

## Summary of Ph.D. Thesis

**Karyotypic variation between wood mouse species: banded chromosomes of *Apodemus alpicola* and *A. microps***  
The banding pattern (G-, C-, AgNOR staining) was described in karyotypes of *Apodemus alpicola* and *A. microps* collected from the Alps and central Europe. Distinct differences between the two species were revealed in the distribution of C-heterochromatic regions in autosomes and the sex chromosomes, and the distribution of nucleolar organizer regions (NORs). Extensive variation in the distribution pattern of C-heterochromatin and NORs obviously exists among the wood mice of the subgenus *Sylvaemus*, and individual species can be distinguished according to a specific variation pattern. However, it seems premature to designate individual karyotypic forms as separate species, because the extent of overall geographical interpopulation variation is still not sufficiently known.

### **Sex-chromosome heterochromatin variation in the wood mouse, *Apodemus sylvaticus***

Variation in the sex chromosome heterochromatin content, revealed by G- and C-banding, was studied in the wood mouse, *Apodemus sylvaticus*. The sex chromosome heterochromatin was also characterized by DAPI staining. The variation in sex chromatin results in extremely large (giant) sex chromosomes recorded in certain individuals and populations. In some individuals, the Y chromosome was the largest element of the complement. Different variants of both the X and Y were found within a single population. The variation is therefore a type of population polymorphism and should not be used in taxonomic discrimination.

### **Allozyme variation in *Apodemus uralensis* (Rodentia: Muridae) from Central Europe**

Allozyme variation and divergence were investigated by electrophoretic analysis of 29 gene loci in 70 specimens representing three populations of *Apodemus uralensis* from northwestern Bohemia, southern Moravia and southeastern Slovakia. The observed values of genetic variability (the mean heterozygosity  $H_o = 0.03 - 0.05$ ) in all populations studied were within the range generally reported for other *Apodemus* (*Sylvaemus*) populations. The values of genetic distances between population samples studied are very low,

ranging from 0.0021 – 0.0077. Only random variance in allele frequencies among populations and low values of fixation index ( $F_{ST} = 0,071$ ) were found. Electrophoretic analysis did not indicate significant genetic divergence between an isolated population from northwestern Bohemia, described as *A. uralensis cimrmani*, and other populations within the study area.

#### Publications

- Nová P.:** Allozyme variation in *Apodemus uralensis* (Rodentia: Muridae) from Central Europe. *Folia Zoologica*, submitted.
- Dubey S., **Nová P.**, Vogel P., Vohralík V.: Cytogenetic and molecular relationships of the Zarudny's rock shrew with Eurasian taxa. *Journal of Mammalogy*, submitted.
- Martínková N., **Nová P.**, Sablina O.V., Graphodatsky A.S., Zima J. 2004: Karyotypic relationships of the Tatra vole (*Microtus taticus*). *Folia Zoologica* 53(3): 279 – 284.
- Nová P.**, Reutter B.A., Rábová M., Zima J. 2002: Sex chromosome heterochromatin variation in the wood mouse, *Apodemus sylvaticus*. *Cytogenetic and Genome Research* 96: 186 – 190.
- Vohralík V., Frynta D., Mikulová P., Benda P., **Nová P.** 2002: Multivariate morphometrics of *Apodemus mystacinus* in the Near East and its divergence from european *A. m. epimelas* (Mammalia: Rodentia). *Israel Journal of Zoology* 48. 135 – 148.
- Reutter B.A., **Nová P.**, Vogel P., Zima J. 2001: Karyotypic variation between wood mouse species: banded chromosomes of *Apodemus alpicola* and *A. microps*. *Acta Theriologica*. 46 (4): 353 – 362.
- Nová P.**, Nový A., Křížek P. 2001: Bat hibernacula in the Benešov and Vlašim regions. *Vespertilio* 5: 191 – 198. (in Czech)
- Nová P.**, Brabec J., Horáček I., Hanák V. 2001: Bat hibernacula in the Křivoklát, Rakovník and Kralovice regions. *Vespertilio* 5: 181-186. (in Czech)
- Frynta D., Kratochvíl L., Moravec J., Benda P., Dandová R., Kaftan M., Klosová K., Mikulová P., **Nová P.**, Schwarzová L. 2000: Amphibians and reptiles recently recorded in Libya. *Acta Soc. Zool. Bohem.* 64: 17 - 26.