



MOLECULAR METHODS IN FORENSIC GENETICS

Enrollment year	2021/2022
Academic year	2021/2022
Regulations	DM270
Academic discipline	MED/43 (LEGAL MEDICINE)
Department	DEPARTMENT OF BIOLOGY AND BIOTECHNOLOGY "LAZZARO SPALLANZANI"
Course	EXPERIMENTAL AND APPLIED BIOLOGY
Curriculum	Biologia ambientale e biodiversità
Year of study	1°
Period	1st semester (01/10/2021 - 14/01/2022)
ECTS	6
Lesson hours	48 lesson hours
Language	Italian
Activity type	ORAL TEST
Teacher	PREVIDERE' CARLO (titolare) - 6 ECTS
Prerequisites	Basic knowledge in genetics, molecular biology and statistics
Learning outcomes	The course is aimed to describe the methodological approach applied in the forensic genetic laboratory to approach DNA identification casework and paternity or kinship cases. At the end of the class, students shall prove to be able to deal with simple forensic casework, describing the methodological approach they selected for a correct interpretation of the analytical results.
Course contents	Collection of biological evidence in crime scene investigations; chain of custody. Sample characterisation to define the biological source. DNA extraction method from different biological specimens and DNA quantification. PCR and capillary electrophoresis. DNA polymorphisms. Definition of genetic profile and interpretation criteria. Y-chromosome DNA testing and its forensic application. Mitochondrial DNA sequencing

	<p>in forensic casework. SNPs and INDELS in forensic genetics. Interpretation challenges in forensic genetics: low copy number DNA (LCN-DNA) and complex mixtures. Forensic DNA phenotyping. Familial searching and forensic genealogy. Molecular anthropology and Disaster Victim Identification (DVI). NGS technology in forensic genetics. Paternity and kinship testings. Forensic DNA databases.</p>
Teaching methods	The course is organised in lectures, casework and lab exercises.
Reccomended or required readings	<p>Pdf presentations and lesson notes will be provided by the teacher. To increase and broaden the knowledge it is possible to read the following books.</p> <ul style="list-style-type: none"> - “La prova del DNA per la ricerca della verità. Aspetti giuridici, biologici e probabilistici”. Autori: Ricci U., Previderè C., Fattorini P., Corradi F., (2006) Giuffré Editore. - “Introduzione alla genetica forense. Indagini di identificazione personale e di paternità”. Autori: Tagliabracci A., (2010) Springer.
Assessment methods	Oral discussion. The student should prove to have achieved the methodological approach to forensic genetics, by applying it to forensic casework presented by the teacher.
Further information	No information
Sustainable development goals - Agenda 2030	The goals