



THE COMPANY OF  
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Neural Stem Cells in Development and Disease

7 – 10 February 2010 • Wilton Park, West Sussex

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9 – 12 May 2010 • Melville Castle, Edinburgh

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**Neural Stem Cells in  
Development and Disease**

Workshop Programme

7th - 10th February 2010  
Wilton Park, West Sussex



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# Neural Stem Cells in Development and Disease

## Workshop Programme

**7th - 10th February 2010  
Wilton Park, West Sussex**

The Company of Biologists is run by biologists for biologists and supports innovation in all aspects of biological research. A not-for-profit publisher of the well established, internationally renowned journals *Development*, *Journal of Cell Science* and *The Journal of Experimental Biology*, the company has also recently launched *Disease Models & Mechanisms*.

The company also provides grants, travelling fellowships and sponsorship supporting innovation in all aspects of biological research. For more information please visit our website, [www.biologists.com](http://www.biologists.com).




**Development**  
dev.biologists.org

A top-ranking research journal in the field of developmental biology



**DMM**  
Disease Models & Mechanisms  
dmm.biologists.org

A new journal to explore the understanding of human disease through model organisms.



**Journal of Cell Science**  
jcs.biologists.org

A leading research journal in the field of cell biology



**The Journal of Experimental Biology**  
jeb.biologists.org

The leading journal in comparative animal physiology



### Funding Scientific Breakthroughs

The Company of Biologists has a long and proud history of funding a range of charitable programmes that enable biologists to collaborate on important scientific research that contributes to new discoveries and treatments. Income generated from the publication of the internationally renowned journals *Development*, *Disease Models & Mechanisms*, *Journal of Cell Science* and *The Journal of Experimental Biology* is reinvested in the community providing grants, travelling fellowships and sponsorship to scientists, meetings and societies around the world.

### Meeting Grants

- Available for meetings, workshops, conferences, summer schools and speaker sponsorship
- Priority will be given to organisers who have sought maximum feasible diversity in terms of geography, gender and age, in addition to ensuring the quality of the science
- Up to £6,000, or more in exceptional circumstances for major grants
- Small meeting grants of up to £300 are available for local meetings on a small budget

### Travelling Fellowships and Direct Travel Grants

- Postgraduate students and postdoctoral researchers are invited to apply for funding to the relevant journal in their research field
- The funding is intended to enable applicants to visit other laboratories to facilitate collaborative research
- Students can also apply for Direct Travel Grants towards the cost of attending relevant research conferences, workshops or skill acquiring visits

The Company's Directors are leading biologists, librarians and computer scientists, who receive no remuneration for their services, and are dedicated to supporting the interests of the community in the advancement of uncovering new scientific discoveries. For more information on our range of charitable activities please visit our website at [www.biologists.com](http://www.biologists.com) or contact our Charity Administrator at [charity@biologists.com](mailto:charity@biologists.com).

## Neural Stem Cells in Development and Disease

Scientific Organisers: Kate Storey and Silvia Marino  
Chairperson: François Guillemot

### PROGRAMME

Sunday 7<sup>th</sup> February 2010

12.30 – 2.00pm	Lunch
2.30 – 2.45pm	Introductions Kate Storey, Silvia Marino & François Guillemot
	<b>Chair for all sessions – François Guillemot</b>
2.45 – 3.25pm	<b>Cayetano Gonzalez</b> ICREA & IRBB, Barcelona, Spain
3.25 – 4.05pm	<b>Steve Pollard</b> Wellcome Trust Centre for Stem Cell Research, Cambridge, UK
4.05 – 4.45pm	<b>Tea Break</b>
4.45 – 5.25pm	<b>Laure Bally-Cuif</b> Institute of Developmental Genetics, Munich, Germany
6.30pm	<b>Pre Dinner Drinks</b>
7.30pm	<b>Dinner</b>

## Monday 8<sup>th</sup> February 2010

### 7.30 – 9.00am Breakfast

9.00 – 9.40am **Richard Gilbertson**  
St. Jude Children's Research Hospital,  
Memphis, USA

9.40 – 10.20am **Chris Doe**  
University of Oregon,  
USA

### 10.20 – 11.00am Coffee Break

11.00 – 11.40am **Domingos Henrique**  
IMM,  
Lisbon, Portugal

### 12.00 – 1.30pm Lunch

1.30 – 2.10pm **Andrea Brand**  
Gurdon Institute of Cancer & Developmental Biology,  
Cambridge, UK

2.10 – 2.50pm **Sebastian Brandner**  
UCL,  
London, UK

### 2.50 – 3.30pm Tea Break

3.30 – 4.10pm **David Rowitch**  
UCSF,  
San Francisco, USA

4.10 – 4.50pm **Charles ffrench-Constant**  
CRM,  
University of Edinburgh, UK

### 6.30pm Pre Dinner Drinks

### 7.30pm Dinner

## Wednesday 10<sup>th</sup> February

### François Guillemot

Talk Title: Function of the proneural factor Mash1/Ascl1 in neural stem cells

Research Interests: Research in Francois Guillemot's lab focuses on the mechanisms controlling the specification and differentiation of neurons in the mouse brain.

### Thomas Jacques

Talk Title: An investigation of stem cells in childhood epilepsy

Research Interests: My research interest is the role of neural stem cells in childhood brain diseases, specifically brain tumours and epilepsy. I am also a clinician with specialist interest in paediatric neuropathology.

### Magdalena Götz

Talk Title: Molecular mechanisms of adult neurogenesis

Research Interests: We are interested in determining the fate determinants that allow neurogenesis only in some regions in the adult mammalian brain, as opposed to rather widespread neurogenesis in the adult brains of other vertebrates.

### Silvia Marino

Talk Title: Self renewal mechanisms in neural stem cells and brain tumours

Research Interests: Current research interests are molecular mechanisms of self-renewal and differentiation of stem cells in the brain and skeletal muscle and generation and analysis of mouse models to study the role of these cells in regeneration and tumourigenesis.

### Kate Storey

Talk Title: Regulation of neural differentiation onset in the vertebrate embryo

Research Interests: Mechanisms that regulate neural and neuronal differentiation in vertebrate embryos. Work presented here exploits the spatial separation of the temporal events of neurogenesis during the progressive generation of the spinal cord to investigate signalling pathways, including the retinoid pathway, and downstream events that control differentiation progression.

### Chris Redfern

Talk Title: Neuroblastoma- retinoids, apoptosis and differentiation

Research Interests: The molecular biology of retinoids and their roles as cellular signalling molecules in controlling cell fate.

## Tuesday 9<sup>th</sup> February 2010

**7.30 – 9.00am**

**Breakfast**

9.00 – 9.40am

**Fiona Doetsch**  
Columbia University,  
New York, USA

9.40 – 10.20am

**Juergen Knoblich**  
Institute of Molecular Biotechnology,  
Vienna, Austria

**10.20 – 11.00am**

**Coffee Break**

11.00 – 11.40pm

**Jonas Muhr**  
Ludwig Institute,  
Karolinska, Sweden

**12.00 – 1.30pm**

**Lunch**

1.30 – 2.10pm

**Michael Weller**  
University Hospital Zurich,  
Switzerland

2.10 – 2.50pm

**Silvia Marino**  
ICMS, Barts and The London School of Medicine,  
London, UK

**2.50 – 3.30pm**

**Tea Break**

3.30 – 4.10pm

**Kate Storey**  
University of Dundee,  
Scotland, UK

4.10 – 4.50pm

**Chris Redfern**  
Northern Institute for Cancer Research,  
Newcastle University, UK

**6.30pm**

**Pre Dinner Drinks**

**7.30pm**

**Dinner**

## Wednesday 10<sup>th</sup> February 2010

Chair - Silvia Marino

7.30 – 9.00am

Breakfast

9.00 – 9.40am

François Guillemot  
NIMR,  
London, UK

9.40 – 10.20am

Thomas Jacques  
Institute of Child Health,  
London, UK

10.20 – 11.00am

Magdalena Götz  
Ludwig-Maximilians-Universität  
München (LMU), Germany

11.00 – 11.30am

Round Up  
François Guillemot

11.30am

Coffee / End of Workshop

## Tuesday 9<sup>th</sup> February

Fiona Doetsch

Talk Title: Stem Cells and Their Niche in the Adult Mammalian Brain

Research Interests: Stem cells persist in specialized niches in the adult mammalian brain where they continuously generate large numbers of neurons that become functionally integrated into neural circuits. We previously showed that the stem cells for adult neurogenesis are a subset of astrocytes, glial cells classically associated with support functions in the brain. We are using a variety of approaches to uncover the regulation, lineage relationships, diversity and function of stem cells and neuronal production in the adult mammalian brain.

Juergen Knoblich

Talk Title: Genome-Wide Analysis of Self-Renewal and Tumorigenesis in Drosophila Neural Stem Cells

Research Interests: Juergen Knoblich's lab is interested in the molecular mechanisms of asymmetric cell division and uses both Drosophila and mice to study how self renewal is controlled in neural stem cells and how defects in this process can lead to tumor formation.

Jonas Muhr

Talk Title: Role of Sox transcription factors in the differentiation of stem cells into neurons

Research Interests: Focusing on Sox transcription factors, we are interested in how stem cells are regulated in the developing vertebrate central nervous system

Michael Weller

Talk Title: Glioblastoma stem cells: a specific target for brain tumor therapy?

Research Interests: Glioblastomas, the most malignant primary brain tumors, are thought to be organized in a hierarchical manner, with a distinct population of "stem cells" maintaining tumor growth and causing resistance to therapy and relapse. We try to define this putative stem cell population and to explore its use as a target of novel interventional strategies, in particular immunotherapy.

### Andrea Brand

Talk Title: Balancing self-renewal and differentiation: regulation of symmetric and asymmetric division in the Drosophila nervous system

Research Interests: Balancing symmetric and asymmetric stem cell division is critical for the generation and maintenance of tissues and for the prevention of tumourous overgrowth. To identify regulatory networks controlling the switch from symmetric to asymmetric cell division, and from self-renewal to differentiation, we are mapping the genome-wide targets of key neural stem cell transcription factors and comparing the transcriptomes of microdissected neural stem cells and their progeny.

### Sebastian Brandner

Talk Title: Neural stem cells out of control: The origin of brain tumours?

Research Interests: Role of neural stem cells in the pathogenesis of brain tumours: We have recently established a mouse model for brain tumours, by inactivating tumour suppressor genes in the neural stem cell compartment. By injecting Cre-expressing virus into the ventricles of the mice the targeted genes are recombined only in cells located near the sub-ventricular zone (SVZ) which contains the largest known population neural stem cells. In mice where Rb and P53 are recombined, after several months, tumours of a specific phenotype resembling that of a human PNET develop. Conversely a tumour resembling human glioma is induced in mice where PTEN and P53 or the trio of genes PTEN, P53 and Rb are targeted.

### David Rowitch

Talk Title: Developmental perspective on newborn neurological injury

Research Interests: Overlapping mechanisms of central nervous system development in neurologic diseases.

### Charles french-Constant

Talk Title: Integrin functions in neural stem cells

Research Interests: The role of extracellular matrix in the regulation of neural stem cells in the embryonic and adult CNS

## List of Attendees

Serena Acquati  
Sharon Ahmad  
Jane Alfred  
Eva Amsen  
Laure Bally-Cuif  
Andrea Brand  
Sebastian Brandner  
Raman Das  
Chris Doe  
Fiona Doetsch  
Charles french-Constant  
Richard Gilbertson  
Cayetano Gonzalez  
Rosa Gonzalez-Quevedo  
Magdalena Götz  
François Guillemot  
Domingos Henrique  
Thomas Jacques  
Juergen Knoblich  
Alfonso Lavado  
Silvia Marino  
Ben Martynoga  
Claire Moulton  
Jonas Muhr  
Nancy Papalopulu  
Omar Pathmanaban  
Anna Philpott  
Steve Pollard  
Chris Redfern  
David Rowitch  
Vivian Siegel  
Kate Storey  
Jignesh Tailor  
Michael Weller  
Yunli Xie

BICMS, Barts and The London SMD  
*Journal of Cell Science*  
*Development*  
*Development*  
CNRS - Neurobiology and Development  
The Gurdon Institute, University of Cambridge  
UCL - Institute of Neurology  
University of Dundee  
University of Oregon  
Columbia University  
MRC Centre for Regenerative Medicine  
St. Jude Children's Research Hospital  
ICREA & IRB  
National Institute for Medical Research  
Institute of Stem Cell Research  
National Institute for Medical Research  
Institute of Molecular Medicine  
UCL - Institute of Child Health  
Institute of Molecular Biotechnology  
St. Jude Children's Research Hospital  
BICMS, Barts and The London SMD  
National Institute for Medical Research  
The Company of Biologists  
Karolinska Institutet  
University of Manchester  
University of Manchester  
University of Cambridge  
UCL - UCL Cancer Institute  
Newcastle University  
UC San Francisco  
*Disease Models & Mechanisms*  
University of Dundee  
Wellcome Trust Centre for Stem Cell Research  
University Hospital Zurich  
Institute of Molecular Biotechnology

## Talk Titles and Research Interests

### Sunday 7<sup>th</sup> February

#### Cayetano Gonzalez

Talk Title:

Research  
Interests:

#### Steve Pollard

Talk Title: Programming and reprogramming brain cancer stem cells

Research Interests: Molecular and cellular mechanisms governing neural stem cell potency, self-renewal and differentiation and their disruption in brain cancer.

#### Laure Bally-Cuif

Talk Title: Neural stem cell maintenance in the zebrafish adult telencephalon: molecular mechanisms and possible behavioral implications

Research Interests: We are using the zebrafish to address the molecular and cellular mechanisms of neural progenitor maintenance in the vertebrate embryonic and adult brain. In addition, we aim to assess the impact of adult neurogenesis on behavioral modulation, with specific emphasis on motivation and cognition.

### Monday 8<sup>th</sup> February

#### Richard Gilbertson

Talk Title: Where do brain tumors come from?

Research Interests: Research interest: The use of cross species genomics and mouse models to decipher the heterogeneous clinical and molecular subgroups that comprise some of the most common childhood brain tumors.

#### Chris Doe

Talk Title: Cell polarity and spindle orientation regulate neuroblast self-renewal

Research Interests: We are interested in Drosophila neural stem cells; how they are polarized by intrinsic or extrinsic cues, how they orient their spindle, and what are the cell fate determinants that regulate stem cell self-renewal versus daughter cell differentiation.

#### Domingos Henrique

Talk Title: Notch, neural progenitors and neurons

Research Interests: I am particularly interested in understanding the regulatory principles governing the generation of neurons in vertebrate embryos. The central role of Notch signalling in the process has been used as an entry point to dissect some of the molecular mechanisms controlling neurogenesis and I shall discuss our views on how different Notch ligands are used to control subsequent steps in neuronal production.