Pathology is the branch of science dedicated to the study of the structural, biochemical, and functional changes in cells, tissues, and organs that underlie disease. The Histopathology Unit offers support and expertise in a range of services from paraffin embedding and tissue sections to histochemical staining, research and diagnostic immunohistochemistry (IHC) testing, antibody validation, in situ hybridisation technology to research projects at the CNIO, focusing on mRNA detection using RNAscope technology. As many as 402 cases were analysed, some of them with double staining, using the Ventana-Roche automated platform for IHC staining. This technique enables the detection of specific mRNAs directly in formalin-fixed, paraffin-embedded (FFPE) tissue sections, thus bringing a spatial dimension to gene expression analysis.

In 2022 the Unit was awarded a grant through the call Ayudas a Proyectos de Colaboración Público-Privada from the Ministry of Science and Innovation (MCI), for a project in collaboration with the company MedLumics and the Universitat Pompeu Fabra. The project focuses on the development of a system to treat auricular fibrillation using irreversible electroporation. The role of the Unit in the project focuses on the analysis of the pathological features and the mechanisms mediating cell death in the cardiac tissue upon auricular fibrillation ablation.

The high quality of the techniques run by the Unit continues to be endorsed by External Quality Assessment Schemes. In this respect, our histochemical techniques were evaluated by UK NEQAS. Similarly, NordiQC and SEAP (Sociedad Española de Anatomía Patológica) evaluated a subset of our IHC techniques under different modules, including general markers, breast cancer markers, and PD-L1; these all obtained very good scores.

Training and outreach activities are also a key component of the Unit’s activities. In the lab we hosted 1 vocational training student in anatomical pathology (Formación Profesional de Grado Superior en Anatomía Patológica) undertaking a practical module for 3 months. In addition, the Unit participated in a master’s course in oncology research.

The pathological analysis of mouse and human tissues provided by the Unit, applying a broad array of histochemical and immunohistochemical techniques, is critical to the progress of oncology research projects run at the CNIO.*

**OVERVIEW**

Pathology is the branch of science dedicated to the study of the structural, biochemical, and functional changes in cells, tissues, and organs that underlie disease. The Histopathology Unit offers support and expertise in a range of services from paraffin embedding and tissue sections to histochemical staining, research and diagnostic immunohistochemistry (IHC) testing, antibody validation, *in situ* hybridisation techniques (including mRNA *in situ* detection using RNAscope), and tissue microarray generation. Other value-added services offered by the Unit’s highly skilled technicians include laser capture microdissection, slide digitalisation, image analysis, and quantification. The Unit also collaborates with CNIO researchers in the histopathological characterisation of animal models of disease, providing them with the necessary expert pathological advice. Finally, the Unit offers its portfolio of services to other institutions, including hospitals, research centres and private companies.