

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. During 2016, the CNIO signed new agreements with several Spanish Universities and other institutions, namely with the

Universidad Autónoma de Barcelona, UNED, the International School of Protocol, University Claude Bernard Lyon, *Universidad Francisco de Vitoria*, *Universidad de Navarra*, *Universidad de Córdoba*, *Universidad CEU San Pablo*, *Fundación Jesús Serra*, *Fundación "la Caixa"*, and the ISFPS Claudio Galeno of Madrid.

TRAINING PROGRAMMES	PARTICIPANTS IN EDUCATION AND TRAINING PROGRAMMES				
	2012	2013	2014	2015	2016
Training of PhD students	121	116	108	105	110
Post-doctoral training	81	67	55	48	51
Training for MDs	16	21	14	25	17
Laboratory training for MSc/BSc students	42	36	73	80	95
Laboratory training for technicians	26	19	21	27	26
Master's Degree in Molecular Oncology (graduated)	37	37	34	29	25

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 (285 hours). During this time, the students actively participate in research projects in one of the CNIO groups. During 2016, 6 students from 3 different countries participated in this programme.
- Additionally, students can apply for laboratory training throughout the academic year by directly contacting the Heads of CNIO individual Research Groups or Units. This year, 95 students participated in these programmes, of which 6 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, in 2016, 10 students obtained their PhD degrees and 25 more joined the CNIO. More than 25% of the 110 students working at the CNIO in 2016 were graduates from foreign universities, thus contributing to the internationalisation of the Centre.

Since 2008, the *Fundación "la Caixa"* offers international fellowships to PhD students to enable them to carry out their thesis projects in biomedical research in Spanish centres of excellence. The CNIO was chosen, as one of 4 such centres, to launch a programme for outstanding young pre-doctoral students from all over the world who have an interest in pursuing an ambitious PhD project. Since 2013, the Ministry of Economy, Industry and Competitiveness has undertaken efforts to link the *"la Caixa"/CNIO International PhD Programme* to distinguished research centres accredited as "Severo Ochoa Centres of Excellence". The third call of this new *"la Caixa"-Severo Ochoa International PhD Programme* was very successful, attracting around 130 eligible applications from undergraduates from 32 different countries. During 2016, 2 pre-doctoral students received one of these internationally recognised fellowships.

The distribution of students across the CNIO's Research Programmes in 2016 was as follows: 54.5% of the students worked in the Molecular Oncology Programme, 11.8% in the Cancer Cell Biology Programme, 8.2% in the Structural Biology and Biocomputing Programme, 13.6% in the Human Cancer Genetics Programme, 9.1% in the Clinical Research Programme, 1.8% in the Biotechnology Programme and the remaining 0.9% in the Experimental Therapeutics Programme.



FUNDING OF PHD TRAINING	NO.
SPANISH ENTITIES	86
Ministry of Economy, Industry and Competitiveness / <i>Ministerio de Economía, Industria y Competitividad (MEIC)</i> (Predoctoral fellowships)	36
Ministry of Economy, Industry and Competitiveness / <i>Ministerio de Economía, Industria y Competitividad (MEIC)</i> (I+D Projects)	7
Ministry of Education, Culture and Sport / <i>Ministerio de Educación, Cultura y Deporte (MECD)</i> (Predoctoral fellowships)	4
Institute of Health Carlos III / <i>Instituto de Salud Carlos III (ISCIII)</i> (I+D Projects)	6
"la Caixa" Banking Foundation / <i>Fundación Bancaria "la Caixa"</i> (Predoctoral fellowships)	23
Spanish Association Against Cancer (AECC) / <i>Fundación Científica de la AECC</i> (I+D Projects)	1
ATresMedia Foundation / <i>Fundación ATresMedia</i>	1
Cris Foundation / <i>Fundación Cris</i>	4
CIBERER	2
CNIO	2
INTERNATIONAL ENTITIES	24
European Commission Framework Programme / H2020	2
Marie Skłodowska-Curie actions of the European Commission	4
European Research Council	5
Portuguese Foundation for Science and Technology (FCT)	1
China Scholarship Council	1
European Foundation for the Study of Diabetes	1
Melanoma Research Alliance	2
Boehringer Ingelheim Fonds	1
Boehringer Ingelheim International GMBH	1
Hoffmann-La Roche	1
Pfizer	3
Prostate Cancer Foundation Young Investigator Award	1
Volkswagen Foundation	1
TOTAL	110

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 interesting research projects at the forefront of cancer research.

In 2016, 51 postdoctoral fellows worked at the CNIO. Notably, more than one third of these fellows were from outside of Spain, many coming from very prestigious international institutions.

For yet another year, the *Fundación Banco Santander* upheld its agreement with the CNIO in 2016 and we continued the highly competitive fellowship programme aimed to support outstanding young scientists who have been trained in the UK or in the USA, and who wish to start or continue their postdoctoral training at the CNIO. One young scientist, who came from the Sloan Kettering Institute for Cancer Research (New York), joined the CNIO thanks to a Santander Foundation-CNIO Fellowship in 2016. Another scientist, coming from the City University of New York, was awarded one of these fellowships in late 2016.

Thanks to the donations received through the "CNIO Friends" platform we launched the inaugural Postdoctoral Contract "CNIO Friends" Programme in 2016, thereby enabling us to recruit 2 scientists for a period of 2 years each.

Furthermore, in 2016, as a result of an agreement signed with the *Juegaterapia* Foundation, we were able to create a third Postdoctoral Contract, "Juegaterapia-CNIO Friends", which enabled us to contract a scientist to carry out a project on paediatric oncology.

FUNDING SOURCES OF POST-DOCTORAL RESEARCHERS	NO.
SPANISH ENTITIES	31
Ministry of Economy, Industry and Competitiveness / <i>Ministerio de Economía, Industria y Competitividad (MEIC)</i> (Postdoctoral fellowships)	5
Ministry of Economy, Industry and Competitiveness / <i>Ministerio de Economía, Industria y Competitividad (MEIC)</i> (I+D Projects)	4
Institute of Health Carlos III / <i>Instituto de Salud Carlos III (ISCIII)</i> (I+D Projects)	2
Institute of Health Carlos III / <i>Instituto de Salud Carlos III (ISCIII)</i> (Postdoctoral fellowship)	1
Madrid-MIT <i>M+Visión</i> (Postdoctoral fellowship)	1
Spanish Association Against Cancer (AECC) / <i>Fundación Científica de la AECC</i> (Postdoctoral fellowships)	4
<i>Botín</i> Foundation / <i>Fundación Botín</i>	1
<i>Banco Santander</i> Foundation / <i>Fundación Banco Santander</i>	1
<i>Cris</i> Foundation / <i>Fundación Cris</i>	2
<i>La Marató TV3</i> Foundation / <i>Fundació La Marató TV3</i>	2
HM Hospitals / <i>HM Hospitales</i>	1
CIBERER	1
CNIO	6
INTERNATIONAL ENTITIES	20
European Commission Framework Programme / H2020	2
European Research Council	2
Association for International Cancer Research	5
Melanoma Research Alliance	1
Worldwide Cancer Research UK	1
US Department of Defense	1
Fulbright Commission	1
Boehringer Ingelheim International GMBH	2
Celgene	1
Daiichi Sankyo Agreement	1
Pfizer	3
TOTAL	51

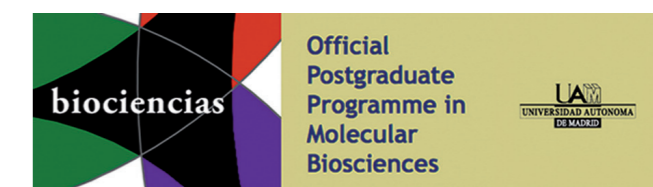
POSTGRADUATE PROGRAMMES

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

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

Official Postgraduate Programmes in 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) through 4 Official Postgraduate Programmes, namely the Doctorate in Biosciences, Masters in Molecular and Cell Biology, Masters in Molecular Biomedicine, and Masters in Biotechnology.



Master's Degree in Biocomputing and Computational Biology

The Master in *Bioinformática y Biología Computacional* – directed by Alfonso Valencia, Director of CNIO's Structural Biology and Biocomputing Programme – 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-ISCIII*), and the Madrid Science Park (*Parque Científico de Madrid, PCM*).



Official Master's Degree in Clinical and Applied Cancer Research

CNIO and the CEU-San Pablo University in Madrid (USP-CEU) jointly 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, 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, Investigación y Desarrollo*.



Master's Degree in Molecular Oncology

The main objective of this Master's degree, organised in collaboration with the Centre for Biomedical Studies (*Centro de Estudios Biosanitarios, CEB*), is to offer training in molecular oncology with emphasis on the latest findings in translational research that are essential for state-of-the-art oncological clinical practice. Upon successful completion of the 500 hours of training, a certificate for a Master's degree in Molecular Oncology – recognised by the European School of Oncology (ESO) – is awarded.



LABORATORY TRAINING FOR TECHNICIANS

This training programme has been developed for students in Anatomical Pathology and is organised through agreements with 18 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 20 weeks (707-712 hours) of laboratory

training for students. Additionally, the CNIO offered real-life work experience to 1 student of Analytical Assays and Quality Control for 12 weeks (370 hours), and to 3 students of Clinical Diagnosis for 12 weeks (380 hours). Of the 26 students who participated in this programme in 2016, 5 were hired by the CNIO.

TRAINING FOR MDS

In line with CNIO's commitment to bridge the gap between bench and bedside, the Centre offers 3 programmes providing excellent training opportunities to MDs and other health care professionals. Training usually consists of a 3-month period

during residency. In 2016, 17 medical residents from 11 different hospitals enjoyed the benefits of rotations within the different Groups and Units of the CNIO.

ADVANCED TRAINING OF SCIENTISTS THROUGH EXTRAMURAL PROGRAMMES

During 2016, the *Ramón y Cajal* Programme supported 8 scientists. This special initiative, established in 2001 by the former Spanish Ministry of Science and Technology (now Spanish Ministry of Economy, Industry and Competitiveness) 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. Ten other scientists were funded by similar programmes, including the *Juan de la Cierva* programme (5 contracts); the *ISCIII Miguel Servet* (1 contract) and *SEOM-Río Hortega* (contract funded by the Spanish Society of Medical Oncology, 1 contract) programmes; and the Spanish Association Against Cancer (*AECC*, 3 contracts).

VISITING RESEARCHER 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 to expand their knowledge in areas of common interest. During 2016, Patrick Sung from the Yale University in New Haven (USA) was beneficiary of the Jesús Serra Foundation's Visiting Researcher Programme.



"SCIENCE BY WOMEN" PROGRAMME

Thanks to this Programme, launched by the Spanish "*Fundación Mujeres por África*", Dorcas Osei Safo from the University of Ghana, Legon, stayed at the CNIO as a visiting scientist in the Experimental Therapeutics Programme, from January to July 2016.

