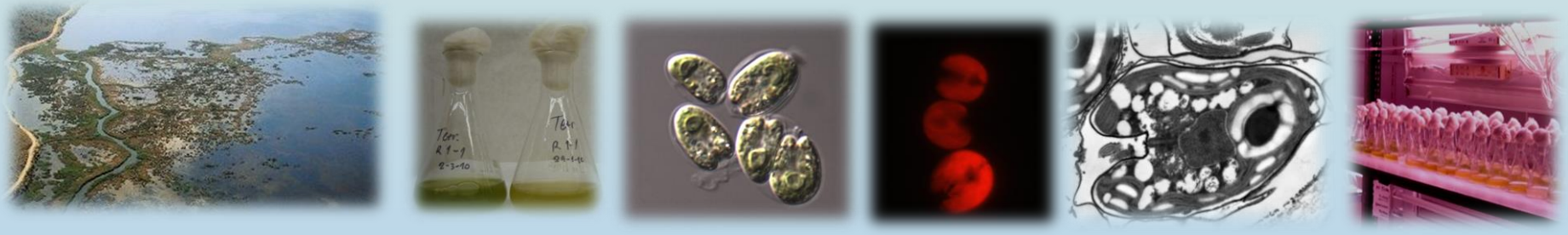
NATIONAL & KAPODISTRIAN UNIVERSITY OF ATHENS
FACULTY OF BIOLOGY
DEPARTMENT OF ECOLOGY & SYSTEMATICS
Panepistimiopolis, ATHENS 15784, GREECE

# The microalgae strain bank ATHU-AL/CY at the University of Athens (NKUA)



Chantzistrountsiou X., Lamprinou V., Gratsia E., Evrigeni E., Tzovenis I., Economou-Amilli A. **

National and Kapodistrian University of Athens, Faculty of Biology,

Department of Ecology & Systematics

** https://sites.google.com/view/athena-economou-amilli/

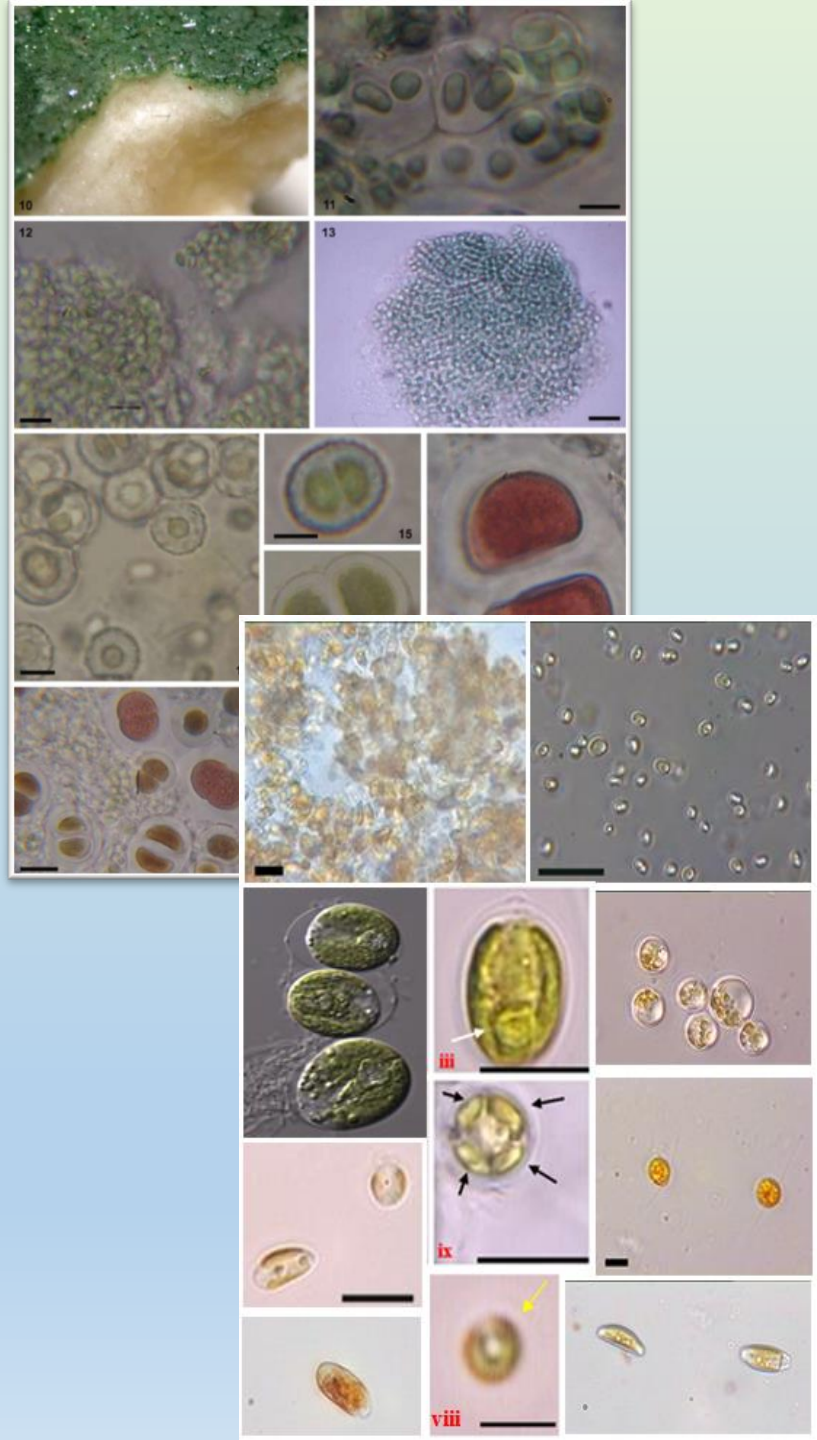
*16th International Nannoplankton Association Meeting*
*September 24-28, 2017*
*Athens, Greece*

# Mission Statement

- The ATHU Culture Collection is a non profit microalgal strain bank, specialized in the cultivation of microalgae from various environments. The collection focuses especially on microalgae from extreme environments such as thermal springs, hyper saline habitats and Greek caves. It was established by Prof. Dr. K. Anagnostidis in 1970 and then continued till today under the supervision of Prof. Dr. A. Economou-Amilli.

- ATHU Culture Collection comprises two main algae groups, Prokaryotic (ATHU-CY) and Eukaryotic (ATHU-AL) and provides an expertise on isolation, cultivation and identification of novel strains and their further biotechnological exploitation.

- It currently consists of >100 strains and it is constantly being enriched.



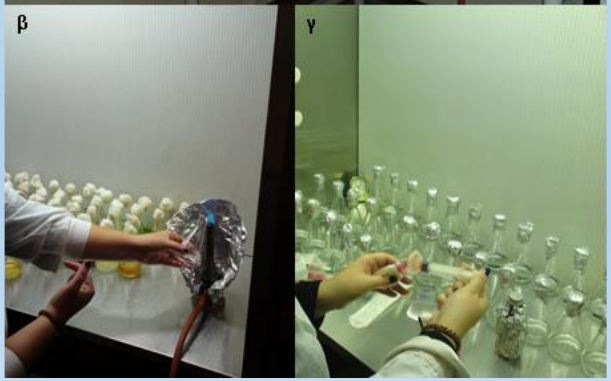
# Methodology

**Field collection**

**Cultivation in the lab (Natural Algal Blooms)**

**Strain selection and isolation**

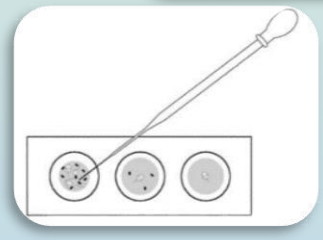

**Single-strain culture development**



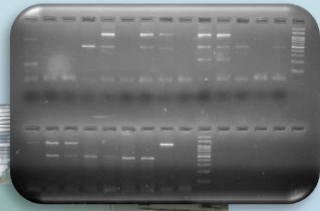

**Research and application**

Observation – Microscopy
*(LM, TEM, SEM, Epifluorescence, Nomarski)*

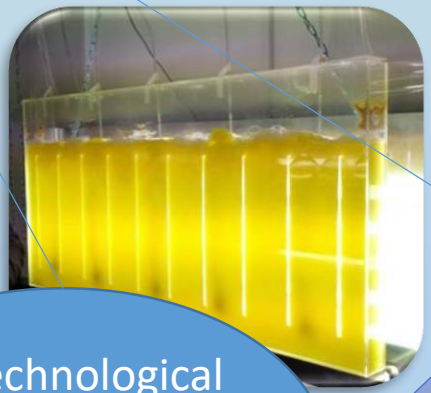
Isolation
*(Multiple dilution, Agar plating, single-cell isolation)*



Culture Collection
ATHU-AL
ATHU-CY



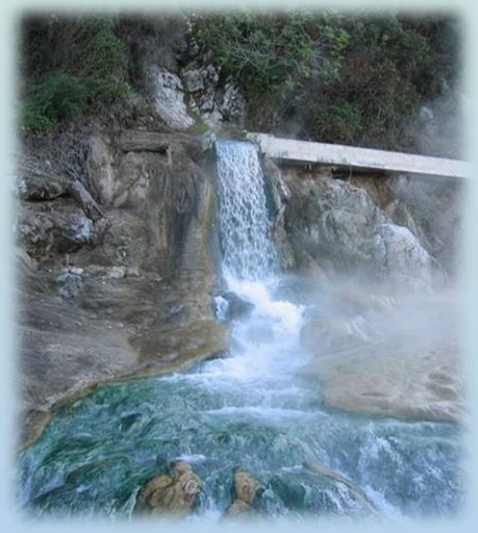
Identification
*(Classic taxonomy, morphology, DNA analysis, chemotaxonomy)*

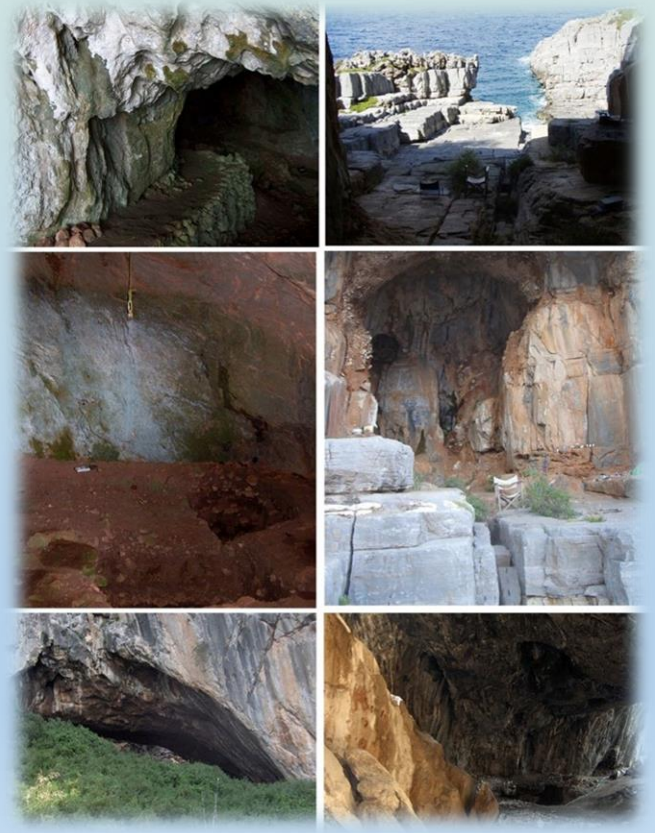


Biotechnological applications
*(Aquaculture, food industry, cosmetics, pharmaceuticals,biofuels)*

# Habitats of primary interest

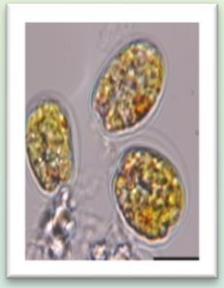
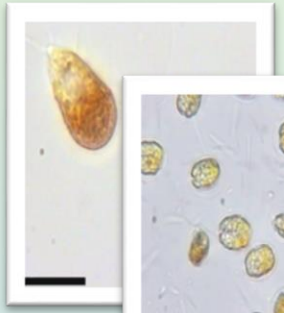
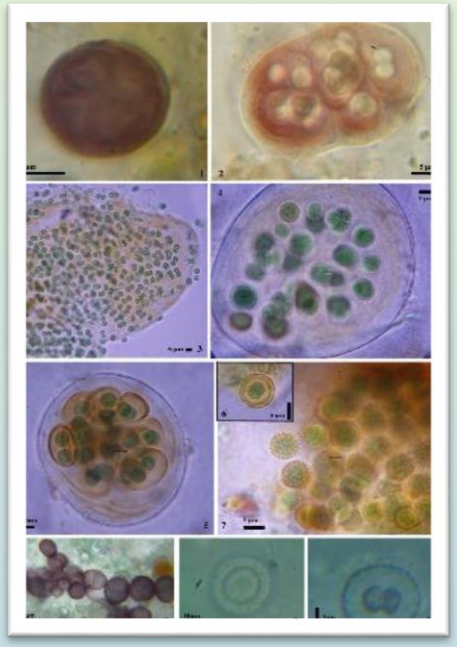
- Coastal lagoons
- Deltaic systems
- Open sea
- Coastal areas
- Transitional waters
- Hypersaline habitats
- Thermal Springs
- Greek Caves

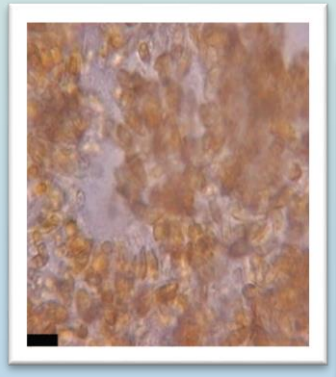





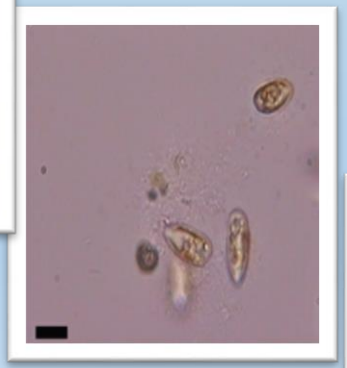
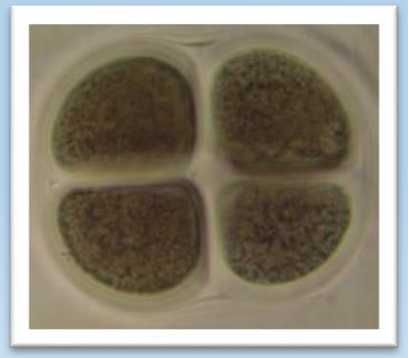
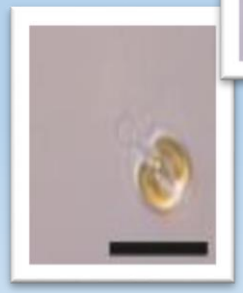
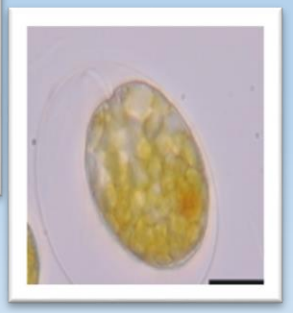
# Organisms

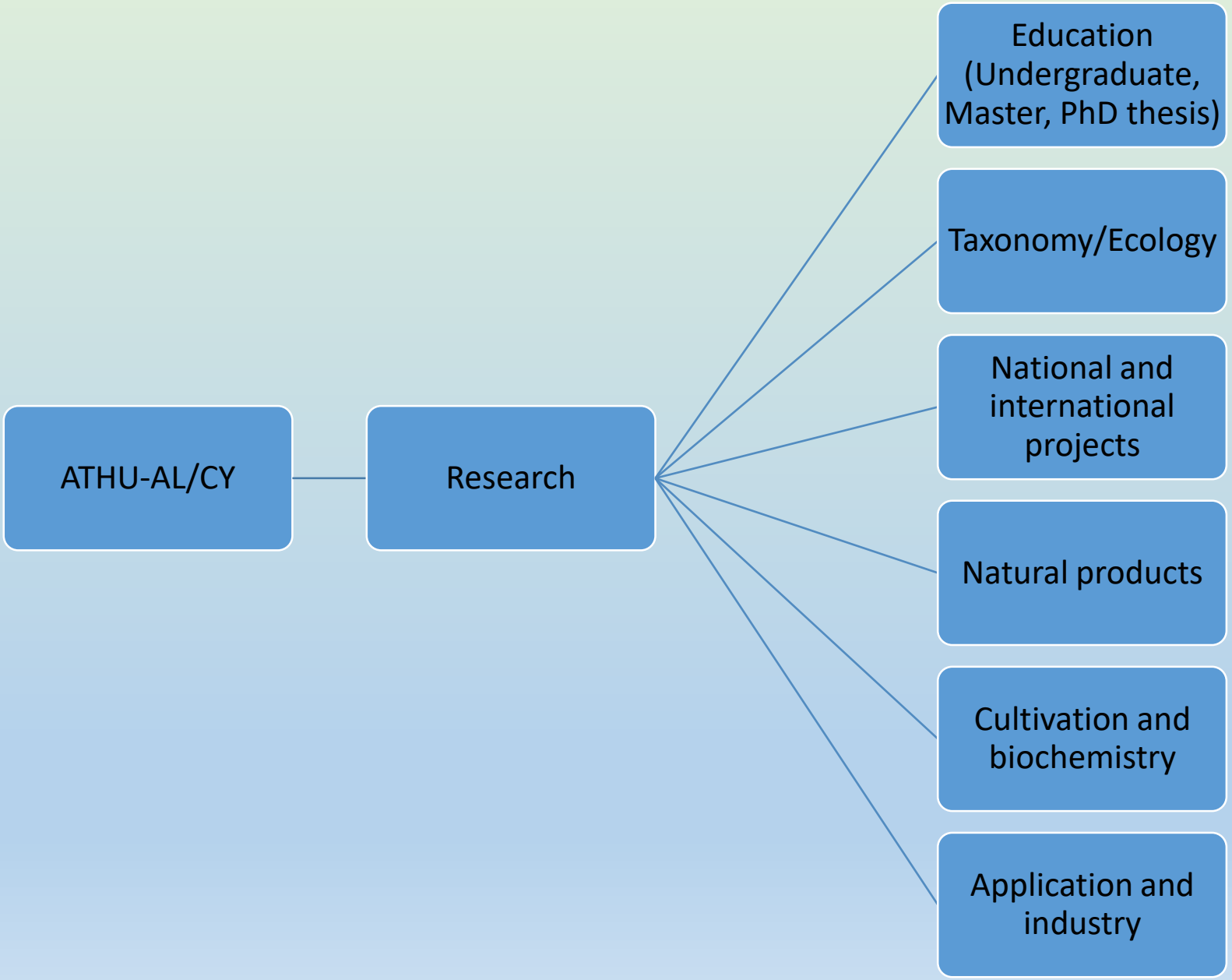
- Chlorophytes
- Haptophytes
- Prasinophytes
- Diatoms
- Dinoflagellates
- Cryptophytes
- Cyanobacteria







ATHU-AL/CY
Research
Education (Undergraduate, Master, PhD thesis)
Taxonomy/Ecology
National and international projects
Natural products
Cultivation and biochemistry
Application and industry

# Novel Species

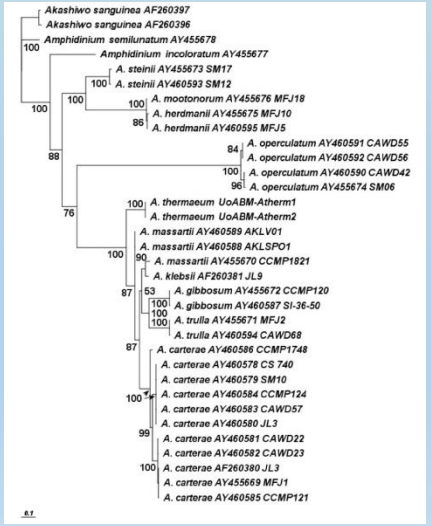
Acta Protozool. (2009) 48: 153–170

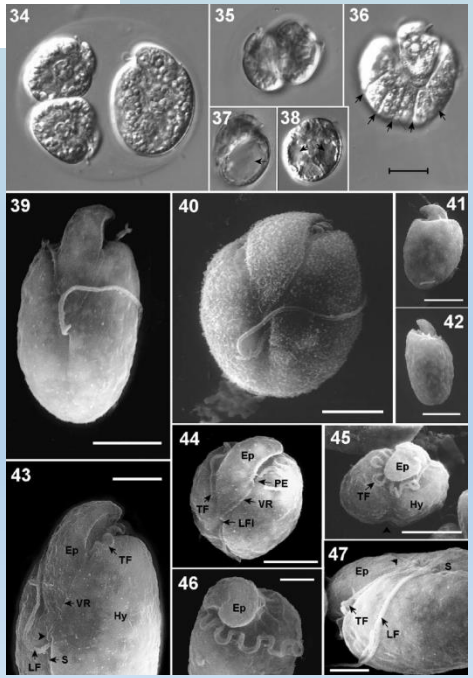
ACTA
PROTOZOOLOGICA

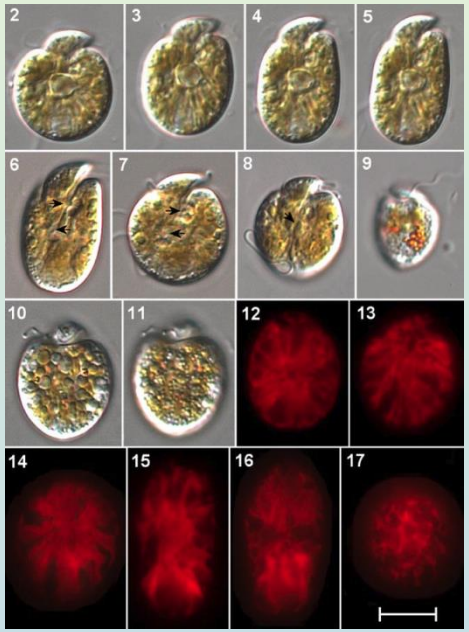
**A New Marine Species of *Amphidinium* (Dinophyceae) from Thermaikos Gulf, Greece**

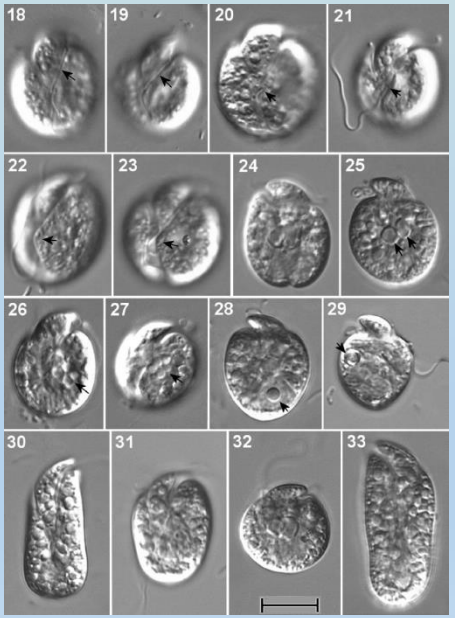
**Nicolas P. DOLAPSAKIS and Athena ECONOMOU-AMILLI**

**Faculty of Biology, Department of Ecology and Systematics, University of Athens, Athens, Greece**



# Novel Species

Int J Syst Evol Microbiol. 2011 Dec;61(Pt 12):2907-15. doi: 10.1099/ijs.0.029223-0. Epub 2011 Jan 21.

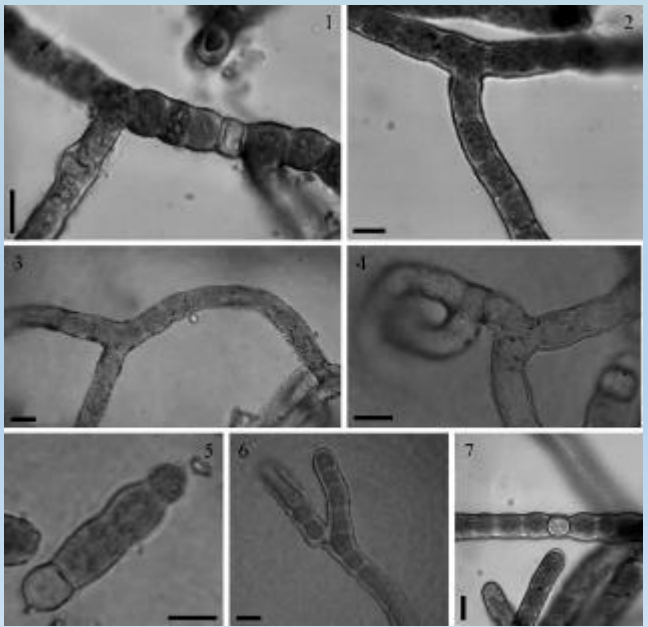
**Morphology and molecular evaluation of Iphinoe spelaeobios gen. nov., sp. nov. and Loriellopsis cavernicola gen. nov., sp. nov., two stigonematalean cyanobacteria from Greek and Spanish caves.**

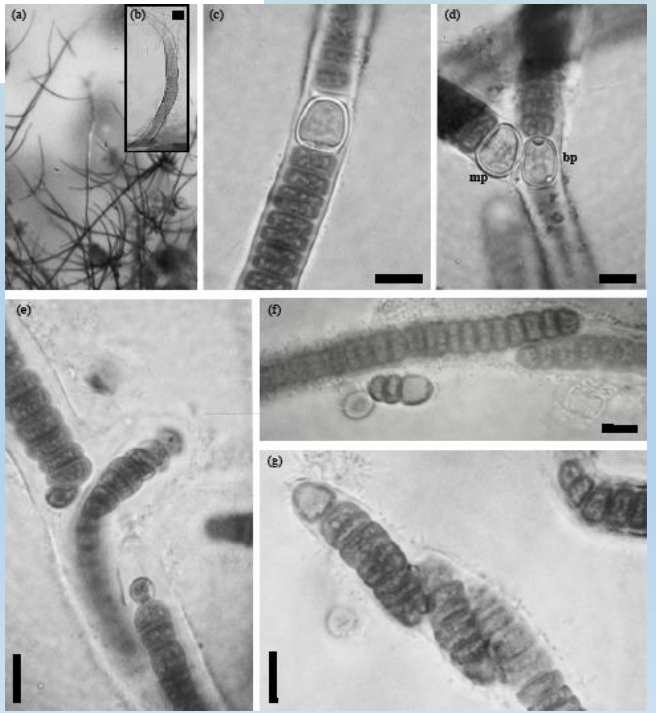
Lamprinou V[1], Hernández-Mariné M, Canals T, Kormas K, Economou-Amilli A, Pantazidou A.

Int J Syst Evol Microbiol. 2012 Dec;62(Pt 12):2870-7. doi: 10.1099/ijs.0.038679-0. Epub 2012 Jan 13.

**Toxopsis calypsus gen. nov., sp. nov. (Cyanobacteria, Nostocales) from cave 'Francthi', Peloponnese, Greece: a morphological and molecular evaluation.**

Lamprinou V[1], Skaraki K, Kotoulas G, Economou-Amilli A, Pantazidou A.



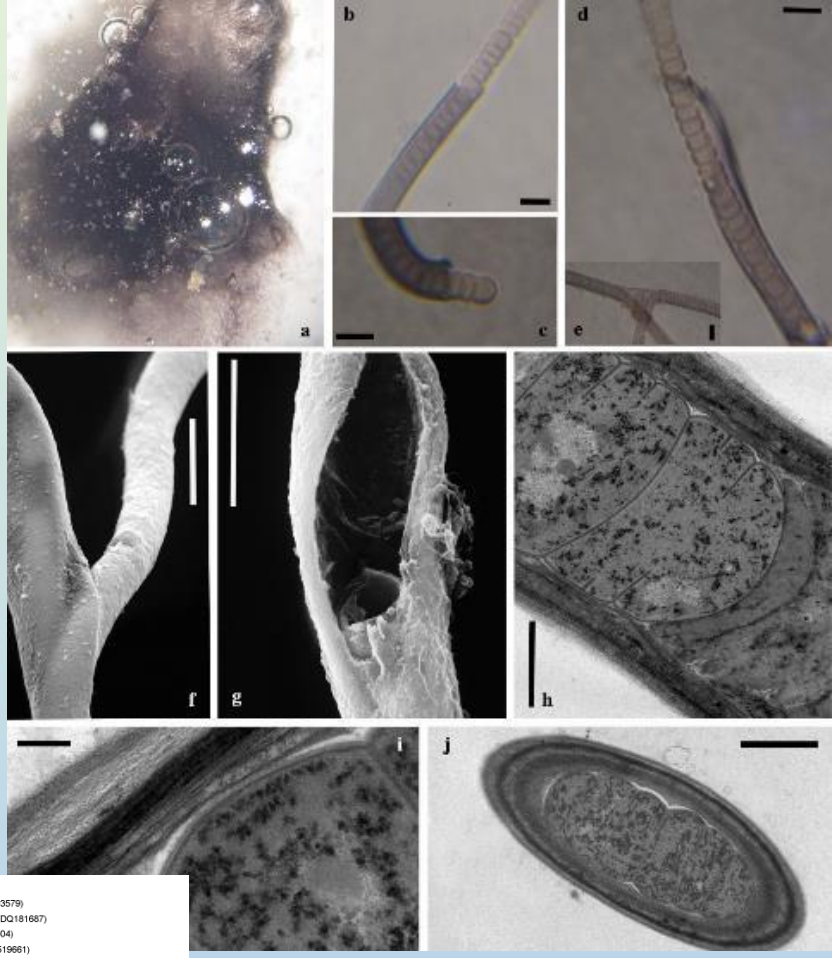
# Novel Species…

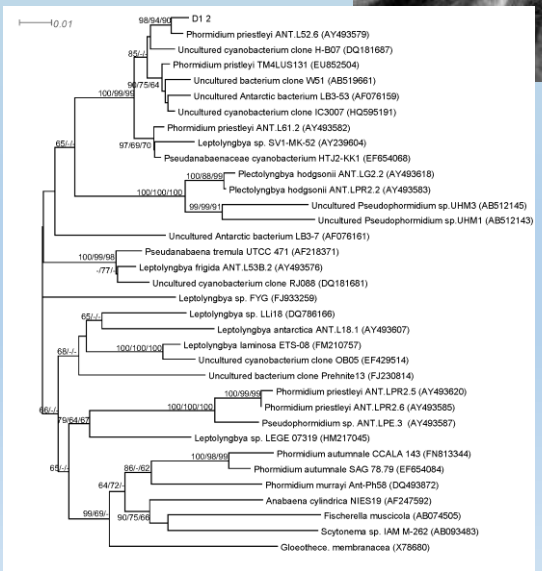
Fundam. Appl. Limnol. Vol. 182/2, 109–116
Stuttgart, February 2013

## A new species of *Phormidium* (Cyanobacteria, Oscillatoriales) from three Greek Caves: morphological and molecular analysis

Paper of the special Issue "Aquatic microbial ecology in the footsteps of Jürgen Overbeck"

V. Lamprinou[1], K. Skaraki[2], G. Kotoulas[2], K. Anagnostidis[1]†,
A. Economou-Amilli[1,*] and A. Pantazidou[1]



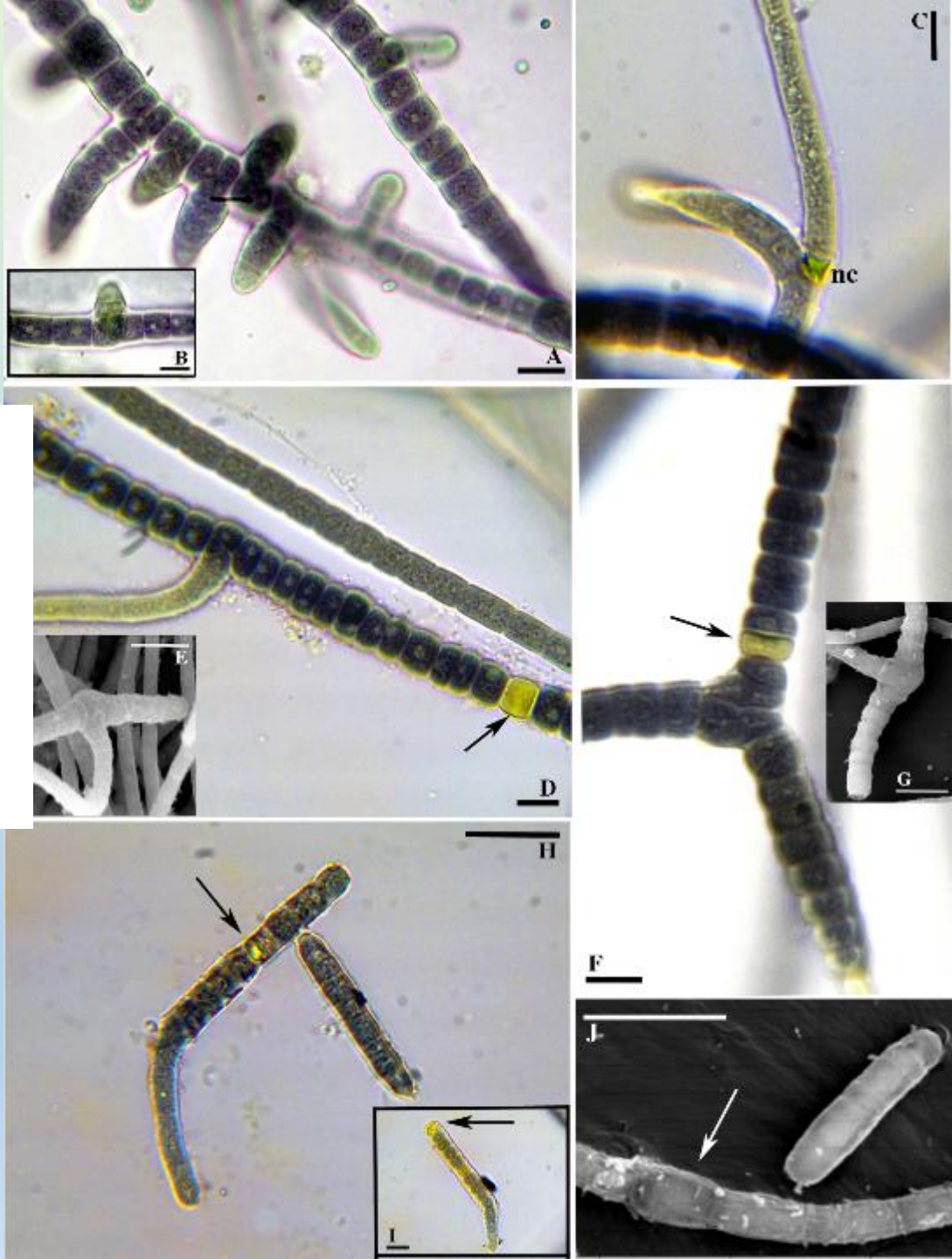



# Novel Species…

Phytotaxa (2016) 282:171-185

***Spelaeonaias* gen. nov., a new true-branched cyanobacterium from Cave Vlychada (Diros, Peloponnese, Greece)**

Lamprinou, V., Christodoulou, M., Hernandez-Marine, M., Parmakelis, A., and Economou-Amilli, A.



# Novel Species…

NOVA HEDWIGIA · BAND XXXI, 1+2 · BRAUNSCHWEIG 1979

## Two New Taxa of *Cyclotella* Kützing from Lake Trichonis, Greece

by

Athina Economou-Amilli

Institute of Systematic Botany, University of Athens, Greece

*Diatom Research* (1990) Volume 5 (1), 43-50.

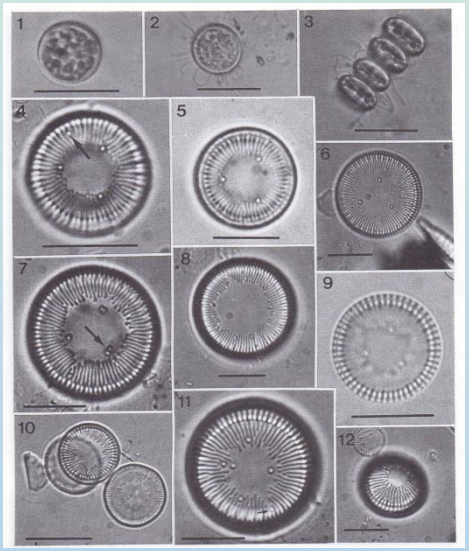
## *CYCLOTELLA CRETICA*, A NEW SPECIES OF DIATOM FROM THE ISLAND OF CRETE, GREECE

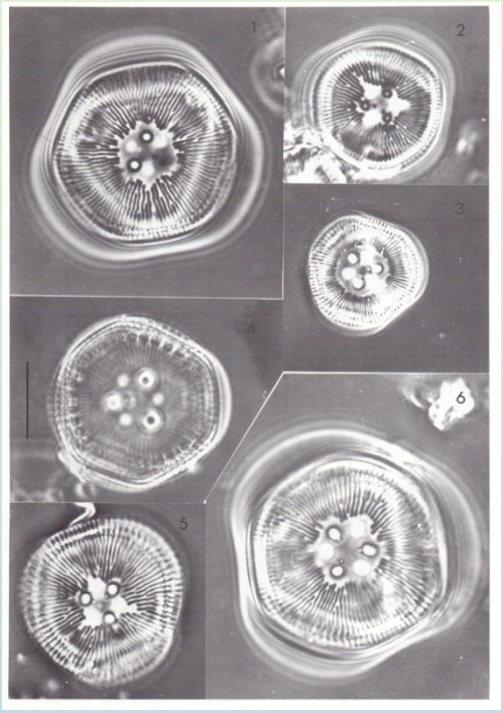
**Jacob John**

*School of Biology, Curtin University of Technology, Bentley, WA 6102, Australia*

**Athena Economou-Amilli**

*Department of Biology, University of Athens, Panepistimiopolis 15784, Athens, Greece*





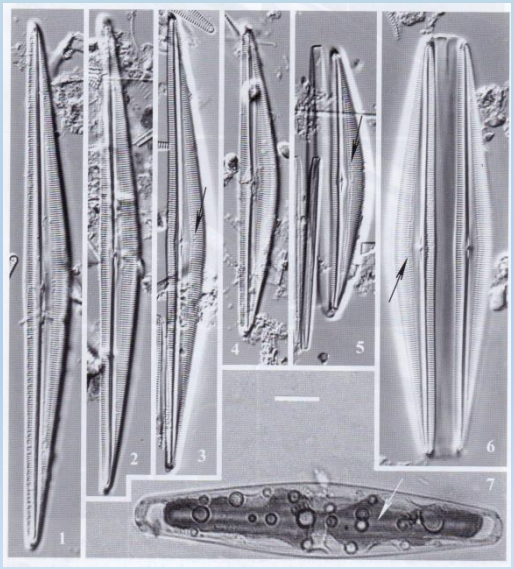
*Diatom Research* (2003), Volume 18 (1), 21–39

## NEW SPECIES AND NEW COMBINATIONS IN THE GENUS *SEMINAVIS* (BACILLARIOPHYTA)

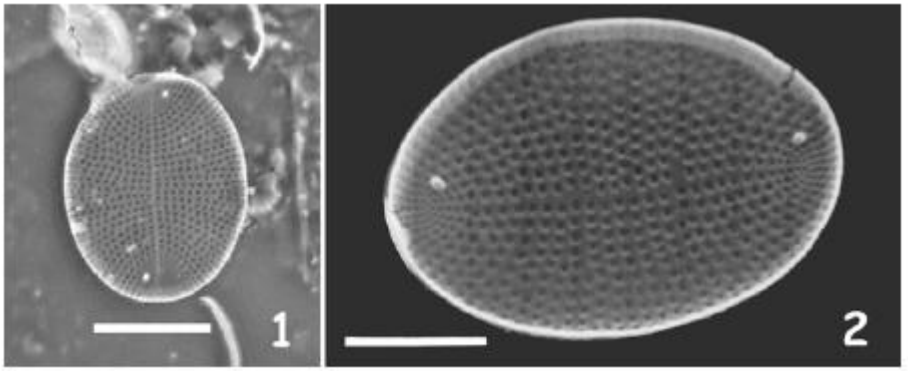
**Daniel B. Danielidis** [1]

*University of Athens, Faculty of Biology, Department of Ecology and Systematics, Panepistimiopolis, 15784 Athens, Greece*

**David G. Mann**



# Novel Species…




Nadya Ognyanova-Rumenova & Kalina Manoylov (eds.) 2006
FOSSIL AND RECENT PHYCOLOGICAL STUDIES
Festschrift in honour of Dobrina Temniskova-Topalova (pp. 9–16)



## Taxonomic Status of *Detonia* Frenguelli and the Establishment of *Detonia dobrinae* sp. nov. (Bacillariophyceae)

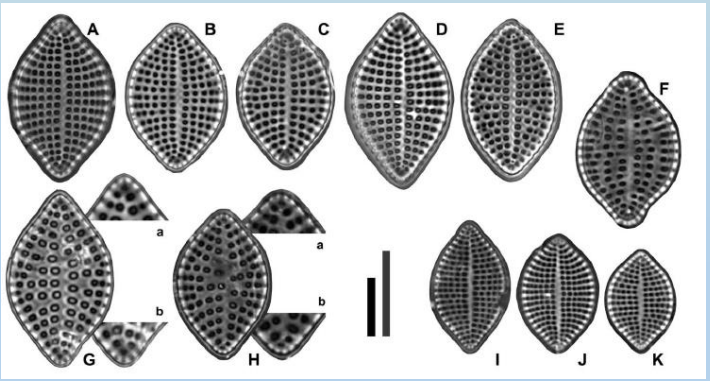
Ioanna Louvrou, Daniel Danielidis and Athena Economou-Amilli

OPEN ACCESS Freely available online

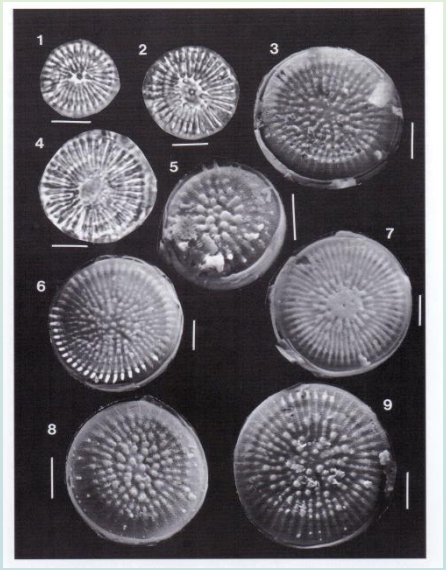
PLoS one

## *Meloneis* Gen. Nov., a New Epipsammic Genus of Rhaphoneidaceae (Bacillariophyceae)

**Ioanna Louvrou, Daniel B. Danielidis, Athena Economou-Amilli***



# Novel Fossil Species…




Arch. Hydrobiol. Spec. Issues Advanc. Limnol. **54**, p. 345–357, April 1999
New vistas in aquatic microbial ecology

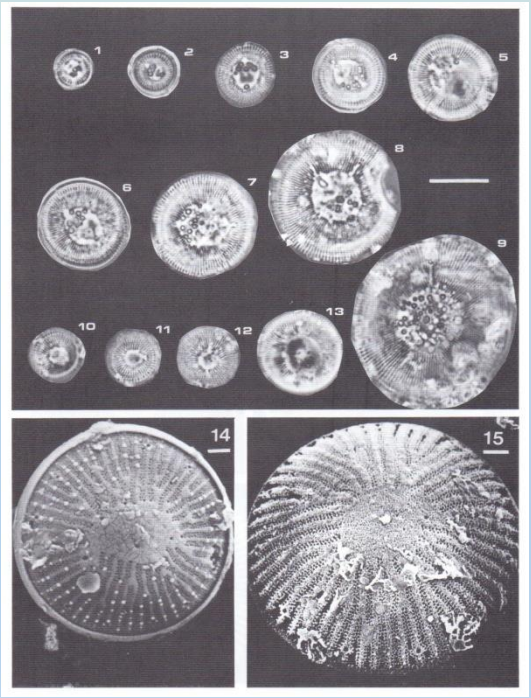
**New fossil freshwater taxa of *Cyclotella* (Bacillariophyceae) from the Neogene basin of Elasson (Thessalia), Greece**

A. Economou-Amilli

*Diatom Research* (1991) Volume 6 (2), 223-233

**CYCLOTELLA ELYMAEA, A NEW FOSSIL SPECIES FROM THE NEOGENE BASIN OF KOZANI-AEANI-SERVIA, NORTHERN GREECE**

Athena Economou-Amilli



# Ecological Research

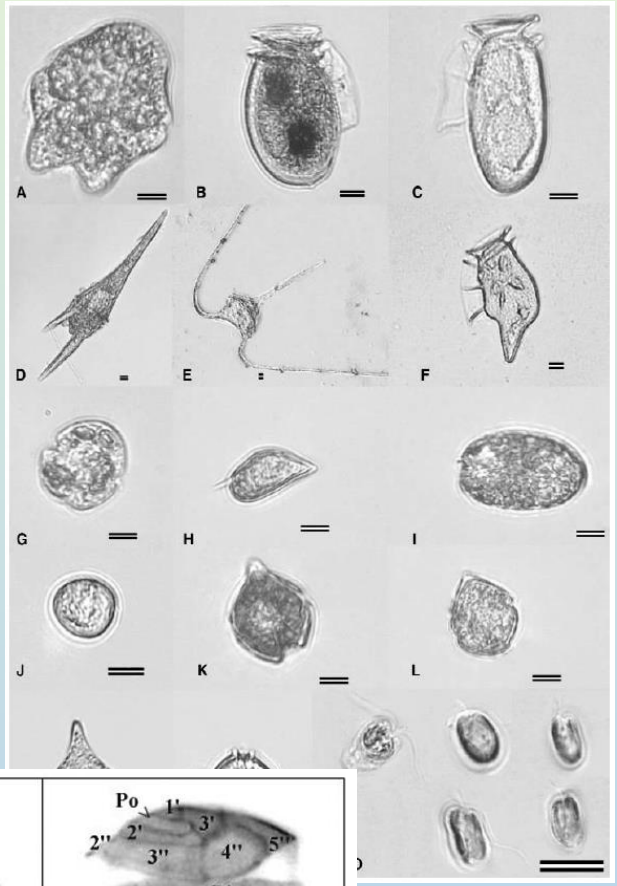
*Journal of Biological Research-Thessaloniki* **9**: 89–95, 2008
*J. Biol. Res.-Thessalon.* is available online at http://www.jbr.gr
Indexed in: WoS (Web of Science, ISI Thomson), CAS (Chemical Abstracts Service) and DOAJ (Directory of Open Access Journals)

— SHORT COMMUNICATION —

## Potentially harmful microalgae from lagoons of the NW Ionian Sea, Greece

NICOLAS P. DOLAPSAKIS*, IOANNIS TZOVENIS, PARASKEVI KANTOUROU, IOANNIS BITIS and ATHENA ECONOMOU-AMILLI

*Department of Biology, Section of Ecology & Systematics, University of Athens, Panepistimioupolis, Zografou 15784, Athens, Greece*

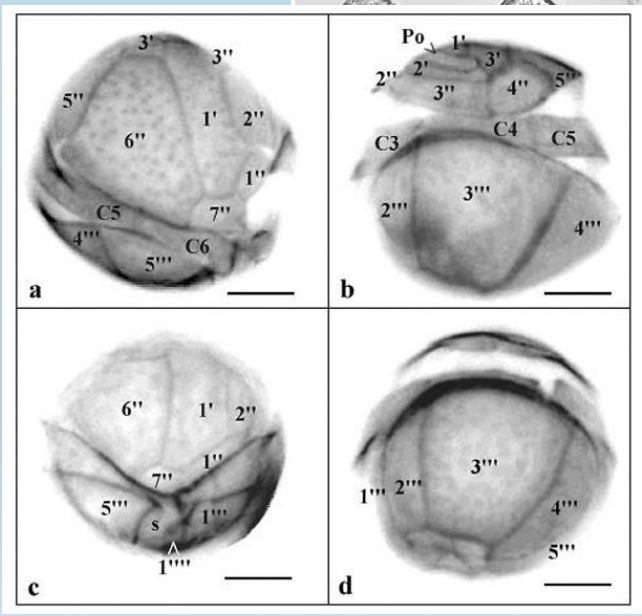



SCI. MAR., 70 (1): 67-76 SCIENTIA MARINA 2006

## Morphology and rDNA phylogeny of a Mediterranean *Coolia monotis* (Dinophyceae) strain from Greece*

NICOLAS P. DOLAPSAKIS [1], MICHAEL W. KILPATRICK [2], ATHENA ECONOMOU-AMILLI [1] and TRIANTAFYLLOS TAFAS [1,2]

[1] Department of Ecology and Systematics, Faculty of Biology, University of Athens, Panepistimiopolis 15784, Athens, Greece. E-mail: ndol@biol.uoa.gr
[2] Ikonisys Inc., 5 Science Park, New Haven 06511, Connecticut, USA



# Natural Products Research


| International Journal of Speleology | 44 (3) | 231-238 | Tampa, FL (USA) | September 2015 |
|---|---|---|---|---|

*Available online at scholarcommons.usf.edu/ijs*

International Journal of Speleology

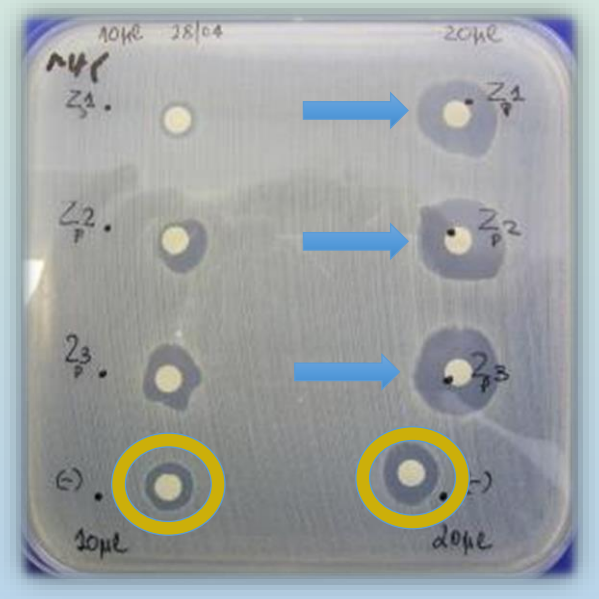
Official Journal of Union Internationale de Spéléologie

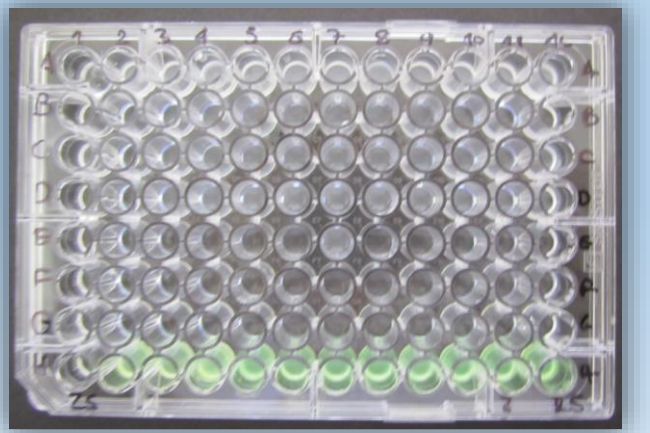

## Cave Cyanobacteria showing antibacterial activity


Vasiliki Lamprinou[1], Kyriaki Tryfinopoulou[2], Emmanuel N. Velonakis[2,3], Alkiviadis Vatopoulos[2,3], Smaragdi Antonopoulou[4], Elizabeth Fragopoulou[4], Adriani Pantazidou[1], and Athena Economou-Amilli[1*]

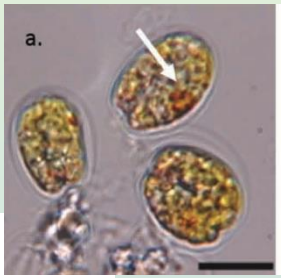

**Antimicrobial Susceptibility testing**

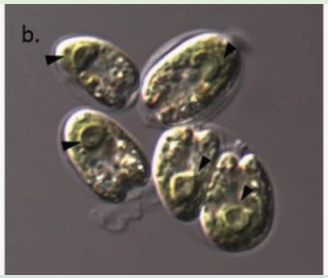
- **Disc-diffusion (Kirby Bauer) method**
- **Broth microdilution method for the determination of the Minimal Inhibitory Concentration (MIC)**

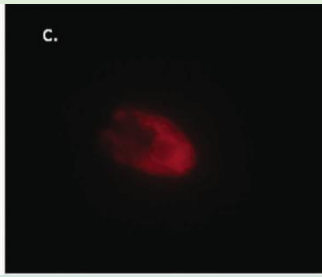




# Biotechnological Research




J Appl Phycol (2009) 21:457–469
DOI 10.1007/s10811-008-9393-6

## Screening for marine nanoplanktic microalgae from Greek coastal lagoons (Ionian Sea) for use in mariculture

I. Tzovenis · E. Fountoulaki · N. Dolapsakis · I. Kotzamanis · I. Nengas · I. Bitis · Y. Cladas · A. Economou-Amilli

*Phytotaxa* 278 (3): 225–240
http://www.mapress.com/j/pt/


Article

ISSN 1179-3155 (print edition)
PHYTOTAXA
ISSN 1179-3163 (online edition)

http://dx.doi.org/10.11646/phytotaxa.278.3.3

## Characterization of *Tetraselmis verrucosa* f. *rubens* (Chlorodendrophyceae) strains from coastal lagoons of Western Greece using a multivariate approach

XANTHI CHANTZISTROUNTSIOU[1], IOANNIS TZOVENIS[1], ARISTEIDIS PARMAKELIS[1] & ATHENA ECONOMOU-AMILLI[1]*
[1]*Faculty of Biology, Department of Ecology and Systematics, National and Kapodistrian University of Athens (NKUA)*
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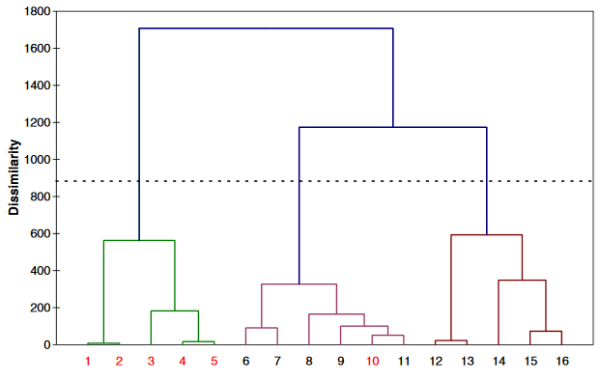


**TABLE 2.** Fatty acid profiles of the strains Tetr_Mes_5, Tetr_Mes_17 and Tetr_V_2_2 as analyzed in this paper, in comparison with the fatty acid profiles of the strains Tetr_R_9_2, Tetr_R_9_3 as presented in Tzovenis *et al.* (2009), and of the species *T. suecica* as cited in Tzovenis (2001). The saturated (SAFA), monounsaturated (MUFA) and polyunsaturated (PUFA) fatty acid content of the above strains is also presented.

| Strain | Mes_5 | Mes_17 | R_9_2 | R_9_3 | V_2_2 | *T. suecica* |
|---|---|---|---|---|---|---|
| **14:00** | 1.35 | 1.21 | 0.83 | 0.24 | 0.94 | 0..50 |
| **16:00** | 25.90 | 25.54 | 29.50 | 28.10 | 20.15 | 17.60 |
| **16:1n-7** | 1.96 | 2.06 | 1.33 | 0.54 | 0.66 | 3.70 |
| **16:1n-9** | 0.00 | 0.00 | 3.00 | 3.18 | 1.51 | 0.00 |
| **16:2n-4** | 0.00 | 0.00 | 1.03 | 1.46 | 2.94 | 0.80 |
| **16:2n-7** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.60 |
| **16:4n-3** | 2.25 | 1.63 | 5.29 | 7.38 | 9.49 | 20.80 |
| **18:00** | 11.75 | 12.94 | 2.13 | 1.19 | 0.74 | 0.80 |
| **18:1n-9** | 0.06 | 0.36 | 28.60 | 26.43 | 0.58 | 9.50 |
| **18:1n-7** | 7.79 | 7.57 | 2.72 | 2.95 | 4.37 | 2.60 |
| **18:2n-9** | 2.22 | 2.33 | 0.00 | 0.00 | 0.00 | 0.00 |
| **18:2n-6** | 7.40 | 7.89 | 5.90 | 6.95 | 5.11 | 4.60 |
| **18:3n-3** | 19.24 | 17.01 | 7.08 | 8.54 | 21.07 | 14.40 |
| **18:4n-3** | 9.16 | 10.39 | 2.60 | 3.15 | 11.04 | 11.20 |
| **20:1n-9** | 4.09 | 3.78 | 2.25 | 1.35 | 6.09 | 0.00 |
| **20:5n-3** | 4.21 | 4.41 | 3.67 | 3.76 | 5.92 | 4.30 |
| **22:5n-3** | 0.00 | 0.00 | 0.00 | 0.00 | 4.01 | 0.00 |
| SAFA | 38.99 | 40.43 | 33.29 | 30.17 | 21.83 | 18.90 |
| MUFA | 13.90 | 14.45 | 38.06 | 34.77 | 15.35 | 16.50 |
| PUFA | 45.69 | 45.10 | 27.20 | 33.25 | 60.55 | 56.80 |

# Future perspectives

Identification and characterization of all preserved strains

Strain isolation of selected species/genera from Greek habitats (*Chlorella*, *Tetraselmis*, *Nannochloropsis*, *Rhodomonas* , *Chaetoceros*, *Dunaliella salina* etc.)

Culture optimization of selected strains for research on natural products and mass aquaculture

# Contributors


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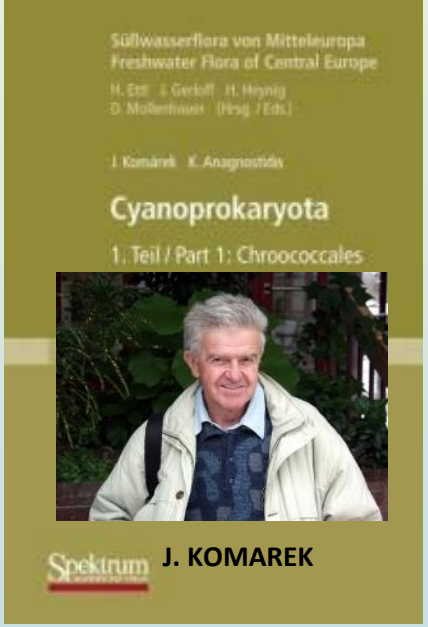
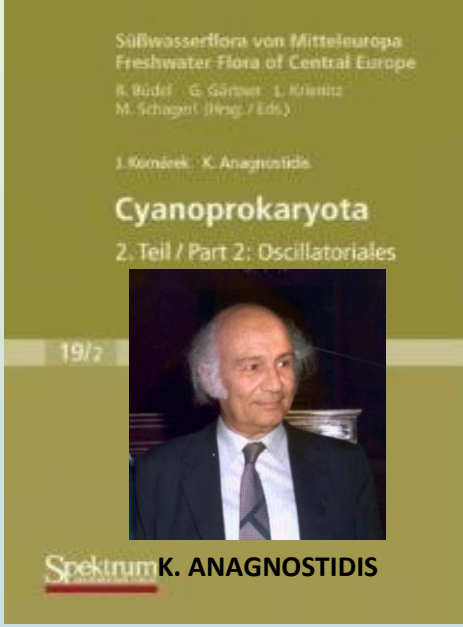


J. KOMAREK



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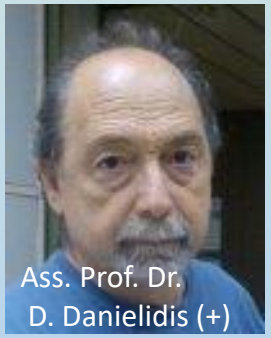
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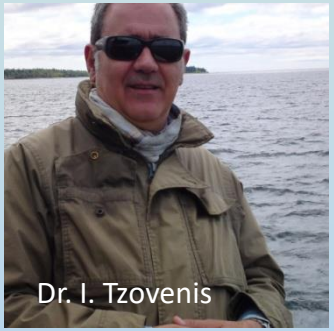
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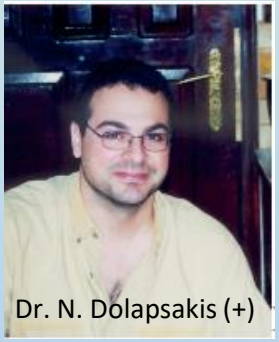
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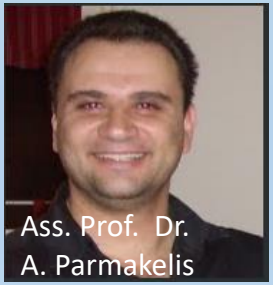
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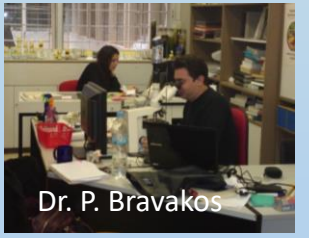
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# Thank you for your attention!