

Gloria G. Curto, PhD

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<http://gloriagcurto.info>

Personal

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Résumé

I am a researcher on developmental, stem cell and cancer biology with genomics/bioinformatics skills. My research interests include how cell fate decisions are related to the establishment of appropriate cellular identities, population ratios and tissue size. Also, how these molecular mechanisms might induce different pathologies when aberrant.

Scientific career and education

- **February 2015-September 2017.** Postdoctoral researcher. Lab. Dr. Ribes. Institute Jacques Monod, Paris. France. Hired by CNRS UMR 7592 with the financial support of the ATIP-Avenir grant of Dr. Vanessa Ribes. My project aimed to identify the molecular mechanisms and underlying transcriptional networks regulated by Pax3 and 7 transcription factors and its oncogenic counterparts PAX3FOXO1A and PAX7FOXO1A.
- **September 2010-January 2014.** Postdoctoral researcher. Lab. Dr. Spassky. Institute de Biologie de l'École Normale Supérieure, Paris. France. From February 2011 to January 2014, I was hired by Inserm, U1024 with the financial support of a *La Ligue contre le cancer* postdoctoral fellowship. From September 2010 to January 2011, I was hired by the Association Robert Debré as a postdoctoral researcher in the team of Dr. Spassky. My project was aimed to identify molecular mechanisms responsible for ependymal cell differentiation. I did a transcriptomic analysis of neural stem cells and differentiating ependymal cells to identify potential candidates. To experimentally validate those candidates I used a combination of in vivo and in vitro techniques, including videomicroscopy.
- **2004-2010.** PhD Thesis. University of Salamanca, Spain. Instituto de Neurociencias de Castilla y León, Spain. Supervisors: José Ramón Alonso Peña and Carmela Gómez Rodríguez. I was interested in the role of the transcription factor Pax6 in adult neurogenesis towards the olfactory bulb. I analyzed in vivo and in vitro the proliferation, self-renewal, and differentiation abilities of adult progenitors as well as cell survival in Pax6 heterozygous mutants. I did my work in strong collaboration with the teams of Dr. Carlos Crespo (Universidad de Valencia, Spain), Dr. Carlos Vicario-Abejon (Cajal Institute, CSIC, Spain) and Dr. Eric Holland (Memorial Sloan Kettering Cancer Center, New York, USA).

I was awarded the doctoral *Premio Extraordinario de Doctorado* prize from University of Salamanca (Spain). This doctorate prize awards the best thesis by domain. It is based both on the CV of the candidate and the confidential comments of thesis committee after the PhD defense.

- **2004-2005.** D.E.A. Thesis. Histological characterization of retina cell populations in a mutant mouse model. Supervisors: Almudena Velasco and Juan Lara.
- **1998-2003.** Degree in Biology. University of Salamanca, Spain. During the last two years as undergraduate student, I was already collaborating in the Department of Cell Biology and Pathology and the Institute of Neurosciences.

Competitive financial support and awards

- **La ligue contre le cancer postdoctoral fellowship.** February 2011-January 2014. Cilia Biology and Neurogenesis Team. Institut de Biologie de l'Ecole Normale Supérieure (IBENS). Paris (France). INSERM U1024.
- **Doctoral Award Premio Extraordinario de Doctorado** from the University of Salamanca (Spain). 2010.
- **Research internship grant.** Supported by *Ministerio de Educación y Ciencia*, Spain. 2007. Dpt. Cancer Biology & Genetics. Memorial Sloan Kettering Cancer Center, New York (USA). 2007, 5 months.
- **Research internship grant.** Supported by *Ministerio de Educación y Ciencia*, Spain. 2005. Dpto. Biología Celular y Parasitología. University of Valencia (Spain).
- **Predoctoral fellowship.** Supported by *Ministerio de Educación y Ciencia, FPI program*, Spanish Government. 2004-2008. Institute of Neuroscience of Castilla y León. University of Salamanca. Salamanca (Spain).
- **Undergraduate collaboration fellowship.** Supported by *Ministerio de Educación, Cultura y Deporte* Spanish Government. 2002-2003. Institute of Neuroscience of Castilla y León, Spain.
- **Popular science awards**
 - Popular science poster contest. VII Young researchers meeting. Barcelona, Spain. 2009. 2nd place.
 - Popular science poster contest. VI Young Researchers meeting. Granada, Spain. 2008. 2nd place.
 - Popular science poster contest. IV Young Researchers meeting. Madrid, Spain. 2006. 3rd place.

Technical skills

- **Bioinformatics and Statistics**
 - R programming, Bioconductor
 - Galaxy
 - Python. Numerical libraries: `numpy` and `scipy`.
 - Bash
- **Histology** Histological tissue processing for optical, confocal, multiphoton, and TEM microscopes
- **Videomicroscopy** Cells in culture, explants, and brain slices
- **Electroporation** In vivo intraventricular electroporation of early postnatal mice
- **Molecular biology and Biochemistry**
 - RNA and DNA isolation and PCR
 - Western Blot
 - Immunoprecipitation
 - Cloning, transfection, electroporation
- **Primary and cell line culture**
 - Neurosphere assays, proliferation
 - Cell differentiation assays
 - In vitro clonal analysis
 - Slice organotypic cultures
 - Explant cultures

- **Big equipment**
 - Transmission electron microscope
 - Laser confocal microscope
 - Spinning disk microscope
- **Experimental models** Mouse, cell lines, chicken embryos.
 - B level: Project designer (according to the French law; July 2015)
 - Certificate of qualified staff to work with experimental animals (according to the Spanish law; July, 2006).

Teaching experience

- **Qualification aux fonctions de maître de conférences.** Cell Biology and Neuroscience sections. France, 2016.
- Practical **undergraduate teaching** in different subjects of Cell Biology, Neurobiology and Histology areas (University of Salamanca). 2006-2008. 210 hours.
 - **Animal and Plant Cytology and Histology** (1st year of Biology Degree). 40 hours teaching/semester.
 - **Cell Biology** (4th year of Biology Grade and 1st year of Biochemistry Degree). 15 hours teaching/semester.
 - **Methodology in the study of Tissue and Cell Biology** (4th year of Biology Degree). 20 hours teaching/semester.
 - **Neurobiology** (5th year of Biology Degree). 15 hours teaching/semester.
 - **Cell Biology** (2nd year of Biotechnology Degree). 15 hours teaching/semester.
- **Pedagogic Aptitude Diploma.** University of Salamanca, Spain. Diploma needed to become a high school teacher in Spain. 2004.

Conference organization, management, and leadership skills

- **Member of the organizing committee.** The YRLS meeting is organized once a year by the young researchers associations of the five leading life science research institutes of Paris. Apart from diverse general organization tasks, I participated in the selection of participants for oral presentations and as a poster judge for the developmental and cell biology sections.
- **Chairman. VII Young Researchers meeting** (*Scientific Politics in Spain: Needs and Proposals*). Barcelona (Spain) 25-27 February 2009.
- **Coordinator of the scientific program. VI Young Researchers meeting** (*Research is future*). Granada (Spain) 13-15 February 2008.
- **2011 to 2013**, I was an **active member** of the **directive team** of the **students and postdocs association of the Institut de Biologie de l'École Normale Supérieure (SPIBens)**. As a part of my activity, I participate in the organization of the Young Researchers in Life Science meeting 2012, in Paris.
- **2004 to 2011**, I was an **active member** of the **Spanish Young Researchers Federation** (Federación de Jóvenes Investigadores; FJI).
- **2005 to 2007** I was in charge of a **national work group** dedicated to the **preparation of informative material on the activities of the association and science policy**.
- **2008 to 2009** I was part of the **directive team** of the association, the last six months as **vice-president**. I participated in the **planning and coordination** of the work of the association and represented the association in different events and negotiations.

Communication skills

Scientific publications I have published ten papers in peer-reviewed journals and one invited review, four of them as the first author and three as the second author. At this moment I have two more manuscripts in preparation related to my work in Dr. Ribes lab. I have made six oral presentations contributions as first author and four poster contributions.

Popular science activities

- Educational activities at the exhibition *Neurosciences in the XXI century*. Science week. Salamanca, 2008. Popular science awards
- *Al filo de lo posible: detectar y parar la neurodegeneración*. Second place. Popular science poster contest. VII Young researchers meeting. Barcelona, Spain. February, 2009
- *Un largo e inesperado viaje: de los huesos al cerebro*. Second place. Popular science poster contest. VI Young Researchers meeting. Granada, Spain. February, 2008
- *¿Quién dijo que el cerebro no cambia?* Third place. Popular science poster contest. IV Young Researchers meeting. Madrid, Spain. March, 2006

Languages

Very good **English** (read/written/spoken)

Very good **French** (read/written/spoken)

Native **Spanish**

Scientific peer-reviewed publications

- Pax3- and Pax7-mediated Dbx1 regulation orchestrates the patterning of intermediate spinal interneurons. Gard C.*, **Curto G.G.** *, Farma YE., Chollet E., Duval N., Auzié V., Auradé F., Vigier L., Relaix F., Pierani A., Causeret F., Ribes V. *Developmental Biology* (2017), 432(1):24-33. *: Both authors contribute equally to this work.
Pubmed DOI: <https://doi.org/10.1016/j.ydbio.2017.06.014>
- Structures and properties of PAX linked regulatory networks architecting & pacing the emergence of neuronal diversity. **Curto G.G.**, Gard C. Ribes V. *Seminars in Cell and Developmental Biology* (2015), 44: 75-86. Invited Review.
Pubmed DOI: <https://doi.org/10.1016/j.semcdb.2015.09.010>
- Pax6 is essential for the maintenance and multi-lineage differentiation of neural stem cells, and for neuronal incorporation into the adult olfactory bulb. **Curto G.G.**, Nieto-Estévez V., Hurtado-Chong A., Valero J., Gómez C., Alonso J.R, Weruaga E., Vicario-Abejón C. *Stem cells and Development* (2014), 23(23):2813-30.
Pubmed DOI: <https://doi.org/10.1089/scd.2014.0058>
- Tubulin glycyloses and glutamylases have distinct functions in stabilization and motility of ependymal cilia. Bosch Grau M., **González Curto G.**, Rocha C., Magiera M.M., Marques Sousa P., Giordano T., Spassky N., Janke C. *The Journal of Cell Biology* (2013), 202(3):441-51.
Pubmed DOI: <https://doi.org/10.1083/jcb.201305041>
- Changes in the serotonergic system and in brain-derived neurotrophic factor distribution in the main olfactory bulb of pcd mice before and after mitral cell loss. Gómez C., **Curto G.G.**, Baltanás F.C., Valero J., O'Shea E., Colado M.I., Díaz D., Weruaga E., Alonso J.R. *Neuroscience* (2012), 201:20-33.
Pubmed DOI: <https://doi.org/10.1016/j.neuroscience.2011.11.025>
- Types of cholecystokinin-containing periglomerular cells in the mouse olfactory bulb. Baltanás F.C., **Curto G.G.**, Gómez C., Díaz D., Murias A.R., Crespo C., Erdelyi F., Szabó G., Alonso J.R.,

Weruaga E. *Journal of Neuroscience Research* (2011), 89(1):35-43.

Pubmed DOI: <https://doi.org/10.1002/jnr.22521>

- Modelos animales en el estudio de los Trastornos del Espectro Autista. Gómez C., Díaz D., Airado Cerrato C., **González Curto G.**, Murias A. R., Sánchez Recio J., Weruaga E., Alonso J.R. Book Chapter. 2010. *Investigaciones sobre autismo en español: problemas y perspectivas, 239-248. Centro de Psicología Aplicada*. ISBN 978-84-614-1786-5.

- Chemical characterization of Pax6-immunoreactive periglomerular neurons in the mouse olfactory bulb. Baltanás F.C., Weruaga E., Murias A.R., Gómez C., **Curto G.G.**, Alonso J.R. *Cellular and Molecular Neurobiology* (2009), 29:1081-1085.

Pubmed DOI: <https://doi.org/10.1007/s10571-009-9405-3>

- Modifications of the retina neuronal populations of the heterozygous mutant small eye mouse, the SeyDey. **Curto G.G.**, Lara J.M., Parrilla M., Aijon A., Velasco A. *Brain Research* (2007), 1127:163-176.

Pubmed DOI: <https://doi.org/10.1016/j.brainres.2006.10.007>

- Sex differences in catechol contents in the olfactory bulb of control and unilaterally deprived rats. Gómez C., Briñón J.G., Valero J., Recio J.S., Murias A.R., **Curto G.G.**, Orio L., Colado M.I., Alonso J.R. *European Journal of Neuroscience* (2007), 25:1517-1528.

Pubmed DOI: <https://doi.org/10.1111/j.1460-9568.2007.05407.x>

- Changes in cell migration and survival in the olfactory bulb of the pcd/pcd mouse. Valero J., Weruaga E., Murias A.R., Recio J.S., **Curto G.G.**, Gómez C., Alonso J.R. *Developmental Neurobiology* (2007), 67:839-859.5.

Pubmed DOI: <https://doi.org/10.1002/dneu.20352>

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<https://scholar.google.com/citations?user=zAspBiAAAAAJ>

Meetings

Oral communications

- Regulation of cell states and chromatin landscapes by the tumorigenic PAXFOXO1 proteins. Curto G.G., der Vartanian A., Duval N., Prisco S., Tena J.J., Clance M., Gomez-Skarmeta J.L., Ribes V. GDR Avian model. Toulouse. October 2016.
- Pax6 regulates proliferation, survival and differentiation of adult mice olfactory bulb stem cells. Curto G.G., Nieto-Estevez V., Hurtado-Chong A., Murias A.R., Weruaga E., Vicario-Abejon C., Alonso J.R. V Congreso de la Sociedad de Neurociencias de Castilla y Leon. Ponferrada (Spain). September, 2008.
- Effects of nicotine chronic treatment in the nucleus accumbens of mice. Murias A.R., Weruaga E., Curto G.G., Aijon J., Alonso J.R. V Congreso de la Sociedad de Neurociencias de Castilla y Leon. Ponferrada (Spain). September, 2008.
- Proliferation, differentiation and survival of newly generated cells in the telencephalon of Pax6 heterozygous adult mice. Curto G.G., Weruaga E., Bobo V., Díaz D., Airado C., Murias A.R., Alonso J.R. "II Jornadas Olfativas" de la Red Olfativa Española. La Franca (Asturias), May 2008.
- Mitral cell density in the olfactory bulb of pcd mutant mice. Bobo V., Gómez C., Weruaga E., Curto G.G., Recio J.S., Aijón J., Alonso J.R. "II Jornadas Olfativas" de la Red Olfativa Española. La Franca (Asturias), May, 2008.
- Female sexual hormones increase cell proliferation in the rostral migratory stream of adult mice. Díaz D., Weruaga E., Valero J., Gómez C., Recio J.S., Curto G.G., Baltanás F.C., Alonso J.R. "II Jornadas Olfativas" de la Red Olfativa Española. La Franca (Asturias), May, 2008.
- The lack of a Pax6 allele modifies the generation of new cells in adult mice CNS. Curto G.G., Airado

- C., Bobo V., Murias A.R., Alonso J.R. IV Congreso de la Asociación de Neurociencias de Castilla y León. October, 2006.
- Disminution of the interneuron number in the olfactory bulb of pcd mutant mouse. Valero J., Weruaga E., Díaz D., Curto G.G., Baltanás F.C., Alonso J.R. IV Congreso de la Asociación de Neurociencias de Castilla y León, Salamanca, October, 2006.
 - Generation of new neurons in Pax6 heterozygous adult mice. Curto G.G., Weruaga E., Gómez C., Baltanás F.C., Airado C., Alonso J.R. Primeras jornadas olfativas. Red olfativa española. Asturias. May, 2006.
 - Effect of the degeneration of mitral cells in the arrival of bone marrow stem cells to the mouse olfactory bulb. Recio J.S., Weruaga E., Murias A.R., Curto G.G., Gómez C., Alonso J.R. Primeras jornadas olfativas. Red olfativa española. Asturias. May, 2006.
 - Neurodegeneration and pre-neurodegeneration of the mitral cells in the pcd mutant mouse. Valero J., Weruaga E., Recio J.S., Murias A.R., Curto G.G., Alonso J.R. Primeras jornadas olfativas. Red olfativa española. Asturias. May, 2006.
 - Expression of nitric oxide synthase in the mouse olfactory bulb. Murias A.R., Weruaga E., Curto G.G., Gómez C., Valero J., Alonso J.R. Primeras jornadas olfativas. Red olfativa española. Asturias. May, 2006.
 - Localization and characterization of Reelin positive cells-in the retina of an adult teleostean fish. García-Pino E., Curto G.G., Parrilla M., Velasco A., Lara J.M. III Congreso de Neurociencias de Castilla y León. Valladolid, October, 2004.
 - Characterization of the cell populations in the retina of the +/SeyDey mutant mice. Curto G.G., Marchena M., Parrilla M., Aijón J., Velasco A. III Congreso de Neurociencias de Castilla y León. Valladolid, October, 2004.

Poster communications

- PAX3FOXO1 and PAX7FOXO1 transcriptional activity imposes 3 tumorigenic traits to alveolar Rhabdomyosarcoma cells. Curto G.G., der Vartanian A., Manceau L., Frarma Y., Prisco S., de Reynies A., Elarouci N., Rigolet M., Aurade F., Causeret F., Relaix F., Ribes V. Stem Cells and Cancer. Gordon Research Conference. February, 2017.
- Reconstruction and modeling of Pax3 and Pax7 linked transcriptional network underpinning spinal development. Curto G.G., Blugeon C., Lemoine S., Relaix F., Ribes V. Modeling in Cell and Developmental Biology. Paris. December, 2015.
- Adult stem cells therapy in a model of neurodegenerative severe ataxia. Effect of the transplant of bone marrow. Weruaga E., Recio J.S., Diaz D., Curto G.G., Alvarez-Dolado M., Alonso J.R. XIII Congreso de la Sociedad Española de Neurociencias. Tarragona (Spain), September, 2009.
- Differential distribution of the CART peptide in the olfactory system of the rat, mouse and pcd mutant mouse. Vilanova-Larena D., Weruaga E., Curto G.G., Baltanás F.C., Alonso J.R. IV Congreso de la Asociación de Neurociencias de Castilla y León, October 2006.
- Generation, migration and differentiation of neurons in the olfactory bulb of Pax6 heterozygous mice. Curto G.G., Valero J., Baltanas F.C., Murias A.R., Weruaga E., Alonso J.R. 5th FENS FORUM. Viena, Austria. July, 2006.
- Transplantation of bone marrow cells in the Purkinje cell degeneration (PCD) mouse. Recio J.S., Airado C., Curto G.G., Briñón J.G., Weruaga E., Piquer M., Alvarez-Dolado M., Alonso J.R. 5th FENS FORUM. Viena, Austria. July, 2006.
- Alterations in the rostral migratory stream of the +/SeyDey mouse. Curto G.G., Valero J., Murias A.R., Baltanás F.C., Weruaga E., Alonso J.R. XI Congreso de la Sociedad Española de Neurociencias. September, 2005.
- Alteration of the neuronal glial cell populations in Pax6 deficient mouse (SeyDey). Velasco A., Curto G.G., Parrilla M., Lara J.M., Aijón J. XI Congreso de la Sociedad Española de Neurociencias. Málaga, September, 2005.

- Neurochemical changes in the glomerular layer of the rat olfactory bulb after sensory deprivation. Alonso J.R., Vidal M., Barbado M.V., Curto G.G., Weruaga E., Briñon J.G. SFN Annual Meeting, Washington DC, USA. November, 2005.

Trainings

- Bioinformatics and statistics
 - **CSAMA 2016. Statistical Data Analysis for Genome-Scale Biology.** The course consisted of both theoretical lessons and practical hands-on exercises based on the R / Bioconductor environment. One week intensive summer school. Brixen, Italy. July, 2016.
 - **Getting and Cleaning Data.** The course covers the basics needed for collecting, cleaning, and sharing data. Coursera online course. Johns Hopkins Bloomberg School of Public Health.
 - **Exploratory Data Analysis.** The course covers in detail the plotting systems in R as well as some of the basic principles of constructing data graphics, and some of the common multivariate statistical techniques used to visualize high-dimensional data. Coursera online course. Johns Hopkins Bloomberg School of Public Health.
 - **R Programming.** The course covers practical issues in statistical computing which includes programming in R, reading data into R, accessing R packages, writing R functions, debugging, and organizing and commenting R code. Coursera online course. Johns Hopkins Bloomberg School of Public Health.
 - **The Data Scientist's Toolbox.** There are two components to this course. The first is a conceptual introduction to the ideas behind turning data into actionable knowledge. The second is a practical introduction to the tools that will be used in the program like version control, markdown, git, Github, R, and Rstudio. Coursera online course. Johns Hopkins Bloomberg School of Public Health.
 - **Data Analysis and Statistical Inference.** This course introduces students to core statistical concepts such as exploratory data analysis, statistical inference and modeling, and basic probability, as well as statistical computing with R. Coursera online course. Duke University.
 - **Bioinformatics Methods II.** It covered motif searching, protein protein interactions, structural bioinformatics, gene expression data analysis, and cis-element predictions. Coursera online course. University of Toronto.
 - **Bioinformatics. Level II.** Initiation to the bioinformatics treatment of RNA-seq generated data. INSERM, DR - Kremlin Bicêtre - Paris XI. 13-17 May 2013.
 - **Bioinformatics. Level I. Analysis of molecular sequences.** INSERM, DR - Kremlin Bicêtre - Paris XI. 18-22 February 2013.
- Experimental models
 - **B level certificate:** experimental model project designer (according to the French law; July 2015).
 - **Certificate of qualified staff to work with experimental animals (according to the Spanish law; July, 2006)**
 - **B level certificate: Experimental model project designer (according to the French law; July 2015)**
 - **Certificate of qualified staff to work with experimental animals (according to the Spanish law; July, 2006)**
- Others
 - **The answer is in the air: odours, neurons, pheromones, pathology and electronic noses.** 20 hrs. Salamanca November, 2008.
 - **The mutable brain: changes in the environment and adult brain modification.** 40hrs. Fully granted student. Universidad Internacional Menéndez Pelayo, Santander. Luis Miguel García Segura y Carlos Avendaño. 2004.

- **Retina and Vision: structure, function, pathologies and therapies of the retina.** 30 hrs. Salamanca. 2003.
- **Injury and repair in the brain.** 20 hrs. Salamanca 2003. 2nd meeting of the Society for Neuroscience of Castilla y Leon. Granted collaborating student. Salamanca. 2002.
- **Stem cells: origins, destinies, functions and genetic manipulation.** 20 hrs. Salamanca May, 2002.
- **Stem cells and genetic manipulation. Practical course.** 20 hrs. Salamanca May, 2002.
- **Biotechnology.** 20 hrs. Salamanca 2000.
- **Integration and defense systems in the living beings.** 20 hrs. Salamanca February, 2000.