

Valentina Brunetti

Personal Information

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Education

- ✓ **Research fellowship** at University of Pavia (Italy)
Pavia (PV), October 2025- September 2026
- ✓ **Visiting Student at University of Vermont (VT)** | United States of America (USA), Dept. of Pharmacology, Larner College of Medicine, Mark's Nelson Laboratory
Burlington (VT) February 2025-September 2025
- ✓ **PhD Program in Biomedical Sciences** | University of Pavia (Italy)
Pavia 2022- September 2026
Project Title: " Investigating membrane currents and resting membrane potential in human cerebrovascular endothelial cells: implications for neurovascular coupling mechanism".
- ✓ **MSc, Experimental and Applied Biology, Curriculum Biomedical Molecular Sciences with honors** | University of Pavia (Italy)
Pavia 2020-2022
- ✓ **BSc, Biological Sciences** | University of Pavia (Italy)
Pavia 2017 -2020

- ✓ **High School Diploma**, Classical High School Diploma | “Melchiorre Gioia” High School, Piacenza (Italy)
Piacenza 2012-2017

Publications

- 1- Mauro Vismara, Sharon Negri, Francesca Scolari, **Valentina Brunetti**, Silvia Maria Grazia Trivigno, Pawan Faris, Luca Galgano, Teresa Soda, Roberto Berra-Romani, Ilaria Canobbio, Mauro Torti, Gianni Francesco Guidetti, Francesco Moccia. Platelet- derived Extracellular Vesicles Stimulate Migration through Partial remodelling of the Ca^{2+} handling machinery in MDA-MB-231 Breast Cancer Cells. *Cells* **2022**, 11(19), 3120; <https://doi.org/10.3390/cells11193120>.
- 2- Sharon Negri, Francesca Scolari, Mauro Vismara, **Valentina Brunetti**, Pawan Faris, Giulio Sancini, Gianni Guidetti, Francesco Moccia. GABA_A and GABA_B receptors mediate GABA-induced intracellular Ca^{2+} signals in human brain microvascular endothelial cells. *Cells* **2022**, 11(23), 3860; <https://doi.org/10.3390/cells11233860>.
- 3-Francesco Moccia, **Valentina Brunetti**, Angelica Perna, Germano Guerra, Teresa Soda, Roberto Berra-Romani. The molecular heterogeneity of store-operated Ca^{2+} entry in vascular endothelial cells: from Ca^{2+} -selective to non-selective cation channels. Does Orai1 make the difference? *Int. J. Mol. Sci.* **2023**, 24(4), 3259; <https://doi.org/10.3390/ijms24043259>.
- 4-Teresa Soda, **Valentina Brunetti**, Roberto Berra-Romani, Francesco Moccia. The Emerging Role of N-Methyl-D-Aspartate (NMDA) Receptors in the Cardiovascular System: Physiological Implications, Pathological Consequences, and Therapeutic Perspectives. *Int. J. Mol. Sci.* **2023**, 24(4), 3914; <https://doi.org/10.3390/ijms24043914>.
- 5-Roberto Berra-Romani, **Valentina Brunetti**, Giorgia Pellavio, Teresa Soda, Umberto Laforenza, Giorgia Scarpellino and Francesco Moccia. Allyl Isothiocyanate Induces Ca^{2+} Signals and Nitric Oxide Release by Inducing Reactive Oxygen Species Production in the Human Cerebrovascular Endothelial Cell Line hCMEC/D3. *Cells* **2023**, 12(13), 1732; <https://doi.org/10.3390/cells12131732>.
- 6-Francesco Moccia, **Valentina Brunetti**, Teresa Soda, Pawan Faris, Giorgia Scarpellino and Roberto Berra-Romani. Store-Operated Ca^{2+} Entry as a Putative

Target of Flecainide for the Treatment of Arrhythmogenic Cardiomyopathy. J. Clin. Med. **2023**, 12(16), 5295; <https://doi.org/10.3390/jcm12165295>.

7- Francesco Moccia, **Valentina Brunetti**, Teresa Soda, Roberto Berra-Romani, Giorgia Scarpellino. Cracking the Endothelial Calcium (Ca^{2+}) Code: A Matter of Timing and Spacing. Int. J. Mol. Sci. **2023**, 24(23), 16765; <https://doi.org/10.3390/ijms242316765>.

8- **Valentina Brunetti**, Roberto Berra-Romani, Filippo Conca, Teresa Soda, Gerardo Rosario Biella, Andrea Gerbino, Francesco Moccia, Giorgia Scarpellino. Lysosomal TRPML1 triggers global Ca^{2+} signals and nitric oxide release in human cerebrovascular endothelial cells. Front. Physiol., 21 June 2024, Sec. Integrative Physiology, Volume 15 - **2024** | <https://doi.org/10.3389/fphys.2024.1426783>.

9- **Valentina Brunetti**, Teresa Soda, Roberto Berra-Romani, Giovambattista De Sarro, Germano Guerra, Giorgia Scarpellino, Francesco Moccia. Two Signaling Modes Are Better than One: Flux-Independent Signaling by Ionotropic Glutamate Receptors Is Coming of Age. Biomedicines **2024**, 12(4), 880; <https://doi.org/10.3390/biomedicines12040880>.

10-Sharon Negri, Filippo Conca, **Valentina Brunetti**, Giorgia Scarpellino, Kostantinos Lefkimmiatis, Francesco Moccia. TRPV1 mediates redox-sensitive intracellular Ca^{2+} release and store-operated Ca^{2+} entry activation in circulating endothelial colony forming cells. Vascular Pharmacology, Abstract, 2024, 10.1016/j.vph.2024.107335.

11- Giorgia Scarpellino, **Valentina Brunetti**, Roberto Berra-Romani, Giovambattista De Sarro, Germano Guerra, Teresa Soda, Francesco Moccia. The Unexpected Role of the Endothelial Nitric Oxide Synthase at the Neurovascular Unit: Beyond the Regulation of Cerebral Blood Flow. Int. J. Mol. Sci. 2024 August 21;25(16):9071. doi: 10.3390/ijms25169071.

12- Teresa Soda, Sharon Negri, Giorgia Scarpellino, Roberto Berra-Romani, Giovambattista De Sarro, Francesco Moccia, **Valentina Brunetti**. An automated planar patch-clamp approach to measure the membrane potential and resting membrane currents in a human cerebrovascular endothelial cell line. Journal of Neuroscience Methods 410 (2024) 110248. 6 August 2024. 10.1016/j.jneumeth.2024.110248.

13- Giorgia Scarpellino, **Valentina Brunetti**, Francesca Scolari, Luca Visentin, Gerardo Rosario Biella, Federico Alessandro Ruffinatti, Francesco Moccia. The ion transport, GPCR, and RTK toolkit expression in the human cerebrovascular

endothelial cell line, hCMEC/D3: an Omics perspective. *Frontiers in Physiology*, 2025, 10.3389/fphys.2025.1733266.

14- Teresa Soda, **Valentina Brunetti**, Giovambattista De Sarro, Gerardo Biella, Francesco Moccia, Roberto Berra-Romani, Giorgia Scarpellino. Transient Receptor Potential Ankyrin 1 (TRPA1) Mediates Hydrogen Sulfide-induced Ca^{2+} Entry and Nitric Oxide Production in Human Cerebrovascular Endothelium. *Current Neuropharmacology*, February 2025, <https://doi.org/10.2174/011570159X349872250124124612>

15- Simona Scorza*, **Valentina Brunetti***, Giorgia Scarpellino, Maira Certini, Andrea Gerbino, Francesco Moccia. Targeting the Ca^{2+} signaling toolkit as an alternative strategy to mitigate SARS-CoV-2-induced cardiovascular adverse events. Co-first. *Vascular Pharmacology*, 2025, 10.1016/j.vph.2024.107458.

16- **Valentina Brunetti**, Roberto Berra-Romani, Nayeli Coyotl-Santiago, Yair Esquitin-Gonzalez, Giorgia Chinigò, Gerardo Rosario Biella, Francesco Moccia, Giorgia Scarpellino. Histamine 1 receptors and reverse-mode $\text{Na}^+/\text{Ca}^{2+}$ exchanger drive extracellular Na^+ -dependent intracellular Ca^{2+} oscillations in human cerebrovascular endothelial cells. *Cell Calcium*, 2025, 10.1016/j.ceca.2025.103067.

17- Francesco Moccia, **Valentina Brunetti**, Roberto Berra-Romani, Giovanni Villone, Gennaro Raimo, Teresa Soda, Giorgia Scarpellino, Germano Guerra. The Emerging Role of Endothelial Ion Channels in the Control of Human Microcirculation. *Int. Journal of Mol.Sci.*, 2026, 10.3390/ijms27031421.

18- Karen Esmeralda Sánchez-Pluma, Edgar Martínez-Romero, José Everardo Avelino-Cruz, Giorgia Scarpellino, **Valentina Brunetti**, Monica Savio, Luis G Vázquez-de-Lara Cisneros, Francesco Moccia, Roberto Berra-Romani. The Ca^{2+} -NO-ROS Crosstalk Induced by Arachidonic Acid in Human Lung Fibroblasts: Implications for Pulmonary Fibrosis. *International Journal of Molecular Sciences*, 2026,

Oral and Poster Presentations

- ✓ **Valentina Brunetti**, Roberto Berra-Romani, Giorgia Scarpellino, Teresa Soda and Francesco Moccia. Membrane currents and resting membrane potential in the human cerebrovascular endothelial cell line (hCMEC/D3). 16TH Young Research Program (Italian Society of Physiology), Bertinoro (Italy), June 2023. *Oral Presentation*.

- ✓ **Valentina Brunetti**, Giorgia Scarpellino, Teresa Soda, Roberto Berra-Romani, Francesco Moccia. The Transient Receptor Potential Mucolipin 1 channel triggers global Ca^{2+} signals in the human cerebrovascular endothelial cell line hCMEC/D3. Italian Society of Physiology (SIF), Pisa, September 2023. *Oral Presentation*.
- ✓ **Valentina Brunetti**, Giorgia Scarpellino, Teresa Soda, Roberto Berra-Romani, Francesco Moccia. The TRPML1 channel triggers global Ca^{2+} signals in the human cerebrovascular endothelial cell line (hCMEC/D3). Junior European Calcium Society (jECS), 5TH October 2023. *Oral Presentation*.
- ✓ **Valentina Brunetti**, Roberto Berra-Romani, Filippo Conca, Teresa Soda, Gerardo Rosario Biella, Andrea Gerbino, Francesco Moccia, Giorgia Scarpellino. Lysosomal TRPML1 triggers global Ca^{2+} signals and nitric oxide release in human cerebrovascular endothelial cells. 17TH Young Research Program (Italian Society of Physiology), Catania (Italy), May 2024. *Oral Presentation*.
- ✓ **Valentina Brunetti**, Roberto Berra-Romani, Filippo Conca, Teresa Soda, Gerardo Rosario Biella, Andrea Gerbino, Francesco Moccia, Giorgia Scarpellino. Lysosomal TRPML1 triggers global Ca^{2+} signals and nitric oxide release in human cerebrovascular endothelial cells. Forum SIRC (Italian Society of Cardiovascular Research), Parma, June 2024. *Oral presentation*.
- ✓ **Valentina Brunetti**, Roberto Berra-Romani, Filippo Conca, Teresa Soda, Gerardo Rosario Biella, Andrea Gerbino, Francesco Moccia, Giorgia Scarpellino. Lysosomal TRPML1 triggers global Ca^{2+} signals and nitric oxide release in human cerebrovascular endothelial cells. MOVD/EDH (International Symposium on Mechanisms of Vasodilatation and EDH 2024), Oxford (UK), July 2024. *Poster presentation*.
- ✓ Teresa Soda, **Valentina Brunetti**, Gerardo Biella, Giovambattista De Sarro, Francesco Moccia, Roberto Berra-Romani, Giorgia Scarpellino. Transient Receptor Potential Ankyrin 1 (TRPA1) mediates hydrogen sulfide-induced Ca^{2+} entry and nitric oxide production in human cerebrovascular endothelium. MOVD/EDH (International Symposium on Mechanisms of Vasodilatation and EDH 2024), Oxford (UK), July 2024. *Poster presentation*.
- ✓ **Valentina Brunetti**, Roberto Berra-Romani, Gerardo Biella, Francesco Moccia, Giorgia Scarpellino. Insights into Calcium Signaling Dynamics and Nitric Oxide Release in Cerebral Microvascular Endothelial Cells. Mnesys Forum, Naples, May 2024. *Poster Presentation*.
- ✓ **Valentina Brunetti**, Gerardo Biella, Francesco Moccia, and Giorgia Scarpellino. The mechano-sensitive Piezo1 channel promotes the release of nitric oxide and hydrogen sulphide by triggering global Ca^{2+} signals in the human cerebrovascular endothelial cell line hCMEC/D3 cells. (SIF) *Oral Presentation*

- ✓ Clemens K. Probst, Nicholas R. Klug, Saul Huerta de la Cruz, **Valentina Brunetti**, Nikolaos Tsoukias, Anne Joutel, Mark T. Nelson. Modeling functional deficits in blood flow in a mouse model of Cerebral Autosomal Dominant Arteriopathy with Subcortical Infarcts and Leukoencephalopathy. BRENDA-Leducq meeting, May 2025. *Poster presentation*
- ✓ **Valentina Brunetti**, Saúl Huerta de la Cruz, Grant Hennig, Amreen Mughal, Mark T. Nelson. Full-field-of-view in vivo analysis of capillary stalling: new insights into small vessel disease. Italian Society of Cardiovascular Research (SIRC), Imola, 2025. *Poster presentation*

Professional Development

- ✓ Biophysics and Physiology School (Italian Society of Physiology), Anacapri (Italy), May 2023
- ✓ 16TH Young Research Program (Italian Society of Physiology), Bertinoro (Italy), June 2023
- ✓ Italian Society of Physiology (SIF), Pisa, September 2023
- ✓ Junior European Calcium Society (jECS), 5TH October 2023
- ✓ 17TH Young Research Program (Italian Society of Physiology), Catania (Italy), May 2024
- ✓ Forum SIRC (Italian Society of Cardiovascular Research), Parma, June 2024.
- ✓ MOVD/EDH (*International Symposium on Mechanisms of Vasodilatation and EDH 2024*), Oxford (UK), July 2024.
- ✓ Italian Society of Physiology, (SIF), Roma, September 2024
- ✓ Italian Society of Cardiovascular Research (SIRC), Imola, 2025.

Research Experience

- ✓ **Research Fellowship** at University of Pavia (PV)| Laboratory of Calcium Signalling, Department of Biology and Biotechnology "Lazzaro Spallanzani", University of Pavia (Italy).
Pavia, October 2025-September 2026
- ✓ **Visiting Student as Erasmus Traineeship at University of Vermont (VT)**| United States of America (USA), Dept. of Pharmacology, Larner College of Medicine, Mark's Nelson Laboratory

Burlington (VT) February 2025-September 2025

- ✓ **PhD** | Laboratory of Calcium Signalling, Department of Biology and Biotechnology "Lazzaro Spallanzani", University of Pavia (Italy).

Pavia, 2022-present

- ✓ **Research Intern** | Laboratory of Calcium Signalling, Laboratory of General Physiology, Department of Biology and Biotechnology "Lazzaro Spallanzani", University of Pavia (Italy).

Pavia 2020-2022

Technical skills

- ✓ **Cell culture:** hCMEC/D3, Endothelial colony-forming cells, human valvular aortic Endothelial cells, GPNTs;
- ✓ **In vivo:** manipulation of mouse models (tagging, colony management, air cutting for genotyping).
- ✓ **Chirurgical surgeries:** craniotomy for studying blood vessels; isolation of capillary endothelial cells from somatosensory cortex of mouse model.
- ✓ **Imaging:** Ca²⁺ imaging by epifluorescence microscopy and use of the Ca²⁺-sensitive ratiometric fluorophore FURA-2; Nitric Oxide imaging by epifluorescence microscopy and use of the DAF/FM ratiometric fluorophore; pH imaging and use of the specific pH fluorophore Phrodo Green; hydrogen sulfide imaging and use of the specific fluorophore SBF-7; membrane potential imaging and use of the specific membrane potential fluorophore Fluovolt. Used of Scientifica 2-photon microscopy with GFPs and TRITC.
- ✓ **Electrophysiology:** "Whole-cell patch-clamp" experiments, voltage-clamp and current-clamp modes using the Port-a-Patch automatic patch-clamp system.
- ✓ **Molecular Biology and Biochemistry methodologies:** gene silencing using esiRNA (small interfering RNA); Immunofluorescence assay using specific antibodies and dyes for intracellular organelles; Western blotting essay.
- ✓ **Softwares:** Office package, pClamp, Gimp. Statistical analysis of data using GraphPad, OriginPro, ImageJ.

Professional societies

- ✓ Junior member of the Italian Society of Physiology (SIF) since 2024

Prizes and awards

- ✓ "Nobel Contest", Biophysics and Physiology School (*Italian Society of Physiology*), Anacapri (Italy) 2023
- ✓ Travel Grant, Forum SIRC (*Italian Society of Cardiovascular Research*), Parma (Italy), June 2024
- ✓ Travel Grant, MOVD/EDH (*International Symposium on Mechanisms of Vasodilatation and EDH 2024*), Oxford (UK), July 2024
- ✓ Best Poster Award, MOVD/EDH (*International Symposium on Mechanisms of Vasodilatation and EDH 2024*), Oxford (UK), July 2024
- ✓ Winner Erasmus Traineeship 2025
- ✓ Winner "Bando Professionalità" sustained by Fondazione Alma Mater Ticinensis con Banca del Monte di Lombardia, 2025
- ✓ Best Poster Award, Forum SIRC (*Italian Society of Cardiovascular Research*), Milano (Italy), June 2026

Language skills

Italian, mother tongue.

English, B2 level

Spanish, basic level

Pavia, Ottobre, 2026