



Katedry genetiky a biochémie PriF UK
a občianske združenie *NATURA*



Vás pozývajú na 81. prednášku v rámci Kuželových seminárov:

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RNA quality control: the tales of two 3'-end tails

ktorá sa uskutoční **14. októbra 2011** (piatok) o **14:00**

v miestnosti **CH1-222** Prírodovedeckej fakulty UK

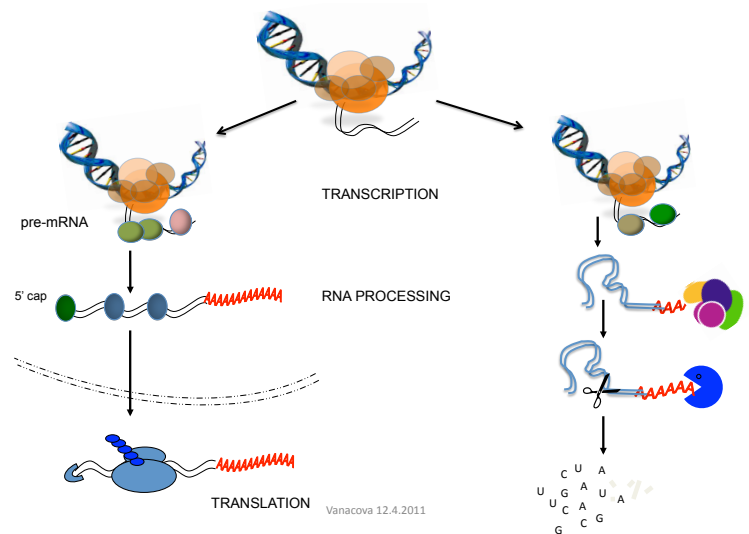
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Štěpánka Vaňáčová is the head of the Laboratory of RNA Processing and Degradation at the Central European Institute of Technology (CEITEC). Her laboratory, established in 2008, investigates the molecular mechanisms of RNA quality control and the role of noncanonical polyadenylation and uridylation in yeast and mammalian cells. Dr. Vaňáčová received her M.S. in 1995 in Biology and Ph.D. in 2001 in Parasitology at the Charles University in Prague. She spent three years as a postdoctoral fellow in the laboratory of Prof. Patricia Johnson at the UCLA, California, USA and then three years in the laboratory of Prof. Walter Keller at the Biozentrum, University of Basel. In 2007, she received the EMBO Installation Grant to set up her own group at the NCBR, Masaryk University in Brno and in 2008 she was awarded the Wellcome Trust International Senior Research Fellowship. She has published over 20 publications in peer-reviewed journals.



Synopsis of the lecture:

Cellular RNAs are extremely diverse in length and shape, and their functions range from simple messengers to regulators and enzymes involved in gene expression. RNAs are produced as precursors that are subsequently processed to their mature form and their trimmings are recycled. RNA biogenesis, is overseen by RNA quality-control mechanisms that ensure that only properly processed RNAs are maintained in the cell. In the first part of the lecture I will present the discovery of new role of 3' terminal polyadenylation in RNA degradation. It involves the so called noncanonical poly(A) polymerase complex TRAMP4 or TRAMP5, respectively. Human genome encodes for several homologs of these noncanonical poly(A) polymerases (or also TUTases) with either ATP or UTP specificity. In the second part



of the talk, I will talk about the scarce data of the different TUTases and our interests in their investigation. Some of those proteins play a crucial role during early embryogenesis some regulate the expression of miRNAs. At the moment we can only speculate about the roles and ximpact of these enzymes on different aspects of mammalian biology.

Recent publications:

- Hobor F, Pergoli R, Kubicek K, Hrossova D, Bacikova V, Zimmermann M, Pasulka J, Hofr C, Vanacova S, Stefl R. 2011 Recognition of transcription termination signal by the nuclear polyadenylated RNA-binding (NAB) 3 protein. *J Biol Chem.* 286:3645-57.
- Sanudo M., Jacko M., Rammelt C., Vanacova S., Stefl R. 2010 (1)H, (13)C, and (15)N chemical shift assignments of ZCCHC9. *Biomol NMR Assign.* 5:19-21.
- Paolo S.S., Vanacova S., Schenk L., Scherrer T., Blank D. Keller W., Gerber A.P. 2009 Distinct roles of non-canonical poly(A) polymerases in RNA metabolism. *PLoS Genet.* 5(7): e1000555.
- Vanacova S., Stefl R. 2007 The exosome and RNA quality control in the nucleus. *EMBO Rep.* 8:651-7.
- Carlton J.M., et al. 2007 Draft genome sequence of the sexually transmitted pathogen *Trichomonas vaginalis*. *Science* 315: 207-12.
- Vanacova S., Wolf J., Martin G., Blank D., Dettwiler S., Friedlein A., Langen H., Keith G., Keller W. 2005 A new yeast poly(A) polymerase complex involved in RNA quality control. *PLoS Biol.* 3:0986-97.
- Vanacova S., Weihong Y., Carlton J.M., Johnson P.J. 2005 Spliceosomal introns in a deep-branching eukaryote. *Proc Natl Acad Sci U S A.* 102:4430-5.