



## ALGAE COM NEWSLETTER

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## EDITORIAL

**SOPHIA LETSIOU**

letsiou-s@apivita.com

**CARLOS INFANTE**

carlos.infante@easyalgae.com

**TINAIG LE COSTAUEC**

tinaig.le.costaouec@gmail.com

**CHRISTOS KARAMITROS**christos.karamitros@mpibpc.mpg.de/  
karamitroschristos@yahoo.gr**SPYRIDON GEORGAKOPOULOS**

spyrosgeor@gmail.com

## CONTACT

CARLOS

**UNAMUNZAGA**

cue@easyalgae.com

**EMMANOUIL FLEMETAKIS**

mflem@aua.gr

**KONSTANTINOS GARDIKIS**

Gardikis-k@apivita.com

**NIKOLAOS LAMBROU**

lambrou@aua.gr

**WILLIAM HELBERT**

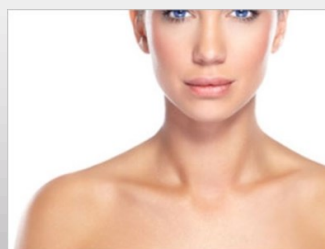
William.helbert@cermav.cnrs.fr

## WEBSITE

<http://www.algaecom.aua.gr/>**New Biochemistry Lab**

A new biochemistry laboratory has been set-up at the company APIVITA SA. It has been equipped with state of the art devices for the basic biochemistry and molecular biology techniques.

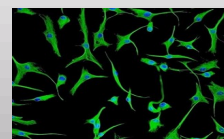
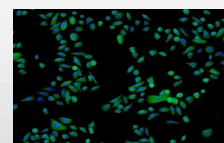
Apivita 's biochemistry lab is focused on *in vitro* assessments pertaining cytotoxicity evaluation that is related to safety of cosmeceutical ingredients. *In vitro bioactivity assessments* is another study aspect of biochemistry lab. This stage entails the evaluation of *in vitro* efficacy of natural based-extracts or isolated compounds on genes expression of dermal cells. For this reason we have developed in collaboration with AUA a genes database that consists of 200 skin-related genes associated with dermal structure, skin ageing, melanogenesis, UV protection, matrix metalloproteinases protein families, oxidative stress defense mechanism, apoptosis, angiogenesis, moisturization and inflammatory response. RT-qPCR protocol is used for the investigation of the above mentioned cellular processes so as to assess the effect of natural based-extracts and or isolated compounds on dermal cell lines. Dermal cell lines that we currently use are : Primary Human Normal Fibroblasts and Primary Human Normal Keratinocytes. Also we assess the cytoprotection against oxidative stress using H<sub>2</sub>O<sub>2</sub> as stressor so as to investigate potential applications of isolated based-extracts or isolated compounds in cosmetics.



Keratinocytes

In Vitro skin  
Simulation

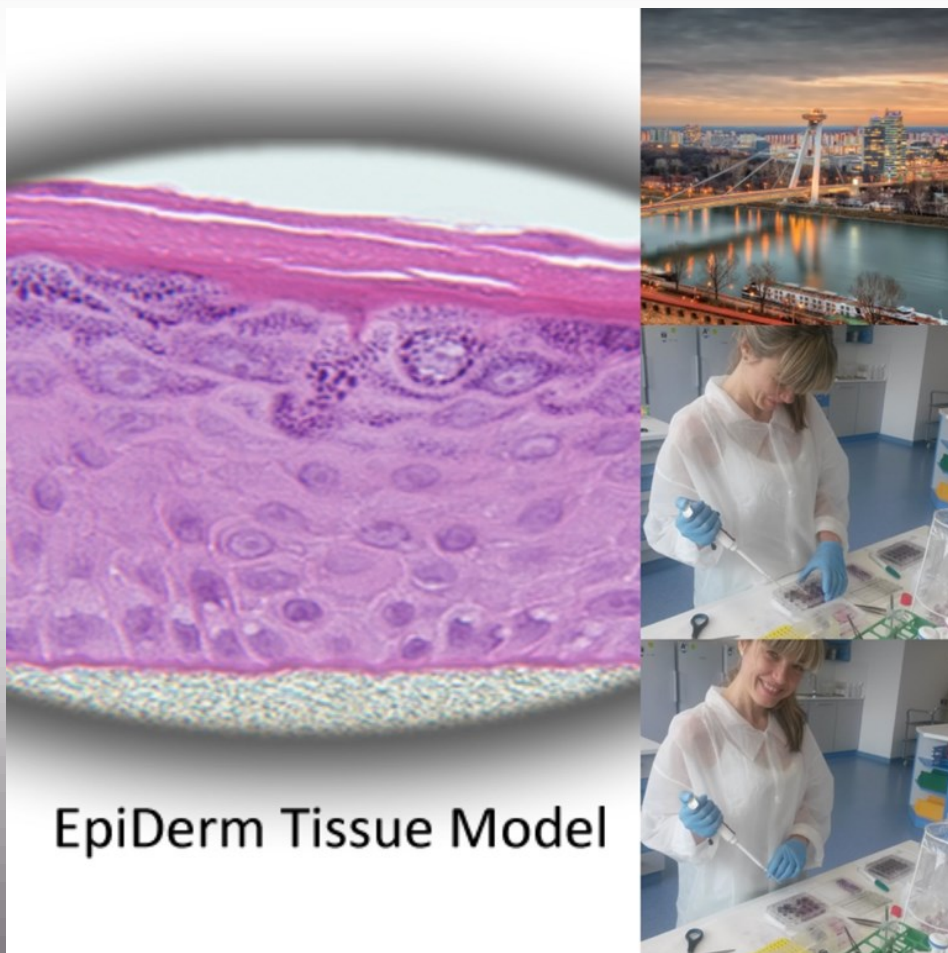
Fibroblasts



## Workshop in Bratislava (20-25<sup>th</sup> July 2015)



During Algaecom, APIVITA's biochemistry became certified on the use of an *in vitro* approach based on 3 Dimension reconstructed skin model (EpiDerm) after following a workshop in Mattek Corporation in Bratislava (20-25th July 2015). One of the most recent trends in skin irritation safety testing of personal care and cosmetic products is the use of reconstructed human epidermis models. Some of the commercially-available models have undergone a series of validation trials, which successfully advanced them as valuable tools for industry use. On a broader perspective, the 3D models are now part of the integrated decision-tree testing strategies used in regulatory setting for skin irritation and/or corrosion registration and labeling of newly designed formulations.



Dr. S Letsiou during the workshop in Mattek corporation , in Bratislava.

# Conference Attendance

The 9th European conference on Marine Natural Products

30th of August to 2nd September 2015-

The university of Strathclyde, Glasgow, Scotland



Supported by



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*Dr. Sophia Letsiou presented the results based on her research during Algaecom Project at the 9th European Conference on Marine Product .at the University of Strathclyde in Glasgow, UK. Her research into the effect of Nannochloropsis gaditana (NannoG) extract on primary human dermal fibroblasts subjected to in vitro oxidative stress showed that NannoG increased anti-ageing, hydration and antioxidant responses affecting the transcript levels of related human genes and manipulating the action of specific enzymes that control skin ageing, wrinkles and skin texture.*

***In Vitro* efficacy of Nannochloropsis gaditana extract on primary human dermal fibroblasts as cosmeceutical bioactive ingredient.**

Sophia Letsiou<sup>1</sup>, Konstantinos Gardikis<sup>1</sup>, Lalia Mantecón<sup>2</sup>, Carlos Unamunzaga<sup>2</sup>, Emmanouil Flemetakis<sup>3</sup>

1. Scientific Affairs, APIVITA S.A., Industrial Park of Markopoulo Mesogaia, 19003 Markopoulo Attiki, Athens, Greece.
2. Fitoplanton Marino, S.L. Dársena Comercial s/n (Muelle Pesquero), 11500 El Puerto de Santa María (Cádiz), Spain.
3. Laboratory of Molecular Biology, Department of Biotechnology, School of Food, Biotechnology and Development, Agricultural University of Athens, Athens, Greece.

***The sea as sustainable source of new medicine and renewable energy.....***



## Screening of cyanobacteria collection at Fitoplancton Marino, S.L. (FITMAR) to seek exopolysaccharides (EPS) producer strains

FITMAR possesses a cyanobacteria collection composed of more than 350 strains, including both freshwater and marine strains. In the scenario of AlgaeCom, a screening of this collection has been carried out in relation to ability of the different strains to produce EPS. A first classification was performed according to the increasing amount of EPS observed under microscope after staining with India ink, establishing five different levels (1-5). All freshwater species producing EPS were included in levels 1-3, although ~39% of the strains were not able to produce EPS under the experimental conditions employed. In contrast, up to 23% of marine species revealed as high EPS producers, reaching levels 4-5. Between marine filamentous strains, most of them (~66%) were classified in levels 4-5, whereas only 5% of unicellular strains reached those levels. Four of these species were further selected for EPS production at a lab-scale owing to their very fast growth and/or high EPS production. A basic protocol for isolation and further purification of EPS has been developed. This procedure includes several dialysis and alcohol-based precipitation steps in order to obtain a final well-purified product. All EPS samples obtained in this way are targets for further characterization and analysis in order to first determine sugar composition and then attempting to reveal structure. Finally, possible bioactivity of EPS samples will be checked using an *in vitro* approach.

