

**FABIO BENFENATI, MD**  
**CURRICULUM VITÆ ACCADEMICO E SCIENTIFICO**

**Date of Birth:** November 5, 1954    **Place of birth:** Bologna, Italy

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**ACADEMIC CAREER**

- 1979:        **Medical Degree** (summa cum laude and best thesis prize), University of Bologna School of Medicine (Italy). Field: neurobiology
- 1983:        **Specialist in Neurology** (summa cum laude), Neurological Clinic, University of Bologna School of Medicine (Italy). Field: experimental neurophysiology and clinical neurology
- 1980-1983:    "*Accademia Nazionale dei Lincei*" fellow at the "*Mario Negri*" Institute for Pharmacological Research (Milano)
- 1983-1991:    **Assistant Professor** at the Institute of Physiology, University of Modena (Italy)
- 1983-1984:    **Post-doctoral fellow** at the Department of Histology and Neurobiology at the Karolinska Institutet, Stockholm (Sweden) in Kjell Fuxe's and Thomas Hokfelt's laboratories
- 1986-1989    **Fogarty Fellow & Research Associate**, Laboratory of Molecular and Cellular Neuroscience, The Rockefeller University, New York (USA) directed by Professor Paul Greengard (Nobel Laureate in 2000)
- 1990-1995:    Guest Investigator, The Rockefeller University, New York (USA)
- 1992-2000:    **Associate Professor of Physiology**, University of Roma Tor Vergata, School of Medicine (Italy)
- 1996-present: **Member of the Adjunct Faculty**, The Rockefeller University, New York (USA)
- 2000-present: **Full Professor of Physiology**, University of Genova, School of Medicine (Italy)
- 2006-present: **Research Director**, Department of Neuroscience and Brain Technologies, The Italian Institute of Technology, Genova (Italy)

**PROFESSIONAL EXPERIENCES**

- 1992-1996:    Board Member of the *Italian Society for Neuroscience*
- 2003-2005:    President, *Italian Society for Neuroscience*
- 2003-2009:    Vice-Dean, *University of Genova, Medical School* (in charge of the Medical School teaching)
- 2004-2006:    Board Member of the *Italian Federation for Life Sciences (FISV)*
- 2005-2008:    Vice-President, *National Institute for Neuroscience*
- 2007-2008:    President Elect, *The Italian Physiological Society*
- 2008-2011:    Chairman of the *IBRO International Program Committee*, 8<sup>th</sup> World Congress of the International Brain Research Organization, Florence (Italy) July 14-19, 2011.
- 2009-2011:    President, *The Italian Physiological Society*
- 2010-present: Member of the *International Advisory Board of EBRI* (European Brain Research Institute, Roma)
- 2005-present: Member of the Scientific Committee of the *International Genoa Science Festival*
- 2009-present: Member of the "*CNRS Conseil Scientifique du Departement Sciences du Vivant*" (France)

**AWARDS AND HONORS**

- 1979:        "Thesis Prize" and thesis publication by the University of Bologna
- 1980:        "*Giuseppe Levi*" Foundation, Accademia Nazionale dei Lincei, Prize for Neurobiology
- 1981-1982:    "*Anna Villa Rusconi*" Foundation Fellowship
- 1986-1987:    *Fogarty International Center* Fellowship from the US Public Health Service
- 1988:        "*Italian Society for Neuroscience*" Prize for young neuroscientists
- 1997:        *Fullbright* Advanced Research and University Lecturing Award
- 1999-2003:    *Research Award* from the Foundation of the Fisher Center for Alzheimer's Disease

Research, NY, USA

## TEACHING ACTIVITY

- 1992-1999: Courses of *Human Physiology* and *Neurophysiology* at the Medical School of the 2<sup>nd</sup> University of Rome, Rome.
  - 2000-present: Courses of *Human Physiology* and *Neurophysiology* at the Medical School of the University of Genova
  - 2000-present: Courses of *Physiology* and *Neurobiology & Neurophysiology*, School of Biotechnologies of the University of Genova
  - 2004-2008: Coordinator, *PhD Course in Experimental Neuroscience*, PhD School in Medical Sciences and Technologies, University of Genova
  - 2008-present: Coordinator, *PhD Course in Neuroscience and Brain Technologies*, PhD School in Life and Humanoid Technologies, University of Genova and Italian Institute of Technology, Genova.
- During his career, FB has supervised over 80 students for Bachelor and Master thesis from the Courses of Medicine, Biological Sciences, Bioengineering and Biotechnologies and over 30 PhD students.

## SCIENTIFIC ACTIVITY

FB is author of over 190 **research papers** in peer-reviewed international journals, including: *Science* (1), *Nature* (2), *Neuron* (2), *Nature Communications* (1), *Nature Neuroscience* (1), *J. Cell Biology* (5), *EMBO J.* (2), *Proc. Natl. Acad. Sci USA* (10), *J. Neuroscience* (11) and of 4 patents.

H-index=51; over 11000 citations; total impact factor > 900 (ref. VIA Academy).

He is **Associate Editor**, *Frontiers in Neuroengineering*, *The Scientific World Journal*, *Archives Italiennes de Biologie*, *Rendiconti Lincei*, *Scienze Fisiche e Naturali* and, more recently *pH*. He has been Guest Editor for a Special issue of *Semin. Cell Dev. Biol.*

He has been **reviewer** for several international scientific journals (including *Nature*, *Nature Protocols*, *J. Cell Biol.*, *Proc. Natl. Acad. Sci. USA*, *J. Neurosci.*, *J. Physiol.*, *J. Neurochem.*, *Neuroscience*, *J. Cell Sci.*, *Cell Death and Differentiation*, *Eur. J. Neurosci.*) and International Granting Agencies (including *Human Frontier Science Program (HFSP)*, *National Science Foundation (USA)*, *Yale University Evaluation Program*, *Biotechnology & Biological Sciences Research Council (UK)*, *INSERM-ANR (France)*, *Ireland Health Research Board*, *Norway Research Council*, *Singapore Biomedical Research Council*, *The Israel Science Foundation*, *Health Research Council of New Zealand (HRC)*).

## Research focus and main contributions

The main subjects of investigation have been the molecular mechanisms of information transfer among neurons and the role of protein phosphorylation in these processes. He has begun working in the field of synaptic transmission in Paul Greengard's laboratory in 1986, starting a collaboration with him that is still ongoing. The main contributions have been following:

1. Elucidation of the mechanisms of neurotransmitter release and synaptic plasticity and identification of the proteins regulating synaptic vesicle trafficking. A long array of papers has, for the first time, put forward the functional role of synaptic vesicle proteins such as the synapsins, synaptophysin and VAMP/synaptobrevin in the regulation of the multi-step process of neurotransmitter release.
2. Identification of the molecular machine that promotes membrane fusion during exocytosis and of the mechanism of action and intracellular targets of tetanus and botulinum neurotoxins.
3. Elucidation of the pathogenic mechanisms of synaptopathies such as epilepsy and autism spectrum disorder in genetically altered mice lacking synaptic vesicle proteins using electrophysiology to study neuronal excitability and synaptic strength at the cellular (patch-clamp) and circuit (microelectrode arrays) levels.
4. Generation of engineered circuits of primary neurons grown on patterned substrates and study of their physiological properties at the single cell and circuit level.