

Technologies



EQUIPMENT

The laboratory is located at the IMBB building (Room A205), and is well equipped for routine molecular biology and biochemistry experimental work. Basic equipment includes various incubators, centrifuges, electrophoresis and blotting apparatuses, a spin-vacuum concentrator, a gradient thermal cycler, a UV-VIS spectrophotometer and a spectrofluorometer for HTS and kinetic measurements.

We share with other groups cold-rooms, large incubators, the tissue culture facility, imaging and scintillation analysis equipment. Fast DNA sequencing, oligonucleotide synthesis and fermentation services are provided by the [DNA sequencing](#), [Microchemistry](#) and [Fermentation & Purification](#) facilities of IMBB.

Microarray equipment, in particular, includes a [Packard SpotArray 24](#) spotter, a four-laser [GSI Lumonics ScanArray 5000](#), a [Tecan HS4800](#) microfluidic hybridization station, an [UltraLum CEX-1500 UV](#) CrossLinker and a [Beckman Biomek 2000](#) robotic system for high-throughput liquid handling procedures.

The massive amounts of data generated by microarray analysis are managed with the [BioArray Software Environment \(BASE\)](#) that run on a dedicated server.

Finally, the [library of FORTH](#) and the nearby [library of the University of Crete](#) provide access to most scientific journal by either print or on-line subscription. The helpdesk of the Industrial Property Organization (Greek Patent Office) in FORTH provides free on-line searches and access to world patent libraries.



Packard SpotArray 24

The SpotArray™ 24 is a compact and lightweight micro printing system. Microarrays are printed with speed and precision using 1-32 Telechem Stealth pins. After printing pins are washed with a powerful pressure-jet pin washer then vacuum-dried, eliminating measurable carryover. Protocol parameters are entered, several instrument settings are verified, ensuring free operation.

The SpotArray 24 is equipped with environmental and I

control to ensure accurate and consistent printing.



Scanarray 5000 Microarray Scanner

The microarray scanner (ScanArray 5000, PerkinElmer Sciences) is a confocal microscope scanning device used for reading out microarrays of standard format (75mmx25mm). For excitation of fluorescence 4 lasers can be used, one external. The emitted fluorescence light is detected by a sensitive photomultiplier tube (PMT).

4 Laser system:

488 nm Ar ion laser

543 nm HeNe laser

594 nm HeNe laser

633 nm HeNe laser

12 filters allow the use of a variety of different dyes
max resolution: 5 μ m, max laser power: ca. 10-20 mW

Detection system: Photomultiplier (PMT)

Sensitivity: 0.1 Fluorophore/ μ m

Image format: 16 bit tif (max. 65535 grey scale values)



Tecan HS4800 Hybridization Station

The Tecan HS4800 is used for automated hybridization of standard format microarray slides. The advantage is the automation, i.e. the HS4800 is performing all protocol steps in a highly accurate and reproducible manner. It consists of heating blocks with hybridization chambers on top. The instrument controls the temperature and the processing times (hybridization, washing). The hybridization solution (10 μ l) is applied by a disposable pipette tip. Due to a highly efficient agitation of the sample within the chamber, the hybridization is faster and more even than under a cover slip. The HS4800 dries the slides.

UltraLum CEX-1500 UV CrossLinker

Microprocessor Controlled

Fully Programmable

254, 300 and 365nm Units Available

6 Lamp Units

Stainless Steel Slide Out Tray

Instant Push Button Intensity Readout

All Electronic Design Eliminates Lamp Flicker During Setup
allowing for Consistent Exposure Everytime!



Optical Feedback to Monitor Lamp Output
Special Push Button Intensity Switch
Easy Opening Door with Lamp Cutoff Circuit to Eliminate Possible UV Exposure
UV Blocking Window for Viewing Samples During Exposure
Stainless Steel Tray for Easy Cleaning and Loading of



Biomek 2000

The Biomek 2000 is a small-volume pipetting workstation capable of accessing up to 12 microtitre plates at one time. Tools included with the workstation include:

- 1) two 8-channel multiple pipettors (2-20 μ l and 20-200 μ l)
- 2) a single-channel pipettor that can sense liquid levels (1000 μ l), and
- 3) a wash unit capable of delivering and aspirating large volumes (>200 μ l)

This combination of tools is capable of addressing laboratory 24-well, 96-well, or 384-well formats as well as tubes of various shapes and arrangements.

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