

Maria Ina Arnone, *PhD*



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**Current Position:** ricercatore II° livello, Senior Scientist

**Current Affiliation:**

Department of Biology and Evolution of Marine Organisms  
Stazione Zoologica Anton Dohrn, Napoli (Italy)

**Biographical Sketch and research interests**

Maria Ina Arnone, biochemist by training, is a developmental molecular biologist with expertise in gene expression analysis, functional genomics and gene regulatory network (GRN) studies. After a period of three years (1995-1998) at the California Institute of Technology, Pasadena, CA, where she contributed to a seminal work on the organization and function of genomic regulatory systems (reviewed in Arnone and Davidson, *Development* 1998, 747 citations), she established her group at Stazione Zoologica in Naples with the aim of studying evolution of organs and body parts by comparison of the GRNs that control the formation of such parts in different animals. Using the sea urchin embryo as main model system, she recently developed a novel approach integrating various 'omics' technologies to study developmental GRNs and their evolution.

**Education/Training/Experience**

Institute and Location	Degree/Function	Year	Field of Study
Università degli Studi di Napoli Federico II	<b>Laurea (Chemistry)</b>	1987	Biochemistry of Thermophiles
University of Cambridge, UK	Visitor scientist (Prof. R. Perham)	1990	Conformational analysis by NMR

Università degli Studi di Napoli Federico II	<b>PhD (Biochemistry)</b>	1993	Thermophily and Thermostability of proteins
Stazione Zoologica Anton Dohrn	CNR fellow (Prof. R. Di Lauro)	1993-94	Gene expression in mammalian systems
California Institute of Technology, Pasadena, CA	Research fellow (Prof. E.H. Davidson)	1995-97	Gene expression in embryonic development
Stazione Zoologica Anton Dohrn	Research fellow	1998-99	Gene expression in embryonic development
Stazione Zoologica Anton Dohrn	Primo Ricercatore	2000-	Developmental Biology, Evo Devo

### **Appointments and awards**

1989 "Pasquale Corsicato Premio di Laurea" Award.

1991 Italian Society of Biochemistry (SIB) fellowship.

1993 Italian National Research Center (CNR) fellowship.

From 1996 to 1997, Research associate of Stower Institute for Medical Research.

From 1997 to 1998, Teaching assistant at the "MBL Developmental Biology: Embryology Course", Woods Hole, MA (S. Fraser and M. Bronner-Fraser, directors).

From 1999 to 2001, Teacher and Coordinator at the TMR Course in "Evolutionary Developmental Biology", Station Biologique Roscoff (Prof. J.A.M. Biggelaar, 1<sup>st</sup> scientific responsible of the TMR Course).

Since 2000, Primo Ricercatore at Stazione Zoologica Anton Dohrn

Since 2006, Teacher and co-organizer of the EMBO Course "Molecular approaches to Evolution and Development" now called "Marine Animal Models for Evolution and Development", Sven Lovén Marine Station, Kristineberg Sweden.

Since 2012, Associate Editor of Marine Genomics

2006-2012, Member of the Editorial Board of Journal of Experimental Zoology – PartB

*Tutor of 10 degree thesis and 11 PhD thesis national and international*

*Member of national and international PhD examination panels*

*Co-organizer of several international meetings and courses*

*Author of >60 papers on international referenced (ISI) journals and of 2 book chapters*

*With 4888 citations (Google Scholar April 2018, 1641 of which since 2013) h-index 22; i10-index 36*

### **Relevant grants over the past 10 years**

2018-2024: Marie Curie ITN EVOCELL "Animal evolution from a cell type perspective: multidisciplinary training in single-cell genomics, evo-devo and in science outreach". Role: principal investigator

2015-2019: EU Infradev Corbel "Coordinated Research Infrastructures Building Enduring Life-science Services". Role: principal investigator

2013-2017: Marie Curie ITN NEPTUNE "Multidisciplinary training in evo-devo and neurobiology of marine animal models". Role: principal investigator

2008-2012: Marie Curie ITN EVONET “Evolution of Gene Regulatory Networks in Animal Development”.  
Role: principal investigator  
2004-2008: Marie Curie ITN ZONET “Development and evolution of animal form: training modern  
comparative zoologists”. Role: principal investigator

**Publications** (starting from most recent; \*corresponding author)

- Anishchenko E, Arnone MI\*, D'Aniello S\*. SoxB2 in sea urchin development: implications in neurogenesis, ciliogenesis and skeletal patterning. *Evodevo*. (2018) 9: 5.
- Lowe EK, Garm A, Ullrich-Lüter E, Arnone MI\*. The crowns have eyes: Multiple opsins found in the eyes of the Crown-of-Thorns Starfish *Acanthaster planci*. *BMC Evol Biol* (2018) under revisions and *bioRxiv* (2017) 173187.
- Burguera D, Marquez Y, Racioppi C, Permanyer J, Torres-Méndez A, Esposito R, Albuixech-Crespo B, Fanlo L, D'Agostino Y, Gohr A, Navas-Perez E, Riesgo A, Cuomo C, Benvenuto G, Christiaen LA, Martí E, D'Aniello S, Spagnuolo A, Ristoratore F, Arnone MI\*, Garcia-Fernández J\*, Irimia M\*. Evolutionary recruitment of flexible Esrp-dependent splicing programs into diverse embryonic morphogenetic processes. *Nat Commun* (2017) 8: 1799.
- Lowe EK, Cuomo C, Arnone MI\*. Omics approaches to study gene regulatory networks for development in echinoderms. *Brief Funct Genomics* (2017) 16, 299-308.
- Valero-Gracia A, Petrone L, Oliveri P, Nilsson DE, Arnone MI\*. Non-directional Photoreceptors in the Pluteus of *Strongylocentrotus purpuratus* *Front Ecol Evol* (2016) 4, 127.
- Arnone MI\*, Andrikou C, Annunziata R. Echinoderm systems for gene regulatory studies in evolution and development. *Curr Opin Gen Dev* (2016) 39: 129-137.
- Perillo M, Wang YJ, Leach, SD, Arnone MI\*. A pancreatic exocrine-like cell regulatory circuit operating in the upper stomach of the sea urchin *Strongylocentrotus purpuratus* larva. *BMC Evol Biol* (2016) 16, 117.
- Rizzo F, Coffman JA, Arnone MI\*. An Elk transcription factor is required for Runx-dependent survival signaling in the sea urchin embryo. *Dev Biol* (2016) 416: 173-186.
- Mao CA, Agca C, Mocko-Strand JA, Wang J, Ullrich-Lüter E, Pan P, Wang SW, Arnone MI, Frishman LJ, Klein WH. Substituting mouse transcription factor Pou4f2 with a sea urchin orthologue restores retinal ganglion cell development. *Proc R Soc B* (2016) 283: 20152978.
- Andrikou C, Pai CY, Su YH, Arnone MI\*. Logics and properties of a genetic regulatory program that drives embryonic muscle development in an echinoderm. *eLIFE* (2015) 4, e07343.

- Elphick MR, Semmens DC, Blowes LM, Levine J, Lowe CJ, Arnone MI, Clark MS. Reconstructing SALMFamide Neuropeptide Precursor Evolution in the Phylum Echinodermata: Ophiuroid and Crinoid Sequence Data Provide New Insights. *Front Endocrinol* (Lausanne) (2015) 2;6:2.
- Andrikou C and Arnone MI. Too many ways to make a muscle: evolution of GRNs governing myogenesis. *Zool Anz* (2015) 256: 2-13.
- Arnone MI, Byrne M, Martinez P. Echinodermata. In: *Evolutionary Developmental Biology of Invertebrates* A. Wanninger ed, Springer 2015 vol. 6: 1-58.
- D'Aniello S, Delroisse J, Valero-Gracia A, Lowe EK, Byrne M, Cannon JT, Halanych KM, Elphick MR, Mallefet J, Kaul-Strehlow S, Lowe CJ, Flammang P, Ullrich-Lüter E, Wanninger A, Arnone MI\*. Opsin evolution in the Ambulacraria. *Mar Genomics* (2015) 24: 177-183.
- Arnone MI, Hejnol A. Genomics going wild: Marine sampling for studies of evolution and development. *Mar Genomics* (2015) 24: 119-20.
- Delroisse J, Ullrich-Lüter E, Ortega-Martinez O, Dupont S, Arnone MI, Mallefet J, Flammang P. High opsin diversity in a non-visual infaunal brittle star. *BMC Genomics* (2014) 15:1035.
- Perillo M and Arnone MI\*. Characterization of insulin-like peptides (ILPs) in the sea urchin *Strongylocentrotus purpuratus*: insights on the evolution of the insulin family. *Gen Comp Endocrinol* (2014) 205: 68-79.
- Annunziata M and Arnone MI\*. A dynamic network of regulatory interactions explains ParaHox gene control of gut patterning in the sea urchin embryo. *Development* (2014) 141: 2462-72.
- Annunziata R, Perillo M, Andrikou C, Cole A, Martinez P & Arnone MI\*. Pattern and Process During Sea Urchin Gut Morphogenesis: the Regulatory Landscape. *Genesis* (2013) 52: 251-68.
- Andrikou C, Iovene E, Rizzo F, Oliveri P and Arnone MI\*. Myogenesis in the sea urchin embryo: the molecular fingerprint of the myoblast precursors. *EvoDevo* (2013) 4:33.
- Ikuta T, Chen Y-C, Annunziata R, Ting H-C, Tung C-H, Koyanagi R, Tagawa K, Humphreys T, Fujiyama A, Saiga H, Satoh N, Yu Jr-K, Arnone MI and Su Y-H. Identification of an intact ParaHox cluster with temporal colinearity but residual spatial colinearity in the hemichordate *Ptychodera flava*. *BMC Evol Biol* (2013) 13:129.
- Annunziata R, Martinez P and Arnone MI\*. Intact cluster and chordate-like expression of ParaHox genes in a sea star. *BMC Biol* (2013) 11:68.
- Ullrich-Lüter E, D'Aniello S and Arnone MI\*. C-opsin expressing photoreceptors in echinoderms *Integr Comp Biol* (2013) 53: 27-38.
- Peterson KJ, Su Y-H, Arnone MI, Swalla B, and King B. microRNAs Support the Monophyly of Enteropneust Hemichordates. *J Exp Zool B Mol Dev Evol* (2013) 320: 368-74.
- Ullrich-Lüter E, Dupont S, Arboleda E, Hausen H and Arnone MI\*. A Unique System of Photoreceptors in Sea Urchin Tube Feet. *Proc Natl Acad Sci U S A* (2011) 108: 8367-72.
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Arnone MI, Birolo L, Cubellis MV, Nitti G, Marino G, Sannia G. Expression of a hyperthermophilic aspartate aminotransferase in *E. coli*. **Biochim Biophys Acta** (1992) 1160, 206-212.

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Cubellis MV, Rozzo C, Nitti G, Arnone MI, Marino G, Sannia G. Cloning and sequencing of the gene coding for aspartate aminotransferase from the thermoacidophilic archaebacterium *Sulfolobus solfataricus*. **Eur J Biochem** (1989) 186, 375-381. 5.

Marino G, Nitti G, Arnone MI, Sannia G, Gambacorta A, De Rosa M. Purification and characterization of aspartate aminotransferase from the thermoacidophile archaebacterium *Sulfolobus solfataricus*. **J Biol Chem** (1988) 263, 12305-12309.

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