

بيان بالأجهزة المتاحة بمعمل البيولوجيا الجزيئية

(معمل التميز لأبحاث الجينوم والسرطان)

## ➤ **Cell and tissue banking**

- Deep freezer -40 °C.
- Deep freezer -80 °C.
- 2 liquid nitrogen tank (50 liter).
- Liquid nitrogen tank (30 liter).
- Withdrawing nitrogen device.

## ➤ **Biotechnology lab**

- Fume hood.
- Microwave digestion.
- FT IR spectrophotometer.

## ➤ **Molecular cytogenetic lab**

- Thermobrite.
- Image analyzer (FISH).
- Fluorescent microscope.
- Microarray.

## ➤ **Stem cell and tissue culture lab**

- Laminar flow class II.
- PCR cabinet.
- Cell counter system.
- Cell separator.
- Cooling centrifuge.

- CO<sub>2</sub> incubator.
- Water purification.
- Inverted microscope.
- Pump.

### ➤ **Protein synthesis lab**

- Cooling incubator.
- Vertical gel electrophoresis (western blot).
- 2D gel electrophoresis.
- Chemidoc MP imaging system.
- ELISA (reader, incubator, washer).

### ➤ **Genomic library lab**

- Laminar flow class II.
- Gene transfection.
- Cell separator.
- Inverted microscope.
- CO<sub>2</sub> incubator.
- Conventional PCR.

### ➤ **Genetic signature lab**

- PCR cabinet.
- Nanodrop.
- Gel documentation system.

- Concentrator.
- Tissue lyser.

## ➤ **Sequencing lab**

- Laminar flow class II.
- Ion proton sequencer.
- Qubit.
- Hybex.
- Rotor gene PCR.
- Step one plus PCR.
- Verti PCR thermal cycler.



# **Molecular biology laboratory**

(Laboratory of Excellence for Genome and Cancer Research)

## **Lab devices & techniques**

## **Molecular unit:**

- **Ion proton & Ion cheaf sequencer:** Next generation sequencing (NGS).
- **Rotor gene PCR:** Real time PCR.
- **Step one plus PCR:** Real time PCR.
- **Biometra PCR:** Conventional PCR.
- **Qubit:** measure DNA, RNA, and protein quantity, and now also RNA integrity and quality.
- **Hybex:** flexible high precision PCR plate heating system with heated lid.
- **Verti PCR thermal cycler:** Run 6 different temps in same protocol step.
- **Microwave digestion:** common technique used to dissolve heavy metals in the presence of organic molecules prior to analysis by inductively coupled plasma, atomic absorption, or atomic emission measurements.
- **FT IR spectrophotometer:** technique used to obtain an infrared spectrum of absorption or emission of a solid (**Stone analysis**), liquid, or gas.
- **Gene transfection:** enables fast and efficient delivery of nucleic acids into all mammalian cell types.
- **Nanodrop:** measuring nucleic acid concentrations in sample volumes of one micro liter.
- **Tissue lyser:** provides efficient disruption of biological material in each sample vessel for reproducible, high- quality results in downstream applications such as the purification of total DNA or RNA from a variety of animal and plant tissues.

- **Concentrator:** facilitates fast and efficient, gentle vacuum concentration of DNA, RNA, nucleotides, proteins and other liquid or wet samples.

## **Stem cell and tissue culture unit**

- **Cell counter system:** designed to provide accurate and precise cell counting
- **Cell separator:** magnetic cell isolation technology with exciting new options, providing for workflows across basic and clinical research.
- **Water purification:** the removal of different contaminants as chemicals to obtain dist. H<sub>2</sub>O.
- **Thermobrite:** programmable temperature controlled slide processing system for FISH procedures.
- **Image analyzer (FISH):** locating the specific DNA sequences, diagnosis of genetic diseases, gene mapping, and identification of novel oncogenes or genetic aberrations contributing to various types of cancers

## **Protein synthesis**

- **Vertical gel electrophoresis (western blot):** protein detection.
- **2D gel electrophoresis:** protein detection.
- **ELISA (incubator, washer, reader):** protein detection.
- **Chemidoc MP imaging system:** for imaging of gels and blots.