

## HISTOPATHOLOGY CORE UNIT

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**“The Histopathology Core Unit participates in several External Quality Assessment Schemes, such as NordiQC and UKNEQAS, which independently evaluate the quality of the techniques performed at the Unit. In 2016, several protocols developed by the Unit were incorporated into the Best Methods section by the UKNEQAS.”**

## OVERVIEW

Pathology is devoted to the study of the structural, biochemical and functional changes in cells, tissues and organs that underlie disease. By using molecular, immunological and morphological techniques, pathology serves as the bridge between the basic sciences and clinical medicine.

The Histopathology Core Unit offers knowledge and expertise through a full range of services encompassing paraffin embedding and cutting, as well as the construction of tissue microarrays (TMAs). We also provide our users with histochemical stains

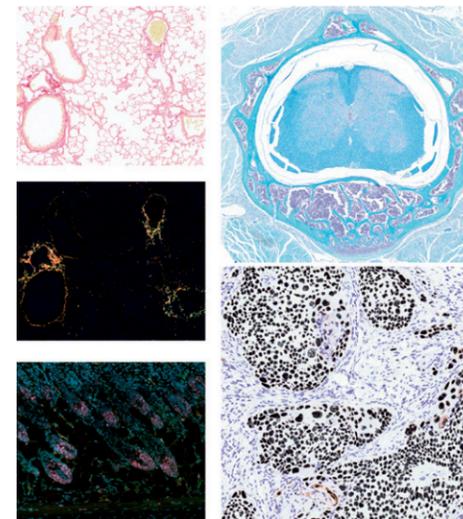
upon request, research and diagnostic immunohistochemistry (IHC) testing, antibody validation, and *in situ* hybridisation (ISH) (ALU sequences for mouse xenograft characterisation). Furthermore, the Unit offers other services, such as laser-capture microdissection; slide digitalisation for brightfield, polarisation light and fluorescence; image analysis; and quantification. The Unit collaborates with researchers at any stage of their career in the histological characterisation of phenotypically relevant animal models of disease, thus providing them with the Pathology expertise required for the success of their research projects.

## RESEARCH HIGHLIGHTS

In 2016, the Unit beat previous records in the Histopathology database with more than 15,000 new entries. This corresponded to about 40,000 requests processed with approximately 37,000 paraffin-embedded blocks; 40,000 histochemical techniques performed; 13,000 routine immunohistochemistry techniques performed (not counting optimisation tests); 7,000 scanning requests for histological slide scanning and image analysis; and 70 requests for laser microdissection.

All the developed techniques follow a standardised validation process. In 2016, the Unit added several new antibodies to its portfolio, which includes more than 3,000 tested and 1,000 currently available antibodies that have been optimised for both human and mouse tissue samples. The antibody validation process follows rigorous testing in order to achieve the best possible results and to demonstrate reproducibility between assay runs and between batches. This represents a highly valuable resource for CNIO researchers as well as for the external clinical and research community.

In respect of the importance that our researchers place on quality and reproducibility, our Unit participates in several External Quality Assessment Schemes, such as NordiQC and UK NEQAS, which evaluate the quality of the staining techniques performed at the Unit and in which more than 800 laboratories participate worldwide. In 2016, our Unit scored very high in the evaluated techniques, and several protocols developed by the Unit were incorporated into the ‘Best Methods section’ of the UKNEQAS Cellular Pathology Technique website (PAS staining and Haematoxylin-Eosin, among others). ■



**Figure** Techniques developed at the Histopathology Core Unit and routinely used by CNIO researchers. Sirius Red, Lung. Brightfield (top left) and Sirius Red, lung. Polarised light (middle left). Immunofluorescence,

skin (bottom left). Luxol Fast Blue staining, decalcified spinal cord (top right). Improved ALU *in situ* hybridisation for mouse xenograft detection (bottom right).

## PUBLICATIONS

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