

Section A. PERSONAL DATA		Date of the CVA	26/01/2022
Name and Surname	Lucía Tabares Domínguez		
Research's identification number	Researcher ID	K-8768-2015	
	ORCID	0000-0002-4027-4044	

A.1. Current professional situation

Institution	University of Seville		
Dpt./Centre	Medical Physiology & Biophysics / School of Medicine		
Address			
Phone	email	ltabares@us.es	
Professional category	Full Professor	Start date	03/07/2009
UNESCO spec. code	249000- Neurosciences		
Keywords	Motor neurons, spinal muscular atrophy, synaptic transmission		

A.2. Academic education (Degrees, institutions, dates)

Bachelor/Master/PhD	University	Year
Degree in Medicine and Surgery	Sevilla	1981
Doctorate in Medicine and Surgery	Sevilla	1986

A.3. General Quality indicators of scientific production

Six-year research periods: 6
 Six-year transfer period: 1
 Doctoral thesis directed in last 10 years: 5
 Citations: Scopus: 1743; Google Academic: 2570
 H-index: Scopus: 23; Google Academic: 26

B. Personal Statement

My training is in Electrophysiology and Imaging, from ion channel recordings to neurotransmission monitorization, to EMG and ERG. During my Ph.D., I discovered that cortical adrenal cells are electrically excitable and characterized the ion conductances by the patch-clamp technique. As a postdoc, I have been working on calcium channels permeation mechanisms with Clay Armstrong at the University of Pennsylvania and the MBL at Woods Hole (USA). During a second postdoc, at the laboratory of David Clapham of the Mayo Clinic (Rochester, MN), I characterized two chloride channels at the cell nucleus membrane. When I came back to Spain, I got a position as Associate Professor and set up my lab where I studied intracellular calcium signaling in neuroendocrine cells. I also collaborated with Guillermo Alvarez de Toledo on the characterization of the last steps of exocytosis with simultaneous capacitance and amperometry measurements. I took a sabbatical in 2001 (15 months) in Palo Alto (CA, USA) at Rinat Neuroscience Corp. (a neuroscience biotech company) where I studied ALS mouse models with electrophysiology techniques. In 2002, I returned to my lab in Spain and started my work in Spinal Muscular Atrophy (SMA) and, since then, I have been committed to investigating the neurotransmission defects and the synaptic morphological alterations in this disease and in others mouse models of synaptopathies. In parallel, and in collaboration with Prof. Bill Betz (Univ. of Colorado, USA), we contributed to the understanding of how active zones organization relates to synaptic transmission regulation. We also performed live imaging of the exo- endocytosis dynamics at motor nerve terminals in synaptopHluorin transgenic mice. I was promoted to Professor in 2009. The main lines my lab now are i) the molecular mechanisms of motoneuron hyperexcitability, ii) the molecular basis of synaptic functional heterogeneity, iii) the role of SMN –the defective protein in SMA- in local translation, iv) the role of synaptic mitochondria in exo-endocytosis and, v) the potential affectation of the mitochondria in SMA NMJs.

Parte C. MOST RELEVANT MERITS (ordered by typology)

C.1. Publications (last 10 years)

1. Lopez-Manzaneda M, Franco-Espin J, Tejero R, Cano R, Tabares L. Calcium is Reduced in Presynaptic Mitochondria of Motor Nerve Terminals during Neurotransmission in SMA Mice. *Hum Mol Genet*. 2021 Mar 9;ddab065. doi: 10.1093/hmg/ddab065.
2. Ojeda J, Bermedo-García F, Pérez V, Mella J, Hanna P, Herzberg D, Tejero R, López-Manzaneda M, Tabares L, Henríquez JP. The Mouse Levator Auris Longus Muscle: An Amenable Model System to Study the Role of Postsynaptic Proteins to the Maintenance and Regeneration of the Neuromuscular Synapse. *Front Cell Neurosci*. 2020 Jul 29;14:225.
3. Tejero R, Balk S, Franco-Espin J, Ojeda J, Hennlein L, Drexl H, Dombert B, Clausen JD, Torres-Benito L, Saal-Bauernschubert L, Blum R, Briese M, Appenzeller S, Tabares L, Jablonka S. R-Roscovitine Improves Motoneuron Function in Mouse Models for Spinal Muscular Atrophy. *iScience*. 2020 Jan 10;23(2):100826.
4. Delezie J, Weihrach M, Maier G, Tejero R, Ham DJ, Gill JF, Karrer-Cardel B, Rüegg MA, Tabares L, Handschin C. BDNF is a mediator of glycolytic fiber-type specification in mouse skeletal muscle. *Proc Natl Acad Sci U S A*. 2019 Aug 6;116(32):16111-16120.
5. Bachiller S, Roca-Ceballos MA, García-Domínguez I, Pérez-Villegas EM, Martos-Carmona D, Pérez-Castro MÁ, Real LM, Rosa JL, Tabares L, Venero JL, Armengol JÁ, Carrión ÁM, Ruiz R. HERC1 Ubiquitin Ligase Is Required for Normal Axonal Myelination in the Peripheral Nervous System. *Mol Neurobiol*. 2018 Mar 30.
6. Tejero, R., Lopez-Manzaneda, M., Franco-Espín, J., Tabares, L. Maturation and heterogeneity of vertebrate motor synapses. *Current Opinion in Physiology* 2018, 4: 1-6.
7. Arumugam S, Garcera A, Soler RM, Tabares L. Smn-Deficiency Increases the Intrinsic Excitability of Motoneurons. *Front Cell Neurosci*. 2017. 11:269.
8. Bertone NI, Groisman AI, Mazzone GL, Cano R, Tabares L, Uchitel OD. Carbonic anhydrase inhibitor acetazolamide shifts synaptic vesicle recycling to a fast mode at the mouse neuromuscular junction. *Synapse*. 2017 Dec;71(12).
9. Lopez-Ortega E, Ruiz R, Tabares L. CSP α , a Molecular Co-chaperone Essential for Short and Long-Term Synaptic Maintenance. *Front Neurosci*. 2017.11:39.
10. Tejero R, Lopez-Manzaneda M, Arumugam S, Tabares L. Synaptotagmin-2, and -1, linked to neurotransmission impairment and vulnerability in Spinal Muscular Atrophy. *Hum Mol Genet*. 2016. 25(21):4703-4716.
11. Rizzoli SO, Tabares L. Editorial: Molecular Nanomachines of the Presynaptic Terminal. *Front Synaptic Neurosci*. 2016. 8:27.
12. Cano R, Tabares L. The Active and Periactive Zone Organization and the Functional Properties of Small and Large Synapses. *Front Synaptic Neurosci*. 2016. 8:12.
13. Wu YJ, Tejero R, Arancillo M, Vardar G, Korotkova T, Kintscher M, Schmitz D, Ponomarenko A, Tabares L, Rosenmund C. Syntaxin 1B is important for mouse postnatal survival and proper synaptic function at the mouse neuromuscular junctions. *J Neurophysiol*. 2015. 114(4):2404-17.
14. Bachiller S, Rybkina T, Porrás-García E, Pérez-Villegas E, Tabares L, Armengol JA, Carrión AM, Ruiz R. The HERC1 E3 Ubiquitin Ligase is essential for normal development and

for neurotransmission at the mouse neuromuscular junction. *Cell Mol Life Sci.* 2015. 15:2961-71.

15. Arnold AS, Gill J, Christe M, Ruiz R, McGuirk S, St-Pierre J, Tabares L, Handschin C. Morphological and functional remodelling of the neuromuscular junction by skeletal muscle PGC-1 α . *Nat Commun.* 2014. 5:3569.

16. Ruiz R, Biea IA, Tabares L. α -Synuclein A30P decreases neurodegeneration and increases synaptic vesicle release probability in CSP α -null mice. *Neuropharmacology.* 2014.76 Pt A:106-17.

17. Ruiz R, Tabares L. Neurotransmitter release in motor nerve terminals of a mouse model of mild spinal muscular atrophy. *J Anat.* 2014. 224(1):74-84.

18. Krieger F, Elflein N, Ruiz R, Guerra J, Serrano AL, Asan E, Tabares L, Jablonka S. Fast motor axon loss in SMARD1 does not correspond to morphological and functional alterations of the NMJ. *Neurobiol Dis.* 2013. 54:169-82.

19. Caraballo-Miralles V, Cardona-Rossinyol A, Garcera A, Torres-Benito L, Soler RM, Tabares L, Lladó J, Olmos G. Notch signaling pathway is activated in motoneurons of spinal muscular atrophy. *Int J Mol Sci.* 2013 May 29;14(6):11424-37.

20. Ackermann B, Kröber S, Torres-Benito L, Borgmann A, Peters M, Hosseini, Barkooie SM, Tejero R, Jakubik M, Schreml J, Milbradt J, Wunderlich TF, Riessland M, Tabares L, Wirth B. Plastin 3 ameliorates spinal muscular atrophy via delayed axon pruning and improves neuromuscular junction functionality. *Hum Mol Genet.* 2013. 22(7):1328-47.

21. Cano R, Torres-Benito L, Tejero R, Biea AI, Ruiz R, Betz WJ, Tabares L. Structural and functional maturation of active zones in large synapses. *Mol Neurobiol.* 2013. 47(1):209-19.

22. Cano R, Ruiz R, Shen C, Tabares L, Betz WJ. The functional landscape of a presynaptic nerve terminal. *Cell Calcium.* 2012 Sep-Oct;52(3-4):321-6.

23. Torres-Benito L, Neher MF, Cano R, Ruiz R, Tabares L. SMN requirement for synaptic vesicle, active zone and microtubule postnatal organization in motor nerve terminals. *PLoS One.* 2011; 6(10):e26164.

24. Torres-Benito L, Ruiz R, Tabares L. Synaptic defects in spinal muscular atrophy animal models. *Dev Neurobiol.* 2012 Jan;72(1):126-33. Review.

25. Ruiz R, Cano R, Casañas JJ, Gaffield MA, Betz WJ, Tabares L. Active zones and the readily releasable pool of synaptic vesicles at the neuromuscular junction of the mouse. *J Neurosci.* 2011 Feb 9;31(6):2000-8.

24. Tabares L, Betz B. Multiple functions of the vesicular proton pump in nerve terminals. *Neuron.* 2010 Dec 22;68(6):1020-2.

26. Ruiz R, Casañas JJ, Torres-Benito L, Cano R, Tabares L. Altered intracellular Ca²⁺ homeostasis in nerve terminals of severe spinal muscular atrophy mice. *J Neurosci.* 2010 Jan 20;30(3):849-57.

C.2. Participation in R&D and Innovation projects (last 10 years)

1. **Muscular Dystrophy Association /Univ. Colorado (USA)**. "NMJ presynaptic function in a mouse transgenic with synaptotHluorin". 1/1/2010-31/12/2014. 100.000 US \$. PI: L. Tabares
2. **BFU2010-21648**. "Role of the cytoskeleton and the mitochondria in the pathogenesis of Spinal Muscular Atrophy." MCYT. 1/1/2011-31/12/2013. 162.000 €. PI: L. Tabares
3. **BFU2013-43763-P**. "Functional synaptic diversity of motor nerve terminals and vulnerability in SMA" MINECO. 1/1/2014-31/12/2016. 174.000 €. PI: L. Tabares.

4. **Tatiana Perez de Guzman El Bueno Foundation** “Molecular basis of the synaptic and electrophysiological alterations in SMA.” 1/1/2015-31/12/2017. 62.700 €. PI: L. Tabares
5. **BFU2016-78934P** “Mechanisms controlling the expression of sv2b, synaptotagmin 1 and 2 and its alteration in SMA”. MINECO. 1/1/2017-31/12/2019. 139.150 €. PI: L. Tabares.
6. **SMA Europe** “Spinal muscular atrophy. Mechanisms implicated in the perturbation of the calcium homeostasis and essay of a new therapeutic molecular target”. 1/1/2020-31/12/21. 99.000 €. PI: L. Tabares.
7. **PID2019-110272RB-I00** “Homeostasis de calcio citosolico y mitocondrial en motoneuronas SMN-deficientes. Estudio del papel neuroprotector de moduladores de los canales de K dependientes de calcio”. MCEI. 1/6/2020-30/05/23. 119.790 €. PI:L. Tabares.

C.3. Participation in R&D and Innovation contracts

“Effect of some antibodies on one or mole mouse model od neurodegenerative diseases” Rinat Neuroscience (Palo Alto, CA, US). 2003.

C.4. Patents

Tabares, L., Lin, J., Rosenthal, A. Title: Methods for Treating Lower Motor Neuron Diseases PCT/US2006/016046; USA application # 60/675393; Priority date: 26 April 2005. Actual owner: Rinat Neuroscience Corporation (Pfizer).

C.6. Awards and Other Professional Activities

- 1986 **Theses Excellence Award** from the University of Seville
- 1984-89 **European Science Foundation**, Member
- 1987-89 **Fogarty International Fellowship** (Fullbright) (NIH)
- 1990-05 **Mayo Alumni Association**, Member
- 1991-95 **Marine Biological Laboratory (MBL, Woods Hole, USA, Corp. Member**
- 1991-present **Spanish Physiological Society (SECF)**, Member
- 1991-present **Spanish Biophysical Society (SBE)**, Council Member (2010-13)
- 2001-09 **American Biophysical Society**, Member
- 2005-present **Spanish Neuroscience Society**, Program Committee Member (2009-13)
- 2007-12 **Society for Neuroscience (USA)**, Member
- 2010-16 **European Neuroscience Institute (ENI)**, Göttingen (Germany), Scientific Advisory Board (SAB)

C.7. Reviewer (Scientific Journals, Institutional grants, and positions)

Research panel of multicenter grants, **German Research Foundation (DFG)**, Ulm Univ. (2016) & Univ. Leipzig/Würzburg (2017) (Germany).

German Research Foundation (DFG), Project evaluator (2018)

Parkinson’s UK Projects evaluator (2016); **Muscular Dystrophy UK Project evaluator** (2019)

Agencia Nacional de Evaluación y Prospectiva (ANEP), Projects evaluator.

Instituto de Salud Carlos III, Projects evaluator

Royal Holloway Univ. London (UK), Reviewer for Full Professorship (2016)

Member of evaluating committee for ‘**Científicos Titulares del CSIC**’ (2011).

Member of evaluating committees for ‘**Titulares y Catedráticos de Universidad.**’

Member of evaluating committees for **Ramón and Cajal y Juan de la Cierva programs**.

Member of evaluating committees for **FPU fellowships** (2014 y 2015).

Associate editor for Frontiers (2016).

Peer-reviewer for more than 20 journals (e.g., Nature Comm., Science, PNAS, J. Neurosci., Hum. Mol. Gen., PlosOne, Neuron, Neurobiol. Disease, J. Neurosci. Meth. Mol. Neurobiol., Eur. J. Neurosci., Exp. Neurobiol., Annals of Neurol., etc.)

C8. Efforts and ability to inspire younger researchers

Teaching Physiology to Medical Students since 1986. Supervision of Masters and Ph.D. theses since 1991. Lecture and coordinator in several Ph.D. Programs in Physiology and Cell Biology at the University of Seville. Teaching at the Course for German students from the University Georg-August (Göttingen, Germany) “A Story of the Nerve Impulse and Synaptic Transmission” (2008-2012).