

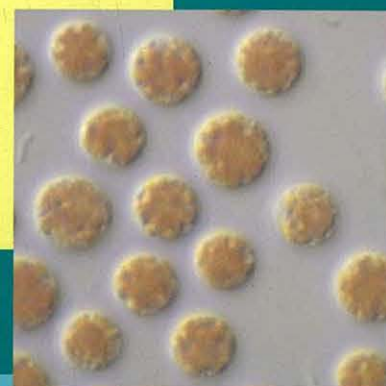
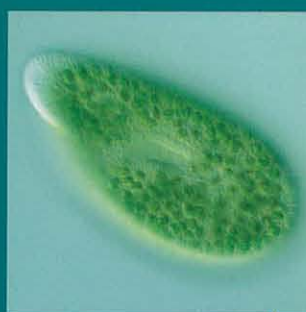
NIES-Collection

LIST OF STRAINS

SEVENTH EDITION

2004

MICROALGAE AND PROTOZOA



MICROBIAL CULTURE COLLECTION
NATIONAL INSTITUTE FOR
ENVIRONMENTAL STUDIES
JAPAN



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NIES-Collection
LIST OF STRAINS
Seventh Edition
2004
Microalgae
and
Protozoa

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National Institute for Environmental Studies
JAPAN

**NIES-Collection. List of Strains
Seventh Edition
Microalgae and Protozoa
March 1, 2004**

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第七版の序

国立環境研究所微生物系統保存施設が、2000年に保存株リスト第六版を発行してから、4年を迎えることとなった。初版～六版に関して、国内国外の各方面から多くの建設的意見や激励が寄せられたことには非常に勇気づけられたと共に、我々の事業が環境科学分野のみならず、基礎生物学、農学、水産学、食品学、医学等の分野でも注目され、重要視されていることを知り、責任の重さを痛感したものである。

この第七版は、初版～六版と同様に微生物系統保存株評価委員会の監修を受け、微細藻類 1,215 株、原生動物 6 株を掲載した。特に保存株の分類、保存株特性については注意深い検討がなされたが、不備な点をご指摘願えれば幸いである。

本施設に保存されている微生物株の殆どは、わが国の藻類学者によって分離培養されたものであり、他の微生物保存機関には保存されていないものである。今後、貴重な微生物株については、国内国外の微生物保存機関と密接な連携・協力関係を組み、共通のルールで共有していくことを考えている。また、本施設の事業は、微生物株の収集・保存・分譲にとどまらず、分類学的研究、保存技術の開発、株情報の収集およびその電算機管理システムの開発等多岐に亘っているが、これらの事業が益々充実し成果をあげるために、施設・要員の充実と拡充をはかっていく所存である。今後とも一層のご批判とご支援を賜ることができれば幸いである。

最後に、寄託依頼された藻類株の評価並びに本リスト刊行に際して様々なご指導とご助言をいただいた評価委員会委員に深甚な謝意を表するとともに、微生物系統保存施設のスタッフ一同の熱意に満腔の敬意を表したい。

平成16年3月

国立環境研究所微生物系統保存株評価委員会委員長
国立環境研究所生物圏環境領域長

渡 邊 信

保存株リスト第一版発刊に寄せて

国立環境研究所に我が国最初の環境微生物の系統保存施設が設置されたのは、昭和58年1月であったが、その後約2年間にわたって、同研究所の関係者の並々ならぬ努力によって、微生物保存事業に関する周到なる準備作業が繰り展げられ、ようやくここにその成果を保存株リストとして集大成されたことは、環境科学にたずさわる多くの研究者にとって、これ程慶ばしいことはない。ここに関係者各位に対して満腔の敬意を表明したい。

今回刊行された保存株リストは、当面環境生物学上重要な生産者である微細藻類に的を絞ったものであるが、これは我が国の現行微生物系統保存事業のうちで最も弱点とされていた分野であり、学界・産業界からもその実現が強く要望されていたところである。微細藻類の系統保存は、長年にわたり活発に研究されてきた細菌類や菌類の系統保存とは異なり、その分離、培養、保存等の条件が極めて複雑で、技術的に多くの困難な作業を伴うものである。本研究所においてはその性格上多角的研究に取り組んでいるが、その特徴を生かして所内の衆知を結集してこの点を克服し、世界的に通用する信頼度の高い系統保存事業を軌道に載せることに成功した。本施設の保存する微生物株は、その特性が科学的に実証されているために、これを実験的に使用する研究者、あるいはそれら微生物株データの利用者にとって、高い信頼感をもって利用することができる。しかも本施設では、保存微生物株に関する独自の電算機管理システムを開発したので、その保存株データを環境生物に関するデータベースの一環として利用することが可能となった。このことによって、とかく遅れがちであった我が国環境生物学の近代化が著しく促進されるものと信ずる。

本施設の当初の目標は環境問題に関係ある多種多様の微生物株を総合的に収集保存することであったが、現状ではようやく微細藻類についての系統保存体制が確立されたに止まっている。今後益々施設設備の充実をはかって、微細藻類のみならず、環境生物学の調査研究上欠かすことのできないその他の微生物の系統保存をも実施し、名実ともにそなわった世界的な環境微生物株保存センターの一つとして発展されることを期待したい。

昭和60年2月

元富山大学長
東京大学名誉教授

柳 田 友 道

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I. はじめに

独立行政法人国立環境研究所微生物系統保存施設（NIESコレクション）は1983年に環境微生物の系統保存を行うことを目的として設立された。当時は湖沼の富栄養化や大気汚染が現在より深刻な時代であった。そのような時代に、NIESコレクションは環境研（当時は公害研）内の研究者が分離した株や他のコレクションから移管された微細藻類株、250株余りでスタートを切った（文献526, 527）。小さなコレクションとしてのスタートであったが、まさに時を得ていたといえる。設立当時はシャットネラやヘテロシグマといった赤潮形成藻、ミクロキスティスのような水の華を形成するシアノバクテリアが代表的な保存株であり、これらは現在でも諸外国のコレクションにはないユニークなコレクションとしてのNIESコレクションの特徴となっている。

保存株

研究者からの寄託と保存施設における独自の分離によって、設立から20年の間に保存株数は1,400株余りに増加し、コレクションは大きく躍進した（Fig. 1）。この保存株リスト第7版は、このうち微細藻類1,215株と原生動物6株をNIES株として掲載している。微細藻類については現在知られているほとんどの綱を網羅している（Table 1）。

NIESコレクションでは、ほとんどの株が5~25°C、4~40 $\mu\text{mol} / \text{m}^2\text{sec}$ （12時間ごとの明暗周期）の最適増殖条件あるいはそれに準ずる環境で維持され、10日~4ヶ月ごとに新しい培地に植え継がれている（継代培養）。培養条件は、このリストの第八章に示されているが、株によって異なる。また、継代培養中に何らかの原因で保存株の状態が悪くなり、最終的に株を失ってしまう危険性をコレクションは常にもっている。これをできる限り防ぐために保存株の生育状態を毎週チェックしている。また、現在保存されている株のうち400株程度が無菌培養株である。これらは遺伝学や生理学の研究には欠かせない。これらの無菌培養株については毎年無菌チェックを行っている。

デジタル画像や18Sリボソーム遺伝子の塩基配列データの収集も業務として行い、保存株の評価に用いている。これらのデータは、通常3年ごとに出版している保存株リスト

（文献521, 528, 529, 531, 532, 540,

541）における分類学的位置の確認

などに利用され、またホームページ

（URL: <http://www.nies.go.jp/biology/mcc/home.htm>）でも検索できるよう

準備が進められている。

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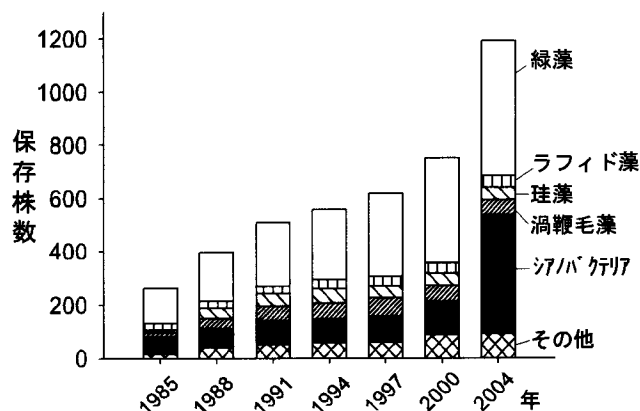


Fig. 1. 第1版~7版に掲載された保存株数の推移。緑藻は狭義の緑藻綱、ペディノ藻綱、アオサ藻綱、トレボキシア藻綱、車軸藻綱を含む。

Table 1. NIESコレクションに保存されている保存株の属、種、株数

門	綱	属	種/変種	株
藍色植物門	藍藻綱	28	68	445
灰色植物門	灰色藻綱	2	3	4
紅色植物門	紅藻綱	2	2	6
クリプト植物門	クリプト藻綱	4	19	40
不等毛植物門	黄金色藻綱	3	5	7
	ラフィド藻綱	6	10	42
	ディクチオカ藻綱	1	1	1
	珪藻綱	19	27	46
	褐藻綱	1	1	1
	黄緑色藻綱	3	3	3
	ペラゴ藻綱	1	1	1
	ピングイオ藻綱	1	1	2
	シゾクラディオ藻綱	1	1	1
	ハプト植物門	プリムネシオ藻綱	12	16
	パプロバ藻綱	1	1	1
渦鞭毛植物門	渦鞭毛藻綱	19	38	58
ユーグレナ植物門	ユーグレナ藻綱	3	6	7
クロララクニオン植物門	クロララクニオン藻綱	1	1	1
緑色植物門	プラシノ藻綱	6	11	23
	ペディノ藻綱	1	1	1
	アオサ藻綱	2	5	6
	トレボキシア藻綱	14	24	57
	緑藻綱	52	130	275
	車軸藻綱	16	60	148
原生動物	貧膜口綱	2	2	2
	ビコソエカ綱	1	1	1
	プラシディア綱	2	2	3
合計		204	438	1,221

分譲と寄託

過去10年間、NIESコレクションでは毎年400~600株を研究や商業目的で分譲してきた。*Microcystis aeruginosa*、*Selenastrum capricornutum*（現在は*Pseudokirchneriella subcapitata*として知られている）、*Chlorella vulgaris*、*Anabaena flos-aquae*や*Chattonella antiqua*が過去5年間で最もよく分譲された種である。分譲された株は、AGPや生態毒性テスト、系統分類学的研究、新規生理活性物質の探求など、様々な分野の研究に用いられている。

NIESコレクションは、また、寄託も受け付けている（第II章参照）。寄託された株は原則として全て、系統保存株評価委員会の評価の後NIES株番号が付され、公開される。分譲依頼があると、新しい培地に植え継がれ、依頼者に郵送ないし宅配便で送られる。NIESコレクションでは、NIES株を使った研究論文を出版した場合、別刷の送付をお願いしている。参考文献の項に示されているように、これまでに多くの科学的に有用な研究成

果が出版されている。

凍結保存

凍結保存は、カルチャーコレクションにおける培養株の長期保存には必須の手段である。繰り返しの植え継ぎ作業がほとんどないことから、継代培養では常に危惧される細菌などの混入の危険を回避できる。また、細胞分裂を押さえることから、保存中の培養株の変質、特に突然変異などによる遺伝的な変質を最小限におさえることができる。現在、NIESコレクションには300余りのシアノバクテリア株と単細胞性紅藻株が液体窒素中の凍結保存（気相保存）のみで維持されている。Appendix I を参照されたい。

分類学的再検討

コッコイドの緑藻は、近年、鞭毛装置構造などの微細構造、18Sリボソーム遺伝子や *rbcL* 遺伝子などの塩基配列解析によって分類学的位置の再検討が行われている。一部の目が改訂されたり、トレボキシア藻綱が設立されたりするなど、分類体系の再検討がなされる一方、科や属レベルでの多系統性が指摘されるようになった。そこで、NIESコレクションにおいても18Sリボソーム遺伝子の解析を独自に行い、一部の株を緑藻綱からトレボキシア藻綱に移行した。また、この解析の過程で、不適切な種名または分類学的位置にある藻類株が見つかった。これらは、寄託者による誤同定か、寄託当時の分類学情報の欠如によるものであると考えられるが、本リストではコメントをつけてそのままにした。今後の分類学的研究に託したい。

シアノバクテリア株について

水の華形成藻類はNIESコレクションの特徴ともなっており、多くの分類学的研究がNIES株を用いて行われている。その中で *Microcystis* 属の5種 [*M. aeruginosa* (Kützinger) Lemmermann, *M. ichthyoblabe* Kützinger, *M. novacekii* (Komárek) Compère, *M. viridis* (A. Braun) Lemmermann, *M. wesenbergii* Komárek] を *M. aeruginosa* に統合することが提案されている（第X章参照）。NIESコレクションではこれを支持し、*Microcystis* 属の5種のうちNIESコレクションで保存する株を *M. aeruginosa* と表示し、前名をデータ中に示した。

他の保存施設との連携

NIESコレクションは、現在、英国のCCAP、フランスのPCC、米国のCCMP、ドイツのSAG、ノルウェーのNIVA（略称の正式名称は第VII章参照）と一部の株を共有している。これらの株にはNIES番号が付してあるが、元の保存機関における株番号も各々の株データ欄に記してある。このような保存機関同士の連携は、保存株を災害などで失わないため、また、世界各地で微細藻類培養株の利用を可能にするために重要な活動である。NIESコレクションでは、このような他機関との連携をさらに拡大しようと考えている。

II. 培養株の寄託

1. 寄託条件

国立環境研究所微生物系統保存施設では基本的に次の条件を満たす株について寄託を受け付けています。寄託された株の受け入れの可否は微生物系統保存株評価委員会で決定します。寄託された株は、原則として、すべて分譲の対象になります。

- (1) 環境問題にかかわる微生物、指標生物、タイプ株、有用な性質をもつ微生物、重要な研究で使われた微生物などの科学的に重要な微生物。
- (2) 履歴が明らかであり、適正な種名のついた株であることを原則としますが、既に属名のみで多くの研究に使われている株は受け入れ対象とします。
- (3) 保存条件が確立しており、安定した培養が可能な株であること。無菌培養株が望ましいが、微細藻類の場合はクローン培養株か単藻培養株であること。原生動物の場合は、無菌株か餌としての生物のみが混入している単一種培養株、細菌類は純粋培養株であること。
- (4) その他、微生物系統保存株評価委員会が特に必要と認めた株。

2. 寄託にあたっての同意事項

国立環境研究所微生物系統保存施設（以後 NIES コレクションと記す）は以下の同意事項に同意していただいた方からの寄託を受け付けます。

- (1) 寄託者は、寄託株を NIES コレクションに無償で寄託することとします。この寄託においては、知的所有権の移転は含まれません。寄託を受けて、NIES コレクションは、寄託された培養株の維持、保存、増殖を行い、また研究者に対し提供することができます。
- (2) 寄託者は、寄託にあたって、寄託株の特性や品質に関する正確な情報（特許等を含む）を添付することとします（微生物株寄託依頼書兼同意書参照）。
- (3) NIES コレクションに寄託するにあたり、寄託株は法律上あるいは契約上いかなる制限も受けていないものであり、その由来は以下のいずれかに該当することとします。
 - ・寄託株は、寄託者が分離・開発した培養株である。
 - ・他者が分離・開発した培養株であるが、寄託にあたっては分離・開発者の許可を得ている。
 - ・寄託者が購入したものであるが、譲渡や寄託をすることについて制限を受けていない。
- (4) NIES コレクションは寄託者の定める以下の条件で利用を希望する者へ寄託株を提供することができます。

- ・論文発表まで寄託株を公開・分譲しない。
- ・その他、寄託者の定める条件。

条件が付与されている場合でも、非公開は原則として寄託日から 1 年以内を目安とします。また、条件が付与されていない場合は、寄託後、保存株評価委員会等の審査を経て直ちに公開・分譲します。

- (5) 寄託者は、寄託株の維持・保存・増殖段階でのやむを得ない事情による変質・滅失あるいは自然災害その他の不可抗力による滅失・散逸などについて、NIES コレクションに対し責任を問うことはできません。
- (6) NIES コレクションは、保存株評価委員会等の意見等を踏まえ、維持方針の変更が生じた場合は事前に寄託者に連絡のうえ、寄託株の維持・保存・提供の中止その他の処分をすることができます。

3. 寄託方法

「微生物株寄託依頼書兼同意書」（6～8 頁）に必要事項を記入し、以下の宛先に郵送してください。ファクスまたは PDF ファイルで送付いただく場合でも、署名捺印された上記「依頼書兼同意書」の原本を後日必ず郵送してください。実際の株の引き取り時期などについては、スタッフにおたずねください。

宛先：〒305-8506 つくば市小野川16-2

国立環境研究所微生物系統保存施設

電話：029-850-2556

ファクス：029-850-2587

電子メール：mcc@nies.go.jp

寄託された株を受領後、株の状態が「寄託依頼書」に記された内容と相違した場合、当施設の判断で株の受け入れを取り消すことがあります。

微生物株寄託依頼書兼同意書

寄託依頼年月日： 年 月 日
依頼者名（フリガナ付）：
所属機関名（日本語名）：
所属機関名（英語名）：
所属機関住所：〒
電話： (内線)
FAX：
Eメールアドレス：

下記微生物の寄託を依頼します。

寄託理由：

[基本情報]

学名及び命名者名：

門名：

綱名：

目名：

科名：

シノニム：

同定者名（フリガナ付）：

同定年： 年 月 日

株番号又は符号：

他の寄託先情報（同じ株を別の機関に寄託している場合、機関名と保存株番号を記述してください）：

[採集]

採集年月日： 年 月 日

採集者名（フリガナ付）：

採集地情報

国名：

産地住所（県名から）：

地名（河川、湖、池、湾、砂浜等の名称）：

緯度経度：

海域名と最も近い国名：

生息環境：陸域 海域 汽水域（塩濃度： ‰）

生息環境の詳細：貧栄養 中栄養 富栄養 腐植栄養 表層 クロロフィル極大水深

その他の水深（— m） その他（ ）

陸水環境の詳細：湖沼 河川 湿原 湿地 水田 塩水 土 温泉 鉱泉 雪または氷

その他（ ）

海水環境の詳細：海浜域 沿岸域 外洋域 潮だまり（タイドプール） 潮間帯 干潟

マングローブ 河口 港湾 漂着（打ち上げ） ドレッジ その他（ ）

生息環境コメント：

[分離]

分離年月日： 年 月 日

分離者名（フリガナ付）：

分離試料源：水 海水 砂 泥 底泥 土 植物 海藻 海草 動物 サンゴ スポンジ

雪または氷 その他（ ）

分離時の状態：運動性栄養細胞 非運動性栄養細胞 休眠細胞 孢子 四分孢子 果孢子

接合子 単為発生配偶子 葉状体 その他（ ）

分離方法：ピペット洗浄法 切り出し 希釈法 寒天平板法 走性 セルソーター

その他（ ）

分離時の培養条件（培地の種類，濃度，光，温度条件等）が後述の保存条件と異なる場合，その詳細を記述してください：

分離時の処理：無処理 抗生物質(名称： ， mg/l) 紫外線照射
化学物質(名称： ， mg/l) 熱処理 集積強化培養 超音波処理
酸化ゲルマニウム その他()

[状態]

藻類・シアノバクテリア：単藻 混合
クローン 非クローン
無菌 非無菌
バクテリア：純粋 混合
原生動物：無菌 二者培養（餌生物： ）
混合

最新の無菌検査年月日： 年 月 日

[保存条件]

保存形態：継代培養 凍結保存 両者併用 その他()

培地名：

培地の出典：

培地形状：液体 半固体 固体 二相 その他()

培地作成等の特記事項：

継代培養による保存条件

温度(°C)：

光強度(Lux)：

光強度($\mu E/m^2sec$)：

光質：白色蛍光灯 赤色蛍光灯 青色蛍光灯 自然光 その他()

明暗周期：

継代培養(植え継ぎ)周期： (□日 □月間隔)

培養条件や植え継ぎ操作に関する特記事項(前培養の条件，特別な処理，最大の増殖率を得る条件，細胞の接種方法や接種量など)：

凍結保存：可 否 不明

凍結保護剤名： (濃度 %)：

保存温度(°C)：

凍結方法：

凍結乾燥保存：可 否 不明

L-乾燥保存：可 否 不明

[特性]

環境上の特性

赤潮形成 水の華形成 AGP試験 生物指標 水の華形成藻の捕食 異味 異臭
浄水障害 毒性 高CO₂固定 有害物質分解 生分解活性 酸化池 汚泥 生物膜処理
腐食性 その他()

生理生態的特性

独立栄養 混合栄養 摂食栄養 従属栄養 浮遊性 底生 共生 寄生 腐生
コスモポリタン 広温性 狭温性 好熱性 好冷性 広塩性 狭塩性 好塩性 好酸性
陽生型 陰生型 窒素固定 発酵 生物発光 走光性 水素発生 オイル生産
内生植物的生活 植物着生 岩石着生 その他()

その他の特性

分類学上重要な株 タイプ株 運動性 非運動性 休眠孢子形成 休眠孢子非形成 色順応
突然変異株 雌雄異株 雌雄同株 雌雄異体 雌雄同体 同型配偶 異型配偶 卵生殖
H,h型生活環 H,d型生活環 D,d+h型生活環 倍数性株 交配型(+) 交配型(-)
雌 雄 その他()

III. 保存株の分譲

1. 分譲にあたっての同意事項

国立環境研究所微生物系統保存施設（以後 NIES コレクションと記す）は、以下の事項に同意していただいた方に培養株を分譲します。

- (1) NIES コレクションから分譲された微生物培養株、それを増殖させたもの及び由来物（以後培養株等と記す）は教育、試験・研究および製品等の開発目的でのみ使用できます。人に直接使用することはできません。また、利用者は使用の際に、分譲された培養株に潜在的な危険性があることを認識し、その国、自治体、機関等の法令や規則を遵守しなければなりません。特に有毒物質を生産する株については、使用中の管理に責任を持ち、使用後は株及び由来物を適切な方法で処理しなければなりません。
- (2) 分譲を希望する場合は、利用者本人が分譲依頼書を提出してください。
- (3) 培養株等に関する知的所有権等が、分譲によって利用者へ与えられるものではありません。
- (4) 利用者が分譲時に示した使用目的から大幅に異なる目的に使用する場合、利用者はその旨を NIES コレクションに書面で連絡しなくてはなりません。
- (5) 利用者は分譲された培養株等を第三者に分与または販売することはできません。
- (6) NIES コレクションから分譲された株を利用した成果を発表する場合、番号の前に必ず NIES-をつけた株番号を記し（例：NIES-123）、国立環境研究所微生物系統保存施設に保存されている株であることを明記してください。分譲された株を利用して論文発表した場合は別刷りまたはコピーを2部、NIES コレクションに送ってください。
- (7) 分譲された培養株等の使用が第三者の知的所有権やその他の権利を侵害していた場合、利用者は利用者の責任によって対処しなければなりません。
- (8) 分譲された培養株等が、欠点、危険な特性、不具合等を有している可能性があること、あるいは特定の目的に合致しているとは限らないことを認識し、分譲された培養株等の利用によって損失が生じた場合は、利用者は、利用者自らの責任で処理しなくてはなりません。
- (9) 利用者は、培養株を受領後、1ヶ月以内に受領報告書を NIES コレクション宛に提出しなくてはなりません。輸送中の環境条件の変化などにより、その時点で増殖状態が悪い場合、利用者は NIES コレクションに無償で再分譲を要求することができます。ただし、NIES コレクションはその期間内であっても、利用者の過失に対する責任は負いません。

2. 株の注文方法

- (1) 「微生物株分譲依頼書兼同意書」（12 頁）に必要事項を記入し、以下の宛先に郵送してください。依頼者が学生、非常勤職員などの場合は、指導教官、雇用者などから依頼するようお願いします。株は指導教官、雇用者宛に郵送されます。また、お急ぎの場合は、分譲依頼のみをあらかじめファクス、PDF ファイルまたは電子メールでお送りください。なお株は署名捺印された依頼書兼同意書原本の到着確認後でないと発送できませんので、この点くれぐれもご注意ください。
- (2) 保存株を受け取った方は、受領後 1 ヶ月以内に「微生物株受領報告書」（18 頁）に必要事項を記入し、以下の宛先にファクス、郵送、または電子メールで連絡してください。

宛先：〒305-8506 つくば市小野川16-2

国立環境研究所微生物系統保存施設

電話：029-850-2556

ファクス：029-850-2587

電子メール：mcc@nies.go.jp

3. 株の価格

約 15mL の培養液に植え込まれた培養株 1 本につき、非営利組織：6,000 円、営利組織：10,000 円となります。この他に消費税と郵送料がかかります。小、中、高等学校の学校教育用、また、大学であっても教育目的で使用する場合は無料です。ただし、これらの場合、種類の選択は保存施設にお任せいただきます。

4. “Untransportable”（輸送が困難な）株と凍結保存株の分譲についての注意

“Untransportable”と記されている株は、保存株の状態や季節によって分譲依頼を受け付けられない場合があります（第VII章を参照のこと）。原則的に、これらの株はとりに来ていただくことになります。スタッフにご相談ください。

また、“[Cryopreserved]”と記されている株は、凍結保存されている株を解凍後、培養してからお送りします。したがって株を発送するまでに1ヶ月くらいかかる場合があります（Appendix I も参照のこと）。

5. 1993年以降採集された外国産株の取り扱い

1993年1月以降に外国より採集された株については、リストに掲載されていても生物多様性条約に関連して当面分譲を見合わせているものがあります。分譲依頼に際しては必ず保存株リストで産地および採集年をご確認の上、本項に該当すると思われる場合にはスタッフにお問合せください。

6. 有毒物質を生産する株の取り扱い

現時点で有毒物質を生産することがわかっている培養株は“Toxic”と記されています(Appendix IIも参照のこと)。これらの株の分譲を希望する場合は、「有毒株分譲依頼書兼同意書」(13頁)を提出してください。

7. 国立環境研究所の職員、客員研究員、共同研究員への分譲

それぞれに該当する「微生物株分譲依頼書兼同意書」(14~17頁)に必要な事項を記入し、署名捺印のうえ所内便で送付するか、微生物系統保存施設のスタッフに直接渡してください。お急ぎの場合は、分譲依頼のみ電子メール(mcc@nies.go.jp宛)で受け付けます。後日上記依頼書を必ずお持ちください。保存株は無料です。

微生物株分譲依頼書兼同意書（一般用）

分譲依頼年月日： 年 月 日
依頼者名（フリガナ）： ()
所属機関名：
郵便番号：〒
住所：
電話：
FAX：
Eメールアドレス：
請求先：（上記機関、住所等と異なる場合にご記入ください）

下記微生物についての分譲を依頼します。
微生物学名（NIES株番号）：
研究目的（できるだけ詳しくご記入ください）：

合計株数：
株データシートの必要な株番号：

分譲依頼にあたって以下の同意事項に同意いたします。
年 月 日

氏名： 印（又はサイン）

分譲依頼者が学生、非常勤職員等の場合、指導教官又は責任者は以下の欄にご記入ください。
年 月 日

指導教官又は責任者名： 印（又はサイン）

所属機関名：
郵便番号：〒
住所：
電話：
FAX：
Eメールアドレス：

分譲にあたっての同意事項

1. 国立環境研究所微生物系統保存施設（以後 NIES コレクションと記す）から分譲された微生物培養株、それを増殖させたもの及び由来物（以後培養株等と記す）は教育、試験・研究および製品等の開発目的でのみ使用できません。人に直接使用することはできません。また、利用者は使用の際に、分譲された培養株に潜在的な危険性があることを認識し、その国、自治体、機関等の法令や規則を遵守しなければなりません。
2. 分譲を希望する場合は、利用者本人が分譲依頼書を提出してください。
3. 培養株等に関する知的所有権等が、分譲によって利用者へ与えられるものではありません。
4. 利用者が分譲時に示した使用目的から大幅に異なる目的に使用する場合、利用者はその旨を NIES コレクションに書面で連絡しなくてはなりません。
5. 利用者は分譲された培養株等を第三者に分与または販売することはできません。
6. NIES コレクションから分譲された株を利用した成果を発表する場合、番号の前に必ず NIES-をつけた株番号を記し（例：NIES-123）、国立環境研究所微生物系統保存施設に保存されている株であることを明記してください。分譲された株を利用して論文発表した場合は別刷りまたはコピーを2部、NIES コレクションに送ってください。
7. 分譲された培養株等の使用が第三者の知的所有権やその他の権利を侵害していた場合、利用者は利用者の責任によって対処しなければなりません。
8. 分譲された培養株等が、欠点、危険な特性、不具合等を有している可能性があること、あるいは特定の目的に合致しているとは限らないことを認識し、分譲された培養株等の利用によって損失が生じた場合は、利用者は利用者自らの責任で処理しなくてはなりません。
9. 利用者は、培養株を受領後、1ヶ月以内に受領報告書を NIES コレクション宛に提出しなくてはなりません。輸送中の環境条件の変化などにより、その時点で増殖状態が悪い場合、利用者は NIES コレクションに無償で再分譲を要求することができます。ただし、NIES コレクションはその期間内であっても、利用者の過失に対する責任は負いません。

有毒株分譲依頼書兼同意書（一般用）

分譲依頼年月日： 年 月 日
依頼者名（フリガナ）： ()
所属機関名：
郵便番号：〒
住所：
電話：
FAX：
Eメールアドレス：
請求先：（上記機関、住所等と異なる場合にご記入ください）

下記微生物についての分譲を依頼します。
微生物学名（NIES株番号）：
研究目的（できるだけ詳しくご記入ください）：

合計株数：
株データシートの必要な株番号：

分譲依頼にあたって以下の同意事項に同意いたします。
年 月 日

氏名： 印（又はサイン）

分譲依頼者が学生、非常勤職員等の場合、指導教官又は責任者は以下の欄にご記入ください。
年 月 日

指導教官又は責任者名： 印（又はサイン）

所属機関名：
郵便番号：〒
住所：
電話：
FAX：
Eメールアドレス：

分譲にあたっての同意事項

1. 国立環境研究所微生物系統保存施設（以後 NIES コレクションと記す）から分譲された微生物培養株、それを増殖させたもの及び由来物（以後培養株等と記す）は教育、試験・研究および製品等の開発目的であり、公共の安全が保証される目的でのみ使用できます。人に直接使用することはできません。また、利用者は、使用の際に、分譲された培養株が有毒物質を生産する株であることを認識し、その国、自治体、機関等の法令や規則を遵守しなければなりません。利用者は使用中の管理に責任を持ち、使用後は培養株をオートクレーブなどで死滅させ、由来物質については適切に処理しなければなりません。
2. 分譲を希望する場合は、利用者本人が分譲依頼書を提出してください。
3. 培養株等に関する知的所有権等が、分譲によって利用者へ与えられるものではありません。
4. 利用者が分譲時に示した使用目的から大幅に異なる目的に使用する場合、利用者はその旨を NIES コレクションに書面で連絡しなくてはなりません。
5. 利用者は分譲された培養株等を第三者に分与または販売することはできません。
6. NIES コレクションから分譲された株を利用した成果を発表する場合、番号の前に必ず NIES-をつけた株番号を記し(例：NIES-123)、国立環境研究所微生物系統保存施設に保存されている株であることを明記してください。分譲された株を利用して論文発表した場合は別刷りまたはコピーを2部、NIES コレクションに送ってください。
7. 分譲された培養株等の使用が第三者の知的所有権やその他の権利を侵害していた場合、利用者は利用者の責任によって対処しなければなりません。
8. 分譲された培養株等が、欠点、危険な特性、不具合等を有している可能性があること、あるいは特定の目的に合致しているとは限らないことを認識し、分譲された培養株等の利用によって損失が生じた場合は、利用者は利用者自らの責任で処理しなくてはなりません。
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有毒株分譲依頼書兼同意書（国立環境研究所職員用）

分譲依頼年月日： 年 月 日
依頼者名（フリガナ）： ()
所属部署： 領域/プロジェクト/センター/ラボ
 研究室/チーム

電話：
FAX：
Eメールアドレス：

下記微生物についての分譲を依頼します。
微生物学名（NIES株番号）：
研究目的（できるだけ詳しくご記入ください）：

研究課題名：
研究課題コード：
合計株数：
株データシートの必要な株番号：

分譲依頼にあたって以下の同意事項に同意いたします。
 年 月 日

氏名： 印（又はサイン）

分譲にあたっての同意事項

1. 国立環境研究所微生物系統保存施設（以後 NIES コレクションと記す）から分譲された微生物培養株（及びそれを増殖させたものを含み、以後培養株等と記す）は教育、試験・研究および製品等の開発目的であり、公共の安全が保証される目的でのみ使用できます。人に直接使用することはできません。また、利用者は、使用の際に、分譲された培養株が有毒物質を生産する株であることを認識し、その国、自治体、機関等の法令や規則を遵守しなければなりません。利用者は使用中の管理に責任を持ち、使用後は培養株をオートクレーブなどで死滅させ、由来物質については適切に処理しなければなりません。
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微生物株分譲依頼書兼同意書（客員研究員・共同研究員用）

分譲依頼年月日： 年 月 日
依頼者名（フリガナ）： （ ）
所属機関名：
郵便番号：〒
住所：
電話：
FAX：
Eメールアドレス：
国立環境研究所の受け入れ職員名：
所属部署：

下記微生物についての分譲を依頼します。

微生物学名（NIES株番号）：

研究目的（できるだけ詳しくご記入ください）：

合計株数：

株データシートの必要な株番号：

分譲依頼にあたって以下の同意事項に同意いたします。

 年 月 日

氏名： 印（又はサイン）

分譲依頼者が学生の場合は以下の欄も記入してください。

 年 月 日

受け入れ職員名： 印（又はサイン）

分譲にあたっての同意事項

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分譲依頼年月日： 年 月 日
依頼者名（フリガナ）： ()
所属機関名：
郵便番号：〒
住所：
電話：
FAX：
Eメールアドレス：
国立環境研究所の受け入れ職員名：
所属部署：

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微生物学名（NIES株番号）：
研究目的（できるだけ詳しくご記入ください）：

合計株数：
株データシートの必要な株番号：

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微生物株受領報告書

受領報告年月日： 年 月 日

依頼者名（フリガナ）： ()

所属機関名：

郵便番号：〒

住所：

電話：

FAX：

Eメールアドレス：

平成 年 月 日に分譲された微生物株の受領と受領時の株の状態
について下記のように報告します。

受付番号：

微生物学名（NIES株番号）：

株が到着した日付： 年 月 日

株の受領時の状態

良好：

不良：

その他：

ご意見、要望など：

IV. 分譲株の培養保存法

微生物株は、ねじ口試験管に培養された状態で郵送される。株の分譲を受けた場合、株を絶やさないために下記の点に留意する必要がある。

- i) 培地は株を受け取る前に作成しておく。
- ii) 株を受領後速やかに荷をとき、新鮮な培地に植え継ぎ、当方で指示した温度と光強度下（第Ⅷ章参照）で培養する。その場合明暗サイクルは12時間明期12時間暗期とし、ねじ口試験管のねじ蓋をゆるくする。
- iii) 良好な増殖が確認された後に、更に株を保存する場合には、当方で指示した期間毎に新鮮な培地に移植する必要がある（第Ⅷ章参照）。

V. 藻類培地作成の基本手法

藻類株の保存には、数多くの培地を必要とする。それぞれの培地は次章に掲載した処方せんに従って作成されるが、正確かつ簡便に培地を作成するために、本施設で採用している基本手法について述べておきたい。

1. 保存試薬液

培地は一般に多量栄養素、微量金属、およびビタミン類(表2)で構成されている。これらの諸成分の保存試薬液を作成しておくことが、培地作成の簡便さをもたらす。このうち微量金属やビタミン類の保存液の濃度は非常に低いので、保存試薬液作成時には、より濃度の高い原液を作成する必要がある。以下、各々について保存試薬液の濃度と作成方法について述べる。

A 多量栄養素：各栄養素につき、10mg/mlの濃度の保存試薬液を別々に作成し、冷蔵庫(5℃)で保管する。

B 微量金属：これらの成分は、各種の保存試薬液として別々に作成され保管される場合と、混液で保管される場合がある。

(1) 各種保存試薬液

- i) 10～100mg/mlの濃度で各種金属の原液を作成する。
- ii) 各原液を1mg/mlの濃度に希釈し冷蔵庫(5℃)に保管する。

表 2. 培地に使われる各種栄養素

多量栄養素	微量金属
NaCl	H ₃ BO ₃
KCl	MnCl ₂ · 4H ₂ O
CaCl ₂ · 2H ₂ O	MnSO ₄ · 7H ₂ O
MgCl ₂ · 6H ₂ O	FeCl ₃ · 6H ₂ O
Na ₂ SO ₄	FeSO ₄ · 7H ₂ O
K ₂ SO ₄	CoCl ₂ · 6H ₂ O
MgSO ₄ · 7H ₂ O	ZnSO ₄ · 7H ₂ O
NaNO ₃	CuSO ₄ · 5H ₂ O
KNO ₃	Na ₂ MoO ₄ · 2H ₂ O
Ca(NO ₃) ₂ · 4H ₂ O	ビタミン類
NH ₄ NO ₃	Vitamin B ₁₂
NaH ₂ PO ₄ · 2H ₂ O	Biotin
β -Na ₂ glycerophosphate · 5H ₂ O	Thiamine HCl
KH ₂ PO ₄	Nicotinic acid
K ₂ HPO ₄	Calcium panthothenate
Na ₂ CO ₃	<i>p</i> -Aminobenzoic acid
NaHCO ₃	Inositol
Na ₂ SiO ₃ · 9H ₂ O	Folic acid
	Thymine

(2) 混液

- i) (1)-i)と同様の操作を行う。
- ii) 必要量の80%の蒸留水をビーカーに加える。
- iii) 十分に攪拌しながら必要量のNa₂EDTAを溶解する。
- iv) 十分に攪拌しながら各種微量金属原液を必要量添加する。
- v) 蒸留水を加え、最終量に調整し、冷蔵庫(5℃)に保管する。

C ビタミン類：ビタミンB₁₂、ビオチン、チアミンの3種のビタミンだけで多くの藻類が増殖するので、殆どの培地はこれら3種のビタミン類だけが添加されている。しかし、いくつかの培地では、他のビタミン類が添加されている。

(1) ビタミンB₁₂、ビオチン、チアミン

- i) ビタミンB₁₂とビオチンについては、各々0.1mg/mlの原液を作成し、チアミンについては10mg/mlの原液を作成する。

- ii) これらの原液を多数の試験管に1mlずつ分注し、オートクレーブ滅菌(121℃, 20min)後、-20℃のフリーザーに保管する。
 - iii) 各ビタミンについて、保存原液の1mlを融解し、蒸留水で1/100に希釈してビタミンB₁₂、ビオチンについては1µg/mlの保存試薬液、チアミンについては、100µg/mlの保存試薬液を作成し、冷蔵庫に保管しながら使用する。
- (2) 他のビタミン類：ある培地では、多種のビタミン類が混液の形で添加される(第VI章-64参照)。大量に作成しておくことをすすめる。
- i) 各種のビタミンについて0.1~1mg/mlの原液を作成する。
 - ii) 必要量の80%の蒸留水をビーカーに加える。
 - iii) 十分に攪拌しながら各種ビタミンを必要量加える。
 - iv) 蒸留水で最終量に調整する。
 - v) ミリポアフィルター(0.22µm)でろ過滅菌したのち、滅菌された試薬瓶に100mlずつ分注し、-20℃のフリーザーで保管する。一部を融解し、冷蔵庫(5℃)に保管しながら使用する。

2. 培地作成

培地は、合成培地と強化培地に大別される。すべての淡水藻や一部の海産藻は合成培地で、殆どの海産藻は強化培地で保存されている。

- (1) 合成培地(淡水)
- i) 必要量の80~90%の蒸留水をビーカーに加える。
 - ii) 十分に攪拌しながら、Tris、glycylglycine、HEPES、TAPS、Bicine、MES等の緩衝剤(必要とされる場合)を必要量天秤で秤量し、添加する。
 - iii) 各種栄養塩を各々の保存液から必要量添加する。
 - iv) 蒸留水で最終量に調整する。
 - v) 緩衝剤が使用されている場合、1N HClあるいは、1N NaOHで、使用されていない場合は各々1/10の濃度でpHを調整する。
 - vi) 培地10mlずつ試験管(18×150mm)に分注し、オートクレーブで滅菌する(121℃, 20min)。
- (2) 合成培地(海水)
- i) 必要量の80%の蒸留水をビーカーに加える。
 - ii) 十分に攪拌しながら、緩衝剤(Tris, NTA等)および多量栄養塩類(NaCl, MgSO₄·7H₂O, KCl, CaCl₂·2H₂O)を必要量天秤で秤量し、添加する。
 - iii) 他の各種栄養塩を各々の保存液から必要量添加する。
 - iv) 蒸留水で最終量に調整する。

- v) 1N HClでpHを調整する(通常8.0)。
 - vi) 培地10mlずつ試験管に分注し、オートクレーブで滅菌する(121℃, 20min)。
- (3) 強化海水培地
- i) 汚染のない外洋海水を採取し、ワットマンGF/Cフィルターでろ過し、粒子を除く。
 - ii) 塩分を調べる。通常の外洋海水の塩分は約35‰である。
 - iii) 必要量の80～90%の海水をビーカーに加える。
 - iv) 必要量のTris等の緩衝剤を天秤で秤量し、溶解する(必要とされる場合)。
 - v) 他の栄養塩類を各々の保存液から必要量添加する。
 - vi) 海水で最終量に調整する。
 - vii) pHを測定する。指示されている場合は1N HClで調整する(通常8.0)。
 - viii) 培地10mlずつ試験管に分注し、オートクレーブで滅菌する(121℃, 20min)。

3. 寒天斜面培地

通常寒天は1.5%の濃度で滅菌する前に液体培地に加えられる。

- i) 寒天を必要量天秤で秤量し、液体培地に添加し、オートクレーブで121℃に熱し、溶解する。
- ii) 溶解後、速やかに10mlずつ試験管に分注し、オートクレーブで滅菌する(121℃, 20min)。
- iii) 滅菌後、試験管上部に直径1cmの枕木をして寝かせ、放冷して培地を斜面状に固まらせる。

PREFACE TO THE SEVENTH EDITION

Four years have past since we published the sixth edition of the list. During this period a considerable number of new cultures have been added to the NIES-Collection. We appreciate the many comments and words of encouragement about the publications from people in diverse places. These have led us to recognize more than ever the value of the NIES-Collection for research and development. Its use extends not only to environmental science, but also to basic biology and microbiology-related fields such as agriculture, fisheries, food manufacture and medical science.

The seventh edition lists 1,215 strains of microalgae and 6 strains of protozoa. These have been evaluated by the Committee for Evaluating Microbial Culture Strains, which is composed of microbiologists from this institute and authorities from other organizations. Although special care has been exercised to ascertain that the taxonomy and characteristics of all strains are clear and precise, we are always grateful for further advice and criticism.

Most of the strains in the NIES-Collection were isolated originally by phycologists in our country and do not exist in other collections. We plan to share responsibility for preservation of the important strains by keeping close contacts with other culture collections.

The NIES-Collection carries out such wide-ranging activities as collection, preservation, distribution, taxonomy, preservation technology, and development of a microbial strain data processing system. We hope to make steady progress in these various activities by expansion of facilities and staff. We would much appreciate your advice, criticism and cooperation concerning the performance of the NIES-Collection.

I wish to express my sincere thanks to all of the members of the committee for their effort devoted to the evaluation of microbial strains for deposit, and their numerous considerations and suggestions for this publication. I would also like to pay my respect to the staffs of the NIES-Collection for their enthusiasm for culture collection.

March 1, 2004



Makoto M. Watanabe, D.Sci.
Chairman for the Committee for
Evaluating Microbial Culture Strains
Director of Environmental Biology Division

PREFACE TO THE FIRST EDITION

In January 1983, the first culture collection of environmental microorganisms in Japan was established at the National Institute for Environmental Studies. In the two years since that time, many dedicated people have collaborated in the collection of microorganisms for the institute. The fruits of their efforts have culminated in a "List of Strains," which I feel will be highly praised by environmental scientists. I would like to extend to all who were involved, my most sincere thanks and gratitude.

The list published herein focuses on microalgae which are important primary producers in the environment. Notwithstanding the fact that there has been a high demand for microalgal collections by both the academic and industrial worlds, until the establishment of the NIES-Collection, no microalgal culture collection for environmental studies *per se* existed in Japan. Unlike the culture collection of bacteria and fungi, organisms which have been actively studied for a long time, the isolation, cultivation, and preservation of microalgae are technically much more complex. Since this institution has characteristically performed interdisciplinary studies, it was possible to conquer these difficulties, and set the culture collection of microalgae on the right path by utilizing the knowledge of its many experts.

Users of the microbial strains of the NIES-Collection will find both their quality and the data maintained about them, highly reliable because the characteristics of the microalgae have been carefully examined and re-examined. Due to the development of the strain computer data processing system, strain data have added to the general data base of environmental biology. Collectively, these developments will contribute to the rapid growth of environmental microbiology, and allow it to catch up with microbiological research in other fields.

Although the ultimate objective of the NIES-Collection is to collect and preserve a great variety of microorganisms related to environmental problems, at present only the collection of microalgal cultures has been established. I hope that in the future the NIES-Collection will preserve not only microalgae, but also other microorganisms which are indispensable to environmental biology. By planning expansion of the facilities and the staff, the NIES-Collection should develop as an international culture collection center, truly worthy of the name.

September 1, 1985



Tomomichi Yanagita, D. Sci.

Professor Emeritus of the University of Tokyo.

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I. INTRODUCTION

The Microbial Culture Collection at the National Institute for Environmental Studies (NIES-Collection) was founded in 1983 within NIES. When the NIES-Collection was created, environmental issues such as eutrophication of lakes and rivers, air and water pollution, and human health problems caused by environmental pollution were much more severe than nowadays. The NIES-Collection started with ca. 250 strains mostly deposited by NIES scientists who were involved in environmental research and by other culture collections in Japan (Ref. 526, 527). Thus, red-tide-forming algae, such as *Chattonella antiqua* and *Heterosigma akashiwo*, and water-bloom-forming cyanobacteria, such as *Microcystis aeruginosa* were representatives at the start, and still characterize the culture collection.

Strains maintained

During 20 years, the number of strains has increased (Fig. 1) by deposition from researchers and original isolation in the NIES-Collection. At present, the NIES-Collection holds more than 1,400 strains in total, including unidentified strains, and 1,221 strains (Table 1), which cover almost all classes of algae so far described, are available to distribution as the NIES strains listed herein.

In the NIES-Collection, most strains are maintained under optimal and/or suboptimal conditions ranging from 5 to 25 °C and 4 to 40 $\mu\text{mol}/\text{m}^2 \text{ sec}$ light intensity in a 12-h-light:12-h-dark photo-regime. The strains are serially transferred at 10 days to 4 months intervals. These maintenance conditions differ depending on algal strains as described in Chap. VIII of this list. To prevent loss of the strains during maintenance by serial transfer, we check growth weekly. Once a year, a check for absence of bacteria is also carried out for the axenic strains by using several bacterial check media (refer to Chap. V). Axenic strains are necessary for conducting some genetic and physiological work. Now, we have about 400 axenic strains.

Digital images and sequences of 18S rDNA are also routinely collected for evaluation of the strains. These data are reflected in the list published every 3 years (Ref. 521, 528, 529, 531, 532, 540, 541) or can be searched online (<http://www.nies.go.jp/biology/mcc/home.htm>).

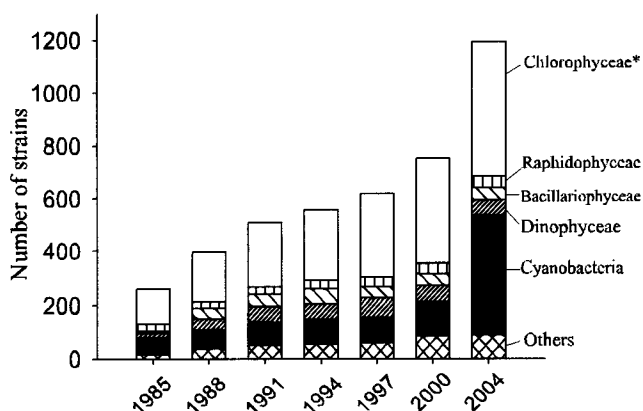


Fig. 1. Changes in strain numbers appeared in the List of Strains, from the first to seventh editions. In this figure *Chlorophyceae includes Chlorophyceae *sensu stricto*, Pedinophyceae, Ulvophyceae, Trebouxiophyceae and Charophyceae.

Table1. Number of genera, species and strains in the NIES-Collection.

Phylum	Class	Genus	Species	Strains	
Cyanophyta (Cyanobacteria)	Cyanophyceae	28	68	445	
Glaucophyta	Glaucophyceae	2	3	4	
Rhodophyta	Rhodophyceae	2	2	6	
Cryptophyta	Cryptophyceae	4	19	40	
Heterokontophyta	Chrysophyceae	3	5	7	
	Raphidophyceae	6	9	42	
	Dictyochophyceae	1	1	1	
	Bacillariophyceae	19	27	46	
	Phaeophyceae	1	1	1	
	Xanthophyceae	3	3	3	
	Pelagophyceae	1	1	1	
	Pinguiphyceae	1	1	2	
	Schizocladiophyceae	1	1	1	
	Haptophyta	Prymnesiophyceae	12	16	39
		Pavlophyceae	1	1	1
	Dinophyta	Diophyceae	19	38	58
	Euglenophyta	Euglenophyceae	3	6	7
Chlorarachniophyta	Chlorarachniophyceae	1	1	1	
Chlorophyta	Prasinophyceae	6	11	20	
	Pedinophyceae	1	1	1	
	Ulvophyceae	2	5	6	
	Trebouxiophyceae	14	24	57	
	Chlorophyceae	52	130	275	
	Charophyceae	16	60	148	
	Protozoa	Oligohymenophorea	2	2	2
Bicoecea		1	1	1	
Placididea		2	2	3	
Total		204	438	1,221	

Distribution and deposition

In the last 10 years, the NIES-Collection has distributed 400 to 600 strains a year to both academic and commercial users. *Microcystis aeruginosa*, *Selenastrum capricornutum* (currently known as *Pseudokirchneriella subcapitata*), *Chlorella vulgaris*, *Anabaena flos-aquae*, and *Chattonella antiqua* were the 5 most popular species in the last 5 years. Distributed strains are used for various purposes, e.g. various tests to evaluate algal growth potential and ecotoxicity, phylogenetic studies, characterization of physiological traits leading to the development of bioactive compounds, and so on.

The NIES-Collection accepts the deposit of strains, all of which become available to all users after evaluation by the Committee for Evaluating Microbial Culture Strains and allocation of a NIES strain number. Upon request, the strain is transferred to fresh medium, and shipped to the customer.

We ask customers to send reprints if they publish results based on our strains. A lot of challenging studies have been conducted using NIES strains, as seen in Chap. X.

Cryopreservation

Cryopreservation is necessary for long-term preservation in culture collections, preventing contamination during repetitive transfer and genetic changes by mutation. We have about 300 cyanobacterial and unicellular red algal strains preserved only in liquid nitrogen as listed in Appendix I.

Taxonomic re-evaluation

The taxonomic positions of coccoid green algae have been revised in recent years on the basis of the ultrastructure of the flagellar apparatus and DNA sequences. This revision has advanced the taxonomy of green algae and led to the revision of several orders as well as the creation of a new class. However, as polyphyly in some families and genera is recognized, it is difficult to classify those groups without sequence data. Moreover, this fact has directly affected the list of strains, in which classification to class level is necessary. Thus, we started the sequencing of 18S rDNA to increase the knowledge of culture strains in the NIES-Collection. As a result, some strains have been transferred from Chlorophyceae to Trebouxiophyceae. In addition, we found several strains assigned to inappropriate taxonomic status, e.g. taxonomic position and species names, in the course of those analyses. It may be due to misidentification by depositors, or to paucity of phylogenetic information. We left those strains as they were with comments.

Cyanobacterial strains

As mentioned above, bloom-forming cyanobacterial strains are characterizing our culture collection, and taxonomic studies of cyanobacteria have been comprehensively carried out using NIES strains (see Chap. X). As a result of those taxonomic studies on *Microcystis*, five morphospecies of *Microcystis* (*M. aeruginosa* (Kützing) Lemmermann, *M. ichthyoblabe* Kützing, *M. novacekii* (Komárek) Compère, *M. viridis* (A. Braun) Lemmermann, and *M. wesenbergii* Komárek) were unified into one species, *M. aeruginosa*. The NIES-Collection accepted this proposal. In Chap. VIII, however, former names are also shown in individual strain data.

Collaboration with other culture collections

Now, the NIES-Collection shares several strains with CCAP, PCC, CCMP, SAG and NIVA (see Chap. VII for acronyms). Those strains are shown with the strain numbers given by the former culture collections. We are planning to expand these collaborations to other culture collections as well, for safety and to enlarge the availability of strains in the world.

II. DEPOSITION OF STRAINS

1. Conditions for deposit

The Committee for Evaluating Microbial Culture Strains at NIES (abbreviate to CEMCS hereafter) has decided to accept for deposit strains that satisfy the following conditions as the NIES strains maintained in the NIES-Collection. In principle, all deposited strains will be available to the public.

- (1) Scientifically important microorganisms, e.g. microorganisms which cause or remediate environmental problems, bioindicators, type strains, microorganisms with useful physiological and biochemical properties, and established strains which have been used for valuable research.
- (2) The background of the strain should be clarified, and the specific name should be established; however, strains that have been used in a number of studies may be accepted even if only the generic name is known.
- (3) The strain should be stable under defined culture conditions and shall be in one of the following states:
 - Microalgae: clonal or unialgal strain (axenic strains are preferable)
 - Protozoa: axenic or xenic strain with supplemented microorganisms as food
 - Bacteria: pure strain
- (4) Some other microorganisms may be accepted for deposit when the CEMCS recognizes their importance.

2. Agreement for deposit

When the depositor agrees to the following conditions, the NIES-Collection shall accept his/her submission of the Strain Deposit Request and Agreement Form:

- (1) The depositor shall deposit the strain to the NIES-Collection without charge. The transfer of intellectual properties is not included in the agreement. The NIES-Collection may maintain, culture and distribute the strain to users.
- (2) The depositors shall submit accurate strain data to the NIES-Collection, which shall include patents, properties and states of the strain (see Strain Deposit Request and Agreement Form).
- (3) The strain shall be free from any limitation, legally and contractually, pursuant to one of the following reasons:
 - The strain was isolated/developed by the depositor
 - The strain is deposited with the permission of the isolator/developer

- The strain has been purchased without any limitation regarding the deposit thereof
- (4) The NIES-Collection may distribute the deposited strains to users in accordance with the following condition(s):
- The strain shall not be disclosed to the public until the paper regarding the strain has been published
 - Other reason specified by the depositor
- This condition will last no longer than one year and the strain will be open to the public, even if the depositor imposes conditions. If the depositor does not specify a condition, then the strain will be open to the public immediately after approval by the CEMCS.
- (5) The NIES-Collection shall bear no responsibility for inevitable change and loss during maintenance, or for loss caused by natural disasters.
- (6) The NIES-Collection may stop the maintenance and distribution of the strains according to a decision of the CEMCS, after prior notification is given to the depositor.

2. Procedure for deposit

- (1) The depositor should complete the “Strain Deposit Request and Agreement Form” (pp.32~34) and send it to the following address:
- Microbial Culture Collection
National Institute for Environmental Studies,
16-2 Onogawa, Tsukuba, Ibaraki 305-8506, Japan
Phone : +81-29-850-2556
Fax : +81-29-850-2587
Email: mcc@nies.go.jp
- (2) The decision regarding the deposit of the strain is given within one month from the date of receipt of the Strain Deposit Request and Agreement Form.
- (3) The depositor should send an actively growing or lyophilized sample of the strain with two copies of relevant reprint(s), if available, within one month of the date of acceptance.
- (4) If the state of the strain sent does not coincide with the description on the Strain Deposit Request and Agreement Form, or does not meet any of the conditions described above, the NIES-Collection acceptance for deposit shall be canceled.

Strain Deposit Request and Agreement Form

Date:

Depositor's full name with family name in capital:

Depositor's affiliation and address:

Tel:

Fax:

E-mail:

I wish to deposit the following microbial culture strain to the NIES-Collection.

Reason for deposit:

[Basic information]

Scientific name with author name(s):

Division:

Class:

Order:

Family:

Synonym:

Identified by (full name with family name in capital):

Identification year:

Strain designation or code:

Other collection number (note collection name and number, if you deposit the strain in other collection):

[Collection]

Collection date:

Collector's name (full name with family name in capital):

Site information

Country:

Address (most detailed one):

Place name (e.g. name of river, lake, pond, bay and coast):

Latitude and longitude:

Ocean name with a nearest country:

Habitats: marine freshwater (incl. terrestrial and aerial) brackish (salinity: ‰)

Details of habitats: oligotrophic mesotrophic eutrophic dystrophic surface
depth in chlorophyll max other depth (- m) others ()

Details on the freshwater environment: lake pond river wetland rice field

salt water soil rock bark hot spring cold spring snow or ice

others ()

Details on the marine environment: shore coastal pelagic tide pool intertidal

tidal flat mangrove estuary harbor wrack dredge sample

others ()

Other information or comments on the habitat:

[Isolation]

Date of isolation:

Isolator's name (full name with family name in capital):

Isolation source: water seawater sand mud sediment soil plant seaweed

sea grass animal coral sponge snow ice others ()

Isolation objective motile vegetative cell non-motile vegetative cell dormant cell spore

tetraspore carospore zygote parthenogenetic gamete thallus

others ()

Isolation method: pipette washing cut-out of specimen dilution agar plating taxis

flow cytometry with cell sorter others ()

Notes on isolation conditions (e.g. medium, light, temperature, if different from maintenance conditions):

Isolation treatment: none antibiotics (name: _____, mg/l) ultra-violet irradiation
chemicals (name: _____, mg/l) heat ultra-sonic enrichment culture
GeO₂ others (_____)

[Strain status]

Algae and cyanobacteria: unialgal mixed
clonal non-clonal
axenic non-axenic
Bacteria: pure mixed
Protozoa: axenic monoxenic (food: _____)
mixed

Date of axenic check: _____

[Preservation conditions]

State of the preservation: subculture cryo-preservation both others (_____)

Medium: _____

Reference of the medium: _____

Medium form: liquid semisolid solid soil water biphasic

Notes for preparation of medium: _____

Sub-culturing conditions

Temperature (°C): _____

Light intensity (Lux): _____

Light intensity ($\mu\text{E}/\text{m}^2 \text{ sec}$) : _____

Light quality: white fluorescent red fluorescent blue fluorescent natural light

others (_____)

L/D cycle: _____

Duration (day(s), month(s)): _____

Culture vessel: test tube Erlenmeyer flask plastic culture flask

others (_____)

Additional notes for culture conditions (e.g. pre-culture conditions, special treatments, information for optimal growth conditions, transfer methods, quantity of cells to transfer, others (_____)):

Cryopreservation: yes no unknown

Cryoprotectant: _____ (concentration _____ %)

Preservation temperature (°C): _____

Method: _____

Preservation in freeze-drying: yes no unknown

Preservation in L-drying: yes no unknown

[Characteristics]

Environmental characteristics

red tide water bloom AGP bioindicator predator of water bloom forming species

offensive taste offensive odor clogging of purification toxic

high CO₂ fixing potential decomposition of hazardous substances biodegradation

oxidation pond activated sludge biofilm process corrosion

others (_____)

Physiological and ecological characteristics

autotrophic mixotrophic phagotrophic heterotrophic planktonic benthic

symbiotic parasitic saprophytic cosmopolitan eurythermal stenothermal

thermophilic cryophilic euryhaline stenohaline halophilic acidophilic

sun plant type shade plant type nitrogen fixation fermentation bioluminescence

phototaxis hydrogen evolution oil (hydrocarbon) production endophytic epiphytic

epilithic others (_____)

Miscellaneous characteristics

taxonomic importance type strain motile immotile resting spore forming

resting spore not forming chromatic adaptation mutant heterothallic homothallic

dioecious monoecious isogamy anisogamy oogamy life cycle (H, h type)

life cycle (H, d type) life cycle (D, d+h type) polyploidy mating type(+)

mating type(-) female male others (_____)

[Genetic information (please write all registered data)]

Gene name:

Accession no:

Registrant (full name with family name in capital):

Registration date:

[References]

Publications in which the strains were used (please make a reference list according to an example below)

(Example) Otsuka, S., Suda, S., Shibata, S., Oyaizu, H., Matsumoto, S. & Watanabe, M. M. 2001. A proposal for the unification of five species of the cyanobacterial genus *Microcystis* Kützing ex Lemmermann 1907 under the rules of the Bacteriological Code. *Int. J. Syst. Evol. Microbiol.*, 51, 873-879.

Other references relevant to the strain(s) (e.g. references used for identification, please make a reference list according to an example above)

[Others]

Any other remarks and comments:

I accept the following conditions for deposit of the strain(s).

Signature

Printed name

Date

Agreement for deposit

1. The depositor shall deposit the strain to the NIES-Collection without charge. The transfer of intellectual properties is not included in the agreement. The NIES-Collection may maintain, culture and distribute the strain to users.
 2. The depositor shall submit accurate strain data to the NIES-Collection, which shall include patents, properties and states of the strain.
 3. The strain shall be free from any limitation, legally and contractually, pursuant to one of the following reasons (please tick).
 - The strain was isolated/developed by the depositor
 - The strain is deposited with the permission of the isolator/developer
 - The strain has been purchased without any limitation regarding the deposit thereof
 4. The NIES-Collection may distribute the deposited strains to users in accordance with the following condition (please tick):
 - The strain shall not be disclosed to the public until the paper regarding the strain has been published
 - Other reason ()
This condition will last no longer than one year and the strain will be open to the public, even if the depositor imposes conditions. If the depositor does not specify a condition, then the strain will be open to the public immediately after approval by the Committee for Evaluating Microbial Culture Strains.
 5. The NIES-Collection shall bear no responsibility for inevitable change and loss during maintenance, or for loss caused by natural disasters.
 6. The NIES-Collection may stop the maintenance and distribution of the strains according to a decision of the Committee for Evaluating Microbial Culture Strains, after prior notification is given to the depositor.
-
-

III. ORDERING AND DISTRIBUTION OF STRAINS

1. Agreement for distribution

The NIES-Collection will distribute strains to users who agree to the following conditions:

- (1) The strains (including replicates and derivatives from the strains), which are distributed from the NIES-Collection, shall be available for education, research, and development purpose only. The strains are not intended to apply directly to humans. The user hereby acknowledges and accepts the potential risks of the strains and shall use them in compliance with domestic and foreign laws, regulation, and guidelines. Especially for strains that produce toxic substances, the user shall store and discard them appropriately.
- (2) The user shall be requested to submit the application form personally.
- (3) The user shall not acquire any intellectual property rights by the purchase of the strain.
- (4) The user shall provide written notice to the NIES when the purpose has changed considerably from the purpose that was stated at the time of submission.
- (5) The user shall not distribute the strains, replicates and derivatives to any third party.
- (6) The user shall use the NIES strain number (e.g., NIES-125) when he/she uses a NIES strain in a paper which is subsequently published, and shall send two copies of the reprint(s) or photocopies thereof to the NIES-Collection.
- (7) When the use of the strain violates another person's rights, the user shall bear responsibility therefor, and deal with the matter on its own.
- (8) The user shall acknowledge the possibility that the strain is deficient and harmful, and inadequate to the user's aim. Thus, if the user suffers any loss by the strain, he/she shall bear responsibility therefor and deal with the matter on its own.
- (9) The user shall submit the Strain Receipt Form within one month of the date of the receipt. The user may request that the strains be sent again without charge if the strain does not show good growth during this warranty period. The NIES-Collection shall not bear any responsibility for mistakes by the user.

2. Order procedures

- (1) All requests to the NIES-Collection for strains shall be by completing the "Strain Ordering and Agreement Form" (p.38), and by sending it **via mail** to the following address:

Microbial Culture Collection
National Institute for Environmental Studies,

16-2 Onogawa, Tsukuba, Ibaraki 305-8506, Japan

Phone : +81-29-850-2556

Fax : +81-29-850-2587

Email: mcc@nies.go.jp

Please note that we can ship the strain only after we accept the original copy (with the user's signature and date) of the order form.

- (2) Upon receipt of a strain, the "Strain Receipt Form" (p.44) should be completed and returned to the NIES-Collection within one month.

3. Price of strains

Sales tax (5%) and postage will be requested in addition to the culture price for 15 mL.

Academic purpose	6,000 yen
Commercial purpose	10,000 yen

For educational use in schools and universities, the NIES-Collection distributes selected strains without charge. Please contact the staff of the NIES-Collection. In this case, the user cannot specify species and strains.

4. Special warning for distribution of "Untransportable" and "[Cryopreserved]" strains

Orders for the strains designated as "Untransportable" in the strain description may not be accepted, depending on the season or condition of the cultures. For transport overseas, such strains should in principle be carried personally (e.g., in hand luggage). Such transportation shall be arranged by individual requestors.

For strains designated as "[Cryopreserved]" in the strain description, frozen cells are thawed and inoculated into fresh medium just after the order is accepted. As a result, it takes at least one month for the overseas shipping of these strains. See also Appendix I.

5. Special warning for distribution of strains collected outside of Japan since 1993

Distribution of some strains collected and isolated outside of Japan since 1993 is now suspended pursuant to the Convention of Biological Diversity, although the strain data are available in the catalogue. Please contact the staff of the NIES-Collection if you wish to request those strains.

6. Special warning for “Toxic” strains

Strains that have been reported to produce toxic substance are shown “toxic” in their descriptions (See also Appendix II). Users who order those strains must complete the “Toxic Strain Ordering and Agreement Form” (p.39) and send it to the NIES-Collection.

7. Distribution to researchers belonging to the NIES

Strains are available without charge. Please complete the “Strain Ordering and Agreement Form” (pp.40~43) and send it via in-house mail or pass it to the staff directly.

Strain Ordering and Agreement Form

Date:

Requestor's full name (family name with capital letters):

Requestor's affiliation and address:

Tel:

Fax:

E-mail:

I request the following culture strain(s).

Scientific name(s) and strain number(s):

Object of use (in detail):

Do you need the strain data? (Yes or No):

I accept the following conditions for ordering the strain(s).

Signature

Printed name _____

Date _____

Agreement for distribution

1. The strains (including replicates and derivatives from the strains), which are distributed from the NIES-Collection, shall be available for education, research, and development purpose only. The strains are not intended to apply directly to humans. The user hereby acknowledges and accepts the potential risks of the strains and shall use them in compliance with domestic and foreign laws, regulation, and guidelines.
 2. The user shall be requested to submit the application form personally.
 3. The user shall not acquire any intellectual property rights by the purchase of the strain.
 4. The user shall provide written notice to the NIES when the purpose has changed considerably from the purpose that was stated at the time of submission.
 5. The user shall not distribute the strains, replicates and derivatives to any third party.
 6. The user shall use the NIES strain number (e.g., NIES-125) when he/she uses a NIES strain in a paper which is subsequently published, and shall send two copies of the reprint(s) or photocopies thereof to the NIES-Collection.
 7. When the use of the strain violates another person's rights, the user shall bear responsibility therefor, and deal with the matter on its own.
 8. The user shall acknowledge the possibility that the strain is deficient and harmful, and inadequate to the user's aim. Thus, if the user suffers any loss by the strain, he/she shall bear responsibility therefor and deal with the matter on its own.
 9. The user shall submit the Strain Receipt Form within one month of the date of the receipt. The user may request that the strains be sent again without charge if the strain does not show good growth during this warranty period. The NIES-Collection shall not bear any responsibility for mistakes by the user.
-
-

Toxic Strain Ordering and Agreement Form

Date:

Requestor's full name (family name with capital letters):

Requestor's affiliation and address:

Tel:

Fax:

E-mail:

I request the following culture strain(s).

Scientific name(s) and strain number(s):

Object of use (in detail):

Do you need the strain data? (Yes or No):

I accept the following conditions for ordering the strain(s).

Signature

Printed name _____ Date _____

Signature of responsible person (Please sign if the requestor is a student/ part-time staff.)

Printed name _____ Date _____

Agreement for distribution

1. The strains (including replicates and derivatives from the strains), which are distributed from the NIES-Collection, shall be available for education, research, and development purpose only. The strains are not intended to apply directly to humans. The user hereby acknowledges and accepts the risks of toxic strains and shall use them in compliance with domestic and foreign laws, regulation, and guidelines. The user shall store and discard them appropriately.
 2. The user shall be requested to submit the application form personally.
 3. The user shall not acquire any intellectual property rights by the purchase of the strain.
 4. The user shall provide written notice to the NIES when the purpose has changed considerably from the purpose that was stated at the time of submission.
 5. The user shall not distribute the strains, replicates and derivatives to any third party.
 6. The user shall use the NIES strain number (e.g., NIES-125) when he/she uses a NIES strain in a paper which is subsequently published, and shall send two copies of the reprint(s) or photocopies thereof to the NIES-Collection.
 7. When the use of the strain violates another person's rights, the user shall bear responsibility therefor, and deal with the matter on its own.
 8. The user shall acknowledge the possibility that the strain is deficient and harmful, and inadequate to the user's aim. Thus, if the user suffers any loss by the strain, he/she shall bear responsibility therefor and deal with the matter on its own.
 9. The user shall submit the Strain Receipt Form within one month of the date of the receipt. The user may request that the strains be sent again without charge if the strain does not show good growth during this warranty period. The NIES-Collection shall not bear any responsibility for mistakes by the user.
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Strain Ordering and Agreement Form (For NIES staff)

Date:
Requestor's full name (family name with capital letters):
Requestor's affiliation at NIES:
Tel:
Fax:
E-mail:

I request the following culture strain(s).

Scientific name(s) and strain number(s):
Object of use (in detail):

Registered research name:
Registered research code:
Do you need the strain data? (Yes or No):

I accept the following conditions for ordering the strain(s).

Signature

Printed name

Date

Agreement for distribution

1. The strains (including replicates and derivatives from the strains), which are distributed from the NIES-Collection, shall be available for education, research, and development purpose only. The strains are not intended to apply directly to humans. The user hereby acknowledges and accepts the potential risks of the strains and shall use them in compliance with domestic and foreign laws, regulation, and guidelines.
 2. The user shall be requested to submit the application form personally.
 3. The user shall not acquire any intellectual property rights by the purchase of the strain.
 4. The user shall provide written notice to the NIES when the purpose has changed considerably from the purpose that was stated at the time of submission.
 5. The user shall not distribute the strains, replicates and derivatives to any third party.
 6. The user shall use the NIES strain number (e.g., NIES-125) when he/she uses a NIES strain in a paper which is subsequently published, and shall send two copies of the reprint(s) or photocopies thereof to the NIES-Collection.
 7. When the use of the strain violates another person's rights, the user shall bear responsibility therefor, and deal with the matter on its own.
 8. The user shall acknowledge the possibility that the strain is deficient and harmful, and inadequate to the user's aim. Thus, if the user suffers any loss by the strain, he/she shall bear responsibility therefor, and deal with the matter on its own.
 9. The user shall submit the Strain Receipt Form within one month of the date of the receipt. The user may request that the strains be sent again without charge if the strain does not show good growth during this warranty period. The NIES-Collection shall not bear any responsibility for mistakes by the user.
-
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Toxic Strain Ordering and Agreement Form (For NIES staff)

Date:

Requestor's full name (family name with capital letters):

Requestor's affiliation and address:

Tel:

Fax:

E-mail:

I request the following culture strain(s).

Scientific name(s) and strain number(s):

Object of use (in detail):

Registered research name:

Registered research code:

Do you need the strain data? (Yes or No):

I accept the following conditions for ordering the strain(s).

Signature

Printed name _____ Date _____

Signature of responsible person (Please sign if the requestor is a student/ part-time staff.)

Printed name _____ Date _____

Agreement for distribution

1. The strains (including replicates and derivatives from the strains), which are distributed from the NIES-Collection, shall be available for education, research and development purpose only. The strains are not intended to apply directly to humans. The user hereby acknowledges and accepts the risks of toxic strains and shall use them in compliance with domestic and foreign laws, regulations and guidelines. The user shall store and discard them appropriately.
 2. The user shall be requested to submit the application form by personally.
 3. The user shall not acquire any intellectual property rights by the purchase of the strain.
 4. The user shall provide written notice to the NIES when the purpose has changed considerably from the purpose that was stated at the time of submission.
 5. The user shall not distribute the strains, replicates and derivatives to any third party.
 6. The user shall use the NIES strain number (e.g., NIES-125) when he/she uses a NIES strain in a paper which is subsequently published, and shall send two copies of the reprint(s) or photocopies thereof to the NIES-Collection.
 7. When the use of the strain violates another person's rights, the user shall bear responsibility therefor, and deal with the matter on its own.
 8. The user shall acknowledge the possibility that the strain is deficient and harmful, and inadequate to the user's aim. Thus, if the user suffers any loss by the strain, he/she shall bear responsibility therefor and deal with the matter on its own.
 9. The user shall submit the Strain Receipt Form within one month of the date of the receipt. The user may request that the strains be sent again without charge if the strain does not show good growth during this warranty period. The NIES-Collection shall not bear any responsibility for mistakes by the user.
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Strain Ordering and Agreement Form (For guest researchers and collaborators)

Date:

Requestor's full name (family name with capital letters):

Requestor's affiliation and address:

Tel:

Fax:

E-mail:

Responsible researcher at NIES

Affiliation

I request the following culture strain(s).

Scientific name(s) and strain number(s):

Object of use (in detail):

Do you need the strain data? (Yes or No):

I accept the following conditions for ordering the strain(s).

Signature

Printed name _____

Date _____

Agreement for distribution

1. The strains (including replicates and derivatives from the strains), which are distributed from the NIES-Collection, shall be available for education, research and development purpose only. The strains are not intended to apply directly to humans. The user hereby acknowledges and accepts the potential risks of the strains and shall use them in compliance with domestic and foreign laws, regulations and guidelines.
 2. The user shall be requested to submit the application form by personally.
 3. The user shall not acquire any intellectual property rights by the purchase of the strain.
 4. The user shall provide written notice to the NIES when the purpose has changed considerably from the purpose that was stated at the time of submission.
 5. The user shall not distribute the strains, replicates and derivatives to any third party.
 6. The user shall use the NIES strain number (e.g., NIES-125) when he/she uses a NIES strain in a paper which is subsequently published, and shall send two copies of the reprint(s) or photocopies thereof to the NIES-Collection.
 7. When the use of the strain violates another person's rights, the user shall bear responsibility therefor, and deal with the matter on its own.
 8. The user shall acknowledge the possibility that the strain is deficient and harmful, and inadequate to the user's aim. Thus, if the user suffers any loss by the strain, he/she shall bear responsibility therefor and deal with the matter on its own.
 9. The user shall submit the Strain Receipt Form within one month of the date of the receipt. The user may request that the strains be sent again without charge if the strain does not show good growth during this warranty period. The NIES-Collection shall not bear any responsibility for mistakes by the user.
-
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Toxic Strain Ordering and Agreement Form (For guest researchers and collaborators)

Date:

Requestor's full name (family name with capital letters):

Requestor's affiliation and address:

Tel:

Fax:

E-mail:

I request the following culture strain(s).

Scientific name(s) and strain number(s):

Object of use (in detail):

Do you need the strain data? (Yes or No):

I accept the following conditions for ordering the strain(s).

Signature

Printed name

Date

Signature of responsible person (Please sign if the requestor is a student/ part-time staff.)

Printed name

Date

Agreement for distribution

1. The strains (including replicates and derivatives from the strains), which are distributed from the NIES-Collection, shall be available for education, research, and development purpose only. The strains are not intended to apply directly to humans. The user hereby acknowledges and accepts the risks of toxic strains and shall use them in compliance with domestic and foreign laws, regulation, and guidelines. The user shall store and discard them appropriately.
 2. The user shall be requested to submit the application form personally.
 3. The user shall not acquire any intellectual property rights by the purchase of the strain.
 4. The user shall provide written notice to the NIES when the purpose has changed considerably from the purpose that was stated at the time of submission.
 5. The user shall not distribute the strains, replicates and derivatives to any third party.
 6. The user shall use the NIES strain number (e.g., NIES-125) when he/she uses a NIES strain in a paper which is subsequently published, and shall send two copies of the reprint(s) or photocopies thereof to the NIES-Collection.
 7. When the use of the strain violates another person's rights, the user shall bear responsibility therefor, and deal with the matter on its own.
 8. The user shall acknowledge the possibility that the strain is deficient and harmful, and inadequate to the user's aim. Thus, if the user suffers any loss by the strain, he/she shall bear responsibility therefor and deal with the matter on its own.
 9. The user shall submit the Strain Receipt Form within one month of the date of the receipt. The user may request that the strains be sent again without charge if the strain does not show good growth during this warranty period. The NIES-Collection shall not bear any responsibility for mistakes by the user.
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Strain Receipt Form

Date:

Recipient's full name (family name with capital letters):

Recipient's affiliation and address:

Tel:

Fax:

E-mail:

I received the following culture strain(s).

Date of strain receipt:

Scientific name(s) and strain number(s):

States of strain(s) received:

Good (strain number)

Poor (strain number)

Others (strain number)

Comments:

IV. ESTABLISHMENT OF FRESH CULTURES

When investigators are to receive culture strains, the following steps should be carried out to establish fresh cultures.

- i) Appropriate culture media should be prepared before receipt of the strains according to the recipes given in Chap. VI and with reference to the basic methods given in Chap. V.
- ii) Immediately after receipt, cultures should be unpacked, transferred to new media and grown at the temperature and light intensity directed by the Collection (cf. Chap. VIII); the light-dark cycle should be 12 hours light : 12 hours dark, and the screw-cap on the tube should be loosened.
- iii) After detecting good growth, further maintenance of cultures requires transfer into new media at intervals suggested by the Collection (cf. Chap. VIII).

V. BASIC METHODS FOR PREPARATION OF ALGAL CULTURE MEDIA

A number of media are used for maintenance of algal cultures and prepared according to the recipes given in the next chapter. The present chapter introduces the basic methods for preparation adopted in the Global Environmental Forum.

1. Stock solutions

Media are generally composed of three components, macronutrients, trace metals and vitamins (cf. Table 2) and prepared from stock solutions of these components. The concentration of stock solutions of trace metals and vitamins is very low and primary stock solutions are prepared for dilution to obtain the stock solutions.

A. Macronutrients : Separate stock solutions with a concentration of 10 mg/ml of each macronutrient are prepared and stored in a refrigerator (5°C).

B. Trace metals : These elements are prepared either as separate stock solutions or mixed stock solutions.

(1) Separate stock solutions

- i) Prepare a separate primary solution with a concentration of 10-100 mg/ml.
- ii) Dilute each primary solution to prepare the stock solution with a concentration of 1 mg/ml and store in a refrigerator (5°C).

Table 2. Chemicals employed for culture media

Macronutrients	Trace metals
NaCl	H ₃ BO ₃
KCl	MnCl ₂ ·4H ₂ O
CaCl ₂ ·2H ₂ O	MnSO ₄ ·7H ₂ O
MgCl ₂ ·6H ₂ O	FeCl ₃ ·6H ₂ O
Na ₂ SO ₄	FeSO ₄ ·7H ₂ O
K ₂ SO ₄	CoCl ₂ ·6H ₂ O
MgSO ₄ ·7H ₂ O	ZnSO ₄ ·7H ₂ O
NaNO ₃	CuSO ₄ ·5H ₂ O
KNO ₃	Na ₂ MoO ₄ ·2H ₂ O
Ca(NO ₃) ₂ ·4H ₂ O	Vitamins
NH ₄ NO ₃	Vitamin B ₁₂
NaH ₂ PO ₄ ·2H ₂ O	Biotin
β -Na ₂ glycerophosphate·5H ₂ O	Thiamine HCl
KH ₂ PO ₄	Nicotinic acid
K ₂ HPO ₄	Calcium panthothenate
Na ₂ CO ₃	p-Aminobenzoic acid
NaHCO ₃	Inositol
Na ₂ SiO ₃ ·9H ₂ O	Folic acid
	Thymine

(2) Mixed stock solution

- i) Same as (1)-i)
- ii) Add approximately 80 % of the required volume of distilled water to a beaker.
- iii) Dissolve the required amount of Na₂EDTA, while stirring continuously.
- iv) Dispense the required volume of each trace metal from primary solution, while stirring continuously.
- v) Dilute to final volume with distilled water and store in a refrigerator (5°C).

C. Vitamins : Only three vitamins, vitamin B₁₂, biotin, and thiamine HCl have been found necessary for growth of many microalgae and are added to most media. Some media, in addition, contain other vitamins

(1) Vitamin B₁₂, biotin and thiamine HCl

- i) Prepare separate primary stock solution with a concentration of 0.1 mg/ml of vitamin B₁₂ and biotin and 10 mg/ml of thiamine HCl.
- ii) After dispersing 1 ml of these primary stock solution into each of a number of test tubes and autoclaving (121°C, 20 min), store in a freezer at -20°C.
- iii) Thaw and dilute 1 ml of primary stock solution of each vitamins to prepare the working stock solution with a concentration of 1 µg/ml of vitamin B₁₂ and biotin or of 100 µg/ml of thiamine HCl, and store in a refrigerator (5°C).

(2) Other vitamins: Additional vitamins are added to some media in the forms of mixes (cf. Chap. VI-64). It is recommended to prepare a large volume of mixed stock solution.

- i) Prepare a separate primary solution with a concentration of 0.1-1.0 mg/ml.
- ii) Add approximately 80 % of the required volume of distilled water to a beaker.
- iii) Dispense the required volume of each vitamin from the primary solution, while stirring continuously.
- iv) After sterilization by passing through a Millipore filter (0.22 μm), aseptically dispense 100 ml of the mixed stock solution into each of a number of vessels and store in a freezer at -20°C .

2. Media

Media are divided broadly into two categories, synthetic and enriched. The former are used for maintenance of all freshwater algal cultures and some marine ones and the latter for most marine ones.

(1) Synthetic medium (freshwater)

- i) Add approximately 80-90% of the required volume of distilled water to a beaker.
- ii) Dissolve appropriate quantities of weighed buffer such as Tris (hydroxymethyl) aminomethane (known as Tris), glycylglycine, HEPES, TAPS, Bicine, MES or 1, 2, 3, 4-cyclopentan tetracarboxylic acid (if required), while stirring continuously. These buffers are easily soluble with stirring.
- iii) Dispense the appropriate nutrients from previously prepared stock solutions, while stirring continuously.
- iv) Dilute to final volume with distilled water.
- v) Check the pH and make any adjustments with either 1N HCl or 1N NaOH (if buffers required) or with either 0.1N HCl or 0.1N NaOH (if no buffers required).
- vi) Dispense 10 ml of medium into each of the test tube (18 \times 150mm) and sterilize by autoclaving (121°C , 20 min).

(2) Synthetic medium (marine)

- i) Add approximately 80% of the required volume of distilled water to a beaker.
- ii) Dissolve appropriate quantities of weighed Tris, Nitrilotriacetic acid (known as NTA) and major salts such as NaCl, $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$, KCl and $\text{CaCl}_2 \cdot 2\text{H}_2\text{O}$, while stirring continuously.
- iii) Dispense the other nutrients from previously prepared stock solutions.
- iv) Dilute to the final volume with the distilled water.
- v) Check the pH, which is usually adjusted to 8.0 with 1N HCl.
- vi) Dispense 10 ml of medium into each of the test tubes and sterilize by autoclaving (121°C , 20 min).

(3) Enriched seawater medium

- i) Collect offshore water free from gross pollution and remove particulate matter with Whatman GF/C filters.
- ii) Check the salinity. A salinity of 35‰ is considered normal seawater.
- iii) Add approximately 80-90% of the required volume of seawater to a beaker.
- iv) Dissolve appropriate quantities of weighed Tris (if required).
- v) Dispense the appropriate nutrients from previously prepared stock solutions.
- vi) Dilute to the final volume with seawater.
- vii) Check the pH and adjust to 8.0 with 1N HCl if necessary.
- viii) Dispense 10 ml of medium into each test tube and sterilize by autoclaving (121°C, 20 min).

3. Agar slant

Agar is added usually at concentrations of 1.5% after liquid medium has been prepared, prior to autoclaving.

- i) Add the appropriate quantities of weighed agar to liquid medium and heat to 121°C by autoclaving to melt all the agar.
- ii) After melting, quickly dispense 10 ml of agar medium into each test tube and sterilize by autoclaving (121°C, 20 min).
- iii) After sterilization, lay the upper part of the test-tube on a rod (1 cm ϕ) and cool to form an agar slant.

VI. MEDIA

1) Stock media for algae

1)-1. For freshwater algae

1. AF-6 (163)¹⁾

NaNO ₃	14	mg
NH ₄ NO ₃	2.2	mg
MgSO ₄ · 7H ₂ O	3	mg
KH ₂ PO ₄	1	mg
K ₂ HPO ₄	0.5	mg
CaCl ₂ · 2H ₂ O	1	mg
CaCO ₃ ²⁾	1	mg
Fe-citrate	0.2	mg
Citric acid	0.2	mg
Biotin	0.2	µg
Thiamine HCl	1	µg
Vitamin B ₆	0.1	µg
Vitamin B ₁₂	0.1	µg
Trace metals ²⁾	0.5	ml
Distilled water	99.5	ml
pH 6.6 ³⁾		

1) Reference number in parentheses.

2) In the NIES-Collection, CaCO₃ is removed and PIV metals are used instead of trace metals.

3) pH is adjusted to 6.6 by buffering with 40 mg MES in the NIES-Collection.

2. AF-6 / 2

AF-6 medium is diluted with distilled water to 1 / 2.

3. Allen (1)

(NH ₄) ₂ SO ₄	132	mg
KH ₂ PO ₄	27.2	mg
MgSO ₄ · 7H ₂ O	24.6	mg
CaCl ₂ · 2H ₂ O	7.4	mg
Allen Metals ¹⁾	0.01	ml
Distilled water	99.9	ml
pH 2.5 ²⁾		

1) See 55

2) pH is adjusted to 2.5 with 1 N H₂SO₄.

4. BBM (12)

NaNO ₃	25	mg
KH ₂ PO ₄	17.5	mg
K ₂ HPO ₄	10	mg
MgSO ₄ · 7H ₂ O	7.5	mg
CaCl ₂ · 2H ₂ O	2.5	mg
NaCl	2.5	mg
KOH	3.1	mg
FeSO ₄ · 7H ₂ O	0.498	mg
H ₃ BO ₃	1.142	mg
ZnSO ₄ · 7H ₂ O	0.882	mg
MnCl ₂ · 7H ₂ O	0.144	mg
MoO ₃	0.071	mg
CuSO ₄ · 5H ₂ O	0.157	mg
Co(NO ₃) ₂ · 6H ₂ O	0.049	mg
Na ₂ EDTA	5	mg
Distilled water	100	ml

5. C (90)

Ca(NO ₃) ₂ · 4H ₂ O	15	mg
KNO ₃	10	mg
β -Na ₂ glycerophosphate · 5H ₂ O	5	mg
MgSO ₄ · 7H ₂ O	4	mg
Vitamin B ₁₂	0.01	µg
Biotin	0.01	µg
Thiamine HCl	1	µg
PIV metals ¹⁾	0.3	ml
Tris (hydroxymethyl) aminomethane	50	mg
Distilled water	99.7	ml
pH 7.5		

1) See 62

6. CA (102)

Ca(NO ₃) ₂ · 4H ₂ O	2	mg
KNO ₃	10	mg
NH ₄ NO ₃	5	mg
β -Na ₂ glycerophosphate · 5H ₂ O	3	mg
MgSO ₄ · 7H ₂ O	2	mg
Vitamin B ₁₂	0.01	µg
Biotin	0.01	µg
Thiamine HCl	1	µg
PIV metals ¹⁾	0.1	ml
Fe (as EDTA; 1:1 molar) ²⁾	0.1	mg
HEPES	40	mg
Distilled water	99.9	ml
pH 7.2		

1) See 62

2) See 58

7. CAM

CA medium with pH adjusted to 6.5 by buffering with MES instead of HEPES.

8. Carefoot (16)

NaNO ₃	24.7	mg
CaCl ₂ · 2H ₂ O	1.1	mg
MgSO ₄ · 7H ₂ O	4.7	mg
K ₂ HPO ₄	0.9	mg
KH ₂ PO ₄	2.3	mg
NaCl	1.5	mg
PIV metals ¹⁾	0.5	ml
Distilled water	99.5	ml
pH 7.5		

* In the NIES-Collection, 0.02 µg Vitamin B₁₂, 0.02 µg Biotin and 2 µg Thiamine HCl are added to this medium.

1) See 62

9. CB

C medium with pH adjusted to 9.0 by buffering with Bicine instead of Tris (hydroxymethyl) aminomethane.

10. CC (96)

C medium with pH adjusted to 3.0 by buffering with 1, 2, 3, 4 - cyclopentan tetracarboxylic acid instead of Tris (hydroxymethyl) aminomethane.

11. CSi

C medium with pH adjusted to 7.0 by buffering with 50 mg HEPES instead of Tris (hydroxymethyl) aminomethane. Thereafter, 10 mg Na₂SiO₃ · 9H₂O is added.

12. CSi+Cu

0.25 mg CuSO₄ · 5H₂O is added to CSi medium.

13. CT (522)

C medium with pH adjusted to 8.2 by buffering with 40 mg TAPS instead of Tris (hydroxymethyl) aminomethane.

14. CYT

10 mg Yeast extract and 20 mg Tryptone are added to C medium.

15. C+10%Seawater (N. Tezuka, unpubl.)

C medium with 10% filtrated seawater.

16. D (17)

Ca(SO ₄)·2H ₂ O	6	mg
KNO ₃	10.3	mg
NaNO ₃	68.9	mg
Na ₂ HPO ₄	11.1	mg
NaCl	0.8	mg
MgSO ₄ ·7H ₂ O	10	mg
FeCl ₃ ·6H ₂ O	0.05	mg
NTA	10	mg
D solution ¹⁾	0.05	ml
Distilled water	100	ml

1) See 57

17. DH+Fe (I.I. Brown, unpubl.)

D medium with 1.14 mg FeCl₂·6H₂O and adjusted to pH 8.24-8.26 by buffering with 120mg HAPES.

18. HUT (89)

KH ₂ PO ₄	2	mg
MgSO ₄ ·7H ₂ O	2.5	mg
Sodium acetate	40	mg
Potassium citrate	4	mg
Polypeptone	60	mg
Yeast extract	40	mg
Vitamin B ₁₂	0.05	μg
Thiamine HCl	0.04	mg
Distilled water	100	ml
pH 6.4		

* Add 150 mg agar to 100 ml of the medium for semi-solid medium.

19. M-11 (60), (553)

NaNO ₃	10	mg
K ₂ HPO ₄	1	mg
MgSO ₄ ·7H ₂ O	7.5	mg
CaCl ₂ ·2H ₂ O	4	mg
Na ₂ CO ₃	3	mg
FeSO ₄ ·7H ₂ O	0.1	mg
Na ₂ EDTA·2H ₂ O	0.1	mg
Distilled water	100	ml
pH 8.0		

20. MA (92)

Ca(NO ₃) ₂ ·4H ₂ O	5	mg
KNO ₃	10	mg
NaNO ₃	5	mg
Na ₂ SO ₄	4	mg
MgCl ₂ ·6H ₂ O	5	mg
β-Na ₂ glycerophosphate·5H ₂ O	10	mg
Na ₂ EDTA	0.5	mg
FeCl ₃ ·6H ₂ O	0.05	mg
MnCl ₂ ·4H ₂ O	0.5	mg
ZnCl ₂	0.05	mg
CoCl ₂ ·6H ₂ O	0.5	mg
Na ₂ MoO ₄ ·2H ₂ O	0.08	mg
H ₃ BO ₃	2	mg
Bicine	50	mg
Distilled water	100	ml
pH 8.6		

21. MAF-6

10 mg glucose and 10 mg sodium acetate are added to AF-6 medium.

22. M Chu No. 10 (20)

Ca(NO ₃) ₂ · 4H ₂ O	2.0	mg
KH ₂ PO ₄	0.62	mg
MgSO ₄ · 7H ₂ O	2.5	mg
Na ₂ CO ₃	2	mg
Na ₂ SiO ₃ · 9H ₂ O	2.5	mg
HCl (1N) ¹⁾	0.025	ml
Na ₂ EDTA · 2H ₂ O	0.2	mg
FeCl ₃ · 6H ₂ O	0.1	mg
H ₃ BO ₃	0.248	mg
MnCl ₂ · 4H ₂ O	0.139	mg
(NH ₄) ₆ Mo ₇ O ₂₄ · 4H ₂ O	0.1	mg
Vitamin B ₁₂	1	µg
Thiamine HCl	0.1	µg
Biotin	0.1	µg
Distilled water	100	ml

1) In the NIES-Collection, pH is adjusted to 7.6 with respective volume of 1 N HCl.

23. MDM (491)

KNO ₃	100	mg
MgSO ₄ · 7H ₂ O	25	mg
K ₂ HPO ₄	25	mg
NaCl	10	mg
CaCl ₂ · 2H ₂ O	1	mg
Fe solution ¹⁾	0.1	ml
A ₅ solution ²⁾	0.1	ml
Agar	1.5	g
Distilled water	99.8	ml
pH 8.0		

1) See 59

2) See 54

24. MG (91)

Ca(NO ₃) ₂ · 4H ₂ O	2	mg
KNO ₃	10	mg
β -Na ₂ glycerophosphate · 5H ₂ O	3	mg
MgSO ₄ · 7H ₂ O	2	mg
Vitamin B ₁₂	0.01	µg
Biotin	0.01	µg
Thiamine HCl	1	µg
PIV metals ¹⁾	0.1	ml
Fe (as EDTA; 1:1 molar) ²⁾	0.1	ml
HEPES	40	mg
Distilled water	99.9	ml
pH 7.2		

1) See 62

2) See 58

25. MGM

MG medium with pH adjusted to 6.5 by buffering with MES instead of HEPES.

26. MW (397)

Urea	0.85	mg
NaNO ₃	0.17	mg
NH ₄ Cl	0.042	mg
Ca(NO ₃) ₂ · 4H ₂ O	10	mg
CaCO ₃	1	mg
CaCl ₂ · 2H ₂ O	1.4	mg
KNO ₃	1	mg
KHCO ₃	0.9	mg
β -Na ₂ glycerophosphate · 5H ₂ O	2	mg
MgSO ₄ · 7H ₂ O	1.5	mg
PIV metals ¹⁾	0.05	ml
Vitamin B ₁₂	0.02	µg
Thiamine HCl	2	µg
Biotin	0.02	µg
Glycylglycine	10	mg
Distilled water	99.95	ml
pH 7.2		

1) See 62

27. MW / 5

MW medium is diluted with distilled water to 1 / 5.

28. P 35 (92)

NH ₄ NO ₃	10	mg
MgSO ₄ · 7H ₂ O	4	mg
KCl	5	mg
CaCl ₂ · 2H ₂ O	7.4	mg
β -Na ₂ glycerophosphate · 5H ₂ O	5	mg
Sodium acetate	100	mg
Vitamin B _{1 2}	0.01	µg
Biotin	0.01	µg
Thiamine HCl	1	µg
PIV metals ¹⁾	0.3	ml
Tris (hydroxymethyl) aminomethane	50	mg
Distilled water	99.7	ml
pH 8.0		

1) See 62

29. URO (177), (263)

NH ₄ NO ₃	0.5	mg
β -Na ₂ glycerophosphate · 5H ₂ O	0.4	mg
MgSO ₄ · 7H ₂ O	1	mg
CaCl ₂ · 2H ₂ O	1	mg
KCl	0.1	mg
Thiamine HCl	1	µg
Vitamin B _{1 2}	0.01	µg
Biotin	0.01	µg
Fe-EDTA	0.05	mg
PIV metals ¹⁾	0.1	ml
Distilled water	99.9	ml
pH 7.5 ²⁾		

1) See 62

2) pH is adjusted to 7.5 with 0.1 N HCl.

30. VT (391)

Ca(NO ₃) ₂ · 4H ₂ O	11.78	mg
β -Na ₂ glycerophosphate · 5H ₂ O	5	mg
MgSO ₄ · 7H ₂ O	4	mg
KCl	5	mg
Vitamin B _{1 2}	0.01	µg
Biotin	0.01	µg
Thiamine HCl	1	µg
PIV metals ¹⁾	0.3	ml
Glycylglycine	50	mg
Distilled water	99.7	ml
pH 7.5		

1) See 62

31. VTAC (332)

20 mg sodium acetate is added to VT medium.

32. VTYT (96)

10 mg yeast extract and 20 mg tryptone are added to VT medium.

33. W (519)

Ca(NO ₃) ₂ · 4H ₂ O	10	mg
KNO ₃	1	mg
MgSO ₄ · 7H ₂ O	1.5	mg
β -Na ₂ glycerophosphate · 5H ₂ O	2	mg
Urea	1.7	mg
Thiamine HCl	0.2	µg
Vitamin B _{1 2}	0.002	µg
Biotin	0.002	µg
PIV metals ¹⁾	0.05	ml
Glycylglycine	10	mg
Distilled water	99.95	ml
pH 7.5		

1) See 62

34. SW (386)

A small amount of dried soil is put into a test tube, and 20 ml distilled water is added.

35. SOT (349)

NaHCO ₃	1.68	g
K ₂ HPO ₄	50	mg
NaNO ₃	250	mg
K ₂ SO ₄	100	mg
NaCl	100	mg
MgSO ₄ · 7H ₂ O	20	mg
CaCl ₂ · 2H ₂ O	4	mg
FeSO ₄ · 7H ₂ O	1	mg
Na ₂ EDTA	8	mg
A ₅ solution ¹⁾	0.1	ml
Distilled water	99.9	ml

1) See 54

1)-2. For marine algae

36. ESM (356)

NaNO ₃	12	mg
K ₂ HPO ₄	0.5	mg
Vitamin B _{1 2}	0.1	µg
Biotin	0.1	µg
Thiamine HCl	10	µg
Fe-EDTA	25.9	µg
Mn-EDTA	33.2	µg
Tris (hydroxymethyl) aminomethane	100	mg
Soil extract ¹⁾	5	ml
Sea water pH 8.0	95	ml

1) See 65

37. f / 2 (59)

NaNO ₃	7.5	mg
NaH ₂ PO ₄ · 2H ₂ O	0.6	mg
Vitamin B _{1 2}	0.05	µg
Biotin	0.05	µg
Thiamine HCl	10	µg
Na ₂ SiO ₃ · 9H ₂ O	1	mg
f / 2 metals ¹⁾	0.1	ml
Sea water	99.9	ml

1) See 60

38. M-ASP7 (541)

NaCl	2.5	g
MgSO ₄ · 7H ₂ O	900	mg
KCl	70	mg
CaCl ₂ · 2H ₂ O	30	mg
NaNO ₃	5	mg
NaH ₂ PO ₄ · 2H ₂ O	2	mg
Vitamin B ₁₂	0.1	µg
Vitamin mix S ₃ ¹⁾	1	ml
Na ₂ SiO ₃ · 9H ₂ O	1	mg
P _N metals ²⁾	3	ml
Tris (hydroxymethyl) aminomethane	100	mg
NTA	7	mg
Distilled water	96	ml
pH 8.0		

1) See 64

2) See 63

39. MF

f / 2 medium with Na₂SiO₃ · 9H₂O replaced by 1.0ml soil extract¹⁾ and adjusted to pH 8.0 by buffering with 100mg Tris (hydroxymethyl) aminomethane.

1) See 65

40. MKM (491)

KNO ₃	75	mg
KH ₂ PO ₄	2.5	mg
MgSO ₄ · 7H ₂ O	2	mg
Fe-citrate	250	µg
Agar	1.5	g
Sea water	50	ml
Distilled water	50	ml

41. MNK (297)

NaNO ₃	2	mg
K ₂ HPO ₄	0.1	mg
Na ₂ HPO ₄ · 12H ₂ O	0.028	mg
Vitamin B ₁₂	0.015	µg
Biotin	0.015	µg
Thiamine HCl	2	µg
CoSO ₄ · 7H ₂ O	0.12	µg
ZnSO ₄ · 7H ₂ O	0.24	µg
MnCl ₂ · 4H ₂ O	0.9	µg
CuSO ₄ · 5H ₂ O	0.006	µg
Na ₂ SeO ₃	0.003	µg
Na ₂ MoO ₄ · 2H ₂ O	0.07	µg
Na ₂ EDTA · 2H ₂ O	0.37	µg
Fe-EDTA	2.6	µg
Mn-EDTA	3.3	µg
Sea water	100	ml

42. URO-YT (246)

10 mg yeast extract and 20 mg tryptone are added to URO medium, which is made with seawater instead of distilled water.

43. URO-1/10YT (247)

1 mg yeast extract and 2 mg tryptone are added to URO medium, which is made with seawater instead of distilled water.

44. WESM

ESM medium with 95 ml sea water replaced by 85 ml sea water and 10 ml distilled water.

2) Bacteria-free check media

2)-1. For freshwater algae

45. YT (96)

Stock medium	100	ml
Yeast extract	100	mg
Tryptone	200	mg

46. B - I (103)

Stock medium	100	ml
Proteose peptone	100	mg

47. B - II (103)

Stock medium	100	ml
Yeast extract	500	mg

48. B - III (103)

Stock medium	100	ml
Peptone	500	mg
Beef extract	300	mg

49. B - IV (103)

Stock medium	100	ml
Glucose	100	mg
Peptone	100	mg

50. B - V (103)

Stock medium	100	ml
Sodium acetate	50	mg
Glucose	50	mg
Tryptone	50	mg
Yeast extract	30	mg

2)-2. For marine algae

51. STP (389)

NaNO ₃	20	mg
K ₂ HPO ₄	1	mg
Sodium glutamate	50	mg
Glucose	20	mg
Glycine	10	mg
D, L - Alanine	10	mg
Vitamin mix 8 ¹⁾	0.1	ml
Trypticase	20	mg
Yeast autolysate ²⁾	20	mg
Sucrose	100	mg
Soil extract ³⁾	5	ml
Sea water	80	ml
Distilled water	15	ml

pH 7.5

1) In the NIES-Collection, vitamin mix 8 is replaced by Vitamin mix S₃.

2) In the NIES-Collection, yeast autolysate is replaced by yeast extract.

3) See 65

52. MM23 (M. Tatewaki, pers. comm.)

NaCl	1.8	g
MgSO ₄ · 7H ₂ O	500	mg
KCl	60	mg
NaNO ₃	100	mg
CaCl ₂ · 2H ₂ O	36.7	mg
K ₂ HPO ₄	6	mg
Sucrose	400	mg
PII metals ¹⁾	2	ml
FeCl ₃ · 6H ₂ O	48	µg
Thiamine HCl	10	µg
Biotin	0.1	µg
Vitamin B ₁₂	0.2	µg
C-Source Mix II ²⁾	1	ml
Tris (hydroxymethyl) aminomethane	100	mg
Distilled water	97	ml

pH 8.0

1) See 61

2) See 56

53. Bf / 2 (573)

ASP7 ¹⁾	100	ml
Trypticase	50	mg
Yeast extract	5	mg

1) In the NIES-Collection, ASP7 is replaced by f / 2 medium.

3) Trace metals, vitamin mixes and soil extract**54. A₅ solution (85)**

H ₃ BO ₃	286	mg
MnSO ₄ · 7H ₂ O	250	mg
ZnSO ₄ · 7H ₂ O	22.2	mg
CuSO ₄ · 5H ₂ O	7.9	mg
Na ₂ MoO ₄ · 2H ₂ O	2.1	mg
Distilled water	100	ml

55. Allen metals¹⁾ (1)

Fe-EDTA	30.16	g
MnCl ₂ · 4H ₂ O	1.79	g
H ₃ BO ₃	2.86	g
ZnSO ₄ · 7H ₂ O	220	mg
CuSO ₄ · 5H ₂ O	79	mg
(NH ₄) ₆ MoO ₂₄ · 4H ₂ O	130	mg
NH ₄ VO ₃	23	mg
Distilled water	100	ml

1) In the NIES-Collection, diluted with distilled water to 1 / 1,000.

56. C - Source Mix II (M. Tatewaki, pers. comm.)

Glycine	100	mg
D, L - Alanine	100	mg
L - Asparagine	100	mg
Sodium acetate · 3H ₂ O	200	mg
Glucose	200	mg
L - Glutamic acid	200	mg
Distilled water	100	ml

57. D solution¹⁾ (17)

Conc · H ₂ SO ₄	0.05	ml
MnSO ₄ · H ₂ O	228	mg
ZnSO ₄ · 7H ₂ O	50	mg
H ₃ BO ₃	50	mg
CuSO ₄ · 5H ₂ O	2.5	mg
Na ₂ MoO ₄ · 2H ₂ O	2.5	mg
CoCl ₂ · 6H ₂ O	4.5	mg
Distilled water	99.95	ml

1) Indicated as "Micronutrient solution" in Ref.17.

58. Fe (as EDTA; 1:1 molar) (388)

Fe(NH ₄) ₂ (SO ₄) ₂ · 6H ₂ O	70.2	mg
Na ₂ EDTA · 2H ₂ O	66	mg
Distilled water	100	ml

* 1 ml of this solution contains 0.1 mg Fe.

59. Fe solution (96)

FeSO ₄ · 7H ₂ O	200	mg
Distilled water	100	ml
Conc · H ₂ SO ₄	0.026	ml ¹⁾

1) 2 drops / 500ml (Ref. 96).

60. f / 2 metals (59)

Na ₂ EDTA·2H ₂ O	440	mg
FeCl ₃ ·6H ₂ O	316	mg
CoSO ₄ ·7H ₂ O	1.2	mg
ZnSO ₄ ·7H ₂ O	2.1	mg
MnCl ₂ ·4H ₂ O	18	mg
CuSO ₄ ·5H ₂ O	0.7	mg
Na ₂ MoO ₄ ·2H ₂ O	0.7	mg
Distilled water	100	ml

61. P II metals (387)

H ₃ BO ₃	114	mg
FeCl ₃ ·6H ₂ O	4.9	mg
MnSO ₄ ·4H ₂ O	16.4	mg
ZnSO ₄ ·7H ₂ O	2.2	mg
CoSO ₄ ·7H ₂ O	480	µg
Na ₂ EDTA·2H ₂ O	100	mg
Distilled water	100	ml

62. P IV metals (390)

FeCl ₃ ·6H ₂ O	19.6	mg
MnCl ₂ ·4H ₂ O	3.6	mg
ZnSO ₄ ·7H ₂ O ¹⁾	2.2	mg
CoCl ₂ ·6H ₂ O	0.4	mg
Na ₂ MoO ₄ ·2H ₂ O	0.25	mg
Na ₂ EDTA·2H ₂ O	100	mg
Distilled water	100	ml

1) In the NIES-Collectoin, ZnCl₂ is replaced by ZnSO₄·7H₂O.

63. P_N metals (541)

Na ₂ EDTA·2H ₂ O	100	mg
H ₃ BO ₃	113	mg
FeCl ₃ ·6H ₂ O	6.3	mg
CoSO ₄ ·7H ₂ O	0.093	mg
ZnSO ₄ ·7H ₂ O	4.66	mg
MnCl ₂ ·4H ₂ O	3.2	mg
Distilled water	100	ml

64. Vitamine mix S₃ (387)

Thiamine HCl	5	mg
Nicotinic acid	1	mg
Calcium pantothenate	1	mg
p - Aminobenzoic acid	0.1	mg
Biotin	0.01	mg
Inositol	50	mg
Folic acid	0.02	mg
Thymine	30	mg
Distilled water	100	ml

65. Soil extract (389)

100g soil combined with 100ml distilled water is heated for 2h and then cooled. The supernatant is passed through a GF / C filter and then distilled water added until there is a total of 100ml.

4) Stock medium for protozoa**66. LE**

L Solution: White part of lettuce is dried at 90 °C for 16 - 18 h without scorching. 300 mg of the dried lettuce is added to 100 ml boiling water (9 : 1 distilled water / tap water) and boiled for 30 minutes, while stirring. The supernatant is passed through cottonwool.

E solution: 300 mg of crushed yolk of hardboiled egg is added to 100ml water (9 : 1 distilled water / tap water) and boiled for 30 minutes, while stirring. The supernatant is passed through cottonwool.

Equal quantities of L and E solutions are mixed. The pH is adjusted to 6.8 - 7.0 with 1 N NaOH. 100 ml of the solution is dispensed into each 200ml-Erlenmayer flasks and sterilized by autoclaving (121°C, 15 min).

VII. 保存株データの利用法

系統保存株の学名はアルファベット順に並べてあり、学名が同じ場合は株番号順に並べてある。同定者が記載されていない限り、学名は原則として分離者によってつけられたものである。また、株番号は、数字の前に“NIES-”を付けて使用することとし(例:NIES-1)、株の学名が命名法などの変更で変わった場合や、やむをえない理由で株が消失した場合にも変更したり付け変えたりしないものとする。

個々の項目についての説明は下記の例を参照されたい。

Spirulina platensis (Gomont) Geitler¹⁾

Syn. *Arthrospira platensis* Gomont²⁾

45³⁾

Lake Kasumigaura / Ibaraki⁴⁾ (1975-11)⁵⁾

IAM M-184⁶⁾, Unialgal, Clonal⁷⁾, M.M.Watanabe⁸⁾ (1975-11)⁹⁾

Identified by: M.M.Watanabe¹⁰⁾

Culture conditions: MA, 25° C, 24 μE/m²sec, 1M, [Cryopreserved]¹¹⁾

Characteristics: Water bloom, Freshwater,

Forming water bloom in Inbanuma¹²⁾

KAS-6-50¹³⁾

References: 79, 96, 242, 450, 518, 522, 530, 549, 559¹⁴⁾

- 1) 学名と原著者名：原著者名は学名の後に記した。
- 2) 異名。
- 3) 株番号：数字の前に“NIES-”を付けて使用すること。
- 4) 採集地。
- 5) 採集年月。
- 6) 他の保存機関に保存されている場合の株番号。保存機関名は略号で株番号の前に記されている。

IAM : 東京大学分子細胞生物学研究所

TAC : 国立科学博物館筑波実験植物園

CCAP : 英国 CCAPカルチャーコレクション

NIVA : ノルウェー 水界研究所藻類株保存施設

PCC : フランス パスツール研究所カルチャーコレクション

SAG : ドイツ ゲッチンゲン大学藻類株保存施設

CCMP : 米国 ビゲロウ海洋研究所カルチャーコレクション

UTEX : 米国 テキサス大学藻類株保存施設

- 7) 株の状態。
Axenic の表示があるものは無菌株である。この表示のない場合は無菌ではないので特に注意されたい。
- 8) 分離者。
- 9) 分離年月。
- 10) 同定者。
- 11) 保存条件。培地名、保存温度、保存光強度、継代周期の順である。本施設では明暗周期は12時間明期／12時間暗期に設定されている。培地は特に記さない限り液体である。軟寒天培地：SS、寒天斜面培地：Sの場合は略号を（ ）内に記した。また（ ）内の温度および光強度は前培養が必要な場合、その条件である。なお光強度の表記については、前第6版より $\mu\text{E}/\text{m}^2\text{sec}$ を採用している。現在凍結保存中の株については [**Cryopreserved**] と記した。
- 12) 株の性質。
Unstable; 保存状態が不安定で永続的な維持が困難である株。
Untransportable; 長時間の（航空便での）郵送では、生存状態で受け取るのが困難である株。
- 13) 分離者等の使用している株名。
- 14) 参考文献の番号。

なお、第IX章 2. 分類群別索引（211～224頁）における藻類門・綱の分類および配列は千原光雄（編）「藻類の多様性と系統」（バイオダイバーシティ・シリーズ、裳華房 1999）に掲載された分類表におおむねしたがった。

VII. EXPLANATORY NOTES ABOUT STRAIN DATA

The strains are listed by scientific names in alphabetical order. Strains with the same scientific name are arranged in order of their strain numbers. The scientific name of each strain was designated by the isolator, unless the identifier is described. The number assigned to the given strain remains the same, regardless of any change in nomenclature. The strain number should be used with the initials "NIES-"(e.g. NIES-1). A detailed example of a strain description is presented below.

Spirulina platensis (Gomont) Geitler¹⁾

Syn. *Arthrospira platensis* Gomont²⁾

45³⁾

Lake Kasumigaura / Ibaraki⁴⁾ (1975-11)⁵⁾

IAM M-184⁶⁾, Unialgal, Clonal⁷⁾, M.M.Watanabe⁸⁾ (1975-11)⁹⁾

Identified by: M.M.Watanabe¹⁰⁾

Culture conditions: MA, 25° C, 24 µE/m²sec, 1M, [Cryopreserved]¹¹⁾

Characteristics: Water bloom, Freshwater,

Forming water bloom in Inbanuma¹²⁾

KAS-6-50¹³⁾

References: 79, 96, 242, 450, 518, 522, 530, 549, 559¹⁴⁾

- 1) Scientific name with authority.
- 2) Synonym.
- 3) Strain number (used with the initials "NIES-").
- 4) Collection site.
- 5) Collection date.
- 6) The strain designations in other culture collections or institutions. The following abbreviations are presented before the strain number.

IAM : Institute of Molecular and Cellular Biosciences, University of Tokyo.

TAC : Tsukuba Botanical Garden, National Science Museum.

CCAP : Culture Collection of Algae and Protozoa, U.K.

NIVA : Culture Collection of Algae, Norwegian Institute for Water Research.

PCC : Pasteur Culture Collection of Cyanobacteria, Institute Pasteur, France.

SAG : Culture Collection of Algae at the University of Göttingen, Germany.

CCMP : Provasoli-Guillard Center for Culture of Marine Phytoplankton, U.S.A.

UTEX : Culture Collection of Algae at the University of Texas at Austin, U.S.A.

- 7) Status of the strain (Unialgal or Axenic, Clonal or Non-clonal).
- 8) Isolator.
- 9) Isolation date.
- 10) Identifier.
- 11) Culture condition for maintenance: medium *, temperature, light intensity ** and duration of subculturing ***.

The light-dark cycle is defined as 12 hours light 12 hours dark.

* Unless otherwise noted the phase of the medium is liquid.

The abbreviations in parentheses are SS for semi-solid and S for solid.

** Light intensity is indicated as $\mu\text{E}/\text{m}^2 \text{ sec}$ in this edition.

*** Preculture temperature and light intensity are given in parentheses when preculture is required.

" [Cryopreserved] " indicates that the strain is preserved as a frozen condition at present.

- 12) Characteristics of the strain.

"**Unstable**" indicates that the strain probably cannot be maintained indefinitely, for various reasons including unsuccessful induction of auxospore formation and germination in diatom.

"**Untransportable**" indicates that the strain is not robust enough to be sent by air mail, involving much time.

- 13) Strain designation given by the isolator.
- 14) Reference number. References corresponding to the numbers are listed in pp.135~158.

Special Note. Algal phyla and classes and assignment of strains to each taxon (as shown in Chap. IX. 2. Systematic Index (pp.211~224) are arranged according principally to the system in Chihara (Ed.), "Diversity and Evolution of Algae" (Shokabo, Tokyo, 1999).

VIII. STRAIN DATA

ALGAE

ACHNANTHES Bory: Bacillariophyceae

* *Achnanthes longipes* Agardh

See *Achnanthes subconstricta* (Meister) Toyoda

Achnanthes minutissima Kützing

71

Kosaka River / Akita (1983-04)

Axenic, Clonal, A.Yuri (1983-09)

Identified by: M.Mizuno

Culture conditions: CSi, 20° C, 40 µE/m² sec, 1M

Characteristics: Indicator, Freshwater

A15-6

References: 267, 378, 453, 454, 544, 545

407

Miyata River / Ibaraki (1987-05)

Unialgal, Non-clonal, F.Kasai (1987-06)

Identified by: N.Takamura

Culture conditions: CSi, 15° C, 15 µE/m² sec, 2M

Characteristics: Freshwater

4st-0-8

Reference: 454

408

Ashio / Gunma (1987-08)

Unialgal, Clonal, F.Kasai (1987-09)

Identified by: M.Idei

Culture conditions: CSi, 15° C, 15 µE/m² sec, 2M

Characteristics: Freshwater

AT5-23

Reference: 454

409

Ashio / Gunma (1987-08)

Unialgal, Clonal, F.Kasai (1987-08)

Identified by: M.Idei

Culture conditions: CSi, 15° C, 15 µE/m² sec, 2M

Characteristics: Freshwater

Ast-3-3

Reference: 454

410

Ashio / Gunma (1987-08)

Unialgal, Non-clonal, F.Kasai (1987-09)

Identified by: N.Takamura

Culture conditions: CSi, 15° C, 15 µE/m² sec, 2M

Characteristics: Freshwater

AT4-18

Reference: 454

411

Miyata River / Ibaraki (1987-02)

Unialgal, Non-clonal, F.Kasai (1987-03)

Identified by: N.Takamura

Culture conditions: CSi, 15° C, 15 µE/m² sec, 2M

Characteristics: Freshwater

1st-3-17

References: 453, 454

412

Miyata River / Ibaraki (1987-02)

Unialgal, Non-clonal, F.Kasai (1987-03)

Identified by: N.Takamura

Culture conditions: CSi, 15° C, 15 µE/m² sec, 2M

Characteristics: Freshwater

1St-1-1

References: 453, 454

413

Miyata River / Ibaraki (1987-02)

Unialgal, Non-clonal, F.Kasai (1987-03)

Identified by: N.Takamura

Culture conditions: CSi, 15° C, 15 µE/m² sec, 2M

Characteristics: Freshwater

1st-2-8

References: 453, 454

414

Ooe River (Ozegahara) / Fukushima (1987-10)

Unialgal, Non-clonal, F.Kasai (1987-11)

Identified by: N.Takamura

Culture conditions: CSi, 15° C, 15 µE/m² sec, 2M

Characteristics: Freshwater

0-25

Reference: 454

Achnanthes minutissima Kützing

var. *saprophila* Kobayasi et Mayama

372

Lake Kasumigaura / Ibaraki (1985-12)

- Axenic, Clonal, T.Sawaguchi (1985-12)
 Identified by: T.Sawaguchi
 Culture conditions: CSi, M Chu No.10, 20° C,
 40 µE/m² sec, 1M
 Characteristics: Indicator, Freshwater,
 Reidentified by M.Idei
 KAAC-6
- Achnanthes subconstricta*** (Meister) Toyoda
 330
 Kawazu / Shizuoka (1985-05)
 Axenic, Clonal, T.Sawaguchi (1985-05)
 Reidentified by: T.Nagumo
 Culture conditions: f/2, 10° C, 25 µE/m² sec, 2M
 Characteristics: Marine, Formerly identified as
Achnanthes longipes Agardh
 IMHB-5
 Reference: 146
- ACINETOSPORA** Bornet: Phaeophyceae
- Acinetospora crinita*** (Carmichael) Sauvageau
 548
 Tuscan / Italy (1991)
 Unialgal, Clonal, T.Hagiwara (1992)
 Tentatively reidentified by: G.Sartoni
 Culture conditions: f/2, 20° C, 4 µE/m² sec, 3M,
 (20° C, 25 µE/m² sec)
 Characteristics: Marine, Formerly identified as
Tribonema marinum J.Feldmann,
COXI gene (AF037996), *tufA* gene (AF038004),
 18S rRNA gene (AF038005)
 References: 26, 402
- ACTINASTRUM** Lagerheim: Trebouxiophyceae
- Actinastrum hantzschii*** Lagerheim
 415
 Lake Kasumigaura / Ibaraki (1983-07)
 Unialgal, Clonal, F.Kasai (1983-07)
 Identified by: M.Watanabe
 Culture conditions: C(S), 20° C, 4 µE/m² sec, 3M,
 (25° C, 30 µE/m² sec)
 Characteristics: Indicator, Freshwater,
COXI gene (D63660)
 F7-4
 References: 76, 242, 530
- ALEXANDRIUM** Halim: Dinophyceae
- Alexandrium catenella*** (Whedon et Kofoid) Balech
 Syn. *Protogonyaulax catenella*
 (Whedon et Kofoid) Taylor
 220
 Tsuda Bay / Kagawa (1980-06)
 Axenic, Clonal, S.Yoshimatsu
 Culture conditions: ESM, 20° C, 40 µE/m² sec, 2M
 Characteristics: Red tide, Marine, Unstable,
 Untransportable
 KGW-31-1
- 519
 Owase Bay / Mie
 Axenic, Clonal, T.Okaichi
 Culture conditions: ESM, 20° C, 40 µE/m² sec, 2M
 Characteristics: Red tide, Marine, Unstable,
 Untransportable
 KGW-41
- 520
 Hachinohe Harbor / Aomori (1988-08)
 Unialgal, Clonal, T.Sawaguchi (1988-08)
 Identified by: T.Sawaguchi
 Culture conditions: ESM, 20° C, 40 µE/m² sec, 1M
 Characteristics: Red tide, Marine, Unstable,
 Untransportable
 88HH-2
 Reference: 283
- 674
 Harima-Nada / Seto Inland Sea (1980-06)
 Axenic, Clonal, S.Yoshimatsu (1980-06)
 Identified by: S.Yoshimatsu
 Culture conditions: ESM, 20° C, 40 µE/m² sec, 1M
 Characteristics: Red tide, Marine, Mating type +,
 Untransportable
 Ac 1
- 675
 Harima-Nada / Seto Inland Sea (1980-06)
 Axenic, Clonal, S.Yoshimatsu (1980-06)
 Identified by: S.Yoshimatsu
 Culture conditions: ESM, 20° C, 40 µE/m² sec, 1M
 Characteristics: Red tide, Marine, Mating type -,
 Untransportable
 Ac 5
- 677
 Yamakawa Bay / Kagoshima (1988-03)
 Axenic, Clonal, S.Yoshimatsu (1988-04)

Identified by: S.Yoshimatsu
Culture conditions: ESM, 20° C, 40 µE/m²sec, 1M
Characteristics: Red tide, Marine, Untransportable
Acy-6

Alexandrium hiranoi Kita et Fukuyo
612

Jogashima, Misaki / Kanagawa (1984-08)
Unialgal, Clonal, T.Kita (1984-08)
Identified by: T.Kita & Y.Fukuyo
Culture conditions: ESM, 20° C, 40 µE/m²sec, 2M
Characteristics: Toxic, Marine, Untransportable
References: 181, 182, 252

Alexandrium insuetum Balech
678

Uchiumi Bay / Kagawa (1985-06)
Axenic, Clonal, S.Yoshimatsu (1985-06)
Identified by: S.Yoshimatsu
Culture conditions: ESM, 20° C, 40 µE/m²sec, 1M
Characteristics: Red tide, Marine, Untransportable

AMPHIDINIUM Claparede et Lachman: Dinophyceae

Amphidinium britannicum (Herdman) Lebour
405

Hasaki / Ibaraki (1987-05)
Unialgal, Clonal, T.Sawaguchi (1987-05)
Identified by: T.Sawaguchi
Culture conditions: ESM, 20° C, 40 µE/m²sec, 1M
Characteristics: Benthic, Marine, Untransportable
HASS-1

Amphidinium carterae Hulburt
331

Iriomote Isl. / Okinawa (1986-01)
Axenic, Clonal, T.Sawaguchi (1986-02)
Identified by: T.Sawaguchi
Culture conditions: ESM, 20° C, 32 µE/m²sec, 1M
Characteristics: Marine, Unstable, Untransportable,
psbA gene (AB025586)
IIDA
Reference: 458

Amphidinium klebsii Coll
613

Aburatsubo Bay / Kanagawa (1993-04)
Unialgal, Clonal, M.Murata (1994-03)
Identified by: Y.Fukuyo
Culture conditions: f/2, ESM, 20° C, 40 µE/m²sec,
1M

Characteristics: Marine, Untransportable
AK-1
References: 86, 248

Amphidinium tetsudo Kofoid et Swezy
1268

Saipan / USA (2002-04)
Unialgal, Clonal, A.Higa
Identified by: A.Higa
Culture conditions: ESM, 20° C, 20 µE/m²sec, 1M
Characteristics: Marine, Untransportable
M-44

ANABAENA Bory: Cyanophyceae

Anabaena affinis Lemmermann
40

Lake Kasumigaura / Ibaraki (1974-08)
IAM M-168, Unialgal, Clonal, M.M.Watanabe
(1974-08)
Identified by: M.M.Watanabe
Culture conditions: CT, 25° C, 24 µE/m²sec, 1M
Characteristics: Water bloom, Freshwater, Unstable
References: 96, 227, 242, 291, 530, 565

Anabaena circinalis Rabenhorst ex Bornet et Flahault
41

Lake Kasumigaura / Ibaraki (1974-08)
IAM M-169, Axenic, Clonal, M.M.Watanabe
(1974-08)
Identified by: M.M.Watanabe
Culture conditions: CB, 25° C, 24 µE/m²sec, 1M
Characteristics: Water bloom, Freshwater, Unstable,
16SrRNA gene (AB042859)
References: 79, 96, 242, 290, 291, 432, 530, 354

Anabaena compacta (Nygaard) Hickel
806

Rostherne Mere, Cheshire / England
CCAP 1403/24, Axenic, Clonal, Jaworski (1978)
Reidentified by: R.Li
Culture conditions: CT, 20° C, 8 µE/m²sec, 2M
Characteristics: Freshwater, Water bloom, Formerly
identified as *Anabaena spiroides* Klebahn

835

Esthwaite Water, Cambria / England
CCAP 1403/29, Unialgal, Clonal, Butterwick (1985)
Reidentified by: R.Li
Culture conditions: CT, 20° C, 8 µE/m²sec, 2M
Characteristics: Freshwater, Water bloom, Formerly

- identified as *Anabaena spiroides* Klebahn
Reference: 83
- Anabaena cylindrica*** Lemmermann
19
IAM M-1, Axenic, Non-clonal
Culture conditions: MDM(S), 20° C, 4 µE/m² sec,
4M, (25° C, 30 µE/m² sec)
Characteristics: Freshwater, Nitrogen fixation,
Reidentified by M.M. Watanabe
References: 3, 4, 14, 40, 44, 46, 47, 48, 49, 50, 51, 52,
53, 58, 74, 96, 137, 196, 198, 222, 242, 260, 350,
351, 352, 353, 383, 384, 385, 449, 474, 491, 498,
530, 560, 561, 562, 563, 564, 565
- Anabaena ellipsoides*** Bolochonzew
828
Fishpond, Wuhan / China (1996-01)
Unialgal, Clonal, R.Li (1996-01)
Identified by: R.Li
Culture conditions: CT, 20° C, 8 µE/m² sec, 2M
Characteristics: Freshwater, Water bloom
Ana HB
- Anabaena flos-aquae*** Brébisson ex Bornet et Flahault
f. *flos-aquae*
73
Lake Kasumigaura / Ibaraki (1978-08)
TAC 32, Axenic, Clonal, M. Watanabe (1978-08)
Identified by: M. Watanabe
Culture conditions: MA, 25° C, 24 µE/m² sec, 1M
Characteristics: Water bloom, Indicator, Freshwater,
Unstable, 16SrRNA gene (AB042858)
K-TAN-32
References: 159, 242, 291, 354, 438, 530, 578
- 74
Lake Kasumigaura / Ibaraki (1978-08)
TAC 33, Unialgal, Clonal, M. Watanabe (1978-08)
Identified by: M. Watanabe
Culture conditions: CT, 25° C, 24 µE/m² sec, 1M
Characteristics: Water bloom, Indicator, Freshwater,
Unstable
K-TAN-33
References: 19, 242, 257, 258, 259, 530
- 75
Lake Kasumigaura / Ibaraki (1978-12)
TAC 43, Unialgal, Clonal, M. Watanabe (1978-12)
Identified by: M. Watanabe
Culture conditions: CB, 25° C, 24 µE/m² sec, 1M
Characteristics: Water bloom, Indicator, Freshwater,
- Unstable
K-TAN-43
References: 242, 265, 530
- Anabaena kisseleviana*** Elenkin
807
Lake Kasumigaura / Ibaraki (1978-08)
TAC 34, Unialgal, Clonal, M. Watanabe (1978-08)
Identified by: R.Li
Culture conditions: MG, 20° C, 8 µE/m² sec, 2M
Characteristics: Freshwater, Water bloom
- Anabaena lemmermannii*** Richter
833
Lake Steinsfjorden, Buskerud / Norway
NIVA CYA 82, Unialgal, Clonal (1980)
Reidentified by: R.Li
Culture conditions: CT, 20° C, 8 µE/m² sec, 2M
Characteristics: Freshwater, Water bloom, Unstable,
Formerly identified as *Anabaena circinalis*
Rabenhorst ex Bornet et Flahault
- Anabaena mendotae*** Trelease
808
Lake Akan / Hokkaido (1990-08)
TAC 437, Unialgal, Clonal, Y. Niiyama (1990-08)
Identified by: R.Li
Culture conditions: CT, 20° C, 8 µE/m² sec, 2M
Characteristics: Freshwater, Water bloom
A28
- Anabaena mucosa*** Komárková et Eloranta
809
Lake Toro / Hokkaido (1990-08)
TAC 426, Unialgal, Clonal, Y. Niiyama (1990-08)
Identified by: R.Li
Culture conditions: MG, 20° C, 8 µE/m² sec, 2M
Characteristics: Freshwater, Water bloom, Unstable
A10
- Anabaena oumiana*** Watanabe
829
Chon Buri / Thailand (1998-05)
Unialgal, Clonal, R.Li (1998-05)
Identified by: R.Li
Culture conditions: CT, 20° C, 8 µE/m² sec, 2M
Characteristics: Freshwater, Water bloom
Ana T1
- Anabaena planktonica*** Brunnthaler
810
Ohnuma / Hokkaido (1990-08)

- TAC 421, Axenic, Clonal, Y.Niiyama (1990-08)
 Identified by: M.Watanabe
 Culture conditions: MG, 20° C, 8 µE/m² sec, 2M
 Characteristics: Freshwater, Water bloom
 A3
 References: 83, 227
- 811
 Ohnuma / Hokkaido (1990-08)
 TAC 422, Axenic, Clonal, Y.Niiyama (1990-08)
 Identified by: M.Watanabe
 Culture conditions: CT, 20° C, 8 µE/m² sec, 2M
 Characteristics: Freshwater, Water bloom
 A4
- 812
 Lake Toro / Hokkaido (1990-08)
 TAC 424, Unialgal, Clonal, Y.Niiyama (1990-08)
 Identified by: M.Watanabe
 Culture conditions: MG, 20° C, 8 µE/m² sec, 2M
 Characteristics: Freshwater, Water bloom
 A7
- 813
 Lake Tofutsu / Hokkaido (1990-08)
 TAC 434, Unialgal, Clonal, Y.Niiyama (1990-08)
 Identified by: R.Li
 Culture conditions: CT, 20° C, 8 µE/m² sec, 2M
 Characteristics: Freshwater, Water bloom
 A25
- 814
 Lake Tofutsu / Hokkaido (1990-08)
 TAC 435, Axenic, Clonal, Y.Niiyama (1990-08)
 Identified by: R.Li
 Culture conditions: CT, 20° C, 8 µE/m² sec, 2M
 Characteristics: Freshwater, Water bloom
 A26
- 815
 Esthwaite Water, Cambria / England
 CCAP 1403/19, Axenic, Clonal, G.H.M.Jaworski
 (1968)
 Reidentified by: R.Li
 Culture conditions: CT, 20° C, 8 µE/m² sec, 2M
 Characteristics: Freshwater, Water bloom, Formerly
 identified as *Anabaena solitaria* Klebahn
- 816
 Blelham Tarn, Cambria / England
 CCAP 1403/27, Axenic, Clonal, G.H.M.Jaworski
 (1985)
- Reidentified by: R.Li
 Culture conditions: CT, 20° C, 8 µE/m² sec, 2M
 Characteristics: Freshwater, Water bloom, Formerly
 identified as *Anabaena solitaria* Klebahn
- 817
 Inba-numa / Chiba (1995-05)
 Unialgal, Clonal, R.Li (1995-05)
 Identified by: R.Li
 Culture conditions: CT, 20° C, 8 µE/m² sec, 2M
 Characteristics: Freshwater, Water bloom, Offensive
 taste and odor
 Inba 2
- 834
 Lake Langsævatn, Aust-Agder / Norway (1979)
 NIVA CYA 66, Unialgal, Clonal
 Reidentified by: R.Li
 Culture conditions: CT, 20° C, 8 µE/m² sec, 2M
 Characteristics: Freshwater, Water bloom, Formerly
 identified as *Anabaena solitaria* Klebahn f.
planktonica (Brunnthaler) Komárek
- Anabaena smithii* (Komárek) Watanabe
- 818
 Lake Barato / Hokkaido (1989-08)
 TAC 116, Unialgal, Clonal, M.Watanabe (1989-08)
 Identified by: R.Li
 Culture conditions: CT, 20° C, 8 µE/m² sec, 2M
 Characteristics: Freshwater, Water bloom
- 819
 Lake Barato / Hokkaido (1990-08)
 TAC 428, Unialgal, Clonal, Y.Niiyama (1990-08)
 Identified by: M.Watanabe
 Culture conditions: CT, 20° C, 8 µE/m² sec, 2M
 Characteristics: Freshwater, Water bloom
 A14
 Reference: 83
- 820
 Hirosaki / Aomori (1990-06)
 TAC 431, Unialgal, Clonal, Y.Niiyama (1990-06)
 Identified by: M.Watanabe
 Culture conditions: CT, 20° C, 8 µE/m² sec, 2M
 Characteristics: Freshwater, Water bloom
 A18
- 821
 Hirosaki / Aomori (1990-06)
 TAC 432, Unialgal, Clonal, Y.Niiyama (1990-06)
 Identified by: M.Watanabe

- Culture conditions: CT, 20° C, 8 µE/m² sec, 2M
 Characteristics: Freshwater, Water bloom
 A19
 Reference: 227
- 822
 Lake Akan / Hokkaido (1991-07)
 TAC 450, Unialgal, Clonal, Y.Niiyama (1991-07)
 Identified by: R.Li
 Culture conditions: CT, 20° C, 8 µE/m² sec, 2M
 Characteristics: Freshwater, Water bloom
 A51
- 823
 Lake Okutama / Tokyo (1991-07)
 TAC 452, Unialgal, Clonal, M.Watanabe (1991-07)
 Identified by: R.Li
 Culture conditions: CT, 20° C, 8 µE/m² sec, 2M
 Characteristics: Freshwater, Water bloom, Offensive
 taste and odor, Unstable
 210
- 824
 Hasse River, Ogasawara Isl. / Tokyo (1998-03)
 Unialgal, Clonal, R.Li (1998-03)
 Identified by: R.Li
 Culture conditions: CT, 20° C, 8 µE/m² sec, 2M
 Characteristics: Freshwater, Water bloom, Offensive
 taste and odor
 Ana Ha 1
- 830
 Lam Takong / Thailand (1997-07)
 Unialgal, Clonal, R.Li (1997-07)
 Identified by: R.Li
 Culture conditions: CT, 20° C, 8 µE/m² sec, 2M
 Characteristics: Freshwater, Water bloom
 Ana130
- 831
 Chon Buri / Thailand (1998-05)
 Unialgal, Clonal, R.Li (1998-05)
 Identified by: R.Li
 Culture conditions: CT, 20° C, 8 µE/m² sec, 2M
 Characteristics: Freshwater, Water bloom
 Ana T3
- Anabaena solitaria* Klebahn f. *solitaria*
 80
 Lake Kasumigaura / Ibaraki (1978-12)
 TAC 42, Axenic, Clonal, M.Watanabe (1978-12)
 Identified by: M.Watanabe
- Culture conditions: CB, 25° C, 24 µE/m² sec, 20D
 Characteristics: Water bloom, Freshwater, Unstable
 K-TAN-42
 References: 227, 242, 291, 530
- Anabaena spiroides* Klebahn
 76
 Lake Kasumigaura / Ibaraki (1983-06)
 Unialgal, Clonal, S.Suda (1983-06)
 Identified by: S.Suda
 Culture conditions: CA, 25° C, 24 µE/m² sec, 1M
 Characteristics: Water bloom, Indicator, Freshwater,
 Unstable, 16SrRNA gene (AB047104)
 K-A-12
 References: 227, 242, 291, 354, 355, 530
- Anabaena spiroides* Klebahn
 f. *crassa* (Lemmermann) Elenkin
 78
 Lake Kasumigaura / Ibaraki (1978-07)
 TAC 30, Axenic, Clonal, M.Watanabe (1978-07)
 Identified by: M.Watanabe
 Culture conditions: CT, 25° C, 24 µE/m² sec, 1M
 Characteristics: Water bloom, Indicator, Freshwater,
 Unstable
 K-TAN-30
 References: 227, 242, 290, 291
- Anabaena spiroides* Klebahn f. *spiroides*
 77
 Lake Kasumigaura / Ibaraki (1978-08)
 TAC 31, Unialgal, Clonal, M.Watanabe (1978-08)
 Identified by: M.Watanabe
 Culture conditions: CT, 25° C, 24 µE/m² sec, 1M
 Characteristics: Water bloom, Indicator, Freshwater,
 Unstable
 K-TAN-31
 References: 159, 242, 530
- 79
 Lake Kasumigaura / Ibaraki (1978-07)
 TAC 28, Axenic, Clonal, M.Watanabe (1978-07)
 Identified by: M.Watanabe
 Culture conditions: CB, 25° C, 24 µE/m² sec, 1M
 Characteristics: Water bloom, Indicator, Freshwater,
 Unstable
 K-TAN-28
 References: 227, 242
- 263
 Lake Kasumigaura / Ibaraki (1978-07)
 TAC 27, Axenic, Clonal, M.Watanabe (1978-07)

Identified by: M.Watanabe
Culture conditions: CT, 25° C, 24 µE/m² sec, 1M
Characteristics: Water bloom, Freshwater, Unstable
K-TAN-27
References: 242, 530

Anabaena ucrainica (Schkorb) Watanabe
825

Lake Sagami / Kanagawa (1991-08)
TAC 448, Unialgal, Clonal, Y.Niiyama (1991-08)
Identified by: M.Watanabe
Culture conditions: CT, 20° C, 8 µE/m² sec, 2M
Characteristics: Freshwater, Water bloom
A48
Reference: 227

826

Lake Sagami / Kanagawa (1991-08)
TAC 449, Unialgal, Clonal, Y.Niiyama (1991-08)
Identified by: M.Watanabe
Culture conditions: CT, 20° C, 8 µE/m² sec, 2M
Characteristics: Freshwater, Water bloom
A50
References: 83, 227

832

Hochimin / Vietnam (1998-12)
Unialgal, Clonal, R.Li (1998-12)
Identified by: R.Li
Culture conditions: CB, MG, 20° C, 22 µE/m² sec,
1M
Characteristics: Freshwater, Water bloom, Unstable
Ana V2

Anabaena variabilis Kützing ex Bornet et Flahault
23

IAM M-2, Axenic, Clonal
Culture conditions: MDM(S), 20° C, 4 µE/m² sec,
4M, (25° C, 30 µE/m² sec)
Characteristics: Freshwater, Non-heterocystous
variant
References: 4, 35, 36, 37, 50, 51, 52, 96, 242, 449,
475, 491

Anabaena viguieri Denis et Frémy
827

Shikata-futago-ike / Hyogo (1990-09)
TAC 433, Unialgal, Clonal, Y.Niiyama (1990-09)
Identified by: R.Li
Culture conditions: CT, 20° C, 8 µE/m² sec, 2M
Characteristics: Freshwater, Water bloom

A23

ANABAENOPSIS Woloszynska: Cyanophyceae

Anabaenopsis circularis

(G.S.West) Woloszynska et Miller

21

IAM M-4, Axenic, Clonal, A.Watanabe
Identified by: Hirano
Culture conditions: MDM(S), 20° C, 4 µE/m² sec,
4M, (25° C, 30 µE/m² sec), [Cryopreserved]
Characteristics: Freshwater, Reidentified by
M.M.Watanabe, 16SrRNA gene (AB043537)
References: 4, 96, 242, 260, 354, 491, 497, 530

APHANIZOMENON Morren: Cyanophyceae

Aphanizomenon flos-aquae (Lemmermann) Ralfs
1258

Lake Suigetsu / Fukui (2000-12)
Unialgal, Clonal, T.Sano (2001-10)
Identified by: S.Otsuka
Culture conditions: CT, 20° C, 12 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom
SUI-CT-1

Aphanizomenon flos-aquae (Lemmermann) Ralfs
f. *gracile* (Lemmermann) Elenkin

81

Lake Kasumigaura / Ibaraki (1978-01)
TAC 1, Axenic, Clonal, M.Watanabe (1978-02)
Identified by: M.Watanabe
Culture conditions: CB, 25° C, 24 µE/m² sec, 1M
Characteristics: Water bloom, Indicator, Freshwater,
Unstable
K-TAN-1
References: 79, 227, 242, 256, 291, 438, 530, 559,
578

APHANOCAPSA Nägeli: Cyanophyceae

Aphanocapsa montana Cramer

416

Nikko / Tochigi (1987-04)
Unialgal, Non-clonal, F.Kasai (1987-04)
Identified by: M.M.Watanabe
Culture conditions: CSi, CSi+Cu, 20° C, 4 µE/m² sec,
4M, (20° C, 12 µE/m² sec), [Cryopreserved]

- Characteristics: Freshwater
NK-24
References: 242, 454
- APIOCYSTIS** Nägeli in Kützing: Chlorophyceae
- Apiocystis brauniana* Nägeli
1020
Tsuchiura / Ibaraki (2002-02)
Unialgal, Clonal, M.Moriya (2002-03)
Identified by: M.Moriya
Culture conditions: AF-6, 15° C, 15 µE/m² sec, 2M
Characteristics: Freshwater, Epiphytic
#115
- ARTHROSPIRA** Sitzenberger ex Gomont:
Cyanophyceae
- * *Arthrospira platensis* Gomont
See *Spirulina platensis* (Gomont) Geitler
- ASTERIONELLA** Hassall: Bacillariophyceae
- Asterionella glacialis* Castracane
265
Matoya Bay / Mie (1984-09)
Unialgal, Clonal, T.Sawaguchi (1984-09)
Identified by: T.Sawaguchi
Culture conditions: f/2, 10° C, 25 µE/m² sec, 1M
Characteristics: Marine
MB-B-1
- 417
Maizuru Bay / Kyoto (1985-10)
Unialgal, Clonal, C.E.Riquelme (1985-10)
Identified by: C.E.Riquelme
Culture conditions: f/2, 15° C, 20 µE/m² sec, 1M
Characteristics: Marine
- ASTEROCHLORIS**
Tschermak-Woess: Trebouxiophyceae
- Asterochloris* cf. *glomerata* (Warén) Friedl
1298
Nyuno, Kochi / Hiroshima (2002-03)
Axenic, Clonal, Y.Ohmura (2002-04)
Identified by: Y.Ohmura
- Culture conditions: BBM(S), 20° C, 20 µE/m² sec,
6M
Characteristics: Freshwater, Terrestrial, Symbiotic,
Isolated from *Cladia aggregata* (lichen) on humus,
Indicator
AYO4871
- 1299
Nyuno, Kochi / Hiroshima (2002-03)
Axenic, Clonal, Y.Ohmura (2002-04)
Identified by: Y.Ohmura
Culture conditions: BBM(S), 20° C, 20 µE/m² sec,
6M
Characteristics: Freshwater, Terrestrial, Symbiotic,
Isolated from *Cladonia macilenta* (lichen) on
wood, Indicator
AYO4872
- 1300
Nyuno, Kochi / Hiroshima (2002-03)
Axenic, Clonal, Y.Ohmura (2002-04)
Identified by: Y.Ohmura
Culture conditions: BBM(S), 20° C, 20 µE/m² sec,
6M
Characteristics: Freshwater, Terrestrial, Symbiotic,
Isolated from *Cladia aggregata* (lichen) on rock,
Indicator
AYO4874
- 1301
Nyuno, Kochi / Hiroshima (2002-03)
Axenic, Clonal, Y.Ohmura (2002-04)
Identified by: S.Takeshita
Culture conditions: BBM(S), 20° C, 20 µE/m² sec,
6M
Characteristics: Freshwater, Terrestrial, Symbiotic,
Isolated from *Cladia aggregata* (lichen) on soil,
Indicator
AYO4875
- ASTREPHOMENE** Pocock: Chlorophyceae
- Astrephomene gubernaculifera* Pocock
418
Kaisei / Kanagawa (1981-4)
Axenic, Clonal, H.Nozaki (1981-05)
Identified by: H.Nozaki
Culture conditions: VTAC, 20° C, 12 µE/m² sec, 1M
Characteristics: Freshwater, Heterothallic,
Mating type –, Crosses with NIES-419,
atpB gene (AB014022-3), *rbcL* gene (D63428),

- psaA* gene (AB044233-4), *psaB* gene (AB044458),
psbC gene (AB044513-4),
rbcL-462 intron (AB076095)
1520-4 (-)
References: 242, 302, 323, 340, 337, 342, 344
- 419
Kaisei / Kanagawa (1981-4)
Axenic, Clonal, H.Nozaki (1981-05)
Identified by: H.Nozaki
Culture conditions: VTAC, 20° C, 12 µE/m² sec, 1M
Characteristics: Freshwater, Heterothallic,
Mating type +, Crosses with NIES-418
1520-1 (+)
References: 242, 302
- 628
Hayama / Kanagawa (1980-12)
Unialgal, Clonal, H.Nozaki (1981-07)
Identified by: H.Nozaki
Culture conditions: VTAC, 20° C, 22 µE/m² sec, 1M
Characteristics: Freshwater, Heterothallic, Isogamy,
Mating type -
1727-1(-)
Reference: 242
- 853
Emmet Co., Michigan / USA (1961-07)
UTEX 1392, Axenic, Clonal, A.E.Brooks (1962-06)
Reidentified by: H.Nozaki
Culture conditions: CB-V, 20° C, 22 µE/m² sec, 20D
Characteristics: Freshwater, Heterothallic, Reisolated
by H.Nozaki
Reference: 13
- 854
Monro Co., Indiana / USA (1962-10)
UTEX 1394, Unialgal, Clonal, A.E.Brooks (1962-10)
Identified by: A.E.Brooks
Culture conditions: VTAC, 20° C, 22 µE/m² sec, 20D
Characteristics: Freshwater, Heterothallic, Reisolated
by H.Nozaki, *atpB* gene (AB044181), *rbcL* gene
(AB044169-70), *psaA* gene (AB044235), *psaB*
gene (AB044459), *psbC* gene (AB044515-7)
References: 13, 337
- 855
Tulare Co., California / USA (1953-08)
UTEX 1398, Unialgal, Clonal, R.W.Nelson
(1965-04)
Identified by: A.E.Brooks
Culture conditions: VTAC, 20° C, 22 µE/m² sec, 20D
- Characteristics: Freshwater, Heterothallic, Reisolated
by H.Nozaki
Reference: 13
- Astrephomene perforata* Nozaki
564
Hayama / Kanagawa (1980-12)
UTEX 2474, Unialgal, Clonal, H.Nozaki (1981-06)
Identified by: H.Nozaki
Culture conditions: VTAC, 20° C, 22 µE/m² sec, 1M
Characteristics: Freshwater, Type strain,
Heterothallic, Isogamy, Mating type +,
Crosses with NIES-565, *atpB* gene (AB014024),
rbcL gene (D63429), *psaA* gene (AB044236-8),
psaB gene (AB044460), *psbC* gene (AB044518-9)
1620-3-2
References: 242, 302, 323, 337, 340, 342
- 565
Hayama / Kanagawa (1980-12)
UTEX 2475, Unialgal, Clonal, H.Nozaki (1981-06)
Identified by: H.Nozaki
Culture conditions: VTAC, 20° C, 22 µE/m² sec, 1M
Characteristics: Freshwater, Type strain,
Heterothallic, Isogamy, Mating type -,
Crosses with NIES-564
1620-4-1
References: 242, 302, 322
- AULOSIRA* Kirchner: Cyanophyceae
- Aulosira laxa* Kirchner ex Bornet et Flahault
50
Pusa / India
IAM M-128, Axenic, Non-clonal,
G.S.Venkataraman
Culture conditions: MDM(S), 20° C, 4 µE/m² sec,
4M, (25° C, 30 µE/m² sec), [Cryopreserved]
Characteristics: Freshwater, Nitrogen fixation,
M-128 as *Aulosira fertissima* in IAM,
Reidentified by M.M.Watanabe
References: 96, 242, 530
- BASICHLAMYS* Skuja: Chlorophyceae
- Basichlamys sacculifera* (Scherffel) Skuja
Syn. *Gonium sacculiferum* Scherffel
566
Fujisawa / Kanagawa (1983-08)
Unialgal, Clonal, H.Nozaki (1983-09)

Identified by: H.Nozaki

Culture conditions: AF-6, 20° C, 22 µE/m² sec, 1M

Characteristics: Freshwater, Akinete forming,
atpB gene (AB014015), *rbcL* gene (D63430),
psaA gene (AB044416), *psaB* gene (AB044467-8),
psbC gene (AB044526)

3907-1

References: 242, 306, 323, 326, 337, 340, 342

BOTRYDIOPSIS Borzi: Xanthophyceae

Botrydiopsis arrhiza Borzi

621

Shelford / England

CCAP 222/1B, Unialgal, George (1947)

Culture conditions: AF-6, 20° C, 32 µE/m² sec, 2M

Characteristics: Freshwater

BOTRYDIUM Wallroth: Xanthophyceae

Botrydium granulatum (L.) Greville

622

CCAP 805/3A, Axenic, Vischer (1939)

Culture conditions: AF-6, 20° C, 32 µE/m² sec, 2M

Characteristics: Freshwater

BOTRYOCOCCUS Kützing: Chlorophyceae

Botryococcus braunii Kützing

836

Imuta-ike Pond / Kagoshima (1997-06)

Unialgal, Clonal, F.Mori (1997-06)

Identified by: F.Mori

Culture conditions: AF-6, 20° C, 24 µE/m² sec, 4M

Characteristics: Freshwater

BRACHIOMONAS Bohlin: Chlorophyceae

Brachiomonas submarina Bohlin

375

Hachinohe Harbor / Aomori (1986-08)

Axenic, Clonal, T.Sawaguchi (1986-08)

Identified by: T.Sawaguchi

Culture conditions: ESM, 15° C, 20 µE/m² sec, 1M

Characteristics: Marine, Brackish

86-SuHH-2

Reference: 242

CACHONINA Loeblich III: Dinophyceae

Cachonina niei Loeblich III

420

Iriomote Isl. / Okinawa (1986-01)

Axenic, Clonal, T.Sawaguchi (1986-02)

Identified by: T.Sawaguchi

Culture conditions: ESM, 20° C, 40 µE/m² sec, 1M

Characteristics: Marine, Untransportable

IID-1

614

Kashiwazaki / Niigata (1986-08)

Unialgal, Clonal, T.Sawaguchi (1986-08)

Identified by: T.Sawaguchi

Culture conditions: ESM, 20° C, 40 µE/m² sec, 1M

Characteristics: Marine, Untransportable

KSTH-29

CALCIDISCUS Kamptner: Prymnesiophyceae

Calcidiscus leptoporus Kamptner

(Murray et Blackman) Lebllich Jr et Tappan

1304

Hachijo Isl. / Tokyo (2002-01)

Unialgal, Clonal, M-H.Noël (2003-08)

Identified by: M-H.Noël

Culture conditions: MNK, 22° C, 15 µE/m² sec, 14D

Characteristics: Marine

MH34

1305

East China Sea (Kuroshio Current) (2003-08)

Unialgal, Clonal, M-H.Noël (2003-08)

Identified by: M-H.Noël

Culture conditions: MNK, 22° C, 15 µE/m² sec, 14D

Characteristics: Marine

MH68

1306

East China Sea (Kuroshio Current) (2003-08)

Unialgal, Clonal, M-H.Noël (2003-09)

Identified by: M-H.Noël

Culture conditions: MNK, 22° C, 15 µE/m² sec, 14D

Characteristics: Marine

MH70

1307

East China Sea (Kuroshio Current) (2003-08)

Unialgal, Clonal, M-H.Noël (2003-09)

Identified by: M-H.Noël

Culture conditions: MNK, 22° C, 15 µE/m² sec, 14D
Characteristics: Marine
MH77

CALOTHRIX Agardh: Cyanophyceae

Calothrix brevis G.S. West
22

Palau Isl. (1941-09)
IAM M-7, Axenic, Non-clonal, A.Watanabe
Identified by: K.Negoro
Culture conditions: MDM(S), 20° C, 4 µE/m² sec,
4M, (25° C, 30 µE/m² sec), [Cryopreserved]
Characteristics: Freshwater, Nitrogen fixation
Chromatic adaptation
References: 96, 242, 382, 491

Calothrix crustacea Thuret ex Bornet et Flahault
266

Oshoro Bay / Hokkaido (1972-09)
IAM M-171, Unialgal, Clonal, M.M.Watanabe
(1972-09)
Identified by: M.M.Watanabe
Culture conditions: f/2, 20° C, 4 µE/m² sec, 6M,
(20° C, 12 µE/m² sec), [Cryopreserved]
Characteristics: Marine
References: 96, 242, 518, 534

Calothrix parasitica Thuret ex Bornet et Flahault
267

Oshoro Bay / Hokkaido (1972-07)
IAM M-172, Axenic, Clonal, M.M.Watanabe
(1972-07)
Identified by: M.M.Watanabe
Culture conditions: f/2, 20° C, 4 µE/m² sec, 6M,
(20° C, 12 µE/m² sec), [Cryopreserved]
Characteristics: Indicator, Marine, Endophyte
in *Nemalion* (Rhodophyceae)
References: 96, 242

334

Oshoro Bay / Hokkaido (1973-02)
IAM M-173, Unialgal, Clonal, M.M.Watanabe
(1973-02)
Identified by: M.M.Watanabe
Culture conditions: f/2, 20° C, 4 µE/m² sec, 6M,
(20° C, 12 µE/m² sec), [Cryopreserved]
Characteristics: Indicator, Marine, Endophyte
in *Codium* (Ulvophyceae)
References: 96, 242

Calothrix scopulorum Agardh ex Bornet et Flahault
268

Oshoro Bay / Hokkaido (1972-09)
IAM M-174, Unialgal, Clonal, M.M.Watanabe
(1972-09)
Identified by: M.M.Watanabe
Culture conditions: MKM(S), 20° C, 4 µE/m² sec,
6M, (20° C, 12 µE/m² sec), [Cryopreserved]
Characteristics: Indicator, Marine
References: 96, 242, 518, 534

CALYPTROSPHAERA Lohmann: Prymnesiophyceae

Calyptrosphaera sphaeroidea Schiller
997

Hikimoto Bay, Owase / Mie (2001-08)
Unialgal, Clonal, N.Hata (2001-08)
Identified by: M.Kawachi
Culture conditions: MNK, 22° C, 15 µE/m² sec, 10D
Characteristics: Marine
13K
Reference: 297

1308

Choutaro-ike Pond, Miyake Isl. / Tokyo (1999-11)
Unialgal, Clonal, M.Kawachi (1999-12)
Identified by: M.Kawachi
Culture conditions: MNK, 22° C, 15 µE/m² sec, 14D
Characteristics: Marine, Red tide
MK18
Reference: 297

1309

Choutaro-ike Pond, Miyake Isl. / Tokyo (1999-11)
Unialgal, Clonal, M.Kawachi (1999-12)
Identified by: M.Kawachi
Culture conditions: MNK, 22° C, 15 µE/m² sec, 14D
Characteristics: Marine, Red tide
MK21
Reference: 297

CARTERIA Diesing: Chlorophyceae

Carteria cerasiformis Nozaki et al.
424

Lake Kasumigaura / Ibaraki (1983-08)
Axenic, Clonal, S.Suda (1983-08)
Reidentified by: H.Nozaki et al.
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 2M
Characteristics: Freshwater, Formerly identified as

- Carteria inversa* (Korshikov) Bourrelly,
rbcL gene (D89767)
Kas-10
References: 242, 319, 327
- 425
Tsukuba / Ibaraki (1985-11)
Axenic, Clonal, S.Suda (1985-11)
Reidentified by: H.Nozaki et al.
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 2M
Characteristics: Freshwater, Formerly identified as
Carteria inversa (Korshikov) Bourrelly, Type
strain of *Carteria cerasiformis* Nozaki et al.,
atpB gene (AB084321), *rbcL* gene (D89768),
psaB gene (AB084359)
w-8-15
References: 242, 319, 327, 342
- Carteria crucifera* Korshikov ex Pascher
421
Tsuchiura / Ibaraki (1986-02)
Axenic, Clonal, S.Suda (1986-05)
Identified by: S.Suda
Culture conditions: CYT, 20° C, 22 µE/m² sec, 2M
Characteristics: Freshwater, *atpB* gene (AB084320),
rbcL gene (D63431), *psaB* gene (AB084358)
SIST3-1
References: 242, 319, 323, 327, 342
- 630
New Haven / USA
UTEX 432, Unialgal, Clonal, R.A.Lewin
Reidentified by: H.Nozaki
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 1M
Characteristics: Freshwater, *rbcL* gene (D89758)
References: 242, 319, 327
- Carteria eugametos* Mitra
631
Saiwai-ku / Kawasaki (1990-10)
Unialgal, Clonal, H.Nozaki (1991-04)
Identified by: H.Nozaki
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 1M
Characteristics: Freshwater, Homothallic, Isogamy,
rbcL gene (D89762)
91-409-1
References: 242, 317, 327
- 632
Saiwai-ku / Kawasaki (1990-10)
Unialgal, Clonal, H.Nozaki (1991-04)
Identified by: H.Nozaki
- Culture conditions: AF-6, 20° C, 22 µE/m² sec, 1M
Characteristics: Freshwater, Homothallic, Isogamy,
rbcL gene (D89763)
91-421-4
References: 242, 317, 319, 327
- 633
Shirako / Chiba (1991-03)
Unialgal, Clonal, H.Nozaki (1991-05)
Identified by: H.Nozaki
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 1M
Characteristics: Freshwater, Homothallic, Isogamy,
rbcL gene (D89764)
91-504-1
References: 242, 317, 319, 327
- 634
UTEX 2161, Unialgal, Clonal, B.Vandover (1972)
Reidentified by: H.Nozaki
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 1M
Characteristics: Freshwater, Homothallic, Isogamy,
rbcL gene (D89761)
References: 242, 319, 327
- 635
Allahabad / India
UTEX 233, Unialgal, Clonal, O.Pringsheim
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 1M
Characteristics: Freshwater, Type strain of *Carteria
eugametos* Mitra, *rbcL* gene (D89759)
References: 242, 319, 327
- 636
California / USA
UTEX 1032, Unialgal, Clonal, A.Waters
Reidentified by: H.Nozaki
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 1M
Characteristics: Freshwater, Formerly identified as
Carteria olivieri G. S. West (Starr and Zeikus
1993), *rbcL* gene (D89760)
References: 242, 319, 327
- Carteria inversa* (Korshikov) Bourrelly
422
Tsukuba / Ibaraki (1982-11)
Axenic, Clonal, F.Kasai (1982-11)
Identified by: S.Suda
Culture conditions: C, 20° C, 22 µE/m² sec, 3M
Characteristics: Freshwater, *rbcL* gene (D89765)
134-4
References: 242, 319, 327

- 423
Higashihiroshima / Hiroshima (1983-08)
Axenic, Clonal, M.Erata (1983-08)
Identified by: S.Suda
Culture conditions: C, 20° C, 22 µE/m² sec, 3M
Characteristics: Freshwater, *rbcL* gene (D89766)
106
References: 242, 319, 327
- * *Carteria inversa* (Korshikov) Bourrelly
424
See *Carteria cerasiformis* Nozaki et al.
- * *Carteria inversa* (Korshikov) Bourrelly
425
See *Carteria cerasiformis* Nozaki et al.
- Carteria klebsii* (Dangeard) Francé
426
Tsuchiura / Ibaraki (1986-02)
Axenic, Clonal, S.Suda (1986-05)
Identified by: S.Suda
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 2M
Characteristics: Freshwater
SIST7-4
Reference: 242
- Carteria multifilis* (Fresenius) Dill
427
Kashiwa / Chiba (1986)
Axenic, Clonal, M.M.Watanabe (1986)
Identified by: S.Suda
Culture conditions: VT, 20° C, 22 µE/m² sec, 2M
Characteristics: Freshwater
Ca1-2
Reference: 242
- Carteria obtusa* Dill
428
Kashiwa / Chiba (1986-09)
Axenic, Clonal, M.M.Watanabe (1986-09)
Identified by: S.Suda
Culture conditions: C, 20° C, 22 µE/m² sec, 2M
Characteristics: Freshwater, *atpB* gene (AB084323),
rbcL gene (D89769), *psaB* gene (AB084361-3)
Ca-2-1
References: 242, 327, 342
- 429
Tsuchiura / Ibaraki (1986-02)
Axenic, Clonal, M.Kasama (1986-03)
Identified by: S.Suda
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 2M
Characteristics: Freshwater
SIS5-20
Reference: 242
- 430
Kashiwa / Chiba (1986-09)
Axenic, Clonal, M.M.Watanabe (1986-09)
Identified by: S.Suda
Culture conditions: C, 20° C, 22 µE/m² sec, 2M
Characteristics: Freshwater
Ca2-3
Reference: 242
- 431
Tsuchiura / Ibaraki (1986-02)
Axenic, Clonal, S.Suda (1986-05)
Identified by: S.Suda
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 2M
Characteristics: Freshwater
SIST6-3
Reference: 242
- Carteria radiosa* Korshikov ex Pascher
432
Tsukuba / Ibaraki (1985-11)
Axenic, Clonal, S.Suda (1985-11)
Identified by: S.Suda
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 2M
Characteristics: Freshwater, *atpB* gene (AB084322),
rbcL gene (D89770), *psaB* gene (AB084360)
w-5-2
References: 242, 327, 342
- CERATIUM** Schrank: Dinophyceae
- Ceratium fusus* (Ehrenberg) Dujardin
899
Tokyo Bay / Tokyo (2000-06)
Unialgal, Clonal, M.Kawachi (2000-07)
Identified by: M.Kawachi
Culture conditions: f/2, 20° C, 40 µE/m² sec, 1M
Characteristics: Marine, Red tide, Untransportable
- Ceratium hirundinella* (O.F.Müller) Schrank
376
Lake Hinuma / Ibaraki (1986-06)
Unialgal, Clonal, M.M.Watanabe (1986-06)
Identified by: M.M.Watanabe
Culture conditions: URO, 20° C, 32 µE/m² sec, 1M
Characteristics: Brackish, Freshwater, Unstable,

Untransportable
860627-10

CHAETOCEROS Ehrenberg: Bacillariophyceae

Chaetoceros didymus Ehrenberg

586
Hitachi / Ibaraki (1990-09)
Unialgal, Non-clonal, S.Ono (1990-10)
Identified by: S.Ono
Culture conditions: f/2, 15° C, 10 µE/m² sec, 1M
Characteristics: Red tide, Marine
St-4

Chaetoceros sociale Lauder

377
Shitaru Harbor / Shizuoka (1985-05)
Unialgal, Clonal, T.Sawaguchi (1985-05)
Identified by: T.Sawaguchi
Culture conditions: f/2, 5° C, 15 µE/m² sec, 2M
Characteristics: Marine
STHB-4

553

Tokyo Bay / Tokyo (1991-10)
Unialgal, Clonal, S.Ono (1991-10)
Identified by: S.Ono
Culture conditions: f/2, 10° C, 25 µE/m² sec, 2M
Characteristics: Red tide, Marine
T-1

CHAMAESIPHON Braun et Grunow emend. Geitler:
Cyanophyceae

Chamaesiphon polymorphus Geitler

433
Lake Mashu / Hokkaido (1987-09)
Unialgal, Non-clonal, F.Kasai (1987-09)
Identified by: M.M.Watanabe
Culture conditions: CSi, 10° C, 6 µE/m² sec, 2M,
(10° C, 15 µE/m² sec)
Characteristics: Freshwater
M-29
References: 242, 454, 455

Chamaesiphon subglobosus Lemmermann

434
Miyata River / Ibaraki (1987-03)
Unialgal, Non-clonal, F.Kasai (1987-05)
Identified by: N.Takamura

Culture conditions: CSi, CSi+Cu, 20° C, 4 µE/m² sec,
3M, (20° C, 12 µE/m² sec), [Cryopreserved]

Characteristics: Freshwater

2st-2-1

References: 242, 453, 454, 455

CHARACIOCHLORIS Pascher: Chlorophyceae

Characiochloris acuminata Lee et Bold

637
E1 Tahin. Prov. Omo-Saber / Egypt
UTEX 2095, Unialgal, Clonal, F.Hindak (1963)
Identified by: K.W.Lee & H.C.Bold
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 2M
Characteristics: Freshwater, Type strain
References: 242, 316

Characiochloris sasae Nozaki

567
Saiwai-ku, Kawasaki / Kanagawa (1990-10)
Unialgal, Clonal, H.Nozaki (1991-01)
Identified by: H.Nozaki
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 2M
Characteristics: Freshwater, Type strain,
Aplanospore forming, *atpB* gene (AB084331),
rbcL gene (AB084338), *psaB* gene (AB084376)
91-0106-1
References: 242, 316, 342

638

Saiwai-ku, Kawasaki / Kanagawa (1990-10)
Unialgal, Clonal, H.Nozaki (1991-01)
Identified by: H.Nozaki
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 1M
Characteristics: Freshwater, Aplanospore forming,
Endemic in Japan
91-0106-6
References: 242, 316

CHARACIUM A.Braun: Chlorophyceae

Characium angustum A.Braun

639
Kinu River / Tochigi (1987-08)
Unialgal, F.Kasai (1987-09)
Identified by: F.Kasai
Culture conditions: C, 15° C, 6 µE/m² sec, 4M,
(15° C, 15 µE/m² sec)
Characteristics: Freshwater, 18SrDNA analysis

- showed close relationship to *Lobocharacium*
AK-5-2
References: 242, 454
- Characium maximum*** S.Watanabe
154
Sasebo / Nagasaki (1975-08)
Unialgal, Non-clonal, S.Watanabe
Identified by: S.Watanabe
Culture conditions: C(S), 20° C, 4 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Soil, Habitat: Garden Shrine
where *Cryptomeria japonica* was planted
6-EBO-2
References: 242, 548
- Characium polymorphum*** Printz
436
Between Ghorepani and Billethadi / Nepal
(1965-12)
IAM C-340, Unialgal, Clonal, T.Ichimura (1969-07)
Identified by: T.Ichimura
Culture conditions: C(S), 20° C, 4 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Indicator, Freshwater
N-76-0
References: 96, 242
- CHATTONELLA** Biecheler: Raphidophyceae
- Chattonella antiqua*** (Hada) Ono
1
Harima-Nada / Seto Inland Sea (1978-09)
Axenic, Clonal, M.M.Watanabe (1978-09)
Identified by: M.M.Watanabe
Culture conditions: f/2, ESM, 20° C, 32 µE/m² sec,
1M
Characteristics: Red tide, Marine, Untransportable,
COXI gene (AF037990)
Ho-1
References: 27, 81, 105, 109, 110, 111, 112, 113, 114,
175, 202, 204, 229, 261, 272, 273, 274, 275, 276,
277, 278, 279, 280, 281, 282, 292, 462, 537, 566,
570
- 2
Osaka Bay / Osaka (1982-09)
Axenic, Clonal, S.Yamochi
Identified by: S.Yamochi
Culture conditions: f/2, ESM, 20° C, 32 µE/m² sec,
1M
- Characteristics: Red tide, Marine, Untransportable
OCH-a
Reference: 81
- 83
Off Hiketa / Seto Inland Sea (1977-08)
Axenic, Clonal, C.Ono
Culture conditions: f/2, 20° C, 32 µE/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable
KGW-2
References: 81, 482
- 84
Off Hiketa / Seto Inland Sea (1972)
Axenic, Clonal, T.Okaichi
Culture conditions: f/2, 20° C, 32 µE/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable
KGW-6-1
Reference: 81
- 85
Shodo Isl. / Kagawa (1978-07)
Axenic, Clonal, S.Yoshimatsu
Culture conditions: f/2, ESM, 20° C, 32 µE/m² sec,
1M
Characteristics: Red tide, Marine, Untransportable
KGW-8-5
References: 81, 82
- 86
Uranouchi Bay / Kochi (1980-11)
Axenic, Clonal, S.Yoshimatsu
Culture conditions: f/2, ESM, 20° C, 32 µE/m² sec,
1M
Characteristics: Red tide, Marine, Untransportable
KGW-42-4
References: 81, 82, 482
- 113
Naoshima Isl. / Kagawa (1982-07)
Axenic, Clonal, S.Yoshimatsu
Culture conditions: f/2, 20° C, 32 µE/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable
KGW-59-2
References: 6, 81
- 114
Harima-Nada / Seto Inland Sea (1983-08)
Axenic, Clonal, S.Yoshimatsu
Culture conditions: f/2, 20° C, 32 µE/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable
KGW-74-8

- References: 81, 557
- 161
Hiroshima Bay / Hiroshima
Axenic, Clonal
Culture conditions: f/2, 20° C, 32 µE/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable
Hiroshima-70
References: 64, 65
- 557
Hiroshima Bay / Hiroshima (1970-09)
Axenic, Clonal, H.Takayama (1970-09)
Culture conditions: f/2, 20° C, 32 µE/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable
- 558
Mikawa Bay / Aichi
Axenic, Clonal, S.Toriumi
Identified by: S.Toriumi
Culture conditions: f/2, 20° C, 32 µE/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable
- Chattonella marina* (Subrahmanyam) Hara et Chihara
3
Osaka Bay / Osaka (1982-08)
Axenic, Clonal, S.Yamochi (1982-08)
Culture conditions: f/2, 20° C, 32 µE/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable
OCH-m
References: 461, 462, 482
- 14
Harima-Nada / Seto Inland Sea (1983-02)
Axenic, Clonal, M.M.Watanabe
Identified by: M.M.Watanabe
Culture conditions: f/2, 20° C, 32 µE/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable
H-53-11
References: 81, 557
- 115
Kinko Bay / Kagoshima (1978-06)
Axenic, Clonal, Aramaki/Yoshimatsu
Culture conditions: f/2, ESM, 20° C, 32 µE/m² sec,
1M
Characteristics: Red tide, Marine, Untransportable
KGW-9-1
Reference: 81
- 116
Harima-Nada / Seto Inland Sea (1981-07)
Axenic, Clonal, S.Yoshimatsu
Culture conditions: f/2, 20° C, 32 µE/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable
KGW-46-7
Reference: 81
- 117
Naoshima Isl. / Kagawa (1982-07)
Axenic, Clonal, S.Yoshimatsu
Culture conditions: f/2, 20° C, 32 µE/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable
KGW-58-3
Reference: 81
- 118
Harima-Nada / Seto Inland Sea (1983-07)
Axenic, Clonal, S.Yoshimatsu
Culture conditions: f/2, 20° C, 32 µE/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable
KGW-75-2
References: 65, 81, 82, 396, 482
- 121
Kagoshima Bay / Kagoshima (1982)
Axenic, Clonal, T.Aramaki (1982)
Culture conditions: f/2, 20° C, 32 µE/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable
KGO-57-1
References: 81, 82, 283, 482
- 559
Maizuru Bay / Kyoto (1975-10)
Axenic, Clonal, H. Takayama (1975-10)
Identified by: S.Yoshimatsu
Culture conditions: f/2, 20° C, 32 µE/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable
- Chattonella minima* Y.Hara et Chihara
848
Kii Channel / Tokushima (1983-09)
Unialgal, Clonal, M.Yoshida (1983-09)
Identified by: Y.Hara
Culture conditions: f/2, 20° C, 32 µE/m² sec, 1M
Characteristics: Marine, Red tide, Type strain,
Untransportable
Reference: 65
- Chattonella ovata* Hara et Chihara
603
Harima-Nada / Seto Inland Sea (1984-04)
Axenic, Clonal, I.Imai
Identified by: H.Nozaki

Culture conditions: f/2, 20° C, 32 µE/m² sec, 1M
Characteristics: Marine, Untransportable
References: 63, 65

671

Harima-Nada / Seto Inland Sea (1982-07)
Axenic, Clonal, S.Yoshimatsu (1982-07)
Identified by: S.Yoshimatsu
Culture conditions: ESM, 20° C, 40 µE/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable

849

Hiroshima Bay / Hiroshima
Unialgal, Clonal, H.Takayama
Identified by: Y.Hara
Culture conditions: f/2, 20° C, 32 µE/m² sec, 1M
Characteristics: Marine, Red tide, Type strain,
Untransportable
Reference: 65

Chattonella verruculosa Hara et Chihara

670

Harima-Nada / Seto Inland Sea (1987-07)
Unialgal, Clonal, S.Yoshimatsu (1987-07)
Identified by: S.Yoshimatsu
Culture conditions: ESM, 20° C, 40 µE/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable
Reference: 65

850

Shodo Isl. / Kagawa (1989-01)
Unialgal, Clonal, S.Yoshimatsu (1989-01)
Identified by: Y.Hara
Culture conditions: f/2, ESM, 15° C, 15 µE/m² sec,
20D
Characteristics: Marine, Red tide, Untransportable

CHILOMONAS Ehrenberg: Cryptophyceae

Chilomonas paramecium Ehrenberg

715

Sugadaira / Nagano (1985-11)
Axenic, Clonal, M.Erata (1985-11)
Identified by: M.Erata
Culture conditions: CYT, 15° C, 6 µE/m² sec, 1M
Characteristics: Freshwater,
18SrRNA gene (AB073108)
#00210
References: 29, 457

766

Lake Jusan-ko / Aomori (1987-07)
Unialgal, Clonal, M.Erata (1987-07)
Identified by: M.Erata
Culture conditions: CYT, 15° C, 6 µE/m² sec, 1M
Characteristics: Freshwater
#00318

767

Lake Jusan-ko / Aomori (1987-07)
Unialgal, Clonal, M.Erata (1987-07)
Identified by: M.Erata
Culture conditions: CYT, 15° C, 6 µE/m² sec, 1M
Characteristics: Freshwater
#00319

CHLAMYDOMONAS Ehrenberg: Chlorophyceae

Chlamydomonas augustae Skuja

var. *ellipsoidea* S.Watanabe

158

Sumatra / Indonesia (1979-08)
Axenic, Clonal, S.Watanabe
Identified by: S.Watanabe
Culture conditions: C(S), 20° C, 4 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Soil
ASE-242
References: 166, 242, 548, 549

Chlamydomonas coccoides Butcher

1021

Osaka Bay, Kobe / Hyogo (2000-11)
Unialgal, Clonal, M.Moriya (2000-12)
Identified by: M.Moriya
Culture conditions: ESM, 20° C, 12 µE/m² sec, 1M
Characteristics: Marine
#95

Chlamydomonas debaryana Goroschankin

var. *crystata* Ettl

884

Nordmähren / Czech
UTEX 1134, Unialgal, Clonal
Culture conditions: C, 20° C, 12 µE/m² sec, 2M
Characteristics: Freshwater, Type strain, *atpB* gene
(AB014034), *rbcL* gene (D86838), *psaA* gene
(AB044417-8), *psaB* gene (AB044469), *psbC*
gene (AB044527)
References: 324, 337, 340

Chlamydomonas fasciata Ettl

437

Tsukuba / Ibaraki (1984-05)

Axenic, Clonal, S.Suda (1984-05)

Identified by: S.Suda

Culture conditions: C, 20° C, 22 µE / m² sec, 2M

Characteristics: Freshwater

H-3-4-2

Reference: 242

Chlamydomonas kuwadae Geiloff

968

Lake Nojiri / Nagano (1989-12)

Unialgal, Clonal, H. Nozaki (1990-01)

Identified by: H. Nozaki

Culture conditions: C, 20° C, 22 µE / m² sec, 1M

Characteristics: Freshwater, *atpB* gene (AB084318),

rbcl gene (AB084334), *psaB* gene (AB084356)

92-514-H-13

Reference: 342

Chlamydomonas monadina Stein var. *monadina*

438

Lake Kasumigaura / Ibaraki (1983-07)

Axenic, Clonal, S.Suda (1983-07)

Identified by: S.Suda

Culture conditions: C, 20° C, 22 µE / m² sec, 2M

Characteristics: Freshwater

Kas-7

Reference: 242

Chlamydomonas monticola S.Watanabe

157

Mt. Shiroumadake / Nagano (1980-08)

Unialgal, Clonal, S.Watanabe

Identified by: S.Watanabe

Culture conditions: C(S), 20° C, 4 µE / m² sec, 3M,

(25° C, 30 µE / m² sec)

Characteristics: Soil

KUC80-4

References: 242, 378, 548

* *Chlamydomonas neglecta* (Pascher) Korshikov

See *Chlorogonium neglectum* Pascher

Chlamydomonas noctigama Korschikov

1048

Neuglobsow, Brandenburg / Germany (2001-08)

Unialgal, Clonal, H.Nozaki (2001-08)

Identified by: H.Nozaki

Culture conditions: AF-6, 20° C, 22 µE / m² sec, 2M

Characteristics: Freshwater, *atpB* gene (AB101502),

rbcl gene (AB101506-7), *psaB* gene (AB101513)

2001-814-C10

Reference: 338

Chlamydomonas parkeae Ettl

440

Izumi Bay / Nagasaki (1986-03)

Unialgal, Clonal, S.Suda (1986-03)

Identified by: S.Suda

Culture conditions: f/2, 20° C, 22 µE / m² sec, 2M

Characteristics: Marine

I-29

References: 176, 242, 403, 410

1022

Mitsu Bay, Akitsu / Hiroshima (2001-03)

Unialgal, Clonal, M.Moriya (2001-03)

Identified by: M.Moriya

Culture conditions: ESM, 20° C, 12 µE / m² sec, 1M

Characteristics: Marine

#97

Chlamydomonas pulsatilla Wollenweber

122

Muroran / Hokkaido (1966-05)

IAM C-385, Axenic, Clonal, T.Ichimura (1966-05)

Identified by: T.Ichimura

Culture conditions: P35, 20° C, 4 µE / m² sec, 2M,

(25° C, 30 µE / m² sec)

Characteristics: Freshwater

MKF-50

References: 95, 96, 139, 242, 530, 549

Chlamydomonas tetragama (Bohlin) Ettl

446

Tsuchiura / Ibaraki (1985-04)

Axenic, Clonal, S.Suda (1985-04)

Identified by: S.Suda

Culture conditions: C, 20° C, 22 µE / m² sec, 2M

Characteristics: Freshwater, Neotype strain of

Chlamydomonas tetragama (Bohlin) Ettl,

Formerly identified as *Chlorogonium*

metamorphum Skuja, *atpB* gene (AB084319),

rbcl gene (AJ001880), *psaB* gene (AB084357)

413D4-4

References: 242, 320, 339, 342, 483

CHLORARACHNION Geitler: Chlorarachniophyceae

Chlorarachnion reptans Geitler

624

Puerto Penasco / Mexico

CCAP 815/1, Unialgal, Norris (1966)

Culture conditions: ESM, 20° C, 32 µE/m² sec, 2M

Characteristics: Marine

CHLORELLA Beijerinck: Trebouxiophyceae

* ***Chlorella fusca*** Shihira et Krauss var. ***fusca***

See *Scenedesmus abundans* Kessler et al.

Chlorella protothecoides (Krüger) Kalina

629

Watarase River / Gunma (1987-08)

Unialgal, Clonal, F.Kasai (1987-08)

Identified by: F.Kasai

Culture conditions: C, 15° C, 6 µE/m² sec, 6M,
(15° C, 15 µE/m² sec)

Characteristics: Freshwater, 18SrDNA analysis
showed close relationship to *Lobosphaera*
tirolensis (ASIB S234)

AT1-7

References: 242, 454

* ***Chlorella pyrenoidosa*** Chick

See *Graesiella emersonii*

(Shihira et Kraus) Nozaki et al.

Chlorella saccharophila (Krueger) Migula

640

Otarunai River / Hokkaido (1987-07)

Unialgal, F.Kasai (1987-07)

Identified by: F.Kasai

Culture conditions: C, 10° C, 6 µE/m² sec, 6M,
(10° C, 15 µE/m² sec)

Characteristics: Freshwater, 18SrDNA analysis
showed close relationship to *C. Saccharophila*
(SAG 211-9a)

Tst-8-2

References: 242, 454

Chlorella vulgaris Beijerinck var. ***vulgaris***

227

IAM C-30, Axenic, Clonal, A.Watanabe

Reidentified by: H.Nozaki

Culture conditions: C(S), 20° C, 4 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)

Characteristics: Freshwater, *COXI* gene (D63763,
AB011523)

References: 76, 96, 117, 155, 168, 228, 242, 244, 329,
365, 405, 481, 491, 500, 549, 576

641

Miyata River / Ibaraki (1987-02)

Unialgal, Clonal, F.Kasai (1987-03)

Identified by: F.Kasai

Culture conditions: C, 20° C, 8 µE / m² sec, 6M

Characteristics: Freshwater, 18SrDNA analysis
showed close relationship to NIES-686

1st-3-26

References: 242, 453, 454

642

Miyata River / Ibaraki (1987-02)

Unialgal, Clonal, F.Kasai (1987-03)

Identified by: F.Kasai

Culture conditions: C, 20° C, 8 µE / m² sec, 6M

Characteristics: Freshwater, 18SrDNA analysis
showed close relationship to NIES-686

1st-2-17

References: 242, 453, 454

686

Delft / Holland

IAM C-207 (= CCAP 211/11b = SAG 211-11b),

Unialgal, Clonal, M.W.Beijerinck (1892)

Culture conditions: C(S), 20° C, 4 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)

Characteristics: Freshwater, Type strain

References: 242, 329

Chlorella sp.

1269

Banzu Salt Marsh, Kisarazu / Chiba (2002-05)

Unialgal, Clonal, M.Moriya (2002-06)

Identified by: M.Moriya

Culture conditions: ESM, 20° C, 20 µE/m² sec, 1M

Characteristics: Marine

M-56

CHLOROGONIUM Ehrenberg: Chlorophyceae

Chlorogonium capillatum Nozaki et al.

692

Miyatoko Mire / Fukushima (1992-04)

Axenic, Clonal, H.Nozaki (1992-05)

Identified by: H.Nozaki

Culture conditions: AF-6, 10° C, 25 µE/m² sec, 1M

Characteristics: Freshwater, Type strain,

Monoecious, Isogamy, Paedogamy,

- rbcL* gene (AB010230)
92-912-1
References: 242, 339
- 742
Czechoslovakia
UTEX 201, CCAP 12/4, Unialgal, Clonal, H.Meyer
Reidentified by: H.Nozaki
Culture conditions: AF-6, 20° C, 12 μE/m² sec, 2M
Characteristics: Freshwater, Formerly identified as
Chlorogonium tetragamum Bohlin, *rbcL* gene
(AB010234)
Reference: 339
- 743
Leveret, MA / USA
UTEX 1643, Unialgal, Clonal, P.Kugrens
Reidentified by: H.Nozaki
Culture conditions: AF-6, 20° C, 12 μE/m² sec, 2M
Characteristics: Freshwater, Formerly identified as
Chlorogonium tetragamum Bohlin, *rbcL* gene
(AB010235)
Reference: 339
- 744
Germany
UTEX 2160, Unialgal, Clonal
Reidentified by: H.Nozaki
Culture conditions: AF-6, 20° C, 12 μE/m² sec, 2M
Characteristics: Freshwater, Formerly identified as
Chlorogonium sp., *rbcL* gene (AB010236)
Reference: 339
- 745
Berlin / Germany
CCAP 12/2A, Unialgal, Clonal, Hartmann
Reidentified by: H.Nozaki
Culture conditions: AF-6, 20° C, 12 μE/m² sec, 2M
Characteristics: Freshwater, Formerly identified as
Chlorogonium elongatum Dangeard, *rbcL* gene
(AB010231)
Reference: 339
- 746
Cape Flats / South Africa
CCAP 12/2B, Unialgal, Clonal, George (1948)
Reidentified by: H.Nozaki
Culture conditions: AF-6, 20° C, 12 μE/m² sec, 2M
Characteristics: Freshwater, Formerly identified as
Chlorogonium elongatum Dangeard, *rbcL* gene
(AB010232)
Reference: 339
- 747
CCAP 12/5, Unialgal, Clonal, E.G.Pringsheim
Reidentified by: H.Nozaki
Culture conditions: AF-6, 20° C, 12 μE/m² sec, 2M
Characteristics: Freshwater, Formerly identified as
Chlorogonium sp., *rbcL* gene (AB010233)
Reference: 339
- 748
near Prague / Czechoslovakia
SAG 12-2e, Unialgal, Clonal, E.G.Pringsheim (1936)
Reidentified by: H.Nozaki
Culture conditions: AF-6, 20° C, 12 μE/m² sec, 2M
Characteristics: Freshwater, Formerly identified as
Chlorogonium elongatum (Dangeard) Dangeard,
rbcL gene (AB010237)
Reference: 339
- 749
SAG 47.84, Unialgal, Clonal, L.Provasoli
Reidentified by: H.Nozaki
Culture conditions: AF-6, 20° C, 12 μE/m² sec, 2M
Characteristics: Freshwater, Formerly identified as
Chlorogonium euchlorum Ehrenberg, *rbcL* gene
(AB010238)
Reference: 339
- 750
Leveret, MA / USA
SAG 4.93, Unialgal, Clonal, P.Kugrens
Reidentified by: H.Nozaki
Culture conditions: AF-6, 20° C, 12 μE/m² sec, 2M
Characteristics: Freshwater, Formerly identified as
Chlorogonium tetragamum Bohlin, *rbcL* gene
(AB010239)
Reference: 339
- Chlorogonium elongatum* (Dangeard) Dangeard
751
Caldbeck / U.K.
IAM C-293, UTEX 204, Unialgal, Clonal,
E.G.Pringsheim
Reidentified by: H.Nozaki
Culture conditions: AF-6, 20° C, 12 μE/m² sec, 2M
Characteristics: Freshwater, Formerly identified as
Chlorogonium acus, *rbcL* gene (AJ001881)
Reference: 339
- 752
Austin, TX / USA
UTEX 2571, Unialgal, Clonal, M.Wood (1990)
Reidentified by: H.Nozaki

- Culture conditions: AF-6, 20° C, 12 µE/m² sec, 2M
 Characteristics: Freshwater, Formerly identified as
Chlorogonium sp., *rbcL* gene (AB010240)
 Reference: 339
- 753
 Austin, TX / USA
 UTEX 2572, Unialgal, Clonal, M.Wood (1990)
 Reidentified by: H.Nozaki
 Culture conditions: AF-6, 20° C, 12 µE/m² sec, 2M
 Characteristics: Freshwater, Formerly identified as
Chlorogonium sp., *rbcL* gene (AB010241)
 Reference: 339
- Chlorogonium euchlorum*** (Ehrenberg) Ehrenberg
 754
 Schickley, NE / USA
 UTEX 1639, Unialgal, Clonal, P.Kugrens
 Reidentified by: H.Nozaki
 Culture conditions: AF-6, 20° C, 12 µE/m² sec, 2M
 Characteristics: Freshwater, Formerly identified as
Chlorogonium elongatum Dangeard, *rbcL* gene
 (AB010226)
 Reference: 339
- 755
 Germany
 UTEX 2010, Unialgal, Clonal, D.G.Müller
 Reidentified by: H.Nozaki
 Culture conditions: AF-6, 20° C, 12 µE/m² sec, 2M
 Characteristics: Freshwater, Formerly identified as
Chlorogonium sp., *rbcL* gene (AB010227)
 Reference: 339
- 756
 Germany
 UTEX 2011, Unialgal, Clonal, D.G.Müller
 Reidentified by: H.Nozaki
 Culture conditions: AF-6, 20° C, 12 µE/m² sec, 2M
 Characteristics: Freshwater, Formerly identified as
Chlorogonium sp., *rbcL* gene (AB010228)
 Reference: 339
- 757
 Amiens / France
 CCAP 12/2C, Unialgal, Clonal, E.G.Pringsheim
 (1949)
 Reidentified by: H.Nozaki
 Culture conditions: AF-6, 20° C, 12 µE/m² sec, 2M
 Characteristics: Freshwater, Formerly identified as
Chlorogonium elongatum (Dangeard) Dangeard,
rbcL gene (AB010224)
- Reference: 339
- 758
 Hirschberg / former Czechoslovakia
 CCAP 12/3, Unialgal, Clonal, Mainx (1936)
 Reidentified by: H.Nozaki
 Culture conditions: AF-6, 20° C, 12 µE/m² sec, 2M
 Characteristics: Freshwater, Formerly identified as
Chlorogonium euchlorum Ehrenberg, *rbcL* gene
 (AJ001882)
 Reference: 339
- 759
 CCAP 12/6, Unialgal, Clonal, E.G.Pringsheim
 Reidentified by: H.Nozaki
 Culture conditions: AF-6, 20° C, 12 µE/m² sec, 2M
 Characteristics: Freshwater, Formerly identified as
Chlorogonium sp., *rbcL* gene (AB010225)
 Reference: 339
- 760
 Cape Flats / South Africa
 SAG 12-2d, Unialgal, Clonal, E.G.Pringsheim (1951)
 Reidentified by: H.Nozaki
 Culture conditions: AF-6, 20° C, 12 µE/m² sec, 2M
 Characteristics: Freshwater, Formerly identified as
Chlorogonium elongatum (Dangeard) Dangeard,
rbcL gene (AB010229)
 Reference: 339
- Chlorogonium fusiforme*** Matvienko
 123
 Niseko / Hokkaido (1964-07)
 IAM C-349, Axenic, Clonal, T.Ichimura (1964-07)
 Reidentified by: H.Nozaki
 Culture conditions: AF-6, 20° C, 4 µE/m² sec, 2M,
 (25° C, 30 µE/m² sec)
 Characteristics: Freshwater, Homothallic, Formerly
 identified as *Chlorogonium metamorphum* Skuja,
atpB gene (AB084329), *rbcL* gene (AB010242),
psaB gene (AB084370)
 MKF-14
 References: 96, 242, 320, 339, 342
- Chlorogonium kasakii*** Nozaki
 761
 Cambria / U.K.
 CCAP 12/8, Unialgal, Clonal, Jaworski
 Reidentified by: H.Nozaki
 Culture conditions: AF-6, 20° C, 12 µE/m² sec, 2M
 Characteristics: Freshwater, Formerly identified as
Chlorogonium sp., Type strain, *rbcL* gene

(AB010244)
Reference: 339

* *Chlorogonium metamorphum* Skuja
123
See *Chlorogonium fusiforme* Matwienko

* *Chlorogonium metamorphum* Skuja
446
See *Chlamydomonas tetragama* (Bohlin) Ettl

Chlorogonium neglectum Pascher
Syn. *Chlamydomonas neglecta* (Pascher) Korshikov
439

Tsukuba / Ibaraki (1984-05)
Axenic, Clonal, S.Suda (1984-05)
Reidentified by: H.Nozaki
Culture conditions: C, 20° C, 22 µE/m²sec, 2M
Characteristics: Freshwater, *atpB* gene (AB084326),
rbcl gene (AB010243), *psaB* gene (AB084366)
T-4-19
References: 129, 242, 339, 342

CHLOROMONAS Gobi emend. Wille: Chlorophyceae

Chloromonas insignis (Anachin) Gerloff et Ettl
447
Lake Kasumigaura / Ibaraki (1983-08)
Axenic, Clonal, S.Suda (1983-08)
Identified by: S.Suda
Culture conditions: C, 20° C, 22 µE/m²sec, 2M
Characteristics: Freshwater, *atpB* gene (AB084313),
rbcl gene (AB022226), *psaB* gene (AB084348)
Kas-8
References: 242, 245, 342

CHLOROSARCINOPSIS Herndon: Chlorophyceae

Chlorosarcinopsis caeca S.Watanabe
160
Tottori (1972-05)
Unialgal, Non-clonal, S.Watanabe
Identified by: S.Watanabe
Culture conditions: C(S), 20° C, 4 µE/m²sec, 3M,
(25° C, 30 µE/m²sec)
Characteristics: Soil
TOT-24
References: 242, 548

Chlorosarcinopsis delicata S.Watanabe
153
Kyoto / Kyoto (1975-04)
Unialgal, Clonal, S.Watanabe
Identified by: S.Watanabe
Culture conditions: C(S), 20° C, 4 µE/m²sec, 3M,
(25° C, 30 µE/m²sec)
Characteristics: Soil
KUC3-6
References: 242, 548

CHROOGLOEOCYSTIS I.I.Brown et Cooksey:
Cyanophyceae

Chroogloeoecystis siderophila I.I.Brown et Cooksey
1031
LaDuke Hot Spring, Montana / USA (2001-07)
Unialgal, Clonal, I.I.Brown (2001-12)
Identified by: I.I.Brown and D.Mummey
Culture conditions: DH+Fe, 25° C, 15 µE/m²sec, 3M
Characteristics: Freshwater, Biofilm process,
Thermophilic, 16SrRNA gene (AY380791)
5.2 s.c.1

CHROOMONAS Hansgirg: Cryptophyceae

Chroomonas caudata Geitler
712
Funada-ike / Chiba (1985-09)
Unialgal, Clonal, M.Erata (1985-09)
Identified by: M.Erata
Culture conditions: AF-6, 15° C, 15 µE/m²sec, 2M
Characteristics: Freshwater
#00171
Reference: 31

Chroomonas coerulea (Geitler) Skuja
713
Sugadaira / Nagano (1985-11)
Unialgal, Clonal, M.Erata (1985-11)
Identified by: M.Erata
Culture conditions: AF-6, 15° C, 15 µE/m²sec, 2M
Characteristics: Freshwater
#00191
References: 29, 31

714
Sugadaira / Nagano (1985-11)
Unialgal, Clonal, M.Erata (1985-11)
Identified by: M.Erata

Culture conditions: AF-6, 15° C, 15 µE/m² sec, 2M
Characteristics: Freshwater
#00217
References: 29, 31, 32

1004

Tomakomai / Hokkaido (1999-11)
Unialgal, Clonal, M.Moriya (1999-11)
Identified by: M.Moriya
Culture conditions: AF-6, 15° C, 20 µE/m² sec, 2M
Characteristics: Freshwater
#74

Chroomonas collegionis Butcher
703

River Thames, Essex / U.K.
CCAP 978/11, Unialgal, Clonal, B.W.Butcher (1961)
Identified by: B.W.Butcher
Culture conditions: ESM, 15° C, 20 µE/m² sec, 1M
Characteristics: Marine, Type strain

Chroomonas dispersa Butcher
704

Bristol Channel / U.K.
CCAP 978/10, Unialgal, Clonal, B.W.Butcher
(1960-08)
Identified by: B.W.Butcher
Culture conditions: ESM, 15° C, 20 µE/m² sec, 1M
Characteristics: Marine, Type strain

Chroomonas nordstedtii Hansgirg
706

Sugadaira / Nagano (1976-09)
Axenic, Clonal, I.Inouye (1976-09)
Identified by: M.Erata
Culture conditions: AF-6, 15° C, 15 µE/m² sec, 2M
Characteristics: Freshwater
#00165
References: 29, 30, 31

707

Funada-ike / Chiba (1985-09)
Unialgal, Clonal, M.Erata (1985-09)
Identified by: M.Erata
Culture conditions: AF-6, 15° C, 15 µE/m² sec, 2M
Characteristics: Freshwater
#00173
References: 31, 32

708

Sapporo / Hokkaido (1987-09)
Unialgal, Clonal, M.Erata (1987-09)

Identified by: M.Erata
Culture conditions: AF-6, 15° C, 15 µE/m² sec, 2M
Characteristics: Freshwater
#00324
Reference: 31

709

Sapporo / Hokkaido (1987-09)
Unialgal, Clonal, M.Erata (1987-09)
Identified by: M.Erata
Culture conditions: AF-6, 15° C, 15 µE/m² sec, 2M
Characteristics: Freshwater
#00330
Reference: 31

710

Sapporo / Hokkaido (1987-09)
Unialgal, Clonal, M.Erata (1987-09)
Identified by: M.Erata
Culture conditions: AF-6, 15° C, 15 µE/m² sec, 2M
Characteristics: Freshwater
#00331
Reference: 31

711

Mitsukaido / Ibaraki (1987-01)
Unialgal, Clonal, S.Suda (1987-12)
Identified by: M.Erata
Culture conditions: AF-6, 15° C, 15 µE/m² sec, 2M
Characteristics: Freshwater
#00354

Chroomonas placoidea Butcher
705

Yorkshire / U.K.
CCAP 978/8, Unialgal, Clonal, B.W.Butcher (1959)
Identified by: B.W.Butcher
Culture conditions: ESM, 15° C, 20 µE/m² sec, 1M
Characteristics: Marine, Type strain
Reference: 30

CHRYSOCHROMULINA Lackey: Prymnesiophyceae

Chrysochromulina hirta Manton
741

Chiba Port / Chiba (1986-06)
Unialgal, Clonal, M.Kawachi (1986-07)
Identified by: M.Kawachi
Culture conditions: ESM, 15° C, 35 µE/m² sec, 1M
Characteristics: Marine, Unstable, Untransportable
CH1

Chrysochromulina parva Lackey
562

NIES / Tsukuba (1992-02)
Unialgal, Clonal, N.Hatakeyama (1992-03)
Identified by: M.Kawachi
Culture conditions: AF-6, 15° C, 35 µE/m² sec, 1M
Characteristics: Freshwater, Unstable,
Untransportable

Chrysochromulina quadrikonta Kawachi et Inouye
998

Toba / Mie (2001-01)
Unialgal, Clonal, N.Hata (2001-01)
Identified by: I.Inouye
Culture conditions: MNK, 22° C, 15 µE/m² sec, 10D
Characteristics: Marine, Red tide
CQ13T

CLOSTERIUM Nitzsch: Charophyceae

Closterium acerosum Ehrenberg ex Ralfs
124

Daramshara / Nepal (1965-10)
Axenic, Clonal, T.Ichimura
Identified by: T.Ichimura
Culture conditions: C, 20° C, 8 µE/m² sec, 3M,
(20° C, 12 µE/m² sec)
Characteristics: Freshwater
N-20-1
References: 91, 242

125

Rukumkot / Nepal (1965-10)
Axenic, Clonal, T.Ichimura
Identified by: T.Ichimura
Culture conditions: C, 20° C, 8 µE/m² sec, 3M,
(20° C, 12 µE/m² sec)
Characteristics: Freshwater,
18SrRNA gene (AF352230)
N-25-22
References: 25, 91, 242

127

Sapporo / Hokkaido
IAM C-435, Axenic, Clonal, Y.Nishihama
Identified by: Y.Nishihama
Culture conditions: C, 20° C, 8 µE/m² sec, 3M,
(20° C, 12 µE/m² sec)
Characteristics: Freshwater, Homothallic
H-2-2

References: 91, 96, 242

448

IAM C-314, UTEX 1075, Axenic, Clonal
Culture conditions: C, 20° C, 8 µE/m² sec, 3M,
(20° C, 12 µE/m² sec)
Characteristics: Freshwater
References: 96, 242

Closterium aciculare T.West
var. *subpronum* W. et G.S.West
258

Lake Biwa / Shiga (1983-12)
Axenic, Clonal, M.M.Watanabe (1983-12)
Identified by: M.M.Watanabe
Culture conditions: CA, 20° C, 32 µE/m² sec, 2M
Characteristics: Water bloom, Freshwater,
Heterothallic, Mating type +, Crosses with
NIES-259 and NIES-260
Bca-25
References: 21, 242

259

Lake Biwa / Shiga (1983-12)
Axenic, Clonal, M.M.Watanabe (1983-12)
Identified by: M.M.Watanabe
Culture conditions: CA, 20° C, 32 µE/m² sec, 2M
Characteristics: Water bloom, Freshwater,
Heterothallic, Mating type -, Crosses with
NIES-258
Bca-26
Reference: 242

Closterium calosporum Wittrock var. *calosporum*
271

Vermont / U.S.A.
IAM C-318, Unialgal, Clonal, P.W.Cook
Culture conditions: AF-6, 20° C, 8 µE/m² sec, 3M,
(20° C, 25 µE/m² sec)
Characteristics: Freshwater,
18SrRNA gene (AF352225)
References: 25, 96, 102, 242, 502, 503

Closterium calosporum Wittrock
var. *galiciense* Gutwinski

128

Ibaraki
Axenic, Clonal, M.M.Watanabe
Identified by: M.Watanabe
Culture conditions: CA, 20° C, 8 µE/m² sec, 3M,
(20° C, 25 µE/m² sec)

- Characteristics: Freshwater, Heterothallic,
Mating type –, Crosses with NIES-162
IB-21-20
Reference: 242
- 162
Ibaraki
Unialgal, Clonal, M.M.Watanabe
Identified by: M.M.Watanabe
Culture conditions: CA, 20° C, 8 μ E/m² sec, 3M,
(25° C, 15 μ E/m² sec)
Characteristics: Freshwater, Heterothallic,
Mating type +, Crosses with NIES-128, NIES-163
and NIES-168
IB-21-21
Reference: 242
- 163
Ginama / Okinawa (1973-06)
IAM C-455, Axenic, Clonal, T.Ichimura (1973-10)
Identified by: M.Watanabe
Culture conditions: CA, 20° C, 8 μ E/m² sec, 3M,
(20° C, 25 μ E/m² sec)
Characteristics: Freshwater, Heterothallic,
Mating type –, Crosses with NIES-162, NIES-164
and NIES-165
R-5-3
References: 102, 242, 502, 503
- 164
Ginama / Okinawa (1973-06)
IAM C-454, Unialgal, Clonal, T.Ichimura (1973-10)
Identified by: M.Watanabe
Culture conditions: CA, 20° C, 8 μ E/m² sec, 3M,
(20° C, 25 μ E/m² sec)
Characteristics: Freshwater, Heterothallic
Mating type +, Crosses with NIES-163 and
NIES-166
R-5-2
References: 102, 242, 502, 503
- 165
Iriomote Isl. / Okinawa (1973-03)
IAM C-457, Axenic, Clonal, T.Ichimura (1973-10)
Identified by: M.Watanabe
Culture conditions: CA, 20° C, 8 μ E/m² sec, 3M,
(25° C, 15 μ E/m² sec)
Characteristics: Freshwater, Heterothallic,
Mating type +, Crosses with NIES-163, NIES-166
and NIES-168, 18SrRNA gene (AF352239)
R-11-6
- References: 25, 102, 242, 502, 503
- 166
Kagawa-cho / Kagawa (1974-09)
Axenic, Clonal, T.Ichimura
Identified by: M.Watanabe
Culture conditions: CA, 20° C, 8 μ E/m² sec, 3M,
(20° C, 25 μ E/m² sec)
Characteristics: Freshwater, Heterothallic,
Mating type –, Crosses with NIES-164, NIES-165
and NIES-167
J5-56-11
Reference: 242
- 167
Kagawa-cho / Kagawa (1974-09)
Axenic, Clonal, T.Ichimura
Identified by: M.Watanabe
Culture conditions: CA, 20° C, 8 μ E/m² sec, 3M,
(20° C, 25 μ E/m² sec)
Characteristics: Freshwater, Heterothallic,
Mating type +, Crosses with NIES-166
J5-56-12
Reference: 242
- 168
Iriomote Isl. / Okinawa (1973-03)
Axenic, Clonal, T.Ichimura
Identified by: M.Watanabe
Culture conditions: CA, 20° C, 8 μ E/m² sec, 3M,
(20° C, 25 μ E/m² sec)
Characteristics: Freshwater, Heterothallic,
Mating type –, Crosses with NIES-165
R-11-5
References: 102, 242, 502, 503
- Closterium calosporum* Wittrock
var. *himalayense* M.Watanabe
- 169
Shewaden / Nepal (1972-06)
Axenic, Clonal, M.M.Watanabe
Identified by: M.Watanabe
Culture conditions: CA, 20° C, 8 μ E/m² sec, 3M,
(20° C, 25 μ E/m² sec)
Characteristics: Freshwater, Homothallic
N-134-5
References: 242, 502, 503
- 170
Suke / Nepal (1972-06)
Unialgal, Clonal, M.M.Watanabe

Identified by: M.Watanabe
Culture conditions: CA, 20° C, 8 µE/m² sec, 3M,
(20° C, 25 µE/m² sec)
Characteristics: Freshwater, Homothallic,
18SrRNA gene (AF352229)
N-143-19
References: 25, 242

171
Suke / Nepal (1972-06)
Unialgal, Clonal, M.M.Watanabe
Identified by: M.Watanabe
Culture conditions: CA, 20° C, 8 µE/m² sec, 3M,
(20° C, 25 µE/m² sec)
Characteristics: Freshwater, Homothallic
N-147-3
References: 157, 242, 502

336
Suke / Nepal (1972-06)
Axenic, Clonal, M.M.Watanabe
Identified by: M.Watanabe
Culture conditions: CA, 22° C, 15 µE/m² sec, 2M
Characteristics: Freshwater, Homothallic
N-147-12
References: 242, 502

Closterium ehrenbergii Meneghini ex Ralfs
228
Ebina / Kanagawa (1975-12)
Axenic, Clonal, T.Ichimura
Identified by: T.Ichimura
Culture conditions: C, 20° C, 8 µE/m² sec, 3M,
(25° C, 15 µE/m² sec)
Characteristics: Freshwater, Heterothallic,
Mating type +, Mating group B
Crosses with NIES-229
KK-33-1
References: 54, 55, 56, 78, 93, 94, 97, 98, 100, 116,
157, 158, 176, 242, 347

229
Ebina / Kanagawa (1975-12)
Axenic, Clonal, T.Ichimura
Identified by: T.Ichimura
Culture conditions: C, 20° C, 8 µE/m² sec, 3M,
(20° C, 12 µE/m² sec)
Characteristics: Freshwater, Heterothallic,
Mating type -, Mating group B
Crosses with NIES-228
KK-33-6

References: 54, 55, 56, 78, 93, 94, 97, 98, 100, 157,
158, 242, 347, 348

Closterium gracile Brébisson ex Ralfs
179
Kathmandu / Nepal (1968-05)
IAM C-444, Axenic, Clonal, T.Ichimura
Identified by: T.Ichimura
Culture conditions: CA, 20° C, 8 µE/m² sec, 3M,
(20° C, 12 µE/m² sec)
Characteristics: Freshwater, Heterothallic,
Mating type +, Crosses with NIES-180
N-90-58
References: 91, 96, 242

180
Kathmandu / Nepal (1968-05)
IAM C-445, Unialgal, Clonal, T.Ichimura
Identified by: T.Ichimura
Culture conditions: CA, 20° C, 8 µE/m² sec, 3M,
(20° C, 12 µE/m² sec)
Characteristics: Freshwater, Heterothallic,
Mating type -, Crosses with NIES-179,
18SrRNA gene (AF352237)
N-90-59
References: 25, 91, 96, 242

Closterium incurvum Brébisson
181
Dhorpatan / Nepal (1965-11)
IAM C-438, Unialgal, Clonal, T.Ichimura
Identified by: T.Ichimura
Culture conditions: CA, 20° C, 8 µE/m² sec, 3M,
(20° C, 25 µE/m² sec)
Characteristics: Freshwater, Homothallic,
18SrRNA gene (AF352231)
N-34-2
References: 25, 91, 96, 242

337
Nawakot / Nepal (1965-10)
Unialgal, Non-clonal, T.Ichimura
Identified by: T.Ichimura
Culture conditions: CA, 20° C, 8 µE/m² sec, 3M,
(20° C, 25 µE/m² sec)
Characteristics: Freshwater, Homothallic
N-12-92
References: 91, 242

Closterium moniliferum Ehrenberg ex Ralfs
var. *moniliferum*

172

Nepal

Unialgal, Non-clonal

Culture conditions: C, 20° C, 8 µE/m² sec, 3M,
(20° C, 25 µE/m² sec)

Characteristics: Freshwater, Homothallic
N-100-1

Reference: 242

173

Kitaadachi-gun / Saitama (1969-01)

IAM C-432, Axenic, Clonal, T.Ichimura (1969-03)

Identified by: T.Ichimura

Culture conditions: C, 20° C, 8 µE/m² sec, 3M,
(20° C, 12 µE/m² sec)

Characteristics: Freshwater, Homothallic
S-1-22

References: 96, 242

174

Ghorepani / Nepal (1965-12)

Unialgal, Clonal, T.Ichimura

Identified by: T.Ichimura

Culture conditions: C, 20° C, 8 µE/m² sec, 3M,
(20° C, 12 µE/m² sec)

Characteristics: Freshwater, Homothallic,
18SrRNA gene (AF352233)

N-76-30

References: 25, 91, 242

Closterium moniliferum Ehrenberg ex Ralfs
var. *submoniliferum* (Woronichin) Krieger

182

Kitaadachi-gun / Saitama (1969-01)

IAM C-433, Axenic, Clonal, T.Ichimura (1969-03)

Identified by: T.Ichimura

Culture conditions: C, 20° C, 8 µE/m² sec, 3M,
(20° C, 12 µE/m² sec)

Characteristics: Freshwater, Heterothallic,
Mating type +, Crosses with NIES-183

S-1-13

References: 91, 96, 242, 426

183

Kitaadachi-gun / Saitama (1969-01)

IAM C-434, Unialgal, Clonal, T.Ichimura (1969-03)

Identified by: T.Ichimura

Culture conditions: C, 20° C, 8 µE/m² sec, 3M,
(20° C, 12 µE/m² sec)

Characteristics: Freshwater, Heterothallic,
Mating type –, Crosses with NIES-182

S-1-24

References: 91, 96, 242

Closterium navicula (Brébisson) Lütkemüller

175

Chingkhola / Nepal (1965-11)

IAM C-443, Unialgal, Clonal, T.Ichimura

Identified by: T.Ichimura

Culture conditions: AF-6, 20° C, 8 µE/m² sec, 3M,
(20° C, 25 µE/m² sec)

Characteristics: Freshwater, Homothallic,
18SrRNA gene (AF352232)

N-49-7

References: 25, 91, 96, 242

176

Ghorepani / Nepal (1965-12)

Axenic, Clonal, T.Ichimura

Identified by: T.Ichimura

Culture conditions: C, 20° C, 8 µE/m² sec, 3M,
(20° C, 25 µE/m² sec)

Characteristics: Freshwater, Homothallic
N-75-10

References: 91, 242

177

Billethadi / Nepal (1965-12)

Unialgal, Clonal, T.Ichimura

Identified by: T.Ichimura

Culture conditions: CA, 20° C, 8 µE/m² sec, 3M,
(20° C, 25 µE/m² sec)

Characteristics: Freshwater, Homothallic
N-79-26

References: 91, 242

178

Shewaden / Nepal (1972-06)

Unialgal, Clonal, M.M.Watanabe (1974)

Culture conditions: CA, 20° C, 8 µE/m² sec, 3M,
(20° C, 25 µE/m² sec)

Characteristics: Freshwater

N-134-15

Reference: 242

Closterium peracerosum-strigosum-littorale complex

51

Katsuta / Ibaraki (1974-08)

Unialgal, Clonal, M.M.Watanabe (1974-08)

Identified by: M.M.Watanabe

- Culture conditions: CA, 15° C, 10 µE/m² sec, 3M,
(20° C, 25 µE/m² sec)
Characteristics: Indicator, Freshwater, Heterothallic,
Mating type +, Group II A
IB-4-2
References: 242, 518, 523, 524, 525
- 52
Katsuta / Ibaraki (1974-08)
Axenic, Clonal, M.M.Watanabe (1974-08)
Identified by: M.M.Watanabe
Culture conditions: C, 15° C, 10 µE/m² sec, 3M,
(20° C, 25 µE/m² sec)
Characteristics: Indicator, Freshwater, Heterothallic,
Mating type -, Group II A,
18SrRNA gene (AF352226)
IB-4-9
References: 25, 242, 426, 518, 523, 524, 525
- 53
Katsuta / Ibaraki (1974-08)
Axenic, Clonal, M.M.Watanabe (1974-08)
Identified by: M.M.Watanabe
Culture conditions: C, 15° C, 10 µE/m² sec, 3M,
(20° C, 25 µE/m² sec)
Characteristics: Freshwater, Heterothallic,
Mating type +, Group II A
IB-6-8
References: 242, 518, 523, 524, 525
- 54
Katsuta / Ibaraki (1974-08)
Axenic, Clonal, M.M.Watanabe (1974-08)
Identified by: M.M.Watanabe
Culture conditions: C, 15° C, 10 µE/m² sec, 3M,
(20° C, 25 µE/m² sec)
Characteristics: Freshwater, Heterothallic,
Mating type -, Group II A
IB-6-9
References: 242, 518, 523, 524
- 55
Katsuta / Ibaraki (1975-05)
Axenic, Clonal, M.M.Watanabe (1975-05)
Identified by: M.M.Watanabe
Culture conditions: C, 15° C, 10 µE/m² sec, 3M,
(20° C, 25 µE/m² sec)
Characteristics: Freshwater, Heterothallic,
Mating type -, Group II C
IB-8-15
References: 242, 518, 523, 524
- 56
Katsuta / Ibaraki (1975-05)
Axenic, Clonal, M.M.Watanabe (1975-05)
Identified by: M.M.Watanabe
Culture conditions: C, 15° C, 10 µE/m² sec, 3M,
(20° C, 25 µE/m² sec)
Characteristics: Freshwater, Heterothallic,
Mating type -, Group II A
IB-8-24
References: 242, 378, 518, 523, 524
- 57
Katsuta / Ibaraki (1975-05)
Axenic, Clonal, M.M.Watanabe (1975-05)
Identified by: M.M.Watanabe
Culture conditions: C, 15° C, 10 µE/m² sec, 3M,
(20° C, 25 µE/m² sec)
Characteristics: Freshwater, Heterothallic,
Mating type +, Group II A
IB-8-25
References: 242, 378, 518, 523, 524
- 58
Mito / Ibaraki (1975-06)
Unialgal, Clonal, M.M.Watanabe (1975-06)
Identified by: M.M.Watanabe
Culture conditions: C, 15° C, 10 µE/m² sec, 3M,
(20° C, 25 µE/m² sec)
Characteristics: Freshwater, Heterothallic,
Mating type -, Group II A
IB-10-1
References: 242, 518, 523, 524
- 59
Mito / Ibaraki (1975-06)
Axenic, Clonal, M.M.Watanabe (1975-06)
Identified by: M.M.Watanabe
Culture conditions: C, 15° C, 10 µE/m² sec, 3M,
(20° C, 25 µE/m² sec)
Characteristics: Freshwater, Heterothallic,
Mating type +, Group II A
IB-10-2
References: 242, 518, 523, 524
- 60
Mito / Ibaraki (1975-06)
Axenic, Clonal, M.M.Watanabe (1975-06)
Identified by: M.M.Watanabe
Culture conditions: C, 15° C, 10 µE/m² sec, 3M,
(20° C, 25 µE/m² sec)
Characteristics: Freshwater, Heterothallic,

- Mating type +, Group II B
 IB-12-1
 References: 242, 518, 523, 524
- 61
 Mito / Ibaraki (1975-06)
 Axenic, Clonal, M.M.Watanabe (1975-06)
 Identified by: M.M.Watanabe
 Culture conditions: C, 15° C, 10 µE/m² sec, 3M,
 (20° C, 25 µE/m² sec)
 Characteristics: Freshwater, Heterothallic,
 Mating type -, Group II B
 IB-12-2
 References: 242, 518, 523, 524
- 62
 Katsuta / Ibaraki (1975-06)
 Axenic, Clonal, M.M.Watanabe (1975-06)
 Identified by: M.M.Watanabe
 Culture conditions: C, 15° C, 10 µE/m² sec, 3M,
 (20° C, 25 µE/m² sec)
 Characteristics: Freshwater, Heterothallic,
 Mating type +, Group II A
 IB-13-1
 References: 242, 518, 523, 524
- 63
 Katsuta / Ibaraki (1975-06)
 Unialgal, Clonal, M.M.Watanabe (1975-06)
 Identified by: M.M.Watanabe
 Culture conditions: C, 15° C, 10 µE/m² sec, 3M,
 (20° C, 25 µE/m² sec)
 Characteristics: Freshwater, Heterothallic,
 Mating type -, Group II A
 IB-13-2
 References: 242, 518, 523, 524
- 64
 Lake Kasumigaura / Ibaraki (1974-11)
 Axenic, Clonal, M.M.Watanabe (1974-11)
 Identified by: M.M.Watanabe
 Culture conditions: C, 15° C, 10 µE/m² sec, 3M,
 (20° C, 25 µE/m² sec)
 Characteristics: Freshwater, Heterothallic,
 Mating type -, Group II B
 KAS-4-29
 References: 160, 161, 162, 242, 285, 413, 420, 518,
 523, 524, 525
- 65
 Lake Kasumigaura / Ibaraki (1974-11)
 Axenic, Clonal, M.M.Watanabe (1974-11)
 Identified by: M.M.Watanabe
 Culture conditions: C, 15° C, 10 µE/m² sec, 3M,
 (20° C, 25 µE/m² sec)
- 66
 Piuthan / Nepal (1965-10)
 Unialgal, Clonal, T.Ichimura
 Identified by: T.Ichimura
 Culture conditions: C, 15° C, 10 µE/m² sec, 3M,
 (20° C, 25 µE/m² sec)
 Characteristics: Indicator, Freshwater, Heterothallic,
 Mating type +, Group I A
 N-13-1
 References: 90, 91, 242, 518
- 67
 Damchan / Nepal (1965-11)
 Unialgal, Clonal, T.Ichimura
 Identified by: T.Ichimura
 Culture conditions: C, 15° C, 10 µE/m² sec, 3M,
 (20° C, 25 µE/m² sec)
 Characteristics: Indicator, Freshwater, Heterothallic,
 Mating type +, Group I B
 N-31-19
 References: 91, 242, 299, 411, 412, 413, 414, 415,
 416, 417, 418, 419, 420, 518
- 68
 Damchan / Nepal (1965-11)
 Axenic, Clonal, T.Ichimura
 Identified by: T.Ichimura
 Culture conditions: C, 15° C, 10 µE/m² sec, 3M,
 (20° C, 25 µE/m² sec)
 Characteristics: Indicator, Freshwater, Heterothallic,
 Mating type -, Group I B
 N-31-24
 References: 91, 242, 299, 411, 412, 413, 414, 415,
 416, 419, 420, 518
- 69
 Lake Teganuma / Chiba (1974-06)
 Unialgal, Clonal, M.M.Watanabe (1974-06)
 Identified by: M.M.Watanabe
 Culture conditions: C, 15° C, 10 µE/m² sec, 3M,
 (20° C, 25 µE/m² sec)

- Characteristics: Freshwater, Heterothallic,
Mating type +, Group II B
TG-2-21
References: 242, 518, 523, 524
- 70
Lake Teganuma / Chiba (1974-06)
Axenic, Clonal, M.M.Watanabe (1974-06)
Identified by: M.M.Watanabe
Culture conditions: C, 15° C, 10 $\mu\text{E}/\text{m}^2\text{sec}$, 3M,
(20° C, 25 $\mu\text{E}/\text{m}^2\text{sec}$)
Characteristics: Freshwater, Heterothallic,
Mating type -, Group II B
TG-2-22
References: 242, 518, 523, 524
- 261
Katsuta / Ibaraki (1974-08)
Unialgal, Clonal, M.M.Watanabe (1974-08)
Identified by: M.M.Watanabe
Culture conditions: C, 15° C, 10 $\mu\text{E}/\text{m}^2\text{sec}$, 3M,
(20° C, 25 $\mu\text{E}/\text{m}^2\text{sec}$)
Characteristics: Freshwater, Heterothallic,
Mating type +, Group II C
IB-8-14
References: 242, 518, 523, 524
- 262
Piuthan / Nepal (1965-10)
Unialgal, Clonal, T.Ichimura
Identified by: T.Ichimura
Culture conditions: C, 15° C, 10 $\mu\text{E}/\text{m}^2\text{sec}$, 3M,
(20° C, 25 $\mu\text{E}/\text{m}^2\text{sec}$)
Characteristics: Freshwater, Heterothallic,
Mating type -
N-13-4
References: 90, 91, 242, 518
- Closterium pleurodermatum* West et West
449
Iriomote Isl. / Okinawa (1973-03)
IAM C-518, Unialgal, Clonal, T.Ichimura (1973-12)
Identified by: T.Ichimura
Culture conditions: AF-6, 20° C, 8 $\mu\text{E}/\text{m}^2\text{sec}$, 3M,
(25° C, 15 $\mu\text{E}/\text{m}^2\text{sec}$)
Characteristics: Freshwater,
18SrRNA gene (AF352238)
R-11-20
References: 25, 242
- Closterium praelongum* Brébisson
var. *brevius* (Nordstedt) Krieger
450
Nawakot / Nepal (1965-10)
IAM C-447, Axenic, Clonal, T.Ichimura
Identified by: T.Ichimura
Culture conditions: CA, 20° C, 8 $\mu\text{E}/\text{m}^2\text{sec}$, 3M,
(20° C, 25 $\mu\text{E}/\text{m}^2\text{sec}$)
Characteristics: Freshwater, Homothallic
N-12-3
References: 91, 96, 242
- 451
Billethadi / Nepal (1965-12)
Unialgal, Clonal, , T.Ichimura
Identified by: T.Ichimura
Culture conditions: MG, 20° C, 8 $\mu\text{E}/\text{m}^2\text{sec}$, 3M,
(20° C, 25 $\mu\text{E}/\text{m}^2\text{sec}$)
Characteristics: Freshwater, Homothallic
N-78-8
References: 91, 242
- Closterium pusillum* Hantzsch var. *maius* Raciborski
185
Billethadi / Nepal (1965-12)
IAM C-449, Unialgal, Clonal, T.Ichimura
Identified by: T.Ichimura
Culture conditions: CA, 20° C, 8 $\mu\text{E}/\text{m}^2\text{sec}$, 3M,
(20° C, 25 $\mu\text{E}/\text{m}^2\text{sec}$)
Characteristics: Freshwater, Heterothallic,
18SrRNA gene (AF352235)
N-79-19
References: 25, 91, 96, 242
- Closterium rostratum* Ehrenberg ex Ralfs
var. *subrostratum* (Krieger) Krieger
Syn. *Closterium subrostratum* Krieger
338
Kathmandu / Nepal (1968-05)
IAM C-446, Axenic, Clonal, T.Ichimura
Identified by: T.Ichimura
Culture conditions: CA, 20° C, 8 $\mu\text{E}/\text{m}^2\text{sec}$, 3M,
(20° C, 12 $\mu\text{E}/\text{m}^2\text{sec}$)
Characteristics: Freshwater, Homothallic
N-90-55
References: 91, 96, 242
- Closterium selenastrum* M.Watanabe
339
Mt. Yonahadake / Okinawa (1972-10)
Unialgal, Clonal, T.Ichimura

- Identified by: M.Watanabe
 Culture conditions: CA, 20° C, 8 $\mu\text{E}/\text{m}^2\text{sec}$, 3M,
 (25° C, 15 $\mu\text{E}/\text{m}^2\text{sec}$)
 Characteristics: Indicator, Freshwater, Homothallic,
 18SrRNA gene (AF352242)
 R-9-40
 References: 25, 102, 242, 502, 503
- 340
 Mt. Yonahadake / Okinawa (1972-10)
 Axenic, Clonal, T.Ichimura
 Identified by: M.Watanabe
 Culture conditions: CA, 20° C, 8 $\mu\text{E}/\text{m}^2\text{sec}$, 3M,
 (25° C, 15 $\mu\text{E}/\text{m}^2\text{sec}$)
 Characteristics: Indicator, Freshwater, Homothallic
 R-9-42
 References: 102, 242, 503
- Closterium spinosporum* Hodgetts
 var. *crassum* M.Watanabe
 186
 Lake Akan / Hokkaido (1973-09)
 Axenic, Clonal, M.Watanabe
 Identified by: M.Watanabe
 Culture conditions: CA, 20° C, 8 $\mu\text{E}/\text{m}^2\text{sec}$, 3M,
 (20° C, 25 $\mu\text{E}/\text{m}^2\text{sec}$)
 Characteristics: Indicator, Freshwater, Homothallic,
 Type strain
 AK-46
 References: 102, 242, 502, 503
- 187
 Mt. Yonahadake / Okinawa (1973-06)
 IAM C-461, Unialgal, Clonal, T.Ichimura (1973-10)
 Identified by: M.Watanabe
 Culture conditions: CA, 20° C, 8 $\mu\text{E}/\text{m}^2\text{sec}$, 3M,
 (20° C, 25 $\mu\text{E}/\text{m}^2\text{sec}$)
 Characteristics: Freshwater, Homothallic,
 18SrRNA gene (AF352241)
 R-9-13
 References: 25, 102, 242, 502, 503
- 341
 Mt. Yonahadake / Okinawa (1972-10)
 Axenic, Clonal, T.Ichimura
 Identified by: M.Watanabe
 Culture conditions: CA, 20° C, 8 $\mu\text{E}/\text{m}^2\text{sec}$, 3M,
 (20° C, 25 $\mu\text{E}/\text{m}^2\text{sec}$)
 Characteristics: Indicator, Freshwater, Homothallic
 R-9-12
 References: 102, 242, 502, 503
- Closterium spinosporum* Hodgetts
 var. *malaysiense* M.Watanabe
 188
 Penang / Malaysia (1974-01)
 Axenic, Clonal, M.Watanabe
 Identified by: M.Watanabe
 Culture conditions: CA, 20° C, 8 $\mu\text{E}/\text{m}^2\text{sec}$, 3M,
 (20° C, 25 $\mu\text{E}/\text{m}^2\text{sec}$)
 Characteristics: Indicator, Freshwater, Heterothallic,
 Mating type +, 18SrRNA gene (AF352227)
 M-10-1
 References: 25, 242, 502, 503
- 189
 Penang / Malaysia (1974-01)
 Axenic, Clonal, M.Watanabe
 Identified by: M.Watanabe
 Culture conditions: CA, 20° C, 8 $\mu\text{E}/\text{m}^2\text{sec}$, 3M,
 (20° C, 25 $\mu\text{E}/\text{m}^2\text{sec}$)
 Characteristics: Indicator, Freshwater, Heterothallic,
 Mating type –
 M-10-4
 References: 242, 502, 503
- Closterium spinosporum* Hodgetts
 var. *ryukyuense* M.Watanabe
 191
 Iriomote Isl. / Okinawa (1973-06)
 Axenic, Clonal, T.Ichimura
 Identified by: M.Watanabe
 Culture conditions: CA, 20° C, 8 $\mu\text{E}/\text{m}^2\text{sec}$, 3M,
 (20° C, 25 $\mu\text{E}/\text{m}^2\text{sec}$)
 Characteristics: Indicator, Freshwater, Homothallic,
 18SrRNA gene (AF352240)
 R-12-3
 References: 25, 242, 502, 503
- 192
 Iriomote Isl. / Okinawa (1973-06)
 Axenic, Clonal, T.Ichimura
 Identified by: M.Watanabe
 Culture conditions: CA, 20° C, 8 $\mu\text{E}/\text{m}^2\text{sec}$, 3M,
 (25° C, 15 $\mu\text{E}/\text{m}^2\text{sec}$)
 Characteristics: Indicator, Freshwater, Homothallic
 R-12-6
 References: 242, 502, 503
- 193
 Iriomote Isl. / Okinawa (1973-06)
 Axenic, Clonal, T.Ichimura
 Identified by: M.Watanabe

- Culture conditions: CA, 20° C, 8 $\mu\text{E}/\text{m}^2\text{sec}$, 3M,
(20° C, 25 $\mu\text{E}/\text{m}^2\text{sec}$)
Characteristics: Indicator, Freshwater, Homothallic,
Giant cell
R-12-2G3
References: 242, 502
- Closterium spinosporum* Hodgetts var. *spinosporum*
194
Tsukude-mura / Aichi (1972-10)
Axenic, Clonal, T.Ichimura
Identified by: M.Watanabe
Culture conditions: CAM, 20° C, 8 $\mu\text{E}/\text{m}^2\text{sec}$, 3M,
(25° C, 15 $\mu\text{E}/\text{m}^2\text{sec}$)
Characteristics: Indicator, Freshwater, Homothallic,
18SrRNA gene (AF352224)
A-2-22
References: 25, 102, 242, 502, 503
- 195
Tsukude-mura / Aichi (1972-10)
Unialgal, Clonal, M.M.Watanabe
Identified by: M.Watanabe
Culture conditions: CAM, 20° C, 8 $\mu\text{E}/\text{m}^2\text{sec}$, 3M,
(20° C, 25 $\mu\text{E}/\text{m}^2\text{sec}$)
Characteristics: Indicator, Freshwater, Homothallic
A-7-3
References: 242, 503
- 196
Tsukude-mura / Aichi (1972-10)
Unialgal, Clonal, M.M.Watanabe
Identified by: M.Watanabe
Culture conditions: CAM, 20° C, 8 $\mu\text{E}/\text{m}^2\text{sec}$, 3M,
(20° C, 25 $\mu\text{E}/\text{m}^2\text{sec}$)
Characteristics: Indicator, Freshwater, Homothallic
A-7-6
References: 242, 502
- 197
Tsukude-mura / Aichi (1972-10)
Unialgal, Clonal, M.M.Watanabe
Identified by: M.Watanabe
Culture conditions: CA, 20° C, 8 $\mu\text{E}/\text{m}^2\text{sec}$, 3M,
(20° C, 25 $\mu\text{E}/\text{m}^2\text{sec}$)
Characteristics: Indicator, Freshwater, Homothallic
A-13-4
References: 242, 502, 503
- * *Closterium subrostratum* Krieger
- See *Closterium rostratum* Ehrenberg ex Ralfs
var. *subrostratum* (Krieger) Krieger
- Closterium tumidum* Johnson
198
Billethadi / Nepal (1965-12)
IAM C-450, Unialgal, Clonal, T.Ichimura
Identified by: T.Ichimura
Culture conditions: C, 20° C, 8 $\mu\text{E}/\text{m}^2\text{sec}$, 3M,
(20° C, 25 $\mu\text{E}/\text{m}^2\text{sec}$)
Characteristics: Freshwater, Homothallic,
18SrRNA gene (AF352234)
N-79-11
References: 25, 91, 96, 242
- Closterium venus* Kützing ex Ralfs
199
Kathmandu / Nepal (1968)
Unialgal, Clonal, T.Ichimura
Identified by: T.Ichimura
Culture conditions: CA, 20° C, 8 $\mu\text{E}/\text{m}^2\text{sec}$, 3M,
(20° C, 25 $\mu\text{E}/\text{m}^2\text{sec}$)
Characteristics: Freshwater,
18SrRNA gene (AF352236)
N-90-48
References: 25, 242
- Closterium wallichii* Turner
200
Kitaadachi-gun / Saitama (1969-01)
IAM C-451, Unialgal, Clonal, T.Ichimura
Identified by: T.Ichimura
Culture conditions: C, 20° C, 8 $\mu\text{E}/\text{m}^2\text{sec}$, 3M,
(20° C, 12 $\mu\text{E}/\text{m}^2\text{sec}$)
Characteristics: Freshwater, Homothallic,
18SrRNA gene (AF352243)
S-1-0
References: 25, 96, 242
- 201
Lake Kasumigaura / Ibaraki (1983-09)
Axenic, Clonal, F.Kasai (1983-09)
Identified by: F.Kasai
Culture conditions: C, 20° C, 8 $\mu\text{E}/\text{m}^2\text{sec}$, 3M,
(20° C, 12 $\mu\text{E}/\text{m}^2\text{sec}$)
Characteristics: Indicator, Freshwater, Homothallic
F60-21
Reference: 242
- 202
Ghasa / Nepal (1965-11)

Axenic, Clonal, T.Ichimura
Identified by: T.Ichimura
Culture conditions: C, 20° C, 8 μE/m² sec, 3M,
(20° C, 12 μE/m² sec)
Characteristics: Freshwater, Homothallic
N-63-0
References: 91, 242

COELASTRUM Nägeli: Chlorophyceae

Coelastrum astroideum De Notaris

129
Lake Shoji / Yamanashi (1981-10)
TAC 56, Axenic, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: C, 20° C, 8 μE/m² sec, 2M,
(25° C, 30 μE/m² sec)
Characteristics: Freshwater
TAN-56-7
Reference: 242

130

Lake Shoji / Yamanashi (1981-08)
TAC 51-9A, Axenic, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: C, 20° C, 8 μE/m² sec, 2M,
(25° C, 30 μE/m² sec)
Characteristics: Freshwater
TAN-51-9A
Reference: 242

244

Lake Kasumigaura / Ibaraki (1983-08)
Unialgal, Clonal, F.Kasai (1983-08)
Identified by: M.Watanabe
Culture conditions: C(S), 20° C, 4 μE/m² sec, 3M,
(25° C, 30 μE/m² sec)
Characteristics: Freshwater
Reference: 242

342

Lake Kawaguchi / Yamanashi (1981-10)
TAC 54, Unialgal, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: C, 20° C, 8 μE/m² sec, 2M
Characteristics: Freshwater
TAN-54-1
Reference: 242

Coelastrum morus W. et G.S.West
231

Hachijo Isl. / Tokyo (1984-04)
Axenic, Clonal, F.Kasai (1984-05)
Identified by: M.Watanabe
Culture conditions: C(S), 20° C, 4 μE/m² sec, 3M,
(25° C, 30 μE/m² sec)
Characteristics: Freshwater
F78-4-2
References: 159, 242

Coelastrum proboscideum Bohlin

131
Near Tukucha / Nepal (1965-11)
IAM C-344, Axenic, Clonal, T.Ichimura (1969-07)
Identified by: T.Ichimura
Culture conditions: C(S), 20° C, 4 μE/m² sec, 3M,
(25° C, 30 μE/m² sec)
Characteristics: Freshwater
N-63-20
References: 96, 242, 530

Coelastrum reticulatum (Dangeard) Senn

132
Lake Yamanaka / Yamanashi (1981-10)
TAC 53-5A, Axenic, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: C, 20° C, 8 μE/m² sec, 2M,
(25° C, 30 μE/m² sec)
Characteristics: Indicator, Freshwater
TAN-53-5A
Reference: 242

Coelastrum reticulatum (Dangeard) Senn
var. *reticulatum*

245
Lake Kasumigaura / Ibaraki (1983-10)
Axenic, Clonal, F.Kasai (1983-10)
Identified by: M.Watanabe
Culture conditions: C(S), 20° C, 4 μE/m² sec, 3M,
(25° C, 30 μE/m² sec)
Characteristics: Indicator, Freshwater
F63-3
Reference: 242

COOLIA Meunier: Dinophyceae

Coolia monotis Meunier

343
Hachijo Isl. / Tokyo (1984-04)

Axenic, Clonal, S.Suda (1984-04)
Identified by: S.Suda
Culture conditions: ESM, 20° C, 12 µE/m² sec, 3M
Characteristics: Marine, Tide pool, Unstable,
Untransportable
8-1

615
Motobu / Okinawa (1993-06)
Unialgal, Clonal, H.Kobayashi (1993-06)
Identified by: Y.Fukuyo
Culture conditions: f/2, 20° C, 32 µE/m² sec, 1M
Characteristics: Toxic, Marine, Untransportable
CM-01

COSMARIUM Corda: Charophyceae

Cosmarium askenasyi Schmidle
768
Near Cairns, Queensland / Australia (1988-09)
Unialgal, Clonal, F.Kasai (1988-09)
Identified by: F.Kasai
Culture conditions: MG, 22° C, 24 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Crosses with NIES-769
88-8-37

769
Near Cairns, Queensland / Australia (1988-09)
Unialgal, Clonal, F.Kasai (1988-09)
Identified by: F.Kasai
Culture conditions: MG, 22° C, 24 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Crosses with NIES-768
88-8-38

770
Near Cairns, Queensland / Australia (1988-09)
Unialgal, Clonal, F.Kasai (1988-09)
Identified by: F.Kasai
Culture conditions: MG, 22° C, 24 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Crosses with NIES-771
88-8-39

771
Near Cairns, Queensland / Australia (1988-09)
Unialgal, Clonal, F.Kasai (1988-09)
Identified by: F.Kasai
Culture conditions: MG, 22° C, 24 µE/m² sec, 3M,

(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Crosses with NIES-770
88-8-40

Cosmarium contractum Kirchner
133
Lake Yamanaka / Yamanashi (1981-10)
Unialgal, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: C, 20° C, 8 µE/m² sec, 2M,
(20° C, 12 µE/m² sec)
Characteristics: Indicator, Freshwater
TAN-53-2
Reference: 242

Cosmarium dilatatum Lütkenmüller
in Tärnefeld et Grönblad
839
Ryoanji Temple / Kyoto (1998-06)
Unialgal, Clonal, A.Gontcharov (1998-07)
Identified by: A.Gontcharov
Culture conditions: C, 22° C, 24 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater
Reference: 57

Cosmarium hians Borge
452
Lake Yamanaka / Yamanashi (1981-06)
Axenic, Clonal, M.H.Watanabe (1981-06)
Identified by: M.H.Watanabe
Culture conditions: C, 20° C, 8 µE/m² sec, 2M
Characteristics: Indicator, Freshwater
YAMA-Cos-4
Reference: 242

COSMOCLADIUM Brébisson: Charophyceae

Cosmocladium constrictum (Archer) Archer
248
Lake Biwa / Shiga (1983-12)
Axenic, Clonal, F.Kasai (1983-12)
Identified by: M.Watanabe
Culture conditions: C, 20° C, 8 µE/m² sec, 3M,
(20° C, 12 µE/m² sec)
Characteristics: Freshwater
F75-2
Reference: 242

CRICOSPHAERA Braarud: Prymnesiophyceae

#00042

References: 133, 159

Cricosphaera roscoffensis

(Dangeard) Gayral et Fresnel

8

Osaka Bay / Osaka (1978-09)

Axenic, Clonal, S.Yamochi

Identified by: S.Yamochi

Culture conditions: f/2, 20° C, 32 µE/m² sec, 1M

Characteristics: Red tide, Marine,

COXI gene (AB000117)

OCri

References: 75, 364

Cryptomonas platyuris Skuja

276

Higashihiroshima / Hiroshima (1983-08)

Axenic, Clonal, M.Ishimitsu (1983-08)

Identified by: M.Ishimitsu

Culture conditions: VT, 10° C, 25 µE/m² sec, 1M

Characteristics: Freshwater

#00096

Reference: 133

344

Higashihiroshima / Hiroshima (1983-08)

Axenic, Clonal, M.Ishimitsu (1983-08)

Identified by: M.Ishimitsu

Culture conditions: VT, 10° C, 25 µE/m² sec, 2M

Characteristics: Freshwater

#00103

Reference: 133

CRYPTOMONAS Ehrenberg: Cryptophyceae

Cryptomonas acuta Butcher

697

Conway, N. Wales / U.K.

CCAP 979/10, Unialgal, Clonal, B.W.Butcher

Identified by: B.W.Butcher

Culture conditions: ESM, 15° C, 20 µE/m² sec, 1M

Characteristics: Marine, Type strain

Reference: 30

Cryptomonas rostratiformis Skuja

277

Hongo / Hiroshima (1983-10)

Axenic, Clonal, M.Ishimitsu (1983-10)

Identified by: M.Ishimitsu

Culture conditions: VT, 15° C, 20 µE/m² sec, 1M

Characteristics: Freshwater

#00148

Reference: 133

Cryptomonas irregularis Butcher

698

Plymouth, Devon / U.K.

CCAP 979/7, Unialgal, Clonal, B.W.Butcher (1960)

Identified by: B.W.Butcher

Culture conditions: ESM, 15° C, 20 µE/m² sec, 1M

Characteristics: Marine, Type strain

Reference: 30

278

Hongo / Hiroshima (1983-10)

Axenic, Clonal, M.Ishimitsu (1983-10)

Identified by: M.Ishimitsu

Culture conditions: VT, 15° C, 20 µE/m² sec, 1M

Characteristics: Freshwater

#00154

Reference: 133

Cryptomonas ovata Ehrenberg

274

Tsuchiura / Ibaraki (1982-10)

Axenic, Clonal, M.Ishimitsu (1982-10)

Identified by: M.Ishimitsu

Culture conditions: VT, 15° C, 15 µE/m² sec, 2M

Characteristics: Freshwater, *COXI* gene (AB009419),

18SrRNA gene (AB073109)

#00046

References: 117, 133, 457

345

Sugadaira / Nagano (1982-07)

Axenic, Clonal, M.Ishimitsu (1982-08)

Identified by: M.Ishimitsu

Culture conditions: VT, 15° C, 15 µE/m² sec, 2M

Characteristics: Freshwater

#00006

Reference: 133

275

Tsuchiura / Ibaraki (1982-09)

Axenic, Clonal, M.Ishimitsu (1982-09)

Identified by: M.Ishimitsu

Culture conditions: VT, 15° C, 15 µE/m² sec, 2M

Characteristics: Freshwater

1327

Sugadaira / Nagano (1986-11)

Unialgal, Clonal, M.Erata (1986-11)
Identified by: M.Erata
Culture conditions: VT, 15° C, 15 µE/m² sec, 2M
Characteristics: Freshwater
#00266

Cryptomonas tetrapirenoidea Skuja

279

Higashihiroshima / Hiroshima (1983-08)
Axenic, Clonal, M.Ishimitsu (1983-08)
Identified by: M.Ishimitsu
Culture conditions: VT, 10° C, 25 µE/m² sec, 2M
Characteristics: Freshwater
#00099
Reference: 133

280

Sugadaira / Nagano (1982-07)
Axenic, Clonal, M.Ishimitsu (1982-08)
Identified by: M.Ishimitsu
Culture conditions: VT, 10° C, 25 µE/m² sec, 2M
Characteristics: Freshwater
#00014
References: 133, 159

281

Minamiizu / Shizuoka (1983-05)
Axenic, Clonal, M.Ishimitsu (1983-05)
Identified by: M.Ishimitsu
Culture conditions: VT, 10° C, 25 µE/m² sec, 2M
Characteristics: Freshwater
#00073
Reference: 133

282

Tsuchiura / Ibaraki (1982-09)
Axenic, Clonal, M.Ishimitsu (1982-09)
Identified by: M.Ishimitsu
Culture conditions: VT, 15° C, 20 µE/m² sec, 1M
Characteristics: Freshwater
#00056
References: 9, 10, 11, 133, 219, 230

346

Sugadaira / Nagano (1982-07)
Axenic, Clonal, M.Ishimitsu (1982-08)
Identified by: M.Ishimitsu
Culture conditions: VT, 10° C, 25 µE/m² sec, 2M
Characteristics: Freshwater
#00009
Reference: 133

347

Minamiizu / Shizuoka (1983-05)
Axenic, Clonal, M.Ishimitsu (1983-05)
Identified by: M.Ishimitsu
Culture conditions: VT, 10° C, 25 µE/m² sec, 2M
Characteristics: Freshwater
#00072
Reference: 133

348

Higashihiroshima / Hiroshima (1983-08)
Axenic, Clonal, M.Ishimitsu (1983-08)
Identified by: M.Ishimitsu
Culture conditions: VT, 10° C, 25 µE/m² sec, 2M
Characteristics: Freshwater
#00109
Reference: 133

CYANOPHORA Korshikov: Glaucophyceae

Cyanophora paradoxa Korshikov

547

England
UTEX 555, Axenic, Clonal, E.G.Pringsheim (1943)
Identified by: E.G.Pringsheim
Culture conditions: C, 20° C, 8 µE/m² sec, 2M,
(25° C, 30 µE/m² sec)
Characteristics: Alkaline water,
psaD gene (AJ132477)
References: 104, 208, 427

763

Mitsukaido / Ibaraki (1987-01)
Axenic, Clonal, S.Suda (1991-08)
Identified by: S.Suda
Culture conditions: CSi, 20° C, 12 µE/m² sec, 2M
Characteristics: Freshwater, Indicator
S117

Cyanophora tetracyanea Korshikov

764

Mitsukaido / Ibaraki (1987-01)
Axenic, Clonal, S.Suda (1991-08)
Identified by: S.Suda
Culture conditions: CSi, 20° C, 12 µE/m² sec, 2M
Characteristics: Freshwater, Indicator
S118

CYCLOTELLA Kützing: Bacillariophyceae

Cyclotella meneghiniana Kützing

803

Mitsukaido / Ibaraki (1993-05)

Unialgal, Clonal, F.Kasai (1993-05)

Identified by: Y.Niiyama

Culture conditions: CSi, 15° C, 15 µE/m² sec, 1M

Characteristics: Freshwater

506-26

Reference: 156

804

Mitsukaido / Ibaraki (1993-05)

Unialgal, Clonal, F.Kasai (1993-05)

Identified by: Y.Niiyama

Culture conditions: CSi, 15° C, 15 µE/m² sec, 1M

Characteristics: Freshwater

518-39

Reference: 156

805

Mitsukaido / Ibaraki (1993-06)

Unialgal, Clonal, F.Kasai (1993-06)

Identified by: Y.Niiyama

Culture conditions: CSi, 15° C, 15 µE/m² sec, 1M

Characteristics: Freshwater

613-2

Reference: 156

CYLINDROCYSTIS Meneghini: Charophyceae

Cylindrocystis brebissonii (Ralfs) De Bary

var. *brebissonii*

349

Lake Onuma / Hokkaido (1967-06)

IAM C-354, Axenic, Clonal, M.Haga (1968-01)

Identified by: M.Haga

Culture conditions: C(S), 20° C, 8 µE/m² sec, 4M,

(25° C, 30 µE/m² sec)

Characteristics: Freshwater, Homothallic

6801-68

Reference: 242

CYLINDROSPERMOPSIS Seenayya et S.Raju

Cyanophyceae

Cylindropermopsis raciborskii

(Woloszynska) Seenayya et S.Raju

930

Shinobazu-no-ike, Taito / Tokyo (2000-07)

Unialgal, Clonal, S.Otsuka (2000-07)

Identified by: S.Otsuka

Culture conditions: CT, 25° C, 24 µE/m² sec, 1M

Characteristics: Freshwater, Water bloom, Planktonic
CYL1

991

Gonoike Pond, Kamisu / Ibaraki (2001-07)

Axenic, Clonal, D.Chonudomkul (2001-07)

Identified by: W.Yongmanitchai

Culture conditions: CT, 23° C, 12 µE/m² sec, 1M

Characteristics: Freshwater, Toxic

KJA1

992

Gonoike Pond, Kamisu / Ibaraki (2001-07)

Axenic, Clonal, D.Chonudomkul (2001-07)

Identified by: W.Yongmanitchai

Culture conditions: CT, 23° C, 12 µE/m² sec, 1M

Characteristics: Freshwater, Toxic

KJA2

993

Gonoike Pond, Kamisu / Ibaraki (2001-07)

Axenic, Clonal, D.Chonudomkul (2001-07)

Identified by: W.Yongmanitchai

Culture conditions: CT, 23° C, 12 µE/m² sec, 1M

Characteristics: Freshwater, Toxic

KJA3

994

Florida / USA (1999-10)

CCMP 1973, Unialgal, Clonal, R.A.Andersen

Identified by: R.A.Andersen

Culture conditions: CT, 23° C, 12 µE/m² sec, 1M

Characteristics: Freshwater, Water bloom

A9298

1040

Shinobazu-no-ike Pond, Taito / Tokyo

Unialgal, Clonal, R.Li

Identified by: W.Yongmanitchai

Culture conditions: CT, 23° C, 12 µE/m² sec, 1M

Characteristics: Freshwater, Toxic

CRJ1

1041

Shinobazu-no-ike Pond, Taito / Tokyo

Axenic, Clonal, R.Li

Identified by: W.Yongmanitchai

Culture conditions: CT, 23° C, 12 µE/m² sec, 1M

Characteristics: Freshwater, Toxic

CRJ2

1042

Shinobazu-no-ike Pond, Taito / Tokyo
Unialgal, Clonal, R.Li
Identified by: W.Yongmanitchai
Culture conditions: CT, 23° C, 12 µE/m² sec, 1M
Characteristics: Freshwater, Toxic
CRJ*

1259

Gonoike Pond, Kamisu / Ibaraki (2002-08)
Unialgal, Clonal, T.Sano (2002-09)
Identified by: T.Sano
Culture conditions: CT, 20° C, 12 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Toxic
GOU-CR-1

1260

Gonoike Pond, Kamisu / Ibaraki (2002-08)
Unialgal, Clonal, T.Sano (2002-09)
Identified by: T.Sano
Culture conditions: CT, 20° C, 12 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Toxic
GOU-CR-2

1261

Shinobazu-no-ike Pond, Taito / Tokyo
Unialgal, Clonal, T.Sano
Identified by: T.Sano
Culture conditions: CT, 20° C, 12 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Toxic
SHI-CR-3

1262

Shinobazu-no-ike Pond, Taito / Tokyo
Unialgal, Clonal, T.Sano
Identified by: T.Sano
Culture conditions: CT, 20° C, 12 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Toxic
SHI-CR-5

CYLINDROTHECA Rabenhorst: Bacillariophyceae

Cylindrotheca closterium (Ehrenberg)

Reimann et Lewin

1045

Shimoda / Shizuoka (2001-05)
Unialgal, Clonal, Y.Takahashi (2001-05)
Identified by: S.Mayama
Culture conditions: f/2, 15° C, 15 µE/m² sec, 2M

Characteristics: Marine, Epilithic

Cylindrotheca fusiformis Reimann et Lewin

1046

CCMP 343, Unialgal, Clonal
Identified by:
Culture conditions: f/2, 15° C, 15 µE/m² sec, 2M
Characteristics: Marine

Cylindrotheca sp.

1047

Futtsu / Chiba (2001-05)
Unialgal, Clonal, Y.Takahashi (2001-05)
Identified by: S.Mayama
Culture conditions: f/2, 15° C, 15 µE/m² sec, 2M
Characteristics: Marine, Epiphytic

DICTYOCHLOROPSIS Geitler: Trebouxiophyceae

Dictyochloropsis irregularis Nakano et Isagi

378

Akkeshi / Hokkaido (1982-07)
Axenic, Clonal, Y.Isagi (1982-08)
Identified by: T.Nakano
Culture conditions: C(S), 20° C, 4 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Aerial on the surface of the
bark of *Picea jezoensis*
CCHU-2227
References: 242, 284

DICTYOSPHAERIUM Nägeli: Trebouxiophyceae

Dictyosphaerium pulchellum Wood

453

Lake Kasumigaura / Ibaraki (1988-12)
Unialgal, Clonal, T.Yanai (1988-12)
Identified by: Y.Niiyama
Culture conditions: MG, 15° C, 15 µE/m² sec, 2M
Characteristics: Freshwater
Reference: 242

DIMORPHOCOCCUS A.Braun: Chlorophyceae

Dimorphococcus lunatus A.Brown

134

Ozegahara / Gunma (1983-08)
Unialgal, Clonal, F.Kasai (1983-09)
Identified by: M.Watanabe

Culture conditions: CA, 20° C, 4 µE/m² sec, 2M,
(25° C, 30 µE/m² sec)

Characteristics: Freshwater
34-5

Reference: 242

135

Tsuchiura / Ibaraki (1983-10)
Axenic, Clonal, F.Kasai (1983-10)

Identified by: M.Watanabe

Culture conditions: CA, 20° C, 4 µE/m² sec, 2M,
(25° C, 30 µE/m² sec)

Characteristics: Freshwater

F-61-4

References: 242, 530

DINOBYRYON Ehrenberg: Chrysophyceae

Dinobryon divergens Imhof

284

Lake Biwa / Shiga (1983-12)

Unialgal, Non-clonal, F.Kasai (1983-12)

Identified by: F.Kasai

Culture conditions: AF-6/2, 15° C, 20 µE/m² sec, 4M

Characteristics: Freshwater

F-75-26

DITYLUM L.W.Bailey: Bacillariophyceae

Ditylum brightwellii (T.West) Grunow et Heurck

350

Shimoda / Shizuoka (1985-05)

Unialgal, Clonal, T.Sawaguchi (1985-05)

Identified by: T.Sawaguchi

Culture conditions: f/2, 5° C, 15 µE/m² sec, 2M

Characteristics: Marine

KBB-10

DOCIDIUM Brébisson ex Ralfs: Charophyceae

Docidium undulatum Bailey var. *undulatum*

285

Oze / Fukushima (1983-08)

Unialgal, Clonal, F.Kasai (1983-09)

Identified by: F.Kasai

Culture conditions: SW(Bi), 20° C, 8 µE/m² sec, 3M

Characteristics: Freshwater

41-11

DRAPARNALDIA Bory: Chlorophyceae

Draparnaldia plumosa (Vaucher) Agardh
454

Sapporo / Hokkaido (1987-10)

Unialgal, Non-clonal, F.Kasai (1987-10)

Identified by: F.Kasai

Culture conditions: C, 10° C, 6 µE/m² sec, 3M,
(10° C, 15 µE/m² sec)

Characteristics: Freshwater

2Tst-2-1

References: 242, 454

ECHINOSPHAERIDIUM : Chlorophyceae

Echinospaeridium nordstedtii Lemmermann

137

Lake Kasumigaura / Ibaraki (1983-08)

Axenic, Clonal, F.Kasai (1983-08)

Identified by: M.Watanabe

Culture conditions: C(S), 20° C, 4 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)

Characteristics: Indicator, Freshwater

F-56-3

References: 159, 242, 530

EMILLANIA Hay et Mohler: Prymnesiophyceae

Emiliana huxleyi (Lohmann) Hay et Mohler

837

Great Barrier Reef / Australia (1990-11)

Unialgal, Clonal, I.Inouye (1990-11)

Identified by: I.Inouye

Culture conditions: MNK, 20° C, 12 µE/m² sec, 20D

Characteristics: Marine, Red tide

EH-01

References: 408, 421, 422, 423, 424

999

Miyake Isl. / Tokyo (1999-11)

Unialgal, Clonal, M.Kawachi (1999-11)

Identified by: M.Kawachi

Culture conditions: MNK, 22° C, 15 µE/m² sec, 14D

Characteristics: Marine, Red tide

MK7

1310

Pacific Ocean (2002-08)

Unialgal, Clonal, M-H.Noël (2002-10)

Identified by: M-H.Noël

Culture conditions: MNK, 22° C, 15 µE/m² sec, 14D
Characteristics: Marine, Red tide, Isolated from
ballast water road Japan-Australia
MH9

1311
Bearing Sea (2002-08)
Unialgal, Clonal, M-H.Noël (2002-10)
Identified by: M-H.Noël
Culture conditions: MNK, 22° C, 15 µE/m² sec, 14D
Characteristics: Marine, Red tide
MH27

1312
Bearing Sea (2002-08)
Unialgal, Clonal, M-H.Noël (2002-10)
Identified by: M-H.Noël
Culture conditions: MNK, 22° C, 15 µE/m² sec, 14D
Characteristics: Marine, Red tide
MH28

1313
East China Sea (Kuroshio Current) (2003-08)
Unialgal, Clonal, M-H.Noël (2003-09)
Identified by: M-H.Noël
Culture conditions: MNK, 22° C, 15 µE/m² sec, 14D
Characteristics: Marine, Red tide
MH74

1314
East China Sea (Kuroshio Current) (2003-08)
Unialgal, Clonal, M.Kawachi (2003-08)
Identified by: M.Kawachi
Culture conditions: MNK, 22° C, 15 µE/m² sec, 14D
Characteristics: Marine, Red tide
YK3-87

EREMOSPHAERA De Bary: Trebouxiophyceae

Eremosphaera gigas (Archer) Fott et Kalina
379
Shinobugaoka / Osaka (1968-11)
IAM C-338, Axenic, Clonal, T.Ichimura (1969-01)
Identified by: T.Nakano
Culture conditions: C(S), 20° C, 4 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater
O-2
References: 96, 242, 530

Eremosphaera viridis De Bary
380
Oze / Fukushima (1983-08)
Unialgal, Clonal, F.Kasai (1983-09)
Identified by: T.Nakano
Culture conditions: CAM, 20° C, 4 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater
43-23
Reference: 242

643
Miyatoko Mire / Fukushima (1992-04)
Unialgal, Clonal, H.Nozaki (1992-04)
Identified by: H.Nozaki
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 2M
Characteristics: Freshwater
92-604-E-5
Reference: 242

644
Miyatoko Mire / Fukushima (1992-04)
Unialgal, Clonal, H.Nozaki (1992-04)
Identified by: H.Nozaki
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 2M
Characteristics: Freshwater
92-604-E-3
Reference: 242

ERRERELLA Conrad: Trebouxiophyceae

Errerella bornhemiensis Conrad
455
Between Ghorepani and Billethadi / Nepal
(1965-12)
IAM C-341, Axenic, Clonal, T.Ichimura (1972-05)
Identified by: T.Ichimura
Culture conditions: C(S), 20° C, 4 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Indicator, Freshwater
N-76-1
References: 96, 242

EUASTRUM Ralfs: Charophyceae

Euastrum biverrucosum
Gontcharov et M.M.Watanabe
Syn. *Euastrum englerii* Schmidle
var. *madagascariense* Bourrelly et Mangium
840

Hirosawa-ike Pond / Kyoto (1998-06)
Unialgal, Clonal, A.Gontcharov (1998-07)
Identified by: A.Gontcharov
Culture conditions: CAM, 22° C, 24 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater
Reference: 57

***Euastrum turgidum* Wallich**
772

Ishigaki Isl / Okinawa (1984-03)
Unialgal, Clonal, T.Ichimura (1984)
Identified by: T.Ichimura
Culture conditions: MG, 22° C, 24 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Heterothallic, Crosses
with NIES-773
84-15-75

773

Ishigaki Isl / Okinawa (1984-03)
Unialgal, Clonal, T.Ichimura (1984)
Identified by: T.Ichimura
Culture conditions: MG, 22° C, 24 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Heterothallic, Crosses
with NIES-772
84-15-76

***EUCAMPIA* Ehrenberg: Bacillariophyceae**

***Eucampia zodiacus* Ehrenberg**

1049

Ise Bay / Mie (2002-05)
Axenic, Clonal, M.Sakabe (2002-05)
Identified by: M.Fukudome (Metocean Environment
Inc.)
Culture conditions: f/2, 15° C, 15 µE/m² sec, 2M
Characteristics: Marine, Red tide, AGP, Not utilize
ammonium salt

***EUDORINA* Ehrenberg: Chlorophyceae**

***Eudorina cylindrica* Korshikov**

722

Iowa / USA
UTEX 1197, Axenic, Clonal, A.W.Coleman
(1957-04)
Culture conditions: AF-6, 20° C, 12 µE/m² sec, 2M

Characteristics: Freshwater, Heterothallic,
atpB gene (AB014033), *rbcL* gene (D86833),
psaA gene (AB044210), *psaB* gene (AB044441),
psbC gene (AB044493)
References: 242, 324, 337, 340

***Eudorina elegans* Ehrenberg**

351

Lake Biwa / Shiga (1983-12)
Axenic, Clonal, S.Suda (1983-12)
Identified by: S.Suda
Culture conditions: CA, 20° C, 12 µE/m² sec, 1M
Characteristics: Freshwater, Homothallic
B-Eud-6
References: 166, 242, 438

Eudorina elegans* Ehrenberg var. *carteri

721

KY / USA
UTEX 1212, Axenic, Clonal, P.Cock (1960-04)
Culture conditions: AF-6, 20° C, 12 µE/m² sec, 2M
Characteristics: Freshwater, Homothallic,
Monoecious, *atpB* gene (AB014012),
rbcL gene (D88806), *psaA* gene (AB044202-3),
psaB gene (AB044438), *psbC* gene (AB044487-8)
References: 242, 325, 337, 340

Eudorina elegans* Ehrenberg var. *elegans

456

Chiyoda-ku / Tokyo (1977-09)
Axenic, Clonal, H.Nozaki (1977-09)
Identified by: H.Nozaki
Culture conditions: VT, 20° C, 12 µE/m² sec, 1M
Characteristics: Freshwater, Heterothallic, Male,
Crosses with NIES-457, *atpB* gene (AB014009),
rbcL gene (D63432), *psaA* gene (AB044199),
psaB gene (AB044435), *psbC* gene (AB044485)
A-5 (m)
References: 242, 303, 322, 323, 337, 340, 342

457

Chiyoda-ku / Tokyo (1977-09)
Axenic, Clonal, H.Nozaki (1977-09)
Identified by: H.Nozaki
Culture conditions: VT, 20° C, 12 µE/m² sec, 1M
Characteristics: Freshwater, Heterothallic, Female,
Crosses with NIES-456
I-14 (f)
References: 242, 303

717

Indiana / USA (1959-06)

- UTEX 1193, Axenic, Clonal, M.E.Goldstein
Culture conditions: AF-6, 20° C, 12 µE/m² sec, 2M
Characteristics: Freshwater, Heterothallic,
atpB gene (AB047071), *rbcL* gene (D88803)
References: 242, 325
- 718
Indiana / USA
UTEX 1195, Axenic, Clonal, A.W.Coleman
Culture conditions: VT, 20° C, 12 µE/m² sec, 2M
Characteristics: Freshwater, Heterothallic,
atpB gene (AB047072), *rbcL* gene (D88810)
References: 242, 325
- 719
Indiana / USA
UTEX 1199, Axenic, Clonal, A.W.Coleman (1956)
Culture conditions: VT, 20° C, 12 µE/m² sec, 2M
Characteristics: Freshwater, Heterothallic,
atpB gene (AB047073), *rbcL* gene (D88804)
References: 242, 325
- 720
Indiana / USA (1959-09)
UTEX 1205, Axenic, Clonal, M.E.Goldstein
Culture conditions: VT, 20° C, 12 µE/m² sec, 2M
Characteristics: Freshwater, Heterothallic,
atpB gene (AB014010), *rbcL* gene (D88805),
psaA gene (AB044200-1),
psaB gene (AB044436-7), *psbC* gene (AB044486)
References: 242, 325, 337, 340
- Eudorina elegans* Ehrenberg
var. *synoica* Goldstein
458
Midori-ku / Yokohama / Kanagawa (1980-01)
Axenic, Clonal, H.Nozaki (1980-04)
Identified by: H.Nozaki
Culture conditions: VT, 20° C, 12 µE/m² sec, 1M
Characteristics: Freshwater, Homothallic,
Monoecious, *rbcL* gene (D88807)
04427-1
References: 242, 309, 325
- 568
Kathmandu / Nepal (1986-09)
Axenic, Clonal, H.Nozaki (1987-09)
Identified by: H.Nozaki
Culture conditions: CA, 20° C, 12 µE/m² sec, 1M
Characteristics: Freshwater, Homothallic,
Monoecious, *atpB* gene (AB014011),
rbcL gene (D88808)
- 7914-E-6
References: 242, 310, 325, 340
- Eudorina illinoisensis* (Kofoid) Pascher
459
Saiwai-ku / Kawasaki / Kanagawa (1984-01)
Axenic, Clonal, H.Nozaki (1985-06)
Identified by: H.Nozaki
Culture conditions: VT, 20° C, 12 µE/m² sec, 1M
Characteristics: Freshwater, Heterothallic, Female,
Crosses with NIES-460
5607-E-14 (F)
References: 242, 307, 336
- 460
Saiwai-ku / Kawasaki / Kanagawa (1984-01)
Axenic, Clonal, H.Nozaki (1985-06)
Identified by: H.Nozaki
Culture conditions: VT, 20° C, 12 µE/m² sec, 1M
Characteristics: Freshwater, Heterothallic, Male,
Crosses with NIES-459, *atpB* gene (AB014013),
rbcL gene (D63433), *psaA* gene (AB044198),
psaB gene (AB044434), *psbC* gene (AB044484)
5630-E-3 (m)
References: 242, 307, 322, 323, 337, 340
- 723
Missouri / USA (1956-11)
UTEX 808, Axenic, Clonal, J.Stein
Reidentified by: H.Nozaki
Culture conditions: AF-6, 20° C, 12 µE/m² sec, 2M
Characteristics: Freshwater, Heterothallic,
atpB gene (AB047069), *rbcL* gene (D88809)
References: 242, 325
- Eudorina minodii* (Chodat) Nozaki et Knieritz
856
Lake Altglobsow, Brandenburg / Germany (1997-07)
Unialgal, Clonal, H.Nozaki (1997-07)
Identified by: H.Nozaki
Culture conditions: AF-6, 20° C, 12 µE/m² sec, 2M
Characteristics: Freshwater, Planktonic, Homothallic,
Dioecious, Anisogamy, H,h type, *atpB* gene
(AB047068), *rbcL* gene (AB047074-6)
970729-E-8
Reference: 330
- Eudorina unicocca* G.M.Smith
var. *peripheralis* Goldstein
726
British Columbia / Canada (1961-05)
UTEX 1218, Axenic, Clonal, M.E.Goldstein

Culture conditions: AF-6, 20° C, 12 µE/m² sec, 2M
Characteristics: Freshwater, Heterothallic,
atpB gene (AB047070), *rbcL* gene (D86830)
References: 242, 324

Eudorina unicocca G.M.Smith var. *unicocca*

724

Indiana / USA
UTEX 737, Axenic, Clonal, R.C.Starr
Culture conditions: VT, 20° C, 12 µE/m² sec, 2M
Characteristics: Freshwater, Heterothallic,
atpB gene (AB014008), *rbcL* gene (D86829),
psaA gene (AB044204-6), *psaB* gene (AB044439),
psbC gene (AB044489-90)
References: 242, 324, 337, 340

725

Ohio / USA (1961-04)
UTEX 1215, Axenic, Clonal, M.E.Goldstein
Culture conditions: AF-6, 20° C, 12 µE/m² sec, 2M
Characteristics: Freshwater, Heterothallic,
atpB gene (AB014007), *rbcL* gene (D63434),
psaA gene (AB044207-9), *psaB* gene (AB044440),
psbC gene (AB044491-2)
References: 242, 323, 337, 340

EUGLENA Ehrenberg: Euglenophyceae

Euglena clara Skuja

253

Higashiyata River / Ibaraki (1983-07)
Unialgal, Clonal, S.Suda (1983-07)
Identified by: S.Suda
Culture conditions: AF-6, 20° C, 12 µE/m² sec, 1M,
(25° C, 30 µE/m² sec)
Characteristics: Indicator, Freshwater
USI-21

Euglena gracilis Klebs

47

IAM E-3, Axenic, Clonal
Culture conditions: HUT(SS), 20° C, 4 µE/m² sec,
1M, (25° C, 30 µE/m² sec)
Characteristics: Indicator, Freshwater, Material for
Vitamin B₁₂ bioassay
References: 96, 144, 491

48

IAM E-6 (Z strain), Axenic, Clonal
Culture conditions: HUT(SS), 20° C, 4 µE/m² sec,

1M, (25° C, 30 µE/m² sec)
Characteristics: Freshwater, Material for Vitamin
B₁₂ bioassay
References: 28, 96, 106, 120, 144, 234, 235, 241, 260,
369, 370, 371, 372, 471, 472, 579

Euglena gracilis Klebs var. *bacillaris* Pringsheim

49

IAM E-2, Axenic, Clonal
Culture conditions: HUT, 20° C, 4 µE/m² sec, 2M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater
References: 96, 139, 144, 491

Euglena mutabilis Schmitz

286

Takatori River / Ibaraki (1984-10)
Axenic, Clonal, S.Suda (1984-10)
Identified by: S.Suda
Culture conditions: AF-6, 20° C, 12 µE/m² sec, 1M,
(25° C, 30 µE/m² sec)
Characteristics: Indicator, Freshwater

EUNOTIA Ehrenberg: Bacillariophyceae

Eunotia pectinalis (Kützing) Rabenhorst

var. *minor* (Kützing) Rabenhorst

461

Mt. Tsukuba / Ibaraki (1987-04)
Unialgal, Non-clonal, F.Kasai (1987-05)
Identified by: N.Takamura
Culture conditions: CSi, 15° C, 15 µE/m² sec, 4M
Characteristics: Freshwater
(1)-16
Reference: 454

EUTREPTIELLA da Cunha: Euglenophyceae

Eutreptiella gymnastica Throndsen

381

Yashima Bay / Kagawa (1982-10)
Axenic, Clonal, S.Yoshimatsu
Identified by: S.Yoshimatsu
Culture conditions: f/2, ESM, 20° C, 32 µE/m² sec,
1M
Characteristics: Red tide, Marine,
COXI gene (AB000136)
KGW-63-1
Reference: 118

FIBROCAPSA Toriumi et Takano: Raphidophyceae

Fibrocapsa japonica Toriumi et Takano

136

Tsuda Bay / Kagawa (1978-07)

Axenic, Clonal, K.Yuki

Identified by: K. Yuki

Culture conditions: f/2, 20° C, 32 µE/m² sec, 1M

Characteristics: Red tide, Marine, Untransportable
KGW-20-2

Reference: 486

462

Hasaki / Ibaraki (1987-05)

Axenic, Clonal, T.Sawaguchi (1987-05)

Identified by: T.Sawaguchi

Culture conditions: ESM, 20° C, 40 µE/m² sec, 1M

Characteristics: Red tide, Marine, Untransportable
HASS-8

560

Mikawa bay / Aichi

Axenic, Non-clonal, S.Toriumi

Identified by: T.Honjou

Culture conditions: ESM, 20° C, 32 µE/m² sec, 1M

Characteristics: Red tide, Marine, Untransportable

605

Seto Inland Sea / Yamaguchi (1970-08)

Axenic, Clonal, H.Iwasaki (1970-08)

Identified by: H.Takano

Culture conditions: f/2, 20° C, 40 µE/m² sec, 1M

Characteristics: Red tide, Marine, Untransportable

1303

East China Sea (Kuroshio Current) (2003-08)

Unialgal, Clonal, M.Kawachi (2003-08)

Identified by: M.Kawachi

Culture conditions: MNK, 20° C, 32 µE/m² sec, 14D

Characteristics: Marine, Red tide, Untransportable
YK03-75

FISCHERELLA Gomont: Cyanophyceae

Fischerella major Gomont

592

Yukawa-hot spring / Iwate (1990-09)

Unialgal, Clonal, T.Hagiwara (1990-10)

Identified by: T.Hagiwara

Culture conditions: CB, 20° C, 4 µE/m² sec, 2M,

(25° C, 30 µE/m² sec)

Characteristics: Benthic

Yu-50

References: 79, 242, 559

FRAGILARIA Lyngbye: Bacillariophyceae

Fragilaria capucina Desmazières

391

Lake Kasumigaura / Ibaraki (1985-04)

Unialgal, Clonal, T.Sawaguchi (1985-04)

Identified by: M.Idei

Culture conditions: CSi, M Chu No.10, 15° C,
20 µE/m² sec, 1M

Characteristics: Freshwater

KEB-24

GEPHYROCAPSA Kamptner: Pymnesiophyceae

Gephyrocapsa oceanica Kamptner

353

Tsushima / Nagasaki (1986-03)

Axenic, Clonal, T.Sawaguchi (1986-05)

Identified by: I.Inouye

Culture conditions: ESM, 20° C, 12 µE/m² sec, 20D

Characteristics: Marine, *COXI* gene (AB000118)
TMCO-2

References: 75, 206, 293

838

Mutsu Bay / Aomori (1990-11)

Unialgal, Clonal, M.Kawachi (1990-11)

Identified by: M.Kawachi

Culture conditions: ESM, 20° C, 12 µE/m² sec, 20D

Characteristics: Marine, Red tide

GO-01

Reference: 408

1000

Miyake Isl. / Tokyo (1999-11)

CCMP 2054, Unialgal, Clonal, M.Kawachi
(1999-11)

Identified by: M.Kawachi

Culture conditions: MNK, 22° C, 15 µE/m² sec, 14D

Characteristics: Marine, Red tide

1315

Hachijo Isl. / Tokyo (2002-01)

Unialgal, Clonal, M-H.Noël (2002-02)

Identified by: M-H.Noël

- Culture conditions: MNK, 22° C, 15 µE/m² sec, 14D
 Characteristics: Marine, Red tide
 MH38
- 1316
 East China Sea (Kuroshiwo Current) (2003-08)
 Unialgal, Clonal, M-H.Noël (2003-09)
 Identified by: M-H.Noël
 Culture conditions: MNK, 22° C, 15 µE/m² sec, 14D
 Characteristics: Marine, Red tide
 MH63
- 1317
 East China Sea (Kuroshiwo Current) (2003-08)
 Unialgal, Clonal, M-H.Noël (2003-09)
 Identified by: M-H.Noël
 Culture conditions: MNK, 22° C, 15 µE/m² sec, 14D
 Characteristics: Marine, Red tide
 MH64
- 1318
 East China Sea (Kuroshiwo Current) (2003-08)
 Unialgal, Clonal, M-H.Noël (2003-09)
 Identified by: M-H.Noël
 Culture conditions: MNK, 22° C, 15 µE/m² sec, 14D
 Characteristics: Marine, Red tide
 MH73
- 1319
 East China Sea (Kuroshiwo Current) (2003-07)
 Unialgal, Clonal, M-H.Noël (2003-08)
 Identified by: M-H.Noël
 Culture conditions: MNK, 22° C, 15 µE/m² sec, 14D
 Characteristics: Marine, Red tide
 YK3-7
- 1328
 Hachijo Isl. / Tokyo (2002-12)
 Unialgal, Clonal, M.Yoshida (2002-12)
 Identified by: M.Yoshida
 Culture conditions: MNK, 22° C, 15 µE/m² sec, 14D
 Characteristics: Marine, Red tide
 ym-01
- 1329
 Okayama
 Unialgal, Clonal, M.Yubuki (2003-06)
 Identified by: M.Yoshida
 Culture conditions: MNK, 22° C, 15 µE/m² sec, 14D
 Characteristics: Marine
 ym-06
- GLAUCOCYSTIS** Itzigsohn: Glaucophyceae
Glaucocystis nostochinearum Itzigsohn
 966
 Lake Renge-numa, Kitashiobara Vil. / Fukushima
 (1987-08)
 Unialgal, Clonal, F.Kasai (1987-08)
 Identified by: F.Kasai
 Culture conditions: MG, 20° C, 12 µE/m² sec, 2M
 Characteristics: Freshwater
 F⑥-5
- GLENODINIOPSIS** Woloszynska: Dinophyceae
Glenodiniopsis uliginosa (Schilling) Woloszynska
 463
 Shizukuishi / Iwate (1984-09)
 Axenic, Clonal, T.Sawaguchi (1984-09)
 Identified by: T.Sawaguchi
 Culture conditions: AF-6/2, 20° C, 40 µE/m² sec,
 2M
 Characteristics: Freshwater, Unstable,
 Untransportable
 TM3D-6
- GLOEOCAPSA** Kützing: Cyanophyceae
Gloeocapsa decorticans (A.Brown) P.Richter
 931
 Tsukui-gun / Kanagawa (2000-04)
 Unialgal, Clonal, S.Otsuka (2000-05)
 Identified by: S.Otsuka
 Culture conditions: CT, 25° C, 24 µE/m² sec, 1M
 Characteristics: Freshwater, Benthic
 GLC2
- GLOEOMONAS** Klebs: Chlorophyceae
Gloeomonas lateperforata (Skuja) Ettl
 464
 Tsukuba / Ibaraki (1982-11)
 Axenic, Clonal, F.Kasai (1982-11)
 Identified by: S.Suda
 Culture conditions: C, 20° C, 22 µE/m² sec, 2M
 Characteristics: Freshwater
 Reference: 242

GLOSSOMASTIX nom. prov.: Pinguicophyceae

Glossomastix chrysoplata O'Kelly

1002

Phillip Bay, Victoria / Australia
CCMP 1537, Unialgal, Clonal, C.J.O'Kelly
(1992-12)
Identified by: C.J.O'Kelly
Culture conditions: MNK, 22° C, 15 µE/m² sec, 14D
Characteristics: Marine

1302

Kumano / Mie (2001-03)
Unialgal, Clonal, K.Kogame
Identified by: K.Kogame
Culture conditions: MNK, 22° C, 15 µE/m² sec, 14D
Characteristics: Marine
GLOSSO

GOMPHONEMA Ehrenberg: Bacillariophyceae

Gomphonema angustatum (Kützing) Rabenhorst

var. *obtusatum* (Kützing) Grunow

620

Mt. Tsukuba / Ibaraki (1987-04)
Unialgal, Clonal, F.Kasai (1987-05)
Identified by: N.Takamura
Culture conditions: CSi, 15° C, 15 µE/m² sec, 2M
Characteristics: Freshwater
1-36
Reference: 454

Gomphonema gracile Ehrenberg var. *gracile*

465

Ashio / Gunma (1987-08)
Unialgal, Clonal, F.Kasai (1987-08)
Identified by: N.Takamura
Culture conditions: CSi, 15° C, 15 µE/m² sec, 2M
Characteristics: Freshwater
Ast-1-1
Reference: 454

Gomphonema parvulum Kützing var. *parvulum*

466

Sapporo / Hokkaido (1987-07)
Unialgal, Non-clonal, F.Kasai (1987-07)
Identified by: N.Takamura
Culture conditions: CSi, 10° C, 15 µE/m² sec, 2M
Characteristics: Freshwater
Tst-1-18
Reference: 454

467

Sapporo / Hokkaido (1987-07)
Unialgal, Clonal, F.Kasai (1987-07)
Identified by: N.Takamura
Culture conditions: CSi, 10° C, 15 µE/m² sec, 2M
Characteristics: Freshwater
Tst-4-3
Reference: 454

GONATOZYGON De Bary: Charophyceae

Gonatozygon brebissonii De Bary

138

Lake Kasumigaura / Ibaraki (1974-11)
Axenic, Clonal
Culture conditions: C, 20° C, 8 µE/m² sec, 4M,
(20° C, 12 µE/m² sec)
Characteristics: Freshwater
KAS-4-43
Reference: 242

139

Lake Shoji / Yamanashi (1981-10)
TAC 56-1, Axenic, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: C, 20° C, 8 µE/m² sec, 4M,
(20° C, 12 µE/m² sec)
Characteristics: Freshwater
TAN-56-1
Reference: 242

Gonatozygon monotaenium De Bary

247

Tsukiyono / Gunma (1984-06)
Axenic, Clonal, F.Kasai (1984-06)
Identified by: F.Kasai
Culture conditions: C, 20° C, 8 µE/m² sec, 3M,
(20° C, 12 µE/m² sec)
Characteristics: Freshwater, Homothallic
84-25-109

287

Lake Yamanaka / Yamanashi (1981-10)
TAC 53-3, Unialgal, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: MG, 20° C, 8 µE/m² sec, 2M,
(20° C, 12 µE/m² sec)
Characteristics: Freshwater
TAN-53-3
Reference: 242

- GONIUM** Müller: Chlorophyceae
- Gonium multicocum*** Pocock
737
UTEX 2580, Axenic, Clonal, H.Nozaki
Identified by: H.Nozaki
Culture conditions: VT, 20° C, 32 µE/m² sec, 1M
Characteristics: Freshwater, F1 clone of UTEX 2579,
atpB gene (AB014020), *rbcL* gene (D63435),
psaA gene (AB044239-40),
psaB gene (AB044461), *psbC* gene (AB04481)
90-530-F1-5
References: 323, 334, 337, 340
- 885
Lemoncove, California / USA (1956-03)
UTEX 783, Unialgal, Clonal
Identified by: J.R.Stein
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 1M
Characteristics: Freshwater
References: 314, 334
- 1038
Texas / USA
Unialgal, Clonal, R.C.Starr
Identified by: H.Nozaki
Culture conditions: AF-6, 20° C, 12 µE/m² sec, 2M
Characteristics: Freshwater
GQ-M-Tx-1
- 1039
Texas / USA
Unialgal, Clonal, R.C.Starr
Identified by: H.Nozaki
Culture conditions: AF-6, 20° C, 12 µE/m² sec, 2M
Characteristics: Freshwater
GQ-M-Tx-2
- Gonium octonarium*** Pocock
851
USA
Unialgal, Clonal, R.C.Starr
Identified by: H.Nozaki
Culture conditions: AF-6, 20° C, 12 µE/m² sec, 2M
Characteristics: Freshwater, *atpB* gene (AB014018),
psaA gene (AB044241), *psaB* gene (AB044462),
psbC gene (AB044520)
GO-LC-1+
References: 337, 340, 342
- 852
USA
- Unialgal, Clonal, R.C.Starr
Identified by: H.Nozaki
Culture conditions: AF-6, 20° C, 12 µE/m² sec, 2M
Characteristics: Freshwater
Reference: 340
- Gonium pectorale*** Müller var. *pectorale*
468
Kohoku-ku / Yokohama / Kanagawa (1979-04)
Axenic, Clonal, H.Nozaki (1979-04)
Identified by: H.Nozaki
Culture conditions: VT, 20° C, 12 µE/m² sec, 1M
Characteristics: Freshwater, Heterothallic,
Mating type -, Crosses with NIES-469
9406-10
References: 176, 242, 304, 314, 331
- 469
Kohoku-ku / Yokohama / Kanagawa (1979-04)
Axenic, Clonal, H.Nozaki (1979-04)
Identified by: H.Nozaki
Culture conditions: VT, 20° C, 12 µE/m² sec, 1M
Characteristics: Freshwater, Heterothallic,
Mating type +, Crosses with NIES-468
9406-12
References: 242, 304
- 569
Kourakuen / Okayama (1988-10)
Unialgal, Clonal, H.Nozaki
Identified by: H.Nozaki
Culture conditions: VTAC, 20° C, 22 µE/m² sec, 1M
Characteristics: Freshwater, Heterothallic, Isogamy,
Mating type +, Crosses with NIES-570,
atpB gene (AB014016-7), *rbcL* gene (D63437),
psaA gene (AB044242), *psaB* gene (AB044463),
psbC gene (AB044521)
88-1113-G-1
References: 166, 242, 323, 337, 340, 342
- 570
Kourakuen / Okayama (1988-10)
Unialgal, Clonal, H.Nozaki
Identified by: H.Nozaki
Culture conditions: VTAC, 20° C, 22 µE/m² sec, 1M
Characteristics: Freshwater, Heterothallic, Isogamy,
Mating type -, Crosses with NIES-569
88-1113-G-2
Reference: 242
- 645
Near Goshokake Hot Spring / Akita (1985-07)

- Unialgal, Clonal, H.Nozaki (1985-09)
 Identified by: H.Nozaki
 Culture conditions: AF-6, 20° C, 22 µE/m² sec, 1M
 Characteristics: Freshwater, Heterothallic, Isogamy,
 Mating type +
 5912-6(+)
 Reference: 242
- 646
 Near Goshokake Hot Spring / Akita (1985-07)
 Unialgal, Clonal, H.Nozaki (1985-09)
 Identified by: H.Nozaki
 Culture conditions: AF-6, 20° C, 22 µE/m² sec, 1M
 Characteristics: Freshwater, Heterothallic, Isogamy,
 Mating type –
 5912-6(-)
 Reference: 242
- Gonium quadratum* Pringsheim ex Nozaki
 647
 Unialgal, Clonal, H.Nozaki (1990-08)
 Identified by: H.Nozaki
 Culture conditions: AF-6, 20° C, 22 µE/m² sec, 1M
 Characteristics: Freshwater, Heterothallic, Isogamy,
 Mating type –, F1 clone of NIES-652 × NIES-653,
 Sister clone to NIES-648, 649, and 650 from one
 zygote
 90-809-F1-2-1
 Reference: 242
- 648
 Unialgal, Clonal, H.Nozaki (1990-08)
 Identified by: H.Nozaki
 Culture conditions: AF-6, 20° C, 22 µE/m² sec, 1M
 Characteristics: Freshwater, Heterothallic, Isogamy,
 Mating type +, F1 clone of NIES-652 × NIES-653,
 Sister clone to NIES-647, 649, and 650 from one
 zygote
 90-809-F1-2-2
 Reference: 242
- 649
 Unialgal, Clonal, H.Nozaki (1990-08)
 Identified by: H.Nozaki
 Culture conditions: AF-6, 20° C, 22 µE/m² sec, 1M
 Characteristics: Freshwater, Heterothallic, Isogamy,
 Mating type +, F1 clone of NIES-652 × NIES-653,
 Sister clone to NIES-647, 648, and 650 from one
 zygote
 90-809-F1-2-3
 Reference: 242
- 650
 Unialgal, Clonal, H.Nozaki (1990-08)
 Identified by: H.Nozaki
 Culture conditions: AF-6, 20° C, 22 µE/m² sec, 1M
 Characteristics: Freshwater, Heterothallic, Isogamy,
 Mating type –, F1 clone of NIES-652 × NIES-653,
 Sister clone to NIES-647, 648, and 649 from one
 zygote
 90-809-F1-2-4
 Reference: 242
- 651
 Klausen / Italy
 UTEX 956, Unialgal, Clonal, E.G.Pringsheim
 (1957)
 Identified by: E.G.Pringsheim
 Culture conditions: AF-6, 20° C, 22 µE/m² sec, 1M
 Characteristics: Freshwater, Type strain
 References: 242, 314, 315
- 652
 Itahari / Nepal (1989-10)
 Unialgal, Clonal, H.Nozaki (1990-04)
 Identified by: H.Nozaki
 Culture conditions: AF-6, 20° C, 22 µE/m² sec, 1M
 Characteristics: Freshwater, Heterothallic, Isogamy,
 Mating type –, Crosses with NIES-653
 90-423-3
 References: 242, 315
- 653
 Itahari / Nepal (1989-10)
 Unialgal, Clonal, H.Nozaki (1990-04)
 Identified by: H.Nozaki
 Culture conditions: AF-6, 20° C, 22 µE/m² sec, 1M
 Characteristics: Freshwater, Heterothallic, Isogamy,
 Mating type +, Crosses with NIES-652,
atpB gene (AB014019), *rbcL* gene (D63438),
psaA gene (AB044243), *psaB* gene (AB044464),
psbC gene (AB044522-3)
 90-423-2
 References: 242n, 315, 323, 331, 337, 340, 342
- * *Gonium sacculiferum* Scherffel
 See *Basichlamys sacculifera* (Scherffel) Skuja
- * *Gonium sociale* (Dujardin) Warming var. *sociale*
 See *Tetrabaena socialis* (Dujardin) Nozaki et Ito
 var. *socialis*
- Gonium viridistellatum* M.Watanabe
 288

- Okinawa / Okinawa (1973-06)
Axenic, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: CA, 20° C, 12 µE/m² sec, 1M
Characteristics: Indicator, Freshwater, Heterothallic,
Mating type –, Crosses with NIES-289 and 290
G4
References: 242, 312, 501
- 289
Okinawa / Okinawa (1973-06)
Axenic, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: CA, 20° C, 12 µE/m² sec, 1M
Characteristics: Indicator, Freshwater, Type strain,
Heterothallic, Mating type +, Crosses with
NIES-288, *atpB* gene (AB076118-9),
rbcL gene (AB076091), *psaA* gene (AB076140-1),
psaB gene (AB076156), *psbC* gene (AB076173),
rbcL-462 intron (AB076091)
G3
References: 242, 312, 344, 501
- 290
Okinawa / Okinawa (1973-06)
Axenic, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: CA, 20° C, 12 µE/m² sec, 1M
Characteristics: Indicator, Freshwater, Type strain,
Heterothallic, Mating type +, Crosses with
NIES-288
G1
References: 242, 312, 501
- 654
Yokohama / Kanagawa (1980-01)
UTEX 2519, Unialgal, Clonal, H.Nozaki (1985-11)
Identified by: H.Nozaki
Culture conditions: VT, 20° C, 22 µE/m² sec, 1M
Characteristics: Freshwater, Heterothallic, Isogamy,
Mating type +, *atpB* gene (AB014021),
rbcL gene (D86831), *psaA* gene (AB044244),
psaB gene (AB044465), *psbC* gene (AB044524),
rbcL-462 intron (AB076090)
KY-4 (+)
References: 242, 312, 322, 324, 337, 340, 344
- 655
Yokohama / Kanagawa (1980-01)
UTEX 2520, Unialgal, Clonal, H.Nozaki (1985-11)
Identified by: H.Nozaki
Culture conditions: VT, 20° C, 22 µE/m² sec, 1M
- Characteristics: Freshwater, Heterothallic, Isogamy,
Mating type –
KY-7 (-)
References: 242, 312
- 857
Gaunli, Kathmandu / Nepal (1986-09)
Unialgal, Clonal, H.Nozaki (1988-05)
Identified by: H.Nozaki
Culture conditions: AF-6, 20° C, 12 µE/m² sec, 2M
Characteristics: Freshwater, *atpB* gene (AB076117),
rbcL gene (AB076092-3), *psaA* gene (AB076139),
psaB gene (AB076155), *psbC* gene (AB076172),
rbcL-462 intron (AB076092)
88-511-9
Reference: 344
- GONYOSTOMUM** Diesing: Raphidophyceae
Gonyostomum semen (Ehrenberg) Diesing
1009
Lake Ozenuma / Fukushima (2002-08)
Unialgal, Clonal, M.Moriya (2002-10)
Identified by: M.Moriya
Culture conditions: AF-6(pH5.8), 15° C,
15 µE/m² sec, 1M
Characteristics: Freshwater
M-87
- GRAESIELLA** Kalina et Puncochárová:
Chlorophyceae
Graesiella emersonii (Shihira et Krauss) Nozaki et al.
Syn. *Chlorella emersonii* Shihira et Krauss
Chlorella fusca Shihira et Krauss var. *vacuolata*
Shihira et Krauss
226
IAM C-28, Axenic, Clonal, E.G.Pringsheim
Reidentified by: H.Nozaki et al.
Culture conditions: C(S), 20° C, 4 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Formerly identified as
Chlorella pyrenoidosa Chick
References: 96, 237, 242, 289, 329, 456, 491, 549,
574, 575, 576, 577
- 687
USA
IAM C-104, CCAP 211/8B, Unialgal, Clonal,
R.Emerson (1923)

Reidentified by: H.Nozaki et al.
Culture conditions: C(S), 20° C, 4 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Type strain of
Chlorella fusca Shihira et Krauss var. *vacuolata*
Shihira et Krauss
References: 242, 329

688

CCAP 211/8G, Unialgal, Clonal, R.Emerson
Reidentified by: H.Nozaki et al.
Culture conditions: C(S), 20° C, 4 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater
References: 242, 329

689

CCAP 211/8H, Unialgal, Clonal, R.Emerson
Reidentified by: H.Nozaki et al.
Culture conditions: C(S), 20° C, 4 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater
References: 242, 329

690

CCAP 211/11N, Unialgal, Clonal, R.Emerson
(1939)
Reidentified by: H.Nozaki et al.
Culture conditions: C(S), 20° C, 4 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Type strain of
Chlorella emersonii Shihira et Krauss
References: 242, 329

GYMNODINIUM Stein: Dinophyceae

Gymnodinium mikimotoi Miyake et Kominami
ex Oda
Syn. *Gymnodinium nagasakiense*
Takayama et Adachi

680

Uchiumi Bay / Kagawa (1992-10)
Axenic, Clonal, S.Yoshimatsu (1992-10)
Identified by: S.Yoshimatsu
Culture conditions: ESM, 20° C, 40 µE/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable

* *Gymnodinium nagasakiense* Takayama et Adachi
See *Gymnodinium mikimotoi*
Miyake et Kominami ex Oda

HAEMATOCOCCUS C.Agardh: Chlorophyceae

Haematococcus lacustris

(Girod-Chantrons) Rostafinski
Syn. *Haematococcus pluvialis* Flotow
144
Sapporo / Hokkaido (1964-07)
IAM C-392, Axenic, Clonal, T.Ichimura (1964-07)
Identified by: T.Ichimura
Culture conditions: C(S), 20° C, 4 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Homothallic, Isogamy,
atpB gene (AB084325), *rbcL* gene (AB084336-7),
psaB gene (AB084365)
MKF-8
References: 96, 147, 148, 185, 186, 187, 188, 189,
190, 191, 192, 193, 194, 195, 242, 342, 463, 464,
465, 530

* *Haematococcus pluvialis* Flotow

See *Haematococcus lacustris*
(Girod-Chantrons) Rostafinski

HAFNIOMONAS Ettl et Moestrup: Chlorophyceae

Hafniomonas montana (Geitler) Ettl et Moestrup 257

Tsukuba / Ibaraki (1983-10)
Axenic, Clonal, S.Suda (1983-10)
Identified by: I.Inouye
Culture conditions: C, 20° C, 12 µE/m² sec, 1M,
(20° C, 25 µE/m² sec)
Characteristics: Freshwater, Unstable,
atpB gene (AB101504), *rbcL* gene (AB101509-10),
psaB gene (AB101515)
OUT-5
References: 242, 338, 441, 530

656

Tsukuba / Ibaraki (1986-04)
Unialgal, Clonal, S.Suda (1986-05)
Identified by: S.Suda
Culture conditions: C, 20° C, 22 µE/m² sec, 1M
Characteristics: Freshwater, *atpB* gene (AB101505),
rbcL gene (AB101511-2), *psaB* gene (AB101516)
430M3-3
References: 242, 338

HANTZSCHIA Grunow: Bacillariophyceae

Hantzschia amphioxys (Ehrenberg) Grunow
var. *compacta* Hustedt
587
Tsukuba / Ibaraki (1990-04)
Unialgal, Clonal, T.Hagiwara (1990-04)
Identified by: T.Hagiwara
Culture conditions: CSi, 15° C, 35 µE/m² sec, 1M
Characteristics: Freshwater
Wn-24

HARAMONAS Horiguchi: Raphidophyceae

Haramonas dimorpha Horiguchi
716
Daintree River / Australia (1991-09)
Unialgal, Clonal, T.Horiguchi (1991-10)
Identified by: T.Horiguchi
Culture conditions: f/2, ESM, 20° C, 40 µE/m² sec,
1M
Characteristics: Brackish, Type strain,
Untransportable
Reference: 87

HEMIDINIUM Stein: Dinophyceae

Hemidinium nasutum Stein
471
Tsuchiura / Ibaraki (1987-08)
Unialgal, Clonal, T.Sawaguchi (1987-08)
Identified by: T.Sawaguchi
Culture conditions: AF-6/2, 20° C, 40 µE/m² sec,
1M
Characteristics: Freshwater, Untransportable
87SPD-1

HETEROCAPSA Stein: Dinophyceae

Heterocapsa pygmaea Loeblich III et al.
472
Kashiwazaki / Niigata (1986-08)
Unialgal, Clonal, T.Sawaguchi (1986-08)
Identified by: T.Sawaguchi
Culture conditions: ESM, 20° C, 40 µE/m² sec, 1M
Characteristics: Marine, Untransportable
KSTH-23
Reference: 80

473

Izuhara / Nagasaki (1986-03)

Unialgal, Clonal, T.Sawaguchi (1986-03)
Identified by: T.Sawaguchi
Culture conditions: ESM, 20° C, 40 µE/m² sec, 1M
Characteristics: Marine, Untransportable
TMUD-2
Reference: 80

Heterocapsa triquetra Stein

7

Osaka Bay / Osaka (1981-04)
Axenic, Clonal, S.Yamochi
Identified by: S.Yamochi
Culture conditions: f/2, ESM, 20° C, 32 µE/m² sec,
1M
Characteristics: Red tide, Marine, Untransportable
OHet
References: 80, 206, 220, 221, 293

235

Harima-Nada / Seto Inland Sea (1982-03)
Axenic, Clonal, S.Yoshimatsu
Identified by: S.Yoshimatsu
Culture conditions: f/2, 20° C, 32 µE/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable
KGW-57
References: 80, 486

HETEROSIGMA Hada: Raphidophyceae

Heterosigma akashiwo (Hada) Hada

4

Fukuyama Bay / Hiroshima (1966-06)
Axenic, Clonal, H.Iwasaki et al.
Identified by: H.Iwasaki et al.
Culture conditions: f/2, M-ASP7, 20° C,
32 µE/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable
FHE
References: 23, 68, 142, 184, 405, 410, 462

5

Gokasho Bay / Mie (1966)
Axenic, Clonal, H.Iwasaki et al.
Identified by: Y.Hara
Culture conditions: f/2, M-ASP7, 20° C,
32 µE/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable
GHE
References: 143, 396

6

Osaka Bay / Osaka (1979-08)
Axenic, Clonal, M.M.Watanabe
Identified by: M.M.Watanabe
Culture conditions: f/2, M-ASP7, 20° C,
32 μ E/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable
OHE-1
References: 67, 70, 172, 173, 174, 199, 200, 201, 203,
206, 207, 212, 239, 240, 243, 261, 268, 293, 345,
357, 407, 436, 437, 446, 487, 488, 489, 504, 506,
507, 508, 509, 510, 511, 512, 533, 535, 536, 537,
538, 539, 546, 567, 570

9

Harima-Nada / Seto Inland Sea (1983-02)
Axenic, Clonal, M.M.Watanabe (1983-05)
Identified by: M.M.Watanabe
Culture conditions: f/2, M-ASP7, 20° C,
32 μ E/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable
H-28

10

Harima-Nada / Seto Inland Sea (1983-02)
Axenic, Clonal, M.M.Watanabe (1983-05)
Identified by: M.M.Watanabe
Culture conditions: f/2, M-ASP7, 20° C,
32 μ E/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable
H-40

145

Nomaike / Kagoshima (1978-05)
Axenic, Clonal, S.Yoshimatsu
Identified by: S.Yoshimatsu
Culture conditions: f/2, M-ASP7, 20° C,
32 μ E/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable
KGW-11-5
Reference: 486

146

Shido Bay / Kagawa (1978-06)
Axenic, Clonal, K.Yuki
Identified by: K.Yuki
Culture conditions: f/2, M-ASP7, 20° C,
32 μ E/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable
KGW-21-2

293

Onagawa Bay / Miyagi (1984-08)
Axenic, Clonal, S.Suda (1984-09)
Identified by: S.Suda
Culture conditions: f/2, 20° C, 32 μ E/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable
8280G21-1
Reference: 23

561

Mikawa Bay / Aichi
Axenic, Clonal, S.Toriumi
Culture conditions: f/2, 20° C, 32 μ E/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable
References: 392, 393, 466

HYALOTHECA Ehrenberg: Charophyceae

Hyalotheca dissiliens Brébisson ex Ralfs

147

Nagatoro / Saitama (1969-11)
IAM C-510, Unialgal, Clonal, T.Ichimura (1972-06)
Identified by: T.Ichimura
Culture conditions: C, 20° C, 8 μ E/m² sec, 3M,
(20° C, 12 μ E/m² sec)
Characteristics: Freshwater, Heterothallic,
Crosses with NIES-148
S-9-18
Reference: 242

148

Nagatoro / Saitama (1969-11)
IAM C-511, Axenic, Clonal, T.Ichimura (1972-06)
Identified by: T.Ichimura
Culture conditions: C, 20° C, 8 μ E/m² sec, 3M,
(20° C, 12 μ E/m² sec)
Characteristics: Freshwater, Heterothallic,
Crosses with NIES-147
S-9-22
Reference: 242

149

Lake Kasumigaura / Ibaraki (1975-12)
IAM C-512, Axenic, Clonal, T.Ichimura (1975-12)
Identified by: T.Ichimura
Culture conditions: VT, 20° C, 8 μ E/m² sec, 1M
Characteristics: Freshwater, Heterothallic,
Crosses with NIES-150, Unstable
KAS-7-3
Reference: 242

150

Lake Kasumigaura / Ibaraki (1975-12)
IAM C-513, Axenic, Clonal, T.Ichimura (1975-12)
Identified by: T.Ichimura
Culture conditions: VT, 20° C, 8 μ E/m² sec, 1M
Characteristics: Freshwater, Heterothallic,
Crosses with NIES-149
KAS-7-8
Reference: 242

Hyalotheca dissiliens Brébisson ex Ralfs
var. *dissiliens* f. *tridentula* (Nordstedt) Bold
294

Tsukuba / Ibaraki (1982)
Unialgal, Clonal, F.Kasai (1983-02)
Identified by: F.Kasai
Culture conditions: VT, 20° C, 8 μ E/m² sec, 3M,
(20° C, 12 μ E/m² sec)
Characteristics: Freshwater, Homothallic
H-1
Reference: 242

HYDROCOCCUS Kützing: Cyanophyceae

Hydrococcus rivularis Kützing
593

Yukawa-hot spring / Iwate (1990-09)
Unialgal, Clonal, T.Hagiwara (1990-10)
Identified by: T.Hagiwara
Culture conditions: CB, 20° C, 4 μ E/m² sec, 4M,
(25° C, 30 μ E/m² sec), [Cryopreserved]
Characteristics: Benthic
Yu-52
Reference: 242

HYDRODICTYON Roth: Chlorophyceae

Hydrodictyon reticulatum (Lagerheim) Lagerheim
295

Kitakawachi-gun / Osaka (1968-11)
IAM C-335, Unialgal, Clonal, T.Ichimura (1969-01)
Identified by: T.Ichimura
Culture conditions: C(S), 20° C, 4 μ E/m² sec, 3M,
(25° C, 30 μ E/m² sec)
Characteristics: Freshwater, Homothallic
O-2
References: 96, 242

HYMENOMONAS von Stein: Prymnesiophyceae

Hymenomonas coronata Mills

1016
Taira / Okinawa (2002-03)
Unialgal, Clonal, M.Moriya (2002-05)
Identified by: M.H.Nöel
Culture conditions: ESM, 15° C, 15 μ E/m² sec, 1M
Characteristics: Marine
M-27

IMANTONIA Reynolds: Prymnesiophyceae

Imantonia rotunda Reynolds emend. Green et Pienaar
1001

Chiba Port / Chiba (1990-10)
Unialgal, Clonal, M.Kawachi (1990-11)
Identified by: M.Kawachi
Culture conditions: MNK, 22° C, 15 μ E/m² sec, 14D
Characteristics: Marine, Red tide, Unstable
Iman2

KATODINIUM Fott: Dinophyceae

Katodinium rotundatum (Lohmann) Loeblich III
356

Hachinohe Harbor / Aomori (1985-01)
Axenic, Clonal, T.Sawaguchi (1985-01)
Identified by: T.Sawaguchi
Culture conditions: f/2, ESM, 5° C, 6 μ E/m² sec,
1M (10° C, 15 μ E/m² sec)
Characteristics: Marine, Unstable, Untransportable
HHD-1

LAGERHEIMIA Chodat: Trebouxiophyceae

Lagerheimia ciliata (Lagerheim) Chodat
382

Lake Kasumigaura / Ibaraki (1983-08)
Axenic, Clonal, F.Kasai (1983-08)
Identified by: Y.Niiyama
Culture conditions: C, 20° C, 4 μ E/m² sec, 3M,
(25° C, 30 μ E/m² sec)
Characteristics: Freshwater
F37-1
Reference: 242

LIMNOTHRIX Meffert: Cyanophyceae

Limnothrix redekei Meffert

847

Lake Mälaren / Sweden (1990)

NIVA CYA277/1, Axenic, Clonal, R.Skulberg
(1990)

Identified by: S.Suda

Culture conditions: CT, 15° C, 20 µE/m² sec, 1M,
[Cryopreserved]

Characteristics: Freshwater, Water bloom, Planktonic,
16SrRNA gene (AB045929)

Reference: 444

LITHODESMIUM Ehrenberg: Bacillariophyceae

Lithodesmium variabile Takano

588

Hitachi / Ibaraki (1990-09)

Unialgal, Non-clonal, S.Ono (1990-10)

Identified by: S.Ono

Culture conditions: f/2, 15° C, 10 µE/m² sec, 1M

Characteristics: Red tide, Marine
St-12

LOBOMONAS Dangeard: Chlorophyceae

Lobomonas monstrosa Korshikov

474

Iwaki / Fukushima (1984-08)

Axenic, Clonal, S.Suda (1984-08)

Identified by: S.Suda

Culture conditions: C, 20° C, 22 µE/m² sec, 2M

Characteristics: Freshwater, *atpB* gene (AB044533),
rbcl gene (AB044171), *psaA* gene (AB044421),
psaB gene (AB044472), *psbC* gene (AB044530)

FL

Reference: 242, 337, 342

LYNGBYA Agardh: Cyanophyceae

Lynghya hieronymusii Lemmermann
var. *hieronymusii*

929

Lake Dalai, Inner Mongolia / China (1996-07)

Axenic, Clonal, S.Suda (1976-07)

Identified by: S.Suda

Culture conditions: CT, 20° C, 20 µE/m² sec, 1M,
[Cryopreserved]

Characteristics: Freshwater, Water bloom, Planktonic,
16SrRNA gene (AB045906)

CN4-3

Reference: 401, 444

MELOSIRA Agardh: Bacillariophyceae

Melosira granulata (Ehrenberg) Ralfs

var. *angustissima* Müller f. *spiralis* Müller

333

Lake Kasumigaura / Ibaraki (1983-05)

Axenic, Clonal, T.Hiwatari (1983-05)

Identified by: M.Mizuno

Culture conditions: CSi, 15° C, 10 µE/m² sec, 1M,
(20° C, 25 µE/m² sec)

Characteristics: Indicator, Freshwater, Unstable
K-Melo

Reference: 438

MERISMOPEDIA Meyen: Cyanophyceae

Merismopedia tenuissima Lemmermann

230

Tsukuba / Ibaraki (1984-05)

Unialgal, Clonal, F.Kasai (1984-05)

Identified by: M.M.Watanabe

Culture conditions: C, 20° C, 12 µE/m² sec, 1M,
[Cryopreserved]

Characteristics: Freshwater

F98-2

References: 79, 159, 242, 559, 578

MESOSTIGMA Lauterborn: Prasinophyceae

Mesostigma viride Lauterborn

296

Mitsukaido / Ibaraki (1985-07)

Axenic, Clonal, S.Suda (1985-07)

Identified by: I.Inouye

Culture conditions: C, 20° C, 40 µE/m² sec, 1M

Characteristics: Freshwater, Plastid complete DNA
(AF166114), Mitochondrial complete DNA
(AF353999)

KY-14

References: 141, 225, 480

475

Mitsukaido / Ibaraki (1986-01)

Axenic, Clonal, S.Suda (1987-12)

Identified by: S.Suda
Culture conditions: C, 20° C, 22 µE/m² sec, 20D
Characteristics: Freshwater, Heterothallic,
Mating type +
KY-Mes-2

476

Mitsukaido / Ibaraki (1986-01)
Axenic, Clonal, S.Suda (1986-12)
Identified by: S.Suda
Culture conditions: C, 20° C, 22 µE/m² sec, 20D
Characteristics: Freshwater, Heterothallic,
Mating type –
KY-Mes-1
Reference: 236

477

Mitsukaido / Ibaraki (1986-01)
Axenic, Clonal, S.Suda (1986-12)
Identified by: S.Suda
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 20D
Characteristics: Freshwater, Heterothallic,
Mating type –
KY-Mes-3
Reference: 236

995

Hojo Pond, Tsukuba / Ibaraki (1995-11)
Unialgal, Clonal, S.Watanabe (1995-11)
Identified by: S.Watanabe
Culture conditions: C, 20° C, 40 µE/m² sec, 1M
Characteristics: Freshwater, Indicator, Phototaxis
Hojo1

MESOTAENIUM Nägeli: Charophyceae

Mesotaenium kramstae Lemmermann

657

IAM C-330, Unialgal, Clonal
Culture conditions: C, 20° C, 4 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Heterothallic, Crosses
with NIES-658
Reference: 242

658

IAM C-331, Unialgal, Clonal
Culture conditions: C, 20° C, 4 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Heterothallic, Crosses

with NIES-657
Reference: 242

MICRACTINIUM Fresenius: Trebouxiophyceae

Micractinium pusillum Fresenius

151

Lake Kasumigaura / Ibaraki (1983-07)
Axenic, Clonal, F.Kasai (1983-07)
Identified by: F.Kasai
Culture conditions: C(S), 20° C, 4 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Indicator, Freshwater
F-19-4
References: 159, 242, 530

MICRASTERIAS C.Agardh: Charophyceae

Micrasterias anomala Turner

774

Cairns, Queensland / Australia (1988-09)
Unialgal, Clonal, T.Ichimura (1988)
Identified by: T.Ichimura
Culture conditions: MG, 22° C, 24 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Homothallic
88-95-12

776

Near Melaka / Malaysia (1985-08)
Unialgal, Clonal, T.Ichimura (1985)
Identified by: T.Ichimura
Culture conditions: MG, 22° C, 24 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Heterothallic
85-30-38

Micrasterias crux-melitensis Ralfs

152

Kathmandu / Nepal (1968-05)
IAM C-427, Unialgal, Clonal, T.Ichimura (1970-12)
Identified by: T.Ichimura
Culture conditions: VT, 20° C, 8 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Homothallic
N-90-27
References: 96, 242

Micrasterias foliacea Bailey ex Ralfs

777

2 km southeast of Melaka / Malaysia (1985-08)
Unialgal, Clonal, T.Ichimura (1985)
Identified by: T.Ichimura
Culture conditions: MG, 22° C, 24 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Heterothallic, Crosses
with NIES-778
M2-1

778

2 km southeast of Melaka / Malaysia (1985-08)
Unialgal, Clonal, T.Ichimura (1985)
Identified by: T.Ichimura
Culture conditions: MG, 22° C, 24 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Heterothallic, Crosses
with NIES-777
M2-2

Micrasterias foliacea Bailey ex Ralfs var. *foliacea*

297

Higashihiroshima / Hiroshima (1983-10)
Unialgal, Clonal, F.Kasai (1983-10)
Identified by: F.Kasai
Culture conditions: MG, 20° C, 8 µE/m² sec, 3M,
(25° C, 15 µE/m² sec)
Characteristics: Freshwater
83-24-24
Reference: 242

Micrasterias mahabuleshwarensis Hobson

779

2 km southeast of Melaka / Malaysia (1985-08)
Unialgal, Clonal, T.Ichimura (1985)
Identified by: T.Ichimura
Culture conditions: MG, 22° C, 24 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Heterothallic, Crosses
with NIES-780
M2-6

780

2 km southeast of Melaka / Malaysia (1985-08)
Unialgal, Clonal, T.Ichimura (1985)
Identified by: T.Ichimura
Culture conditions: MG, 22° C, 24 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Heterothallic, Crosses
with NIES-779

M2-7

Micrasterias thomasiana Archer

var. *notata* (Nordstedt) Grönblad

781

2 km southeast of Melaka / Malaysia (1985-08)
Unialgal, Clonal, T.Ichimura (1985)
Identified by: T.Ichimura
Culture conditions: MG, 22° C, 24 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Heterothallic, Crosses
with NIES-782
85-28-14

782

2 km southeast of Melaka / Malaysia (1985-08)
Unialgal, Clonal, T.Ichimura (1985)
Identified by: T.Ichimura
Culture conditions: MG, 22° C, 24 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Heterothallic, Crosses
with NIES-781
85-28-57

Micrasterias truncata (Corda) Brébisson ex Ralfs

var. *pusilla* G.S.West

783

Centennial Park, Sydney / Australia (1988-09)
Unialgal, Clonal, F.Kasai (1988-09)
Identified by: F.Kasai
Culture conditions: MG, 22° C, 24 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Heterothallic, Crosses
with NIES-784
88-7-2

784

Near Cairns, Queensland / Australia (1988-09)
Unialgal, Clonal, F.Kasai (1988-09)
Identified by: F.Kasai
Culture conditions: MG, 22° C, 24 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Heterothallic, Crosses
with NIES-783
88-8-5

MICROCYSTIS Lemmermann: Cyanophyceae

- Microcystis aeruginosa* (Kützing) Lemmermann
Syn. *Microcystis ichtyoblabe* Kützing
Microcystis novacekii (Komárek) Compère
Microcystis viridis (A. Brown) Lemmermann
Microcystis wesenbergii Komárek
- 44
Lake Kasumigaura / Ibaraki (1974-08)
IAM M-176, Axenic, Clonal, M.H. Watanabe
(1974-08)
Reidentified by: S. Otsuka
Culture conditions: CB, 25° C, 24 µE/m² sec, 20D,
[Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater,
Formerly identified as *M. aeruginosa* f. *aeruginosa*,
16SrRNA gene (AB015361), 16S-23S ITS region
(AB015361)
References: 5, 19, 61, 96, 103, 145, 151, 152, 159,
227, 242, 291, 376, 438, 459, 530, 542, 565
- 87
Lake Kasumigaura / Ibaraki (1982-09)
Axenic, Clonal, M.H. Watanabe (1982-09)
Reidentified by: S. Otsuka
Culture conditions: MA, 25° C, 24 µE/m² sec, 20D,
[Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater,
Formerly identified as *M. aeruginosa* f. *aeruginosa*,
16SrRNA gene (D89031)
K-MA-11
References: 129, 145, 210, 211, 212, 213, 215, 227,
242, 265, 266, 267, 291, 365, 468, 530, 572, 578
- 88
Lake Kawaguchi / Yamanashi (1981-06)
Unialgal, Clonal, M.H. Watanabe (1981-06)
Reidentified by: S. Otsuka
Culture conditions: MA, 25° C, 24 µE/m² sec, 20D,
[Cryopreserved]
Characteristics: Water bloom, Indicator, Toxic,
Freshwater, Formerly identified as *M. aeruginosa* f.
aeruginosa, 16SrRNA gene (AB023255)
KW-MA1-3
References: 122, 124, 126, 145, 169, 210, 211, 212,
213, 438, 473, 530, 572, 578
- 89
Lake Kawaguchi / Yamanashi (1981-06)
Unialgal, Clonal, M.H. Watanabe (1981-06)
Reidentified by: S. Otsuka
Culture conditions: MA, 25° C, 24 µE/m² sec, 20D,
[Cryopreserved]
Characteristics: Water bloom, Indicator, Toxic,
Freshwater, Formerly identified as *M. aeruginosa* f.
aeruginosa, 16SrRNA gene (U03403)
KW-MA2-5
References: 132, 210, 211, 212, 213, 215, 227, 242,
290, 291, 530, 543, 572, 578
- 90
Lake Kawaguchi / Yamanashi (1981-06)
Axenic, Clonal, M.H. Watanabe (1981-06)
Reidentified by: S. Otsuka
Culture conditions: MA, 25° C, 24 µE/m² sec, 20D,
[Cryopreserved]
Characteristics: Water bloom, Indicator, Toxic,
Freshwater, Formerly identified as *M. aeruginosa* f.
aeruginosa, 16SrRNA gene (AB023256)
KW-MB-2
References: 125, 130, 210, 211, 212, 213, 242, 530,
542, 572, 578
- 91
Lake Kasumigaura / Ibaraki (1982-09)
Unialgal, Clonal, M.H. Watanabe (1982-09)
Reidentified by: S. Otsuka
Culture conditions: MA, 25° C, 24 µE/m² sec, 20D,
[Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater,
Formerly identified as *M. aeruginosa* f. *aeruginosa*,
16SrRNA gene (AB023257)
K-MB-13
References: 210, 211, 212, 213, 242, 530, 578
- 98
Lake Kasumigaura / Ibaraki (1982-09)
Axenic, Clonal, M.H. Watanabe (1982-09)
Reidentified by: S. Otsuka
Culture conditions: MA, 25° C, 24 µE/m² sec, 20D,
[Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater,
Formerly identified as *M. aeruginosa* f. *flos-aquae*,
16SrRNA gene (D89032)
K-MF-K-3
References: 2, 107, 108, 132, 180, 210, 211, 212, 213,
215, 227, 242, 249, 291, 515, 530, 578
- 99
Lake Suwa / Nagano (1982-08)
Unialgal, Clonal, M.H. Watanabe (1982-08)
Reidentified by: S. Otsuka
Culture conditions: MA, 25° C, 24 µE/m² sec, 20D,
[Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater,
Formerly identified as *M. aeruginosa* f. *aeruginosa*,

- 16SrRNA gene (AB023258)
S-MA-S5
References: 123, 145, 210, 211, 212, 213, 242, 530, 565, 578
- 100
Lake Suwa / Nagano (1982-08)
Unialgal, Clonal, M.H.Watanabe (1982-08)
Reidentified by: S.Otsuka
Culture conditions: MA, 25° C, 24 µE/m² sec, 20D, [Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater, Formerly identified as *M. aeruginosa* f. *aeruginosa*, 16SrRNA gene (AB023259)
S-MB-S7
References: 210, 211, 212, 213, 242, 360, 362, 394, 515, 530, 557, 578
- 101
Lake Suwa / Nagano (1982-10)
TAC 48, Unialgal, Clonal, M.Watanabe (1982-10)
Reidentified by: S.Otsuka
Culture conditions: CB, 25° C, 24 µE/m² sec, 20D, [Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater, 16SrRNA gene (AB023260)
S-TAN-48
References: 34, 210, 211, 212, 213, 242, 269, 515, 530, 578
- 102
Lake Kasumigaura / Ibaraki (1982-09)
Axenic, Clonal, M.H.Watanabe (1982-09)
Reidentified by: S.Otsuka
Culture conditions: MA, 25° C, 24 µE/m² sec, 1M
Characteristics: Water bloom, Indicator, Toxic, Freshwater, Formerly identified as *M. viridis*, 16SrRNA gene (D89033)
K-MV-20
References: 79, 115, 116, 119, 134, 140, 159, 170, 210, 211, 212, 213, 215, 218, 227, 232, 242, 290, 291, 368, 394, 447, 448, 520, 543, 557, 558, 559, 565, 572, 578
- 103
Lake Kasumigaura / Ibaraki (1978-12)
TAC 44, Unialgal, Clonal, M.Watanabe (1978-12)
Reidentified by: S.Otsuka
Culture conditions: MA, 25° C, 24 µE/m² sec, 1M, [Cryopreserved]
Characteristics: Water bloom, Indicator, Toxic, Freshwater, Formerly identified as *M. viridis*
- K-TAN-44
References: 197, 242, 251, 515
- 104
Chiyoda-ku / Tokyo (1982-11)
Axenic, Clonal, M.H.Watanabe (1982-11)
Reidentified by: S.Otsuka
Culture conditions: CB, MA, 25° C, 24 µE/m² sec, 1M, [Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater, Formerly identified as *M. wesenbergii*, 16SrRNA gene (AB015387, AB023266, AJ133174), 16S-23S ITS region (AB015387), *gyrB* gene (AB074771), *rpoC1* gene (AB074794), *rpoD1* gene (AB074821)
MW-H1
References: 210, 211, 212, 213, 215, 227, 242, 376, 425, 438, 557, 572, 578
- 105
Lake Kasumigaura / Ibaraki (1982-09)
Unialgal, Clonal, M.H.Watanabe (1982-09)
Reidentified by: M.H.Watanabe
Culture conditions: MA, 25° C, 24 µE/m² sec, 1M, [Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater, Formerly identified as *M. wesenbergii*, 16SrRNA gene (AB023267)
K-MW-K4
References: 210, 211, 212, 213, 242, 572, 578
- 106
Lake Kasumigaura / Ibaraki (1982-09)
Unialgal, Clonal, M.H.Watanabe (1982-09)
Reidentified by: S.Otsuka
Culture conditions: MA, 25° C, 24 µE/m² sec, 1M, [Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater, (A) large size, Formerly identified as *M. wesenbergii*, 16SrRNA gene (AB023268)
K-MW-19
References: 210, 211, 212, 213, 242, 394, 572, 578
- 107
Lake Kawaguchi / Yamanashi (1981-06)
Unialgal, Clonal, M.H.Watanabe (1981-06)
Reidentified by: S.Otsuka
Culture conditions: CB, MA, 25° C, 24 µE/m² sec, 1M, [Cryopreserved]
Characteristics: Water bloom, Indicator, Toxic, Freshwater, Formerly identified as *M. wesenbergii*, 16SrRNA gene (U40333)

- KW-MW-7
References: 213, 214, 242, 290, 291, 543
- 108
Lake Suwa / Nagano (1982-08)
Unialgal, Clonal, M.H.Watanabe (1982-08)
Reidentified by: S.Otsuka
Culture conditions: MA, 25° C, 24 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater,
Formerly identified as *M. wesenbergii*, 16SrRNA
gene (AB023269)
S-MW-52
References: 210, 211, 212, 213, 242, 572, 578
- 109
Lake Yogo / Shiga (1982-07)
Unialgal, Clonal, M.H.Watanabe (1982-07)
Reidentified by: S.Otsuka
Culture conditions: MA, 25° C, 24 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater,
Formerly identified as *M. wesenbergii*, 16SrRNA
gene (AB023270)
Y-MW-24
References: 210, 211, 212, 213, 242, 572, 578
- 110
Lake Kasumigaura / Ibaraki (1978-08)
TAC 36, Unialgal, Clonal, M.Watanabe (1978-08)
Reidentified by: S.Otsuka
Culture conditions: CT, 25° C, 24 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater,
Formerly identified as *M. wesenbergii*, 16SrRNA
gene (AB023271)
K-TAN-36
References: 210, 211, 212, 213, 242, 572, 578
- 111
Lake Kasumigaura / Ibaraki (1978-08)
TAC 37, Axenic, Clonal, M.Watanabe (1978-08)
Reidentified by: S.Otsuka
Culture conditions: MA, 25° C, 24 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater,
Formerly identified as *M. wesenbergii*, 16SrRNA
gene (D89034, AB015388), 16S-23S ITS region
(AB015388)
K-TAN-37
References: 210, 211, 212, 213, 215, 227, 242, 290,
291, 376, 438, 543, 572, 578
- 112
Lake Suwa / Nagano (1982-10)
TAC 52, Axenic, Clonal, M.Watanabe (1982-10)
Reidentified by: S.Otsuka
Culture conditions: MA, 25° C, 24 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater,
Formerly identified as *M. wesenbergii*, 16SrRNA
gene (U40334, AB023272)
S-TAN-52
References: 210, 211, 212, 213, 214, 215, 227, 242,
291, 515, 565, 572, 578
- 298
Lake Kasumigaura / Ibaraki (1982-09)
TAC 47, Axenic, Clonal, M.Watanabe (1982-09)
Reidentified by: S.Otsuka
Culture conditions: CB, 25° C, 24 µE/m² sec, 20D,
[Cryopreserved]
Characteristics: Water bloom, Toxic, Freshwater,
Formerly identified as *M. aeruginosa* f. *aeruginosa*,
16SrRNA gene (AB023261)
K-TAN-47
References: 34, 61, 79, 115, 131, 132, 159, 210, 211,
212, 213, 215, 223, 224, 227, 242, 253, 291, 294,
361, 394, 515, 543, 559, 572, 578
- 299
Lake Kasumigaura / Ibaraki (1979-08)
Unialgal, Clonal, N.Takamura (1979-08)
Reidentified by: S.Otsuka
Culture conditions: MA, 25° C, 24 µE/m² sec, 20D,
[Cryopreserved]
Characteristics: Water bloom, Freshwater, Formerly
identified as *M. aeruginosa* f. *aeruginosa*,
16SrRNA gene (AB023262)
KN1133
References: 61, 123, 127, 210, 211, 212, 213, 242,
572, 578
- 478
Lake Kasumigaura / Ibaraki (1977-09)
Unialgal, Non-clonal, O.Yagi (1978-04)
Reidentified by: S.Otsuka
Culture conditions: MA, 20° C, 4 µE/m² sec, 3M,
(25° C, 15 µE/m² sec), [Cryopreserved]
Characteristics: Toxic, Freshwater, Formerly
identified as *M. aeruginosa* f. *flos-aquae*
K-5
References: 128, 242, 550, 551, 552

- 604
 Lake Kasumigaura / Ibaraki (1977-09)
 Axenic, Clonal, O.Yagi (1978-04)
 Reidentified by: S.Otsuka
 Culture conditions: MA, 20° C, 4 µE/m² sec, 3M,
 (25° C, 15 µE/m² sec), [Cryopreserved]
 Characteristics: Water bloom, Freshwater, 16SrRNA
 gene (AB023273)
 K-3A
 References: 60, 210, 211, 212, 213, 215, 217, 227,
 242, 262, 428, 550, 572, 578
- 843
 Lake Kasumigaura / Ibaraki (1997-08)
 Axenic, Clonal, S.Otsuka (1997-08)
 Identified by: S.Otsuka
 Culture conditions: MA, 25° C, 15 µE/m² sec, 2M,
 [Cryopreserved]
 Characteristics: Freshwater, Water bloom, Offensive
 taste and odor, Toxic, 16SrRNA gene
 (AB035549)
 NC7
 References: 373, 377
- 901
 Dundee, Scotland / U.K. (1997-08)
 Axenic, Clonal, S.Otsuka (1997-08)
 Identified by: S.Otsuka
 Culture conditions: MA, 25° C, 24 µE/m² sec, 1M,
 [Cryopreserved]
 Characteristics: Freshwater, Water bloom, Offensive
 taste and odor, Toxic
 BC18
 Reference: 373
- 902
 Chon Buri / Thailand (1997-01)
 Axenic, Clonal, R.Li (1997-02)
 Identified by: S.Otsuka
 Culture conditions: MA, 25° C, 24 µE/m² sec, 1M,
 [Cryopreserved]
 Characteristics: Freshwater, Water bloom, Offensive
 taste and odor, Toxic
 TL2
 Reference: 373
- 903
 Hubei / China (1996-07)
 Axenic, Clonal, S.Otsuka (1996-07)
 Identified by: S.Otsuka
 Culture conditions: MA, 25° C, 24 µE/m² sec, 1M,
 [Cryopreserved]
- Characteristics: Freshwater, Water bloom, Offensive
 taste and odor, Toxic
 CC9
 Reference: 373
- 904
 Bangkok / Thailand (1996-10)
 Axenic, Clonal, S.Otsuka (1996-10)
 Identified by: S.Otsuka
 Culture conditions: MA, 25° C, 24 µE/m² sec, 1M,
 [Cryopreserved]
 Characteristics: Freshwater, Water bloom, Offensive
 taste and odor, Toxic
 TC7
 Reference: 373
- 933
 Little Rideau Lake, Ontario / Canada
 PCC 7941, Unialgal, Clonal, P.R.Gorham &
 W.W.Carmichael (1954)
 Identified by: R.Rippka
 Culture conditions: MA, 25° C, 24 µE/m² sec, 1M,
 [Cryopreserved]
 Characteristics: Freshwater, Water bloom, Toxic,
 Type strain
- 1025
 Sapporo / Hokkaido (2000-06)
 Unialgal, Clonal, T.Sano (2000-06)
 Identified by: S.Otsuka
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
 [Cryopreserved]
 Characteristics: Freshwater, Water bloom, Toxic,
 Formerly identified as *Microcystis ichtyoblabe*
 Doutyou-1-3
- 1026
 Sapporo / Hokkaido (2000-06)
 Unialgal, Clonal, T.Sano (2000-06)
 Identified by: S.Otsuka
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
 [Cryopreserved]
 Characteristics: Freshwater, Water bloom, Toxic,
 Formerly identified as *Microcystis ichtyoblabe*
 Doutyou-1-4
- 1027
 Lake Kasumigaura / Ibaraki (2000-08)
 Unialgal, Clonal, T.Sano (2000-08)
 Identified by: T.Sano
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
 [Cryopreserved]

- Characteristics: Freshwater, Water bloom, Toxic
Takahama-Ma-2
- 1028
Lake Teganuma / Chiba (2000-09)
Unialgal, Clonal, T.Sano (2000-09)
Identified by: T.Sano
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom, Toxic
TEGA-Mv-1
- 1029
Neuglobsow, Brandenburg / Germany (2000-08)
Unialgal, Clonal, T.Sano (2000-08)
Identified by: S.Otsuka
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom, Toxic
DU-MA-4-1
- 1043
Neuglobsow, Brandenburg / Germany (2000-08)
Unialgal, Clonal, T.Sano (2000-08)
Identified by: T.Sano
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom, Toxic
DU-MA-4-1
- 1050
Lake Kasumigaura / Ibaraki (1978-02)
TAC 4, Unialgal, Clonal, M.Watanabe (1978-02)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom
Reference: 505
- 1051
Lake Kasumigaura / Ibaraki (1978-02)
TAC 6, Unialgal, Clonal, M.Watanabe (1978-02)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom
Reference: 505
- 1052
Lake Kasumigaura / Ibaraki (1978-02)
TAC 15, Unialgal, Clonal, M.Watanabe (1978-02)
Identified by: M.Watanabe
- Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom
Reference: 505
- 1053
Lake Kasumigaura / Ibaraki (1978-02)
TAC 19, Unialgal, Clonal, M.Watanabe (1978-02)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom, Formerly
identified as *M. novaceckii*
References: 379, 505, 514, 515, 517
- 1054
Lake Kasumigaura / Ibaraki (1978-02)
TAC 20, Unialgal, Clonal, M.Watanabe (1978-02)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom,
16SrRNA gene (AB012336, AB015374)
References: 375, 376, 379, 505, 514, 515, 517
- 1055
Lake Kasumigaura / Ibaraki (1978-08)
TAC 38-1, Unialgal, Clonal, M.Watanabe (1978-08)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom, Formerly
identified as *M. wesenbergii*, Reisolated from TAC
38, 16SrRNA gene (AB012334, AB015389,
AB023274)
References: 164, 210, 211, 212, 375, 376, 379, 473,
515, 578 [Both for TAC 38 and 38-1 are included]
- 1056
Lake Kasumigaura / Ibaraki (1978-08)
TAC 39, Unialgal, Clonal, M.Watanabe (1978-08)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom, Formerly
identified as *M. wesenbergii*
- 1057
Lake Kasumigaura / Ibaraki (1978-08)
TAC 40, Unialgal, Clonal, M.Watanabe (1978-08)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,

- [Cryopreserved]
 Characteristics: Freshwater, Water bloom, Formerly identified as *M. wesenbergii*
 Reference: 394
- 1058
 Lake Kasumigaura / Ibaraki (1978-12)
 TAC 45-1, Unialgal, Clonal, M.Watanabe (1978-12)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M, [Cryopreserved]
 Characteristics: Freshwater, Water bloom, Formerly identified as *M. viridis*, Reisolated from TAC 45, 16SrRNA gene (AB015400)
 References: 164, 376, 515, 578 [Both for TAC 45 and 45-1 are included]
- 1059
 Lake Kasumigaura / Ibaraki (1978-12)
 TAC 46, Unialgal, Clonal, M.Watanabe (1978-12)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M, [Cryopreserved]
 Characteristics: Freshwater, Water bloom, Formerly identified as *M. viridis*
 References: 379, 513, 514, 515
- 1060
 Lake Suwa / Nagano (1982-10)
 TAC 50, Unialgal, Clonal, M.Watanabe (1982-10)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M, [Cryopreserved]
 Characteristics: Freshwater, Water bloom
 Reference: 517
- 1061
 Lake Suwa / Nagano (1982-10)
 TAC 51, Unialgal, Clonal, M.Watanabe (1982-10)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M, [Cryopreserved]
 Characteristics: Freshwater, Water bloom, Formerly identified as *M. ichthyoblabe*, 16SrRNA gene (AB023281)
 References: 164, 210, 211, 212, 296, 379, 394, 473, 505, 514, 517, 578
- 1062
 Lake Suwa / Nagano (1982-10)
 TAC 57-1, Unialgal, Clonal, M.Watanabe (1982-10)
 Identified by: M.Watanabe
- Culture conditions: MA, 20° C, 15 µE/m² sec, 1M, [Cryopreserved]
 Characteristics: Freshwater, Water bloom, Formerly identified as *M. wesenbergii*, Reisolated from TAC 57, 16SrRNA gene (AB015391, AB023276)
 References: 210, 376, 578 [Both for TAC 57 and 57-1 are included]
- 1063
 Lake Shirakaba / Nagano (1982-09)
 TAC 60, Unialgal, Clonal, M.Watanabe (1982-09)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M, [Cryopreserved]
 Characteristics: Freshwater, Water bloom
 References: 164, 367, 379, 380, 381, 505, 514, 517, 578
- 1064
 Lake Shirakaba / Nagano (1982-09)
 TAC 61, Unialgal, Clonal, M.Watanabe (1982-09)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M, [Cryopreserved]
 Characteristics: Freshwater, Water bloom, Toxic
 References: 164, 379, 505, 514, 516, 517, 578
- 1065
 Lake Kutsuzawa / Nagano (1982-09)
 TAC 62, Unialgal, Clonal, M.Watanabe (1982-09)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M, [Cryopreserved]
 Characteristics: Freshwater, Water bloom
 Reference: 505
- 1066
 Lake Kutsuzawa / Nagano (1982-09)
 TAC 63, Unialgal, Clonal, M.Watanabe (1982-09)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M, [Cryopreserved]
 Characteristics: Freshwater, Water bloom
 References: 379, 394, 505, 514, 516, 517
- 1067
 Chikato-ike Pond, Matsumoto / Nagano (1982-09)
 TAC 65-2, Unialgal, Clonal, M.Watanabe (1982-09)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom, Formerly identified as *M. wesenbergii*, Reisolated from TAC

- 65, 16SrRNA gene (AB012337, AB023285)
References: 164, 210, 296, 375, 376, 379, 505, 514, 515, 517, 578 [Both for TAC 65 and 65-2 are included]
- 1068
Rokusuke-ike Pond, Matsumoto / Nagano (1982-09)
TAC 66-1, Unialgal, Clonal, M.Watanabe (1982-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Formerly identified as *M. novacekii*, Reisolated from TAC 66, 16SrRNA gene (AB015376, AB023286)
References: 164, 210, 211, 212, 296, 367, 376, 379, 505, 514, 517, 578 [Both for TAC 66 and 66-1 are included]
- 1069
Rokusuke-ike Pond, Matsumoto / Nagano (1982-09)
TAC 67, Unialgal, Clonal, M.Watanabe (1982-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M, [Cryopreserved]
Characteristics: Freshwater, Water bloom
- 1070
Rokusuke-ike Pond, Matsumoto / Nagano (1982-09)
TAC 69-1, Unialgal, Clonal, M.Watanabe (1982-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M, [Cryopreserved]
Characteristics: Freshwater, Water bloom, Toxic, Formerly identified as *M. ichthyoblabe*, Reisolated from TAC 69
References: 164, 379, 505, 514, 516, 517, 569, 578 [Both for TAC 69 and 69-1 are included]
- 1071
Fukui / Ishikawa (1982-09)
TAC 70-1, Unialgal, Clonal, M.Watanabe (1982-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M, [Cryopreserved]
Characteristics: Freshwater, Water bloom, Toxic, Reisolated from TAC 70
References: 164, 379, 505, 514, 516, 517, 578 [Both for TAC 70 and 70-1 are included]
- 1072
Fukui / Ishikawa (1982-09)
TAC 71-1, Unialgal, Clonal, M.Watanabe (1982-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M, [Cryopreserved]
- 1073
Fukui / Ishikawa (1982-09)
TAC 72, Unialgal, Clonal, M.Watanabe (1982-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M, [Cryopreserved]
Characteristics: Freshwater, Water bloom
- 1074
Lake Yogo / Shiga (1984-09)
TAC 73-1, Unialgal, Clonal, M.Watanabe (1984-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M, [Cryopreserved]
Characteristics: Freshwater, Water bloom, Reisolated from TAC 73
References: 164, 379, 380, 381, 505, 514, 517 [Both for TAC 73 and 73-1 are included]
- 1075
Lake Yogo / Shiga (1984-09)
TAC 74-1, Unialgal, Clonal, M.Watanabe (1984-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Reisolated from TAC 74
Reference: 505 [For TAC 74]
- 1076
Lake Yogo / Shiga (1984-09)
TAC 75-1, Unialgal, Clonal, M.Watanabe (1984-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Reisolated from TAC 75, 16SrRNA gene (AB023287)
References: 210, 211, 212, 296, 379, 505, 514, 517, 578 [Both for TAC 75 and 75-1 are included]
- 1077
Lake Yogo / Shiga (1984-09)
TAC 76, Unialgal, Clonal, M.Watanabe (1984-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M, [Cryopreserved]

- Characteristics: Freshwater, Water bloom, Toxic
References: 164, 296, 379, 505, 514, 516, 517
- 1078
Lake Mikata / Fukui (1984-09)
TAC 79, Unialgal, Clonal, M.Watanabe (1984-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom
- 1079
Lake Suigetsu / Fukui (1984-09)
TAC 80-1, Unialgal, Clonal, M.Watanabe (1984-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom, Formerly
identified as *M. ichthyoblabe*, Reisolated from
TAC 80
References: 164, 367, 379, 380, 381, 505, 514, 517,
578 [Both for TAC 80 and 80-1 are included]
- 1080
Lake Suigetsu / Fukui (1984-09)
TAC 81-1, Unialgal, Clonal, M.Watanabe (1984-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom, Reisolated
from TAC 81
References: 379, 394, 473, 505, 517 [Both for TAC
81 and 81-1 are included]
- 1081
Koyama-ike Pond, Tottori / Tottori (1984-09)
TAC 82-1, Unialgal, Clonal, M.Watanabe (1984-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom, Reisolated
from TAC 82
References: 164, 379, 473, 505, 514, 517 [Both for
TAC 82 and 82-1 are included]
- 1082
Koyama-ike Pond, Tottori / Tottori (1984-09)
TAC 83-1, Unialgal, Clonal, M.Watanabe (1984-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Reisolated
from TAC 83
- Reference: 505 [For TAC 83]
- 1083
Ukiginu-ike Pond, Ooda / Shimane (1984-09)
TAC 84, Unialgal, Clonal, M.Watanabe (1984-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom
References: 379, 473, 505, 514, 517
- 1084
Ukiginu-ike Pond, Ooda / Shimane (1984-09)
TAC 85, Unialgal, Clonal, M.Watanabe (1984-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom, Formerly
identified as *M. wesenbergii*
References: 164, 367, 379, 578
- 1085
Koshi-ike Pond, Matsue / Shimane (1984-09)
TAC 86-1, Unialgal, Clonal, M.Watanabe (1984-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Toxic,
Reisolated from TAC 86, 16SrRNA gene
(AB012333, AB015363)
References: 375, 376, 379, 380, 381, 505, 514, 517
[Both for TAC 86 and 86-1 are included]
- 1086
Koshi-ike Pond, Matsue / Shimane (1984-09)
TAC 87-1, Unialgal, Clonal, M.Watanabe (1984-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Toxic,
Reisolated from TAC 87, 16SrRNA gene
(AB015364)
References: 164, 374, 376, 379, 380, 381, 505, 514,
516, 517, 578 [Both for TAC 87 and 87-1 are
included]
- 1087
Koshi-ike Pond, Matsue / Shimane (1984-09)
TAC 88, Unialgal, Clonal, M.Watanabe (1984-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom
Reference: 505

- 1088
Koshi-ike Pond, Matsue / Shimane (1984-09)
TAC 89, Unialgal, Clonal, M.Watanabe (1984-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom
Reference: 505
- 1089
Koshi-ike Pond, Matsue / Shimane (1984-09)
TAC 90, Unialgal, Clonal, M.Watanabe (1984-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom
Reference: 505
- 1090
Lake Barato / Hokkaido (1984-08)
TAC 91-1, Unialgal, Clonal, M.Watanabe (1984-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom, Formerly
identified as *M. ichthyoblabe*, Reisolated from
TAC 91, 16SrRNA gene (AB012339, AB015367,
AB023282)
References: 164, 210, 211, 212, 296, 367, 375, 376,
379, 380, 381, 505, 514, 517, 578 [Both for TAC
91 and 91-1 are included]
- 1091
Lake Barato / Hokkaido (1984-08)
TAC 92-1, Unialgal, Clonal, M.Watanabe (1984-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom, Formerly
identified as *M. viridis*, Reisolated from TAC 92,
16SrRNA gene (AB015402, AB023278)
References: 164, 210, 211, 212, 296, 376, 379, 511,
513, 514, 569, 578 [Both for TAC 92 and 92-1 are
included]
- 1092
Lake Barato / Hokkaido (1984-08)
TAC 93-1, Unialgal, Clonal, M.Watanabe (1984-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Reisolated
from TAC 93, 16SrRNA gene (AB015403)
- Reference: 376 [For TAC 93]
- 1093
Lake Barato / Hokkaido (1984-08)
TAC 95-1, Unialgal, Clonal, M.Watanabe (1984-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Reisolated
from TAC 95
Reference: 164, 367, 379, 505, 514, 516, 517, 578
[Both for TAC 95 and 95-1 are included]
- 1094
Lake Shirakaba / Nagano (1984-09)
TAC 96, Unialgal, Clonal, M.Watanabe (1984-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom
- 1095
Lake Shirakaba / Nagano (1984-09)
TAC 97, Unialgal, Clonal, M.Watanabe (1984-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom, Toxic
References: 164, 379, 505, 514, 516, 517
- 1096
Lake Shirakaba / Nagano (1984-09)
TAC 98, Unialgal, Clonal, M.Watanabe (1984-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom
- 1097
Ogasahara / Tokyo (1984-11)
TAC 109, Unialgal, Clonal, M.Watanabe (1984-12)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Toxic
References: 164, 379, 505, 514, 517, 578
- 1098
Ogasahara / Tokyo (1984-11)
TAC 110-1, Unialgal, Clonal, M.Watanabe
(1984-12)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
[Cryopreserved]

- Characteristics: Freshwater, Water bloom, Reisolated from TAC 110
References: 164, 379, 473, 505, 514, 517, 578 [Both for TAC 110 and 110-1 are included]
- 1099
Noborio-ike Pond, Misho / Ehime (1988-10)
TAC 113-1, Unialgal, Clonal, M.Watanabe (1988-10)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M, [Cryopreserved]
Characteristics: Freshwater, Water bloom, Toxic, Reisolated from TAC 113
References: 367, 379, 505, 514, 516, 517 [Both for TAC 113 and 113-1 are included]
- 1100
Kathmandu / Nepal (1988-11)
TAC 114-1, Unialgal, Clonal, M.Watanabe (1988-11)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M, [Cryopreserved]
Characteristics: Freshwater, Water bloom, Reisolated from TAC 114
- 1101
Kathmandu / Nepal (1988-11)
TAC 115-1, Unialgal, Clonal, M.Watanabe (1988-11)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M, [Cryopreserved]
Characteristics: Freshwater, Water bloom, Reisolated from TAC 115
- 1102
Lake Barato / Hokkaido (1989-08)
TAC 122, Unialgal, Clonal, M.Watanabe (1989-08)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M, [Cryopreserved]
Characteristics: Freshwater, Water bloom, Formerly identified as *M. viridis*
- 1103
Lake Barato / Hokkaido (1989-08)
TAC 123, Unialgal, Clonal, M.Watanabe (1989-08)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M, [Cryopreserved]
- Characteristics: Freshwater, Water bloom, Formerly identified as *M. viridis*
- 1104
Lake Barato / Hokkaido (1989-08)
TAC 124, Unialgal, Clonal, M.Watanabe (1989-08)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M, [Cryopreserved]
Characteristics: Freshwater, Water bloom, Formerly identified as *M. viridis*
Reference: 473
- 1105
Lake Barato / Hokkaido (1989-08)
TAC 125-1, Unialgal, Clonal, M.Watanabe (1989-08)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M, [Cryopreserved]
Characteristics: Freshwater, Water bloom, Formerly identified as *M. ichthyoblabe*, Reisolated from TAC 125, 16SrRNA gene (AB015368, AB023283)
References: 210, 211, 212, 296, 376, 505, 578 [Both for TAC 125 and 125-1 are included]
- 1106
Shin-ike Pond, Matsumoto / Nagano (1989-08)
TAC 126, Unialgal, Clonal, M.Watanabe (1989-08)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M, [Cryopreserved]
Characteristics: Freshwater, Water bloom, Formerly identified as *M. wesenbergii*
- 1107
Kamisawa-ike Pond, Matsumoto / Nagano (1989-08)
TAC 128, Unialgal, Clonal, M.Watanabe (1989-08)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M, [Cryopreserved]
Characteristics: Freshwater, Water bloom
References: 505, 569
- 1108
Kamisawa-ike Pond, Matsumoto / Nagano (1989-08)
TAC 129, Unialgal, Clonal, M.Watanabe (1989-07)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M, [Cryopreserved]
Characteristics: Freshwater, Water bloom

- Reference: 505
- 1109
Dazaifu / Fukuoka (1989-07)
TAC 130, Unialgal, Clonal, M.Watanabe (1989-07)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom
Reference: 505
- 1110
Dazaifu / Fukuoka (1989-07)
TAC 131, Unialgal, Clonal, M.Watanabe (1989-07)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom
Reference: 505
- 1111
Dazaifu / Fukuoka (1989-07)
TAC 132, Unialgal, Clonal, M.Watanabe (1989-07)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom, Formerly
identified as *M. wesenbergii*
- 1112
Dazaifu / Fukuoka (1989-07)
TAC 133, Unialgal, Clonal, M.Watanabe (1989-07)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom, Formerly
identified as *M. wesenbergii*
- 1113
Lake Suwa / Nagano (1989-07)
TAC 134, Unialgal, Clonal, M.Watanabe (1989-07)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
Reference: 505
- 1114
Lake Suwa / Nagano (1989-07)
TAC 135, Unialgal, Clonal, M.Watanabe (1989-07)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Formerly
- identified as *M. viridis*
- 1115
Showa-tameike Pond, Yame / Fukuoka (1989-08)
TAC 136-1, Unialgal, Clonal, M.Watanabe
(1989-08)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom, Reisolated
from TAC 136, 16SrRNA gene (AB015369)
References: 376, 505 [Both for TAC 136 and 136-1
are included]
- 1116
Showa-tameike Pond, Yame / Fukuoka (1989-08)
TAC 137, Unialgal, Clonal, M.Watanabe (1989-08)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
Reference: 505
- 1117
Showa-tameike Pond, Yame / Fukuoka (1989-08)
TAC 138-1, Unialgal, Clonal, M.Watanabe
(1989-08)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom, Reisolated
from TAC 138, 16SrRNA gene (AB015370)
References: 376, 505 [Both for TAC 138 and 138-1
are included]
- 1118
Showa-tameike Pond, Yame / Fukuoka (1989-08)
TAC 141, Unialgal, Clonal, M.Watanabe (1989-08)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom, Formerly
identified as *M. viridis*
- 1119
Showa-tameike Pond, Yame / Fukuoka (1989-08)
TAC 143, Unialgal, Clonal, M.Watanabe (1989-08)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom, Formerly
identified as *M. wesenbergii*

- 1120
 Showa-tameike Pond, Yame / Fukuoka (1989-08)
 TAC 144, Unialgal, Clonal, M.Watanabe (1989-08)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom, Formerly
 identified as *M. wesenbergii*
- 1121
 Showa-tameike Pond, Yame / Fukuoka (1989-08)
 TAC 145, Unialgal, Clonal, M.Watanabe (1989-08)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
 [Cryopreserved]
 Characteristics: Freshwater, Water bloom, Formerly
 identified as *M. wesenbergii*
- 1122
 Ohnuma, Nanae / Hokkaido (1989-09)
 TAC 146-1, Unialgal, Clonal, M.Watanabe
 (1989-09)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
 [Cryopreserved]
 Characteristics: Freshwater, Water bloom, Formerly
 identified as *M. ichthyoblabe*, Reisolated from
 TAC 146, 16SrRNA gene (AB023284)
 References: 210, 211, 212, 296, 505, 578 [Both for
 TAC 146 and 146-1 are included]
- 1123
 Ohnuma, Nanae / Hokkaido (1989-09)
 TAC 147, Unialgal, Clonal, M.Watanabe (1989-09)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom
- 1124
 Ohnuma, Nanae / Hokkaido (1989-09)
 TAC 148, Unialgal, Clonal, M.Watanabe (1989-09)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom
 Reference: 505
- 1125
 Ohnuma, Nanae / Hokkaido (1989-09)
 TAC 149, Unialgal, Clonal, M.Watanabe (1989-09)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom
 Reference: 505
- 1126
 Ohnuma, Nanae / Hokkaido (1989-09)
 TAC 150, Unialgal, Clonal, M.Watanabe (1989-09)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom
 Reference: 505
- 1127
 Ohnuma, Nanae / Hokkaido (1989-09)
 TAC 151, Unialgal, Clonal, M.Watanabe (1989-09)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom
 Reference: 505
- 1128
 Ohnuma, Nanae / Hokkaido (1989-09)
 TAC 152, Unialgal, Clonal, M.Watanabe (1989-09)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom, Formerly
 identified as *M. wesenbergii*
- 1129
 Ohnuma, Nanae / Hokkaido (1989-09)
 TAC 153, Unialgal, Clonal, M.Watanabe (1989-09)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
 [Cryopreserved]
 Characteristics: Freshwater, Water bloom, Formerly
 identified as *M. wesenbergii*
- 1130
 Lake Teganuma / Chiba (1989-09)
 TAC 154-1, Unialgal, Clonal, M.Watanabe
 (1989-09)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M,
 [Cryopreserved]
 Characteristics: Freshwater, Water bloom, Reisolated
 from TAC 154
 Reference: 505 [For TAC 154]
- 1131
 Lake Teganuma / Chiba (1989-09)
 TAC 155, Unialgal, Clonal, M.Watanabe (1989-09)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom

- 1132
Lake Teganuma / Chiba (1989-09)
TAC 156-1, Unialgal, Clonal, M.Watanabe (1989-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M, [Cryopreserved]
Characteristics: Freshwater, Water bloom, Reisolated from TAC 156
Reference: 505 [For TAC 156]
- 1133
Lake Teganuma / Chiba (1989-09)
TAC 157-2, Unialgal, Clonal, M.Watanabe (1989-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Reisolated from TAC 157, 16SrRNA gene (AB023263)
References: 210, 211, 212, 213, 296, 505, 578 [Both for TAC 157 and 157-2 are included]
- 1134
Lake Teganuma / Chiba (1989-09)
TAC 159-1, Unialgal, Clonal, M.Watanabe (1989-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Reisolated from TAC 159
Reference: 505 [For TAC 159]
- 1135
Lake Teganuma / Chiba (1989-09)
TAC 160-1, Unialgal, Clonal, M.Watanabe (1989-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Reisolated from TAC 160
- 1136
Lake Teganuma / Chiba (1989-09)
TAC 162, Unialgal, Clonal, M.Watanabe (1989-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Formerly identified as *M. viridis*
- 1137
Lake Teganuma / Chiba (1989-09)
TAC 163, Unialgal, Clonal, M.Watanabe (1989-09)
- Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Formerly identified as *M. wesenbergii*
Reference: 473
- 1138
Lake Teganuma / Chiba (1989-09)
TAC 164-1, Unialgal, Clonal, M.Watanabe (1989-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Formerly identified as *M. wesenbergii*, Reisolated from TAC 164
- 1139
Lake Okutama / Tokyo (1989-09)
TAC 165, Unialgal, Clonal, M.Watanabe (1989-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
Reference: 505
- 1140
Lake Okutama / Tokyo (1989-09)
TAC 166, Unialgal, Clonal, M.Watanabe (1989-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Toxic
References: 165, 379, 505, 514, 517
- 1141
Lake Okutama / Tokyo (1989-09)
TAC 167, Unialgal, Clonal, M.Watanabe (1989-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Toxic
References: 165, 505
- 1142
Lake Okutama / Tokyo (1989-09)
TAC 169, Unialgal, Clonal, M.Watanabe (1989-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, 16SrRNA gene (AB023264)
References: 210, 211, 212, 296, 505, 517, 578
- 1143
Lake Okutama / Tokyo (1989-09)
TAC 170-1, Unialgal, Clonal, M.Watanabe

- (1989-09)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom, Formerly
 identified as *M. novacekii*, Reisolated from TAC
 170, 16SrRNA gene (AB012340, AB015365)
 References: 375, 376 [For TAC170]
- 1144
 Lake Okutama / Tokyo (1989-09)
 TAC 171, Unialgal, Clonal, M.Watanabe (1989-09)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom, Formerly
 identified as *M. wesenbergii*
- 1145
 Lake Okutama / Tokyo (1989-09)
 TAC 172, Unialgal, Clonal, M.Watanabe (1989-09)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom, Formerly
 identified as *M. wesenbergii*
 Reference: 165
- 1146
 Lake Shirakaba / Nagano (1989-08)
 TAC 173, Unialgal, Clonal, M.Watanabe (1989-08)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom
 Reference: 505
- 1147
 Lake Shirakaba / Nagano (1989-08)
 TAC 174, Unialgal, Clonal, M.Watanabe (1989-08)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom
 Reference: 505
- 1148
 Lake Shirakaba / Nagano (1989-08)
 TAC 175, Unialgal, Clonal, M.Watanabe (1989-08)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom
- 1149
 Lake Shirakaba / Nagano (1989-08)
 TAC 176, Unialgal, Clonal, M.Watanabe (1989-08)
 Identified by: M.Watanabe
- Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom
 Reference: 505
- 1150
 Lake Shirakaba / Nagano (1989-08)
 TAC 177, Unialgal, Clonal, M.Watanabe (1989-08)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom
- 1151
 Lake Shirakaba / Nagano (1989-08)
 TAC 178, Unialgal, Clonal, M.Watanabe (1989-08)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom
- 1152
 Lake Okutama / Tokyo (1989-09)
 TAC 179, Unialgal, Clonal, M.Watanabe (1989-09)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom
 References: 165, 505
- 1153
 Lake Okutama / Tokyo (1989-09)
 TAC 180, Unialgal, Clonal, M.Watanabe (1989-09)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom
 Reference: 505
- 1154
 Lake Okutama / Tokyo (1989-09)
 TAC 181, Unialgal, Clonal, M.Watanabe (1989-09)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom
 References: 379, 380, 505
- 1155
 Lake Teganuma / Chiba (1989-09)
 TAC 182, Unialgal, Clonal, M.Watanabe (1989-09)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom
 Reference: 505

- 1156
Lake Shirakaba / Nagano (1989-09)
TAC 183, Unialgal, Clonal, M.Watanabe (1989-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
Reference: 505
- 1157
Lake Teganuma / Chiba (1989-09)
TAC 185, Unialgal, Clonal, M.Watanabe (1989-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
Reference: 505
- 1158
Yame / Fukuoka (1989-09)
TAC 186, Unialgal, Clonal, M.Watanabe (1989-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Formerly
identified as *M. wesenbergii*
- 1159
Okutama / Tokyo (1989-09)
TAC 187, Unialgal, Clonal, M.Watanabe (1989-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
References: 165, 505
- 1160
Lake Okutama / Tokyo (1989-09)
TAC 188, Unialgal, Clonal, M.Watanabe (1989-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
References: 165, 505
- 1161
Lake Okutama / Tokyo (1989-09)
TAC 189, Unialgal, Clonal, M.Watanabe (1989-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
References: 165, 505
- 1162
Lake Okutama / Tokyo (1989-09)
TAC 190, Unialgal, Clonal, M.Watanabe (1989-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
Reference: 505
- 1163
Lake Okutama / Tokyo (1989-09)
TAC 191, Unialgal, Clonal, M.Watanabe (1989-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
References: 165, 505
- 1164
Lake Okutama / Tokyo (1989-09)
TAC 192, Unialgal, Clonal, M.Watanabe (1989-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom,
16SrRNA gene (AB023265)
References: 210, 211, 212, 296, 505, 578
- 1165
Tsuruoka / Yamagata (1990-08)
TAC 193, Unialgal, Clonal, Y.Niiyama (1990-08)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
- 1166
Tsuruoka / Yamagata (1990-08)
TAC 194, Unialgal, Clonal, Y.Niiyama (1990-08)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
- 1167
Tsuruoka / Yamagata (1990-08)
TAC 195, Unialgal, Clonal, Y.Niiyama (1990-08)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Formerly
identified as *M. wesenbergii*
- 1168
Tsuruoka / Yamagata (1990-08)
TAC 196, Unialgal, Clonal, Y.Niiyama (1990-08)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Formerly
identified as *M. wesenbergii*

- 1169
Tsuruoka / Yamagata (1990-08)
TAC 197, Unialgal, Clonal, Y.Niiyama (1990-08)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
- 1170
Lake Barato / Hokkaido (1990-08)
TAC 198, Unialgal, Clonal, M.Watanabe (1990-08)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Formerly identified as *M. wesenbergii*
- 1171
Lake Barato / Hokkaido (1990-08)
TAC 199, Unialgal, Clonal, M.Watanabe (1990-08)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Formerly identified as *M. wesenbergii*
- 1172
Lake Barato / Hokkaido (1990-08)
TAC 200, Unialgal, Clonal, M.Watanabe (1990-08)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Formerly identified as *M. wesenbergii*
- 1173
Saburo-ike Pond, Takamatsu / Kagawa (1990-09)
TAC 311, Unialgal, Clonal, M.Watanabe (1990-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
Reference: 505
- 1174
Saburo-ike Pond, Takamatsu / Kagawa (1990-09)
TAC 312, Unialgal, Clonal, M.Watanabe (1990-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
- 1175
Saburo-ike Pond, Takamatsu / Kagawa (1990-09)
TAC 313, Unialgal, Clonal, M.Watanabe (1990-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
- Characteristics: Freshwater, Water bloom, Formerly identified as *M. wesenbergii*
- 1176
Saburo-ike Pond, Takamatsu / Kagawa (1990-09)
TAC 314, Unialgal, Clonal, M.Watanabe (1990-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
- 1177
Saburo-ike Pond, Takamatsu / Kagawa (1990-09)
TAC 315, Unialgal, Clonal, M.Watanabe (1990-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
- 1178
Shin-ike Pond, Kagawa / Kagawa (1990-09)
TAC 316, Unialgal, Clonal, M.Watanabe (1990-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
Reference: 505
- 1179
Shin-ike Pond, Kagawa / Kagawa (1990-09)
TAC 317, Unialgal, Clonal, M.Watanabe (1990-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
- 1180
Shin-ike Pond, Kagawa / Kagawa (1990-09)
TAC 319, Unialgal, Clonal, M.Watanabe (1990-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Formerly identified as *M. viridis*
- 1181
Shin-ike Pond, Kagawa / Kagawa (1990-09)
TAC 320, Unialgal, Clonal, M.Watanabe (1990-09)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Formerly identified as *M. wesenbergii*
- 1182
Sakase-ike Pond / Kagawa (1990-09)
TAC 321, Unialgal, Clonal, M.Watanabe (1990-10)
Identified by: M.Watanabe

- Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom, Formerly identified as *M. ichthyoblabe*
 Reference: 505
- 1183
 Sakase-ike Pond / Kagawa (1990-09)
 TAC 322, Unialgal, Clonal, M.Watanabe (1990-10)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom, Formerly identified as *M. ichthyoblabe*
 Reference: 505
- 1184
 Sakase-ike Pond / Kagawa (1990-09)
 TAC 323, Unialgal, Clonal, M.Watanabe (1990-10)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom
 Reference: 505
- 1185
 Sakase-ike Pond / Kagawa (1990-09)
 TAC 325, Unialgal, Clonal, M.Watanabe (1990-10)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom
- 1186
 Sakase-ike Pond / Kagawa (1990-09)
 TAC 326, Unialgal, Clonal, M.Watanabe (1990-10)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom
- 1187
 Lake Heiso, Kakogawa / Hyogo (1990-09)
 TAC 327, Unialgal, Clonal, M.Watanabe (1990-10)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom
 Reference: 505
- 1188
 Lake Heiso, Kakogawa / Hyogo (1990-09)
 TAC 328, Unialgal, Clonal, M.Watanabe (1990-10)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom
- 1189
 Lake Heiso, Kakogawa / Hyogo (1990-09)
 TAC 329, Unialgal, Clonal, M.Watanabe (1990-10)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom
 Reference: 505
- 1190
 Lake Heiso, Kakogawa / Hyogo (1990-09)
 TAC 330, Unialgal, Clonal, M.Watanabe (1990-10)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom
- 1191
 Lake Heiso, Kakogawa / Hyogo (1990-09)
 TAC 331, Unialgal, Clonal, M.Watanabe (1990-09)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom
- 1192
 Lake Heiso, Kakogawa / Hyogo (1990-09)
 TAC 332, Unialgal, Clonal, M.Watanabe (1990-09)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom
- 1193
 Lake Heiso, Kakogawa / Hyogo (1990-09)
 TAC 333, Unialgal, Clonal, M.Watanabe (1990-09)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom, Formerly identified as *M. wesenbergii*
- 1194
 Lake Heiso, Kakogawa / Hyogo (1990-09)
 TAC 335, Unialgal, Clonal, M.Watanabe (1990-09)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom
 Reference: 505
- 1195
 Lake Heiso, Kakogawa / Hyogo (1990-09)
 TAC 336, Unialgal, Clonal, M.Watanabe (1990-09)
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom

- 1196
Lake Heiso, Kakogawa / Hyogo (1990-09)
TAC 337, Unialgal, Clonal, M.Watanabe (1990-10)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
Reference: 505
- 1197
Lake Heiso, Kakogawa / Hyogo (1990-09)
TAC 338, Unialgal, Clonal, M.Watanabe (1990-10)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
- 1198
Futago-ike Pond, Kakogawa / Hyogo (1990-09)
TAC 339, Unialgal, Clonal, M.Watanabe (1990-10)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
Reference: 505
- 1199
Futago-ike Pond, Kakogawa / Hyogo (1990-09)
TAC 340, Unialgal, Clonal, M.Watanabe (1990-10)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
- 1200
Shinji-aika-ike Pond, Matsue / Shimane (1990-09)
TAC 341, Unialgal, Clonal, M.Watanabe (1990-10)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
Reference: 505
- 1201
Shinji-aika-ike Pond, Matsue / Shimane (1990-09)
TAC 342, Unialgal, Clonal, M.Watanabe (1990-10)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
- 1202
Shinji-aika-ike Pond, Matsue / Shimane (1990-09)
TAC 343, Unialgal, Clonal, M.Watanabe (1990-10)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Formerly
identified as *M. wesenbergii*
- 1203
Shinji-aika-ike Pond, Matsue / Shimane (1990-09)
TAC 344, Unialgal, Clonal, M.Watanabe (1990-10)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
Reference: 505
- 1204
Shinji-aika-ike Pond, Matsue / Shimane (1990-09)
TAC 345, Unialgal, Clonal, M.Watanabe (1990-10)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
- 1205
Johoku-ike Pond, Matsue / Shimane (1990-09)
TAC 346, Unialgal, Clonal, M.Watanabe (1990-10)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
Reference: 505
- 1206
Johoku-ike Pond, Matsue / Shimane (1990-09)
TAC 347, Unialgal, Clonal, M.Watanabe (1990-10)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
Reference: 505
- 1207
Johoku-ike Pond, Matsue / Shimane (1990-09)
TAC 348, Unialgal, Clonal, M.Watanabe (1990-10)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Formerly
identified as *M. wesenbergii*
- 1208
Johoku-ike Pond, Matsue / Shimane (1990-09)
TAC 349, Unialgal, Clonal, M.Watanabe (1990-10)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Formerly
identified as *M. wesenbergii*
- 1209
Lake Toro / Hokkaido (1990-09)
TAC 350, Unialgal, Clonal, M.Watanabe

- Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
Reference: 505
- 1210
Lake Toro / Hokkaido (1990-09)
TAC 351, Unialgal, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
- 1211
Lake Tofutsu / Hokkaido (1990-09)
TAC 352, Unialgal, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
- 1212
Lake Tofutsu / Hokkaido (1990-09)
TAC 353, Unialgal, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
- 1213
Kunma Dam, Yonaguni Isl. / Okinawa (1990-10)
TAC 355, Unialgal, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
References: 209, 505
- 1214
Kunma Dam, Yonaguni Isl. / Okinawa (1990-10)
TAC 356, Unialgal, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
- 1215
Kunma Dam, Yonaguni Isl. / Okinawa (1990-10)
TAC 357, Unialgal, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
- 1216
Kunma Dam, Yonaguni Isl. / Okinawa (1990-10)
TAC 358, Unialgal, Clonal, M.Watanabe
- Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
Reference: 505
- 1217
Kunma Dam, Yonaguni Isl. / Okinawa (1990-10)
TAC 359, Unialgal, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
- 1218
Kunma Dam, Yonaguni Isl. / Okinawa (1990-10)
TAC 360, Unialgal, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
- 1219
Kunma Dam, Yonaguni Isl. / Okinawa (1990-10)
TAC 361, Unialgal, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
Reference: 505
- 1220
Kunma Dam, Yonaguni Isl. / Okinawa (1990-10)
TAC 362, Unialgal, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
- 1221
Kunma Dam, Yonaguni Isl. / Okinawa (1990-10)
TAC 363, Unialgal, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
- 1222
Tatsugami Dam, Yonaguni Isl. / Okinawa (1990-10)
TAC 364, Unialgal, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
Reference: 505
- 1223
Tatsugami Dam, Yonaguni Isl. / Okinawa (1990-10)

- TAC 365, Unialgal, Clonal, M.Watanabe
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom
- 1224
 Tatsugami Dam, Yonaguni Isl. / Okinawa (1990-10)
 TAC 368, Unialgal, Clonal, M.Watanabe
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom
- 1225
 Tatsugami Dam, Yonaguni Isl. / Okinawa (1990-10)
 TAC 369, Unialgal, Clonal, M.Watanabe
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom
 Reference: 505
- 1226
 Tatsugami Dam, Yonaguni Isl. / Okinawa (1990-10)
 TAC 370, Unialgal, Clonal, M.Watanabe
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom
- 1227
 Fukuchi Dam, Higashi Vil. / Okinawa (1990-10)
 TAC 371, Unialgal, Clonal, M.Watanabe
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom
- 1228
 Fukuchi Dam, Higashi Vil. / Okinawa (1990-10)
 TAC 372, Unialgal, Clonal, M.Watanabe
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom
- 1229
 Fukuchi Dam, Higashi Vil. / Okinawa (1990-10)
 TAC 373, Unialgal, Clonal, M.Watanabe
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom
- 1230
 Ishigaki Dam, Ishigaki / Okinawa (1990-10)
 TAC 374, Unialgal, Clonal, M.Watanabe
- Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom
 Reference: 505
- 1231
 Ishigaki Dam, Ishigaki / Okinawa (1990-10)
 TAC 375, Unialgal, Clonal, M.Watanabe
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom
- 1232
 Ishigaki Dam, Ishigaki / Okinawa (1990-10)
 TAC 376, Unialgal, Clonal, M.Watanabe
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom
 Reference: 505
- 1233
 Ishigaki Dam, Ishigaki / Okinawa (1990-10)
 TAC 377, Unialgal, Clonal, M.Watanabe
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom
- 1234
 Ishigaki Dam, Ishigaki / Okinawa (1990-10)
 TAC 378, Unialgal, Clonal, M.Watanabe
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom
 Reference: 505
- 1235
 Ishigaki Dam, Ishigaki / Okinawa (1990-10)
 TAC 379, Unialgal, Clonal, M.Watanabe
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom
- 1236
 Ishigaki Dam, Ishigaki / Okinawa (1990-10)
 TAC 380, Unialgal, Clonal, M.Watanabe
 Identified by: M.Watanabe
 Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom
- 1237
 Tengan Dam, Ishikawa / Okinawa (1990-10)

TAC 381, Unialgal, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
Reference: 505

1238

Tengan Dam, Ishikawa / Okinawa (1990-10)
TAC 382, Unialgal, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom

1239

Tengan Dam, Ishikawa / Okinawa (1990-10)
TAC 383, Unialgal, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
Reference: 505

1240

Tengan Dam, Ishikawa / Okinawa (1990-10)
TAC 384, Unialgal, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom

1241

Tengan Dam, Ishikawa / Okinawa (1990-10)
TAC 385, Unialgal, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
Reference: 505

1242

Tengan Dam, Ishikawa / Okinawa (1990-10)
TAC 386, Unialgal, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom

1243

Maesato Dam, Ishigaki / Okinawa (1990-10)
TAC 387, Unialgal, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
Reference: 505

1244

Maesato Dam, Ishigaki / Okinawa (1990-10)
TAC 388, Unialgal, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom

1245

Maesato Dam, Ishigaki / Okinawa (1990-10)
TAC 389, Unialgal, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom

1246

Hyotan-ike Pond, Minamidaito Isl. / Okinawa
(1990-10)
TAC 390, Unialgal, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
Reference: 505

1247

Hyotan-ike Pond, Minamidaito Isl. / Okinawa
(1990-10)
TAC 391, Unialgal, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom

1248

Hyotan-ike Pond, Minamidaito Isl. / Okinawa
(1990-10)
TAC 392, Unialgal, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom

1249

Hyotan-ike Pond, Minamidaito Isl. / Okinawa
(1990-10)
TAC 393, Unialgal, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom

1250

Hyotan-ike Pond, Minamidaito Isl. / Okinawa
(1990-10)
TAC 394, Unialgal, Clonal, M.Watanabe
Identified by: M.Watanabe

- Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
- 1251
Lake Suwa / Nagano (1990-03)
TAC 395, Unialgal, Clonal, M.Watanabe (1990-04)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Formerly identified as *M. wesenbergii*
- 1252
Lake Suwa / Nagano (1990-03)
TAC 396, Unialgal, Clonal, M.Watanabe (1990-04)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Formerly identified as *M. wesenbergii*
- 1253
Lake Suwa / Nagano (1990-03)
TAC 401, Unialgal, Clonal, M.Watanabe (1990-04)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Formerly identified as *M. wesenbergii*
- 1254
Lake Suwa / Nagano (1990-03)
TAC 402, Unialgal, Clonal, M.Watanabe (1990-04)
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Formerly identified as *M. wesenbergii*
- 1255
Lake Tsukui / Kanagawa (1990-08)
TAC 405, Unialgal, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Formerly identified as *M. wesenbergii*
- 1256
Lake Tsukui / Kanagawa (1990-08)
TAC 406, Unialgal, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Formerly identified as *M. wesenbergii*
- 1257
Nakagusuku Vil. / Okinawa (1990-12)
TAC 407, Unialgal, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: MA, 20° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom
- * *Microcystis ichtyoblabe* Kützing
See *Microcystis aeruginosa* (Kützing) Lemmermann
- * *Microcystis novacekii* (Komárek) Compère
See *Microcystis aeruginosa* (Kützing) Lemmermann
- * *Microcystis viridis* (A.Brown) Lemmermann
See *Microcystis aeruginosa* (Kützing) Lemmermann
- * *Microcystis wesenbergii* Komárek
See *Microcystis aeruginosa* (Kützing) Lemmermann
- MICROTHAMNION** Nägeli: Trebouxiophyceae
- Microthamnion kützingianum* Nägeli
479
Toyohira River, Sapporo / Hokkaido (1987-07)
Unialgal, Clonal, F.Kasai (1987-07)
Identified by: F.Kasai
Culture conditions: C, 10° C, 6 µE/m² sec, 6M,
(10° C, 15 µE/m² sec)
Characteristics: Freshwater
Tst11-6
References: 242, 454, 455
- MONOMASTIX** Scherffel: Prasinophyceae
- Monomastix minuta* Skuja
255
Tsuchiura / Ibaraki (1983-07)
Axenic, Clonal, S.Suda (1983-07)
Identified by: S.Suda
Culture conditions: C, 20° C, 40 µE/m² sec, 1M
Characteristics: Freshwater
SIS-Mono
Reference: 159
- 256
Oze / Gunma (1983-08)
Axenic, Clonal, S.Suda (1983-11)
Identified by: S.Suda
Culture conditions: AF-6, 20° C, 40 µE/m² sec, 1M

Characteristics: Freshwater
Oz-35-m

MONORAPHIDIUM Komarkova-Legnerova:
Chlorophyceae

* *Monoraphidium capricornutum* (Printz) Nygaard
See *Selenastrum capricornutum* Printz

Monoraphidium circinale (Nygaard) Nygaard
480
Tsuchiura / Ibaraki (1983-07)
Axenic, Clonal, S.Suda (1983-07)
Identified by: F.Kasai
Culture conditions: C(S), 20° C, 4 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater
SIS-1-M
Reference: 242

Monoraphidium contortum
(Thuret) Komárková-Legnerová
384
Lake Unagiike / Kagoshima (1985-02)
Unialgal, Clonal, T.Sawaguchi (1985-02)
Identified by: Y.Niiyama
Culture conditions: C, 20° C, 4 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater
Ep-i
Reference: 242

Monoraphidium griffithii
(Berkeley) Komárková-Legnerová
385
Urizura / Ibaraki (1984-10)
Axenic, Clonal, T.Sawaguchi (1984-12)
Identified by: Y.Niiyama
Culture conditions: C, 20° C, 4 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater
AWA
Reference: 242

MYXOSARCINA Printz: Cyanophyceae

Myxosarcina burmensis Skuja
481
Mt.Tsukuba / Ibaraki (1987-04)

Unialgal, Non-clonal, F.Kasai (1987-05)
Identified by: M.M.Watanabe
Culture conditions: MDM(S), 20° C, 4 µE/m² sec,
5M, (20° C, 12 µE/m² sec), [Cryopreserved]
Characteristics: Freshwater
(1)-45
References: 242, 454

NANOCHLORUM Wilhelm et al.: Trebouxiophyceae

Nanochlorum sp.
1270
Banshu Salt Marsh, Kisarazu / Chiba (2002-05)
Unialgal, Clonal, M.Moriya (2002-06)
Identified by: M.Moriya
Culture conditions: ESM, 20° C, 20 µE/m² sec, 1M
Characteristics: Marine
M-66

NEPHROSELMIS Stein: Prasinophyceae

Nephroselmis astigmatica Inouye et Pienaar
252
Tateyama Harbor / Chiba (1983-08)
Axenic, Clonal, I.Inouye (1983-08)
Identified by: I.Inouye
Culture conditions: f/2, ESM, 20° C, 32 µE/m² sec,
1M
Characteristics: Red tide, Marine
810-13

Nephroselmis olivacea Stein
483
Tsuchiura / Ibaraki (1986-02)
Unialgal, Clonal, S.Suda (1986-05)
Identified by: S.Suda
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 20D
Characteristics: Freshwater, Heterothallic,
Mating type +
S-N-2-1
References: 231, 442

484
Tsuchiura / Ibaraki (1986-02)
Unialgal, Clonal, S.Suda (1986-05)
Identified by: S.Suda
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 20D
Characteristics: Freshwater, Heterothallic,
Mating type -, Plastid complete DNA (AF137379),
Mitochondrial complete DNA (AF110138)

S-N-5-8

References: 478, 479

485

Tsuchiura / Ibaraki (1986-02)

Unialgal, Clonal, S.Suda (1986-05)

Identified by: S.Suda

Culture conditions: AF-6, 20° C, 22 $\mu\text{E}/\text{m}^2\text{sec}$, 20D

Characteristics: Freshwater, Heterothallic,

Mating type –

S-N-3-4

References: 231, 442

Nephroselmis spinosa Suda et M.M.Watanabe

934

Port Hedland / Australia (1991-10)

Unialgal, Clonal, S.Suda (1992-11)

Identified by: S.Suda

Culture conditions: ESM, 20° C, 12 $\mu\text{E}/\text{m}^2\text{sec}$, 2M

Characteristics: Marine, Indicator, Eurythermal

S222

Reference: 439

935

Hamerin Pool / Australia (1991-10)

Unialgal, Clonal, S.Suda (1992-12)

Identified by: S.Suda

Culture conditions: ESM, 20° C, 12 $\mu\text{E}/\text{m}^2\text{sec}$, 2M

Characteristics: Marine, Indicator, Eurythermal

SD959-3

Reference: 439

Nephroselmis viridis Inouye, nom. nud.

486

Harima-Nada / Seto Inland Sea (1983-02)

Axenic, Clonal, S.Suda (1983-09)

Identified by: I.Inouye

Culture conditions: ESM, 20° C, 12 $\mu\text{E}/\text{m}^2\text{sec}$, 1M

Characteristics: Red tide, Marine, Type strain

H-70-2

NITZSCHIA Hassall: Bacillariophyceae

Nitzschia palea (Kützing) W.Smith

487

Miyata River / Ibaraki (1987-04)

Unialgal, Non-clonal, F.Kasai (1987-05)

Identified by: N.Takamura

Culture conditions: CSi, 15° C, 15 $\mu\text{E}/\text{m}^2\text{sec}$, 2M

Characteristics: Freshwater

3st-0-57

Reference: 454

488

Miyata River / Ibaraki (1987-02)

Unialgal, Non-clonal, F.Kasai (1987-03)

Identified by: N.Takamura

Culture conditions: CSi, 15° C, 15 $\mu\text{E}/\text{m}^2\text{sec}$, 2M

Characteristics: Freshwater

1st-3-39

Reference: 454

489

Ashio / Gunma (1987-08)

Unialgal, Clonal, F.Kasai (1987-08)

Identified by: N.Takamura

Culture conditions: CSi, 15° C, 15 $\mu\text{E}/\text{m}^2\text{sec}$, 1M

Characteristics: Freshwater

Ast-2-2

References: 267, 454, 455

NOSTOC Vaucher ex Bornet et Flahault:

Cyanophyceae

Nostoc commune Vaucher ex Bornet et Flahault

24

Kurobe Valley / Toyama

IAM M-13, Unialgal, Non-clonal, A.Watanabe

Identified by: H.Fukushima

Culture conditions: MDM(S), 20° C, 4 $\mu\text{E}/\text{m}^2\text{sec}$,

4M, (25° C, 30 $\mu\text{E}/\text{m}^2\text{sec}$), [Cryopreserved]

Characteristics: Freshwater, Reidentified by

M.M.Watanabe

References: 96, 242, 291, 451, 491, 530

38

Marble Point

IAM M-115, Unialgal, Non-clonal, O.Holm-Hansen

Identified by: M.M.Watanabe

Culture conditions: MDM(S), 20° C, 4 $\mu\text{E}/\text{m}^2\text{sec}$,

4M, (25° C, 30 $\mu\text{E}/\text{m}^2\text{sec}$), [Cryopreserved]

Characteristics: Freshwater, From dry lichens and

algae in sand

M-48-a

References: 96, 242

Nostoc linckia Bornet ex Bornet et Flahault

25

Kagoshima / Kagoshima

IAM M-16, Axenic, Non-clonal, M.Ishikawa

Identified by: M.M.Watanabe

- Culture conditions: MDM(S), 20° C, 4 µE/m² sec,
4M, (25° C, 30 µE/m² sec)
Characteristics: Freshwater
References: 242, 491
- Nostoc linckia* Bornet ex Bornet et Flahault
var. *arvense* C.B.Rao
28
Kagoshima / Kagoshima
IAM M-30, Axenic, Non-clonal, M.Ishikawa
Identified by: Fukushima/Mariyama
Culture conditions: MDM(S), 20° C, 4 µE/m² sec,
4M, (25° C, 30 µE/m² sec), [Cryopreserved]
Characteristics: Freshwater, Reidentified by
M.M.Watanabe
References: 96, 242, 491
- Nostoc minutum* Desmazières ex Bornet et Flahault
26
Ishigaki Isl. / Okinawa
IAM M-17, Unialgal, Non-clonal, M.Ishikawa
Identified by: M.M.Watanabe
Culture conditions: MDM(S), 20° C, 4 µE/m² sec,
4M, (25° C, 30 µE/m² sec)
Characteristics: Freshwater, Chromatic adaptation
References: 242, 255, 363, 491, 530
- 29
Ishigaki Isl. / Okinawa
IAM M-31, Unialgal, Non-clonal, M.Ishikawa
Identified by: M.M.Watanabe
Culture conditions: MDM(S), 20° C, 4 µE/m² sec,
4M, (25° C, 30 µE/m² sec)
Characteristics: Freshwater
References: 242, 491, 530
- ODONTELLA** Agardh: Bacillariophyceae
- Odontella aurita* Agardh
589
Penzance / England (1991-03)
Unialgal, Non-clonal, S.Ono (1991-04)
Identified by: S.Ono
Culture conditions: f/2, 15° C, 10 µE/m² sec, 1M
Characteristics: Red tide, Marine
St-22
Reference: 469
- Odontella longicuris* (Greville) Hoban
590
Hitachi / Ibaraki (1990-09)
Unialgal, Non-clonal, S.Ono (1990-10)
Identified by: S.Ono
Culture conditions: f/2, 15° C, 10 µE/m² sec, 1M
Characteristics: Red tide, Marine
St-11
- OEDOGONIUM** Link: Chlorophyceae
- Oedogonium obesum* Wittrock ex Hirn
203
IAM C-348, Axenic, Clonal, E.Saito
Identified by: E.Saito
Culture conditions: C, 20° C, 4 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Indicator, Freshwater
807
References: 96, 242
- OLISTHODISCUS** Carter: Raphidophyceae
- Olisthodiscus luteus* Carter
15
Tamano / Okayama / Seto Inland Sea
Axenic, Clonal, I.Inouye
Identified by: I.Inouye
Culture conditions: f/2, 20° C, 12 µE/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable
Olisth
References: 66, 171, 173, 261, 346, 486, 570
- OLTMANNSELLOPSIS** Inouye et Chihara:
Ulvophyceae
- Oltmannsiellopsis geminata* Inouye et Chihara
672
Harima-Nada / Seto Inland Sea (1986-06)
Axenic, Clonal, S.Yoshimatsu (1986-06)
Identified by: S.Yoshimatsu
Culture conditions: ESM, 20° C, 40 µE/m² sec, 1M
Characteristics: Marine, Mutant
Reference: 242
- Oltmannsiellopsis unicellularis* Inouye et Chihara
359
Ieshima Isls. / Hyogo (1984-08)
Axenic, Clonal, S.Suda (1984-08)
Identified by: I.Inouye
Culture conditions: ESM, 20° C, 32 µE/m² sec, 2M

Characteristics: Red tide, Marine, Type strain
810YB-6
References: 18, 242

Oltmannsiellopsis viridis

(Hargraves et Steele) Chihara et Inouye
360

Onagawa Bay / Miyagi (1984-08)
Axenic, Clonal, S.Suda (1984-09)
Identified by: S.Suda
Culture conditions: ESM, 20° C, 32 µE/m² sec, 1M
Characteristics: Marine, 18S rDNA gene (D86495)
8280G41-2
References: 18, 242, 286

***OOCYSTIS* Nägeli: Trebouxiophyceae**

***Oocystis borgei* Snow**

659
Watarase River / Gunma (1987-08)
Unialgal, F.Kasai (1987-09)
Identified by: F.Kasai
Culture conditions: C, 15° C, 6 µE/m² sec, 6M,
(15° C, 15 µE/m² sec)
Characteristics: Freshwater
AT2-26
References: 242, 454

***Oocystis lacustris* Chodat**

660
Watarase River / Gunma (1987-08)
Unialgal, Clonal, F.Kasai (1987-08)
Identified by: F.Kasai
Culture conditions: C, 15° C, 6 µE/m² sec, 6M,
(15° C, 15 µE/m² sec)
Characteristics: Freshwater
Ast-3-1
References: 242, 454

661

Miyata River / Ibaraki (1987-05)
Axenic, Clonal, F.Kasai (1987-06)
Identified by: F.Kasai
Culture conditions: C, 20° C, 8 µE/m² sec, 6M
Characteristics: Freshwater
4st-3-9
References: 242, 454

662

Miyata River / Ibaraki (1987-02)
Unialgal, Clonal, F.Kasai (1987-03)

Identified by: F.Kasai
Culture conditions: C, 20° C, 8 µE/m² sec, 6M
Characteristics: Freshwater
1st-2-9
References: 242, 453, 454

***OOLITHOTUS* : Prymnesiophyceae**

***Oolithotus fragilis* (Lohmann) Reinhardt**

1320
Hachijo Isl. / Tokyo (2002-01)
Unialgal, Clonal, M-H.Noël (2002-02)
Identified by: M-H.Noël
Culture conditions: MNK, 22° C, 15 µE/m² sec, 14D
Characteristics: Marine
MH35

1321

Hachijo Isl. / Tokyo (2003-01)
Unialgal, Clonal, M-H.Noël (2003-02)
Identified by: M-H.Noël
Culture conditions: MNK, 22° C, 15 µE/m² sec, 14D
Characteristics: Marine
MH59

1322

East China Sea (Kuroshio Current) (2003-08)
Unialgal, Clonal, M-H.Noël (2003-09)
Identified by: M-H.Noël
Culture conditions: MNK, 22° C, 15 µE/m² sec, 14D
Characteristics: Marine
MH80

***OPHIOCYTIUM* Nägeli: Xanthophyceae**

***Ophiocytium capitatum* Wolle**

1011
Tsuchiura / Ibaraki (2000-05)
Unialgal, Clonal, M.Moriya (2000-05)
Identified by: M.Moriya
Culture conditions: AF-6, 15° C, 15 µE/m² sec, 2M
Characteristics: Freshwater
#86

***OSCILLATORIA* Vaucher ex Gomont: Cyanophyceae**

*** *Oscillatoria agardhii* Gomont**

See *Planktothrix agardhii* Anagnostidis et Komárek

Oscillatoria amphibia Agardh ex Gomont

361

Asaji Bay / Nagasaki (1985-07)

Unialgal, Clonal, M.M.Watanabe (1985-07)

Identified by: M.M.Watanabe

Culture conditions: f/2, 20° C, 12 µE/m² sec, 1M,
[Cryopreserved]

Characteristics: Marine, Benthic

Oa

Reference: 242

Oscillatoria animalis Agardh ex Gomont

206

IAM M-75, Unialgal, Clonal, F.Murano

Identified by: H.Fukushima

Culture conditions: MDM(S), 20° C, 4 µE/m² sec,
4M, (25° C, 30 µE/m² sec), [Cryopreserved]

Characteristics: Freshwater, Reidentified by
M.M.Watanabe

References: 96, 242

Oscillatoria laetevirens Gomont

31

Kawaji / Tochigi

IAM M-42, Unialgal, Clonal, M.Ishikawa

Identified by: H.Fukushima

Culture conditions: MDM(S), 20° C, 4 µE/m² sec,
4M, (25° C, 30 µE/m² sec)

Characteristics: Freshwater, Hot spring, Reidentified
by M.M.Watanabe

References: 96, 242, 530

Oscillatoria limnetica Lemmermann

36

Nakano / Tokyo

IAM M-92, Unialgal, Clonal, F.Murano

Identified by: H.Fukushima

Culture conditions: MDM(S), 20° C, 4 µE/m² sec,
4M, (25° C, 30 µE/m² sec), [Cryopreserved]

Characteristics: Freshwater, Reidentified by
M.M.Watanabe

References: 4, 96, 242, 355

* ***Oscillatoria raciborskii*** Woloszynska

See *Planktothricoides raciborskii*

Suda et M.M.Watanabe

Oscillatoria rosea Utermöhl

208

Asaji Bay / Nagasaki (1983-08)

Axenic, Clonal, Y.Ichimura (1983-08)

Identified by: M.M.Watanabe

Culture conditions: f/2, 20° C, 32 µE/m² sec, 1M,
[Cryopreserved]

Characteristics: Indicator, Marine

NGS-1

References: 242, 410

* ***Oscillatoria rubescens*** DC. ex Gomont

See *Planktothrix rubescens* Anagnostidis et Komárek

Oscillatoria tenuis Agardh ex Gomont

33

Setagaya / Tokyo

IAM M-50, Unialgal, Clonal, M.Ishikawa

Identified by: K.Maruyama

Culture conditions: MDM(S), 20° C, 4 µE/m² sec,
4M, (25° C, 30 µE/m² sec), [Cryopreserved]

Characteristics: Indicator, Freshwater, Reidentified
by M.M.Watanabe, 16SrRNA gene (AB042844)

References: 96, 242, 354

OXYRRHIS Dujardin: Dinophyceae

Oxyrrhis marina Dujardin

494

Hachinohe / Aomori (1988-08)

Mixed, Clonal, T.Sawaguchi (1989-01)

Identified by: T.Sawaguchi

Culture conditions: f/2, 20° C, 40 µE/m² sec, 1M

Characteristics: Predator, Marine, Feeds on
NIES-254, Untransportable
3700X

PANDORINA Bory: Chlorophyceae

Pandorina colemaniae Nozaki

572

Kourakuen / Okayama (1988-10)

Unialgal, Clonal, H.Nozaki (1988-10)

Identified by: H.Nozaki

Culture conditions: AF-6, 20° C, 22 µE/m² sec, 1M

Characteristics: Freshwater, Type strain, Isogamy,

Mating type +, Crosses with NIES-573,

atpB gene (AB014027), *rbcL* gene (D63441),

psaA gene (AB044232), *psaB* gene (AB044457),

psbC gene (AB044512)

88-1025-1

References: 242, 323, 335, 340, 337

- 573
Kourakuen / Okayama (1988-10)
Unialgal, Clonal, H.Nozaki (1989-01)
Identified by: H.Nozaki
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 1M
Characteristics: Freshwater, Type strain, Isogamy,
Mating type -, Crosses with NIES-572
89-0131-P-3
References: 242, 335
- Pandorina morum*** (O. F. Müller) Bory
242
Lake Ozenuma / Fukushima (1983-08)
Axenic, Clonal, S.Suda (1983-09)
Identified by: S.Suda
Culture conditions: CA, 20° C, 12 µE/m² sec, 1M
Characteristics: Indicator, Freshwater, Heterothallic,
Mating type +, Crosses with NIES-243 and 362
Oz-Pa-2
Reference: 242
- 243
Lake Ozenuma / Fukushima (1983-08)
Axenic, Clonal, S.Suda (1983-09)
Identified by: S.Suda
Culture conditions: CA, 20° C, 12 µE/m² sec, 1M
Characteristics: Freshwater, Heterothallic,
Mating type -, Crosses with NIES-242
Oz-Pa-3
Reference: 242
- 362
Lake Ozenuma / Fukushima (1983-08)
Axenic, Clonal, S.Suda (1983-09)
Identified by: S.Suda
Culture conditions: CA, 20° C, 12 µE/m² sec, 1M
Characteristics: Freshwater, Heterothallic,
Mating type -, Crosses with NIES-242
Oz-Pa-1
Reference: 242
- 886
Bloomington, Indiana / USA (1955-09)
UTEX 854, Unialgal, Clonal, A.W.Coleman
Identified by: A.W.Coleman
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 1M
Characteristics: Freshwater, Heterothallic, Isogamy,
H,h type, *atpB* gene (AB044180), *rbcL* gene
(AB044167), *psaA* gene (AB044231), *psaB* gene
(AB044456), *psbC* gene (AB044510-1)
References: 22, 337
- 887
Tulare Co., California / USA (1951-02)
UTEX 880, Unialgal, Clonal, A.W.Coleman
Identified by: A.W.Coleman
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 1M
Characteristics: Freshwater, Heterothallic, Isogamy,
H,h type, *atpB* gene (AB044179), *rbcL* gene
(AB044166), *psaA* gene (AB044229-30), *psaB*
gene (AB044455), *psbC* gene (AB044509)
Reference: 22, 337
- 888
Kimberley / South Africa (1967-07)
UTEX 1726, Unialgal, Clonal, E.Palmer
Identified by: E.Palmer
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 1M
Characteristics: Freshwater, Heterothallic, Isogamy,
H,h type, Mating type +, Crosses with NIES-889
Reference: 337
- 889
Kimberley / South Africa (1967-07)
UTEX 1727, Unialgal, Clonal, E.Palmer
Identified by: E.Palmer
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 1M
Characteristics: Freshwater, Heterothallic, Isogamy,
H,h type, Mating type -, Crosses with NIES-888,
atpB gene (AB044178), *rbcL* gene (AB044165),
psaA gene (AB044228), *psaB* gene (AB044454),
psbC gene (AB044508)
Reference: 337
- 890
Kawai Dam, Yamanaka / Ishikawa (1997-09)
UTEX 2326, Unialgal, Clonal, H.Nozaki
Identified by: H.Nozaki
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 1M
Characteristics: Freshwater, Heterothallic, Isogamy,
H,h type, *atpB* gene (AB044177), *rbcL* gene
(AB044164), *psaA* gene (AB044227), *psaB* gene
(AB044453), *psbC* gene (AB044506-7)
References: 328, 337
- Pandorina morum*** (O. F. Müller) Bory var. *morum*
574
Nepal (1986-09)
Unialgal, Clonal, H.Nozaki (1987-09)
Identified by: H.Nozaki
Culture conditions: VT, 20° C, 22 µE/m² sec, 1M
Characteristics: Freshwater, Heterothallic, Isogamy,
Mating type +, Crosses with NIES-575,
atpB gene (AB014025-6), *rbcL* gene (D63442),

psaA gene (AB044226), *psaB* gene (AB044452),
psbC gene (AB044505)
7916-P-7
References: 242, 310, 323, 337, 340, 342

575

Nepal (1986-09)
Unialgal, Clonal, H.Nozaki (1987-09)
Identified by: H.Nozaki
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 1M
Characteristics: Freshwater, Heterothallic, Isogamy,
Mating type -, Crosses with NIES-574
7916-P-8
References: 242, 310

* *Pandorina unicocca* Rayburn et Starr
See *Yamagishiella unicocca*
(Rayburn et Starr) Nozaki

PAULSCHULZIA Skuja: Chlorophyceae

Paulschulzia pseudovolvox Skuja
727

Tvärminne / Finland
UTEX 167, Axenic, Clonal, M.R.Droop (1951)
Culture conditions: AF-6, 20° C, 12 µE/m² sec, 2M
Characteristics: Freshwater, *atpB* gene (AB014040),
rbcL gene (D86837), *psaA* gene (AB044422-3),
psaB gene (AB044473), *psbC* gene (AB044531-2)
References: 31, 242, 337, 340

PAVLOVA Butcher: Pavlovophyceae

Pavlova gyrans Butcher
623

Matoya Bay / Mie (1984-09)
Unialgal, Clonal, T.Sawaguchi (1984-09)
Identified by: S.Suda
Culture conditions: ESM, 20° C, 22 µE/m² sec, 2M
Characteristics: Marine
MB-D-24

PEDIASTRUM Meyen: Chlorophyceae

Pediastrum angulosum Meneghini
var. *angulosum*

300
Higashihiroshima / Hiroshima (1983-10)
Axenic, Clonal, F.Kasai (1983-10)

Identified by: M.Watanabe
Culture conditions: C, 20° C, 4 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater
83-24-1-7
Reference: 242

Pediastrum boryanum (Turpin) Meneghini
209

Lake Kasumigaura / Ibaraki (1982-12)
Axenic, Clonal, M.H.Watanabe (1982-12)
Identified by: M.H.Watanabe
Culture conditions: C, 20° C, 8 µE/m² sec, 2M
Characteristics: Indicator, Freshwater,
COXI gene (D63659)
K-P-40
References: 76, 242

301

Lake Shoji / Yamanashi (1981-10)
TAC 56-3A, Axenic, Clonal, M.Watanabe
Culture conditions: C, 20° C, 8 µE/m² sec, 2M
Characteristics: Freshwater
TAN-56-3A
References: 242, 270, 271

Pediastrum duplex Meyen

212
Lake Kawaguchi / Yamanashi (1981-06)
Unialgal, Clonal, M.H.Watanabe (1981-06)
Identified by: M.H.Watanabe
Culture conditions: C, 20° C, 8 µE/m² sec, 2M
Characteristics: Indicator, Freshwater
KW-P-1
References: 242, 484

Pediastrum duplex Meyen var. *duplex*

210
Tsukuba / Ibaraki (1983-05)
Axenic, Clonal, A.Yuri (1983-05)
Identified by: A.Yuri
Culture conditions: C, 20° C, 4 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Indicator, Freshwater, Reidentified
by M.Watanabe
Pe-16
Reference: 242

213

Tsukuba / Ibaraki (1983-05)
Axenic, Clonal, T.Hiwatari (1983-06)

Identified by: T.Hiwatari
Culture conditions: C, 20° C, 8 µE/m²sec, 2M
Characteristics: Indicator, Freshwater, Reidentified
by M.Watanabe, *atpB* gene (AB084306),
rbcL gene (AB084333), *psaB* gene (AB084340)
AQ-P-1
References: 84, 242, 342, 530

***Pediastrum duplex* Meyen**

var. *gracillimum* W. et G.S.West

211

Lake Kasumigaura / Ibaraki (1983-08)
Axenic, Clonal, F.Kasai (1983-08)
Identified by: M.Watanabe
Culture conditions: C(S), 20° C, 4 µE/m²sec, 3M,
(25° C, 30 µE/m²sec)
Characteristics: Indicator, Freshwater
F50-1
Reference: 242

214

Tsukuba / Ibaraki (1983-08)
Axenic, Clonal, T.Hiwatari (1983-08)
Identified by: T.Hiwatari
Culture conditions: C, 20° C, 8 µE/m²sec, 2M
Characteristics: Indicator, Freshwater, Reidentified
by M.Watanabe
KR-P-2
Reference: 242

***Pediastrum simplex* Meyen**

215

Lake Biwa / Shiga (1982-07)
Axenic, Clonal, M.H.Watanabe (1982-07)
Identified by: M.H.Watanabe
Culture conditions: C, 20° C, 8 µE/m²sec, 2M
Characteristics: Indicator, Freshwater
B-P-18
Reference: 242

302

Lake Kasumigaura / Ibaraki (1983-08)
Axenic, Clonal, F.Kasai (1983-08)
Culture conditions: C, 20° C, 4 µE/m²sec, 3M,
(25° C, 30 µE/m²sec)
Characteristics: Indicator, Freshwater
F-26-4
Reference: 242

***Pediastrum tetras* (Ehrenberg) Ralfs**

216

Lake Kasumigaura / Ibaraki (1982-12)
Axenic, Clonal, M.H.Watanabe (1982-12)
Identified by: M.H.Watanabe
Culture conditions: C, 20° C, 8 µE/m²sec, 2M
Characteristics: Indicator, Freshwater
K-P-30
Reference: 242

***PEDINELLA* Vysotskij: Dictyochophyceae**

***Pedinella squamata* Sekiguchi et al.**

1008

Nakagusuku Bay, Okinawa / Okinawa (2002-03)
Unialgal, Clonal, M.Moriya (2002-04)
Identified by: M.Moriya
Culture conditions: ESM, 20° C, 32 µE/m²sec, 2M
Characteristics: Marine, Unstable
M-11

***PEDINOMONAS* Korshikov: Pedinophyceae**

***Pedinomonas minor* Korshikov**

363

Tsukuba / Ibaraki (1984-05)
Axenic, Clonal, S.Suda (1984-05)
Identified by: S.Suda
Culture conditions: C(S), 20° C, 4 µE/m²sec, 3M,
(25° C, 30 µE/m²sec)
Characteristics: Freshwater
H31P4

***PELAGOMONAS* Andersen et Saunders:
Pelagophyceae**

***Pelagomonas calceolata* Andersen et Saunders**

1003

North Pacific Central Gyre (1973-02)
CCMP 1214, Unialgal, Clonal, R.Lewin
Identified by: R.A.Andersen
Culture conditions: MNK, 22° C, 15 µE/m²sec, 14D
Characteristics: Marine, Unstable

***PENIUM* Brébisson: Charophyceae**

***Penium margaritaceum* Brébisson**

217

Rumalbhara / Nepal (1965-11)
IAM C-397, Axenic, Clonal, T.Ichimura (1972-05)

Identified by: T. Ichimura
Culture conditions: C, 20° C, 8 µE/m² sec, 2M,
(25° C, 30 µE/m² sec)
Characteristics: Indicator, Freshwater, Heterothallic
N-76-20
References: 96, 242

303

Tsukiyono / Gunma (1984-06)
Axenic, Clonal, F.Kasai (1984-06)
Identified by: F.Kasai
Culture conditions: C, 20° C, 8 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater
84-25-1
Reference: 242

PERIDINIUM Ehrenberg emend. Stein: Dinophyceae

Peridinium bipes Stein f. ***globosum*** Lindermann

495

Lake Onogawa / Fukushima (1985-07)
Unialgal, Clonal, T.Sawaguchi (1985-08)
Identified by: T.Sawaguchi
Culture conditions: AF-6, 15° C, 35 µE/m² sec, 2M
Characteristics: Freshwater, Untransportable
LOND-9

Peridinium bipes Stein

f. ***occultatum*** (Lindermann) Lefèvre

497

Lake Kizaki / Nagano (1988-04)
Unialgal, Clonal, T.Sawaguchi (1988-04)
Identified by: T.Sawaguchi
Culture conditions: Carefoot, 15° C, 35 µE/m² sec,
2M
Characteristics: Red tide, Freshwater,
Untransportable
LK420

Peridinium bipes Stein var. ***tabulatum***

(Ehrenberg) Lefèvre

600

Shishizuka / Tsuchiura / Ibaraki (1990-04)
Unialgal, Clonal, T.Hagiwara (1990-04)
Identified by: T.Hagiwara
Culture conditions: URO, 15° C, 35 µE/m² sec, 3M
Characteristics: Red tide, Freshwater, Planktonic,
Untransportable
CCZ-1

Peridinium inconspicuum Lemmermann

subsp. ***remotum*** (Lefèvre) Lefèvre

499

Iwai / Ibaraki (1985-10)
Unialgal, Clonal, T.Sawaguchi (1985-11)
Identified by: T.Sawaguchi
Culture conditions: MW/5, 15° C, 35 µE/m² sec,
2M
Characteristics: Freshwater, Untransportable
TOM-1

Peridinium volzii Lemmermann

365

Ajiro / Iwate (1984-09)
Axenic, Clonal, T.Sawaguchi (1984-09)
Identified by: T.Sawaguchi
Culture conditions: Carefoot, 15° C, 35 µE/m² sec,
2M
Characteristics: Freshwater, Untransportable
HND-1

501

Tsuchiura / Ibaraki (1986-04)
Unialgal, Clonal, T.Sawaguchi (1986-05)
Culture conditions: Carefoot, 15° C, 35 µE/m² sec,
2M
Characteristics: Freshwater, Homothallic,
Untransportable
SPSP-2

Peridinium willei Huitfeldt-Kaas

304

Tsukiyono / Gunma (1984-06)
Axenic, Clonal, T.Sawaguchi (1984-06)
Identified by: T.Sawaguchi
Culture conditions: Carefoot, 15° C, 35 µE/m² sec,
2M
Characteristics: Freshwater, Homothallic,
Untransportable
8423-P

366

Tsuchiura / Ibaraki (1985-04)
Axenic, Clonal, T.Sawaguchi (1985-04)
Identified by: T.Sawaguchi
Culture conditions: Carefoot, 15° C, 35 µE/m² sec,
2M
Characteristics: Freshwater, Homothallic,
Untransportable
SPD-1

PHACOTUS Perty: Chlorophyceae

Phacotus lenticularis (Ehrenberg) Stein

858

Germany

Unialgal, Clonal

Identified by: L.Knieritz

Culture conditions: C, 20° C, 12 µE/m² sec, 2M

Characteristics: Freshwater, *atpB* gene (AB014039),
rbcL gene (AJ001883), *psaB* gene (AB084373-4),
18SrRNA gene (X91628)

KR 91/1

References: 77, 340, 342

859

Germany

SAG 61-1, Unialgal, Clonal

Culture conditions: C, 20° C, 12 µE/m² sec, 2M

Characteristics: Freshwater, *rbcL* gene (AJ001884)

Reference: 77

PHACUS Dujardin: Euglenophyceae

Phacus agilis Skuja

387

Kashiwa / Chiba (1986-09)

Axenic, Clonal, M.M.Watanabe (1986-09)

Identified by: M.M.Watanabe

Culture conditions: MAF-6, AF-6, 20° C,
32 µE/m² sec, 1M

Characteristics: Freshwater, Umetatechi-
shinshutsusui lagoon

PhD-3

PHAEOCYSTIS Lagerheim: Prymnesiophyceae

Phaeocystis globosa Scherffel

388

Hachijo Isl. / Tokyo (1984-04)

Unialgal, Non-clonal, T.Sawaguchi (1984-04)

Reidentified by: M.Kawachi

Culture conditions: ESM, 15° C, 20 µE/m² sec, 20D,
(20° C, 40 µE/m² sec)

Characteristics: Red tide, Marine, Formerly
identified as *Phaeocystis pouchetii*, Unstable,
Untransportable, *COXI* gene (AB000120)

8-P

Reference: 75

* **Phaeocystis pouchetii** (Hariot) Lagerheim

See *Phaeocystis globosa* Scherffel

PHORMIDIUM Kützing: Cyanophyceae

Phormidium foveolarum Gomont

32

Lake Shirakaba / Nagano

IAM M-43, Unialgal, Non-clonal, M.Ishikawa

Identified by: H.Fukushima

Culture conditions: MDM(S), 20° C, 4 µE/m² sec,
4M, (25° C, 30 µE/m² sec), [Cryopreserved]

Characteristics: Freshwater, Reidentified by
M.M.Watanabe

References: 96, 242, 467, 481

34

Sendai / Miyagi

IAM M-59, Unialgal, Non-clonal, M.Ishikawa

Identified by: K.Maruyama

Culture conditions: MDM(S), 20° C, 4 µE/m² sec,
4M, (25° C, 30 µE/m² sec), [Cryopreserved]

Characteristics: Freshwater, Reidentified by
M.M.Watanabe

References: 96, 242

503

Mt. Tsukuba / Ibaraki (1987-04)

Unialgal, Non-clonal, F.Kasai (1987-05)

Identified by: M.M.Watanabe

Culture conditions: CSi, CSi+Cu, 20° C,
4 µE/m² sec, 3M, (20° C, 12 µE/m² sec)

Characteristics: Freshwater
(1)-48

References: 242, 454

504

Miyata River / Ibaraki (1987-03)

Unialgal, Non-clonal, F.Kasai (1987-05)

Identified by: M.M.Watanabe

Culture conditions: CSi, CSi+Cu, 20° C,
4 µE/m² sec, 3M, (20° C, 12 µE/m² sec)

Characteristics: Freshwater
2st-2-4

References: 242, 453, 454, 455

505

Watarase River / Gunma (1987-08)

Unialgal, Non-clonal, F.Kasai (1987-10)

Identified by: M.M.Watanabe

- Culture conditions: CSi, CSi+Cu, 20° C,
4 µE/m² sec, 2M, (20° C, 12 µE/m² sec)
Characteristics: Freshwater
AT4-17
References: 242, 454, 455
- Phormidium jenkelianum*** G.Schmid
506
Watarase River / Gunma (1987-08)
Unialgal, Non-clonal, F.Kasai (1987-09)
Identified by: M.M.Watanabe
Culture conditions: CSi, CSi+Cu, 20° C, 4 µE/m² sec,
2M, (20° C, 12 µE/m² sec)
Characteristics: Freshwater
AT5-37
References: 242, 454
- 507
Watarase River / Gunma (1987-08)
Unialgal, Non-clonal, F.Kasai (1987-08)
Identified by: M.M.Watanabe
Culture conditions: CSi, CSi+Cu, 20° C, 4 µE/m² sec,
2M, (20° C, 12 µE/m² sec)
Characteristics: Freshwater
Ast-1-4
References: 242, 454, 455
- Phormidium molle*** Gomont
509
Watarase River / Gunma (1987-08)
Unialgal, Non-clonal, F.Kasai (1987-08)
Identified by: M.M.Watanabe
Culture conditions: CSi, CSi+Cu, 20° C, 4 µE/m² sec,
2M, (20° C, 12 µE/m² sec)
Characteristics: Freshwater
AT2-17
References: 242, 454, 455
- Phormidium mucicola*** Huber-Pestalozzi et Naum
510
Mt.Tsukuba / Ibaraki (1987-04)
Unialgal, Non-clonal, F.Kasai (1987-05)
Identified by: M.M.Watanabe
Culture conditions: CSi, CSi+Cu, 20° C, 4 µE/m² sec,
4M, (20° C, 12 µE/m² sec)
Characteristics: Freshwater
(1)-23
References: 242, 454
- Phormidium ramosum*** Boye-Petersen
305
Takatori River / Ibaraki (1984-12)
Unialgal, Clonal, S.Suda (1984-12)
Identified by: S.Suda
Culture conditions: CSi, CSi+Cu, 20° C, 4 µE/m² sec,
4M, (20° C, 12 µE/m² sec)
Characteristics: Freshwater
841211St5-1
References: 242, 453, 454
- Phormidium tenue*** Gomont
30
Akita / Akita
IAM M-40, Unialgal, Non-clonal, M.Ishikawa
Identified by: H.Fukushima
Culture conditions: MDM(S), 20° C, 4 µE/m² sec,
4M, (25° C, 30 µE/m² sec), [Cryopreserved]
Characteristics: Freshwater, Reidentified by
M.M.Watanabe, 16SrRNA gene (AB042857)
References: 96, 242, 354, 435
- 512
Nagoya / Aichi (1981-11)
Axenic, Clonal, N.Yamada (1985-05)
Identified by: N.Yamada
Culture conditions: CT, 20° C, 4 µE/m² sec, 20D,
(20° C, 12 µE/m² sec), [Cryopreserved]
Characteristics: Offensive taste and odor,
Freshwater, Nakaku Honmaru (a moat of the
Nagoya Castle), 16SrRNA gene (AB042838)
PM-81A
References: 223, 224, 242, 265, 267, 354, 355, 555,
556
- 611
Lake Biwa / Shiga (1987-06)
Unialgal, Clonal, S.Ichise (1987-06)
Identified by: M.M.Watanabe
Culture conditions: CT, 25° C, 30 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, 16SrRNA gene
(AB042842)
Bpt
References: 242, 354
- PLANCTONEMA** Schmidle: Chlorophyceae
- Planctonema lauterbornii*** Schmidle
514
Lake Kasumigaura / Ibaraki (1988-08)
Axenic, Clonal, Y.Niiyama (1988-08)

Identified by: Y.Niiyama
Culture conditions: C, 20° C, 8 µE/m² sec, 2M
Characteristics: Freshwater
K880818
Reference: 242

PLANKTOTHRICOIDES Suda et M.M.Watanabe:
Cyanophyceae

Planktothricoides raciborskii Suda et M.M.Watanabe
Syn. *Oscillatoria raciborskii* Woloszynska
207

Lake Kasumigaura / Ibaraki (1983-06)
Axenic, Clonal, S.Suda (1983-06)
Reidentified by: S.Suda
Culture conditions: CB, CT, 25° C, 24 µE/m² sec,
20D
Characteristics: Water bloom, Offensive taste and
odor, Freshwater, Unstable
K-O-R
References: 227, 242, 291, 444, 530

917

Lake Inba / Chiba (1995-08)
Axenic, Clonal, R.Li (1995-08)
Identified by: R.Li
Culture conditions: CT, 20° C, 20 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Planktonic,
16SrRNA gene (AB045953)
INBaOR
Reference: 444

918

Bangkok / Thailand (1996-01)
Axenic, Clonal, S.Suda (1996-01)
Identified by: S.Suda
Culture conditions: CT, 20° C, 20 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Planktonic,
16SrRNA gene (AB045967)
T1-6-2
Reference: 444

919

Bangkok / Thailand (1996-01)
Axenic, Clonal, R.Li (1996-01)
Identified by: S.Suda
Culture conditions: CT, 20° C, 20 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Planktonic,
16SrRNA gene (AB045964)
OR1-1
Reference: 444

920

Chang-Mai / Thailand (1996-10)
Axenic, Clonal, S.Suda (1996-10)
Identified by: S.Suda
Culture conditions: CT, 20° C, 20 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Planktonic
Kase1-2

921

Chang-Mai / Thailand (1996-10)
Axenic, Clonal, S.Suda (1996-10)
Identified by: S.Suda
Culture conditions: CT, 20° C, 20 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Planktonic
Kase3-5

922

Wohan / China (1997-07)
Axenic, Clonal, S.Suda (1997-07)
Identified by: S.Suda
Culture conditions: CT, 20° C, 20 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Planktonic
Wohan1-5

923

Taifu / China (1997-07)
Axenic, Clonal, S.Suda (1997-07)
Identified by: S.Suda
Culture conditions: CT, 20° C, 20 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Planktonic
Taiko726-1

924

Phatchanbari Dam / Thailand (1998-11)
Unialgal, Clonal, S.Suda (1998-11)
Identified by: S.Suda
Culture conditions: CT, 20° C, 20 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Planktonic
P1

925

Phatchanbari Dam / Thailand (1998-11)
Unialgal, Clonal, S.Suda (1998-11)
Identified by: S.Suda
Culture conditions: CT, 20° C, 20 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Planktonic
P2

926

Vietnam (1998-12)
Unialgal, Clonal, S.Suda (1998-12)
Identified by: S.Suda

- Culture conditions: CT, 20° C, 20 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom, Planktonic
 Ho12-3 Or-4
- 927
 Vietnam (1998-12)
 Unialgal, Clonal, S.Suda (1998-12)
 Identified by: S.Suda
 Culture conditions: CT, 20° C, 20 µE/m² sec, 1M
 Characteristics: Freshwater, Water bloom, Planktonic
 Ho12-3 Or-9
- PLANKTOTHRIX** Anagnostidis et Komárek
- Planktothrix agardhii** Anagnostidis et Komárek
 Syn. *Oscillatoria agardhii* Gomont
- 204
 Lake Kasumigaura / Ibaraki (1983-08)
 Axenic, Clonal, S.Suda (1983-08)
 Reidentified by: S.Suda
 Culture conditions: CB, 25° C, 24 µE/m² sec, 1M,
 [Cryopreserved]
 Characteristics: Water bloom, Indicator, Freshwater,
 16SrRNA gene (AB045954)
 K-O-A
 References: 19, 79, 136, 227, 242, 254, 291, 406,
 429, 431, 433, 434, 444, 530, 549, 578
- 205
 Lake Kasumigaura / Ibaraki (1982-09)
 TAC 53, Unialgal, Clonal, M.Watanabe (1982-09)
 Reidentified by: S.Suda
 Culture conditions: MA, 25° C, 24 µE/m² sec, 1M,
 [Cryopreserved]
 Characteristics: Water bloom, Indicator, Freshwater,
 16SrRNA gene (AB045955)
 K-TAN-53
 References: 136, 227, 242, 250, 430, 444
- 594
 North Ireland / U.K.
 Axenic, Clonal
 Reidentified by: S.Suda
 Culture conditions: CT, 20° C, 4 µE/m² sec, 2M,
 (20° C, 12 µE/m² sec), [Cryopreserved]
 Characteristics: Freshwater,
 16SrRNA gene (AB045956)
 k-8
 References: 242, 444
- 595
 North Ireland / U.K.
 Axenic, Clonal
 Reidentified by: S.Suda
 Culture conditions: CT, 20° C, 4 µE/m² sec, 2M,
 (20° C, 12 µE/m² sec), [Cryopreserved]
 Characteristics: Freshwater,
 16SrRNA gene (AB045957)
 3A②
 References: 138, 242, 444
- 596
 Veluwemeer / Holland
 Axenic, Clonal
 Reidentified by: S.Suda
 Culture conditions: CT, 20° C, 4 µE/m² sec, 2M,
 (20° C, 12 µE/m² sec), [Cryopreserved]
 Characteristics: Freshwater,
 16SrRNA gene (AB045958)
 VLOA7
 References: 33, 136, 242, 250, 444
- 905
 Windermere, Cumbria / U.K. (1975)
 CCAP 1459/11A, Axenic, Clonal, Jaworski (1975)
 Reidentified by: S.Suda
 Culture conditions: CT, 20° C, 20 µE/m² sec, 1M,
 [Cryopreserved]
 Characteristics: Freshwater, Water bloom, Planktonic,
 Toxic, 16SrRNA gene (AB045896)
 References: 401, 444
- 906
 Kuming / China (1996-02)
 Axenic, Clonal, S.Suda (1996-02)
 Identified by: S.Suda
 Culture conditions: CT, 20° C, 20 µE/m² sec, 1M,
 [Cryopreserved]
 Characteristics: Freshwater, Water bloom, Planktonic,
 16SrRNA gene (AB045904)
 C1-12
 Reference: 444
- 907
 Kuming / China (1996-02)
 Axenic, Clonal, S.Suda (1996-02)
 Identified by: S.Suda
 Culture conditions: CT, 20° C, 20 µE/m² sec, 1M,
 [Cryopreserved]
 Characteristics: Freshwater, Water bloom, Planktonic,
 16SrRNA gene (AB045905)

- C1-17
Reference: 444
- 908
Kumming / China (1996-02)
Axenic, Clonal, S.Suda (1996-02)
Identified by: S.Suda
Culture conditions: CT, 20° C, 20 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom, Planktonic
C1-18
- 909
Taifu / China (1997-07)
Axenic, Clonal, S.Suda (1997-07)
Identified by: S.Suda
Culture conditions: CT, 20° C, 20 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom, Planktonic
Taiko3-12
- 910
Phatchanbari Dam / Thailand (1998-11)
Unialgal, Clonal, S.Suda (1998-11)
Identified by: S.Suda
Culture conditions: CT, 20° C, 20 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom, Planktonic
P3-5
- 989
Lake Mikata / Fukui (2000-12)
Unialgal, Clonal, T.Sano (2001-08)
Identified by: M.Kawachi
Culture conditions: CT, 20° C, 12 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom
Mikata1-3
- 990
Lake Mikata / Fukui (2000-12)
Unialgal, Clonal, T.Sano (2001-08)
Identified by: M.Kawachi
Culture conditions: CT, 20° C, 12 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom
Mikata1-6
- 1263
Germany (2000-08)
Unialgal, Clonal, T.Sano (2000-08)
Identified by: S.Otsuka
- Culture conditions: CT, 20° C, 20 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Toxic
DU-Oa-2-3
- 1264
Neuglobsow, Brandenburg / Germany (2000-08)
Unialgal, Clonal, T.Sano (2000-08)
Identified by: S.Otsuka
Culture conditions: CT, 20° C, 20 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Toxic
DU-Oa-3-3
- 1265
Neuglobsow, Brandenburg / Germany (2000-08)
Unialgal, Clonal, T.Sano (2000-08)
Identified by: S.Otsuka
Culture conditions: CT, 20° C, 20 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Toxic
DU-Oa-5-5
- Planktothrix mougeotii* Anagnostidis et Komárek
Syn. *Oscillatoria mougeotii* Kützing ex Lemmermann
844
Nakhon Pathom / Thailand (1996-03)
Axenic, Clonal, R.Li (1996-03)
Identified by: S.Suda
Culture conditions: CT, 20° C, 20 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom, Planktonic,
16SrRNA gene (AB045971)
TR1-5
Reference: 444
- 911
Nakhon Pathom / Thailand (1996-03)
Axenic, Clonal, R.Li (1996-03)
Identified by: S.Suda
Culture conditions: CT, 20° C, 20 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom, Planktonic,
16SrRNA gene (AB045972)
TR2-4
Reference: 444
- 912
Bangkok / Thailand (1996-03)
Axenic, Clonal, S.Suda (1996-03)
Identified by: S.Suda
Culture conditions: CT, 20° C, 20 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom, Planktonic,
16SrRNA gene (AB045969)

- TK4-5
Reference: 444
- 913
Bangkok / Thailand (1996-03)
Axenic, Clonal, S.Suda (1996-03)
Identified by: S.Suda
Culture conditions: CT, 20° C, 20 µE/m²sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom, Planktonic,
16SrRNA gene (AB045970)
TK5-1
Reference: 444
- Planktothrix pseudoagardhii* Suda et M.M.Watanabe
845
Bangkok / Thailand (1996-01)
Axenic, Clonal, S.Suda (1996-01)
Identified by: S.Suda
Culture conditions: CT, 20° C, 20 µE/m²sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom, Planktonic,
16SrRNA gene (AB045968)
T1-8-4
Reference: 444
- 914
Lake Dalai, Inner Mongolia / China (1996-07)
Axenic, Clonal, S.Suda (1996-07)
Identified by: S.Suda
Culture conditions: CT, 20° C, 20 µE/m²sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom, Planktonic
16SrRNA gene (AB045907)
CW4-5
Reference: 444
- 915
Bangkok / Thailand (1996-03)
Axenic, Clonal, S.Suda (1996-03)
Identified by: S.Suda
Culture conditions: CT, 20° C, 20 µE/m²sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom, Planktonic,
16SrRNA gene (AB045965)
T19-6'-6-1
Reference: 444
- 916
Bangkok / Thailand (1996-03)
Axenic, Clonal, S.Suda (1996-03)
Identified by: S.Suda
- Culture conditions: CT, 20° C, 20 µE/m²sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom, Planktonic,
16SrRNA gene (AB045966)
T19-6'-8-2-3
Reference: 444
- Planktothrix rubescens* Anagnostidis et Komárek
Syn. *Oscillatoria rubescens* DC.ex Gomont
610
Lake Gjersjoen / Norway
CCAP 1459/22, Axenic, Romstad (1971)
Reidentified by: S.Suda
Culture conditions: CB, MA, 20° C, 40 µE/m²sec,
1M, [Cryopreserved]
Characteristics: Freshwater, Formerly identified as
Oscillatoria agardhii Gomont,
16SrRNA gene (AB045959)
NIVA CYA 18
References: 242, 398, 399, 400, 444
- 928
Cambria / U.K. (1975)
CCAP 1459/14, Unialgal, Clonal, Jaworski (1975)
Reidentified by: S.Suda
Culture conditions: CT, 20° C, 20 µE/m²sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom, Planktonic,
Toxic
Reference: 401
- 1266
Neuglobsow, Brandenburg / Germany (2000-08)
Unialgal, Clonal, T.Sano (2000-08)
Identified by: T.Sano
Culture conditions: CT, 20° C, 12 µE/m²sec, 1M
Characteristics: Freshwater, Water bloom, Toxic
DU-Oa-4-1
- 1267
Neuglobsow, Brandenburg / Germany (2000-08)
Unialgal, Clonal, T.Sano (2000-08)
Identified by: T.Sano
Culture conditions: CT, 20° C, 12 µE/m²sec, 1M
Characteristics: Freshwater, Water bloom, Toxic
DU-Oa-4-2
- PLATYDORINA** Kofoid: Chlorophyceae
- Platydorina caudata* Kofoid
728

Kansas / USA (1965-09)
UTEX 1658, Unialgal, Clonal, D.O.Harris
Culture conditions: MG, 20° C, 12 µE/m² sec, 2M
Characteristics: Freshwater, *atpB* gene (AB014032),
rbcL gene (D86828), *psaA* gene (AB044211-2),
psaB gene (AB044442), *psbC* gene (AB044494)
References: 242, 324, 337, 340

729

Kansas / USA (1965-09)
UTEX 1661, Unialgal, Clonal, D.O.Harris
Culture conditions: MG, 23° C, 48 µE/m² sec, 1M
Characteristics: Freshwater, *rbcL* gene (D86827)
References: 242, 324

PLECTONEMA Thuret ex Gomont: Cyanophyceae

Plectonema radiosum Gomont

515

Nikko / Tochigi (1987-04)
Axenic, Clonal, F.Kasai (1987-04)
Identified by: M.M.Watanabe
Culture conditions: CSi, 20° C, 4 µE/m² sec, 3M,
(20° C, 12 µE/m² sec)
Characteristics: Freshwater
NK-12
References: 233, 242, 454, 455

PLEODORINA Shaw: Chlorophyceae

Pleodorina californica Shaw

576

Hachiman / Gifu (1990-08)
Axenic, Clonal, Y.Ogasawara (1990-08)
Identified by: Y.Ogasawara
Culture conditions: VT, 25° C, 30 µE/m² sec, 1M
Characteristics: Freshwater
Reference: 242

735

Indiana / USA
UTEX 809, Axenic, Clonal, R.C.Starr
Culture conditions: VT, 20° C, 12 µE/m² sec, 1M
Characteristics: Freshwater, *atpB* gene (AB014004),
rbcL gene (D63439), *psaA* gene (AB044190-2),
psaB gene (AB044430), *psbC* gene (AB044480)
References: 323, 337, 340

Pleodorina indica (Iyengar) Nozaki

736

Mexico

UTEX 1990, Unialgal, Clonal, S.Morro
Reidentified by: H.Nozaki
Culture conditions: AF-6, 23° C, 48 µE/m² sec, 1M
Characteristics: Freshwater, *atpB* gene (AB014006),
rbcL gene (D86834), *psaA* gene (AB044195-7),
psaB gene (AB044432-3), *psbC* gene (AB044483)
References: 324, 337, 340

Pleodorina japonica Nozaki

577

Fuji / Shizuoka (1986-07)
UTEX 2523, Unialgal, Clonal, H.Nozaki (1986-07)
Identified by: H.Nozaki
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 1M
Characteristics: Freshwater, Type strain, Homothallic,
Dioecious, Anisogamy, *rbcL* gene (D63440)
6715-7
References: 242, 323, 332, 337, 340

PLEUROTAENIUM Nägeli: Charophyceae

Pleurotaenium cylindricum (Turner) Schmidle

var. *stuhlmannii* (Hieronymus) Krieger

306

Niimi / Okayama (1983-09)
Unialgal, Clonal, F.Kasai (1983-09)
Identified by: F.Kasai
Culture conditions: MG, 22° C, 15 µE/m² sec, 1M
Characteristics: Freshwater, Homothallic
F57-18-4
Reference: 242

Pleurotaenium ehrenbergii (Ralfs) De Bary

var. *curtum* Krieger

307

Naka-gun / Wakayama (1969-10)
IAM C-378, Axenic, Clonal, T.Ichimura (1969-11)
Identified by: T.Ichimura
Culture conditions: MG, 20° C, 8 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Heterothallic,
Mating type +, Crosses with NIES-308
W-1-1
Reference: 242

308

Naka-gun / Wakayama (1969-10)
IAM C-379, Axenic, Clonal, T.Ichimura (1969-11)
Identified by: T.Ichimura
Culture conditions: CA, 20° C, 8 µE/m² sec, 3M,

(25° C, 30 µE/m² sec)
 Characteristics: Freshwater, Heterothallic,
 Mating type –, Crosses with NIES-307
 W-1-3
 Reference: 242

311
 Iriomote Isl. / Okinawa (1973-06)
 IAM C-430, Unialgal, Clonal, T.Ichimura (1973-11)
 Culture conditions: MG, 20° C, 8 µE/m² sec, 3M,
 (25° C, 30 µE/m² sec)
 Characteristics: Freshwater, Heterothallic,
 Mating type +
 R-13-19
 Reference: 242

Pleurotaenium ehrenbergii (Ralfs) De Bary
 var. *ehrenbergii*
 309
 Iriomote Isl. / Okinawa (1973-06)
 IAM C-467, Unialgal, Clonal, T.Ichimura (1973-10)
 Culture conditions: MG, 20° C, 8 µE/m² sec, 3M,
 (25° C, 30 µE/m² sec)
 Characteristics: Freshwater, Heterothallic,
 Mating type +, Crosses with NIES-310
 R-13-27
 References: 96, 242

310
 Iriomote Isl. / Okinawa (1973-06)
 IAM C-468, Unialgal, Clonal, T.Ichimura (1973-10)
 Culture conditions: MG, 20° C, 8 µE/m² sec, 3M,
 (25° C, 30 µE/m² sec)
 Characteristics: Freshwater, Heterothallic,
 Mating type –, Crosses with NIES-309
 R-13-30
 References: 96, 242

Pleurotaenium nodosum (Bailey ex Ralfs) Lundell
 var. *borgei* Grönblad
 663
 Miyatoko Mire / Fukushima (1993-09)
 Unialgal, Clonal, H.Nozaki (1993-09)
 Identified by: H.Nozaki
 Culture conditions: AF-6, 20° C, 22 µE/m² sec, 2M
 Characteristics: Freshwater
 93-913-Gon-1
 Reference: 242

664
 Miyatoko Mire / Fukushima (1993-09)

Unialgal, Clonal, H.Nozaki (1993-09)
 Identified by: H.Nozaki
 Culture conditions: AF-6, 20° C, 22 µE/m² sec, 2M
 Characteristics: Freshwater
 93-913-Gon-3
 Reference: 242

Pleurotaenium nodosum (Bailey ex Ralfs) Lundell
 var. *gutwinskii* Krieger
 787
 4 km northwest of Melaka / Malaysia (1985-08)
 Unialgal, Clonal, T.Ichimura (1985)
 Identified by: T.Ichimura
 Culture conditions: MG, 22° C, 24 µE/m² sec, 3M,
 (25° C, 30 µE/m² sec)
 Characteristics: Freshwater, Heterothallic, Crosses
 with NIES-788
 85-30-9

788
 4 km northwest of Melaka / Malaysia (1985-08)
 Unialgal, Clonal, T.Ichimura (1985)
 Identified by: T.Ichimura
 Culture conditions: MG, 22° C, 24 µE/m² sec, 3M,
 (25° C, 30 µE/m² sec)
 Characteristics: Freshwater, Heterothallic, Crosses
 with NIES-787
 85-30-56

Pleurotaenium nodosum (Bailey ex Ralfs) Lundell
 var. *nodosum*
 312
 Higashihiroshima / Hiroshima (1983-10)
 Unialgal, Clonal, F.Kasai (1983-10)
 Identified by: F.Kasai
 Culture conditions: CAM, 20° C, 8 µE/m² sec, 3M,
 (25° C, 30 µE/m² sec)
 Characteristics: Freshwater
 83-24-3
 Reference: 242

785
 Imuta-ike Pond / Kagoshima (1986-10)
 Unialgal, Clonal, T.Ichimura (1986)
 Identified by: T.Ichimura
 Culture conditions: MG, 22° C, 24 µE/m² sec, 3M,
 (25° C, 30 µE/m² sec)
 Characteristics: Freshwater, Heterothallic, Crosses
 with NIES-786
 86-7-15

786

Imuta-ike Pond / Kagoshima (1986-10)
Unialgal, Clonal, T.Ichimura (1986)
Identified by: T.Ichimura
Culture conditions: MG, 22° C, 24 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Heterothallic, Crosses
with NIES-785
86-7-16

Pleurotaenium ovatum Nordstedt

313

Niimi / Okayama (1983-09)
Unialgal, Clonal, F.Kasai (1983-09)
Identified by: F.Kasai
Culture conditions: C, 20° C, 8 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater
F57-17-8
Reference: 242

POLYEDRIOPSIS Schmidle: Chlorophyceae

Polyedriopsis spinulosa (Schmidle) Schmidle

232

Tsukuba / Ibaraki (1984-05)
Unialgal, Clonal, F.Kasai (1984-05)
Identified by: F.Kasai
Culture conditions: C, 20° C, 4 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater
F128
Reference: 242

PORPHYRIDIDIUM Greville: Rhodophyceae

Porphyridium sp.

1032

Iriomote Isl. / Okinawa (1990-10)
Unialgal, Clonal, N.Hatakeyama-Ishida (1990-11)
Identified by: N.Hatakeyama-Ishida
Culture conditions: ESM, 20° C, 12 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Marine, Mangrove
M-1

1033

Iriomote Isl. / Okinawa (1990-10)
Unialgal, Clonal, N.Hatakeyama-Ishida (1990-11)

Identified by: N.Hatakeyama-Ishida

Culture conditions: ESM, 20° C, 12 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Marine, Mangrove
M-7

1034

Florida / USA (1991-08)
Unialgal, Clonal, N.Hatakeyama-Ishida (1991-09)
Identified by: N.Hatakeyama-Ishida
Culture conditions: ESM, 20° C, 12 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Marine, Mangrove
AM-31

1035

Florida / USA (1991-08)
Unialgal, Clonal, N.Hatakeyama-Ishida (1991-09)
Identified by: N.Hatakeyama-Ishida
Culture conditions: ESM, 20° C, 12 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Marine
AM-31

PROROCENTRUM Ehrenberg: Dinophyceae

Prorocentrum dentatum Stein

682

Hiuchi-Nada / Seto Inland Sea (1979-12)
Unialgal, Clonal, S.Yoshimatsu (1980-01)
Identified by: S.Yoshimatsu
Culture conditions: ESM, 20° C, 40 µE/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable

900

Off Cape Irago / Aichi (2000-07)
Unialgal, Clonal, K.Yumoto (2000-08)
Identified by: M.Kawachi
Culture conditions: ESM, 20° C, 40 µE/m² sec, 1M
Characteristics: Marine, Red tide, Untransportable

Prorocentrum gracile Schütt

315

Harima-Nada / Seto Inland Sea
Axenic, Clonal, S.Yoshimatsu (1984-08)
Identified by: S.Yoshimatsu
Culture conditions: ESM, 20° C, 32 µE/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable
80

- Prorocentrum lima*** (Ehrenberg) Dodge
617
Motobu / Okinawa (1993-06)
Unialgal, Clonal, H.Kobayashi (1993-06)
Identified by: Y.Fukuyo
Culture conditions: f/2, ESM, 20° C, 32 µE/m² sec, 1M
Characteristics: Toxic, Marine, Untransportable
PL-03
- Prorocentrum mexicanum*** Osorio Tafall
618
Motobu / Okinawa (1993-06)
Unialgal, Clonal, H.Kobayashi (1993-06)
Identified by: Y.Fukuyo
Culture conditions: ESM, 20° C, 32 µE/m² sec, 1M
Characteristics: Marine, Untransportable
PX-01
- Prorocentrum micans*** Ehrenberg
12
Osaka Bay / Osaka (1981-07)
Axenic, Clonal, S.Yamochi
Culture conditions: ESM, 20° C, 32 µE/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable,
COXI gene (AB000133-4), psbA gene
(AB025585)
OPm
References: 117, 118, 261, 458, 486, 570
- 218
Yashima Bay / Kagawa (1978-08)
Axenic, Clonal, K.Yuki
Culture conditions: f/2, 20° C, 32 µE/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable
KGW-13-7
- 316
Matoya Bay / Mie (1984-09)
Axenic, Clonal, T.Sawaguchi (1984-09)
Identified by: T.Sawaguchi
Culture conditions: f/2, ESM, 20° C, 32 µE/m² sec, 2M
Characteristics: Red tide, Marine, Untransportable
MB-D-4
- 601
Mikawa bay / Aichi
Unialgal, Clonal, S.Toriumi
Culture conditions: f/2, 20° C, 32 µE/m² sec, 1M
Characteristics: Marine, Untransportable
- 608
Ise Bay / Mie (1978-06)
Unialgal, Clonal, H.Iwasaki (1978-06)
Identified by: K.Steidnger
Culture conditions: ESM, 20° C, 40 µE/m² sec, 2M
Characteristics: Red tide, Marine, Untransportable
- Prorocentrum minimum*** (Pavillard) Schiller
237
Osaka Bay / Osaka (1982-08)
Axenic, Clonal, M.M.Watanabe (1982-08)
Culture conditions: ESM, 20° C, 32 µE/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable
OPmin
- 238
Harima-Nada / Seto Inland Sea (1983-04)
Unialgal, Clonal, S.Yoshimatsu
Culture conditions: f/2, ESM, 20° C, 32 µE/m² sec, 1M
Characteristics: Red tide, Marine, Unstable,
Untransportable
KGW-14-2-5
- Prorocentrum sigmoides*** Bohm
683
Uchiumi Bay / Kagawa (1985-10)
Axenic, Clonal, S.Yoshimatsu (1985-10)
Identified by: S.Yoshimatsu
Culture conditions: ESM, 20° C, 40 µE/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable
- Prorocentrum triestinum*** Schiller
219
Nomi Bay / Kochi (1980-04)
Unialgal, Clonal, S.Yoshimatsu
Culture conditions: ESM, 20° C, 32 µE/m² sec, 2M
Characteristics: Red tide, Marine, Untransportable
KGW-28-1
Reference: 486
- PROTOCERATIUM** (Claparede et Lachmann)
Butschli: Dinophyceae
- Protoceratium reticulatum***
(Claparède et Lachmann) Bütschli
318
Matoya Bay / Mie (1984-09)
Axenic, Clonal, T.Sawaguchi (1984-09)
Identified by: T.Sawaguchi
Culture conditions: ESM, 20° C, 40 µE/m² sec, 1M

Characteristics: Red tide, Marine, Unstable,
Untransportable
MB-D-25

319

Naoshima Isl. / Kagawa (1982-07)
Axenic, Clonal, S.Yoshimatsu
Identified by: S.Yoshimatsu
Culture conditions: f/2, ESM, 20° C, 40 µE/m² sec,
1M
Characteristics: Red tide, Marine, Unstable,
Untransportable
KGW-62
Reference: 486

PROTOGONYAULAX Taylor: Dinophyceae

* *Protogonyaulax catenella* (Whedon et Kofoid)
Taylor
See *Alexandrium catenella*
(Whedon et Kofoid) Balech

PRYMNESIUM Conrad: Prymnesiophyceae

Prymnesium calathiferum Chang et Ryan
1330
Awase / Okinawa
Unialgal, Clonal, A.Kai (2003-04)
Identified by: M.Yoshida
Culture conditions: MNK, 22° C, 15 µE/m² sec, 14D
Characteristics: Marine
ym-07

Prymnesium parvum

Carter emend. J.C.Green, DJ.Hibberd et Pienaar
1017
Jogashima, Miura / Kanagawa (1997-04)
Unialgal, Clonal, M.Moriya (1997-04)
Identified by: M.Moriya
Culture conditions: ESM, 15° C, 15 µE/m² sec, 2M
Characteristics: Marine
#22

1018

Taira / Okinawa (2002-03)
Unialgal, Clonal, M.Moriya (2002-05)
Identified by: M.Moriya
Culture conditions: ESM, 15° C, 15 µE/m² sec, 1M
Characteristics: Brackish
M-25

PSEUDOCARTERIA Ettl: Chlorophyceae

Pseudocarteria mucosa (Korshikov) Ettl
522

Izumi / Miyagi (1985-08)
Unialgal, Clonal, S.Suda (1985-08)
Identified by: S.Suda
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 1M
Characteristics: Freshwater, Homothallic,
atpB gene (AB084324), *rbcL* gene (AB084335),
psaB gene (AB084364)
M-2
References: 242, 342, 443

523

Higashiyata River / Ibaraki (1983-07)
Unialgal, Clonal, S.Suda (1983-07)
Identified by: S.Suda
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 1M
Characteristics: Freshwater, Homothallic
USI-8
References: 242, 440, 443

524

Izumi / Miyagi (1985-08)
Unialgal, Clonal, S.Suda (1985-08)
Identified by: S.Suda
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 1M
Characteristics: Freshwater, Homothallic
M-4
References: 242, 443

PSEUDOKIRCHNERIELLA Hindák: Chlorophyceae

Pseudokirchneriella subcapitata (Korshikov) Hindák
35

Nitelva River / Norway
Axenic, Clonal, O.M.Skulberg (1959)
Culture conditions: C(S), 20° C, 4 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: AGP, Freshwater, Formerly
identified as *Selenastrum capricornutum* (Printz)
Nygaard
P-26
References: 69, 88, 149, 150, 155, 159, 168, 216, 242,
264, 267, 269, 295, 298, 358, 366, 445, 476, 551,
552, 554

PSEUDOPLEUROCOCCUS Snow: Chlorophyceae

Pseudopleurococcus printzii Vischer
var. *longissimus* S.Watanabe

159

Kyoto (1975-03)

Unialgal, Clonal, S.Watanabe (1975-03)

Identified by: S.Watanabe

Culture conditions: C(S), 20° C, 4 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)

Characteristics: Indicator, Soil

KUC6-2

References: 242, 548

PTEROMONAS Seligo: Chlorophyceae

Pteromonas aculeata Lemmermann

738

Shinobazu-no-ike, Ueno Park / Tokyo (1996-10)

Unialgal, Clonal, S.Tanaka (1996-10)

Identified by: S.Tanaka

Culture conditions: MG, 20° C, 12 µE/m² sec, 2M

Characteristics: Freshwater

970603-PtAcl

Reference: 460

860

Dorfteich, Darstein / Germany (1997-07)

Unialgal, Clonal, H.Nozaki (1997-08)

Identified by: H.Nozaki

Culture conditions: AF-6, 20° C, 12 µE/m² sec, 2M

Characteristics: Freshwater, Planktonic

970801-2

Pteromonas angulosa (Carter) Lemmermann

739

Shinobazu-no-ike, Ueno Park / Tokyo (1996-11)

Axenic, Clonal, S.Tanaka (1996-11)

Identified by: S.Tanaka

Culture conditions: MG, 20° C, 12 µE/m² sec, 2M

Characteristics: Freshwater

970603-PtAng

Reference: 460

861

Germany

Unialgal, Clonal

Identified by: L.Knieritz

Culture conditions: AF-6, 20° C, 12 µE/m² sec, 2M

Characteristics: Freshwater, Planktonic,

atpB gene (AB014038), *rbcL* gene (AJ001887),

psaB gene (AB084371-2)

KR 91/2

References: 77, 342, 340

862

Germany

Unialgal, Clonal

Identified by: L.Knieritz

Culture conditions: AF-6, 20° C, 12 µE/m² sec, 2M

Characteristics: Freshwater, Planktonic, *rbcL* gene
(AJ001888)

KR 91/3

Reference: 77

Pteromonas multipyrenoidea Iyenger

740

Shinobazu-no-ike, Ueno Park / Tokyo (1996-11)

Axenic, Clonal, S.Tanaka (1996-11)

Identified by: S.Tanaka

Culture conditions: MG, 20° C, 12 µE/m² sec, 2M

Characteristics: Freshwater

970603-PtMul

Reference: 460

PTEROSPERMA Pouchet: Prasinophyceae

Pterosperma cristatum Schiller

221

Harima-Nada / Seto Inland Sea (1983-02)

Axenic, Clonal, S.Suda (1983-09)

Identified by: I.Inouye

Culture conditions: f/2, ESM, 20° C, 32 µE/m² sec,
1M

Characteristics: Red tide, Marine, Untransportable
H-88-1

References: 231, 486

626

Seto Inland Sea / Kagawa (1989-02)

Unialgal, Clonal, T.Sawaguchi (1989)

Identified by: I.Inouye

Culture conditions: ESM, 15° C, 20 µE/m² sec, 20D

Characteristics: Marine, Untransportable
89KGW-1

936

Oku-matsushima / Miyagi (1998-03)

Unialgal, Clonal, Y.Yoshii (1999-04)

Identified by: I.Inouye

Culture conditions: ESM, 20° C, 40 µE/m² sec, 1M

Characteristics: Marine

Pt

PYRAMIMONAS Schmarda: Prasinophyceae

Pyramimonas aff. *amylifera* Conrad

251

Yashima Bay / Kagawa (1982-10)

Axenic, Clonal, S.Yoshimatsu

Identified by: S.Suda

Culture conditions: f/2, ESM, 20° C, 32 µE/m² sec, 1M

Characteristics: Red tide, Marine

KGW-64-3

Reference: 486

320

Onagawa Bay / Miyagi (1984-08)

Axenic, Clonal, S.Suda (1984-09)

Identified by: S.Suda

Culture conditions: f/2, 20° C, 32 µE/m² sec, 1M

Characteristics: Red tide, Marine

8280G47-5

Pyramimonas *parkeae* Norris et Pearson

254

Hachijo Isl. / Tokyo (1984-04)

Axenic, Clonal, S.Suda (1984-04)

Identified by: S.Suda

Culture conditions: ESM, 20° C, 32 µE/m² sec, 1M

Characteristics: Indicator, Red tide, Marine, Tide pool, Collected from Senjo-jiki Yaene Hachijo

8-25-2

References: 176, 205, 206, 404

PYROCYSTIS Murray ex Haeckel: Dinophyceae

Pyrocystis *lunura* (Schütt) Schütt

609

Unialgal, Non-Clonal

Culture conditions: f/2, 20° C, 40 µE/m² sec, 1M

Characteristics: Marine

PYROPHACUS Stein: Dinophyceae

Pyrophacus *steinii* (Schiller) Wall et Dale

321

Matoya Bay / Mie (1984-09)

Unialgal, Clonal, T.Sawaguchi (1984-09)

Identified by: T.Sawaguchi

Culture conditions: ESM, 20° C, 40 µE/m² sec, 2M

Characteristics: Red tide, Marine, Untransportable

MB-D-27

RAPHIDIOPSIS F.E.Fritsch et F.Rich: Cyanophyceae

Raphidiopsis *curvata* F.E.Fritsch et F.Rich

932

Shinobazu-no-ike, Taito / Tokyo (2000-07)

Unialgal, Clonal, S.Otsuka (2000-07)

Identified by: S.Otsuka

Culture conditions: CT, 25° C, 24 µE/m² sec, 1M

Characteristics: Freshwater, Water bloom, Planktonic RAP1

RHODELLA Evans: Rhodophyceae

Rhodella sp.

1036

Iriomote Isl. / Okinawa (1990-10)

Unialgal, Clonal, N.Hatakeyama-Ishida (1990-11)

Identified by: N.Hatakeyama-Ishida

Culture conditions: ESM, 20° C, 12 µE/m² sec, 1M,

[Cryopreserved]

Characteristics: Marine, Mangrove

O4-3

1037

Iriomote Isl. / Okinawa (1990-10)

Unialgal, Clonal, N.Hatakeyama-Ishida (1990-11)

Identified by: N.Hatakeyama-Ishida

Culture conditions: ESM, 20° C, 12 µE/m² sec, 1M,

[Cryopreserved]

Characteristics: Marine, Mangrove

M-4

RHODOMONAS Karsten: Cryptophyceae

Rhodomonas *atrorosea* Butcher ex Hill et Wetherbee

699

Isle of Wight / U.K.

CCAP 978/6a, Unialgal, Clonal, B.W.Butcher

Identified by: B.W.Butcher

Culture conditions: ESM, 15° C, 20 µE/m² sec, 1M

Characteristics: Marine, Type strain

Reference: 30

Rhodomonas *baltica* Karsten

700

Channel Islands / U.K.

CCAP 979/9, Unialgal, Clonal, B.W.Butcher (1961)

Identified by: B.W.Butcher

Culture conditions: ESM, 15° C, 20 µE/m² sec, 1M

Characteristics: Marine

- Reference: 30
- Rhodomonas chrysoidea*** Butcher ex Hill et Wetherbee
701
River Colne, Essex / U.K.
CCAP 979/8, Unialgal, Clonal, B.W.Butcher (1953)
Identified by: B.W.Butcher
Culture conditions: ESM, 15° C, 20 µE/m² sec, 1M
Characteristics: Brackish, Type strain
Reference: 30
- 1005
Miyako Isl. / Okinawa (2002-03)
Unialgal, Clonal, M.Moriya (2002)
Identified by: M.Moriya
Culture conditions: ESM, 15° C, 20 µE/m² sec, 1M
Characteristics: Marine
M-23
- Rhodomonas duplex*** Hill et Wetherbee
765
Yaka, Kin / Okinawa (1986)
Unialgal Clonal, I. Inouye (1986)
Identified by: M.Erata
Culture conditions: ESM, 15° C, 20 µE/m² sec, 1M
Characteristics: Marine
M014
- Rhodomonas falcata*** Butcher ex Hill et Wetherbee
702
Aberystwyth, Wales / U.K.
CCAP 978/5a, Unialgal, Clonal, B.W.Butcher (1956)
Identified by: B.W.Butcher
Culture conditions: ESM, 15° C, 20 µE/m² sec, 1M
Characteristics: Marine, Type strain
Reference: 30
- Rhodomonas salina*** (Wislouch) Hill et Wetherbee
1006
Taira / Okinawa (2002-03)
Unialgal, Clonal, M.Moriya (2002-05)
Identified by: M.Moriya
Culture conditions: ESM, 15° C, 20 µE/m² sec, 1M
Characteristics: Marine
M-40
- SCENEDESMUS** Meyen: Chlorophyceae
- Scenedesmus abundans*** (Kirchner) Chodat
685
IAM C-101, Unialgal, Clonal, R.A.Lewin
Culture conditions: C(S), 20° C, 4 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Type strain, Formerly
identified as *Chlorella fusca* var. *fusca*
Reference: 242
- Scenedesmus acuminatus*** (Lagerheim) Chodat
var. *tetradesmoides* G.M.Smith
92
Lake Kasumigaura / Ibaraki (1983-08)
Axenic, Clonal, T.Hiwatari (1983-08)
Identified by: M.Watanabe
Culture conditions: CT, 20° C, 8 µE/m² sec, 2M
Characteristics: Indicator, Freshwater
K-S-1
References: 242, 549
- Scenedesmus acutus*** Meyen
94
Kosaka River / Akita (1983-04)
Axenic, Clonal, A.Yuri (1983-05)
Identified by: M.Watanabe
Culture conditions: C(S), 20° C, 4 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Indicator, Freshwater
2-2-3-1
References: 242, 549
- 95
Tsukuba / Ibaraki (1983-05)
Axenic, Clonal, S.Suda (1983-05)
Identified by: M.Watanabe
Culture conditions: C(S), 20° C, 4 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Indicator, Freshwater, Collected
from an artificial pond beside Aquatron at the
NIES
Aq-S-1
References: 84, 242, 530
- 120
Tsukuba / Ibaraki (1983-05)
Axenic, Clonal, S.Suda (1983-05)
Identified by: M.Watanabe
Culture conditions: C(S), 20° C, 4 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Indicator, Freshwater, Collected
from an artificial pond beside Aquatron at the
NIES
Aq-S-2
References: 242, 530

- Scenedesmus dimorphus* (Turpin) Kützing
93
Lake Kasumigaura / Ibaraki (1983-07)
Axenic, Clonal, F.Kasai (1983-07)
Identified by: M.Watanabe
Culture conditions: C(S), 20° C, 4 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Indicator, Freshwater
F-18-1
References: 242, 530
- 119
Ozegahara / Gunma (1983-08)
Axenic, Clonal, S.Suda (1983-09)
Identified by: T.Hiwatari
Culture conditions: C, 20° C, 8 µE/m² sec, 2M
Characteristics: Indicator, Freshwater
OZ-29
Reference: 242
- Scenedesmus gutwinskii* Chodat
var. *heterospina* Bodfölközy
797
Lake Kasumigaura / Ibaraki (1992-06)
Unialgal, Clonal, F.Kasai (1992-07)
Identified by: T.Nakano
Culture conditions: C, 20° C, 4 µE/m² sec, 4M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Herbicide (simetryn)
susceptible
B8-7
Reference: 154
- 798
Lake Kasumigaura / Ibaraki (1992-06)
Unialgal, Clonal, F.Kasai (1992-07)
Identified by: T.Nakano
Culture conditions: C, 20° C, 4 µE/m² sec, 4M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Herbicide (simetryn)
susceptible
B8-16
Reference: 154
- 799
Lake Kasumigaura / Ibaraki (1992-06)
Unialgal, Clonal, F.Kasai (1992-07)
Identified by: T.Nakano
Culture conditions: C, 20° C, 4 µE/m² sec, 4M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Herbicide (simetryn)
- susceptible
B8-23
Reference: 154
- 800
Lake Kasumigaura / Ibaraki (1992-06)
Unialgal, Clonal, F.Kasai (1992-07)
Identified by: T.Nakano
Culture conditions: C, 20° C, 4 µE/m² sec, 4M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Herbicide (simetryn)
tolerant
B3-12
Reference: 154
- 801
Lake Kasumigaura / Ibaraki (1992-06)
Unialgal, Clonal, F.Kasai (1992-07)
Identified by: T.Nakano
Culture conditions: C, 20° C, 4 µE/m² sec, 4M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Herbicide (simetryn)
tolerant
B3-15
Reference: 154
- 802
Lake Kasumigaura / Ibaraki (1992-06)
Unialgal, Clonal, F.Kasai (1992-07)
Identified by: T.Nakano
Culture conditions: C, 20° C, 4 µE/m² sec, 4M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Herbicide (simetryn)
tolerant
B12-2
References: 153, 154
- Scenedesmus quadricauda*
(Turpin) Brébisson sensu Chodat
96
Lake Shoji / Yamanashi (1981-08)
TAC 51-3B, Axenic, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: C, 20° C, 4 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Indicator, Freshwater,
COXI gene (D63658, AB011524),
atpB gene (AB084305), *rbcL* gene (AB084332),
psaB gene (AB084339)
TAN-51-3B
References: 76, 242, 267, 342, 500, 568

Scenedesmus serratus (Corda) Bohlin

97

Lake Shoji / Yamanashi (1981-08)
TAC 51-3C, Axenic, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: C, 20° C, 4 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Indicator, Freshwater
TAN-51-3C
Reference: 242

SCHIZOCLADIA Henry, Okuda et Kawai:

Schizocladiphyceae

Schizocladia ischiensis Henry, Okuda et Kawai

1044

Ischia Isl., Naples / Italy (1987-10)
Unialgal, Clonal, E.C.Henry (1987)
Identified by: H.Kawai
Culture conditions: ESM, 20° C, 4 µE/m² sec, 3M
Characteristics: Marine, Type strain, 18SrRNA gene
(AB085614), *rbcL* gene (AB085615)
KU-333
Reference: 167

SCHROEDERIA Lemmermann: Chlorophyceae

Schroederia setigera (Schröder) Lemmermann

246

Lake Kasumigaura / Ibaraki (1983-08)
Axenic, Clonal, F.Kasai (1983-08)
Identified by: M.Watanabe
Culture conditions: C, 25° C, 30 µE/m² sec, 20D
Characteristics: Indicator, Freshwater
F47-3
Reference: 242

SCRIPPSIELLA Balech: Dinophyceae

Scrippsiella sweeneyae Balech

684

Bisan-Seto / Seto Inland Sea (1982-07)
Unialgal, Clonal, S.Yoshimatsu (1982-07)
Identified by: S.Yoshimatsu
Culture conditions: ESM, 20° C, 40 µE/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable

Scrippsiella trochoidea (Stein) Loeblich III

369

Hachinohe Harbor / Aomori (1985-08)

Axenic, Clonal, T.Sawaguchi (1985-08)

Identified by: T.Sawaguchi

Culture conditions: ESM, 20° C, 40 µE/m² sec, 1M

Characteristics: Red tide, Marine, Homothallic,

Unstable, Untransportable,

COXI gene (AB000135)

HHSS-1

References: 118, 261, 293, 570

SELENASTRUM Reinsch: Chlorophyceae

* *Selenastrum capricornutum* Printz

See *Pseudokirchineriella subcapitata* (Korshikov)

Hindák

SKELETONEMA Greville: Bacillariophyceae

Skeletonema costatum (Greville) Cleve

16

Harima-Nada / Seto Inland Sea (1982-02)

Unialgal, Clonal, M.M.Watanabe (1982-05)

Identified by: M.M.Watanabe

Culture conditions: f/2, 5° C, 15 µE/m² sec, 2M

Characteristics: Red tide, Marine,

Collected from St. 53 Harima-Nada

H-53-3

References: 184, 378, 410

17

Harima-Nada / Seto Inland Sea (1983-02)

Unialgal, Clonal, M.M.Watanabe (1983-05)

Identified by: M.M.Watanabe

Culture conditions: f/2, 5° C, 15 µE/m² sec, 2M

Characteristics: Red tide, Marine,

Collected from St. 90 Harima-Nada

H-90-2

Reference: 248

223

Shodo Isl. / Kagawa (1979-07)

Unialgal, Clonal, K.Yuki

Culture conditions: f/2, 5° C, 15 µE/m² sec, 2M

Characteristics: Red tide, Marine

KGW-26

323

Off Kishiwada / Osaka Bay (1985-01)

Axenic, Clonal, S.Yamochi (1985-01)

Identified by: S.Yamochi

Culture conditions: f/2, 5° C, 15 µE/m² sec, 2M
Characteristics: Red tide, Marine, *petG,psbK,D,psaI*
etc. (AJ132266), *psaC,psbA* etc. (AJ132264),
psbC,D,petB,D etc. (AJ132263), *trnD,I,T* etc.
(AJ132265), *ycf24*,parietal (AJ132267)
Sk-85w
References: 135, 206, 452

324

Off Kobe / Osaka Bay (1985-07)
Axenic, Clonal, S.Yamochi (1985-07)
Identified by: S.Yamochi
Culture conditions: f/2, 5° C, 15 µE/m² sec, 2M
Characteristics: Red tide, Marine
Sk-85su
Reference: 359

SPINOCLOSTERIUM Bernard: Charophyceae

Spinoclosterium cuspidatum (Bailey ex Ralfs) Hirano
325

Higashihiroshima / Hiroshima (1983-10)
Unialgal, Clonal, T.Ichimura (1983-10)
Identified by: T.Ichimura
Culture conditions: SW(Bi), 20° C, 8 µE/m² sec, 4M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Homothallic
83-24-19
Reference: 99

SPIROGYRA Link: Charophyceae

Spirogyra sp.

1023
Tsukuba / Ibaraki (2002-04)
Unialgal, Clonal, M.Moriya (2002-05)
Identified by: M.Moriya
Culture conditions: C, 20° C, 12 µE/m² sec, 3M
Characteristics: Freshwater
M-42

SPIRULINA Turpin: Cyanophyceae

Spirulina platensis (Gomont) Geitler
Syn. *Arthrospira platensis* Gomont
39

Lake Chad / Chad
IAM M-135, Axenic, Clonal
Culture conditions: SOT, 20° C, 4 µE/m² sec, 4M,

(25° C, 15 µE/m² sec)

Characteristics: Salt water, Hydrogen evolution,
Contains good quality of proteins
References: 4, 96, 222, 238, 242, 450, 470, 499, 518,
522, 530

45

Lake Kasumigaura / Ibaraki (1975-11)
IAM M-184, Unialgal, Clonal, M.M.Watanabe
(1975-11)
Identified by: M.M.Watanabe
Culture conditions: MA, 25° C, 24 µE/m² sec, 1M
Characteristics: Water bloom, Freshwater,
Forming water bloom in Inbanuma
KAS-6-50
References: 79, 96, 242, 450, 518, 522, 530, 549, 559

46

Lake Texcoco / Mexico
IAM M-185, Axenic, Clonal
Culture conditions: SOT, 20° C, 4 µE/m² sec, 4M
(25° C, 15 µE/m² sec)
Characteristics: Water bloom, Salt water,
Hydrogen evolution
References: 2, 4, 7, 8, 96, 222, 242, 450, 518, 522,
530

597

Lake Teganuma / Chiba (1990-07)
Unialgal, Non-clonal, T.Hagiwara (1990-07)
Identified by: T.Hagiwara
Culture conditions: MA, 20° C, 4 µE/m² sec, 2M,
(25° C, 15 µE/m² sec)
Characteristics: Water bloom, Freshwater, Planktonic
T-43
Reference: 242

Spirulina subsalsa Oersted ex Gomont

27
IAM M-183, Axenic, Clonal
Culture conditions: MA, 25° C, 24 µE/m² sec, 1M
Characteristics: Freshwater
References: 96, 227, 242, 549

527

Shikabe / Hokkaido (1976-04)
IAM M-182, Unialgal, Clonal, M.M.Watanabe
(1976-04)
Identified by: M.M.Watanabe
Culture conditions: f/2, 25° C, 24 µE/m² sec, 1M
Characteristics: Indicator, Marine

References: 96, 242

598

Chiyoda-ku / Tokyo (1989-10)

Unialgal, Non-clonal, T.Hagiwara (1989-10)

Identified by: T.Hagiwara

Culture conditions: CB, CT, Csi, 20° C, 4 µE/m² sec, 2M, (25° C, 15 µE/m² sec)

Characteristics: Freshwater, Planktonic
KO-39

Reference: 242

STAUSTRUM Meyen: Charophyceae

Staurastrum dejectum Brébisson ex Ralfs
224

Lake Yamanaka / Yamanashi (1981-10)

TAC 53-1, Axenic, Clonal, M.Watanabe

Identified by: M.Watanabe

Culture conditions: AF-6, 20° C, 8 µE/m² sec, 2M, (20° C, 25 µE/m² sec)

Characteristics: Freshwater

TAN-53-1

Reference: 242

Staurastrum dorcidentiferum W. et G.S.West
665

Lake Biwa / Shiga (1986-09)

Unialgal, Clonal, S.Ohara (1986-09)

Identified by: M.Nakanishi

Culture conditions: AF-6, 25° C, 30 µE/m² sec, 2M

Characteristics: Freshwater

NB

Reference: 242

Staurastrum inconspicuum Nordstedt
390

Oze / Gunma (1983-08)

Axenic, Clonal, F.Kasai (1983-09)

Culture conditions: CAM, 20° C, 8 µE/m² sec, 3M, (20° C, 12 µE/m² sec)

Characteristics: Freshwater

34-10'

Reference: 242

Staurastrum levanderi Grönblad
841

Namiki-ike Pond, Tsukuba / Ibaraki (1998-07)

Unialgal, Clonal, A.Gontcharov (1998-07)

Identified by: A.Gontcharov

Culture conditions: C, 20° C, 8 µE/m² sec, 3M, (25° C, 30 µE/m² sec)

Characteristics: Freshwater

Reference: 57

Staurastrum paradoxum Meyen
528

Lake Kasumigaura / Ibaraki (1982-12)

Axenic, Clonal, M.H.Watanabe (1982-12)

Culture conditions: C, 20° C, 8 µE/m² sec, 2M, (20° C, 25 µE/m² sec)

Characteristics: Indicator, Freshwater

Kas-K-3

Reference: 242

Staurastrum tsukubicum

Gontcharov et M.M.Watanabe

842

Tsukuba / Ibaraki (1997-12)

Unialgal, Clonal, A.Gontcharov (1997-12)

Identified by: A.Gontcharov

Culture conditions: C, 20° C, 8 µE/m² sec, 3M, (25° C, 30 µE/m² sec)

Characteristics: Freshwater, Type strain

Reference: 57

STICHOCOCCUS Nägeli: Trebouxiophyceae

Stichococcus ampulliformis S.Handa
996

Taishaku Valley, Jinseki / Hiroshima (1987-12)

Unialgal, Clonal, S.Handa (1988-01)

Identified by: S.Handa

Culture conditions: C(S), 20° C, 4 µE/m² sec, 4M, (25° C, 30 µE/m² sec)

Characteristics: Freshwater, Epiphytic, Type strain, 18SrRNA gene (AB087559)

Handa-299(f)

Reference: 62

Stichococcus bacillaris Nägeli
529

Watarase River / Gunma (1987-08)

Unialgal, Non-clonal, F.Kasai (1987-08)

Identified by: F.Kasai

Culture conditions: C, 15° C, 15 µE/m² sec, 3M

Characteristics: Freshwater

AT2-16

References: 242, 454

530

Watarase River / Gunma (1987-08)
Unialgal, Non-clonal, F.Kasai (1987-09)
Identified by: F.Kasai
Culture conditions: C, 15° C, 15 µE/m² sec, 3M
Characteristics: Freshwater
AT5-17
References: 242, 454, 455

STIGEOCLONIUM Kützing: Chlorophyceae

Stigeoclonium aestivale (Hazen) Collins

531

Miyata River / Ibaraki (1987-03)
Unialgal, Non-clonal, F.Kasai (1987-04)
Identified by: F.Kasai
Culture conditions: C, 20° C, 8 µE/m² sec, 3M
Characteristics: Freshwater
2st-3-12
References: 242, 453, 454

Stigeoclonium fasciculare Kützing var. *fasciculare*

532

Lake Mashu / Hokkaido (1987-08)
Unialgal, Clonal, F.Kasai (1987-09)
Identified by: F.Kasai
Culture conditions: C, 10° C, 6 µE/m² sec, 3M,
(10° C, 15 µE/m² sec)
Characteristics: Freshwater
M-2
References: 242, 454

SYNECHOCOCCUS Nägeli: Cyanophyceae

Synechococcus sp.

937

Junsai-numa / Hokkaido (1991-06)
Unialgal, Clonal, N.Takamura
Identified by: N.Takamura
Culture conditions: C, 15° C, 15 µE/m² sec, 2M,
[Cryopreserved]
Characteristics: Freshwater, *cpcBA*-IGS gene
(AF223433)
JUS1
Reference: 391

938

Lake Harutori / Hokkaido (1991-05)
Unialgal, Clonal, N.Takamura (1991-07)
Identified by: N.Takamura

Culture conditions: CB, 15° C, 15 µE/m² sec, 2M,
[Cryopreserved]
Characteristics: Freshwater, Euryhaline, *cpcBA*-IGS
gene (AF223434)
HAR3
Reference: 391

939

Lake Harutori / Hokkaido (1991-05)
Unialgal, Clonal, N.Takamura (1991-07)
Identified by: N.Takamura
Culture conditions: CB, 15° C, 15 µE/m² sec, 2M,
[Cryopreserved]
Characteristics: Freshwater, Euryhaline, *cpcBA*-IGS
gene (AF223438)
HAR10
Reference: 391

940

Himenuma / Hokkaido (1991-05)
Unialgal, Clonal, N.Takamura (1991-07)
Identified by: N.Takamura
Culture conditions: C, 15° C, 15 µE/m² sec, 2M,
[Cryopreserved]
Characteristics: Freshwater, *cpcBA*-IGS gene
(AF223452)
HIM1
Reference: 391

941

Lake Teganuma / Chiba (1991-06)
Unialgal, Clonal, N.Takamura (1991-07)
Identified by: N.Takamura
Culture conditions: C, 15° C, 15 µE/m² sec, 2M,
[Cryopreserved]
Characteristics: Freshwater, *cpcBA*-IGS gene
(AF223439)
TEG1
Reference: 391

942

Lake Ushikunuma / Ibaraki (1991-06)
Unialgal, Clonal, N.Takamura (1991-07)
Identified by: N.Takamura
Culture conditions: C, 15° C, 15 µE/m² sec, 2M,
[Cryopreserved]
Characteristics: Freshwater, *cpcBA*-IGS gene
(AF223440)
USK1
Reference: 391

- 943
Lake Kojima / Okayama (1991-07)
Unialgal, Clonal, N.Takamura (1991-10)
Identified by: N.Takamura
Culture conditions: C, 15° C, 15 µE/m² sec, 2M,
[Cryopreserved]
Characteristics: Freshwater, *cpcBA*-IGS gene
(AF223441)
USK1
Reference: 391
- 944
Lake Abashiri / Hokkaido (1991-05)
Unialgal, Clonal, N.Takamura (1991-07)
Identified by: N.Takamura
Culture conditions: C, 15° C, 15 µE/m² sec, 2M,
[Cryopreserved]
Characteristics: Freshwater, *cpcBA*-IGS gene
(AF223453)
ABS1
Reference: 391
- 945
Lake Biwa / Shiga (1990-09)
Unialgal, Clonal, N.Takamura (1990-11)
Identified by: N.Takamura
Culture conditions: C, 15° C, 15 µE/m² sec, 2M,
[Cryopreserved]
Characteristics: Freshwater, *cpcBA*-IGS gene
(AF223428), 16SrRNA gene (AF216951)
B1
Reference: 391
- 946
Lake Kasumigaura / Ibaraki (1991-02)
Unialgal, Clonal, N.Takamura (1991-04)
Identified by: N.Takamura
Culture conditions: C, 15° C, 15 µE/m² sec, 2M,
[Cryopreserved]
Characteristics: Freshwater, *cpcBA*-IGS gene
(AF223443)
2K11
Reference: 391
- 947
Lake Sagami / Kanagawa (1991-04)
Unialgal, Clonal, N.Takamura (1991-05)
Identified by: N.Takamura
Culture conditions: C, 15° C, 15 µE/m² sec, 2M,
[Cryopreserved]
Characteristics: Freshwater, *cpcBA*-IGS gene
(AF223444)
- SA1
Reference: 391
- 948
Lake Abashiri / Hokkaido (1991-05)
Unialgal, Clonal, N.Takamura (1991-07)
Identified by: N.Takamura
Culture conditions: C, 15° C, 15 µE/m² sec, 2M,
[Cryopreserved]
Characteristics: Freshwater, *cpcBA*-IGS gene
(AF223454)
ABS11
Reference: 391
- 949
Lake Ushikunuma / Ibaraki (1991-06)
Unialgal, Clonal, N.Takamura (1991-07)
Identified by: N.Takamura
Culture conditions: CB, 15° C, 15 µE/m² sec, 2M,
[Cryopreserved]
Characteristics: Freshwater, *cpcBA*-IGS gene
(AF223455)
USK2
Reference: 391
- 950
Lough Neagh, North Ireland / U.K. (1991-03)
Unialgal, Clonal, N.Takamura (1991-07)
Identified by: N.Takamura
Culture conditions: C, 15° C, 15 µE/m² sec, 2M,
[Cryopreserved]
Characteristics: Freshwater, *cpcBA*-IGS gene
(AF223448)
LN3
Reference: 391
- 951
Lake Akan / Hokkaido (1991-05)
Unialgal, Clonal, N.Takamura (1991-09)
Identified by: N.Takamura
Culture conditions: C, 15° C, 15 µE/m² sec, 2M,
[Cryopreserved]
Characteristics: Freshwater, *cpcBA*-IGS gene
(AF223429), 16SrRNA gene (AF216952)
AKN3
Reference: 391
- 952
Lake Kizaki / Nagano (1991-05)
Unialgal, Clonal, N.Takamura (1991-07)
Identified by: N.Takamura
Culture conditions: CB, 15° C, 15 µE/m² sec, 2M,

- [Cryopreserved]
 Characteristics: Freshwater, *cpcBA*-IGS gene (AF223449)
 KIZ5/3
 Reference: 391
- 953
 Lake Biwa / Shiga (1990-09)
 Unialgal, Clonal, N.Takamura (1990-10)
 Identified by: N.Takamura
 Culture conditions: C, 15° C, 15 µE/m² sec, 2M,
 [Cryopreserved]
 Characteristics: Freshwater, *cpcBA*-IGS gene (AF223430), 16SrRNA gene (AF216953)
 B10
 Reference: 391
- 954
 Lake Biwa / Shiga (1990-09)
 Unialgal, Clonal, N.Takamura (1990-10)
 Identified by: N.Takamura
 Culture conditions: C, 15° C, 15 µE/m² sec, 2M,
 [Cryopreserved]
 Characteristics: Freshwater, Water bloom, *cpcBA*-IGS gene (AF223456)
 B8
 Reference: 391
- 955
 Lake Kizaki / Nagano (1991-05)
 Unialgal, Clonal, N.Takamura (1991-07)
 Identified by: N.Takamura
 Culture conditions: CB, 15° C, 15 µE/m² sec, 2M,
 [Cryopreserved]
 Characteristics: Freshwater, *cpcBA*-IGS gene (AF223445)
 KIZ5/1
 Reference: 391
- 956
 Lake Nojiri / Nagano (1991-05)
 Unialgal, Clonal, N.Takamura (1991-07)
 Identified by: N.Takamura
 Culture conditions: C, 15° C, 15 µE/m² sec, 2M,
 [Cryopreserved]
 Characteristics: Freshwater, Water bloom, *cpcBA*-IGS gene (AF223450)
 NOJ1
 Reference: 391
- 957
 Lake Biwa / Shiga (1991-06)
- Unialgal, Clonal, N.Takamura (1991-09)
 Identified by: N.Takamura
 Culture conditions: C, 15° C, 15 µE/m² sec, 2M,
 [Cryopreserved]
 Characteristics: Freshwater, Water bloom, *cpcBA*-IGS gene (AF223431), 16SrRNA gene (AF216954)
 B11
 Reference: 391
- 958
 Lake Biwa / Shiga (1990-09)
 Unialgal, Clonal, N.Takamura (1990-11)
 Identified by: N.Takamura
 Culture conditions: C, 15° C, 15 µE/m² sec, 2M,
 [Cryopreserved]
 Characteristics: Freshwater, Water bloom, *cpcBA*-IGS gene (AF223435)
 B4
 Reference: 391
- 959
 Lake Biwa / Shiga (1990-09)
 Unialgal, Clonal, N.Takamura (1990-10)
 Identified by: N.Takamura
 Culture conditions: C, 15° C, 15 µE/m² sec, 2M,
 [Cryopreserved]
 Characteristics: Freshwater, Water bloom, *cpcBA*-IGS gene (AF223432), 16SrRNA gene (AF216955)
 B3
 Reference: 391
- 960
 Lake Tsukui / Kanagawa (1991-04)
 Unialgal, Clonal, N.Takamura (1991-06)
 Identified by: N.Takamura
 Culture conditions: C, 15° C, 15 µE/m² sec, 2M,
 [Cryopreserved]
 Characteristics: Freshwater, *cpcBA*-IGS gene (AF223436)
 TSU3
 Reference: 391
- 961
 Lake Kasumigaura / Ibaraki (1991-02)
 Unialgal, Clonal, N.Takamura (1991-03)
 Identified by: N.Takamura
 Culture conditions: C, 15° C, 15 µE/m² sec, 2M,
 [Cryopreserved]
 Characteristics: Freshwater, *cpcBA*-IGS gene (AF223446)

- 2K12
Reference: 391
- 962
Lake Onuma / Hokkaido (1991-06)
Unialgal, Clonal, N.Takamura (1991-09)
Identified by: N.Takamura
Culture conditions: C, 15° C, 15 µE/m² sec, 2M,
[Cryopreserved]
Characteristics: Freshwater, *cpcBA*-IGS gene
(AF223442)
ONM3
Reference: 391
- 963
Lake Nakatsuna / Nagano (1991-05)
Unialgal, Clonal, N.Takamura (1991-07)
Identified by: N.Takamura
Culture conditions: C, 15° C, 15 µE/m² sec, 2M,
[Cryopreserved]
Characteristics: Freshwater, *cpcBA*-IGS gene
(AF223447)
NT5
Reference: 391
- 964
Lake Megami / Nagano (1991-05)
Unialgal, Clonal, N.Takamura (1991-07)
Identified by: N.Takamura
Culture conditions: C, 15° C, 15 µE/m² sec, 2M,
[Cryopreserved]
Characteristics: Freshwater, *cpcBA*-IGS gene
(AF223437)
Me5
Reference: 391
- 965
Lake Misuzu / Nagano (1991-05)
Unialgal, Clonal, N.Takamura (1991-07)
Identified by: N.Takamura
Culture conditions: C, 15° C, 15 µE/m² sec, 2M,
[Cryopreserved]
Characteristics: Freshwater, *cpcBA*-IGS gene
(AF223451)
MSZ2
Reference: 391
- 969
East China Sea (1998-06)
Axenic, Clonal, N.Teزuka (1998-09)
Identified by: N.Teزuka
Culture conditions: ESM, 20° C, 40 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Marine, 16SrRNA gene (AF448060),
rpoC1 gene (AF448082)
1002
- 970
Tokunoshima Isl. / Kagoshima (1998-08)
Axenic, Clonal, N.Teزuka (1998-10)
Identified by: N.Teزuka
Culture conditions: ESM, 20° C, 40 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Marine, 16SrRNA gene (AF448073)
T71
- 971
Tokunoshima Isl. / Kagoshima (1998-08)
Axenic, Clonal, N.Teزuka (1998-10)
Identified by: N.Teزuka
Culture conditions: ESM, 20° C, 40 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Marine, Euryhaline, 16SrRNA gene
(AF448061), *rpoC1* gene (AF448083)
T7cc1
- 972
Iriomote Isl. / Okinawa (1998-11)
Axenic, Clonal, N.Teزuka (1999-02)
Identified by: N.Teزuka
Culture conditions: ESM, 20° C, 40 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Marine, Euryhaline, 16SrRNA gene
(AF448079), *rpoC1* gene (AF448117)
IR11
- 973
Iriomote Isl. / Okinawa (1998-11)
Unialgal, Clonal, N.Teزuka (1999-01)
Identified by: N.Teزuka
Culture conditions: C+10%Seawater, 20° C,
40 µE/m² sec, 1M, [Cryopreserved]
Characteristics: Brackish, 16SrRNA gene
(AF448062)
48
- 974
Iriomote Isl. / Okinawa (1998-11)
Unialgal, Clonal, N.Teزuka (1999-01)
Identified by: N.Teزuka
Culture conditions: ESM, 20° C, 40 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Marine, *rpoC1* gene (AF448101)
58E8

- 975
Iriomote Isl. / Okinawa (1998-11)
Unialgal, Clonal, N.Tezuka (1999-01)
Identified by: N.Tezuka
Culture conditions: ESM, 20° C, 40 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Marine, *rpoC1* gene (AF448099)
58g6
- 976
Iriomote Isl. / Okinawa (1998-11)
Unialgal, Clonal, N.Tezuka (1999-01)
Identified by: N.Tezuka
Culture conditions: ESM, 20° C, 40 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Marine, *rpoC1* gene (AF448100)
59
- 977
Taiyo Vil. / Ibaraki (1999-01)
Unialgal, Clonal, N.Tezuka (1999-03)
Identified by: N.Tezuka
Culture conditions: ESM, 20° C, 40 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Marine, *rpoC1* gene (AF448105)
taiyo
- 978
Iriomote Isl. / Okinawa (1999-02)
Unialgal, Clonal, N.Tezuka (1999-04)
Identified by: N.Tezuka
Culture conditions: C+10%Seawater, 20° C,
40 µE/m² sec, 1M, [Cryopreserved]
Characteristics: Brackish, Euryhaline, 16SrRNA
gene (AF448063), *rpoC1* gene (AF448084)
UBR
- 979
Iriomote Isl. / Okinawa (1999-02)
Unialgal, Clonal, N.Tezuka (1999-04)
Identified by: N.Tezuka
Culture conditions: ESM, 20° C, 40 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Marine, 16SrRNA gene (AF448074),
rpoC1 gene (AF448109)
UH7
- 980
Iriomote Isl. / Okinawa (1999-06)
Unialgal, Clonal, N.Tezuka (1999-08)
Identified by: N.Tezuka
Culture conditions: ESM, 20° C, 40 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Marine, *rpoC1* gene (AF448097)
kom
- 981
Iriomote Isl. / Okinawa (1999-07)
Axenic, Clonal, N.Tezuka (1999-09)
Identified by: N.Tezuka
Culture conditions: ESM, 20° C, 40 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Marine, 16SrRNA gene (AF448064),
rpoC1 gene (AF448085)
Hos
- 982
Iriomote Isl. / Okinawa (1999-07)
Unialgal, Clonal, N.Tezuka (1999-09)
Identified by: N.Tezuka
Culture conditions: ESM, 20° C, 40 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Marine, *rpoC1* gene (AF448113)
Hosso
- 983
Sagami Bay / Shizuoka (1999-07)
Unialgal, Clonal, N.Tezuka (1999-09)
Identified by: N.Tezuka
Culture conditions: ESM, 20° C, 40 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Marine, *rpoC1* gene (AF448104)
St235
- 984
Tagosato River / Nagasaki (1999-08)
Axenic, Clonal, N.Tezuka (1999-10)
Identified by: N.Tezuka
Culture conditions: C+10%Seawater, 20° C,
40 µE/m² sec, 1M, [Cryopreserved]
Characteristics: Brackish, 16SrRNA gene
(AF448066), *rpoC1* gene (AF448087)
TAG
- 985
Miyake Isl. / Tokyo (1999-11)
Unialgal, Clonal, N.Tezuka (2000-01)
Identified by: N.Tezuka
Culture conditions: ESM, 20° C, 40 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Marine, *rpoC1* gene (AF448102)
miyaR

986
Iriomote Isl. / Okinawa (1998-11)
Unialgal, Clonal, N.Tezuka (1999-01)
Identified by: N.Tezuka
Culture conditions: ESM, 20° C, 40 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Marine
74

987
Futtsu / Chiba (1999-06)
Unialgal, Clonal, N.Tezuka (1999-08)
Identified by: N.Tezuka
Culture conditions: ESM, 20° C, 40 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Marine
FUT

988
Miyake Isl. / Tokyo (1998-11)
Unialgal, Clonal, N.Tezuka (1999-01)
Identified by: N.Tezuka
Culture conditions: ESM, 20° C, 40 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Marine
miyaY

SYNURA Ehrenberg: Chrysophyceae

Synura petersenii Korshikov
233
Higashiyata River / Ibaraki (1983-07)
Axenic, Clonal, S.Suda (1983-07)
Identified by: S.Suda
Culture conditions: C, 20° C, 12 µE/m² sec, 2M
Characteristics: Indicator, Freshwater
USI-10
Reference: 438

1007
Tomakomai / Hokkaido (1999-11)
Unialgal, Clonal, M.Moriya (1999-11)
Identified by: M.Moriya
Culture conditions: AF-6, 15° C, 15 µE/m² sec, 2M
Characteristics: Freshwater
#73

Synura sphagnicola (Korshikov) Korshikov
695
Miyatoko Mire / Fukushima (1992-04)
Unialgal, Clonal, H.Nozaki (1992-04)

Identified by: H.Nozaki
Culture conditions: AF-6, 20° C, 12 µE/m² sec, 1M
Characteristics: Freshwater
92-520-s-6

696
Miyatoko Mire / Fukushima (1992-10)
Unialgal, Clonal, H.Nozaki (1992-10)
Identified by: H.Nozaki
Culture conditions: AF-6, 20° C, 12 µE/m² sec, 1M
Characteristics: Freshwater
92-1001-s-2

Synura spinosa Korshikov
234

Tsuchiura / Ibaraki (1983-07)
Axenic, Clonal, S.Suda (1983-07)
Identified by: S.Suda
Culture conditions: C, 20° C, 12 µE/m² sec, 2M
Characteristics: Indicator, Freshwater
SIS-1
Reference: 438

TABELLARIA Ehrenberg ex Kützing:
Bacillariophyceae

Tabellaria flocculosa (Roth) Kützing
225
Oze / Fukushima (1983-08)
Unialgal, Clonal, M.M.Watanabe (1983-09)
Identified by: M.M.Watanabe
Culture conditions: CSi, 15° C, 20 µE/m² sec, 2M
Characteristics: Indicator, Freshwater
OZ-43-4
Reference: 378

TETRABAENA Fromentel: Chlorophyceae

Tetrabaena socialis (Dujardin) Nozaki et Ito
Syn. *Gonium sociale* (Dujardin) Warming
691
King George Isl. / Antarctic (1990-12)
Axenic, Clonal, S.Ohtani (1990-12)
Identified by: H.Nozaki
Culture conditions: AF-6, 10° C, 25 µE/m² sec, 1M
Characteristics: Freshwater, Psychrophilic
KG-4-8th
References: 242, 341

Tetrabaena socialis (Dujardin) Nozaki et Ito
var. *socialis*
Syn. *Gonium sociale* (Dujardin) Warming var. *sociale*
571
Kohoku-ku / Yokohama / Kanagawa (1982-08)
Unialgal, Clonal, H.Nozaki (1982-10)
Identified by: H.Nozaki
Culture conditions: AF-6, 20° C, 12 µE/m² sec, 1M
Characteristics: Freshwater, Homothallic, Isogamy,
atpB gene (AB014014), *rbcL* gene (D63443),
psaA gene (AB044415), *psaB* gene (AB044466),
psbC gene (AB044525)
21028-4
References: 242, 308, 322, 323, 337, 340, 341, 342

TETRACYSTIS Brown et Bold: Chlorophyceae

Tetracystis chlorococcoides (Korshikov) S.Watanabe
155
Mt. Eboshidake / Nagasaki (1975-08)
Axenic, Clonal, S.Watanabe
Identified by: S.Watanabe
Culture conditions: C(S), 20° C, 4 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Soil
3-EBO-1
References: 242, 548

TETRAËDRON Kützing: Chlorophyceae

Tetraëdron incus (Teiling) G.M.Smith
392
Tsukuba / Ibaraki (1984-05)
Axenic, Clonal, F.Kasai (1984-05)
Identified by: M.Watanabe
Culture conditions: C, 20° C, 4 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater
F115
References: 242, 438

TETRASELMIS Stein: Prasinophyceae

Tetraselmis cordiformis (Carter) Stein
18
Oniishi / Gunma (1980-04)
Axenic, Clonal, M.M.Watanabe (1980-04)
Identified by: I.Inouye
Culture conditions: C, 20° C, 32 µE/m² sec, 1M

Characteristics: Water bloom, Freshwater
SM-6-9
Reference: 530

533
Mitsukaido / Ibaraki (1985-07)
Axenic, Clonal, S.Suda (1985-07)
Identified by: S.Suda
Culture conditions: C, 20° C, 22 µE/m² sec, 20D
Characteristics: Freshwater
KY-20-1

Tetraselmis striata Butcher

1019
Miyajima Isl. / Hiroshima (2001-03)
Unialgal, Clonal, M.Moriya (2001-04)
Identified by: M.Moriya
Culture conditions: ESM, 20° C, 32 µE/m² sec, 1M
Characteristics: Marine
#96

THALASSIONEMA Grunow: Bacillariophyceae

Thalassionema nitzschioides (Grunow) Hustedt
534
Matoya Bay / Mie (1984-09)
Unialgal, Clonal, T.Sawaguchi (1984-09)
Identified by: T.Sawaguchi
Culture conditions: f/2, 15° C, 20 µE/m² sec, 1M
Characteristics: Marine
MBB-6
Reference: 378

THORACOSPHAERA Kamptner: Dinophyceae

Thoracosphaera heimii (Lohmann) Kamptner
1325
Hachijo Isl. / Tokyo (2002-01)
Unialgal, Clonal, M-H.Noël (2002-02)
Identified by: M-H.Noël
Culture conditions: MNK, 22° C, 15 µE/m² sec, 14D
Characteristics: Marine
MH36

1326

East China Sea (Kuroshio Current) (2003-08)
Unialgal, Clonal, M-H.Noël (2003-09)
Identified by: M-H.Noël
Culture conditions: MNK, 22° C, 15 µE/m² sec, 14D
Characteristics: Marine

MH78

TOLYPOTHRIX Kützing: Cyanophyceae

Tolypothrix tenuis Kützing ex Bornet et Flahault
37

Borneo

IAM M-29, Unialgal, Non-clonal, A.Watanabe

Identified by: K.Negoro

Culture conditions: MDM(S), 20° C, 4 µE/m² sec,

4M, (25° C, 30 µE/m² sec), [Cryopreserved]

Characteristics: Freshwater, Nitrogen fixation,
Chromatic adaptation, Heterotrophic, Reidentified
by M.M.Watanabe, Material for studying on
phycobilin production

References: 24, 38, 39, 40, 41, 42, 43, 45, 71, 72, 73,
96, 183, 242, 260, 409, 477, 485, 490, 491, 492,
493, 494, 495, 496, 498, 571

TREBOUXIA de Puymaly: Trebouxiophyceae

Trebouxia anticipata Archibald

1271

Mt.Tsukuba / Ibaraki (2002-01)

Axenic, Clonal, Y.Ohmura (2002-02)

Identified by: S.Takeshita

Culture conditions: BBM(S), 20° C, 20 µE/m² sec,

6M

Characteristics: Freshwater, Terrestrial, Symbiotic,
Isolated from *Punctelia rudecta* (lichen) on rock,
Indicator

AYO4776

1272

Mt.Tsukuba / Ibaraki (2002-01)

Axenic, Clonal, Y.Ohmura (2002-03)

Identified by: S.Takeshita

Culture conditions: BBM(S), 20° C, 20 µE/m² sec,

6M

Characteristics: Freshwater, Terrestrial, Symbiotic,
Isolated from *Punctelia rudecta* (lichen) on bark,
Indicator

AYO4780

1273

Nyuno, Kochi / Hiroshima (2002-03)

Axenic, Clonal, Y.Ohmura (2002-04)

Identified by: Y.Ohmura

Culture conditions: BBM(S), 20° C, 20 µE/m² sec,

6M

Characteristics: Freshwater, Terrestrial, Symbiotic,
Isolated from *Flavoparmelia caperata* (lichen) on
bark, Indicator

AYO4870

Trebouxia arboricola Puymaly

1274

Mt.Tsukuba / Ibaraki (2002-01)

Axenic, Clonal, Y.Ohmura (2002-02)

Identified by: S.Takeshita

Culture conditions: BBM(S), 20° C, 20 µE/m² sec,

6M

Characteristics: Freshwater, Terrestrial, Symbiotic,
Isolated from *Ramalina yasudae* (lichen) on rock,
Indicator

AYO4775

1275

Mt.Tsukuba / Ibaraki (2002-01)

Axenic, Clonal, Y.Ohmura (2002-02)

Identified by: S.Takeshita

Culture conditions: BBM(S), 20° C, 20 µE/m² sec,

6M

Characteristics: Freshwater, Terrestrial, Symbiotic,
Isolated from *Ramalina yasudae* (lichen) on rock,
Indicator

AYO4779

1276

Okuniwa, Mt.Fuji / Yamanashi (2003-05)

Axenic, Clonal, Y.Ohmura (2003-05)

Identified by: Y.Ohmura

Culture conditions: BBM(S), 20° C, 20 µE/m² sec,

6M

Characteristics: Freshwater, Terrestrial, Symbiotic,
Isolated from *Usnea longissima* (lichen) on bark,
Indicator

AYO5316

1277

Ochudo, Mt.Fuji / Yamanashi (2003-05)

Axenic, Clonal, Y.Ohmura (2003-05)

Identified by: Y.Ohmura

Culture conditions: BBM(S), 20° C, 20 µE/m² sec,

6M

Characteristics: Freshwater, Terrestrial, Symbiotic,
Isolated from *Usnea trichodeoides* (lichen) on bark,
Indicator

AYO5321

Trebouxia corticola (Archibald) Gärtner

1278

- Mt. Tsukuba / Ibaraki (2002-01)
 Axenic, Clonal, Y. Ohmura (2002-01)
 Identified by: S. Takeshita
 Culture conditions: BBM(S), 20° C, 20 µE/m² sec,
 6M
 Characteristics: Freshwater, Terrestrial, Symbiotic,
 Isolated from *Usnea bismolliuschula* (lichen) on
 rock, Indicator
 AYO4774
- 1279
 Mt. Tsukuba / Ibaraki (2002-01)
 Axenic, Clonal, Y. Ohmura (2002-02)
 Identified by: S. Takeshita
 Culture conditions: BBM(S), 20° C, 20 µE/m² sec,
 6M
 Characteristics: Freshwater, Terrestrial, Symbiotic,
 Isolated from *Rimelia clavurifera* (lichen) on rock,
 Indicator
 AYO4777
- 1280
 Suki Vil. / Miyazaki (2002-02)
 Axenic, Clonal, Y. Ohmura (2002-03)
 Identified by: S. Takeshita
 Culture conditions: BBM(S), 20° C, 20 µE/m² sec,
 6M
 Characteristics: Freshwater, Terrestrial, Symbiotic,
 Isolated from *Ramalina peruviana* (lichen) on bark,
 Indicator
 AYO4860
- 1281
 Nyuno, Kochi / Hiroshima (2002-03)
 Axenic, Clonal, Y. Ohmura (2002-04)
 Identified by: S. Takeshita
 Culture conditions: BBM(S), 20° C, 20 µE/m² sec,
 6M
 Characteristics: Freshwater, Terrestrial, Symbiotic,
 Isolated from *Usnea baileyi* (lichen) on bark,
 Indicator
 AYO4863
- 1282
 Nyuno, Kochi / Hiroshima (2002-03)
 Axenic, Clonal, Y. Ohmura (2002-04)
 Identified by: Y. Ohmura
 Culture conditions: BBM(S), 20° C, 20 µE/m² sec,
 6M
 Characteristics: Freshwater, Terrestrial, Symbiotic,
 Isolated from *Usnea rubrotincta* (lichen) on bark,
 Indicator
- AYO4864
- 1283
 Nyuno, Kochi / Hiroshima (2002-03)
 Axenic, Clonal, Y. Ohmura (2002-04)
 Identified by: Y. Ohmura
 Culture conditions: BBM(S), 20° C, 20 µE/m² sec,
 6M
 Characteristics: Freshwater, Terrestrial, Symbiotic,
 Isolated from *Usnea ceratina* (lichen) on bark,
 Indicator
 AYO4865
- 1284
 Nyuno, Kochi / Hiroshima (2002-03)
 Axenic, Clonal, Y. Ohmura (2002-04)
 Identified by: S. Takeshita
 Culture conditions: BBM(S), 20° C, 20 µE/m² sec,
 6M
 Characteristics: Freshwater, Terrestrial, Symbiotic,
 Isolated from *Usnea ceratina* (lichen) on bark,
 Indicator
 AYO4867
- 1285
 Nyuno, Kochi / Hiroshima (2002-03)
 Axenic, Clonal, Y. Ohmura (2002-04)
 Identified by: Y. Ohmura
 Culture conditions: BBM(S), 20° C, 20 µE/m² sec,
 6M
 Characteristics: Freshwater, Terrestrial, Symbiotic,
 Isolated from *Usnea baileyi* (lichen) on bark,
 Indicator
 AYO4868
- 1286
 Higashihiroshima / Hiroshima (2002-03)
 Axenic, Clonal, Y. Ohmura (2002-04)
 Identified by: Y. Ohmura
 Culture conditions: BBM(S), 20° C, 20 µE/m² sec,
 6M
 Characteristics: Freshwater, Terrestrial, Symbiotic,
 Isolated from *Dirinaria applanata* (lichen) on bark,
 Indicator
 AYO4882
- 1287
 Higashihiroshima / Hiroshima (2002-03)
 Axenic, Clonal, Y. Ohmura (2002-04)
 Identified by: Y. Ohmura
 Culture conditions: BBM(S), 20° C, 20 µE/m² sec,
 6M

- Characteristics: Freshwater, Terrestrial, Symbiotic,
Isolated from *Rimelia clavulifera* (lichen) on bark,
Indicator
AYO4884
- 1288
Aokigahara, Mt.Fuji / Yamanashi (2003-05)
Axenic, Clonal, Y.Ohmura (2003-05)
Identified by: Y.Ohmura
Culture conditions: BBM(S), 20° C, 20 µE/m² sec,
6M
Characteristics: Freshwater, Terrestrial, Symbiotic,
Isolated from *Usnea rubrotincta* (lichen) on bark,
Indicator
AYO5330
- Trebouxia higginsiae* (Hildreth et Ahmadjian) Gärtner
1289
Mt.Tsukuba / Ibaraki (2002-01)
Axenic, Clonal, Y.Ohmura (2002-02)
Identified by: S.Takeshita
Culture conditions: BBM(S), 20° C, 20 µE/m² sec,
6M
Characteristics: Freshwater, Terrestrial, Symbiotic,
Isolated from *Parmotrema tinctorum* (lichen) on
bark, Indicator
AYO4781
- 1290
Mt.Tsukuba / Ibaraki (2002-01)
Axenic, Clonal, Y.Ohmura (2002-03)
Identified by: S.Takeshita
Culture conditions: BBM(S), 20° C, 20 µE/m² sec,
6M
Characteristics: Freshwater, Terrestrial, Symbiotic,
Isolated from *Dirinaria applanata* (lichen) on bark,
Indicator
AYO4782
- 1291
Nyuno, Kochi / Hiroshima (2002-03)
Axenic, Clonal, Y.Ohmura (2002-04)
Identified by: Y.Ohmura
Culture conditions: BBM(S), 20° C, 20 µE/m² sec,
6M
Characteristics: Freshwater, Terrestrial, Symbiotic,
Isolated from *Parmotrema tinctorum* (lichen) on
bark, Indicator
AYO4866
- 1292
Higashihiroshima / Hiroshima (2002-03)
Axenic, Clonal, Y.Ohmura (2002-04)
Identified by: Y.Ohmura
Culture conditions: BBM(S), 20° C, 20 µE/m² sec,
6M
Characteristics: Freshwater, Terrestrial, Symbiotic,
Isolated from *Myelochroa aurulenta* (lichen) on
bark, Indicator
AYO4877
- 1293
Higashihiroshima / Hiroshima (2002-03)
Axenic, Clonal, Y.Ohmura (2002-04)
Identified by: Y.Ohmura
Culture conditions: BBM(S), 20° C, 20 µE/m² sec,
6M
Characteristics: Freshwater, Terrestrial, Symbiotic,
Isolated from *Parmotrema tinctorum* (lichen) on
bark, Indicator
AYO4879
- 1294
Higashihiroshima / Hiroshima (2002-03)
Axenic, Clonal, Y.Ohmura (2002-04)
Identified by: Y.Ohmura
Culture conditions: BBM(S), 20° C, 20 µE/m² sec,
6M
Characteristics: Freshwater, Terrestrial, Symbiotic,
Isolated from *Dirinaria applanata* (lichen) on bark,
Indicator
AYO4880
- 1295
Higashihiroshima / Hiroshima (2002-03)
Axenic, Clonal, Y.Ohmura (2002-04)
Identified by: S.Takeshita
Culture conditions: BBM(S), 20° C, 20 µE/m² sec,
6M
Characteristics: Freshwater, Terrestrial, Symbiotic,
Isolated from *Parmotrema tinctorum* (lichen) on
bark, Indicator
AYO4887
- 1296
Higashihiroshima / Hiroshima (2002-03)
Axenic, Clonal, Y.Ohmura (2002-04)
Identified by: Y.Ohmura
Culture conditions: BBM(S), 20° C, 20 µE/m² sec,
6M
Characteristics: Freshwater, Terrestrial, Symbiotic,
Isolated from *Parmotrema austrosinense* (lichen)
on bark, Indicator
AYO4885

- Trebouxia showmanii*** (Hildreth et Ahmadjian) Gärtner
1297
Mt. Tsukuba / Ibaraki (2002-01)
Axenic, Clonal, Y. Ohmura (2002-02)
Identified by: S. Takeshita
Culture conditions: BBM(S), 20° C, 20 µE/m² sec,
6M
Characteristics: Freshwater, Terrestrial, Symbiotic,
Isolated from *Xanthoparmelia coreana* (lichen) on
rock, Indicator
AYO4778
- TRETEPOHLLIA*** Martius: Chlorophyceae
- Trentepohlia* sp.**
967
Nozawa-onsen Vil. / Nagano (1989-12)
Unialgal, Clonal, T. Hagiwara (1990-01)
Identified by: T. Hagiwara
Culture conditions: C, 20° C, 22 µE/m² sec, 6M
Characteristics: Freshwater
TP-5
- TREUBARIA*** Bernard: Chlorophyceae
- Treubaria triappendiculata*** Bernard
394
Lake Kasumigaura / Ibaraki (1983-10)
Axenic, Clonal, F. Kasai (1983-10)
Identified by: Y. Niiyama
Culture conditions: C, 20° C, 4 µE/m² sec, 2M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater
F67-5
Reference: 242
- TRICERATIUM*** Ehrenberg: Bacillariophyceae
- Triceratium dubium*** Brightwell
556
Okinawa (1990)
Unialgal, Clonal, S. Ono (1990)
Identified by: S. Ono
Culture conditions: f/2, 20° C, 40 µE/m² sec, 1M
Characteristics: Marine
No.20
Reference: 395
- TRIPLOCERAS*** Bailey: Charophyceae
- Triploceras gracile*** Bailey
789
2 km east of Melaka / Malaysia (1985-08)
Unialgal, Clonal, T. Ichimura (1985)
Identified by: T. Ichimura
Culture conditions: MG, 22° C, 24 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Homothallic
85-28-1
Reference: 101
- 790
2 km east of Melaka / Malaysia (1985-08)
Unialgal, Clonal, T. Ichimura (1985)
Identified by: T. Ichimura
Culture conditions: MG, 22° C, 24 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Homothallic
85-28-2
Reference: 101
- 791
2 km east of Melaka / Malaysia (1985-08)
Unialgal, Clonal, T. Ichimura (1985)
Identified by: T. Ichimura
Culture conditions: MG, 22° C, 24 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Homothallic
85-28-3
Reference: 101
- 792
2 km east of Melaka / Malaysia (1985-08)
Unialgal, Clonal, T. Ichimura (1985)
Identified by: T. Ichimura
Culture conditions: MG, 22° C, 24 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Homothallic
85-28-4
Reference: 101
- 793
Higashihiroshima / Hiroshima (1983-10)
Unialgal, Clonal, T. Ichimura (1983)
Identified by: T. Ichimura
Culture conditions: MG, 22° C, 24 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Heterothallic,
Mating type +

83-24-2
Reference: 101

794
Higashihiroshima / Hiroshima (1983-10)
Unialgal, Clonal, T.Ichimura (1983)
Identified by: T.Ichimura
Culture conditions: MG, 22° C, 24 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Heterothallic,
Mating type +
83-24-7
Reference: 101

795
Higashihiroshima / Hiroshima (1983-10)
Unialgal, Clonal, T.Ichimura (1983)
Identified by: T.Ichimura
Culture conditions: MG, 22° C, 24 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Heterothallic,
Mating type –
83-24-3
Reference: 101

796
Higashihiroshima / Hiroshima (1983-10)
Unialgal, Clonal, T.Ichimura (1983)
Identified by: T.Ichimura
Culture conditions: MG, 22° C, 24 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Freshwater, Heterothallic,
Mating type –
83-24-6
Reference: 101

TYCHONEMA Anagnostidis et Komárek:
Cyanophyceae

Tychonema bourrellyi Anagnostidis et Komárek
846
Loughgall, North Ireland / U.K.
CCAP 1459/11B, Axenic, Clonal, Fitzsimons
Reidentified by: S.Suda
Culture conditions: CT, 20° C, 12 µE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater, Water bloom, Planktonic,
Formerly identified as *Oscillatoria bounetii* f.
tenuis Skuja, 16SrRNA gene (AB045897)
Reference: 444

ULOTHRIX Kützing: Ulvophyceae

Ulothrix variabilis Kützing
329
Takatori River / Ibaraki (1984-12)
Unialgal, Clonal, S.Suda (1984-12)
Identified by: M.M.Watanabe
Culture conditions: C, 20° C, 12 µE/m² sec, 3M
Characteristics: Freshwater
References: 242, 453, 454

Ulothrix zonata (Weber et Mohr) Kützing
536
Hitachi / Ibaraki (1987-05)
Unialgal, Non-clonal, F.Kasai (1987-06)
Identified by: F.Kasai
Culture conditions: C, 10° C, 6 µE/m² sec, 3M,
(10° C, 15 µE/m² sec)
Characteristics: Freshwater
4st-1'-24
References: 242, 454

537
Sapporo / Hokkaido (1987-10)
Unialgal, Non-clonal, F.Kasai (1987-10)
Identified by: F.Kasai
Culture conditions: C, 10° C, 15 µE/m² sec, 1M
Characteristics: Freshwater
2Tst-1-1
References: 242, 454

UMBILICOSPHAERA Lohmann: Prymnesiophyceae

Umbilicosphaera sibogae (Weber-van Bosse) Gaarder
var. *foliosa* Kamptner
1323
Hachijo Isl. / Tokyo (2002-07)
Unialgal, Clonal, M-H.Noël (2002-08)
Identified by: M-H.Noël
Culture conditions: MNK, 22° C, 15 µE/m² sec, 14D
Characteristics: Marine
MH51

Umbilicosphaera sibogae (Weber-van Bosse) Gaarder
var. *sibogae*
1324
East China Sea (Kuroshio Current) (2003-08)
Unialgal, Clonal, M-H.Noël (2003-09)
Identified by: M-H.Noël
Culture conditions: MNK, 22° C, 15 µE/m² sec, 14D
Characteristics: Marine

- MH67
- URNELLA** Playfair: Chlorophyceae
- Urnella terrestris* Playfair
156
Pokhara / Nepal (1975-10)
Unialgal, Clonal, S.Watanabe
Identified by: S.Watanabe
Culture conditions: C(S), 20° C, 4 µE/m² sec, 3M,
(25° C, 30 µE/m² sec)
Characteristics: Soil
NPL-111
References: 242, 547
- UROGLENA** Ehrenberg: Chrysophyceae
- Uroglena americana* Calkins
395
Lake Biwa / Shiga (1978-05)
Unialgal, Clonal, Monoxenic, Y.Ishida (1978-05)
Identified by: Y.Ishida
Culture conditions: URO, 15° C, 20 µE/m² sec, 1M
Characteristics: Water bloom, Phagotrophic,
Freshwater, Untransportable
Strain 78
References: 121, 178, 179
- URONEMA** Lagerheim: Chlorophyceae
- Uronema confervicolum* Lagerheim
538
Miyata River / Ibaraki (1987-05)
Unialgal, Non-clonal, F.Kasai (1987-05)
Identified by: F.Kasai
Culture conditions: C, 20° C, 8 µE/m² sec, 3M
Characteristics: Freshwater
4st-2-10
References: 242, 453, 454
- Uronema gigas* Vischer
539
Miyata River / Ibaraki (1987-05)
Unialgal, Non-clonal, F.Kasai (1987-05)
Identified by: F.Kasai
Culture conditions: C, 20° C, 8 µE/m² sec, 3M
Characteristics: Freshwater
4st-3-5
References: 242, 454
- 540
Miyata River / Ibaraki (1987-05)
Unialgal, Non-clonal, F.Kasai (1987-05)
Identified by: F.Kasai
Culture conditions: C, 20° C, 8 µE/m² sec, 3M
Characteristics: Freshwater
4st-0-16
References: 242, 454
- VITREOCHLAMYS** Batko: Chlorophyceae
- Vitreochlamys aulata* (Pascher) Batko
875
Atsugi / Kanagawa (1998-02)
Unialgal, Clonal, A.Nakazawa (1998-03)
Identified by: A.Nakazawa
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 2M
Characteristics: Freshwater, Planktonic,
atpB gene (AB076121), *rbcL* gene (AB050486-7),
psaA gene (AB076143), *psaB* gene (AB076158),
psbC gene (AB076175-7),
rbcL-462 intron (AB076097)
Spha-5/1998-3-9
References: 287, 288, 342, 344
- 876
Habikino / Osaka (1998-03)
Unialgal, Clonal, A.Nakazawa (1998-07)
Identified by: A.Nakazawa
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 2M
Characteristics: Freshwater, Planktonic, *rbcL* gene
(AB050488-9)
Spha-8/1998-7-14
Reference: 287
- 877
South Bohemia / Czech
SAG 69.72, Unialgal, Clonal
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 2M
Characteristics: Freshwater, Planktonic, *rbcL* gene
(AB050492)
Reference: 287
- 878
Zool / Slovakia
SAG 80.81, Unialgal, Clonal
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 2M
Characteristics: Freshwater, Planktonic, formerly
identified as *Sphaerellopsis aulata*, *rbcL* gene
(AB050493)
Reference: 287

Vitreochlamys fluviatilis (Stein) Batko
879

Nerima / Tokyo (1997-11)
Unialgal, Clonal, A.Nakazawa (1997-12)
Identified by: A.Nakazawa
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 2M
Characteristics: Freshwater, Planktonic, *rbcL* gene
(AB050484)
Spha-1/1997-12-5
Reference: 287

Vitreochlamys gloeocystiformis (Dill) Nakazawa
Syn. *Sphaerellopsis gloeocystiformis* (Dill) Gerloff
880

Lake Altglobsow, Brandenburg / Germany (1997-08)
Unialgal, Clonal, H.Nozaki (1997-08)
Identified by: A.Nakazawa
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 2M
Characteristics: Freshwater, Planktonic, *rbcL* gene
(AB050485)
970805-u-4
Reference: 287

Vitreochlamys nekrassovii (Korshikov) Nakazawa
Syn. *Sphaerellopsis nekrassovii* (Korshikov) Ettl
881

River Elbe near Čelakovice / Czech
SAG 11-10, Unialgal, Clonal
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 2M
Characteristics: Freshwater, Planktonic, *rbcL* gene
(AB050494)
Reference: 287

Vitreochlamys ordinata (Skuja) Nakazawa
Syn. *Sphaerellopsis ordinata* Skuja
882

Lake Altglobsow, Brandenburg / Germany (1997-08)
Unialgal, Clonal, H.Nozaki (1997-08)
Identified by: A.Nakazawa
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 2M
Characteristics: Freshwater, Planktonic, *atpB* gene
(AB014036), *rbcL* gene (AB014041), *psaA* gene
(AB044420), *psaB* gene (AB044471), *psbC* gene
(AB044529)
Nozaki S-4
References: 287, 337, 340, 342

Vitreochlamys pinguis Nakazawa
883

Nerima / Tokyo (1998-06)
Unialgal, Clonal, A.Nakazawa (1998-07)
Identified by: A.Nakazawa

Culture conditions: AF-6, 20° C, 22 µE/m² sec, 2M
Characteristics: Freshwater, Planktonic, Type strain,
atpB gene (AB076120), *rbcL* gene (AB050490-1),
psaA gene (AB076142), *psaB* gene (AB076157),
psbC gene (AB076174)
References: 287, 342, 344

VOLVOX L.: Chlorophyceae

Volvox africanus G.S.West
863

UTEX 1891, Unialgal, Clonal
Identified by: R.C.Starr
Culture conditions: AF-6/2, 23° C, 48 µE/m² sec,
20D
Characteristics: Freshwater, Planktonic, Heterothallic,
Dioecious, Oogamy, H,h type, Mating type female,
Reisolated by H.Nozaki

Volvox aureus Ehrenberg
241

Nagatoro / Saitama (1969-11)
IAM C-419, Axenic, Clonal, T.Ichimura
Identified by: T.Ichimura
Culture conditions: VT, 25° C, 30 µE/m² sec, 20D
Characteristics: Freshwater, Fertility lost,
Untransportable
S-9-8
References: 96, 242

396

Koshokugun / Nagano (1983-08)
Axenic, Clonal, Y.Ogasawara (1983-08)
Identified by: Y.Ogasawara
Culture conditions: VT, 20° C, 12 µE/m² sec, 20D
Characteristics: Freshwater, Homothallic,
Untransportable
Reference: 242

693

Meguro / Tokyo (1977-06)
Axenic, Clonal, H.Nozaki (1977-06)
Identified by: H.Nozaki
Culture conditions: VT, 23° C, 48 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom,
Homothallic, Dioecious, Oogamy, Untransportable
k-5
Reference: 242

694

Sakyo / Kyoto (1983-10)

Axenic, Clonal, H.Nozaki (1983-10)
Identified by: H.Nozaki
Culture conditions: VT, 23° C, 48 µE/m² sec, 1M
Characteristics: Freshwater, Water bloom,
Homothallic, Dioecious, Oogamy, Untransportable
31202-2-9
Reference: 242

864

Neuglobsow / Germany (1997-07)
Unialgal, Clonal, H.Nozaki (1997-07)
Identified by: H.Nozaki
Culture conditions: AF-6, 15° C, 35 µE/m² sec, 2M
Characteristics: Freshwater, Planktonic

891

Neuglobsow / Germany (1997-07)
Unialgal, Clonal, H.Nozaki (1997-07)
Identified by: H.Nozaki
Culture conditions: AF-6, 15° C, 35 µE/m² sec, 2M
Characteristics: Freshwater, *atpB* gene (AB076104),
rbcL gene (AB076096), *psaA* gene (AB076123),
psaB gene (AB076145), *psbC* gene (AB076160)
970717-2
Reference: 344

892

Lake Sagami / Kanagawa (1999-06)
Unialgal, Clonal, H.Nozaki (1999-06)
Identified by: H.Nozaki
Culture conditions: MG, 15° C, 35 µE/m² sec, 2M
Characteristics: Freshwater, Water bloom,
Homothallic, Dioecious, Oogamy, H,h type,
atpB gene (AB076105), *rbcL* gene (AB076086),
psaA gene (AB076124), *psaB* gene (AB076146),
psbC gene (AB076161),
rbcL-462 intron (AB076086)
990601-1V-9
Reference: 344

Volvox aureus Ehrenberg var. *aureus*

541

Lake Yamanaka / Yamanashi (1981)
Axenic, Clonal, H.Nozaki (1981-07)
Identified by: H.Nozaki
Culture conditions: VT, 23° C, 48 µE/m² sec, 1M
Characteristics: Freshwater, *atpB* gene (AB013998),
rbcL gene (D63445), *psaA* gene (AB044182),
psaB gene (AB044424), *psbC* gene (AB044474)
Untransportable
1706-2
References: 242, 305, 318, 322, 323, 337, 340

542

Lake Yamanaka / Yamanashi (1981)
Axenic, Clonal, H.Nozaki (1981-07)
Identified by: H.Nozaki
Culture conditions: VT, 20° C, 12 µE/m² sec, 1M
Characteristics: Freshwater, Untransportable
1706-4
References: 242, 305

Volvox barberi Shaw

730

California / USA (1965-09)
UTEX 164n, Unialgal, Clonal, J.Stein (1957-04)
Culture conditions: C, 23° C, 48 µE/m² sec, 20D
Characteristics: Freshwater, *atpB* gene (AB014001),
rbcL gene (D86835), *psaA* gene (AB044186),
psaB gene (AB044427), *psbC* gene (AB044477),
Untransportable
References: 324, 337, 340

Volvox carteri Stein

397

Ichinomiya / Aichi (1983-06)
Axenic, Clonal, Y.Ogasawara (1983-06)
Culture conditions: VT, 25° C, 30 µE/m² sec, 20D
Characteristics: Freshwater, Heterothallic, Female,
Crosses with NIES-398, Untransportable
V-4
Reference: 242

398

Ichinomiya / Aichi (1983-06)
Axenic, Clonal, Y.Ogasawara (1983-06)
Culture conditions: VT, 25° C, 30 µE/m² sec, 20D
Characteristics: Freshwater, Heterothallic, Male,
Crosses with NIES-397, Untransportable
V-11
Reference: 242

Volvox carteri Stein f. *kawasakiensis* Nozaki

580

Kawasaki / Kanagawa (1984-01)
Unialgal, Clonal, H.Nozaki (1986-06)
Identified by: H.Nozaki
Culture conditions: VTAC, 20° C, 22 µE/m² sec, 1M
Characteristics: Freshwater, Heterothallic,
Dioecious, Oogamy, Female, Crosses with
NIES-581, Untransportable
6823-♀-2
References: 242, 311

- 581
Kawasaki / Kanagawa (1990-10)
Unialgal, Clonal, H.Nozaki (1990-11)
Identified by: H.Nozaki
Culture conditions: VTAC, 20° C, 22 µE/m²sec, 1M
Characteristics: Freshwater, Heterothallic, Dioecious,
Oogamy, Male, Crosses with NIES-580,
Untransportable
90-1111-5
References: 242, 311
- 732
Kawasaki / Kanagawa (1984-01)
Axenic, Clonal, H.Nozaki (1984-02)
Identified by: H.Nozaki
Culture conditions: VT, 23° C, 48 µE/m²sec, 1M
Characteristics: Freshwater, Heterothallic, Dioecious,
Oogamy, Female, Crosses with NIES-733,
Type strain, *atpB* gene (AB013999),
rbcl gene (D63446), *psaA* gene (AB044184-5),
psaB gene (AB044425), *psbC* gene (AB044475),
Untransportable
KK-3
References: 311, 318, 323, 337, 340, 342
- 733
Kawasaki / Kanagawa (1984-01)
Axenic, Clonal, H.Nozaki (1984-02)
Identified by: H.Nozaki
Culture conditions: C, 23° C, 48 µE/m²sec, 1M
Characteristics: Freshwater, Heterothallic, Dioecious,
Oogamy, Male, Crosses with NIES-732,
Untransportable
KK-5
Reference: 311
- Volvox carteri* Stein f. *nagariensis* Iyengar
865
Kobe / Hyogo
UTEX 1885, Unialgal, Clonal, R.C.Starr
Identified by: R.C.Starr
Culture conditions: MG, 23° C, 48 µE/m²sec, 20D
Characteristics: Freshwater, Planktonic, Heterothallic,
Dioecious, Oogamy, H,h type, Mating type female
- Volvox carteri* Stein f. *weismannia* (Powers) Iyengar
866
Waterford / Australia
UTEX 1875, Unialgal, Clonal, R.C.Starr
Identified by: R.C.Starr
Culture conditions: VTAC, 23° C, 48 µE/m²sec, 20D
Characteristics: Freshwater, Planktonic, Heterothallic,
Dioecious, Oogamy, H,h type, Mating type male
- Dioecious, Oogamy, H,h type, Mating type male,
Reisolated by H.Nozaki
- Volvox dissipatrix* (Shaw) Printz
731
UTEX 2184, Unialgal, Clonal, R.C.Starr
Culture conditions: MG, 23° C, 48 µE/m²sec, 14D
Characteristics: Freshwater, *atpB* gene (AB014000),
rbcl gene (D63447), *psaA* gene (AB044183),
psaB gene (AB044426), *psbC* gene (AB044476),
Unstable, Untransportable
References: 323, 337, 340
- Volvox gigas* Pocock
867
UTEX 1895, Unialgal, Clonal, R.C.Starr
Identified by: R.C.Starr
Culture conditions: MG, 23° C, 48 µE/m²sec, 14D
Characteristics: Freshwater, Planktonic, Heterothallic,
Dioecious, Oogamy, H,h type, Mating type female
- Volvox obversus* (Shaw) Printz
868
UTEX 1865, Unialgal, Clonal, R.C.Starr
Identified by: R.C.Starr
Culture conditions: MG, 23° C, 48 µE/m²sec, 14D
Characteristics: Freshwater, Planktonic, Heterothallic,
Dioecious, Oogamy, H,h type, Mating type male
- Volvox prolificus* Iyengar
543
Axenic, Clonal, Y.Ogasawara
Identified by: S.Suda
Culture conditions: VT, 23° C, 48 µE/m²sec, 1M
Characteristics: Freshwater, Untransportable
V-sp
Reference: 242
- Volvox rousseletii* G.S.West
734
UTEX 1862, Unialgal, Clonal, R.C.Starr
Culture conditions: AF-6, 23° C, 48 µE/m²sec, 1M
Characteristics: Freshwater, *atpB* gene (AB014003),
rbcl gene (D63448), *psaA* gene (AB044188),
psaB gene (AB044429), *psbC* gene (AB044479),
Untransportable
References: 323, 337, 340
- Volvox tertius* Meyer
544
Kisofukushima / Nagano (1986-08)
Axenic, Clonal, Y.Ogasawara (1986-08)

- Identified by: Y.Ogasawara
 Culture conditions: MG, 20° C, 12 µE/m² sec, 20D
 Characteristics: Freshwater, Homothallic,
 Untransportable
 Reference: 242
- 869
 Queen's Ditch, Cambridge / U.K. (1947)
 Axenic, Clonal, E.A.George (1947)
 Identified by: R.C.Starr
 Culture conditions: MG, 23° C, 48 µE/m² sec, 14D
 Characteristics: Freshwater, Planktonic, Reisolated
 by H.Nozaki
- VOLVULINA** Playfair: Chlorophyceae
- Volvulina boldii* O'Neil et Starr. nom.nud.
 893
 Peurith, North Carolina / USA
 UTEX 2185, Unialgal, Clonal, R.C.Starr
 Identified by: R.C.Starr
 Culture conditions: MG, 20° C, 22 µE/m² sec, 1M
 Characteristics: Freshwater, Heterothallic, Isogamy,
 H,h type, Mating type +, *atpB* gene (AB044176),
rbcL gene (AB044162-3), *psaA* gene (AB044225),
psaB gene (AB044451), *psbC* gene (AB044504)
 Reference: 337
- 894
 Peurith, North Carolina / USA
 UTEX 2186, Unialgal, Clonal, R.C.Starr
 Identified by: R.C.Starr
 Culture conditions: MG, 20° C, 22 µE/m² sec, 1M
 Characteristics: Freshwater, Heterothallic, Isogamy,
 H,h type, Mating type -
- Volvulina compacta* Nozaki
 582
 Birtamod / Nepal (1988-10)
 Axenic, Clonal, H.Nozaki (1989-08)
 Identified by: H.Nozaki
 Culture conditions: VT, 20° C, 12 µE/m² sec, 1M
 Characteristics: Freshwater, Heterothallic,
 Mating type +, Crosses with NIES-583,
atpB gene (AB014029), *rbcL* gene (D86832),
psaA gene (AB044217-9), *psaB* gene (AB044446),
psbC gene (AB044498),
rbcL-462 intron (AB076089)
 89-804-4
 References: 242, 324, 333, 337, 340, 342, 344
- 583
 Birtamod / Nepal (1988-10)
 Axenic, Clonal, H.Nozaki (1989-08)
 Identified by: H.Nozaki
 Culture conditions: VT, 20° C, 12 µE/m² sec, 1M
 Characteristics: Freshwater, Heterothallic,
 Mating type -, Crosses with NIES-582
 89-804-7
 References: 242, 333
- Volvulina pringsheimii* Starr
 895
 Fredricksburg, Texas / USA (1960)
 UTEX 1020, Unialgal, Clonal, R.C.Starr (1960-11)
 Identified by: R.C.Starr
 Culture conditions: MG, 20° C, 22 µE/m² sec, 1M
 Characteristics: Freshwater, Heterothallic, Isogamy,
atpB gene (AB014028), *rbcL* gene (D63444), *psaA*
 gene (AB044220), *psaB* gene (AB044447), *psbC*
 gene (AB044499)
 References: 323, 337, 340
- Volvulina steinii* Playfair
 545
 Hayama / Kanagawa (1980-12)
 Axenic, Clonal, H.Nozaki (1981-01)
 Identified by: H.Nozaki
 Culture conditions: VTAC, 20° C, 12 µE/m² sec, 1M
 Characteristics: Freshwater, Heterothallic,
 Mating type -, Crosses with NIES-546,
atpB gene (AB044713), *rbcL* gene (AB044159),
psaA gene (AB044221-2), *psaB* gene (AB044448),
psbC gene (AB044500)
 1107-5 (-)
 References: 242, 301, 321, 337
- 546
 Hayama / Kanagawa (1980-12)
 Axenic, Clonal, H.Nozaki (1981-01)
 Identified by: H.Nozaki
 Culture conditions: VTAC, 20° C, 12 µE/m² sec, 1M
 Characteristics: Freshwater, Heterothallic,
 Mating type +, Crosses with NIES-545
 1107-8 (+)
 References: 166, 242, 301
- 584
 Bahrabise / Nepal (1988-09)
 Unialgal, Clonal, H.Nozaki (1989-03)
 Identified by: H.Nozaki
 Culture conditions: VTAC, 20° C, 22 µE/m² sec, 1M
 Characteristics: Freshwater, Heterothallic, Isogamy,

- Mating type +, Crosses with NIES-585
89-306-1
References: 242, 313
- 585
Bahrabise / Nepal (1988-09)
Unialgal, Clonal, H.Nozaki (1989-04)
Identified by: H.Nozaki
Culture conditions: VTAC, 20° C, 22 µE/m² sec, 1M
Characteristics: Freshwater, Heterothallic, Isogamy,
Mating type –, Crosses with NIES-584
89-423-1
References: 242, 313
- 896
Farmington, California / USA
UTEX 1525, Unialgal, Clonal
Identified by: R.J.Carefoot
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 1M
Characteristics: Freshwater, Mixotrophic,
Heterothallic, Isogamy, H,h type, *atpB* gene
(AB044174), *rbcL* gene (AB044160), *psaA* gene
(AB044223), *psaB* gene (AB044449), *psbC* gene
(AB044501)
References: 15, 301, 321, 337
- 897
Bloomington, Indiana / USA
UTEX 1527, Unialgal, Clonal
Identified by: R.J.Carefoot
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 1M
Characteristics: Freshwater, Mixotrophic,
Heterothallic, Isogamy, H,h type
References: 15, 301, 321
- 898
Wilson Co., Texas / USA
UTEX 1531, Unialgal, Clonal
Identified by: R.J.Carefoot
Culture conditions: AF-6, 20° C, 22 µE/m² sec, 1M
Characteristics: Freshwater, Mixotrophic,
Heterothallic, Isogamy, H,h type, *atpB* gene
(AB044175), *rbcL* gene (AB044161), *psaA* gene
(AB044224), *psaB* gene (AB044450), *psbC* gene
(AB044502-3)
References: 15, 301, 321, 337

WOLOSZYNSKIA Thompson: Dinophyceae

Woloszynskia leopoliense (Woloszynska)Thompson
619

- Mitsukaido / Ibaraki (1985-04)
Unialgal, Clonal, T.Sawaguchi (1985-04)
Identified by: T.Sawaguchi
Culture conditions: MW1/5, 20° C, 40 µE/m² sec, 1M
Characteristics: Freshwater, Homothallic,
Untransportable
KRYZ-3

YAMAGISHIELLA Nozaki: Chlorophyceae

- Yamagishiella unicocca* (Rayburn et Starr) Nozaki
Syn. *Pandorina unicocca* Rayburn et Starr
578
Kamogawa / Chiba (1980-10)
Unialgal, Clonal, H.Nozaki (1980-12)
Identified by: H.Nozaki
Culture conditions: VTAC, 20° C, 22 µE/m² sec, 1M
Characteristics: Freshwater, Heterothallic, Isogamy,
Mating type +, Crosses with NIES-579,
rbcL gene (AB000811)
01209-1
References: 242, 343
- 579
Kamogawa / Chiba (1980-10)
Unialgal, Clonal, H.Nozaki (1980-12)
Identified by: H.Nozaki
Culture conditions: VTAC, 20° C, 22 µE/m² sec, 1M
Characteristics: Freshwater, Heterothallic, Isogamy,
Mating type –, Crosses with NIES-578
01209-7
Reference: 242
- 666
Nobi / Kanagawa (1979-05)
UTEX 2428, Unialgal, Clonal, S.Kato (1979-05)
Identified by: H.Nozaki
Culture conditions: VT, 20° C, 22 µE/m² sec, 1M
Characteristics: Freshwater, Heterothallic, Isogamy,
Mating type +, Crosses with NIES-667,
atpB gene (AB014030), *rbcL* gene (D86823),
psaA gene (AB044213), *psaB* gene (AB044443),
psbC gene (AB044495)
X-441
References: 176, 242, 300, 324, 336, 337, 340
- 667
Nobi / Kanagawa (1979-05)
UTEX 2429, Unialgal, Clonal, S.Kato (1979-05)
Identified by: H.Nozaki
Culture conditions: VT, 20° C, 22 µE/m² sec, 1M

- Characteristics: Freshwater, Heterothallic, Isogamy,
Mating type –, Crosses with NIES-666
X-443
References: 242, 300
- 762
China
CCFA 646, Unialgal, Clonal
Reidentified by: H.Nozaki
Culture conditions: AF-6, 20° C, 12 μ E/m² sec, 2M
Characteristics: Freshwater, Formerly identified as
Eudorina sp., *rbcL* gene (AB000810)
Reference: 343
- 870
Lake Röblin, Fürstenberg / Germany (1997-07)
Unialgal, Clonal, H.Nozaki (1997-07)
Identified by: H.Nozaki
Culture conditions: AF-6, 15° C, 20 μ E/m² sec, 2M
Characteristics: Freshwater, Planktonic, Heterothallic,
Isogamy, H,h type, Mating type +
970730-E-1
- 871
Lake Röblin, Fürstenberg / Germany (1997-07)
Unialgal, Clonal, H.Nozaki (1997-07)
Identified by: H.Nozaki
Culture conditions: AF-6, 15° C, 20 μ E/m² sec, 2M
Characteristics: Freshwater, Planktonic, Heterothallic,
Isogamy, H,h type, Mating type –
970730-E-7
- 872
Brandenburg / Germany (1997-07)
Unialgal, Clonal, H.Nozaki (1997-08)
Identified by: H.Nozaki
Culture conditions: AF-6, 15° C, 20 μ E/m² sec, 2M
Characteristics: Freshwater, Planktonic, Heterothallic,
Isogamy, H,h type, Mating type +, *atpB* gene
(AB044172), *rbcL* gene (AB044168), *psaA* gene
(AB044216), *psaB* gene (AB044445), *psbC* gene
(AB044497)
Nozaki-E-5
Reference: 337
- 873
Brandenburg / Germany (1997-07)
Unialgal, Clonal, H.Nozaki (1997-08)
Identified by: H.Nozaki
Culture conditions: AF-6, 15° C, 20 μ E/m² sec, 2M
Characteristics: Freshwater, Planktonic, Heterothallic,
Isogamy, H,h type, Mating type –
- 970730-E-9
- 874
Brandenburg / Germany (1997-07)
Unialgal, Clonal, H.Nozaki (1997-08)
Identified by: H.Nozaki
Culture conditions: AF-6, 15° C, 20 μ E/m² sec, 2M
Characteristics: Freshwater, Planktonic, Heterothallic,
Isogamy, H,h type, Mating type –
970730-E-10

PROTOZOA

CAFETERIA Fenchel et Patterson: Bicoecia

Cafeteria roenbergensis Fenchel et Patterson
1012

Isonoura, Wakayama / Wakayama (2002-01)
Unialgal, Clonal, M.Moriya (2002-01)
Identified by: M.Moriya
Culture conditions: swURO-1/10YT, 15° C,
6 μ E/m² sec, 1M
Characteristics: Marine
#106

PARAMECIUM Müller: Oligohymenophorea

Paramecium bursaria Focke
668

Miyatoko Mire / Fukushima (1993-05)
Xenic, Clonal, H.Nozaki (1993-05)
Identified by: H.Nozaki
Culture conditions: AF-6, 20° C, 22 μ E/m² sec, 1M
Characteristics: Freshwater, Symbiotic
93-527-Pa-1

PLACIDIA Moriya et al.: Placididea

Placidia cafeteriposis Moriya et al.

1013
Yokohama / Kanagawa (1998-01)
Unialgal, Clonal, M.Moriya (1998-01)
Identified by: M.Moriya
Culture conditions: swURO-1/10YT, 15° C,
6 μ E/m² sec, 1M
Characteristics: Marine, Phagotrophic, Heterotrophic,
18SrRNA gene (AB061218)
#51
Reference: 247

1014
Kamaishi / Iwate (1999-01)
Unialgal, Clonal, M.Moriya (1999-01)
Identified by: M.Moriya
Culture conditions: swURO-1/10YT, 15° C,
6 μ E/m² sec, 1M
Characteristics: Marine, Phagotrophic, Heterotrophic
#69
Reference: 247

TETRAHYMENA Furgason: Oligohymenophorea

Tetrahymena pyriformis Ehrenberg
403

Tsuchiura Harbor / Lake Kasumigaura / Ibaraki
(1976-08)
Xenic, Non-clonal, R.Sudo (1976-08)
Identified by: R.Sudo
Culture conditions: LE, 10° C, 20D, (20° C)
Characteristics: Freshwater, Water bloom,
Untransportable
Tetra-1
Reference: 139

WOBBLIA Moriya et al.: Placididea

Wobblia lunata Moriya et al.

1015
Rikuzen-Takada / Iwate (1996-08)
Unialgal, Clonal, M.Moriya (1996-10)
Identified by: M.Moriya
Culture conditions: swURO-YT, 15° C,
6 μ E/m² sec, 1M
Characteristics: Marine, Phagotrophic, Heterotrophic,
Type strain, 18SrRNA gene (AB032606)
#1
Reference: 246

Appendix I. List of cryopreserved strains

Cyanophyceae

<i>Anabaenopsis circularis</i>	21	<i>Microcystis aeruginosa</i>	1052
<i>Aphanocapsa montana</i>	416	<i>Microcystis aeruginosa</i>	1053
<i>Aulosira laxa</i>	50	<i>Microcystis aeruginosa</i>	1054
<i>Calothrix brevissima</i>	22	<i>Microcystis aeruginosa</i>	1055
<i>Calothrix crustacea</i>	266	<i>Microcystis aeruginosa</i>	1056
<i>Calothrix parasitica</i>	267	<i>Microcystis aeruginosa</i>	1057
<i>Calothrix parasitica</i>	334	<i>Microcystis aeruginosa</i>	1058
<i>Calothrix scopulorum</i>	268	<i>Microcystis aeruginosa</i>	1059
<i>Chamaesiphon subglobosus</i>	434	<i>Microcystis aeruginosa</i>	1060
<i>Limnothrix redekei</i>	847	<i>Microcystis aeruginosa</i>	1061
<i>Lyngbya hieronymusii</i> var. <i>hieronymusii</i>	929	<i>Microcystis aeruginosa</i>	1062
<i>Merismopedia tenuissima</i>	230	<i>Microcystis aeruginosa</i>	1063
<i>Microcystis aeruginosa</i>	44	<i>Microcystis aeruginosa</i>	1064
<i>Microcystis aeruginosa</i>	87	<i>Microcystis aeruginosa</i>	1065
<i>Microcystis aeruginosa</i>	88	<i>Microcystis aeruginosa</i>	1066
<i>Microcystis aeruginosa</i>	89	<i>Microcystis aeruginosa</i>	1069
<i>Microcystis aeruginosa</i>	90	<i>Microcystis aeruginosa</i>	1070
<i>Microcystis aeruginosa</i>	91	<i>Microcystis aeruginosa</i>	1071
<i>Microcystis aeruginosa</i>	98	<i>Microcystis aeruginosa</i>	1072
<i>Microcystis aeruginosa</i>	99	<i>Microcystis aeruginosa</i>	1073
<i>Microcystis aeruginosa</i>	100	<i>Microcystis aeruginosa</i>	1074
<i>Microcystis aeruginosa</i>	101	<i>Microcystis aeruginosa</i>	1077
<i>Microcystis aeruginosa</i>	298	<i>Microcystis aeruginosa</i>	1078
<i>Microcystis aeruginosa</i>	299	<i>Microcystis aeruginosa</i>	1079
<i>Microcystis aeruginosa</i>	478	<i>Microcystis aeruginosa</i>	1080
<i>Microcystis aeruginosa</i>	103	<i>Microcystis aeruginosa</i>	1081
<i>Microcystis aeruginosa</i>	104	<i>Microcystis aeruginosa</i>	1083
<i>Microcystis aeruginosa</i>	105	<i>Microcystis aeruginosa</i>	1084
<i>Microcystis aeruginosa</i>	106	<i>Microcystis aeruginosa</i>	1087
<i>Microcystis aeruginosa</i>	107	<i>Microcystis aeruginosa</i>	1088
<i>Microcystis aeruginosa</i>	108	<i>Microcystis aeruginosa</i>	1089
<i>Microcystis aeruginosa</i>	109	<i>Microcystis aeruginosa</i>	1090
<i>Microcystis aeruginosa</i>	110	<i>Microcystis aeruginosa</i>	1091
<i>Microcystis aeruginosa</i>	111	<i>Microcystis aeruginosa</i>	1094
<i>Microcystis aeruginosa</i>	112	<i>Microcystis aeruginosa</i>	1095
<i>Microcystis aeruginosa</i>	604	<i>Microcystis aeruginosa</i>	1096
<i>Microcystis aeruginosa</i>	843	<i>Microcystis aeruginosa</i>	1098
<i>Microcystis aeruginosa</i>	901	<i>Microcystis aeruginosa</i>	1099
<i>Microcystis aeruginosa</i>	902	<i>Microcystis aeruginosa</i>	1100
<i>Microcystis aeruginosa</i>	903	<i>Microcystis aeruginosa</i>	1101
<i>Microcystis aeruginosa</i>	904	<i>Microcystis aeruginosa</i>	1102
<i>Microcystis aeruginosa</i>	1025	<i>Microcystis aeruginosa</i>	1103
<i>Microcystis aeruginosa</i>	1026	<i>Microcystis aeruginosa</i>	1104
<i>Microcystis aeruginosa</i>	1027	<i>Microcystis aeruginosa</i>	1105
<i>Microcystis aeruginosa</i>	1028	<i>Microcystis aeruginosa</i>	1106
<i>Microcystis aeruginosa</i>	1029	<i>Microcystis aeruginosa</i>	1107
<i>Microcystis aeruginosa</i>	1043	<i>Microcystis aeruginosa</i>	1108
<i>Microcystis aeruginosa</i>	1050	<i>Microcystis aeruginosa</i>	1109
<i>Microcystis aeruginosa</i>	1051	<i>Microcystis aeruginosa</i>	1110
		<i>Microcystis aeruginosa</i>	1111
		<i>Microcystis aeruginosa</i>	1112

<i>Microcystis aeruginosa</i>	1115	<i>Synechococcus</i> sp.	948
<i>Microcystis aeruginosa</i>	1117	<i>Synechococcus</i> sp.	949
<i>Microcystis aeruginosa</i>	1118	<i>Synechococcus</i> sp.	950
<i>Microcystis aeruginosa</i>	1119	<i>Synechococcus</i> sp.	951
<i>Microcystis aeruginosa</i>	1121	<i>Synechococcus</i> sp.	952
<i>Microcystis aeruginosa</i>	1122	<i>Synechococcus</i> sp.	953
<i>Microcystis aeruginosa</i>	1129	<i>Synechococcus</i> sp.	954
<i>Microcystis aeruginosa</i>	1130	<i>Synechococcus</i> sp.	955
<i>Microcystis aeruginosa</i>	1132	<i>Synechococcus</i> sp.	956
<i>Myxosarcina burmensis</i>	481	<i>Synechococcus</i> sp.	957
<i>Nostoc commune</i>	24	<i>Synechococcus</i> sp.	958
<i>Nostoc commune</i>	38	<i>Synechococcus</i> sp.	959
<i>Nostoc linckia</i> var. <i>arvense</i>	28	<i>Synechococcus</i> sp.	960
<i>Oscillatoria amphibia</i>	361	<i>Synechococcus</i> sp.	961
<i>Oscillatoria animalis</i>	206	<i>Synechococcus</i> sp.	962
<i>Oscillatoria limnetica</i>	36	<i>Synechococcus</i> sp.	963
<i>Oscillatoria rosea</i>	208	<i>Synechococcus</i> sp.	964
<i>Oscillatoria tenuis</i>	33	<i>Synechococcus</i> sp.	965
<i>Phormidium foveolarum</i>	32	<i>Synechococcus</i> sp.	969
<i>Phormidium foveolarum</i>	34	<i>Synechococcus</i> sp.	970
<i>Phormidium tenue</i>	30	<i>Synechococcus</i> sp.	971
<i>Phormidium tenue</i>	512	<i>Synechococcus</i> sp.	972
<i>Phormidium tenue</i>	611	<i>Synechococcus</i> sp.	973
<i>Planktothrix agardhii</i>	204	<i>Synechococcus</i> sp.	974
<i>Planktothrix agardhii</i>	205	<i>Synechococcus</i> sp.	975
<i>Planktothrix agardhii</i>	594	<i>Synechococcus</i> sp.	976
<i>Planktothrix agardhii</i>	595	<i>Synechococcus</i> sp.	977
<i>Planktothrix agardhii</i>	596	<i>Synechococcus</i> sp.	978
<i>Planktothrix agardhii</i>	905	<i>Synechococcus</i> sp.	979
<i>Planktothrix agardhii</i>	906	<i>Synechococcus</i> sp.	980
<i>Planktothrix agardhii</i>	907	<i>Synechococcus</i> sp.	981
<i>Planktothrix agardhii</i>	908	<i>Synechococcus</i> sp.	982
<i>Planktothrix agardhii</i>	909	<i>Synechococcus</i> sp.	983
<i>Planktothrix agardhii</i>	910	<i>Synechococcus</i> sp.	984
<i>Planktothrix agardhii</i>	989	<i>Synechococcus</i> sp.	985
<i>Planktothrix agardhii</i>	990	<i>Synechococcus</i> sp.	986
<i>Planktothrix mougeotii</i>	844	<i>Synechococcus</i> sp.	987
<i>Planktothrix mougeotii</i>	911	<i>Synechococcus</i> sp.	988
<i>Planktothrix mougeotii</i>	912	<i>Tolypothrix tenuis</i>	37
<i>Planktothrix mougeotii</i>	913	<i>Tychonema bourrelii</i>	846
<i>Planktothrix pseudoagardhii</i>	845		
<i>Planktothrix pseudoagardhii</i>	914		
<i>Planktothrix pseudoagardhii</i>	915		
<i>Planktothrix pseudoagardhii</i>	916		
<i>Planktothrix rubescens</i>	610		
<i>Planktothrix rubescens</i>	928		
<i>Synechococcus</i> sp.	937		
<i>Synechococcus</i> sp.	938		
<i>Synechococcus</i> sp.	939		
<i>Synechococcus</i> sp.	940		
<i>Synechococcus</i> sp.	941		
<i>Synechococcus</i> sp.	942		
<i>Synechococcus</i> sp.	943		
<i>Synechococcus</i> sp.	944		
<i>Synechococcus</i> sp.	945		
<i>Synechococcus</i> sp.	946		
<i>Synechococcus</i> sp.	947		
		Rhodophyceae	
		<i>Porphyridium</i> sp.	1032
		<i>Porphyridium</i> sp.	1033
		<i>Porphyridium</i> sp.	1034
		<i>Porphyridium</i> sp.	1035
		<i>Rhodella</i> sp.	1036
		<i>Rhodella</i> sp.	1037

Appendix II. List of toxic strains

Cyanophyceae

<i>Cylindrospermopsis raciborskii</i>	991
<i>Cylindrospermopsis raciborskii</i>	992
<i>Cylindrospermopsis raciborskii</i>	993
<i>Cylindrospermopsis raciborskii</i>	1040
<i>Cylindrospermopsis raciborskii</i>	1041
<i>Cylindrospermopsis raciborskii</i>	1042
<i>Cylindrospermopsis raciborskii</i>	1259
<i>Cylindrospermopsis raciborskii</i>	1260
<i>Cylindrospermopsis raciborskii</i>	1261
<i>Cylindrospermopsis raciborskii</i>	1262
<i>Microcystis aeruginosa</i>	88
<i>Microcystis aeruginosa</i>	89
<i>Microcystis aeruginosa</i>	90
<i>Microcystis aeruginosa</i>	102
<i>Microcystis aeruginosa</i>	103
<i>Microcystis aeruginosa</i>	107
<i>Microcystis aeruginosa</i>	298
<i>Microcystis aeruginosa</i>	478
<i>Microcystis aeruginosa</i>	843
<i>Microcystis aeruginosa</i>	901
<i>Microcystis aeruginosa</i>	902
<i>Microcystis aeruginosa</i>	903
<i>Microcystis aeruginosa</i>	904
<i>Microcystis aeruginosa</i>	933
<i>Microcystis aeruginosa</i>	1025
<i>Microcystis aeruginosa</i>	1026
<i>Microcystis aeruginosa</i>	1027
<i>Microcystis aeruginosa</i>	1028
<i>Microcystis aeruginosa</i>	1029
<i>Microcystis aeruginosa</i>	1043
<i>Microcystis aeruginosa</i>	1064
<i>Microcystis aeruginosa</i>	1070
<i>Microcystis aeruginosa</i>	1071
<i>Microcystis aeruginosa</i>	1072
<i>Microcystis aeruginosa</i>	1077
<i>Microcystis aeruginosa</i>	1085
<i>Microcystis aeruginosa</i>	1086
<i>Microcystis aeruginosa</i>	1095
<i>Microcystis aeruginosa</i>	1097
<i>Microcystis aeruginosa</i>	1099
<i>Microcystis aeruginosa</i>	1140
<i>Microcystis aeruginosa</i>	1141
<i>Planktothrix agardhii</i>	905

<i>Planktothrix agardhii</i>	1263
<i>Planktothrix agardhii</i>	1264
<i>Planktothrix agardhii</i>	1265
<i>Planktothrix rubescens</i>	928
<i>Planktothrix rubescens</i>	1266
<i>Planktothrix rubescens</i>	1267

Dinophyceae

<i>Alexandrium hiranoi</i>	612
<i>Coolia monotis</i>	615
<i>Prorocentrum lima</i>	617

Appendix III. List of gene data

16S rRNA gene

Cyanophyceae

41	<i>Anabaena circinalis</i>	AB042859	1067	<i>Microcystis aeruginosa</i>	AB023285
73	<i>Anabaena flos-aquae</i>		1068	<i>Microcystis aeruginosa</i>	AB015376
	f. <i>flos-aquae</i>	AB042858	1068	<i>Microcystis aeruginosa</i>	AB023286
76	<i>Anabaena spiroides</i>	AB047104	1072	<i>Microcystis aeruginosa</i>	AB012332
21	<i>Anabaenopsis circularis</i>	AB043537	1072	<i>Microcystis aeruginosa</i>	AB015362
1031	<i>Chroogloeocystis siderophila</i>	AY380791	1076	<i>Microcystis aeruginosa</i>	AB023287
847	<i>Limnothrix redekei</i>	AB045929	1085	<i>Microcystis aeruginosa</i>	AB012333
929	<i>Lyngbya hieronymusii</i>		1085	<i>Microcystis aeruginosa</i>	AB015363
	var. <i>hieronymusii</i>	AB045906	1086	<i>Microcystis aeruginosa</i>	AB015364
44	<i>Microcystis aeruginosa</i>	AB015361	1090	<i>Microcystis aeruginosa</i>	AB012339
87	<i>Microcystis aeruginosa</i>	D89031	1090	<i>Microcystis aeruginosa</i>	AB015367
88	<i>Microcystis aeruginosa</i>	AB023255	1090	<i>Microcystis aeruginosa</i>	AB023282
89	<i>Microcystis aeruginosa</i>	U03403	1091	<i>Microcystis aeruginosa</i>	AB015402
90	<i>Microcystis aeruginosa</i>	AB023256	1091	<i>Microcystis aeruginosa</i>	AB023278
91	<i>Microcystis aeruginosa</i>	AB023257	1092	<i>Microcystis aeruginosa</i>	AB015403
98	<i>Microcystis aeruginosa</i>	D89032	1105	<i>Microcystis aeruginosa</i>	AB015368
99	<i>Microcystis aeruginosa</i>	AB023258	1105	<i>Microcystis aeruginosa</i>	AB023283
100	<i>Microcystis aeruginosa</i>	AB023259	1115	<i>Microcystis aeruginosa</i>	AB015369
101	<i>Microcystis aeruginosa</i>	AB023260	1117	<i>Microcystis aeruginosa</i>	AB015370
102	<i>Microcystis aeruginosa</i>	D89033	1122	<i>Microcystis aeruginosa</i>	AB023284
104	<i>Microcystis aeruginosa</i>	AB015387	1133	<i>Microcystis aeruginosa</i>	AB023263
104	<i>Microcystis aeruginosa</i>	AB023266	1142	<i>Microcystis aeruginosa</i>	AB023264
104	<i>Microcystis aeruginosa</i>	AJ133174	1143	<i>Microcystis aeruginosa</i>	AB012340
105	<i>Microcystis aeruginosa</i>	AB023267	1143	<i>Microcystis aeruginosa</i>	AB015365
106	<i>Microcystis aeruginosa</i>	AB023268	1164	<i>Microcystis aeruginosa</i>	AB023265
107	<i>Microcystis aeruginosa</i>	U40333	33	<i>Oscillatoria tenuis</i>	AB042844
108	<i>Microcystis aeruginosa</i>	AB023269	30	<i>Phormidium tenue</i>	AB042857
109	<i>Microcystis aeruginosa</i>	AB023270	512	<i>Phormidium tenue</i>	AB042838
110	<i>Microcystis aeruginosa</i>	AB023271	611	<i>Phormidium tenue</i>	AB042842
111	<i>Microcystis aeruginosa</i>	D89034	917	<i>Planktothricoides raciborskii</i>	AB045953
111	<i>Microcystis aeruginosa</i>	AB015388	918	<i>Planktothricoides raciborskii</i>	AB045967
112	<i>Microcystis aeruginosa</i>	U40334	919	<i>Planktothricoides raciborskii</i>	AB045964
112	<i>Microcystis aeruginosa</i>	AB023272	204	<i>Planktothrix agardhii</i>	AB045954
298	<i>Microcystis aeruginosa</i>	AB023261	205	<i>Planktothrix agardhii</i>	AB045955
299	<i>Microcystis aeruginosa</i>	AB023262	594	<i>Planktothrix agardhii</i>	AB045956
604	<i>Microcystis aeruginosa</i>	AB023273	595	<i>Planktothrix agardhii</i>	AB045957
843	<i>Microcystis aeruginosa</i>	AB035549	596	<i>Planktothrix agardhii</i>	AB045958
1054	<i>Microcystis aeruginosa</i>	AB012336	905	<i>Planktothrix agardhii</i>	AB045896
1054	<i>Microcystis aeruginosa</i>	AB015374	906	<i>Planktothrix agardhii</i>	AB045904
1055	<i>Microcystis aeruginosa</i>	AB012334	907	<i>Planktothrix agardhii</i>	AB045905
1055	<i>Microcystis aeruginosa</i>	AB015389	844	<i>Planktothrix mougeotii</i>	AB045971
1055	<i>Microcystis aeruginosa</i>	AB023274	911	<i>Planktothrix mougeotii</i>	AB045972
1058	<i>Microcystis aeruginosa</i>	AB015400	912	<i>Planktothrix mougeotii</i>	AB045969
1061	<i>Microcystis aeruginosa</i>	AB023281	913	<i>Planktothrix mougeotii</i>	AB045970
1062	<i>Microcystis aeruginosa</i>	AB015400	845	<i>Planktothrix pseudoagardhii</i>	AB045968
1062	<i>Microcystis aeruginosa</i>	AB023276	914	<i>Planktothrix pseudoagardhii</i>	AB045907
1067	<i>Microcystis aeruginosa</i>	AB012337	915	<i>Planktothrix pseudoagardhii</i>	AB045965
			916	<i>Planktothrix pseudoagardhii</i>	AB045966
			610	<i>Planktothrix rubescens</i>	AB045959
			945	<i>Synechococcus</i> sp.	AF216951
			951	<i>Synechococcus</i> sp.	AF216952

953	<i>Synechococcus</i> sp.	AF216953	185	<i>Closterium pusillum</i>	AF352235
957	<i>Synechococcus</i> sp.	AF216954	339	<i>Closterium selenastrum</i>	AF352242
959	<i>Synechococcus</i> sp.	AF216955	187	<i>Closterium spinosporum</i>	
969	<i>Synechococcus</i> sp.	AF448060		var. <i>crassum</i>	AF352241
970	<i>Synechococcus</i> sp.	AF448073	188	<i>Closterium spinosporum</i>	
971	<i>Synechococcus</i> sp.	AF448061		var. <i>malaysiense</i>	AF352227
972	<i>Synechococcus</i> sp.	AF448079	191	<i>Closterium spinosporum</i>	
973	<i>Synechococcus</i> sp.	AF448062		var. <i>ryukyuense</i>	AF352240
978	<i>Synechococcus</i> sp.	AF448063	194	<i>Closterium spinosporum</i>	
979	<i>Synechococcus</i> sp.	AF448074		var. <i>spinosporum</i>	AF352224
981	<i>Synechococcus</i> sp.	AF448064	198	<i>Closterium tumidum</i>	AF352234
984	<i>Synechococcus</i> sp.	AF448066	199	<i>Closterium venus</i>	AF352236
846	<i>Tychonema bourrellyi</i>	AB045897	200	<i>Closterium wallichii</i>	AF352243

Placididea

1015	<i>Wobblia lunata</i>	AB032606
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16S-23S ITS region

Cyanophyceae

44	<i>Microcystis aeruginosa</i>	AB015361
104	<i>Microcystis aeruginosa</i>	AB015387
111	<i>Microcystis aeruginosa</i>	AB015388

18S rRNA gene

Cryptophyceae

715	<i>Chilomonas paramecium</i>	AB073108
274	<i>Cryptomonas ovata</i>	AB073109

Phaeophyceae

548	<i>Acinetospora crinita</i>	AF038005
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Schizocladiophyceae

1044	<i>Schizocladia ischiensis</i>	AB085614
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Ulvophyceae

360	<i>Oltmannsiellopsis viridis</i>	D86495
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Trebouxiophyceae

996	<i>Stichococcus ampulliformis</i>	AB087559
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Chlorophyceae

858	<i>Phacotus lenticularis</i>	X91628
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Charophyceae

125	<i>Closterium acerosum</i>	AF352230
271	<i>Closterium calosporum</i>	
	var. <i>calosporum</i>	AF352225
165	<i>Closterium calosporum</i>	
	var. <i>galiciense</i>	AF352239
170	<i>Closterium calosporum</i>	
	var. <i>himalayense</i>	AF352229
180	<i>Closterium gracile</i>	AF352237
181	<i>Closterium incurvum</i>	AF352231
174	<i>Closterium moniliferum</i>	
	var. <i>moniliferum</i>	AF352233
175	<i>Closterium navicula</i>	AF352232
52	<i>Closterium peracerosum-</i>	
	<i>strigosum-littorale</i> complex	AF352226
449	<i>Closterium pleurodermatum</i>	AF352238

atpB gene

Chlorophyceae

418	<i>Astrephomene gubernaculifera</i>	AB014022-3
854	<i>Astrephomene gubernaculifera</i>	AB044181
564	<i>Astrephomene perforata</i>	AB014024
566	<i>Basichlamys sacculifera</i>	AB014015
425	<i>Carteria cerasiformis</i>	AB084321
421	<i>Carteria crucifera</i>	AB084320
428	<i>Carteria obtusa</i>	AB084323
432	<i>Carteria radiosa</i>	AB084322
567	<i>Characiochloris sasae</i>	AB084331
884	<i>Chlamydomonas debaryana</i>	
	var. <i>cristata</i>	AB014034
968	<i>Chlamydomonas kuwadae</i>	AB084318
1048	<i>Chlamydomonas noctigama</i>	AB101502
446	<i>Chlamydomonas tetragama</i>	AB084319
123	<i>Chlorogonium fusiforme</i>	AB084329
439	<i>Chlorogonium neglectum</i>	AB084326
447	<i>Chloromonas insignis</i>	AB084313
722	<i>Eudorina cylindrica</i>	AB014033
721	<i>Eudorina elegans</i> var. <i>carteri</i>	AB014012
456	<i>Eudorina elegans</i> var. <i>elegans</i>	AB014009
717	<i>Eudorina elegans</i> var. <i>elegans</i>	AB047071
718	<i>Eudorina elegans</i> var. <i>elegans</i>	AB047072
719	<i>Eudorina elegans</i> var. <i>elegans</i>	AB047073
720	<i>Eudorina elegans</i> var. <i>elegans</i>	AB014010
568	<i>Eudorina elegans</i> var. <i>synoica</i>	AB014011
460	<i>Eudorina illinoisensis</i>	AB014013
723	<i>Eudorina illinoisensis</i>	AB047069
856	<i>Eudorina minodii</i>	AB047068
726	<i>Eudorina unicocca</i>	
	var. <i>peripheralis</i>	AB047070
724	<i>Eudorina unicocca</i>	
	var. <i>unicocca</i>	AB014008
725	<i>Eudorina unicocca</i>	
	var. <i>unicocca</i>	AB014007
737	<i>Gonium multicocum</i>	AB014020
851	<i>Gonium octonarium</i>	AB014018

569	<i>Gonium pectorale</i> var. <i>pectorale</i>	AB014016-7
653	<i>Gonium quadratum</i>	AB014019
289	<i>Gonium viridistellatum</i>	AB076118-9
654	<i>Gonium viridistellatum</i>	AB014021
857	<i>Gonium viridistellatum</i>	AB076117
144	<i>Haematococcus lacustris</i>	AB084325
257	<i>Hafniomonas montana</i>	AB101504
656	<i>Hafniomonas montana</i>	AB101505
474	<i>Lobomonas monstrosa</i>	AB044533
572	<i>Pandorina colemaniae</i>	AB014027
886	<i>Pandorina morum</i>	AB044180
887	<i>Pandorina morum</i>	AB044179
889	<i>Pandorina morum</i>	AB044178
890	<i>Pandorina morum</i>	AB044177
574	<i>Pandorina morum</i> var. <i>morum</i>	AB014025-6
727	<i>Paulschulzia pseudovolvox</i>	AB014040
213	<i>Pediastrum duplex</i>	AB084306
858	<i>Phacotus lenticularis</i>	AB014039
728	<i>Platydorina caudata</i>	AB014032
735	<i>Pleodorina californica</i>	AB014004
736	<i>Pleodorina indica</i>	AB014006
522	<i>Pseudocarteria mucosa</i>	AB084324
861	<i>Pteromonas angulosa</i>	AB014038
96	<i>Scenedesmus quadricauda</i>	AB084305
571	<i>Tetrabaena socialis</i> var. <i>socialis</i>	AB014014
875	<i>Vitreochlamys aulata</i>	AB076121
882	<i>Vitreochlamys ordinata</i>	AB014036
883	<i>Vitreochlamys pinguis</i>	AB076120
541	<i>Volvox aureus</i> var. <i>aureus</i>	AB013998
891	<i>Volvox aureus</i>	AB076104
892	<i>Volvox aureus</i>	AB076105
730	<i>Volvox barberi</i>	AB014001
732	<i>Volvox carteri</i> f. <i>kawasakiensis</i>	AB013999
731	<i>Volvox dissipatrix</i>	AB014000
734	<i>Volvox rousseletii</i>	AB014003
893	<i>Volvulina boldii</i>	AB044176
582	<i>Volvulina compacta</i>	AB014029
895	<i>Volvulina pringsheimii</i>	AB014028
545	<i>Volvulina steinii</i>	AB044713
896	<i>Volvulina steinii</i>	AB044174
898	<i>Volvulina steinii</i>	AB044175
666	<i>Yamagishiella unicocca</i>	AB014030
872	<i>Yamagishiella unicocca</i>	AB044172

COXI gene

Cryptophyceae

274 *Cryptomonas ovata* AB009419

Raphidophyceae

1 *Chattonella antiqua* AF037990

Phaeophyceae

548 *Acinetospora crinita* AF037996

Prymnesiophyceae

8 *Cricosphaera roscoffensis* AB000117

353 *Gephyrocapsa oceanica* AB000118

388 *Phaeocystis globosa* AB000120

Dinophyceae

12 *Prorocentrum micans* AB000133-4

369 *Scrippsiella trochoidea* AB000135

Euglenophyceae

381 *Eutreptiella gymnastica* AB000136

Trebouxiophyceae

415 *Actinastrum hantzschii* D63660

227 *Chlorella vulgaris* var. *vulgaris* D63763

227 *Chlorella vulgaris* var. *vulgaris* AB011523

Chlorophyceae

209 *Pediastrum boryanum* D63659

96 *Scenedesmus quadricauda* D63658

96 *Scenedesmus quadricauda* AB011524

cpcBA-IGS gene

Cyanophyceae

937 *Synechococcus* sp. AF223433

938 *Synechococcus* sp. AF223434

939 *Synechococcus* sp. AF223438

940 *Synechococcus* sp. AF223452

941 *Synechococcus* sp. AF223439

942 *Synechococcus* sp. AF223440

943 *Synechococcus* sp. AF223441

944 *Synechococcus* sp. AF223453

945 *Synechococcus* sp. AF223428

946 *Synechococcus* sp. AF223443

947 *Synechococcus* sp. AF223444

948 *Synechococcus* sp. AF223454

949 *Synechococcus* sp. AF223455

950 *Synechococcus* sp. AF223448

951 *Synechococcus* sp. AF223429

952 *Synechococcus* sp. AF223449

953 *Synechococcus* sp. AF223430

954 *Synechococcus* sp. AF223456

955 *Synechococcus* sp. AF223445

956 *Synechococcus* sp. AF223450

957 *Synechococcus* sp. AF223431

958 *Synechococcus* sp. AF223435

959 *Synechococcus* sp. AF223432

960 *Synechococcus* sp. AF223436

961 *Synechococcus* sp. AF223446

962 *Synechococcus* sp. AF223442

963 *Synechococcus* sp. AF223447

964 *Synechococcus* sp. AF223437

965 *Synechococcus* sp. AF223451

gyrB gene

Cyanophyceae

104 *Microcystis aeruginosa* AB074771

Mitochondrial complete DNA

Prasinophyceae

296 <i>Mesostigma viride</i>	AF353999
484 <i>Nephroselmis olivacea</i>	AF110138

petG, *psbK*, *D*, *psaI* etc.

Bacillariophyceae

323 <i>Skeletonema costatum</i>	AJ132266
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Plastid complete DNA

Prasinophyceae

296 <i>Mesostigma viride</i>	AF166114
484 <i>Nephroselmis olivacea</i>	AF137379

psaA gene

Chlorophyceae

418 <i>Astrephomene gubernaculifera</i>	AB044233-4
854 <i>Astrephomene gubernaculifera</i>	AB044235
564 <i>Astrephomene perforata</i>	AB044236-8
566 <i>Basichlamys sacculifera</i>	AB044416
884 <i>Chlamydomonas debaryana</i> var. <i>cristata</i>	AB044417-8
722 <i>Eudorina cylindrica</i>	AB044210
721 <i>Eudorina elegans</i> var. <i>carteri</i>	AB044202-3
456 <i>Eudorina elegans</i> var. <i>elegans</i>	AB044199
720 <i>Eudorina elegans</i> var. <i>elegans</i>	AB044200-1
460 <i>Eudorina illinoisensis</i>	AB044198
724 <i>Eudorina unicocca</i> var. <i>unicocca</i>	AB044204-6
725 <i>Eudorina unicocca</i> var. <i>unicocca</i>	AB044207-9
737 <i>Gonium multicoccum</i>	AB044239-40
851 <i>Gonium octonarium</i>	AB044241
569 <i>Gonium pectorale</i> var. <i>pectorale</i>	AB044242
653 <i>Gonium quadratum</i>	AB044243
289 <i>Gonium viridistellatum</i>	AB076140-1
654 <i>Gonium viridistellatum</i>	AB044244
857 <i>Gonium viridistellatum</i>	AB076139
474 <i>Lobomonas monstrosa</i>	AB044421
572 <i>Pandorina colemaniae</i>	AB044232
886 <i>Pandorina morum</i>	AB044231
887 <i>Pandorina morum</i>	AB044229-30
889 <i>Pandorina morum</i>	AB044228
890 <i>Pandorina morum</i>	AB044227
574 <i>Pandorina morum</i> var. <i>morum</i>	AB044226
727 <i>Paulschulzia pseudovolvox</i>	AB044422-3
728 <i>Platydorina caudata</i>	AB044211-2
735 <i>Pleodorina californica</i>	AB044190-2

736 <i>Pleodorina indica</i>	AB044195-7
571 <i>Tetrabaena socialis</i> var. <i>socialis</i>	AB044415
875 <i>Vitreochlamys aulata</i>	AB076143
882 <i>Vitreochlamys ordinata</i>	AB044420
883 <i>Vitreochlamys pinguis</i>	AB076142
891 <i>Volvox aureus</i>	AB076123
892 <i>Volvox aureus</i>	AB076124
541 <i>Volvox aureus</i> var. <i>aureus</i>	AB044182
730 <i>Volvox barberi</i>	AB044186
732 <i>Volvox carteri</i> f. <i>kawasakiensis</i>	AB044184-5
731 <i>Volvox dissipatrix</i>	AB044183
734 <i>Volvox rousseletii</i>	AB044188
893 <i>Volvulina boldii</i>	AB044225
582 <i>Volvulina compacta</i>	AB044217-9
895 <i>Volvulina pringsheimii</i>	AB044220
545 <i>Volvulina steinii</i>	AB044221-2
896 <i>Volvulina steinii</i>	AB044223
898 <i>Volvulina steinii</i>	AB044224
666 <i>Yamagishiella unicocca</i>	AB044213
872 <i>Yamagishiella unicocca</i>	AB044216

psaB gene

Chlorophyceae

418 <i>Astrephomene gubernaculifera</i>	AB044458
854 <i>Astrephomene gubernaculifera</i>	AB044459
564 <i>Astrephomene perforata</i>	AB044460
566 <i>Basichlamys sacculifera</i>	AB044467-8
425 <i>Carteria cerasiformis</i>	AB084359
421 <i>Carteria crucifera</i>	AB084358
428 <i>Carteria obtusa</i>	AB084361-3
432 <i>Carteria radiosa</i>	AB084360
567 <i>Characiochloris sasae</i>	AB084376
884 <i>Chlamydomonas debaryana</i> var. <i>cristata</i>	AB044469
968 <i>Chlamydomonas kuwadae</i>	AB084356
1048 <i>Chlamydomonas noctigama</i>	AB101513
446 <i>Chlamydomonas tetragama</i>	AB084357
123 <i>Chlorogonium fusiforme</i>	AB084370
439 <i>Chlorogonium neglectum</i>	AB084366
447 <i>Chloromonas insignis</i>	AB084348
722 <i>Eudorina cylindrica</i>	AB044441
721 <i>Eudorina elegans</i> var. <i>carteri</i>	AB044438
456 <i>Eudorina elegans</i> var. <i>elegans</i>	AB044435
720 <i>Eudorina elegans</i> var. <i>elegans</i>	AB044436-7
460 <i>Eudorina illinoisensis</i>	AB044434
724 <i>Eudorina unicocca</i> var. <i>unicocca</i>	AB044439
725 <i>Eudorina unicocca</i> var. <i>unicocca</i>	AB044440
737 <i>Gonium multicoccum</i>	AB044461
851 <i>Gonium octonarium</i>	AB044462
569 <i>Gonium pectorale</i> var. <i>pectorale</i>	AB044463
653 <i>Gonium quadratum</i>	AB044464
289 <i>Gonium viridistellatum</i>	AB076156

654	<i>Gonium viridistellatum</i>	AB044465
857	<i>Gonium viridistellatum</i>	AB076155
144	<i>Haematococcus lacustris</i>	AB084365
257	<i>Hafniomonas montana</i>	AB101515
656	<i>Hafniomonas montana</i>	AB101516
474	<i>Lobomonas monstrosa</i>	AB044472
572	<i>Pandorina colemaniae</i>	AB044457
886	<i>Pandorina morum</i>	AB044456
887	<i>Pandorina morum</i>	AB044455
889	<i>Pandorina morum</i>	AB044454
890	<i>Pandorina morum</i>	AB044453
574	<i>Pandorina morum</i> var. <i>morum</i>	AB044452
727	<i>Paulschulzia pseudovolvox</i>	AB044473
213	<i>Pediastrum duplex</i>	AB084340
858	<i>Phacotus lenticularis</i>	AB084373-4
728	<i>Platydorina caudata</i>	AB044442
735	<i>Pleodorina californica</i>	AB044430
736	<i>Pleodorina indica</i>	AB044432-3
522	<i>Pseudocarteria mucosa</i>	AB084364
861	<i>Pteromonas angulosa</i>	AB084371-2
96	<i>Scenedesmus quadricauda</i>	AB084339
571	<i>Tetrabaena socialis</i> var. <i>socialis</i>	AB044466
875	<i>Vitreochlamys aulata</i>	AB076158
882	<i>Vitreochlamys ordinata</i>	AB044471
883	<i>Vitreochlamys pinguis</i>	AB076157
891	<i>Volvox aureus</i>	AB076145
892	<i>Volvox aureus</i>	AB076146
541	<i>Volvox aureus</i> var. <i>aureus</i>	AB044424
730	<i>Volvox barberi</i>	AB044427
732	<i>Volvox carteri</i> f. <i>kawasakiensis</i>	AB044425
731	<i>Volvox dissipatrix</i>	AB044426
734	<i>Volvox rousseletii</i>	AB044429
893	<i>Volvulina boldii</i>	AB044451
582	<i>Volvulina compacta</i>	AB044446
895	<i>Volvulina pringsheimii</i>	AB044447
545	<i>Volvulina steinii</i>	AB044448
896	<i>Volvulina steinii</i>	AB044449
898	<i>Volvulina steinii</i>	AB044450
666	<i>Yamagishiella unicocca</i>	AB044443
872	<i>Yamagishiella unicocca</i>	AB044445

psaC, *psbA* etc.

Bacillariophyceae

323	<i>Skeletonema costatum</i>	AJ132264
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psaD gene

Glaucoephyceae

547	<i>Cyanophora paradoxa</i>	AJ132477
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psbA gene

Dinophyceae

331	<i>Amphidinium carterae</i>	AB025586
12	<i>Prorocentrum micans</i>	AB025585

psbC gene

Chlorophyceae

418	<i>Astrephomene gubernaculifera</i>	AB044513-4
854	<i>Astrephomene gubernaculifera</i>	AB044515-7
564	<i>Astrephomene perforata</i>	AB044518-9
566	<i>Basichlamys sacculifera</i>	AB044526
884	<i>Chlamydomonas debaryana</i>	
	var. <i>cristata</i>	AB044527
722	<i>Eudorina cylindrica</i>	AB044493
721	<i>Eudorina elegans</i> var. <i>carteri</i>	AB044487-8
456	<i>Eudorina elegans</i> var. <i>elegans</i>	AB044485
720	<i>Eudorina elegans</i> var. <i>elegans</i>	AB044486
460	<i>Eudorina illinoisensis</i>	AB044484
724	<i>Eudorina unicocca</i>	
	var. <i>unicocca</i>	AB044489-90
725	<i>Eudorina unicocca</i>	
	var. <i>unicocca</i>	AB044491-2
737	<i>Gonium multicoccum</i>	AB044481
851	<i>Gonium octonarium</i>	AB044520
569	<i>Gonium pectorale</i> var. <i>pectorale</i>	AB044521
653	<i>Gonium quadratum</i>	AB044522-3
289	<i>Gonium viridistellatum</i>	AB076173
654	<i>Gonium viridistellatum</i>	AB044524
857	<i>Gonium viridistellatum</i>	AB076172
474	<i>Lobomonas monstrosa</i>	AB044530
572	<i>Pandorina colemaniae</i>	AB044512
886	<i>Pandorina morum</i>	AB044510-1
887	<i>Pandorina morum</i>	AB044509
889	<i>Pandorina morum</i>	AB044508
890	<i>Pandorina morum</i>	AB044506-7
574	<i>Pandorina morum</i> var. <i>morum</i>	AB044505
727	<i>Paulschulzia pseudovolvox</i>	AB044531-2
728	<i>Platydorina caudata</i>	AB044494
735	<i>Pleodorina californica</i>	AB044480
736	<i>Pleodorina indica</i>	AB044483
571	<i>Tetrabaena socialis</i> var. <i>socialis</i>	AB044525
875	<i>Vitreochlamys aulata</i>	AB076175-7
882	<i>Vitreochlamys ordinata</i>	AB044529
883	<i>Vitreochlamys pinguis</i>	AB076174
891	<i>Volvox aureus</i>	AB076160
892	<i>Volvox aureus</i>	AB076161
541	<i>Volvox aureus</i> var. <i>aureus</i>	AB044474
730	<i>Volvox barberi</i>	AB044477
732	<i>Volvox carteri</i> f. <i>kawasakiensis</i>	AB044475
731	<i>Volvox dissipatrix</i>	AB044476
734	<i>Volvox rousseletii</i>	AB044479
893	<i>Volvulina boldii</i>	AB044504
582	<i>Volvulina compacta</i>	AB044498

895 *Volvulina pringsheimii* AB044499
 545 *Volvulina steinii* AB044500
 896 *Volvulina steinii* AB044501
 898 *Volvulina steinii* AB044502-3
 666 *Yamagishiella unicocca* AB044495
 872 *Yamagishiella unicocca* AB044497

psbC, D, petB, D etc.

Bacillariophyceae

323 *Skeletonema costatum* AJ132263

***rbcL* gene**

Schizocladiphyceae

1044 *Schizocladia ischiensis* AB085615

Chlorophyceae

418 *Astrephomene gubernaculifera* D63428
 854 *Astrephomene gubernaculifera* AB044169-70
 564 *Astrephomene perforata* D63429
 566 *Basichlamys sacculifera* D63430
 424 *Carteria cerasiformis* D89767
 425 *Carteria cerasiformis* D89768
 421 *Carteria crucifera* D63431
 630 *Carteria crucifera* D89758
 631 *Carteria eugametos* D89762
 632 *Carteria eugametos* D89763
 633 *Carteria eugametos* D89764
 634 *Carteria eugametos* D89761
 635 *Carteria eugametos* D89759
 636 *Carteria eugametos* D89760
 422 *Carteria inversa* D89765
 423 *Carteria inversa* D89766
 428 *Carteria obtusa* D89769
 432 *Carteria radiosa* D89770
 567 *Characiochloris sasae* AB084338
 884 *Chlamydomonas debaryana*
 var. *cristata* D86838
 968 *Chlamydomonas kuwadae* AB084334
 1048 *Chlamydomonas noctigama* AB101506-7
 446 *Chlamydomonas tetragama* AJ001880
 692 *Chlorogonium capillatum* AB010230
 742 *Chlorogonium capillatum* AB010234
 743 *Chlorogonium capillatum* AB010235
 744 *Chlorogonium capillatum* AB010236
 745 *Chlorogonium capillatum* AB010231
 746 *Chlorogonium capillatum* AB010232
 747 *Chlorogonium capillatum* AB010233
 748 *Chlorogonium capillatum* AB010237
 749 *Chlorogonium capillatum* AB010238
 750 *Chlorogonium capillatum* AB010239
 751 *Chlorogonium elongatum* AJ001881
 752 *Chlorogonium elongatum* AB010240

753 *Chlorogonium elongatum* AB010241
 754 *Chlorogonium euchlorum* AB010226
 755 *Chlorogonium euchlorum* AB010227
 756 *Chlorogonium euchlorum* AB010228
 757 *Chlorogonium euchlorum* AB010224
 758 *Chlorogonium euchlorum* AJ001882
 759 *Chlorogonium euchlorum* AB010225
 760 *Chlorogonium euchlorum* AB010229
 123 *Chlorogonium fusiforme* AB010242
 761 *Chlorogonium kasakii* AB010244
 439 *Chlorogonium neglectum* AB010243
 447 *Chloromonas insignis* AB022226
 722 *Eudorina cylindrica* D86833
 721 *Eudorina elegans* var. *carteri* D88806
 456 *Eudorina elegans* var. *elegans* D63432
 717 *Eudorina elegans* var. *elegans* D88803
 718 *Eudorina elegans* var. *elegans* D88810
 719 *Eudorina elegans* var. *elegans* D88804
 720 *Eudorina elegans* var. *elegans* D88805
 458 *Eudorina elegans* var. *synoica* D88807
 568 *Eudorina elegans* var. *synoica* D88808
 460 *Eudorina illinoisensis* D63433
 723 *Eudorina illinoisensis* D88809
 856 *Eudorina minodii* AB047074-6
 726 *Eudorina unicocca*
 var. *peripheralis* D86830
 724 *Eudorina unicocca*
 var. *unicocca* D86829
 725 *Eudorina unicocca*
 var. *unicocca* D63434
 737 *Gonium multicocccum* D63435
 569 *Gonium pectorale* var. *pectorale* D63437
 653 *Gonium quadratum* D63438
 289 *Gonium viridistellatum* AB076091
 654 *Gonium viridistellatum* D86831
 857 *Gonium viridistellatum* AB076092-3
 144 *Haematococcus lacustris* AB084336-7
 257 *Hafniomonas montana* AB101509-10
 656 *Hafniomonas montana* AB101511-2
 474 *Lobomonas monstrosa* AB044171
 572 *Pandorina colemaniae* D63441
 886 *Pandorina morum* AB044167
 887 *Pandorina morum* AB044166
 889 *Pandorina morum* AB044165
 890 *Pandorina morum* AB044164
 574 *Pandorina morum* var. *morum* D63442
 727 *Paulschulzia pseudovolvox* D86837
 213 *Pediastrum duplex* AB084333
 858 *Phacotus lenticularis* AJ001883
 859 *Phacotus lenticularis* AJ001884
 728 *Platydorina caudata* D86828
 729 *Platydorina caudata* D86827
 735 *Pleodorina californica* D63439
 736 *Pleodorina indica* D86834
 577 *Pleodorina japonica* D63440
 522 *Pseudocarteria mucosa* AB084335
 861 *Pteromonas angulosa* AJ001887

862	<i>Pteromonas angulosa</i>	AJ001888	979	<i>Synechococcus</i> sp.	AF448109
96	<i>Scenedesmus quadricauda</i>	AB084332	980	<i>Synechococcus</i> sp.	AF448097
571	<i>Tetrabaena socialis</i> var. <i>socialis</i>	D63443	981	<i>Synechococcus</i> sp.	AF448085
875	<i>Vitreochlamys aulata</i>	AB050486-7	982	<i>Synechococcus</i> sp.	AF448113
876	<i>Vitreochlamys aulata</i>	AB050488-9	983	<i>Synechococcus</i> sp.	AF448104
877	<i>Vitreochlamys aulata</i>	AB050492	984	<i>Synechococcus</i> sp.	AF448087
878	<i>Vitreochlamys aulata</i>	AB050493	985	<i>Synechococcus</i> sp.	AF448102
879	<i>Vitreochlamys fluviatilis</i>	AB050484			
880	<i>Vitreochlamys gloeocystiformis</i>	AB050485			
881	<i>Vitreochlamys nekrašovii</i>	AB050494			
882	<i>Vitreochlamys ordinata</i>	AB014041			
883	<i>Vitreochlamys pinguis</i>	AB050490-1			
891	<i>Volvox aureus</i>	AB076096			
892	<i>Volvox aureus</i>	AB076086			
541	<i>Volvox aureus</i> var. <i>aureus</i>	D63445			
730	<i>Volvox barberi</i>	D86835			
732	<i>Volvox carteri</i> f. <i>kawasakensis</i>	D63446			
731	<i>Volvox dissipatrix</i>	D63447			
734	<i>Volvox rousseletii</i>	D63448			
893	<i>Volvulina boldii</i>	AB044162-3			
582	<i>Volvulina compacta</i>	D86832			
895	<i>Volvulina pringsheimii</i>	D63444			
545	<i>Volvulina steinii</i>	AB044159			
896	<i>Volvulina steinii</i>	AB044160			
898	<i>Volvulina steinii</i>	AB044161			
578	<i>Yamagishiella unicocca</i>	AB000811			
666	<i>Yamagishiella unicocca</i>	D86823			
762	<i>Yamagishiella unicocca</i>	AB000810			
872	<i>Yamagishiella unicocca</i>	AB044168			

rbcL-462 intron

Chlorophyceae

418	<i>Astrephomene gubernaculifera</i>	AB076095
289	<i>Gonium viridistellatum</i>	AB076091
654	<i>Gonium viridistellatum</i>	AB076090
857	<i>Gonium viridistellatum</i>	AB076092
875	<i>Vitreochlamys aulata</i>	AB076097
892	<i>Volvox aureus</i>	AB076086
582	<i>Volvulina compacta</i>	AB076089

rpoC1 gene

Cyanophyceae

104	<i>Microcystis aeruginosa</i>	AB074794
969	<i>Synechococcus</i> sp.	AF448082
971	<i>Synechococcus</i> sp.	AF448083
972	<i>Synechococcus</i> sp.	AF448117
974	<i>Synechococcus</i> sp.	AF448101
975	<i>Synechococcus</i> sp.	AF448099
976	<i>Synechococcus</i> sp.	AF448100
977	<i>Synechococcus</i> sp.	AF448105
978	<i>Synechococcus</i> sp.	AF448084

rpoD1 gene

Cyanophyceae

104	<i>Microcystis aeruginosa</i>	AB074821
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trnD, *I*, *T* etc.

Bacillariophyceae

323	<i>Skeletonema costatum</i>	AJ132265
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tufA gene

Phaeophyceae

548	<i>Acinetospora crinita</i>	AF038004
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ycf24, partial

Bacillariophyceae

323	<i>Skeletonema costatum</i>	AJ132267
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108	<i>Microcystis aeruginosa</i>	163	<i>Closterium calosporum</i> var. <i>galiciense</i>
109	<i>Microcystis aeruginosa</i>	164	<i>Closterium calosporum</i> var. <i>galiciense</i>
110	<i>Microcystis aeruginosa</i>	165	<i>Closterium calosporum</i> var. <i>galiciense</i>
111	<i>Microcystis aeruginosa</i>	166	<i>Closterium calosporum</i> var. <i>galiciense</i>
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179 *Closterium gracile*
180 *Closterium gracile*
181 *Closterium incurvum*
182 *Closterium moniliferum* var. *submoniliferum*
183 *Closterium moniliferum* var. *submoniliferum*
185 *Closterium pusillum* var. *maius*
186 *Closterium spinosporum* var. *crassum*
187 *Closterium spinosporum* var. *crassum*
188 *Closterium spinosporum* var. *malaysiense*
189 *Closterium spinosporum* var. *malaysiense*
191 *Closterium spinosporum* var. *ryukyuense*
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194 *Closterium spinosporum* var. *spinosporum*
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196 *Closterium spinosporum* var. *spinosporum*
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208 *Oscillatoria rosea*
209 *Pediastrum boryanum*
210 *Pediastrum duplex* var. *duplex*
211 *Pediastrum duplex* var. *gracillimum*
212 *Pediastrum duplex*
213 *Pediastrum duplex* var. *duplex*
214 *Pediastrum duplex* var. *gracillimum*
215 *Pediastrum simplex*
216 *Pediastrum tetras*
217 *Penium margaritaceum*
218 *Prorocentrum micans*
219 *Prorocentrum triestinum*
220 *Alexandrium catenella*
221 *Pterosperma cristatum*
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230 *Merismopedia tenuissima*
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233 *Synura petersenii*
234 *Synura spinosa*
235 *Heterocapsa triquetra*
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238 *Prorocentrum minimum*
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243 *Pandorina morum*
244 *Coelastrum astroideum*
245 *Coelastrum reticulatum* var. *reticulatum*
246 *Schroederia setigera*
247 *Gonatozygon monotaenium*
248 *Cosmocladium constrictum*
251 *Pyramimonas* aff. *amylifera*
252 *Nephroselmis astigmatica*
253 *Euglena clara*
254 *Pyramimonas parkeae*
255 *Monomastix minuta*
256 *Monomastix minuta*
257 *Hafniomonas montana*
258 *Closterium aciculare* var. *subpronum*
259 *Closterium aciculare* var. *subpronum*
261 *Closterium peracerosum-strigosum-littorale* complex
262 *Closterium peracerosum-strigosum-littorale* complex
263 *Anabaena spiroides* f. *spiroides*
265 *Asterionella glacialis*
266 *Calothrix crustacea*
267 *Calothrix parasitica*
268 *Calothrix scopulorum*
271 *Closterium calosporum* var. *calosporum*
274 *Cryptomonas ovata*
275 *Cryptomonas ovata*
276 *Cryptomonas platyuris*
277 *Cryptomonas rostratiformis*
278 *Cryptomonas rostratiformis*
279 *Cryptomonas tetrapyrenoidosa*
280 *Cryptomonas tetrapyrenoidosa*
281 *Cryptomonas tetrapyrenoidosa*
282 *Cryptomonas tetrapyrenoidosa*
284 *Dinobryon divergens*
285 *Docidium undulatum* var. *undulatum*
286 *Euglena mutabilis*
287 *Gonatozygon monotaenium*
288 *Gonium viridistellatum*
289 *Gonium viridistellatum*
290 *Gonium viridistellatum*

- 293 *Heterosigma akashiwo*
 294 *Hyalotheca dissiliens*
 var. *dissiliens* f. *tridentula*
 295 *Hydrodictyon reticulatum*
 296 *Mesostigma viride*
 297 *Micrasterias foliacea* var. *foliacea*
 298 *Microcystis aeruginosa*
 299 *Microcystis aeruginosa*
 300 *Pediastrum angulosum* var. *angulosum*
 301 *Pediastrum boryanum*
 302 *Pediastrum simplex*
 303 *Penium margaritaceum*
 304 *Peridinium willei*
 305 *Phormidium ramosum*
 306 *Pleurotaenium cylindricum* var. *stuhlmannii*
 307 *Pleurotaenium ehrenbergii* var. *curtum*
 308 *Pleurotaenium ehrenbergii* var. *curtum*
 309 *Pleurotaenium ehrenbergii* var. *ehrenbergii*
 310 *Pleurotaenium ehrenbergii* var. *ehrenbergii*
 311 *Pleurotaenium ehrenbergii* var. *curtum*
 312 *Pleurotaenium nodosum* var. *nodosum*
 313 *Pleurotaenium ovatum*
 315 *Prorocentrum gracile*
 316 *Prorocentrum micans*
 318 *Protoceratium reticulatum*
 319 *Protoceratium reticulatum*
 320 *Pyramimonas* aff. *amylifera*
 321 *Pyrophacus steinii*
 323 *Skeletonema costatum*
 324 *Skeletonema costatum*
 325 *Spinoclosterium cuspidatum*
 329 *Ulothrix variabilis*
 330 *Achnanthes subconstricta*
 331 *Amphidinium carterae*
 333 *Melosira granulata*
 var. *angustissima* f. *spiralis*
 334 *Calothrix parasitica*
 336 *Closterium calosporum* var. *himalayense*
 337 *Closterium incurvum*
 338 *Closterium rostratum* var. *subrostratum*
 339 *Closterium selenastrum*
 340 *Closterium selenastrum*
 341 *Closterium spinosporum* var. *crassum*
 342 *Coelastrum astroideum*
 343 *Coolia monotis*
 344 *Cryptomonas platyuris*
 345 *Cryptomonas rostratiformis*
 346 *Cryptomonas tetrapyrenoidosa*
 347 *Cryptomonas tetrapyrenoidosa*
 348 *Cryptomonas tetrapyrenoidosa*
 349 *Cylindrocystis brebissonii* var. *brebissonii*
 350 *Ditylum brightwellii*
 351 *Eudorina elegans*
 353 *Gephyrocapsa oceanica*
 356 *Katodinium rotundatum*
 359 *Oltmannsiellopsis unicellularis*
 360 *Oltmannsiellopsis viridis*
 361 *Oscillatoria amphibia*
 362 *Pandorina morum*
 363 *Pedinomonas minor*
 365 *Peridinium volzii*
 366 *Peridinium willei*
 369 *Scrippsiella trochoidea*
 372 *Achnanthes minutissima* var. *saprophila*
 375 *Brachiomonas submarina*
 376 *Ceratium hirundinella*
 377 *Chaetoceros sociale*
 378 *Dictyochloropsis irregularis*
 379 *Eremosphaera gigas*
 380 *Eremosphaera viridis*
 381 *Eutreptiella gymnastica*
 382 *Lagerheimia ciliata*
 384 *Monoraphidium contortum*
 385 *Monoraphidium griffithii*
 387 *Phacus agilis*
 388 *Phaeocystis globosa*
 390 *Staurastrum inconspicuum*
 391 *Fragilaria capucina*
 392 *Tetraëdron incus*
 394 *Treubaria triappendiculata*
 395 *Uroglena americana*
 396 *Volvox aureus*
 397 *Volvox carteri*
 398 *Volvox carteri*
 403 *Tetrahymena pyriformis*
 405 *Amphidinium britannicum*
 407 *Achnanthes minutissima*
 408 *Achnanthes minutissima*
 409 *Achnanthes minutissima*
 410 *Achnanthes minutissima*
 411 *Achnanthes minutissima*
 412 *Achnanthes minutissima*
 413 *Achnanthes minutissima*
 414 *Achnanthes minutissima*
 415 *Actinastrum hantzschii*
 416 *Aphanocapsa montana*
 417 *Asterionella glacialis*
 418 *Astrephomene gubernaculifera*
 419 *Astrephomene gubernaculifera*
 420 *Cachonina niei*

421	<i>Carteria crucifera</i>	478	<i>Microcystis aeruginosa</i>
422	<i>Carteria inversa</i>	479	<i>Microthamnion kützingianum</i>
423	<i>Carteria inversa</i>	480	<i>Monoraphidium circinale</i>
424	<i>Carteria cerasiformis</i>	481	<i>Myxosarcina burmensis</i>
425	<i>Carteria cerasiformis</i>	483	<i>Nephroselmis olivacea</i>
426	<i>Carteria klebsii</i>	484	<i>Nephroselmis olivacea</i>
427	<i>Carteria multifilis</i>	485	<i>Nephroselmis olivacea</i>
428	<i>Carteria obtusa</i>	486	<i>Nephroselmis viridis</i>
429	<i>Carteria obtusa</i>	487	<i>Nitzschia palea</i>
430	<i>Carteria obtusa</i>	488	<i>Nitzschia palea</i>
431	<i>Carteria obtusa</i>	489	<i>Nitzschia palea</i>
432	<i>Carteria radiosa</i>	494	<i>Oxyrrhis marina</i>
433	<i>Chamaesiphon polymorphus</i>	495	<i>Peridinium bipes</i> f. <i>globosum</i>
434	<i>Chamaesiphon subglobosus</i>	497	<i>Peridinium bipes</i> f. <i>occultatum</i>
436	<i>Characium polymorphum</i>	499	<i>Peridinium inconspicuum</i> subsp. <i>remotum</i>
437	<i>Chlamydomonas fasciata</i>	501	<i>Peridinium volzii</i>
438	<i>Chlamydomonas monadina</i> var. <i>monadina</i>	503	<i>Phormidium foveolarum</i>
439	<i>Chlorogonium neglectum</i>	504	<i>Phormidium foveolarum</i>
440	<i>Chlamydomonas parkeae</i>	505	<i>Phormidium foveolarum</i>
446	<i>Chlamydomonas tetragama</i>	506	<i>Phormidium jenkelianum</i>
447	<i>Chloromonas insignis</i>	507	<i>Phormidium jenkelianum</i>
448	<i>Closterium acerosum</i>	509	<i>Phormidium molle</i>
449	<i>Closterium pleurodermatum</i>	510	<i>Phormidium mucicola</i>
450	<i>Closterium praelongum</i> var. <i>brevius</i>	512	<i>Phormidium tenue</i>
451	<i>Closterium praelongum</i> var. <i>brevius</i>	514	<i>Planctonema lauterbornii</i>
452	<i>Cosmarium hians</i>	515	<i>Plectonema radiosum</i>
453	<i>Dictyosphaerium pulchellum</i>	519	<i>Alexandrium catenella</i>
454	<i>Draparnaldia plumosa</i>	520	<i>Alexandrium catenella</i>
455	<i>Errerella bornhemiensis</i>	522	<i>Pseudocarteria mucosa</i>
456	<i>Eudorina elegans</i> var. <i>elegans</i>	523	<i>Pseudocarteria mucosa</i>
457	<i>Eudorina elegans</i> var. <i>elegans</i>	524	<i>Pseudocarteria mucosa</i>
458	<i>Eudorina elegans</i> var. <i>synoica</i>	527	<i>Spirulina subsalsa</i>
459	<i>Eudorina illinoisensis</i>	528	<i>Staurastrum paradoxum</i>
460	<i>Eudorina illinoisensis</i>	529	<i>Stichococcus bacillaris</i>
461	<i>Eunotia pectinalis</i> var. <i>minor</i>	530	<i>Stichococcus bacillaris</i>
462	<i>Fibrocapsa japonica</i>	531	<i>Stigeoclonium aestivale</i>
463	<i>Glenodiniopsis uliginosa</i>	532	<i>Stigeoclonium fasciculare</i> var. <i>fasciculare</i>
464	<i>Gloeomonas lateperforata</i>	533	<i>Tetraselmis cordiformis</i>
465	<i>Gomphonema gracile</i> var. <i>gracile</i>	534	<i>Thalassionema nitzschioides</i>
466	<i>Gomphonema parvulum</i> var. <i>parvulum</i>	536	<i>Ulothrix zonata</i>
467	<i>Gomphonema parvulum</i> var. <i>parvulum</i>	537	<i>Ulothrix zonata</i>
468	<i>Gonium pectorale</i> var. <i>pectorale</i>	538	<i>Uronema confervicolum</i>
469	<i>Gonium pectorale</i> var. <i>pectorale</i>	539	<i>Uronema gigas</i>
471	<i>Hemidinium nasutum</i>	540	<i>Uronema gigas</i>
472	<i>Heterocapsa pygmaea</i>	541	<i>Volvox aureus</i> var. <i>aureus</i>
473	<i>Heterocapsa pygmaea</i>	542	<i>Volvox aureus</i> var. <i>aureus</i>
474	<i>Lobomonas monstrosa</i>	543	<i>Volvox prolificus</i>
475	<i>Mesostigma viride</i>	544	<i>Volvox tertius</i>
476	<i>Mesostigma viride</i>	545	<i>Volvulina steinii</i>
477	<i>Mesostigma viride</i>	546	<i>Volvulina steinii</i>

- 547 *Cyanophora paradoxa*
548 *Acinetospora crinita*
553 *Chaetoceros sociale*
556 *Triceratium dubium*
557 *Chattonella antiqua*
558 *Chattonella antiqua*
559 *Chattonella marina*
560 *Fibrocapsa japonica*
561 *Heterosigma akashiwo*
562 *Chrysochromulina parva*
564 *Astrephomene perforata*
565 *Astrephomene perforata*
566 *Basichlamys sacculifera*
567 *Characiochloris sasae*
568 *Eudorina elegans* var. *synoica*
569 *Gonium pectorale* var. *pectorale*
570 *Gonium pectorale* var. *pectorale*
571 *Tetrabaena socialis* var. *socialis*
572 *Pandorina colemaniae*
573 *Pandorina colemaniae*
574 *Pandorina morum* var. *morum*
575 *Pandorina morum* var. *morum*
576 *Pleodorina californica*
577 *Pleodorina japonica*
578 *Yamagishiella unicocca*
579 *Yamagishiella unicocca*
580 *Volvox carteri* f. *kawasakiensis*
581 *Volvox carteri* f. *kawasakiensis*
582 *Volvulina compacta*
583 *Volvulina compacta*
584 *Volvulina steinii*
585 *Volvulina steinii*
586 *Chaetoceros didymus*
587 *Hantzschia amphioxys* var. *compacta*
588 *Lithodesmium variabile*
589 *Odontella aurita*
590 *Odontella longicuris*
592 *Fischerella major*
593 *Hydrococcus rivularis*
594 *Planktothrix agardhii*
595 *Planktothrix agardhii*
596 *Planktothrix agardhii*
597 *Spirulina platensis*
598 *Spirulina subsalsa*
600 *Peridinium bipes* var. *tabulatum*
601 *Prorocentrum micans*
603 *Chattonella ovata*
604 *Microcystis aeruginosa*
605 *Fibrocapsa japonica*
608 *Prorocentrum micans*
609 *Pyrocystis lunura*
610 *Planktothrix rubescens*
611 *Phormidium tenue*
612 *Alexandrium hiranoi*
613 *Amphidinium klebsii*
614 *Cachonina niei*
615 *Coolia monotis*
617 *Prorocentrum lima*
618 *Prorocentrum mexicanum*
619 *Woloszynskia leopoliense*
620 *Gomphonema angustatum* var. *obtusatum*
621 *Botrydiopsis arrhiza*
622 *Botrydium granulatum*
623 *Pavlova gyrans*
624 *Chlorarachnion reptans*
626 *Pterosperma cristatum*
628 *Astrephomene gubernaculifera*
629 *Chlorella protothecoides*
630 *Carteria crucifera*
631 *Carteria eugametos*
632 *Carteria eugametos*
633 *Carteria eugametos*
634 *Carteria eugametos*
635 *Carteria eugametos*
636 *Carteria eugametos*
637 *Characiochloris acuminata*
638 *Characiochloris sasae*
639 *Characium angustum*
640 *Chlorella saccharophila*
641 *Chlorella vulgaris* var. *vulgaris*
642 *Chlorella vulgaris* var. *vulgaris*
643 *Eremosphaera viridis*
644 *Eremosphaera viridis*
645 *Gonium pectorale* var. *pectorale*
646 *Gonium pectorale* var. *pectorale*
647 *Gonium quadratum*
648 *Gonium quadratum*
649 *Gonium quadratum*
650 *Gonium quadratum*
651 *Gonium quadratum*
652 *Gonium quadratum*
653 *Gonium quadratum*
654 *Gonium viridistellatum*
655 *Gonium viridistellatum*
656 *Hafniomonas montana*
657 *Mesotaenium kramstae*
658 *Mesotaenium kramstae*
659 *Oocystis borgei*
660 *Oocystis lacustris*
661 *Oocystis lacustris*

662	<i>Oocystis lacustris</i>	717	<i>Eudorina elegans</i> var. <i>elegans</i>
663	<i>Pleurotaenium nodosum</i> var. <i>borgei</i>	718	<i>Eudorina elegans</i> var. <i>elegans</i>
664	<i>Pleurotaenium nodosum</i> var. <i>borgei</i>	719	<i>Eudorina elegans</i> var. <i>elegans</i>
665	<i>Staurastrum dorcidentiferum</i>	720	<i>Eudorina elegans</i> var. <i>elegans</i>
666	<i>Yamagishiella unicocca</i>	721	<i>Eudorina elegans</i> var. <i>carteri</i>
667	<i>Yamagishiella unicocca</i>	722	<i>Eudorina cylindrica</i>
668	<i>Paramecium bursaria</i>	723	<i>Eudorina illinoisensis</i>
670	<i>Chattonella verruculosa</i>	724	<i>Eudorina unicocca</i> var. <i>unicocca</i>
671	<i>Chattonella ovata</i>	725	<i>Eudorina unicocca</i> var. <i>unicocca</i>
672	<i>Oltmannsiellopsis geminata</i>	726	<i>Eudorina unicocca</i> var. <i>peripheralis</i>
674	<i>Alexandrium catenella</i>	727	<i>Paulschulzia pseudovolvox</i>
675	<i>Alexandrium catenella</i>	728	<i>Platydorina caudata</i>
677	<i>Alexandrium catenella</i>	729	<i>Platydorina caudata</i>
678	<i>Alexandrium insuetum</i>	730	<i>Volvox barberi</i>
680	<i>Gymnodinium mikimotoi</i>	731	<i>Volvox dissipatrix</i>
682	<i>Prorocentrum dentatum</i>	732	<i>Volvox carteri</i> f. <i>kawasakiensis</i>
683	<i>Prorocentrum sigmoides</i>	733	<i>Volvox carteri</i> f. <i>kawasakiensis</i>
684	<i>Scrippsiella sweeneyae</i>	734	<i>Volvox rousseletii</i>
685	<i>Scenedesmus abundans</i>	735	<i>Pleodorina californica</i>
686	<i>Chlorella vulgaris</i> var. <i>vulgaris</i>	736	<i>Pleodorina indica</i>
687	<i>Graesiella emersonii</i>	737	<i>Gonium multicocum</i>
688	<i>Graesiella emersonii</i>	738	<i>Pteromonas aculeata</i>
689	<i>Graesiella emersonii</i>	739	<i>Pteromonas angulosa</i>
690	<i>Graesiella emersonii</i>	740	<i>Pteromonas multipyrenoidea</i>
691	<i>Tetraabaena socialis</i>	741	<i>Chrysochromulina hirta</i>
692	<i>Chlorogonium capillatum</i>	742	<i>Chlorogonium capillatum</i>
693	<i>Volvox aureus</i>	743	<i>Chlorogonium capillatum</i>
694	<i>Volvox aureus</i>	744	<i>Chlorogonium capillatum</i>
695	<i>Synura sphagnicola</i>	745	<i>Chlorogonium capillatum</i>
696	<i>Synura sphagnicola</i>	746	<i>Chlorogonium capillatum</i>
697	<i>Cryptomonas acuta</i>	747	<i>Chlorogonium capillatum</i>
698	<i>Cryptomonas irregularis</i>	748	<i>Chlorogonium capillatum</i>
699	<i>Rhodomonas atrorosea</i>	749	<i>Chlorogonium capillatum</i>
700	<i>Rhodomonas baltica</i>	750	<i>Chlorogonium capillatum</i>
701	<i>Rhodomonas chrysoidea</i>	751	<i>Chlorogonium elongatum</i>
702	<i>Rhodomonas falcata</i>	752	<i>Chlorogonium elongatum</i>
703	<i>Chroomonas collegionis</i>	753	<i>Chlorogonium elongatum</i>
704	<i>Chroomonas dispersa</i>	754	<i>Chlorogonium euchlorum</i>
705	<i>Chroomonas placoidea</i>	755	<i>Chlorogonium euchlorum</i>
706	<i>Chroomonas nordstedtii</i>	756	<i>Chlorogonium euchlorum</i>
707	<i>Chroomonas nordstedtii</i>	757	<i>Chlorogonium euchlorum</i>
708	<i>Chroomonas nordstedtii</i>	758	<i>Chlorogonium euchlorum</i>
709	<i>Chroomonas nordstedtii</i>	759	<i>Chlorogonium euchlorum</i>
710	<i>Chroomonas nordstedtii</i>	760	<i>Chlorogonium euchlorum</i>
711	<i>Chroomonas nordstedtii</i>	761	<i>Chlorogonium kasakii</i>
712	<i>Chroomonas caudata</i>	762	<i>Yamagishiella unicocca</i>
713	<i>Chroomonas coerulea</i>	763	<i>Cyanophora paradoxa</i>
714	<i>Chroomonas coerulea</i>	764	<i>Cyanophora tetracyanea</i>
715	<i>Chilomonas paramecium</i>	765	<i>Rhodomonas duplex</i>
716	<i>Haramonas dimorpha</i>	766	<i>Chilomonas paramecium</i>

767	<i>Chilomonas paramecium</i>	818	<i>Anabaena smithii</i>
768	<i>Cosmarium askenasyi</i>	819	<i>Anabaena smithii</i>
769	<i>Cosmarium askenasyi</i>	820	<i>Anabaena smithii</i>
770	<i>Cosmarium askenasyi</i>	821	<i>Anabaena smithii</i>
771	<i>Cosmarium askenasyi</i>	822	<i>Anabaena smithii</i>
772	<i>Euastrum turgidum</i>	823	<i>Anabaena smithii</i>
773	<i>Euastrum turgidum</i>	824	<i>Anabaena smithii</i>
774	<i>Micrasterias anomala</i>	825	<i>Anabaena ucrainica</i>
776	<i>Micrasterias anomala</i>	826	<i>Anabaena ucrainica</i>
777	<i>Micrasterias foliacea</i>	827	<i>Anabaena viguieri</i>
778	<i>Micrasterias foliacea</i>	828	<i>Anabaena ellipsoides</i>
779	<i>Micrasterias mahabuleshwarensis</i>	829	<i>Anabaena oumiana</i>
780	<i>Micrasterias mahabuleshwarensis</i>	830	<i>Anabaena smithii</i>
781	<i>Micrasterias thomasi</i> var. <i>notata</i>	831	<i>Anabaena smithii</i>
782	<i>Micrasterias thomasi</i> var. <i>notata</i>	832	<i>Anabaena ucrainica</i>
783	<i>Micrasterias truncata</i> var. <i>pusilla</i>	833	<i>Anabaena lemmermannii</i>
784	<i>Micrasterias truncata</i> var. <i>pusilla</i>	834	<i>Anabaena planktonica</i>
785	<i>Pleurotaenium nodosum</i> var. <i>nodosum</i>	835	<i>Anabaena compacta</i>
786	<i>Pleurotaenium nodosum</i> var. <i>nodosum</i>	836	<i>Botryococcus braunii</i>
787	<i>Pleurotaenium nodosum</i> var. <i>gutwinski</i>	837	<i>Emiliana huxleyi</i>
788	<i>Pleurotaenium nodosum</i> var. <i>gutwinski</i>	838	<i>Gephyrocapsa oceanica</i>
789	<i>Triploceras gracile</i>	839	<i>Cosmarium dilatatum</i>
790	<i>Triploceras gracile</i>	840	<i>Euastrum biverrucosum</i>
791	<i>Triploceras gracile</i>	841	<i>Staurastrum levanderi</i>
792	<i>Triploceras gracile</i>	842	<i>Staurastrum tsukubicum</i>
793	<i>Triploceras gracile</i>	843	<i>Microcystis aeruginosa</i>
794	<i>Triploceras gracile</i>	844	<i>Planktothrix mougeotii</i>
795	<i>Triploceras gracile</i>	845	<i>Planktothrix pseudagardhii</i>
796	<i>Triploceras gracile</i>	846	<i>Tychonema bourrellyi</i>
797	<i>Scenedesmus gutwinski</i> var. <i>heterospina</i>	847	<i>Limnothrix redekei</i>
798	<i>Scenedesmus gutwinski</i> var. <i>heterospina</i>	848	<i>Chattonella minima</i>
799	<i>Scenedesmus gutwinski</i> var. <i>heterospina</i>	849	<i>Chattonella ovata</i>
800	<i>Scenedesmus gutwinski</i> var. <i>heterospina</i>	850	<i>Chattonella verruculosa</i>
801	<i>Scenedesmus gutwinski</i> var. <i>heterospina</i>	851	<i>Gonium octonarium</i>
802	<i>Scenedesmus gutwinski</i> var. <i>heterospina</i>	852	<i>Gonium octonarium</i>
803	<i>Cyclotella meneghiniana</i>	853	<i>Astrephomene gubernaculifera</i>
804	<i>Cyclotella meneghiniana</i>	854	<i>Astrephomene gubernaculifera</i>
805	<i>Cyclotella meneghiniana</i>	855	<i>Astrephomene gubernaculifera</i>
806	<i>Anabaena compacta</i>	856	<i>Eudorina minodii</i>
807	<i>Anabaena kisseleviana</i>	857	<i>Gonium viridistellatum</i>
808	<i>Anabaena mendotae</i>	858	<i>Phacotus lenticularis</i>
809	<i>Anabaena mucosa</i>	859	<i>Phacotus lenticularis</i>
810	<i>Anabaena planktonica</i>	860	<i>Pteromonas aculeata</i>
811	<i>Anabaena planktonica</i>	861	<i>Pteromonas angulosa</i>
812	<i>Anabaena planktonica</i>	862	<i>Pteromonas angulosa</i>
813	<i>Anabaena planktonica</i>	863	<i>Volvox africanus</i>
814	<i>Anabaena planktonica</i>	864	<i>Volvox aureus</i>
815	<i>Anabaena planktonica</i>	865	<i>Volvox carteri</i> f. <i>nagariensis</i>
816	<i>Anabaena planktonica</i>	866	<i>Volvox carteri</i> f. <i>weismannia</i>
817	<i>Anabaena planktonica</i>	867	<i>Volvox gigas</i>

868	<i>Volvox obversus</i>	918	<i>Planktothricoides raciborskii</i>
869	<i>Volvox tertius</i>	919	<i>Planktothricoides raciborskii</i>
870	<i>Yamagishiella unicocca</i>	920	<i>Planktothricoides raciborskii</i>
871	<i>Yamagishiella unicocca</i>	921	<i>Planktothricoides raciborskii</i>
872	<i>Yamagishiella unicocca</i>	922	<i>Planktothricoides raciborskii</i>
873	<i>Yamagishiella unicocca</i>	923	<i>Planktothricoides raciborskii</i>
874	<i>Yamagishiella unicocca</i>	924	<i>Planktothricoides raciborskii</i>
875	<i>Vitreochlamys aulata</i>	925	<i>Planktothricoides raciborskii</i>
876	<i>Vitreochlamys aulata</i>	926	<i>Planktothricoides raciborskii</i>
877	<i>Vitreochlamys aulata</i>	927	<i>Planktothricoides raciborskii</i>
878	<i>Vitreochlamys aulata</i>	928	<i>Planktothrix rubescens</i>
879	<i>Vitreochlamys fluviatilis</i>	929	<i>Lyngbya hieronymusii</i> var. <i>hieronymusii</i>
880	<i>Vitreochlamys gloeocystiformis</i>	930	<i>Cylindrospermopsis raciborskii</i>
881	<i>Vitreochlamys nekrassovii</i>	931	<i>Gloeocapsa decorticans</i>
882	<i>Vitreochlamys ordinata</i>	932	<i>Raphidiopsis curvata</i>
883	<i>Vitreochlamys pinguis</i>	933	<i>Microcystis aeruginosa</i>
884	<i>Chlamydomonas debaryana</i> var. <i>crystata</i>	934	<i>Nephroselmis spinosa</i>
885	<i>Gonium multicoecum</i>	935	<i>Nephroselmis spinosa</i>
886	<i>Pandorina morum</i>	936	<i>Pterosperma cristatum</i>
887	<i>Pandorina morum</i>	937	<i>Synechococcus</i> sp.
888	<i>Pandorina morum</i>	938	<i>Synechococcus</i> sp.
889	<i>Pandorina morum</i>	939	<i>Synechococcus</i> sp.
890	<i>Pandorina morum</i>	940	<i>Synechococcus</i> sp.
891	<i>Volvox aureus</i>	941	<i>Synechococcus</i> sp.
892	<i>Volvox aureus</i>	942	<i>Synechococcus</i> sp.
893	<i>Volvulina boldii</i>	943	<i>Synechococcus</i> sp.
894	<i>Volvulina boldii</i>	944	<i>Synechococcus</i> sp.
895	<i>Volvulina pringsheimii</i>	945	<i>Synechococcus</i> sp.
896	<i>Volvulina steinii</i>	946	<i>Synechococcus</i> sp.
897	<i>Volvulina steinii</i>	947	<i>Synechococcus</i> sp.
898	<i>Volvulina steinii</i>	948	<i>Synechococcus</i> sp.
899	<i>Ceratium fusus</i>	949	<i>Synechococcus</i> sp.
900	<i>Prorocentrum dentatum</i>	950	<i>Synechococcus</i> sp.
901	<i>Microcystis aeruginosa</i>	951	<i>Synechococcus</i> sp.
902	<i>Microcystis aeruginosa</i>	952	<i>Synechococcus</i> sp.
903	<i>Microcystis aeruginosa</i>	953	<i>Synechococcus</i> sp.
904	<i>Microcystis aeruginosa</i>	954	<i>Synechococcus</i> sp.
905	<i>Planktothrix agardhii</i>	955	<i>Synechococcus</i> sp.
906	<i>Planktothrix agardhii</i>	956	<i>Synechococcus</i> sp.
907	<i>Planktothrix agardhii</i>	957	<i>Synechococcus</i> sp.
908	<i>Planktothrix agardhii</i>	958	<i>Synechococcus</i> sp.
909	<i>Planktothrix agardhii</i>	959	<i>Synechococcus</i> sp.
910	<i>Planktothrix agardhii</i>	960	<i>Synechococcus</i> sp.
911	<i>Planktothrix mougeotii</i>	961	<i>Synechococcus</i> sp.
912	<i>Planktothrix mougeotii</i>	962	<i>Synechococcus</i> sp.
913	<i>Planktothrix mougeotii</i>	963	<i>Synechococcus</i> sp.
914	<i>Planktothrix pseudagardhii</i>	964	<i>Synechococcus</i> sp.
915	<i>Planktothrix pseudagardhii</i>	965	<i>Synechococcus</i> sp.
916	<i>Planktothrix pseudagardhii</i>	966	<i>Glaucocystis nostochinearum</i>
917	<i>Planktothricoides raciborskii</i>	967	<i>Trentepohlia</i> sp.

- 968 *Chlamydomonas kuwadae*
969 *Synechococcus* sp.
970 *Synechococcus* sp.
971 *Synechococcus* sp.
972 *Synechococcus* sp.
973 *Synechococcus* sp.
974 *Synechococcus* sp.
975 *Synechococcus* sp.
976 *Synechococcus* sp.
977 *Synechococcus* sp.
978 *Synechococcus* sp.
979 *Synechococcus* sp.
980 *Synechococcus* sp.
981 *Synechococcus* sp.
982 *Synechococcus* sp.
983 *Synechococcus* sp.
984 *Synechococcus* sp.
985 *Synechococcus* sp.
986 *Synechococcus* sp.
987 *Synechococcus* sp.
988 *Synechococcus* sp.
989 *Planktothrix agardhii*
990 *Planktothrix agardhii*
991 *Cylindrospermopsis raciborskii*
992 *Cylindrospermopsis raciborskii*
993 *Cylindrospermopsis raciborskii*
994 *Cylindrospermopsis raciborskii*
995 *Mesostigma viride*
996 *Stichococcus ampulliformis*
997 *Calyptrosphaera sphaeroidea*
998 *Chrysochromulina quadrikonta*
999 *Emiliana huxleyi*
1000 *Gephyrocapsa oceanica*
1001 *Imantonia rotunda*
1002 *Glossomastix chrysoplata*
1003 *Pelagomonas calceolata*
1004 *Chroomonas coerulea*
1005 *Rhodomonas chrysoidea*
1006 *Rhodomonas salina*
1007 *Synura petersenii*
1008 *Pedinella squamata*
1009 *Gonyostomum semen*
1010 *Ophiocytium capitatum*
1011 *Cafeteria roenbergensis*
1012 *Placidia cafeteriopsis*
1013 *Placidia cafeteriopsis*
1014 *Wobblia lunata*
1015 *Hymenomonas coronata*
1016 *Prymnesium parvum*
1017 *Prymnesium parvum*
1018 *Prymnesium parvum*
1019 *Tetraselmis striata*
1020 *Apiocystis brauniana*
1021 *Chlamydomonas coccoides*
1022 *Chlamydomonas parkeae*
1023 *Spirogyra* sp.
1025 *Microcystis aeruginosa*
1026 *Microcystis aeruginosa*
1027 *Microcystis aeruginosa*
1028 *Microcystis aeruginosa*
1029 *Microcystis aeruginosa*
1031 *Chroogloeocystis siderophila*
1032 *Porphyridium* sp.
1033 *Porphyridium* sp.
1034 *Porphyridium* sp.
1035 *Porphyridium* sp.
1036 *Rhodella* sp.
1037 *Rhodella* sp.
1038 *Gonium multicocum*
1039 *Gonium multicocum*
1040 *Cylindrospermopsis raciborskii*
1041 *Cylindrospermopsis raciborskii*
1042 *Cylindrospermopsis raciborskii*
1043 *Microcystis aeruginosa*
1044 *Schizocladia ischiensis*
1045 *Cylindrotheca closterium*
1046 *Cylindrotheca fusiformis*
1047 *Cylindrotheca* sp.
1048 *Chlamydomonas noctigama*
1049 *Eucampia zodiacus*
1050 *Microcystis aeruginosa*
1051 *Microcystis aeruginosa*
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- 1171 *Microcystis aeruginosa*
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1256 *Microcystis aeruginosa*
1257 *Microcystis aeruginosa*
1258 *Aphanizomenon flos-aquae*
1259 *Cylindrospermopsis raciborskii*
1260 *Cylindrospermopsis raciborskii*
1261 *Cylindrospermopsis raciborskii*
1262 *Cylindrospermopsis raciborskii*
1263 *Planktothrix agardhii*
1264 *Planktothrix agardhii*
1265 *Planktothrix agardhii*
1266 *Planktothrix rubescens*
1267 *Planktothrix rubescens*
1268 *Amphidinium tetsudo*
1269 *Chlorella* sp.
1270 *Nanochlorum* sp.

- 1271 *Trebouxia anticipata*
 1272 *Trebouxia anticipata*
 1273 *Trebouxia anticipata*
 1274 *Trebouxia arboricola*
 1275 *Trebouxia arboricola*
 1276 *Trebouxia arboricola*
 1277 *Trebouxia arboricola*
 1278 *Trebouxia corticola*
 1279 *Trebouxia corticola*
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 1285 *Trebouxia corticola*
 1286 *Trebouxia corticola*
 1287 *Trebouxia corticola*
 1288 *Trebouxia corticola*
 1289 *Trebouxia higginsiae*
 1290 *Trebouxia higginsiae*
 1291 *Trebouxia higginsiae*
 1292 *Trebouxia higginsiae*
 1293 *Trebouxia higginsiae*
 1294 *Trebouxia higginsiae*
 1295 *Trebouxia higginsiae*
 1296 *Trebouxia higginsiae*
 1297 *Trebouxia showmanii*
 1298 *Asterochloris* cf. *glomerata*
 1299 *Asterochloris* cf. *glomerata*
 1300 *Asterochloris* cf. *glomerata*
 1301 *Asterochloris* cf. *glomerata*
 1302 *Glossomastix chrysoplata*
 1303 *Fibrocapsa japonica*
 1304 *Calcidiscus leptoporus*
 1305 *Calcidiscus leptoporus*
 1306 *Calcidiscus leptoporus*
 1307 *Calcidiscus leptoporus*
 1308 *Calyptrosphaera sphaeroidea*
 1309 *Calyptrosphaera sphaeroidea*
 1310 *Emiliana huxleyi*
 1311 *Emiliana huxleyi*
 1312 *Emiliana huxleyi*
 1313 *Emiliana huxleyi*
 1314 *Emiliana huxleyi*
 1315 *Gephyrocapsa oceanica*
 1316 *Gephyrocapsa oceanica*
 1317 *Gephyrocapsa oceanica*
 1318 *Gephyrocapsa oceanica*
 1319 *Gephyrocapsa oceanica*
 1320 *Oolithotus fragilis*
 1321 *Oolithotus fragilis*
 1322 *Oolithotus fragilis*
 1323 *Umbilicosphaera sibogae* var. *foliosa*
 1324 *Umbilicosphaera sibogae* var. *sibogae*
 1325 *Thoracosphaera heimii*
 1326 *Thoracosphaera heimii*
 1327 *Cryptomonas rostratiformis*
 1328 *Gephyrocapsa oceanica*
 1329 *Gephyrocapsa oceanica*
 1330 *Prymnesium calathiferum*

2. Systematic index

ALGAE

CYANOPHYTA (CYANOBACTERIA)

Cyanophyceae

<i>Anabaena affinis</i>	40	<i>Anabaena ucrainica</i>	825
<i>Anabaena circinalis</i>	41	<i>Anabaena ucrainica</i>	826
<i>Anabaena compacta</i>	806	<i>Anabaena ucrainica</i>	832
<i>Anabaena compacta</i>	835	<i>Anabaena variabilis</i>	23
<i>Anabaena cylindrica</i>	19	<i>Anabaena viguieri</i>	827
<i>Anabaena ellipsoides</i>	828	<i>Anabaenopsis circularis</i>	21
<i>Anabaena flos-aquae</i> f. <i>flos-aquae</i>	73	<i>Aphanizomenon flos-aquae</i>	1258
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<i>Anabaena kisseleviana</i>	807	<i>Aulosira laxa</i>	50
<i>Anabaena lemmermannii</i>	833	<i>Calothrix brevissima</i>	22
<i>Anabaena mendotae</i>	808	<i>Calothrix crustacea</i>	266
<i>Anabaena mucosa</i>	809	<i>Calothrix parasitica</i>	267
<i>Anabaena oumiana</i>	829	<i>Calothrix parasitica</i>	334
<i>Anabaena planktonica</i>	810	<i>Calothrix scopulorum</i>	268
<i>Anabaena planktonica</i>	811	<i>Chamaesiphon polymorphus</i>	433
<i>Anabaena planktonica</i>	812	<i>Chamaesiphon subglobosus</i>	434
<i>Anabaena planktonica</i>	813	<i>Chroogloeocystis siderophila</i>	1031
<i>Anabaena planktonica</i>	814	<i>Cylindrospermopsis raciborskii</i>	930
<i>Anabaena planktonica</i>	815	<i>Cylindrospermopsis raciborskii</i>	991
<i>Anabaena planktonica</i>	816	<i>Cylindrospermopsis raciborskii</i>	992
<i>Anabaena planktonica</i>	817	<i>Cylindrospermopsis raciborskii</i>	993
<i>Anabaena planktonica</i>	834	<i>Cylindrospermopsis raciborskii</i>	994
<i>Anabaena smithii</i>	818	<i>Cylindrospermopsis raciborskii</i>	1040
<i>Anabaena smithii</i>	819	<i>Cylindrospermopsis raciborskii</i>	1041
<i>Anabaena smithii</i>	820	<i>Cylindrospermopsis raciborskii</i>	1042
<i>Anabaena smithii</i>	821	<i>Cylindrospermopsis raciborskii</i>	1259
<i>Anabaena smithii</i>	822	<i>Cylindrospermopsis raciborskii</i>	1260
<i>Anabaena smithii</i>	823	<i>Cylindrospermopsis raciborskii</i>	1261
<i>Anabaena smithii</i>	824	<i>Cylindrospermopsis raciborskii</i>	1262
<i>Anabaena smithii</i>	830	<i>Fischerella major</i>	592
<i>Anabaena smithii</i>	831	<i>Gloeocapsa decorticans</i>	931
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<i>Anabaena spiroides</i>	76	<i>Limnothrix redekei</i>	847
<i>Anabaena spiroides</i> f. <i>crassa</i>	78	<i>Lyngbya hieronymusii</i> var. <i>hieronymusii</i>	929
<i>Anabaena spiroides</i> f. <i>spiroides</i>	77	<i>Merismopedia tenuissima</i>	230
<i>Anabaena spiroides</i> f. <i>spiroides</i>	79	<i>Microcystis aeruginosa</i>	44
<i>Anabaena spiroides</i> f. <i>spiroides</i>	263	<i>Microcystis aeruginosa</i>	87
		<i>Microcystis aeruginosa</i>	88
		<i>Microcystis aeruginosa</i>	89
		<i>Microcystis aeruginosa</i>	90
		<i>Microcystis aeruginosa</i>	91
		<i>Microcystis aeruginosa</i>	98
		<i>Microcystis aeruginosa</i>	99

<i>Microcystis aeruginosa</i>	100	<i>Microcystis aeruginosa</i>	1071
<i>Microcystis aeruginosa</i>	101	<i>Microcystis aeruginosa</i>	1072
<i>Microcystis aeruginosa</i>	102	<i>Microcystis aeruginosa</i>	1073
<i>Microcystis aeruginosa</i>	103	<i>Microcystis aeruginosa</i>	1074
<i>Microcystis aeruginosa</i>	104	<i>Microcystis aeruginosa</i>	1075
<i>Microcystis aeruginosa</i>	105	<i>Microcystis aeruginosa</i>	1076
<i>Microcystis aeruginosa</i>	106	<i>Microcystis aeruginosa</i>	1077
<i>Microcystis aeruginosa</i>	107	<i>Microcystis aeruginosa</i>	1078
<i>Microcystis aeruginosa</i>	108	<i>Microcystis aeruginosa</i>	1079
<i>Microcystis aeruginosa</i>	109	<i>Microcystis aeruginosa</i>	1080
<i>Microcystis aeruginosa</i>	110	<i>Microcystis aeruginosa</i>	1081
<i>Microcystis aeruginosa</i>	111	<i>Microcystis aeruginosa</i>	1082
<i>Microcystis aeruginosa</i>	112	<i>Microcystis aeruginosa</i>	1083
<i>Microcystis aeruginosa</i>	298	<i>Microcystis aeruginosa</i>	1084
<i>Microcystis aeruginosa</i>	299	<i>Microcystis aeruginosa</i>	1085
<i>Microcystis aeruginosa</i>	478	<i>Microcystis aeruginosa</i>	1086
<i>Microcystis aeruginosa</i>	604	<i>Microcystis aeruginosa</i>	1087
<i>Microcystis aeruginosa</i>	843	<i>Microcystis aeruginosa</i>	1088
<i>Microcystis aeruginosa</i>	901	<i>Microcystis aeruginosa</i>	1089
<i>Microcystis aeruginosa</i>	902	<i>Microcystis aeruginosa</i>	1090
<i>Microcystis aeruginosa</i>	903	<i>Microcystis aeruginosa</i>	1091
<i>Microcystis aeruginosa</i>	904	<i>Microcystis aeruginosa</i>	1092
<i>Microcystis aeruginosa</i>	933	<i>Microcystis aeruginosa</i>	1093
<i>Microcystis aeruginosa</i>	1025	<i>Microcystis aeruginosa</i>	1094
<i>Microcystis aeruginosa</i>	1026	<i>Microcystis aeruginosa</i>	1095
<i>Microcystis aeruginosa</i>	1027	<i>Microcystis aeruginosa</i>	1096
<i>Microcystis aeruginosa</i>	1028	<i>Microcystis aeruginosa</i>	1097
<i>Microcystis aeruginosa</i>	1029	<i>Microcystis aeruginosa</i>	1098
<i>Microcystis aeruginosa</i>	1043	<i>Microcystis aeruginosa</i>	1099
<i>Microcystis aeruginosa</i>	1050	<i>Microcystis aeruginosa</i>	1100
<i>Microcystis aeruginosa</i>	1051	<i>Microcystis aeruginosa</i>	1101
<i>Microcystis aeruginosa</i>	1052	<i>Microcystis aeruginosa</i>	1102
<i>Microcystis aeruginosa</i>	1053	<i>Microcystis aeruginosa</i>	1103
<i>Microcystis aeruginosa</i>	1054	<i>Microcystis aeruginosa</i>	1104
<i>Microcystis aeruginosa</i>	1055	<i>Microcystis aeruginosa</i>	1105
<i>Microcystis aeruginosa</i>	1056	<i>Microcystis aeruginosa</i>	1106
<i>Microcystis aeruginosa</i>	1057	<i>Microcystis aeruginosa</i>	1107
<i>Microcystis aeruginosa</i>	1058	<i>Microcystis aeruginosa</i>	1108
<i>Microcystis aeruginosa</i>	1059	<i>Microcystis aeruginosa</i>	1109
<i>Microcystis aeruginosa</i>	1060	<i>Microcystis aeruginosa</i>	1110
<i>Microcystis aeruginosa</i>	1061	<i>Microcystis aeruginosa</i>	1111
<i>Microcystis aeruginosa</i>	1062	<i>Microcystis aeruginosa</i>	1112
<i>Microcystis aeruginosa</i>	1063	<i>Microcystis aeruginosa</i>	1113
<i>Microcystis aeruginosa</i>	1064	<i>Microcystis aeruginosa</i>	1114
<i>Microcystis aeruginosa</i>	1065	<i>Microcystis aeruginosa</i>	1115
<i>Microcystis aeruginosa</i>	1066	<i>Microcystis aeruginosa</i>	1116
<i>Microcystis aeruginosa</i>	1067	<i>Microcystis aeruginosa</i>	1117
<i>Microcystis aeruginosa</i>	1068	<i>Microcystis aeruginosa</i>	1118
<i>Microcystis aeruginosa</i>	1069	<i>Microcystis aeruginosa</i>	1119
<i>Microcystis aeruginosa</i>	1070	<i>Microcystis aeruginosa</i>	1120

<i>Microcystis aeruginosa</i>	1221	<i>Phormidium foveolarum</i>	32
<i>Microcystis aeruginosa</i>	1222	<i>Phormidium foveolarum</i>	34
<i>Microcystis aeruginosa</i>	1223	<i>Phormidium foveolarum</i>	503
<i>Microcystis aeruginosa</i>	1224	<i>Phormidium foveolarum</i>	504
<i>Microcystis aeruginosa</i>	1225	<i>Phormidium foveolarum</i>	505
<i>Microcystis aeruginosa</i>	1226	<i>Phormidium jenkelianum</i>	506
<i>Microcystis aeruginosa</i>	1227	<i>Phormidium jenkelianum</i>	507
<i>Microcystis aeruginosa</i>	1228	<i>Phormidium molle</i>	509
<i>Microcystis aeruginosa</i>	1229	<i>Phormidium mucicola</i>	510
<i>Microcystis aeruginosa</i>	1230	<i>Phormidium ramosum</i>	305
<i>Microcystis aeruginosa</i>	1231	<i>Phormidium tenue</i>	30
<i>Microcystis aeruginosa</i>	1232	<i>Phormidium tenue</i>	512
<i>Microcystis aeruginosa</i>	1233	<i>Phormidium tenue</i>	611
<i>Microcystis aeruginosa</i>	1234	<i>Planktothricoides raciborskii</i>	207
<i>Microcystis aeruginosa</i>	1235	<i>Planktothricoides raciborskii</i>	917
<i>Microcystis aeruginosa</i>	1236	<i>Planktothricoides raciborskii</i>	918
<i>Microcystis aeruginosa</i>	1237	<i>Planktothricoides raciborskii</i>	919
<i>Microcystis aeruginosa</i>	1238	<i>Planktothricoides raciborskii</i>	920
<i>Microcystis aeruginosa</i>	1239	<i>Planktothricoides raciborskii</i>	921
<i>Microcystis aeruginosa</i>	1240	<i>Planktothricoides raciborskii</i>	922
<i>Microcystis aeruginosa</i>	1241	<i>Planktothricoides raciborskii</i>	923
<i>Microcystis aeruginosa</i>	1242	<i>Planktothricoides raciborskii</i>	924
<i>Microcystis aeruginosa</i>	1243	<i>Planktothricoides raciborskii</i>	925
<i>Microcystis aeruginosa</i>	1244	<i>Planktothricoides raciborskii</i>	926
<i>Microcystis aeruginosa</i>	1245	<i>Planktothricoides raciborskii</i>	927
<i>Microcystis aeruginosa</i>	1246	<i>Planktothrix agardhii</i>	204
<i>Microcystis aeruginosa</i>	1247	<i>Planktothrix agardhii</i>	205
<i>Microcystis aeruginosa</i>	1248	<i>Planktothrix agardhii</i>	594
<i>Microcystis aeruginosa</i>	1249	<i>Planktothrix agardhii</i>	595
<i>Microcystis aeruginosa</i>	1250	<i>Planktothrix agardhii</i>	596
<i>Microcystis aeruginosa</i>	1251	<i>Planktothrix agardhii</i>	905
<i>Microcystis aeruginosa</i>	1252	<i>Planktothrix agardhii</i>	906
<i>Microcystis aeruginosa</i>	1253	<i>Planktothrix agardhii</i>	907
<i>Microcystis aeruginosa</i>	1254	<i>Planktothrix agardhii</i>	908
<i>Microcystis aeruginosa</i>	1255	<i>Planktothrix agardhii</i>	909
<i>Microcystis aeruginosa</i>	1256	<i>Planktothrix agardhii</i>	910
<i>Microcystis aeruginosa</i>	1257	<i>Planktothrix agardhii</i>	989
<i>Myxosarcina burmensis</i>	481	<i>Planktothrix agardhii</i>	990
<i>Nostoc commune</i>	24	<i>Planktothrix agardhii</i>	1263
<i>Nostoc commune</i>	38	<i>Planktothrix agardhii</i>	1264
<i>Nostoc linckia</i>	25	<i>Planktothrix agardhii</i>	1265
<i>Nostoc linckia</i> var. <i>arvense</i>	28	<i>Planktothrix mougeotii</i>	844
<i>Nostoc minutum</i>	26	<i>Planktothrix mougeotii</i>	911
<i>Nostoc minutum</i>	29	<i>Planktothrix mougeotii</i>	912
<i>Oscillatoria amphibia</i>	361	<i>Planktothrix mougeotii</i>	913
<i>Oscillatoria animalis</i>	206	<i>Planktothrix pseudagardhii</i>	845
<i>Oscillatoria laetevirens</i>	31	<i>Planktothrix pseudagardhii</i>	914
<i>Oscillatoria limnetica</i>	36	<i>Planktothrix pseudagardhii</i>	915
<i>Oscillatoria rosea</i>	208	<i>Planktothrix pseudagardhii</i>	916
<i>Oscillatoria tenuis</i>	33	<i>Planktothrix rubescens</i>	610

<i>Chroomonas dispersa</i>	704	<i>Chattonella antiqua</i>	2
<i>Chroomonas nordstedtii</i>	706	<i>Chattonella antiqua</i>	83
<i>Chroomonas nordstedtii</i>	707	<i>Chattonella antiqua</i>	84
<i>Chroomonas nordstedtii</i>	708	<i>Chattonella antiqua</i>	85
<i>Chroomonas nordstedtii</i>	709	<i>Chattonella antiqua</i>	86
<i>Chroomonas nordstedtii</i>	710	<i>Chattonella antiqua</i>	113
<i>Chroomonas nordstedtii</i>	711	<i>Chattonella antiqua</i>	114
<i>Chroomonas placoidea</i>	705	<i>Chattonella antiqua</i>	161
<i>Cryptomonas acuta</i>	697	<i>Chattonella antiqua</i>	557
<i>Cryptomonas irregularis</i>	698	<i>Chattonella antiqua</i>	558
<i>Cryptomonas ovata</i>	274	<i>Chattonella marina</i>	3
<i>Cryptomonas ovata</i>	275	<i>Chattonella marina</i>	14
<i>Cryptomonas platyuris</i>	276	<i>Chattonella marina</i>	115
<i>Cryptomonas platyuris</i>	344	<i>Chattonella marina</i>	116
<i>Cryptomonas rostratiformis</i>	277	<i>Chattonella marina</i>	117
<i>Cryptomonas rostratiformis</i>	278	<i>Chattonella marina</i>	118
<i>Cryptomonas rostratiformis</i>	345	<i>Chattonella marina</i>	121
<i>Cryptomonas rostratiformis</i>	1327	<i>Chattonella marina</i>	559
<i>Cryptomonas tetrapyrenoidosa</i>	279	<i>Chattonella minima</i>	848
<i>Cryptomonas tetrapyrenoidosa</i>	280	<i>Chattonella ovata</i>	603
<i>Cryptomonas tetrapyrenoidosa</i>	281	<i>Chattonella ovata</i>	671
<i>Cryptomonas tetrapyrenoidosa</i>	282	<i>Chattonella ovata</i>	849
<i>Cryptomonas tetrapyrenoidosa</i>	346	<i>Chattonella verruculosa</i>	670
<i>Cryptomonas tetrapyrenoidosa</i>	347	<i>Chattonella verruculosa</i>	850
<i>Cryptomonas tetrapyrenoidosa</i>	348	<i>Fibrocapsa japonica</i>	136
<i>Rhodomonas atrorosea</i>	699	<i>Fibrocapsa japonica</i>	462
<i>Rhodomonas baltica</i>	700	<i>Fibrocapsa japonica</i>	560
<i>Rhodomonas chrysoidea</i>	701	<i>Fibrocapsa japonica</i>	605
<i>Rhodomonas chrysoidea</i>	1005	<i>Fibrocapsa japonica</i>	1303
<i>Rhodomonas duplex</i>	765	<i>Gonyostomum semen</i>	1009
<i>Rhodomonas falcata</i>	702	<i>Haramonas dimorpha</i>	716
<i>Rhodomonas salina</i>	1006	<i>Heterosigma akashiwo</i>	4
		<i>Heterosigma akashiwo</i>	5
		<i>Heterosigma akashiwo</i>	6
		<i>Heterosigma akashiwo</i>	9
		<i>Heterosigma akashiwo</i>	10
		<i>Heterosigma akashiwo</i>	145
		<i>Heterosigma akashiwo</i>	146
		<i>Heterosigma akashiwo</i>	293
		<i>Heterosigma akashiwo</i>	561
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<i>Achnanthes minutissima</i>	412
<i>Achnanthes minutissima</i>	413
<i>Achnanthes minutissima</i>	414
<i>Achnanthes minutissima</i> var. <i>saprophila</i>	372
<i>Achnanthes subconstricta</i>	330
<i>Asterionella glacialis</i>	265
<i>Asterionella glacialis</i>	417
<i>Chaetoceros didymus</i>	586
<i>Chaetoceros sociale</i>	377
<i>Chaetoceros sociale</i>	553
<i>Cyclotella meneghiniana</i>	803
<i>Cyclotella meneghiniana</i>	804
<i>Cyclotella meneghiniana</i>	805
<i>Cylindrotheca closterium</i>	1045
<i>Cylindrotheca fusiformis</i>	1046
<i>Cylindrotheca</i> sp.	1047
<i>Ditylum brightwellii</i>	350
<i>Eucampia zodiacus</i>	1049
<i>Eunotia pectinalis</i> var. <i>minor</i>	461
<i>Fragilaria capucina</i>	391
<i>Gomphonema angustatum</i> var. <i>obtusatum</i>	620
<i>Gomphonema gracile</i> var. <i>gracile</i>	465
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<i>Gomphonema parvulum</i> var. <i>parvulum</i>	467
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<i>Nitzschia palea</i>	487
<i>Nitzschia palea</i>	488
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<i>Skeletonema costatum</i>	324
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<i>Calcidiscus leptoporus</i>	1306
<i>Calcidiscus leptoporus</i>	1307
<i>Calyptrosphaera sphaeroidea</i>	997
<i>Calyptrosphaera sphaeroidea</i>	1308
<i>Calyptrosphaera sphaeroidea</i>	1309
<i>Chrysochromulina hirta</i>	741
<i>Chrysochromulina parva</i>	562
<i>Chrysochromulina quadrikonta</i>	998
<i>Cricosphaera roscoffensis</i>	8
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<i>Emiliania huxleyi</i>	999
<i>Emiliania huxleyi</i>	1310
<i>Emiliania huxleyi</i>	1311
<i>Emiliania huxleyi</i>	1312
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<i>Emiliana huxleyi</i>	1314	<i>Coolia monotis</i>	615
<i>Gephyrocapsa oceanica</i>	353	<i>Glenodiniopsis uliginosa</i>	463
<i>Gephyrocapsa oceanica</i>	838	<i>Gymnodinium mikimotoi</i>	680
<i>Gephyrocapsa oceanica</i>	1000	<i>Hemidinium nasutum</i>	471
<i>Gephyrocapsa oceanica</i>	1315	<i>Heterocapsa pygmaea</i>	472
<i>Gephyrocapsa oceanica</i>	1316	<i>Heterocapsa pygmaea</i>	473
<i>Gephyrocapsa oceanica</i>	1317	<i>Heterocapsa triquetra</i>	7
<i>Gephyrocapsa oceanica</i>	1318	<i>Heterocapsa triquetra</i>	235
<i>Gephyrocapsa oceanica</i>	1319	<i>Katodinium rotundatum</i>	356
<i>Gephyrocapsa oceanica</i>	1328	<i>Oxyrrhis marina</i>	494
<i>Gephyrocapsa oceanica</i>	1329	<i>Peridinium bipes</i> f. <i>globosum</i>	495
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<i>Imantonia rotunda</i>	1001	<i>Peridinium bipes</i> var. <i>tabulatum</i>	600
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<i>Oolithotus fragilis</i>	1321	<i>Peridinium volzii</i>	365
<i>Oolithotus fragilis</i>	1322	<i>Peridinium volzii</i>	501
<i>Phaeocystis globosa</i>	388	<i>Peridinium willei</i>	304
<i>Prymnesium calathiferum</i>	1330	<i>Peridinium willei</i>	366
<i>Prymnesium parvum</i>	1017	<i>Prorocentrum dentatum</i>	682
<i>Prymnesium parvum</i>	1018	<i>Prorocentrum dentatum</i>	900
<i>Umbilicosphaera sibogae</i> var. <i>foliosa</i>	1323	<i>Prorocentrum gracile</i>	315
<i>Umbilicosphaera sibogae</i> var. <i>sibogae</i>	1324	<i>Prorocentrum lima</i>	617
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		<i>Prorocentrum micans</i>	316
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		<i>Prorocentrum micans</i>	608
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<i>Alexandrium catenella</i>	519	<i>Pyrocystis lunura</i>	609
<i>Alexandrium catenella</i>	520	<i>Pyrophacus steinii</i>	321
<i>Alexandrium catenella</i>	674	<i>Scrippsiella sweeneyae</i>	684
<i>Alexandrium catenella</i>	675	<i>Scrippsiella trochoidea</i>	369
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<i>Alexandrium hiranoi</i>	612	<i>Thoracosphaera heimii</i>	1326
<i>Alexandrium insuetum</i>	678	<i>Woloszynskia leopoliense</i>	619
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<i>Cachonina niei</i>	614	<i>Euglena clara</i>	253
<i>Ceratium fusus</i>	899	<i>Euglena gracilis</i>	47
<i>Ceratium hirundinella</i>	376	<i>Euglena gracilis</i>	48
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<i>Mesostigma viride</i>	476
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<i>Monomastix minuta</i>	256
<i>Nephroselmis astigmatica</i>	252
<i>Nephroselmis olivacea</i>	483
<i>Nephroselmis olivacea</i>	484
<i>Nephroselmis olivacea</i>	485
<i>Nephroselmis spinosa</i>	934
<i>Nephroselmis spinosa</i>	935
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<i>Pterosperma cristatum</i>	221
<i>Pterosperma cristatum</i>	626
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<i>Ulothrix zonata</i>	537

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<i>Asterochloris</i> cf. <i>glomerata</i>	1299
<i>Asterochloris</i> cf. <i>glomerata</i>	1300
<i>Asterochloris</i> cf. <i>glomerata</i>	1301
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<i>Chlorella vulgaris</i> var. <i>vulgaris</i>	641
<i>Chlorella vulgaris</i> var. <i>vulgaris</i>	642
<i>Chlorella vulgaris</i> var. <i>vulgaris</i>	686
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<i>Trebouxia corticola</i>	1283
<i>Trebouxia corticola</i>	1284
<i>Trebouxia corticola</i>	1285
<i>Trebouxia corticola</i>	1286
<i>Trebouxia corticola</i>	1287
<i>Trebouxia corticola</i>	1288
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<i>Trebouxia higginsiae</i>	1291
<i>Trebouxia higginsiae</i>	1292
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<i>Trebouxia higginsiae</i>	1295
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<i>Astrephomene gubernaculifera</i>	628
<i>Astrephomene gubernaculifera</i>	853
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<i>Astrephomene gubernaculifera</i>	855
<i>Astrephomene perforata</i>	564
<i>Astrephomene perforata</i>	565
<i>Basichlamys sacculifera</i>	566
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<i>Carteria cerasiformis</i>	425
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<i>Carteria crucifera</i>	630
<i>Carteria eugametos</i>	631
<i>Carteria eugametos</i>	632
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<i>Characiochloris sasae</i>	638
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<i>Chlamydomonas debaryana</i> var. <i>cristata</i>	884
<i>Chlamydomonas fasciata</i>	437
<i>Chlamydomonas kuwadae</i>	968
<i>Chlamydomonas monadina</i> var. <i>monadina</i>	438
<i>Chlamydomonas monticola</i>	157
<i>Chlamydomonas noctigama</i>	1048
<i>Chlamydomonas parkeae</i>	440
<i>Chlamydomonas parkeae</i>	1022
<i>Chlamydomonas pulsatilla</i>	122
<i>Chlamydomonas tetragama</i>	446
<i>Chlorogonium capillatum</i>	692
<i>Chlorogonium capillatum</i>	742
<i>Chlorogonium capillatum</i>	743
<i>Chlorogonium capillatum</i>	744
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<i>Chlorogonium capillatum</i>	749
<i>Chlorogonium capillatum</i>	750
<i>Chlorogonium elongatum</i>	751
<i>Chlorogonium elongatum</i>	752
<i>Chlorogonium elongatum</i>	753
<i>Chlorogonium euchlorum</i>	754
<i>Chlorogonium euchlorum</i>	755
<i>Chlorogonium euchlorum</i>	756
<i>Chlorogonium euchlorum</i>	757
<i>Chlorogonium euchlorum</i>	758
<i>Chlorogonium euchlorum</i>	759
<i>Chlorogonium euchlorum</i>	760
<i>Chlorogonium fusiforme</i>	123
<i>Chlorogonium kasakii</i>	761
<i>Chlorogonium neglectum</i>	439
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<i>Coelastrum astroideum</i>	244	<i>Gonium viridistellatum</i>	290
<i>Coelastrum astroideum</i>	342	<i>Gonium viridistellatum</i>	654
<i>Coelastrum morus</i>	231	<i>Gonium viridistellatum</i>	655
<i>Coelastrum proboscideum</i>	131	<i>Gonium viridistellatum</i>	857
<i>Coelastrum reticulatum</i>	132	<i>Graesiella emersonii</i>	226
<i>Coelastrum reticulatum</i> var. <i>reticulatum</i>	245	<i>Graesiella emersonii</i>	687
<i>Dimorphococcus lunatus</i>	134	<i>Graesiella emersonii</i>	688
<i>Dimorphococcus lunatus</i>	135	<i>Graesiella emersonii</i>	689
<i>Draparnaldia plumosa</i>	454	<i>Graesiella emersonii</i>	690
<i>Echinospaeridium nordstedtii</i>	137	<i>Haematococcus lacustris</i>	144
<i>Eudorina cylindrica</i>	722	<i>Hafniomonas montana</i>	257
<i>Eudorina elegans</i>	351	<i>Hafniomonas montana</i>	656
<i>Eudorina elegans</i> var. <i>carteri</i>	721	<i>Hydrodictyon reticulatum</i>	295
<i>Eudorina elegans</i> var. <i>elegans</i>	456	<i>Lobomonas monstruosa</i>	474
<i>Eudorina elegans</i> var. <i>elegans</i>	457	<i>Monoraphidium circinale</i>	480
<i>Eudorina elegans</i> var. <i>elegans</i>	717	<i>Monoraphidium contortum</i>	384
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<i>Eudorina elegans</i> var. <i>elegans</i>	719	<i>Oedogonium obesum</i>	203
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<i>Eudorina elegans</i> var. <i>synoica</i>	458	<i>Pandorina colemaniae</i>	573
<i>Eudorina elegans</i> var. <i>synoica</i>	568	<i>Pandorina morum</i>	242
<i>Eudorina illinoisensis</i>	459	<i>Pandorina morum</i>	243
<i>Eudorina illinoisensis</i>	460	<i>Pandorina morum</i>	362
<i>Eudorina illinoisensis</i>	723	<i>Pandorina morum</i>	886
<i>Eudorina minodii</i>	856	<i>Pandorina morum</i>	887
<i>Eudorina unicocca</i> var. <i>peripheralis</i>	726	<i>Pandorina morum</i>	888
<i>Eudorina unicocca</i> var. <i>unicocca</i>	724	<i>Pandorina morum</i>	889
<i>Eudorina unicocca</i> var. <i>unicocca</i>	725	<i>Pandorina morum</i>	890
<i>Gloeomonas lateperforata</i>	464	<i>Pandorina morum</i> var. <i>morum</i>	574
<i>Gonium multicoccum</i>	737	<i>Pandorina morum</i> var. <i>morum</i>	575
<i>Gonium multicoccum</i>	885	<i>Paulschulzia pseudovolvox</i>	727
<i>Gonium multicoccum</i>	1038	<i>Pediastrum angulosum</i> var. <i>angulosum</i>	300
<i>Gonium multicoccum</i>	1039	<i>Pediastrum boryanum</i>	209
<i>Gonium octonarium</i>	851	<i>Pediastrum boryanum</i>	301
<i>Gonium octonarium</i>	852	<i>Pediastrum duplex</i>	212
<i>Gonium pectorale</i> var. <i>pectorale</i>	468	<i>Pediastrum duplex</i> var. <i>duplex</i>	210
<i>Gonium pectorale</i> var. <i>pectorale</i>	469	<i>Pediastrum duplex</i> var. <i>duplex</i>	213
<i>Gonium pectorale</i> var. <i>pectorale</i>	569	<i>Pediastrum duplex</i> var. <i>gracillimum</i>	211
<i>Gonium pectorale</i> var. <i>pectorale</i>	570	<i>Pediastrum duplex</i> var. <i>gracillimum</i>	214
<i>Gonium pectorale</i> var. <i>pectorale</i>	645	<i>Pediastrum simplex</i>	215
<i>Gonium pectorale</i> var. <i>pectorale</i>	646	<i>Pediastrum simplex</i>	302
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<i>Gonium quadratum</i>	648	<i>Phacotus lenticularis</i>	858
<i>Gonium quadratum</i>	649	<i>Phacotus lenticularis</i>	859
<i>Gonium quadratum</i>	650	<i>Planctonema lauterbornii</i>	514
<i>Gonium quadratum</i>	651	<i>Platydorina caudata</i>	728
<i>Gonium quadratum</i>	652	<i>Platydorina caudata</i>	729
<i>Gonium quadratum</i>	653	<i>Pleodorina californica</i>	576
<i>Gonium viridistellatum</i>	288	<i>Pleodorina californica</i>	735
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<i>Pseudocarteria mucosa</i>	523	<i>Volvox africanus</i>	863
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<i>Pseudopleurococcus printzii</i>	159	<i>Volvox aureus</i>	693
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<i>Pteromonas aculeata</i>	738	<i>Volvox aureus</i>	864
<i>Pteromonas aculeata</i>	860	<i>Volvox aureus</i>	891
<i>Pteromonas angulosa</i>	739	<i>Volvox aureus</i>	892
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<i>Pteromonas angulosa</i>	862	<i>Volvox aureus</i> var. <i>aureus</i>	542
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<i>Tetraëdron incus</i>	392	<i>Volvulina steinii</i>	585
<i>Trentepohlia</i> sp.	967	<i>Volvulina steinii</i>	896
<i>Treubaria triappendiculata</i>	394	<i>Volvulina steinii</i>	897
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<i>Uronema gigas</i>	540	<i>Yamagishiella unicocca</i>	666
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<i>Vitreochlamys aulata</i>	877	<i>Yamagishiella unicocca</i>	870
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<i>Closterium venus</i>	199	var. <i>ehrenbergii</i>	
<i>Closterium wallichii</i>	200	<i>Pleurotaenium ehrenbergii</i>	310
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<i>Euastrum turgidum</i>	773	<i>Staurastrum levanderi</i>	841
<i>Gonatozygon brebissonii</i>	138	<i>Staurastrum paradoxum</i>	528
<i>Gonatozygon brebissonii</i>	139	<i>Staurastrum tsukubicum</i>	842
<i>Gonatozygon monotaenium</i>	247	<i>Triploceras gracile</i>	789
<i>Gonatozygon monotaenium</i>	287	<i>Triploceras gracile</i>	790
<i>Hyalotheca dissiliens</i>	147	<i>Triploceras gracile</i>	791
<i>Hyalotheca dissiliens</i>	148	<i>Triploceras gracile</i>	792
<i>Hyalotheca dissiliens</i>	149	<i>Triploceras gracile</i>	793
<i>Hyalotheca dissiliens</i>	150	<i>Triploceras gracile</i>	794
<i>Hyalotheca dissiliens</i>	294	<i>Triploceras gracile</i>	795
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* The order of algal phyla and classes, and assignment of strains to each taxon in this index is according to the system in Chihara (Ed.), "Diversity and Evolution of Algae" (Shokabo, Tokyo, 1999), and Nakayama, T. (unpubl.).

PROTOZOA

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* See Ref.226.

Bicoecea

<i>Cafeteria roenbergensis</i>	1012
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Placididea

<i>Placidia cafeteriopsis</i>	1013
<i>Placidia cafeteriopsis</i>	1014
<i>Wobblia lunata</i>	1015

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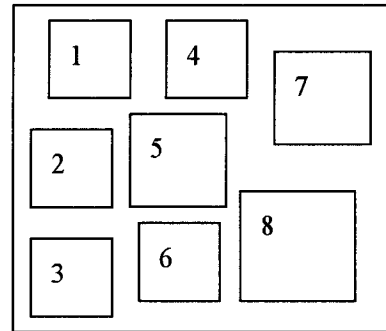
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