

**ESSENCIAL MOLECULAR BIOLOGY – A HANDS-ON LABORATORY COURSE**  
**10<sup>th</sup> EDITION**

Laboratory of Support to Research in Molecular Medicine  
23 January – 10 February 2017

**OPTIONS OF EXPERIMENTAL FOCUS**

**Name:** \_\_\_\_\_

Please choose up to two of the seven options below. Options can be chosen within the same category. The total number of days is limited to 10.

Genomics:

- Gene expression studies (G1+G2+G3+G6). Duration: 5 days
- DNA cloning in E.Coli (G1+G2+G3+G4+G5). Duration: 5 days
- DNA-protein interaction studies (P1+P2+G7+P3+P4). Duration: 5 days

Proteomics:

- Tagged protein purification (P1+P2+P6). Duration: 5 days
- Protein expression studies (P1+P2+P3+P4). Duration: 5 days
- Protein-protein interaction studies (P7+P3+P4+P1+P2). Duration: 5 days
- Protein separation by two-dimensional electrophoresis (P1+P2+P5+P3+P4). Duration: 10 days.  
(Please note: this option cannot be combined with any other as it takes up the whole 10 days).

**Genomics:**

- G1: Nucleic acids extraction (DNA, RNA) from cells, tissues or fluids;
- G2: Quantification techniques and quality control;
- G3: cDNA synthesis by reverse transcription (RT);
- G4: DNA and cDNA amplification by conventional PCR and real time PCR (qPCR);
- G5: Recombinant DNA techniques (enzymatic restriction, transformation, molecular cloning);
- G6: Gene expression studies (RT-qPCR);
- G7: DNA-protein interaction studies (Electrophoretic Mobility Shift Assay, DNA pull-down essays)

**Proteomics:**

- P1: Protein extraction from cells or tissues;
- P2: Quantification techniques;
- P3: Electrophoresis (SDS-PAGE);
- P4: Western blotting;
- P5: Isoelectric focusing;
- P6: Purification by liquid chromatography;
- P7: Protein co-immunoprecipitation.