

Immacolata Castellano



Born in Sorrento (Naples) on 22/07/1976

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Current Position: Researcher III level

Current Affiliation: Biology and Evolution of Marine Organisms (BEOM), Stazione Zoologica Anton Dohrn, Napoli

Education/Training/Experience

Institute and Location	Degree / Function	Year	Field of Study
University Federico II, Naples Stazione Zoologica A. Dohrn	Master Degree in Biological Sciences (110/110 cum laude)	1996-2001	Cellular Biology and Biochemistry
Telethon Institute of Genetics and Medicine, Naples	Research Fellow	2002	Bioinformatic and Molecular Biology
Department of Biochemistry and Medical Biotechnology, University Federico II, Naples	Ph.D. in Biochemistry, Molecular and Cellular Biology	2002-2006	Biochemistry and Molecular Biology
Institute of Protein Biochemistry, CNR of Naples	Postdoc	2007-2010	Biochemistry and Molecular Biology
Stazione Zoologica “Anton Dohrn” of Naples	Postdoc	2012-2016	Biochemistry and Molecular Biology of marine organisms
Stazione Zoologica Anton Dohrn, Naples	Researcher III level	2016-present	Marine Biochemistry

Grants and Awards

2018: EMBRIC Transnational Access Program - Proposal code: 5650, Project Title “Discovery of dermato-protective properties of marine 5-thiohistidines”.

2017: EMBRIC Transnational Access Program Grant, PI Proposal code: 2803, Project Title “Discovery of cosmeceutical and pharmaceutical properties of a promising marine natural product”.

2017: Director of studies of 1 PhD project O.U. co-funded by SZN.

2014: First “Aldo Fasolo” Prize for young researchers awarded by SZN.

2014: EMBO Travel Grant to attend the “FEBS EMBO 2014”, Paris.

2011: Travel Grant awarded by SIB society to attend the 36° to FEBS Congress, Torino, Italy

2010: Travel Grant awarded by SIB society to attend the 35° FEBS Congress, 2010, Göteborg, Sweden

2008: Travel Grant awarded by FEBS society to attend the 33° FEBS Congress and 11th IUBMB Conference, Athens

2006: Travel Grant to attend the EUROBIC8 Congress, Aveiro, Portugal

Appointments

2019: Chair of SZN Seminar Committee.

2018: "Ligand-protein docking and computer-aided drug design" Course, 27-28 November, Basel, Switzerland.

2018: “Course of Management”, 30 May-June, SZN, Napoli, Italy.

2018: Member of the Coordination Group for SWOT analysis at SZN.

2017: Chair of the workshop “*Challenges and Perspectives of Research at SZN*”, Naples, SZN Retreat, November 20-21, 2017.

2017: Selected talk for oral presentation at BBCC2017 Congress. Castellano I. “Probing the interactions of marine thiohistidines with an attractive pharmaceutical target”, 18 December 2017, CNR, Naples.

2017: Visiting Scientist (October 2 weeks) at Laboratory of Functional Biochemistry and Proteomics, CCMAR, University of Algarve/ Campus de Gambelas, Faro, Portugal- EMBRIC Transnational Program Access.

2017: Visiting Scientist (November 2 weeks) at Laboratory of Molecular Pharmacology, FVP, Berlin - EMBRIC Transnational Program Access.

2017: Selected talk for oral presentation at SIB Congress 2017. Castellano I. “Evolution of 5-thiohistidines from life in the oceans to human health”, 21 September 2017, Caserta.

2017: “Molecular Phylogenetics” Workshop, 10-12 April, Stazione Zoologica Anton Dohrn, Napoli, Italy.

2016: Invited Speaker at “Pint of Science” 2016 Edition.

2015: Summer School of Natural Product, Stazione Zoologica Anton Dohrn, Napoli, Italy.

2006 - 7 Advanced Course on Nutrition and Wellness, University Federico II of Naples.

2005 - 2006: Teacher assistant (lecture in Biochemistry) for students at Faculty of Medicine, University of Naples Federico II

2005 9° Course of Mass Spectrometry for PhD students, Siena, Italy

Other matters relevant to scientific career

2017-National Scientific Qualification as Associate Professor in Biochemistry, Scientific Area **BIO/10**

Guest Editor for **Marine Drugs** Special Issue "Marine Antioxidant", deadline May 2019.

Member of the Italian Society of Biochemistry and Molecular Biology, **SIB** from 2008.

Reviewer for ISI-journals in Biochemistry and Molecular Biology: Molecular Biosystems, Biochimie, BBA - Proteins and Proteomics, Process Biochemistry, Applied Microbiology Biotechnology, Biomed Research International, International Journal of Biological Macromolecules, F100 Research, Scientific Reports, Genome Biology and Evolution, Natural Product Reports.

Member of the Editorial Board of Journal of Molecular Biology and Molecular Imaging from 2015.

Students' tutorship

Past, Tutor of 7 under-graduated students and 2 Ph.D. students

Actually, Director of studies of 1 PhD student O.U. program, and 2 under-graduated students

Scientometric data: author of 34 papers on international referenced (ISI) journals, 1 book, 4 book chapters, and 2 patents. Google Scholar: https://scholar.google.com/citations?user=nz_uZi4AAAAJ&hl=it

List of main publications

Castellano I*, Seebeck FP. (2018) "On ovothiol biosynthesis and biological roles: from life in the ocean to therapeutic potential" *Nat Prod Rep*. doi: 10.1039/c8np00045j.

Brancaccio M, D'Argenio G, Lembo V, Palumbo A, **Castellano I*** (2018) "Anti-fibrotic effect of marine ovothiol in an in vivo model of liver fibrosis" *Ox Med Cell Long*. doi: 10.1155/2018/5045734.

Kumar A, Abdelgawad H, **Castellano I**, Selim S, Beemster GTS, Asard H, Buia MC, Palumbo A. (2018) "Effects of ocean acidification on the levels of primary and secondary metabolites in the brown macroalga *Sargassum vulgare* at different time scales" *Sci Total Environ*. 643:946-956. doi: 10.1016/j.scitotenv.2018.06.176.

Castellano I, Di Tomo P, Di Pietro N, Mandatori D, Pipino C, Formoso G, Napolitano A, Palumbo A, Pandolfi A. (2018) "Anti-inflammatory activity of marine ovothiol A in an in vitro model of endothelial dysfunction induced by hyperglycemia" *Oxid Med Cell Longev* 2018:2087373. doi: 10.1155/2018/2087373.

Castellano I*, Migliaccio O, Ferraro G, Maffioli E, Marasco D, Merlino A, Zingone A, Tedeschi G, Palumbo A (2018) "Biotic and environmental stress induces nitration and changes in structure and function of the sea urchin major yolk protein toposome". *Scientific Reports* 8:4610. doi: 10.1038/s41598-018-22861-1.

Kumar A, **Castellano I**, Patti FP, Delledonne M, Abdelgawad H, Beemster GT, Asard H, Palumbo A, Buia MC (2017) "Molecular response of *Sargassum vulgare* to acidification at volcanic CO₂ vents - insights from de novo transcriptomic analysis". *Mol Ecol*. doi: 10.1111/mec.14034.

Kumar A, Abdelgawad H, **Castellano I**, Lorenti M, Delledonne M, Beemster GTS, Asard H, Buia MC, Palumbo A

(2017) “Physiological and Biochemical Analyses Shed Light on the Response of *Sargassum vulgare* to Ocean Acidification at Different Time Scales” *Front Plant Sci.* 19; 8:570. doi: 10.3389/fpls.2017.00570.

Oral R, Pagano G, Siciliano A, Gravina M, Palumbo A, **Castellano I**, Migliaccio O, Thomas PJ, Guida M, Tommasi F, Trifuoggi M (2017) “Heavy rare earth elements affect early life stages in *Paracentrotus lividus* and *Arbacia lixula* sea urchins”. *Environ Res.* 154:240-246. doi: 10.1016/j.envres.2017.01.011.

Castellano I*, Migliaccio O, D’Aniello S, Merlino A, Napolitano A, Palumbo A (2016) “Shedding light on ovothiol biosynthesis in marine metazoans” *Scientific Reports* 6:21506. doi: 10.1038/srep21506.

Migliaccio O, **Castellano I**, Di Cioccio D, Tedeschi G, Negri A, Cirino P, Romano G, Zingone A, Palumbo A (2016) “Subtle reproductive impairment through nitric oxide-mediated mechanisms in sea urchins from an area affected by harmful algal blooms” *Scientific Reports* 6:26086. doi: 10.1038/srep26086.

Pagano G, Guida M, Siciliano A, Oral R, Koçbaş F, Palumbo A, **Castellano I**, Migliaccio O, Thomas PJ, Trifuoggi M (2016) “Comparative toxicities of selected rare earth elements: Sea urchin embryogenesis and fertilization damage with redox and cytogenetic effects” *Environ Res.* 147:453-60. doi: 10.1016/j.envres.2016.02.031.

Castellano I, Ercolesi E, Romano G, Ianora A, Palumbo A (2015) “The diatom-derived aldehyde decadienal affects life cycle transition in the ascidian *Ciona intestinalis* through nitric oxide/ERK signaling” *Open Biol.* 5(3):140182. doi: 10.1098/rsob.140182.

Kumar A, **Castellano I**, Patti FP, Palumbo A, Buia MC (2015) “Nitric oxide in marine photosynthetic organisms” *Nitric Oxide.* 47:34-39. doi: 10.1016/j.niox.2015.03.001. Review.

Migliaccio O, **Castellano I**, Cirino P, Romano G, Palumbo A (2015) “Maternal Exposure to Cadmium and Manganese Impairs Reproduction and Progeny Fitness in the Sea Urchin *Paracentrotus lividus*” *PloS One.* 10(6):e0131815doi: 10.1371/journal.pone.0131815.

Castellano I, Ercolesi E, Palumbo A (2014) "Nitric Oxide Affects ERK Signaling through Down- regulation of MAP Kinase Phosphatase Levels during Larval Development of the Ascidian *Ciona intestinalis*" *PloS One.* 9(7):e102907. 10.1371/journal.pone.0102907.

Migliaccio O, **Castellano I**, Romano G, Palumbo A (2014) “Stress response to cadmium and manganese in *Paracentrotus lividus* developing embryos is mediated by nitric oxide”. *Aquatic Toxicology.* 156C:125-134. doi: 10.1016/j.aquatox.2014.08.007.

Russo GL, Russo M, **Castellano I**, Napolitano A, Palumbo A (2014) “Ovothiol Isolated from Sea Urchin Oocytes Induces Autophagy in Hep-G2 cell line” *Marine Drugs.* 12, 4069-4085; doi:10.3390/md12074069.

Merlino A, Russo Krauss I, **Castellano I**, Ruocco MR, Capasso A, De Vendittis E, Rossi B, Sica F (2014) “Structural and denaturation studies of two mutants of a cold adapted superoxide dismutase point to the importance of electrostatic interactions in protein stability” *Biochim Biophys Acta.* 1844, 632-40. doi: 10.1016/j.bbapap.2014.01.007.

Pica A, Russo Krauss I, **Castellano I**, La Cara F, Graziano G, Sica F, Merlino A (2013) “Effect of NaCl on the conformational stability of the thermophilic γ -glutamyltranspeptidase from *Geobacillus thermodenitrificans*: Implication for globular protein halotolerance” *Biochim Biophys Acta.* 1834, 149-57 doi: 10.1016/j.bbapap.2012.09.014.

Castellano I*, Merlino A (2012) “ γ -Glutamyltranspeptidases: sequence, structure, biochemical properties, and biotechnological applications” *Cell Mol Life Sci.* 69, 3381-94.

- Pica A, Russo Krauss I, **Castellano I**, Rossi M, La Cara F, Graziano G, Sica F, Merlino A (2012) “Exploring the unfolding mechanism of gamma-glutamyltranspeptidases: the case of the thermophilic enzyme from *Geobacillus thermodenitrificans*” *Biochim Biophys Acta* 1824, 571- 577.
- Castellano I***, Di Salle A, Merlino A, Rossi M, La Cara F (2011) “Gene cloning and protein expression of gamma-glutamyltranspeptidases from *Thermus thermophilus* and *Deinococcus radiodurans*: comparison of molecular and structural properties with mesophilic counterparts” *Extremophiles* 15, 259-270.
- Castellano I***, Merlino A, Rossi M, La Cara F (2010) “Biochemical and structural properties of gamma-glutamyl transpeptidase from *Geobacillus thermodenitrificans*: an enzyme specialized in hydrolase activity”, *Biochimie* 92, 464-474.
- Merlino A, Russo Krauss I, **Castellano I**, De Vendittis E, Rossi B, Conte M, Vergara A, Sica F (2010) “Structure and flexibility in cold-adapted iron superoxide dismutases: The case of the enzyme isolated from *Pseudoalteromonas haloplanktis*” *J Struct Biol* 172, 343- 52.
- De Vendittis A, Amato M, Mickiewicz A, Parlato G, De Angelis A, **Castellano I**, Rullo R, Riccitiello F, Rengo S, Masullo M and De Vendittis E (2010) “Regulation of the properties of superoxide dismutase from the dental pathogenic microorganism *Streptococcus mutans* by iron- and manganese-bound cofactor”. *Molecular BioSystems* 6, 1973-82.
- Cassano S, Agnese S, D’Amato V, Papale M, Garbi C, Castagnola P, Ruocco MR, **Castellano I**, De Vendittis E, Santillo M, Amente S, Porcellini A, Avvedimento EV (2010) “ROS, Ki-Ras and mitochondrial SOD cooperate in the NGF-induced differentiation of PC12 cells”. *J Biol Chem.* 285, 24141-53.
- Cecere F, Iuliano A, Albano F, Zappelli C, **Castellano I**, Grimaldi P, Masullo M, De Vendittis E, Ruocco MR (2010) “Involvement of the mitochondrial superoxide dismutase (SOD2) in the apoptosis of the SH-SY5Y neuroblastoma cell line induced by diclofenac”. *J. Biom Biotech* doi:10.1155/2010/801726.
- Castellano I**, Cecere F, De Vendittis A, Cotugno R, Chambery A, Di Maro A, Michniewicz A, Parlato G, Masullo M, Avvedimento EV, De Vendittis E, Ruocco MR (2009) "Rat mitochondrial manganese superoxide dismutase: amino acid positions involved in covalent modifications, activity and heat stability", *Biopolymers* 91, 1215-1226.
- Castellano I**, Ruocco MR, Cecere F, Di Maro A, Chambery A, Michniewicz A, Parlato G, Masullo M, De Vendittis E, (2008) “Glutathionylation of the iron superoxide dismutase from the psychrophilic eubacterium *Pseudoalteromonas haloplanktis*”, *Biochim Biophys Acta*, 1784, 816-826.
- De Vendittis E, **Castellano I**, Cotugno R, Ruocco MR, Raimo G, Masullo M, (2008) “Adaptation of ubiquitous proteins from cold to hot environments involves continuous and small adjustments of average parameters related to amino acid composition” *J Theor Biol* 250, 156- 71.
- Castellano I**, Di Maro A, Ruocco MR, Chambery A, Parente A, Di Martino MT, Parlato G, Masullo M, De Vendittis E, (2006) “Psychrophilic superoxide dismutase from *Pseudoalteromonas haloplanktis*: biochemical characterization and identification of a highly reactive cysteine residue”, *Biochimie* 88, 1377-1389.
- Russo GL, Tosto M, Mupo A, **Castellano I**, Cuomo A, Tosto E, (2004), “Biochemical and functional characterization of protein kinase CK2 in ascidian *Ciona intestinalis* oocytes at fertilization. Cloning and sequence analysis of cDNA for alpha and beta subunits”, *J Biol Chem* 279, 33012-33023.

Books

- Castellano I*** and Merlino A, (2013) “Gamma-Glutamyl Transpeptidases”, SpringerBriefs in Biochemistry and Molecular Biology, DOI: 10.1007/978-3-0348-0682-4_1.

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