



Xanthi CHANTZISTROUNTSIOU

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Title of the ongoing PhD Project

'Systematics and Ecology of Certain Micro-algal Strains from Coastal Transitional Ecosystems of Western Greece'

(supervised by A. Economou-Amilli)

The goal of this particular thesis is the phylogenetic analysis and ecological study of phytoplankton representatives with possible or verified commercial value, in transitional aquatic ecosystems of the Ionian Sea (W. Greece) such as coastal lagoons (open and confined) and estuarine systems, where a more or less defined gradient of environmental conditions (salinity, temperature, nutrient concentration etc.) is observed.

This type of conditions has an immediate effect on the biotic component of the above systems and on the phytoplankton in particular since this community is the first level of the food web that is affected by the fluctuation of environmental parameters. The main target of this study is the verification of the relationships between well-known from literature, cosmopolitan micro-algal strains of phytoplankton, with

isolated strains from transitional ecosystem, in a phylogenetic level.

To achieve the above goal, we focus on more specific goals and in particular, on the study of certain chosen organisms which are commonly found in such environments and additionally play an important role on the industries of aquaculture, food, biofuels, drugs, cosmetics etc. The first stage of this work encompasses the study of several representatives from the wider groups of microalgae (Chlorophytes, Prasinophytes, Crypto-phytes, Diatoms, Dinoflagellates and Cyanobacteria among them) that are deposited in the Micro-algal Strain Bank of the Department of 'Ecology and Systematics' (Faculty of Biology, National & Kapodistrian University of Athens) and are of commercial and economic interest, as well as strains collected from several coastal lagoons of Western Greece, isolated and cultured in the lab.

The methodologies used, include molecular phylogenetic analyses with focus on certain genes (rbcL and 18s ribosomal DNA), morpho-logical observation (classic taxonomy), study of the ultrastructure of the strain cells as well as biochemical analyses of photosynthetic pigments, fatty acid profiles, protein and polysaccharide content analyses, in order to investigate the possible differences induced in the genotype and phenotype of microalgal phytoplankton strains related to the fluctuation of environmental conditions.

Summarizing, the basic question this thesis is aiming to answer is whether and to what degree the phytoplankton strains of transitional ecosystems differ from their open sea and fresh water counterparts in the genetic and morphological level. The organisms intended to be isolated during this study will be cultured and deposited to the above mentioned 'Microalgal Strain Bank' and will possibly be exploited in an applied and commercial level.

Curriculum Vitae

Personal Information

Name: Xanthi Chantzistrountsiou

Date of birth: June 9th 1985

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Profession:

Biologist/Phycologist

Institution: National Kapodistrian University of Athens (NKUA)

Education

2014: PhD studies in the University of Athens with subject "Taxonomic study

of marine phytoplankton of transient aquatic ecosystems in the Ionian Sea".
2011: Bachelor of Science in Biology (NKUA).

2011-2014: MSc in "Oceanography and Management of Marine Environment", Faculties of Biology, Chemistry, Geology and Physics, NKUA.

Languages

English: Certificate of Proficiency in English (CPE), University of Cambridge (Level: Excellent)

French: Delf 1 (Unités A1, A2, A3, A4), Centre international 'études pédagogiques (Level: Very good)

Spanish: no degree (Level: Good)

Additional information

Computer skills: excellent use of Microsoft Windows XP/Vista/07/08 and Ubuntu 12.10 (Linux), Microsoft Office Word, Excel, Powerpoint and internet. **Statistical packages:** PRIMER E (ver.6), STATISTICA, STAT-GRAPHICS, MATlab.

Geographic Information Systems: ArcGIS, Surfer.

Member of the Hellenic Phycological Society (HEL.P.S.) since 2011.

Areas of interest and expertise

- Algal taxonomy, systematics (morphological, biochemical and molecular methods) and ecology (particularly planktic microalgae).
- Biodiversity of lagoonal and oceanic phytoplankton (field sampling, qualitative and quantitative assessment, biochemical analysis, strain identification, strain isolation, statistical analysis). Ecology and biodiversity of transitional waters.

Microalgal cultures (small and large scale, batch and continuous, media preparation, sub-culturing, scale-up).

- Industrial importance of algae: commercially important products (pigments, fatty acids, food products, cosmetics etc.) and aquaculture.

Ecological engineering. Manipulation and optimization of natural algal blooms for biofuel production.

Specialized laboratory and field experience

1. Undergraduate thesis on “Microorganisms from lacustrine/marine environment: Studies on the taxonomy of certain strains of the genus *Tetraselmis* STEIN (Prasino-phyceae) isolated from coastal lagoons of Western Greece”.
2. Participation in the project “Maintenance of microalgal cultures for taxonomic and ecological purposes” as researcher-analyst in charge of the microalgal strain culture bank of the Department of Ecology and Taxonomy, Faculty of Biology, National and Kapodistrian University of Athens (2009-2011).
3. Participation in the ReDEco (Regional Drivers of Ecosystem Change and its Influence on Deep-Sea Populations in the Mediterranean) cruise in June 2012.
4. Participation in the international project “MED ALGAE: Production of biodiesel from Algae in selected Mediter-ranean Countries” as a research assistant in the Applied Phycology Unit in NKUA (2012-2015).
5. Participation in the Training Workshop “Algae Culture & Identification Techniques”, 11-15 February 2013, Athens.
6. MSc Thesis in “Studies on the systematics of strains of the genus *Tetraselmis* from coastal lagoons of western Greece using microscopic, biochemical and molecular methods” and particularly: classical taxonomy methods (LM, SEM, TEM), pigment and fatty acid analysis and 18sRNA sequencing.

Participation in scientific Symposia and Congresses

1. 28th (Ioannina, Greece, 2006), 31st (Patras, Greece, 2009) & 34th (Trikala, Greece, 2012) Annual Scientific Congresses of the Hellenic Society for Biological Sciences.
2. 1st Panhellenic Symposium “Biology in Education”, in Athens, Greece, April 2012.
3. 6th Congress of the Hellenic Ecological Society “Ecological Research in Greece: Trends, Challenges and Applications” in Athens, Greece, October 2012. Poster: “Studies on the phytoplankton of six transitional aquatic systems in Epirus (estuarine systems of the rivers Kalamas and Louros” (in Greek).
4. 2nd Meta-barcoding Spring School in Crete, Greece, May 2013. Institute of Marine Biology, Biotechnology and Aquaculture (former Institute of Marine Biology and Genetics) of the Hellenic Centre for Marine Research, in the context of the European project, MARBIGEN.
5. 13th Panhellenic Congress of the Greek Botanical Society in Thessaloniki, Greece, October 2013. Oral presentation: “Studies on the fine structure of strains of the genus *Tetraselmis* (Prasinophyceae, Chlorodendrales) from coastal lagoons of Western Greece” (in Greek).
6. 1st SAHYOG summer school in Athens, Greece, June 2013. Bioresource Technology Unit (BTU) of the National Technical

University of Athens (NTUA). Student's award winner.

7. 6th ISAP meeting, Sydney Australia, June 2014. Poster presentation: Tzovenis I. et al., "Development of natural algal blooms for production of Biodiesel".