
MARA D'ONOFRIO

**Head of Facility –
Genomics**

+39 0649255230 |
mara.donofrio@ebri.it



Mara D'Onofrio has been working as a research scientist at the European Brain Research Institute "Rita Levi-Montalcini" since 2004, as Head of the Genomics Facility since 2010 (up-today) and Vice of the EBRI Scientific Coordinator (2011-2013). She coordinates the scientific activities of the Facility and collaborates with many National and International Institutions, mainly to provide expression profiles fingerprinting, specific of disease models or modulated by pharmacological treatments.

Her main research interest and expertise focus on understanding the molecular bases of diseases, with particular interest to the molecular events linking the NGF system to neurodegenerative diseases and chronic pain, along with the development of genomics technologies (gene expression, microRNA and CGH), exploiting innovative biomarkers and candidates for novel pharmacological treatments. Her main interest is the early and more

accurate prediction and diagnosis of disease and disease progression and the redefinition of disease subtypes (typical application cancer) to optimize differential therapies (pharmacogenomics) and understand the individual responses (personalised medicine) to drugs with crucial implications for their development by the pharmaceutical industry.

She got her medical doctor degree at the School of Medicine at the "Sapienza University" (Roma, Italy) in 1986 and her PhD in Physiopathology at University of L'Aquila (Italy) in 1990. From 1986 to 1990 she was post-doctoral fellow at National Institutes of Health, (NIH, Bethesda, MD, USA), where she worked on the molecular characterization of the nuclear pore, under the supervision of Dr. John Hanover.

In 1995 she got her residency in Clinical Pathology at the University of L'Aquila.

From 1995 to 2004 she was a research assistance at the Neuroscience Institute Neuromed (Pozzilli, IS, Italy), where she worked on metabotropic glutamate receptors in neurodegeneration, neuroinflammation and brain tumors (Prof. Ferdinando Nicoletti), focusing on neuroprotective drugs in the treatment of neurodegenerative disorders and on neuro-immune network. She has been collaborating at projects on the identification of genetics of migraine with and without aura with Maria Gabriella Buzzi at the IRCCS Santa Lucia Foundation. The analysis of the genes of the calcium channels, CACNA1A and CACNA1E, in a basilar familiar migraine, contributed to the identification of a new mutation of the Na/K ATPase (R548). Mara D'Onofrio has been working at the molecular characterization of the gene expression profiling of a mouse model for Alzheimer's disease like neurodegeneration process (anti-NGF AD11 mouse) for further understanding of the physiopathogenesis of the disease and the identification of early biomarkers.

She is the EBRI coordinator of the EU Grant: "Magnetic Diagnostic Assay for neurodegenerative diseases", (MADIA), Horizon 2020 and of the Life Grant Project: Informatic platform based on mathematical models for a most accurate and non invasive diagnosis of neurodegenerative diseases by integration of clinical, instrumental, and innovative biomarkers data. She has also contributed to the FP7 EU funded project 603191, Acronym PAINCAGE (2014-2017) on innovative targets, involving the NGF system, for neuropathic pain treatment.

She is associate to the National Research Council as senior collaborator, to the scientific activities of Traslational Pharmacological Institute (IFT), working on specific activities on nervous system.

Mara D'Onofrio authored several publications in peer-reviewed journals.

Education and Positions

- She got her MD degree at the School of Medicine at the “Sapienza University” (Rome, Italy) in 1986 and her PhD in Physiopathology at University of L’Aquila (Italy) in 1990.
- From 1986 to 1990 she was research fellow at NIH, National Institutes of Health, (Bethesda, MD, USA), where she worked on the molecular characterization of a nuclear pore protein, under the supervision of John Hanover.
- In 1986 she got the abilitazione to the medical profession, Università degli Studi di L’Aquila, L’Aquila.
- In 1995 she got her residency in Clinical Pathology at the University of L’Aquila.
- From 1995 to 2004 she was a research assistance at the Neuroscience Institute Neuromed (Pozzilli, IS, Italy), where she worked on metabotropic glutamate receptors in neurodegeneration, neuroinflammation and brain tumors.
- From 2004 to 2010 Researcher at the EBRI Foundation.
- From 2010 up to date, Head of the European Brain Research Institute (EBRI) “Rita Levi-Montalcini”, Roma, Italy.
- From July 2011 to December 2013 Vice-Coordinator of the EBRI Foundation.

Selected publications

2019

Pandolfini L, Barbieri I, Bannister AJ, Hendrick A, Andrews B, Webster N, Murat P, Mach P, Brandi R, Robson SC, Migliori V, Alendar A, D’Onofrio M, Balasubramanian S, Kouzarides T (2019) METTL1 Promotes let-7 MicroRNA Processing via m7G Methylation. *Mol Cell*. Apr 19. pii: S1097-2765(19)30269-2. doi: 10.1016/j.molcel.2019.03.040.

D’Onofrio M. Trust within and in Science: Changing Landscape of Communication. Proceedings Conference (in press, 2019) “ Social Media Marketing - Opportunities & Challenges”, Jesus and Mary College, New Delhi Department of Commerce, University of Delhi, March 28-29.

Casagrande V, Mauriello A, Anemona L, Mavilio M, Iuliani G, De Angelis L, D’Onofrio M, Arisi I, Federici M, Menghini R (2019) Timp3 deficiency affects the progression of DEN-related hepatocarcinoma during diet-induced obesity in mice. *Acta Diabetol*. Jul 10. doi: 10.1007/s00592-019-01382-x.

2018

Terrigno M, Busti I, Alia C, Pietrasanta M, Arisi I, D’Onofrio M, Caleo M, Cremisi F (2018) Neurodegenerated by mouse ES cell with hippocampal or cortical identity display distinct

projection patterns when co-transplanted in the adult brain. *Stem Cell Reports*. Mar 13;10(3):1016-1029. doi: 10.1016/j.stemcr.2018.01.010. Epub 2018 Feb 15.

Rizzi C, D'Onofrio M et al. NGF steers microglia towards a neuroprotective phenotype (2018) *Glia* Jul; 66(7): 1395–1416. Epub 2018 Feb 2.

2017

Chirichella M, Lisi S, Fantini M, Goracci M, Arisi I, D'Onofrio M, Brandi R, Di Primio C, Cattaneo A. "Post-translational-selective intracellular silencing of acetylated proteins with de novo selected intrabodies" (2017) *Nature Methods* Jan 16. doi: 10.1038/nmeth.4144. [Epub ahead of print].

Fasulo L, Brandi R, Arisi I, La Regina F, Berretta N, Capsoni S, D'Onofrio M, Cattaneo A (2017) "ProNGF Drives Localized and Cell Selective Parvalbumin Interneuron and Perineuronal Net Depletion in the Dentate Gyrus of Transgenic Mice". *Front Mol Neurosci* Feb 9;10:20. doi: 10.3389/fnmol.2017.00020.

Caputo M, Balzerano A, Arisi I, D'Onofrio M, Brandi R, Bongiorno S, Brancorsini S, Frontini M, Proietti-De-Santis L (2017) CSB ablation induced apoptosis is mediated by increased Endoplasmic Reticulum Stress Response. *PLoS One* Mar 2;12(3):e0172399. doi: 10.1371/journal.pone.0172399.

Severini C, Petrocchi Passeri P, Ciotti MT, Florenzano F, Petrella C, Malerba F, Bruni B, D'Onofrio M, Arisi I, Brandi R, Possenti R, Calissano P, Cattaneo A (2017) Evidence for reduced pain sensitization by 'painless' NGF in dorsal root ganglion neurons. *Neuropharmacology* Feb 2. pii: S0028-3908(17)30034-5. doi: 10.1016/j.neuropharm.2017.01.035.

Ambrosini A, D'Onofrio M, Buzzi MG, Arisi I, Grieco GS, Pierelli F, Santorelli FM, Schoenen J (2017) The interplay of two single nucleotide polymorphisms in the CACNA1A gene may contribute to migraine susceptibility. *Headache* 2017 Jul;57(7):1136-1144. doi: 10.1111/head.13107. Epub Jun 1.

Antonelli M, Strappazzon F, Arisi I, Brandi R, D'Onofrio M, Sambucci M, Barilà D, Stagni V (2017) ATM kinase sustains Breast Cancer Stem-like Cells by promoting ATG4C expression and autophagy", *Oncotarget*. Mar 28;8(13):21692-21709. doi: 10.18632/oncotarget.15537.63. 63.

Mancini F, Di Conza G, Monteleone V, Arisi I, Teveroni E, Buttarelli M, Pellegrino M, Pieroni L, D'Onofrio M, Urbani A, Lozano G, Pontecorvi A, Mazzone M, Moretti F (2017) MDM4 actively restrains cytoplasmic mTORC1 by sensing nutrient availability, *Mol Cancer*. Mar 7;16(1):55. doi: 10.1186/s12943-017-0626-7.

2016

D'Aurizio R, Russo F, Chiavacci E, Baumgart M, Groth M, D'Onofrio M, Arisi I, Rainaldi G, Pitto L, Pellegrini (2016) Discovering miRNA Regulatory. Jul 14;4:60. *Front Bioeng Biotechnol*. 2016 Jul 14;4:60. doi: 10.3389/fbioe.2016.00060. PubMed PMID: 27471727;

PubMed Central PMCID: PMC4943955.

Guglielmi L, Nardella M, Musa C, Iannetti I, Arisi I, D'Onofrio M, Storti A, Valentini A, Cacci E, Biagioni S, Augusti-Tocco G, D'Agnano I, Felsani A (2016) Lamin A/C Is Required for ChAT-Dependent Neuroblastoma Differentiation. *Mol Neurobiol.* May 25.

Pandolfini L, Luzi E, Bressan D, Ucciferri N, Bertacchi M, Brandi R, Rocchiccioli S, D'Onofrio M, Cremisi F (2016) RISC-mediated control of selected chromatin regulators stabilizes ground state pluripotency of mouse embryonic stem cells. *Genome Biol.* May 6; 17(1):94.

D'Aurizio R, Russo F, Chiavacci E, Baumgart M, Groth M, D'Onofrio M, Arisi I, Rainaldi G, Pitto L, Pellegrini M (2016) Discovering miRNA Regulatory Networks in Holt–Oram Syndrome Using a Zebrafish Model". *Front Bioeng Biotechnol.* Jul 14;4:60.

2015

Arisi I, D'Onofrio M, Brandi R, Cattaneo A, Bertolazzi P, Cumbo F, Felici G and Guerra C (2015) Time Dynamics of Protein Complexes in the AD11 Transgenic Mouse Model for Alzheimer's Disease. *BMC Neurosci.* Apr 29;16:28. doi: 10.1186/s12868-015-0155-5.

Bertacchi M, Lupo G, Pandolfini L, Casarosa S, D'Onofrio M, Pedersen RA, Harris WA, Cremisi F (2015) Activin/Nodal Signaling Supports Retinal Progenitor Specification in a Narrow Time Window during Pluripotent Stem Cell Neuralization. *Stem Cell Reports.* Sep 16. pii: S2213-6711(15)00245-3.

Pellegrino M, Mancini F, Lucà R, Coletti A, Giacchè N, Manni I, Arisi I, Florenzano F, Teveroni E, Buttarelli M, Fici L, Brandi R, Bruno T, Fanciulli M, D'Onofrio M, Piaggio G, Pellicciari R, Pontecorvi A, Marine JC, Macchiarulo A, Moretti F (2015) Targeting the MDM2/MDM4 Interaction Interface as a Promising Approach for p53 Reactivation Therapy *Cancer Res.* Nov 1;75(21):4560-72.

Chiavacci E, D'Aurizio R, Guzzolino E, Russo F, Baumgart M, Groth M, Mariani L, D'Onofrio M, Arisi I, Pellegrini M, Cellerino A, Cremisi F, Pitto L (2015) microRNA 19° replacement partially rescues fin and cardiac defects in Zebrafish model of Holt Oram Syndrome. *Sci Rep* Dec 14;5:18240.

2014

Tzanoulinou S, Brandi R, Arisi I, D'Onofrio M, Urfer SM, Sandi C, Constam D, Capsoni S (2014) Pathogen-Free Husbandry Conditions Alleviate Behavioral Deficits and Neurodegeneration in AD10 Anti-NGF Mice. *J Alzheimers Dis.* Jan1;38(4):951-64. doi: 10.3233/JAD-131037.

Arisi I*, D'Onofrio M*, Brandi R*, Malerba F, Paoletti F, Storti AE, Fulvio Florenzano, Luisa

Fasulo and Cattaneo A (2014) proNGF/NGF mixtures behave as a new ligand in the NGF-regulated transcriptional response in PC12 cells". *BMC Neuroscience* 2014 Apr 8;15:48. doi: 10.1186/1471-2202-15-48.

Bertacchi M, Pandolfini L, D'Onofrio M, Brandi R, Cremisi F (2016) The double inhibition of endogenously-produced BMP and Wnt factors synergistically triggers dorsal telencephalic differentiation of mouse ES cells *Dev Neurobiol.* Jan;75(1):66-79. doi: 10.1002/dneu.22209. Epub 2014 Jul 16.

Selected recent Grants:



2014-2017: Project Number 603191 Project Acronym PAINCAGE FP7-HEALTH-2013-INNOVATION-The NGF system and its interplay with endocannabinoid signalling, from peripheral sensory terminals to the brain: new targets for the development of next generation drugs for neuropathic pain.



MADIA
MAGnetic Diagnostic Assay
for neurodegenerative diseases

2017-2020: "Magnetic Diagnostic Assay for neurodegenerative diseases (MADIA) founded by EU Commission, Horizon Programme, (EBRI Leader) for an innovative assay for the Neurodegenerative diseases, with main interest for Alzheimer's and Parkinson's diseases.



MODIAG
Modeling for Diagnostic
Genomics and NeuroScience

2016-2019: Regione Lazio/CE: MoDiag To create a **technological platform, web service**, for the early and **non-invasive diagnosis** of neurodegenerative diseases (**Alzheimer's and Parkinson's** diseases).