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“The quipucamayocs of ubiquitin: deciphering a cellular code”

Wednesday, October 19th, 2011 at 17.00

Institute for Genetics, Zülpicher Str. 47a, Lecture Hall, ground floor
The talk will be followed by “cheese and wine” and possibility for further discussion.

Ubiquitination is a key regulator of proliferation and differentiation in all eukaryotes. It is carried out by a cascade of three different classes of enzymes, E1, E2, and E3. In humans alone, there are 38 E2s and more than 600 E3s, making ubiquitination enzymes one of the most abundant and diverse family of enzymes. Loss of essential ubiquitination enzymes can lead to rapid cell cycle arrest.

Work in the Michael Rape’s lab aims at:

Discovering ubiquitination enzymes that control proliferation and differentiation

Identifying the pathways regulated by these enzymes during cell cycle control

Dissecting the biochemical mechanisms of ubiquitination

Isolating small molecule agonists and antagonists of ubiquitination

Selected Publications

Williamson A, Banerjee S, Zhu X, Philipp I, Iavarone AT, **Rape M.** (2011). Regulation of ubiquitin chain initiation to control the timing of substrate degradation. *Mol Cell*. **42**, 744-57.

Wickliffe KE, Lorenz S, Wemmer DE, Kuriyan J, **Rape M.** (2011). The mechanism of linkage-specific ubiquitin chain elongation by a single-subunit E2. *Cell*. **144**, 769-81.

Song EJ, Werner SL, Neubauer J, Stegmeier F, Aspden J, Rio D, Harper JW, Elledge SJ, Kirschner MW, and **Rape M.** (2010). The Prp19 complex and the Usp4Sart3 deubiquitinating enzyme control reversible ubiquitination at the spliceosome. *Genes Dev*. **24**, 1434-47.

Song L, and **Rape M.** (2010). Regulated degradation of spindle assembly factors by the anaphase-promoting complex. *Mol. Cell* **38**, 369-82.

Jin, L., Williamson, A., Banerjee, S., Phillip, I., and **Rape M.** (2008). Mechanism of ubiquitin chain formation by the human Anaphase-Promoting Complex. *Cell* **133**, 653-665.

Reddy, S.K.*, **Rape, M.***, and Kirschner M.W. (2007). Ubiquitination by the anaphase-promoting complex drives spindle checkpoint inactivation. *Nature* **446**, 921-925.

Stegmeier, F.*, **Rape, M.***, et al. (2007). Anaphase initiation is regulated by antagonistic ubiquitination and deubiquitination activities. *Nature* **446**, 876-881.

Rape, M., Reddy, S.K. and Kirschner, M.W. (2006). The processivity of multiubiquitination by the APC determines the order of substrate degradation. *Cell* **124**, 89-103.

Host: Thorsten Hoppe
CECAD at the Institute for Genetics