

Maria Immacolata Ferrante



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Current Position: Researcher

Current Affiliation:

Department of Integrative Marine Ecology, Stazione Zoologica Anton Dohrn, Napoli (Italy)

Education/Training/Experience

Institute and Location	Degree / Function	Year	Field of Study
Istituto Internazionale di Genetica e Biofisica (IIGB), Consiglio Nazionale delle Ricerche (CNR), Naples, Italy	Master student	1997-1998	Molecular biology, regulation of gene expression
Università di Napoli Federico II, Italy	Laurea in Biological Sciences	1998	Master thesis in molecular biology
Istituto Internazionale di Genetica e Biofisica (IIGB), (CNR), Naples, Italy	Apprenticeship	1999	Regulation of gene expression
Telethon Institute of Genetics and Medicine (TIGEM), Milan, Italy	Fellow	1999-2000	Disease gene identification
Telethon Institute of Genetics and Medicine (TIGEM), Naples, Italy	PhD student	2001-2004	Disease gene identification, mouse models, mouse genetics
Università di Napoli Federico II, Italy	PhD	2004	Genetics

Wellcome Trust Sanger Institute, Cambridge, UK	Wellcome Trust Sanger Postdoctoral Fellow	2005-2010	Zebrafish genetics and developmental biology
Wellcome Trust Sanger Institute, Cambridge, UK	Staff scientist	2010	Zebrafish genetics and developmental biology
Stazione Zoologica Anton Dohrn, Naples, Italy	Researcher	2010-present	Diatom biology, functional genomics

National scientific qualification (Abilitazione Scientifica Nazionale) to function as associate professor in Molecular Biology (05/E2), Genetics (05/I1) and Applied Biology (05/F1) in Italian Universities, from April 2017 to April 2023.

Grants and Fellowships

DISCO (Diatom life cycles, molecular controls and contribution to ecosystem dynamics), funded by the Gordon and Betty Moore Foundation's Marine Microbiology Initiative. PI - December 2018- November 2021.

Assemble Plus (Association of European Marine Biological Research Laboratories Expanded), EU H2020 project. Partner - October 2017- September 2021.

DiaEdit (Development of genetic tools for the establishment of routine genome editing in the marine diatom *Phaeodactylum tricornutum*), funded by the Gordon and Betty Moore Foundation's Marine Microbiology Initiative. Partner - November 2015- May 2018.

EMBRIC (European Marine Biological Research Infrastructure Cluster to promote the Blue Bioeconomy). Work Package leader for the WP “Microalgae for blue biotechnological applications” - June 2015- May 2019.

Marie Curie Career Integration Grant GyPSy- A forward genetic screen in the marine planktonic diatom *Pseudo-nitzschia multistriata*. PI – September 2011- August 2015.

People-MCA-COFUND TuPRE. Supervisor and scientific coordinator of the Marie Curie Cofund fellowship to A. Amato, September 2014-August 2016.

Progetto Bandiera RITMARE – Italian National Project, coordinating an action and a unit focused on the study of marine turbulence– 2012-2016.

Lifewatch-Italy, Call for interdisciplinary research projects at the distributed Laboratory of "Molecular Biodiversity"- *An investigation of the genetic basis of toxin production in the diatom species Pseudo-nitzschia multistriata*, awarded 20.000 euros for sequencing. 2014.

ASSEMBLE Fellowship for a short visit to the Sven Lovén Centre for Marine Sciences in Tjärnö, Sweden, for the project “Gene expression changes in diatoms responding to copepods cues”. August 2014.

Training activities

- PhD supervisor of six PhD students (director of studies or internal supervisor), supervisor of five Master students and seven Postdoctoral researchers (past and present).
- Member of the Stazione Zoologica (SZN)/Open University (OU) PhD Commission, 2010-2014 (organisation of the training activities required by the OU Programme).

Publications

Peer-reviewed

- Lauritano C, Ferrante MI*, Rogato A*. Marine Natural Products from Microalgae: An -Omics Overview. *Marine Drugs*. 2019; 17(5):269. DOI: 10.3390/md17050269. *Corresponding authors.
- Adelfi MG, Vitale RM, d'Ippolito G, Nuzzo G, Gallo C, Amodeo P, Manzo E, Pagano D, Landi S, Picariello G, Ferrante MI, Fontana A. Patatin-like lipolytic acyl hydrolases and galactolipid metabolism in marine diatoms of the genus *Pseudo-nitzschia*. *BBA - Molecular and cell biology of lipids*. 2019 Feb;1864(2):181-190. DOI: 10.1016/j.bbalip.2018.11.008
- Russo MT, Vitale L, Entrambasaguas L, Anestis K, Fattorini N, Romano F, Minucci C, De Luca P, Biffali E, Vyverman W, Sanges R, Montresor M, Ferrante MI. *MRP3* is a sex determining gene in the diatom *Pseudo-nitzschia multistriata*. *Nature Communications* 2018, 9:5050. DOI: 10.1038/s41467-018-0749.
- Russo MT, Sanseverino W, Aiese Cigliano R, Ferrante MI. Assessment of genomic changes in a CRISPR/Cas9 *Phaeodactylum tricornutum* mutant through whole genome resequencing. *PeerJ* 6:e5507; 2018. DOI 10.7717/peerj.5507
- Kroth PG, Bones AM, Daboussi F, Ferrante MI, Jaubert M, Kolot M, Nymark M, Río Bártulos C, Ritter A, Russo MT, Winge P, Falciatore A. Genome editing in diatoms: achievements and goals. Review. *Plant Cell Reports*. 37:1401–1408.; DOI: 10.1007/s00299-018-2334-1
- Brennecke P, Ferrante MI, Johnston IA, Smith D. A Collaborative European Approach to Accelerating Translational Marine Science. *Journal of Marine Science and Engineering* 2018, 6, 81; DOI:10.3390/jmse6030081
- Amato A, Sabatino V, Nylund GM, Bergkvist J, Basu S, Andersson MX, Sanges R, Godhe A, Kiørboe T, Selander E, Ferrante MI. Grazer-induced transcriptomic and metabolomic response of the chain-forming diatom *Skeletonema marinoi*. *The ISME Journal*, 12, 1594–1604, 2018. DOI:10.1038/s41396-018-0094-0
- Ruggiero MV, D'Alelio D, Ferrante MI, Santoro M, Vitale L, Procaccini G, Montresor M. Clonal expansion behind a marine diatom bloom. *The ISME Journal*, 2018 Feb;12(2):463-472; DOI:10.1038/ismej.2017.181.
- Nanjappa D, Sanges R, Ferrante MI, Zingone A. Diatom flagellar genes and their expression during sexual reproduction in *Leptocylindrus danicus*. *BMC Genomics* (2017) 8:813 DOI: 10.1186/s12864-017-4210-8.

- Amato A, Dell'Aquila G, Musacchia F, Annunziata R, Ugarte A, Maillet N, Carbone A, Ribera d'Alcalà M, Sanges R, Iudicone D, Ferrante MI. Marine diatoms change their gene expression profile when exposed to microscale turbulence under nutrient replete conditions. *Scientific Reports* 2017. 7, 3826. DOI:10.1038/s41598-017-03741-6
- Dell'Aquila G, Ferrante MI, Gherardi M, Cosentino Lagomarsino M, Ribera d'Alcalà M, Iudicone D, Amato A. Nutrient consumption and chain tuning in diatoms exposed to storm-like turbulence. *Scientific Reports* 2017. 7, 1828. DOI: 10.1038/s41598-017-02084-6
- Basu S, Patil S, Mapleson D, Russo MT, Vitale L, Fevola C, Maumus F, Casotti R, Mock T, Caccamo M, Montresor M, Sanges R, Ferrante MI. Finding a partner in the ocean: molecular and evolutionary bases of the response to sexual cues in a planktonic diatom. *New Phytologist*. 2017. doi: 10.1111/nph.14557
- Mock T, Otilar RP, Strauss J, McMullan M, Pajananen P, Schmutz J, Salamov A, Sanges R, Toseland A, Ward BJ, Allen AE, Dupont CL, Frickenhaus S, Maumus F, Veluchamy A, Wu T, Barry KW, Falciatore A, Ferrante MI, Fortunato AE, Glöckner G, Gruber A, Hipkin R, Janech MG, Kroth PG, Leese F, Lindquist EA, Lyon BR, Martin J, Mayer C, Parker M, Quesneville H, Raymond JA, Uhlig C, Valas RE, Valentin KU, Worden AZ, Armbrust EV, Clark MD, Bowler C, Green BR, Moulton V, van Oosterhout C, Grigoriev IV. Evolutionary genomics of the cold-adapted diatom *Fragilariopsis cylindrus*. *Nature*. 2017. 541:536–540. doi: 10.1038/nature20803
- Montresor M, Vitale L, D'Alelio D, Ferrante MI. Sex in marine planktonic diatoms: insights and challenges. *Perspective in Phycology*. 2016. vol. 3, p. 61-75, doi: 10.1127/pip/2016/0045
- Gherardi M., Amato A., Bouly JP, Cheminant S., Ferrante M.I., Ribera d'Alcalá M., Iudicone D., Falciatore A., Cosentino Lagomarsino M. Regulation of chain length in two diatoms as a growth-fragmentation process. *Physical Review E*, vol. 94, p. 022418-1-022418-8, 2016.
- Amato A., Fortini S., Watteaux R., Diano M., Espa S., Esposito S., Ferrante M.I., Peters F., Iudicone D., d'Alcalà M.R. TURBOGEN: Computer-controlled vertically oscillating grid system for small-scale turbulence studies on plankton. *Review of Scientific Instruments*, vol. 87, p. 035119-1-035119-11, 2016, 87:35119. doi: 10.1063/1.4944813
- Patil S, Moeys S, von Dassow P, Huysman MJJ, Mapleson D, De Veylder L, Sanges R, Vyverman W, Montresor M, Ferrante MI. Identification of the meiotic toolkit in diatoms and exploration of meiosis-specific SPO11 and RAD51 homologs in the sexual species *Pseudo-nitzschia multistriata* and *Seminavis robusta*. *BMC Genomics*. 2015;16:930. doi: 10.1186/s12864-015-1983-5
- Scalco E, Amato A, Ferrante MI, Montresor M. The sexual phase of the diatom *Pseudo-nitzschia multistriata*: cytological and time-lapse cinematography characterization. *Protoplasma*. 2015. doi: 10.1007/s00709-015-0891-5
- Di Dato V, Musacchia F, Petrosino G, Patil S, Montresor M, Sanges R, Ferrante MI. Transcriptome sequencing of three *Pseudo-nitzschia* species reveals comparable gene sets and the presence of Nitric Oxide Synthase genes in diatoms. *Scientific Reports*. 2015;5:12329. doi: 10.1038/srep12329
- Russo MT, Annunziata R, Sanges R, Ferrante MI, Falciatore A. The upstream regulatory sequence of the light harvesting complex Lhcf2 gene of the marine diatom *Phaeodactylum*

tricornutum enhances transcription in an orientation- and distance-independent fashion. *Marine Genomics*. 2015. doi: 10.1016/j.margen.2015.06.010

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- Sabatino V, Russo MT, Patil S, d'Ippolito G, Fontana A, Ferrante MI. Establishment of Genetic Transformation in the Sexually Reproducing Diatoms *Pseudo-nitzschia multistriata* and *Pseudo-nitzschia arenysensis* and Inheritance of the Transgene. *Marine Biotechnology*. 2015; 1–11. doi:10.1007/s10126-015-9633-0
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- Franzè A, Ferrante MI, Fusco F, Santoro A, Sanzari E, Martini G, Ursini MV. Molecular anatomy of the human glucose 6-phosphate dehydrogenase core promoter. *FEBS Lett*. 1998;437: 313–318.