

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, Genetics and Applied Biology in Italian Universities, from April 2017 to April 2023.

Grants and Fellowships

DiaEdit (Development of genetic tools for the establishment of routine genome editing in the marine diatom *Phaeodactylum tricorutum*), funded by the Gordon and Betty Moore Foundation's Marine Microbiology Initiative. Partner. 11/ 2015-05/2018.

EMBRIC (European Marine Biological Research Infrastructure Cluster to promote the Blue Bioeconomy), WP leader for the WP “Microalgae for blue biotechnological applications”, 06/2015-05/2018.

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

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.

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 Ph.D. students (director of studies or internal supervisor), supervisor of five Master students and five 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

- 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. Accepted.
- 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. Accepted. 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, Paajanen 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 tricorutum* enhances transcription in an orientation- and distance-independent fashion. *Marine Genomics*. 2015. doi: 10.1016/j.margen.2015.06.010
- Rogato A, Amato A, Iudicone D, Chiurazzi M, Ferrante MI, d'Alcalà MR. The diatom molecular toolkit to handle nitrogen uptake. *Marine Genomics*. 2015. doi:10.1016/j.margen.2015.05.018
- 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
- Scalco E, Stec K, Iudicone D, Ferrante MI, Montresor M. The dynamics of sexual phase in the marine diatom *Pseudo-nitzschia multistriata* (Bacillariophyceae). *Journal of Phycology*. 2014;50: 817–828. doi:10.1111/jpy.12225
- Adelfi MG, Borra M, Sanges R, Montresor M, Fontana A, Ferrante MI. Selection and validation of reference genes for qPCR analysis in the pennate diatoms *Pseudo-nitzschia multistriata* and *P. arenysensis*. *Journal of Experimental Marine Biology and Ecology*. 2014;451: 74–81. doi:10.1016/j.jembe.2013.11.003
- Ferriero R, Manco G, Lamantea E, Nusco E, Ferrante MI, Sordino P, Stacpoole PW, Lee B, Zeviani M, Brunetti-Pierrri N. Phenylbutyrate therapy for pyruvate dehydrogenase complex deficiency and lactic acidosis. *Science Translational Medicine*. 2013;5: 175ra31. doi:10.1126/scitranslmed.3004986
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- Ferrante MI, Romio L, Castro S, Collins JE, Goulding DA, Stemple DL, Woolf AS, Wilson SW. Convergent extension movements and ciliary function are mediated by ofd1, a zebrafish orthologue of the human oral-facial-digital type 1 syndrome gene. *Human Molecular Genetics*. 2009;18: 289–303. doi:10.1093/hmg/ddn356
- Ferrante MI, Zullo A, Barra A, Bimonte S, Messaddeq N, Studer M, Dolle P, Franco B. Oral-facial-digital type I protein is required for primary cilia formation and left-right axis specification. *Nature Genetics*. 2006;38: 112–117. doi:10.1038/ng1684
- Di Leva F, Ferrante MI, Demarchi F, Caravelli A, Matarazzo MR, Giacca M, D'Urso M, D'Esposito M, Franzé A. Human synaptobrevin-like 1 gene basal transcription is regulated through the interaction of selenocysteine tRNA gene transcription activating factor-zinc finger 143 factors with evolutionary conserved cis-elements. *Journal of Biological Chemistry*. 2004;279: 7734–7739. doi:10.1074/jbc.M308140200

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- Toutain A, Dessay B, Ronce N, Ferrante MI, Tranchemontagne J, Newbury-Ecob R, Wallgren-Pettersson C, Burn J, Kaplan J, Rossi A, Russo S, Walpole I, Hartsfield JK, Oyen N, Nemeth A, Bitoun P, Trump D, Moraine C, Franco B. Refinement of the NHS locus on chromosome Xp22.13 and analysis of five candidate genes. *European Journal of Human Genetics*. 2002;10: 516–520. doi:10.1038/sj.ejhg.5200846
- Ferrante MI, Ghiani M, Bulfone A, Franco B. IL1RAPL2 maps to Xq22 and is specifically expressed in the central nervous system. *Gene*. 2001;275: 217–221.
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Abstract (non peer-reviewed)

- Fevola, C.; Patil, S.; Basu, S.; Scalco, E.; Miele, M.; Drou, N.; Caccamo, M.; Sanges, R.; Montresor, M.; Ferrante, M. Genome sequencing and mutagenesis in the planktonic diatom *Pseudo-nitzschia multistriata*, in: Sabbe, K. et al. (Ed.) (2012). Twenty-second International Diatom Symposium, Aula Academica, Ghent, 26-31 August 2012. Abstracts. VLIZ Special Publication, 58: pp. 44