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Supervisor's review on the Ph.D. thesis of RNDr. Martina Hejníčková

Martina joined our team already during her master study and has continued her studies to the Ph.D. level. Along the way, she became a skilled molecular cytogeneticist and mastered various aspects of scientific life, from laboratory work, bioinformatics, laboratory management, critical reading of scientific literature, presenting her results at scientific conferences, to writing manuscripts and grant proposals.

Contemporary molecular cytogenetics is a complex discipline that combines classical cytogenetics with a wealth of different molecular methods and bioinformatics. Moreover, in Martina's case, laboratory work was preceded by fieldwork, as she studied numerous species that had to be captured and, in some cases, bread till the stage optimal for chromosome preparation. She mastered all the above tasks, and the results she obtained were included in three first-authored publications. During her Ph.D., Martina was very independent, hard-working, and so well organized that her time management skills became legendary in our laboratory. As a result, in addition to her study duties, she found time to teach undergraduate and high school students, and she supervised an undergraduate thesis that was conducted in our lab. Due to her kind and helpful personality, she became a popular member of our laboratory.

In her first paper, she proved the long-ignored suggestion that the bag worms lack the W chromosome, a fact that has an impact on theories about the origin of the W chromosome in lepidopterans. However, her main task was to explore the lepidopteran family Geometridae, a group with potentially frequent losses of the W chromosome, which would show that the W chromosome is dispensable and has little or no value to females. Martina did heroic work as she investigated 50 species, making the Geometridae the most explored lepidopteran taxon with respect to sex chromosomes. Her results showed that the absence of the sex chromatin was not a reliable marker for the absence of the W chromosome, for which it was often used. This put some of the theories about the evolution of the W chromosome in a new light. On the other hand, it showed that sex chromatin can be an excellent marker to determine species with atypical sex

chromosome composition. Finally, her last study carried out in collaboration with the laboratory of Pedro Lorite, contributed to our knowledge of the content of the W chromosome

To conclude, it was a privilege to be Martina's supervisor and I confess that I learned as much from her as she learned from me. I am very happy with her thesis, which I gladly recommend for defense, and I wish her good luck in her future career.

In České Budějovice

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