CV Antonello (Antonio) Mallamaci, July 2020

A. Generalities and present position

Generalities: Antonello (Antonio) Mallamaci, born on June 14, 1961, in Naples, Italy, Italian citizen
Present position: Full Professor of Molecular Biology, at SISSA, Trieste, Italy

B. Education

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
Liceo-Ginnasio A.Pansini, Naples, Italy	Diploma	1979	High School, Humanities branch
Conservatorio di Musica S. Pietro a Majella, Naples, Italy	Diploma	1985	Piano
University of Naples Federico II, Italy	Biol. Sci. Degree	1990	Biological Sciences
MPI fur Biophysikalische Chemie, Goettingen, Germany	Course Attend.	1995	Mouse and Chick Development
CSHL, Cold Spring Harbor, USA	Course Attend.	1996	Mouse Development

C. Positions

Positions and Employment

1993 Fellow, National Institute for Medical Research, Medical Research Council, London, UK;
1993-1997 Fellow, Department of Biological and Technological Research, Scientific Institute H San Raffaele, Milan, Italy
1997 Fellow, GSF, Forschungzentrum fur Umwelt und Gesundheit, Munich, Germany
1997-2001 Tenured Researcher, Department of Biological and Tecnological Research - Scientific Institute H San Raffaele, Milan, Italy
2002-2006 Head of Laboratory, Department of Biological and Tecnological Research - Scientific Institute H San Raffaele, Milan, Italy
2006-2018 Head of Laboratory, Associate Professor of Molecular Biology
from 2014 to 2018, Coordinator of the PhD Course in Functional and Structural Genomics
at Scuola Internazionale Superiore di Studi Avanzati, SISSA, Trieste, Italy
2018-2020 Head of Laboratory, Full Professor of Molecular Biology
since 2018, Coordinator of the Neuroscience Area
at Scuola Internazionale Superiore di Studi Avanzati, SISSA, Trieste, Italy

Other Experience

1997-1999 Appointed Professor ("Developmental Biology and Vegetal Morphogenesis"), University of Verona, Verona, Italy
1999-2002 Appointed Professor (“Developmental Genetics: from Drosophila to Vertebrates”), University of Pavia, Pavia, Italy
2002-2003 Appointed Professor (“Recombinant DNA technologies”), University of Insubria, Varese, Italy;
2003-2005 Appointed Professor (“Animal models in Genetics”), University Vita-Salute San Raffaele, Milan, Italy;
2000-2005 Courses Organizer and Teacher, Open University Ph.D. Program in Cell and Molecular Biology, Department of Biological and Tecnological Research, Scientific Institute H San Raffaele & University Vita-Salute San Raffaele, Milan, Italy
2007-2020 Appointed Professor ("CNS development", 2007; "Cerebral Cortex Development", 2008-2009; "Neuroembriology", 2009-2013; "Neurodevelopmental genetics", 2014-present), University of Trieste, Trieste, Italy

2002-2020 Ad hoc reviewer for the Journals: Brain Research - BMC Biology - BMC Genomics - BMC Neural Development - Cell Cycle - Cellular and Molecular Life Sciences - Cerebral Cortex - Development - Developmental Biology - Developmental Dynamics - European Journal of Neuroscience - EMBO Journal - Experimental Neurology - FEBS Letters - Frontiers in Neuroscience - Gene - ISRN Stem Cells - Journal of Comparative Neurology - Journal of Biomedical Research - Journal of Neuroscience - Mechanisms of Development - Molecular Cancer Therapy - Neural Development - Neurochemical Research - Neuroscience - PLoS Genetics - Stem Cell

2002-2020 Ad hoc reviewer for the Funding Agencies: ANR/ Agence Nationale de la Recherche - Association for International Cancer Research - Israel Science Foundation - The Wellcome Trust - IASys/ India Alliance System - FWF/Austrian Science Fund - University of Rome - University of Trieste.

D. Contribution to Science

A small set of evolutionarily conserved transcription factor genes specifies the early cerebral cortical field and subsequently dictates its inter-areal differentiation.

At the end of last century, molecular mechanisms orchestrating early patterning of the rostral mammalian brain were still largely unknown. The expression profiles of a number of genes encoding for secreted ligands and transcription factor genes suspected to be involved in this process were known. However the causative role of these genes in CNS patterning was still hypothetical. First as senior researcher (corresponding author) and then as PI, I substantially contributed to decode gene control of this process. My Team demonstrated that *Emx2* and *Pax6* are each sufficient to specify pallial identity, so that mice null for both genes undergo homeotic respecification of dorsal telencephalic territories to striatal identity. Moreover, we showed that, as the pallial field is specified, then *Emx2* (as well as its paralog *Emx1*), *Pax6* and *Foxg1* shape its areal profile. Specifically, we found that *Emx2* promotes hippocampal and occipital neocortical programs, *Pax6* is needed for proper development of fronto-lateral areas, *Foxg1* is absolutely required for the activation of paleocortical and neocortical programs. Moreover, we found that *Emx2* impact on cortical arealization has a dual origin. It stems from the capability of this gene to allot a proper number of pallial precursors to caudal-medial programs. It reflects its ability to subsequently sustain the expansion of such committed caudal-medial proliferating pool.

Control of late neocortical histogenesis by transcription factor genes patterning the pallial field.

Beyond their involvement in early brain patterning and their fine control of neuronogenesis dynamics, *Emx2* and *Foxg1* transcription factor genes were known to be expressed in late embryonic neocortex, however their role in this developmental scenario was for a long time largely obscure.

My Team investigated the impact of *Foxg1* on the architecture of neocortical pyramidal neurons and found that it promotes dendrite elongation and branching. That was early reported on Stem Cells in 2010. A more in depth study on this issue, including a detailed reconstruction of undelying molecular mechanisms, was subsequently run. Its results were published in Cerebral Cortex in 2018.

Next, we investigated the impact of *Foxg1* on the activity of neocortical pyramidal neurons. We found that mice overexpressing *Foxg1* displayed an EEG with increased spike frequency and were more prone to KA-induced seizures. Consistently, primary cultures of neocortical neurons overexpressing *Foxg1* were hyperactive, which reflected an unbalanced expression of key determinants of neuron excitability as well as by a pronounced interneuron depletion. We also detected a transient *Foxg1* upregulation driven by neuronal activity and and reconstructed the underlying gene circuitry. Based on this, we proposed that even small changes of Foxg1 levels may result in a profound impact on pyramids' activity, an issue relevant to neuronal physiology and neurological aberrancies associated to *FOXG1* copy number variations. These findings have been published in Cerebral Cortex in 2020.

On the other side, we investigated the impact of *Foxg1* and *Emx2* on gliogenesis progression, and found that both inhibit such progression, by distinct mechanisms.

As anticipated by a study of ours published in 2010, *Foxg1* acts by antagonizing the transition from neocortical stem cells to early astrocyte/oligodendrocyte precursors. More recently, we readdressed this issue in living mice and re-observed the same phenotype. Moreover, we found that a similar control is exerted by *Foxg1* on *primate* gliogenesis. Finally, we identified key cellular and molecular mechanisms linking *Foxg1* to astrogenesis progression. These findings are the subject of a dedicated study published in Cerebral Cortex in 2019.

As for *Emx2*, we found that it rather acts *after* the conversion of neural stem cell to astrocyte progenitors, by promoting the exit of these progenitors from cell cycle and their differentiation to postmitotic astrocytes. In this way, it anticipates astroglial differentiation and limits the numerical astrogenic output originating form the starting stem pool. We reconstructed mechanisms, both cell-autonomous and not-cell-autonomous, linking *Emx2* overexpression to premature astroglial differentiation, and proved that timed decline of *Emx2* levels in late gestational neocortex is a prerequisite for the perinatal astrogenic burst. These results were published on Glia in 2015.

Gene therapy of glioblastoma multiforme.

Building on results of our study on *Emx2* control of astrogenesis, we subsequently showed that over-expression of this gene can be employed to suppress glioblastoma multiforme (GBM). Possibly as a consequence of its pleiotropic impact on GBM founder cell metabolism, *Emx2* turned out to be highly effective in a number of GBM of heterogenous origin, in vitro and in vivo. Remarkably, its overactivation doubled the survival time of nude mice orthotopically transplanted by human GBMs, outperforming TMZ. These findings were published on Oncotarget and were the basis of a patent application for gene therapy of this tumor. At the moment we are working at biosafe delivery of a therapeutic transgene *in vivo*.

RNA therapy of neuropathogenic haploinsufficiencies

Haploinsufficiency for specific genes and genesets underlie an impressive number of rare and severe neurological pathologies for which no cure is presently available. The huge heterogeneity of the corresponding pathogenetic mechanisms and their low individual prevalence make the development of effective cures for each of these pathologies a particularly challenging issue. How escaping this impasse? Unfortunately, neither homologous recombination-mediated repair of the defective chromosome/gene nor the employment of therapeutic minigenes are affordable options. We reasoned that the haploinsufficiency problem might be solved by stimulating the spared gene allele, driven by the whole array of regulatory elements which shape its normal spatio-temporal expression profile and finely tune its expression.

We successfully employed miRNA-like, small-activating RNAs (saRNAs) to stimulate transcription of *Emx2* and haploinsufficient *Foxg1*. We developed a novel class of RNA-programmable transactivators, the NMHVs, seven folds smaller than CRISPR-transactivators (CRISPR-TAs), suitable for transactivating endogenous genes ad libitum. Both saRNAs and NMHVs gave expression gains not far from 2 and quantifiable biological redouts. Differently from CRISPR-TAs, they complied with endogenous, natural regulation of their target genes. All that makes them a promising tool for therapy of haploinsufficiencies.

Beyond our early work on *Foxg1* and *Emx2* stimulation, we further developed saRNAs promoting transcription of *FXN* and *Scn1a* (haploinsufficiency for which underlie Friedreich ataxia and Dravet's syndrome, respectively).

E. Publication list

Tigani W, Rossi MP, Artimagnella O, Santo M, Rauti R, Sorbo T, Ulloa FPS, Provenzano G, Allegra M, Caleo M, Ballerini L, Bozzi Y, Mallamaci A. Foxg1 Upregulation Enhances Neocortical Activity. Cereb Cortex. 2020 May 7;. doi: 10.1093/cercor/bhaa107. [Epub ahead of print] PubMed PMID: 32383447.

Falcone C, Santo M, Liuzzi G, Cannizzaro N, Grudina C, Valencic E, Peruzzotti-Jametti L, Pluchino S, Mallamaci A. Foxg1 Antagonizes Neocortical Stem Cell Progression to Astrogenesis. Cereb Cortex. 2019 Dec 17;29(12):4903-4918. doi: 10.1093/cercor/bhz031. PubMed PMID: 30821834.

Bon C, Luffarelli R, Russo R, Fortuni S, Pierattini B, Santulli C, Fimiani C, Persichetti F, Cotella D, Mallamaci A, Santoro C, Carninci P, Espinoza S, Testi R, Zucchelli S, Condò I, Gustincich S. SINEUP non-coding RNAs rescue defective frataxin expression and activity in a cellular model of Friedreich's Ataxia. Nucleic Acids Res. 2019 Nov 18;47(20):10728-10743. doi: 10.1093/nar/gkz798. PubMed PMID: 31584077; PubMed Central PMCID: PMC6847766.

Chiola S, Santo M, Mallamaci A. Intraventricular Transplantation of Engineered Neuronal Precursors for In Vivo Neuroarchitecture Studies. J Vis Exp. 2019 May 11;(147). doi: 10.3791/59242. PubMed PMID: 31132045.

Chiola S, Do MD, Centrone L, Mallamaci A. Foxg1 Overexpression in Neocortical Pyramids Stimulates Dendrite Elongation Via Hes1 and pCreb1 Upregulation. Cereb Cortex. 2019 Mar 1;29(3):1006-1019. doi: 10.1093/cercor/bhy007. PubMed PMID: 29385539.

Desmaris E, Keruzore M, Saulnier A, Ratié L, Assimacopoulos S, De Clercq S, Nan X, Roychoudhury K, Qin S, Kricha S, Chevalier C, Lingner T, Henningfeld KA, Zarkower D, Mallamaci A, Theil T, Campbell K, Pieler T, Li M, Grove EA, Bellefroid EJ. DMRT5, DMRT3, and EMX2 Cooperatively Repress Gsx2 at the Pallium-Subpallium Boundary to Maintain Cortical Identity in Dorsal Telencephalic Progenitors. J Neurosci. 2018 Oct 17;38(42):9105-9121. doi: 10.1523/JNEUROSCI.0375-18.2018. Epub 2018 Aug 24. PubMed PMID: 30143575; PubMed Central PMCID: PMC6191521.

Gustincich S, Zucchelli S, Mallamaci A. The Yin and Yang of nucleic acid-based therapy in the brain. Prog Neurobiol. 2017 Aug;155:194-211. doi: 10.1016/j.pneurobio.2016.11.001. Epub 2016 Nov 22. Review. PubMed PMID: 27887908.

Mallamaci A. Enhancing Neuronogenesis and Counteracting Neuropathogenic Gene Haploinsufficiencies by RNA Gene Activation. Adv Exp Med Biol. 2017;983:23-39. doi: 10.1007/978-981-10-4310-9_2. PubMed PMID: 28639189.

Fimiani C, Goina E, Su Q, Gao G, Mallamaci A. RNA activation of haploinsufficient Foxg1 gene in murine neocortex. Sci Rep. 2016 Dec 20;6:39311. doi: 10.1038/srep39311. PubMed PMID: 27995975; PubMed Central PMCID: PMC5172352.

Falcone C, Daga A, Leanza G, Mallamaci A. Emx2 as a novel tool to suppress glioblastoma. Oncotarget. 2016 Jul 5;7(27):41005-41016. doi: 10.18632/oncotarget.9322. PubMed PMID: 27191499; PubMed Central PMCID: PMC5173038.

Fimiani C, Goina E, Mallamaci A. Upregulating endogenous genes by an RNA-programmable artificial transactivator. Nucleic Acids Res. 2015 Sep 18;43(16):7850-64. doi: 10.1093/nar/gkv682. Epub 2015 Jul 7. PubMed PMID: 26152305; PubMed Central PMCID: PMC4652751.

Falcone C, Mallamaci A. Tuning of neocortical astrogenesis rates by Emx2 in neural stem cells. Neural Regen Res. 2015 Apr;10(4):550-1. doi: 10.4103/1673-5374.155418. PubMed PMID: 26170809; PubMed Central PMCID: PMC4424741.

Falcone C, Filippis C, Granzotto M, Mallamaci A. Emx2 expression levels in NSCs modulate astrogenesis rates by regulating EgfR and Fgf9. Glia. 2015 Mar;63(3):412-22. doi: 10.1002/glia.22761. Epub 2014 Oct 18. PubMed PMID: 25327963.

Pedroni A, Minh do D, Mallamaci A, Cherubini E. Electrophysiological characterization of granule cells in the dentate gyrus immediately after birth. Front Cell Neurosci. 2014;8:44. doi: 10.3389/fncel.2014.00044. eCollection 2014. PubMed PMID: 24592213; PubMed Central PMCID: PMC3924035.

Saulnier A, Keruzore M, De Clercq S, Bar I, Moers V, Magnani D, Walcher T, Filippis C, Kricha S, Parlier D, Viviani L, Matson CK, Nakagawa Y, Theil T, Götz M, Mallamaci A, Marine JC, Zarkower D, Bellefroid EJ. The doublesex homolog Dmrt5 is required for the development of the caudomedial cerebral cortex in mammals. Cereb Cortex. 2013 Nov;23(11):2552-67. doi: 10.1093/cercor/bhs234. Epub 2012 Aug 23. PubMed PMID: 22923088; PubMed Central PMCID: PMC3792737.

Raciti M, Granzotto M, Duc MD, Fimiani C, Cellot G, Cherubini E, Mallamaci A. Reprogramming fibroblasts to neural-precursor-like cells by structured overexpression of pallial patterning genes. Mol Cell Neurosci. 2013 Nov;57:42-53. doi: 10.1016/j.mcn.2013.10.004. Epub 2013 Oct 12. PubMed PMID: 24128663.

Falace A, Vanni N, Mallamaci A, Striano P, Zara F. Do regulatory regions matter in FOXG1 duplications?. Eur J Hum Genet. 2013 Apr;21(4):365-6. doi: 10.1038/ejhg.2012.142. Epub 2012 Jul 4. PubMed PMID: 22763380; PubMed Central PMCID: PMC3598311.

Diodato A, Pinzan M, Granzotto M, Mallamaci A. Promotion of cortico-cerebral precursors expansion by artificial pri-miRNAs targeted against the Emx2 locus. Curr Gene Ther. 2013 Apr;13(2):152-61. doi: 10.2174/1566523211313020009. PubMed PMID: 23317055.

Mallamaci A. Developmental control of cortico-cerebral astrogenesis. Int J Dev Biol. 2013;57(9-10):689-706. doi: 10.1387/ijdb.130148am. Review. PubMed PMID: 24307293.

Capossela S, Muzio L, Bertolo A, Bianchi V, Dati G, Chaabane L, Godi C, Politi LS, Biffo S, D'Adamo P, Mallamaci A, Pannese M. Growth defects and impaired cognitive-behavioral abilities in mice with knockout for Eif4h, a gene located in the mouse homolog of the Williams-Beuren syndrome critical region. Am J Pathol. 2012 Mar;180(3):1121-1135. doi: 10.1016/j.ajpath.2011.12.008. Epub 2012 Jan 9. PubMed PMID: 22234171.

Mallamaci A. Molecular bases of cortico-cerebral regionalization. Prog Brain Res. 2011;189:37-64. doi: 10.1016/B978-0-444-53884-0.00017-8. Review. PubMed PMID: 21489382.

Maiorano NA, Mallamaci A. The pro-differentiating role of miR-124: indicating the road to become a neuron. RNA Biol. 2010 Sep-Oct;7(5):528-33. doi: 10.4161/rna.7.5.12262. Epub 2010 Sep 1. PubMed PMID: 20523124.

Brancaccio M, Pivetta C, Granzotto M, Filippis C, Mallamaci A. Emx2 and Foxg1 inhibit gliogenesis and promote neuronogenesis. Stem Cells. 2010 Jul;28(7):1206-18. doi: 10.1002/stem.443. PubMed PMID: 20506244.

Puzzolo E, Mallamaci A. Cortico-cerebral histogenesis in the opossum Monodelphis domestica: generation of a hexalaminar neocortex in the absence of a basal proliferative compartment. Neural Dev. 2010 Mar 19;5:8. doi: 10.1186/1749-8104-5-8. PubMed PMID: 20302607; PubMed Central PMCID: PMC2859365.

Spigoni G, Gedressi C, Mallamaci A. Regulation of Emx2 expression by antisense transcripts in murine cortico-cerebral precursors. PLoS One. 2010 Jan 11;5(1):e8658. doi: 10.1371/journal.pone.0008658. PubMed PMID: 20066053; PubMed Central PMCID: PMC2799550.

Maiorano NA, Mallamaci A. Promotion of embryonic cortico-cerebral neuronogenesis by miR-124. Neural Dev. 2009 Nov 2;4:40. doi: 10.1186/1749-8104-4-40. PubMed PMID: 19883498; PubMed Central PMCID: PMC2777883.

Mallamaci A, Stoykova A. Gene networks controlling early cerebral cortex arealization. Eur J Neurosci. 2006 Feb;23(4):847-56. doi: 10.1111/j.1460-9568.2006.04634.x. Review. PubMed PMID: 16519650.

Gangemi RM, Daga A, Muzio L, Marubbi D, Cocozza S, Perera M, Verardo S, Bordo D, Griffero F, Capra MC, Mallamaci A, Corte G. Effects of Emx2 inactivation on the gene expression profile of neural precursors. Eur J Neurosci. 2006 Jan;23(2):325-34. doi: 10.1111/j.1460-9568.2005.04559.x. PubMed PMID: 16420441.

Muzio L, Soria JM, Pannese M, Piccolo S, Mallamaci A. A mutually stimulating loop involving emx2 and canonical wnt signalling specifically promotes expansion of occipital cortex and hippocampus. Cereb Cortex. 2005 Dec;15(12):2021-8. doi: 10.1093/cercor/bhi077. Epub 2005 Mar 30. PubMed PMID: 15800025.

Muzio L, Mallamaci A. Foxg1 confines Cajal-Retzius neuronogenesis and hippocampal morphogenesis to the dorsomedial pallium. J Neurosci. 2005 Apr 27;25(17):4435-41. doi: 10.1523/JNEUROSCI.4804-04.2005. PubMed PMID: 15858069; PubMed Central PMCID: PMC6725101.

Muzio L, Mallamaci A. Emx1, emx2 and pax6 in specification, regionalization and arealization of the cerebral cortex. Cereb Cortex. 2003 Jun;13(6):641-7. doi: 10.1093/cercor/13.6.641. PubMed PMID: 12764040.

López-Bendito G, Chan CH, Mallamaci A, Parnavelas J, Molnár Z. Role of Emx2 in the development of the reciprocal connectivity between cortex and thalamus. J Comp Neurol. 2002 Sep 16;451(2):153-69. doi: 10.1002/cne.10345. PubMed PMID: 12209834.

Muzio L, Di Benedetto B, Stoykova A, Boncinelli E, Gruss P, Mallamaci A. Conversion of cerebral cortex into basal ganglia in Emx2(-/-) Pax6(Sey/Sey) double-mutant mice. Nat Neurosci. 2002 Aug;5(8):737-45. doi: 10.1038/nn892. PubMed PMID: 12118260.

Galli R, Fiocco R, De Filippis L, Muzio L, Gritti A, Mercurio S, Broccoli V, Pellegrini M, Mallamaci A, Vescovi AL. Emx2 regulates the proliferation of stem cells of the adult mammalian central nervous system. Development. 2002 Apr;129(7):1633-44. PubMed PMID: 11923200.

Muzio L, Di Benedetto B, Stoykova A, Boncinelli E, Gruss P, Mallamaci A. Emx2 and Pax6 control regionalization of the pre-neuronogenic cortical primordium. Cereb Cortex. 2002 Feb;12(2):129-39. doi: 10.1093/cercor/12.2.129. PubMed PMID: 11739261.

Mallamaci A, Muzio L, Chan CH, Parnavelas J, Boncinelli E. Area identity shifts in the early cerebral cortex of Emx2-/- mutant mice. Nat Neurosci. 2000 Jul;3(7):679-86. doi: 10.1038/76630. PubMed PMID: 10862700.

Mallamaci A, Mercurio S, Muzio L, Cecchi C, Pardini CL, Gruss P, Boncinelli E. The lack of Emx2 causes impairment of Reelin signaling and defects of neuronal migration in the developing cerebral cortex. J Neurosci. 2000 Feb 1;20(3):1109-18. PubMed PMID: 10648716; PubMed Central PMCID: PMC6774155.

Boncinelli E, Mallamaci A, Muzio L. Genetic control of regional identity in the developing vertebrate forebrain. Novartis Found Symp. 2000;228:53-61; discussion 61-6, 109-13. doi: 10.1002/0470846631.ch5. Review. PubMed PMID: 10929316.

Cecchi C, Mallamaci A, Boncinelli E. Otx and Emx homeobox genes in brain development. Int J Dev Biol. 2000;44(6):663-8. Review. PubMed PMID: 11061430.

Cecchi C, Mallamaci A, Boncinelli E. Mouse forebrain development. The role of Emx2 homeobox gene. C R Acad Sci III. 1999 Oct;322(10):837-42. doi: 10.1016/s0764-4469(00)86648-2. Review. PubMed PMID: 10609088.

Mallamaci A, Iannone R, Briata P, Pintonello L, Mercurio S, Boncinelli E, Corte G. EMX2 protein in the developing mouse brain and olfactory area. Mech Dev. 1998 Oct;77(2):165-72. doi: 10.1016/s0925-4773(98)00141-5. PubMed PMID: 9831645.

Boncinelli E, Mallamaci A, Broccoli V. Body plan genes and human malformation. Adv Genet. 1998;38:1-29. doi: 10.1016/s0065-2660(08)60140-6. Review. PubMed PMID: 9677704.

Bovolenta P, Mallamaci A, Puelles L, Boncinelli E. Expression pattern of cSix3, a member of the Six/sine oculis family of transcription factors. Mech Dev. 1998 Jan;70(1-2):201-3. doi: 10.1016/s0925-4773(97)00183-4. PubMed PMID: 9510037.

Bovolenta P, Mallamaci A, Briata P, Corte G, Boncinelli E. Implication of OTX2 in pigment epithelium determination and neural retina differentiation. J Neurosci. 1997 Jun 1;17(11):4243-52. PubMed PMID: 9151741; PubMed Central PMCID: PMC6573571.

Mallamaci A, Di Blas E, Briata P, Boncinelli E, Corte G. OTX2 homeoprotein in the developing central nervous system and migratory cells of the olfactory area. Mech Dev. 1996 Aug;58(1-2):165-78. doi: 10.1016/s0925-4773(96)00571-0. PubMed PMID: 8887325.

Briata P, Di Blas E, Gulisano M, Mallamaci A, Iannone R, Boncinelli E, Corte G. EMX1 homeoprotein is expressed in cell nuclei of the developing cerebral cortex and in the axons of the olfactory sensory neurons. Mech Dev. 1996 Jul;57(2):169-80. doi: 10.1016/0925-4773(96)00544-8. PubMed PMID: 8843394.

Bovolenta P, Mallamaci A, Boncinelli E. Cloning and characterisation of two chick homeobox genes, members of the six/sine oculis family, expressed during eye development. Int J Dev Biol. 1996;Suppl 1:73S-74S. PubMed PMID: 9087702.

Boncinelli E, Mallamaci A. Homeobox genes in vertebrate gastrulation. Curr Opin Genet Dev. 1995 Oct;5(5):619-27. doi: 10.1016/0959-437x(95)80031-x. Review. PubMed PMID: 8664550.

Simeone A, Acampora D, Pannese M, D'Esposito M, Stornaiuolo A, Gulisano M, Mallamaci A, Kastury K, Druck T, Huebner K. Cloning and characterization of two members of the vertebrate Dlx gene family. Proc Natl Acad Sci U S A. 1994 Mar 15;91(6):2250-4. doi: 10.1073/pnas.91.6.2250. PubMed PMID: 7907794; PubMed Central PMCID: PMC43348.

Boncinelli E, Mallamaci A, Lavorgna G. Vertebrate homeobox genes. Genetica. 1994;94(2-3):127-40. doi: 10.1007/bf01443427. Review. PubMed PMID: 7896134.

Simeone A, Acampora D, Mallamaci A, Stornaiuolo A, D'Apice MR, Nigro V, Boncinelli E. A vertebrate gene related to orthodenticle contains a homeodomain of the bicoid class and demarcates anterior neuroectoderm in the gastrulating mouse embryo. EMBO J. 1993 Jul;12(7):2735-47. PubMed PMID: 8101484; PubMed Central PMCID: PMC413524.

Faiella A, D'Esposito M, Rambaldi M, Acampora D, Balsofiore S, Stornaiuolo A, Mallamaci A, Migliaccio E, Gulisano M, Simeone A. Isolation and mapping of EVX1, a human homeobox gene homologous to even-skipped, localized at the 5' end of HOX1 locus on chromosome 7. Nucleic Acids Res. 1991 Dec 11;19(23):6541-5. doi: 10.1093/nar/19.23.6541. PubMed PMID: 1684419; PubMed Central PMCID: PMC329215.

F. PhD students graduated under AM supervision

PhD Course in "Molecular and Cellular Biology", HSR, Milan - Open University, London.

(1) Luca Muzio (2005), thesis: "The role of Emx genes during the development of the mammalian cerebral cortex"

PhD Course in "Neuroscience-Neurobiology", SISSA, Trieste

(1) Elisa Puzzolo (2009), thesis: "Cortico-cerebral development in the gray short-tailed opossum Monodelphis domestica"
(2) Giulia Spigoni (2010), thesis: "Regulation of Emx2 expression by antisense transcripts in the murine developing CNS"
(3) Marco Brancaccio (2010), thesis: "Emx2 and Foxg1 inhibit gliogenesis and promote neuronogenesis"

PhD Course in "Functional and structural Genomics", SISSA, Trieste

(1) Nicola Antonio Maiorano (2009), thesis: "Promotion of embryonic cortico-cerebral neuronogenesis by miR-124"
(2) Assunta Diodato (2010), thesis: "Promotion of cortico-cerebral precursors expansion by artificial miRNAs against the Emx2 locus"
(3) Marilena Raciti (2012), thesis: "Reprogramming fibroblasts to neural-stem-like cells by structured overexpression of pallial patterning genes"
(4) Carol Filippis (2013), thesis: "Emx2 expression levels in NSCs modulate astrogenesis rates by downregulating EgfR and Fgf9"
(5) Mihn Duc Do (2014), thesis: "FoxG1 promotes neuritogenesis and the formation of dendritic spines – a potential mechanism for West syndrome"
(6) Clara Grudina (2015), thesis: "The impact of Foxg1 on human cortico-cerebral astrogenesis"
(7) Moira Pinzan (2016), thesis: "Modelling etiopathogenesis of the FOXG1-duplication-linked variant of West syndrome"
(8) Carmen Falcone (2017), thesis: "Gene control of neocortical astrogliogenesis, in normal development and its disorders"
(9) Cristina Fimiani (2017), thesis: "RNA therapy of neuropathogenic gene haplo-insufficiences". *Qualified as the best 2017 PhD thesis of SISSA - Neuroscience Area.*
(10) Simone Chiola (2018), thesis: "Foxg1 control of neuronal morphology"
(11) Jessica Zucco (2019), thesis: "Towards Emx2 therapy of Glioblastoma multiforme"
(12) Wendy Tigani (2019), thesis: "Functional and Molecular Impact of Foxg1 Over-expression in Neocortical Projection Neurons