

TECHNOLOGY TRANSFER AND VALORISATION OFFICE



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“Our office is strongly committed to translating new discoveries in cancer research into outputs for the benefit of patients and the health care system. To this end, we identify, protect, and develop projects with commercial potential, always with the mindset of co-developing them with private and public entities to increase the value of potential products.”

At the CNIO, the best science and research efforts join in the desire to make a great impact for cancer patients and the health care system. The Technology Transfer and Valorisation Office (TTVO) contributes to this purpose by ensuring appropriate protection of intellectual property and by channelling the technologies that arise from our research to companies and entrepreneurs to develop them further and thereby impact society.

The TTVO proactively monitors the progress of the CNIO's scientific activity to identify projects with high transfer potential. In 2020, 8 new ideas were incorporated into the technology transfer portfolio, of which 1 turned into a priority patent application, and 7 will become priority patent applications in 2021. These cover a wide range of products, including a monoclonal therapeutic antibody, drug inhibitors, new biomarkers, a cell therapy, a therapeutic vector for gene therapy and a SARS-CoV-2 diagnostic kit.

CNIO patents constitute an active portfolio of assets that are carefully prosecuted according to a patent strategy and licensing efforts. In coordination with national and international patent agents, TTVO manages a portfolio of 34 patent families, and provides advice and assistance during the drafting of the patent document, the filing, and the prosecution process. One PCT (Patent Cooperation Treaty) application for international extension was filed in 2020, and 1 patent with proven commercial interest entered the national phase. Licensed patents make up a remarkable 41% of the CNIO portfolio. Among those signed in 2020, was a license agreement with the newly created spin-off company Telomere Therapeutics, in which both the CNIO and the *Universidad Autònoma de Barcelona (UAB)* are partners, encouraging technology transfer through academic spin-offs. This new company, which received investment from InVivo Capital Partners, will develop gene therapy technology with telomerase to treat pulmonary and kidney fibrosis. The CNIO and *UAB* licensed 2 patent applications in co-ownership, and 1 more patent will be submitted in 2021. These patents protect the results obtained by the laboratory of Maria A. Blasco (CNIO Telomeres and Telomerase Group) and by the research group of Fátima Bosch (Animal Genetic Engineering Laboratory, *UAB*).

To ensure that scientific ideas and results are transferred to the private sector, a proof-of-concept phase is usually necessary to validate its potential application in the market. The TTVO supports the preparation and coordination of this phase, and advises CNIO scientists so that their ideas reach the point of development necessary for potential companies to decide to invest and co-develop. This is the case of calls aimed at technological development projects such as *CaixaImpulse*, among others. Besides the 3 CNIO projects ongoing since 2018, a new project was awarded a *CaixaImpulse CONSOLIDATE COVID-19* grant in 2020 and thereby benefits from funding and mentoring by experts of the national bio-ecosystem. This project, co-led by Felipe Cortés Ledesma (CNIO Topology and DNA Breaks Group) and Luis Blanco Dávila (*CBMSO-CSIC*), aims to develop a novel detection kit for the simple and rapid diagnosis of SARS-CoV-2 infection. It is also worth mentioning that an ERC Proof of Concept Grant was awarded to Óscar Fernández-Capetillo (CNIO Genomic Instability Group) in 2020 to develop his TARGETSET research project. This project aims to advance the development of novel SETD8 inhibitors — linked to the development of some childhood tumours associated with a poor prognosis — and to study the preclinical potential of a compound that could help treat these tumours. In addition, 3 projects selected in pharmaceutical industry calls — *Farmaindustria*, Merck KGaA Research Grants, and Pfizer Call for Proposals — are being evaluated, and 1 project is currently under evaluation by a venture capital firm.

The experience and financial support of the value chain's actors, from specialised investors to large multinationals in the biopharmaceutical industry and start-up companies,

are necessary to develop technologies. The TTVO identifies these partners, negotiates technology transfer agreements, and manages the relationship with licensees, including the payment of royalty fees. In 2020, the TTVO managed 261 agreements (MTAs, CDAs, research collaborations, licenses, etc.). Among these industrial partnerships is worth noting a research contract between the CNIO, *CRIS contra el cáncer*, and Bionam Biotech for a pancreatic cancer project led by Mariano Barbacid (CNIO Experimental Oncology Group). Other partnerships include the collaboration of the CNIO Experimental Therapeutics Programme, led by Joaquín Pastor, with Foxy Pharma and *CSIC*, to develop FOXO target triggers in cancer models and ageing-related diseases.

Most of these agreements (60%) were established with international entities, which is an indicator of the internationalisation of the CNIO's research activity. Through collaborations with industry, up to €2.4 million were secured for research activities. Moreover, 4% of the agreements are licences to commercial partners. Patents and unpatented research tools are licensed to increase their availability to the scientific community, as well as to create opportunities for our business partners and to provide a financial return on public investment. The net income derived from licences in 2020 increased to €728,000. This income reverts to CNIO research activities as well as to the inventors themselves. A total of 40 inventors and 10 research groups have contributed towards and benefited from this achievement. Our monoclonal antibody commercial pipeline was also strengthened, and now accounts for more than 100 monoclonal antibodies.

In February 2020, TTVO jointly with the *Instituto de Salud Carlos III* participated in *Transfiere*, the European Meeting on Science, Technology, and Innovation. Then, the Covid-19 pandemic had an extraordinary impact on events promoting technology transfer and partnerships, many of which, such as BIO2020 (USA) or BioSpain, were scheduled in 2021 in a virtual format. In these circumstances, we decided to seize the opportunity offered by the increase in virtual meetings and organised a training seminar on the protection of IP in bioinformatics, AI, and big data, for nearly 50 CNIO researchers, in collaboration with the intellectual property firm Mewburn Ellis. With the aim of fostering the culture of innovation, at the end of the year, 6 CNIO researchers were selected to participate in the “Accelerate: Building Business from Science and Technology” course at the *Instituto de Empresa* business school that will be developed in 2021 with the support of *Banco Santander* Foundation.

All the above-mentioned achievements stand testament to the excellence and hard work of CNIO scientists and to the CNIO's unwavering encouragement of innovation and technology transfer activities. ■