

Pablo Catalán

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Education

- 2017:** PhD in Mathematical Engineering
Carlos III University of Madrid (UC3M) || Graduated *cum laude*, awarded extraordinary prize
Thesis: Models in molecular evolution: the case of t_{cy} LIFE
- 2017:** BSc in Mathematics (4-year degree)
National Distance Education University (UNED) || GPA: 9.5 (out of 10)
Studied simultaneously with PhD
- 2012:** MSc in Modelling and Physics of Complex Systems
King Juan Carlos I University of Madrid (URJC) || GPA: 9.75 (out of 10)
Thesis: Mutation-selection equilibrium in finite populations playing a Hawk-Dove game
- 2011:** BSc+MSc in Biology (5-year degree)
Complutense University of Madrid (UCM) || GPA: 9.74 (out of 10) (Graduated with honors)

Work Experience

- Apr 2017—present:** Postdoctoral researcher
Department of Mathematics, Carlos III University of Madrid
Research topic: Models in molecular evolution
Supervisor: Prof. José A. Cuesta
- Dec 2012—Feb 2017:** PhD student
Department of Mathematics, Carlos III University of Madrid
Research topic: Models in molecular evolution
Supervisor: Prof. José A. Cuesta
- Oct 2008—Jun 2011:** Assistant researcher (undergraduate)
Department of Ecology, Complutense University of Madrid
Research topic: Reproductive allocation strategies in *Cistus ladanifer*
Supervisor: Dr. Juan Antonio Delgado

Awards

- Jan 2018** Best poster award at the 6th meeting of the Spanish Society for Evolutionary Biology (Palma de Mallorca, Spain).
- Mar 2016** Short-Term Fellowship for a 60 days visit to Robert Beardmore's lab, University of Exeter (awarded by the Spanish Ministry of Economy)
- Mar 2015** Short-Term Fellowship for a 120 days visit to Andreas Wagner's lab, University of Zurich (awarded by EMBO)

- Dec 2012** FPI PhD Fellowship: 4 year fellowship to carry out a PhD at Carlos III University (awarded by the Spanish Ministry of Economy)
- Sep 2010** Assistant scholarship: 1 year fellowship to collaborate in research as an undergraduate (awarded by Complutense University of Madrid)
- Sep 2009** Excellency scholarship: 1 year fellowship to collaborate in research as an undergraduate (awarded by the Regional Government of Madrid)
- Sep 2008** Excellency scholarship: 1 year fellowship to collaborate in research as an undergraduate (awarded by the Regional Government of Madrid)

Teaching

2015-2016, 2017-2018: Linear Algebra (problems)

One semester course, taught to first year students in the Degree in Industrial Technology Engineering at Carlos III University of Madrid

Languages

English: Full professional proficiency (C2).

French: Elementary proficiency (A2).

Publications

8. CATALÁN, P., Wagner, A., Cuesta, J. A. and Manrubia, S. **2018** Adding levels of complexity enhances robustness and evolvability in a multi-level genotype-phenotype map. *Journal of the Royal Society Interface* **15**:20170516.
7. CATALÁN, P., Arias, C.F., Cuesta, J. A. and Manrubia, S. **2017** Adaptive multiscapes: an up-to-date metaphor to visualize molecular adaptation. *Biology Direct* **12**:7.
6. CATALÁN, P., Delgado, J.A., Jiménez, M.D. and Balaguer, L. **2016**. Sink strength manipulation in branches of a Mediterranean woody plant suggests sink-driven allocation of biomass in fruits but not of nutrients in seeds. *Acta Physiologiae Plantarum* **38**:193.
5. Planchuelo, G., CATALÁN, P. and Delgado, J.A. **2016**. Gone with the wind and the stream: Dispersal in the invasive species *Ailanthus altissima*. *Acta Oecologica* **73**:31-37.
4. Planchuelo, G., CATALÁN, P., Delgado, J.A. and Murciano A. **2016**. Estimating wind dispersal potential in *Ailanthus altissima*: The need to consider the three-dimensional structure of samaras. *Plant Biosystems*, DOI: 10.1080/11263504.2016.1174170.
3. CATALÁN, P., Seoane, J.M. and Sanjuán, M.A.F. **2015**. Mutation-selection equilibrium in finite populations playing a Hawk-Dove game. *Communications in Nonlinear Science and Numerical Simulations* **25**:66-73.
2. Arias, C.F., CATALÁN, P., Manrubia, S.M. and Cuesta, J.A. **2014**. τ_{OY} LIFE: a computational framework to study the multi-level organization of the genotype-phenotype map. *Scientific Reports* **4**: 7549.
1. CATALÁN, P., Vázquez de Aldana, B.R., De las Heras, P., Fernández-Seral, A. and Pérez-Corona, M.E. **2013**. Comparing the allelopathic potential of exotic and native plant species on understory plants: are exotic plants better armed? *Anales de Biología* **35**: 65-74.

Conference contributions

Posters

7. CATALÁN, P., Manrubia, S. and Cuesta, J. A. 2018. Adding levels of complexity enhances robustness and evolvability in a multi-level genotype-phenotype map. **6th SESBE Meeting. January 17-19th 2018, Palma de Mallorca (Spain).**
6. CATALÁN, P., Manrubia, S. and Cuesta, J. A. 2017. The evolution of pattern formation in toyLIFE , a multi-level model of the genotype-phenotype map. **EMBO Conference Quantitative Principles in Biology. 2-4 Noviembre 2017. Heidelberg (Germany).**
5. CATALÁN, P., Manrubia, S. and Cuesta, J. A. 2017. Evolutionary dynamics on shifting environments suggest new antibiotic therapies. **Gordon Research Conference: Molecular Mechanisms in Evolution. June 11-17th 2017, Easton (USA).**
4. CATALÁN, P., Fernández-Arias, C. and Cuesta, J. A. 2014. toyLIFE : un universo de juguete para comprender mejor la evolución. **XIX Congreso de Física Estadística (FISES '14). April 2-4th 2014, Ourense (Spain).**
3. CATALÁN, P., Jiménez, M.D., Delgado, J.A. and Balaguer, L. 2011. Variation in sink strength affects size-mediated competition within the crown. **12 th EEF Congress. September 25-29th 2011, Ávila (Spain).**
2. Pérez-Corona, M.E., CATALÁN, P., Fernández-Seral, A., De las Heras, P., Castro-Díez, P. and Vázquez de Aldana, B.R. 2011. Effect of riverine invasive species in germination and radicle growth of understory species. **12 th EEF Congress. September 25-29th 2011, Ávila (Spain).**
1. Pérez-Borrero, B., CATALÁN, P., Aguilar, E.Y., Fontecha, G., Trabanino, R., Gallego, F.J., Figueiras, A.M. and Benito, C. 2010. Identificación con diferentes marcadores moleculares de cepas de *Beauveria bassiana* utilizadas en la lucha biológica contra la broca del café (*Hypothenemus hampei*). **XII Congreso Internacional de manejo integrado de plagas / XX reunión anual de la Sociedad americana de fitopatología (APS-CD). August 24-27th 2010, Managua (Nicaragua).**

Talks

4. CATALÁN, P. 2016. toyLIFE , or the importance of being promiscuous. **International Workshop on Genotype-Phenotype Maps 2016 (IWGP 2016). 8-9 September 2016, Cambridge (UK) (invited talk).**
3. CATALÁN, P. 2015. toyLIFE : the complexities of the genotype-phenotype map. **Modelling Biological Evolution 2015 (MBE '15), April 28-May 1 2015, Leicester (UK) (invited talk).**
2. CATALÁN, P. 2014. toyLIFE : a toy Universe for gaining insight into biological evolution. **XI GISG Workshop, February 7th 2014, Madrid (Spain).**
1. CATALÁN, P., Fernández-Arias, C. and Cuesta, J. A. 2013. toyLIFE : a toy Universe for gaining insight into evolution. **4th SESBE Meeting. November 27-29th 2013, Barcelona (Spain).**