Discipline: Formal and Population Genetics

Objectives: Mastering of the basic tools for genetic analysis at familial and population levels.

Program:

Ways of conveying probabilities
      Odds ratios
    Quantifying the relative likelihood of hypotheses

Formal bases of Mendelian theory
    Transmission modes
      Segregation analyses

Linkage
      Recombination fraction

Hardy-Weinberg formalism
      Homogametic loci
      Gene frequency estimation
      Heterogametic loci
      Verification of HW equilibrium
    Population comparisons
    Simultaneous analysis of two loci
        Haplotype frequencies
        Gametic determinant
    Uniparental transmission
        Y chromosome and mtDNA

Forensic Genetics
      Problem formulation and the framework of the expert
      Bayesian algorithms
       Typical examples: identity and paternity probabilities

Bibliography:

WEBSITES

general
http://cmpg.unibe.ch/software/arlequin3/
http://www.hgvbaseg2p.org/index
http://www.cstl.nist.gov/biotech/strbase/
http://www.yhrd.org/
http://www.hapmap.org/thehapmap.html.en
forensic
http://dna-view.com/
http://www.isfg.org/
http://homepages.mcs.vuw.ac.nz/~vignaux/evidence/interpreting.html
mendeliana
http://www.mendelweb.org/

Balding DJ, Bishop M, Cannings C (2007) Handbook of Statistical Genetics. John Wiley & Sons

Jobling MA, M.E. Hurles ME, Tyler-Smith C (2004) Human Evolutionary Genetics: Origins, People and Disease. Garland Science.

Nature Reviews Genetics 7(10), October 2006.

Software: http://cmpg.unibe.ch/software/arlequin3/

Teaching and Learning Methods: seminars and tutorials; includes attendance to *Portugaliæ Genetica*

Evaluation: written test

Coordination: Antonio Amorim

Teaching Staff: -

Site: IPATIMUP

Schedule: 2011 March 14-18