



5th International Stem Cell School in Regenerative Medicine 2008

Signaling Processes and Systemsbiology in Neural Stem Cells

Lecture Week: October 20th – October 22nd, 2008

Berlin, Germany



Culture and Transplantation of Neural Stem Cells

Practical Course: October 24th – October 26th, 2008

Rostock, Germany



Under the Patronage of the "German Society of Neurology"

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"RegMedTeach" MSCF-CT-2006-46102

Register online and apply for funding at: <http://regmedro.med.uni-rostock.de/>

Regenerative medicine is the new frontier in medicine, unlocking the secrets of how the body generates itself. Recently, William Haseltine, chairman and CEO of Human Genome Sciences in Rockville, Maryland, told the New York Times, "When we know, in effect, what our cells know, health care will be revolutionised, giving birth to regenerative medicine - ultimately including the prolongation of life by regenerating our aging bodies with younger cells." This is why stem cell research is so important: it is not merely a small step along a continuum of medical technology development, but a fundamental change in the paradigm of medicine. Stem cells, especially adult stem cells are tools that the body uses to enable self-assembly.

But, interest in stem cells derives also from their ability to multiply as undifferentiated cells in culture, to be stored in biobanks, and to form defined cell types. Stem cells thereby become a potential source of other, more specialised cells, which upon proper delivery might replace diseased or damaged cells, when cell loss exceeds the body's own abilities to repair. Stem cells used in **cell replacement therapy** do accordingly have the potential to cure severe and disabling diseases and conditions like Parkinson's disease, Chorea Huntington, stroke etc.

EU Spring School on regenerative medicine offers the opportunity to meet, listen, discuss and interact with the most prominent scientists in the field of stem cell biology and medicine. The topics will cover the basic cellular biology of stem cells as well as potential applications in regenerative medicine.

Welcome to Berlin and Rostock for the International Stem Cell School 2008. We hope that the meeting will fulfil its goals and your anticipation.

Marie Curie Program on Regenerative Medicine

Arndt Rolfs, Rostock (head)

Ernest Arenas, Stockholm

Stefan Krauss, Oslo

Eva Sykova, Prague

Jens Zimmer, Odense

Organization committee

Ernest Arenas (Stockholm)

Stefan Krauss (Oslo)

Josef Priller (Berlin)

Arndt Rolfs (Rostock)

Johannes Schwarz (Leipzig)

Monday, October 20th, Berlin

The Stem Cell Challenge



Introduction

- 09.30 – 10.00 **Registration**
- 10.00 – 10.10 **Opening**
Arndt Rolfs – Marie Curie program on regenerative medicine
- 10.10 – 11.10 **Welcome Addresses**
NN Representatives of the German Ministry of Sciences
NN European Commission
Dr. Ivo Vanicky – ESF EMRC Programme
Dr. Fiona Kernan – EUROCORES Programme Coordinator in Medical Sciences
- 11.10 – 11.20 **Cultural program**
- 11.20 – 12.00 **Presidential talk**
Determinants of aging and life span
Linda B. Buck (inquired), Seattle, USA
- 12.00 – 13.00 **Lunch**

Overviews

- 13.00 – 13.30 Stem cells – hope and threats
Ernest Arenas, Stockholm, Sweden
- 13.35 – 14.05 Neurorestorative treatment of neurological disease: neurogenesis, angiogenesis and MRI
Michael Chopp, Detroit, USA
- 14.10 – 14.40 In vivo magnetic resonance tracking of magnetically labelled cells after transplantation
Jeff Bulte, Baltimore, USA
- 14.40 – 15.10 **Break** Coffee and tea
- 15.10 – 15.40 Generation of dopaminergic neurons
Albert Martinez-Serrano, Madrid, Spain
- 15.45 – 16.15 Human stem cells in medical treatment of neurodegenerative diseases
Johannes Schwarz, Leipzig, Germany

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Stem cell differentiation and Wnt-signaling

- 16.20 – 16.50 Wnt/ β -catenin signaling in development and disease, as studied by LOF and GOF mutations of β -catenin
Walter Birchmeier, Berlin, Germany
- 16.55 – 17.25 Wnt signaling in neural stem cell maintenance and maturation
Stefan Krauss, Oslo, Norway
- 17.30 – 18.00 Exploring Wnt pathway interactions in stem cells
Karl Willert, San Diego, USA
- 18.05 – 18.35 Wnts in the vertebrate nervous system: from patterning to neuronal connectivity
Patricia Salinas, London, UK
- 18.35 – 18.45 Closing remarks
Stefan Krauss, Oslo, Norway

Social event

Tuesday, October 21st, Berlin

The Stem Cell Challenge



Neural stem cells and signaling

08.00 – 09.00	Poster set-up
09.00 – 09.30	Toll-like receptors and neurogenesis <i>Michal Schwartz, Rehovot, Israel</i>
09.35 – 10.05	TAG1-APP signalling in neurogenesis <i>Zhi-Cheng Xiao, Singapore</i>
10.10 – 10.40	Catecholaminergic neurotransmitters and Wnt signaling <i>Tsvee Lapidot, Rehovot, Israel</i>
10.45 – 11.15	Erythropoietin and the nervous system <i>Constance Noguchi, Bethesda, USA</i>
11.20 – 11.50	Rac GTPases during neuronal differentiation <i>Ivan de Curtis, Milan, Italy</i>
11.55 – 12.25	Intrinsic fate determinants of adult neurogenesis <i>Jovica Ninkovic, Munich, Germany</i>
12.25 – 13.30	Lunch

Systemsbiology and signaling

13.30 – 14.00	Multi-level modelling and simulation for systems biology <i>Adeline Uhrmacher, Rostock, Germany</i>
14.05 – 14.35	Systems genetics of signaling <i>Timothy Galitski, Seattle, USA</i>
14.40 – 15.10	Systemsbiology: its challenges for cellular signalling processes <i>Olaf Wolkenhauer, Rostock, Germany</i>
15.15 – 15.45	Modeling the signaling and gene regulatory interactions underlying the stem cell to t-cell developmental transition <i>Hamid Bolouri, Seattle, USA</i>
15.45 – 16.15	Break Coffee and tea

Tuesday, October 21st, Berlin

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16.20 – 16.50 Molecular regulation of stem cell self-renewal versus differentiation

William Stanford, Toronto, Canada

16.55 – 17.00 Introduction of poster session

Arndt Rolfs, Rostock, Germany

17.00 – 18.30 Poster session

All participants

Social event

Molecular imaging and stem cells

- 09.00 – 09.30 Stem cells and biomaterials for treatment of brain and spinal cord injury
Eva Sykova, Prague, Czech Republic
- 09.35 – 10.05 In vivo imaging in mouse models of neurodevelopment and degenerative disease
Daniel H. Turnbull, New York, USA
- 10.10 – 10.40 Advanced imaging in animal models of neurodegenerative diseases
NN
- 10.40 – 11.00 *Break Coffee and tea*
- 11.00 – 11.30 Multimodality imaging in experimental stroke and stem cell therapy
Raphael Guzman, Stanford, USA
- 11.35 – 12.05 Neurogenesis and migration
Erik M Shapiro, New Haven, USA
- 12.10 – 13.30 **Lunch**

Homing and migration

- 13.30 – 14.00 Magnetic resonance imaging as a tool for monitoring stem cell migration
NN
- 14.00 – 14.30 Homing of peripheral stem cells to the brain
Josef Priller, Berlin, Germany
- 14.35 – 15.05 Neuronal migration and morphogenesis of the CNS
NN
- 15.05 – 15.30 *Break Coffee and tea*

Wednesday, October 22nd, Berlin

The Stem Cell Challenge



- 15.30 – 16.00 In-vitro models for the analysis of neuronal migration
***Jens Zimmer**, Odense, Denmark*
- 16.35 – 17.05 What goes on during neural differentiation – experimental in vitro approaches
***Moritz Frech**, Rostock, Germany*
- 17.10– 17.30 Closing remarks and perspectives
***Arndt Rolfs**, Rostock, Germany*

Dinner and good bye party