

Curriculum Vitae

José María Frade, Ph.D.

Senior Investigator

Deputy Director

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Honorary Professor

Autonomous University of Madrid

DEGREES

October 1994 Ph.D. in Biology. Autonomous University of Madrid (UAM).

June 1989 M.Sc. in Biology. Complutense University of Madrid (UCM).

PREVIOUS POSITIONS

2008- Scientific Researcher. Cajal Institute, CSIC, Madrid, Spain

2000-08 Staff Scientist. Cajal Institute, CSIC, Madrid, Spain

1998-99 Associated Researcher. Cajal Institute, CSIC, Madrid, Spain.

1996-98 Postdoctoral Fellow. Max-Planck-Institute of Neurobiology, Martinsried, Germany.

1994-95 Postdoctoral Fellow. Cajal Institute, CSIC, Madrid, Spain.

1991-94 Ph.D. student. Cajal Institute, CSIC, Madrid, Spain.

1987-89 Graduate student. Department of Genetics, Complutense University of Madrid. Madrid. Spain.

HONORS AND AWARDS

2020 Member of the Evaluation Panel for the *Instituto de Investigação e Inovação em Saúde i3S* (University of Porto).

2018- Member of the *Red Temática Española de Descubrimiento de Fármacos REDEFAR* Community (<https://www.redefar.com/comunidad-redefar>).

2017-2018 Editorial Board Member of *Molecular Cytogenetics*

2017- Deputy Director Cajal Institute.

2017-2021 Member of the Governing Council of CIBERNED.

2017- President of the Committee of Ethics in Animal Research, Cajal Institute/ CSIC/ Spain.

2016- Honorary Professor. Department of Anatomy, Histology and Neuroscience,

- Faculty of Medicine, Autonomous University of Madrid.
- 2013-2017** Head of Department. Cajal Institute, CSIC, Spain.
- 2013-2017** Member of the Committee of Ethics in Animal Research, Cajal Institute/ CSIC/ Spain
- 2013-** Member of the Spanish Society of Neuroscience
- 2012-** Scientific Director. Tetraneuron
- 2012** Dr. Santiago Ramón y Cajal Lectureship 2012 (Spanish Society of Neurology).
- 2012-** Master Student Advisor, Autonomous University of Madrid/ Spain
- 2001-2005** Member of the Committee of Safety and Labour Risk Prevention, Institute Cajal, CSIC, Spain
- 2001-** Reviewer of scientific projects (ANEP)
- 2001** Prize to the best poster. Cajal Club/Cajal Institute Joint Conference, Madrid, Spain.
- 1999** Selected by the International Society for Neurochemistry to give a talk in the “Young Investigator Colloquium *Neuronal cell death*”. 17th ISN/ESN Joint Meeting, Berlin, Germany.
- 1997-** Member of the Society for Neuroscience.
- 1997** Attendant to the “First practical workshop on apoptosis”. European School of Haematology. Saclay, France.
- 1996-1998** Postdoctoral fellowship (Max-Planck Institute of Neurobiology).
- 1995** Attendant to the international course: “Developmental Neurobiology”. Cold Spring Harbor Laboratory. New York, USA.
- 1995-** Founder member of the Spanish Society for Developmental Biology.
- 1993** Short-term fellowship from the Autonomous Government of Madrid. University of Liverpool. Liverpool, UK.
- 1991-1994** Ph.D. fellowship (Autonomous Government of Madrid).

Ad hoc Grant Reviewer for Israel Science Foundation, Czech Science Foundation, Portuguese Foundation for Science and Technology, Thalís Research Program (Greek Ministry of Education), Spanish Found for Sanitary Research

Ad Hoc Manuscript Reviewer for American Journal of Pathology, Brain Research, Developmental Dynamics, Development, Developmental Neurobiology (former Journal of Neurobiology), Developmental Neuroscience, European Journal of Neuroscience, Journal of Neuroscience Research, FEBS Letters, Journal of Alzheimer’s Disease, Journal of Biological Chemistry, Journal of Cell Science, Journal of Neurobiology, Journal of Neurochemistry, Journal of Neuroscience, Molecular and Cellular Neuroscience, Neuroscience, PLoS Biology, PLoS ONE.

FORMER STUDENTS AND POSTDOCS: CURRENT POSITIONS

Ruth Diez del Corral (former Associated Researcher): Research Associate, Champalimaud Neuroscience Programme, Centro Champalimaud, Lisboa, Portugal

María Jesús Latasa (former Associated Researcher): Postdoctoral Researcher, Madrid Institute

for Advanced Studies, IMDEA-Food.

Marta García-Flores (former Postdoc): Transgenesis facility, Spanish National Center for Biotechnology, CSIC, Madrid.

Noelia López-Sánchez (former Ph.D. Student): Technical Director, Tetraneuron.

Elsa Cisneros (former Ph.D. Student): Associated Researcher, Anatomy, Histology and Neuroscience Department, University of Alcalá (UAH), Alcalá de Henares, Madrid, Spain

Carmen Ovejero-Benito (former Ph.D. Student): Collaborating Professor/PI, San Pablo CEU University, Madrid, Spain.

Chaska Walton (former Ph.D. Student): Postdoc, Buck Institute for Research on Aging, California, USA.

Estibaliz Barrio-Alonso (former Ph.D. Student): Postdoc, Weill Medical College, Cornell University, New York, USA.

PUBLICATIONS

Research Articles

1.- López-Sánchez N, Ramón-Landreau M, Trujillo C, Garrido-García A, **Frade JM** (2022) A mutant variant of E2F4 triggers multifactorial therapeutic effects in 5xFAD mice. *Mol. Neurobiol.* (in press). DOI: 10.1007/s12035-022-02764-z.

2.- López-Sánchez N, Garrido-García A, Ramón-Landreau M, Cano-Daganzo V, **Frade JM** (2021) E2F4-based gene therapy mitigates the phenotype of the Alzheimer's disease mouse model 5xFAD. *Neurotherapeutics* 18: 2484–2503.

3.- Barrio-Alonso E, Fontana B, Valero M, **Frade JM** (2020) Pathological aspects of neuronal hyperploidy in Alzheimer's disease evidenced by computer simulation. *Front. Genet.* 11: 287.

4. Walton CC, Zhang W, Patiño-Parrado I, Barrio-Alonso E, Garrido JJ, **Frade JM**. (2019) Primary neurons can enter M-phase. *Sci. Rep.* 9: 4594.

5. Villoslada P, Vila G, Colafrancesco V, Moreno B, Fernandez-Diez B, Vazquez R, Pertsovskaya I, Zubizarreta I, Pulido-Valdeolivas I, Messeguer J, Vendrell-Navarro G, **Frade JM**, López-Sánchez N, Teixido M, Giralt E, Masso M, Dugas JC, Leonoudakis D, Lariosa-Willingham KD, Steinman L, Masseguer A. (2019) Axonal and myelin neuroprotection by the peptoid BN201 in brain inflammation. *Neurotherapeutics* 16: 808-827.

6. Barrio-Alonso E, Hernández-Vivanco A, Walton, CC, Perea G, **Frade JM** (2018) Cell cycle reentry triggers hyperploidy and synaptic dysfunction followed by delayed cell death in differentiated cortical neurons. *Sci. Rep.* 8: 14316.

7. López-Sánchez N, Fontán-Lozano A, Anna Pallé, Valentina González-Álvarez, Rábano A, Trejo JL, **Frade JM** (2017) Neuronal tetraploidy in the cerebral cortex correlates with reduced cognition in mice and precedes and recapitulates Alzheimer's-associated neuropathology. *Neurobiol. Aging* 56: 50-66.

8. López-Sánchez N, **Frade JM** (2017) A mutant form of E2F4 prevents neuronal tetraploidization and cognitive deficits in 5xFAD mice without affecting A β deposition. *Alzheimer's & Dementia* 13 (Supplement): P659–P661.
9. Patiño-Parrado I, García-Gómez A, López-Sánchez N, **Frade JM** (2017) Strand-specific CpG formylation, a novel epigenetic modification functional for gene silencing. *Nucl. Acids Res.* 45: 8822-8834.
10. Slaninová I, López-Sánchez N, Šebrlová K, Vymazal O, **Frade JM**, Taborská E (2016) Introduction of Macarpine as a novel cell-permeant DNA dye for live cell imaging and flow cytometry sorting. *Biol. Cell* 108: 1-18.
11. Ovejero-Benito MC, **Frade JM** (2015) p27^{Kip1} participates in the regulation of endoreduplication in differentiating chick retinal ganglion cells. *Cell Cycle* 14: 2311-2322.
12. Galan A, Dergham P, Escoll P, de la Hera A, D'Onofrio PM, Magharious MM, Koeberle PD, **Frade JM**, Saragovi HU (2014) Neuronal injury external to the retina rapidly activates retinal glia, followed by elevation of markers for cell cycle re-entry and death in retinal ganglion cells. *PLoS One* 9: e101349.
13. López-Sánchez N, **Frade JM** (2013) Genetic evidence for p75^{NTR}-dependent tetraploidy in cortical projection neurons from adult mice. *J. Neurosci.* 33: 7488-7500.
14. Ovejero-Benito MC, **Frade JM** (2013) Brain-derived neurotrophic factor-dependent cdk1 inhibition prevents G2/M progression in differentiating tetraploid neurons. *PLoS One* 5: e64890. doi: 10.1371/journal.pone.0064890.
15. Morillo SM, Abanto E, Román MJ, **Frade JM** (2012) NGF-induced cell cycle reentry in newborn neurons is triggered by p38^{MAPK}-dependent E2F4 phosphorylation. *Mol. Cell. Biol.* 32: 2722-2737.
16. Formosa-Jordan P, Ibañes M, Ares S, **Frade JM** (2012) Regulation of neuronal differentiation at the neurogenic wave front. *Development* 139: 2321-2329. **HIGHLIGHTED in: "In this issue"**.
17. Santos AM, López-Sánchez N, Martín-Oliva D, de la Villa P, Cuadros MA, **Frade JM** (2012) Sortilin participates in light-dependent photoreceptor degeneration in vivo. *PLoS One* 7: e36243. doi: 10.1371/journal.pone.0036243.
18. García-Domínguez DJ, Morello D, Cisneros E, Kontoyiannis DL, **Frade JM** (2011) Stabilization of Dll1 mRNA by Elavl1/HuR in neuroepithelial cells undergoing mitosis. *Mol. Biol. Cell.* 22: 1227-1239.
19. Nikolettou V, Lickert H, **Frade JM**, Rencurel C, Zhang L, Bibel M, Barde YA (2010) Neurotrophin receptors TrkA and TrkC cause neuronal death whereas TrkB does not. *Nature* 467:59-64. **Published as an Article.**
20. Morillo SM, Escoll P, de la Hera A, **Frade JM** (2010) Somatic Tetraploidy in specific chick

retinal ganglion cells induced by nerve growth factor. *Proc. Natl. Acad. Sci. USA* 107:109-114.

21. Cisneros E, Latasa MJ, García-Flores M, **Frade JM** (2008) Instability of Notch1 and Delta1 mRNAs and reduced Notch activity in vertebrate neuroepithelial cells undergoing S-phase. *Mol. Cell. Neurosci.* 37: 820-831.
22. López-Sánchez N, González-Fernández Z, Niinobe M, Yoshikawa K, **Frade JM** (2007) Single mage gene in the chicken genome encodes CMage, a protein with functional similarities to mammalian type II Mage proteins. *Physiol. Genomics* 30: 156-171.
23. López-Sánchez N, Rodríguez JR, **Frade JM** (2007) Mitochondrial c-Jun N-terminal kinase prevents the accumulation of reactive oxygen species and reduces necrotic damage in neural tumor cells that lack trophic support. *Mol. Cancer Res.* 5: 47-60. **Cover caption.**
24. **Frade JM** (2005) Nuclear translocation of the p75 neurotrophin receptor cytoplasmic domain in response to neurotrophin binding.. *J. Neurosci.* 25: 1407-1411.
25. López-Sánchez N, Müller U, **Frade JM** (2004) Lengthening of G2/mitosis in cortical precursors from mice lacking β -amyloid precursor protein. *Neuroscience* 130: 51-60.
26. Murciano A, Zamora J, López-Sánchez J, **Frade JM** (2002) Interkinetic nuclear movement may provide spatial clues to the regulation of neurogenesis. *Mol. Cell. Neurosci.* 21: 285-300.
27. **Frade JM** (2000) Unscheduled cell cycle re-entry induced by NGF precedes cell death in nascent retinal neurones. *J. Cell Sci.* 113: 1139-1148.
28. Casademunt E, Carter BD, Benzel I, **Frade JM**, Dechant G, Barde Y-A (1999) The zinc finger protein NRIF interacts with the neurotrophin receptor p75^{NTR} and participates in programmed cell death. *EMBO J.* 18: 6050-6061.
29. **Frade JM**, Barde Y-A (1999) Genetic evidence for cell death mediated by nerve growth factor and the neurotrophin receptor p75 in the developing mouse retina and spinal cord. *Development* 126: 683-690.
30. **Frade JM**, Barde Y-A (1998) Microglia-derived nerve growth factor causes cell death in the developing retina. *Neuron* 20: 35-41.
31. **Frade JM**, Bovolenta P, Martínez-Morales JR, Arribas A, Barbas J, Rodríguez-Tébar A (1997) Control of early cell death by BDNF in the chick retina. *Development* 124: 3313-3320.
32. Carter BD, Dechant G, **Frade JM**, Kaltschmidt C, Barde Y-A. (1996) Neurotrophins and their p75 receptor. *Cold Spring Harbor Symp. Quan. Biol.* Vol. LXI: 407-415.
33. **Frade JM**, Rodríguez-Tébar A, Barde Y-A. (1996) Induction of cell death by endogenous nerve growth factor through its p75 receptor. *Nature* 383: 166-168. **COMMENT in Science 272: 1742-1743, 1996 (Research News).**

34. **Frade JM**, Martí E, Bovolenta P, Rodríguez-Peña MA, Pérez-García D, Rohrer H, Edgar D, Rodríguez-Tébar A. (1996) Insulin-like growth factor-I stimulates neurogenesis in chick retina by regulating expression of the alpha-6 integrin subunit. *Development* 122: 2497-2506.
35. Bovolenta P, **Frade JM**, Martí E, Rodríguez-Peña MA, Barde Y-A., Rodríguez-Tébar A. (1996). Neurotrophin-3 antibodies disrupt the normal development of the chick retina. *J. Neurosci.* 16: 4402-4410.
36. **Frade JM**, Martínez-Morales JR, Rodríguez-Tébar A. (1996) Laminin-1 selectively stimulates neuron generation from cultured retinal neuroepithelial cells. *Exp. Cell Res.* 222: 140-149.
37. Martínez-Morales JR, Martí E., **Frade JM**, and Rodríguez-Tébar A. (1995) Developmentally regulated vitronectin influences cell differentiation, neuron survival and process outgrowth in the developing chicken retina. *Neuroscience* 68: 245-253.
38. Hernández-Sánchez C, **Frade JM**, de la Rosa EJ (1994) Heterogeneity among neuroepithelial cells in the chick retina revealed by immunostaining with monoclonal antibody PM 1. *Eur. J. Neurosci.* 6: 105-114.
39. De la Rosa EJ, Arribas A, **Frade JM**, Rodríguez-Tébar A (1994). Role of neurotrophins in the control of neural development: neurotrophin 3 promotes both neuron differentiation and survival of cultured chick retinal cells. *Neuroscience* 58: 347-352.
40. Benito C, Gallego FJ, Zaragoza C, **Frade JM**, Figueiras AM (1991). Biochemical evidence of a translocation between 6RL//RL chromosome arms in rye (*Secale cereale* L.). A genetic map of 6R chromosome. *Theor. Appl. Genet.* 82: 27-32.
41. Benito C, **Frade JM**, Orellana J, Carrillo JM (1990). Linkage and cytogenetic maps of genes controlling endosperm storage proteins and isozymes in rye (*Secale cereale* L.). *Theor. Appl. Genet.* 79: 347-352.
42. Benito C, Gallego FJ, **Frade JM**, Zaragoza C, Figueiras AM (1990). Chromosomal location of adenylate kinase isozymes in *Triticeae* species. *Theor. Appl. Genet.* 79: 157-160.

Reviews

1. **Frade JM**, López-Sánchez N. (2017) Neuronal tetraploidy in Alzheimer and aging. *Aging* 9: 2014-2015.
2. **Frade JM**, Ovejero-Benito MC (2015) Neuronal cell cycle: the neuron itself and its circumstances. *Cell Cycle* 14: 712-720.
3. López-Sánchez N, **Frade JM** (2015) Flow cytometric analysis of DNA synthesis and apoptosis in the central nervous system using fresh cell nuclei. *Methods Mol. Biol.* 1254: 33-42.

4. Formosa-Jordan P, Ibañes M, Ares S, **Frade JM** (2013) Lateral inhibition and neurogenesis: novel aspects in motion. *Int. J. Dev. Biol.* 57: 341-350.
5. López-Sánchez N, Ovejero-Benito MC, Borreguero L, **Frade JM** (2011) Control of neuronal ploidy during vertebrate development. *Results Probl. Cell Differ.* 53: 547-563.
6. **Frade JM**, López-Sánchez N (2010) A novel hypothesis for Alzheimer's disease based on neuronal tetraploidy induced by p75^{NTR}. *Cell Cycle* 9: 1934-1941.
7. **Frade JM** (2010) Somatic tetraploidy in vertebrate neurons: implications in physiology and pathology. *Commun. Integr. Biol.* 3: 201-203.
8. Latasa MJ, Cisneros E, **Frade JM** (2009) Cell cycle control of Notch signaling and the functional regionalization of the neuroepithelium during vertebrate neurogenesis. *Int. J. Dev. Biol.* 53: 895-908.
9. López-Sánchez N, **Frade JM** (2002) Control of the cell cycle by neurotrophins: lessons from the p75 neurotrophin receptor. *Histol. Histopathol.* 17: 1227-1237.
10. **Frade JM** (2002) Interkinetic nuclear movement in the vertebrate neuroepithelium: encounters with an old acquaintance. *Prog. Brain Res.* 136: 67-71.
11. **Frade JM** (2000) NRAGE and the cycling side of the neurotrophin receptor p75. *Trends Neurosci.* 23: 591-592.
12. **Frade JM**, Rodríguez-Tébar A (2000). Neuroepithelial differentiation induced by ECM molecules. *Methods Mol. Biol.* 139: 257-264.
13. **Frade JM**, Bovolenta P, Rodríguez-Tébar A (1999) Neurotrophins and other growth factors in the generation of retinal neurons. *Micr. Res. Tech.* 45: 243-251.
- 14.- **Frade JM** (1998) Cell death induced by nerve growth factor during the development of the central nervous system. *Spots in Neurochemistry* 3: 37-38.
15. **Frade JM**, Barde Y-A (1998) Nerve growth factor: two receptors, multiple functions. *BioEssays* 20: 137-145.
16. **Frade JM**, Michaelidis T (1997) Origin of eukaryotic programmed cell death: a consequence of aerobic metabolism? *BioEssays* 19: 827-832.

BOOKS

1. **Frade JM**, Gage FH (2017) Genomic Mosaicism in neurons and other cell types. *Springer Nature*, New York. ISBN: 978-1-4939-7279-1 (eBook ISBN 978-1-4939-7280-7).

BOOK CHAPTERS

1. **Frade JM**, Gage FH (2017) Preface. In: Genomic Mosaicism in neurons and other cell types (Eds. Jose M. Frade and Fred H. Gage). *Springer Nature*, Nueva York, pág. vii-x.
2. López-Sánchez N, Patiño-Parrado I, **Frade JM** (2017) Quantification, isolation, and subsequent epigenetic analysis of tetraploid neurons by flow cytometry. In: Genomic Mosaicism in neurons and other cell types (Eds. Jose M. Frade and Fred H. Gage). *Springer Nature*, Nueva York, pág. 57-80.
3. López-Sánchez N, Ovejero-Benito MC, Rodríguez-Ruiz C, **Frade JM** (2014) NGF/p75^{NTR} in cell cycle and neuronal tetraploidy. In: *Handbook of Neurotoxicity* (Ed. Richard Kostrzewa). *Springer Verlag*, Heidelberg, pages 1877-1897.
4. Morillo SM, and **Frade JM** (2008) Nerve growth factor signaling in neural cancer and metastasis. In: *Nerve Growth Factor: New Research* (Ed. Guy K. McIntire). *NOVA Science Publishers, Inc.*, New York, pages 203-227.
5. **Frade JM** (2006). Type II MAGE proteins at the crossroads of cell death and neurogenesis. In: *Trends in Signal Transduction Research* (Ed. Jennifer N. Meyers). *NOVA Science Publishers, Inc.*, New York, pages 55-74.
6. **Frade JM**, and Barde Y-A (1999) Nerve growth factor-induced cell death during neural development. In: *Neural Development. Keio University Symposia for Life Science and Medicine (Vol. 2)* (Eds. Uyemura K, Kawamura K y Yazaki T). *Springer-Verlag*, Tokio, pages 137-141.
7. **Frade JM**, Casademunt E, Dechant G, and Barde YA (1998). Control of neuronal survival by neurotrophins. In: *Pharmaceutical interventions in apoptotic pathways* (Eds. Nagelkerke JF, van Dierendonck JH y Noteborn MHM). *Royal Netherlands Academy of Arts and Sciences*, Amsterdam, pages 87-96.

GRANTS

- 2021-2022:** Interdisciplinary Thematic Platform in Neuroaging. CSIC.
- 2019-2022:** Regulación de la generación de tetraploidía somática neuronal en la enfermedad de Alzheimer. Ref. RTI2018-095030-B-I00. Spanish Ministry of Science, Innovation and Universities.
- 2017-2022:** Development and exploitation of patents: “Phosphorylation of the transcription factor E2F4 in Thr-248 and/or Thr-250 as a therapeutic target in pathological processes triggered by somatic polyploidy” and “Method to determine the risk of developing Alzheimer’s disease”. R&D Contract signed between CSIC and Tetraneuron, S.L.
- 2016-2018:** Neuronal tetraploidization in adult brain and Alzheimer: mechanisms of action and pathophysiological effects. Ref. SAF2015-68488-R. Spanish Ministry of Economy and Competitiveness.
- 2013-2015:** Neuronal tetraploidy in the adult brain and Alzheimer’s disease. Ref. SAF2012-38316. Spanish Ministry of Economy and Competitiveness.

- 2012-2017:** Development of blocking agents of neuronal tetraploidization as a therapeutic method for Alzheimer's disease. R&D Contract signed between CSIC and Tetraneuron, S.L.
- 2012-2015:** Epigenetic alterations in tetraploid neurons and Alzheimer's disease. Ref. CIVP16A1815. Ramón Areces Foundation.
- 2009-2012:** Tetraploidization of retinal ganglion cells and other vertebrate neurons: characterization and functional significance. Ref. BFU2009-07671. Spanish Ministry of Science and Innovation.
- 2009-2011:** Participation of the apoptotic signaling pathway triggered by p75^{NTR} and sortilin in a model of hereditary retinal dystrophies. FUNDALUCE
- 2006-2009:** Structural and functional characterization of CMAGE as a paradigm of type II MAGE proteins in vertebrates: implications on neuronal differentiation and apoptosis. Ref. BFU2006-00805. Spanish Ministry of Education and Science
- 2006-2008:** p75^{NTR}-associated apoptosis during embryonic development and hereditary retinal dystrophies. FUNDALUCE
- 2005-2008:** Functionality of proNGF as proapoptotic agent with potential effects in Alzheimer's disease. Mechanisms of proapoptotic signaling induced by nuclear translocation of the intracellular domain of p75^{NTR} in response to proNGF. Ref. BM05-71-0. La Caixa Foundation
- 2003-2006:** Influence of the tri-dimensional structure of the neuroepithelium and its relationship with the cell cycle as regulatory elements of neurogenesis and neuronal identity in vertebrates. Ref. BMC2003-03441. Spanish Ministry of Science and Technology.
- 2002-2004:** Functional interactions between APP and p75^{NTR}: physiopathological implications on Alzheimer's disease. Ref. 08.5/0018/2001 1. Autonomous Government of Madrid
- 2001-2003:** Physiopathological base of Alzheimer's disease. Role of APP as a membrane receptor in neuritic remodeling, synapse formation, and regulation of apoptosis. Ref. 01/1369. Sanitary Research Fund.
- 2000-2003:** Cloning and characterization of factors expressed by the pigment epithelium with capacity to induce neurogenesis in the chick neuroretina. Ref. PM99-0100. Spanish Ministry of Education and Science.
- 2000-2003:** Physiopathological base of Alzheimer's disease: neuritogenesis regulated by APP, Notch and p75^{NTR}. Ref. 00/003-00. La Caixa Foundation.

TEACHING

- 2017-** Guest lecturer – Molecular Mechanisms of Neural Function, Master in Biomolecules and Cell Dynamics, Autonomous University of Madrid/ Spain.
- 2014-2018** Guest lecturer – Neurological Diseases course, Master in Molecular Biomedicine, Autonomous University of Madrid/ Spain.
- 2012-** Co-organizer and lecturer of Developmental Neurobiology Course (Master in Neurosciences, Autonomous University of Madrid/Cajal Institute).
- 2010-2012** Guest lecturer – Developmental Neurobiology course, Master of Neuroscience, Autonomous University of Madrid/ Spain.

- 2009** Guest lecturer in postgraduate course “Insulin-like growth factors: physiology, pathology and therapeutic perspectives” CSIC.
- 2005-2007** Guest lecturer in PhD course “Regulation of programmed cell death: physiopathology and molecular mechanisms”. Autonomous University of Madrid.

SELECTED INVITED LECTURES

- 2019** Cajal Institute.
- 2019** Teófilo Hernando Institute. Faculty of Medicine (UAM).
- 2017** Institute of Biomedicine of Valencia (CSIC).
- 2016** Cajal Institute.
- 2016** Research Institute on Neurological Disabilities-IDINE, Castilla-La Mancha University.
- 2016** Gregorio Marañón Hospital.
- 2015** Symposium on “Cell Cycle Regulation in Brain Development and Pathologies”. 16 Meeting of the Spanish Society of Neuroscience. Granada.
- 2014** Cold Spring Harbor Asia/NGF 2014 Joint Meeting on “Nerve Growth Factor and Related Neurotrophic Factors: Emerging Concepts, New Mechanisms, Novel Technologies”. Suzhou, China.
- 2013** Symposium on NGF and the Foundation of the Neurotrophin Family, in Memoriam of Prof. Rita Levi-Montacini (1909-2012). Madrid, Spain.
- 2013** Fundación Areces Workshop on neurotrophic factors in health and disease. Salamanca, Spain.
- 2012** NGF2012: Neurotrophic factors and Plasticity of the Nervous system. Würzburg, Germany
- 2012** LXIV Annual Meeting of the Spanish Society of Neurology. Barcelona, Spain.
- 2012** Winter Meeting 2012. Cajal Institute (CSIC). Madrid, Spain.
- 2011** National Center of Microbiology (Institute of Health “Carlos III”). Majadahonda, Madrid, Spain.
- 2011** Optics University School (Complutense University of Madrid). Madrid, Spain.
- 2010** VI Neuroscience Meeting of Castilla y Leon. Ávila, Spain.
- 2010** Scientific Meeting Cajal Institute/Autonomous University of Madrid. Madrid, Spain.
- 2010** XII FUNDALUCE Meeting. Madrid, Spain.
- 2010** NGF2010 (Neurotrophic factors in health and disease). Helsinki, Finland.
- 2009** INCYL. Salamanca, Spain.
- 2009** CABD (CSIC). Seville. Spain.
- 2008** NGF2008 (Katzir Conference on Life and Death in the Nervous System). Galilea, Israel.
- 2008** Institute of Neurosciences (UMH-CSIC). Alicante, Spain.
- 2007** Centre de Biologie du Developpement (CNRS)-Universite P. Sabatier. Toulouse, France.
- 2006** Symposium on Neurotrophins and Neurodegeneration. Madrid, Spain.
- 2006** Faculty of Medicine. University of Lleida. Lleida, Spain.

- 2005** Gordon Research Conference on Neurotrophic Factors. Newport, Rhode Island, USA.
- 2005** VII APOREUNION. Miraflores de la Sierra, Madrid, Spain.
- 2004** 4th Forum of European Neuroscience. Lisbon, Portugal.
- 2004** Juan March Workshop on “The p75 Neurotrophin Receptor: Signalling and Function”. Madrid, April 19-21, 2004.
- 2004** University Pompeu Fabra. Barcelona, Spain.
- 2003** Faculty of Medicine. University of Lisbon. Lisbon, Portugal, February 28, 2003.
- 2003** University of Navarra/University Clinic of Navarra. Pamplona, Spain.
- 2002** Society for Neuroscience 32nd Annual Meeting. Orlando, Florida, USA.
- 2002** IV Meeting on Hereditary Retinal Diseases. Madrid, Spain.
- 2001** III Congress Spanish Society for Developmental Biology. Malaga, Spain.
- 1999** 17th ISN/ESN Joint Meeting. Berlin, Germany. August 8-13, 1999.
- 1998** In-House Symposium of the Max-Planck-Institute of Neurobiology. Martinsried, Germany.
- 1998** Faculty of Sciences. University of Granada.
- 1997** Institute of Neurosciences. (UMH-CSIC). Alicante, Spain.
- 1997** Center for Biological Research (C.S.I.C.). Madrid, Spain.
- 1996** IV Workshop “Advances in Molecular and Cellular Biology”. Spanish National Center for Biotechnology (CSIC). Madrid, Spain.

ORGANIZED MEETINGS

International Meetings

- 2018** Co-organizer of the “International Conference on Neurotrophic Factors 2018”/ 18 senior speakers / Spain / 22 senior speakers / Spain
- 2013** Co-organizer of the “NGF receptors and the diversity of NGF function. Symposium on NGF and the Foundation of the Neurotrophin Family, in Memoriam of Prof. Rita Levi-Montacini (1909-2012)” / 6 senior speakers / Spain
- 2004** Co-organizer of the “Juan March Workshop on the p75 Neurotrophin Receptor: Signalling and Function” / 31 senior speakers / Spain

National Meetings

- 2015** Organizer of the “Symposium on Cell Cycle Regulation in Brain Development and Pathologies”. 16 Meeting of the Spanish Society of Neuroscience / 4 senior speakers / Spain.
- 2006** Organizer of the “Symposium on neurotrophins and neurodegeneration” / 8 senior speakers / Spain

Ph.D. SUPERVISOR

- 2019** Estíbaliz Barrio Alonso. Title: Reactivación del ciclo celular en neuronas y disfunción sináptica: un nuevo concepto en la enfermedad de Alzheimer. Autonomous University of Madrid, Faculty of Sciences. Highest qualification “cum laude”.
- 2018** Chaska Walton Enriquez. Title: Mitotic biology of primary neurons. Autonomous University of Madrid, Faculty of Sciences. Highest qualification “cum laude”.
- 2018** Iris Patiño Parrado. Title: Caracterización del estado de metilación en citosinas en las neuronas tetraploides de la corteza cerebral murina. Autonomous University of Madrid, Faculty of Medicine. Highest qualification “cum laude”.
- 2013** María del Carmen Ovejero-Benito. Title: Regulación del mantenimiento de la tetraploidía en las células ganglionares de la retina de pollo. Autonomous University of Madrid, Faculty of Medicine. Highest qualification “cum laude”.
- 2007** Elsa Cisneros. Title: Regulación de la capacidad neurogénica de los precursores neurales de los vertebrados durante el ciclo celular. University of Alcalá; Faculty of Medicine. Highest qualification “cum laude”.
- 2006** Noelia López-Sánchez. Title: Supervivencia frente a la privación trófica en líneas tumorales neurales: activación mitocondrial de JNK. Autonomous University of Madrid, Faculty of Sciences. Highest qualification “cum laude”.

PATENTS

- 2011** Phosphorylation of the transcription factor E2F4 in Thr-248 and/or Thr-250 as a therapeutic target in pathological processes triggered by somatic polyploidy. Spanish Patent #2409779. USA Patent # US9567384B2 (February 14, 2017). Japan Patent #JP6100276B2 (January 27, 2017). EU Patent #EP2783696B1 (August 9, 2018). **Licensed and exploited by *Tetraneuron, S.L.***
- 2015** Method to determine the risk of developing Alzheimer’s disease. Spanish Patent #2598885 (October 2, 2017). UE Patent # EP3318874B1 (September 9, 2020). USA Patent # US11047867B2 (June 29, 2021). **Exploited by *Tetraneuron, S.L.*** (50% owner).
- 2008** Procedure for the optimization of oligonucleotides and amplification conditions by PCR for RACE (5’ and 3’-Rapid Amplification of cDNA Ends)”. Spanish Patent #2257895.

INDUSTRIAL ACTIVITIES

2012 Founder Member of the Spin-off Biotech Company: Tetraneuron, S.L. (JLABS Resident Company).

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