



**“In 2023 we reached an historical maximum in the number of publications in journals with an impact factor greater than 15 since the start of CNIO operations.”**

**MARIA A. BLASCO**  
Director

# FOREWORD

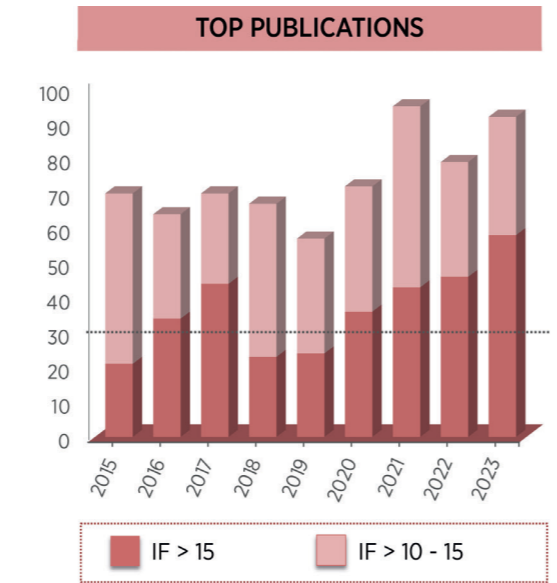
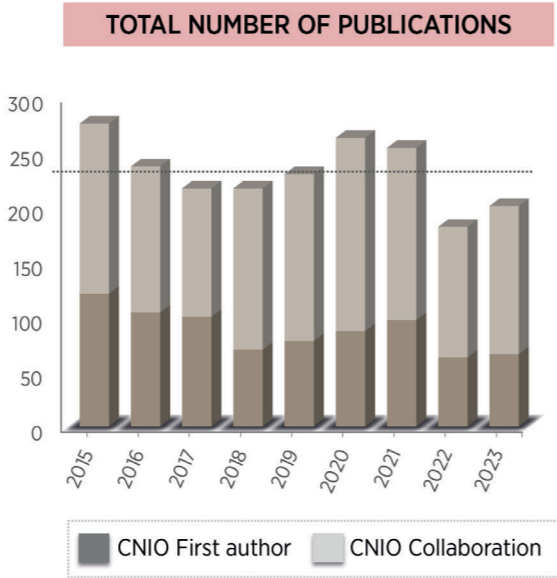
MARIA A. BLASCO Director

I feel proud to open this foreword by remarking that 2023 was once again excellent for our scientific productivity. We authored a total of 197 papers, 33 of which were published in journals with an impact factor between 10 and 15, and 59 publications in journals with an impact factor greater than 15. The latter figure represents the maximum of the historical series from the beginning of CNIO operations.

According to the *Nature Index*, considering our scientific contributions in the natural sciences and healthcare sector, the CNIO ranked second among cancer-focused singular centres in Europe and holds the 9<sup>th</sup> position worldwide. Likewise, the SCImago ranking places CNIO in the 9<sup>th</sup> position among cancer centres worldwide. These indicators provide evidence of the success of our scientific activity in cancer research and our leadership at the international level.

The CNIO External Scientific Advisory Board (SAB) plays a critical role in guiding the strategic plans of the CNIO, as well as in reviewing our Research Groups. During 2023, the SAB reviewed the Groups in 3 of the CNIO Research Programmes (Molecular Oncology, Structural Biology and Clinical Research). Upon concluding their visit to the CNIO on April 24-25, they delivered a report that highlights the scientific excellence of the Centre, acknowledging its prominent position at the forefront of basic and translational cancer research worldwide, and commending the senior leadership of the CNIO and its Scientific Director for maintaining the CNIO’s scientific productivity and prominence, despite the considerable challenges imposed by the recent pandemic.

The adaptation of the Centre to the constant evolution of science, by incorporating new research groups working in emerging fields in cancer research, is key to maintaining our competitive edge. Along these lines, a process of selecting new groups for the Molecular Oncology Programme resulted in our incorporating Guadalupe Sabio, formerly Group Leader at the Spanish National Cardiovascular Centre (*CNIC*), by the end of 2023. Guadalupe Sabio is a well-known expert in the



field of the pathologies related with metabolism and obesity, including cancer, and at the CNIO she is leading the new Organ Crosstalk in Metabolic Diseases Group. Likewise, Antonio Pérez, Head of the Service of Paediatric Haemato-oncology at the *Hospital La Paz*, joined the CNIO to lead a joint Unit focused on the paediatric cancer field, to reinforce our Clinical Research Programme. Antonio Pérez is a reference in the application of cell therapy in paediatric cancer, including NK cells, transplant of haematopoietic stem cells, and advanced therapies with CAR-T cells.

Another candidate who will join the CNIO in the near future is Gonçalo Bernardes, at present Chemical Biology Professor at the University of Cambridge, UK. Prof Bernardes has focused his successful research career on the application of chemical biology methods and approaches to better understand cancer-related processes. During 2023 he was beneficiary of the *Jesús Serra* Foundation (now *Fundación Occident*) Visiting Researchers Programme, spending several months at the CNIO during a sabbatical stay. He was the recipient of a grant from the *ATRAE* programme of the *MCIU*, aimed to attract researchers of recognised international prestige to research centres in Spain.

In addition, a selection process was put into place during 2023 to incorporate a new Junior Group Leader to the Structural Biology Programme. The process was concluded with the proposal to recruit Lucas Tafur, a bright young scientist who is currently a senior researcher at the University of Geneva. At the CNIO he will develop a project focused on the study of the mTORC1 complex, highly relevant in the regulation of cancer and metabolism from a structural biology perspective. He is expected to be incorporated into the CNIO in September 2024.

Regarding our activity in the innovation field, in 2023, the CNIO filed 7 priority patent applications, 2 PCT applications for international extension, and 3 for national phases. Our efforts in promoting collaborations with industry resulted in more than €4M secured through research agreements with key partners from the pharmaceutical and biotech sectors. As much as 63% of CNIO agreements with the private sector were established with international entities. Additionally, the net income from royalties derived from the licensing of CNIO assets quantified in 2023 (corresponding to the sales in 2022) reached €1.64M, which represents an increase of 26% over the levels achieved in the previous year. Moreover, a new spin-off company was launched in 2023 based upon the results from our research activities. Thus, the CNIO is participating in a new company, *TNC Terapia*, together with the *Fundación para la Investigación Biomédica Hospital 12 de Octubre (FIBH12O)*. Both institutions are co-owners of the LUMICA technology, which aims to use precision nutrition as a therapeutic tool against cancer and derives from the work of the Breast Cancer Clinical Research Unit, headed by Miguel A. Quintela. These

achievements represent a clear reflection of the leadership and influence of the CNIO and our researchers worldwide in the innovation field.

Our drug discovery programme (the Experimental Therapeutics Programme) continues working on the co-development of drug candidates from novel targets validated by CNIO investigators, contributing to the generation of new therapeutic agents to fight cancer and ageing-related diseases, which also represent assets for the CNIO.

Furthermore, we continue supporting and promoting the participation of CNIO researchers in national and international calls for proposals from public agencies and private foundations that fund projects with a strong innovation component. Thus, in 2023 two CNIO Groups were awarded grants from the new National *AEI* Innovation calls, co-funded by the EU Reconstruction Funds “NextGenerationEU”. Miguel A. Quintela is coordinating the project “Integrating longitudinal patient-generated data and multi-omic profiling for comprehensive precision oncology in women’s cancers”; and Mercedes Robledo is participating in the project “Development and implementation of a functional genomics platform for undiagnosed hereditary cancer (IMPACT\_VUSCan)”. It is also worth mentioning the project “GUIDE.MRD: GUIDing multi-moDal therapies against MRD by liquid biopsies”, which received a grant from the EU call “Innovative Health Initiative Joint Undertaking (IHI-JU)” that was awarded to Núria Malats as principal investigator, with a total budget of €17.6M, out of which €1.27M will fund the research developed at the CNIO.

Our training programmes are among the key elements of the Centre’s strategic plan, as an essential part of our mission. To provide high-quality training to the new generations of biomedical researchers is one of our priorities, and we warmly thank our sponsors contributing to support our training initiatives.

As another initiative related to attracting talent, each year the CNIO continues hosting visiting scientists from both national and international institutions. In addition to the above mentioned case of Gonçalo Bernardes, recipient of a grant from the *Jesús Serra* Foundation’s Visiting Researchers Programme, 3 female African scientists, awarded with grants from different editions of the “Science by Women” programme of the *Mujeres por Africa* Foundation, came to CNIO to spend sabbatical stays of 6 months as Visiting Scientists: Marwa Muhammad Abu-Serie Ali (7th edition), from GEBRI, SRTA-City (Egypt); Mai Tolba (5<sup>th</sup> edition), from Ain Shams University (Egypt); and Nwodo Ngozi (8<sup>th</sup> edition), from the University of Nigeria.

We continued with all our ongoing activities related to the communication and discussion of scientific results and

advances, through the organisation of our ongoing series of seminars, conferences and workshops. In 2023 we organised 2 new editions of the prestigious CNIO-CaixaResearch Frontiers Meetings, which always count on the participation of key leaders in a broad array of fields. Two conferences were held in 2023, focusing on the topics of Genome Organisation and Stability (May 22-23) and Metastasis (November 6-8).

The “Philosophy and Science” symposia series that began in 2019, with the support of *Banco Sabadell* Foundation, held its 5<sup>th</sup> edition in 2023. Under the title “The catastrophe of the loss of biodiversity”, a panel of philosophers and scientists discussed the reasons behind this increasingly accelerated process and the associated challenges, as well as the potential strategies to prevent or revert such loss.

CNIO news also continued attracting the interest of the media, marking over 6,300 appearances in press (printed and online), an increase of nearly 40% over the previous year. In addition to covering some of our most relevant research findings, the general media were also attracted by other CNIO initiatives, such as described below.

On the occasion of World Cancer Day on February 4, we organised a campaign of fundraising and awareness, with the collaboration of the actress Nathalie Seseña, focusing on conveying the strong links between human health and planet health. The success of the campaign contributed to significant presence of CNIO in the media, which in turn generated a significant number of new donors for our “CNIO Friends” philanthropic platform.

The Institutional Image and Outreach Office leads several projects aiming to generate society’s trust and attention. Upon the departure of the former Office Coordinator, Amparo Garrido, we incorporated a new Director, Juan de Nieves, an expert in the field of visual arts, with a long trajectory as curator of museums and exhibitions, at both national and international levels.

In 2023, the 6<sup>th</sup> edition of our “CNIO Arte” project, co-funded by the *Banco Santander* Foundation, which explores the common territories between scientific research and artistic creation, brought together the visual artist Amparo Garrido and Elizabeth Blackburn, the latter recipient of the Nobel Prize of Medicine and Physiology (2009) for her work on telomeres, structures that protect the chromosomes and that are involved in ageing processes at the cellular and organismal levels. The pieces created by the artist, 2 pictures and 1 video, were exhibited at the CNIO throughout the year. For the 3<sup>rd</sup> year, we had our own space at the contemporary art fair ARCO (February 22-26), where the work of Amparo Garrido was exhibited, attracting a lot of interest from the public and the media. CNIO Arte 2023 was also presented at the Guggenheim



CNIO Arte 2023 encounter at the Guggenheim Museum in Bilbao. July 5, 2023. In this image: CNIO Director Maria A. Blasco (right), Nobel laureate Liz Blackburn connected virtually by Zoom (stage screen), and CNIO Arte 2023 featured artist Amparo Garrido (left).

Museum in Bilbao. Beyond the social visibility and impact, CNIO Arte generated, for the 6<sup>th</sup> consecutive year, a donation of €100,000 that contributed directly to our “CNIO Friends” philanthropic initiative.

Derived from the success of this initiative, a proposal was developed jointly with the *Instituto Cervantes* (IC), to exhibit the works of the successive CNIO Arte editions in the different IC sites across the world. Through this initiative, the exhibition “*Excelentes: Dialogues between Art and Science*” was opened on February 2 at the IC in New York. The exhibition, which offers a selection of works from the CNIO Arte programme across the years, including photographs, videos, drawings, and collages, was on display until April 15 and moved later to the Spanish Embassy in Washington (from April 27 to September 20) and then to the IC site in Chicago (from October 25). This exhibition will tour across other IC sites during 2024.

Furthermore, aiming to increase the impact of this initiative, we organised the 4<sup>th</sup> edition of the “Art and Science Symposia” series, which brings renowned professionals from both fields to participate in an open and enriching discussion on a selected topic. The symposium was held jointly with the presentation of the 6<sup>th</sup> edition of CNIO Arte, under the title “The thread of life in arts and sciences”, chaired by Carlos Jiménez (Emeritus Professor of Aesthetics, historian, and art critic).

Another related activity established in 2023 was the “CNIO Artistic Residences” initiative, which received financial support from the *FECYT*. A young artist, Clara Montoya, was selected through an open call to spend several months at the CNIO. The aim is to achieve an understanding of our research activities and, based on this experience, to create an artwork inspired by or reflecting the work developed at the CNIO. As a result of the project, Clara Montoya created the work “*Ignota 2023*”, which is now being exhibited at the CNIO, and was also presented in ARCO. Based on the success of this initiative, a second edition of the CNIO Artistic Residences was launched in 2023. A call was opened to select a new artist, who will develop his/her residence at the CNIO in 2024.

The fundraising strategy of the CNIO is implemented through our Philanthropy and Development Office, aiming to generate an additional income stream for our research activities. Donations from members of the public, corporate organisations, associations, and foundations go directly to the “CNIO Friends Contracts” philanthropic initiative, to fund the salaries of new post-doctoral research fellows recruited through a highly competitive international call each year. From 2016 to date, philanthropic donations to the CNIO have made it possible to incorporate 35 new researchers, and from the call that was open in 2023, we expect to fill 8 new positions. We are deeply grateful to our donors and CNIO Friends for their ongoing support to our research programme. After all, philanthropy is a tool that enables all members of society to have a direct impact on our mission to stop cancer.

Our commitment to gender equality continued during 2023 through the activities spearheaded by our CNIO Women and Diversity Office (WISE), an effort of CNIO volunteers that facilitates cultural changes as well as institutional improvements. The Office continued bringing outstanding female speakers who are leaders in a broad array of fields to the “WISE Seminars” series. Open to the general public, this initiative aims to inspire the audience by sharing new perspectives and visions on the role of women in society. Aligned with our goal of fostering the STEM careers among the youngsters and breaking gender stereotypes, on February 11, International Day of the Women and Girls in Science, the WISE Diversity Office organised an event with several secondary schools, which included, among other activities, a talk by Sara García, who described how she became a researcher at the CNIO as well as an astronaut at the ESA. The office was also involved in the follow-up of the CNIO’s first Equality Plan, preparing protocols to prevent situations of harassment and other conflicts, as well as to protect women during the pregnancy and lactation periods, among other documents. The WISE Diversity Office also worked together with the Workers Council and other CNIO areas to elaborate the CNIO’s second Equality Plan, to be approved during 2024.

Lastly, I do not want to end this foreword without mentioning the appointment of the CNIO Biobank Director, Eva Ortega-Paíno, as new Secretary General for Research by the Spanish Government in late 2023. Since joining the CNIO in 2018, Eva has been instrumental in expanding the activities and role of the Biobank, which under her leadership has reached a new level of excellence. We feel proud of having had Eva as a member of our team and wish her all the success in her new role at the *MCIU*.

To conclude, it is a pleasure for us to convey to society the report of our activities and achievements during 2023 and to emphasise again our commitment to continue dedicating our best efforts to fulfil our mission of conducting research of excellence in oncology, translating scientific knowledge into clinical practice, and transferring the technology developed at the CNIO to the productive sector for the years to come. ■