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Student evaluation:

Jindra Šíchová (2016)

**Contrasting patterns of karyotype and sex chromosome evolution in Lepidoptera
[Ph.D. Thesis]**

For each supervisor it must be a pleasure to evaluate the work of such students as Jindra. She has golden hands, keen mind, great enthusiasm for research and she is a goal-oriented hardworker. In the last five years Jindra has contributed significantly to the research performance of our lab as the first author or co-author of seven published papers (and two other papers currently processed in journals).

In her PhD project, Jindra focused on the role of sex-chromosome and karyotype change in the evolution of moths and butterflies, the largest group of organisms with female heterogamety and holokinetic chromosomes. For this research we selected two very distinct models, moths of the family Tortricidae mainly known as pest species and wood white butterflies of the genus *Leptidea*, recently established models for the evolution of cryptic species. While most tortricids used were available in lab cultures, with *Leptidea* Jindra had to partly become a field worker and collect butterflies using catching net or, in the case of two species, obtain them with help of foreign co-workers. Because of problems with identification of the cryptic *Leptidea* species, she had to learn not only taxonomic practices, but also had to use mitochondrial and nuclear genes as molecular markers.

During years spent in our lab, Jindra showed excellent skills for fine lab works. In particular, she mastered various techniques of molecular cytogenetics based on fluorescence in situ hybridization (FISH), including genomic hybridizations, chromosome painting with chromosome-specific probes prepared by laser microdissection, and physical mapping of genes by FISH with bacterial artificial chromosomes (BAC-FISH). Besides FISH techniques and fluorescence microscopy, she has become skilled in a battery of molecular methods including RNA and DNA extractions, electrophoresis, enzymatic digestion, Southern hybridization, PCR amplification, gene identification, cloning, sequencing and sequence analysis. These skills along with a high precision of work enabled her to obtain valuable information on the architecture of lepidopteran genomes and evolution of sex chromosomes. Particularly significant are her results on unique multiple sex chromosomes in wood white butterflies, which seem to play a key role in speciation of these cryptic species.

Besides the exceptional skills and great diligence, I always appreciated Jindra's excellent work with literature, the ability to quickly learn new methods, logical thinking in designing experiments, and precise processing and interpretation of results, simply speaking a high quality of research work. Jindra also has very good communication skills and she has independently managed cooperation with several labs abroad. Last but not least, Jindra has greatly contributed to the friendly atmosphere in our lab.

To conclude, Jindra has been an excellent doctoral student and has done a great job in our lab. It gives me great pleasure to recommend her PhD thesis for the defence.

Jindra, THANK YOU for your work and friendship and wish you happiness and success in your life!

In České Budějovice,
13 March 2016

František Marec
(tutor)