



UNIVERSITÀ  
di VERONA

Scuola di Dottorato  
di SCIENZE NATURALI ED INGEGNERISTICHE

Corso di Dottorato in Biotecnologie

# “Microalgae based carbon conversion and utilization by implementing genome editing technology”

July 5<sup>th</sup>, 2019 - h. 14.30

**Prof.ssa EonSeon Jin**

*Department of Life Science, Hanyang University, Seoul, South Korea*

## Abstract

Microalgae are responsible for half of the global primary productivity, converting solar energy to chemical energy to fix carbon dioxide. This could exploit algal biomass as an ideal feature for photosynthetic capture of anthropogenic carbon. Microalgae also have received the most attention as lipid producers. Over the past decade, many improvements of microalgae have been achieved through selection and strain development for industrial applications. However, the large-scale production of lipids for commercialization is not yet realistic because the production is still much more expensive than that of agricultural products. Current efforts for developing tools and technique of precise genetic manipulation in microalgae made them more economically feasible for better application in areas including nutrition and pharmaceuticals. In this study, genome-editing of microalgae by the CRISPR-Cas9 ribonucleoproteins method has been attempted to generate commercially desirable microalgal strains which can produce high-value pigments and enhance neutral lipid accumulation. Also, this technology has been applied to improve light harvesting optimization. More importantly, the same technique has been successfully employed to newly isolated marine microalga, which is a domestic strain to increase the TAG accumulation. The latest progress on the development and application of algal strains for carbon conversion utilization will be presented and discussed.

---

The lecture will take place **at 14.30 – Sala Verde – Cà Vignal – Strada Le Grazie, 15**

Local organization and contact:

Prof. Matteo Ballottari

[matteo.ballottari@univr.it](mailto:matteo.ballottari@univr.it)

For each hour of seminar, 1 CFU (provided for the specific activities of PhD Program in Biotechnology) will be recognized to students attending the event.

---

**Scuola di Dottorato di Scienze Naturali ed Ingegneristiche**

Strada Le Grazie, 15 - 37129 Verona | T + 045 802 7026

[laura.marcazzan@univr.it](mailto:laura.marcazzan@univr.it)

P. IVA 01541040232 | C.F. 93009870234