Title:	**Introduction to Forensic Genetics**
Lecture hours:	10h
Study period: (summer/winter)	Summer
Number of credits:	2
Assessment methods:	Test
Language of instruction:	English
Prerequisites:	Genetics (Basic level), Introductory statistics (opt.), Introductory biochemistry (opt.)
Course content:	1. A brief history of forensic genetics 2. Principles of genetic evidence (Mendelian vs. non-Mendelian inheritance, linkage, genetic marker, DNA as an evidence) 3. Principles of molecular DNA typing (DNA extraction and quantification) 4. STR as a standard genetic marker (PCR reaction, electrophoresis, scoring, allelic drop-out and related problems) 5. Single Nucleotide Polymorphism (SNP) as a powerful genetic tool 6. Statistical fundamentals of genetic profiling (Bayes Theorem, likelihood ratio) 7. Population genetic laws as a basis for forensic inference (Hardy-Weinberg Law, Inbreeding, Genetic divergence) 8. Inference about Genetic identity 9. Inference about kinship (paternity testing, identification of remains, etc.) 10. Forensic genetics in model vs. non-model organisms
Learning outcomes:	Students learn basic principles of forensic genetics, including the fundamentals of DNA typing based on STR and SNP markers, as well as the fundamentals of statistical interpretation, evaluation and presentation of the genetic evidence. As a result, students understand advantages and disadvantages of molecular techniques and issues related with statistical (formal) interpretation of DNA evidence under the most representative scenarios (e.g. genetic identity and paternity). Eventually, students are able to transfer the principles of forensic genetics from humans to non-model organisms and understand advantages of such a transfer.
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Literature:	Goodwin W. et al. 2007. An Introduction to Forensic Genetics. John Wiley and Sons, Ltd. Butler J.M. 2009. Fundamentals of Forensic DNA Typing. Academic Press.