

BIOGRAPHICAL SKETCH

NAME: Nicola Facchinello

POSITION TITLE: Associate Professor - Department of Pharmacy and Biotechnology (FaBiT)
University of Bologna

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
University of Padova, Italy	B.Sc	11/10/2006	Biotechnology
University of Padova, Italy	Ph.D	17/03/2010	Cell biology, Developmental biology, Functional genomics

A. Personal Statement

I am a Associate Professor at the University of Bologna and associate researcher with Neuroscience Institute (CNR) in Padova with over 14 years of experience in the field of cell biology, mouse and zebrafish manipulation, and a deep interest in human disorders. During my scientific career, I have authored 41 full-length publications in peer-reviewed journals, including prestigious ones such as Nature Metabolism, Journal of Cell Biology, and PNAS. My current H-index is 17, and my ORCID is 0000- 0003-4898-4064.

Currently, I serve as a Guest Editor at IJMS and Frontiers, overseeing Special Issues focused on Zebrafish as a Model in Human Disease. Over the last seven years, my research has been centered on investigating a wide range of mechanisms involved in neural, cardiovascular, muscular, cancer, and endocrine development. In particular, I have been utilizing CRISPR-based technology in zebrafish models to study the molecular mechanisms and pathophysiology of various disorders and also neurodevelopmental disorders. My expertise has allowed me to effectively merge CRISPR-Cas9 techniques with pathwayresponsive zebrafish lines and advanced imaging techniques. This combination has provided detailed insights into developmental and physio-pathological processes.

With my extensive training, expertise, and unwavering motivation, I am well-prepared to lead the proposed collaborative project. In recognition of my work, I was awarded fellowships by the Italian Veronesi Foundation in 2020 and 2021, Telethon and as a team Member in the following international project: HORIZON-EIC-2022-PATH FINDER CHALLENGES “Cardiogenomics meets Artificial Intelligence: a step forward in arrhythmogenic cardiomyopathy diagnosis and treatment” (Project 101115536-IMPACT).

B. Positions, Scientific Appointments, and Honors

Positions and Scientific Appointments

From 07/10/2024	Associate Professor in genetics at the University of Bologna
From 02/11/2022	Senior Researcher (III Level) at CNR (National Research Council), Institute of Neuroscience
2021- 30/10/2022	Post-Doc Fellow Laboratory of Matrix Biology and Functional Genomics (Department of Molecular Medicine). Supervisor Prof. Paolo Bonaldo
2018-2020	Post-Doc Fellow Laboratory of angiogenesis and redox metabolism (University of Padova, Department of Biology). Supervisor Prof. Massimo Santoro
2016-2017	Post-Doc Fellow Laboratory of Genetics and Developmental Molecular Biology, University of Padova (Department of Biology). Supervisor Prof. Natascia Tiso
2014-2015	Post-Doc Fellow Laboratory of Comparative Endocrinology, University of Padova, (Department of Biology). Supervisor Prof.ssa Luisa Dalla Valle
2010-2014	Post-Doc Fellow Laboratory of Genetics and Developmental Biology, University of Padova (Department of Biology). Supervisor Prof. Francesco Argenton

Honors

2024	Poster Prize ZFIM 2024 / IZM 2024, 4th Zebrafish Italian Meeting, Palermo, Italy
2022	Winner of conference award for the ZDM15 (Sheffield, England – 5-8 September 2022)
2022	Winner of conference award for the 17th IZFC International Zebrafish Conference (Montreal, Canada – 22-30 June)
2021	Post-doctoral Fellowships 2021 award from Fondazione Umberto Veronesi
2020	Post-doctoral Fellowships 2020 award from Fondazione Umberto Veronesi
2019	Winner of travel award for the 14th IZFC International Zebrafish Conference (Suzhou, China, 12-16 June 2019)
2017	Poster Prize at 2nd Joint meeting of the EASD - Islet Study Group and the Beta Cell Workshop for the abstract entitled: "Tcf7l2 plays pleiotropic roles in the control of glucose homeostasis, pancreas morphology, vascularization and regeneration".
2012	Winner of Cost Action BM0804, Title "Applying ViBE for quantitative spatial mapping of signalling activities in larval zebrafish brain".

C. Contributions to Science

My earliest papers characterized the signaling pathways involved in organ and tissue development and homeostasis in zebrafish by utilizing the novel approach of transgenic technology. With this strategy, I used several living biosensors for drug screening, phenotyping mutants and characterizing how genes work both in healthy development and disease models.

- Peron, M.; Dinarello, A.; Meneghetti, G.; Martorano, L.; **Facchinello, N.**; Vettori, A.; Licciardello, G.; Tiso, N.; Argenton, F. The stem-like Stat3-responsive cells of zebrafish intestine are Wnt/betacatenin dependent. *Development* 2020, 147
- Vettori, A.; Greenald, D.; Wilson, G.K.; Peron, M.; **Facchinello, N.**; Markham, E.; Sinnakaruppan, M.; Matthews, L.C.; McKeating, J.A.; Argenton, F., et al. Glucocorticoids promote Von Hippel Lindau degradation and Hif-1alpha stabilization. *Proc Natl Acad Sci U S A* 2017, 114, 9948-9953,
- **Facchinello, N.***; Tarifeno-Saldivia, E.; Grisan, E.; Schiavone, M.; Peron, M.; Mongera, A.; Ek, O.; Schmitner, N.; Meyer, D.; Peers, B., et al. Tcf7l2 plays pleiotropic roles in the control of glucose homeostasis, pancreas morphology, vascularization and regeneration. *Sci Rep* 2017, 7, 9605,
- **Facchinello N**, Schiavone M, Vettori A, Argenton F, Tiso N: Monitoring Wnt Signaling in Zebrafish Using Fluorescent Biosensors. *Methods Mol Biol* 2016, 1481:81-94.

Another field of interest of my research is the role of extracellular matrix and in particular the role of its components in organ physiology and pathology. During my PhD I produced transgenic and conditional knockout mouse models respectively for collagen VI and emilin1 (a member of EMILIN superfamily). The major achievements of these studies were the discovery of new mechanism in the cardiovascular and skeletal muscle systems.

- Tanelotto, V., Consorti, C., **Facchinello, N.**, Trapani, V., Sabatelli, P., Giraudo, C., Spizzotin, M., Cescon, M., Bertolucci, C., & Bonaldo, P. (2022). Collagen VI ablation in zebrafish causes neuromuscular defects during developmental and adult stages. *Matrix biology : journal of the International Society for Matrix Biology*, S0945-053X(22)00098-1.
- Carnevale, D.; **Facchinello, N.**; Iodice, D.; Bizzotto, D.; Perrotta, M.; De Stefani, D.; Pallante, F.; Carnevale, L.; Ricciardi, F.; Cifelli, G., et al. Loss of EMILIN-1 Enhances Arteriolar Myogenic Tone Through TGF-beta (Transforming Growth Factor- beta)-Dependent Transactivation of EGFR (Epidermal Growth Factor Receptor) and Is Relevant for Hypertension in Mice and Humans. *Arterioscler Thromb Vasc Biol* 2018, 38, 2484-2497,
- Litteri G, Carnevale D, D'Urso A, Cifelli G, Braghetta P, Damato A, Bizzotto D, Landolfi A, Ros FD, Sabatelli P, **Facchinello N**, Bressan GM, Lembo G. Vascular smooth muscle Emilin-1 is a regulator of arteriolar myogenic response and blood pressure. *Arterioscler Thromb Vasc Biol* 2012, 32(9):2178-2184
- Frka K*, **Facchinello N***, Del Vecchio C, Carpi A, Curtarello M, Venerando R, Angelin A, Parolin C, Bernardi P, Bonaldo P et al: Lentiviral-mediated RNAi in vivo silencing of Col6a1, a gene with complex tissue specific expression pattern. *J Biotechnol* 2009, 141(1-2):8-17.

During 2018-2020 I joined the team of Prof. Massimo Santoro, where I completed my training in the fields of metabolism and signaling in cardiovascular diseases with a particular focus to combines genetic, molecular, and metabolic approaches for studying gene function *in vitro* and *in vivo* (mouse and zebrafish models).

- **Facchinello, N.**, Astone, M., Audano, M., Oberkersch, RE., Spizzottin, M., Calura, E., Marques, M., Crisan, M., Mitro, N., Santoro, MM. Oxidative pentose phosphate pathway controls vascular mural cell coverage by regulating extracellular matrix composition. *Nat Metab* 2022, 4, 123–140
- Camillo C*, **Facchinello N***, Villari G, Mana G, Gioelli N, Sandri C, Astone M, Tortarolo D, Clapero F, Gays D, Oberkersch RE, Arese M, Tamagnone L, Valdembrì D, Santoro MM, Serini G. LPHN2 inhibits vascular permeability by differential control of endothelial cell adhesion. *J Cell Biol.* 2021 Nov 1;220(11)
- Meneghetti G, Skobo T, Chrisam M, Fontana CM, **Facchinello N**, Nazio F, Cecconi F, Bonaldo P, Dalla Valle L. Z ebrafish ambra1a and ambra1b Silencing Affect Heart Development. *Zebrafish.* 2020 Apr 22. doi: 10.1089/zeb. 2020.1860.
- Giuliodori, A.; Beffagna, G.; Marchetto, G.; Fornetto, C.; Vanzi, F.; Toppo, S.; **Facchinello, N.**; Santimaria, M.; Vettori, A.; Rizzo, S., et al. Loss of cardiac Wnt/beta-catenin signalling in desmoplakin-deficient AC8 zebrafish models is rescuable by genetic and pharmacological intervention. *Cardiovasc Res* 2018, 114, 1082-1097

In the past six years, I have studied the molecular mechanisms and the pathophysiology of a number of disorders using the toolset of CRISPR-based technologies in zebrafish models.

- Brañas Casas R, Zuppardo A, Risato G, Dinarello A, Celeghin R, Fontana C, Grelloni E, Gilea AI, Viscomi C, Rasola A, Dalla Valle L, Lodi T, Baruffini E, **Facchinello N***, Argenton F, Tiso N. Zebrafish polg2 knock-out recapitulates human POLG-disorders; implications for drug treatment. *Cell Death Dis.* 2024 Apr 20;15(4):281.
- **Facchinello N**, Laquatra C, Locatello L, Beffagna G, Brañas Casas R, Fornetto C, Martorano L, Vettori A, Risato G, Celeghin R, Meneghetti G, Dinarello A, Delahodde A, Vanzi F, Rasola A, Dalla Valle L, Rasotto M.B, Lodi T, Baruffini E, Argenton F, Tiso N, Clofilium tosylate treatment can rescue mtDNA depletion and Complex I activity in zebrafish POLG mutants. *Cell Death Disease* 2020
- Adusumilli, L*.; **Facchinello, N***; Teh, C.; Busolin, G.; Le, M.T.; Yang, H.; Beffagna, G.; Campanaro, S.; Tam, W.L.; Argenton, F., et al. miR-7 Controls the Dopaminergic/Oligodendroglial Fate through Wnt/beta-catenin Signaling Regulation. *Cells* 2020
- Meneghetti G, Skobo T, Chrisam M, **Facchinello N**, Fontana CM, Bellesso S, Sabatelli P, Raggi F, Cecconi F, Bonaldo P et al: The epg5 knockout zebrafish line: a model to study Vici syndrome. *Autophagy* 2019, 15(8): 1438-1454.
- **Facchinello, N.**; Skobo, T.; Meneghetti, G.; Colletti, E.; Dinarello, A.; Tiso, N.; Costa, R.; Gioacchini, G.; Carnevali, O.; Argenton, F., et al. nr3c1 null mutant zebrafish are viable and reveal DNA-binding-independent activities of the glucocorticoid receptor. *Sci Rep* 2017, 7, 4371,

Recently I start to investigate the cellular and molecular interactions that occur between human tumor cells and zebrafish innate immune cells by tumor xenografts with the identification of new therapies.

- Maradonna, F., Fontana, C. M., Sella, F., Giommi, C., **Facchinello, N.**, Rampazzo, C., Caichiolo, M., Hoseinifar, S. H., Dalla Valle, L., Van Doan, H., & Carnevali, O. (2022). A zebrafish HCT116 xenograft model to predict anandamide outcomes on colorectal cancer. *Cell death & disease*, 13(12), 1069.
- Codolo, G*.; **Facchinello, N***; Papa, N.; Bertocco, A.; Coletta, S.; Benna, C.; Dall'Olmo, L.; Mocellin, S.; Tiso, N.; de Bernard, M. Macrophage-Mediated Melanoma Reduction after HP-NAP Treatment in a Zebrafish Xenograft Model. *Int. J. Mol. Sci.* 2022, 23, 1644.
- Saltari, A., Dzung, A., Quadri, M., Tiso, N., **Facchinello, N.**, Hernández-Barranco, A., Garcia-Silva, S., Nogués, L., Stoffel, C. I., Cheng, P. F., Turko, P., Eichhoff, O. M., Truzzi, F., Marconi, A., Pincelli, C., Peinado, H., Dummer, R., & Levesque, M. P. Specific Activation of the CD271 Intracellular

Complete List of Published Work in PubMed:

<https://pubmed.ncbi.nlm.nih.gov/?term=facchinello+nicola>