
BIOGRAPHICAL SKETCH

NAME: **Sabrina Carrella**

POSITION TITLE: **Tenured Researcher** III level; 1/12/2021-present

Ecosustainable Marine Biotechnology Department, Stazione Zoologica Anton Dohrn, Napoli (Italy)

ORCID ID: 0000-0002-3302-1698

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	YEAR	FIELD OF STUDY
University of the Study of Naples Federico II, Naples, Italy	Bachelor degree	07/2006	Biology
University of the Study of Naples Federico II, Naples, Italy	Master of Science degree	07/2008	Molecular Biology
University of the Study of Naples Federico II, Naples, Italy	PhD	12/2012	Molecular Medicine
Telethon Institute of Genetics and Medicine (TIGEM), Pozzuoli (NA) and University of Campania Luigi Vanvitelli, Naples, Italy	Postdoctoral Associate Researcher	2013-2021	Molecular Medicine
Stazione Zoologica Anton Dohrn, Naples, Italy	Tenured Researcher	2021-present	Marine Biotechnology

A. Personal Statement

In my career I focus my attention on the study of the functional role of microRNAs in vertebrates, contributing to the identification and characterization of the roles of specific microRNAs in vertebrate eye and at the identification of strategies of miRNAs modulation as possible RNA-therapeutics. I'm also an inventor of the "mir-181 inhibitors and uses thereof" patent (WO/2019/202162). In 2020, I have been awarded with three grant projects (as PI, from the BrightFocus Foundation and AFM-Telethon, and as Co-PI from the VeluxStiftung Foundation) that aimed at developing RNA-based approaches targeting miRNAs. In these projects I also supervised the work of Post-doc fellows, PhD students, master students and technicians. In December 2021, I won the competition for tenured researcher and started my own independent team as PI at the new biotechnology department of the Stazione Zoologica Anton Dohrn (SZN). In this role I'm establishing a novel research line centered on the study of marine miRNA roles and the possibility to use them as modulators of metabolic pathways in biotechnologies. In this respect, I won an SZN internal competition for a PhD fellowship (SZN-OU PhD Fellowship 2022-2025) and four competitive projects as PI (PRIN 2022, AFM-Telethon TG2023, Bando a Cascata PNRR 2024 "SEA SIGHT") and as Co-PI (PRIN-PNRR 2022). My group is constituted by a PhD student, a graduated fellow, two post-docs and an undergraduate student. In 2023, I became the Coordinator of the PhD program at SZN. In my working life I have had two career breaks for maternity leave (June-October 2016 and January-June 2019).

B. Positions, Scientific Appointments, and Honors

Positions and Employment

2009 - 2012	PhD Student, TIGEM and University of the Studies of Naples Federico II, Naples, Italy
2013 - 2014	MIUR Post-Doctoral Fellowship, TIGEM, Naples, Italy
2014 - 2015	Post-Doctoral Fellow, TIGEM, Naples, Italy
2015 – 2019	Post-Doctoral Associate, University of Campania Luigi Vanvitelli and TIGEM, Naples, Italy
2021-present	Tenured Researcher, Stazione Zoologica Anton Dohrn, Naples, Italy
2022-present	Director of studies for Gabriele De Falco, PhD program Open University-SZN, Naples (Italy)
2023-present	Coordinator of the SZN PhD Program

2023-present Principal Investigator in four Grants, and Co-Principal Investigator in one Grant
 2023-2034 National scientific qualification (Abilitazione Scientifica Nazionale) to function as associate professor in Applied Biology (05/F1) in Italian Universities, from December 2023 to December 2034.

Honors

2008 Winner of PhD Fellowship, European School of Molecular Medicine (SEMM)
 2010 Graziella Persico Travel Award, Institute of Genetics and Biophysics "A. Buzzati-Traverso" – CNR Naples
 2010 ESHG Young Investigator Award, Scientific Programme Committee at European Human Genetics Conference 2010
 2013 Winner of two-year fellowship, MIUR and TIGEM
 2015 Winner of three-years Research Associate fellowship, Università della Campania Luigi Vanvitelli and TIGEM
 2019 Winner of one-year Research Associate Fellowship Università della Campania Luigi Vanvitelli and TIGEM
 2021 Winner of tenured researcher position at the "Stazione Zoologica-Anton Dohrn" in Naples, Italy

FUNDINGS

Ongoing:

- "MicroRNAs-mediated environmental adaptation in marine microalgae: from physiological responses to biotechnology applications". SZN-OU PhD Fellowship. Funding period: 1/10/2022-30/9/2025 (Role: Director of the Studies)
- Italian Ministry of University and Research (MUR). Projects of Relevant National Interest (PRIN) 2022. "Mitochondrial Dynamic Modulators from the Seas". Funding period: 14/10/2023-13/10/2025 (Role: Principal Investigator)
- AFM-Telethon (Trampoline grant) 2023. "OxymiRs modulation as gene-independent therapeutic approach in rare mitochondrial diseases." Funding period: 10/10/2023- 10/4/2025 (Role: Principal Investigator)
- Italian Ministry of University and Research (MUR). Projects of Relevant National Interest (PRIN)-PNRR 2022. "Development of an innovative combinatorial therapy to tackle age-related macular degeneration". Funding period: 1/12/2023-30/11/2025 (Role: Co- Principal Investigator)
- Italian Ministry of University and Research (MUR). Bando a Cascata PNRR a valere sui fondi dello Spoke 1 "National Center for Gene Therapy and Drugs based on RNA Technology". "FROM THE SEA FOR THE SIGHT: IDENTIFICATION OF NOVEL RNA MOLECULES TO TACKLE RETINAL DISEASES (SEA SIGHT)" Funding period: 1/8/2024-31/7/2025 (Role: Principal Investigator)

Completed:

- "AAV-Sponge-mediated modulation of microRNA-181a/b: a potential therapeutic approach for Inherited Retinal Disease." Foundation Fighting Blindness. Funding period: 1/6/19-31/5/22. Role: Participant
- "miR-181a/b modulation as potential therapeutic approach for AMD treatment" BrightFocus Foundation. Funding period: 1/11/20-31/10/22. Role: Principal Investigator
- "MicroRNA expression modulation: a new therapeutic avenue for Inherited Retinal Diseases" Velux Stiftung Foundation. Funding period: 1/11/20-31/10/23. Role: Co-Principal Investigator
- "CRISPR/Cas9 microRNAs Editing as gene-independent therapeutic approach in Inherited Retinal Dystrophies (IRDs)" AFM-Telethon Trampoline grant. Funding period: 1/12/20-30/11/21. Role: Principal Investigator

C. Contributions to Science

PUBLICATIONS

1. Conte I, **Carrella S**, Avellino R, Karali M, Marco-Ferreres R, Bovolenta P, Banfi S. (2010) "miR-204 is required for lens and retinal development via Meis2 targeting." *Proc Natl Acad Sci U S A* 107: 15491-15496 (2022-2023 Journal's Impact IF = 12.779)
2. R. Avellino, **S. Carrella**, M. Pirozzi, M. Risolino, Salierno FG, P. Franco, P. Stoppelli, P. Verde, S. Banfi, I. Conte (2013) "miR-204 targeting of Ankrd13A controls both mesenchymal neural crest and lens cell migration" *PLoS One* 8: e61099 (2022-2023 Journal's Impact IF = 3.7)
3. Poulter JA, Al-Araimi M, Conte I, van Genderen MM, Sheridan E, Carr IM, Parry DA, Shires M, **Carrella S**, Bradbury J, Khan K, Lakeman P, Sergouniotis PI, Webster AR, Moore AT, Pal B, Mohamed MD, Venkataramana A, Ramprasad V, Shetty R, Saktivel M, Kumaramanickavel G, Tan A, Mackey DA, Hewitt AW, Banfi S, Ali M, Inglehearn CF, Toomes C. (2013) "Recessive Mutations in SLC38A8 Cause Foveal Hypoplasia and Optic Nerve Misrouting without Albinism." *Am J Hum Genet* 93: 1143-1150 15496 (2022-2023 Journal's Impact IF = 11.043)
4. Ivan Conte, Stefania Merella, Jose Manuel Garcia Manteiga, Chiara Migliore, Dejan Lazarevic, **Sabrina Carrella**, Raquel Marco-Ferreres, Raffaella Avellino, Davidson Nathan Paul, Warren Emmett, Remo Sanges, Nicholas Bockett, David Van Heel, Germana Meroni, Paola Bovolenta, Sandro Banfi, Elia Stupka. (2014) "The combination of transcriptomics and informatics identifies pathways targetted by miR-204 during neurogenesis and axon guidance". *Nucleic Acids Res* 42: 7793-7806. 15496 (2022-2023 Journal's Impact IF = 19.16)
5. **Sabrina Carrella**, Ylenia D'Agostino, Sara Barbato, Sabina P. Huber-Reggi, Francesco Giuseppe Salierno, Anna Manfredi, Stephan C.F. Neuhauss, Sandro Banfi, Ivan Conte (2015). "miR-181a/b control the assembly of visual circuitry by regulating retinal axon specification and growth". *Dev Neurobiol* 75: 1252-1267. (2022-2023 Journal's Impact IF = 3.10)
6. Ivan Conte, Kristen D Hadfield, Sara Barbato, **Sabrina Carrella**, Mariateresa Pizzo, Louise F Porter, Sofie Hateley, James O'Sullivan, Forbes Manson, Stephan C.F. Neuhauss, Sandro Banfi, Graeme C M Black (2015). "MiR-204 is responsible for inherited retinal dystrophy associated with ocular coloboma". *Proc Natl Acad Sci U S A* 112: E3236-3245. (2022-2023 Journal's Impact IF = 12.779)
7. **Sabrina Carrella**, Sara Barbato, Ylenia D'Agostino, Francesco Giuseppe Salierno, Anna Manfredi, Sandro Banfi, Ivan Conte (2015). "TGF- β controls miR-181/ERK regulatory network during retinal axon specification and growth." *PlosOne* 10(12):e0144129. (2022-2023 Journal's Impact IF = 3.7)
8. Alessia Indrieri†, **Sabrina Carrella†**, Alessia Romano, Alessandra Spaziano, Elena Marrocco, Erika Fernandez-Vizarra, Sara Barbato, Mariateresa Pizzo, Yulia Ezhova, Francesca M. Golia, Ludovica Ciampi, Roberta Tammaro, Jorge Henao-Mejia, Adam Williams, Richard A. Flavell, Elvira De Leonibus, Massimo Zeviani, Enrico M. Surace, Sandro Banfi*, Brunella Franco*. "miR-181a/b downregulation exerts a protective action on Mitochondrial Disease models". *EMBO Molecular Medicine*, 2019 † co-first authors; *co-corresponding authors (2022-2023 Journal's Impact IF = 14)
9. Alessia Indrieri, **Sabrina Carrella**, Pietro Carotenuto, Sandro Banfi and Brunella Franco. "The Pervasive Role of the miR-181 Family in Development, Neurodegeneration, and Cancer." *Int J Mol Sci.* 2020 (2022-2023 Journal's Impact IF = 5.6)
10. **Sabrina Carrella***, Alessia Indrieri, Brunella Franco, Sandro Banfi*. "Mutation-Independent Therapies for Retinal Diseases: Focus on Gene-Based Approaches". *Front Neurosci.* 2020 *co-corresponding authors (2022-2023 Journal's Impact IF = 4.3)
11. **Sabrina Carrella***, Sandro Banfi*, Marianthi Karali *. "Sophisticated gene regulation for a complex physiological system: the role of non-coding RNAs in photoreceptor cells". *Front Cell Dev Biol.* 2021 *co-corresponding authors (2022-2023 Journal's Impact IF = 6.08)
12. Anna Barbato, Antonella Iuliano, Mariagrazia Volpe, Romina D'Alterio, Simona Brillante, Filomena Massa, Rossella De Cegli, **Sabrina Carrella**, Massimiliano Salati, Annapina Russo, Giulia Russo, Sara Riccardo, Davide Cacchiarelli, Mariaelena Capone, Gabriele Madonna, Paolo A. Ascierto, Brunella Franco, Alessia Indrieri and Pietro Carotenuto. "Integrated Genomics Identifies miR-181/TFAM Pathway as a Critical Driver of Drug-resistance in Melanoma" *Int. J. Mol. Sci.* 2021 (2022-2023 Journal's Impact IF = 5.6)
13. **Sabrina Carrella***, Filomena Massa, Alessia Indrieri*. "microRNAs in mitochondrial-related eye diseases" *Front Cell Dev Biol.* 2021 *co-corresponding authors (2022-2023 Journal's Impact IF = 6.08)

14. Brillante S, Galasso C, Lauritano C, **Carrella S***. From the Sea for the Sight: Marine Derived Products for Human Vision. *Front Aging Neurosci.* 2022 May 9;14:892764. doi: 10.3389/fnagi.2022.892764. PMID: 35615590; PMCID: PMC9124809. (*corresponding author) (2022-2023 Journal's Impact IF =5.7)
15. Ciampi L, Mantica F, López-Blanch L, Permanyer J, Rodriguez-Marín C, Zang J, Cianferoni D, Jiménez-Delgado S, Bonnal S, Miravet-Verde S, Ruprecht V, Neuhaus SCF, Banfi S, **Carrella S**, Serrano L, Head SA, Irimia M. Specialization of the photoreceptor transcriptome by Srrm3-dependent microexons is required for outer segment maintenance and vision. *Proc Natl Acad Sci U S A.* 2022 Jul 19;119(29):e2117090119. doi: 10.1073/pnas.2117090119. Epub 2022 Jul 12. PMID: 35858306; PMCID: PMC9303857. (2022-2023 Journal's Impact IF = 12.779)
16. Nocera GM, Viscido G, Criscuolo S, Brillante S, Carbone F, Staiano L, **Carrella S**, di Bernardo D. The VersaLive platform enables microfluidic mammalian cell culture for versatile applications. *Commun Biol.* 2022 Sep 29;5(1):1034. doi: 10.1038/s42003-022-03976-8. Erratum in: *Commun Biol.* 2022 Oct 13;5(1):1090. PMID: 36175545; PMCID: PMC9522807. (2022-2023 Journal's Impact IF =5.9)
17. **Carrella S***, Di Guida M, Brillante S, Piccolo D, Ciampi L, Guadagnino I, Garcia Piqueras J, Pizzo M, Marrocco E, Molinari M, Petrogiannakis G, Barbato S, Ezhova Y, Auricchio A, Franco B, De Leonibus E, Surace EM, Indrieri A, Banfi S*. miR-181a/b downregulation: a mutation-independent therapeutic approach for inherited retinal diseases. *EMBO Mol Med.* 2022 Oct 4:e15941. doi: 10.15252/emmm.202215941. Epub ahead of print. PMID: 36194668. (*co-corresponding authors) (2022-2023 Journal's Impact IF = 14)
18. Gabriele De Falco, Chiara Lauritano and **Sabrina Carrella***. “MicroRNA-Mediated Responses: Adaptations to Marine Extreme Environments” *J. Mar. Sci. Eng.* 2023, 11(2), 361; <https://doi.org/10.3390/jmse11020361> (2022-2023 Journal's Impact IF =2.7)
19. Chiara Lauritano, Eleonora Montuori, Gabriele De Falco and **Sabrina Carrella**. “In Silico Methodologies to Improve Antioxidants’ Characterization from Marine Organisms”. *Antioxidants* 2023, 12(3), 710; <https://doi.org/10.3390/antiox12030710> (2022-2023 Journal's Impact IF =7.6)
20. Rhea Subba, Gianluca Fasciolo, Eugenio Geremia, Maria Teresa Muscari Tomajoli, Adriana Petito, **Sabrina Carrella**, Amal Chandra Mondal, Gaetana Napolitano, Paola Venditti. “Simultaneous induction of systemic hyperglycaemia and stress impairs brain redox homeostasis in the adult zebrafish”. *Arch Biochem Biophys* 2024 Jul 18:759:110101. doi: 10.1016/j.abb.2024.110101 (2022-2023 Journal's Impact IF =3.8)

OTHER:

- Supervision: 2012- present: 4 Post-docs, 3 PhD students, 3 Technicians, 5 Master students
- Lecturer: Lecturer for the specialistic course “miRNAs in mitochondrial diseases” of second year in the PhD program at TIGEM; Lecturer in the Research Training workshop as part of an “Innovative Training Network” grant. Title of the course: “Implementation of Novel Therapies for IRD”; Lecturer in the course “Marine Genomics – Module of Marine Genomics” at Federico II University. Title of the lesson: “non-coding RNAs in marine organisms”
- Participations to congresses: 12 oral presentations as main author and >35 abstracts
- Patent: "mir-181 inhibitors and uses thereof" (WO/2019/202162) 20th of April, 2018
- Reviewer activity: Molecular Therapy, Frontiers in Marine Science, Biotechnology Advances, MDPI (International Journal of Molecular Science, Genes, Pharmaceuticals and Cells), Inflammation Research and European Journal of Neuroscience
- Topic Editor: Research Topic “Rare and common neurodegenerative retinal diseases: from molecular mechanisms to the identification of novel mutation-independent therapeutic strategies”. Frontiers In Aging Neuroscience
- Coordinator of the SZN PhD Program (Decreto del Presidente n. 141/2023 del 13/10/2023)
- External member of the thesis committee in the PhD program at Centre for Genomic Regulation (CRG) in Barcelona. Student name: Dr Ludovica Ciampi, Title of the thesis project: “MIRAS: bringing the Microexons Retina-specific Alternative Splicing program to light”
- Member of the examining commission for the public competition number IRGB/AR/002/2021MI; Project: SAC.AD002.020.031, and for the public competition number IRGB/AR/008/2022MI; Project: PRIN 2020 2020XBCMhJ - CUP B49I22000550006; at IRGB- Istituto di Ricerca Genetica e Biomedica (CNR)
- Member of the Technical-Scientific Committee of the Marine Library of Stazione Zoologica Anton Dohrn (Decreto del Presidente n. 16 del 18.02.2022)

- Member of the Commission for the evaluation of PhD candidates for the XXIV cycle of the PhD Open University program - Zoological Station (Decreto del Presidente n. 62 del 10.06.2022)
- Scientific Member of Organismo per il Benessere Animale (OPBA) TIGEM for the retrospective evaluation of the research project 7B56B.0 (Aut. Min n. n° 598/2017-PR del 24/7/2017) "Generazione di modelli di malattie metaboliche ereditarie nel Medaka fish" (resp. prof. Nicola Pierri-Brunetti)
- Member of the Commission for the evaluation of projects and of PhD candidates for the XXV cycle of the PhD Open University program - Zoological Station and for the XXXIX cycle of doctoral programs in agreement with other universities (Decreto del Presidente n. 67/2023 del 29/03/2023)
- President of the Commission for the evaluation of projects and of PhD candidates for the XXVI cycle of the PhD Open University program - Zoological Station and for the XL cycle of doctoral programs in agreement with other universities (Decreto del Presidente n. 7/2024).
- Member of the examining commission for the public competition number Postdoctoral research fellowship AR 43_2023, Postdoctoral research fellowship AR 6_2024, research fellowship BR 5_2024 (Decreti del Direttore Generale 7/2024; 83/2024; 175/2024)
- Secretary of the public competition 15/2022, published in the Official Gazette of the Italian Republic IV special series n. 65 of 16 August 2022 (Decreto del Presidente n. 49/2023 del 22/02/2023)
- Internal examiner member of research degree student Miss Martina Blasio (Student number: 11892958) Thesis title: Production and Biosynthesis of Secondary Metabolites from *Nannochloropsis Oceanica* (Eustigmatophyceae). Supervisors: Dr Sergio Balzano, Dr Christophe Brunet and Prof Stefan Schouten
- Dissemination activities: From 2014 to 2019, Scientific dissemination at TIGEM laboratories to schools and/or to civil society; December 5th 2015, Participation at "Il non vedente del terzo millennio" Convention, Naples, Italy; December 21st 2018, Scientific dissemination about Retinitis Pigmentosa at "Uno Mattina", Studi Rai, Rome, Italy; Scientific dissemination at SZN laboratories at Molosiglio to schools, Futuro Remoto 2023, Città della Scienza
- 2019-2020: Member of Association for research Vision and Ophthalmology (ARVO)
- 2015-2016: Member of American Society of Cell Biology
- 2024: Member of SIBE (Società Italiana di Biologia Evoluzionistica)
- June-October 2016: Maternity leave
- January-June 2019: Maternity leave

MAJOR COLLABORATIONS

Alessia Indrieri, TIGEM and CNR, Pozzuoli, Italy. Projects: "miR-181a/b in optic neuropathies"; "miR-181a/b modulation as potential therapeutic approach for AMD treatment"; "Oxymirs modulation as gene-independent therapeutic approach in rare mitochondrial diseases."

Ivana Trapani, TIGEM and UNINA, Italy. Project: "Development of an innovative combinatorial therapy to tackle age-related macular degeneration".

Simone Di Paola, CNR, Italy. Project: "Mitochondrial Dynamic Modulators from the Seas"

Salvatore D'Aniello and Serena Mirra; Stazione Zoologica Anton Dohrn, Italy. Project: "FROM THE SEA FOR THE SIGHT: IDENTIFICATION OF NOVEL RNA MOLECULES TO TACKLE RETINAL DISEASES (SEA SIGHT)"

Sandro Banfi, TIGEM, Pozzuoli, Italy. Projects: "AAV-Sponge-mediated modulation of microRNA-181a/b: a potential therapeutic approach for Inherited Retinal Disease."; "MicroRNA expression modulation: a new therapeutic avenue for Inherited Retinal Diseases"; "Systematic search for microRNAs that play a role in photoreceptor degeneration"

Chiara Lauritano, Stazione Zoologica Anton Dohrn, Italy. Project: "Microalgae secondary metabolites to be applied in skin care"

Pietro Tedesco, Stazione Zoologica Anton Dohrn, Italy. Analysis of marine lasso peptides effects on human cancer cell lines.

Donatella de Pascale and Gerardo Della Sala, Stazione Zoologica Anton Dohrn, Italy. Collaboration in the context of the PRIN 2022 project "MITOSEAs"

Maria Vittoria Modica, Stazione Zoologica Anton Dohrn, Italy. Collaboration in the context of the PRIN 2022 PNRR project "TRADE"