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**CONFÉRENCES  
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# **Le cycle cellulaire dans tous ses états**

## **Cell cycle inside out**

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## **Rapport sur la Conférence**

*Conference Report*

# Rapport sur la Conférence

## *Conference Report*

In September 2017, from the 18<sup>th</sup> till the 22<sup>nd</sup>, 119 scientists got together for the 13<sup>th</sup> edition of the cell cycle meeting named-Cell cycle inside out. The aim of this meeting was to bring scientists, working in different aspects of cell division, and using a large variety of model systems, together. We think we achieved this aim, in quite a significant manner and we felt that the net scientific satisfaction at the end of the meeting was far more significant than we had initially expected.

This meeting was, of course only possible with the generous contribution of the CNRS and the organization capacities of Mme Babic, which dealt with a large number of application in an excellent manner.

Before we will give details about the meeting proceedings, it is important to mention that this year we had far more applicants than the number of people the Roscoff conference infrastructures can accommodate. Although we had to undergo through a painful process of applicant selection- mainly based on abstract relevance to the meeting and number of participants per lab, we were happy to see that the announced proposed programme was of interest to many scientists.

The meeting started on Monday, the 18<sup>th</sup> of September evening with the keynote lecture provided by **Angelika Amon** (MIT, USA) and sponsored by EMBO keynote lecture program. A. Amon discussed the causes and consequences of aneuploidy and how this condition can lead to pathological conditions. In the following day, the first session was dedicated to cell cycle control and genetic instability with talks from **Terry Orr-Weaver** (WHI, USA), **Allison Bardin** (Institut Curie, France) **Fanni Gergely** (CRI, UK) and one selected talk from **Silvia Santos** (Crick Institut, UK). They presented exciting results related with the generation of genetic instability and mitotic errors in stem cells and proliferative cells and how oscillations contribute to cell cycle progression. This session was followed by the Kinetochore and spindle assembly checkpoint session with seminars from **Jon Pines** (ICR, London, UK), presenting checkpoint control during mitosis, **Katja Wassmann** (IBPS, Paris, FR) on the role of AuroraB/C kinases in oocytes, **Stefania Castagnetti** (LBD, Villefranche-sur-Mer, Fr) which showed the comparison of mitotic control in embryonic divisions across a variety of organisms, **Jonathan B.A. Millar** (Warwick University, Coventry, UK) on the role of kinetochores and checkpoint signalling and **Andrea Musacchio** (Max Planck Institute, Dortmund, Germany) who presented work

concerning the biochemical and structural reconstitution of the kinetochore and associated checkpoint complexes.

A very dynamic poster session followed lunch, where participants were able to interact to discuss findings presented in their posters. The 3rd session, on nuclear envelope and nucleus position, included the invited speakers **Marie-Helene Verlhac** (CRB, Paris Fr), who presented the active fluctuations associated with gene expression in mouse oocytes, **Manuel Mendoza** (CRB, Barcelona SP) showed the unexpected role of a lysine deacytelase on cell cycle control and **Valerie Doye** (IJM, Paris, FR) on the structure of nucleoporins and its role in cell differentiation. This session was then followed by the 4<sup>th</sup> session on APC/C with remarkable talks by **David Barford** (LMB, Cambridge, UK) presenting the molecular basis for APC/C recognition by the spindle checkpoint, **Mark C. Hall** (Purdue University, West Laffayette, USA) on a catalytic function of D-boxes, **Jacob Nilsson** (U. of Copenhagen, Copenhagen, DK), presenting the role of phosphatases in mitotic control and **Florent Weissmann** (IMBA, Vienna, AU) on the *in vitro* reconstitution of different APC/C populations with different mitotic roles.

Session V was initiated with a landmark talk by **Rebecca Heald** (U. of Berkeley, California, USA) describing the mechanisms of mitotic spindle size control during development. **Alexander Bird** (Max Planck Institute, Dortmund, Germany). Presented the role of GTSE1 on mitotic spindle dynamics while **Marie Delattre** (ENS, Lyon, FR) showed a comparative analysis of mitotic spindle behaviour across 40 nematode species. **Renata Basto** (Institut Curie, Paris, FR) showed the interplay between spindle architecture and morphogenesis of the mammalian brain, while **Ruth Kroschewski** (ETH, Zurich, CH) described the correlation between asymmetric events and cell cycle duration in animal cells. A first session on centrosomes (session VI) followed coffee break with **Iain Hagan** (CRUK, Manchester UK) presenting the role of the spindle pole body as a platform for regulators of mitotic commitment. **Xavier Morin** (ENS, Paris, France) showed a role for Mindbomb1, which is associated with centrosomal satellites in regulating asymmetric cell division in neural progenitors. **Monica Bettencourt-Dias** (IGC, Oeiras, PT) showed the assembly of Plk4 aggregates that might function as the first pro-centriole structures. During the afternoon, a lot of the participants took the ferry to go to the beautiful Batz Island, where we enjoyed the nice weather either to cycle or just to walk around.

A dynamic session on cell cycle control and genetic instability II included talks by **Caetano Gonzalez** (IRB, Barcelona, SP), who presented work related with tissue specific responses to chromosome instability. **Marck Kschonsak** (EMBL, Heidelberg, DE) showed a surprisingly novel model that ensures the anchoring of condensing to chromosomes. **Snezhana Oliferenko** (CRICK, London, UK) discussed recent findings related with polarization events influenced by cell size, while **Anne Royou** (University of Bordeaux, Bordeaux, FR) presented mechanisms involved in maintaining acentric chromosomes

linked to the main chromosome arms. This session ended with the vibrant talk by **Wallace Marshall** on the mechanisms of regeneration of Stentor, a unicellular organism that is currently being characterised as a novel model organism.

On Thursday, the 21st of September, the program was dedicated to Cytokinesis. **Claude Prigent** (IGDR, Rennes, FR) discussed recent findings on the mechanisms of central spindle assembly and the role of Aurora A in this process. **Benedicte Laval** (CRBM, Montpellier, Fr) showed how IFT proteins regulate cleavage furrow ingression and lumen position, while **Roland Le Borgne** (IGDR, Rennes, FR) discussed the coordination between septate junctions remodelling in the *Drosophila* wing disc during cell division. **Stephane Fremont**, Institut Pasteur, Paris, FR) showed surprising results on the role of oxidation of F-actin at the abscission bridge, followed by **Simonetta Piatti** (CRBM, Montpellier, FR), showing a link between septin ring dynamics and efficiency of cytokinesis. A third session on cell cycle control and genetic instability was initiated by **Thierry Lorca** (CRBM, Montpellier, FR), showing the mechanisms controlling mitotic entry. **Lionel Pintard** (IJM, Paris, FR) showed that Plk1 is recruited to the nuclear pore complexes influencing directly nuclear envelope breakdown. **Sarah E. McClelland** (Barts Institute, London, UK) presented unexpected findings establishing a link between the identity of certain chromosomes and their probability of being mis-segregated upon mitotic challenge. A small session on centrosomes finalized the morning session with talks from **Jordan Raff** (Oxford University, Oxford, UK) on mechanisms influencing centriole length and **Laurence Pelletier** (Lunenfeld-Tanenbaum Research Institute, Toronto, Canada) on mechanisms of centriole duplication in breast cancer.

The 2nd poster session took place just after lunch in the afternoon. The Centromeres, Kinetochores and the SAC II session was initiated by **Lars Jansen** (IGC, Oeiras, PT) who presented how centromeric chromatin is maintained along the cell cycle. **Helder Maiato** (i3S, Porto, Portugal) and **Geert Koops** (Hubrecht Institute, Utrecht, Netherlands) presented work related with kinetochore size and structure respectively, and how these aspects influence chromosome segregation. Pablo Lara-Gonzalez showed a novel role for the Mad1/Mad2 complex during *C. elegans* development.

The banquet that followed, was just outstanding and even more impressive than in previous meetings. This was also the case for the final keynote talk, presented by David Pellman (Dana-Farber, Boston, USA) on how defects in DNA replication are propagated along the cell cycle, and in particular during mitosis.

Although inevitable, the departure was difficult. We truly had an outstanding meeting with intense and fruitful discussions generated during this week. We received several compliments both from scientific participants as well from journal editors. Indeed, the presence of Nat Cell Bio, Nat Comm, Journal of

Cell Science, EMBO journal and PLOS Biology editors testified of the importance and relevance of the cell cycle Roscoff meeting series in current cell cycle research.

### **Resume en Francais**

Grâce à la générosité des fonds accordés par le CNRS et au support administratif de Mme Nathalie Babic, la conférence Jacques Monod, qui a eu lieu du 18 au 22 Septembre 2014, a été un vrai succès. La conférence “Le cycle cellulaire dans tous ses états”, avait pour objectif de réunir des experts qui travaillent dans plusieurs domaines de l'échelle biologique. La présidente scientifique (Renata Basto, CNRS-Institut Curie, Paris, France) et le vice-présidente (Iain Hagan, CRUK, Manchester, UK) ont maintenu le format traditionnel de cette conférence et inclus deux sessions keynote et une “landmark lecture”. Les présentations orales assurées par les conférenciers invités et par les personnes invitées après sélection de leur résumé ont été d'une qualité scientifique remarquable. Deux sessions “poster” ont eu lieu et elles ont fait l'objet de discussions animées. L'intérêt du sujet, la qualité scientifique et l'atmosphère conviviale et attractive de Roscoff ont contribué au succès de cette conférence.