

PERSONAL INFORMATION

- **Date of Birth:** 15/10/1976
 - **Place of Birth:** Merate (LC), Italy
 - **Nationality:** Italian
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EDUCATION

- **(2002)** Master's Degree in Physics (pre-reform system; 4 years) from the University of Milan.
Thesis title: *"Synapses between Golgi cells and granule cells in the rat cerebellum: shortterm plasticity and structural properties."*
Supervisor: Prof. Gianfranco Nardelli; Co-supervisor: Dr. Lia Chiara Forti
 - **(2006)** PhD in Physiological Sciences from the University of Pavia
Thesis title: *"Spatial organization of excitation and plasticity in the cerebellum granular layer: an investigation with multi-site and fast-imaging techniques."* Tutor: Prof. Egidio D'Angelo
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WORK EXPERIENCE

- **(2002–2004)** PhD scholarship holder funded by the National Institute for the Physics of Matter (INFN) under the European project **SPIKEFORCE**: *"Real-time Spiking Networks for Robot Control."*
- **(2004–2006)** PhD scholarship holder funded by the National Research Council – INFN (CNR-INFN) under the same SPIKEFORCE project
- **(2006)** Visiting researcher at the Laboratory of Non-Linear Spectroscopy (LENS, Florence) in Prof. Francesco Pavone's lab
- **(2006–2010)** Postdoctoral research fellow at the University of Pavia
- **(2008)** Visiting researcher at the University of Padua in Prof. Stefano Vassanelli's lab
- **(2008–2009)** Short-term contract with CNISM (National Interuniversity Consortium for the Structure of Matter) within the CNISM-INNESCO project **NEUROIMAGE**: *"Imaging multiple single-neuron activities to reconstruct network computations."*
- **(2010–2011)** Researcher at the Brain Connectivity Center (BCC), IRCCS Mondino Foundation (Pavia)
- **Since 2011** Tenured University Researcher in Physiology (BIO-09), confirmed in 2014, at the University of Modena and Reggio Emilia
- **Since November 2018** Associate Professor of Physiology at the University of Modena and Reggio Emilia

TEACHING ACTIVITIES

- **2008/2009:** Supplemental teaching seminars for the General Physiology course (Prof. Egidio D'Angelo), Pharmacy program, University of Pavia

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- **2009/2010:** Appointed Subject Expert in Physiology and Neuroscience, University of Pavia
- **2011–2013:** Lecturer of Physiology (8 ECTS) in the Herbal Sciences program, University of Modena and Reggio Emilia
- **2013–2014:** Lecturer of Physiology (7 ECTS), same program and university
- **2014–2015 onward:** Lecturer of Physiology (3 ECTS) in “Morphological and Functional Foundations of Life”, Nursing program
- **2016–2017 onward:** Lecturer of Physiology modules for:
 - Biomedical Laboratory Techniques
 - Cardiovascular Pathophysiology and Perfusion Techniques
 - Medical Imaging and Radiotherapy Techniques
- **2016–2017 onward:** Lecturer of Physics (3 ECTS) for cadets of the Military Academy of Modena, Medical School
- **2020–2021 onward:** Lecturer of Human Physiology I (5 ECTS), Medical School
- Supervisor and co-supervisor of numerous Master’s and Specialist thesis projects for degree programs in Biology, Pharmacy, Herbal Sciences, Neurobiology, and Physics (Universities of Modena and Reggio Emilia, Pavia, Milan, Parma)
- Supervisor of 4 PhD students in Neuroscience at UNIMORE
- **Since 2012:** Member of the PhD Faculty Board in Neuroscience at UNIMORE

SCIENTIFIC ACTIVITY

Dr. Mapelli’s research during his training focused on electrophysiological properties of nerve cells and synaptic functions. Specifically:

- Studied the role of synapsin in cerebellar synapse exo-endocytotic activity (collaboration with Prof. Fabio Benfenati, University of Genoa)
- Investigated long-term plasticity of mossy fiber–granule cell synapses (collaboration with Dr. Elena Saftenku, Kiev University)
- Modeled Golgi cell activity (with Prof. Erik De Schutter, University of Antwerp)
- Developed optical methods for single-neuron imaging (with Prof. Francesco Pavone, LENS, Florence)
- Characterized nicotinic receptor impact on long-term synaptic plasticity (with Prof. Daniel Bertrand, University of Geneva)
- Developed neural network models for robotics (with Prof. Alessandra Pedrocchi, Politecnico di Milano)
- Designed an advanced microscopy system for multi-neuron activity (with Prof. Giuseppe Chirico, University of Milan-Bicocca)
- Participated in the creation of a high-resolution brain-computer interface (with Prof. Stefano Vassanelli, University of Padua)

As a university researcher at UNIMORE, he continued studying cellular and synaptic mechanisms in neural communication, developing advanced experimental methodologies in neuroscience (linear/non-linear optical imaging, electrophysiology, mathematical models).

Main achievements include:

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- Characterization of mutual information transfer in cerebellar synapses under general anesthetics
- Identification of a novel long-term synaptic plasticity at Golgi–granule cell synapses
Development of a biologically realistic cerebellar cortex model reproducing discovered plasticity
Patent for a confocal imaging system using two-photon holographic fluorescence microscopy

PROFESSIONAL EXPERIENCES AND FUNDING

- **2004–2006:** Collaboration with Dr. Anna Fassio (Univ. of Genoa) in COFIN 2004 project: *“Genetic and biological studies to identify the molecular mechanisms of synapsin action...”*
- **2005:** Participant in “BENEFRI PhD program in Neuroscience – Brain mapping” (University of Freiburg and Bern)
- **2006–2007:** Visiting researcher at LENS, Florence (CNISM-INNESCO project: **NEUROIMAGE**)
- **2008:** Visiting researcher at Neurochip Lab, University of Padua (**CYBERRAT** project) • **2010–2015:** Co-leader of a research line at IRCCS Mondino Foundation • **Principal Investigator** of the following projects:
 - *“Neuroprotective effect of inhaled anesthetics on brain anoxic damage therapy”,* Fondazione di Vignola (2013)
 - *“Physiology of the cerebellum through advanced biologically realistic modeling”,* Emilia-Romagna Region (2016)
 - *“Mathematical modeling of long-term inhibitory plasticity in the cerebellar granular layer”,* FAR funds (2017)
 - **SMART-BRAIN** (EU JTC 2019-FLAGERA HBP partnering project)
 - **HIPPOCOMP** (PRIN 2022)
 - **SMART-BRAIN** (MUR – PNRR research infrastructure project)
 - **FITS** (Neuroscience partnership, PNRR MNESYS program)
- Participant in numerous national and EU projects (PRIN, FIRB, SENSOPAC, CEREBNET, SPIKEFORCE, HBP, CYBERRAT)

MANAGEMENT AND ORGANIZATIONAL ROLES

- Head of the Advanced Bioimaging Laboratory (LAB), Dept. of Biomedical, Metabolic and Neurosciences, UNIMORE
- Since **2019:** Member of the Board of the Interdepartmental Animal Facility
- Since **2022:** Scientific Director of the Interdepartmental Animal Facility, UNIMORE

AWARDS AND RECOGNITIONS

- **2010:** Travel grant for 7th FENS Forum (Amsterdam, NL)

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- **2011:** Travel grant for 96th Italian Physics Society Meeting (L'Aquila)
- **2011:** Young Researcher Award in Physiology (Italian Physiological Society)
- **2012–2013:** Invited lecture at UNIPD's PhD School of Neurotechniques
- **2012:** Invited seminar at OMG-Salieri (Brescia)
- **2013–2014:** Multiple invited talks (FISMAT, LENS, SINS, Scientifica Ltd., Sincrotrone Trieste)
- **2014:** Finalist, APPLICO Biomedical Innovation Prize (Project "Holoscope")
- **2014–present:** Associate Editor – *Frontiers in Cellular Neuroscience*
- **2015:** Invited speaker at Modena Center for Regenerative Medicine, UNIPV
- **2015:** Innovation grant – UNIMIB
- **2015:** Patent granted (Italy and EU) – *Method for generating fluorescence images*
- **2016:** Semifinalist at SPIE Startup Challenge
- **2016–2017:** Guest Editor of two thematic issues – *Frontiers in Cellular/Computational Neuroscience*
- **2017:** National Scientific Qualification – Associate Professor in Phys

To date, Dr. Mapelli is the author of **58 scientific publications**, **43** of which have been published in **peer-reviewed journals with an impact factor**, totaling **2,150 citations** and an **H-index of 23**.

The information contained in this curriculum vitae is true and accurate

Modena

17/07/2026

Paolo Mapelli