

**CURRICULUM VITAE ABREVIADO (CVA)**

**IMPORTANT** – The Curriculum Vitae cannot exceed 4 pages. Instructions to fill this document are available in the website.

**Part A. PERSONAL INFORMATION**

First name	Aixa Victoria		
Family name	Morales García		
Gender (*)	Female	Birth date	25/01/1969
ID number	30538904X		
e-mail	aixamorales@cajal.csic.es	URL Web	<a href="https://cajal.csic.es/laboratorios/control-molecular-de-la-neurogenesis/">https://cajal.csic.es/laboratorios/control-molecular-de-la-neurogenesis/</a>
Open Researcher and Contributor ID (ORCID) (*)	0000-0001-6295-5142		

**A.1. Current position**

Position	Científico Titular CSIC		
Initial date	15/11/2021. PI since 01/01/2005		
Institution	Instituto Cajal (CSIC)		
Department/Center	Molecular, Cellular and Developmental Neurobiology		
Country	Spain	Teleph. number	+34915854722
Key words	<b>Developmental neurobiology, adult neurogenesis, hippocampus, neural stem cells, cell signalling, quiescence</b>		

**A.2. Previous positions (research activity interruptions, indicate total months)**

Period	Position/Institution/Country/Interruption cause
1993-1997	PhD Student /CIB (CSIC)/Spain
1997-2002	Postdoctoral contract (Fund.Ramón Areces/Marie Curie Fellow)/ICRF (Cancer Research UK)/United Kingdom
2002-2004	Postdoctoral contract (I3P-CSIC)/Instituto Cajal (CSIC)/ Spain
2004-2010	Ramón y Cajal Program researcher/Instituto Cajal (CSIC)/Spain/ 5 months for maternity leave (3 children)
2011-2021	Research Fellow, PI (Tit. Sup. Act. Téc. Prof.)/ Instituto Cajal (CSIC)/ Spain
2017-	Pr.“Ad honorem” /Dept. Anatomy, Histology & Neuroscience (UAM)/Spain

**A.3. Education**

PhD, Licensed, Graduate	University/Country	Year
Licensed in Veterinary	Universidad de Córdoba	1992
PhD in Biology	Universidad Autónoma de Madrid	1997

**Part B. CV SUMMARY** (max. 5000 characters, including spaces)

Since 2005, when I started my career as **PI**, I have focused my research on **Nervous System Development**. My lab demonstrated the role of transcription factor **Sox5** in the development of **cranial ganglia neural crest derivatives** (Morales et al., 2007b; Morales et al., 2005; MEC-BFU2005-00762) and that **FGF** and **RA** signals are essential for the temporal control of the **specification and migration of neural crest cells** (Martínez-Morales, et al., 2011, *J. Cell Biol.*; BFU2008-02963/BFI).

Later, we focused on spinal cord **neurogenesis** and showed that **Sox5 promotes cell cycle exit of neural progenitors**, interfering with **canonical Wnt signalling** (Martínez-Morales et al., 2010, *EMBO Reports*; BFU2008-02963/BFI). Further, in collaboration with M. Wegner in Erlangen, we determined that Sox5 and Sox6 are required for the **specification of a subpopulation of dorsal neural progenitors and interneurons** (Quiroga et al., 2015, *Dev. Neurobiol.*; MCINN BFU2011-29490). In addition, we made important advances on the **control of ventral pattern in the spinal cord** (Morales et al., 2016; Díez del Corral y Morales, 2017; MCINN BFU2011-29490) and in collaboration with **V. Ruíz** group, uncovered the molecular basis of **Gli1** mutations in a developmental human disorder (Palencia-Campos et al., 2017, *Human Mol. Gen. Cover*).



From 2015, our interest moved towards **adult neurogenesis** in mouse **hippocampus**. In this context, my group collaborated with C. Vicario's in the analysis of **IGF-1** in adult hippocampal neurogenesis (Nieto-Estevez et al., 2016, *Stem Cells*) and discovered **new pro-neurogenic drugs** using adult neural stem cells (**NSCs**) cultured as neurospheres (Salado et al., 2017; Uliassi et al., 2019). Moreover, in a coordinated effort with A. Martínez's lab, we discovered a group of **LRRK2 inhibitors** that control **adult NSCs proliferation** and promote **oligodendrocytic** cell-fate (Zaldívar-Diez et al., 2020, *J. Med. Chem.*; SAF2017-85717-R). One of our current interest is the molecular control of **quiescence**, as a mechanism for **long-term maintenance of NSCs in the adult brain** (Morales and Mira, 2019, *Front. Cell Dev. Biol.*). Thus, our lab has shown that **Sox5** and **Sox6** are required for the **transition from quiescence to activation in NSCs of the adult hippocampus** (Li et al., 2022, *Cell Reports*; Cover; PID2020-112989RB-I00). More recently, we have described a **temporal postnatal window when developmental NSCs enter in a primed state of quiescence to generate hippocampal adult NSCs** (Medina-Menéndez, et al., *submitted*, PID2020-112989RB-I00).

Our lab is also interested in the molecular basis of neurodevelopmental disorders such as **Lamb-Shaffer Syndrome (LAMSHF)**, a rare disease caused by mutations in **SOX5** gene and characterized by speech delay, cognitive deficits, anxiety, and autism spectrum disorder (ASD) behaviors. In collaboration with de la Prida lab, we showed that **Sox5 is expressed in hippocampal CA2 region** (involved in social memory; Fernández-Lamo et al., 2019, *Cell Reports*). More recently, we found that mice with a **CA2-specific loss of Sox5** exhibit **social memory deficits** that could be relevant for the ASD presentations in LAMSHF (Rodríguez-Martín et al., *in preparation*; **Fundación A. Koplowitz**).

In collaboration with the Spanish Association for LAMSHF and P. Lapunzina's group (Hospital La Paz) we helped to identify the first 20 Spanish **LAMSHF** patients (Tenorio-Castano et al., 2023, *Clinical Genetics*). We are currently collaborating with them to support families and spark research efforts, including the **First LAMSHF Symposium** in Spain (2023) and one project from **Fundación Inocente Inocente** in 2024.

During this time, I have **supervised four PhD students** (P. Martínez-Morales in 2011, now Research Associate in Puebla, Mexico; A. Quiroga in 2013, posdoct in U. Complutense; Lingling Li in 2019, posdoct at Beijing University (China) and Cristina Medina-Menéndez in 2023, Medical Project Manager in Evidenze). Currently **supervising two more PhD students**: Paula Tirado (F. Tatiana fellowship) and Pilar Rodríguez (Garantía Juvenil CAM). I have supervised 7 TFGs and 14 TFM (one international) and directed the research of 3 JAE-Pre (CSIC) fellows and one posdoct (Katarzyna Bilinski) from Torun University (Poland).

I have been **Coordinator** of "Neurobiología del Desarrollo" subject (6 ECTS) in **Master de Neurobiología UAM/IC-CSIC** (2012 to 2023) and **Profesora Ad Honorem UAM** (2017-2024).

I frequently serve as a **Scientific evaluator** for Science Agencies in Spain (**ANEP**, including RyC and JdelaC Program Panels), Portugal (**FCT**), France (**ANR**), Germany (**DFG**), Netherlands (**NWO**), Belgium (**FNRS**) and Israel (**ISF**).

Finally, I consider outreach activities an essential part of my work as a scientist and actively participate in **11<sup>th</sup>-February Activities for International Day of Girls and Women in Science** (13 High Schools since 2018, FECYT FCT-21-16682); **Científic@s en Prácticas (CSIC)**; **4<sup>o</sup> ESO +Empresa (CAM)** and conferences in Museos (**MNCN, CSIC**) and cafés (**Neurobeers**).

**Part C. RELEVANT MERITS** (*sorted by typology*) AC, corresponding autor.

### C.1. Publications

1. Medina-Menéndez, C.\* , Li, L.\* , Tirado-Menéndez, P.<sup>§</sup>, Rodríguez-Martín, P. <sup>§</sup>, Melgarejo, E., Díaz, M., Valdés-Bescós, M., López-Sansegundo, R. and **Morales, A.V. (AC)**. (9/9) *Early postnatal control of quiescence dynamics in neural stem cells is essential for long-lasting neurogenesis* (*Preprint en BioRxiv*: <https://www.biorxiv.org/content/10.1101/2024.05.03.592315v1> and under review; \* and <sup>§</sup>, equal contribution).



2. Tenorio-Castano J, Gómez ÁS, Coronado M, ..., **Morales AV**, Nevado J, Lapunzina P. (10/12) (2023) Lamb-Shaffer syndrome: 20 Spanish patients and literature review expands the view of neurodevelopmental disorders caused by SOX5 haploinsufficiency. *Clinical Genetics* 104(6):637-647
3. Li, L.\*, Medina, C.\*, García-Corzo, L., ..., **Morales, A.V (AC)**. (17/17) (2022) SoxD genes are required for adult neural stem cell activation. *Cell Reports* 38: 110313; [Cover].
4. Cid E, Márquez-Galera A, Valero M, ... **Morales AV** ... de la Prida LM. (9/18) (2021). Sublayer- and cell-type-specific neurodegenerative transcriptional trajectories in hippocampal sclerosis. *Cell Reports* 35(10):109229
5. Zaldivar-Diez, J., Li, L., García, A.M.,... **Morales, A.V.\*** & Martínez, A\*. (\*AC). (9/10) (2020) Benzothiazole-based LRRK2 inhibitors as WNT enhancers and promoters of oligodendrocytic fate. *J. of Medicinal Chemistry* 63(5):2638-2655
6. **Morales, A.V.** and H. Mira. (AC). (1/2) (2019) Adult neural stem cells: born to last. *Front. Cell Dev. Biol.* 7: 96. Review
7. Fernandez-Lamo, I, Gomez-Dominguez, D, Sanchez-Aguilera, A, ... **Morales, AV** ... & de la Prida, LM. (5/9) (2019) Proximodistal organization of the CA2 hippocampal area. *Cell Reports* 26 (7): 1734-1746 [Cover]
8. Palencia-Campos, A., Nevado, J., Yıldırım, R., ..., **Morales A. V.**, Ruiz-Perez, V.L. (13/14) (2017) Gli1 inactivation is associated with developmental phenotypes overlapping with Ellis-van Creveld syndrome. *Human Molecular Genetics* 26(23):4556-4571 [Cover].
9. Quiroga, A.C., Stolt, C.C., Diez del Corral, R., ... **Morales, A.V.(AC)** (9/9) (2015). Sox5 controls dorsal interneuron specification, counteracting Wnt signalling in the developing spinal cord. *Dev. Neurobiol.* 75(5):522-38.
10. Martínez-Morales, PL, Diez del Corral, R, Olivera-Martínez, I, Quiroga, AC, Das, R, Barbas, JA, Storey, KG & **Morales, AV.** (AC) (8/8) (2011). FGF and RA activity gradients control the timing of neural crest cells delamination in the trunk. *J. Cell Biology* 194(3):489-503

## C.2. Congress.

1. Searching for the origin of quiescent neural stem cells during hippocampal development (**oral presentation**). V **Eurogenesis Meeting**. 12-14<sup>th</sup> of June, 2024 Bordeaux (France).
2. Coordination **First Lamb-Shaffer Symposium in Spain**: 17/03/23. Hospital La Paz, Madrid (Spain).
3. Coordination of the **Symposium: “Understanding quiescence in adult neurogenic niches”**. **Morales, A.V.** From quiescence to proliferation and back: the active life of neural stem cells (**oral presentation**). SENC Congress 2021. 4<sup>th</sup> November 2021, Lleida (Spain).
4. From quiescence to proliferation and back: the active life of neural stem cells. **Seminar**. Facultad de Farmacia de Sevilla (US) 15 de noviembre 2019, Sevilla. (**Invited talk**).
5. From quiescence to proliferation and back: the active life of neural stem cells. V **International Sox meeting**. L'Isle-sur-la-Sorgue (France). 29 Sep/3 Oct, 2019 (**Invited talk**).
6. SoxD genes in the control of adult hippocampus neurogenesis (**oral presentation**). **SfN Congress 2018** San Diego (USA) 3-7 November, 2018.
7. From quiescence to proliferation and back: the active life of neural stem cells. **Seminar**. Instituto de Biomedicina de Valencia (IBV, CSIC) 17/10/2018, Valencia. (**Invited talk**).
8. Coordination of the **Symposium: “Molecular basis of adult neurogenesis: from epigenetic, to transcriptional and metabolic control”**. **Morales, A.V.** SoxD genes in the control of adult neurogenesis (**oral presentation**). SENC Congress 2017. 28<sup>th</sup> of September, Alicante (Spain)
9. When to decide to divide: a Soxist point of view. **Seminar** Dep.t of Cell and Molecular Biology (**Karolinska Institutet and Ludwig Institute for Cancer Research**) 16/2/2017, Stockholm (Sweden). (**Invited talk**)
10. SoxD genes in the control of patterning and proliferation of the spinal cord. “Development and regeneration of the Spinal Cord”. **EMBO Workshop**. Sitges (Barcelona, Spain). 1-4 October, 2014 (**Invited talk**)

### C.3. Research projects.

1. Origin of the quiescence state in neural stem cells during the development of the adult neurogenic hippocampal niche. Funded by **MCIU PID2023-147546NB-I00**, 01/09/2024 to 31/08/2027 (275000 €). PI: **Aixa V. Morales**.
  2. Analysis of postnatal neurogenic hippocampal niche in Sox5 mice conditional mutants. Funded by 2024AEP099 (related to MCIU PID2020-112989RB-I00). 01/09/2024 to 30/11/2024. (7333 €) PI: **Aixa V. Morales**.
  3. Búsqueda de dianas terapéuticas para el Síndrome de Lamb-Shaffer usando un modelo de ratón. Funded by: **Fundación Inocente Inocente y Asociación Española de Síndrome de Lamb-Shaffer**. Convocatoria de Proyectos 2024 - Ayudas 2024 para niños con enfermedades raras. (20000 €). PI: **Aixa V. Morales**.
  4. Adult neurogenesis origin: analysis of postnatal neurogenic hippocampal niche in Sox5 mice conditional mutants. Funded by **MCIU PID2020-112989RB-I00**. 01/09/2021 to 31/08/2024. (106.480 €). PI: **Aixa V. Morales**.
  5. Searching for the molecular mechanisms of quiescence establishment in neural stem cells of the adult mouse brain. Funded by : **CSIC "Proyectos Intramurales Especiales"** . 01/11/2022 to 31/10/2023 (5.000 €) PI: **Aixa V. Morales**.
  6. Molecular control of adult neurogenesis during postnatal hippocampal development Funded by **2020AEP179** (related to SAF2017-85717-R). 01/01/2021 to 31/08/2021. (15.931 €) PI: **Aixa V. Morales**.
  7. Analysis of hippocampal participation in social interactions in a genetic model of autistic spectrum disorder. Funded by: **Fundación Alicia Koplowitz**. 11/2018 to 10/2020. (50.000 €) PI: **Aixa V. Morales**
  8. Analysis of adult and developmental hippocampal neurogenesis through the functional study of SoxD genes. Funded by: **SAF2017-85717-R**; 1/2018 to 12/2020. (157.300 €) PI: **Aixa V. Morales**.
  9. Searching for shared molecular networks in adult and embryonic neurogenesis: using SoxD proteins as a hub. Funded by: **MCINN BFU2014-57494**. 1/2015 to 12/2017. (157.300 €). PI: **Aixa V. Morales**.
- \*\*Atrévete a ser científica: promoviendo las vocaciones científicas entre las adolescentes a través de la visibilización de las científicas y de los sesgos de género en la elección de las carreras STEM. (**Outreach Project**). Funded by: **FECYT FCT-21-16682**. 01/09/2022 to 31/08/2023 (23.000 €). Aixa V. Morales (Researcher; PI Sagrario Martínez).

### C.4. Contracts, technological or transfer merits.