



FIRST FACULTY OF MEDICINE  
CHARLES UNIVERSITY IN PRAGUE

## Ph.D. STUDENT AND POSTDOCTORAL POSITIONS AVAILABLE IN PRAGUE

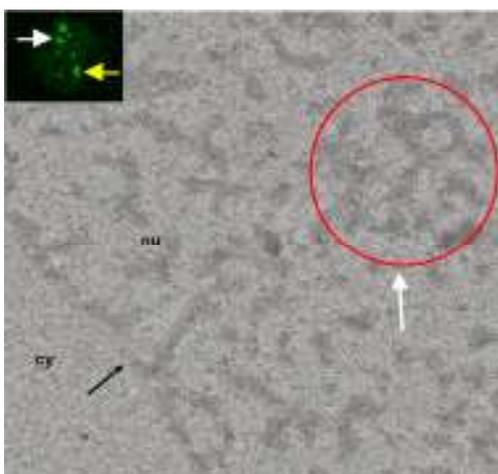
### Functional organization of the cell nucleus

Announcement date: 10 May, 2012

Several positions are available for Ph.D. students and postdoctoral fellows at the Institute of Cellular Biology and Pathology (1<sup>st</sup> Faculty of Medicine, Charles University in Prague).

Our Institute has a long standing program of research in the cell nucleus, particularly using modern techniques in microscopy. We have a complete suite of light and electron microscopes, with new acquisitions and laboratory renovations underway.

We employ mammalian cell lines, as well as model organisms such as *C. elegans* and *Drosophila*, to explore structure-function relationships in the cell nucleus. Chromatin organization, integration of the processes of DNA replication, RNA synthesis and processing including gene silencing in the context of a functional nuclear architecture and the structure of the chromatin fiber are all topics under study using the latest methods in microscopy. Correlative light-electron microscopy, cryo-electron microscopy, electron tomography, live-cell imaging, state of the art molecular biology, and super-resolution optical microscopy are used together to elucidate mechanisms of gene regulation and other important events in the nucleus. We also focus on developing the methods themselves.



**Correlative light-electron microscopy of the PcG (Polycomb group proteins) body.** In the live-cell fluorescence image, the white and yellow arrows point to a nuclear region/domain corresponding to the two GFP PcG bodies. At the electron microscopy level, the white arrow points to a nuclear domain that correlates with the PcG body fluorescence (white arrow) and corresponds to the local accumulation of heterochromatin structures (red circle). This approach allowed us to clearly identify fluorescent PcG bodies as not bearing the characteristics of a nuclear body, but as nuclear domains enriched in separate heterochromatin fascicles (from Smigova et al. 2011, *Nucleus* 2:3, 219-28).

Scientists joining our team will work with an interdisciplinary group of biophysicists, cell biologists, and mathematicians. Interested applicants must possess good communication skills and be highly motivated. To apply, please send a curriculum vitae, a letter of interest, and a summary of research experience to Professor Ivan Raška.

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