



CURRICULUM VITAE (CVA)

Part A. PERSONAL INFORMATION

		CV date	14.2.22
First name	Patricia		
Family name	Boya		
Gender (*)	Female	Birth date	01/03/1971
ID number	25447175k		
e-mail	patricia.boya@csic.es	URL Web	
Open Researcher and Contributor ID (ORCID) (*)	0000-0003-3045-951X		

A.1. Current position

Position	Investigadora Científica, CSIC		
Initial date	1.2.2016		
Institution	Consejo Superior de Investigaciones Científicas, CSIC		
Department/Center	Centro de Investigaciones Biológicas Margarita Salas		
Country	Spain	Tel	918373312
Key words	Autophagy, mitophagy, neurodegeneration, cell death, retina		

A.2. Previous positions (research activity interruptions, art. 14.2.b)

Period	Position/Institution/Country/Interruption cause
2013	Maternity leave, Fran born 22.4.2013, 5 months
2010	Maternity leave, Mauro born 18.7.2010, 5 months
2009-2016	Científica Titular, CIB, CSIC
2005-2009	Ramón y Cajal Investigator, CIB, CSIC
2004	FEBS Fellow, Dept. Biochemistry University of Cambridge, UK
2001-2003	Marie Curie Fellow, CNRS-UMR 8125, Paris, France
2000	Postdoctoral fellow, Universidad de Navarra, Spain

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
PhD	Universidad de Navarra, Spain	2000
Biology	Universidad de Navarra, Spain	1994

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

PhD in 2000 from the University of Navarra, postdoctoral stays at CNRS and the University of Cambridge 2001-2004. Ramón y Cajal contract 2005-2009, 2009 Senior Scientist and promotion to Scientific Researcher in 2016. My research focuses on understanding why autophagy is an essential process in cellular homeostasis, what are its implications in the physiology of organisms and in finding new therapeutic strategies based on modulating this process.

I have been investigating autophagy for more than 20 years. Studying the consequences of damaging the lysosomes I found that the cells before dying accumulated autophagosomes. I then discovered that autophagy is essential for cell survival, being the first evidence of the cytoprotective role of this process in mammalian cells. This was a milestone in the field and the resulting publication has more than 1300 citations. Later, as an independent researcher, I demonstrated the role of autophagy in neuronal differentiation and in degenerative processes of the nervous system. Recently my research is aimed at understanding the role of selective autophagy in regulating processes such as cell differentiation and metabolism and how mitophagy alterations impact the progression of neurodegenerative diseases such as ALS and Parkinson's disease.

My discoveries have been published in high-level journals such as EMBO J, J Neuroscience, J Clinical Investigation and Nature Cell Biology. I have numerous national and international scientific collaborations. I have helped numerous Spanish groups to establish new lines of research based on



autophagy and I am co-founder and first President of the Spanish Network of Autophagy, SEFAGIA. I have been co-organizer of the five annual meetings held, including an international meeting with the French and Nordic autophagy societies in 2014.

My research has a large transnational component with patents; contracts with companies and I have been the founder of the spin-off ProRetina Therapeutics. Finally, proof of my projection in the field at the international level is my participation in international consortia such as the ITN Network DRIVE and the COST Transautophagy project as well as invited speaker at the best conferences in the field. I have organised the last Keystone Autophagy conference in 2020 that was held virtual due to the pandemic, which gathered more than 450 assistants from 30 countries.

Part C. RELEVANT MERITS (sorted by typology)

C.1. Publications (see instructions) * corresponding author

1. HDAC inhibition ameliorates cone survival in retinitis pigmentosa mice. Samardzija M, Corna A, Raquel Gomez-Sintes R ... **Boya P** (14/17), Trifunovic D*. *Cell Death Differ.* 2021 28(4):1317-1332.
2. Acyl-CoA-Binding Protein Is a Lipogenic Factor that Triggers Food Intake and Obesity. Bravo-San Pedro JM ... **Boya P** (26/34), Kroemer G*. *Cell Metab.* 2019 30(6):1171.
3. Programmed mitophagy is essential for the glycolytic switch during cell differentiation. Esteban-Martínez L, Sierra-Filardi E, McGreal RS, Salazar-Roa M, Mariño G, Seco E, Durand S, Enot D, Graña O, Malumbres M, Cvekl A, Cuervo AM, Kroemer G, **Boya P***. *EMBO J.* 2017;36:1688-1706. Best CIB paper 2017. Premio Charo Armas SEBC 2017.
4. AMPK and PFKFB3 mediate glycolysis and survival in response to mitophagy during mitotic arrest. Doménech E, Maestre C, Esteban-Martínez L ... **Boya P** (17/20), Salazar-Roa M*, Malumbres M*. *Nature Cell Biology*, 2015;17:1304-16.
5. New method to assess mitophagy flux by flow cytometry. Mauro-Lizcano M, Esteban-Martínez L, Seco E, Serrano-Puebla A, Garcia-Ledo L, Figueiredo-Pereira C, Vieira HL, **Boya P***. *Autophagy*. 2015;11:833-43.
6. Lysosomal membrane permeabilization and autophagy blockade contribute to photoreceptor cell death in a mouse model of retinitis pigmentosa. Rodríguez-Muela N, Hernández-Pinto AM, Serrano-Puebla A, García-Ledo L, Latorre SH, de la Rosa EJ, **Boya P***. *Cell Death Differ.* 2015;22:476-87.
7. Balance between autophagic pathways preserves retinal homeostasis. Rodríguez-Muela N, Koga H, García-Ledo LM, de la Vila P, de la Rosa E, Cuervo AM*, **Boya P***. *Aging Cell*, 2013;12:478-88.
8. Atg5 and Ambra1 differentially modulate neurogenesis in neural stem cells. Vázquez P, Arroba AI, Cecconi F, de la Rosa EJ, **Boya P***, De Pablo F*. *Autophagy*. 2012;8:187-99.
9. Autophagy promotes survival of retinal ganglion cells after optic nerve axotomy in mice. Rodríguez-Muela N, Germain G, Mariño G, Fitze PS and **Boya P***. *Cell Death Differ.* 2012;19:162-9.
10. Pathogenic lysosomal depletion in Parkinson's disease. Dehay B, Bové J, Rodríguez-Muela N, Perier C, Recasens A, **Boya P***, Vila M*. *J Neurosci.* 2010;30(37):12535-44.

C.2. Congress

International conference and symposia organisation:

- 2020 Main organiser of the Keystone Symposia: Autophagy. October 05-08, 2020 <https://www.kestonesymposia.org/ks/Online/Events/2021S6/Details.aspx?EventKey=2021S>
- 2017 Symposia “Autophagy, metabolism and cell fate” at the FEBS3+ joint meeting, Barcelona
- 2013 International Autophagy Conferences. Joint meeting Spanish, French and Nordic Autophagy networks. <http://cfatg.org/international-autophagy-conferences/>



- 2012 22nd IUBMB & 37th FEBS Congress.
<http://www.iubmb-febs-2012.org/IUBMBFEBS2012/index.asp?item=2099>
- 2010 EMBO Workshop: Proteolysis and Neurodegeneration. Fundación Ramón Areces, Madrid.
<http://cwp.embo.org/w10-08/organisers.html>

Selected invited speaker at International Conferences:

- 46 Invitations as speaker at International Conferences in last ten years, among those:
- 2023 Keystone Symposia “Autophagy and Neurodegeneration: Mechanisms to Therapies” USA (tbh)
- 2022 CFATG, French Autophagy Society. Keynote lecture, June 2022 in Besançon, France (tbh)
- 2022 EMBO meeting "Autophagy in Brain Health and Disease". Sant Feliu de Guixols May (tbh)
- 2022 Gordon Research Conference. Autophagy, Ventura, USA 20-25th March 2022 (tbh)
- 2021 Nordic Autophagy Society NAS Annunal Conference 10-12 November 2021.
- 2021 Proteasome and Autophagy Congress Clermont-Fd (France), October 13-15, 2021.
- 2020 Molecular Mechanisms of Autophagy in Diseases. Russian Academy of Science. 30-31 October
- 2020 AIN-EMBO webinar lecture series 2020 "Autophagy, Metabolism, and Inflammation" (virtual)
- 2019 International Society for Neurochemistry, “Neuroprotection through Autophagy” Canada
- 2019 International Congress of Toxicology. Symposium on Lysosomes Hawaii, USA
- 2019 Molecular Biology of Ageing Meeting. 10-12 Oct 2019, Groningen, The Netherlands
- 2019 GBM/DGZ Joint Fall Conference 2019. “Age-related human diseases: focus Autophagy”
- 2019 European Cell Death Organization, ECDO Dresden, Germany
- 2018 83rd Harden Conference, Warwickshire, UK.
- 2018 Joint Keystone Symposia on Mitochondrial Biology/Selective Autophagy. Japan

C.3. Research projects

1. *Physiological roles of mitophagy for retinal photoreceptors*. PGC2018-098557-B-I00. Spanish Ministry of Science. Total amount: 254.100,00€ + FPI. 2019-2021. Patricia Boya, PI.
2. *Alteraciones de la mitofagia en la enfermedad de Parkinson*. Proyectos en Neurociencia 2018 de la Fundación Tatiana Pérez de Guzmán el Bueno. 93,000€. IP: Patricia Boya.
3. *Design and development of innovative drugs for the treatment of amyotrophic lateral sclerosis*. Redes de la Comunidad de Madrid 2017/BMD-3813. 767.395€. 2018-2022. PIs: Ana Martínez, Patricia Boya, Isabel Lastres and Ángeles Martín Requero, Eva de Lago, José Carlos Menéndez, Alberto García Redondo.
4. *Driving next generation autophagy researchers towards translation: DRIVE*. H2020-MSCA-ITN-2017 MSCA-ITN-ETN 765912. 2017-2020. Total amount: 3,890,064€, 247,872 € to IP: Patricia Boya
5. NEAR, Red de Excelencia para el estudio de la autofagia (*Network of Excellence for Autophagy Research*) <http://autofagia.org/>. BFU2015-71869-REDT, Redes de Excelencia MINECO. 2015-2017. 42.000 € (costes directos). IP: Patricia Boya.
6. *Papel de la autofagia selectiva durante el desarrollo y degeneración del sistema nervioso*. BFU2015-65623 (2016-2018). IP: Patricia Boya. 195,000€
7. *Chaperone mediated autophagy as a cytoprotective response during aging*. I-LINK0701. CSIC i-Link (international cooperation program). 2014-2016. 30,000€. IP: Patricia Boya. Investigadora Internacional: Ana María Cuervo, EEUU



8. *New roles of autophagy during development and disease*. SAF2012-36079. 2013-2015. 160,000€ +FPI. IP: Patricia Boya
9. *Sistema experto de análisis cuantitativo de imágenes para evaluación automatizada de ensayos celulares de migración, angiogénesis, autofagia y apoptosis*. Programa INNPACTO IPT-010000-2010-48. 2010-2013. 288,718€. IP: Patricia Boya. EMPRESA: Wimasis SL
10. *Disfunción cerebral durante el envejecimiento: relevancia para la enfermedad de Alzheimer (Brainage)*. CONSOLIDER, CDS2010-00045. 2011-2015. IPs: Enrique de la Rosa y Patricia Boya subgrupo CIB-CSIC, 327,000€

La Caixa Health Research Grants 2017 and 2019, selected for interview in the Neuroscience panel.

ERC-Starting Grants 2012, selected for interview in LS5 Neuroscience panel.

C.4. Contracts, technological or transfer merits

5 contracts with companies for 756,746 €

1. *In vivo activity of Selphagy compounds in chaperone mediated autophagy reporter animals*. Selphagy Therapeutics, USA. 2019-2022. 412,696€. Investigadora responsable **Patricia Boya**
2. *Comparation of autophagic activity of different asparagus extracts*. DSM (Suiza). 2013. 20,000 €. Investigadora responsable **Patricia Boya**.
3. *Nuevos compuestos que inducen degradación intracelular en células humanas*. Provital SL. 2013-2016. 127,050 €. Investigadora responsable **Patricia Boya**.
4. *New compounds targeting intracelullar degradation*. Provital SL. 2010-2012. 107,000 €. Investigadora responsable **Patricia Boya**.
5. *New pro-autophagic drugs for the treatment of cancer and neurodegenerative diseases*. Prous Institute for Biomedical Research- 2008-2010. 90,000 euros y un contrato Torres Quevedo para un postdoctoral de dos años. Investigadora responsable **Patricia Boya**.

3 patents

1. Pérez-Sala MD, Boya P, Stamatakis K. *Uso de una secuencia proteica de localización y degradación endo-lisosomal*. P20082721. 25.9.2008
2. Esteve J, Plaza JA, Gómez R, de la Rosa E, Suárez T, Vázquez P, Boya P, Nogués C, Barrios L, Ibáñez ME, Llobera M, Rosas E, Sánchez FJ, Marco MP, González D, Muriano A. *Dispositivo intracelular para el estudio de parámetros intracelulares en células, órganos y tejidos*. P20072623. 5.10.2007
3. Rosa EJ, de Pablo F, Boya P, Corrochano S, de la Villa P, Barthoum R, Bosch F. *Uso de la proinsulina para la elaboración de una composición farmacéutica neuroprotectora, composición terapéutica que la contiene y sus aplicaciones*. P20061314. 22.5.2006. Exploited by ProRetina Therapeutics S.L.”, founded in July 2007. Patricia Boya, co-founder.