

From November 2011 to September 2021, CNR Researcher, Institute of Bioscience and BioResources in Naples, Italy

From March 2016 to today, Research Fellow at the Department of Integrative Marine Ecology - Stazione Zoologica "A. Dohrn", Naples, Italy

Since 2021, CNR Senior Researcher at Institute of Bioscience and BioResources in Naples, Italy.

The objective of my research is to identify and characterize the molecular mechanisms underlying the ecological success of photosynthetic organisms and their capacity for handling different adaptative solutions in order to succeed in a variable environment. In this context, examples of environmental adaptations are the ones that take place in marine microalgae, which display a suite of sophisticated responses (physiological, biochemical, and behavioural) to optimize their photosynthesis and growth under changing conditions. I am interested in characterizing the molecular mechanisms of nutrient acclimation in marine diatoms, prominent microalgae in the contemporary oceans, mainly focusing on the pathways of uptake and assimilation of N sources. What I find intriguing is the role played by ammonium and nitrate transporters as sensors of the external N conditions. Integration of multi-omics, phylogenetic, structural, expression analyses and genome editing techniques will offer the foundation for the genetic dissection of the extra- and intracellular transport system in diatoms, elucidating the complex physiology of these successful microalgae.

In addition, I am interested in understanding how symbioses involving N<sub>2</sub>-fixing microorganisms function and evolve in both aquatic and terrestrial habitats.

I am involved also in a project aiming at deciphering the biogenesis and function of the diatoms silica cell wall (known as the frustule) and exploring his potential physical, optical and biotechnological applications. This is of fundamental importance in the understanding of the interactions of the living cell with the external environment.

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### Relevant Publications

1. Jaubert, M., Duchêne, C., Kroth, P.G., **Rogato, A.**, Bouly, JP., Falciatore, A. (2022). "Sensing and Signalling in Diatom Responses to Abiotic Cues". In: Falciatore, A., Mock, T. (eds) The Molecular Life of Diatoms. Springer, Cham. [https://doi.org/10.1007/978-3-030-92499-7\\_21](https://doi.org/10.1007/978-3-030-92499-7_21) pp:607:639.
2. Santin A., Caputi L, Longo A, Chiurazzi M, Ribera d'Alcalà M, Russo M., Ferrante MI, **Rogato A\*** "Integrative-omics identification, evolutionary and structural analysis of low affinity nitrate transporters in diatoms, diNPFs" Open Biology 2021;11 200395. 200395 **\*corresponding author**
3. Busseni G., Rocha Jimenez Vieira F., Amato A., Pelletier E., Pierella Karlusich J.J., Ferrante M.I., Winckerd P., **Rogato, A.**, Bowler C., Sanges R., Maiorano L., Chiurazzi M., Ribera d'Alcalà M., Caputi L., Iudicone D. "Meta-omics reveals genetic flexibility of diatoms nitrogen transporters in response to environmental changes". Molecular Biology and Evolution, 2019 DOI: 10.1093/molbev/msz157
4. Taddei L\*, Stella GR\*, **Rogato A\***, Bailleul B, Fortunato AE, Annunziata R, Sanges R, Thaler M, Lepetit B, Lavaud J, Jaubert M, Finazzi G, Bouly JP, Falciatore A. "Multi-signal control of expression of LHCX protein family in marine diatom *Phaeodactylum tricornutum*". J. Exp. Bot. 2016, 67 (13), 3939-3951 doi: 10.1093/jxb/erw198 **\*co-first author**
5. **Rogato A. \***, A. Amato, D. Iudicone, M. Chiurazzi, M. I. Ferrante, M. Ribera d'Alcalà. "The diatom molecular toolkit to handle nitrogen uptake". Marine Genomics 2015; 24(1): 95-108 doi: 10.1016 **\*corresponding author**