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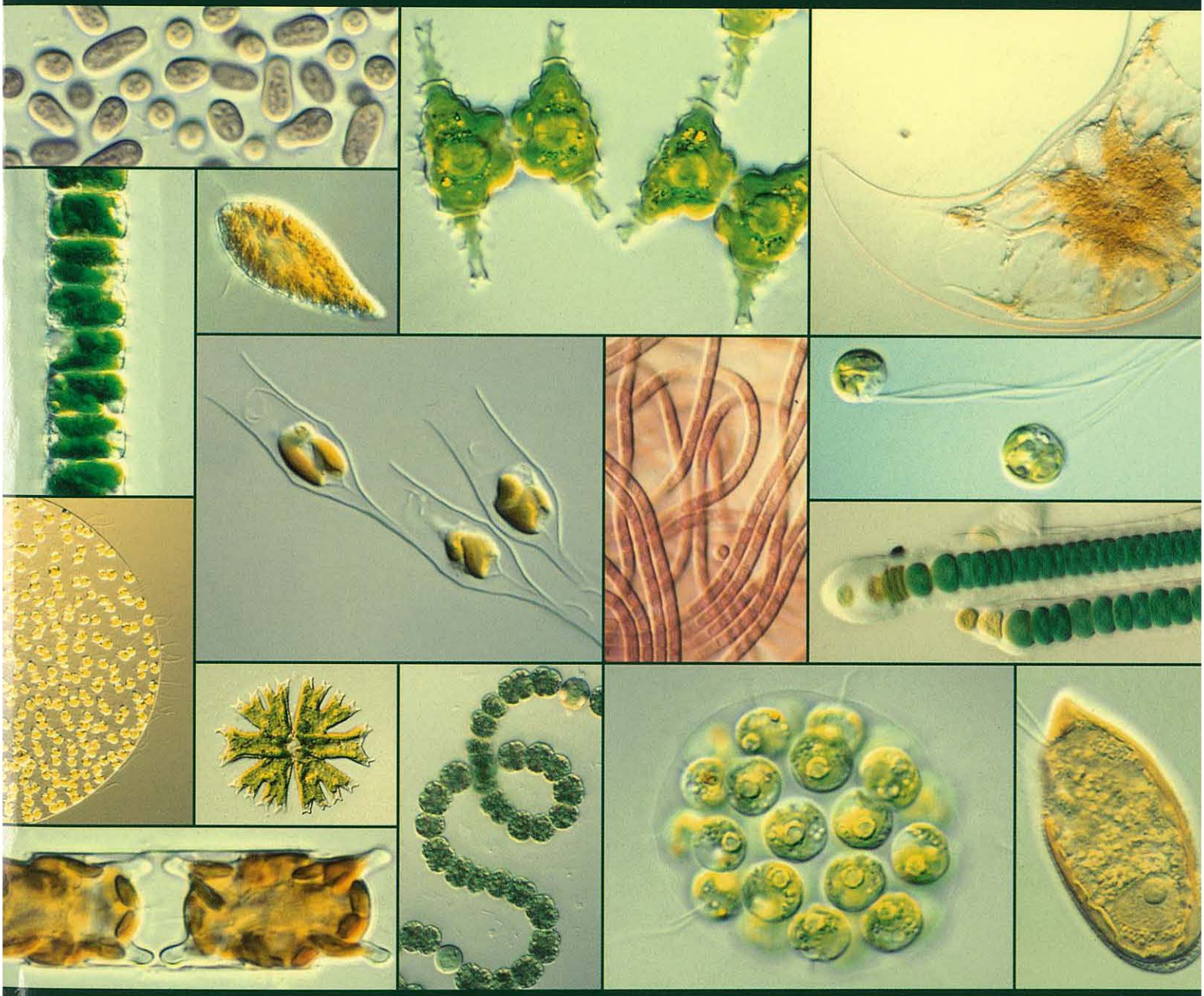
NIES-Collection

LIST OF STRAINS

SIXTH EDITION

2000

MICROALGAE AND PROTOZOA



MICROBIAL CULTURE COLLECTION
NATIONAL INSTITUTE FOR ENVIRONMENTAL STUDIES
ENVIRONMENT AGENCY
JAPAN

NIES-Collection

LIST OF STRAINS

Sixth Edition

2000

Microalgae

and

Protozoa

Edited by
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Mikiya Hiroki and Fumie Kasai
Supervised by
Committee for Evaluating Microbial Culture Strains

National Institute for Environmental Studies
Environment Agency
JAPAN

NIES-Collection. List of Strains
Sixth Edition
Microalgae and Protozoa
March 1, 2000

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Acknowledgment

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Cover design : Mayumi Erata

第六版の序

国立環境研究所微生物系統保存施設が、1997 年に保存株リスト第五版を発行してから、3年を迎えることとなった。初版～五版に関して、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。

この第六版は、初版～五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 752 株、原生動物 2 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、不備な点は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１２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部長

渡　辺　　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にあったが、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

目　次

I. はじめに

国立環境研究所微生物系統保存施設は、昭和58年に環境微生物の系統保存を行なうことを目的として設立された。この施設は、当研究所で遂行されている微生物学的研究で使用されている微生物の培養を、所内研究者の要望に応じて保存し、分譲することを目的としていたが、環境科学に携る微生物学者からの強い要望を配慮して、所内に止らず、広く他機関からも微生物株とそれらの株データの収集および分譲を積極的に行なうこととし、将来的には国際的な環境微生物のカルチャーコレクションセンターとして国内外の環境関連研究機関および研究者と密接なネットワーク体制を構築し、環境微生物研究の推進を支える役割を担っていくことを計画している。

本施設で保存される微生物の培養株は、表1に記されているように微細藻類、原生動物および特殊な浄化能を有する細菌類が対象となっているが、現状ではこれらすべてを同時に保存できる体制の整備が不十分であることおよび環境科学の分野では水域の汚染と浄化に微細藻類が密接に関連していることから、微細藻類株が積極的に収集・保存されている。収集されたすべての株について、その種名、培養条件、保存法、形態学的特徴、生理生態学的特徴、環境科学との関連性に関する株特性の検査や情報収集が行なわれ、更にそれらの株データ管理のパーソナルコンピューターによるシステム化が行なわれている。

表1　本施設に保存される対象となる微生物株

環境問題との関連性での類型	対象となる微生物株
環境汚染の原因となる微生物	赤潮形成藻類，水の華形成藻類，有毒藻類，水道水の異味異臭をもたらす藻類または放線菌類，硫酸還元細菌等
環境汚染の指標となる微生物	AGP供試藻類，重金属耐性微生物，水質の富栄養化の指標となる細菌類，微細藻類，原生動物等
自浄作用，廃水および廃棄物処理に関係する微生物	光合成細菌，脱窒菌，硝化細菌，汚染原因微生物を捕食または溶解する微生物，活性汚泥および生物膜処理の原生動物および細菌類，嫌気性処理にかかわる嫌気性細菌，生物学的処理の障害となる微生物等
有機合成化合物の分解に関係する微生物	PCB，フェノール，各種除草剤および農薬等の分解に関与する細菌類
金属の酸化・還元作用に関連する微生物	塩化水銀($HgCl_2$)やシアン化水銀の還元に関与する細菌類，亜砒酸の酸化に関与する細菌類，重金属のバクテリアリーチング に関与する細菌類等

本施設に保存された環境微生物培養株の最初のリストには、施設、組織、基本業務の概要説明とともに、微細藻類２６２株が掲載された(文献395, 396)。それ以降、施設、組織、基本業務の大きな変化はないが、寄託された株、安定した増殖が得られた株および株データの変更を行なった株があり、それらは追補株リストおよび第２版、第３版、第４版、第５版として掲載された(文献397, 398, 400, 409, 408, 390)。現在、微細藻類７５２、原生動物２株が保存されるに至っている。第６版は、これらの保存株すべてを再整理し、新たなデータを加えて、掲載したものである。

II. 培養株の寄託

1. 寄託条件

微生物の培養株の本施設への保存寄託は、以下の条件を満たしている培養株で、微生物系統保存株評価委員会の審査を経たものとする。

(1) 寄託の対象となる微生物は原則として以下のいずれかにあてはまることとする。
(i)環境汚染の原因となる微生物、(ii)環境汚染の指標となる微生物、(iii)自浄作用、廃水及び廃棄物処理に関係する微生物、(iv)有機合成化合物の分解に関係する微生物、(v)金属の酸化・還元作用に関係する微生物。

(2) 種名及び履歴が明らかである培養株であることを原則とするが、既に多くの調査研究において属名をもって使用されている微生物株については例外として受け入れる。

(3) 寄託対象保存株は、保存条件が確立している培養株、すなわち保存中の状態が安定しており、次のいずれかにあてはまる培養株であることとする。
(i)微細藻類ではクローン培養株か単藻培養株であり、無菌培養株であることが望ましい、(ii)原生動物では無菌培養株か餌料としての他の微生物のみが混入している単一種培養株であること、(iii)細菌類はすべて純粋培養株であること。

(4) 寄託された培養株は原則としてすべて分譲対象として扱う。

(5) その他、特に微生物系統保存株評価委員会が必要と認めたもの。

2. 寄託の手続き

(1) 寄託者は様式－１の書類に所定事項を記入の上、下記の寄託先へ申し込むこととする。

〒305-0053 茨城県つくば市小野川16-2 国立環境研究所 微生物系統保存施設
電話 0298(50)2556 ＦＡＸ 0298(50)2587

(2) 受託可否は寄託依頼があった日から１ヶ月以内に行う。

(3) 寄託者は受託の回答があった日から１ヶ月以内に、微生物株を本施設に寄託するものとする。

(4) 寄託書類の記載事項と寄託された微生物の状態が一致せず、前述した寄託条件より逸脱した場合には、寄託のあった日より１ヶ月以内に受託の取り消しを寄託者へ知らせることとする。

様式－１（１）

微生物株寄託依頼書

国立環境研究所
微生物系統保存施設　殿

国環研記入
受付日＿＿＿＿＿＿
受付担当者＿＿＿＿＿
受付番号＿＿＿＿＿＿
受託　□可　□否

年　　月　　日

（フリガナ）
依頼者名＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

所属機関（日本語名）＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

（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

① 学名及び命名者名

＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

② 株番号又はシンボル

＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

③ 履歴

1. 採 集 場 所：＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿
2. 生 息 環 境（２５ページより番号で記入してください。）：＿＿＿＿
3. 採集年月日：　　年　　月　　日

（フリガナ）
4. 採 集 者 名：＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿
5. 分離年月日：　　年　　月　　日

（フリガナ）
6. 分 離 者 名：＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿
7. 分離試料源：□土，□底泥，□水，□植物（　　），□動物（　　），□雪または氷，□その他（　　）
8. 分離時の生物の状態：□運動性栄養細胞，□非運動性栄養細胞，□休眠細胞，□胞子，□その他（　　）
9. 分離方法：□ピペット洗浄法，□希釈法，□寒天平板法，□走性，□その他（　　）
10. 分離時の処理：□無処理，□抗生物質，□紫外線照射，□化学物質，□熱処理，□超音波処理，□集積(強化)培養，□その他（　　）

（フリガナ）
11. 同 定 者 名：＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿
（フリガナ）
12. 無菌化者名：＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿
（フリガナ）
13. クローン化者名：＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

様式－１（２）

④ 株の状態
1. 微細藻類 □無菌，□単藻，□クローン，□二種混合
2. 細 菌 類 □純粋，□非クローン
3. 原生動物 □無菌，□単一種混菌，□二種混菌，□混合
4. そ の 他（ ）

⑤ 培地
1. 培地名及び出典：＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿
2. 培地組成及び作成上の注意
（通常よく使用されている培地の場合、原典を記すだけでよい。）

＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

⑥ 培養条件
1. 温 度：＿＿＿＿＿＿ 2. 照 度：＿＿＿＿＿＿
3. 光源種類：＿＿＿＿＿＿ 4. 明暗周期：＿＿＿＿＿＿

⑦ 保存条件
□継代培養条件
1. 温 度：＿＿＿＿＿＿ 2. 照 度：＿＿＿＿＿＿
3. 光源種類：＿＿＿＿＿＿ 4. 明暗周期：＿＿＿＿＿＿
5. 継代周期：＿＿＿＿＿＿

□凍結保存
□ 可 □ 否
1. 凍害防御物質：□なし，□ＤＭＳＯ，□ＰＶＰ，□グリセロール，
□メタノール，□その他（ ）
濃度（ ％）

2. 凍 結 速 度：＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿
3. 融 解 条 件：□40℃ウォーターバス中
□その他（ ）

4. 保 存 温 度：□液体窒素，□ディープフリーザー（ ℃）
□その他（ ）

□凍結乾燥保存
□ 可 □ 否

□Ｌ－乾燥保存
□ 可 □ 否

⑧ 株特性
1. 環境上問題となる特性（２５ページより番号で記入してください。）

＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿
2. 生理生態的特性（２５ページより番号で記入してください。）

＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿
3. その他の特性（２５ページより番号で記入してください。）

＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

⑨ 遺伝子データ
1. 遺 伝 子 名：＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿
2. 登 録 番 号：＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿
（フリガナ）
3. 登 録 者 名：＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿
4. 登 録年月日： 年 月 日

⑩ その他の情報

＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

⑪ この株に関する文献がある場合は、別刷りまたはコピーを２部ずつ添付してください。

III. 保存株の分譲

1. 所内研究者への分譲

(1) 分譲条件

i) 分譲された株を使った研究成果を論文として発表する場合は、NIES株番号（例："NIES-125"）と本施設から分譲を受けたことを明記し、別刷りまたはコピーを2部ずつ本施設に送ることとする。

ii) 分譲された株を第三者に分譲することを禁止する。

iii) 株データの分譲については、保存株の分譲に準じて行われる。

(2) 分譲依頼の手続き

i) 分譲希望者は様式－２の書類に所定事項を記入の上、本施設へ申し込むこととする。

ii) 分譲を受けた者は受領後直ちに培養株の状態について、様式－３の書類に所定事項を記入の上、本施設へ提出するものとする。

2. 所外への分譲

本施設に保存されている微生物株の所外への分譲は、(財)地球・人間環境フォーラムで行われている。分譲依頼等はフォーラム発行のカタログを参照されたい。

3. "Untransportable"株の分譲について

保存株リストの「株の性質」の項において"Untransportable"と記載されている株（40頁を参照のこと）についての分譲依頼は季節や株の生育状態等により受け付けられないことがあるので、これらの株の分譲依頼にあたっては必ず事前に本施設へ問い合わせるものとする。

また当該株の海外への分譲は、持ち帰りの場合を除き、原則として行わないものとする。

4. 凍結保存株の分譲について

保存株リストの「培養条件」の項において"[Cryopreserved]"と記載されている株（40頁を参照のこと）は現在凍結保存のみで維持されている。これらの株の分譲については、依頼を受理した時点で解凍・再培養を開始するため引渡し（発送）までに最低３～４週間を要する。分譲依頼にあたってはあらかじめこの点を考慮されたい。

様式－2

微生物株分譲依頼書

国立環境研究所
微生物系統保存施設　殿

国環研記入
受付日＿＿＿＿＿＿
受付者＿＿＿＿＿＿
受付番号＿＿＿＿＿＿

年　　月　　日

（フリガナ）
依頼者名 ＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

所属機関（日本語名）＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

（英 語 名）＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

所属機関住所
〒□□□－□□□□

＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

電話　　（　　）　　（内線　　）
ＦＡＸ　　（　　）
Ｅメールアドレス

下記微生物についての分譲を依頼します。

微生物学名及び株番号

研究目的（具体的に）

株データ
□ 要　　（株番号　　）
□ 不要

国環研担当者記入

様式－3

微生物株の受領と受領時の状態についての報告

国立環境研究所
微生物系統保存施設　殿

国環研記入
受付日＿＿＿＿＿＿
受付者＿＿＿＿＿＿
受付番号＿＿＿＿＿＿

年　　月　　日

（フリガナ）
依頼者名　＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

所属機関（日本語名）＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

（英 語 名）＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

所属機関住所
〒□□□－□□□□

＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

電話　　（　　）　　（内線　　）
ＦＡＸ　　（　　）
Ｅメールアドレス

年　　月　　日に分譲されました微生物株の受領と分譲時の株の状態について下記のように報告いたします。

分譲株（微生物学名及び株番号）

株の受領時の状態

□　良好株

□　不良株

□　その他

当施設についての意見と要望

国環研担当者記入

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照度下（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。

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照度下（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）。

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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_3BO_3
KCl	$MnCl_2 \cdot 4H_2O$
$CaCl_2 \cdot 2H_2O$	$MnSO_4 \cdot 7H_2O$
$MgCl_2 \cdot 6H_2O$	$FeCl_3 \cdot 6H_2O$
Na_2SO_4	$FeSO_4 \cdot 7H_2O$
K_2SO_4	$CoCl_2 \cdot 6H_2O$
$MgSO_4 \cdot 7H_2O$	$ZnSO_4 \cdot 7H_2O$
$NaNO_3$	$CuSO_4 \cdot 5H_2O$
KNO_3	$Na_2MoO_4 \cdot 2H_2O$
$Ca(NO_3)_2 \cdot 4H_2O$	ビタミン類
NH_4NO_3	Vitamin B_{12}
$NaH_2PO_4 \cdot 2H_2O$	Biotin
β-Na_2 glycerophosphate $\cdot 5H_2O$	Thiamine HCl
KH_2PO_4	Nicotinic acid
K_2HPO_4	Calcium panthothenate
Na_2CO_3	*p*-Aminobenzoic acid
$NaHCO_3$	Inositol
$Na_2SiO_3 \cdot 9H_2O$	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)　十分に撹拌しながら必要量のNa_2EDTAを溶解する。

iv)　十分に撹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B_{12}、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B_{12}、ビオチン、チアミン

i)　ビタミンB_{12}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B_{12}、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-56参照)。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) 十分に撹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) 十分に撹拌しながら、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) 十分に撹拌しながら、緩衝剤(Tris, NTA等)および多量栄養塩類(NaCl, $MgSO_4 \cdot 7H_2O$, KCl, $CaCl_2 \cdot 2H_2O$)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%の蒸留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 SIXTH EDITION

Three years have past since we published the fifth 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.

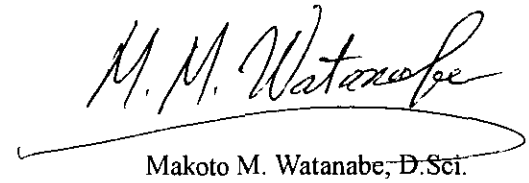
The sixth edition lists 752 strains of microalgae and 2 strains of protozoa. These have been evaluated by the Committee for Evaluating Microbial Culture Strains, which is composed of microbiologists from this institute and authorities from other organizations. Although special care has been exercised 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, 2000



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

T. Yanagita

Tomomichi Yanagita, D. Sci.
Professor Emeritus of the University of Tokyo

CONTENTS

I. INTRODUCTION

Microbial Culture Collection at the National Institute for Environmental Studies (NIES-Collection) was founded in 1983 as the first collection center of environmental microorganisms.

Although microalgae, bacteria and protozoa related to environmental problems will be preserved in this collection in the future (Table 1), microalgae associated with water pollution and cleaning have been collected and preserved the most actively as the first step. The scientific names, sources, conditions of cultivation and preservation, purity, morphological and physiological characteristics, and environmental characteristics, of all the strains collected have been re-examined, and the revised data processed using a personal computer.

The first list of environmental microorganisms preserved in the NIES-Collection (Ref. 395, 396) offered 262 strains of microalgae, together with the examples of NIES-Collection facilities, organization and fundamental pattern of research. Since then, as the result of our studies on many strains isolated by us and deposited by many other microbiologists, a considerable number of new algal strains have been added and the supplementary, the second, third, fourth and the fifth lists published (Ref. 397, 398, 400, 409, 408, 390). The total numbers of strains of algae and protozoa in the NIES-Collection are now 752 and 2, respectively.

The sixth edition lists all the strains of algae and protozoa preserved in the collection together with new or revised data.

Table 1. Microbial culture strains preserved in the NIES-Collection

Environmental Microorganisms	Examples
Causative microorganisms of environmental pollution.	Causative algae of red tide or water bloom, toxic algae, microorganisms causing the offensive odor or taste of tap water, and sulfate-reducing bacteria.
Microbial indicators of environmental pollution.	Algae used in bioassay studies of water pollution, metal resistant microorganisms, and microbial indicators of eutrophication.
Microorganisms associated with environmental self-cleaning and waste water treatment	Photosynthetic bacteria, denitrifying bacteria, microorganisms which prey upon or lyse causative organisms of environmental pollution, and bacteria and protozoa associated with activated sludge, microbial film processing or anaerobic processing.
Microorganisms associated with biodegradation of synthetic organic compounds	Bacteria associated with biodegradation of PCB, phenol and agricultural chemicals.
Microorganisms associated with oxidation and reduction of metals.	Bacteria associated with reduction of mercury chloride (II) or mercury cyanide (II), oxidation of arsenious acid, or bacterial leaching of heavy metals.

II. DEPOSITION OF STRAINS

1. Condition for deposit

The decision to accept the deposit of a strain is made by the Committee for Evaluating Microbial Culture Strains. A strain for deposit in the NIES-Collection should fit the following criteria.

(1) It must be at least one of the following microorganism types:
   i) Causative microorganism of environmental pollution.
   ii) Microbial indicator of environmental pollution.
   iii) Microorganism related to waste water treatment of self-cleaning by the environment.
   iv) Microorganism related to the biodegradation of synthetic organic compounds.
   v) Microorganism capable of oxidation of reduction of metals.

(2) The source of the strain and the specific name should be established, though strains which have been used in number of studies may be accepted even if only the generic name is known.

(3) It should be a stable culture under defined conditions and fit one of the following states:
   i) Microalgae : clonal or unialgal strain.
   ii) Protozoa : axenic or xenic strain with supplementary microorganisms added as food.
   iii) Bacteria : pure strain.

(4) As a rule, deposited strains are available to the general public.

(5) At the discretion of the Committee for Evaluating Microbial Culture Strains, some micro-organisms may be accepted for deposit, even if they do not meet the above criteria.

2. Procedure for deposit

(1) The depositor should complete the Strain Deposit Request Form (p. 20) and send it to the following address:

Microbial Culture Collection
National Institute for Environmental Studies,
16-2 Onogawa, Tsukuba, Ibaraki 305-0053, Japan
Phone : +81-298-50-2556
Fax : +81-298-50-2587

(2) The decision for the deposit of the strain is given within one month from the date of receipt of the Strain Deposit Request 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 the acceptance.

(4) If the state of the strain sent does not coincide with the description of the Stain Deposit Request Form, or do not meet any of the rules described above, the acceptance for deposit is canceled. (The NIES reserves the right to refuse any deposit at its discretion.)

Strain Deposit Request Form

Director,
Microbial Culture Collection,
National Institute for Environmental Studies

NIES use only
Date
Name
Number
Acceptance☐YES ☐NO

Date:

Depositor's full name (underline the family name.):

Depositor's affiliation and address:

TEL: FAX:

E-mail:

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

Reason for deposit:

1. Scientific name with citation of authority

2. Strain designation or symbol and other collection number

3. History

a. Locality:

b. Habitat (select from Nos. in page 25): _____

c. Collection date:

d. Collector's full name (underline the family name):

e. Isolation date:

f. Isolator's full name (underline the family name):

g. Source of isolation: ☐ soil, ☐ sediment, ☐ water, ☐ animal ( ),
☐ plant ( ), ☐ snow or ice, ☐ others ( )

h. Isolation objective: ☐ motile vegetative cell, ☐ nonmotile vegetative cell, ☐ dormant cell,
☐ spore, ☐ others ( )

i. Physical separation: ☐ pipette washing, ☐ dilution, ☐ agar plating, ☐ taxis,
☐ others ( )

j. Isolation treatment: ☐ none, ☐ antibiotics, ☐ ultra-violet irradiation, ☐ enrichment culture,
☐ chemicals ( ), ☐ heat, ☐ ultra-sonic, ☐ others ( )

k. Identified by (write full name with underlined family name):

l. Axenified by (write full name with underlined family name):

m. Clonized by (write full name with underlined family name):

4. Status

a. Microalgae: ☐ axenic, ☐ unialgal, ☐ clonal, ☐ mixed

b. Bacteria: ☐ pure, ☐ non-clonal

c. Protozoa: ☐ axenic, ☐ monoxenic, ☐ dixenic, ☐ mixed

5. Medium

a. Designation and references:

b. Composition and notes for preparation of medium:

6. Experimental culture conditions

a. Temperature:

b. Light intensity:

c. Light quality:

d. L/D cycle:

7. Stock-culture conditions

a. Maintenance by sub-culturing

i. Temperature:

ii. Light intensity:

iii. Light quality:

iv. L/D cycle:

v. Duration:

b. Preservation in freezing: ☐ yes ☐ no

i. Cryoprotectant:

ii. Freezing rate:

iii. Thawing condition: ☐ 40℃ waterbath ☐ others ( )

iv. Preservation: ☐ liquid nitrogen ☐ Deep freezer (℃) ☐ others ( )

c. Preservation in freeze-drying: ☐ yes ☐ no

d. Preservation in L-drying: ☐ yes ☐ no

8. Strain characteristics

a. Environmental characteristics (select from Nos. in page 25): _____

b. Physiological and ecological characteristics (select from Nos. in page 25): _____

c. Miscellaneous characteristics (select from Nos. in page 25): _____

9. Gene data

a. Gene name and accession No:

b. Registrar's full name (underline the family name):

c. Registration date:

10. Other information

11. References

Two copies of relevant reprint(s) should be accompanied with this form.

III. ORDERING AND DISTRIBUTION OF STRAINS

1. Distribution to researchers of this institute

(1) Rules on distribution

i) Anyone who uses a NIES-Collection strain in a paper which is subsequently published, is requested to give the full number of the strain, e.g. NIES-125, and to send two copies of the reprint(s) or Xerox copies to the NIES-Collection.

ii) In order to prevent trouble, confusion, or difficulty in the collection, accumulation and processing of strain information and data, the distribution of any NIES-Collection strain to a third party is strictly prohibited.

(2) Procedure for ordering strains

i) All orders for strains must be requested to the NIES-Collection by completing the Strain Ordering Form (p. 23).

ii) Upon receipt of a strain, the Strain Receipt Form (p. 24) should be completed and returned to the NIES-Collection as soon as possible.

2. Distribution to people of other organizations, both academic and commercial

The distribution of the strains is made through the Global Environmental Form (GEF), and the ordering procedure is shown in the GEF Catalogue (April, 2000).

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

Orders for the strains designated as "Untransportable" in the strain description (see p. 42) may not be accepted, depending on the season or condition of the cultures.
In principle, such strains must be personally carried (e.g. as hand luggage) in order to be transported overseas. Such transport must be arranged by individual requestors.

And for the strains designated as "[Cryopreserved]" in the strain description (see p. 42), frozen cells are thawed and inoculated into the fresh medium just after the order is accepted. As a result, it takes at least one month for the overseas shipping of these strains.

Strain Ordering Form

NIES use only
Date
Name
Number

Director,

Microbial Culture Collection,

National Institute for Environmental Studies

Date:

Requestor's full name (underline the family name):

Requestor's affiliation and address:

TEL: FAX:

E-mail:

The following microbial culture strains are requested.

Scientific names and strain numbers:

Object of use (in detail):

Strain data

☐ Needed (strain number)

☐ Not needed

Strain Receipt Form

NIES use only
Date
Name
Number

Director,
Microbial Culture Collection,
National Institute for Environmental Studies

Date:

Recipient's full name (underline the family name):

Recipient's affiliation and address:

TEL: FAX:

Date of strain receipt :

I received the following culture strains.

Scientific names and strain numbers:

States of strains received:

☐ Good (strain number)

☐ Poor (strain number)

☐ Others (strain number)

Comments:

--- **Habitat** （生息環境）---

1) Freshwater （淡水）

1-a) Oligotrophic（貧栄養） 1-b) Mesotrophic（中栄養） 1-c) Eutrophic（富栄養） 1-d) Dystrophic（腐植栄養）

2) Marine （海水）

2-a) Coastal（沿岸） 2-b) Oceanic（外洋） 2-c) Surface（表層） 2-d) Deep（深層，採水深度をお書きください）

3) Brackish （汽水） 4) Tide pool （潮だまり） 5) Tideland （干潟）

6) Salt water （塩水） 7) Soil （土） 8) Hot spring （温泉）

9) Cold spring （鉱泉） 10) Snow or ice （雪または氷） 11) Wetland （湿原，湿地）

12) Rice field （水田） 13) Lotic （流水） 14) Lentic （止水）

15) Others （その他） {write details（お書きください）}

--- **Environmental Characteristics** （環境上問題となる特性）---

1) Red tide （赤潮） 2) Water bloom （水の華）

3) AGP （藻類生長試験） 4) Oxidation pond （酸化池）

5) Biodegradation （生分解） 6) Activated sludge （活性汚泥）

7) Microbial film process （生物膜処理） 8) Indicator （指標）

9) Predator （捕食性） 10) Offensive taste and odor （異味異臭）

11) Toxic （有毒） 12) Inhibition of purification （浄水障害）

13) Corrosion （腐食性） 14) Others（その他） {write details（お書きください）}

--- **Physiological and Ecological Characteristics** （生理生態的特性）---

1) Autotrophic （独立栄養） 2) Mixotrophic （混合栄養）

3) Phagotrophic （摂食栄養） 4) Heterotrophic （従属栄養）

5) Planktonic （浮遊性） 6) Benthic （底生）

7) Symbiotic （共生） 8) Parasitic （寄生）

9) Saprophytic （腐生） 10) Endophytic （内生）

11) Epiphytic （植物着生） 12) Epilithic （岩石着生）

13) Eurythermal （広温性） 14) Stenothermal （狭温性）

15) Thermophilic （好熱性） 16) Psychrophilic （好冷性）

17) Euryhaline （広塩性） 18) Stenohaline （狭塩性）

19) Halophilic （好塩性） 20) Acidophilic （好酸性）

21) Sun-type （陽生型） 22) Shade-type （陰生型）

23) Nitrogen fixation （窒素固定） 24) Fermentation （発酵）

25) Bioluminescence （生物発光） 26) Phototaxis （走光性）

27) Hydrogen evolution （水素発生） 28) Aerobic （好気性）

29) Anaerobic （嫌気性） 30) Gram positive （グラム陽性）

31) Gram negative （グラム陰性） 32) Others（その他） {write details（お書きください）}

--- **Miscellaneous Characteristics** （その他の特性）---

1) Mutant （突然変異株） 2) Type strain （タイプ株）

3) Heterothallic （雌雄異株） 4) Homothallic （雌雄同株）

5) Dioecious （雌雄異体） 6) Monoecious （雌雄同体）

7) Isogamy （同型配偶） 8) Anisogamy （異型配偶）

9) Oogamy （卵生殖） 10) H, h type （H, h型生活環）

11) H, d type （H, d型生活環） 12) D, d+h type （D, d+h型生活環）

13) Polyploidy （倍数性株） 14) Chromatic adaptation （色順応）

15) Rod （桿菌） 16) Coccus （球菌）

17) Coryne form （コリネ形菌） 18) Spiral （ラセン菌）

19) Motile （運動性） 20) Immotile （非運動性）

21) Resting spore forming （休眠胞子形成） 22) Resting spore not forming （休眠胞子非形成）

23) Mating type ＋ （交配型 ＋） 24) Mating type － （交配型 －）

25) Mating type female （交配型 雌） 26) Mating type male （交配型 雄）

27) Others（その他） {write details（お書きください）}

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_3BO_3
KCl	$MnCl_2 \cdot 4H_2O$
$CaCl_2 \cdot 2H_2O$	$MnSO_4 \cdot 7H_2O$
$MgCl_2 \cdot 6H_2O$	$FeCl_3 \cdot 6H_2O$
Na_2SO_4	$FeSO_4 \cdot 7H_2O$
K_2SO_4	$CoCl_2 \cdot 6H_2O$
$MgSO_4 \cdot 7H_2O$	$ZnSO_4 \cdot 7H_2O$
$NaNO_3$	$CuSO_4 \cdot 5H_2O$
KNO_3	$Na_2MoO_4 \cdot 2H_2O$
$Ca(NO_3)_2 \cdot 4H_2O$	**Vitamins**
NH_4NO_3	Vitamin B_{12}
$NaH_2PO_4 \cdot 2H_2O$	Biotin
β-Na_2 glycerophosphate$\cdot 5H_2O$	Thiamine HCl
KH_2PO_4	Nicotinic acid
K_2HPO_4	Calcium panthothenate
Na_2CO_3	*p*-Aminobenzoic acid
$NaHCO_3$	Inositol
$Na_2SiO_3 \cdot 9H_2O$	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 B_{12}, 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 B_{12}, biotin and thiamine HCl

i) Prepare separate primary stock solution with a concentration of 0.1 mg/ml of vitamin B_{12} 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 B_{12} 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-56). 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 (18×150mm) 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, $MgSO_4 \cdot 7H_2O$, KCl and $CaCl_2 \cdot 2H_2O$, 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 cmϕ) and cool to form an agar slant.

VI. MEDIA

1) Stock media for algae

1)-1. For freshwater algae

1. AF-6 (130)[1)]

$NaNO_3$	14	mg
NH_4NO_3	2.2	mg
$MgSO_4 \cdot 7H_2O$	3	mg
KH_2PO_4	1	mg
K_2HPO_4	0.5	mg
$CaCl_2 \cdot 2H_2O$	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, $CaCO_3$ 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)

$(NH_4)_2SO_4$	132	mg
KH_2PO_4	27.2	mg
$MgSO_4 \cdot 7H_2O$	24.6	mg
$CaCl_2 \cdot 2H_2O$	7.4	mg
Allen Metals[1)]	0.01	ml
Distilled water	99.9	ml
pH 2.5[2)]		

1) See 48
2) pH is adjusted to 2.5 with 1 N H_2SO_4.

4. C (75)

$Ca(NO_3)_2 \cdot 4H_2O$	15	mg
KNO_3	10	mg
β-Na_2glycerophosphate$\cdot 5H_2O$	5	mg
$MgSO_4 \cdot 7H_2O$	4	mg
Vitamin B_{12}	0.01	μg
Biotin	0.01	μg
Thiamine HCl	1	μg
PIV metals[1)]	0.3	ml
Tris (hydroxymethyl) aminomathane	50	mg
Distilled water	99.7	ml
pH 7.5		

1) See 54

5. CA (86)

$Ca(NO_3)_2 \cdot 4H_2O$	2	mg
KNO_3	10	mg
NH_4NO_3	5	mg
β-Na_2glycerophosphate$\cdot 5H_2O$	3	mg
$MgSO_4 \cdot 7H_2O$	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 54
2) See 50

6. CAM

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

7. Carefoot (13)

$NaNO_3$	24.7	mg
$CaCl_2 \cdot 2H_2O$	1.1	mg
$MgSO_4 \cdot 7H_2O$	4.7	mg
K_2HPO_4	0.9	mg
KH_2PO_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 B_{12}, 0.02 μg Biotin and 2 μg Thiamine HCl are added to this medium.
1) See 54

8. CB

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

9. CC (80)

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

10. CSi

C medium with pH adjusted to 7.0 by buffering with 50 mg HEPES instead of Tris (hydroxymethyl) aminomethane. Thereafter, 10 mg $Na_2SiO_3 \cdot 9H_2O$ is added.

11. CSi+Cu

0.25 mg $CuSO_4 \cdot 5H_2O$ is added to CSi medium.

12. CT (391)

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

13. CYT

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

14. HUT (74)

KH_2PO_4	2	mg
$MgSO_4 \cdot 7H_2O$	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.

15. M-11 (51), (421)

$NaNO_3$	10	mg
K_2HPO_4	1	mg
$MgSO_4 \cdot 7H_2O$	7.5	mg
$CaCl_2 \cdot 2H_2O$	4	mg
Na_2CO_3	3	mg
$FeSO_4 \cdot 7H_2O$	0.1	mg
$Na_2EDTA \cdot 2H_2O$	0.1	mg
Distilled water	100	ml

pH 8.0

16. MA (77)

$Ca(NO_3)_2 \cdot 4H_2O$	5	mg
KNO_3	10	mg
$NaNO_3$	5	mg
Na_2SO_4	4	mg
$MgCl_2 \cdot 6H_2O$	5	mg
β-Na_2glycerophosphate$\cdot 5H_2O$	10	mg
Na_2EDTA	0.5	mg
$FeCl_3 \cdot 6H_2O$	0.05	mg
$MnCl_2 \cdot 4H_2O$	0.5	mg
$ZnCl_2$	0.05	mg
$CoCl_2 \cdot 6H_2O$	0.5	mg
$Na_2MoO_4 \cdot 2H_2O$	0.08	mg
H_3BO_3	2	mg
Bicine	50	mg
Distilled water	100	ml

pH 8.6

17. MAF-6

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

18. M Chu No. 10 (15)

$Ca(NO_3)_2 \cdot 4H_2O$	2.0	mg
KH_2PO_4	0.62	mg
$MgSO_4 \cdot 7H_2O$	2.5	mg
Na_2CO_3	2	mg
$Na_2SiO_3 \cdot 9H_2O$	2.5	mg
HCl (1N)[1]	0.025	ml
$Na_2EDTA \cdot 2H_2O$	0.2	mg
$FeCl_3 \cdot 6H_2O$	0.1	mg
H_3BO_3	0.248	mg
$MnCl_2 \cdot 4H_2O$	0.139	mg
$(NH_4)_6Mo_7O_{24} \cdot 4H_2O$	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.

19. MDM (366)

KNO_3	100	mg
$MgSO_4 \cdot 7H_2O$	25	mg
K_2HPO_4	25	mg
NaCl	10	mg
$CaCl_2 \cdot 2H_2O$	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 51
2) See 47

20. MG (76)

$Ca(NO_3)_2 \cdot 4H_2O$	2	mg
KNO_3	10	mg
β-Na_2glycerophosphate$\cdot 5H_2O$	3	mg
$MgSO_4 \cdot 7H_2O$	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 54
2) See 50

21. MGM

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

22. P 35 (77)

NH_4NO_3	10	mg
$MgSO_4 \cdot 7H_2O$	4	mg
KCl	5	mg
$CaCl_2 \cdot 2H_2O$	7.4	mg
β-Na_2glycerophosphate$\cdot 5H_2O$	5	mg
Sodium acetate	100	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 8.0		

1) See 54

23. MW (289)

Urea	0.85	mg
$NaNO_3$	0.17	mg
NH_4Cl	0.042	mg
$Ca(NO_3)_2 \cdot 4H_2O$	10	mg
$CaCO_3$	1	mg
$CaCl_2 \cdot 2H_2O$	1.4	mg
KNO_3	1	mg
$KHCO_3$	0.9	mg
β-Na_2glycerophosphate$\cdot 5H_2O$	2	mg
$MgSO_4 \cdot 7H_2O$	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 54

24. MW / 5

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

25. URO (136), (196)

NH_4NO_3	0.5	mg
β-Na_2glycerophosphate$\cdot 5H_2O$	0.4	mg
$MgSO_4 \cdot 7H_2O$	1	mg
$CaCl_2 \cdot 2H_2O$	1	mg
KCl	0.1	mg
Thiamine HCl	1	μg
Vitamin B_{12}	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 54
2) pH is adjusted to 7. 5 with 0.1 N HCl.

26. VT (286)

$Ca(NO_3)_2 \cdot 4H_2O$	11.78	mg
β-Na_2glycerophosphate$\cdot 5H_2O$	5	mg
$MgSO_4 \cdot 7H_2O$	4	mg
KCl	5	mg
Vitamin B_{12}	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 54

27. VTAC (250)

20 mg sodium acetate is added to VT medium.

28. VTYT (80)

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

29. W (388)

$Ca(NO_3)_2 \cdot 4H_2O$	10	mg
KNO_3	1	mg
$MgSO_4 \cdot 7H_2O$	1.5	mg
β-Na_2glycerophosphate$\cdot 5H_2O$	2	mg
Urea	1.7	mg
Thiamine HCl	0.2	μg
Vitamin B_{12}	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 54

30. SW (282)

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

31. SOT (258)

$NaHCO_3$	1.68	g
K_2HPO_4	50	mg
$NaNO_3$	250	mg
K_2SO_4	100	mg
NaCl	100	mg
$MgSO_4 \cdot 7H_2O$	20	mg
$CaCl_2 \cdot 2H_2O$	4	mg
$FeSO_4 \cdot 7H_2O$	1	mg
Na_2EDTA	8	mg
A_5 solution[1)]	0.1	ml
Distilled water	99.9	ml

1) See 47

1)-2. For marine algae

32. ESM (264)

$NaNO_3$	12	mg
K_2HPO_4	0.5	mg
Vitamin B_{12}	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	95	ml
pH 8.0		

1) See 57

33. f / 2 (50)

$NaNO_3$	7.5	mg
$NaH_2PO_4 \cdot 2H_2O$	0.6	mg
Vitamin B_{12}	0.05	μg
Biotin	0.05	μg
Thiamine HCl	10	μg
$Na_2SiO_3 \cdot 9H_2O$	1	mg
f / 2 metals[1)]	0.1	ml
Sea water	99.9	ml

1) See 52

34. M-ASP7 (409)

NaCl	2.5	g
$MgSO_4 \cdot 7H_2O$	900	mg
KCl	70	mg
$CaCl_2 \cdot 2H_2O$	30	mg
$NaNO_3$	5	mg
$NaH_2PO_4 \cdot 2H_2O$	2	mg
Vitamin B_{12}	0.1	μg
Vitamin mix S_3[1)]	1	ml
$Na_2SiO_3 \cdot 9H_2O$	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 56
2) See 55

35. MF

f / 2 medium with $Na_2SiO_3 \cdot 9H_2O$ replaced by 1.0ml soil extract[1)] and adjusted to pH 8.0 by buffering with 100mg Tris (hydroxymethyl) aminomethane.

1) See 57

36. MKM (366)

KNO_3	75	mg
KH_2PO_4	2.5	mg
$MgSO_4 \cdot 7H_2O$	2	mg
Fe-citrate	250	μg
Agar	1.5	g
Sea water	50	ml
Distilled water	50	ml

37. 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

38. YT (80)

Stock medium	100	ml
Yeast extract	100	mg
Tryptone	200	mg

39. B - I (87)

Stock medium	100	ml
Proteose peptone	100	mg

40. B - II (87)

Stock medium	100	ml
Yeast extract	500	mg

41. B - III (87)

Stock medium	100	ml
Peptone	500	mg
Beef extract	300	mg

42. B - IV (87)

Stock medium	100	ml
Glucose	100	mg
Peptone	100	mg

43. B - V (87)

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

2)-2. For marine algae

44. STP (285)

$NaNO_3$	20	mg
K_2HPO_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 S_3.
2) In the NIES-Collection, yeast autolysate is replaced by yeast extract.
3) See 57

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

NaCl	1.8	g
$MgSO_4 \cdot 7H_2O$	500	mg
KCl	60	mg
$NaNO_3$	100	mg
$CaCl_2 \cdot 2H_2O$	36.7	mg
K_2HPO_4	6	mg
Sucrose	400	mg
PII metals [1]	2	ml
$FeCl_3 \cdot 6H_2O$	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 53
2) See 49

46. Bf / 2 (437)

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

47. A_5 solution (71)

H_3BO_3	286	mg
$MnSO_4 \cdot 7H_2O$	250	mg
$ZnSO_4 \cdot 7H_2O$	22.2	mg
$CuSO_4 \cdot 5H_2O$	7.9	mg
$Na_2MoO_4 \cdot 2H_2O$	2.1	mg
Distilled water	100	ml

48. Allen metals (1)

Fe-EDTA	30.16	mg
$MnCl_2 \cdot 4H_2O$	1.79	mg
H_3BO_3	2.86	mg
$ZnSO_4 \cdot 7H_2O$	0.22	mg
$CuSO_4 \cdot 5H_2O$	0.079	mg
$(NH_4)_6MoO_{24} \cdot 4H_2O$	0.13	mg
NH_4VO_3	0.023	mg
Distilled water	100	ml

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

Glycine	100	mg
D, L - Alanine	100	mg
L - Aspargine	100	mg
Sodium acetate $\cdot 3H_2O$	200	mg
Glucose	200	mg
L - Glutamic acid	200	mg
Distilled water	100	ml

50. Fe (as EDTA; 1:1 molar) (284)

$Fe(NH_4)_2(SO_4)_2 \cdot 6H_2O$	70.2	mg
$Na_2EDTA \cdot 2H_2O$	66	mg
Distilled water	100	ml

* 1 ml of this solution contains 0.1 mg Fe.

51. Fe solution (80)

$FeSO_4 \cdot 7H_2O$	200	mg
Distilled water	100	ml
Conc $\cdot H_2SO_4$	0.026	ml[1)]

1) 2 drops / 500ml (Ref. 80).

52. f / 2 metals (50)

$Na_2EDTA \cdot 2H_2O$	440	mg
$FeCl_3 \cdot 6H_2O$	316	mg
$CoSO_4 \cdot 7H_2O$	1.2	mg
$ZnSO_4 \cdot 7H_2O$	2.1	mg
$MnCl_2 \cdot 4H_2O$	18	mg
$CuSO_4 \cdot 5H_2O$	0.7	mg
$Na_2MoO_4 \cdot 2H_2O$	0.7	mg
Distilled water	100	ml

53. P II metals (283)

H_3BO_3	114	mg
$FeCl_3 \cdot 6H_2O$	4.9	mg
$MnSO_4 \cdot 4H_2O$	16.4	mg
$ZnSO_4 \cdot 7H_2O$	2.2	mg
$CoSO_4 \cdot 7H_2O$	480	μg
$Na_2EDTA \cdot 2H_2O$	100	mg
Distilled water	100	ml

54. P IV metals (286)

$FeCl_3 \cdot 6H_2O$	19.6	mg
$MnCl_2 \cdot 4H_2O$	3.6	mg
$ZnSO_4 \cdot 7H_2O$ [1)]	2.2	mg
$CoCl_2 \cdot 6H_2O$	0.4	mg
$Na_2MoO_4 \cdot 2H_2O$	0.25	mg
$Na_2EDTA \cdot 2H_2O$	100	mg
Distilled water	100	ml

1) In NIES-Collectoin, $ZnCl_2$ is replaced by $ZnSO_4 \cdot 7H_2O$.

55. P_N metals (409)

$Na_2EDTA \cdot 2H_2O$	100	mg
H_3BO_3	113	mg
$FeCl_3 \cdot 6H_2O$	6.3	mg
$CoSO_4 \cdot 7H_2O$	0.093	mg
$ZnSO_4 \cdot 7H_2O$	4.66	mg
$MnCl_2 \cdot 4H_2O$	3.2	mg
Distilled water	100	ml

56. Vitamine mix S_3 (283)

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

57. Soil extract (285)

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

58. 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－をつ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) Geitler[1)]

Syn. ***Arthrospira platensis*** Gomont[2)]

45[3)]

Lake Kasumigaura / Ibaraki[4)] (1975-11)[5)]

IAM M-184[6)], Unialgal, Clonal[7)], M.M.Watanabe[8)] (1975-11)[9)]

Identified by: M.M.Watanabe[10)]

Culture conditions: MA, 25° C, 24 μE / m² sec, 1M, [Cryopreserved][11)]

Characteristics: Water bloom, Freshwater,

Forming water bloom in Inbanuma[12)]

KAS-6-50[13)]

References: 80, 335, 387, 391, 399, 417[14)]

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
   - SAG ： ドイツ ゲッチンゲン大学藻類株保存施設
   - 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。

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、本第６版より $\mu E/m^2 sec$ を用いるものとする。
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（125～134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) Geitler[1)]
Syn. ***Arthrospira platensis*** Gomont[2)]
45[3)]
Lake Kasumigaura / Ibaraki[4)] (1975-11)[5)]
IAM M-184[6)], Unialgal, Clonal[7)], M.M.Watanabe[8)] (1975-11)[9)]
Identified by: M.M.Watanabe[10)]
Culture conditions: MA, 25° C, 24 μE/m² sec, 1M, [Cryopreserved][11)]
Characteristics: Water bloom, Freshwater,
Forming water bloom in Inbanuma[12)]
KAS-6-50[13)]
References: 80, 335, 387, 391, 399, 417[14)]

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.
   SAG: Culture Collection of Algae at the University of Göttingen, Germany.
   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 $\mu E/m^2 sec$ 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.125~134) are arranged according to the system in Chihara (Ed.), "Diversity and Evolution of Algae" (Shokabo, Tokyo, 1999).

VIII. STRAIN DATA

ALGAE

Achnanthes longipes Agardh

330
Kawazu / Shizuoka (1985-05)
Axenic, Clonal, T.Sawaguchi (1985-05)
Identified by: T.Sawaguchi
Culture conditions: f/2, 10° C, 25 μE/m² sec, 2M
Characteristics: Marine
IMHB-5
Reference: 113

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: 277, 337, 338, 412, 413

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: 338

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: 338

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: 338

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: 338

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: 337, 338

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: 337, 338

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: 337, 338

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: 338

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

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, Isolated from mixed culture with *Tribonema marinum* J.Feldmann, Formerly identified as *T. marinum*, *COXI* gene (AF037996), *tufA* gene (AF038004), 18S rRNA gene (AF038005)
References: 19, 293

Actinastrum hantzschii Lagerheim
415
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, *COXI* gene (D63660)
F7-4
References: 66, 399

Alexandrium affine (Inoue et Fukuyo) Balech
673
Harima-Nada / Seto Inland Sea (1980-09)
Axenic, Clonal, S.Yoshimatsu (1980-09)
Identified by: S.Yoshimatsu
Culture conditions: ESM, 20° C, 40 μE/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable

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

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/m² sec, 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/m² sec, 2M
Characteristics: Toxic, Marine, Untransportable
References: 139, 140, 186

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/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable

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/m² sec, 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/m² sec, 1M
Characteristics: Marine, Unstable, Untransportable
IIDA

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/m² sec, 1M
Characteristics: Marine, Untransportable
AK-1

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, 12 μE/m² sec, 1M
Characteristics: Water bloom, Freshwater, Unstable
References: 80, 169, 216, 399, 431

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/m² sec, 1M
Characteristics: Water bloom, Freshwater, Unstable
References: 80, 215, 216, 319, 399

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/m² sec, 1M
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/m² sec, 1M
Characteristics: Freshwater, Water bloom, Formerly identified as *Anabaena spiroides* Klebahn

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, 12, 32, 36, 38, 39, 40, 41, 42, 43, 44, 45, 49, 64, 80, 165, 193, 259, 260, 261, 262, 279, 280, 281, 334, 350, 366, 373, 399, 426, 427, 428, 429, 430, 431

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, 1M
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, [Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater, Unstable
K-TAN-32
References: 126, 216, 325, 399

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: 189, 190, 191, 399

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, [Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater, Unstable
K-TAN-43
Reference: 399

Anabaena kisseleviana Elenkin
807
Lake Kasumigaura / Ibaraki (1978-08)
TAC 34, Unialgal, Clonal, M.Watanabe (1978-08)
Identified by: R.Li
Culture conditions: CT, 20° C, 8 μE/m² sec, 1M
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, 1M
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, 1M
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: CT, 20° C, 8 μE/m² sec, 1M
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, 1M
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: CT, 20° C, 8 μE/m² sec, 1M
Characteristics: Freshwater, Water bloom
A3
Reference: 169

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, 1M
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: CT, 20° C, 8 μE/m² sec, 1M
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, 1M
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, 1M
Characteristics: Freshwater, Water bloom
A26

815
Esthwaite Water, Cambria / England
CCAP 1403/19, Axenic, Clonal, Jaworski (1968)
Reidentified by: R.Li
Culture conditions: CT, 20° C, 8 μE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Formerly identified as *Anabaena solitaria* Klebahn

816
Blelham Tarn, Cambria / England
CCAP 1403/27, Axenic, Clonal, Jaworski (1985)
Reidentified by: R.Li
Culture conditions: CT, 20° C, 8 μE/m² sec, 1M
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, 1M
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, 1M
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, 1M
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, 1M
Characteristics: Freshwater, Water bloom
A14

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, 1M
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, 1M
Characteristics: Freshwater, Water bloom
A19
Reference: 169

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, 1M
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, 1M
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, 1M
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/m²sec, 1M
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/m²sec, 1M
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/m²sec, 20D
Characteristics: Water bloom, Freshwater, Unstable
K-TAN-42
References: 169, 216, 399

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/m²sec, 1M
Characteristics: Water bloom, Indicator, Freshwater, Unstable
K-A-12
References: 169, 216, 263, 399

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/m²sec, 1M, [Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater, Unstable
K-TAN-30
References: 169, 215, 216

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/m²sec, 1M, [Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater, Unstable
K-TAN-31
References: 126, 399

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/m²sec, 1M, [Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater, Unstable
K-TAN-28
Reference: 169

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/m²sec, 1M
Characteristics: Water bloom, Freshwater, Unstable
K-TAN-27
Reference: 399

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/m²sec, 1M
Characteristics: Freshwater, Water bloom
A48
Reference: 169

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/m²sec, 1M
Characteristics: Freshwater, Water bloom
A50
Reference: 169

832
Hochimin / Vietnam (1998-12)
Unialgal, Clonal, R.Li (1998-12)
Identified by: R.Li
Culture conditions: CT, 20° C, 8 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, 27, 28, 29, 42, 43, 44, 80, 334, 351, 366

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, 1M
Characteristics: Freshwater, Water bloom
A23

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
References: 4, 80, 193, 366, 372, 399

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, [Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater, Unstable
K-TAN-1
References: 169, 216, 325, 399

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
Reference: 338

* ***Arthrospira platensis*** Gomont
See ***Spirulina platensis*** (Gomont) Geitler

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

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, *rbc*L gene (D63428)
1520-4 (−)
References: 222, 243

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 (+)
Reference: 222

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, Hetherothallic, Isogamy, Mating type –
1727-1(-)

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, *rbc*L gene (D63429)
1620-3-2
References: 222, 243

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: 222, 242

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: 80, 399

Auxenochlorella protothecoides (Kruger) 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
AT1-7
Reference: 338

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, *rbc*L gene (D63430)
3907-1
References: 226, 243, 246

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 granulatum (L.) Greville
622
CCAP 805/3A, Axenic, Vischer (1939)
Culture conditions: AF-6, 20° C, 32 μE/m² sec, 2M
Characteristics: Freshwater

Botryococcus braunii Kützing
836
Imuta-ike Pond / Kagoshima (1997-06)
Unialgal, Clonal, F.Mori (1997-06)
Identified by: F.Mori
Culture conditions: CA, 20° C, 24 μE/m² sec, 4M
Characteristics: Freshwater

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

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

Calothrix brevissima 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: 80, 278, 366

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: 80, 387, 402

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)
Reference: 80

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)
Reference: 80

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: 80, 387, 402

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, *rbc*L gene (D89767)
Kas-10
References: 239, 247

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., *rbc*L gene (D89768)
w-8-15
References: 239, 247

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, *rbc*L gene (D63431)
SIST3-1
References: 243, 239, 247

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, *rbc*L gene (D89758)
References: 239, 247

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, *rbc*L gene (D89762)
91-409-1
References: 237, 247

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, *rbc*L gene (D89763)
91-421-4
References: 237, 239, 247

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, *rbc*L gene (D89764)
91-504-1
References: 237, 239, 247

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, *rbc*L gene (D89761)
References: 239, 247

635
Allahabad / India
UTEX 233, Unialgal, Clonal, Pringsheim.O.
Culture conditions: AF-6, 20° C, 22 μE/m² sec, 1M
Characteristics: Freshwater, Type strain of *Carteria eugametos* Mitra, *rbc*L gene (D89759)
References: 239, 247

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), *rbc*L gene (D89760)
References: 239, 247

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, *rbc*L gene (D89765)
134-4
References: 239, 247

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, *rbc*L gene (D89766)
106
References: 239, 247

* ***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

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

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, *rbc*L gene (D89769)
Ca-2-1
Reference: 247

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

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

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

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, *rbc*L gene (D89770)
w-5-2
Reference: 247

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 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, 20D
Characteristics: Marine
STHB-4

553
Tokyo Bay / Tokyo (1991-10)
Unialgal, Clonal, S.Ono (1991-10)
Identified by: S.Ono
Culture conditions: f/2, 5° C, 15 μE/m² sec, 1M
Characteristics: Red tide, Marine
T-1

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), [Cryopreserved]
Characteristics: Freshwater
M-29
References: 338, 339

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: 337, 338, 339

Characiochloris acuminata Lee et Bold
637
El 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
Reference: 236

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
91-0106-1
Reference: 236

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
Reference: 236

Characium angustum A.Braun
639
Kinu River / Tochigi (1987-08)
Unialgal, F.Kasai, (1987-09-17)
Identified by: F.Kasai
Culture conditions: C, 15° C, 6 μE/m² sec, 4M, (15° C, 15 μE/m² sec)
Characteristics: Freshwater
AK-5-2
Reference: 338

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
Reference: 416

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
Reference: 80

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: 20, 68, 90, 91, 92, 93, 94, 95, 156, 158, 194, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 217, 405, 432, 435

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: 68

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: 68, 357

84
Off Hiketa / Seto Inland Sea (1972)
Axenic, Clonal, T.Okaichi

Culture conditions: f/2, 20° C, 32 μE/m²sec, 1M
Characteristics: Red tide, Marine, Untransportable
KGW-6-1
Reference: 68

85
Shodo Isl. / Kagawa (1978-07)
Axenic, Clonal, S.Yoshimatsu
Culture conditions: f/2, ESM, 20° C, 32 μE/m²sec, 1M
Characteristics: Red tide, Marine, Untransportable
KGW-8-5
References: 68, 69

86
Uranouchi Bay / Kochi (1980-11)
Axenic, Clonal, S.Yoshimatsu
Culture conditions: f/2, ESM, 20° C, 32 μE/m²sec, 1M
Characteristics: Red tide, Marine, Untransportable
KGW-42-4
References: 68, 69, 357

113
Naoshima Isl. / Kagawa (1982-07)
Axenic, Clonal, S.Yoshimatsu
Culture conditions: f/2, 20° C, 32 μE/m²sec, 1M
Characteristics: Red tide, Marine, Untransportable
KGW-59-2
References: 6, 68

114
Harima-Nada / Seto Inland Sea (1983-08)
Axenic, Clonal, S.Yoshimatsu
Culture conditions: f/2, 20° C, 32 μE/m²sec, 1M
Characteristics: Red tide, Marine, Untransportable
KGW-74-8
References: 68, 425

161
Hiroshima Bay / Hiroshima
Axenic, Clonal
Culture conditions: f/2, 20° C, 32 μE/m²sec, 1M
Characteristics: Red tide, Marine, Untransportable
Hiroshima-70
References: 54, 55

557
Hiroshima Bay / Hiroshima (1970-09)
Axenic, Clonal, H.Takayama (1970-09)
Culture conditions: f/2, 20° C, 32 μE/m²sec, 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/m²sec, 1M
Characteristics: Red tide, Marine, Untransportable

Chattonella marina (Subrahmanyan) Hara et Chihara
3
Osaka Bay / Osaka (1982-08)
Axenic, Clonal, S.Yamochi (1982-08)
Culture conditions: f/2, 20° C, 32 μE/m²sec, 1M
Characteristics: Red tide, Marine, Untransportable
OCH-m
Reference: 357

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/m²sec, 1M
Characteristics: Red tide, Marine, Untransportable
H-53-11
References: 68, 425

115
Kinko Bay / Kagoshima (1978-06)
Axenic, Clonal, Aramaki/Yoshimatsu
Culture conditions: f/2, ESM, 20° C, 32 μE/m²sec, 1M
Characteristics: Red tide, Marine, Untransportable
KGW-9-1
Reference: 68

116
Harima-Nada / Seto Inland Sea (1981-07)
Axenic, Clonal, S.Yoshimatsu
Culture conditions: f/2, 20° C, 32 μE/m²sec, 1M
Characteristics: Red tide, Marine, Untransportable
KGW-46-7
Reference: 68

117
Naoshima Isl. / Kagawa (1982-07)
Axenic, Clonal, S.Yoshimatsu
Culture conditions: f/2, 20° C, 32 μE/m²sec, 1M
Characteristics: Red tide, Marine, Untransportable
KGW-58-3
Reference: 68

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: 55, 68, 69, 288, 357

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: 68, 69, 357

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 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: 53, 55

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

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: 55

Chilomonas paramecium Ehrenberg
715
Sugadaira / Nagano (1985-11)
Axenic, Clonal, M.Erata (1985-11)
Identified by: M.Erata
Culture conditions: CYT, 15° C, 15 μE/m² sec, 1M
Characteristics: Freshwater
#00210
Reference: 22

766
Lake Jusan-ko / Aomori (1987-07)
Unialgal, Clonal, M.Erata (1987-07)
Identified by: M.Erata
Culture conditions: CYT, 15° C, 15 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, 15 μE/m² sec, 1M
Characteristics: Freshwater
#00319

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: 416, 417

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

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

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: 277, 416

* ***Chlamydomonas neglecta*** (Pascher) Korshikov
See ***Chlorogonium neglectum*** Pascher

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: 135, 294, 300

441
Hachinohe Harbor / Aomori (1985-01)
Axenic, Clonal, S.Suda (1985-02)
Identified by: S.Suda
Culture conditions: f/2, 20° C, 22 μE/m² sec, 2M
Characteristics: Marine
HH-5
Reference: 294

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: 80, 399, 417

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, *rbc*L gene (AJ001880)
413D4-4
References: 240, 255, 358

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

* ***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
Tst-8-2
Reference: 338

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: 66, 80, 96, 122, 131, 170, 182, 248, 271, 356, 366, 374, 417, 440

641
Miyata River / Ibaraki (1987-02)
Axenic, Clonal, F.Kasai (1987-03)
Identified by: F.Kasai
Culture conditions: C, 20° C, 8 μE / m² sec, 6M

Characteristics: Freshwater
1st-3-26
References: 337, 338

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
1st-2-17
References: 337, 338

686
Delft / Holland
IAM C-207, 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
Reference: 248

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, *rbc*L gene (AB010230)
92-912-1
Reference: 255

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, 1M
Characteristics: Freshwater, Formerly identified as *Chlorogonium tetrragamum* Bohlin, *rbc*L gene (AB010234)
Reference: 255

743
Leveret, MA / USA
UTEX 1643, Unialgal, Clonal, P.Kugrens
Reidentified by: H.Nozaki
Culture conditions: AF-6, 20° C, 12 μE/m² sec, 1M
Characteristics: Freshwater, Formerly identified as *Chlorogonium tetragamum* Bohlin, *rbc*L gene (AB010235)
Reference: 255

744
Germany
UTEX 2160, Unialgal, Clonal
Reidentified by: H.Nozaki
Culture conditions: AF-6, 20° C, 12 μE/m² sec, 1M
Characteristics: Freshwater, Formerly identified as *Chlorogonium* sp., *rbc*L gene (AB010236)
Reference: 255

745
Berlin / Germany
CCAP 12/2A, Unialgal, Clonal, Hartmann
Reidentified by: H.Nozaki
Culture conditions: AF-6, 20° C, 12 μE/m² sec, 1M
Characteristics: Freshwater, Formerly identified as *Chlorogonium elongatum* Dangeard, *rbc*L gene (AB010231)
Reference: 255

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, 1M
Characteristics: Freshwater, Formerly identified as *Chlorogonium elongatum* Dangeard, *rbc*L gene (AB010232)
Reference: 255

747
CCAP 12/5, Unialgal, Clonal, E.G.Pringsheim
Reidentified by: H.Nozaki
Culture conditions: AF-6, 20° C, 12 μE/m² sec, 1M
Characteristics: Freshwater, Formerly identified as *Chlorogonium* sp., *rbc*L gene (AB010233)
Reference: 255

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, 1M
Characteristics: Freshwater, Formerly identified as *Chlorogonium elongatum* (Dangeard) Dangeard, *rbc*L gene (AB010237)
Reference: 255

749
SAG 47.84, Unialgal, Clonal, L.Provasoli
Reidentified by: H.Nozaki

Culture conditions: AF-6, 20° C, 12 μE/m² sec, 1M
Characteristics: Freshwater, Formerly identified as *Chlorogonium euchlorum* Ehrenberg, *rbc*L gene (AB010238)
Reference: 255

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, 1M
Characteristics: Freshwater, Formerly identified as *Chlorogonium tetragamum* Bohlin, *rbc*L gene (AB010239)
Reference: 255

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, 1M
Characteristics: Freshwater, Formerly identified as *Chlorogonium acus*, *rbc*L gene (AJ001881)
Reference: 255

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, 1M
Characteristics: Freshwater, Formerly identified as *Chlorogonium* sp., *rbc*L gene (AB010240)
Reference: 255

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, 1M
Characteristics: Freshwater, Formerly identified as *Chlorogonium* sp., *rbc*L gene (AB010241)
Reference: 255

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, 1M
Characteristics: Freshwater, Formerly identified as *Chlorogonium elongatum* Dangeard, *rbc*L gene (AB010226)
Reference: 255

755
Germany
UTEX 2010, Unialgal, Clonal, D.G.Müller
Reidentified by: H.Nozaki
Culture conditions: AF-6, 20° C, 12 μE/m² sec, 1M
Characteristics: Freshwater, Formerly identified as *Chlorogonium* sp., *rbc*L gene (AB010227)
Reference: 255

756
Germany
UTEX 2011, Unialgal, Clonal, D.G.Müller
Reidentified by: H.Nozaki
Culture conditions: AF-6, 20° C, 12 μE/m² sec, 1M
Characteristics: Freshwater, Formerly identified as *Chlorogonium* sp., *rbc*L gene (AB010228)
Reference: 255

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, 1M
Characteristics: Freshwater, Formerly identified as *Chlorogonium elongatum* (Dangeard) Dangeard, *rbc*L gene (AB010224)
Reference: 255

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, 1M
Characteristics: Freshwater, Formerly identified as *Chlorogonium euchlorum* Ehrenberg, *rbc*L gene (AJ001882)
Reference: 255

759
CCAP 12/6, Unialgal, Clonal, E.G.Pringsheim
Reidentified by: H.Nozaki
Culture conditions: AF-6, 20° C, 12 μE/m² sec, 1M
Characteristics: Freshwater, Formerly identified as *Chlorogonium* sp., *rbc*L gene (AB010225)
Reference: 255

760
Cape Flats / South Africa, D.K.Vlei
SAG 12-2d, Unialgal, Clonal, E.G.Pringsheim (1951)
Reidentified by: H.Nozaki
Culture conditions: AF-6, 20° C, 12 μE/m² sec, 1M
Characteristics: Freshwater, Formerly identified as *Chlorogonium elongatum* (Dangeard) Dangeard, *rbc*L gene (AB010229)
Reference: 255

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, *rbc*L gene (AB010242)
MKF-14
References: 80, 240, 255

Chlorogonium kasakii Nozaki
761
Cumbria / U.K.
CCAP 12/8, Unialgal, Clonal, Jaworski
Reidentified by: H.Nozaki
Culture conditions: AF-6, 20° C, 12 μE/m² sec, 1M
Characteristics: Freshwater, Formerly identified as *Chlorogonium* sp., Type strain, *rbc*L gene (AB010244)
Reference: 255

* ***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/m² sec, 2M
Characteristics: Freshwater, *rbc*L gene (AB010243)
T-4-19
Reference: 255

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/m² sec, 2M
Characteristics: Freshwater, *rbc*L gene (AB022226)
Kas-8
Reference: 183

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/m² sec, 3M, (25° C, 30 μE/m² sec)
Characteristics: Soil
TOT-24
Reference: 416

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/m² sec, 3M, (25° C, 30 μE/m² sec)
Characteristics: Soil
KUC3-6
Reference: 416

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/m² sec, 1M
Characteristics: Freshwater
#00171
Reference: 24

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/m² sec, 1M
Characteristics: Freshwater

#00191
References: 22, 24

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, 1M
Characteristics: Freshwater
#00217
References: 22, 24, 25

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, 15 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, 15 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, 1M
Characteristics: Freshwater
#00165
References: 22, 23, 24

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, 1M
Characteristics: Freshwater
#00173
References: 24, 25

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, 1M
Characteristics: Freshwater
#00324
Reference: 24

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, 1M
Characteristics: Freshwater
#00330
Reference: 24

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, 1M
Characteristics: Freshwater
#00331
Reference: 24

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, 1M
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, 15 μE/m² sec, 1M
Characteristics: Marine, Type strain
Reference: 23

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

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
Reference: 76

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
N-25-22
Reference: 76

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: 76, 80

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
Reference: 80

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
Reference: 16

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

Closterium calosporum Wittrock var. ***calosporum***
271
Vermont / U.S.A.
IAM C-318, Axenic, Clonal, P.W.Cook
Culture conditions: AF-6, 20° C, 8 μE/m² sec, 3M, (20° C, 25 μE/m² sec)
Characteristics: Freshwater
References: 80, 86, 376, 377

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

162
Ibaraki
Unialgal, Clonal, M.M.Watanabe
Identified by: M.M.Watanabe
Culture conditions: CA, 20° C, 8 μE/m² sec, 3M, (25° C, 15 μE/m² sec)
Characteristics: Freshwater, Heterothallic, Mating type +, Crosses with NIES-128, NIES-163 and NIES-168
IB-21-21

163
Ginama / Okinawa (1973-06)
IAM C-455, Axenic, Clonal, T.Ichimura (1973-10)

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, NIES-164 and NIES-165
R-5-3
References: 86, 376, 377

164
Ginama / Okinawa (1973-06)
IAM C-454, Unialgal, Clonal, T.Ichimura (1973-10)
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-163 and NIES-166
R-5-2
References: 86, 376, 377

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 μE/m² sec, 3M, (25° C, 15 μE/m² sec)
Characteristics: Freshwater, Heterothallic, Mating type +, Crosses with NIES-163, NIES-166 and NIES-168
R-11-6
References: 86, 376, 377

166
Kagawa-cho / Kagawa (1974-09)
Axenic, Clonal, T.Ichimura
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-164, NIES-165 and NIES-167
J5-56-11

167
Kagawa-cho / Kagawa (1974-09)
Axenic, Clonal, T.Ichimura
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-166
J5-56-12

168
Iriomote Isl. / Okinawa (1973-03)
Axenic, Clonal, T.Ichimura
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-165
R-11-5
References: 86, 376, 377

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 μE/m² sec, 3M, (20° C, 25 μE/m² sec)
Characteristics: Freshwater, Homothallic
N-134-5
References: 376, 377

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
N-143-19

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: 124, 376

336
Suke / Nepal (1972-06)
Axenic, Clonal, M.M.Watanabe
Identified by: M.Watanabe
Culture conditions: CA, 25° C, 15 μE/m² sec, 2M
Characteristics: Freshwater, Homothallic

N-147-12
Reference: 376

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/m²sec, 3M, (25° C, 15 μE/m²sec)
Characteristics: Freshwater, Heterothallic, Mating type +, Mating group B
Crosses with NIES-229
KK-33-1
References: 46, 47, 67, 78, 79, 81, 82, 84, 124, 125, 135

229
Ebina / Kanagawa (1975-12)
Axenic, Clonal, T.Ichimura
Identified by: T.Ichimura
Culture conditions: C, 20° C, 8 μE/m²sec, 3M, (20° C, 12 μE/m²sec)
Characteristics: Freshwater, Heterothallic, Mating type −, Mating group B
Crosses with NIES-228
KK-33-6
References: 46, 47, 67, 78, 79, 81, 82, 84, 124, 125

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/m²sec, 3M, (20° C, 12 μE/m²sec)
Characteristics: Freshwater, Heterothallic, Mating type +, Crosses with NIES-180
N-90-58
References: 76, 80

180
Kathmandu / Nepal (1968-05)
IAM C-445, Unialgal, Clonal, T.Ichimura
Identified by: T.Ichimura
Culture conditions: CA, 20° C, 8 μE/m²sec, 3M, (20° C, 12 μE/m²sec)
Characteristics: Freshwater, Heterothallic, Mating type −, Crosses with NIES-179
N-90-59
References: 76, 80

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/m²sec, 3M, (20° C, 25 μE/m²sec)
Characteristics: Freshwater, Homothallic
N-34-2
References: 76, 80

337
Nawakot / Nepal (1965-10)
Unialgal, Non-clonal, T.Ichimura
Identified by: T.Ichimura
Culture conditions: CA, 20° C, 8 μE/m²sec, 3M, (20° C, 25 μE/m²sec)
Characteristics: Freshwater, Homothallic
N-12-92
Reference: 76

Closterium moniliferum Ehrenberg ex Ralfs
var. ***moniliferum***
172
Nepal
Unialgal, Non-clonal
Culture conditions: C, 20° C, 8 μE/m²sec, 3M, (20° C, 25 μE/m²sec)
Characteristics: Freshwater, Homothallic
N-100-1

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/m²sec, 3M, (20° C, 12 μE/m²sec)
Characteristics: Freshwater, Homothallic
S-1-22
Reference: 80

174
Ghorepani / Nepal (1965-12)
Unialgal, Clonal, T.Ichimura
Identified by: T.Ichimura
Culture conditions: C, 20° C, 8 μE/m²sec, 3M, (20° C, 12 μE/m²sec)
Characteristics: Freshwater, Homothallic
N-76-30
Reference: 76

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/m²sec, 3M, (20° C, 12 μE/m²sec)
Characteristics: Freshwater, Heterothallic, Mating type +, Crosses with NIES-183
S-1-13
References: 76, 80

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/m²sec, 3M, (20° C, 12 μE/m²sec)
Characteristics: Freshwater, Heterothallic, Mating type –, Crosses with NIES-182
S-1-24
References: 76, 80

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/m²sec, 3M, (20° C, 25 μE/m²sec)
Characteristics: Freshwater, Homothallic
N-49-7
References: 76, 80

176
Ghorepani / Nepal (1965-12)
Axenic, Clonal, T.Ichimura
Identified by: T.Ichimura
Culture conditions: C, 20° C, 8 μE/m²sec, 3M, (20° C, 25 μE/m²sec)
Characteristics: Freshwater, Homothallic
N-75-10
Reference: 76

177
Billethadi / Nepal (1965-12)
Unialgal, Clonal, T.Ichimura
Identified by: T.Ichimura
Culture conditions: CA, 20° C, 8 μE/m²sec, 3M, (20° C, 25 μE/m²sec)
Characteristics: Freshwater, Homothallic
N-79-26
Reference: 76

178
Shewaden / Nepal (1972-06)
Unialgal, Clonal, M.M.Watanabe (1974)
Culture conditions: CA, 20° C, 8 μE/m²sec, 3M, (20° C, 25 μE/m²sec)
Characteristics: Freshwater
N-134-15

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/m²sec, 3M, (20° C, 25 μE/m²sec)
Characteristics: Indicator, Freshwater, Heterothallic, Mating type +, Group II A
IB-4-2
References: 387, 392, 393, 394

52
Katsuta / Ibaraki (1974-08)
Axenic, Clonal, M.M.Watanabe (1974-08)
Identified by: M.M.Watanabe
Culture conditions: C, 15° C, 10 μE/m²sec, 3M, (20° C, 25 μE/m²sec)
Characteristics: Indicator, Freshwater, Heterothallic, Mating type –, Group II A
IB-4-9
References: 387, 392, 393, 394

53
Katsuta / Ibaraki (1974-08)
Axenic, Clonal, M.M.Watanabe (1974-08)
Identified by: M.M.Watanabe
Culture conditions: C, 15° C, 10 μE/m²sec, 3M, (20° C, 25 μE/m²sec)
Characteristics: Freshwater, Heterothallic, Mating type +, Group II A
IB-6-8
References: 387, 392, 393, 394

54
Katsuta / Ibaraki (1974-08)
Axenic, Clonal, M.M.Watanabe (1974-08)
Identified by: M.M.Watanabe
Culture conditions: C, 15° C, 10 μE/m²sec, 3M,

(20° C, 25 μE/m² sec)
Characteristics: Freshwater, Heterothallic, Mating type –, Group II A
IB-6-9
References: 387, 392, 393

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: 387, 392, 393

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: 277, 387, 392, 393

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: 277, 387, 392, 393

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: 387, 392, 393

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: 387, 392, 393

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: 387, 392, 393

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: 387, 392, 393

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: 387, 392, 393

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: 387, 392, 393

64
Lake Kasumigaura / Ibaraki (1974-11)
Unialgal, 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: 127, 128, 129, 212, 303, 310, 387, 392, 393, 394

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)
Characteristics: Freshwater, Heterothallic, Mating type +, Group II B
KAS-4-30
References: 127, 128, 129, 212, 303, 310, 387, 392, 393, 394

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: 75, 76, 387

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: 76, 219, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 387

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: 76, 219, 301, 302, 303, 304, 305, 306, 309, 310, 387

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: 387, 392, 393

70
Lake Teganuma / Chiba (1974-06)
Axenic, 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-2-22
References: 387, 392, 393

261
Katsuta / Ibaraki (1974-08)
Unialgal, 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 C
IB-8-14
References: 387, 392, 393

262
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: Freshwater, Heterothallic,
Mating type –
N-13-4
References: 75, 76, 387

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 μE/m² sec, 3M,
(25° C, 15 μE/m² sec)
Characteristics: Freshwater
R-11-20

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 μE/m² sec, 3M,
(20° C, 25 μE/m² sec)
Characteristics: Freshwater, Homothallic
N-12-3
References: 76, 80

451
Billethadi / Nepal (1965-12)
Unialgal, Clonal, , T.Ichimura
Identified by: T.Ichimura
Culture conditions: MG, 20° C, 8 μE/m² sec, 3M,
(20° C, 25 μE/m² sec)
Characteristics: Freshwater, Homothallic
N-78-8
Reference: 76

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 μE/m² sec, 3M,
(20° C, 25 μE/m² sec)
Characteristics: Freshwater, Heterothallic
N-79-19
References: 76, 80

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 μE/m² sec, 3M,
(20° C, 12 μE/m² sec)
Characteristics: Freshwater, Homothallic
N-90-55
References: 76, 80

Closterium selenastrum M.Watanabe
339
Mt. Yonahadake / Okinawa (1972-10)
Unialgal, Clonal, T.Ichimura
Identified by: M.Watanabe
Culture conditions: CA, 20° C, 8 μE/m² sec, 3M,
(25° C, 15 μE/m² sec)
Characteristics: Indicator, Freshwater, Homothallic
R-9-40
References: 86, 376, 377

340
Mt. Yonahadake / Okinawa (1972-10)
Axenic, Clonal, T.Ichimura
Identified by: M.Watanabe
Culture conditions: CA, 20° C, 8 μE/m² sec, 3M,
(25° C, 15 μE/m² sec)
Characteristics: Indicator, Freshwater, Homothallic
R-9-42
References: 86, 377

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 μE/m² sec, 3M,
(20° C, 25 μE/m² sec)
Characteristics: Indicator, Freshwater, Homothallic,
Type strain
AK-46
References: 86, 376, 377

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 μE/m² sec, 3M,
(20° C, 25 μE/m² sec)
Characteristics: Freshwater, Homothallic

R-9-13
References: 86, 376, 377

341
Mt. Yonahadake / Okinawa (1972-10)
Axenic, Clonal, T.Ichimura
Identified by: M.Watanabe
Culture conditions: CA, 20° C, 8 μE/m² sec, 3M, (20° C, 25 μE/m² sec)
Characteristics: Indicator, Freshwater, Homothallic
R-9-12
References: 86, 376, 377

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 μE/m² sec, 3M, (20° C, 25 μE/m² sec)
Characteristics: Indicator, Freshwater, Heterothallic, Mating type +
M-10-1
References: 376, 377

189
Penang / Malaysia (1974-01)
Axenic, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: CA, 20° C, 8 μE/m² sec, 3M, (20° C, 25 μE/m² sec)
Characteristics: Indicator, Freshwater, Heterothallic, Mating type –
M-10-4
References: 376, 377

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 μE/m² sec, 3M, (20° C, 25 μE/m² sec)
Characteristics: Indicator, Freshwater, Homothallic
R-12-3
References: 376, 377

192
Iriomote Isl. / Okinawa (1973-06)
Axenic, Clonal, T.Ichimura
Identified by: M.Watanabe
Culture conditions: CA, 20° C, 8 μE/m² sec, 3M, (25° C, 15 μE/m² sec)
Characteristics: Indicator, Freshwater, Homothallic
R-12-6
References: 376, 377

193
Iriomote Isl. / Okinawa (1973-06)
Axenic, Clonal, T.Ichimura
Identified by: M.Watanabe
Culture conditions: CA, 20° C, 8 μE/m² sec, 3M, (20° C, 25 μE/m² sec)
Characteristics: Indicator, Freshwater, Homothallic, Giant cell
R-12-2G3
Reference: 376

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 μE/m² sec, 3M, (25° C, 15 μE/m² sec)
Characteristics: Indicator, Freshwater, Homothallic
A-2-22
References: 86, 376, 377

195
Tsukude-mura / Aichi (1972-10)
Unialgal, Clonal, M.M.Watanabe
Identified by: M.Watanabe
Culture conditions: CAM, 20° C, 8 μE/m² sec, 3M, (20° C, 25 μE/m² sec)
Characteristics: Indicator, Freshwater, Homothallic
A-7-3
Reference: 377

196
Tsukude-mura / Aichi (1972-10)
Unialgal, Clonal, M.M.Watanabe
Identified by: M.Watanabe
Culture conditions: CAM, 20° C, 8 μE/m² sec, 3M, (20° C, 25 μE/m² sec)
Characteristics: Indicator, Freshwater, Homothallic
A-7-6
Reference: 376

197
Tsukude-mura / Aichi (1972-10)
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: Indicator, Freshwater, Homothallic
A-13-4
References: 376, 377

* ***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 μE/m² sec, 3M, (20° C, 25 μE/m² sec)
Characteristics: Freshwater, Homothallic
N-79-11
References: 76, 80

Closterium venus Kützing ex Ralfs
199
Kathmandu / Nepal (1968)
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
N-90-48

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 μE/m² sec, 3M, (20° C, 12 μE/m² sec)
Characteristics: Freshwater, Homothallic
S-1-0
Reference: 80

201
Lake Kasumigaura / Ibaraki (1983-09)
Axenic, Clonal, F.Kasai (1983-09)
Identified by: F.Kasai
Culture conditions: C, 20° C, 8 μE/m² sec, 3M, (20° C, 12 μE/m² sec)
Characteristics: Indicator, Freshwater, Homothallic
F60-21

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
Reference: 76

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

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

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

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

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
Reference: 126

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: 80, 399

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

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

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 askenasyi Schmidle
768
Near Cairns, Queensland / Australia (1988-09)
Unialgal, Clonal, F.Kasai (1988-09)
Identified by: F.Kasai
Culture conditions: MG, 20° C, 8 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, 20° C, 8 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, 20° C, 8 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, 20° C, 8 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)
TAC 53, 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

Cosmarium dilatatum Lütkemüller in Tärnefeld et Grönblad
839
Ryoanji Temple / Kyoto (1998-06)
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: 48

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

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

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: 65, 270

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, 15 μE/m² sec, 1M
Characteristics: Marine, Type strain
Reference: 23

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, 15 μE/m² sec, 1M
Characteristics: Marine, Type strain
Reference: 23

Cryptomonas ovata Ehrenberg
274
Tsuchiura / Ibaraki (1982-10)
Axenic, Clonal, M.Ishimitsu (1982-10)
Identified by: M.Ishimitsu
Culture conditions: VT, 10° C, 25 μE/m² sec, 2M
Characteristics: Freshwater, *COXI* gene (AB009419)
#00046
References: 96, 106

275
Tsuchiura / Ibaraki (1982-09)
Axenic, Clonal, M.Ishimitsu (1982-09)
Identified by: M.Ishimitsu
Culture conditions: VT, 10° C, 25 μE/m² sec, 2M
Characteristics: Freshwater
#00042
References: 106, 126

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: 106

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: 106

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: 106

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: 106

345
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
#00006
Reference: 106

Cryptomonas tetrapyrenoidosa 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: 106

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: 106, 126

281
Minamiizu / Shizuoka (1983-05)
Axenic, Clonal, M.Ishimitsu (1983-05)
Identified by: M.Ishimitsu
Culture conditions: VT, 5° C, 15 μE/m² sec, 2M
Characteristics: Freshwater
#00073
Reference: 106

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, 106

346
Sugadaira / Nagano (1982-07)
Axenic, Clonal, M.Ishimitsu (1982-08)
Identified by: M.Ishimitsu
Culture conditions: VT, 5° C, 15 μE/m² sec, 2M
Characteristics: Freshwater
#00009
Reference: 106

347
Minamiizu / Shizuoka (1983-05)
Axenic, Clonal, M.Ishimitsu (1983-05)
Identified by: M.Ishimitsu
Culture conditions: VT, 5° C, 15 μE/m² sec, 2M
Characteristics: Freshwater
#00072
Reference: 106

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: 106

Cyanidioschyzon merolae De Luca et al.
549
Unialgal, Non-clonal
Identified by: A.Merola et al.
Culture conditions: Allen, 20° C, 4 μE/m² sec, 6M,
(20° C, 12 μE/m² sec)
Characteristics: Acidophilic
3
Reference: 175

Cyanidium caldarium (Tilden) Geitler
250
See ***Galdieria sulphuraria*** (Galdieri) Merola

551
Unialgal, Non-clonal
Identified by: A.Merola et al.
Culture conditions: Allen, 20° C, 4 μE/m² sec, 6M, (20° C, 12 μE/m² sec)
Characteristics: Acidophilic
086
Reference: 175

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

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 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: 123

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: 123

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: 123

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

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
Reference: 211

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

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/m²sec, 2M, (25° C, 30 μE/m²sec)
Characteristics: Freshwater
34-5

135
Tsuchiura / Ibaraki (1983-10)
Axenic, Clonal, F.Kasai (1983-10)
Identified by: M.Watanabe
Culture conditions: CA, 20° C, 4 μE/m²sec, 2M, (25° C, 30 μE/m²sec)
Characteristics: Freshwater
F-61-4
Reference: 399

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/m²sec, 4M
Characteristics: Freshwater
F-75-26

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/m²sec, 1M
Characteristics: Marine
KBB-10

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/m²sec, 3M
Characteristics: Freshwater
41-11

Draparnaldia plumosa (Vaucher) Agardh
454
Shirai River / Sapporo (1987-10)
Unialgal, Non-clonal, F.Kasai (1987-10)
Identified by: F.Kasai
Culture conditions: C, 10° C, 6 μE/m²sec, 3M, (10° C, 15 μE/m²sec)
Characteristics: Freshwater
2Tst-2-1
Reference: 338

Echinosphaeridium 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/m²sec, 3M, (25° C, 30 μE/m²sec)
Characteristics: Indicator, Freshwater
F-56-3
References: 126, 399

Emiliania huxleyi (Lohmann) Hay et Mohler
837
Great Barrier Reef / Australia (1990-11)
Unialgal, Clonal, I.Inouye (1990-11)
Identified by: I.Inouye
Culture conditions: ESM, 20° C, 12 μE/m²sec, 1M
Characteristics: Marine, Red tide
EH-01
References: 297, 311, 312, 313, 314

Eremosphaera gigas (Archer) Fott et Kalina
379
Shinobugaoka / Osaka (1968-11)
IAM C-338, Unialgal, Clonal, T.Ichimura (1969-01)
Identified by: T.Nakano
Culture conditions: C(S), 20° C, 4 μE/m²sec, 3M, (25° C, 30 μE/m²sec)
Characteristics: Freshwater
O-2
References: 80, 399

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/m²sec, 3M, (25° C, 30 μE/m²sec)
Characteristics: Freshwater
43-23

643
Miyatoko Mire / Fukushima (1992-04)
Unialgal, Clonal, H.Nozaki (1992-04)
Identified by: H.Nozaki
Culture conditions: AF-6, 20° C, 22 μE/m²sec, 2M
Characteristics: Freshwater

92-604-E-5

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

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
Reference: 80

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, 20° C, 8 μE/m² sec, 3M, (25° C, 30 μE/m² sec)
Characteristics: Freshwater
Reference: 48

Euastrum turgidum Wallich
772
Ishigaki Isl / Okinawa (1984-03)
Unialgal, Clonal, T.Ichimura (1984-03)
Identified by: T.Ichimura
Culture conditions: MG, 20° C, 8 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 (1984-03)
Identified by: T.Ichimura
Culture conditions: MG, 20° C, 8 μE/m² sec, 3M, (25° C, 30 μE/m² sec)
Characteristics: Freshwater, Heterothallic, Crosses with NIES-772
84-15-76

Eudorina cylindrica Korshikov
722
IA / USA
UTEX 1197, Axenic, Clonal, A.W.Coleman (1957-04)
Culture conditions: AF-6, 20° C, 12 μE/m² sec, 1M
Characteristics: Freshwater, Heterothallic, *rbc*L gene (D86833)
Reference: 244

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
Reference: 325

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, 1M
Characteristics: Freshwater, Homothallic, Monoecious, *rbc*L gene (D88806)
Reference: 245

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, *rbc*L gene (D63432)
A-5 (m)
References: 223, 242, 243

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)
Reference: 223

717
Indiana / USA (1959-06)
UTEX 1193, Axenic, Clonal, M.E.Goldstein
Culture conditions: AF-6, 20° C, 12 μE/m²sec, 1M
Characteristics: Freshwater, Heterothallic, *rbc*L gene (D88803)
References 245

718
Indiana / USA
UTEX 1195, Axenic, Clonal, A.W.Coleman
Culture conditions: AF-6, 20° C, 12 μE/m²sec, 1M
Characteristics: Freshwater, Heterothallic, *rbc*L gene (D88810)
Reference: 245

719
Indiana / USA
UTEX 1199, Axenic, Clonal, A.W.Coleman (1956)
Culture conditions: AF-6, 20° C, 12 μE/m²sec, 1M
Characteristics: Freshwater, Heterothallic, *rbc*L gene (D88804)
Reference: 245

720
Indiana / USA (1959-09)
UTEX 1205, Axenic, Clonal, M.E.Goldstein
Culture conditions: AF-6, 20° C, 12 μE/m²sec, 1M
Characteristics: Freshwater, Heterothallic, *rbc*L gene (D88805)
Reference: 245

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/m²sec, 1M
Characteristics: Freshwater, Homothallic, Monoecious, *rbc*L gene (D88807)
04427-1
References: 229, 245

568
Kathmandu / Nepal (1986-09)
Axenic, Clonal, H.Nozaki (1987-09)
Identified by: H.Nozaki
Culture conditions: CA, 20° C, 12 μE/m²sec, 1M
Characteristics: Freshwater, Homothallic, Monoecious, *rbc*L gene (D88808)
7914-E-6
References: 230, 245

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/m²sec, 1M
Characteristics: Freshwater, Heterothallic, Female, Crosses with NIES-460
5607-E-14 (F)
References: 227, 254

460
Saiwai-ku / Kawasaki / Kanagawa (1984-01)
Axenic, Clonal, H.Nozaki (1985-06)
Identified by: H.Nozaki
Culture conditions: VT, 20° C, 12 μE/m²sec, 1M
Characteristics: Freshwater, Heterothallic, Male, Crosses with NIES-459, *rbc*L gene (D63433)
5630-E-3 (m)
References: 227, 242, 243

723
Missouri / USA (1956-11)
UTEX 808, Axenic, Clonal, J.Stein
Reidentified by: H.Nozaki
Culture conditions: AF-6, 20° C, 12 μE/m²sec, 1M
Characteristics: Freshwater, Heterothallic, *rbc*L gene (D88809)
Reference: 245

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/m²sec, 1M
Characteristics: Freshwater, Heterothallic, *rbc*L gene (D86830)
Reference: 244

Eudorina unicocca G.M.Smith var. ***unicocca***
724
Indiana / USA
UTEX 737, Axenic, Clonal, R.C.Starr
Culture conditions: AF-6, 20° C, 12 μE/m²sec, 1M
Characteristics: Freshwater, Heterothallic, *rbc*L gene (D86829)

Reference: 244

725
Ohio / USA (1961-04)
UTEX 1215, Axenic, Clonal, M.E.Goldstein
Culture conditions: AF-6, 20° C, 12 μE/m² sec, 1M
Characteristics: Freshwater, Heterothallic, *rbc*L gene (D63434)
Reference: 243

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 B_{12} bioassay
References: 80, 112, 366

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 B_{12} bioassay
References: 21, 80, 88, 112, 174, 180, 193, 273, 274, 275, 276, 348, 349, 442

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: 80, 112, 366

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 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: 338

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: 97

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: 361

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

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), [Cryopreserved]
Characteristics: Benthic
Yu-50

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

Galdieria sulphuraria (Galdieri) Merola
250
IAM M-8, Unialgal, Non-clonal
Culture conditions: Allen, 20° C, 4 μE/m² sec, 4M, (20° C, 12 μE/m² sec)
Characteristics: Hot spring, Formerly identified as *Cyanidium caldarium* (Tilden) Geitler
References: 80, 134, 193

550
Unialgal, Non-clonal, Pinto
Identified by: A.Merola et al.
Culture conditions: Allen, 20° C, 4 μE/m² sec, 6M, (25° C, 15 μE/m² sec)
Characteristics: Acidophilic, Type strain
002
Reference: 175

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: 65, 160

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, 1M
Characteristics: Marine, Red tide
GO-01
Reference: 297

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

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

Gomphonema angustatum (Kützing) Rabenhorst var. ***obtusatum*** (Kützing) Grunow
620
Mt.Tsukuba / Ibaraki (1987-04-17)
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: 338

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: 338

Gomphonema parvulum Kützing var. ***parvulum***
466
Shirai River / Sapporo (1987-07)
Unialgal, Non-clonal, F.Kasai (1987-07)
Identified by: N.Takamura
Culture conditions: CSi, 10° C, 15 μE/m²sec, 2M
Characteristics: Freshwater
Tst-1-18
Reference: 338

467
Shirai River / Sapporo (1987-07)
Unialgal, Clonal, F.Kasai (1987-07)
Identified by: N.Takamura
Culture conditions: CSi, 10° C, 15 μE/m²sec, 2M
Characteristics: Freshwater
Tst-4-3
Reference: 338

Gonatozygon brebissonii De Bary
138
Lake Kasumigaura / Ibaraki (1974-11)
Axenic, Clonal
Culture conditions: C, 20° C, 8 μE/m²sec, 4M, (20° C, 12 μE/m²sec)
Characteristics: Freshwater
KAS-4-43

139
Lake Shoji / Yamanashi (1981-10)
TAC 56-1, Axenic, Clonal, M.Watanabe
Identified by: M.Watanabe
Culture conditions: C, 20° C, 8 μE/m²sec, 4M, (20° C, 12 μE/m²sec)
Characteristics: Freshwater
TAN-56-1

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/m²sec, 3M, (20° C, 12 μE/m²sec)
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/m²sec, 2M, (20° C, 12 μE/m²sec)
Characteristics: Freshwater
TAN-53-3

Gonium multicoccum Pocock
737
UTEX 2580, Axenic, Clonal, H.Nozaki
Identified by: H.Nozaki
Culture conditions: AF-6, 20° C, 12 μE/m²sec, 1M
Characteristics: Freshwater, F1 clone of UTEX 2579, *rbc*L gene (D63435)
90-530-F1-5
References: 243, 252

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/m²sec, 1M
Characteristics: Freshwater, Heterothallic, Mating type –, Crosses with NIES-469
9406-10
References: 135, 224, 234, 249

469
Kohoku-ku / Yokohama / Kanagawa (1979-04)
Axenic, Clonal, H.Nozaki (1979-04)
Identified by: H.Nozaki
Culture conditions: VT, 20° C, 12 μE/m²sec, 1M
Characteristics: Freshwater, Heterothallic, Mating type +, Crosses with NIES-468
9406-12
Reference: 224

569
Kourakuen / Okayama (1988-10)
Unialgal, Clonal, H.Nozaki
Identified by: H.Nozaki
Culture conditions: VTAC, 20° C, 22 μE/m²sec, 1M
Characteristics: Freshwater, Heterothallic, Isogamy, Mating type +, Crosses with NIES-570, *rbc*L gene (D63437)
88-1113-G-1
Reference: 243

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

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(+)

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(-)

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

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

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

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

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: 234, 235

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
Reference: 235

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, *rbc*L gene (D63438)
90-423-2
References: 235, 243, 249

* ***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: 232, 375

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
G3
References: 232, 375

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: 232, 375

654
Midori-ku / Yokohama (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 +, *rbc*L gene (D86831)
KY-4 (+)
References: 232, 242, 244

655
Midori-ku / Yokohama (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 (-)
Reference: 232

Graesiella emersonii (Shihira et Kraus) 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
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: 80, 176, 214, 248, 340, 366, 417, 438, 439, 440, 441

687
USA
IAM C-104, CCAP 211/8B, Unialgal, Clonal, R.Emerson (1923)
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
Reference: 248

688
CCAP 211/8G, Unialgal, Clonal, R.Emerson
Culture conditions: C(S), 20° C, 4 μE/m² sec, 3M, (25° C, 30 μE/m² sec)
Characteristics: Freshwater
Reference: 248

689
CCAP 211/8H, Unialgal, Clonal, R.Emerson
Culture conditions: C(S), 20° C, 4 μE/m² sec, 3M, (25° C, 30 μE/m² sec)
Characteristics: Freshwater
Reference: 248

690
CCAP 211/11N, Unialgal, Clonal, R.Emerson (1939)
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
Reference: 248

Gymnodinium fuscum Stein
470
Tsuchiura / Ibaraki (1986-02)
Unialgal, Clonal, T.Sawaguchi (1986-05)

Identified by: T.Sawaguchi
Culture conditions: AF-6/2, 20° C, 40 μE/m² sec, 1M
Characteristics: Freshwater, Unstable, Untransportable
SPSDG

Gymnodinium mikimotoi Miyake et Kominami ex Oda
Syn. ***Gymnodinium nagasakiense*** Takayama et Adachi
680
Uchiumi Bay / Kagawa (1992-10)
Unialgal, 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 Mominami ex Oda

Gyrodinium instriatum Freudenthal et Lee
143
Shodo Isl. / Kagawa (1978-06)
Unialgal, Clonal, K.Yuki
Identified by: K.Yuki
Culture conditions: f/2, ESM, 20° C, 32 μE/m² sec, 1M
Characteristics: Red tide, Marine Unstable, Untransportable
KGW-17-1

Haematococcus lacustris (Girod-Chantrans) 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
MKF-8
References: 80, 114, 115, 142, 143, 144, 145, 146, 147, 148, 149, 151, 150, 152, 344, 343, 345, 399

* ***Haematococcus pluvialis*** Flotow
See ***Haematococcus lacustris*** (Girod-Chantrans) Rostafinski

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
OUT-5
References: 327, 399

656
Tsukuba / Ibaraki (1986-04-30)
Axenic, Clonal, S.Suda (1986-05)
Identified by: S.Suda
Culture conditions: C, 20° C, 22 μE/m² sec, 1M
Characteristics: Freshwater
430M3-3

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 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: 72

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 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

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

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
Reference: 160

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
Reference: 361

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: 17, 58, 110, 300

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: 111, 288

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 μE/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable
OHE-1
References: 57, 60, 153, 154, 155, 157, 160, 161, 178, 179, 181, 194, 296, 323, 324, 331, 362, 363, 364, 378, 379, 380, 381, 382, 383, 384, 385, 401, 403, 404, 405, 406, 407, 414, 433, 435

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 μE/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 μE/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 μE/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable
KGW-11-5
Reference: 361

146
Shido Bay / Kagawa (1978-06)
Axenic, Clonal, K.Yuki
Identified by: K.Yuki
Culture conditions: f/2, M-ASP7, 20° C, 32 μE/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 μE/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable
8280G21-1
Reference: 17

561
Mikawa Bay / Aichi
Axenic, Clonal, S.Toriumi
Culture conditions: f/2, 20° C, 32 μE/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable

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 μE/m² sec, 3M, (20° C, 12 μE/m² sec)
Characteristics: Freshwater, Heterothallic, Crosses with NIES-148
S-9-18

148
Nagatoro / Saitama (1969-11)
IAM C-511, Axenic, Clonal, T.Ichimura (1972-06)
Identified by: T.Ichimura
Culture conditions: C, 20° C, 8 μE/m² sec, 3M, (20° C, 12 μE/m² sec)
Characteristics: Freshwater, Heterothallic, Crosses with NIES-147
S-9-22

149
Lake Kasumigaura / Ibaraki (1975-12)
IAM C-512, Axenic, Clonal, T.Ichimura (1975-12)
Identified by: T.Ichimura
Culture conditions: VT, 20° C, 12 μE/m² sec, 1M
Characteristics: Freshwater, Heterothallic, Crosses with NIES-150
KAS-7-3

150
Lake Kasumigaura / Ibaraki (1975-12)
IAM C-513, Axenic, Clonal, T.Ichimura (1975-12)
Identified by: T.Ichimura
Culture conditions: VT, 20° C, 12 μE/m² sec, 1M
Characteristics: Freshwater, Heterothallic, Crosses with NIES-149
KAS-7-8

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 μE/m² sec, 3M, (20° C, 12 μE/m² sec)
Characteristics: Freshwater, Homothallic
H-1

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 μE/m² sec, 4M, (25° C, 30 μE/m² sec), [Cryopreserved]
Characteristics: Benthic
Yu-52

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 μE/m² sec, 3M, (25° C, 30 μE/m² sec)
Characteristics: Freshwater, Homothallic
O-2
Reference: 80

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 μE/m² sec, 1M (10° C, 15 μE/m² sec)
Characteristics: Marine, Unstable, Untransportable
HHD-1

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 μE/m² sec, 3M, (25° C, 30 μE/m² sec)
Characteristics: Freshwater
F37-1

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 monstruosa 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
FL

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: 325

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
Reference: 126

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
KY-14

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

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

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

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

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: 126, 399

Micrasterias anomala Turner
774
Cairns, Queensland / Australia (1988-09)
Unialgal, Clonal, T.Ichimura (1988)
Identified by: T.Ichimura
Culture conditions: MG, 20° C, 8 μE/m² sec, 3M, (25° C, 30 μE/m² sec)
Characteristics: Freshwater, Homothallic
88-95-12

775
Near Melaka / Malaysia (1985-08)
Unialgal, Clonal, T.Ichimura (1985)
Identified by: T.Ichimura
Culture conditions: MG, 20° C, 8 μE/m² sec, 3M, (25° C, 30 μE/m² sec)
Characteristics: Freshwater, Heterothallic, Crosses with NIES-776
85-30-30

776
Near Melaka / Malaysia (1985-08)
Unialgal, Clonal, T.Ichimura (1985)
Identified by: T.Ichimura
Culture conditions: MG, 20° C, 8 μE/m² sec, 3M, (25° C, 30 μE/m² sec)
Characteristics: Freshwater, Heterothallic, Crosses with NIES-775
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
Reference: 80

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, 20° C, 8 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, 20° C, 8 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

Micrasterias mahabuleshwarensis Hobson
779
2 km southeast of Melaka / Malaysia (1985-08)
Unialgal, Clonal, T.Ichimura (1985)
Identified by: T.Ichimura
Culture conditions: MG, 20° C, 8 μE/m² sec, 3M, (25° C, 30 μE/m² sec)
Characteristics: Freshwater, Heterothallic, Crosses with NIES-780
M2-6

780 (PS-952)
2 km southeast of Melaka / Malaysia (1985-08)
Unialgal, Clonal, T.Ichimura (1985)
Identified by: T.Ichimura
Culture conditions: MG, 20° C, 8 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, 20° C, 8 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, 20° C, 8 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
Centenial Park, Sydney / Australia (1988-09)
Unialgal, Clonal, F.Kasai (1988-09)
Identified by: F.Kasai
Culture conditions: MG, 20° C, 8 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, 20° C, 8 μE/m² sec, 3M, (25° C, 30 μE/m² sec)
Characteristics: Freshwater, Heterothallic, Crosses with NIES-783
88-8-5

Microcystis aeruginosa (Kützing) Lemmermann f. ***aeruginosa***
44
Lake Kasumigaura / Ibaraki (1974-08)
IAM M-176, Axenic, Clonal, M.M.Watanabe (1974-08)
Identified by: M.M.Watanabe
Culture conditions: CB, 25° C, 24 μE/m² sec, 20D, [Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater
References: 5, 52, 80, 87, 118, 119, 126, 169, 216, 325, 341, 399, 410, 431

87
Lake Kasumigaura / Ibaraki (1982-09)
Axenic, Clonal, M.H.Watanabe (1982-09)
Identified by: M.H.Watanabe
Culture conditions: MA, 25° C, 24 μE/m² sec, 20D, [Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater
K-MA-11
References: 169, 216, 271, 347, 399

88
Lake Kawaguchi / Yamanashi (1981-06)
Unialgal, Clonal, M.H.Watanabe (1981-06)
Identified by: M.H.Watanabe
Culture conditions: MA, 25° C, 24 μE/m² sec, 20D, [Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater
KW-MA1-3
References: 100, 102, 132, 325, 399

89
Lake Kawaguchi / Yamanashi (1981-06)
Unialgal, Clonal, M.H.Watanabe (1981-06)
Identified by: M.H.Watanabe
Culture conditions: MA, 25° C, 24 μE/m² sec, 20D, [Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater
KW-MA2-5
References: 169, 215, 216, 399, 411

90
Lake Kawaguchi / Yamanashi (1981-06)
Axenic, Clonal, M.H.Watanabe (1981-06)
Identified by: M.H.Watanabe
Culture conditions: MA, 25° C, 24 μE/m² sec, 20D, [Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater
KW-MB-2
References: 101, 105, 399, 410

91
Lake Kasumigaura / Ibaraki (1982-09)
Unialgal, Clonal, M.H.Watanabe (1982-09)
Identified by: M.H.Watanabe
Culture conditions: MA, 25° C, 24 μE/m² sec, 20D, [Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater
K-MB-13

Reference: 399

99
Lake Suwa / Nagano (1982-08)
Unialgal, Clonal, M.H.Watanabe (1982-08)
Identified by: M.H.Watanabe
Culture conditions: MA, 25° C, 24 μE/m² sec, 20D, [Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater
S-MA-S5
References: 399, 431

100
Lake Suwa / Nagano (1982-08)
Unialgal, Clonal, M.H.Watanabe (1982-08)
Identified by: M.H.Watanabe
Culture conditions: MA, 25° C, 24 μE/m² sec, 20D, [Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater
S-MB-S7
References: 266, 268, 287, 386, 399, 425

101
Lake Suwa / Nagano (1982-10)
TAC 48, Unialgal, Clonal, M.Watanabe (1982-10)
Identified by: M.Watanabe
Culture conditions: CB, 25° C, 24 μE/m² sec, 20D, [Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater
S-TAN-48
References: 198, 386, 399

298
Lake Kasumigaura / Ibaraki (1982-09)
TAC 47, Axenic, Clonal, M.Watanabe (1982-09)
Culture conditions: CB, 25° C, 24 μE/m² sec, 20D, [Cryopreserved]
Characteristics: Water bloom, Toxic, Freshwater
K-TAN-47
References: 52, 126, 166, 167, 169, 187, 216, 267, 287, 386, 411

299
Lake Kasumigaura / Ibaraki (1979-08)
Unialgal, Clonal, N.Takamura (1979-08)
Identified by: N.Takamura
Culture conditions: MA, 25° C, 24 μE/m² sec, 20D, [Cryopreserved]
Characteristics: Water bloom, Freshwater
KN1133
References: 52, 103

Microcystis aeruginosa (Kützing) Lemmermann f. ***flos-aquae*** (Wittrock) Elenkin
98
Lake Kasumigaura / Ibaraki (1982-09)
Axenic, Clonal, M.H.Watanabe (1982-09)
Identified by: M.H.Watanabe
Culture conditions: MA, 25° C, 24 μE/m² sec, 20D, [Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater
K-MF-K-3
References: 2, 89, 169, 184, 216, 386, 399

478
Lake Kasumigaura / Ibaraki (1977-09)
Unialgal, Non-clonal, O.Yagi (1978-04)
Identified by: O.Yagi
Culture conditions: MA, 20° C, 4 μE/m² sec, 3M, (25° C, 15 μE/m² sec), [Cryopreserved]
Characteristics: Freshwater
K-5
References: 104, 418, 419, 420

Microcystis elabens Kützing var. ***minor*** Nygaard
42
Lake Kasumigaura / Ibaraki (1974-08)
IAM M-177, Unialgal, Clonal, M.M.Watanabe (1974-08)
Identified by: M.M.Watanabe
Culture conditions: CT, 25° C, 24 μE/m² sec, 1M, [Cryopreserved]
Characteristics: Water bloom, Freshwater
References: 80, 215, 216, 299, 425, 431

Microcystis holsatica Lemmermann
43
Lake Kasumigaura / Ibaraki (1974-08)
IAM M-179, Unialgal, Clonal, M.M.Watanabe (1974-08)
Identified by: M.M.Watanabe
Culture conditions: CT, 25° C, 24 μE/m² sec, 1M, [Cryopreserved]
Characteristics: Water bloom, Freshwater
References: 80, 216, 299, 425

Microcystis viridis (A.Brown) Lemmermann
102
Lake Kasumigaura / Ibaraki (1982-09)
Axenic, Clonal, M.H.Watanabe (1982-09)
Identified by: M.H.Watanabe
Culture conditions: MA, 25° C, 24 μE/m² sec, 1M, [Cryopreserved]
Characteristics: Water bloom, Indicator, Toxic,

Freshwater
K-MV-20
References: 98, 107, 109, 126, 133, 164, 169, 172, 215, 216, 272, 287, 332, 333, 389, 411, 425, 431

103
Lake Kasumigaura / Ibaraki (1978-12)
TAC 44, Unialgal, Clonal, M.Watanabe (1978-12)
Identified by: M.Watanabe
Culture conditions: MA, 25° C, 24 μE/m² sec, 1M, [Cryopreserved]
Characteristics: Water bloom, Indicator, Toxic, Freshwater
K-TAN-44
References: 185, 386

Microcystis wesenbergii Komárek
104
Chiyoda-ku / Tokyo (1982-11)
Axenic, Clonal, M.H.Watanabe (1982-11)
Identified by: M.H.Watanabe
Culture conditions: CB, MA, 25° C, 24 μE/m² sec, 1M, [Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater
MW-H1
References: 169, 325, 425

105
Lake Kasumigaura / Ibaraki (1982-09)
Unialgal, Clonal, M.H.Watanabe (1982-09)
Identified by: M.H.Watanabe
Culture conditions: MA, 25° C, 24 μE/m² sec, 1M, [Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater
K-MW-K4

106
Lake Kasumigaura / Ibaraki (1982-09)
Unialgal, Clonal, M.H.Watanabe (1982-09)
Identified by: M.H.Watanabe
Culture conditions: MA, 25° C, 24 μE/m² sec, 1M, [Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater, (A) large size
K-MW-19
Reference: 287

107
Lake Kawaguchi / Yamanashi (1981-06)
Unialgal, Clonal, M.H.Watanabe (1981-06)
Identified by: M.H.Watanabe
Culture conditions: CB, MA, 25° C, 24 μE/m² sec, 1M, [Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater
KW-MW-7
References: 215, 216, 411

108
Lake Suwa / Nagano (1982-08)
Unialgal, Clonal, M.H.Watanabe (1982-08)
Identified by: M.H.Watanabe
Culture conditions: MA, 25° C, 24 μE/m² sec, 1M, [Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater
S-MW-52

109
Lake Yogo / Shiga (1982-07)
Unialgal, Clonal, M.H.Watanabe (1982-07)
Identified by: M.H.Watanabe
Culture conditions: MA, 25° C, 24 μE/m² sec, 1M, [Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater
Y-MW-24

110
Lake Kasumigaura / Ibaraki (1978-08)
TAC 36, Unialgal, Clonal, M.Watanabe (1978-08)
Identified by: M.Watanabe
Culture conditions: CT, 25° C, 24 μE/m² sec, 1M, [Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater
K-TAN-36

111
Lake Kasumigaura / Ibaraki (1978-08)
TAC 37, Axenic, Clonal, M.Watanabe (1978-08)
Identified by: M.Watanabe
Culture conditions: MA, 25° C, 24 μE/m² sec, 1M, [Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater
K-TAN-37
References: 169, 215, 216, 325, 411

112
Lake Suwa / Nagano (1982-10)
TAC 52, Axenic, Clonal, M.Watanabe (1982-10)
Identified by: M.Watanabe
Culture conditions: MA, 25° C, 24 μE/m² sec, 1M, [Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater
S-TAN-52
References: 169, 216, 386, 431

604
Lake Kasumigaura / Ibaraki (1977-09)
Axenic, Clonal, O.Yagi (1978-04)
Identified by: O.Yagi
Culture conditions: MA, 20° C, 4 μE/m² sec, 3M, (25° C, 15 μE/m² sec), [Cryopreserved]
Characteristics: Water bloom, Freshwater, Formerly identified as *Microcystis aeruginosa*
K-3A
References: 51, 163, 169, 195, 315, 418

Microthamnion kützingianum Nägeli
479
Toyohira River / Sapporo (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: 338, 339

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: 126

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 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, μE/m² sec, 3M, (25° C, 30 μE/m² sec)
Characteristics: Freshwater
SIS-1-M

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

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

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
Reference: 338

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)
Axenic, 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: 171, 328

484
Tsuchiura / Ibaraki (1986-02)
Axenic, 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-5-8
References: 354, 355

485
Tsuchiura / Ibaraki (1986-02)
Axenic, 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-3-4
References: 171, 328

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 μE/m² sec, 1M
Characteristics: Red tide, Marine, Type strain
H-70-2

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 μE/m² sec, 2M
Characteristics: Freshwater
3st-0-57
Reference: 338

488
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-3-39
Reference: 338

489
Ashio / Gunma (1987-08)
Unialgal, Clonal, F.Kasai (1987-08)
Identified by: N.Takamura
Culture conditions: CSi, 15° C, 15 μE/m² sec, 1M
Characteristics: Freshwater
Ast-2-2
References: 338, 339

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 μE/m² sec,
4M, (25° C, 30 μE/m² sec), [Cryopreserved]
Characteristics: Freshwater, Reidentified by
M.M.Watanabe
References: 80, 216, 336, 366, 399

38
Marble Point
IAM M-115, Unialgal, Non-clonal, O.Holm-Hansen
Identified by: M.M.Watanabe
Culture conditions: MDM(S), 20° C, 4 μE/m² sec,
4M, (25° C, 30 μE/m² sec), [Cryopreserved]
Characteristics: Freshwater,From dry lichens and
algae in sand
M-48-a
Reference: 80

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
Reference: 366

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/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: 80, 366

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/m²sec, 4M, (25° C, 30 μE/m²sec), [Cryopreserved]
Characteristics: Freshwater, Chromatic adaptation
References: 192, 269, 366, 399

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/m²sec, 4M, (25° C, 30 μE/m²sec), [Cryopreserved]
Characteristics: Freshwater
References: 366, 399

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/m²sec, 1M
Characteristics: Red tide, Marine
St-22

Odontella longicruris (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/m²sec, 1M
Characteristics: Red tide, Marine
St-11

Oedogonium obesum Witrock ex Hirn
203
IAM C-348, Axenic, Clonal, E.Saito
Identified by: E.Saito
Culture conditions: C, 20° C, 4 μE/m²sec, 3M, (25° C, 30 μE/m²sec)
Characteristics: Indicator, Freshwater
807
Reference: 80

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/m²sec, 1M
Characteristics: Red tide, Marine, Untransportable Olisth
References: 56, 194, 361, 435

Oltamannsiellopsis 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/m²sec, 1M
Characteristics: Marine, Mutant

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, 12 μE/m²sec, 2M
Characteristics: Red tide, Marine, Type strain
810YB-6
Reference: 14

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/m²sec, 2M
Characteristics: Marine, 18S rDNA gene (D86495)
8280G41-2
References: 14, 213

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/m²sec, 6M, (15° C, 15 μE/m²sec)
Characteristics: Freshwater
AT2-26
Reference: 338

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
Reference: 338

661
Miyata River / Ibaraki (1987-05)
Unialgal, Clonal, F.Kasai (1987-06)
Identified by: F.Kasai
Culture conditions: C, 20° C, 8 μE/m² sec, 6M
Characteristics: Freshwater
4st-3-9
Reference: 338

662
Miyata River / Ibaraki (1987-02)
Axenic, 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: 337, 338

Oscillatoria agardhii Gomont
204
Lake Kasumigaura / Ibaraki (1983-08)
Axenic, Clonal, S.Suda (1983-08)
Identified by: S.Suda
Culture conditions: CB, 25° C, 24 μE/m² sec, 1M, [Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater
K-O-A
References: 169, 188, 216, 316, 318, 320, 321, 399, 417

205
Lake Kasumigaura / Ibaraki (1982-09)
TAC 53, Unialgal, Clonal, M.Watanabe (1982-09)
Identified by: M.Watanabe
Culture conditions: MA, 25° C, 24 μE/m² sec, 1M, [Cryopreserved]
Characteristics: Water bloom, Indicator, Freshwater
K-TAN-53
References: 169, 317

594
North Ireland / U.K.
Axenic, Clonal
Culture conditions: CT, 20° C, 4 μE/m² sec, 2M, (20° C, 12 μE/m² sec), [Cryopreserved]
Characteristics: Freshwater
k-8

595
North Ireland / U.K.
Axenic, Clonal
Culture conditions: CT, 20° C, 4 μE/m² sec, 2M, (20° C, 12 μE/m² sec), [Cryopreserved]
Characteristics: Freshwater
3A②

596
Veluwemeer / Holland
Axenic, Clonal
Culture conditions: CT, 20° C, 4 μE/m² sec, 2M, (20° C, 12 μE/m² sec), [Cryopreserved]
Characteristics: Freshwater
VLOA7
Reference: 26

610
See ***Oscillatoria rubescens*** (DC.) ex Gomont

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

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
Reference: 80

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), [Cryopreserved]

Characteristics: Freshwater, Hot spring, Reidentified by M.M.Watanabe
References: 80, 399

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, 80, 263

Oscillatoria raciborskii Woloszynska
207
Lake Kasumigaura / Ibaraki (1983-06)
Axenic, Clonal, S.Suda (1983-06)
Identified 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: 169, 216, 399

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
Reference: 300

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/m² sec, 1M, [Cryopreserved]
Characteristics: Freshwater, Formerly identified as *Oscillatoria agardhii* Gomont
NIVA CYA 18
References: 290, 291, 292

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
Reference: 80

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
370OX

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, *rbc*L gene (D63441)
88-1025-1
References: 243, 253

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
Reference: 253

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

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

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

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,
*rbc*L gene (D63442)
7916-P-7
References: 230, 243

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
Reference: 230

* ***Pandorina unicocca*** Rayburn et Starr
See ***Yamagishiella unicocca***
(Rayburn et Starr) Nozaki

Paulschulzia pseudovolvox Skuja
727
Tvärminne / Finland
UTEX 167, Axenic, Clonal, M.R.Droop (1951)
Culture conditions: AF-6, 20° C, 12 μE/m² sec, 1M
Characteristics: Freshwater, *rbc*L gene (D86837)
Reference: 244

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 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

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
Reference: 66

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
Reference: 199

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
Reference: 359

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

213
Tsukuba / Ibaraki (1983-05)
Axenic, Clonal, T.Hiwatari (1983-06)
Identified by: T.Hiwatari
Culture conditions: C, 20° C, 8 μE/m² sec, 2M
Characteristics: Indicator, Freshwater, Reidentified by M.Watanabe
AQ-P-1
References: 70, 399

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/m² sec, 3M, (25° C, 30 μE/m² sec)
Characteristics: Indicator, Freshwater
F50-1

214
Tsukuba / Ibaraki (1983-08)
Axenic, Clonal, T.Hiwatari (1983-08)
Identified by: T.Hiwatari
Culture conditions: C, 20° C, 8 μE/m² sec, 2M
Characteristics: Indicator, Freshwater, Reidentified by M.Watanabe
KR-P-2

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/m² sec, 2M
Characteristics: Indicator, Freshwater
B-P-18

302
Lake Kasumigaura / Ibaraki (1983-08)
Axenic, Clonal, F.Kasai (1983-08)
Culture conditions: C, 20° C, 4 μE/m² sec, 3M, (25° C, 30 μE/m² sec)
Characteristics: Indicator, Freshwater
F-26-4

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/m² sec, 2M
Characteristics: Indicator, Freshwater
K-P-30

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/m² sec, 3M, (25° C, 30 μE/m² sec)
Characteristics: Freshwater
H31P4

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
Reference: 80

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

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
364
Lake Unagiike / Kagoshima (1985-02)
Axenic, Clonal, T.Sawaguchi (1985-02)
Identified by: T.Sawaguchi
Culture conditions: URO, Carefoot, 15° C, 35 μE/m² sec, 2M
Characteristics: Red tide, Freshwater, Untransportable
EPD-7

496
Isobe / Mie (1986-10)
Unialgal, Clonal, T.Sawaguchi (1986-11)
Identified by: T.Sawaguchi
Culture conditions: URO, 15° C, 35 μE/m² sec, 2M
Characteristics: Red tide, Freshwater, Untransportable
KDD-1

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 polonicum Woloszynska
500
Shiogama / Miyagi (1988-07)
Axenic, Clonal, T.Sawaguchi (1988-07)
Identified by: T.Sawaguchi
Culture conditions: AF-6/2, 20° C, 40 μE/m² sec, 2M
Characteristics: Freshwater, Untransportable
KAP-2

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 wierzejskii Woloszynska
502
Tsuchiura / Ibaraki (1985-04)
Unialgal, Clonal, T.Sawaguchi (1985-04)
Identified by: T.Sawaguchi
Culture conditions: MW/5, 15° C, 35 μE/m² sec, 2M
Characteristics: Freshwater, Homothallic, Untransportable
SPD-7

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

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 pouchetii (Hariot) Lagerheim
388
Hachijo Isl. / Tokyo (1984-04)
Unialgal, Non-clonal, T.Sawaguchi (1984-04)
Identified by: T.Sawaguchi
Culture conditions: ESM, 15° C, 20 μE/m² sec, 20D, (20° C, 40 μE/m² sec)
Characteristics: Red tide, Marine, Unstable, Untransportable, *COXI* gene (AB000120)
8-P
Reference: 65

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: 80, 346, 356

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
Reference: 80

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), [Cryopreserved]
Characteristics: Freshwater
(1)-48
Reference: 338

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), [Cryopreserved]
Characteristics: Freshwater
2st-2-4
References: 337, 338, 339

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), [Cryopreserved]
Characteristics: Freshwater
AT4-17
References: 338, 339

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), [Cryopreserved]
Characteristics: Freshwater
AT5-37
Reference: 338

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), [Cryopreserved]
Characteristics: Freshwater

Ast-1-4
References: 338, 339

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), [Cryopreserved]
Characteristics: Freshwater
AT2-17
References: 338, 339

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), [Cryopreserved]
Characteristics: Freshwater
(1)-23
Reference: 338

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), [Cryopreserved]
Characteristics: Freshwater
841211St5-1
References: 337, 338

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
References: 80, 322

512
Nagoya / Aichi (1981-11)
Axenic, Non-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)
PM-81A
References: 166, 167, 263, 423, 424

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
Bpt

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

Platydorina caudata Kofoid
728
Kansas / USA (1965-09)
UTEX 1658, Unialgal, Clonal, D.O.Harris
Culture conditions: AF-6, 20° C, 12 μE/m² sec, 1M
Characteristics: Freshwater, *rbc*L gene (D86828)
Reference: 244

729
Kansas / USA (1965-09)
UTEX 1661, Unialgal, Clonal, D.O.Harris
Culture conditions: AF-6, 20° C, 12 μE/m² sec, 1M
Characteristics: Freshwater, *rbc*L gene (D86827)
Reference: 244

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), [Cryopreserved]
Characteristics: Freshwater
NK-12
References: 173, 338, 339

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

735
Indiana / USA
UTEX 809, Axenic, Clonal, R.C.Starr
Culture conditions: AF-6, 20° C, 12 μE/m² sec, 1M
Characteristics: Freshwater, *rbc*L gene (D63439)
Reference: 243

Pleodorina indica (Iyengar) Nozaki
736
Mexico
UTEX 1990, Unialgal, Clonal, S.Morro
Reidentified by: H.Nozaki
Culture conditions: AF-6, 20° C, 12 μE/m² sec, 1M
Characteristics: Freshwater, *rbc*L gene (D86834)
Reference: 244

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, *rbc*L gene (D63440)
6715-7
References: 243, 250

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, 25° C, 15 μE/m² sec, 1M
Characteristics: Freshwater, Homothallic
F57-18-4

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: CA, 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

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

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

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
Reference: 80

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
Reference: 80

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

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

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, 20° C, 8 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, 20° C, 8 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

785
Imuta-ike Pond / Kagoshima (1986-10)
Unialgal, Clonal, T.Ichimura (1986)
Identified by: T.Ichimura
Culture conditions: MG, 20° C, 8 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, 20° C, 8 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

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

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

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
317
Harima-Nada / Seto Inland Sea
Axenic, Clonal, S.Yoshimatsu (1984-08)
Identified by: S.Yoshimatsu
Culture conditions: f/2, 20° C, 32 μE/m² sec, 1M
Characteristics: Red tide, Marine, Untransportable
KGW-83

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, AB000134)
OPm
References: 96, 97, 194, 361, 435

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, 1M
Characteristics: Red tide, Marine, Untransportable
KGW-28-1
Reference: 361

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: 361

* ***Protogonyaulax catenella*** (Whedon et Kofoid) Taylor
See ***Alexandrium catenella*** (Whedon et Kofoid) Balech

Pseudocarteria mucosa (Korshikov) Ettl
522
Izumi / Miyagi (1985-08)
Axenic, Clonal, S.Suda (1985-08)
Identified by: S.Suda
Culture conditions: AF-6, 20° C, 22 μE/m² sec, 1M
Characteristics: Freshwater, Homothallic
M-2
Reference: 329

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: 326, 329

524
Izumi / Miyagi (1985-08)
Axenic, 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
Reference: 329

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
Reference: 416

Pteromonas aculeata Lemmermann
738
Shinobazu-no-ike, Ueno Park / Tokyo (1996-10)
Unialgal, Clonal, S.Tanaka (1996-10)
Identified by: S.Tanaka
Culture conditions: AF-6, 20° C, 12 μE/m² sec, 1M
Characteristics: Freshwater
970603-PtAcl
Reference: 342

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: AF-6, 20° C, 12 μE/m² sec, 1M
Characteristics: Freshwater
970603-PtAng
Reference: 342

Pteromonas multipyrenoidea Iyenger
740
Shinobazu-no-ike, Ueno Park / Tokyo (1996-11)
Axenic, Clonal, S.Tanaka (1996-11)
Identified by: S.Tanaka
Culture conditions: AF-6, 20° C, 12 μE/m² sec, 1M
Characteristics: Freshwater
970603-PtMul
Reference: 342

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: 171, 361

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

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: 361

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: 135, 159, 160, 295

Pyrocystis lunura (Schütt) Schütt
609
Unialgal, Non-Clonal
Culture conditions: f/2, 20° C, 40 μE/m² sec, 1M
Characteristics: Marine

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

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, 15 μE/m² sec, 1M
Characteristics: Marine, Type strain
Reference: 23

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, 15 μE/m² sec, 1M
Characteristics: Marine
Reference: 23

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, 15 μE/m² sec, 1M
Characteristics: Brackish, Type strain
Reference: 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, 15 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, 15 μE/m² sec, 1M
Characteristics: Marine, Type strain
Reference: 23

Scenedesmus acuminatus (Lageraeim) 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
Reference: 417

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
Reference: 417

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: 70, 399

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
Reference: 399

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
Reference: 399

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

Scenedesmus gutwinskii Chodat var. ***heterospina*** Bodfogközy

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, 6M, (25° C, 30 μE/m² sec)
Characteristics: Freshwater, Herbicide (simetryn) susceptible
B8-7
Reference: 121

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, 6M, (25° C, 30 μE/m² sec)
Characteristics: Freshwater, Herbicide (simetryn) susceptible
B8-16
Reference: 121

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, 6M, (25° C, 30 μE/m² sec)
Characteristics: Freshwater, Herbicide (simetryn) susceptible
B8-23
Reference: 121

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, 6M, (25° C, 30 μE/m² sec)
Characteristics: Freshwater, Herbicide (simetryn) tolerant

B3-12
Reference: 121

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, 6M, (25° C, 30 μE/m² sec)
Characteristics: Freshwater, Herbicide (simetryn) tolerant
B3-15
Reference: 121

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, 6M, (25° C, 30 μE/m² sec)
Characteristics: Freshwater, Herbicide (simetryn) tolerant
B12-2
References: 120, 121

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))
TAN-51-3B
References: 66, 374, 434

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

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

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: 97, 194, 435

Selenastrum capricornutum Printz
Syn. ***Monoraphidium capricornutum*** (Printz) Nygaad
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
P-26
References: 59, 73, 116, 117, 122, 126, 131, 162, 197, 198, 218, 330, 352, 419, 420, 422

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, 1M
Characteristics: Red tide, Marine, Collected from St. 53 Harima-Nada
H-53-3
References: 277, 300

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, 1M
Characteristics: Red tide, Marine,
Collected from St. 90 Harima-Nada
H-90-2

223
Shodo Isl. / Kagawa (1979-07)
Unialgal, Clonal, K.Yuki
Culture conditions: f/2, 5° C, 15 μE/m² sec, 1M
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, 1M
Characteristics: Red tide, Marine
Sk-85w
References: 108, 160

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, 1M
Characteristics: Red tide, Marine
Sk-85su
Reference: 265

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: 83

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, 80, 165, 177, 335, 387, 391, 399

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,
[Cryopreserved]
Characteristics: Water bloom, Freshwater,
Forming water bloom in Inbanuma
KAS-6-50
References: 80, 335, 387, 391, 399, 417

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, 80, 165, 335, 387, 391, 399

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), [Cryopreserved]
Characteristics: Water bloom, Freshwater, Planktonic
T-43

Spirulina subsalsa Oersted ex Gomont
27
IAM M-183, Axenic, Clonal
Culture conditions: MA, 25° C, 24 μE/m² sec, 1M,
[Cryopreserved]
Characteristics: Freshwater
References: 80, 169, 417

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,
[Cryopreserved]
Characteristics: Indicator, Marine
Reference: 80

598
Chiyoda-ku / Tokyo (1989-10)
Unialgal, Non-clonal, T.Hagiwara (1989-10)
Identified by: T.Hagiwara
Culture conditions: CB, 20° C, 4 μE/m² sec, 2M, (25° C, 15 μE/m² sec)
Characteristics: Freshwater, Planktonic
KO-39

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

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

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'

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: 48

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

Staurastrum tsukubikum
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: 48

Stephanopyxis palmeriana (Greville) Grunow
327
Hachijo Isl. / Tokyo (1984-04)
Unialgal, Clonal, T.Sawaguchi (1984-04)
Identified by: T.Sawaguchi
Culture conditions: f/2, 10° C, 25 μE/m² sec, 1M
Characteristics: Marine
8-B-2

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
Reference: 338

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: 338, 339

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: 337, 338

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
Reference: 338

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: 325

Synura sphagnicola (Korshikov) Korshikov
695
Miyatoko Mire / Fukushima (1992-04)
Axenic, 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)
Axenic, 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: 325

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: 277

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
Reference: 256

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,
*rbc*L gene (D63443)
21028-4
References: 228, 242, 243, 256

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
Reference: 416

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
Reference: 325

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: 399

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

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: 277

Thalassiosira pacifica Gran et Angst
535
Hachinohe Harbor / Aomori (1987-03)
Unialgal, Clonal, T.Sawaguchi (1987-03)
Identified by: T.Sawaguchi
Culture conditions: f/2, 10° C, 25 μE/m² sec, 1M
Characteristics: Marine
87MHHB-1

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: 18, 30, 31, 32, 33, 34, 35, 37, 61, 62, 63, 80, 141, 193, 298, 353, 360, 365, 366, 367, 368, 369, 370, 371, 373, 436

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

* ***Tribonema marinum*** J.Feldmann
See ***Acinetospora crinita*** (Carmichael) Sauvageau

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

Triploceras gracile Bailey
789
2 km east of Melaka / Malaysia (1985-08)
Unialgal, Clonal, T.Ichimura (1985)
Identified by: T.Ichimura
Culture conditions: MG, 20° C, 8 μE/m² sec, 3M, (25° C, 30 μE/m² sec)
Characteristics: Freshwater, Homothallic
85-28-1
Reference: 85

790
2 km east of Melaka / Malaysia (1985-08)
Unialgal, Clonal, T.Ichimura (1985)
Identified by: T.Ichimura
Culture conditions: MG, 20° C, 8 μE/m² sec, 3M, (25° C, 30 μE/m² sec)
Characteristics: Freshwater, Homothallic
85-28-2
Reference: 85

791
2 km east of Melaka / Malaysia (1985-08)

Unialgal, Clonal, T.Ichimura (1985)
Identified by: T.Ichimura
Culture conditions: MG, 20° C, 8 μE/m² sec, 3M, (25° C, 30 μE/m² sec)
Characteristics: Freshwater, Homothallic
85-28-3
Reference: 85

792
2 km east of Melaka / Malaysia (1985-08)
Unialgal, Clonal, T.Ichimura (1985)
Identified by: T.Ichimura
Culture conditions: MG, 20° C, 8 μE/m² sec, 3M, (25° C, 30 μE/m² sec)
Characteristics: Freshwater, Homothallic
85-28-4
Reference: 85

793
Higashihiroshima / Hiroshima (1983-10)
Unialgal, Clonal, T.Ichimura (1983)
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 +
83-24-2
Reference: 85

794
Higashihiroshima / Hiroshima (1983-10)
Unialgal, Clonal, T.Ichimura (1983)
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 +
83-24-7
Reference: 85

795
Higashihiroshima / Hiroshima (1983-10)
Unialgal, Clonal, T.Ichimura (1983)
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 –
83-24-3
Reference: 85

796
Higashihiroshima / Hiroshima (1983-10)
Unialgal, Clonal, T.Ichimura (1983)
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 –
83-24-6
Reference: 85

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: 337, 338

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
Reference: 338

537
Shirai River / Sapporo (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
Reference: 338

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
Reference: 415

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: 99, 137, 138

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: 337, 338

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
Reference: 338

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
Reference: 338

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
Reference: 80

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

693
Meguro / Tokyo (1977-06)
Axenic, Clonal, H.Nozaki (1977-06)
Identified by: H.Nozaki
Culture conditions: VT, 20° C, 12 μE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Homothallic, Dioecious, Oogamy, Untransportable
k-5

694
Sakyo / Kyoto (1983-10)
Axenic, Clonal, H.Nozaki (1983-10)
Identified by: H.Nozaki
Culture conditions: VT, 20° C, 12 μE/m² sec, 1M
Characteristics: Freshwater, Water bloom, Homothallic, Dioecious, Oogamy, Untransportable
31202-2-9

Volvox aureus Ehrenberg var. *aureus*
541
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, *rbc*L gene (D63445), Untransportable
1706-2
References: 225, 238, 242, 243

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
Reference: 225

Volvox barberi Shaw
730
California / USA (1965-09)
UTEX 804, Unialgal, Clonal, J.Stein (1957-04)
Culture conditions: AF-6, 20° C, 12 μE/m² sec, 1M
Characteristics: Freshwater, *rbc*L gene (D86835),

Untransportable
Reference: 244

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

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

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
Reference: 231

581
Kawasaki / Kanagawa (1990-10)
Unialgal, Clonal, H.Nozaki (1990-11)
Identified by: H.Nozaki
Culture conditions: VTAC, 20° C, 22 μE/m² sec, 1M
Characteristics: Freshwater, Heterothallic, Dioecious, Oogamy, Male, Crosses with NIES-580, Untransportable
90-1111-5
Reference: 231

732
Kawasaki / Kanagawa
Axenic, Clonal, H.Nozaki
Identified by: H.Nozaki
Culture conditions: AF-6, 20° C, 12 μE/m² sec, 1M
Characteristics: Freshwater, Heterothallic, Dioecious, Oogamy, Female, Crosses with NIES-733, Type strain, *rbc*L gene (D63446), Untransportable
KK-3
References: 231, 238, 243

733
Kawasaki / Kanagawa
Axenic, Clonal, H.Nozaki
Identified by: H.Nozaki
Culture conditions: AF-6, 20° C, 12 μE/m² sec, 1M
Characteristics: Freshwater, Heterothallic, Dioecious, Oogamy, Male, Crosses with NIES-732, Untransportable
KK-5
Reference: 231

Volvox dissipatrix (Shaw) Printz
731
UTEX 2184, Unialgal, Clonal, R.C.Starr
Culture conditions: AF-6, 20° C, 12 μE/m² sec, 1M
Characteristics: Freshwater, *rbc*L gene (D63447), Unstable, Untransportable
Reference: 243

Volvox prolificus Iyengar
543
Axenic, Clonal, Y.Ogasawara
Identified by: S.Suda
Culture conditions: VT, 25° C, 30 μE/m² sec, 1M
Characteristics: Freshwater, Untransportable
V-sp

Volvox rousseletii G.S.West
734
UTEX 1862, Unialgal, Clonal, R.C.Starr
Culture conditions: AF-6, 20° C, 12 μE/m² sec, 1M
Characteristics: Freshwater, *rbc*L gene (D63448), Untransportable
Reference: 243

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

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, *rbc*L gene (D86832)
89-804-4
References 244, 251

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
Reference: 251

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
1107-5 (–)
References: 221, 241

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 (+)
Reference: 221

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
Reference: 233

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
Reference: 233

Woloszynskia leopoliense (Woloszynska)Thompson
619
Mitsukaidou / Ibaraki (1985-04)
Axenic, 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 unicocca (Raybarn 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, *rbc*L gene (AB000811)
01209-1
Reference: 257

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

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, *rbc*L gene (D86823)
X-441
References: 135, 220, 244, 254

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
Reference: 220

762
China
CCFA 646, Unialgal, Clonal
Reidentified by: H.Nozaki
Culture conditions: AF-6, 20° C, 12 μE/m² sec, 1M
Characteristics: Freshwater, Formerly identified as *Eudorina* sp., *rbc*L gene (AB000810)
Reference: 257

PROTOZOA

Paramecium bursaria Forke
668
Miyatoko Mire / Fukushima (1993-05)
Xenic, Clonal, H.Nozaki (1993-05)
Identified by: H.Nozaki
Culture conditions: AF-6, 20° C, 22 μE/m² sec, 1M
Characteristics: Freshwater, Symbiotic
93-527-Pa-1

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

IX. INDEXES

1. Numerical index

1 *Chattonella antiqua*
2 *Chattonella antiqua*
3 *Chattonella marina*
4 *Heterosigma akashiwo*
5 *Heterosigma akashiwo*
6 *Heterosigma akashiwo*
7 *Heterocapsa triquetra*
8 *Cricosphaera roscoffensis*
9 *Heterosigma akashiwo*
10 *Heterosigma akashiwo*
12 *Prorocentrum micans*
14 *Chattonella marina*
15 *Olisthodiscus luteus*
16 *Skeletonema costatum*
17 *Skeletonema costatum*
18 *Tetraselmis cordiformis*
19 *Anabaena cylindrica*
21 *Anabaenopsis circularis*
22 *Calothrix brevissima*
23 *Anabaena variabilis*
24 *Nostoc commune*
25 *Nostoc linckia*
26 *Nostoc minutum*
27 *Spirulina subsalsa*
28 *Nostoc linckia* var. *arvense*
29 *Nostoc minutum*
30 *Phormidium tenue*
31 *Oscillatoria laetevirens*
32 *Phormidium foveolarum*
33 *Oscillatoria tenuis*
34 *Phormidium foveolarum*
35 *Selenastrum capricornutum*
36 *Oscillatoria limnetica*
37 *Tolypothrix tenuis*
38 *Nostoc commune*
39 *Spirulina platensis*
40 *Anabaena affinis*
41 *Anabaena circinalis*
42 *Microcystis elabens* var. *minor*
43 *Microcystis holsatica*
44 *Microcystis aeruginosa* f. *aeruginosa*
45 *Spirulina platensis*
46 *Spirulina platensis*
47 *Euglena gracilis*
48 *Euglena gracilis*
49 *Euglena gracilis* var. *bacillaris*
50 *Aulosira laxa*
51 *Closterium peracerosum-strigosum-littorale* complex
52 *Closterium peracerosum-strigosum-littorale* complex
53 *Closterium peracerosum-strigosum-littorale* complex
54 *Closterium peracerosum-strigosum-littorale* complex
55 *Closterium peracerosum-strigosum-littorale* complex
56 *Closterium peracerosum-strigosum-littorale* complex
57 *Closterium peracerosum-strigosum-littorale* complex
58 *Closterium peracerosum-strigosum-littorale* complex
59 *Closterium peracerosum-strigosum-littorale* complex
60 *Closterium peracerosum-strigosum-littorale* complex
61 *Closterium peracerosum-strigosum-littorale* complex
62 *Closterium peracerosum-strigosum-littorale* complex
63 *Closterium peracerosum-strigosum-littorale* complex
64 *Closterium peracerosum-strigosum-littorale* complex
65 *Closterium peracerosum-strigosum-littorale* complex
66 *Closterium peracerosum-strigosum-littorale* complex
67 *Closterium peracerosum-strigosum-littorale* complex
68 *Closterium peracerosum-strigosum-littorale* complex
69 *Closterium peracerosum-strigosum-littorale* complex

70 *Closterium peracerosum-strigosum-littorale* complex
71 *Achnanthes minutissima*
73 *Anabaena flos-aquae* f. *flos-aquae*
74 *Anabaena flos-aquae* f. *flos-aquae*
75 *Anabaena flos-aquae* f. *flos-aquae*
76 *Anabaena spiroides*
77 *Anabaena spiroides* f. *spiroides*
78 *Anabaena spiroides* f. *crassa*
79 *Anabaena spiroides* f. *spiroides*
80 *Anabaena solitaria* f. *solitaria*
81 *Aphanizomenon flos-aquae* f. *gracile*
83 *Chattonella antiqua*
84 *Chattonella antiqua*
85 *Chattonella antiqua*
86 *Chattonella antiqua*
87 *Microcystis aeruginosa* f. *aeruginosa*
88 *Microcystis aeruginosa* f. *aeruginosa*
89 *Microcystis aeruginosa* f. *aeruginosa*
90 *Microcystis aeruginosa* f. *aeruginosa*
91 *Microcystis aeruginosa* f. *aeruginosa*
92 *Scenedesmus acuminatus* var. *tetradesmoides*
93 *Scenedesmus dimorphus*
94 *Scenedesmus acutus*
95 *Scenedesmus acutus*
96 *Scenedesmus quadricauda*
97 *Scenedesmus serratus*
98 *Microcystis aeruginosa* f. *flos-aquae*
99 *Microcystis aeruginosa* f. *aeruginosa*
100 *Microcystis aeruginosa* f. *aeruginosa*
101 *Microcystis aeruginosa* f. *aeruginosa*
102 *Microcystis viridis*
103 *Microcystis viridis*
104 *Microcystis wesenbergii*
105 *Microcystis wesenbergii*
106 *Microcystis wesenbergii*
107 *Microcystis wesenbergii*
108 *Microcystis wesenbergii*
109 *Microcystis wesenbergii*
110 *Microcystis wesenbergii*
111 *Microcystis wesenbergii*
112 *Microcystis wesenbergii*
113 *Chattonella antiqua*
114 *Chattonella antiqua*
115 *Chattonella marina*
116 *Chattonella marina*
117 *Chattonella marina*
118 *Chattonella marina*
119 *Scenedesmus dimorphus*
120 *Scenedesmus acutus*
121 *Chattonella marina*
122 *Chlamydomonas pulsatilla*
123 *Chlorogonium fusiforme*
124 *Closterium acerosum*
125 *Closterium acerosum*
127 *Closterium acerosum*
128 *Closterium calosporum* var. *galiciense*
129 *Coelastrum astroideum*
130 *Coelastrum astroideum*
131 *Coelastrum proboscideum*
132 *Coelastrum reticulatum*
133 *Cosmarium contractum*
134 *Dimorphococcus lunatus*
135 *Dimorphococcus lunatus*
136 *Fibrocapsa japonica*
137 *Echinosphaeridium nordstedtii*
138 *Gonatozygon brebissonii*
139 *Gonatozygon brebissonii*
143 *Gyrodinium instriatum*
144 *Haematococcus lacustris*
145 *Heterosigma akashiwo*
146 *Heterosigma akashiwo*
147 *Hyalotheca dissiliens*
148 *Hyalotheca dissiliens*
149 *Hyalotheca dissiliens*
150 *Hyalotheca dissiliens*
151 *Micractinium pusillum*
152 *Micrasterias crux-melitensis*
153 *Chlorosarcinopsis delicata*
154 *Characium maximum*
155 *Tetracystis chlorococcoides*
156 *Urnella terrestris*
157 *Chlamydomonas monticola*
158 *Chlamydomonas augustae* var. *ellipsoidea*
159 *Pseudopleurococcus printzii* var. *longissimus*
160 *Chlorosarcinopsis caeca*
161 *Chattonella antiqua*
162 *Closterium calosporum* var. *galiciense*
163 *Closterium calosporum* var. *galiciense*
164 *Closterium calosporum* var. *galiciense*
165 *Closterium calosporum* var. *galiciense*
166 *Closterium calosporum* var. *galiciense*
167 *Closterium calosporum* var. *galiciense*
168 *Closterium calosporum* var. *galiciense*
169 *Closterium calosporum* var. *himalayense*
170 *Closterium calosporum* var. *himalayense*
171 *Closterium calosporum* var. *himalayense*
172 *Closterium moniliferum* var. *moniliferum*
173 *Closterium moniliferum* var. *moniliferum*
174 *Closterium moniliferum* var. *moniliferum*

175 *Closterium navicula*
176 *Closterium navicula*
177 *Closterium navicula*
178 *Closterium navicula*
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*
192 *Closterium spinosporum* var. *ryukyuense*
193 *Closterium spinosporum* var. *ryukyuense*
194 *Closterium spinosporum* var. *spinosporum*
195 *Closterium spinosporum* var. *spinosporum*
196 *Closterium spinosporum* var. *spinosporum*
197 *Closterium spinosporum* var. *spinosporum*
198 *Closterium tumidum*
199 *Closterium venus*
200 *Closterium wallichii*
201 *Closterium wallichii*
202 *Closterium wallichii*
203 *Oedogonium obesum*
204 *Oscillatoria agardhii*
205 *Oscillatoria agardhii*
206 *Oscillatoria animalis*
207 *Oscillatoria raciborskii*
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*
223 *Skeletonema costatum*
224 *Staurastrum dejectum*
225 *Tabellaria flocculosa*
226 *Graesiella emersonii*
227 *Chlorella vulgaris* var. *vulgaris*
228 *Closterium ehrenbergii*
229 *Closterium ehrenbergii*
230 *Merismopedia tenuissima*
231 *Coelastrum morus*
232 *Polyedriopsis spinulosa*
233 *Synura petersenii*
234 *Synura spinosa*
235 *Heterocapsa triquetra*
237 *Prorocentrum minimum*
238 *Prorocentrum minimum*
241 *Volvox aureus*
242 *Pandorina morum*
243 *Pandorina morum*
244 *Coelastrum astroideum*
245 *Coelastrum reticulatum* var. *reticulatum*
246 *Schroederia setigera*
247 *Gonatozygon monotaenium*
248 *Cosmocladium constrictum*
250 *Galdieria sulphuraria*
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* f. *aeruginosa*
299 *Microcystis aeruginosa* f. *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*
317 *Prorocentrum mexicanum*
318 *Protoceratium reticulatum*
319 *Protoceratium reticulatum*
320 *Pyramimonas* aff. *amylifera*
321 *Pyrophacus steinii*
323 *Skeletonema costatum*
324 *Skeletonema costatum*
325 *Spinoclosterium cuspidatum*
327 *Stephanopyxis palmeriana*
329 *Ulothrix variabilis*
330 *Achnanthes longipes*
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*
364 *Peridinium bipes* var. *occultatum*
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 pouchetii*
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 *Carteria crucifera*
422 *Carteria inversa*
423 *Carteria inversa*
424 *Carteria cerasiformis*
425 *Carteria cerasiformis*
426 *Carteria klebsii*
427 *Carteria multifilis*
428 *Carteria obtusa*
429 *Carteria obtusa*
430 *Carteria obtusa*
431 *Carteria obtusa*
432 *Carteria radiosa*
433 *Chamaesiphon polymorphus*
434 *Chamaesiphon subglobosus*
436 *Characium polymorphum*
437 *Chlamydomonas fasciata*
438 *Chlamydomonas monadina* var. *monadina*
439 *Chlorogonium neglectum*
440 *Chlamydomonas parkeae*
441 *Chlamydomonas parkeae*
446 *Chlamydomonas tetragama*
447 *Chloromonas insignis*
448 *Closterium acerosum*
449 *Closterium pleurodermatum*
450 *Closterium praelongum* var. *brevius*
451 *Closterium praelongum* var. *brevius*
452 *Cosmarium hians*
453 *Dictyosphaerium pulchellum*
454 *Draparnaldia plumosa*
455 *Errerella bornhemiensis*
456 *Eudorina elegans* var. *elegans*
457 *Eudorina elegans* var. *elegans*
458 *Eudorina elegans* var. *synoica*
459 *Eudorina illinoisensis*
460 *Eudorina illinoisensis*
461 *Eunotia pectinalis* var. *minor*
462 *Fibrocapsa japonica*
463 *Glenodiniopsis uliginosa*
464 *Gloeomonas lateperforata*
465 *Gomphonema gracile* var. *gracile*
466 *Gomphonema parvulum* var. *parvulum*
467 *Gomphonema parvulum* var. *parvulum*
468 *Gonium pectorale* var. *pectorale*
469 *Gonium pectorale* var. *pectorale*
470 *Gymnodinium fuscum*
471 *Hemidinium nasutum*
472 *Heterocapsa pygmaea*
473 *Heterocapsa pygmaea*
474 *Lobomonas monstruosa*
475 *Mesostigma viride*
476 *Mesostigma viride*
477 *Mesostigma viride*
478 *Microcystis aeruginosa* f. *flos-aquae*
479 *Microthamnion kützingianum*
480 *Monoraphidium circinale*
481 *Myxosarsina burmensis*
483 *Nephroselmis olivacea*
484 *Nephroselmis olivacea*
485 *Nephroselmis olivacea*
486 *Nephroselmis viridis*
487 *Nitzschia palea*
488 *Nitzschia palea*
489 *Nitzschia palea*
494 *Oxyrrhis marina*
495 *Peridinium bipes* f. *globosum*
496 *Peridinium bipes* f. *occultatum*
497 *Peridinium bipes* f. *occultatum*
499 *Peridinium inconspicuum* subsp. *remotum*
500 *Peridinium polonicum*
501 *Peridinium volzii*
502 *Peridinium wierzejskii*
503 *Phormidium foveolarum*
504 *Phormidium foveolarum*
505 *Phormidium foveolarum*
506 *Phormidium jenkelianum*
507 *Phormidium jenkelianum*
509 *Phormidium molle*
510 *Phormidium mucicola*
512 *Phormidium tenue*
514 *Planctonema lauterbornii*
515 *Plectonema radiosum*
519 *Alexandrium catenella*
520 *Alexandrium catenella*
522 *Pseudocarteria mucosa*
523 *Pseudocarteria mucosa*
524 *Pseudocarteria mucosa*
527 *Spirulina subsalsa*
528 *Staurastrum paradoxum*
529 *Stichococcus bacillaris*
530 *Stichococcus bacillaris*
531 *Stigeoclonium aestivale*
532 *Stigeoclonium fasciculare* var. *fasciculare*
533 *Tetraselmis cordiformis*

534 *Thalassionema nitzschioides*
535 *Thalassiosira pacifica*
536 *Ulothrix zonata*
537 *Ulothrix zonata*
538 *Uronema confervicolum*
539 *Uronema gigas*
540 *Uronema gigas*
541 *Volvox aureus* var. *aureus*
542 *Volvox aureus* var. *aureus*
543 *Volvox prolificus*
544 *Volvox tertius*
545 *Volvulina steinii*
546 *Volvulina steinii*
547 *Cyanophora paradoxa*
548 *Acinetospora crinita*
549 *Cyanidioschyzon merolae*
550 *Galdieria sulphuraria*
551 *Cyanidium caldarium*
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 longicruris*
592 *Fischerella major*
593 *Hydrococcus rivularis*
594 *Oscillatoria agardhii*
595 *Oscillatoria agardhii*
596 *Oscillatoria agardhii*
597 *Spirulina platensis*
598 *Spirulina subsalsa*
600 *Peridinium bipes* var. *tabulatum*
601 *Prorocentrum micans*
603 *Chattonella ovata*
604 *Mycrocystis wesenbergii*
605 *Fibrocapsa japonica*
608 *Prorocentrum micans*
609 *Pyrocystis lunura*
610 *Oscillatoria 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 *Auxenochlorella 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 *Oocystis lacustris*
663 *Pleurotaenium nodosum* var. *borgei*
664 *Pleurotaenium nodosum* var. *borgei*
665 *Staurastrum dorcidentiferum*
666 *Yamagishiella unicocca*
667 *Yamagishiella unicocca*
668 *Paramecium bursaria*
670 *Chattonella verrculosa*
671 *Chattonella ovata*
672 *Oltmannsiellopsis geminata*
673 *Alexandrium affine*
674 *Alexandrium catenella*
675 *Alexandrium catenella*
677 *Alexandrium catenella*
678 *Alexandrium insuetum*
680 *Gymnodinium mikimotoi*
682 *Prorocentrum dentatum*
683 *Prorocentrum sigmoides*
684 *Scrippsiella sweeneyae*
685 *Chlorella fusca* var. *fusca*
686 *Chlorella vulgaris var. vulgaris*
687 *Graesiella emersonii*
688 *Graesiella emersonii*
689 *Graesiella emersonii*
690 *Graesiella emersonii*
691 *Tetrabaena socialis*
692 *Chlorogonium capillatum*
693 *Volvox aureus*
694 *Volvox aureus*
695 *Synura sphagnicola*
696 *Synura sphagnicola*
697 *Cryptomonas acuta*
698 *Cryptomonas irregularis*
699 *Rhodomonas atrorosea*
700 *Rhodomonas baltica*
701 *Rhodomonas chrysoidea*
702 *Rhodomonas falcata*
703 *Chroomonas collegionis*
704 *Chroomonas dispersa*
705 *Chroomonas placoidea*
706 *Chroomonas nordstedtii*
707 *Chroomonas nordstedtii*
708 *Chroomonas nordstedtii*
709 *Chroomonas nordstedtii*
710 *Chroomonas nordstedtii*
711 *Chroomonas nordstedtii*
712 *Chroomonas caudata*
713 *Chroomonas coerulea*
714 *Chroomonas coerulea*
715 *Chilomonas paramecium*
716 *Haramonas dimorpha*
717 *Eudorina elegans* var. *elegans*
718 *Eudorina elegans* var. *elegans*
719 *Eudorina elegans* var. *elegans*
720 *Eudorina elegans* var. *elegans*
721 *Eudorina elegans* var. *carteri*
722 *Eudorina cylindrica*
723 *Eudorina illinoisensis*
724 *Eudorina unicocca* var. *unicocca*
725 *Eudorina unicocca* var. *unicocca*
726 *Eudorina unicocca* var. *peripheralis*
727 *Paulschulzia pseudovolvox*
728 *Platydorina caudata*
729 *Platydorina caudata*
730 *Volvox barberi*
731 *Volvox dissipatrix*
732 *Volvox carteri* f. *kawasakiensis*
733 *Volvox carteri* f. *kawasakiensis*
734 *Volvox rousseletii*
735 *Pleodorina californica*
736 *Pleodorina indica*
737 *Gonium multicoccum*
738 *Pteromonas aculeata*
739 *Pteromonas angulosa*
740 *Pteromonas multipyrenoidea*
741 *Chrysochromulina hirta*
742 *Chlorogonium capillatum*
743 *Chlorogonium capillatum*
744 *Chlorogonium capillatum*
745 *Chlorogonium capillatum*
746 *Chlorogonium capillatum*
747 *Chlorogonium capillatum*
748 *Chlorogonium capillatum*
749 *Chlorogonium capillatum*

750 *Chlorogonium capillatum*
751 *Chlorogonium elongatum*
752 *Chlorogonium elongatum*
753 *Chlorogonium elongatum*
754 *Chlorogonium euchlorum*
755 *Chlorogonium euchlorum*
756 *Chlorogonium euchlorum*
757 *Chlorogonium euchlorum*
758 *Chlorogonium euchlorum*
759 *Chlorogonium euchlorum*
760 *Chlorogonium euchlorum*
761 *Chlorogonium kasakii*
762 *Yamagishiella unicocca*
763 *Cyanophora paradoxa*
764 *Cyanophora tetracyanea*
765 *Rhodomonas duplex*
766 *Chilomonas paramecium*
767 *Chilomonas paramecium*
768 *Cosmarium askenasyi*
769 *Cosmarium askenasyi*
770 *Cosmarium askenasyi*
771 *Cosmarium askenasyi*
772 *Euastrum turgidum*
773 *Euastrum turgidum*
774 *Micrasterias anomala*
775 *Micrasterias anomala*
776 *Micrasterias anomala*
777 *Micrasterias foliacea*
778 *Micrasterias foliacea*
779 *Micrasterias mahabuleshwarensis*
780 *Micrasterias mahabuleshwarensis*
781 *Micrasterias thomasiana* var. *notata*
782 *Micrasterias thomasiana* var. *notata*
783 *Micrasterias truncata* var. *pusilla*
784 *Micrasterias truncata* var. *pusilla*
785 *Pleurotaenium nodosum* var. *nodosum*
786 *Pleurotaenium nodosum* var. *nodosum*
787 *Pleurotaenium nodosum* var. *gutwinskii*
788 *Pleurotaenium nodosum* var. *gutwinskii*
789 *Triploceras gracile*
790 *Triploceras gracile*
791 *Triploceras gracile*
792 *Triploceras gracile*
793 *Triploceras gracile*
794 *Triploceras gracile*
795 *Triploceras gracile*
796 *Triploceras gracile*
797 *Scenedesmus gutwinskii* var. *heterospina*
798 *Scenedesmus gutwinskii* var. *heterospina*
799 *Scenedesmus gutwinskii* var. *heterospina*
800 *Scenedesmus gutwinskii* var. *heterospina*
801 *Scenedesmus gutwinskii* var. *heterospina*
802 *Scenedesmus gutwinskii* var. *heterospina*
803 *Cyclotella meneghiniana*
804 *Cyclotella meneghiniana*
805 *Cyclotella meneghiniana*
806 *Anabaena compacta*
807 *Anabaena kisseleviana*
808 *Anabaena mendotae*
809 *Anabaena mucosa*
810 *Anabaena planktonica*
811 *Anabaena planktonica*
812 *Anabaena planktonica*
813 *Anabaena planktonica*
814 *Anabaena planktonica*
815 *Anabaena planktonica*
816 *Anabaena planktonica*
817 *Anabaena planktonica*
818 *Anabaena smithii*
819 *Anabaena smithii*
820 *Anabaena smithii*
821 *Anabaena smithii*
822 *Anabaena smithii*
823 *Anabaena smithii*
824 *Anabaena smithii*
825 *Anabaena ucrainica*
826 *Anabaena ucrainica*
827 *Anabaena viguieri*
828 *Anabaena ellipsoides*
829 *Anabaena oumiana*
830 *Anabaena smithii*
831 *Anabaena smithii*
832 *Anabaena ucrainica*
833 *Anabaena lemmermannii*
834 *Anabaena planktonica*
835 *Anabaena compacta*
836 *Botryococcus brauniii*
837 *Emiliania huxleyi*
838 *Gephyrocapsa oceanica*
839 *Cosmarium dilatatum*
840 *Euastrum biverrucosum*
841 *Staurastrum levanderi*
842 *Staurastrum tsukubicum*

2. Systematic index

ALGAE

CYANOPHYTA

Cyanophyceae

GLAUCOPHYTA

Glaucophyceae

RHODOPHYTA

Rhodophyceae

CRYPTOPHYTA

Cryptophyceae

HETEROKONTOPHYTA

Chrysophyceae

Raphidophyceae

Bacillariophyceae

EUGLENOPHYTA

Euglenophyceae

CHLORARACHNIOPHYTA

Chlorarachniophyceae

CHLOROPHYTA

Prasinophyceae

Chlorophyceae

Trebouxiophyceae

Charophyceae

Ulvophyceae

Chlorophyta *incertae sedis* (=affinity unknown)

* 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).

PROTOZOA

Oligohymenophorea *

Paramecium bursaria	668
Tetrahymena pyriformis	403

* See Ref. 168.

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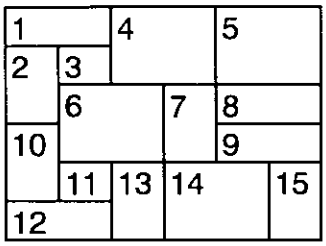

1 *Chamaesiphon polymorphus* (NIES-433)
2 *Hyalotheca dissiliens* v. *dissiliens* f. *tridentula* (NIES-294)
3 *Chattonella antiqua* (NIES-85)
4 *Staurastrum paradoxum* (NIES-528)
5 *Pyrocystis lunura* (NIES-609)
6 *Dinobryon divergens* (NIES-284)
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11 *Micrasterias crux-melitensis* (NIES-152)
12 *Odontella aurita* (NIES-589)
13 *Anabaena spiroides* f. *spiroides* (NIES-77)
14 *Pleodorina indica* (NIES-736)
15 *Cryptomonas rostratiformis* (NIES-345)

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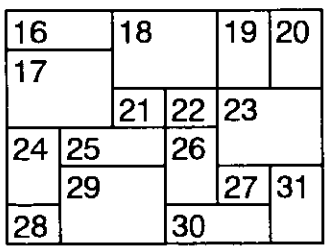

16 *Ceratium hirundinella* (NIES-376)
17 *Trentepohlia* sp.
18 *Euglena* sp.
19 *Cricosphaera roscoffensis* (NIES-8)
20 *Monoraphidium griffithii* (NIES-385)
21 *Cyanophora tetracyanea* (NIES-764)
22 *Porphyridium* sp.
23 *Lagerheimia ciliata* (NIES-382)
24 *Fibrocapsa japonica* (NIES-462)
25 *Carteria eugametos* (NIES-631)
26 *Nitzschia palea* (NIES-488)
27 *Chroomonas coerulea* (NIES-713)
28 *Microcystis aeruginosa* f. *aeruginosa* (NIES-100)
29 *Chlorarachnion reptans* (NIES-624)
30 *Nostoc minutum* (NIES-29)
31 *Acinetospora crinita* (NIES-548)

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