

BIOGRAPHICAL SKETCH

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NAME	POSITION TITLE		
Monica DiLuca	Full Professor Director, Department of Pharmacological and Biomolecular Sciences, University of Milan.		
EDUCATION/TRAINING			
INSTITUTION AND LOCATION	DEGREE (if applicable)	MM/YY	FIELD OF STUDY
University of Milan, Faculty of Pharmacy	Laurea	1986	Medical Chemistry
School of Medicine, University of Utrecht	Ph.D.	1992	Medical Sciences
University of Milan, Faculty of Pharmacy	Ph.D.	1993	Pharmacology and Toxicology

A. Personal Statement

Monica DiLuca's primary research interest has been always related to neuronal and synaptic plasticity both in physiological and pathological conditions, with the primary aim to apply her basic findings to the cure of neurodegenerative diseases as Alzheimer (AD) and Parkinson Disease (PD). She made significant contributions in generating the blueprint of the molecular organization of synapses, increasing our knowledge on the series of protein-protein interactions between ionotropic glutamate receptors, their scaffolds, and mediators of signaling. Furthermore, she identified a key role for components of glutamatergic synapses in neurodegenerative diseases, particularly focusing on NMDAR complexes, showing that in mouse models for AD and PD, NMDAR composition in the postsynaptic density is dramatically altered. Monica DiLuca identified pillars of amyloid cascade in the core of the glutamatergic synapse, disclosing the synaptic localization and the mechanisms guiding local trafficking of the ADAM10. Her discoveries enriched our understanding of glutamatergic synapse in physiology and pathology, increasing our knowledge on plasticity and memory and leading to new tools for neuroprotection. Her long-lasting dedication to understand mechanisms tuning neuronal and synaptic plasticity both in health and diseases lasted over 30 years.

A prominent trait of Monica DiLuca's career is her deep and exigent involvement in sharing ideas over borders and establishing collaborative multi stakeholder networks merging scientists, clinicians and patients organizations. She has played a pivotal role in international organizations for neuroscience research in connection with societal challenges. She has served as a member of Council of several national and international scientific organizations. At present, she serves as President of the European Brain Council (EBC).

Monica DiLuca dedicated particular attention to mentoring activities. Among other more general contributions to training and mentorship Monica DiLuca devoted great attention to higher education in neuroscience in Europe, starting the tradition of FENS Summer school in 1999, and giving continuous support in the development of advanced education contributing in structuring the Cajal Advanced Neuroscience Programme. Furthermore, she contributed to PhD training and EU recognition through ITN/Marie Skłodowska-Curie grants in the last 10 years. Special attention has been given to activities meaningful to improve diversity and equality in brain science, both at individual level through mentoring seminars around Europe, and at institutional level through participation to relevant committee (ALBA; Women in Neuroscience Committee and Professional Development Committee – SfN).

B. Positions and Honors

- Positions and Employment

2020 – present Director, Dept. Pharmacological and Biomolecular Sciences, University of Milano
2014 - 2018 Vice - Rector for International Strategies, University of Milano
2014 - 2018 Director of NeuroNest (Center of Neuroscience of University of Milano)
2011 - Full professor of Pharmacology, University of Milano
2000 - 2011 Associated Professor of Pharmacology - University of Milano
1995 - 2000 Assistant Professor, Institute of Pharmacological Sciences University of Milano

- **Other Experience and Professional Memberships**

- ALBA Network (FENS) Steering Committee (Founding member 2018 - Board of Directors 2020)
- EBC - European Brain Council (Member of Advisory Board: 2003-2006; Vice-president: 2010-2016; **President: 2017-2021**)
- FENS - Federation of European Neuroscience Societies (Member of Scientific Programme Committee: 1996-2000; Secretary General: 2000-2006; Member of Board Programme of European Neuroscience Schools, PENS: 2006-2010; **President 2014 - 2016**)
- IBRO, International Brain Organization (**Chair** of Western Europe Regional Committee: 2006-2010; Executive Director Inter-Regional activities, 2010-2014)
- SfN - Society for Neuroscience (Member of Women in Neuroscience Committee: 2007 - 2010; Member of Professional Development Committee: 2009 – 2012)
- Founder and Vice President Airalz (Non profit association on Alzheimer Disease research) 2016-2020
- SINS - Società Italiana di Neuroscienze (Board Member 2001-2005)
- SIF - Società Italiana di Farmacologia (Board Member: 2013-2017)
- 2019-2021 - Member of Lundbeckfonden's Grants & Prizes panel
- 2019-2022 - Member of DZNE Senate
- 2019-2021 - SfN Julius Axelrod Prize Selection Committee
- 2021-2024 - Scientific Advisory Board LIN Magdeburg

- **Honors**

- Doctor Honoris Causa University of Bordeaux (October 2019)
- Laurea Honoris Causa Faculty of Medicine and Pharmacy, Univ. of Mons (Belgium) (March 2017)
- EMBO membership (2017)
- Visiting professor at Liaoning Normal University, Dalian (2017)
- “*Otto Creutzfeldt Lecture*”, 12th Goettingen Meeting of the German Neuroscience Society (2017)
- ENCP Media Award (2013)
- EDAB, European Dana Alliance Invited Member (2008)

C. Selected Peer-reviewed Publications (15 best peer-reviewed publications)

15 representative publications (main author)

1. Gardoni F, Schrama LH, Kamal A, Gispen WH, Cattabeni F, Di Luca M. Hippocampal synaptic plasticity involves competition between Ca²⁺/calmodulin-dependent protein kinase II and postsynaptic density 95 for binding to the NR2A subunit of the NMDA receptor. *J Neurosci*. 2001 Mar 1;21(5):1501-9. doi: 10.1523/JNEUROSCI.21-05-01501.2001.
2. Padovani A, Pastorino L, Borroni B, Colciaghi F, Rozzini L, Monastero R, Perez J, Pettenati C, Mussi M, Parrinello G, Cottini E, Lenzi GL, Trabucchi M, Cattabeni F, Di Luca M. Amyloid precursor protein in platelets: a peripheral marker for the diagnosis of sporadic AD. *Neurology*. 2001 Dec 26;57(12):2243-8. doi: 10.1212/wnl.57.12.2243.
3. Colciaghi F, Marcello E, Borroni B, Zimmermann M, Caltagirone C, Cattabeni F, Padovani A, Di Luca M. Platelet APP, ADAM 10 and BACE alterations in the early stages of Alzheimer disease. *Neurology*. 2004 Feb 10;62(3):498-501. doi: 10.1212/01.wnl.0000106953.49802.9c.

4. Marcello E, Gardoni F, Mauceri D, Romorini S, Jeromin A, Epis R, Borroni B, Cattabeni F, Sala C, Padovani A, Di Luca M. Synapse-associated protein-97 mediates alpha-secretase ADAM10 trafficking and promotes its activity. *J Neurosci*. 2007 Feb 14;27(7):1682-91. doi: 10.1523/JNEUROSCI.3439-06.2007.
5. Gardoni F, Mauceri D, Malinverno M, Polli F, Costa C, Tozzi A, Siliquini S, Picconi B, Cattabeni F, Calabresi P, Di Luca M. Decreased NR2B subunit synaptic levels cause impaired long-term potentiation but not long-term depression. *J Neurosci*. 2009 Jan 21;29(3):669-77. doi: 10.1523/JNEUROSCI.3921-08.2009.
6. Epis R, Marcello E, Gardoni F, Vastagh C, Malinverno M, Balducci C, Colombo A, Borroni B, Vara H, Dell'agli M, Cattabeni F, Giustetto M, Borsello T, Forloni G, Padovani A, Di Luca M. Blocking ADAM10 synaptic trafficking generates a model of sporadic Alzheimer's disease. *Brain*. 2010 Nov;133(11):3323-35. doi: 10.1093/brain/awq217.
7. Vastagh C, Gardoni F, Bagetta V, Stanic J, Zianni E, Giampà C, Picconi B, Calabresi P, Di Luca M. N-methyl-D-aspartate (NMDA) receptor composition modulates dendritic spine morphology in striatal medium spiny neurons. *J Biol Chem*. 2012 May 25;287(22):18103-14. doi: 10.1074/jbc.M112.347427.
8. Gardoni F, Saraceno C, Malinverno M, Marcello E, Verpelli C, Sala C, Di Luca M. The neuropeptide PACAP38 induces dendritic spine remodeling through ADAM10-N-cadherin signaling pathway. *J Cell Sci*. 2012 Mar 15;125(Pt 6):1401-6. doi: 10.1242/jcs.097576.
9. Marcello E, Saraceno C, Musardo S, Vara H, de la Fuente AG, Pelucchi S, Di Marino D, Borroni B, Tramontano A, Pérez-Otaño I, Padovani A, Giustetto M, Gardoni F, Di Luca M. Endocytosis of synaptic ADAM10 in neuronal plasticity and Alzheimer's disease. *J Clin Invest*. 2013 Jun;123(6):2523-38. doi: 10.1172/JCI65401.
10. Gardoni F, Di Luca M. Targeting glutamatergic synapses in Parkinson's disease. *Curr Opin Pharmacol*. 2015 Feb;20:24-8. doi: 10.1016/j.coph.2014.10.011.
11. Stanic J, Carta M, Eberini I, Pelucchi S, Marcello E, Genazzani AA, Racca C, Mulle C, Di Luca M*, Gardoni F. Rabphilin 3A retains NMDA receptors at synaptic sites through interaction with GluN2A/PSD-95 complex. *Nat Commun*. 2015 Dec 18;6:10181. doi: 10.1038/ncomms10181. *Elife*. 2016 Mar 15;5:e12430. doi: 10.7554/eLife.12430. *corresponding author
12. Dinamarca MC, Guzzetti F, Karpova A, Lim D, Mitro N, Musardo S, Mellone M, Marcello E, Stanic J, Samaddar T, Burguière A, Caldarelli A, Genazzani AA, Perroy J, Fagni L, Canonico PL, Kreutz MR, Gardoni F, Di Luca M. Ring finger protein 10 is a novel synaptonuclear messenger encoding activation of NMDA receptors in hippocampus. *Elife*. 2016 Mar 15;5:e12430. doi: 10.7554/eLife.12430.
13. Marcello E, Di Luca M*, Gardoni F. Synapse-to-nucleus communication: from developmental disorders to Alzheimer's disease. *Curr Opin Neurobiol*. 2018 Feb;48:160-166. doi: 10.1016/j.conb.2017.12.017. *corresponding author
14. Marcello E, Musardo S, Vandermeulen L, Pelucchi S, Gardoni F, Santo N, Antonucci F, Di Luca M. Amyloid- β Oligomers Regulate ADAM10 Synaptic Localization Through Aberrant Plasticity Phenomena. *Mol Neurobiol*. 2019 Oct;56(10):7136-7143. doi: 10.1007/s12035-019-1583-5.
15. Pelucchi S, Vandermeulen L, Pizzamiglio L, Aksan B, Yan J, Konietzny A, Bonomi E, Borroni B, Padovani A, Rust MB, Di Marino D, Mikhaylova M, Mauceri D, Antonucci F, Edefonti V, Gardoni F, Di Luca M*, Marcello E. CAP2 dimerization regulates cofilin in synaptic plasticity and Alzheimer's disease. *Brain Communications*, Published on-line 26 June 2020. doi: <https://doi.org/10.1093/braincomms/fcaa086>. *corresponding author

D. Research Support

- **Ongoing Research Support**

<i>Project Title</i>	<i>Funding source</i>	<i>Period</i>	<i>Role of the PI</i>
Identifying disease signatures of Alzheimer's disease and Frontotemporal dementia: role of the immune system	Italian Ministry of Health	2021-2024	Partner
Human and animal studies: a novel strategy against Alzheimer synaptic dysfunction	Italian Ministry of Health	01.03.2019-28.02.2022	Partner
Identification and validation of COmmon pathways at the CrOssroads of neurodegeneration and Neuroprotection (COCOON)	Italian Ministry of Education, Universities and Research – MIUR	28.08.2019-27.08.2022	Coordinator
EBRA (825348) European Brain Research Area	H2020	01.11.2018 - 30.04.22	Coordinator
From pathogenic mechanisms of Alzheimer disease to identification of biomarkers and novel targets of intervention	Italian Ministry of Education, Universities and Research – MIUR	2018-2021	Coordinator

- **Completed Research Support**

- Italian Ministry of University and Research (PRIN2015, PRIN2010-11, FIRB2011, PRIN2008, FIRB2003)
- Italian Ministry of Health (Min.San. 2016, 2010, 2008, 2004, 2002, 2000)
- CNR (1999, 1998, 1995)
- European Commission (H2020-MSCA-ITN-2015; JPCo-fuND, STAD project 2016; FP7 SymbAD ITN; FP7 REPLACES Collaborative project; FP7 cPADS, IAPP project, FP6 SynScaff Collaborative projects)
- Foundations (Cariplo, IPSEN, Telethon, AlzOrg)