



# VIEWS INTO NUCLEAR FUNCTION

A SEEDRUG Workshop including practical sessions on live-cell imaging methods

*September 11-12, 2014*

Conference and Cultural Center of the University of Patras

## Programme

Thursday September 11, 2014

08:30 -09:00    **Registration**

**Session I: Transcriptional Regulation and Cell Fate Choices    Chair: Carol Murphy, Yoshihiro Takihara**

09:00 – 09:30    *New players in stem cell fate commitment decisions*

**Stavros Taraviras**

Stem Cell Laboratory, Department of Physiology, Medical School, University of Patras, Greece

09:30 - 10:00    *Molecular role for Geminin in governing Hematopoietic Stem Cell activity*

**Yoshihiro Takihara**

Department of Stem Cell Biology, Research Institute for Radiation Biology and Medicine, Hiroshima University, Japan

10:00 - 10:30    *Growth factor receptor signalling and intracellular membrane trafficking*

**Carol Murphy**

FORTH, Biomedical Research Institute, Ioannina, Greece

10:30 - 10:45    *Regulation of nuclear complex formation and transport of HIF-1 $\alpha$  and its role in metabolic adaptation of cancer cells to hypoxia*

**George Simos**

Department of Biochemistry, Medical School, University of Thessaly, Greece

10:45 - 11:00    *Human nuclear RNase P is part of initiation complexes of RNA polymerase III: Coordination of transcription and processing of tRNA.*

**Nayef Jarrous**

Department of Microbiology and Molecular Genetics, IMRIC, School of Medicine, The Hebrew University-Hadassah, Jerusalem, Israel

11:00 - 11:30    **Coffee Break**

**Session II: Chromatin and Nuclear Organization**

**Chair: Dave M. Gilbert, J. Julian Blow**

11:30 -12:00    *Hierarchical re-organization of chromatin during early G1 reflects temporal and developmental control of DNA replication*

**Dave M. Gilbert**

Department of Biological Science, The Florida State University, Florida, USA

12:00 - 12:30    *Interdependence of the chromosome condensation-decondensation cycle with DNA replication in *C. elegans* embryos*

**Julian Blow**

Centre for Gene Regulation and Expression, College of Life Science, University of Dundee, UK

12:30 - 13:00    *Quantitative imaging of chromosome segregation dynamics in yeast model systems*

**Christian H. Haering**

Cell Biology and Biophysics Unit, Structural and Computational Biology Unit, EMBL, Heidelberg, Germany

13:00 - 13:15    *Nuclear dynamics in laminopathy cells*

**Winnok DeVos**

Department of Molecular Biotechnology, Ghent University, Ghent, Belgium

13:15 - 13:30    *Reb1 protein, from replication blockage to transcription regulation*

**María Rodríguez-López**

Research Department of Genetics, Evolution and Environment, University College London, UK

13:30 - 15:00    **Lunch Break and Poster Viewing**

15:00 - 15:30    *Super-Resolution Microscopy: New Dimensions in STED Imaging*

**Gabriele Burger**

Leica Microsystems, Mannheim, Germany

**Session III: Stem Cells, Development and Regeneration****Chair: Colette Dehay, Takashi Hiiragi****15:30 - 16:00** *Symmetry breaking in mouse development***Takashi Hiiragi**

Developmental Biology Unit, EMBL, Heidelberg, Germany

**16:00 - 16:30** *Importance of cell-cycle regulation for evo/devo of the cerebral cortex***Colette Dehay**

Stem-cell and Brain Research Institute, Lyon, France

**16:30 - 17:00** *Chromatin in neuronal programming and reprogramming***Jovica Ninkovic**

Institute of Stem Cell Research, Helmholtz Center Munich, Munich, Germany

**17:00 - 17:15** *Co-ordinated regulation of cell cycle, neurogenesis and astrogliogenesis by nuclear receptor NR5A2 during neural development***Panagiotis Politis**

Center for Basic Research, Biomedical Research Foundation of the Academy of Athens, Greece

**17:15 - 17:30** *Gypsy insulator containing transgenes display transvection***Pawel Piwko**

Institute of Molecular Biology &amp; Biotechnology FORTH and Dept of Biology, University of Crete, Heraklion, Greece

**17:30 - 18:00** **Coffee Break****Session IV: Origins and Genome Stability****Chair: Jenny Wu, John Diffley****18:00 - 18:30** *Mechanism, Regulation and Misregulation of DNA Replication Origin Firing***John Diffley**

Clare Hall Laboratories, London Research Institute, London, UK

**18:30 - 19:00** *Impact of replication origin selection on cellular physiology***Jenny Wu**

Institute of Genetics and Development, Faculty of Medicine, Rennes, France

**19:00 - 19:30** *From genome integrity to genome plasticity: DNA replication licensing aberrations***Zoi Lygerou**

Cell Cycle Laboratory, Department of General Biology, Medical School, University of Patras, Greece

**19:30 - 19:45** *Molecular mechanisms underlying oncogene-dependent replication stress***Gaetano Ivan Dellino**

Department of Experimental Oncology, European Institute of Oncology, Milan, Italy

**End of day one****Dinner**

Friday September 12, 2014

**SESSION V: Replication and DNA Damage** **Chair: Maria Fousteri, Wojciech Niedzwiedz**

- 9:00 – 9:30** *TOPBP1 recruits TOP2A to ultra-fine anaphase bridges to aid in their resolution*  
**Wojciech Niedzwiedz**  
The Weatherall Institute of Molecular Medicine, University of Oxford, John Radcliffe Hospital, Headington, Oxford
- 9:30 - 10:00** *Chromosome Kissing and Replicative Life Span*  
**Deepak Bastia**  
Department of Biochemistry and Molecular Biology, Medical University of South Carolina, Charleston, USA
- 10:00 - 10:15** *Polyubiquitylation drives replicative helicase disassembly at the termination of eukaryotic replication forks*  
**Aga Gambus**  
Chromosomal Replication Laboratory, School of Cancer Sciences, University of Birmingham, Edgbaston, Birmingham, UK
- 10:15 - 10:30** *RASSF1A-LATS1 signalling stabilizes replication forks by restricting CDK2-mediated phosphorylation of BRCA2*  
**Dafni E. Pefani**  
Department of Oncology, Cancer Research UK/MRC Oxford Institute, University of Oxford, UK
- 10:30 - 10:45** *Regulating DNA replication: H4K20me1 is part of it!*  
**Nina Kirstein**  
Department of Gene Vectors, Research Group DNA Replication, Institute of Stem Cell Research, Helmholtz Center Munich, Munich, Germany

**10:45 - 11:15** **Coffee Break**

**SESSION VI : Gene Expression and Epigenetic Regulation** **Chair: Peter Fraser, Spiros Georgatos**

- 11:15 - 11:45** *From cell populations to single molecule analysis of chromosome folding*  
**Peter Fraser**  
Nuclear Dynamics Programme, The Babraham Institute, Cambridge, UK
- 11:45- 12:15** *HP1 dynamics reports a shifting continuum of chromatin states in pluripotent and terminally differentiated cells*  
**Spyros Georgatos**  
Department of Biochemistry, Medical School, University of Ioannina, Greece
- 12:15 - 12:45** *Estimation and control of cell populations*  
**John Lygeros**  
Automatic Control Laboratory, ETH Zurich, Switzerland
- 12:45 - 13:00** *Cdc23/Mcm10 Cooperates with Pol $\alpha$  to Generate the Lagging Strand Imprint to Facilitate Cell Fate Determination in Fission Yeast*  
**Jagmohan Singh**  
Institute of Microbial Technology, Chandigarh, India
- 13:00 – 14:30** **Lunch Break and Poster Viewing**
- 14:30 - 15:00** *Scientific publishing- towards a useful, reliable literature*  
**Esther Schnapp**  
Editor EMBO Report, EMBO, Heidelberg, Germany

**SESSION VII: Cell Reprogramming** **Chair: Maria Pia Cosma, Eirini Papapetrou**

- 15:00 - 15:30** *Visualizing nucleosome organization in pluripotent stem cells*  
**Maria Pia Cosma**

- 15:30 - 16:00 Reprogramming and Regeneration Group, Center for Genomic Regulation, Barcelona, Spain  
*Functional dissection of chromosome 7q loss associated with myeloid malignancies using isogenic human pluripotent stem cell models*  
**Eirini Papapetrou**  
 Department of Oncological Sciences, Icahn School of Medicine at Mount Sinai Hospital, New York, USA
- 16:00 - 16:15 *iSox2 accelerates lineage reprogramming*  
**Morfoula Remboutsika**  
 Stem Cell Biology Laboratory, Biomedical Sciences Research Centre "Alexander Fleming", Athens, Greece
- 16:15 - 16:30 *Hypomethylating agents induce immunoregulatory T cells*  
**Panagiota Stamou**  
 Bone Marrow Transplantation Unit, University Hospital of Patras, Patras, Greece
- 16:30 - 16:45 *Epigenetic regulation of "Aged" genome*  
**Teimuraz Lezhava**  
 Department of Genetics, Tbilisi State University, Tbilisi, Georgia
- 16:45 –17:15 **Coffee Break**

**SESSION VIII: Cell Cycle Control**

**Chair: Nicoletta Sacchi, Erich Nigg**

- 17:15 - 17:45 *Cell Cycle Control of Chromosome Segregation*  
**Erich Nigg**  
 The Center of Molecular Life Sciences, University of Basel, Biozentrum, Basel, Switzerland
- 17:45 - 18:15 *Operation and regulation of synthetic cell cycles*  
**Damien Coudreuse**  
 Institute of Genetics and Development, Faculty of Medicine, Rennes, France
- 18:15 - 18:45 *Nuclear organization of centromeres*  
**Patrick Heun**  
 Centre for Biological Signalling Studies, Albert-Ludwigs-University of Freiburg, Freiburg, Germany
- 18:45 - 19:15 *Imaging a cell autonomous RARA mechanism that determines disparate retinoic acid actions in development and cancer*  
**Nicoletta Sacchi**  
 Department of Cancer Genetics, Roswell Park Cancer Institute, Buffalo, New York, USA
- 19:15-19:30 **Concluding remarks**  
**End of Meeting**  
**Conference Dinner**