

XXII Jornadas de Genética Forense

GHEP-ISFG

Faculdade de Medicina
Universidade de Coimbra

Coimbra, Portugal
September 18 - 22, 2017



Workshop: “FORENSIC APPLICATIONS OF MASSIVELY PARALLEL SEQUENCING”

Thursday 21st September, 2017

The goal of this workshop is to provide a general overview of the current state and future trends of Massively Parallel Sequencing (MPS) for forensic genetics applications. After two general presentations on basic theoretical/practical background on the Illumina and the ThermoFisher workflows and sequencing chemistries, we will address the current applications of MPS to the study of Identity, ancestry and phenotype SNP/INDEL markers, the analysis of the mtDNA genome (Control Region and Whole Genome) as well as the investigation of STR markers. Finally, there will be presented the ISFG recommendations and updates on alignment, annotation and nomenclature of core forensic STR sequence data, as well as the use of independent database / analysis modules for the full range of MPS genotype data.

To carry out this activity we count on a group of speakers with previous experience in MPS technology (all belonging to GHEP laboratories) that will give us a practical view about the advantages, current limitations, and future perspectives of the MPS in the field of forensic genetics.

Full Day Workshop Program

1.- Massively Parallel Sequencing: Current state, capacities, and future trends in Forensic genetics. (Information on the results of the ENFSI and GHEP surveys)

Antonio Alonso. Instituto Nacional de Toxicología y Ciencias Forenses. Servicio de Biología. Madrid.

2.- The MiSeq FGx workflow for library preparation, sequencing and analysis. Application of the ForenSeq panels to the identification of the missing of the Spanish Civil War. (Basics on technology, DNA Library and DNA template preparations, fluorescence detection, software for data analysis and data interpretation, overview on genetic panels, ...).

Ferran Casals. Genomics Core Facility. CEXS-Universitat Pompeu Fabra

3.- The Ion Torrent PGM/Ion Chef workflows and panels for emulsion PCR and proton detection. Evaluation of the HID-Ion AmpliSeq™ Identity Panel markers in Basques. (Basics on technology, DNA Library and DNA template preparations, proton detection, software for data analysis and data interpretation, overview on genetic panels...)

Oscar García Fernández. Unidad de Policia Científica. Laboratorio de Genética Forense. Ertzaintza

4.- Forensic SNP genotyping with Ion Torrent MPS. *Maria de la Puente, Ana Mosquera, Christopher Phillips. Instituto de Ciencias Forenses. Universidade de Santiago de Compostela*

5.- MPS analysis of mtDNA Control Region vs mtDNA whole genome.

Vanesa Álvarez, Ana Mosquera, Maria de la Puente. Instituto de Ciencias Forenses. Universidade de Santiago de Compostela

6.- The Ion S5 / Ion Chef / Converge workflow for STR analysis (*ID Precision Globalfiler Panels*).

Pedro Barrio. Instituto Nacional de Toxicología y Ciencias Forenses. Servicio de Biología. Madrid.

7.- Considerations for alignment, annotation and nomenclature of core forensic STR sequence data - updates from the ISFG Commission.

Christopher Phillips. Instituto de Ciencias Forenses. Universidade de Santiago de Compostela

8.- Use of independent genetic databases and analysis modules with MPS data: STRidER, Erasmus HIRISplex, USC Snipper, USC SPSmart and 1000 Genomes websites.

Christopher Phillips, Maria de la Puente, Ana Mosquera, Vanesa Álvarez. Instituto de Ciencias Forenses. Universidade de Santiago de Compostela