



# Prof. Dr. med. Antonio Malgaroli

Specialist in Psychiatry and Psychotherapy, FMH member

---

## Languages

EN,IT

## Work Experience

- since 2020 Head of Field Project Master in Cognitive Psychology and H.C., USI - UniSR, Sant'Anna Clinic
- since 2017 Director of the Centre for the Study of Behaviour (International Center for Behavioral Neuroscience and Communication) University Vita-Salute San Raffaele, Milan, IT
- since 2016 Clinical Activity as Neuropsychiatrist, VilleTurro San Raffaele Hospital, San Donato Group, Milan, IT
- since 2000 Full Professor of Human Physiology, University Vita-Salute San Raffaele, Milan, IT
- 2017-2019 Clinical activity as Psychiatrist, The Tourette's Centre, IRCCS Galeazzi Hospital, San Donato group, Milan
- 1993-2000 Head of Unit of Neurobiology of Memory, San Raffaele Scientific Institute
- 1989-1992 Postdoctoral fellow, Department of Molecular and Cellular Physiology, Stanford University, Stanford, CA, US
- 1985-1989 Clinical fellow in Psychiatry and Psychotherapy, Postgraduate Degree in Psychiatry, Department of Psychiatry, Faculty of Medicine, University of Milan, Milan, Italy
- 1982-1985 Research Fellow, Department of Pharmacology, Faculty of Medicine, University of Milan, Milan

## Education

- 1991 University of Milan, Specialisation Diploma in Psychiatry and Psychotherapy
- 1985 University of Milan, Degree in Medicine and Surgery
- 1985 Licence to practise medicine and surgery

## Memberships

- since 2016 Member of Scientific Board, Italian Tourette Syndrome Association (AIST)

## Publications

Ferro M, Lamanna J, Spadini S, Nespoli A, Sulpizio S, Malgaroli A. Synaptic plasticity mechanisms behind TMS efficacy: insights from its application to animal models. J Neural Transm (Vienna). 2022 Jan;129(1):25-36. doi: 10.1007/s00702-021-02436-7.

Spadini S, Ferro M, Lamanna J, Malgaroli A. Activity-based anorexia animal model: a review of the main neurobiological findings. *J Eat Disord*. 2021 Oct 2;9(1):123. doi: 10.1186/s40337-021-00481-x

Spadini S, Racchetti G, Adiletta A, Lamanna J, Moro AS, Ferro M, Zimarino V, Malgaroli A. A novel integrated approach to estimate the mitochondrial content of neuronal cells and brain tissues. *J Neurosci Methods*. 2021 Nov 1;363:109351. doi: 10.1016/j.jneumeth.2021.109351

Previdi A, Piazzoni C, Borghi F, Schulte C, Lorenzelli L, Giacomozzi F, Bucciarelli A, Malgaroli A, Lamanna J, Moro A, Racchetti G, Podestà A, Lenardi C, Milani P. Micropatterning of Substrates for the Culture of Cell Networks by Stencil-Assisted Additive Nanofabrication. *Micromachines (Basel)*. 2021 Jan 18;12(1):94. doi: 10.3390/mi12010094

Lamanna J, Isotti F, Ferro M, Racchetti G, Anchora L, Rucco D, Malgaroli A. Facilitation of dopamine-dependent long-term potentiation in the medial prefrontal cortex of male rats follows the behavioral effects of stress. *J Neurosci Res*. 2021 Feb;99(2):662-678. doi: 10.1002/jnr.24732

Jacopo Lamanna J, et al. Facilitation of dopamine-dependent long-term potentiation in the medial prefrontal cortex of male rats follows the behavioral effects of stress. *J Neuroscience Res*. In press

Vitale JA, et al. Exploring circannual rhythms and chronotype effects in patients with Obsessive-Compulsive Tic Disorder (OCTD): A pilot study. *J Affect Disord*. 2020 Feb 1;262:286-292.

Lamanna J, Sulpizio S, Ferro M, Martoni R, Abutalebi J, Malgaroli A. (2019) Behavioral assessment of activity-based-anorexia: how cognition can become the drive wheel. *Physiol Behav*. 1;202:1-7. doi: 10.1016/j.physbeh.2019.01.016.

Briguglio M, Dell'Osso B, Panzica G, Malgaroli A, Banfi G, Zanaboni Dina C, Galentino R, Porta M. (2018) Dietary Neurotransmitters: A Narrative Review on Current Knowledge. *Nutrients*. 10;10(5). pii: E591. doi: 10.3390/nu10050591.

M.Ferro, J. Lamanna, M. Ripamonti, G. Racchetti, A. Arena, S. Spadini, G. Montesano, R. Cortese, V.Zimarino & A. Malgaroli. (2017) Functional mapping of brain synapses by an enriching activity-marker. *Nature Communications*, Oct 31;8(1):1229. doi: 10.1038/s41467-017-01335-4.

A.Malgaroli The complexity of man and psychosomatics. à jour! *Psychotherapie Berufsentwicklung*, 4(2):71-74 - November 2018, Psychosozial Verlag doi.org/10.30820/8245.31

Briguglio M, Dell'Osso B, Panzica G, Malgaroli A, Banfi G, Zanaboni Dina C, Galentino R, Porta M. Dietary Neurotransmitters: A Narrative Review on Current Knowledge. *Nutrients*. 2018 May 10;10(5).

Putzu, S. Valtorta, G. Di Grigoli, M. Haenggi, A. Malgaroli, M. Gemma, G. Landoni, L. Beretta, RM Moresco (2017) Regional differences in cerebral glucose metabolism after cardiac arrest and resuscitation in rats using [18F]FDG positron emission tomography and autoradiography. *Neurocritical Care*, Sep 5.

C. Schulte, M. Ripamonti, E. Maffioli, M.A. Cappelluti, S. Nonnis, L. Puricelli, J. Lamanna, C. Piazzoni, A. Podestà, C. Lenardi, G. Tedeschi\*, A. Malgaroli\* & P. Milani\* (2016) Scale invariant disordered nanotopography promotes hippocampal neuron development and maturation with involvement of mechanotransductive pathway. *Frontiers Cell Neuroscience*. 10:267. eCollection 2016. (\* shared last authors)

Arena A, Lamanna J, Gemma M, Ripamonti M, Ravasio G, Zimarino V, De Vitis A, Beretta L, & Malgaroli A (2017) A linear transformation of the encoding mechanism for light-intensity underlies paradoxical enhancement of cortical visual responses by sevoflurane. *J Physiology J Physiol.* Jan 1;595(1):321-339

Montesano G, Belfiore M, Ripamonti M, Arena A, Lamanna J, Ferro M, Zimarino V, Ambrosi A, Malgaroli A. (2015) Effects of the Concomitant Activation of ON and OFF Retinal Ganglion Cells on the Visual Thalamus: Evidence for an Enhanced Recruitment of GABAergic Cells. *Front Neural Circuits.* 9: 77, 1-19.

Lamanna J, Signorini MG, Cerutti S, Malgaroli A.(2015) A pre-docking source for the power-law behavior of spontaneous quantal release: application to the analysis of LTP. *Front Cell Neurosci.* 9: 44, 1-13.

Treccani G, Musazzi L, Perego C, Milanese M, Nava N, Bonifacino T, Lamanna J, Malgaroli A, Drago F, Racagni G, Nyengaard JR, Wegener G, Bonanno G, Popoli M. (2014) Acute stress rapidly increases the readily releasable pool of glutamate vesicles in prefrontal and frontal cortex through non-genomic action of corticosterone *Mol Psychiatry.* 19(4):401-

Treccani G, Musazzi L, Perego C, Milanese M, Nava N, Bonifacino T, Lamanna J, Malgaroli A, Drago F, Racagni G, Nyengaard JR, Wegener G, Bonanno G, Popoli M. (2014) Stress and corticosterone increase the readily releasable pool of glutamate vesicles in synaptic terminals of prefrontal and frontal cortex *Mol Psychiatry.* 19:433-43

D'Acunzo P, Badaloni A, Ferro M, Ripamonti M, Zimarino V, Malgaroli A\*, Consalez GG\*. (2014) A conditional transgenic reporter of presynaptic terminals reveals novel features of the mouse corticospinal tract. *Frontiers Neuroanatomy* 7:50, 1-12. (\* shared corresponding authors)

Lamanna J, Malgaroli A, Cerutti S, Signorini MG. (2012) Detection of fractal behaviour in temporal series of synaptic quantal release events: a feasibility study. *Comput Intell Neurosci.* 704673: 1-9

Lamanna J, Esposti F, Malgaroli A, Signorini MG. (2011) Fractal behavior of spontaneous neurotransmitter release: from single-synapse to whole-cell recordings. *Conf Proc IEEE Eng Med Biol Soc.;*2011:3346-3349.

Anelli T, Bergamelli L, Margittai E, Rimessi A, Fagioli C, Malgaroli A, Pinton P, Ripamonti M, Rizzuto R, Sitia R. (2012) Ero1 $\alpha$  regulates Ca<sup>2+</sup> fluxes at the endoplasmic reticulum-mitochondria interface (MAM). *Antioxid Redox Signal.* 16(10):1077-87.

Fanelli A, Titapiccolo JI, Esposti F, Ripamonti M, Malgaroli A, Signorini MG. (2011) Novel image processing methods for the analysis of calcium dynamics in glial cells. *IEEE Trans Biomed Eng.* 58(9):2640-7.

Croccolo F, Quintini A, Barni R, Ripamonti M, Malgaroli A, Riccardi C (2009). H-mode inductive coupling plasma for PVC surface treatment. *The European Physical Journal. d, atomic, molecular and optical physics*, vol. 54, p. 477-480.

Torta F, Usuelli V, Malgaroli A, Bachi A. (2009) Proteomic analysis of protein S-nitrosylation. *Proteomics.* 8:4484-94

Corti V, Sanchez-Ruiz Y, Piccoli G, Bergamaschi A, Cannistraci CV, Pattini L, Cerutti S, Bachi A, Alessio M, Malgaroli A. (2008) Protein fingerprints of cultured CA3-CA1 hippocampal neurons: comparative analysis of the distribution of synaptosomal and cytosolic proteins. *BMC Neurosci.* 9:36-52

Moresco RM, Lavazza T, Belloli S, Lecchi M, Pezzola A, Todde S, Matarrese M, Carpinelli A, Turolla E, Zimarino V, Popoli P, Malgaroli A, Fazio F. (2008) Quinolinic acid induced neurodegeneration in the striatum: a combined in vivo and in vitro analysis of receptor changes and microglia activation. *Eur J Nucl Med Mol Imaging*. 35:704-15.

Camerini S, Polci ML, Restuccia U, Usuelli V, Malgaroli A, Bachi A. (2007) A novel approach to identify proteins modified by nitric oxide: the HIS-TAG switch method. *J Proteome Res*. 6:3224-31.

De Filippis L, Lamorte G, Snyder EY, Malgaroli A, Vescovi AL. (2007) A novel, immortal, and multipotent human neural stem cell line generating functional neurons and oligodendrocytes. *Stem Cells*. 25:2312-21.

Thiagarajan TC, Lindskog M, Malgaroli A, Tsien RW. (2007) LTP and adaptation to inactivity: overlapping mechanisms and implications for metaplasticity. *Neuropharmacology* 2007 52:156-75.

Bernasconi F, Malgaroli A, Vallar L. (2006) Independent Regulation of Rap1 and Mitogen-Activated Protein Kinase by the alpha Chain of G(o). *Neurosignals* 15:180-189

Malgaroli A, Vallar L, Zimarino V. (2006) Links Protein homeostasis in neurons and its pathological alterations. *Current Opinion Neurobiology* 16:270-4.

Rastaldi MP, et al. (2006) Glomerular podocytes contain neuron-like functional synaptic vesicles. *FASEB Journal* 20:976-8.

Panzeri D., Lavazza T & Malgaroli A (2005) Advanced tracer technique to monitor synaptic activity. *Arch Ital Biol* 143:157-68

Lundstrom K, Abenavoli A, Malgaroli A, Ehrenguber MU (2003) Novel Semliki Forest Virus vectors with reduced cytotoxicity and temperature-sensitivity: long-term enhancement of transgene expression. *Mol Therapy*, 7 :202-9.

Abenavoli, A., L. Forti, Bossi M., Bergamaschi A., Villa A. & Malgaroli A. (2002) Multimodal quantal release at hippocampal synapses: evidence for lack of lateral inhibition. *J. Neuroscience* 22: 6336- 6346.

Moroni A, Gorza L, Beltrame M, Gravante B, Vaccari T, Bianchi ME, Altomare C, Longhi R, Heurteaux C, Vitadello M, Malgaroli A & DiFrancesco D. (2001) HCN1 is a molecular determinant of the cardiac pacemaker current. *J Biol Chem* 276: 29233-29241.

Abenavoli, A., Montagna, M. & Antonio Malgaroli. (2001) Calcium: the common theme in vesicular cycling, *Nature Neuroscience*, 4: 117-118.

Böse, CM, Qiu D., Bergamaschi, A., Gravante, B., Bossi M., Villa, A, Rupp F, & Malgaroli A. (2000) Agrin controls synaptic differentiation in hippocampal neurons. *J. Neuroscience* 20:9086-9095.

Abenavoli A, Forti L & Malgaroli A (2000) Mechanisms of spontaneous miniature activity at CA3-CA1 synapses: evidence for a divergence from a random Poisson process. *Biology Bull*. 199:184-6.

Malgaroli, A.(1999) Silent synapses: I can't hear you! Could you please speak aloud. *Nature Neuroscience*, 2: 3-5.

- Forti, L., Bossi, M., Bergamaschi, A., Villa, A. & Malgaroli, A. (1997) Loose-patch recordings of single quanta at individual hippocampal synapses, *Nature* 338: 874-878.
- Osen-Sand, A., Naldi, E., Staple, J.K., Schiavo, G., Petitpierre, S. Malgaroli, A., Montecucco, C., Catsicas, S. (1996) Distinct mechanism for regulated membrane fusion in axonal growth and transmitter release. *Journal of Comparative Neurology* 367: 222-234.
- Malgaroli, A., Ting, A.E., Wendland, B., Bergamaschi, A., Villa, A., Tsien, R.W., & Scheller, R.H. (1995) Presynaptic Component of Long-term Potentiation Visualized at Individual Hippocampal Synapses. *Science* 268: 1624-1628.
- Malgaroli, A. (1994) LTP expression: hanging like a yo-yo. *Seminars in Cell Biology*, 5: 231-241. Malgaroli, A. & Tsien, R.W. (1992) Glutamate-induced long-term potentiation of the frequency of miniature synaptic currents in cultured hippocampal neurons. *Nature*, 357: 134-139.
- Letari, O., Malgaroli, A., Morgan, D.G., Welton, A.F. & Nicosia, S. (1991) Cytosolic calcium ion and arachidonic acid release and metabolism in macrophages. *European J. Pharmacol.*, 206: 211-219.
- Malgaroli, A. & Meldolesi, J. (1991)  $[Ca^{2+}]_i$  oscillations from internal stores sustain exocytic secretion in rat chromaffin cells. *FEBS letters*, 283: 169-172.
- Sacchetti E, Malgaroli A. (1991) Cytosolic-free calcium concentrations in skin fibroblasts of patients with bipolar disorder *Journal of Neuropsychiatry and Clinical Neurosciences*. 3: 114.
- Milani, D., Malgaroli, A., Guidolin, D., Fasolato, C., Skaper, S.D., Meldolesi, J. & Pozzan, T. (1990)  $Ca^{2+}$  channels and intracellular stores in neuronal and neuroendocrine cells. *Cell Calcium*, 11: 191-199.
- Malgaroli, A., Fesce R. & Meldolesi, J. (1990) Spontaneous  $Ca^{2+}$  fluctuations of rat chromaffin cells involve a caffeine- and ryanodine-sensitive intracellular  $Ca^{2+}$  store, apparently insensitive to inositol-1, 4, 5-trisphosphate. *J. Biol. Chem.*, 265: 3005-3008.
- Malgaroli, A., De Camilli, P. & Meldolesi, J. (1989) Distribution of  $\alpha$ -latrotoxin receptor in the rat brain by quantitative autoradiography: comparison with the nerve terminal protein synapsin-I. *Neuroscience*, 32: 393-404.
- Malgaroli, A., Meldolesi, J., Zamboni Zallone, A. & Teti, A. (1989) Control of cytosolic free  $Ca^{2+}$  in rat and chicken osteoclasts. The role of extracellular  $Ca^{2+}$  and calcitonin. *J. Biol. Chem.*, 264: 14342- 14347.
- Colonna, R., Tatone, C., Malgaroli, A., Eusebi, F., & Mangia, F. (1989) Effects of protein kinase C stimulation and free  $Ca^{2+}$  rise in mammalian egg activation. *Gamete Res*, October 1, 1989; 24(2): 171-83.
- Malgaroli, A., Hashimoto, S., Grohovaz, F., Fumagalli, G., Pozzan, T. & Meldolesi, J. (1988) Intracellular source(s) of  $[Ca^{2+}]_i$  transients in non-muscle cells. *Ann. N.Y. Acad. Sci.*, 551: 159-167.

Pandiella, A., Malgaroli, A., Meldolesi, J. & Vicentini, L.M.(1987) EGF raises cytosolic Ca<sup>2+</sup> in A431 and Swiss 3T3 cells by a dual mechanism: redistribution from intracellular stores and stimulated influx. *Experimental Cell Research*, 170: 175-185.

Wanke, E., Ferroni, A., Malgaroli, A., Ambrosini, A., Pozzan T. & Meldolesi, J.(1987) Activation of a muscarinic receptor selectively inhibits a rapidly inactivated Ca<sup>2+</sup> current in rat sympathetic neurons. *Proc. Natl. Acad. Sci. USA*, 84: 4313-4317.

Malgaroli, A., Vallar, L. RezaElahi, F., Pozzan,T., Spada, A. & Meldolesi, J. (1987). Dopamine inhibits cytosolic Ca<sup>2+</sup> increases in ratlactotroph cells: evidence of a dual mechanism of action *J. Biol. Chem.*, 262: 13920-13927.

Malgaroli, A. , Milani, D., Meldolesi, J. & Pozzan, T.(1987) Fura-2 measurement of cytosolic free Ca<sup>2+</sup> in monolayers and suspensions of various types of animal cells. *J. Cell Biol.*, 105: 2145-2155.

Pandiella, A., Malgaroli, A. Vicentini, L.M. &Meldolesi, J. (1986) Early raise of cytosolic Ca<sup>2+</sup> induced by NGF in PC12 and Chromaffin cells. *FEBS Letters*, 208: 48-51.

## Awards

1985-88: Recipient of the AIRC research fellowship

1988-89: Recipient of the Monte Tabor research fellowship

1988: DeVisart award

1989-91: Recipient of the G. Moruzzi FIDIA research fellowship

1991: Chemofux prize, University of Vienna (Co-Recipient with Anna Teti)

1998-2001: Human Frontier grant award

1999: Herbert W. Rand Award, MBL

2000: Frank Lillie Award, MBL

2000: Elected as a member of the Physiological Society London

2000: Elected as a member of EMBO

## Research

Antonio Malgaroli has published more than one hundred publications in the fields of neurophysiology, neuroscience, psychology and psychiatry, 58 of these are peer-reviewed articles with about 3500 citations in total; he has an h-index of 26, g-index of 58 (source: Google Scholar). His work has been widely described in many textbooks and reviews in the field of physiology and neuroscience. With regard to his current research activity, his interests focus on the mechanisms of brain synaptic plasticity. In addition to maladaptive aspects, which lead to functional and/or anatomical abnormalities and are therefore involved in the genesis of many neuropsychiatric diseases, plasticity phenomena underlie many compensatory processes, such as those induced by therapies, not only pharmacological but also psychoanalytical and psychotherapeutic. In detail, the main research interests focus on four thematic areas:

1. The plasticity of neural networks and its cellular and molecular mechanisms. In this field, he has obtained important results in understanding the mechanisms of induction and expression of synaptic plasticity, both in the hippocampus and in the prefrontal cortex.
2. Development of innovative techniques for the functional study of synaptic circuits in vitro and in vivo. His achievements include the first technology for the electrical measurement of the activity of a single central synapse, and the first technology for the functional assessment of synaptic activity changes in a neural network in vitro. Recently, after several years of work, he developed the only method available today to record synaptic activity in vivo (GreenZip), a technique that is used for many of the questions in section 3, below.
3. The neurobiological mechanisms and clinical aspects of certain psychopathological conditions such as anxiety and stress, anorexia, Tourette's syndrome, understanding the mechanism of action of certain psychoactive drugs such as ketamine, which is used today for the treatment of major depression that is not responsive to other treatments.

Human clinical projects include: the study of OCD in Tourette Syndrome; ii) The implementation of TMS brain magnetic stimulation protocols to induce lasting plastic changes in brain circuits involved in certain psychiatric disorders (OCD, anorexia, depression, S. Tourette); The use of TMS to assess the involvement of certain brain areas in attentional and decision-making aspects and the effect of emotional states.

## Accreditation

[Clinica Sant'Anna](#)

## Specialties

[Psychiatry and psychotherapy](#)

## Contact

Clinica Sant'Anna Via Sant'Anna 1, 6924, Sorengo

T + 41 91 985 13 53

[amalgaroli@clnicasantanna.ch](mailto:amalgaroli@clnicasantanna.ch)

[Download vCard](#)