

FACHB-COLLECTION: GENERAL INTRODUCTION AND THE STRAIN LIST*

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1 Introduction

The Freshwater Algae Culture Collection of the Institute of Hydrobiology, abbreviation for FACHB-Collection, was initially established by the late Professor Li Shanghao, Professor Yu Minjuan and their colleagues in the early 1960's. At beginning the purpose of the culture collection was mainly to support the fundamental and applied researches in the Department of Phycology of the Institute of Hydrobiology. Gradually, it developed as one of the main algal collections in China. The FACHB is open to distribute strains domestically and internationally. The FACHB is one of the specialized membership of the Type Culture Collection Committee, officially established in 1995 by The Chinese Academy of Sciences and is a member of ANMR(Asian Network of Microbial Research) consisting of member teams from 8 Asian countries.

The development of the FACHB could be traced back into 3 stages. Stage 1: In the 1960's, based on the wide range of liminological investigation and surveys on the distribution of nitrogen-fixing blue-green algae in the Department of Phycology, a great deal of microalgae especially nitrogen-fixing blue-green algae strains were isolated and kept into FACHB. Stage 2: In the 1970's, the problem of worldly protein food shortage was continuously raised and the single-cell protein was then thought to be a solution to the problem. The FACHB therefore concentrated on the isolation of single celled algae, especially focused on the isolation of single cell green algae and diatoms. Stage 3 featured the increase of strains of toxic algae especially the freshwater ones when the problem of water-bloom become more and more serious in China in 1980's.

Most of the strains collected in the FACHB were isolated from different kinds of water bodies and soils in China, with some strains derived from the exchange with other culture collections, particularly from the late Professor Richard Starr of the Culture Collection of Algae at the University of Texas, U.S..

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2 Instruction for ordering cultures

Orders for cultures are accepted by letter, purchase order or telephone: (027-87647715) or Fax: (027-87875132) or email: (lrsong@ihb.ac.cn). Delivery usually can be made within 10-14 days of receipt of the order.

Most cultures in the Collection are available (with restriction for some strains) by interested individuals and organizations, both academic and commercial. To academic institutions, the cost of each culture is 50 RMB, all others are charged 100 RMB.

3 Establishment of fresh cultures

Upon receiving the culture strains, investigators should follow the steps below to establish fresh cultures.

1) Appropriate culture media should be prepared before receipt of the strains according to the recipes given in Section V and with reference to the basic methods given in following section.

2) Immediately after receipt, cultures should be unpacked, transferred to new media and grown at the temperature and light intensity directed by the Collection. The light-dark cycle should be 12 hours light: 12 hours dark, and the screw cap on the tube should be loosened.

3) After detecting good growth, further maintenance of cultured requires transfer into new media at intervals as suggested by the Collection.

4 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 section. The present section introduces some basic methods for preparation of algal culture media.

1) Stock solutions

Media are generally composed of three kinds of components, i.e. macronutrients, trace elements and vitamins. Media are prepared from stock solutions of these components. As concentration of stock solutions of trace elements or vitamins is very low, 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 elements: 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 10-100mg/mL.

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

(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 Na_2EDTA , while stirring continuously.
- iv) Dispense the required volume of each trace element from primary solution, while stirring continuously.
- v) Dilute to final volume with distilled water and store in a refrigerator (5°C).

2) Media

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

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, glycoglycine, HEPES, TAPS, Bicine, , MES or 1, 2, 3, 4-cyclopentan tetraboxylic 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 1mol/L HCl or 1mol/L NaOH (if buffer required) or with 0.1mol/L HCl or 0.1mol/L NaOH (if no buffer required).

Synthetic medium (marine)

- i) Add approximately 80 % of the required volume of distilled water to a beaker.
- ii) Dissolve appropriate quantities of weighed Tris, Nitrilotriacetic acid (known as NTA) and major salts such as NaCl , $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$, KCl and $\text{CaCl}_2 \cdot 2\text{H}_2\text{O}$, while stirring continuously.
- iii) Dispense the other nutrients from previously prepared stock solutions.
- iv) Dilute to the final volume with the distilled water.
- v) Check the pH, which is usually adjusted to 8.0 with 1mol/L HCl.

Agar is added usually at concentration 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 agar.
- ii) After melting, quickly dispense 10 ml of agar medium into each test tube and sterilize by autoclaving (121°C , 20 min).
- iii) After sterilization, lay the upper part of the test-tube on a rod (1-cm ϕ) and cool to form an agar slant.

5 Systematic Index of the strains

Cyanophyceae		<i>Anabaena</i> sp.	583
<i>Agmenellum quadruplicatum</i> Bréb.	307	<i>Anabaena</i> sp.	584
<i>Anabaena aequalis</i> Borge	249	<i>Anabaena</i> sp.	586
<i>Anabaena azollae</i> Strasb.	190	<i>Anabaena</i> sp.	587
<i>Anabaena azotica</i> Ley	118	<i>Anabaena</i> sp.	588
<i>Anabaena catenula</i> (Kütz.) Born et Flah	362	<i>Anabaena</i> sp.	589
		<i>Anabaena</i> sp.	592
<i>Anabaena circinalis</i> Raben.	501	<i>Anabaena</i> sp.	593
<i>Anabaena cylindrica</i> Lemm.	170	<i>Anabaena</i> sp.	594
<i>Anabaena cylindrica</i> Lemm.	318	<i>Anabaena</i> sp.	595
<i>Anabaena cylindrica</i> Lemm.	383	<i>Anabaena</i> sp.	597
<i>Anabaena flos-aquae</i> (Lyngb.) Bréb.	245	<i>Anabaena</i> sp.	606
<i>Anabaena lutea</i> Gardn.	131	<i>Anabaena</i> sp.	608
<i>Anabaena lutea</i> Gardn.	133	<i>Anabaena</i> sp.	612
<i>Anabaena minutissima</i> Lemm.	250	<i>Anabaena</i> sp.	709
<i>Anabaena oscillarioides</i> (Bory) Born. et Flah.	578	<i>Anabaena</i> sp.	178
		<i>Anabaena</i> 1058	175
<i>Anabaena oscillarioides</i> (Bory) Born. et Flah.	579	<i>Anabaena</i> PCC 7120	607
		<i>Aulosira</i> sp.	
<i>Anabaena siamensis</i>	799	<i>Aulosira</i> sp.	615
<i>Anabaena sphaerica</i> Born. et Flah.	251	<i>Aulosira terrestre</i> Subba-Raju	256
<i>Anabaena spiroides</i> Klebahn	498	<i>Calothrix anomala</i> Mitra	343
<i>Anabaena spiroides</i> Klebahn	398	<i>Calothrix javanica</i> de Wild	386
<i>Anabaena subcylindrica</i> Borge	384	<i>Calothrix membranacea</i> Schmidle	236
<i>Anabaena subtropica</i> Gardner	260	<i>Calothrix parietina</i> Thur.	288
<i>Anabaena utermohlii</i> (Uterm.) Geitler	374	<i>Calothrix</i> sp.	154
<i>Anabaena variabilis</i> Kütz.	171	<i>Calothrix</i> sp.	167
<i>Anabaena variabilis</i> Kütz.	112	<i>Calothrix</i> sp.	611
<i>Anabaena variabilis</i> Kütz.	164	<i>Chroococcus</i> sp.	193
<i>Anabaena variabilis</i> Kütz.	235	<i>Chroococcus turgidus</i> (Kütz.) Näg	344
<i>Anabaena variabilis</i> Kütz.	319	<i>Coelosphaerium</i> sp.	826
<i>Anabaena</i> sp.	82	<i>Coelosphaerium</i> sp.	710
<i>Anabaena</i> sp.	109	<i>Cylindrospermum licheniforme</i> Kütz.	289
<i>Anabaena</i> sp.	115	<i>Cylindrospermum</i> sp.	282
<i>Anabaena</i> sp.	134	<i>Dermocarpa violacea</i> Crouan	349
<i>Anabaena</i> sp.	172	<i>Fischerella muscicola</i> (Thur.) Gom.	321

<i>Fischerella muscicola</i> (Thur.) Gom.	387	<i>Microcystis</i> sp.	562
<i>Fremyella diplosiphon</i> (Gom.) Drouet	399	<i>Microcystis</i> sp.	563
<i>Gloeocapsa</i> sp.	281	<i>Microcystis</i> sp.	564
<i>Gloeocapsa</i> sp.	345	<i>Microcystis</i> sp.	568
<i>Gloeocapsa</i> sp.	400	<i>Microcystis</i> sp.	572
<i>Gloeocapsa</i> sp.	513	<i>Microcystis</i> sp.	573
<i>Gloeocapsa</i> sp.	514	<i>Microcystis</i> sp.	574
<i>Gloeotrichia echinulata</i> (Smith)	341	<i>Microcystis</i> sp.	575
P. Richt.		<i>Microcystis</i> sp.	576
<i>Gloeotrichia ghosi</i> Singh	419	<i>Microcystis</i> sp.	854
<i>Gloeotrichia</i> sp.	459	<i>Nodularia spumigena</i> (Mertens in	377
<i>Hapalosiphon welwitschii</i>	257	Juergens) Born. et Flah.	
W. et G. S. West		<i>Nostoc calcicola</i> Bréb.	389
<i>Lyngbya kuetzingii</i> Schmidle	388	<i>Nostoc commune</i> Vaucher	261
<i>Lyngbya</i> sp.	722	<i>Nostoc ellipsosporum</i> (Desm.) Rabenh.	390
<i>Mastigocladus laminosus</i> Cohn	382	<i>Nostoc flagelliforme</i> Born et Flah.	838
<i>Mastigocladus</i> sp.	408	<i>Nostoc foliaceum</i> Moug.	393
<i>Mastigocladus</i> sp.	785	<i>Nostoc linckia</i> (Roth.) Born. et Flah.	391
<i>Merismopedia glauca</i> f.	711	<i>Nostoc linckia</i> (Roth.) Born. et Flah.	103
<i>insignis</i> (Schkorb.) Geitler		<i>Nostoc linckia</i> (Roth.) Born. et Flah.	105
<i>Merismopedia</i> sp.	286	<i>Nostoc longstaffi</i> Fritsch	394
<i>Microcoleus vaginatus</i> var.	253	<i>Nostoc muscorum</i> Ag.	244
<i>cyanoviridis</i> Baker et Bold		<i>Nostoc muscorum</i> Ag.	316
<i>Microcystis aeruginosa</i> Kütz. em.	524	<i>Nostoc muscorum</i> Ag.	395
Elenkin		<i>Nostoc paludosum</i> Kütz.	157
<i>Microcystis aeruginosa</i> Kütz. em.	525	<i>Nostoc parmelioides</i> Kütz.	392
Elenkin		<i>Nostoc piscinale</i> Kütz.	396
<i>Microcystis aeruginosa</i> Kütz. em. lenkin	526	<i>Nostoc punctiforme</i> (Kütz.) Hariot	252
<i>Microcystis aeruginosa</i> Kütz. em.	469	<i>Nostoc spongiaeforme</i> Ag.	130
Elenkin		<i>Nostoc</i> sp.	280
<i>Microcystis aeruginosa</i> Kütz. em.	434	<i>Nostoc</i> sp.	599
Elenkin		<i>Nostoc</i> sp.	623
<i>Microcystis aeruginosa</i> Kütz. em.	315	<i>Nostoc</i> sp.	713
Elenkin		<i>Nostoc</i> sp.	94
<i>Microcystis aeguginosa</i> Kütz. em.	836	<i>Nostoc</i> sp.	146
Elenkin		<i>Nostoc</i> sp.	149

<i>Nostoc</i> sp.	151	<i>Spirulina platensis</i> (Nordst.) Geitler	439
<i>Oscillatoria amoena</i> (Kütz.) Gom.	346	<i>Spirulina subsalsa</i> Oested.	351
<i>Oscillatoria animalis</i> Ag.	284	<i>Spirulina subsalsa</i> f. <i>versicolor</i>	441
<i>Oscillatoria lutea</i> Ag.	406	(Cohn) Koster	
<i>Oscillatoria lutea</i> var. <i>contorta</i>	278	<i>Spirulina</i> sp.	440
Baker et Bold		<i>Starrria zimbabweensis</i> Lang	322
<i>Oscillatoria planctonica</i> Woloszy.	708	<i>Synechococcus cedrorum</i> Sauv.	283
<i>Oscillatoria tenuis</i> Ag.	247	<i>Synechococcus elongatus</i> Näg.	347
<i>Oscillatoria</i> sp.	853	<i>Synechococcus</i> PCC 7942	805
<i>Phormidium foveolarum</i> (Mont.)	239	<i>Tolypothrix curta</i> Gurder	143
Gom.		<i>Tolypothrix distorta</i> (H. Dan) Ktz	100
<i>Phormidium luridum</i> var. <i>olivace</i>	238	<i>Tolypothrix distorta</i> var.	279
Boresch.		<i>symplocoides</i> Hansg.	
<i>Phormidium mucicola</i> Hub.-Pest.	723	<i>Tolypothrix tenuis</i> Kütz.	184
et Naum		<i>Tolypothrix</i> sp.	97
<i>Plectonema boryanum</i> Gom.	246	<i>Tolypothrix</i> sp.	121
<i>Plectonema boryanum</i> Gom.	240	<i>Tolypothrix</i> sp.	618
<i>Plectonema boryanum</i> Gom.	402	<i>Tolypothrix</i> sp.	624
<i>Plectonema phormidioides</i> Hansg.	200	<i>Tolypothrix</i> sp.	629
<i>Pleurocapsa</i> sp.	560	Glaucophyceae	
<i>Richelia sinica</i> Shen et Li	800	<i>Cyanophora paradoxa</i> Korsh.	317
<i>Schizothrix calcicola</i> (Ag.) Gom.	404	Rhodophyceae	
<i>Schizothrix calcicola</i> var. <i>radiata</i>	405	<i>Audouinella chalybea</i> Bory	796
Baker et Bold		<i>Batrachospermum sirodotia</i> Skuja	339
<i>Scytonema crispum</i> (Ag.) Born.	285	<i>Porphyridium aerugineum</i> Geitler	744
<i>Scytonema hofmanni</i> Ag.	248	<i>Porphyridium purpureum</i> (Bory)	806
<i>Scytonema</i> sp.	91	Drew et Ross	
<i>Spirulina maxima</i> (Setch. et Gard.)	438	<i>Porphyridium</i> sp.	840
Geitler		<i>Rhodorus marinus</i> Geitler	808
<i>Spirulina platensis</i> (Nordst.) Geitler	790	<i>Rhodella reticulate</i> Deason	742
<i>Spirulina platensis</i> (Nordst.) Geitler	791	<i>Rhodella reticulate</i> Deason	807
<i>Spirulina platensis</i> (Nordst.) Geitler	792	Cryptophyceae	
<i>Spirulina platensis</i> (Nordst.) Geitler	793	<i>Cryptomonas ovata</i> Ehr.	472
<i>Spirulina platensis</i> (Nordst.) Geitler	794	<i>Cryptomonas</i> sp.	515
<i>Spirulina platensis</i> (Nordst.) Geitler	314	Dinophyceae	
<i>Spirulina platensis</i> (Nordst.) Geitler	350	<i>Cryptocodinium cohnii</i> (Seligo)	272

Chatton		<i>Synedra</i> sp.	843
<i>Peridinium pusillum</i> (Penard.)	328	Euglenophyceae	
Lemm.		<i>Euglena gracilis</i> Klebs	277
<i>Peridinium pusillum</i> (Penard.)	809	<i>Euglena gracilis</i> Klebs	745
Lemm.		<i>Euglena gracilis</i> Klebs	848
Chrysophyceae		<i>Euglena gracilis</i> Klebs	849
<i>Botrydiopsis aplina</i> Vischer	367	<i>Euglena gracilis</i> Klebs var.	850
<i>Botrydium cystosum</i> Vischer	365	<i>bacillaris</i> Pringsheim	
<i>Botrydium becherianum</i> Vischer	368	<i>Euglena intermedia</i> (Klebs) Schmitz	412
<i>Ellipsoidion</i> sp.	756	<i>Euglena mutabilis</i> Schmitz	851
<i>Ellipsoidion</i> sp.	757	<i>Euglena stellata</i> Mainx	366
<i>Monodus subterraneus</i> Petersen	819	<i>Phacus agilis</i> Skuja	852
Bacillariophyceae		Chlorophyceae	
<i>Achnanthes brevipes</i> (Ag.) Cl.	446	<i>Ankistrodesmus falcatus</i> (Corda)	19
<i>Amphora coffeaeformis</i> Ag.	363	Ralfs	
<i>Cyclotella meneghiniana</i> Kütz.	739	<i>Ankistrodesmus</i> sp.	46
<i>Cyclotella meneghiniana</i> Kütz.	740	<i>Ankistrodesmus</i> sp.	49
<i>Cymbella</i> sp.	844	<i>Aphanochaete magna</i> Godward	462
<i>Fragilaria</i> sp.	532	<i>Ascochloris multinucleata</i> Bold	358
<i>Gomphonema parvulum</i> (Kütz.) Grun.	212	et MacEntee	
<i>Gomphonema</i> sp.	783	<i>Asterococcus superbus</i> (Cienk.)	465
<i>Hantzschia amphioxys</i> (Ehr.) Grun.	221	Scherffell	
<i>Hantzschia</i> sp.	224	<i>Basycladia chelonum</i> (Coll.)	795
<i>Melosira</i> sp.	537	Hoffm. et Tild.	
<i>Melosira</i> sp.	539	<i>Botryococcus braunii</i> Kütz.	759
<i>Navicula incerta</i> Grun.	371	<i>Botryococcus braunii</i> Kütz.	760
<i>Navicula incerta</i> Grun.	372	<i>Botryococcus braunii</i> Kütz.	761
<i>Nitzschia hantzschiana</i> Rabh.	215	<i>Botryococcus braunii</i> Kütz.	763
<i>Nitzschia palea</i> (Kütz.) W. Smith	209	<i>Botryococcus braunii</i> Kütz.	764
<i>Nitzschia</i> sp.	206	<i>Botryococcus braunii</i> Kütz.	765
<i>Nitzschia</i> sp.	510	<i>Botryococcus braunii</i> Kütz.	767
<i>Nitzschia</i> sp.	511	<i>Botryococcus braunii</i> Kütz.	768
<i>Nitzschia</i> sp.	512	<i>Botryococcus braunii</i> Kütz.	772
<i>Synedra</i> sp.	565	<i>Botryococcus braunii</i> Kütz.	773
<i>Synedra</i> sp.	570	<i>Botryococcus braunii</i> Kütz.	775
<i>Synedra</i> sp.	842	<i>Botryococcus braunii</i> Kütz.	776

<i>Botryococcus braunii</i> Kütz.	777	<i>Chlorella protothecoides</i> Krueg.	2
<i>Botryococcus braunii</i> Kütz.	778	<i>Chlorella pyrenoidosa</i> Chick	5
<i>Botryococcus braunii</i> Kütz.	357	<i>Chlorella pyrenoidosa</i> Chick	9
<i>Centrosphaera</i> sp.	291	<i>Chlorella pyrenoidosa</i> Chick	17
<i>Characiosiphon rivularis</i> Iyengar	304	<i>Chlorella pyrenoidosa</i> Chick	27
<i>Chlamydomonas applanata</i> Prings.	268	<i>Chlorella pyrenoidosa</i> Chick.	415
[E&S]		<i>Chlorella regularis</i> var. minima	728
<i>Chlamydomonas geitleri</i>	473	Shihira et Krauss	
(Starr & Zeikus)		<i>Chlorella regularis</i> var. minima	729
<i>Chlamydomonas inflexa</i> Prings.	461	Shihira et Krauss	
<i>Chlamydomonas melanospora</i> Lewin	447	<i>Chlorella saccharophila</i> (Krüg.) Migula	4
<i>Chlamydomonas mexicana</i> Lewin	724	<i>Chlorella saccharophila</i> (Krüg.) Migula	727
<i>Chlamydomonas mexicana</i> Lewin	273	<i>Chlorella sorokiniana</i> Shihira et Krauss	270
<i>Chlamydomonas mexicana</i> Lewin	274	<i>Chlorella sorokiniana</i> Shihira et Krauss	275
<i>Chlamydomonas microsphaeua</i>	52	<i>Chlorella vulgaris</i> Beij.	24
Pasch. et Jah.		<i>Chlorella vulgaris</i> Beij.	30
<i>Chlamydomonas moewusii</i> Gerloff	263	<i>Chlorella vulgaris</i> Beij.	36
[E&S]		<i>Chlorella</i> sp.	482
<i>Chlamydomonas moewusii</i> Gerloff	264	<i>Chlorella</i> sp.	483
[E&S]		<i>Chlorella</i> sp.	484
<i>Chlamydomonas moewusii</i> Gerloff	360	<i>Chlorococcum humicola</i> (Näg.) Rab.	21
<i>Chlamydomonas moewusii</i> Gerloff	267	<i>Chlorogonium elongatum</i> Dang.	442
[E&S]		<i>Chlorogonium elongatum</i> Dang.	467
<i>Chlamydomonas philotes</i> Lewin	451	<i>Chlorogonium tetragamum</i> Bohlin	443
<i>Chlamydomonas philotes</i> Lewin	454	<i>Closterium cornu</i> Ehr.	516
<i>Chlamydomonas reinhardtii</i> Dang.	479	<i>Closterium cornu</i> Ehr.	554
<i>Chlamydomonas reinhardtii</i> Dang.	265	<i>Closterium lanceolatum</i> Ktz.	545
[E&S]		<i>Closterium leibleinii</i> Ktz.	424
<i>Chlamydomonas reinhardtii</i> Dang.	355	<i>Closterium moniliformum</i> (Bory) Ehr.	421
[E&S]		<i>Closterium moniliformum</i> (Bory) Ehr.	553
<i>Chlamydomonas sajae</i> Lewin	726	<i>Closterium</i> sp.	326
<i>Chlamydomonas</i> sp.	67	<i>Coccomyxa arvernensis</i> Jaag	456
<i>Chlamydomonas</i> sp.	293	<i>Coccomyxa simplex</i> Mainx	457
<i>Chlamydomonas</i> sp.	543	<i>Coelastrum</i> sp.	334
<i>Chlamydomonas</i> sp.	715	<i>Cosmarium botrytis</i> Menegh.	295
<i>Chlorella ellipsoidea</i> Gerneck [K&H]	40	<i>Cosmarium botrytis</i> Menegh.	375

<i>Cosmarium botrytis</i> Menegh.	376	<i>Pediastrum</i> sp.	561
<i>Cosmarium turpinii</i> Bréb.	294	<i>Pediastrum</i> sp.	55
<i>Cosmarium</i> sp.	330	<i>Pediastrum</i> sp.	530
<i>Dunaliella bardawil</i> Ben-Amotz	847	<i>Penium margaritaceum</i> (Her.) Bréb.	436
et Avron		<i>Scenedesmus bijuga</i> (Turp.) Lag.	76
<i>Dunaliella parva</i> Lerche	815	<i>Scenedesmus dimorphus</i> (Turp.) Kütz.	496
<i>Dunaliella primolecta</i> Butcher	818	<i>Scenedesmus obliquus</i> (Turp.) Kütz.	12
<i>Dunaliella salina</i> (Dunal) Teod.	435	<i>Scenedesmus obliquus</i> (Turp.) Kütz.	33
<i>Dunaliella</i> sp.	558	<i>Scenedesmus obliquus</i> (Turp.) Kütz.	39
<i>Dunaliella tertiolecta</i> Butcher	821	<i>Scenedesmus obliquus</i> (Turp.) Ktz.	276
<i>Dysmorphococcus globosus</i>	290	<i>Scenedesmus obliquus</i> (Turp.) Ktz.	416
Bold et Starr		<i>Scenedesmus quadricauda</i> (Turp.) Bréb.	43
<i>Euastrum pectinatum</i> Bréb.	423	<i>Scenedesmus quadricauda</i> (Turp.) Bréb.	506
<i>Euastrum verrucosum</i> Ehr.	803	<i>Scenedesmus</i> sp.	489
<i>Eudorina</i> sp.	529	<i>Selenastrum capricornutum</i> Printz	271
<i>Eudorina</i> sp.	331	<i>Spirogyra gracilis</i> (Hassall) Ktz.	354
<i>Golenkinia paucispina</i> W. et G. S. West	542	<i>Spirogyra</i> sp.	737
<i>Haematococcus pluvialis</i> Flot et Will	712	<i>Spirogyra</i> sp.	738
<i>Haematococcus pluvialis</i> Flot	797	<i>Spongiochloris excentrica</i> Starr	234
<i>Haematococcus</i> sp.	748	<i>Staurastrum chaetoceras</i> (Schr.) Smith	798
<i>Hormidium</i> sp.	70	<i>Staurasteum orbiculare</i> var. ralfsii	361
<i>Hormidium</i> sp.	486	W. & G. S. West	
<i>Hormidium</i> sp.	488	<i>Staurastrum</i> sp.	523
<i>Hydrodictyon</i> sp.	734	<i>Staurastrum</i> sp.	719
<i>Mesotaenium kramstai</i> Lemm	296	<i>Stichococcus bacillaris</i> Näg.	754
<i>Micrasterias decemdentata</i> (Näg.) Arch.	292	<i>Stigeoclonium</i> sp.	58
<i>Mougeotia</i> sp.	320	<i>Stigeoclonium</i> sp.	546
<i>Mougeotia</i> sp.	718	<i>Stigeoclonium</i> sp.	780
<i>Netrium digitus</i> var. digitus	468	<i>Tetracystis aggregata</i> Brown et Bold	262
(Biebel nom. nud.)		<i>Tetraspora</i> sp.	547
<i>Oedogonium</i> sp.	544	<i>Ulothrix</i> sp.	493
<i>Oedogonium</i> sp.	559	<i>Ulothrix</i> sp.	781
<i>Pandorina morum</i> (Mueller) Bory	463	<i>Volvox carteri</i> f. nagariensis Iyengar	323
<i>Pandorina morum</i> (Mueller) Bory	478	<i>Zygnema extenua</i> Jao	340
<i>Pediastrum</i> sp.	721	<i>Zygnema circumcarinatum</i> Czurda	378
<i>Pediastrum</i> sp.	703		

Reference

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