

MICROSCOPY UNIT



Contact

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The Microscopy Unit is a facility that provides to other research institutions and companies, the necessary infrastructure and experience required for the study, using different microscopic techniques, of biological material from both, patients (biopsies, autopsies ...) and experimental studies (animal, cell culture ...).



The Microscopy Unit has two different areas of action:

- Electron microscopy (TEM) area equipped with sample preparation laboratory, ultramicrotomy area, and transmission electron microscope, besides cryomethods laboratory for cryoembedding, polymerization and cryosectioning samples

- Confocal microscopy area equipped with a confocal microscope Leica TCS-SP5 with incubation system that allows studies in live cells.

SERVICES AND EXPERTISSE

- Sample preparation for transmission electron microscopy (TEM): Chemical fixation, dehydration with alcohols increasing concentrations, staining with contrasting agents (osmium tetroxide and uranyl acetate) and embedding in epoxy or acrylic resins (Epon 812, Lowicryl K4M).
- Cryo-methods (TEM): Cryofixation, cryoembedding, polymerization at low temperatures and cryosectioning of samples. These methods use the cold to stabilize biological samples and are especially recommended for immunocytochemical studies.
- Ultramicrotomy: Obtaining of semithin sections (0.5-2 μ m) for light microscopy and ultrathin sections (60-100 nm) for electron microscopy.
- Immunocytochemistry for electron microscopy, using colloidal gold (immunogold), pre- and post-embedding.
- Sample preparation for confocal microscopy (fluorescent labeling, immunofluorescence).
- Colocalization studies in cells and tissues.
- Observation and image capture at the Confocal Microscope.
- Microscopy consulting service, experimental design and protocols elaboration.

EQUIPMENT

Transmission Electron Microscope, Philips CM100, equipped with high resolution digital camera (Soft Image System) and the image capture software (ITEM).

Ultramicrotome Leica EM UC611 that provides easy preparation of semi- and ultrathin sections, with accessory cryochamber for cryosectioning.

Leica Automatic Freeze Substitution (AFS) for cryo embedding of samples and cryo UV polymerization.

Pyramitome (Leica EM TRIM)

Glass Knifemaker for ultramicrotomy (Leica EM KMR2)

Confocal Microscope Leica TCS-SP5-AOBS: spectral confocal microscope with resonant scanner mounted on an inverted DMI 6000 CS microscope equipped with 4 laser lines (Ar, HeNe 543, HeNe 594, HeNe 633) and incubation system for short-time live cells studies.

OUTSTANDING FEATURES

This infrastructure enables the study of biological samples, obtaining high resolution, and also high magnification (TEM) images of tissues, cells, organelles, and microorganisms, allowing also the localization of protein expression at the cellular level by immunocytochemistry technics.