

EUROFORGEN-NoE SUMMER SCHOOL

WORKING IN A FORENSIC GENETICS LABORATORY
TRABAJANDO EN UN LABORATORIO DE GENETICA FORENSE



Level: Basic-Intermediate

Duration: 3 credits (30 hours)

Dates: July 10st-14th

Location: University of Santiago de Compostela/Faculty of Medicine

Language: Two groups: English and Spanish

Number of participants: 30

Participants: No specific requirements

Cost: 125 €

Speakers:

- Prof. Peter Schneider

(University of Cologne)

- Prof. Angel Carracedo

(University of Santiago de Compostela)

- Prof. M.V. Lareu

(University of Santiago de Compostela)

- Prof. Antonio Salas

(University of Santiago de Compostela)

- Dr. Christopher Phillips

(University of Santiago de Compostela)

- Dr. Lourdes Prieto

(Spanish National Police, University of Santiago de Compostela)

- Dr. Ana Mosquera

(University of Santiago de Compostela)

- Dr. Vanesa Álvarez

(University of Santiago de Compostela)

- Dr. Manuel Fondevila

(University of Santiago de Compostela)

This course aims to provide basic knowledge and training in molecular biology and initiate participants in the field of forensic genetics. The course will cover from the theoretical and practical point of view to the main concepts and analysis of polymorphisms that are currently used in forensic genetics laboratories, introducing participants to the principal techniques (extraction, quantification, amplification, sequencing, etc.), to get acquainted with the workflow in these laboratories (sample collection, processing, analysis of genetic markers, and to understand the basic principles of interpretation of the value of the evidence and communication...).

SECTION 1: Basics of molecular biology

- The cell
- DNA
- Heredity: Notions of Mendelian inheritance and population genetics
- Seminar: basic exercises on character heritage

SECTION 2: Introduction to Forensic Genetics.

- Concept and historical evolution of forensic genetics
- DNA testing and its applications
- Stages in the forensic investigation of a biological evidence

SECTION 3: Forensic Samples: types, collection, delivery and chain of custody

- Types of biological evidence
- Sampling at the scene of the crime
- Treatment, shipping and storage of samples
- Chain of custody
- Workshop: sample collection

SECTION 4: Basic principles in forensic genetics laboratory

- Precautions and safety measures
- Internal quality controls
 - spatial and temporal separation
 - laboratory staff profile
 - duplicate analysis
- Workflow in the laboratory of forensic genetics
- Standardization and quality control laboratories. Inter-laboratory exercises.
- Accreditation for ISO 17025.
- International Recommendations (ENFSI, DNA Commission of ISFG)

SECTION 5: Technical analysis in a laboratory of forensic genetics

- Quality measures and contamination prevention
- Preliminary analysis (blood, semen, saliva, etc.)
- DNA extraction from various biological fluids, organs and tissues.
- Quantification of DNA
- PCR amplification
- Sequencing
- Capillary Electrophoresis
- Laboratory practices (subject to availability)

SECTION 6: Introduction to analysis of DNA polymorphisms in forensic genetics.

- DNA polymorphisms.
 - Types
 - Applications
 - Kinship
 - Identification
 - Forensic cases

- Autosomal markers: STRs and SNPs
- Y-chromosome markers
- X chromosome markers
- Mitochondrial DNA variation
- Seminar: solving practical forensic cases

SECTION 7: Basic Ethical Considerations

- Privacy and confidentiality
- Informed consent
- Databases

COURSE PROGRAMME



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