



Press release

## The 8<sup>th</sup> Cell Press / Days of Molecular Medicine Global Foundation / Fondation Ipsen meeting in the Exciting Biologies series:

### “Biology of boundaries”

**Paris (France), October 17, 2013** – The concept of boundaries pervades all of biology. Within genomes, inside cells, across tissues, and as a barrier to the outside world, biological boundaries are everywhere. This meeting will bring together researchers from very different fields, all of whom think about boundaries in one way or another – from cancer metastasis to plasmodesmata, from organelle membranes to biofilms. This meeting is the eighth in the ongoing Cell Press–Fondation IPSEN–DMMGF Exciting Biologies series, which focuses on topics that form a point of intersection between disciplines. These meetings serve a unique and important role in bringing together scientists\* from a variety of backgrounds and in promoting the communication and exchange of ideas across wide-ranging areas of biology. The meeting will be held in Savudrija, Croatia from 17<sup>th</sup>–19<sup>th</sup> October 2013.

First, why do cells need boundaries? During embryonic development, precise timing of gene expression is essential to ensure normal size, shape, and function of the animal. **Michael Levine** (UC, Berkeley, USA) will start the meeting with a keynote lecture on his seminal work on regulatory boundaries in embryonic gene expression. Cells also contain different compartments, or organelles, to provide specific environments in which important processes and chemical reactions take place: **Joanne Chory** (Salk Institute and HHMI, La Jolla, USA) and **Maya Schuldiner** (Weizmann Institute, Rehovot, Israël) will discuss the functions of different plant and animal organelle boundaries. To create a larger boundary, many cells can stick together to form a water-tight sheet — **Ben Margolis** (University of Michigan, USA) will discuss how the cells strongly adhere to one another.

Taking a step back, why do organisms need boundaries? The immune system is a beautiful example of the boundary between self and non-self. **David Artis** (University of Pennsylvania, USA) and **Alex Betz** (MRC, Cambridge, UK) will discuss different aspects of regulating immune barriers at mucosal surfaces and in the placenta. **Alistair Hetherington** (University of Bristol, UK) will then talk about recent work on stomata — unique plant structures that act as ‘gatekeepers’ between leaves and the outside environment. **Olivier Pourquié** (Université de Strasbourg, France) will move on to boundaries that are required for a critical aspect of the vertebrate body plan, segmentation.

So then, how are all of these boundaries built? **Karen Oegema** (UC, San Diego, USA) will explain how the boundary between dividing cells is assembled. **Vivian Budnik** (University of Massachusetts, USA) will go on to discuss how neuronal synapses are assembled during nervous system development. **Maxence Nachury** (Stanford, USA) and **Anne Simonsen** (University of Oslo, Norway) will then discuss the specialized assembly of two important boundaries — the cilium, which serves as the cell’s antenna, and the autophagosome, which engulfs cellular components and targets them for degradation and recycling.

Once boundaries are built, how can communication take place across them? **Dan Tracey** (Duke University, USA) will tell us how touch and pain can be sensed through the thick barrier of the skin. **Patricia Zambryski** (UC Berkeley, USA) will go on to discuss plasmodesmata — holes in the walls of plant cells that allow flow of information and nutrients between cells in the same tissue. **Aaron Mitchell** (Carnegie Mellon University, USA) will change gears a bit, and describe how pathogens can receive cues from the hosts they are infecting, and how this communication across the host–pathogen interface can alter pathogen behavior.

Perhaps most importantly, what happens when these biological barriers are broken? **Paul Martin** (University of Bristol, UK) will talk about the mechanisms of wound repair after a boundary has been



disrupted. **Anne Ridley** (King's College London, UK) will discuss how cancer cells cross entire tissue type boundaries as they spread and metastasize. Finally, **Micha Spira** (Hebrew University of Jerusalem, Israël) will talk about overcoming incompatible barriers when creating man-machine hybrids.

The breadth of these topics, along with the great diversity of techniques and model systems used to study boundaries, will stimulate exciting discussions and creative ideas for new directions to take in the fascinating fields of biological boundaries.

\* The speakers will be: **David ARTIS** (Perelman School of Medicine, Philadelphia, USA), **Alexander BETZ** (University of Cambridge, Cambridge, UK), **Vivian BUDNIK** (University of Massachusetts Medical School, Worcester, USA), **Joanne CHORY** (HHMI, Salk Institute for Biological Studies, La Jolla, USA), **Maïke DE LA ROCHE** (University of Cambridge, Cambridge, UK), **Hanna ENGELBERG-KULTA** (The Hebrew University - Hadassah Medical School, Jerusalem, Israel), **Alistair M. HETHERINGTON** (University of Bristol, Bristol, UK), **Lauren LEBON** (California Institute of Technology, Pasadena, USA), **Michael S. LEVINE** (University of California Berkeley, Berkeley, USA), **Benjamin MARGOLIS** (University of Michigan Medical School, Ann Arbor, USA), **Paul MARTIN** (Bristol University School of Medicine, Bristol, UK), **Aaron P. MITCHELL** (Carnegie Mellon University, Pittsburgh, USA), **Maxence V. NACHURY** (Stanford University School of Medicine, Stanford, USA), **Karen OEGEMA** (University of California San Diego, La Jolla, USA), **Olivier POURQUIE** (Institut de Génétique et de Biologie Moléculaire et Cellulaire, Illkirch, France), **Andrea PUHAR** (Institut Pasteur, Paris, France), **Katharina RIBBECK** (Massachusetts Institute of Technology, Cambridge, USA), **Anne RIDLEY** (King's College London, London, UK), **Maya SCHULDINER** (Weizmann Institute of Science, Rehovot, ISRAEL), **Daria E. SIEKHAUS** (Institute of Science and Technology Austria, Lower, AUSTRIA), **Anne SIMONSEN** (University of Oslo, Oslo, NORWAY), **Micha E. Spira** (The Hebrew University of Jerusalem, Jerusalem, ISRAEL), **Alan TARTAKOFF** (Case Western Reserve University, Cleveland, USA), **W. Daniel TRACEY** (Duke University, Durham, USA) and **Patricia C. ZAMBRYSKI** (University California Berkeley, Berkeley, USA).

#### **About Cell Press**

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#### **About Days of Molecular Medicine Global Foundation**

The DMM Global Foundation is a non-profit organization dedicated to forming a bridge between advances in molecular medicine and global cardiovascular health, through educational programs and research collaborations. Our primary focus is to promote global collaboration in the field of molecular medicine through the organization of conferences with other leading international institutions. A key to the success of these conferences is our dedication to support young physician-scientists, from all parts of the world, to participate in these conferences and to expand the international biomedical network to further advance global health issues. In addition we are developing a Global Health initiative designed to identify, design, and catalyze promising research collaborations that may uncover new scientific approaches to global cardiovascular health, particularly but not limited to the regions of Africa and Asia.

#### **About the Fondation Ipsen**



Established in 1983 under the aegis of the Fondation de France, the mission of the Fondation Ipsen is to contribute to the development and dissemination of scientific knowledge. The long-standing action of the Fondation Ipsen aims at fostering the interaction between researchers and clinical practitioners, which is indispensable due to the extreme specialisation of these professions. The ambition of the Fondation Ipsen is to initiate a reflection about the major scientific issues of the forthcoming years. It has developed an important international network of scientific experts who meet regularly at meetings known as Colloques Médecine et Recherche, dedicated to six main themes: Alzheimer's disease, neurosciences, longevity, endocrinology, the vascular system and cancer science. Moreover the Fondation Ipsen has started since 2007 several meetings in partnership with the Salk Institute, the Karolinska Institutet, the Massachusetts General Hospital, the Days of Molecular Medicine Global Foundation as well as with the science journals Nature, Cell and Science. The Fondation Ipsen produced several hundreds publications; more than 250 scientists and biomedical researchers have been awarded prizes and research grants.

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