

EDUCATION AND TRAINING PROGRAMMES

One of the principal goals of the CNIO is to increase its training capacity in order to give students and professionals the opportunity to advance their careers in the healthcare sector.

The CNIO obtains essential grants to train new professionals and attracts funds to hire personnel-in-training. Coordinating specific training programmes, establishing collaborations with different universities and institutions, and managing grant funding and training contracts are fundamental to guarantee the training of new researchers and the continuity of high-level research projects.

During 2022, the CNIO obtained funding to hire personnel-in-training from several national and international public institutions such as the State Research Agency of the Spanish

Ministry of Science and Innovation (*AEI/MCIN*), the Community of Madrid, the Institute of Health *Carlos III*, China Scholarship Council, and the European Research Council; most of them co-funded by European Structural and Investment Funds. Funding also came from private funders, including the Spanish Association Against Cancer (*AECC*), “la Caixa” Banking Foundation, and the *Cris* Foundation.

In addition, in 2022, the CNIO signed several new agreements with Spanish Universities and other institutions, namely with the *Universidad de Santiago de Compostela*, *Erasmus University Medical Center Rotterdam*, *Universidad Camilo José Cela*, *Universidad Pablo de Olavide*, *IES Ribera del Tajo*, *IES Siglo XXI*, *IES Maria Inmaculada*, and *IES Corredor del Henares*.

TRAINING PROGRAMMES	PARTICIPANTS IN EDUCATION AND TRAINING PROGRAMMES				
	2018	2019	2020	2021	2022
Training of PhD students	109	100	109	135	130
Post-doctoral training	50	49	52	62	55
Training for MDs	12	20	7	10	12
Laboratory training for MSc/BSc students	128	150	85	106	136
Laboratory training for technicians	13	15	5	9	17

TRAINING OF BSC/MSC STUDENTS

The CNIO is committed to training junior scientists at the onset of their careers. To this end, the Centre has established a Programme that offers BSc and MSc students the opportunity to obtain hands-on practical laboratory experience by working on ongoing research projects in one of the CNIO Groups. The CNIO offers 2 types of short-term laboratory training:

- An annual Summer Training Programme for undergraduate students, from any country, who are in their last years of study in the biomedical field. The Programme encompasses 8 weeks of full-time laboratory training (292.5 hours). During this time, the students actively participate in research projects in one of the CNIO Groups. During 2022, 4 students from Spain participated in this programme.
- Additionally, students can apply for laboratory training throughout the academic year by directly contacting the Heads of CNIO’s individual Research Groups or Units. This year, 136 students participated in these programmes, of whom 4 ended up joining the CNIO as pre-doctoral students.

TRAINING OF PHD STUDENTS

The training of PhD students in cutting-edge cancer research is of key importance to the CNIO. The Centre offers many opportunities for bright and dynamic university graduates, of all nationalities, to pursue an ambitious PhD project. To attest this, 16 students obtained their PhD degrees in 2022 and 26 others joined the CNIO in the same year. Over 15% of the students working at the CNIO in 2022 were graduates from foreign universities, thus contributing to the internationalisation of the Centre.

Since 2008, the “la Caixa” Foundation offers international fellowships to PhD students to enable them to carry out their thesis projects in biomedical research in Spanish centres of excellence, such as the CNIO. During 2022, 3 pre-doctoral students received a doctoral fellowship from the INPhINIT programme of the “la Caixa” Foundation to join the CNIO.

The distribution of students across the CNIO’s Research Programmes in 2022 was as follows: 68 % of students worked in the Molecular Oncology Programme, 12% in the Structural Biology Programme, 12% in the Human Cancer Genetics Programme, 2% in the Experimental Therapeutics Programme, 2% in the Biotechnology Programme, and 4% in the Clinical Research Programme.

FUNDING OF PHD TRAINING	NO.
SPANISH ORGANISATIONS	106
State Research Agency / <i>Agencia Estatal de Investigación (AEI)</i> . Ministry of Science and Innovation / <i>Ministerio de Ciencia e Innovación</i> (Predoctoral Fellowships)	50
State Research Agency / <i>Agencia Estatal de Investigación (AEI)</i> . Ministry of Science and Innovation / <i>Ministerio de Ciencia e Innovación</i> (I+D Projects)	8
Spanish Association Against Cancer (<i>AECC</i>) / <i>Fundación Científica de la AECC</i> (I+D Projects)	6
Spanish Association Against Cancer (<i>AECC</i>) / <i>Fundación Científica de la AECC</i> (Fellowships)	4
Institute of Health Carlos III / <i>Instituto de Salud Carlos III (ISCIII)</i> (Fellowship)	1
Institute of Health Carlos III / <i>Instituto de Salud Carlos III (ISCIII)</i> (I+D Projects)	2
Comillas University / <i>Univesidad de Comillas</i>	1
<i>FERO</i> Foundation / <i>Fundación FERO</i>	1
<i>Cris</i> Foundation / <i>Fundación Cris</i>	3
Community of Madrid / <i>Comunidad de Madrid</i>	11
Bionam Biotech <i>AIE</i>	3
CNIO	7
“la Caixa” Banking Foundation/ <i>Fundación Bancaria</i> “la Caixa” (I+D Projects)	2
“la Caixa” Banking Foundation/ <i>Fundación Bancaria</i> “la Caixa” (Predoctoral Fellowships)	7
INTERNATIONAL ORGANISATIONS	24
AXA	2
China Scholarship Council (CSC)	3
European Research Council	11
GENCODE	2
ESMO	1
MERCK	1
Marie Skłodowska-Curie actions of the European Commission	2
VCN	1
Pfizer	1
TOTAL	130

POST-DOCTORAL TRAINING

One of the CNIO’s prime objectives is to attract young researchers, who have recently obtained their PhD or MD degrees, and to offer them highly attractive research projects at the forefront of cancer research.

In 2022, 55 postdoctoral fellows worked at the CNIO. Notably, about one fourth of these fellows were from outside of Spain, many coming from very prestigious international institutions.

Thanks to the donations received through the ‘CNIO Friends’ platform, the seventh call of the ‘CNIO Friends’ Postdoctoral Contract Programme, launched in 2022, resulted in the recruitment of 9 scientists for a 2-year period each.

FUNDING SOURCES OF POST-DOCTORAL CONTRACTS	NO.
SPANISH ORGANISATIONS	39
State Research Agency / <i>Agencia Estatal de Investigación (AEI)</i> . Ministry of Science and Innovation / <i>Ministerio de Ciencia e Innovación</i> (Postdoctoral Fellowships)	3
State Research Agency / <i>Agencia Estatal de Investigación (AEI)</i> . Ministry of Science and Innovation / <i>Ministerio de Ciencia e Innovación</i> (I+D Projects)	3
Spanish Association Against Cancer (<i>AECC</i>) / <i>Fundación Científica de la AECC</i> (Fellowships)	4
“la Caixa” Banking Foundation / <i>Fundación Bancaria</i> “la Caixa” (Postdoctoral Junior Leader- INCOMING)	1
“la Caixa” Banking Foundation / <i>Fundación Bancaria</i> “la Caixa” (I+D Projects)	3
Institute of Health Carlos III / <i>Instituto de Salud Carlos III (ISCIII)</i>	1
<i>Cris</i> Cancer Foundation (<i>CRIS</i>) / <i>Fundación Cris Contra el Cáncer (CRIS)</i>	1
Community of Madrid / <i>Comunidad de Madrid</i>	3
CNIO	18
<i>Banco Santander</i> Foundation / <i>Fundación Banco Santander</i>	1
<i>BBVA</i> Foundation / <i>Fundación BBVA</i>	1
INTERNATIONAL ORGANISATIONS	16
AIRC	1
European Commission	1
European Research Council	7
Janssen	1
Marie Skłodowska-Curie actions of the European Commission	4
ESMO	1
Worldwide Cancer Research UK	1
TOTAL	55

POSTGRADUATE PROGRAMMES

In addition, the CNIO — in collaboration with academic institutions across Spain — provides access to a variety of postgraduate programmes that cover the areas of Cellular &

Molecular Biology, Molecular Biomedicine, Biotechnology, Biocomputing, Clinical & Applied Cancer Research, and Therapeutic Targets.

Official Postgraduate Programmes in Molecular Biosciences

The majority of the international postgraduate trainings offered at the CNIO are developed in collaboration with the Faculty of Medicine and Faculty of Sciences at the Autonomous University of Madrid (*UAM*). These trainings fall under 4 official Postgraduate Programmes, namely, the Doctorate in Molecular Biosciences, Master’s in Biomolecules & Cell Dynamics, Master’s in Molecular Biomedicine, and Master’s in Biotechnology. CNIO also collaborates with the *UAM* as a partner institution of *UAM*’s Doctoral School (*EDUAM*), and is a member of the Management Committee.



Master’s Degree in Biocomputing Applied to Personalised Medicine and Health

The Master’s in *Bioinformática Aplicada a la Medicina Personalizada y la Salud* is organised together with the National School of Health of the National Institute of Health Carlos III (*Escuela Nacional de Sanidad del Instituto de Salud Carlos III, ENS-ISCHII*).



Official Master’s Degree in Clinical and Applied Cancer Research

The CNIO and the *CEU-San Pablo* University in Madrid (*USP-CEU*) co-organise a Postgraduate Training Programme in Clinical and Applied Cancer Research: the *Máster Universitario en Investigación Clínica y Aplicada en Oncología*.



Official Master’s Degree in Therapeutic Targets of Cell Signalling: Research and Development

The CNIO collaborates with the Biochemistry and Molecular Biology Department at the University of Alcalá de Henares (*UAH*) for the *Máster Oficial en Dianas Terapéuticas en Señalización Celular: Investigación y Desarrollo*.



Dianas Terapéuticas
en Señalización Celular
Investigación y Desarrollo
Máster Oficial

LABORATORY TRAINING FOR TECHNICIANS

This training programme has been developed for students in Anatomical Pathology, Clinical Diagnostic Laboratory, and Archiving/Recording; it is organised through agreements with 19 institutions that provide secondary education for laboratory technicians in Spain. It provides students with

hands-on knowledge in cellular and molecular biology techniques. The programme consists of 14 weeks (370-400 hours) of laboratory training. Of the 17 students who participated in this programme in 2022, 1 was hired by the CNIO.

TRAINING FOR MDS

In line with CNIO’s commitment to bridge the “bench to bedside” gap, the Centre offers 3 training opportunity programmes to MDs and other health care professionals. Training usually consists

of a 3-month period during residency. In 2022, 12 medical residents from 5 different hospitals enjoyed the benefits of rotations within the different Groups and Units at the CNIO.

ADVANCED TRAINING OF SCIENTISTS THROUGH EXTRAMURAL PROGRAMMES

During 2022, the *Ramón y Cajal* Programme supported 6 scientists. This special initiative, established in 2001 by the former Spanish Ministry of Science and Technology (currently the State Research Agency of the Spanish Ministry of Science and Innovation) aims to encourage Spanish or foreign scientists working abroad to return to or relocate to Spain. Successful candidates are selected on the basis of their potential capacity

to lead independent projects and groups, or to contribute successfully to the ongoing research in the existing groups. Fourteen other scientists are funded by similar programmes, including the *Juan de la Cierva* programme (Spanish Ministry of Science and Innovation, 4 contracts); the *Miguel Servet* programme (1 contract) of the Institute of Health *Carlos III*; and the Spanish Association Against Cancer (*AECC*, 9 contracts).

VISITING RESEARCHERS PROGRAMME

The *Jesús Serra* Foundation, part of the *Catalana Occidente* Group, aims to help eminent international specialists work together with CNIO researchers for a few months in order for them to expand their knowledge in areas of common interest. During 2022, Eva Nogales, from UC Berkeley (USA), and Gonçalo Bernardes, from the University of Cambridge (UK),



were beneficiaries of the *Jesús Serra* Foundation’s Visiting Researchers Programme.

“SCIENCE BY WOMEN” PROGRAMME

Thanks to the “Science by Women” Programme, launched by the Spanish “Fundación Mujeres por África”, Marwa Muhammad Abu-Serie Ali, from Alexandria University, Sudan, was awarded a grant to join the CNIO’s Genetic and Molecular Epidemiology Group for a 6-month stay as a visiting scientist.

