

Curriculum Vitæ

María Cecilia ANGULO JARAMILLO

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Present position

Research Director (DR1) at CNRS

Team leader of the group: “Interactions between neurons and oligodendroglia in myelination and myelin repair”; Institut de Psychiatrie et Neurosciences de Paris (IPNP), INSERM U1266, Univ. Paris Descartes, Paris, France (Director: Thierry Galli)

Previous positions

[2011-2017] Research Director (DR2) at CNRS; Team leader of the group: “Physiology of NG2 cells”, Neurophysiology and New Microscopies Laboratory, INSERM U1128, Univ. Paris Descartes, Paris, France (Director: Serge Charpak)

[2002-2010] Scientist at CNRS (CR2 and CR1), Laboratory of Neurophysiology and New Microscopies, INSERM U603, CNRS UMR8154, Univ. Paris Descartes, Paris, France (Director: Serge Charpak)

[2000-2001] Postdoctoral training; Dept. of Experimental Biomedical Science; Padova, Italy (Directors: Tullio Pozzan and Giorgio Carmignoto).

Education

[2010] Habilitation to Supervise Research (HDR); Univ. Paris Descartes.

[1996-1999] PhD Thesis; Univ. Pierre et Marie Curie and Lab. of Neurobiology, ESPCI, CNRS UMR7637; highest honors and best thesis award.

[1995-1996] DEA; Univ. Pierre et Marie Curie, Lab. of Neurobiology, ESPCI, CNRS UMR 7637; highest honors (Ranked 1st).

[1989-1995] Undergraduate diploma in Biology, National University of Colombia, Bogotá (Ranked 1st at the faculty of Sciences).

Fellowships, awards and honors

[2019] Promotion from Research Director 2 (DR2) to DR1 at CNRS (Ranked 1st)

[2018] Recognition as a high quality reviewer of The Journal of Neuroscience

[2016] Selected team by an international scientific advisory board to integrate the new Institut of Psychiatry and Neuroscience of Paris (IPNP, Dir. Thierry Galli). The team moved in September 2017.

[2016-2019] “Equipe FRM 2015” award from the French Research Medical Foundation (FRM, France)

[2014-2017] “Prime d'encadrement doctoral et de recherche” from CNRS

[2014] Selected for the oral defense of an ERC-consolidator grant

[2007-2010] Young investigator grant from ANR

[2005-2007] Young Investigator Award from NARSAD, USA

[2000-2001] HFSPO postdoctoral fellowship

[2000] EMBO postdoctoral fellowship (withdrawn since HFSPO accepted)

[2000] Best PhD thesis award, French Society for Neuroscience

[1995-1999] PhD fellowship from Colciencias (Colombia) and from FRM (France)

[1995] Award for the best student of the Faculty of Sciences in 1995, National University of Colombia

Organized events (five last years)

[2020-2022] Representative of the French Society of Neuroscience at the local committee of FENS 2022, July 9th-13th 2022, Paris, France

[2020-2021] Member of the local organizing committee of the “XV european meeting on glial cells in health and disease” (Euroglia), July 7th-10th 2021, Marseille, France

[2019] 14th European meeting of glial cells in health and disease, Porto (July 10-13). Symposium organizer: Role of GABAergic neurons in controlling oligodendroglia function and shaping their own myelination.

[2018] Annual meeting of the French Club of Glial Cells, ICM, Paris (October 9). Organizer with members of the club.

[2015-2017] Elected member of the international scientific committee of the “XIII european meeting on glial cells in health and disease” (Euroglia), July 8th-11th 2017, Edinburgh, UK (415 votes by the worldwide glial cells community)

[2016] 23rd Annual meeting of the French Club of Glial Cells, Carry-Le-Rouet (June 1-3). Organizer of the meeting with the club and organizer of the symposium: Multiples interactions between glia and synapses

[2015] “The Brain, beyond neurons”, international conference on glial cells, Paris (May 11-12). Financed by ENP, ARSEP, Univ. Paris Descartes and CNRS FR3636

Outreach activities

[2020] Film for major donors of the French Society of Multiple Sclerosis (ARSEP) to promote the research on Multiple Sclerosis.

[2019] Paris, Capitale Européenne de l’Innovation en santé, Paris, France. Organized by “Mairie de La ville de Paris”. Representative of the IPNP at a round table with the journalist Heloïse Rambert.

[2018] 8th meeting with patients suffering from Multiple Sclerosis at IPNP, Paris (Nov 23). Organizer with the French Society of Multiple Sclerosis (ARSEP).

[2017] 7th meeting with patients suffering from Multiple Sclerosis at IPNP, Paris (Nov 24). Organizer with the French Society of Multiple Sclerosis (ARSEP).

[2016] 5th meeting with patients suffering from Multiple Sclerosis at Saints-Pères, Paris (Jan 28). Organization with members of Univ. Paris Descartes and the French Society of Multiple Sclerosis (ARSEP).

Present grants

[2020-2022] European Joint Program on Rare Diseases (ANR under european cofund)

[2019-2022] Era-Net Neuron call 2018 (ANR under european cofund)

[2018-2020] National Multiple Sclerosis Society (NMSS), USA

[2016-2020] ANR générique; Agence Nationale de la Recherche (ANR), France

Institutional responsibilities and commissions of trust

[2019-2022] Elected Treasurer of the French Society of Neuroscience (2 years assistant treasurer and 2 years principal treasurer) ; member of the office and administrative council of the society

[2018] Member of the international “in-depth evaluation panel” to select a director for a Center supported by the Institute for Basic Science (IBS), Daejeon, South Korea

[2017-2018] Member of the scientific committee of Agence Nationale de la Recherche (ANR), Section : Molecular and Cellular Neuroscience

[From 2017] Member of the scientific committee of the Fondation pour la Recherche sur le Cerveau (FRC).

[From 2017] Representative of researchers/professors in the Administrative Council of the Ecole des Neurosciences de Paris (ENP)

[From 2014] Scientific committee of the “French Club of glial cells”, France

[2013-2017] Representative of INSERM U1128 in the scientific committee of Neuroscience Department (CNRS FR3636), University Paris Descartes, Paris, France

[2012-2016] Elected member of the Administrative Council of the Faculty of Fundamental and Biomedical Sciences, University Paris Descartes, Paris, France

Reviewer for: Science, Nature Neuroscience, Nature Communications, eLife, The Journal of Neuroscience, Glia, European Journal of Neuroscience among others

Reviewer for grant agencies: Wellcome Trust (UK), Swiss National Science Foundation (SNF, Switzerland), German Research Foundation (DFG, Germany), Agence Nationale de la Recherche (ANR, France), French Multiple Sclerosis Society (ARSEP), Italian Multiple Sclerosis Society (FISM), University of Tübingen (Germany)

Jury: 6 HDR, 13 PhD theses, 1 Professor, several juries for ATER, doctoral schools and master degrees

Supervision of graduate students and postdoctoral fellows (last five years)

[From 2020] Dorien Maas (Post-doc)

[From 2018] Marie Vidal (PhD student)

[From 2017] Domiziana Ortolani (PhD student)

[From 2017] Blandine Manot-Saillet (PhD student)

[From 2015] Najate Benamer (Post-doc)

[2016-2020] Chloé Habermacher (Post-doc). Present: Research scientist at SynapCell pharmaceutical company, Grenoble, France

[2011-2017] Fernando Ortiz Cisternas (Post-doc). Present: P.I. at Universidad Autónoma de Chile (Santiago, Chile)

[2012-2017] David Orduz Pérez (Post-doc). Present: DevOps Engineer, Gfi Informatique (Saint-Ouen, France).

[2011-2016] Maddalena Balia (PhD student). Present: post-doctoral fellow in Beatriz Rico's team, King College London, UK

Teaching activities

[From 2019] Master 2, Neurosciences (a new interdisciplinary master), Neuron-glia interaction: effect of neuronal activity on oligodendroglial development, 2 hours/year, University of Paris.

[From 2016] Master 2, Relationship between neuronal activity and oligodendrogenesis, 2 hours/year, University of Paris.

[From 2008] Master 2, Physiology of NG2 cells, 2 hours/year, Sorbonne University, Paris.

[2004-2018] Master 1, Neuron-glia interactions, 2 hours/year, Ecole Normale Supérieure (ENS), Paris.

[2010-2012] Master 2, Neuron-glia interactions, 2 hours/year, Univ. Paris Descartes, Paris.

[2005-2007] Master 2, Role of astrocytes in neurovascular coupling, 2 hours/year, Univ. Paris VI, Paris.

Memberships of scientific societies

[From 2014] French Club of glial cells, France.

[From 2014] Scientific network "Ecole des Neurosciences de Paris (ENP)", Paris, France.

[From 1997] Society for Neuroscience, SFN, USA.

[From 1997] Société de Neurosciences Française, SNF, France.

Languages

Spanish, French, Italian and English

Invited conferences (last five years)

february 2020: Series seminars of the Centre for Discovery Brain Sciences, University of Edinburgh, UK.

december 2019: JeCCO XIIth Symposium, Paris, France. New technologies Empowering Biomedical Research. Symposium: On a Cellular level. “Optogenetics and Neurology”.

august 2019: ISN-ASN meeting, Montréal, Canada. Symposium: Interneuron Development and Interaction with Other Cell Types in the Developing Brain. “Roles of long-lasting interactions between GABAergic interneurons and oligodendrocyte progenitors in the neocortex”.

august 2019: Satellite in New Perspectives in Myelin Function and Disease at the ISN-ASN meeting, Montréal, Canada. Symposium: Oligodendrocyte function in learning and synaptic transmission. “Role of GABAergic synapses of oligodendrocyte progenitors in regulating axonal myelination and function of parvalbumin interneurons” (selected abstract for an oral presentation).

july 2019: 14th European meeting of glial cells in health and disease, Porto, Portugal. Symposium organizer: Role of GABAergic neurons in controlling oligodendroglia function and shaping their own myelination. “Embryonic oligodendrocyte progenitors form postnatal functional clusters with their lineage-related cortical interneurons”.

June 2019: Paris, Capitale Européenne de l’Innovation en santé, Paris, France. Representative of the IPNP at the round table with the journalist Heloïse Rambert.

may 2019: Neurofrance 2019, Marseille, France. Symposium: Critical periods for postnatal cortical development: Current transversal views. “Embryonic oligodendrocyte progenitors form postnatal functional clusters with their lineage-related interneurons”.

nov. 2018: Inauguration of IPNP, Paris, France. Symposium: Neurodevelopment and Psychiatry. “Neuronal activity *in vivo* promotes functional myelin repair”

oct 2018: Series seminars of Institut de neurobiologie de la méditerranée (INMED), Marseille, France.

july 2018: Institute of Basic Science symposium in Neuroscience, Daejeon, South Korea. Symposium.

june 2018: First Achucarro International Glia School, Bilbao (Spain). Lecture.

April 2018: Symposium on Uncoding Multiple Roles of Glial Cells in the Brain, organized by the French Society of Biologie (Société de Biologie), Institut Curie, Paris.

march 2018: The Myelin Gordon Research Conference, Ventura (USA). Symposium: Adolescent Myelin. Development and Disease.

march 2018: Series seminars of Icahn Medical School of Medicine at Mount Sinai, New York, USA.

March 2018: Series seminars of the Department of Physiology and Neurobiology, University of Connecticut, Storrs, USA.

oct 2017: MSPARIS2017, Paris. European (ECTRIMS) and American (ACTRIMS) committees for treatment and research in Multiple Sclerosis. *Hot topic* Symposium.

june 2017: Swiss and French MS meeting, ARSEP, Paris. Symposium. "Effect of neuronal activity in remyelination".

may 2017: Femmes en Sciences et Ingénierie, Bogota (Colombia). Symposium (invitation within the framework of the franco-colombian year). Dissemination of information to students at the level of high school, undergraduate and master degrees at Los Andes University.

nov 2016: Neuroscience 2016, San Diego, USA. Minisymposium: Mechanisms and consequences of white matter plasticity. "Role of GABAergic synapses of cortical oligodendrocyte precursor cells".

july 2016: Symposium on Current Challenges in Cell-Cell Communication, organized by the French Society of Cell Biology (SCBF) and ITMO Biologie cellulaire, développement et évolution, Paris, France. "Synapses between interneurons and NG2 cells in the developing neocortex".

oct 2015: 16th Congress SINS, Cagliari, Italy. Symposium: Intrinsic and extrinsic regulation of oligodendrocyte progenitor cell self-renewal and differentiation. "Regulation of synaptic connectivity between GABAergic interneurons and NG2 cells during cortical oligodendrogenesis."

aug 2015: Federation of European Physiological Society 2015 (FEPS 2015), Kaunas, Lithuania. Symposium: Role of glial neurotransmitters receptors in central and peripheral nervous system development and regeneration. "A structured synaptic connectivity between GABAergic interneurons and oligodendrocyte precursors in the developing somatosensory cortex."

july 2015: 12th European meeting of glial cells in health and disease, Bilbao, Spain. Symposium: Molecular and cellular changes in CNS myelinating glia during demyelination and remyelination. "Regulation of synaptic connectivity of oligodendrocyte precursor cells in myelination and myelin repair."

may 2015: "The Brain, beyond neurons", Paris. Symposium: Neuron-glia and glia-glia interactions in myelination and myelin repair, Paris, France. "Structured synaptic connectivity between GABAergic interneurons and oligodendrocyte precursors in the developing somatosensory cortex."

jan 2015: ENP days 2015, La Clusaz. "Regulation of synaptic connectivity of oligodendrocyte precursor cells in the CNS."

List of publications (last five years) (*Members of the team are underlined*)

Published original articles

Riva M*, Genescu I*, Habermacher H*, Orduz D, Ledonne F, Rijli FM, Lopez-Bendito G, Coppola E, Garel S#, **Angulo MC**#, Pierani A# (2019) Activity-dependent elimination of Cajal-Retzius cells regulates the wiring of upper cortical layers. *eLife* 8:e50503

*Co-first authors; #Co-last authors

Orduz D*, Benamer N*, Ortolani D*, Coppola E, Vigier L, Pierani A, **Angulo MC** (2019) Developmental cell death regulates lineage-related interneuron-oligodendroglia functional clusters and oligodendrocyte homeostasis. *Nat. Commun.* 10(1):4249

This article was highlighted as a "Featured Article" by the Nature Communications.

Ortiz FC*, Habermacher C*, Graciarena M, Houry P-Y, Nishiyama A, Nait Oumesmar B, **Angulo MC** (2019) Neuronal activity in vivo enhances functional myelin repair. *JCI Insight* 4(9): e123434.

*Co-first authors

This study was highlighted and webcasted at the international ECTRIMS/ACTRIMS meeting MSParis2017 (around 10 000 participants)

Ortolani D*, Manot-Saillet B*, Ortiz FC*, **Angulo MC**# (2018) In vivo optogenetic approach to study neuron-oligodendroglia interactions in mouse pups. *Front Cell Neurosci* 12:477

*Co-first authors; #Co-last authors

Remaud S, Ortiz FC, Perret-Jeanneret M, Aigrot MS, Gothié JD, Fekete C, Kvártá-Papp Z, Gereben B, Langui D, Lubetzki C, **Angulo MC**, Zalc B, Demeneix B. (2017) Transient hypothyroidism promotes functional brain remyelination in vivo. *eLife* 6:e29996

Balia M, Benamer N, **Angulo MC** (2017) A specific GABAergic synapse onto oligodendrocyte precursors does not regulate cortical oligodendrogenesis. *Glia* 65(11):1821-1832

Ledonne F, Orduz D, Mercier J, Vigier L, Grove EA, Tissir F, **Angulo MC**, Pierani A#, Coppola E#. (2016) Targeted inactivation of Bax reveals subtype-specific mechanism of Cajal-Retzius neuron death in the postnatal cerebral cortex. *Cell Rep* 17(12) 3133

#Co-last authors

Wake H*, Ortiz FC*, Woo DH, Lee P, **Angulo MC**, Fields D (2015) "Non-synaptic junctions on myelinating glia promote preferential myelination of electrically-active axons". *Nat Commun* 6:7844

*Co-first authors

Orduz D*, Maldonado PP*, Balia M, Vélez-Fort M, de Sars V, Yanagawa Y, Emiliani V, **Angulo MC** (2015) Interneurons and oligodendrocyte progenitors form a structured synaptic network in the developing neocortex. *eLife* 4:e06953

*Co-first authors

Sahel, A*, Ortiz, FC*, Kerninon, C, Maldonado PP, **Angulo MC**#, Nait Oumesmar B# (2015) Alteration of synaptic connectivity of oligodendrocyte precursor cells following demyelination. *Front Cell Neurosci* 9:77. doi: 10.3389/fncel.2015.00077

*Co-first authors; #Co-last authors

Balia M*, Vélez-Fort M*, Passlick S, Schäfer C, Audinat E, Steinhäuser C, Seifert G, **Angulo MC** (2015) Postnatal down-regulation of the GABA_A receptor $\gamma 2$ subunit in neocortical NG2 cells accompanies synaptic-to-extrasynaptic switch in GABAergic transmission mode. **Cereb Cortex**, 25(4):1114-23

*Co-first authors

Review articles

Benamer N, Vidal M, Angulo MC (2020) The cerebral cortex is a substrate of multiple interactions between GABAergic interneurons and oligodendrocyte lineage cells. **Neurosci Lett**. 715:134615. (Invited Review in the Special Issue: “Oligodendrocyte Niche in development and repair” by A. Nishiyama and Holly Collognato)

Habermacher C, Angulo MC[#], Benamer N[#]. (2019) Glutamate versus GABA in neuron-oligodendroglia communication. **Glia** 67(11):2092-2106. (Invited Review in the Special Issue: Plasticity of Myelinating Cells by RD Fields and WD Richardson).

[#]Co-last authors

Maldonado, PP, **Angulo, MC** (2015) Multiple modes of communication between neurons and oligodendrocyte precursor cells. **Neuroscientist** 21(3):266-76 (Invited review)

Book chapter

Habermacher C, Manot-Saillet B, Ortolani D, Ortiz FC, Angulo MC (2020) Optogenetics to interrogate neuron-glia interactions in pups and adults. **Methods Mol Biol**. Ed. Robert E. Dempksi, Springer (Invited)

Lay article

Angulo MC (2020) Les cellules du lignage oligodendrocytaire sont des partenaires actifs clés des neurones. La Lettre des Neurosciences, Société des Neurosciences française. 26 May 2020.