


PERSONAL INFORMATION

Saraceni Paolo Roberto

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Date of birth: 07/03/1983 | Nationality: Italian

PROFESSIONAL PROFILE

Research Scientist in environmental toxicology, specializing in micro- and nanoplastics pollution and microbial contaminants. Experienced in assessing pollution impacts on aquatic ecosystems and environmental health, with a proven record of leading and contributing to EU- and nationally funded research projects and supporting evidence-based approaches for environmental monitoring and sustainable resource management.

PROFESSIONAL EXPERIENCE

Jul 2023 - present

Research Scientist

ENEA (Italian National Agency for New Technologies, Energy and Sustainable Economic Development), Department for Sustainability, Rome.

My research focuses on the ecotoxicology of aquatic and airborne pollutants, particularly micro- and nanoplastics, and on the application of blue biotechnologies for environmental sustainability. I employ fish cell-based models and *in silico* approaches to investigate the mechanisms of toxicity and the environmental impact of plastic particles. I am currently the scientific lead of the PLASTICBREATH project (ENEA 5×1000 funding), which aims to develop a Digital Twin to predict the toxicity of airborne nanoplastics to support environmental risk assessment.

Dec 2018 - Jun 2023

Postdoctoral Researcher

University of Tuscia, DIBAF Department, Zoology and Animal Biotechnology laboratory, Viterbo.

I carried out toxicological studies on fish models as part of the SEED TALENT@Unitus, NANOPISCES, and PISCES (FEAMP 2014–2020) projects investigating the effects of micro- and nanoplastics on cell lines and primary cell cultures from fish species such as *Dicentrarchus labrax*, *Sparus aurata*, *Oncorhynchus mykiss*, *Merluccius merluccius*, and *Mullus barbatus* for sustainable management of aquatic ecosystems. Within the PRONAT project, I explored marine-derived compounds for environmental and health applications.

May 2012 - May 2015

Ph.D. fellowship

Institute of Marine Research (CSIC – Spanish National Research Council), Vigo.

I was awarded a Marie Curie PhD fellowship (7th Framework Programme) for the Training Network on Zebrafish Infection Models for Pharmaceutical Screens, using zebrafish (*Danio rerio*) to study waterborne pathogens affecting fish and humans and to develop innovative biotechnological treatments, producing knowledge relevant to environmental health and the sustainable management of aquatic resources.

Curriculum vitae

Apr 2015 - May 2015

Ph.D. Internship

Pasteur Institute, Macrophage and Immunity Development Unit, Paris.

I conducted infection experiments with *Aeromonas hydrophila* to investigate the key mechanisms of the innate immune response in zebrafish (*Danio rerio*) against this bacterium.

EDUCATION AND TRAINING

Oct 2014 - Nov 2017

Ph.D. in Advanced Biotechnology

Level 8 EQF

University of Vigo, Vigo (Spain), cum Laude.

Biotechnological applications in healthcare, environmental and industrial fields.

Dissertation Title: 'Zebrafish (*Danio rerio*) as infection model to study the pathogenesis of the bacteria *Aeromonas hydrophila*'.

Oct 2013 - Jul 2015

M.Sc. in Advanced Biotechnology

Level 7 EQF

University of Vigo, Vigo (Spain).

Applications of biotechnology in the sustainability of production systems and environmental bioremediation, as well as in environmental prevention and management (environmental audit).

Production systems, management, and quality control in the food, agricultural, and biomedical industries.

Oct 2007 - Dec 2011

M.Sc. in Applied Biocatalysis

Level 7 EQF

University of Tuscia, Viterbo (Italy), cum Laude.

Development, application, and production of biocatalysts to the advancement of sustainable industrial processes.

Sep 2002 - Apr 2007

B.Sc in Agricultural and Industrial Biotechnology

Level 6 EQF

University of Tuscia, Viterbo (Italy), cum Laude.

Study of biological systems and multidisciplinary techniques applied in biotechnology for production purposes.

PERSONAL SKILLS

Mother Tongue

Italian

Other Languages

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Interaction	Oral production	
English	C1	C1	C1	C1	C1
Spanish	C2	C2	C2	C2	C2

Levels: A1 and A2: Basic user – B1 and B2: Independent user – C1 and C2: Proficient user
Common European Framework of Reference for Languages (CEFR)

Curriculum vitae

Professional Skills

Hands-on experience with *in vitro* and *ex vivo* systems from fish and mammals to assess key cellular endpoints (cytotoxicity, apoptosis, oxidative stress, etc.) relevant to environmental toxicology and blue biotechnology.

Molecular modelling, Molecular dynamics, and Digital twins development to simulate biomolecular interactions for the assessment of environmental impacts of airborne pollutants on living organisms.

Application of statistical methods for data analysis and interpretation.

Communication Skills

Developed strong proficiency in English and Spanish through professional experience in Spain, regularly collaborating with colleagues from diverse international backgrounds.

Organizational and Managerial Skills

Demonstrated strong organizational and managerial abilities by coordinating multiple projects, overseeing administrative tasks and procurement, planning experiments and training sessions, and facilitating collaborative meetings with international research teams.

Digital Skills

Proficient in Windows and Linux operating systems.

Experienced in advanced molecular simulation software (GROMACS, CHARMM-GUI) to model the structure and dynamics of biological molecules and molecular complexes *in silico*.

ADDITIONAL INFORMATION

Publications

(complete list available on [ORCID](#))

- 2025 Lorenzetti S, Amorena M, Attanasio C, Calleri M, Caloni F, Dang Z, D'Angelo L, De Angelis I, De Girolamo P, Di Cosmo A, Failla CM, Ferrante MC, Kuan M, Libralato G, Nevelli F, Nicolotti O, Pastorino P, **Saraceni PR**, Severino L, Vitale A. **Possible applications of new approach methodologies (NAMs) in ecotoxicology**. 42(2):363-365, doi: 10.14573/altex.2503281.
- 2024 **Saraceni PR**, Miccoli A, Bada A, Taddei AR, Mazzonna M, Fausto AM, Scapigliati G, Picchiatti S. **Polystyrene nanoplastics as an ecotoxicological hazard: cellular and transcriptomic evidences on marine and freshwater *in vitro* teleost models**. Sci Total Environ. 934:173159, doi: 10.1016/j.scitotenv.2024.173159.
- 2023 Buonocore F, **Saraceni PR**, Taddei AR, Miccoli A, Porcelli F, Borocci S, Gerdol M, Bugli F, Sanguinetti M, Fausto AM, Scapigliati G, Picchiatti S. **Antibacterial and anticancer activity of two NK-lysin-derived peptides from the Antarctic teleost *Trematomus bernacchii***. Fish Shellfish Immunol. 142:109099, doi: 10.1016/j.fsi.2023.109099.
- 2022 Miccoli A, Mancini E, **Saraceni PR**, Della Ventura G, Scapigliati G, Picchiatti S. **First evidence of *in vitro* cytotoxic effects of marine microlitter on *Merluccius merluccius* and *Mullus barbatus*, two Mediterranean commercial fish species**. Sci Total Environ. 813:152618, doi:10.1016/j.scitotenv.2021.152618.
- 2021 Mancini E, Miccoli A, Piazzolla D, **Saraceni PR**, Lezzi M, Tiralongo F, Bonifazi A, Picchiatti S, Marcelli M. **Macrozoobenthic fauna associated with benthic marine litter (Northern Tyrrhenian Sea, Italy) and first report of two bryozoan species in Italian waters**. Regional Studies in Marine Science, 47 :101912, doi: 10.1016/j.rsma.2021.101912.
- 2021 Picchiatti S, Buonocore F, Guerra L, Belardinelli MC, De Wolf T, Couto A, Fausto AM, **Saraceni PR**, Miccoli A, Scapigliati G. **Molecular and cellular characterization of European sea bass CD3 ϵ + T lymphocytes and their**

Curriculum vitae

- modulation by microalgal feed supplementation. *Cell Tissue Res.* 384(1):149-165, doi: 10.1007/s00441-020-03347-x.
- 2019 Miccoli A, Saraceni PR, Scapigliati G. **Vaccines and immune protection of principal Mediterranean marine fish species.** *Fish & Shellfish Immunology* 94:800-809, doi: 10.1016/j.fsi.2019.09.065.
- 2016 Saraceni PR, Romero A, Figueras A, Novoa B. **Establishment of Infection Models in Zebrafish Larvae (*Danio rerio*) to Study the Pathogenesis of *Aeromonas hydrophila*.** *Frontiers in Microbiology* 7:1219.doi: 10.3389/fmicb.2016.01219.
- Conference Abstracts and Posters
- 2024 Saraceni PR, Benassi B, Santoro M, Stracquadiano M, Gualtieri M, Arcangeli C. **Molecular modelling and Molecular Dynamics Simulations to reveal and predict the molecular interactions between the airborne particles and biomolecular targets.** 4rd MaSBIC Annual Symposium, 25-27 September 25-27, Ancona.
- 2024 Saraceni PR, Miccoli A, Taddei AR, Mazzonna M, Fausto AM, Scapigliati G, Picchietti S. **Adverse effects of polystyrene nanoplastics on teleost fish: *in vitro* and *ex vivo* evidence.** 29th Meeting of the Italian Society of Comparative and Developmental Immunobiology, February 14-16, Modena.
- 2023 Picchietti S, Guerra A, Taddei AR, Saraceni PR, Gerdol M, Porcelli F, Bugli F, Rosato R, Miccoli A, Fausto AM, Scapigliati G, Buonocore F. **NK-lysin homologue from the Antarctic teleost *Trematomus bernacchii* and its Ala mutant: focus on antibacterial and anticancer activities.** 23rd Meeting of the Italian Society of Comparative and Developmental Immunobiology, February 13–15, Naples.
- 2022 Miccoli A, Saraceni PR, Perrotta F, Taddei AR, Scapigliati G, Picchietti S. **The physiological effects of nanoplastics on the European sea bass *Dicentrarchus labrax* DLEC cell line.** 14th INBB National Conference, Research and Innovation for Environment, Health, and Nutrition, November 17-18, Rome.
- 2020 Picchietti S, Buonocore F, Miccoli A, Saraceni PR, Fausto AM, Scapigliati G. **T lymphocytes in the sea bass (*Dicentrarchus labrax*) intestine.** 21st Meeting of the Italian Society of Comparative and Developmental Immunobiology, February 12-14, Varese.
- 2018 Forn-Cunì G, Pereiro P, Romero A, Saraceni PR, Merino S, Tomas JM, Figueras A, Novoa B. **A zebrafish model for the study of gastroenteric *Aeromonas* reveals the importance of polar flagellum glycosylation in gram-negative virulence and immune stimulation.** 11th Annual Zebrafish Disease Models Conference, July 10-13, 2018, Leiden.
- Invited Talks and Academic Lectures
- 2025 **European Maritime Day Workshop: Effects of Micro and Nanoplastics on Marine Organisms and Human Health.**
Presentation title: **Impact of Nanoplastics on Cellular Health of Marine Organisms and Implications for Human Health**, May 6, Taranto.
- 2025 **Third International Winter School 2025 Lake Como School Wildlife Toxicology, Poisonings & Strategies.**
Presentation title: **Teleost fish cell cultures as alternative model for ecotoxicological studies**, March 26, online.
- 2024 **3rd IPAM Conference: Possible Applications of New Approach Methodologies (NAM) in Ecotoxicology.**
Presentation title: **Teleost fish cell cultures as alternative models for ecotoxicological studies**, December 3, Naples.

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	2019	Bachelor's Degree in Biotechnology program. Presentation title: Experimental Models to Study Infectious Diseases and Therapeutic Molecules: Example of the Zebrafish Infection Model University of Tuscia, June 4, Viterbo.
Attendance at Conferences	2026	Accademia Nazionale dei Lincei: Micro- and Nanoplastics: Traceability, Impacts, and Mitigation Strategies , April 8-9, Rome.
	2024	3rd IPAM Conference: Possible Applications of New Approach Methodologies (NAM) in Ecotoxicology , December 3, Naples.
	2024	4th MaSBIC Annual Symposium: Advances in Biomolecular Sciences: Perspectives on Structure, Function and Dynamics , December 3-4, Ancona.
	2015	6th EMBO meeting , September 5-8, Birmingham.
	2014	11th International Symposium on <i>Aeromonas</i> and <i>Plesiomonas</i> , June 25-27, Montpellier.
	2013	First International Conference of Fish and Shellfish Immunology , June 25-28, Vigo.
Training Courses	2025	Third International Winter School 2025 Lake Como School Wildlife Toxicology, Poisonings & Strategies , March 26, online.
	2025	European Maritime Day Workshop: Effects of Micro and Nanoplastics on Marine Organisms and Human Health , May 16, Taranto.
	2024	Data of the National Statistical System, May 2 , online.
	2024	Webinar: Introduction to Digital Twin: Goals & Solutions , June 25, Rome.
	2024	Webinar: Multiplexing Magic: How MULTI-seq Revolutionizes Single-Cell RNA Sequencing - Broadcast 1 , May 28, online.
	2017	European Computer Driving Licence (ECDL) Course , October 18, online.
	2015	Animal Experimentation Course, Category B, Animalaria , Vigo.
	2014	Genomics and Bioinformatics Workshop , January 28-30, Leiden.
	2013	Drug Discovery, Scientific Publishing and Communication Workshop , April 27-30, Wageningen.
	2013	Fish Immunology workshop , April 21-25, Wageningen.
	2012	Husbandry & Facility Management, Zebrafish Infection & Imaging Workshop , September 18-21, Paris.
Scientific Dissemination Activities	2025	PNRR Project (Actions to strengthen Stem and Multilingual Skills) at State Scientific High School Paolo Ruffini. Title of the outreach activity: 'Particulate matter (PM) and Lung Digital Twins' , April 16, Viterbo.
	2025	Interview on the ecotoxicological effects of nanoplastics broadcast on the program FUTURO24 (RAINEWS24) , March 24.
	2025	Interview on the environmental hazards of nanoplastics broadcast on TG3 Leonardo (RAI) , February 19.
	2023	European Researchers Night , NET 2022-23 ScieNcE Project. Title of the outreach activity: 'The Genomics of Climate' , September 29-30, Rome.
Official Professional Registers	2021	Italian National Order of Biologists.
Personal Interests		Music, astronomy, volleyball.
Declaration		I hereby declare that the information provided in this curriculum vitae is true, accurate, and complete to the best of my knowledge.