
PIETRO

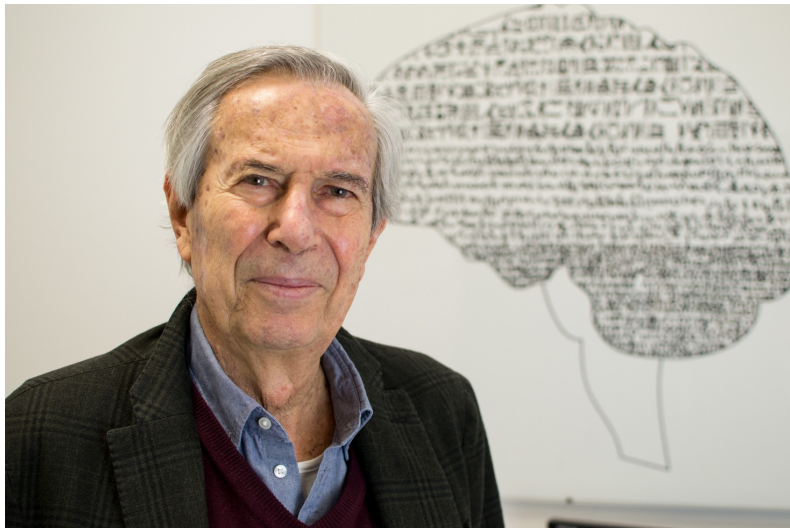
CALISSANO

Group Leader

**Tau protein, tauopathies and
Alzheimer disease Laboratory**

Co-founder of the

**European Brain Research
Institute (EBRI)**



+39 0649255241 | pietro.calissano@gmail.com

Graduated in Medicine and Surgery in 1964 at the University of Genoa in 1965, Rita Levi Montalcini offered him a scholarship at the Neurobiology center at National Research Council (Consiglio Nazionale delle Ricerche, CNR). First under the Levi-Montalcini's scientific guidance and later as a collaborator of the same scientist, alternating numerous work stays at foreign institutions, carry on most of their experimental work on nerve growth factor (NGF) and on certain other problems of neurobiological nature concerning the specific protein of the brain called S100. In the last decade Calissano advances the hypothesis that activation of apoptosis resulting from the lack of NGF in target cells of the peripheral nervous system and of the cholinergic system of the brain, produces the characteristic events of Alzheimer disease. This hypothesis is confirmed in a series of experimental studies performed in neuronal cultures NGF-dependent, and opens the way to investigation to a series of studies that lead to the identification of a neurotoxin peptide derived from tau protein and also found in the brains of Alzheimer disease patients. Currently, the research group coordinated by Calissano and headed by Giuseppina

Amadoro, is investigating the properties of a monoclonal antibody(12A12) directed against such peptide neurotoxin, with the purpose to employ it for the diagnosis and treatment of Alzheimer's disease

Previous positions

Member of the European Molecular Biology Organization (EMBO)
Director of the Institute of Neurobiology and Molecular Medicine(inmm)
Member of the Scientific Council of the Istituto Treccani
Professor of Neurophysiology at the Tor Vergata University of Rome
Member of the National Academy of Sciences said "dei XL"
President of the European Brain Research Institute(EBRI)

Education:

1964 Degree in Medicine and Surgery (cum laude) University of Genoa
1971 Professorship in Biological Chemistry

Previous positions

1966-67 Research Associate at the Dept. of Biology, Washington University of St. Louis, USA
1967-68 Acting Laboratory Director at the same University
1973 Research Director at the Laboratory of Cell Biology of the CNR in Roma
1974 "Consultant" at the Dept. of Neuropathology, Harvard Medical School
1977-1978 Visiting Professor at the Dept. of Neuropathology, Harvard Medical School
1978 Member of the European Molecular Biology Organization (EMBO)
1980 Italian Member of the "Advisory Panel on the Research Grants Program" of NATO
1986 Professor of General Physiology, Faculty of Sciences of the University of Perugia
1988 Director of the Institute of Neurobiology of the C.N.R.
1991 Professor of Neurophysiology at the Tor Vergata University in Rome
1994* Indicated for the "Balzan Prize" by Lincei National Academy
1995 Member of the Scientific Council of 'Enciclopedia Italiana Treccani
1999 Member of National Academy of Sciences said of XL
2000-2008 Director of the Institute of Neurobiology and Molecular Medicine of the CNR
2002 Founder together with Rita Levi Montalcini of EBRI

2008-2019 EBRI President

Scientific Associations:

Member of the European Molecular Biology Organization (EMBO);

Member of the National Academy of Sciences said of XL;

Member of the Scientific Council of the Enciclopedia Italiana Treccani

Fellowships in other Institutions

1966-68 Washington University, S.Louis USA

1973 EMBO Fellowship, Dept. of Neurobiology Weizmann Institute,
Israele

'''''' EMBO fellowship Dept of Human Physiology, Cambridge

1977-78 Visiting Professor, Dept. of Neuropathology, Harvard Medical
School, Boston, USA

Selected publications:

2019

Naletova I, Satriano C, Pietropaolo A, Gianì F, Pandini G, Triaca V, Amadoro G, Latina V, Calissano P, Travaglia A, Nicoletti VG, La Mendola D, Rizzarelli E. The Copper(II)-Assisted Connection between NGF and BDNF by Means of Nerve Growth Factor-Mimicking Short Peptides. *Cells*. 2019 Apr 1;8(4). pii: E301. doi: 10.3390/cells8040301.

Perini G, Ciasca G, Minelli E, Papi M, Palmieri V, Maulucci G, Nardini M, Latina V, Corsetti V, Florenzano F, Calissano P, De Spirito M, Amadoro G. Dynamic structural determinants underlie the neurotoxicity of the N-terminal tau 26-44 peptide in Alzheimer's disease and other human tauopathies. *Int J Biol Macromol*. 2019 Dec 1;141:278-289. doi: 10.1016/j.ijbiomac.2019.08.220. Epub 2019 Aug 27.

Amadoro G, Latina V, Corsetti V, Calissano P. N-terminal tau truncation in the pathogenesis of Alzheimer's disease (AD): Developing a novel diagnostic and therapeutic approach. *Biochim Biophys Acta Mol Basis Dis*. 2020 Mar 1;1866(3):165584. doi: 10.1016/j.bbadis.2019.165584. Epub 2019 Oct 29. Review.

2018

Borreca A, Latina V, Corsetti V, Middei S, Piccinin S, Della Valle F, Bussani R, Ammassari-Teule M, Nisticò R, Calissano P, Amadoro G. AD-Related N-Terminal Truncated Tau Is Sufficient to Recapitulate In Vivo the Early Perturbations of Human Neuropathology: Implications for Immunotherapy. *Mol Neurobiol*. 2018 Oct;55(10):8124-8153. doi: 10.1007/s12035-018-0974-3. Epub 2018 Mar 5.

Latina V, Caioli S, Zona C, Ciotti MT, Borreca A, Calissano P, Amadoro G. NGF-Dependent Changes in Ubiquitin Homeostasis Trigger Early Cholinergic Degeneration in Cellular and Animal AD-Model. *Front Cell Neurosci.* 2018 Dec 13;12:487. doi: 10.3389/fncel.2018.00487. eCollection 2018.

2017

Latina V, Caioli S, Zona C, Ciotti MT, Amadoro G, Calissano P. Impaired NGF/TrkA Signaling Causes Early AD-Linked Presynaptic Dysfunction in Cholinergic Primary Neurons.

Front Cell Neurosci. 2017 Mar 15;11:68. doi: 10.3389/fncel.2017.00068. eCollection 2017.

Canu N, Amadoro G, Triaca V, Latina V, Sposato V, Corsetti V, Severini C, Ciotti MT, Calissano P. The Intersection of NGF/TrkA Signaling and Amyloid Precursor Protein Processing in Alzheimer's Disease Neuropathology. *Int J Mol Sci.* 2017 Jun 20;18(6). pii: E1319. doi: 10.3390/ijms18061319. Review.

Florenzano F, Veronica C, Ciasca G, Ciotti MT, Pittaluga A, Olivero G, Feligioni M, Iannuzzi F, Latina V, Maria Sciacca MF, Sinopoli A, Milardi D, Pappalardo G, Marco S, Papi M, Atlante A, Bobba A, Borreca A, Calissano P, Amadoro G. Extracellular truncated tau causes early presynaptic dysfunction associated with Alzheimer's disease and other tauopathies. *Oncotarget.* 2017 Apr 22;8(39):64745-64778. doi: 10.18632/oncotarget.17371. eCollection 2017 Sep 12.

2016

Paparone S, Severini C, Ciotti MT, D'Agata V, Calissano P, Cavallaro S. Transcriptional landscapes at the intersection of neuronal apoptosis and substance P-induced survival: exploring pathways and drug targets. *Cell Death Discov.* 2016;2:16050.

Severini C, Petrella C, Calissano P. Substance P and Alzheimer's Disease: Emerging Novel Roles. *Curr Alzheimer Res.* 2016;13(9):964-72.

Triaca V, Calissano P (2016) Impairment of the nerve growth factor pathway driving amyloid accumulation in cholinergic neurons: the incipit of the Alzheimer's disease story? *Neural Regen Res* 11(10):1553-1556.

Triaca V, Sposato V, Bolasco G, Ciotti MT, Pelicci P, Bruni AC, Cupidi C, Maletta R, Feligioni M, Nisticò R, Canu N, Calissano P. (2016) NGF controls APP cleavage by downregulating APP phosphorylation at Thr668: relevance for Alzheimer's disease. *Aging Cell.* 2016 Aug;15(4):661-72. doi: 10.1111/ace.12473. PMID: 27076121 Free PMC Article

2015

Bobba A, Amadoro G, La Piana G, Calissano P, Atlante A. Glycolytic enzyme upregulation and numbness of mitochondrial activity characterize the early phase of apoptosis in cerebellar granule cells. *Apoptosis.* 2015 Jan;20(1):10-28. doi: 10.1007/s10495-014-1049-1.

Bobba A, Amadoro G, La Piana G, Petragallo VA, Calissano P, Atlante A. Glucose-6-phosphate tips the balance in modulating apoptosis in cerebellar granule cells. *FEBS Lett.* 2015 Feb 27;589(5):651-8. doi: 10.1016/j.febslet.2015.01.031. Epub 2015 Jan 31.

Corsetti V, Florenzano F, Atlante A, Bobba A, Ciotti MT, Natale F, Della Valle F, Borreca A, Manca A, Meli G, Ferraina C, Feligioni M, D'Aguanno S, Bussani

R, Ammassari-Teule M, Nicolin V, Calissano P, Amadoro G. NH₂-truncated human tau induces deregulated mitophagy in neurons by aberrant recruitment of Parkin and UCHL-1: implications in Alzheimer's disease. *Hum Mol Genet.* 2015 Jun 1;24(11):3058-81. doi: 10.1093/hmg/ddv059. Epub 2015 Feb 15.

2014

Severini C, Passeri PP, Ciotti M, Florenzano F, Possenti R, Zona C, Di Matteo A, Guglielmotti A, Calissano P, Pachter J, Mercanti D. (2014) Bindarit, inhibitor of CCL2 synthesis, protects neurons against amyloid- β -induced toxicity. *J Alzheimers Dis.* 2014 Jan 1;38(2):281-93. doi: 10.3233/JAD-131070.

Amadoro G, Corsetti V, Florenzano F, Atlante A, Bobba A, Nicolin V, Nori SL, Calissano P. (2014) Morphological and bioenergetic demands underlying the mitophagy in post-mitotic neurons: the pink-parkin pathway. *Front Aging Neurosci.* 2014 Feb 18;6:18. doi: 10.3389/fnagi.2014.00018. eCollection 2014.

Amadoro G, Corsetti V, Sancesario GM, Lubrano A, Melchiorri G, Bernardini S, Calissano P, Sancesario G. Cerebrospinal fluid levels of a 20-22 kDa NH₂ fragment of human tau provide a novel neuronal injury biomarker in Alzheimer's disease and other dementias. *J Alzheimers Dis.* 2014;42(1):211-26. doi: 10.3233/JAD-140267.

Amadoro G, Corsetti V, Florenzano F, Atlante A, Ciotti MT, Mongiardì MP, Bussani R, Nicolin V, Nori SL, Campanella M, Calissano P (2014) AD-linked, toxic NH₂ human tau affects the quality control of mitochondria in neurons. *Neurobiol Dis.* 2014 Feb;62:489-507. doi: 10.1016/j.nbd.2013.10.018. Epub 2013 Oct 24.

2013

La Rosa LR, Matrone C, Ferraina C, Panico MB, Piccirilli S, Di Certo MG, Strimpakos G, Mercuri NB, Calissano P, D'Amelio M, Nisticò R. (2013) Age-related changes of hippocampal synaptic plasticity in A β PP-null mice are restored by NGF through p75NTR. *J Alzheimers Dis.* 2013 Jan 1;33(1):265-72.

Chao MV, Calissano P. (2013) Rita Levi-Montalcini: in memoriam. *Neuron.* 2013 Feb 6;77(3):385-7.

Campolongo P, Ratano P, Ciotti MT, Florenzano F, Nori SL, Marolda R, Palmery M, Rinaldi AM, Zona C, Possenti R, Calissano P, Severini C (2013) Systemic administration of substance P recovers beta amyloid-induced cognitive deficits in rat: involvement of Kv potassium channels. *PLoS One.* 2013 Nov 12;8(11):e78036. doi: 10.1371/journal.pone.0078036.

Bobba A, Amadoro G, Petragallo VA, Calissano P, Atlante A. (2013) Dissecting the molecular mechanism by which NH₂tau and A β 1-42 peptides impair mitochondrial ANT-1 in Alzheimer disease. *Biochim Biophys Acta.* 2013 Jul;1827(7):848-60. doi: 10.1016/j.bbabbio.2013.04.001. Epub 2013 Apr 11.

2012

Scarpi D, Cirelli D, Matrone C, Castronovo G, Rosini P, Occhiato EG, Romano F, Bartali L, Clemente AM, Bottegoni G, Cavalli A, De Chiara G, Bonini P, Calissano P, Palamara AT, Garaci E, Torcia MG, Guarna A, Cozzolino F (2012) Low molecular weight, non-peptidic agonists of TrkA receptor with NGF-mimetic activity. *Cell Death Dis.* 2012 Sep 6;3:e389. doi: 10.1038/cddis.2012.129.

Cattaneo A, Calissano P. (2012) Nerve growth factor and Alzheimer's disease: new facts for an old hypothesis. *Mol Neurobiol.* 2012 Dec;46(3):588-604. doi: 10.1007/s12035-012-8310-9. Epub 2012 Sep 1.

Calissano P, Amadoro G (2012) NGF at the interface between physiology and pathology of A β PP processing. *European Journal of Neurodegenerative Diseases*, 1(1): 35-52.

Bornstein SR, Ehrhart-Bornstein M, Androutsellis-Theotokis A, Eisenhofer G, Licinio J, Wong M.L, Calissano P, Nisticò G, Levi-Montalcini R, (2012) Chromaffin Cells - The Peripheral Brain, *Molecular Psychiatry*17(4):354-8.

Amadoro G, Corsetti V, Atlante A, Florenzano F, Capsoni S, Bussani R, Mercanti D, Calissano P. Interaction between NH₂-tau fragment and Abeta in AD mitochondria contributes to the synaptic deterioration. *Neurobiology of Aging*, 2012 April; 33(4):833.e1-25.

2011

Paratore S, Ciotti MT, Basille M, Vaudry D, Gentile A, Parenti R, Calissano P, Cavallaro S (2011) Gastric inhibitory polypeptide and its receptor are expressed in the central nervous system and support neuronal survival. *Cent Nerv Syst Agents Med Chem.* 2011 Sep 1;11(3):210-22.

Matrone C, Barbagallo AP, La Rosa LR, Florenzano F, Ciotti MT, Mercanti D, Calissano P, D'Adamio L. (2011) APP is phosphorylated by TrkA and regulates NGF/TrkA signaling. *J Neurosci.* 2011 Aug 17;31(33):11756-61. doi: 10.1523/JNEUROSCI.1960-11.2011.

2010

P. Calissano, G. Amadoro, C. Matrone, S. Ciaffrè, R. Marolda, V. Corsetti, MT Ciotti, D. Mercanti, A. Di Luzio, C. Severini, C. Provenzano, and N. Canu. (2010) Does the term Trophic actually mean anti-amyloidogenic? The case of NGF Cell death and Differentiation (2010) 1-8 IF 9.05

Amadoro G, Corsetti V, Stringaro A, Colone M, D'Aguzzo S, Meli G, Ciotti M, Sancesar G, Cattaneo A, Bussani R, Mercanti D, Calissano P. (2010) A NH₂ tau fragment targets neuronal mitochondria at AD synapses: possible implications for neurodegeneration. J Alzheimers Dis. 2010;21(2):445-70 IF 3.8

Calissano P, Matrone C, Amadoro G. (2010) Nerve growth factor as a paradigm of neurotrophins related to Alzheimer's disease. Dev Neurobiol. 2010 Apr;70(5):372-83. IF 2.85

Pieri M, Amadoro G, Carunchio I, Ciotti MT, Quaresima S, Florenzano F, Calissano P, Possenti R, Zona C, Severini C. (2010) SP protects cerebellar granule cells against beta-amyloid-induced apoptosis by down-regulation and reduced activity of Kv4 potassium channels. Neuropharmacology. 2010 Jan;58(1):268-76. IF. 4.7

Tendi EA, Cunsolo R, Bellia D, Messina RL, Paratore S, Calissano P, Cavallaro S. (2010) Drug target identification for neuronal apoptosis through a genome scale screening. Curr Med Chem. 2010;17(26):2906-20.

2009

Matrone C, Marolda R, Ciafrè S, Ciotti MT, Mercanti D, Calissano P (2009) Tyrosine kinase nerve growth factor receptor switches from pro-survival to pro-apoptotic activity via Aβ-mediated phosphorylation. Proc Natl Acad Sci 105(27): 11358-11363

Amadoro G, Corsetti V, Ciotti MT, Florenzano F, Capsoni S, Amato G, Calissano P (2009) Endogenously A β causes cell death via early tau hyperphosphorylation. *Neurobiol Aging* 32(6): 969-90

Matrone,C.Marolda, R. Ciaffrè,S. Ciotti,M,T. Mercanti,d: and Calissano,P,(2009) *Proc.Natl.Acad.Sci.USA* 106,11358.-11363. Tyrosine kinase nerve growth factor receptor switches from prosurvival to proapoptotic activity via Abeta-mediated phosphorylation IF 9.7