



**Ruben PEREZ CARRASCO**

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## Summary of CV

This section describes briefly a summary of your career in science, academic and research; the main scientific and technological achievements and goals in your line of research in the medium -and long- term. It also includes other important aspects or peculiarities.

I am a researcher currently holding a **fellow** position in the **Mathematics Department of the University College London (UCL)**, and as external scientist in the Francis Crick Institute performing research on biophysics, mathematical biology and stochastic dynamical systems.

I have performed research activities in Spain, the UK and the USA as part of both, theoretical groups (Mathematics Department UCL, Structure and Constituents of Matter) and experimental oriented groups (The Francis Crick Institute, Medical Research Council UK, Clarendon Laboratory in Cambridge). This activities have resulted in **18 scientific papers**, 17 of them in first quartile peer reviewed journals.

My research has been **funded by** projects of different institutions across Europe including the **Spanish Government, the Catalan Government, the Wellcome Trust and the University College London**. My PhD was funded by a **FPU (Formacion de Profesorado Univesitario) fellowship** and currently I hold my own project through a **Clifford Fellowship** from the UCL.

I have **participated in 19 conferences** around the world, several times as an invited speaker. I have also actively performed **organization roles in 5 of them**. Including the **foundation of the JIPI doctoral conference**, and the direction of the series of lectures "Encontres amb el Tercer Cicle". I received a **Nature Physics award for best poster** at the Physics of Living Matter meeting 2016 in Cambridge

I have taught **more than 150 classroom hours** at the university between Spain and the UK. Outside the classroom, my teaching roles involved the direction of individual modules/subjects and the production of teaching and evaluation material. I have also **supervised 2 Master (M.Sci) projects, a short stay of a PhD student** and informally supervised other PhD students in the research groups I have been working.

I have been referee of multiple scientific journals, and also being a panel member for academic jobs in the Mathematics Department at UCL.

As member of different institutions I am committed to the improvement of research environment and the role that these institutions play in society. For this reason I am **member of the Equality and Diversity Committee** of the Mathematics Department at UCL, currently holding a Silver Athena SWAN medal and also **member of the Green and Sustainability Committee** that



was recently awarded with a **GreenUCL Platinum medal**. In addition to institutional roles I have also been **hosting the outreach scientific podcast of the SRUK** (Society of Spanish Researchers in the UK) "En fase experimental" since 2018.



## General quality indicators of scientific research

This section describes briefly the main quality indicators of scientific production (periods of research activity, experience in supervising doctoral theses, total citations, articles in journals of the first quartile, H index...). It also includes other important aspects or peculiarities.

Author of 18 Scientific publications in international peer reviewed journals, 17 of them with an impact factor in the first quartile of their fields.

These publication have 96 citations with a total H index of 5 (Source: Scopus). I am also highly active regularly reviewing papers for these journals.

I have performed research activities in Spain, the UK and the USA, currently actively collaborating with 5 different established groups in different countries in Europe.

Contributed to 19 international conferences, including 8 oral contributions, and organization roles in 5 of them, including the foundation of the JIPI conference in Barcelona, and the participation during 5 years in the organization of the regular science talks "Encontres amb el tercer cicle" in the faculty of Physics in Barcelona.

Received the prestigious Clifford Fellowship from the Mathematics Department of the University College London, and the Nature Physics prize for best poster in Physics of Living Matter meeting 2016 in Cambridge.

Supervision of 2 Master students (M.Sci) projects, codirection of a doctoral student during a short stay and informal supervision of several PhD students in the research group.

**Ruben PEREZ CARRASCO**

**Surname(s):** PEREZ CARRASCO  
**Name:** Ruben  
**DNI:** 44181653X  
**Date of birth:** 07/11/1984  
**Gender:** Male  
**Nationality:** Spain  
**Country of birth:** Spain  
**Aut. region/reg. of birth:** Catalonia  
**City of birth:** Barcelona  
**Contact address:** Mathematics Department UCL  
**Rest of contact address:** 25 Gordon Street  
**Postcode:** WC1H 0AY  
**Contact country:** United Kingdom  
**Contact aut. region/reg.:** Inner London  
**Contact city:** Londres  
**Land line phone:** 937998773  
**Email:** 2PIRUBEN@GMAIL.COM  
**Mobile phone:** (+44) 7851044372  
**Personal web page:** www.perez-carrasco.com

**Current professional situation**

**Employing entity:** University College London      **Type of entity:** University  
**Department:** Mathematics Department  
**Professional category:** Independent Research Fellow      **Educational Management (Yes/No):** No  
**Start date:** 11/02/2018  
**Type of contract:** Temporary employment contract      **Dedication regime:** Full time  
**Primary (UNESCO code):** 129900 - Other mathematical specialities  
**Secondary (UNESCO code):** 240600 - Biophysics  
**Tertiary (UNESCO code):** 240400 - Biomathematics  
**Performed tasks:** - Independent Research: Publication in peer reviewed international journal, participation and organization of international conferences, collaboration with researchers in different countries of EU - University teaching: Main lecturer of undergraduate modules, elaboration and evaluation of exams, elaboration of new teaching material - Supervision of Master students - Member of equality and diversity panel of the Department - Member of the sustainability panel of the Department  
**Identify key words:** Stochastic and control systems; Dynamic systems of low density; Genetics; Developmental biology

**Previous positions and activities**

|  | <b>Employing entity</b>   | <b>Professional category</b>                                   | <b>Start date</b> |
|--|---------------------------|--|-------------------|
|  | University College London | Postdoctoral Research Associate<br>(Investigador Postdoctoral) | 11/02/2013        |



**Employing entity:** University College London      **Type of entity:** University  
**Department:** Mathematics Department, University College London  
**City employing entity:** Londres, Inner London, United Kingdom  
**Professional category:** Postdoctoral Research Associate (Investigador Postdoctoral)      **Educational Management (Yes/No):** No  
**Phone:** (+44) 7851044372      **Email:** r.carrasco@ucl.ac.uk  
**Start-End date:** 11/02/2013 - 10/02/2018      **Duration:** 5 years  
**Type of contract:** Temporary employment contract  
**Dedication regime:** Full time  
**Primary (UNESCO code):** 240400 - Biomathematics  
**Secondary (UNESCO code):** 240600 - Biophysics  
**Performed tasks:** - Research: Publication in peer reviewed international journal, participation and organization of international conferences, collaboration with researchers in different countries of EU  
- University teaching: Main lecturer of undergraduate modules, elaboration and evaluation of exams, elaboration of new teaching material - Supervision of Master students - Member of equality and diversity panel of the Department - Member of the sustainability panel of the Department  
**Identify key words:** Stochastic and control systems; Dynamic systems of low density; Developmental biology; Genetics  
**Field of management activity:** University



## Education

### University education

#### 1st and 2nd cycle studies and pre-Bologna degrees

**University degree:** Higher degree

**Name of qualification:** Licenciado en Física

**Degree awarding entity:** Universitat de Barcelona    **Type of entity:** University

**Date of qualification:** 28/11/2007

#### Doctorates

**Doctorate programme:** Programa Oficial de Doctorado en Física

**Degree awarding entity:** Universitat de Barcelona    **Type of entity:** University

**Date of degree:** 05/02/2013

**European doctorate:** Yes

**Thesis title:** Mechano-chemical study of rotatory molecular motors

**Thesis director:** Jose Maria Sancho Herrero

**Obtained qualification:** Excelente Cum Laude

#### Other postgraduate university studies

**Postgraduate qualification:** Máster en biofísica

**Degree awarding entity:** Universitat de Barcelona    **Type of entity:** University

**Faculty, institute or centre:** Facultat de Física

**Date of qualification:** 26/11/2008

### Specialised, lifelong, technical, professional and refresher training (other than formal academic and healthcare studies)

**1 Training title:** Gefenol Summer School on Statistical Physics of Complex and Small Systems

**Awarding entity:** GEFENOL

**End date:** 2012

**Duration in hours:** 80 hours

**2 Training title:** Fundamental Problems in Statistical Physics XII

**Awarding entity:** The Katholieke Universiteit Leuven

**End date:** 2009

**Duration in hours:** 80 hours



## Attended advanced, improvement and innovative teacher training and new technology courses and seminars focused on improving teaching

- Title of course/seminar:** Leadership in action  
**Goals of the course/seminar:** Aprender a liderar un grupo de investigación  
**Organising entity:** University College London      **Type of entity:** University  
**Faculty, institute or centre:** Mathematics Department  
**Duration in hours:** 24 hours  
**Start-End date:** 2016 - 2016
- Title of course/seminar:** Teaching Undergraduates mathematics- an introduction for postgraduate students  
**Goals of the course/seminar:** Docencia de Matemáticas a nivel universitario  
**Organising entity:** University College London      **Type of entity:** University  
**Faculty, institute or centre:** Mathematics Department  
**Duration in hours:** 10 hours  
**Start-End date:** 2015 - 2015

## Language skills

| Language         | Listening skills | Reading skills | Spoken interaction | Speaking skills | Writing skills |
|------------------|------------------|----------------|--------------------|-----------------|----------------|
| German           | A2               | A2             | A2                 | A2              | A2             |
| Mandarin Chinese | A2               | A2             | A2                 | A2              | A2             |
| Catalan          | C2               | C2             | C2                 | C2              | C2             |
| Spanish          | C2               | C2             | C2                 | C2              | C2             |
| English          | C2               | C2             | C2                 | C2              | C2             |

## Teaching experience

### General teaching experience

- Type of teaching:** Official teaching  
**Name of the course:** Mathematical Ecology  
**Type of teaching:** In person theory  
**University degree:** Licenciado en Ciencias Matemáticas  
**Start date:** 24/09/2018      **End date:** 14/12/2018  
**End date:** 2018      **Type of hours/ ECTS credits:** Hours  
**Hours/ECTS credits:** 30  
**Entity:** University College London      **Type of entity:** University  
**Faculty, institute or centre:** Mathematics Department  
**City of entity:** London, United Kingdom
- Type of teaching:** Official teaching  
**Name of the course:** Evolutionary Games and Population Genetics  
**Type of teaching:** In person theory  
**University degree:** Licenciado en Ciencias Matemáticas





**Start date:** 12/01/2017

**End date:** 2017

**Hours/ECTS credits:** 15

**Entity:** University College London

**Faculty, institute or centre:** Mathematics Department

**City of entity:** London, United Kingdom

**End date:** 22/05/2017

**Type of hours/ ECTS credits:** Hours

**Type of entity:** University

**3 Type of teaching:** Official teaching

**Name of the course:** Mathematical Ecology

**Type of teaching:** In person theory

**University degree:** Licenciado en Ciencias Matemáticas

**Start date:** 15/09/2016

**End date:** 2016

**Hours/ECTS credits:** 15

**Entity:** University College London

**Faculty, institute or centre:** Mathematics Department

**City of entity:** London, United Kingdom

**End date:** 22/12/2016

**Type of hours/ ECTS credits:** Hours

**Type of entity:** University

**4 Type of teaching:** Official teaching

**Name of the course:** Differential and Integral Calculus

**Type of teaching:** Practical work (classroom-problems)

**University degree:** Licenciado en Ciencias Matemáticas

**Start date:** 15/09/2015

**End date:** 2015

**Hours/ECTS credits:** 10

**Entity:** University College London

**Faculty, institute or centre:** Mathematics Department

**City of entity:** London, United Kingdom

**End date:** 22/12/2015

**Type of hours/ ECTS credits:** Hours

**Type of entity:** University

**5 Type of teaching:** Official teaching

**Name of the course:** Differential and Integral Calculus

**Type of teaching:** Practical work (classroom-problems)

**University degree:** Licenciado en Ciencias Matemáticas

**Start date:** 15/09/2014

**End date:** 2014

**Hours/ECTS credits:** 10

**Entity:** University College London

**Faculty, institute or centre:** Mathematics Department

**City of entity:** London, United Kingdom

**End date:** 22/12/2014

**Type of hours/ ECTS credits:** Hours

**Type of entity:** University

**6 Type of teaching:** Official teaching

**Name of the course:** Càlcul de diverses variables

**Type of teaching:** Practical work (classroom-problems)

**University degree:** Graduado o Graduada en Física

**Start date:** 13/09/2012

**End date:** 2012

**Hours/ECTS credits:** 15

**Entity:** Universitat de Barcelona

**Faculty, institute or centre:** Facultad de Física

**End date:** 22/12/2012

**Type of hours/ ECTS credits:** Hours

**Type of entity:** University



- 7** **Type of teaching:** Official teaching  
**Name of the course:** Càlcul de diverses variables  
**Type of teaching:** Practical work (classroom-problems)  
**University degree:** Graduado o Graduada en Física  
**Start date:** 12/02/2012 **End date:** 25/05/2012  
**End date:** 2012 **Type of hours/ ECTS credits:** Hours  
**Hours/ECTS credits:** 13  
**Entity:** Universitat de Barcelona **Type of entity:** University  
**Faculty, institute or centre:** Facultat de Física
- 8** **Type of teaching:** Official teaching  
**Name of the course:** Laboratori basic d'enginyeria química  
**Type of teaching:** Laboratory work  
**University degree:** Graduado o Graduada en Ingeniería Química  
**Start date:** 12/02/2012 **End date:** 25/05/2012  
**End date:** 2012 **Type of hours/ ECTS credits:** Hours  
**Hours/ECTS credits:** 10  
**Entity:** Universitat de Barcelona **Type of entity:** University  
**Faculty, institute or centre:** Facultat de Física
- 9** **Type of teaching:** Official teaching  
**Name of the course:** Càlcul de diverses variables  
**Type of teaching:** Practical work (classroom-problems)  
**University degree:** Graduado o Graduada en Física  
**Start date:** 12/02/2011 **End date:** 25/05/2011  
**End date:** 2011 **Type of hours/ ECTS credits:** Hours  
**Hours/ECTS credits:** 13  
**Entity:** Universitat de Barcelona **Type of entity:** University  
**Faculty, institute or centre:** Facultat de Física
- 10** **Type of teaching:** Official teaching  
**Name of the course:** Mecanica  
**Type of teaching:** Laboratory work  
**University degree:** Graduado o Graduada en Física  
**Start date:** 12/02/2011 **End date:** 25/05/2011  
**End date:** 2011 **Type of hours/ ECTS credits:** Hours  
**Hours/ECTS credits:** 16  
**Entity:** Universitat de Barcelona **Type of entity:** University  
**Faculty, institute or centre:** Facultat de Física

## Experience supervising doctoral thesis and/or final year projects

- 1** **Project title:** Orbital equivalence in gene regulatory networks  
**Type of project:** Trabajo de Master (M.Sci. Project)  
**Entity:** University College London (Department of Mathematics) **Type of entity:** University  
**City of entity:** London,  
**Student:** Carlos Barragan  
**Date of reading:** 15/03/2019



**2** **Project title:** Modeling cell fate decisions of neuromesodermal progenitor cells  
**Type of project:** Trabajo de Master (M.Sci. Project)  
**Entity:** University College London (Department of Mathematics)  
**City of entity:** London,  
**Student:** Georgina Kennedy  
**Date of reading:** 28/02/2017

**3** **Project title:** Cosupervision of visiting PhD Student  
**Type of project:** Doctoral Stay  
**Entity:** University College London (Department of Mathematics)  
**Student:** Roberto de la Cruz  
**Date of reading:** 2016

## Student tutorials

**Name of the programme:** Tutorial Applied Mathematics  
**Entity:** University College London **Type of entity:** University  
**City of entity:** Londres, United Kingdom  
**Number of recognized hours/ECTS credits:** 10 **Frequency of the activity:** 10  
**Number of tutored students:** 6

## Scientific and technological experience

### Scientific or technological activities

#### R&D projects funded through competitive calls of public or private entities

**1** **Name of the project:** Clifford Fellowship - Role of noise in patterning multistable genetic switches  
**Entity where project took place:** University College London **Type of entity:** University  
**Nº of researchers:** 1  
**Funding entity or bodies:** University College London **Type of entity:** University  
**City funding entity:** London, United Kingdom  
**Name of the programme:** Clifford Fellowship  
**Code according to the funding entity:** 502535 - 100 - 156780  
**Start-End date:** 2018 - 2021

**2** **Name of the project:** Shh Morphogen gradient in the developing vertebrate neural tube  
**Entity where project took place:** University College London / Medical Research Council  
**City of entity:** London, United Kingdom  
**Name principal investigator (PI, Co-PI...):** James Briscoe; Karen Page  
**Funding entity or bodies:** Wellcome Trust **Type of entity:** -  
**City funding entity:** London, United Kingdom  
**Name of the programme:** Wellcome Trust



**Code according to the funding entity:** 080630/Z/06/A  
**Start-End date:** 2013 - 2019  
**Total amount:** 200.000 €

**3** **Name of the project:** Física No lineal  
**Entity where project took place:** Universitat de Barcelona **Type of entity:** University  
**Name principal investigator (PI, Co-PI....):** Jordi Ortin Rull  
**Funding entity or bodies:**  
Generalitat de Catalunya **Type of entity:** -  
**City funding entity:** Barcelona, Catalonia, Spain  
**Code according to the funding entity:** 2009SGR14  
**Start-End date:** 2009 - 2013

**4** **Name of the project:** Dinamica No lineal y Estocástica en Sitemas Físicos y Biofísicos  
**Entity where project took place:** Universitat de Barcelona **Type of entity:** University  
**Name principal investigator (PI, Co-PI....):** Jose Maria Sancho Herrera  
**Funding entity or bodies:**  
Ministerio de Ciencia e Innovación **Type of entity:** -  
**City funding entity:** Madrid, Community of Madrid, Spain  
**Code according to the funding entity:** FIS2009-13360-C03-01  
**Start-End date:** 2010 - 2012  
**Total amount:** 34.000 €

**5** **Name of the project:** Orden, Ruido y Dinámicas Emergentes bajo Nolinearidades  
**Entity where project took place:** Universitat de Barcelona **Type of entity:** University  
**Name principal investigator (PI, Co-PI....):** Jose Maria Sancho Herrera  
**Funding entity or bodies:**  
Subdirección General de Proyectos de Investigación **Type of entity:** State agency  
**Code according to the funding entity:** FIS2006-11452-C03-01  
**Start-End date:** 2006 - 2009  
**Total amount:** 33.000 €

**6** **Name of the project:** Física No lineal  
**Entity where project took place:** Universitat de Barcelona **Type of entity:** University  
**Name principal investigator (PI, Co-PI....):** Jordi Ortin Rull  
**Funding entity or bodies:**  
Generalitat de Catalunya **Type of entity:** -  
**City funding entity:** Barcelona, Catalonia, Spain  
**Start-End date:** 2005 - 2008  
**Applicant's contribution:** 2005SGR00507



## Scientific and technological activities

### Scientific production

#### Publications, scientific and technical documents

- 1** Ruben Perez-Carrasco; Chris P. Barnes; Yolanda Schaerli; Mark Isalan; James Briscoe; Karen M. Page. Combining a Toggle Switch and a Repressilator within the AC-DC Circuit Generates Distinct Dynamical Behaviors. Cell Systems. 6 - 4, pp. 521 - 530. Elsevier, 2018. ISSN 2405-4712

**Type of production:** Scientific paper  
**Corresponding author:** Yes  
**Impact source:** ISI  
**Impact index in year of publication:** 8.982

**Category:** Science Edition - BIOCHEMISTRY & MOLECULAR BIOLOGY  
**Journal in the top 25%:** Yes
- 2** Karen M. Page; Ruben Perez-Carrasco. Degradation rate uniformity determines success of oscillations in repressive feedback regulatory networks. Journal of the Royal Society Interface. 15 - 42, pp. 20180157. 2018. ISSN 1742-5689

**Type of production:** Scientific paper  
**Position of signature:** 2  
**Corresponding author:** Yes  
**Impact source:** ISI  
**Impact index in year of publication:** 3.355

**Category:** Science Edition - MULTIDISCIPLINARY SCIENCES  
**Journal in the top 25%:** Yes
- 3** Edgar Herrera-Delgado; Ruben Perez-Carrasco; James Briscoe; Peter Sollich. Memory functions reveal structural properties of gene regulatory networks. PLoS Computational Biology. 14 - 2, pp. e1006003. 2018. ISSN 1553-734X

**Type of production:** Scientific paper  
**Position of signature:** 2  
**Corresponding author:** No  
**Impact source:** ISI  
**Impact index in year of publication:** 3.955

**Category:** Science Edition - MATHEMATICAL & COMPUTATIONAL BIOLOGY  
**Journal in the top 25%:** Yes
- 4** Roberto de la Cruz; Ruben Perez; Pilar Guerrero; Karen M. Page. Minimum Action Path Theory Reveals the Details of Stochastic Transitions out of Oscillatory States. Physical Review Letters. 120, pp. 128102. 2018. ISSN 0031-9007

**Type of production:** Scientific paper  
**Position of signature:** 1  
**Corresponding author:** Yes  
**Impact source:** ISI  
**Impact index in year of publication:** 8.839

**Category:** Science Edition - PHYSICS, MULTIDISCIPLINARY  
**Journal in the top 25%:** Yes

**Relevant results:** Shared first author position



- 5** Ashley L Nord; Emilie Gachon; Ruben Perez-Carrasco; Jasmine A Nirody; Alessandro Barducci; Richard M. Berry; Francesco Pedaci. Catch bond drives stator mechanosensitivity in the bacterial flagellar motor. Proceedings of the National Academy of Sciences of the United States of America. 2017. ISSN 0027-8424  
**Type of production:** Scientific paper  
**Corresponding author:** Yes  
**Impact source:** ISI  
**Impact index in year of publication:** 9.504  
**Relevant results:** Shared first author position with R. de la Cruz  
**Category:** Science Edition - MULTIDISCIPLINARY SCIENCES  
**Journal in the top 25%:** Yes
- 6** Mae Woods; Miriam Leon; Ruben Perez-Carrasco; Chris P. Barnes. A statistical approach reveals designs for the most robust stochastic gene oscillators. ACS Synthetic Biology. 5 - 6, pp. 459 - 470. 2016. ISSN 2161-5063  
**Type of production:** Scientific paper  
**Corresponding author:** No  
**Impact source:** ISI  
**Impact index in year of publication:** 5.382  
**Category:** Science Edition - BIOCHEMICAL RESEARCH METHODS  
**Journal in the top 25%:** Yes
- 7** Marek Bodnar; Pilar Guerrero; Ruben Perez-Carrasco; Monika J. Piotrowska. Deterministic and stochastic study for a microscopic angiogenesis model: Applications to the lewis lung carcinoma. PLoS ONE. 11 - 5, pp. e0155553. 2016. ISSN 1932-6203  
**Type of production:** Scientific paper  
**Corresponding author:** Yes  
**Impact source:** ISI  
**Impact index in year of publication:** 2.766  
**Relevant results:** Shared first author position with the rest of authors of the manuscript  
**Category:** Science Edition - MULTIDISCIPLINARY SCIENCES  
**Journal in the top 25%:** Yes
- 8** Ruben Perez-Carrasco; Pilar Guerrero; James Briscoe; Karen M. Page. Intrinsic Noise Profoundly Alters the Dynamics and Steady State of Morphogen-Controlled Bistable Genetic Switches. PLoS Computational Biology. 13 - 5, pp. e1005563. 2016. ISSN 1553-734X  
**Type of production:** Scientific paper  
**Corresponding author:** Yes  
**Impact source:** ISI  
**Impact index in year of publication:** 4.542  
**Category:** Science Edition - MATHEMATICAL & COMPUTATIONAL BIOLOGY  
**Journal in the top 25%:** Yes
- 9** Michael Cohen; Karen M. Page; Ruben Perez-Carrasco; Chris P. Barnes; James Briscoe. Mathematical models help explain experimental data. Response to ?transcriptional interpretation of Shh morphogen signaling: Computational modeling validates empirically established models?. Development. 143, pp. 1640 - 1643. 2016. ISSN 0950-1991  
**Type of production:** Scientific paper  
**Corresponding author:** No  
**Impact source:** ISI  
**Impact index in year of publication:** 6.462  
**Category:** Science Edition - DEVELOPMENTAL BIOLOGY  
**Journal in the top 25%:** Yes
- 10** Michael Cohen; Karen M. Page; Ruben Perez-Carrasco; Chris P. Barnes; James Briscoe. A theoretical framework for the regulation of shh morphogen-controlled gene expression. Development. 141, pp. 3868 - 3878. 2014. ISSN 0950-1991





**Type of production:** Scientific paper

**Corresponding author:** No

**Impact source:** ISI

**Impact index in year of publication:** 5.843

**Category:** Science Edition - DEVELOPMENTAL BIOLOGY

**Journal in the top 25%:** Yes

- 11** Ruben Perez-Carrasco; Alessandro Fiasconaro; Fernando Falo; Jose Maria Sancho. Modeling the mechanochemistry of the P29 DNA translocation motor. *Physical Review E*. 87, pp. 032721. 2013. ISSN 2470-0045

**Type of production:** Scientific paper

**Position of signature:** 1

**Impact source:** ISI

**Impact index in year of publication:** 2.313

**Category:** Science Edition - PHYSICS, MATHEMATICAL

**Journal in the top 25%:** Yes

- 12** Ruben Perez-Carrasco; Jose Maria Sancho. Theoretical study of a molecular turbine. *Physical Review E*. 88, pp. 042705. 2013. ISSN 2470-0045

**Type of production:** Scientific paper

**Position of signature:** 1

**Impact source:** ISI

**Impact index in year of publication:** 2.326

**Category:** Science Edition - PHYSICS, MATHEMATICAL

**Journal in the top 25%:** Yes

- 13** Ruben Perez-Carrasco; Jose Maria Sancho. Physics of molecular machines operated by a particle flux. *Europhysics Letters - EPL*. 100 - 4, pp. 40001. 2012. ISSN 0295-5075

**Type of production:** Scientific paper

**Position of signature:** 1

**Impact source:** ISI

**Impact index in year of publication:** 2.260

**Category:** Science Edition - PHYSICS, MULTIDISCIPLINARY

**Journal in the top 25%:** Yes

- 14** Jose Maria Sancho; Ruben Perez-Carrasco. Power and efficiency of F1-ATPase molecular motor. *Fluctuation and Noise Letters*. 10, pp. 1. 2012. ISSN 0219-4775

**Type of production:** Scientific paper

**Position of signature:** 1

**Impact source:** ISI

**Impact index in year of publication:** 0.889

**Category:** Science Edition - PHYSICS, APPLIED

**Journal in the top 25%:** No

- 15** Ruben Perez-Carrasco; Jose Maria Sancho. Molecular motors in conservative and dissipative regimes. *Physical Review E*. 84, pp. 041915. 2011. ISSN 2470-0045

**Type of production:** Scientific paper

**Position of signature:** 1

**Impact source:** ISI

**Impact index in year of publication:** 2.255

**Category:** Science Edition - PHYSICS, MATHEMATICAL

**Journal in the top 25%:** Yes



- 16** Ruben Perez-Carrasco; Jose Maria Sancho. Fokker-Planck approach to molecular motors. Europhysics Letters - EPL. 91 - 6, pp. 60001. 2010.  
**Type of production:** Scientific paper  
**Position of signature:** 1  
**Impact source:** ISI  
**Impact index in year of publication:** 2.753  
**Category:** Science Edition - PHYSICS, MULTIDISCIPLINARY  
**Journal in the top 25%:** Yes
- 17** Ruben Perez-Carrasco; Jose Maria Sancho. Stochastic algorithms for discontinuous multiplicative white noise. Physical Review E. 81 - 3, pp. 03214. 2010.  
**Type of production:** Scientific paper  
**Position of signature:** 1  
**Impact source:** ISI  
**Impact index in year of publication:** 2.352  
**Category:** Science Edition - PHYSICS, MULTIDISCIPLINARY  
**Journal in the top 25%:** Yes
- 18** Ruben Perez-Carrasco; Jose Maria Sancho. Theoretical analysis of the  $F_{>1}$ -atpase experimental data. Biophysical Journal. 98 - 11, pp. 2591 - 2600. 2010. ISSN 0006-3495  
**Type of production:** Scientific paper  
**Position of signature:** 1  
**Impact source:** ISI  
**Impact index in year of publication:** 4.218  
**Category:** Science Edition - BIOPHYSICS  
**Journal in the top 25%:** Yes

## Works submitted to national or international conferences

- 1** **Title of the work:** Automated design of gene circuits with optimal mushroom-bifurcation behaviour  
**Name of the conference:** 10th International Workshop on Bio-Design Automation  
**Type of event:** Conference  
**City of event:** Berkeley, United States of America  
**Date of event:** 2018  
**With external admission assessment committee:** Yes  
**Type of contribution:** Scientific paper  
Ruben Perez-Carrasco; Irene Otero-Muras; Julio Banga; Chirs P Barnes. En: Proceedings book.
- 2** **Title of the work:** Determining the role of intrinsic noise in genetic bistable switches using minimum action principles  
**Name of the conference:** 12th AIMS Conference on Dynamical Systems, Differential Equations and Applications  
**Type of event:** Conference  
**Type of participation:** Participatory - invited/keynote talk  
**Corresponding author:** Yes  
**City of event:** Taipei, Taiwan  
**Date of event:** 2018  
**Organising entity:** AIMS  
Ruben Perez-Carrasco; Pilar Guerrero; James Briscoe; Karen M. Page.
- 3** **Title of the work:** Success of oscillations in negative feedback gene regulatory networks is determined by degradation rate uniformity  
**Name of the conference:** European Conference of Mathematical and Theoretical Biology





**Type of event:** Conference

**Type of participation:** Participatory - oral communication

**Corresponding author:** Yes

**City of event:** Lisboa, Portugal

**Date of event:** 2018

**Organising entity:** European Society for Mathematical and Theoretical Biology

Ruben Perez-Carrasco; Karen M Page.

- 4** **Title of the work:** Intrinsic noise profoundly alters the dynamics and steady state of morphogen- controlled bistable genetic switches

**Name of the conference:** Physics of living Matter 12

**Type of event:** Conference

**Type of participation:** 'Participatory - poster

**Corresponding author:** Yes

**City of event:** Cambridge, United Kingdom

**Date of event:** 2017

**Organising entity:** University of Cambridge

Ruben Perez-Carrasco; Pilar Guerrero; James Briscoe; Karen M. Page.

- 5** **Title of the work:** Intrinsic noise profoundly alters the dynamics and steady state of morphogen- controlled patterning through bistable genetic switches

**Name of the conference:** Modeling, noise and development

**Type of event:** Conference

**Type of participation:** Participatory - invited/keynote talk

**Corresponding author:** Yes

**City of event:** Bath, United Kingdom

**Date of event:** 2017

**Organising entity:** University of Bath

Ruben Perez-Carrasco; Pilar Guerrero; James Briscoe; Karen M Page.

- 6** **Title of the work:** Intrinsic noise profoundly alters the dynamics and steady state of morphogen- controlled patterning through bistable genetic switches

**Name of the conference:** Circle meeting

**Type of event:** Conference

**Type of participation:** 'Participatory - poster

**Corresponding author:** Yes

**City of event:** Heidelberg, Germany

**Date of event:** 2017

**Organising entity:** EMBO

Ruben Perez-Carrasco; Pilar Guerrero; James Briscoe; Karen M Page.

- 7** **Title of the work:** Intrinsic noise profoundly alters the dynamics and steady state of morphogen- controlled patterning through bistable genetic switches

**Name of the conference:** Quantitative Principles in Biology

**Type of event:** Conference

**Type of participation:** 'Participatory - poster

**Corresponding author:** Yes

**City of event:** Heidelberg, Germany

**Date of event:** 2017

**Organising entity:** EMBO

Ruben Perez-Carrasco; Pilar Guerrero; James Briscoe; Karen M Page.



- 8** **Title of the work:** Intrinsic noise profoundly alters the dynamics and steady state of morphogen- controlled patterning through bistable genetic switches  
**Name of the conference:** Physics of Living Matter 11  
**Type of event:** Conference  
**Type of participation:** 'Participatory - poster  
**Corresponding author:** Yes  
**City of event:** Cambridge, United Kingdom  
**Date of event:** 2016  
**Organising entity:** University of Cambridge  
Ruben Perez-Carrasco; Pilar Guerrero; James Briscoe; Karen M Page.
- 9** **Title of the work:** Noise alters the dynamics and steady state of morphogen- controlled patterning through bistable genetic switches  
**Name of the conference:** Circle Meeting  
**Type of event:** Conference  
**Type of participation:** Participatory - oral communication  
**Corresponding author:** Yes  
**City of event:** Paris, France  
**Date of event:** 2016  
**Organising entity:** Institut Pierre-Gilles de Gennes  
Ruben Perez-Carrasco; Pilar Guerrero; James Briscoe; Karen Page.
- 10** **Title of the work:** Noise profoundly alters the dynamics and steady state of morphogen- controlled patterning through bistable genetic switches  
**Name of the conference:** 17th International Conference on Systems Biology  
**Type of event:** Conference  
**Type of participation:** 'Participatory - poster  
**Corresponding author:** Yes  
**City of event:** Barcelona, Spain  
**Date of event:** 2016  
**Organising entity:** Centre for Genomic Regulation  
Ruben Perez-Carrasco; Pilar Guerrero; James Briscoe; Karen Page.
- 11** **Title of the work:** Understanding genetic dynamics of neural tube patterning: The AC/DC circuit  
**Name of the conference:** Cellular Heterogeneity: Role of Variability and Noise in Biological Decision-Making  
**Type of event:** Conference  
**Type of participation:** 'Participatory - poster  
**Corresponding author:** Yes  
**City of event:** Heidelberg, Germany  
**Date of event:** 2015  
**Organising entity:** EMBO  
Ruben Perez-Carrasco; Pilar Guerrero; James Briscoe; Karen Page.
- 12** **Title of the work:** Understanding genetic dynamics of neural tube patterning: The AC/DC circuit  
**Name of the conference:** Physics of Living Matter 10  
**Type of event:** Conference  
**Type of participation:** 'Participatory - poster  
**Corresponding author:** Yes  
**City of event:** Cambridge, United Kingdom



**Date of event:** 2015

**Organising entity:** University of Cambridge

Ruben Perez-Carrasco; Pilar Guerrero; James Briscoe; Karen Page.

**13 Title of the work:** Understanding genetic dynamics of neural tube patterning: The AC/DC circuit

**Name of the conference:** Young Embriologist Meeting

**Type of event:** Conference

**Type of participation:** 'Participatory - poster

**Corresponding author:** Yes

**City of event:** Londres, United Kingdom

**Date of event:** 2015

**Organising entity:** Young Embriologist Network

Ruben Perez-Carrasco; Pilar Guerrero; James Briscoe; Karen Page.

**14 Title of the work:** Modelling of neural tube patterning

**Name of the conference:** Barcelona Mathematical Days

**Type of event:** Conference

**Type of participation:** Participatory - invited/keynote talk

**Corresponding author:** Yes

**City of event:** Barcelona, Spain

**Date of event:** 2013

**Organising entity:** Institut de Estudis Catalans

Ruben Perez-Carrasco; Pilar Guerrero; James Briscoe; Karen Page.

**15 Title of the work:** Mechano-chemical study of rotatory molecular motors

**Name of the conference:** JIPI

**Type of event:** Workshop

**Type of participation:** Participatory - oral communication

**Corresponding author:** Yes

**City of event:** Barcelona, Spain

**Date of event:** 2013

**Organising entity:** Barcelona Knowledge Campus

Ruben Perez-Carrasco; Jose Maria Sancho.

**16 Title of the work:** Energetic study of the F1-ATPase Molecular Motor

**Name of the conference:** NoLineal 2012

**Type of event:** Conference

**Type of participation:** Participatory - oral communication

**Corresponding author:** Yes

**City of event:** Zaragoza, Spain

**Date of event:** 2012

**Organising entity:** Universidad de Zaragoza - BIFI

Ruben Perez-Carrasco; Jose Maria Sancho.

**17 Title of the work:** Rotatory Molecular Machines: Dynamics, Power and Efficiency

**Name of the conference:** FisEs'12

**Type of event:** Conference

**Type of participation:** Participatory - oral communication

**Corresponding author:** Yes

**City of event:** Palma de Mallorca, Spain

**Date of event:** 2012



**Organising entity:** INSTITUTO DE FISICA INTERDISCIPLINAR Y SISTEMAS COMPLEJOS  
Ruben Perez-Carrasco; Jose Maria Sancho.

**Type of entity:** State agency

**18** **Title of the work:** Modelling the F1-ATPase  
**Name of the conference:** FisEs' 11  
**Type of event:** Conference  
**Type of participation:** 'Participatory - poster  
**Corresponding author:** Yes  
**City of event:** Barcelona, Spain  
**Date of event:** 2011  
**Organising entity:** Universitat de Barcelona  
Ruben Perez-Carrasco; Jose Maria Sancho.

**19** **Title of the work:** Stochastic Algorithm for discontinuous multiplicative noise  
**Name of the conference:** Emergency and Design of Robustness  
**Type of event:** Conference  
**Type of participation:** 'Participatory - poster  
**Corresponding author:** Yes  
**City of event:** Mallorca, Spain  
**Date of event:** 2010  
**Organising entity:** INSTITUTO DE FISICA INTERDISCIPLINAR Y SISTEMAS COMPLEJOS  
Ruben Perez-Carrasco; Jose Maria Sancho.

**Type of entity:** State agency

### Works submitted to national or international seminars, workshops and/or courses

**1** **Title of the work:** The power of the AC-DC genetic circuit  
**Name of the event:** Seminar Department of Genetics  
**Type of event:** Seminar  
**Corresponding author:** Yes  
**City of event:** Cambridge, United Kingdom  
**Date of event:** 2018  
**Organising entity:** University of Cambridge  
Ruben Perez-Carrasco.

**Reasons for participation:** Speaker

**Type of entity:** University

**2** **Title of the work:** Intrinsic noise alters the dynamics and steady state of bistable genetic switches during patterning  
**Name of the event:** Modelling from structures to systems  
**Type of event:** Seminar  
**Corresponding author:** Yes  
**City of event:** Londres, United Kingdom  
**Date of event:** 2016  
**Organising entity:** Imperial College  
Ruben Perez-Carrasco; Pilar Guerrero; James Briscoe; Karen M Page.

**Reasons for participation:** Speaker

**3** **Title of the work:** Intrinsic noise alters the dynamics and steady state of bistable genetic switches during patterning  
**Name of the event:** Seminar Physics Department KCL  
**Type of event:** Seminar



**Corresponding author:** Yes

**City of event:** Londres, United Kingdom

**Date of event:** 2016

**Organising entity:** King's College London

Ruben Perez-Carrasco; Pilar Guerrero; James Briscoe; Karen M Page.

**Reasons for participation:** Speaker

**4 Title of the work:** Advantadges of dynamical signalling on the neural tube patterning

**Name of the event:** Developmental Biology Seminar

**Type of event:** Seminar

**Corresponding author:** Yes

**City of event:** London, United Kingdom

**Date of event:** 2015

**Organising entity:** The Francis Crick Institute

Ruben Perez-Carrasco; Pilar Guerrero; James Briscoe; Karen M Page.

**Reasons for participation:** Speaker

**5 Title of the work:** Advantadges of dynamical signalling on the neural tube patterning

**Name of the event:** IPLS seminar

**Type of event:** Seminar

**Corresponding author:** Yes

**City of event:** London, United Kingdom

**Date of event:** 2014

**Organising entity:** Intitute of Physics of Living Systems (IPLS)

Ruben Perez-Carrasco; Pilar Guerrero; James Briscoe; Karen M Page.

**Reasons for participation:** Speaker

**6 Title of the work:** F1-ATPase. Understanding a rotatory molecular machine

**Name of the event:** Condensed Matter Seminar

**Type of event:** Seminar

**Corresponding author:** Yes

**City of event:** Barcelona, Spain

**Date of event:** 2014

**Organising entity:** Universitat de Barcelona

Ruben Perez-Carrasco; Jose M Sancho.

**Reasons for participation:** Speaker

**Type of entity:** University

## Other dissemination activities

**1 Title of the work:** Host of the science podcast of the SRUK

**Name of the event:** En Fase Experimental

**City of event:** Londres, United Kingdom

**Date of event:** 2019

**Organising entity:** Society of Spanish Researchers in the United Kingdom

**2 Title of the work:** Host of the science podcast of the SRUK

**Name of the event:** En Fase Experimental

**City of event:** Londres, United Kingdom

**Date of event:** 2018

**Organising entity:** Society of Spanish Researchers in the United Kingdom



## R&D management and participation in scientific committees

### Scientific, technical and/or assessment committees

- 1 **Committee title:** Equality and Diversity Committee of the Mathematics Department of UCL (Athena SWAN Silver Medal)  
**Affiliation entity:** University College London  
**Start-End date:** 2018 - 2019
- 2 **Committee title:** Green and sustainability Committee of the Mathematics Department  
**Affiliation entity:** University College London  
**Start-End date:** 2018 - 2019

### Organization of R&D activities

- 1 **Title of the activity:** Encontres amb el Tercer Cicle  
**Type of activity:** Ciclo de charlas  
**Convening entity:** Universitat de Barcelona  
**City convening entity:** Barcelona, Spain  
**Start-End date:** 2008 - 2012  
**Geographical area:** Regional  
**Type of entity:** University  
**Duration:** 5 years
- 2 **Title of the activity:** 10th Young Embryologist Conference  
**Type of activity:** Congreso  
**City of event:** Londres, United Kingdom  
**Convening entity:** Young Embriologist Network  
**Type of participation:** Organiser  
**Start date:** 2017  
**Geographical area:** Non EU International
- 3 **Title of the activity:** 9th Young Embryologist Conference  
**Type of activity:** Congreso  
**City of event:** Londres, United Kingdom  
**Convening entity:** Young Embriologist Network  
**Type of participation:** Organiser  
**Start date:** 2016  
**Geographical area:** Non EU International
- 4 **Title of the activity:** Minisimposio "Analysis of multi-scale and hybrid models" at the 10th European Conference of Mathematical and Theoretical Biology and the Society of Mathematical Biology  
**Type of activity:** Congreso  
**City of event:** Nottingham, United Kingdom  
**Convening entity:** Society for Mathematical Biology  
**Type of participation:** Organiser  
**Start date:** 2016  
**Geographical area:** Non EU International
- 5 **Title of the activity:** Minisimposio "Dynamics of stochastic molecular systems" at the 10th European Conference of Mathematical and Theoretical Biology and the Society of Mathematical Biology  
**Type of activity:** Congreso  
**City of event:** Nottingham, United Kingdom  
**Convening entity:** Society for Mathematical Biology  
**Geographical area:** Non EU International





**Type of participation:** Organiser  
**Start date:** 2016

**6** **Title of the activity:** Sesión Matemática aplicada en Congreso Jóvenes Investigadores de RSME  
**Type of activity:** Congreso **Geographical area:** Non EU International  
**City of event:** Murcia,  
**Convening entity:** REAL SOCIEDAD MATEMÁTICA ESPAÑOLA  
**Type of participation:** Organiser  
**Start date:** 2015

**7** **Title of the activity:** Jornada d'Investigadors Predoctorals Interdisciplinària  
**Type of activity:** Congreso **Geographical area:** Regional  
**Convening entity:** Barcelona Knowledge Campus  
**City convening entity:** Barcelona, Spain  
**Start date:** 2013

## Other achievements

### Stays in public or private R&D centres

**1** **Entity:** Medical Research Council UK **Type of entity:** Public Research Body  
**Faculty, institute or centre:** Mill Hill Laboratories  
**City of entity:** London, Inner London, United Kingdom  
**Start-End date:** 18/02/2013 - 18/11/2016 **Duration:** 3 years - 9 months  
**Goals of the stay:** Guest  
**Provable tasks:** Visiting worker during my postdoc in UCL

**2** **Entity:** University of California San Diego **Type of entity:** University  
**Faculty, institute or centre:** Department of Chemistry  
**City of entity:** San Diego, United States of America  
**Start-End date:** 13/07/2009 - 27/08/2009 **Duration:** 1 month - 13 days  
**Goals of the stay:** Doctorate  
**Provable tasks:** visiting PhD student

**3** **Entity:** The Francis Crick Institute **Type of entity:** R&D Centre  
**City of entity:** London, Inner London, United Kingdom  
**Start date:** 18/11/2016 **Duration:** 2 years - 2 months  
**Goals of the stay:** Guest  
**Provable tasks:** Visiting worker during my position in UCL

**4** **Entity:** University of Oxford **Type of entity:** University  
**Faculty, institute or centre:** Clarendon Laboratory  
**City of entity:** Oxford, United Kingdom  
**Start date:** 2011 **Duration:** 3 months  
**Goals of the stay:** Doctorate  
**Provable tasks:** Investigación en el grupo de Richard Berry



- 5** **Entity:** Parc Científic de Barcelona **Type of entity:** R&D Centre  
**City of entity:** Barcelona, Spain  
**Start date:** 2006 **Duration:** 1 month  
**Goals of the stay:** Predoctoral  
**Provable tasks:** Investigacion en la Plataforma Automatizada de Cristalografia

## Obtained grants and scholarships

- 1** **Name of the grant:** Doctoral Short stay grant  
**Aims:** Pre-doctoral  
**Awarding entity:** MINISTERIO DE EDUCACION Y CIENCIA  
**Conferral date:** 2011 **Duration:** 3 months
- 2** **Name of the grant:** Beca de Colaboracion con proyectos de investigacion  
**Aims:** Pre-doctoral  
**Awarding entity:** Universitat de Barcelona **Type of entity:** University  
**Conferral date:** 2008 **Duration:** 1 year  
**Entity where activity was carried out:** Universitat de Barcelona  
**Faculty, institute or centre:** Facultat de Fisica
- 3** **Name of the grant:** Formacion de Profesorado Universitario (FPU)  
**Aims:** Pre-doctoral  
**Awarding entity:** MINISTERIO DE EDUCACION Y CIENCIA  
**Conferral date:** 2008 **Duration:** 4 years  
**Entity where activity was carried out:** Universitat de Barcelona  
**Faculty, institute or centre:** Facultat de Fisica
- 4** **Name of the grant:** Beca de Colaboracion con departamentos  
**Aims:** Pre-doctoral  
**Awarding entity:** MINISTERIO DE EDUCACION Y CIENCIA  
**Conferral date:** 2007 **Duration:** 1 year  
**Entity where activity was carried out:** Universitat de Barcelona  
**Faculty, institute or centre:** Facultat de Fisica
- 5** **Name of the grant:** Beca Erasmus  
**Aims:** Pre-doctoral  
**Awarding entity:** Union Europea  
**Conferral date:** 2005 **Duration:** 6 months  
**Entity where activity was carried out:** KTH Royal Institute of Technology in Stockholm

## Prizes, mentions and distinctions

- 1** **Description:** Platinum Medal - Sustainability Green UCL award  
**Awarding entity:** University College London  
**City awarding entity:** Londres, United Kingdom  
**Conferral date:** 2018





**2** **Description:** Nature Physics prize best Poster in Physics of Living Matter  
**Awarding entity:** Nature **Type of entity:** Business  
**Conferral date:** 2016