

# IRB BARCELONA 2011 ANNUAL REPORT

## Research Programmes

### CELL AND DEVELOPMENTAL BIOLOGY

#### Jens Lüders: Microtubule Organization



#### Group Members

##### Group Leader

Jens Lüders

##### Postdoctoral Fellows

Roberta Kiffin  
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##### PhD Students

Francisco Freixo  
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##### Research Assistant

Cristina Lacasa

##### Visiting Student

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#### Highlights

- While the role of the  $\gamma$ -tubulin ring complex ( $\gamma$ TuRC) as a nucleator of microtubule polymerization is well established,  $\gamma$ TuRC regulation is poorly understood. We have identified multiple novel *in vivo* phosphorylation sites in core subunits of  $\gamma$ TuRC and have started their functional characterization.
- To study microtubule organization and dynamics *in vivo* markers are needed that allow specific labelling of microtubule ends. We have developed tools and techniques that allow time-lapse imaging of  $\gamma$ TuRCs as potential minus end marker in living cells.
- The microtubule cytoskeleton is essential for morphogenesis and neuronal function. Surprisingly, very little is known about the mechanisms that assemble and organize microtubules in neurons. We have performed a genome-wide gene expression screen for candidate proteins that might be involved in microtubule organization in neurons.

#### Research projects

- Microtubule organizing centers and microtubule nucleation in mitosis (MTOC FUNCTION) 224835 FP7-People- Marie Curie Reintegration Grants European Commission (EC) 2008-2012. Principal investigator: Jens Lüders
- MICROTUBULE ORGANIZATION GROUP 2009 SGR 1536 Grup de Recerca reconegut de la Generalitat de Catalunya Agency for Administration of University and Research Grants (AGAUR) 2009-2013. Principal investigator: Jens Lüders
- Organización molecular de los sitios de nucleación de microtubulos centrosómicos y no centrosómicos BFU2009-08522 Proyectos Investigación Fundamental Spanish Ministry of Science and Innovation (MICINN) 2010-2012. Principal investigator: Jens Lüders

## Collaborations

- *Microtubule organization during neuronal differentiation.*, Eduardo Soriano, IRB Barcelona (Barcelona, Spain)
- *Regulation of microtubule nucleation through phosphorylation*, Carme Caelles, IRB Barcelona (Barcelona, Spain); Joan Roig, IRB Barcelona (Barcelona, Spain)
- *The centrosome as an integrator of DNA damage signalling: implications for mitotic spindle assembly and function.*, Travis Stracker, IRB Barcelona (Barcelona, Spain)
- *Composition and regulation of the human  $\gamma$ TuRC*, Carme Caelles, IRB Barcelona (Barcelona, Spain); Joan Roig, IRB Barcelona (Barcelona, Spain); Judit Villen, University of Washington (Seattle, United States)
- *Super resolution imaging of mitotic spindles.*, Melike Lakadamyali, ICFO (Castelldefels, Spain)



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