

## Maria Sirakov, Ph.D.

### Current Position:

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

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**EXPERTISE KEYWORDS** Gut physiology, Signalling pathway, Marine Organism, Gene expression, Transcriptomic, Emerging contaminant.

2018-2028: Eligible as Associate Professor National Scientific Qualification SSD: 05/F1 (BIO/13), Applied Biology.

### Education

2004-2007: Ph.D. in Animal Biology. Università degli Studi della Calabria (UNICAL) /SZN, Italy. Supervisor Dr. Fiorito (SZN) and co-supervisor Dr. Borra (SZN)

1999-2003: *Laurea cum laude* (equivalent M2R) in Natural Science. Università degli studi di Napoli "Federico II" (UNINA), Italy. Supervisor Prof. Pollio (UNINA)

### Employment record

2019 up to present Researcher (permanent position) at BEOM-SZN

2017-2018 Post-doc at Università degli Studi della Campania "Vanvitelli" (UNICAMPANIA), Italy, laboratory lead by Dr. Ciniglia.

2013-2016 Post-doc at Telethon Institute of Genetics and Medicine (TIGEM), Italy, laboratory lead by Prof. Auricchio.

2013 Post-doc Istituto di Genetica e Biophysica (IGB) 'Adriano Buzzati-Traverso', CNR, Ital, laboratory lead by Prof. Simeone.

2011-2013 Post-doc Institut de Biologie et de Médecine Moléculaires (IBMM), Belgium, laboratory lead by Prof. Bellefroid.

2008- 2011 Post-doc Institut de Génomique Fonctionnelle de Lyon (IGFL), France, laboratory lead by Prof. Samarut.

### Scientific Society Member

From 2017 Member of Società dei Naturalisti (Society of Natural Scientist) in Naples;

From 2022 Memembr of Euro Evo-Devo Society (EED)

### Editorial Activity

Occasional peer reviewing: Biochimica et Biophysica Acta, BMC Molecular Biology, Cancer, Cell Death and Differentiation, Cells, Frontiers in Endocrinology, International Journal of Molecular Science, Molecular and Cellular Endocrinology, PloS ONE, Scientific Reports, Water

#### Guest Editor

- ✓ CELLS Thyroid Hormone Signaling and Function: News from Classical and Emerging Models (2022);
- ✓ MOLECULAR AND CELLULAR ENDOCRINOLOGY Endocrinology of the Intestine (on going);
- ✓ INTERNATIONAL JOURNAL OF MOLECULAR SCIENCE Explore Marine Biodiversity: Discover Insights from Genomics and Transcriptomics (on going).

### Ongoing research activities with external scientific collaborators

- "Natural Organic Matter characterization in marine environment" with Prof. Fabbri and Dr. Pontoni (UNINA) and Dr. Boguta, Institute of Agrophysics, Polish Academy of Sciences (IAPAS), Poland;
- "Effect of *Caulerpa cylindracea* on *M. galloprovincialis*" with Prof. De Falco and Dr. Rosati (UNINA) and Dr. Brunelli (UNICAL);
- "Hystological and molecular characterization of *C. robusta* gastrointestinal system" with Dr. David Ferrier, Universtity of St. Andrews (UK) and Dr. Arun Chavan (USA);
- "Effect of Emerging Contaminants if fresh and marine organisms" with Dr. Antonietta Siciliano (UNINA) and Prof. Marco Guida (UNINA).

### Publications

(\*) Corresponding

- Gerdol M, Greco S, Marino R, Locascio A, Plateroti M, [Sirakov M\\*](#) (2024) Conserved Signalling Pathways in the *Ciona robusta* Gut. *International Journal of Molecular Sciences* 25 (14), 7846. doi:10.3390/ijms25147846.
- Paoletta G, Fabbicino M, Locascio A, [Sirakov M](#), Pontoni L (2024) Fate of bisphenol A in marine environment: A critical review. *Chemical Engineering Journal*, 153228. doi:10.1016/j.cej.2024.153228
- Yao S, Boguta P, Giolito MV, Pontoni L, [Sirakov M\\*](#), Plateroti M, Fabbicino M (2024) Nano-sized natural organic matter interacts with bisphenol A and decreases cytotoxicity to human cells. *Environmental Chemistry Letters* 22:2183-2189. doi: 10.1007/s10311-024-01711-9
- Salatiello F, Gerdol M, Pallavicini A, Locascio A, [Sirakov M\\*](#) (2022) Comparative analysis of novel and common reference genes in adult tissues of the mussel *Mytilus galloprovincialis*. *BMC Genomics* 23:349. doi:10.1186/s12864-022-08553-1
- Pontoni L, La Vecchia C, Boguta P, [Sirakov M](#), D'Aniello E, Fabbicino M, Locascio A (2022) Natural organic matter controls metal speciation and toxicity for marine organisms: a review. *Environmental Chemistry Letters* 20: 797–812. doi:10.1007/s10311-021-01310-y
- [Sirakov M](#), Plateroti M (2022) Thyroid Hormone Signaling and Function: News from Classical and Emerging Models. *Cells* 11:453. doi:10.3390/cells11030453
- [Sirakov M\\*](#), Claret L, Plateroti M. Thyroid Hormone Nuclear Receptor TR $\alpha$ 1 and Canonical WNT Pathway Cross-Regulation in Normal Intestine and Cancer (2021) *Frontiers in Endocrinology* (Lausanne) Dec 10:12:725708. doi: 10.3389/fendo.2021.725708. eCollection 2021
- [Sirakov M](#), Palmieri M, Iovinella M, Davis SJ, Petriccione M, di Cicco MR, De Stefano M, Ciniglia C (2021) *Cyanidiophyceae* (*Rhodophyta*) Tolerance to Precious Metals: Metabolic Response to Palladium and Gold. *Plants* 10: doi:10.3390/plants10112367
- Godart M, Frau C, Farhat D, Giolito MV, Jamard C, Le Nevé C, Freund JN, Penalva LO, [Sirakov M](#), Plateroti M (2021) The murine intestinal stem cells are highly sensitive to the modulation of the T3/TR $\alpha$ 1-dependent pathway. *Development* 148: doi:10.1242/dev.194357
- Ciniglia C, Cennamo P, De Natale A, De Stefano M, [Sirakov M](#), Iovinella M, Yoon HS, Pollio A (2019) *Cyanidium chilense* (*Cyanidiophyceae*, *Rhodophyta*) from tuff rocks of the archeological site of Cuma, Italy. *Phycological Research* 67:311–319. doi:10.1111/pre.12383
- Skah S, Uchuya-Castillo J, [Sirakov M](#), Plateroti M (2017) The thyroid hormone nuclear receptors and the Wnt/ $\beta$ -catenin pathway: An intriguing liaison. *Developmental Biology* 422:71–82. doi:10.1016/j.ydbio.2017.01.003
- Skah S, Nadjar J, [Sirakov M](#), Plateroti M (2015) The secreted Frizzled-Related Protein 2 modulates cell fate and the Wnt pathway in the murine intestinal epithelium. *Experimental Cell Research* 330:56–65. doi: 10.1016/j.yexcr.2014.10.014.
- [Sirakov M](#), Boussoar AA, Kress E, Frau C, Lone IN, Nadjar J, Angelov D, Plateroti M (2015) The thyroid hormone nuclear receptor TR $\alpha$ 1 controls the Notch signaling pathway and cell fate in murine intestine. *Development* 142:2764–2774. doi:10.1242/dev.121962
- [Sirakov M](#), Kress E, Nadjar J, Plateroti M (2014) Thyroid hormones and their nuclear receptors: new players in intestinal epithelium stem cell biology? *Cellular and Molecular Life Science* 71(15):2897-907 doi 10.1007/s00018-014-1586-3
- [Sirakov M\\*](#), Borra M, Cambuli FM, Plateroti M (2013) Defining Suitable Reference Genes for RT-qPCR Analysis on Intestinal Epithelial Cells. *Molecular Biotechnology* 54:930–938. doi:10.1007/s12033-012-9643-3
- Bellefroid EJ, Leclère L, Saulnier A, Keruzore M, [Sirakov M](#), Vervoortc M, De Clercq S (2013) Expanding roles for the evolutionarily conserved Dmrt sex transcriptional regulators during embryogenesis. *Cellular and Molecular Life Science* 70:3829–3845. doi:10.1007/s00018-013-1288-2
- Diala I, Wagner N, Magdinier F, Shkrelia M, [Sirakov M](#), Bauwens S, Schluth-Bolard C, Simonet T, Renault VM, Ye J, et al. (2013) Telomere protection and TRF2 expression are enhanced by the canonical Wnt signalling pathway. *EMBO Reports* 14:356–363. doi:10.1038/embor.2013.16
- Parlier D, Moers V, Van Campenhout C, Preillon J, Leclère L, Saulnier A, [Sirakov M](#), Busengdal H, Kricha S, Marine JC, et al. (2013) The *Xenopus* doublesex-related gene Dmrt5 is required for olfactory placode neurogenesis. *Developmental Biology* 373:39–52. doi:10.1016/j.ydbio.2012.10.003
- [Sirakov M](#), Skah S, Nadjar J, Plateroti M (2013) Thyroid hormone's action on progenitor/stem cell biology: New challenge for a classic hormone? *Biochimica et Biophysica Acta* 1830:3917–3927. doi:10.1016/j.bbagen.2012.07.014

- [Sirakov M](#), Plateroti (2011). The thyroid hormones and their nuclear receptors in the gut: From developmental biology to cancer. *Biochimica et Biophysica Acta* 1812:938–946. doi:10.1016/j.bbadis.2010.12.020
- Kress E, Skah S, [Sirakov M](#), Nadjar J, Gadot N, Scoazec JY, Samarut J, Plateroti M (2010) Cooperation Between the Thyroid Hormone Receptor TR $\alpha$ 1 and the WNT Pathway in the Induction of Intestinal Tumorigenesis. *Gastroenterology* 138:1863-1874.e1. doi:10.1053/j.gastro.2010.01.041
- [Sirakov M](#), Zarrella I, Borra M, Rizzo F, Biffali E, Arnone M.I., Fiorito G (2009) Selection and validation of a set of reliable reference genes for quantitative RT-PCR studies in the brain of the Cephalopod Mollusc *Octopus vulgaris*. *BMC Molecular Biology* 10. doi:10.1186/1471-2199-10-70

#### Published Abstract

- Chianese T, Rosati L, Vorzitelli S, Paturzo V, Locascio A, [Sirakov M](#), Scudiero R (2023) Morphological conditions of mussels gonads after exposure to polystyrene microplastics alone and conjugated with bisphenol A or cadmium. *European Journal of Histochemistry* 67 (3), 9-9a.
- Skah S, Nadjar J, [Sirakov M](#) and Plateroti (2015) M 795 The Secreted Frizzled-Related Protein 2 Modulates Cell Fate and the WNT Pathway in the Murine Intestinal Epithelium. *Gastroenterology* 148 (49): S-156
- [Sirakov M](#), Plateroti M (2013) Sa2008 The Activity of the Notch Signalling Pathway in the Developing Intestine Is Modulated by the Thyroid Hormone Nuclear Receptor Tr $\alpha$ 1. *Gastroenterology* 144 (5): S-358
- [Sirakov M](#), Skah S, Plateroti M (2011) Multiple-Level Interactions Between the Thyroid Hormone Receptor Tr $\alpha$ 1 and the Wnt Pathway in the Context of the Intestinal Epithelium. *Gastroenterology* 140 (5): S-631.
- Skah S, [Sirakov M](#), Cambuli FM, Plateroti M (2011) Study of the secreted Frizzled Related Protein 2 (sFRP2) function in the intestinal physiopathology. *BULLETIN DU CANCER* 98: S39-S40.
- [Sirakov M](#), Skah S, Plateroti M (2010) 36 Synergy Between the Thyroid Hormone Receptor Tr $\alpha$ 1 and the Wnt/ $\beta$ -Catenin in the Induction of Intestinal Tumors in the Mouse. *Gastroenterology* 138 (5); S-7.

#### Book Chapter

- [Sirakov M](#), Plateroti M. “In Vitro Approaches to Identify Thyroid Hormone Receptor-Dependent Transcriptional Response,” in *Thyroid Hormone Nuclear Receptor*, ed. Plateroti M Samarut J (New York - DEU: Springer - Humana press), 29–38. doi:https://doi.org/10.1007/978-1-4939-7902-8\_4

#### Oral Presentation (from 2022)

(\* ) corresponding, (\$) presenter

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- Gerdol M, Marino R, Plateroti M, Locascio A, [Sirakov M](#) (\$\*). Novel insights on *Ciona robusta* gut physiology and evolution. 2nd Italian Congress on Marine Evolution (EVLIMAR 2023), November 14<sup>th</sup>-17<sup>th</sup> 2023, virtual congress.
- Gerdol M, De Felice V, Sicong Y, Marino R, Capaldo A, Locascio A, [Sirakov M](#) (\$\*). Histological and molecular features provide insight to consider *Ciona robusta* gut a suitable model to study gut physiology and evolution. 5th Euro-Mediterranean Conference for Environmental Integration (EMCEI23), October 2<sup>nd</sup>-5<sup>th</sup> 2023. Rende (Italy).
- Tramontin E, De Felice V, Spinosa G, Gerdol M, Locascio A, [Sirakov M](#) (\$\*). *Ciona robusta* as model system for Intestinal Stem Cells biology (CrISCs). 11th Tunicate International Meeting (ITM2022-Congresso Internazionale sui Tunicati), July 11<sup>th</sup>-15<sup>th</sup> 2022 Kobe (Giappone). Virtual congress.

#### Congress contribution (from 2022)

(\* ) corresponding

- Chianese T, Rosati L, Vorzitelli S, Paturzo V, Locascio A, [Sirakov M](#), Scudiero R. Morphological conditions of mussel gonads after exposure to polystyrene microplastics alone and conjugated with bisphenol A or cadmium. 68<sup>th</sup> Congress, Gruppo embriologico italiano – società italiana di biologia dello sviluppo e della cellula (GEI-SIBSC-), June 5<sup>th</sup>-8<sup>th</sup> 2023, Oliveri (Italy).
- [Sirakov M](#), Yao S, Pontoni L, Tramontin E, Rosati L, Brunelli E, Fabbicino M, Locascio A. Study of the Natural Organic Matter and how it affects BPA Toxicity on the Marine Mussels *Mytilus galloprovincialis*. 4th International Symposium on Advances in Marine Mussel Research (AMMR2022), 21<sup>st</sup>-23<sup>th</sup> November 2022 Exeter (UK).
- Yao S, Boguta P, Fabbicino M, Plateroti M, Pontoni L, Race M, [Sirakov M](#)\*. Interaction of natural organic matter with Bisphenol-A in water phase: preliminary observations and bioavailability evaluation. 32<sup>nd</sup> Congress New European Society for Comparative Physiology and Biochemistry (ESCPB 2022), 28<sup>th</sup>-31<sup>st</sup> August 2022, Naples (Italy).
- Chianese T, Mileo A, Locascio A, [Sirakov M](#), Landi S, Prisco M, Laforgia V, Rosati L. The effects of *Caulerpa racemosa* on the gametogenesis of *Mytilus galloprovincialis*. 67<sup>th</sup> GEI-SIBSC congress June 5<sup>th</sup>-7<sup>th</sup> 2022, Gargnano (Italia).

- Salatiello F, Gerdol M, Arnone MI, Locascio A, Sirakov M\*. *Ciona robusta* as model system for Intestinal Stem Cells biology (CrISCs). 8<sup>th</sup> Conference of the European Society for Evolutionary Developmental Biology (EURODEVO2022) 31<sup>th</sup> May- 3<sup>rd</sup> June 2022, Naples (Italy).

