

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

Laboratory of Support to Research in Molecular Medicine  
20 Jan – 7 Feb 2020

**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:

- G1. Gene expression studies (1+2+3+6). Duration: 5 days
- G2. DNA cloning in E.Coli (1+2+4+5). Duration: 5 days
- G3. DNA-protein interaction studies (8+9+7+10+11). Duration: 5 days

Proteomics:

- P1. Tagged protein purification (8+9+13). Duration: 5 days
- P2. Protein expression studies (8+9+10+11). Duration: 5 days
- P3. Protein-protein interaction studies (14+10+11+8+9). Duration: 5 days
- P4. Protein separation by two-dimensional electrophoresis (8+9+12+10+11). Duration: 10 days.  
(Please note: this option cannot be combined with any other as it takes up the whole 10 days).

**Genomics:**

- 1: Nucleic acids extraction (DNA or RNA) from cells, tissues or fluids;
- 2: Quantification techniques and quality control;
- 3: cDNA synthesis by reverse transcription (RT);
- 4: DNA amplification by conventional PCR
- 5: Recombinant DNA techniques (enzymatic restriction, transformation, molecular cloning);
- 6: Gene expression studies (cDNA amplification by real time PCR)
- 7: DNA-protein interaction studies (Electrophoretic Mobility Shift Assay, DNA pull-down essays)

**Proteomics:**

- 8: Protein extraction from cells or tissues;
- 9: Quantification techniques;
- 10: Electrophoresis (SDS-PAGE);
- 11: Western blotting;
- 12: Isoelectric focusing;
- 13: Purification by liquid chromatography;
- 14: Protein co-immunoprecipitation.