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· *Cell metabolism in tumor-stroma interactions* · *Quantitative cell and developmental biology* · *Cellular social interactions*

Education

University Degrees

- 2010 PHD in Cell and Developmental Biology. University College London (UCL), UK. Thesis subject: Collective migration of neural crest cells.
- 2005 BSC in Biological Sciences, Pontificia Universidad Católica (PUC), Santiago, Chile.

Scientific Training Courses

- 2014 Mouse Development, Stem Cells & Cancer. June-July, Cold Spring Harbor Laboratories (CSHL), Long Island, NY. USA.
- 2013 The Genome Access Course. New York Genome Center/CSHL. New York, NY. USA.
- 2009 Embryology: Concepts & Techniques in Modern Developmental Biology. Marine Biological Laboratory, Woods Hole, MA. USA.
- 2003 Molecular basis of Nervous System Development, Universidad de Chile. Santiago. Chile.

Employment and research experience

- 2017 - Assistant Professor. Center for Genomics & Systems Biology. Department of Biology, NYU
- 2012-2016 Independent Postdoctoral Fellow at the Computational Biology Program, Memorial Sloan Kettering Cancer Center (MSKCC). Mentor: Dr. Joao B. Xavier; Co-mentors: Craig B. Thompson and Johanna A. Joyce.
- 2011 Postdoctoral Fellow at the Computational Biology Program, MSKCC. Mentor: Dr. Joao B. Xavier.
- 2005-2006 Research Assistant at Universidad de Chile. Wnt signaling and Neural Crest Induction.
- 2005 Visiting Researcher at UCL, London, UK. Mechanism of Neural Crest Inhibition in the anterior neural fold.

Honors & awards

- 2015-2019 NIH Pathway to Independence Award (K99/R00).
- 2012-2015 CCSB Independent Postdoctoral Fellowship. Computational Biology Program, MSKCC. [Click here for more Info.](#)
- 2011 Outstanding alumni award. Biology Department at PUC.
- 2011 **Beddington Medal** (best Developmental Biology PhD thesis of the year in the UK).
- 2006-2009 **Boehringer Ingelheim Fonds PhD Fellowship.**
- 2006-2009 **Overseas Research Scholarship PhD Scholarship.**
- 2009 **Bogue Research Fellowship.**
- 2005 Academic Excellence at PUC. Best student of the cohort during all the entire degree (Ranking 1).
- 2001-2004 First-Class Honor at PUC. Best student of the year.

Publications

(as corresponding author)

- 2017 Carmona-Fontaine, Carlos*, M. Deforet, L. Akkari, C. B. Thompson, J. A. Joyce, and J. B.* Xavier. *Metabolic origins of spatial organization in the tumor microenvironment.* **PNAS**, 114(11):2934–2939, 2017.
- 2013 Carmona-Fontaine, Carlos*, Vanni Bucci, Leila Akkari, Maxime Deforet, Johanna A Joyce, and Joao B Xavier*. Emergence of spatial structure in the tumor microenvironment due to the Warburg effect. **PNAS**, 110(48):19402–19407, 2013.
- * co-corresponding author

Other publications

- 2017 A. M. Intlekofer, B. Wang, H. Liu, H. Shah, Carmona-Fontaine, Carlos, A. S. Rustenburg, S. Salah, M. R. Gunner, J. D. Chodera, J. R. Cross, and C. B. Thompson. *L-2-Hydroxyglutarate production arises from noncanonical enzyme function at acidic pH.* **Nature Chem Biol**, 2017.
- 2016 M. A. Rabadan, A. Herrera, L. Fanlo, S. Usieto, Carmona-Fontaine, Carlos, R. Mayor, S. Pons, and E. Marti. *Delamination of neural crest cells requires transient and reversible Wnt inhibition mediated by Dact1/2.* **Development**, 143(12):2194–205, 2016.
- 2016 C. Araya, Carmona-Fontaine, Carlos, and J. D. Clarke. *Extracellular matrix couples the convergence movements of mesoderm and neural plate during the early stages of neurulation.* **Dev Dyn**, 245(5):580–9, 2016.

- 2014 Mae L Woods, Carmona-Fontaine, Carlos, Chris P Barnes, Iain D Couzin, Roberto Mayor, and Karen M Page. Directional Collective Cell Migration Emerges as a Property of Cell Interactions. **PloS one**, 9(9):e104969, 2014.
- 2014 Claudio Araya, Marcel Tawk, Gemma C Girdler, Marta Costa, Carmona-Fontaine, Carlos, and Jonathan DW Clarke. Mesoderm is required for coordinated cell movements within zebrafish neural plate in vivo. **Neural development**, 9(1):1–16, 2014.
- 2014 Maxime Deforet, Dave van Ditmarsch, Carmona-Fontaine, Carlos, and Joao B Xavier. Hyperswarming adaptations in a bacterium improve collective motility without enhancing single cell motility. **Soft matter**, 10(14):2405–2413, 2014.
- 2013 William K Chang, Carmona-Fontaine, Carlos, and Joao B Xavier. Tumour–stromal interactions generate emergent persistence in collective cancer cell migration. **Interface focus**, 3(4):20130017, 2013.
- 2012 Carmona-Fontaine, Carlos and Joao B Xavier. Altruistic cell death and collective drug resistance. **Molecular Systems Biology**, 8(1), 2012.
- 2011 Carmona-Fontaine, Carlos, Eric Theveneau, Apostolia Tzekou, Masazumi Tada, Mae Woods, Karen M Page, Maddy Parsons, John D Lambris, and Roberto Mayor. Complement Fragment C3a Controls Mutual Cell Attraction during Collective Cell Migration. **Developmental Cell**, 2011.
- 2010 Roberto Mayor and Carmona-Fontaine, Carlos. Keeping in touch with contact inhibition of locomotion. **Trends in Cell Biology**, 20(6):319–328, 2010.
- 2008 Carmona-Fontaine, Carlos, Helen K Matthews, Sei Kuriyama, Mauricio Moreno, Graham A Dunn, Maddy Parsons, Claudio D Stern, and Roberto Mayor. Contact inhibition of locomotion in vivo controls neural crest directional migration. **Nature**, 456(7224):957–961, 2008.
- 2008 Helen K Matthews, Lorena Marchant, Carmona-Fontaine, Carlos, Sei Kuriyama, Juan Larraín, Mark R Holt, Maddy Parsons, and Roberto Mayor. Directional migration of neural crest cells in vivo is regulated by Syndecan-4/Rac1 and non-canonical Wnt signaling/RhoA. **Development**, 135(10):1771–1780, 2008.
- 2008 Carmona-Fontaine, Carlos, Helen Matthews, and Roberto Mayor. Directional cell migration in vivo. **Cell Adhes Migr**, 2:240–242, 2008.
- 2007 Carmona-Fontaine, Carlos, Gustavo Acuña, Kristina Ellwanger, Christof Niehrs, and Roberto Mayor. Neural crests are actively precluded from the anterior neural fold by a novel inhibitory mechanism dependent on Dickkopf1 secreted by the prechordal mesoderm. **Developmental Biology**, 309(2):208–221, 2007.
- 2006 Daniel Rojas, Carmona-Fontaine, Carlos, Javier López-Calderón, and Francisco Aboitiz. Do discreteness and rivalry coexist in illusory motion reversals? **Vision research**, 46(6):1155–1157, 2006.
- 2006 Alexies Dagnino-Subiabre, Juan A Orellana, Carmona-Fontaine, Carlos, Juan Montiel, Gabriela Díaz-Velíz, María Serón-Ferré, Ursula Wyneken, Miguel L Concha, and Francisco Aboitiz. Chronic stress decreases the expression of sympathetic markers in the pineal gland and increases plasma melatonin concentration in rats. **Journal of neurochemistry**, 97(5):1279–1287, 2006.
- 2005 Alexies Dagnino-Subiabre, G Terreros, Carmona-Fontaine, Carlos, R Zepeda, JA Orellana, Gabriela Díaz-Velíz, S Mora, and Francisco Aboitiz. Chronic stress impairs acoustic conditioning more than visual conditioning in rats: morphological and behavioural evidence. **Neuroscience**, 135(4):1067–1074, 2005.
- 2005 Ben Steventon, Carmona-Fontaine, Carlos, and Roberto Mayor. Genetic network during neural crest induction: from cell specification to cell survival. **Seminars in cell & developmental biology**, 16(6):647–654, 2005.