

Post-doc position (26 months)
How do the forces in the mitotic spindle contribute
to correct aneuploidy

A post-doc position is available immediately in the research group “A reverse engineering of cell division” (pecreaux.openwetware.org), supervised by Jacques Pécrcéaux at the Institute of Genetics and Developmental biology of Rennes (IGDR, CNRS UMR 6290 / Univ. Rennes 1, director: Claude Prigent), Brittany, France. The Pécrcéaux’s group focuses on uncovering mechanisms of cell division through a multidisciplinary approach featuring molecular biology, biophysics modeling, systems biology and image processing. **The chosen candidate will contribute to understand spindle mechanics and the role of forces in correcting chromosomes mis-attachment using the nematode as a model organism.** The project is a collaboration with the team of Sylvie Tournier and Yannick Gachet (LBCMCP, Toulouse).

Scientific environment:

The IGDR is a vibrant research institute featuring established teams and dynamics new labs. Research covers genetics, regulation of expression, cell division, membrane trafficking and polarity. In the past few years, three new labs added microscopy technological development and image processing to the institute skills’ portfolio (<http://igdr.univ-rennes1.fr/english/>).

Background:

Maintenance of the correct number of chromosomes is necessary for the development and survival of all organisms. The accurate segregation of sister chromatids to daughter cells requires both the bipolar attachment of centromeres to the mitotic spindle and the correct positioning of the spindle with respect to the axis of cytokinesis. The coordination of these events is essential to prevent aneuploidy. Combining cell biology and biophysical modeling approaches, Tournier-Gachet’s lab recently described a mitotic coarse-grained model for fission yeast chromosome segregation and correction of chromosome mis-attachments. In parallel, Pecreaux's team established a model describing *C. elegans* spindle positioning through cortical forces. These different studies highlight the importance of mechanical forces in the control of spindle positioning and chromosome segregation in lower and higher eukaryotic cells.

Goals of the project:

Using molecular genetics associated with live cell video-microscopy modeling and *in silico* approaches, we aim to determine when and where forces participate in chromosome bi-orientation in *C. elegans* and fission yeast. The interplay between theory and experiments will provide a new framework to uncover key functions in chromosome attachment correction during mitosis. The goal of our project is to provide a joint, coarse-grained, model of chromosome dynamic and spindle positioning in both organisms, with respect to cell specification and entirely based on *in vivo* data acquisition.

Requirements and position details:

The recruited candidate will work in Pécrcéaux’s lab mainly on *C. elegans*, in close collaboration with B. Mercat, PhD student in biophysics modeling and scientific computing, to perform most of the biology and microscopy experiments required by the project. • The candidate has a PhD in biology, with experience in molecular cell biology, in microscopy and to a lower extend in genetics. Experience in nematode biology or laser microdissection is advantageous. • A strong interest for biophysics and image processing is mandatory although no education or experience in these fields is required. • Candidate is expected to be highly motivated, with excellent interpersonal and communication skills to collaborate in an interdisciplinary team • She/He is fluent in spoken and written English (French is not mandatory) • Gross salary will range between 27,400 and 34,400 €/year according experience and qualifications. The position gives right to social benefit and includes health insurance. CNRS is an equal opportunity employer. Position is available immediately.

To apply (or for informal enquiries), please send (preferably by email and as a pdf):

to **Dr Jacques Pécrcéaux**, jacques.pecreaux@univ-rennes1.fr, IGDR, CNRS UMR 6061 - Faculté de Médecine (Université Rennes 1), 2 avenue du Pr L. Bernard, CS 34317, 35043 Rennes cedex, France
A Curriculum Vitae (CV) detailing your **publications**, conference contributions and your **achievements**. •
A cover letter detailing your **motivation** and **skills** to take over the project. • and the names of **two referees**. *This call will remain opened until a suitable candidate is found. Applications will be assessed in the order in which they are received.*