“This year’s Covid-19 pandemic has increased the importance of scientific research; it is thanks to science that the world is slowly returning to normality.”

MARIA A. BLASCO
Director
This year started with the arrival of the COVID-19 pandemic in early 2020 which, although it has changed our lives in so many ways, has not stopped, but instead increased the importance of scientific research. Indeed, it is thanks to science that the world is slowly returning to normality.

Despite the initial limitations imposed in the workplaces by this health crisis, I am proud to convey that the CNIO has been able to overcome those difficulties and to achieve our goal of scientific leadership and international impact. In 2020, CNIO researchers authored a total of 263 papers, 36 of which were published in journals with impact factor between 10 and 15, and 36 publications in journals with impact factor greater than 15. This year was very productive in terms of number of high-quality publications, which increased by 26% with respect to 2019. According to the Nature Index, considering our scientific contributions in the life sciences and healthcare field, the CNIO ranked second among cancer-focused institutions in Europe and holds the eighth position worldwide. These indicators are a testimony of our scientific efforts in basic and translational cancer research.

In 2020 the CNIO was awarded for the third time the Spanish Government accreditation as Centre of Excellence within the Severo Ochoa / María de Maeztu call from the Ministry of Science and Innovation. The CNIO is thus one of the only 6 research centres in Spain that have been granted this distinction without interruption since the launch of this flagship programme of Spanish science in 2011.

Also, 2020 was particularly successful for CNIO researchers in getting access to top-level funding opportunities in international calls, with 3 Group Leaders being awarded prestigious ERC Grants during 2020. Maria Blasco, Telomeres and Telomerase Group Leader (ERC Advanced Grant, project SHELTERIN); Marisol Soengas, Melanoma Group Leader (ERC Advanced Grant, project METALERT-STOP); and Manuel Valiente, Brain Metastasis Junior Group Leader (ERC Consolidator Grant, project ALTER-BRAIN).
Aiming to contribute to the fight against the COVID-19 pandemic by using our scientific excellence, this year several Groups and Units at the Centre became involved in projects focusing on different aspects of the disease, such as the association of telomere length with the severity of the pathology related to COVID-19; the identification of genetic variants correlated with disease severity; the generation of humanised mouse models susceptible to SARS-CoV-2 infection for preclinical studies; the development of a new and rapid diagnostic method using phi29 polymerase amplification; and the evaluation of the modulation of the viral receptor ACE2 with drugs already approved for medical use, to name a few. It is clear that understanding the molecular mechanisms of life can be useful not only to solve cancer but other diseases as well. 

Adapting the Centre to the constant evolution of science and the new emerging fields in cancer research, by recruiting new groups working at the forefront of science, is key to maintaining our competitive edge. Thus, in 2020 we carried out a selection process that allowed us to incorporate a new Research Group into the Molecular Oncology Programme, which will join the Centre in January 2021: the Immunity of Cancer Group, led by Maria Casanova, coming from the Icahn School of Medicine at Mount Sinai Hospital, New York. This new Junior Group will contribute to boosting the activity of the CNIO in the immuno-oncology area. We wish to thank all our generous donors for their support of the CNIO. Every single donation supports cancer research and will contribute to society for generations to come.

A key achievement in this area this year was the launch of a new research programme “Therapy Development of Telomere Cancer”, which is focused on the development of gene therapy based on telomerase, using AuV9 virus as vector, for the treatment of pulmonary fibrosis and other fibrosis conditions, which currently have no effective treatments. This new company is based on the results generated by the Telomeres and Telomerase Group of Maria Blasco at the CNIO, in collaboration with the Group of Fátima Bosch, from the Universidad Autónoma de Barcelona. The company has received seed capital from the firm InVivo Capital Partners. It is also worth mentioning the research agreement established with Biomim Biotech and CRIS contra el cáncer for a project on pancreatic cancer of the Experimental Oncology Group, led by Mariano Barbacid.

Furthermore, we continue supporting and promoting the participation of CNIO researchers in national and international calls from public agencies and private foundations that fund projects with a strong innovation component. In 2020 an ERC Proof of Concept Grant was awarded to Oskar Fernández-Capetillo, Head of the Genomic Instability Group, to work on the development of SETDB protein inhibitors with potential for the treatment of neuroblastomas and medulloblastomas, paediatric tumours that currently have poor prognosis. In addition, a project from the Topology and DNA Repair Group, led by Felipe Cortés, was awarded a CaixaImpulse CONSOLIDATE COVID-19 grant to develop a novel detection kit for the simple and rapid diagnosis of SARS-CoV-2 infection. The CNIO holds a total of 4 prestigious CaixaImpulse projects that aim to accelerate the transfer of technology from basic research centres to industry.

Our drug discovery programme (Experimental Therapeutics) at the CNIO, with the support of the Consejo Superior de Investigaciones Científicas (CSIC), in order to develop compounds triggering a proprietary target relevant in cancer models and aging-related diseases.

Our training programmes are also a key feature of the Centre, as an essential part of our mission. To provide training to the new generations of highly skilled researchers is a priority for the CNIO, and we warmly thank our sponsors as they contribute to supporting all our training initiatives.

During 2020, Sonia Lain, from the Karolinska Institutet in Stockholm (Sweden), was beneficiary of the Jesús Serra Foundation’s Visiting Researchers Programme. In addition, thanks to a “green agreement” by Women for Science Europe, the programme was established with international entities. This is a clear reflection of the leadership and influence of the CNIO and our researchers worldwide.