Katedry Genetiky a Biochémie
Prírodovedeckej fakulty Univerzity Komenského

Vás pozývajú na 45. prednášku v rámci *Kuželových seminárov*:

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Meiosis & Telomeres: Unexpected connections

ktorá sa uskutoční v piatok 12. novembra 2004 o 14:00
v miestnosti **B1-501**PriF UK

http://www.fns.uniba.sk/~kbi/kuzela

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1990-1995: M.Sc. in Molecular Biology and genetics, Masaryk University, Brno, Czech republic
1995-1998: Ph.D. in Genetics, Masaryk University, Brno, Czech republic
1995-1998: Graduate research assistant in laboratory of Dr. Boris Vyskot, Institute of Biophysics, Czech Academy of Sciences, Brno, Czech Republic.
1999-2002: Postdoctoral research associate in laboratory of Dr. Dorothy E. Shippen at Department of Biochemistry & Biophysics, Texas A&M University, College Station, USA.
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Lecture background:

Telomeres are nucleoprotein structures which protect chromosome ends from being recognized as DNA double-strand breaks (DSB) and processed by DNA repair machinery. Interestingly, several DNA repair complexes appear to be essential for telomere protection and processing. Our research is focused on investigating the function of DNA repair proteins in telomere maintenance using the genetically tractable plant model *Arabidopsis thaliana*. We are particularly interested in the Ku70/80 heterodimer, which is important for the DSB repair via the non-homologous end-joining pathway as well as for telomere protection. Another area of our interest is the role of telomeres in genome stability. Chromosomes without functional telomeres tend to fuse and set in motion further genome instabilities through a breakage-fusion-bridge cycle. We utilize *Arabidopsis* mutants null for telomerase's catalytic subunit to deprotect chromosome termini and to investigate consequences of telomere dysfunction in plants.

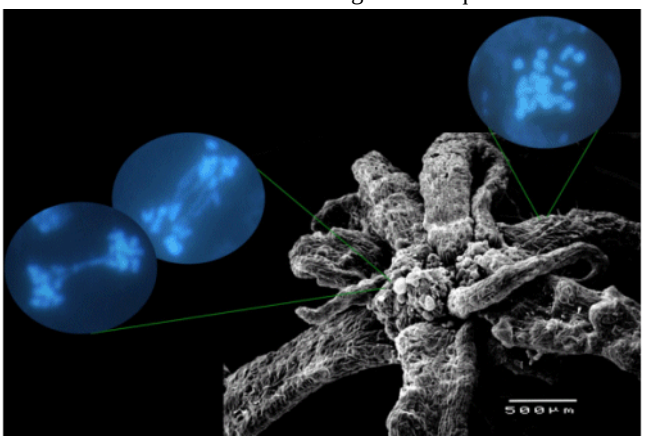

Figure: *Arabidopsis* telomerase mutant arrested very early in development (viewed by scanning electron microscopy). Anaphase bridges and unusual numbers of chromosomes are frequently observed in mitotic figures prepared from the arrested plants (http://www.gmi.oeaw.ac.at/rkriha.htm)

List of selected recent publications:

Puizina J., Siroky J., Mokros P., Schweizer D., Říha K. (2004) Mre11 deficiency in *Arabidopsis* is associated with chromosomal instability in somatic cells and Spo11-dependent genome fragmentation during meiosis. *The Plant Cell* **16**, 1968-1978.

Heacock M., Spangler E., Říha K., Puizina J., Shippen D.E. (2004) Molecular analysis of chromosome fusions in Arabidopsis reveals multiple pathways for chromosome end-joining. *The EMBO Journal* **23**, 2304-2313.

Weiss-Schneeweiss H., Říha K., Jang C.G., Puizina J., Scherthan H., Schweizer D. (2004) Chromosome termini of the monocot plant *Othocallis siberica* are maintained by telomerase which specifically synthesizes vertebrate-type telomere sequences. *The Plant Journal* **37**, 484-493.

Říha K., Shippen D.E. (2003) Ku is required for telomeric C-rich strand maintenance, but not for chromosome end-to-end fusions in *Arabidopsis. Proceedings of the National Academy of Sciences of the U.S.A.* **100**, 611-615.

Říha K., Parkey J., Watson J.M., Shippen D.E. (2002) Telomere lengthening and enhanced sensitivity to genotoxic stress in *Arabidopsis* mutants deficient in Ku70. *The EMBO Journal* **21**, 2819 – 2826.

Říha K., McKnight T.D., Griffing L.R., Shippen D.E. (2001) Living with genome instability: Plant responses to telomere dysfunction. *Science* **291**, 1797 – 1800.

Říha K., McKnight T.D, Fajkus J, Vyskot B, Shippen D.E. (2000) Analysis of the G-overhang structures on plant telomeres: evidence for two distinct telomere architectures. *The Plant Journal* **23**, 633 – 641.