



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 **20 scientific papers**, 19 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 and have also obtained competitive funding for other scientific activities such as the organization of a **Royal Society** meeting or funding to host a summer project from the **London Mathematical Society**.

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 180 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 4 Master (M.Sci) projects, a short stay of a PhD student** and currently informally supervising another PhD student.

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 Gold 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 20 Scientific publications in international peer reviewed journals, 19 of them with an impact factor in the first quartile of their fields.

These publication have 270 citations with a total H index of 8 (Source: Google Scholar). 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 4 Master students (M.Sci) projects, codirection of a doctoral student during a short stay and currently informally supervising a PhD student

**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

	Employing entity	Professional category	Start date
	University College London	Postdoctoral Research Associate (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: 24/09/2019 **End date:** 14/12/2019
End date: 2019 **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: Mathematical Ecology
Type of teaching: In person theory
University degree: Licenciado en Ciencias Matemáticas

**Start date:** 24/09/2018**End date:** 2018**Hours/ECTS credits:** 30**Entity:** University College London**Faculty, institute or centre:** Mathematics Department**City of entity:** London, United Kingdom**End date:** 14/12/2018**Type of hours/ ECTS credits:** Hours**Type of entity:** University**3 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**4 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**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:** 15/09/2015**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**6 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



- 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: 13/09/2012
End date: 2012
Hours/ECTS credits: 15
Entity: Universitat de Barcelona
Faculty, institute or centre: Facultat de Física
- End date:** 22/12/2012
Type of hours/ ECTS credits: Hours
Type of entity: University
- 8** **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: 2012
Hours/ECTS credits: 13
Entity: Universitat de Barcelona
Faculty, institute or centre: Facultat de Física
- End date:** 25/05/2012
Type of hours/ ECTS credits: Hours
Type of entity: University
- 9** **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: 2012
Hours/ECTS credits: 10
Entity: Universitat de Barcelona
Faculty, institute or centre: Facultat de Física
- End date:** 25/05/2012
Type of hours/ ECTS credits: Hours
Type of entity: University
- 10** **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: 2011
Hours/ECTS credits: 13
Entity: Universitat de Barcelona
Faculty, institute or centre: Facultat de Física
- End date:** 25/05/2011
Type of hours/ ECTS credits: Hours
Type of entity: University
- 11** **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: 2011
Hours/ECTS credits: 16
Entity: Universitat de Barcelona
Faculty, institute or centre: Facultat de Física
- End date:** 25/05/2011
Type of hours/ ECTS credits: Hours
Type of entity: University



Experience supervising doctoral thesis and/or final year projects

- 1** **Project title:** Mechanisms of symmetry breaking during primitive streak formation
Type of project: Doctoral thesis (informal supervision)
Entity: University College London (Department of Mathematics)
City of entity: London, United Kingdom
Student: Cato Hastings Page
Date of reading: 2021
- 2** **Project title:** Cell competition mechanisms inference during early gastrulation
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: Claudia de Sousa Miranda Perez
Date of reading: 15/03/2020
- 3** **Project title:** Shh Dynamics and Shh Gradient Variations with Implementing the Vertex Model of the Vertebrate Neural Tube
Type of project: Trabajo de Master (M.Sc. Project)
Entity: University College London (Department of Mathematics) **Type of entity:** University
City of entity: London,
Student: Yue Hao
Date of reading: 10/09/2019
- 4** **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
- 5** **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
- 6** **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

City of entity: London, Inner London, United Kingdom

Name principal investigator (PI, Co-PI....): Ruben Perez-Carrasco

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

Total amount: 391.285 €

2 Name of the project: Phase Portrait Analysis of the Experimental Synthetic AC/DC circuit

Entity where project took place: University College London (Dep. Mathematics)

Name principal investigator (PI, Co-PI....): Ruben Perez-Carrasco

Nº of researchers: 2

Funding entity or bodies:

London Mathematical Society

Start-End date: 2019 - 2019

Total amount: 1.706 €

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** Nuria Folguera; Ruben Perez Carrasco; Elisabet Cuyas; Javier A Menendez; Tomas Alarcon. A multiscale model of epigenetic heterogeneity reveals the kinetic routes of pathological cell fate reprogramming. PLoS Computational Biology. 15 - 4, pp. e1006592. 2019.

Type of production: Scientific paper
Format: Journal

Corresponding author: No
Category: Science Edition - MATHEMATICAL & COMPUTATIONAL BIOLOGY

Impact source: ISI
Journal in the top 25%: Yes

Impact index in year of publication: 3.955
- 2** Roberto de la Cruz; Ruben Perez-Carrasco; Pilar Guerrero; Tomas Alarcon; Karen M. Page. Reply to Comment on "Minimum Action Path Theory Reveals the Details of Stochastic Transitions Out of Oscillatory States". Physical Review Letters. 122, pp. 059802. 2019.

Type of production: Scientific paper
Format: Journal

Corresponding author: Yes
Category: Science Edition - PHYSICS, MULTIDISCIPLINARY

Impact source: ISI
Journal in the top 25%: Yes

Impact index in year of publication: 8.839
- 3** 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
Format: Journal

Corresponding author: Yes
Category: Science Edition - BIOCHEMISTRY & MOLECULAR BIOLOGY

Impact source: ISI
Journal in the top 25%: Yes

Impact index in year of publication: 8.982
- 4** 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
Format: Journal

Position of signature: 2
Category: Science Edition - MULTIDISCIPLINARY SCIENCES

Corresponding author: Yes
Journal in the top 25%: Yes

Impact source: ISI

Impact index in year of publication: 3.355
- 5** 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

- 6** 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

Relevant results: Shared first author position

Category: Science Edition - PHYSICS, MULTIDISCIPLINARY

Journal in the top 25%: Yes

- 7** 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

- 8** 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

Relevant results: Shared first author position with the rest of authors of the manuscript

Category: Science Edition - BIOCHEMICAL RESEARCH METHODS

Journal in the top 25%: Yes

- 9** 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

- 10** 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

- 11** 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

- 12** 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

- 13** 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

- 14** 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

- 15** 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



- 16** 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
- 17** 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
- 18** 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
- 19** 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
- 20** 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:** Minimum Action Path reveals spatiotemporal mechanism of embryo patterning
Name of the conference: Annual Meeting of the Society of Mathematical Biology
Type of event: Conference
Type of participation: Participatory - oral communication
Corresponding author: Yes
City of event: Montreal, Canada
Date of event: 2019



Organising entity: Society of Mathematical Biology

- 2** **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.
- 3** **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.
- 4** **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.
- 5** **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.
- 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: 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.

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: 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.

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: 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.

9 **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.

10 **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.



- 11** **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.
- 12** **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.
- 13** **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.
- 14** **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.
- 15** **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.



- 16** **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.
- 17** **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.
- 18** **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
- 19** **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.
- 20** **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 **Type of entity:** State agency



Ruben Perez-Carrasco; Jose Maria Sancho.

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

- 1** **Title of the work:** Degradation rates determine success of oscillations in cyclic regulatory networks
Name of the event: Sheffield Mathematical Biology Seminars
City of event: Sheffield, United Kingdom
Date of event: 2019
Organising entity: University of Sheffield
- 2** **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 **Reasons for participation:** Speaker
City of event: Cambridge, United Kingdom
Date of event: 2018
Organising entity: University of Cambridge **Type of entity:** University
Ruben Perez-Carrasco.
- 3** **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 **Reasons for participation:** Speaker
City of event: Londres, United Kingdom
Date of event: 2016
Organising entity: Imperial College
Ruben Perez-Carrasco; Pilar Guerrero; James Briscoe; Karen M Page.
- 4** **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 **Reasons for participation:** Speaker
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.
- 5** **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 **Reasons for participation:** Speaker
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.



6 **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 **Reasons for participation:** Speaker
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.

7 **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 **Reasons for participation:** Speaker
City of event: Barcelona, Spain
Date of event: 2014
Organising entity: Universitat de Barcelona **Type of entity:** University
 Ruben Perez-Carrasco; Jose M Sancho.

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:** Green and sustainability Committee of the Mathematics Department
Affiliation entity: University College London
Start-End date: 2018 - 2019

2 **Committee title:** Equality and Diversiy Committee of the Mathematics Department of UCL (Athena SWAN Silver Medal)
Affiliation entity: University College London
End date: 2019

3 **Committee title:** Equality and Diversiy Committee of the Mathematics Department of UCL (Athena SWAN Silver Medal)
Affiliation entity: University College London
End date: 2018



- 4** **Committee title:** Green and sustainability Committee of the Mathematics Department
Affiliation entity: University College London
End date: 2018

Organization of R&D activities

- 1** **Title of the activity:** Encontres amb el Tercer Cicle
Type of activity: Ciclo de charlas **Geographical area:** Regional
Convening entity: Universitat de Barcelona **Type of entity:** University
City convening entity: Barcelona, Spain
Start-End date: 2008 - 2012 **Duration:** 5 years
- 2** **Title of the activity:** Interdisciplinary approaches to dynamics in biology
Type of activity: Congreso **Geographical area:** European Union
City of event: Newport Pagnell, United Kingdom
Convening entity: Royal Society **Type of entity:** Public Research Body
City convening entity: London, United Kingdom
Type of participation: Organiser
Start date: 2020
- 3** **Title of the activity:** 10th Young Embryologist Conference
Type of activity: Congreso **Geographical area:** Non EU International
City of event: Londres, United Kingdom
Convening entity: Young Embriologist Network
Type of participation: Organiser
Start date: 2017
- 4** **Title of the activity:** 9th Young Embryologist Conference
Type of activity: Congreso **Geographical area:** Non EU International
City of event: Londres, United Kingdom
Convening entity: Young Embriologist Network
Type of participation: Organiser
Start date: 2016
- 5** **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 **Geographical area:** Non EU International
City of event: Nottingham, United Kingdom
Convening entity: Society for Mathematical Biology
Type of participation: Organiser
Start date: 2016
- 6** **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 **Geographical area:** Non EU International
City of event: Nottingham, United Kingdom
Convening entity: Society for Mathematical Biology
Type of participation: Organiser
Start date: 2016



- 7** **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
- 8** **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:** University College London
City of entity: London, United Kingdom
Start-End date: 11/02/2013 - 10/02/2018 **Duration:** 5 years
Goals of the stay: Contracted
Provable tasks: Research Associate
- 2** **Entity:** National Institute of Medical Research **Type of entity:** Public Research Body
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
- 3** **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
- 4** **Entity:** University College London
City of entity: London, United Kingdom
Start date: 11/02/2018 **Duration:** 1 year - 4 months
Goals of the stay: Contracted
Provable tasks: Independent research fellow
- 5** **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



- 6** **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: Investigacion en el grupo de Richard Berry
- 7** **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 Cristalografía

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:** Gold Medal - Sustainability Green UCL award
Awarding entity: University College London
City awarding entity: Londres, United Kingdom
Conferral date: 2019
- 2** **Description:** Equality and Diversity Silver award
Awarding entity: Athena SWAN
City awarding entity: United Kingdom
Conferral date: 2018
- 3** **Description:** Platinum Medal - Sustainability Green UCL award
Awarding entity: University College London
City awarding entity: Londres, United Kingdom
Conferral date: 2018
- 4** **Description:** Nature Physics prize best Poster in Physics of Living Matter
Awarding entity: Nature **Type of entity:** Business
Conferral date: 2016