

# Luis Bonet-Ponce

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📍 Columbus, OH

🎓 scholar profile

🐦 @Luis\_BonetPonce

## PROFESSIONAL EXPERIENCE

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- 2023- present    Role: **Assistant Professor**  
Lysosomal dynamics and neurodegeneration  
THE OHIO STATE UNIVERSITY. DEPARTMENT OF NEUROLOGY
- 2016-2023        Role: **Postdoc**  
Understanding the role of LRRK2 in membrane trafficking  
NATIONAL INSTITUTES OF HEALTH. LABORATORY OF NEUROGENETICS (NIA)  
Advisor: Mark R. Cookson
- 2015-2016        Role: **Postdoc**  
Investigating the molecular pathways underlying myocilin-induced glaucoma  
NATIONAL INSTITUTES OF HEALTH. SECTION ON RETINAL GANGLION  
CELL BIOLOGY (NEI)  
Advisor: Stanislav I. Tomarev

## EDUCATION

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- 2012-2015        PhD in Biomedical Sciences  
The role of ROS in selective autophagy in RPE cells  
UNIVERSIDAD CATOLICA DE VALENCIA, Valencia, Spain  
Advisors: Francisco J. Romero and Francisco J. Sancho-Pelluz
- 2011-2012        MS in Applied and Basics Neurosciences  
UNIVERSIDAD DE VALENCIA, Valencia, Spain  
Advisor: Jose M. Garcia-Verdugo
- 2005-2011        BS in Biological Science  
UNIVERSIDAD DE VALENCIA, Valencia, Spain

## OTHER

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- 2014-2015        **Exchange Visitor**  
Characterizing the neuroprotective effect of enhanced glycolysis using gene therapy in a preclinical model of Retinitis Pigmentosa  
COLUMBIA UNIVERSITY. DEPARTMENT OF OPHTHALMOLOGY  
Advisor: Stephen H. Tsang
- 2013-2015        **Graduate Student**  
Evaluating the role of specific types of autophagy in RPE cells undergoing ROS-induced damage.  
COMPLEJO HOSPITALARIO UNIVERSIDAD DE ALBACETE, UNIDAD DE NEUROPSICOLOGIA Y NEUROFARMACOLOGIA, Albacete, Spain

Advisors: Joaquin Jordan and Maria F. Galindo

- 2010-2011      **Undergraduate Student**  
Studying the role of neurogenesis in hippocampus and amygdala-based learning in zebrafish.  
UNIVERSITY OF OSLO, DEPARTMENT OF PHYSIOLOGY, Oslo, Norway  
Advisors: Christina Sørensen, and Göran E. Nilsson
- 2006-2012      **Undergraduate Student**  
Studying adult neurogenesis on mice amygdala. Describing the effect of ENU administration on adult neurogenic niche  
UNIVERSIDAD DE VALENCIA, DEPARTMENT OF CELL BIOLOGY, Valencia, Spain  
Advisor: Jose M. Garcia-Verdugo

## **INVITED SPEAKER**

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- 2024              Biennial International LRRK2 Meeting (upcoming)
- 2023              Tissue, Matrix, and Pathobiology (ASIP, ASMB & HCS Meeting)
- 2023              Gordon Research Conference in Parkinson's disease
- 2023              Tenure-Track Seminar, University of Rochester
- 2022              Tenure-Track Seminar, The Ohio State University
- 2022              Tenure-Track Seminar, University of Zurich
- 2022              Tenure-Track Seminar, VIB Center for Molecular Neurology
- 2022              Tenure-Track Seminar, Institute of Functional Biology and Genomics (CSIC)
- 2021              Tenure-Track Seminar, Vrije Universiteit Amsterdam
- 2021              Protein Trafficking and Organelle Dynamics Interest Group Seminar (NIH)
- 2021              Udall Interdisciplinary Meeting, The University of Alabama at Birmingham
- 2021              Wellcome Connecting Science: Vesicle Trafficking & Pathways to Neurodegeneration Conference
- 2021              Guest lecturer, Neuroscience Graduate Group, University of Pennsylvania
- 2021              Neurobiology Interest Group Seminar (NIH)
- 2020              Membrane Trafficking Webinar
- 2020              3P: Parkinson's Postdoc Program Seminars
- 2019              Department of Neuroscience, Mayo Clinic, Florida
- 2015              The young researcher Vision Camp, Leibertingen, Germany
- 2013              The young researcher Vision Camp, Leibertingen, Germany

## **FELLOWSHIPS/ FUNDING**

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- 2019              NIA/IRP Postdoctoral Funding Opportunity (as Principal Investigator, \$13.000).
- 2014              Rotation Fellow. UNIVERSIDAD CATOLICA DE VALENCIA
- 2013-2015        Predoctoral Fellowship. GENERALITAT VALENCIANA
- 2012-2013        Predoctoral Fellowship. UNIVERSIDAD CATOLICA DE VALENCIA
- 2010-2011        Erasmus Scholarship. UNIVERSIDAD DE VALENCIA.

## **AWARDS/ VOLUNTEERING**

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- 2023              Early Career Researcher Paper of the Year Award, **Molecular Biology of the Cell**
- 2023- present    Lead Curation Editor, **Molecular Biology of the Cell**
- 2021-2023        Early Career Editor, **Molecular Biology of the Cell**

2021 Fellows Award for Research Excellence (FARE) competition.  
2021 Special Interest Group (SIG) Award on Neurobiology.  
2021 Special Interest Group (SIG) Award on Protein Trafficking and Organelle Dynamics.  
2018 Scientific Director Award, 2018 NIA IRPS Scientific Retreat.  
2020-2021 Chair, 3Pseminars  
2012 ISCEV 2012 meeting, Organizing committee.

## PUBLICATIONS

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### 2023

Metcalfe RD, Martinez Fiesco JA, **Bonet-Ponce L**, Kluss JH, Cookson MR and Zhang P  
Structure and regulation of full-length human leucine-rich repeat kinase 1.  
**Nature Communications**, 14:4797, doi: 10.1038/s41467-023-40532-2.

### 2022

Kluss JH, Beilina A, Williamson CD, Lewis PA, Cookson MR<sup>‡</sup> and **Bonet-Ponce L<sup>‡</sup>** (<sup>‡</sup> **corresponding author**)

Lysosomal positioning regulates Rab10 phosphorylation at LRRK2+ lysosomes.

**Proc Natl Acad Sci U S A**, 119: e2205492119.

#### **Bonet-Ponce L**

Preprint Highlight: The selective autophagy receptor p62 and the heat shock protein HSP27 facilitate lysophagy via the formation of phase-separated condensates.

**Molecular Biology of the Cell**, doi: 10.1091/mbc.P22-08-1003.

#### **Bonet-Ponce L<sup>‡</sup>** and Cookson MR<sup>‡</sup> (<sup>‡</sup> **corresponding author**)

The endoplasmic reticulum contributes to lysosomal tubulation/sorting driven by LRRK2.

**Molecular Biology of the Cell**, doi: 10.1091/mbc.E22-04-0139

#### **Bonet-Ponce L**

Preprint Highlight: All-optical visualization of specific molecules in the ultrastructural context of brain tissue

**Molecular Biology of the Cell**, doi: 10.1091/mbc.P22-07-1001.

#### Kluss JH\*, **Bonet-Ponce L\***, Lewis PA, and Cookson MR (**\*equal contribution**)

Directing LRRK2 to membranes of the endolysosomal pathway triggers RAB phosphorylation and JIP4 recruitment

**Neurobiology of Disease**, DOI:10.1016/j.nbd.2022.105769

### 2021

Mamais A, Kluss JH, **Bonet-Ponce L**, Landeck N, Langston RG, Smith N, Beilina A, Kaganovich A, Ghosh MC, Pellegrini L, Kumaran R, Papazoglou I, Heaton GR, Bandopadhyay R, Maio N, Kim C, LaVoie MJ, Gershlick DC, and Cookson MR

Mutations in LRRK2 linked to Parkinson's disease sequester Rab8a to damaged lysosomes and regulate transferrin-mediated iron uptake in microglia.

**Plos Biology**, 19: e3001480.

### **Bonet-Ponce L**

Preprint Highlight: ER-lysosome lipid transfer protein VPS13C/PARK23 prevents aberrant mtDNA-dependent STING signaling.

**Molecular Biology of the Cell**, doi: 10.1091/mbc.E21-10-0125p.

### **Bonet-Ponce L** and Cookson MR

LRRK2 recruitment, activity, and function in organelles.

**FEBS J**, doi: 10.1111/febs.16099.

## **2020**

**Bonet-Ponce L**, Beilina A, Williamson CD, Lindberg E, Kluss JH, Saez-Atienzar S, Landeck N, Kumaran R, Mamais A, Bleck CKE, Li Y and Cookson MR

LRRK2 mediates tubulation and vesicle sorting from lysosomes.

**Science Advances**, 46: eabb2454.

### **Bonet-Ponce L** and Cookson MR

Can Leucine-Rich Repeat Kinase 2 Inhibition Benefit GBA-Parkinson's Disease?

**Movement Disorders**, 35: 721-723.

Beilina A\*, **Bonet-Ponce L\***, Kumaran R\*, Kordich JJ, Ishida M, Mamais A, Kaganovich A, Saez-Atienzar S, Gershlick DC, Roosen DA, Pellegrini L, Malkov V, Fell MJ, Harvey K, Bonifacino JS, Moore DJ, Cookson MR (**\* equal contribution**).

The Parkinson's disease protein LRRK2 interacts with the GARP complex to promote retrograde transport to the *trans*-Golgi network.

**Cell Reports**, 31: 107614.

Kole C, Brommer B, Nakaya N, Sengupta M, **Bonet-Ponce L**, Zhao T, Wang C, Li W, He Z, Tomarev S  
Activating Transcription Factor 3 (ATF3) Protects Retinal Ganglion Cells and Promotes Functional Preservation After Optic Nerve Crush.

**Invest Ophthalmol Vis Sci**, 61: 31.

Blauwendraat C, Reed X, Krohn L, Heilbron K, Bandres-Ciga S, Tan M, Gibbs R, Hernandez DG, Kumaran R, Langston R, **Bonet-Ponce L**, (...) Cookson MR, Nalls MA, Gan-Or Z, Singleton AB, on behalf of the International Parkinson's Disease Genomics Consortium (IPDGC)  
Genetic modifiers of risk and age at onset in *GBA* associated Parkinson's disease and Lewy body dementia.

**Brain**, 143: 234-248.

## **2019**

Sara Bandres-Ciga, Sarah Ahmed, Marya S. Sabir, Cornelis Blauwendraat, (...), **Luis Bonet-Ponce**, (...) Andrew Singleton on behalf of the International Parkinson Disease Genomics Consortium  
The genetic architecture of Parkinson disease in Spain.

**Movement Disorders**, 34: 1851-1863.

### **Bonet-Ponce L** and Cookson MR

The role of Rab GTPases in the pathobiology of Parkinson' disease.

**Current Opinion in Cell Biology**, 59: 73-80

## **2018**

Bandres-Ciga S\*, Saez-Atienzar S\*, **Bonet-Ponce L\***, Billingsley K, Vitale D, Blauwendraat C, Gibbs JR, Pihlstrom L, Gan-Or Z. The International Parkinson's Disease Genomics Consortium (IPDGC), Cookson MR, Nalls MA, Singleton AB (**\* equal contribution**).

The endocytic membrane trafficking pathway plays a major role in the risk of Parkinson disease. **Movement Disorders**, doi:10.1002/mds.27614.

Langston RG, Rudenko IN, Kumaran R, Hauser DN, Kaganovich A, **Ponce LB**, Mamais A, Ndukwe K, Dillman AA, Al-Saif AM, Beilina A, Cookson MR

Differences in Stability, Activity and Mutation Effects Between Human and Mouse Leucine-Rich Repeat Kinase 2.

**Neurochem Res**, doi: 10.1007/s11064-018-2650-4.

## 2017

**Bonet-Ponce L** and Singleton AB

Make dopamine neurons great again: an exciting new therapeutic option in Parkinson's disease.

**Movement Disorders**, 32: 1164.

## 2016

Zhang L, Du J, Justus S, Hsu CW, **Bonet-Ponce L**, Wu WH, Tsai YT, Wu WP, Jia Y, Duong J, Mahajan VB, Lin CS, Wang S, Hurley J, Tsang SH

Enhancing glycolysis with gene therapy attenuates neurodegeneration.

**The Journal of Clinical Investigation**, 126: 4659-4673.

## 2015

**Bonet-Ponce L**, Saez-Atienzar S, da Casa C, Sancho-Pelluz J, Barcia JM, Martinez-Gil N, Nava E, Jordan J, Romero FJ, Galindo MF

Rotenone Induces the Formation of 4- Hydroxynonenal Aggregates. Role of ROS-Mediated Tubulin Hyperacetylation and Autophagic Flux Disruption.

**Molecular Neurobiology**, 53: 6194-6208.

Martinez-Gil N, Flores-Bellver M, Atienzar-Aroca S, Lopez-Malo D, Urdaneta AC, Sancho-Pelluz J, Peris-Martinez C, **Bonet-Ponce L**, Romero FJ, Barcia JM

CYP2E1 in the human retinal pigment epithelium: expression, activity, and induction by ethanol.

**Ophthalmol Vis Sci**, 56: 6855-63.

Saez-Atienzar S, **Bonet-Ponce L**, da Casa C, Perez-Dolz L, Blesa JR, Galindo MF, Jordan J

Bcl-xL mediated antioxidant function abrogates the mitochondrial dynamics disruption induced by the LRRK2 inhibition.

**BBA Molecular Basis of Disease**, 862: 20-31.

Koch SF, Tsai YT, Duong JK, Wu WH, Hsu CW, Wu WP, **Bonet-Ponce L**, Lin CS, Tsang SH

Halting progressive neurodegeneration in advanced retinitis pigmentosa.

**The Journal of Clinical Investigation**, 125: 3704-13.

**Bonet-Ponce L**, Saez-Atienzar S, Barcia JM, Sancho-Pelluz J, Romero FJ, Jordan J, Galindo MF

On the mechanism underlying ethanol-induced mitochondrial dynamic disruption and autophagy response.

**BBA Molecular Basis of Disease**, 1852: 1400-1409.

## 2014

Saez-Atienzar S, **Bonet-Ponce L**, Blesa JR, Romero FJ, Murphy M, Jordan J, Galindo M  
The LRRK2 inhibitor GSK2578215A induces protective autophagy in SH-SY5Y cells: involvement of Drp-1-mediated mitochondrial fission and mitochondrial-derivate ROS signaling.  
**Cell Death and Disease**, 5: e1368.

Flores-Bellver M\*, **Bonet-Ponce L\***, Barcia JM, Garcia-Verdugo JM, Martinez-Gil N, Saez-Atienzar S, Sancho-Pelluz J, Jordan J, Galindo M, Romero FJ (**\* equal contribution**).  
Autophagy and mitochondrial alterations in human retinal pigment epithelial cells induced by ethanol. Implications of 4-hydroxy-nonenal.  
**Cell Death and Disease**, 5: e1328.

## 2012

Capilla-Gonzalez V, Gil-Perotin S, Ferragud A, **Bonet-Ponce L**, Canales JJ, Garcia-Verdugo JM  
Exposure to N-ethyl-N-nitrosourea in adult mice alters structural and functional integrity of neurogenic sites.  
**PLoS One**, 7: e29891.

## TECHNIQUES/ SKILLS

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Cell culture (human cell lines, adult stem cells, retinal explants, primary astrocytes, and neurons), Transfections (plasmids, siRNA), Immunocytochemistry, Fluorescent/Confocal Microscopy, Live-cell imaging, Immunoprecipitation, Super-resolution microscopy, SILAC-based proteomics, Western Blotting, PCR, Cloning, Transmission Electron Microscopy, Mouse perfusion, Tissue sectioning (cryostat and paraffin), Immunohistochemistry (DAB, fluorescence), Imaging software (Fiji, Photoshop, Illustrator, CorelDraw), other software (GraphPad, R), Behavioral tests in zebrafish

## REVIEWER

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Experience as a reviewer in the following journals: **Nature, Science, Nature Communications, Science Advances, Current Biology, Brain, Autophagy, Cell Reports, Aging Cell, Human Molecular Genetics, iScience, Journal of Neuroscience, Neurobiology of Disease, Neurobiology of Aging, Development, Frontiers in Neuroscience, Journal of Neurochemistry, Oxidative Medicine and Cellular Longevity, NPJ Parkinsonism and Synapse.**

## TEACHING/ MENTORING

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2018                      Scientists Teaching Science 9-week Pedagogy course  
2017                      Summer intern from NIH Summer Internship Program