Laboratory Skills

A course for those wishing to gain hands-on practical experience of vital and fundamental laboratory techniques

17 - 28 June 2019

Course director: Dr Jose Gutierrez-Marcos

For further details and an application form please see overleaf or go to warwick.ac.uk/go/labskills
Many young science graduates and qualified professionals need practical experience of fundamental molecular and biochemical laboratory techniques. Over a two week period this intensive hands-on laboratory course will allow you to PCR amplify a gene, clone it into a suitable Escherichia coli expression vector, express, purify and analyse the resulting protein. In addition, you will perform site directed mutagenesis and a number of other important related techniques.

The course is suitable for any one seeking a hands-on introduction to some of the fundamental laboratory skills needed in molecular biology and biochemistry. It is aimed at those with no/little laboratory experience, but you are required to have a background in Biological Science. The course is informal but intensive with a high level of staffing to encourage interaction, questions and discussion. Teaching is carried out in modern laboratory facilities, a comprehensive course manual is provided and you will complete your own lab book.

Course Programme

Week 1. Molecular Techniques - recombinant DNA manipulation & Microscopy Analysis
- Fundamentals of laboratory work (safety, weights & measures, buffers, using a pH meter)
- Purification and analysis of plasmid DNA (mini-preps, agarose gel electrophoresis, restriction digests, making plates)
- Polymerase chain reaction (preparation of DNA for sequencing, amplification, primer design, sequence analysis)
- Cloning and E.coli expression (gene cloning, sequencing and sequence analysis)
- Targeted mutagenesis (sequence design, mutagenesis and sequence analysis)
- Laser confocal & electron microscopy (sample preparation, imaging and image analysis).

Week 2. Biochemical Techniques - protein expression & purification
- Protein expression in E.coli (culture induction, buffer preparation and protein expression)
- Protein purification (sonication & chemical cell lysis, affinity chromatography, SDS gel electrophoresis)
- Protein analysis and quantification (SDS gel interpretation, Western blotting, mass spectrometry analysis).

The University of Warwick ranks in the top ten of the country’s one hundred universities. More than 80% of research in the School was rated as ‘World Leading or Internationally Excellent’ in REF2014.

Application Form (Closing date for applications: 3 June 2019)
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Name: ....................................................................................................................................................
Address: ..................................................................................................................................................
Telephone: ..........................................................E-mail: .......................................................................
Organisation: ........................................................Position: ..........................................................

The fee of £1323 includes all laboratory materials and course manual. To register, return the completed form with the full fee or a deposit of £250 (cheques made payable to ‘University of Warwick’, or an order number with invoicing details. Details for bank transfers can be provided on request).

Application form and enquiries to:
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