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

Vás pozývajú na 84. prednášku v rámci Kuželových seminárov:

Dr. Anna Karnkowska-Ishikawa

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University of Warsaw

Molecular phylogeny and evolution of autotrophic euglenoids - one of the most ancient lines of eukaryotes

ktorá sa uskutoční **24. februára 2012** (piatok) o **14:00**

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

http://www.naturaoz.org/seminare.html
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Hostitelia: J. Krajčovič & M. Vesteg, Katedra genetiky PriF UK

Anna Karnkowska-Ishikawa, is a member of the Team working on the biology of autotrophic euglenoids at the University of Warsaw. Dr. Karnkowska-Ishikawa received at the University of Warsaw her M.Sc. in Biology in 2006 and Ph.D. in molecular evolution and taxonomy in 2011. Her work is focused on the molecular evolution of autotrophic euglenoids. She is mainly interested in molecular reconstruction of evolutionary relationships and tracing the euglenoids evolution. She is addressing questions about character evolution using molecular phylogenetic methods and studying morphological changes associated with secondary endosymbiosis. She collaborates with prof. Richard Triemer from Michigan State University on this topic.

Synopsis of the lecture: Autotrophic euglenoids are one of the most ancient, distinctive, free-living eukaryotic protists. They are critically positioned near the base of the eukaryotic evolutionary tree and are among the first eukaryotes to possess a mitochondrion. These single-celled photosynthetic eukaryotes acquired chloroplast as a consequence of a single endosymbiotic episode between a heterotrophic euglenoid and a chlorophycean alga. Once photosynthesis was established in a previously phagotrophic cell, the evolutionary pressures on the cytoskeletal systems involved in locomotion and feeding changed. This gave rise to fundamental modifications of cell structures found in the descendants of these chimeric cells. Moreover, during the evolution of green euglenoids they took possession of the freshwater environments which probably also had huge impact on their morphology. The morphological diversity present in this group provides an excellent system for demonstrating evolutionary transformations of morphological characters.

In the first part of the lecture I will present problems with estimation of phylogenetic relationships of autotrophic euglenoids. I will focus on problems with taxon sampling, selection of appropriate molecular marker and difficulties with heterogeneous rate of evolution in this group. In the second part of the talk, I will talk about the current state of knowledge regarding tree of autotrophic euglenoids and evolution of their morphological characters.

Recent publications:

- **Karnkowska-Ishikawa A**, Watza D, Bennett MS, Zakryś B & Triemer RE. Phylogenetic relationships and character evolution of photosynthetic euglenoids (Euglenea) inferred from taxon-rich analyses of five genes. *Molecular Phylogenetics and Evolution*, submitted
- **Karnkowska-Ishikawa A**, Milanowski R, Triemer RE & Zakryś B. A redescription of morphologically similar species from the genus *Euglena*: *E. laciniata*, *E. sanguinea*, *E. sociabilis* and *E. splendens*. *Journal of Phycology*, submitted
- **Karnkowska-Ishikawa A**, Milanowski R, Triemer RE & Zakryś B (2012) Taxonomic revisions of morphologically similar species from two genera: *Euglena* (*E. granulata* and *E. velata*) and *Euglenaria* (*Eu. anabaena, Eu. caudata, Eu. clavata*). *Journal of Phycology* 48. (in press)
- **Karnkowska-Ishikawa A**, Milanowski R, Zakryś B (2011) The species *Euglena deses* (Euglenaceae) revisited: new morpological and molecular data. *Journal of Phycology* 47: 653-61.
- Linton E W, **Karnkowska-Ishikawa A**, Kim J-I, Ciugulea I, Shin W, Bennett M, Kwiatowski J, Zakryś B & Triemer RE (2010) Reconstructing euglenoid evolutionary relationships using three genes: nuclear SSU and LSU, and chloroplast 16S rDNA sequences and the description of *Euglenaria* gen. nov. (Euglenophyta). *Protist* 161: 603-19.