



# Stem Cells in Development and Disease

Max-Delbrück-Center (MDC) Berlin-Buch, September 11 – 14, 2011

## PROGRAM

### SUNDAY, September 11th, Keynote Lectures

(Meistersaal/Potsdamer Platz, Köthener Str. 38, 10963 Berlin)

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|---------------|---|
| 15:00 - 16:00 | Registration  |
| 16:00 - 16:15 | Opening Remarks/Chair<br><i>Walter Birchmeier</i> (Berlin, Germany)   |
| 16:15 - 17:15 | Keynote Lecture (supported by Sigma Life Science)<br>Stem cells, pluripotency and nuclear reprogramming<br><i>Rudolf Jaenisch</i> (Boston, USA) |
| 17:15 - 18:15 | The EMBO Lecture<br>Lgr5 stem cells in self-renewal and cancer<br><i>Hans Clevers</i> (Utrecht, The Netherlands)                                |
| 18:15         | Reception (supported by Miltenyi/Stemgent)<br><br>Jazz: Zola Mennenöh (vocal) and band  |

## MONDAY, September 12<sup>th</sup>

(MDC, Berlin-Buch, Robert-Rössle-Str. 10, 13125 Berlin)

### Session I. "Pluripotency and Epigenetics"

Chairs: *Jürgen Knoblich* and *Ulrike Ziebold*

- 09:00 - 09:30 Intergenerational epigenetic control of mammalian early embryonic development  
*Antoine Peters* (Basel, Switzerland)
- 09:30 - 09:45 Mad2l2 is essential for epigenetic reprogramming in murine primordial germ cells  
*Mehdi Pirouz* (Goettingen, Germany)
- 09:45 - 10:15 Development of hematopoietic stem cell: an outline of final scenario  
*Shin-Ichi Nishikawa* (Kobe, Japan)
- 10:15 - 10:30 Gene expression profiling of planarian stem cells suggests deep conservation of molecular mechanisms for pluripotency  
*Nikolaus Rajewsky* (Berlin, Germany)
- 10:30 - 11:00 Coffee Break

### Session II. "Signaling in Stem Cells"

Chairs: *Ulrike Ziebold* and *Jürgen Knoblich*

- 11:00 - 11:30 The Role of TGF $\beta$  signaling in pluripotency and differentiation in human embryonic stem cells  
*Ali H. Brivanlou* (New York, USA)
- 11:30 - 12:00 FoxO transcription factors in aging and stem cells  
*Anne Brunet* (Stanford, USA)
- 12:00 - 12:20 An innovative feeder-free cell culture surface for the expansion of human ES cells  
*Tina Marwood* (Thermo Fisher Scientific, Roskilde, Denmark)
- 12:20 - 13:00 Lunch Buffet
- 13:00 - 15:00 Poster Session I

Session III. "Pluripotency and Germ Cells"

Chairs: *Rudolf Jaenisch* and *Daniel Besser*

- 15:00 - 15:30 Mechanism and reconstitution in vitro of germ cell specification in mice  
*Mitunori Saitou* (Kyoto, Japan)
- 15:30 - 16:00 Germ line, stem cells and epigenetic reprogramming  
*Azim Surani* (Cambridge, UK)
- 16:00 - 16:30 Induction of pluripotency by Oct4  
*Hans Schöler* (Muenster, Germany)
- 16:30 - 16:50 Zinc finger nuclease engineering of iPS cells  
*Markus Veit* (Sigma, Taufkirchen, Germany)
- 16:50 - 17:20 Coffee Break

Session IV. "Stem Cells in Development: Ectoderm"

Chairs: *Daniel Besser* and *Rudolf Jaenisch*

- 17:20 - 17:50 Skin stem cells in silence and in action  
*Elaine Fuchs* (New York, USA)
- 17:50 - 18:05 The opposing transcriptional functions of Sin3A and c-Myc are required to maintain skin homeostasis  
*Michaela Frye* (Cambridge, UK)
- 18:05 - 18:35 Asymmetric cell division and tumorigenesis in *Drosophila* and mouse neural stem cell lineages  
*Jürgen Knoblich* (Vienna, Austria)
- 18:35 - 19:05 Neural stem and progenitor cells in developing neocortex – molecular, cellular and evolutionary aspects  
*Wieland Huttner* (Dresden, Germany)
- 19:20 Get together, bus transfer & conference dinner and party downtown at Spindler & Klatt, Köpenicker Straße 16-17, 10997 Berlin (supported by Thermo Scientific)

## TUESDAY, September 13<sup>th</sup>

### Session V. "Stem Cells in Development: Endoderm"

Chairs: *Elaine Fuchs* and *Francesca Spagnoli*

13:00 - 13:30 Stem cell derivation and differentiation - learning from developmental biology  
*Janet Rossant* (Toronto, Canada)

13:30 - 13:45 Production of multipotent anterior definitive endoderm from human pluripotent stem cells  
*Nicholas Hannan* (Cambridge, UK)

13:45 - 14:15 Establishing developmental competence in endoderm for liver and pancreas  
*Ken Zaret* (Philadelphia, USA)

14:15 - 14:45 Coffee Break

Chairs: *Francesca Spagnoli* and *Elaine Fuchs*

14:45 - 15:15 Neurogenin 3 progenitor cells endogenous to the pancreas contribute to increased beta cell mass  
*Harry Heimberg* (Brussels, Belgium)

15:15 - 15:30 miRNA335 controls mesendoderm separation in the mouse  
*Heiko Lickert* (Munich, Germany)

15:30 - 16:00 Reconstructing the developmental path of pancreatic insulin-producing beta-cells  
*Maike Sander* (San Diego, USA)

16:00 - 16:30 Coffee Break

### Session VI. "Pluripotency and Reprogramming"

Chairs: *Margaret Buckingham* and *Shin-Ichi Nishikawa*

16:30 - 17:00 Dissecting the mechanisms of cellular reprogramming  
*Konrad Hochedlinger* (Boston, USA)

17:00 - 17:15 Oct3/4 activates Cdx1 to terminate pluripotency at the onset of gastrulation  
*Abraham Fainsod* (Jerusalem, Israel)

17:15 - 17:45 Role of polycomb repressors in stem cells, cancer & DNA repair  
*Maarten Van Lohuizen* (Amsterdam, The Netherlands)

17:45 - 18:00 miRNA screening reveals a new miRNA family strongly enhancing the generation of murine induced pluripotent stem cells  
*Nils Pfaff* (Hannover, Germany)

18:00 - 18:20 A validated mRNA reprogramming protocol for the reproducible generation of integration-free human iPS cells  
*Brad Hamilton* (Stemgent, Cambridge, USA)

18:20 - 20:00 Dinner Buffet

Session VII. "Stem Cells in Regeneration"

Chairs: *Shin-Ichi Nishikawa* and *Margaret Buckingham*

20:00 - 20:15 Permanent silencing of germ line genes upon the differentiation of mouse embryonic stem cells requires the transcriptional repressor E2F6 and CpG methylation  
*Christian Hagemeier* (Berlin, Germany)

20:15 - 20:45 Cardiovascular derivatives of embryonic stem cells in cardiac repair and drug discovery  
*Christine Mummery* (Leiden, The Netherlands)  
(supported by CellGenix)

20:45 - 21:15 Mechanisms of pancreatic beta cell regeneration  
*Yuval Dor* (Jerusalem, Israel)

21:15 - 21:30 miR-125b is an essential regulator of spinal cord injury repair  
*Karen Echeverri* (Dresden, Germany)

## WEDNESDAY, September 14th

### Session VIII. "Stem Cells in Development: Mesoderm"

Chairs: *Christine Mummery* and *Mathias Treier*

- 09:00 - 09:30 Molecular control of cardiovascular regeneration and remodeling  
*Thomas Braun* (Bad Nauheim, Germany)
- 09:30 - 09:45 Wnt/ $\beta$ -catenin and Bmp act downstream of Notch signaling in the differentiation of mouse mesodermal cardiac progenitor cells  
*Alexandra Klaus* (Berlin, Germany)
- 09:45 - 10:15 Regulation of entry into the myogenic programme in stem cells in the embryo and in quiescent and activated satellite cells in the adult  
*Margaret Buckingham* (Paris, France)
- 10:15 - 10:30 The T-box transcription factor Eomesodermin acts upstream of Mesp1 to specify cardiac mesoderm during mouse gastrulation  
*Sebastian Arnold* (Freiburg, Germany)

10:30 - 11:00 Coffee Break

Chairs: *Mathias Treier* and *Christine Mummery*

- 11:00 - 11:30 Pathways regulating self-renewal of hematopoietic stem cells  
*Leonard Zon* (Boston, USA)
- 11:30 - 11:45 Role of  $\alpha$ IIb/ $\beta$ 3 integrin in the maintenance of hematopoietic stem cells in the mouse embryo aorta  
*Jean-Charles Boisset* (Rotterdam, The Netherlands)
- 11:45 - 12:15 Dormant blood stem cells and circulating cancer stem cells  
*Andreas Trumpp* (Heidelberg, Germany)
- 12:15 - 12:30 Stem cell-related features in therapy-induced senescence  
*Clemens Schmitt* (Berlin, Germany)

12:30 - 13:00 Lunch Buffet

13:00 - 15:00 Poster Session II

Chair: *Achim Leutz*

- 15:00 - 15:30 Molecular regulation of muscle stem cell quiescence  
*Tom Rando* (Stanford, USA)
- 15:30 - 16:00 Molecular regulation of muscle stem cell function  
*Michael Rudnicki* (Ottawa, Canada)
- 16:00 - 16:20 High content analysis with Cytiva™ cardiomyocytes for investigative toxicology  
*Elizabeth Roquemore* (GE Healthcare Life Sciences, Cardiff, UK)

16:20 - 16:50 Coffee Break

Session IX. "Stem Cells in Development: Ectoderm"

Chairs: *Thomas Braun* and *Carmen Birchmeier*

16:50 - 17:05 Spatiotemporal regulation of epidermal stem cell behavior by the molecular clock machinery  
*Salvador Aznar Benitah* (Barcelona, Spain)

17:05 - 17:35 Glial cells generating neurons: molecular and cellular mechanisms  
*Magdalena Götz* (Munich, Germany)

17:35 - 17:50 The cellular response to CNS injury – identification of injury responsive cells that mediate scarring and repair  
*Christian Göritz* (Stockholm, Sweden)

17:50 - 18:20 Coffee Break

Session X. "Stem Cells and Disease"

Chairs: *Carmen Birchmeier* and *Thomas Braun*

18:20 - 18:50 Modeling bone marrow failure syndromes with iPS cells  
*George Daley* (Boston, USA)

18:50 - 19:05 The polycomb repressive complex and histone 3 lysine 27 trimethylation is essential for cancer stem cell maintenance  
*Elaine Hurt* (Gaithersburg, USA)

19:05 - 19:35 Towards unification of the cancer stem cell and clonal evolution models of cancer  
*John E. Dick* (Toronto, Canada)

19:35 - 19:50 Award Ceremony:  
1 Nature Cell Biology/PeproTech Speaker Award  
1 EMBO Journal/PeproTech Poster Award  
3 PeproTech Poster Awards

19:50 – 20:00 Outlook  
*Mathias Treier* (Berlin, Germany)

20:00 Conference BBQ, open end

End of Conference