**MBG LAB is proud to announce the opening of its new Training and Education stream!!**

**Intensive Hands-on training** courses are provided in various aspects of molecular biology and genetics. A brief outline of the individual courses is provided in this leaflet.

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Description</th>
<th>*Prerequisite</th>
<th>Theory and hands-on practical training</th>
<th>Hands-on practical training only</th>
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<td>No. of days</td>
<td>Fee structure (AED)</td>
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<tr>
<td>IET01</td>
<td>Nucleic Acid Extraction</td>
<td>–</td>
<td>5</td>
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<tr>
<td>IET02A</td>
<td>PCR, RT-PCR &amp; Gel Electrophoresis</td>
<td>IET01</td>
<td>5</td>
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<td>IET03B</td>
<td>Real-time PCR</td>
<td>IET03, IET02A</td>
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<td>IET04</td>
<td>Sequencing</td>
<td>IET01, IET02</td>
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<td>IET06A</td>
<td>Genotyping</td>
<td>IET01, IET02</td>
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<tr>
<td>IET06B</td>
<td>FISH</td>
<td>IET06A</td>
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</table>

*Background knowledge on the principles of the subject matter is a prerequisite (Documentation may be required)*

We are happy to customize a training for a group to meet your requirement. We offer 15% discount to students and group bookings!

For further information, please do not hesitate to contact us.

The **Molecular Biology and Genetics Laboratory** (MBG Lab) is a modern facility designed to support an extensive and diverse range of scientific research. It includes large testing areas with state-of-the-art equipment, safety features and office space. Our interests mainly surround the field of molecular biology, genetics, cell biology and genomics. We also provide extensive support in a range of molecular diagnostic tests.

The recent addition of teaching and education stream has made MBG Lab one of its kind in the region.
1. Nucleic Acid Extraction

Extraction is typically the first step in a longer laboratory process. It is an important part of that process as the nucleic acid first needs to be purified away from proteins and other cellular contaminants.

The 3 day extraction training course includes manual as well as automated procedures for nucleic acid extraction, purification, quantification and gel electrophoresis for visualization of the extracted nucleic acids on an agarose gel.

2. Polymerase Chain Reaction (PCR)

PCR is the key technique in molecular biology. It is a simple and inexpensive tool to amplify a segment of DNA. It is widely used in research and molecular diagnostics.

The 4 day PCR training course aims to provide step by step technical assistance in various aspects of PCR setup and analysis. This includes Reverse transcription (RT) /cDNA synthesis, End-point PCR setup and analysis by agarose gel electrophoresis, Real Time PCR, SYBR Green, Hybridization probe and Hydrolysis probe based Real Time PCR.

3. Sequencing

Sequencing is the process of reading the nucleotide bases in a DNA molecule.

Knowledge of DNA sequences has become indispensable for basic biological research and in numerous applied fields such as diagnostics, biotechnology, forensic biology and biological systematics.

The 3 day course offers students a hands-on experience in sequencing, from the cycle sequencing step to sequence analysis and submitting the sequence on GenBank database. The course also incorporates an introduction to basic Bioinformatics which includes using NCBI, BLAST tools, repeat finder softwares etc.

4. Genotyping

Genotyping is the process of determining differences in the genetic make-up of an individual by examining the Individual’s DNA using bioassays and comparing it to another individual's or reference sequence.

The 4 day training course is aimed at providing the basic molecular skills, in particular fluorescent microsatellite genotyping. This includes hands-on training using state-of-the art equipments as well as different analysis and reporting software.

5. Microarray

Microarray technology is a powerful technique that helps to investigate thousands of genes for their expressions or mutation simultaneously.

A 5 day microarray hands-on training and background courses will be offered to students at MBG lab. This includes experimental design and the use of different data mining tools (software). The course will cover technical presentation, printing microarray slides, hybridization, washing of the slides, scanning and analysis.

6. Cytogenetics

Cytogenetics encompasses all aspects of chromosome biology applied in all areas of biomedicine. These include structural and functional organization of the chromosomes and the nucleus, genome variation, chromosomal abnormalities etc.

6A. During the 3 day (split over weekend) training course, students will perform various cytogenetic techniques such as harvesting and preparing slides from blood cultures, specialized staining like G & C banding and silver staining.

6B. The 3 day FISH training course includes preparing direct or indirect fluorescent probes using Nick translation or random priming as well as using these probes to perform FISH. The prepared slides will then be scanned and analyzed using computer imaging systems.