

Scientific & Technical Services

Fernando Usera Mena

Personnel

Sonia Calvo Ladrero Aranzazu de la Encina Valencia Jessica Gaspar Navarro

RADIOLOGICAL PROTECTION AND BIOLOGICAL SECURITY

- Risk evaluation, security equipment purchase and guidelines edition.
- Formation and information of exposed personnel.
- Control of function and use of the facilities equipment and instruments for prevention, protection, sterilization and disinfection.
- Operational surveillance: maintenance of the internal records on operational surveillance.
- Managing of biosanitary, toxic and radioactive waste

BIO SAFETY LEVEL 3 LABORATORY (P-3)

This laboratory has three in vitro cell culture sublaboratories with all necessary equipment for a safe handling of pathogenic agents included in Risk Group 3, and to perform activities with genetic modified organisms.

This laboratory is responsibility of the Biosafety and Radioprotection Service.

Cristina Patiño Martín

Personnel

Rocio Arranz Avila Javier Bueno Chamorro Susana Pérez Ferreras

ELECTRON MICROSCOPY

The service manages equipment and techniques for preparation, imaging and analysis of biological samples in ultrastructural, cytochemical and immunocytochemical studies using transmission electron microscopy.

The techniques currently covered by the service comprise sample embedding in conventional and low-denaturation plastic, cryo-fixation and substitution for resin embedding, ultrathin sections of resin-embedded material, pre- and post-inclusion immunolabeling, negative staining, immunonegative staining, *in situ* hybridization, and transmission electron microscopy.

Samples can include cell and bacterial cultures, cell fractions, proteins, viruses, and animal and plant tissues. Technical personnel carry out image acquisition and assist with data interpretation. Regular training is offered to users in techniques and methods, as well as the implementation of advanced methods in microscopy



Lluís Montoliu

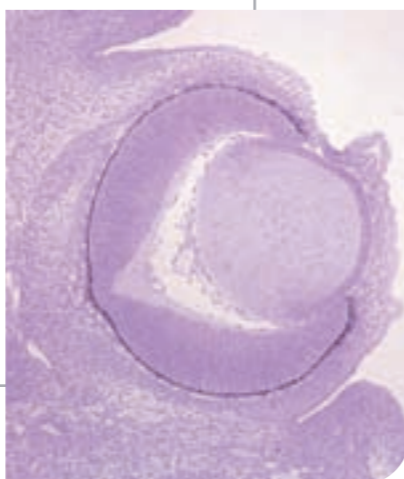
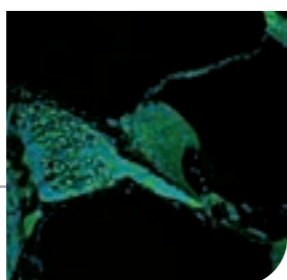
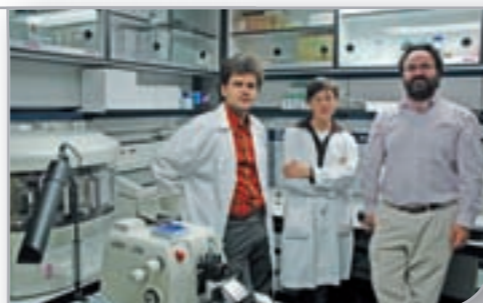
Personnel

Soledad Montalbán Iglesias Óscar Sánchez Sánchez

CNB HISTOLOGY FACILITY

At the Histology facility of CNB we offer methods for the histological analysis of animal and vegetal biological samples. Available methods include the preparation of paraffin/wax blocks and plastic (Historesin) for obtaining histological sections with the automatic microtome, and also the preparation of blocks for obtaining sections from frozen tissue with the cryostat. Sections can be counterstained or assigned for posterior analysis by immunohistochemistry. The facility is equipped with a cryostat, an automatic microtome, a cryostat, a tissue processor carousel, a paraffin/wax embedding machine, a water bath, an oven, and additional small equipment to process all kind of tissue samples.

Our expertise is reflected by the wide variety of tissue samples and species that we have been able to process over the past years, including tissue samples: from spleen, aorta, femoral, embryos and fetuses, brain, cochlea, colon, stomach, ganglia, liver, thin gut, fingers and toes, muscle, eyes, ears, ovary, pancreas, skin, lung, prostate, raquis, kidney, brown and white adipose tissue, mammary gland, testis, femur, tibia, gonads, perone, trachea, thyroid gland, skin tumours, mammary gland tumours, uterus and other tissues from various animals, such as mice, rats, rabbits, sheep, lynx, cat, pig, fish, chicken, gazelle and humans; and also fruits, leaves, apical meristem, roots, stems from tomato, Arabidopsis and potato plants.



Florencio Pazos Cabaleiro

Personnel

Juan Carlos Sánchez Ferrero Mónica Chagoyen Quiles

SEQUENCE ANALYSIS AND STRUCTURE PREDICTION

The main function of the service is to provide bioinformatic support in sequence analysis and structure prediction to all groups at the CNB that might require it. This includes, among other things:

- Localization of homologous genes within different genomes, totally or partially sequenced, using high sensibility methods.
- Generation of high quality multiple sequence alignments.
- Evolution: study of gene distribution within organisms/kingdoms, phylogenetic tree generation,...
- Subcellular localization prediction
- Structural/functional domains localization
- Prediction of functionally relevant residues or regions
- Prediction of post-translational modification sites (phosphorylation, glycosylation,...)
- Prediction of interaction sites.
- Prediction of functional relationships with other genes by cotext methods (not based on homology) - Prediction of physical/functional interactions
- Generation of structural organisation drafts: localization of globular domain, unstructured regions, coiled-coil, transmembrane regions, etc...
- Secondary structure prediction
- 3D structure prediction for close and remote homology
- Generation of high-quality structural representations for publications

Additionally, the service organizes in collaboration with others, periodic courses and seminars about the available bioinformatic tools.

Moreover, we would like to continue the recently initiated line of "a-la-carte" software development (bespoke solutions) for experimental groups. The idea is to implement, using modern and efficient technologies, protocols that now these groups are either carrying out with general tools (i.e. Excel, FileMaker, Access, etc...) or simply not carrying out because of the impossibility of doing it with the available software.