

EGIDIO D'ANGELO - CV

1975-1979. Scientific high-school (Liceo Scientifico Aselli, Cremona), diploma with honors.

1979-1985. University fellow by Collegio Ghislieri, Pavia

1985 Degree in Medicine with honors

1989 Specialization in Neurology with honors

1990 Fellow of European Science Foundation, Prof. John Garthwaite, Liverpool (UK)

1991 Fellow of European Science Foundation, Prof. Per Andersen, Oslo (Norway).

1995 SIF prize for best young Italian physiologist (Italian Physiological Society).

1995 - 1997. Assistant Professor, University of Pavia

1996. Visiting Professor, Università di Heidelberg.

1997-2005. Associate Professor of Physiology, University of Parma

2000. Visiting Professor, University of Jerusalem.

2005 - now. Full Professor of Physiology, University of Pavia.

ACADEMIC ROLES

- Director of the Neurophysiology unit of Department of Brain and Behavioral Sciences. The unit counts 20 members including 1 associate professor, 4 researchers, 11 postdocs and 5 PhD students. The unit has extensive collaborations inside and outside Italy.
- Member of the Scientific Board of Human Brain Project (EU). Coleader of WP1 "Human Brain Models" and leader of T1.15 "Rodent Brain Models". These projects aim at integrating experimental research and brain simulations across scales.
- Director of the Brain Connectivity Centre (BCC) at IRCCS Mondino, which is a centre for applied human neuroscience research.
- Director of the Doctoral Course in Biomedical Sciences, University of Pavia, which graduates about 20 students each year.
- Director of the School for Brain Cells and Circuits "Camillo Golgi" of the Centro Ettore Majorana for Science and Culture (Erice, Italy). This school gives courses on multiscale brain functioning and modeling.
- Member of the Research Programming Committee of the Italian Ministry of Research (MUR).
- Member of the Directory Board of the Italian Physiological Society (SIF).
- Member of the Centro Fermi for Physics (Ministry of Internal Affairs, Rome)

TEACHING

Human Physiology (Specialization in Neurology)

Human Physiology (Pharmacy)

Neurophysiology of integrated systems (Neurobiology)

Neuroscience (Interfaculty)

EDITORIAL ACTIVITY

- Associate Editor of The Journal of Physiology (London) 2009-2013
- Field Editor of Frontiers in Cellular Neuroscience 2013-now.
- Editor of a text book in Physiology

RESEARCH PROJECTS

- EUROPEAN PROJECTS. PI of 8 European projects and European coordinator of 2 of them (REALNET and CEREBNET) devoted to the experimental and computational analysis of cerebellar circuits. Currently member of the Scientific Board and PI in the European Flagship "Human Brain Project".
- NATIONAL PROJECTS. National coordinator of research projects of the Ministry of Research and the Ministry of Health of Italy.

MAJOR SCIENTIFIC CONTRIBUTIONS.

H-index 49.

ED has a long-standing track in the development and application of experimental and computational techniques, including patch-clamp recordings in brain slices (Nature, 1990), single neuron and microcircuit modelling (J. Neuroscience, 2001), advanced two-photon imaging with spatial light modulators (Frontiers in Cellular Neuroscience, 2014), closed-loop simulations using spiking cerebellar networks embedded into robotic controllers (PLOS, 2015). ED has published over 200 peer reviewed papers including publications in Nature, Nature Neuroscience, Nature Communication, Cell, Neuron, TINS, J Neuroscience.

ED has contributed to a relevant extent to understand neuronal computation and plasticity within the cerebellar circuit. ED has pioneered patch-clamp recordings in brain slices revealing the importance of NMDA receptors in synaptic transmission (Nature, 1990; Cell, 2006), generating an advanced interpretation framework for distributed synaptic plasticity in the cerebellum (Nature Neurosci. 2001; TINS 2009). On a parallel line, ED has pioneered single neuron and microcircuit modelling (J. Neuroscience, 2001) and has combined it to experimental analysis of action potential generation (Nature Comm, 2016; Nature Comm Biol. 2020) and Na channel activation in ataxic mouse mutants (Neuron, 2006). He has published over 150 peer-reviewed original articles. Recent projects are also using MRI and connectomics to determine cerebellar involvement in brain pathologies (Sci. Rep, 2017) as well as closed-loop robotic simulations with spiking cerebellar networks to investigate cognitive and sensorimotor control (PLOS, 2015). The current proposal is aligned with this extended effort, in which a multi-level research approach is integrated through highly detailed computational models in order to define a framework for investigating the mechanisms disease.

Among latest ED projects are those aimed at bridging the cellular-molecular level of research with integrative neuroscience and brain pathology through computational models. New projects are running on MRI (in collaboration with UCL), on neurovascular coupling and BOLD signal modelling (in collaboration with AMRITA University, India) and on closed-loop robotic simulations (in collaboration with the Neuroengineering department of Politecnico di Milano), on recordings in vivo (ErasmusMC, Rotterdam), on neuronal modelling (Cajal Institute, Madrid), on Virtual Brain Modeling (CNRS, Aix-Marseille), on Medical Informatics (EPFL, Lausanne).

OUTREACH ACTIVITIES

- President and organizer of the international meeting "The cerebellum" for the Golgi Nobel Prize Centennial, Pavia, September 2006.
- President and organizer of the National Meeting of the Italian Physiological Society, Pavia, September 2017
- President and organizer of the Meeting "Human Brain Project: the endeavour of neuroscience", Pavia, March 2018
- President and organizer of the hackathon "Brain modeling ", Pavia, January 2020
- Director of Courses 2015-2019 at the International School "Brain Cells and Circuits: Camillo Golgi", Erice.
- Numerous invited talks every year in European and USA universities and research centres.
- Press release and interview on TV and newspapers about neuroscience research and brain modeling.

WEBSITE

Details can be found at:

<http://www-5.unipv.it/dangelo/>

<http://www.eric-golgi.org/>

<http://drsbm.unipv.it/news/>

KEYWORDS

NMDA receptor, synaptic transmission, synaptic plasticity, cerebellum, granule cells, Golgi cells, Purkinje cells, electrophysiology, patch-clamp, calcium imaging, two-photon microscopy mathematical modelling, optogenetics, multielectrode array recordings, spiking neuronal networks, fMRI, neurorobotics, Virtual Brain.

LIST OF PAST PROJECTS:

project responsible (PR), principal investigator (PI)

1. ESF Short-term-fellowship grant nr. 317, 1989. PR
2. ESF Twinning grant nr. 9118, 1991. PR
3. ESF European Research Grant nr. 89, 1993. PR
4. Telethon grant E.464, 1996. PR
5. Telethon grant E.702, 1998-1999. PR
6. CNR. 1999-2000. PI
7. INFM. 1998-2001. PR
8. CEREBELLUM. EU PL97 0182, 1999-2000. "Information transfer and computation in the cerebellar cortex: an experimental and modeling analysis". PI
9. EC PL97 6060, 1999-2001. "Cerebellar network alterations in prion diseases". PI
10. CRUI-British Council. 2000. PR
11. PRIN (MURST). 2001-2002. PI
12. CEREBELLUM2. EU FP5-LIFE BIOTECHNOLOGY 2001-2004. "Computation and plasticity in the cerebellar system: experiments, modeling and database". BIO4CT98-0182. PI
13. PRIN. 2003-2004. PI
14. SPIKEFORCE 2002-2005 – EU FP5- IST 2001-2004. "Real-time spiking networks for robotic control". IST35271. PI
15. FIRB. 2002-2005. PR
16. PRIN. 2005- 2006. PI
17. CARIPO. 2005- 2007. PR
18. SENSOPAC 2006-2010. EU (IP). Sensorimotor structuring of perception and action for emerging cognition. PI and Scientific Director
19. CNISM. 2007-2009. PR
20. CYBERRAT. 2008-2010. EU (STREP). A Brain-Chip Interface for High-resolution Bi-directional Communication. PI
21. CEREBNET. 2010-2014. EU (EC-ITN Marie-Curie). "Timing and plasticity in the olivo-cerebellar system". PR, European Coordinator.
22. REALNET 2011-2014 – EU (STREP). " Realistic Real-time Networks: computation dynamics in the cerebellum." PR, European Coordinator.
23. CARIPO . 2010- 2012. PI
24. MinSal. Finalized Research. 2010-2012. PR
25. MinSal. Finalized Research. 2012-2014. PR
26. HUMAN BRAIN PROJECT (HBP). 2013-2023 - EU FP8 Flagship. PI, Scientific Directory Board
27. Centro Fermi. 2013-2019. Local Neuronal Microcircuits. PR