Pathology is the branch of science devoted to the study of the structural, biochemical and functional changes in cells, tissues and organs underlying disease. The Histopathology Unit offers support and expertise throughout a full range of services covering from paraffin embedding and tissue sections to histochemical stains, research and diagnostic immunohistochemistry, IHC testing, antibody validation. In situ hybridisation techniques (including in situ detection of specific mRNAs directly on sections from formalin-fixed paraffin-embedded (FFPE) tissues, thus providing a spatial dimension to gene expression analysis. The applications of this new technology are expected to be manifold, e.g., as an alternative to IHC whenever it is difficult to find specific antibodies that work well on FFPE tissues, or to validate results from other technologies, among others. Also, sometimes it is feasible to combine this technique with IHC, allowing for double stains to detect both mRNA and protein, or any other marker of interest.

The high quality of the techniques run by the Unit continues to be endorsed by External Quality Assessment Schemes. Thus, our histochemical techniques were evaluated by UK NEQAS. On the other hand, NordiQC and SEAP has evaluated a subset of our IHC techniques under different modules, including general markers, breast cancer markers and PD-L1; these all obtained very high scores.

During 2019, the Unit implemented RNAScope technology for in situ hybridisation, using the Ventana-Roche automatic platform for IHC stains. This new technique allows the efficient detection of specific mRNAs directly on sections from formalin-fixed paraffin-embedded (FFPE) tissues, thus providing a spatial dimension to gene expression analysis. The applications of this new technology are expected to be manifold, e.g., as an alternative to IHC whenever it is difficult to find specific antibodies that work well on FFPE tissues, or to validate results from other technologies, among others. Also, sometimes it is feasible to combine this technique with IHC, allowing for double stains to detect both mRNA and protein, or any other marker of interest.

In line with the activity carried out over the last few years, the Unit has maintained the portfolio of services demanded by its users in accordance with the needs of their projects. Thus, about 300,000 paraffin blocks of tissue samples were generated, and ca. 25,000 techniques performed, including histological and IHC techniques, in situ chromogenic hybridisation, tissue microarrays, slide scanning, etc. Also, during this time we introduced new IHC markers useful for the study of tumour development, as well as new chromogenic substrates for the visualisation of those markers.

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Training and outreach activities are also a critical component of the Unit’s activity. This includes our participation in modules of Formación Profesional for pathology technicians, mentoring of high school students during short-term stays at the Unit, conducting guided visits to the laboratories for students and other audiences, as well as offering practice sessions on the different technologies run by the Unit in Masters and other courses, among other activities.