

Curriculum vitae

Candiani Simona

ACADEMIC POSITION

Full Professor of Comparative Anatomy, Cell Biology and Developmental Biology (BIO/06) and Principal Investigator of the research group of Developmental Neurobiology of the Department of Earth, Environment and Life Sciences (DISTAV), University of Genoa, Italy.

EDUCATION

1997: Degree in Biological Sciences (summa cum laude), at the University of Genoa.

2004: Member of the PhD Board in Neurochemistry and Neurobiology at the Department of Biology, University of Genoa.

PROFESSIONAL EXPERIENCE

2004-2009: Research fellow at the University of Genoa.

2010-2014: Researcher, Comparative Anatomy and Cytology.

2014-2020: Associate Professor, Comparative Anatomy and Cytology.

2020-present: Full Professor of Comparative Anatomy and Cytology.

Since 2012 she has been a member of the PhD Collegiate in Neurochemistry and Neurobiology and since 2016 of the PhD Collegiate in Experimental Medicine of the University of Genoa.

2021-2023: Member of the Commission for the National Scientific Habilitation in the Comparative Anatomy and Cytology (ASN)

2017 to date: Scientific member of OPBA Animal Welfare Body of the University of Genoa and Responsible of the zebrafish Facility.

2017 to date: Member of the Board of the Department of Earth, Environment and Life Sciences (DISTAV), UNIGE

2020 to date: Member of the AQ Commission of Biology Course, DISTAV, UNIGE

SCIENTIFIC ACTIVITY

Principal Investigator of the research group of Developmental Neurobiology of the Department of Earth, Environment and Life Sciences (DISTAV), University of Genoa. Current research is mainly focused on the evolution of the nervous system and developmental biology processes using as models' mammals, teleosts and protochordates. Other scientific activities are focused on zebrafish for the study of neuroblastoma, neurodegenerative diseases and rare genetic diseases. More recently, the research group is also involved in the study of the role of NK cells in checkpoint blockade immunotherapy for cancer treatment with expertise in molecular biology, microRNAs and siRNA technology.

Author of numerous communications at international and national congresses, including invited lectures.

INTERNATIONAL RESEARCH EXPERIENCE

Research appointments and collaborations at:

Kristineberg Marine Research Station, Royal Swedish Academy of Sciences (Sweden)

University of South Florida (USA)

Laboratoire Arago, Banyuls-sur-Mer (France)

Scripps Institution of Oceanography, University of California San Diego (USA)
Observatoire Océanologique de Villefranche-sur-Mer (France)
Institute of Molecular Genetics, Czech Academy of Sciences (Prague)

TEACHING ACTIVITY

Professor in Biological Sciences and Biotechnology graduate degree, and for the second level degree in Applied and Experimental Biology of the following courses: Cytology and Histology, Cell and Developmental Biology, Developmental Biology, Biological Evolution, Comparative Genomics, Cytology and Forensic Histology, Neuro-Evo-Devo, Evolution of Marine Vertebrates at the Faculty of Sciences of the University of Genoa.

TEACHING ACTIVITY IN INTERNATIONAL SCHOOLS

11-13 May 2012: International school organized by UZI and Istituto Veneto di Scienze, Lettere e Arti, Venezia on "DEVELOPMENT OF THE NERVOUS SYSTEM: A COMPARATIVE AND BEHAVIORAL APPROACH", lecture entitled: "microRNAs in neural development".

31 July-06 August: Practical seminars on in situ hybridization techniques applied to the amphioxus model for members of the Transcriptional Regulation Department of the Institute of Molecular Genetics in Prague.

SUPERVISOR AND TUTORING ACTIVITY

Tutors and co-tutor of more than 70 thesis of first level and second level; tutor of several PhD thesis (16) and of research fellows (8). Member of several PhD examining commissions both national and international.

GRANTS AS PRINCIPAL INVESTIGATOR OF NATIONAL RESEARCH PROJECTS

2001-2002 Funding for single/young researchers

2011-2012 University Research Project (PRA 2011). Title: "Functional role of synapsins in zebrafish *Danio rerio*".

2012-2013 University Research Project (PRA 2012). Title: "Pedomorphosis phenomena in the adaptive radiation of Antarctic teleosts: Development of the lateral line system in *Pleuragramma antarcticum*".

2017-2019 Research project funded by the Italian Association of Alexander Syndrome "More Unique than Rare". Title: "zebrafish as a new model to study Alexander disease"

2019-2021 Research Project funded by the Italian Alexander Syndrome Association "More Unique than Rare". Title: "Creations of transgenic zebrafish models for the study of Alexander's disease and their molecular characterization"

2021-2023 Research Project funded by the Italian Alexander Syndrome Association " Study of transgenic zebrafish models for the study of Alexander's disease"

2025-2027 PRIN 2022: NoDe: The impact of anthropogenic noise on marine invertebrate deuterostomes: development, behavior and resilience. (Genoa PI unit).

GRANTS AS PI OF INTERNATIONAL RESEARCH PROJECTS

2011-2012 ASSEMBLE project (EU FP7 research infrastructure initiative comprising a network of marine research stations) at the Observatoire Oceanologique de Banyul sur mer Laboratoire Aragò, France. Project title: "microRNAs in the neural development of amphioxus".

2016-2017 CORBEL project (Horizon H2020: <http://www.corbel-project.eu/success-stories.html>) entitled "Involvement of lin-28 and let-7 in the neural development of amphioxus".

2017-2018 ASSEMBLE PLUS project at the Observatoire oceanologique de VilleFrance sur mer, France. Project title: "Development of neuroglia in amphioxus"

2020-2021 ASSEMBLE PLUS project at the Observatoire oceanologique de VilleFrance sur mer, France, Project title: "Locomotor Control in Amphioxus Larvae"

2022-2025: European Project: JPI Oceans: <https://www.jpi-oceans.eu/en/turning-volume-five-new-projectsunderwater-noise-marine-environment-awarded-funding>. Title: DeuteroNoise Characterization of maritime noise in different European basins and its impact on ecological relevant deuterostome invertebrates-PI: University of Padua (Italy).

GRANTS AS PARTICIPANTS

2001-2004 MIUR-FIRB (protocol N. RBAU01WAFY): "POU genes in the differentiation of the nervous system of proto-chordates"

2002-2004 MIUR-PRIN (protocol N.2002055187): "Neurotransmitters as signal molecules in the development and differentiation of the nervous system"

2004-2006 MIUR-PRIN (protocol No. 2004057732): "Role of neurotransmitters in neural development and differentiation in different experimental models: molecular, functional and evolutionary aspects"

2006-2008 MIUR-PRIN (protocol No. 2006058952): "Transcription factors and neurotransmitters in neural differentiation: molecular, functional and evolutionary aspects"

2008-2010 MIUR-PRIN (protocol No. 20088JEHW3_001): "MicroRNAs in neuronal gene regulation in chordate amphioxus invertebrate".

2013-2015 Research Project funded by the Carige Foundation in collaboration with prof. E. Marcenaro and A. Moretta of DIMES, University of Genoa entitled: "Analysis of the role of microRNAs in the differentiation of human NK cell subpopulations".

2018-2021 Research project funded by AIRC (IG 2017 Id. 20312): "Checkpoint inhibitors regulate anti-tumor responses by human NK cells". PI Prof. A. Moretta of DIMES

2018-2024 Research project funded by AIRC 5x1000 "Immunity in Cancer Spreading and Metastasis (ISM)" (n. 21147) PI Prof. A. Moretta of DIMES.

2020-2022 Research Project funded by the San Paolo Foundation (ROL. N. 32638) in collaboration with prof. Lemoli, IRCCS San Martino Polyclinic Hospital and Prof. E. Marcenaro. Title: "Adoptive immunotherapy and checkpoint inhibitors for the treatment of relapsed/refractory Hodgkin's lymphoma: anti-neoplastic role of NK cells".

2021-2026: AIRC IG 2021 (Id. 26037). Titolo: "Understanding the role of NK cells in checkpoint blockade immunotherapy for treatment of breast and gynecologic cancers".

2023-2026: Telethon: Role of TGDS in Catel-Manzke syndrome". PI: Michela Tonetti "Multiround 21-24 – Round 1 2022 Track Basic" n. GMR22T1065.

2024-2026: SINISA (FILSE): The project is coordinated by Dedalus Italia s.p.a., with the participation of Leonardo s.p.a., Genartis s.r.l., Rulx Innovation Labs s.r.l., CherryChain s.r.l. and Vis (ETT Group), Asl5 of La Spezia, and University of Genoa.

HONORS AND AWARDS FOR SCIENTIFIC ACTIVITY

-Invited author of a chapter entitled "Detection of mRNA and microRNA expression in basal chordates, amphioxus and ascidians, in Neuromethods, Springer, vol. 99 (2015), pp. 279-292.

-Invited author a chapter entitled: "Cephalochordate Nervous System" In: Murray Sherman S. Oxford Research Encyclopedia of Neuroscience. p. 1-36, New York: Oxford University Press.

-Author of some of the most cited articles in the field of developmental biology of amphioxus:1. Holland et al. 2008. The amphioxus genome illuminates vertebrate origins and cephalochordate biology. *Genome Research* 18, 1380; it is one of the most cited works in the field of the study of amphioxus (scopus citations: 441). 2.Kozmik et al., 2007. Pax-Six-Eya-Dach network during amphioxus development: Conservation in vitro but context specificity in vivo. *Developmental Biology* 306, 143-159 (scopus citations: 152).

- 01/2006 to 12/2007: participation in the annotation of the genome of the amphioxus in collaboration with the DOE Joint Genome Institute (CA, USA) and Dr. N. Putnam.

-2025: participation in the Phase I Vertebrate Genomes Project (VGP) assembly in collaboration with Vertebrate Genome Lab of The Rockefeller University and Dr. Giulio Formenti.

MEMBERSHIPS

Since 2006 member of the Governing Council of the “GEI-Società Italiana di Biologia dello Sviluppo e della Cellula” and since 2011 member of the Italian Zoological Union (UZI).

Since 2021 member of the Accademia Ligure di Scienze e Lettere (<http://www.accademialigurediscienzelettere.it/>).

Member of international PhD examination panel at the Observatoire Oceanologique, Laboratoire de biologie du développement, evoinside team, Villefranche-sur-mer, France.

EDITORIAL ACTIVITY

- 1.Review Editor for *Frontiers Neurophysiology*
- 2.Review Editor for *Frontiers in Cell and Developmental Biology*
3. Review Editor for *Frontiers in Ecology and Evolution*
4. Member of Topics Board for the journal “Cells”, MDPI
6. Member of the Editorial Committee of Genova University Press (GUP)
<https://gup.unige.it/node/45>.
7. Guest editor for special issue on “Neuronal Differentiation and Development” organized by Cells from MDPI

REVIEWER ACTIVITY FOR THE FOLLOWING JOURNALS

Journal of the Marine Biological Association of the United Kingdom; *Acta Biochimica et Biophysica Sinica*; *Cell and Tissue Research*; *BMC Microbiology*; *BMC Evolutionary Biology*; *Gene*; *Molecular Biology*; *Evolution and Development*; *Molecular Neurobiology*; *PlosOne*; *BMC Developmental Biology*; *Journal of Comparative Neurology*; *Scientific Reports*; *International Journal of Molecular Biology*; *Brain Sciences*; *International Journal of Environmental Research and Public Health*; *Genes*; *International Journal of Molecular Sciences*, *Frontiers in Ecology and Evolution*; *Cells*, *Development*. Reviewer for PRIN and FIRB projects. Reviewer of two research projects within the French National Research Agency ANR.

BIBLIOMETRIC INDICATORS

She is author of 105 papers on international journals.

H-index (Scopus): 26, Total citations (Scopus): 2449.

H-index (Scholar): 31, i10-index:73, Total citations (Scholar): 3256

ORCID: <https://orcid.org/0000-0002-4453-5475>

SOME RELEVANT PUBLICATIONS:

1. Bellitto D, Bozzo M, Ravera S, Bertola N, Rosamilia F, Milia J, Barboro P, Vargas GC, Di Lisa D, Pastorino L, Lantieri F, Castagnola P, Iervasi E, Ponassi M, Profumo A, Tkachenko K, Rosano C,

- Candiani S*, Bachetti T. A multi-omics approach reveals impaired lipid metabolism and oxidative stress in a zebrafish model of Alexander disease. *Redox Biol.* 2025;81:103544. *corresponding author
2. Coppola MR, Bellitto D, Asgari E, Bazzurro V, Casucci G, Piacente F, Bozzo M, Ceresa D, Parisi C, Winata C, Candiani S*, Tonetti M*. Zebrafish as a model for Catel-Manzke syndrome-identification and characterization of the zebrafish TGDS ortholog. *FEBS J.* 2025 Oct 29. doi: 10.1111/febs.70307. * corresponding author
3. Guarneri I, Bozzo M, Perez Criado N, Serafini E, Manfè G, Tagliapietra D, Fiorin R, Scapin L, Povero P, Bellitto D, Ferrando S, Amaroli A, Castellano L, Pestarino M, Schubert M, Candiani S. *Amphioxus* (*Branchiostoma lanceolatum*) in the North Adriatic Sea: ecological observations and spawning behavior. *Integr Zool.* 2025 Mar;20(2):331-343.
4. Bozzo M, Serafini E, Rosa G, Bazzurro V, Amaroli A, Ferrando S, Schubert M, Candiani S. The Expression of Shmt Genes in *Amphioxus* Suggests a Role in Tissue Proliferation Rather than in Neurotransmission. *Cells.* 2025;14(14):1071. doi: 10.3390/cells14141071.
5. Bozzo M, Lacalli TC, Obino V, Caicci F, Marcenaro E, Bachetti T, Manni L, Pestarino M, Schubert M, Candiani S. *Amphioxus* neuroglia: Molecular characterization and evidence for early compartmentalization of the developing nerve cord. *Glia.* 2021, 69(7):1654-1678.
6. Patrizia Perri P, Ponzoni M, Corrias MV, Ceccherini I, Candiani S, Bachetti T. A Focus on Regulatory Networks Linking MicroRNAs, Transcription Factors and Target Genes in Neuroblastoma. *Cancers (Basel).* 2021, 13(21):5528.
7. Candiani S, Carestiato S, Mack AF, Bani D, Bozzo M, Obino V, Ori M, Rosamilia F, De Sarlo M, Pestarino M, Ceccherini I, Bachetti T. Alexander Disease Modeling in Zebrafish: An In Vivo System Suitable to Perform Drug Screening. *Genes (Basel).* 2020, 11(12):1490.
8. Corallo,D, Donadon,M, Pantile,M, Sidarovich,V, Cocchi,S, Ori,M, De Sarlo,M, Candiani,S, Frasson,C, Distel,M, Quattrone,A, Zanon,C, Basso,G, Tonini,GP, Aveic,S. LIN28B increases neural crest cell migration and leads to transformation of trunk sympathoadrenal precursors. *Cell Death Differ* 2020. 27(4):1225-1242.
9. Pesce,S, Squillario,M, Greppi,M, Loiacono,F, Moretta,L, Moretta,A, Sivori,S, Castagnola,P, Barla,A ‡, Candiani,S ‡, Marcenaro,E ‡. New miRNA Signature Heralds Human NK Cell Subsets at Different Maturation Steps: Involvement of miR-146a-5p in the Regulation of KIR Expression. *Front Immunol.* 2018, 9:2360. ‡ *senior authorship*.

Genova, 18/02/2025



According to law 679/2016 of the Regulation of the European Parliament of 27th April 2016, I hereby express my consent to process and use my data provided in this CV.