



Instituto de Salud Carlos III

Annual
Report 2019





Edited by:

Ministerio de Ciencia e Innovación (Spanish Ministry of Science and Innovation)



Acknowledgments:

To all staff of ISCIII Centers, Areas and Units, for their active participation and effort in preparing this report.

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Presentation of the ISCIII by the Director

The Institute of Health Carlos III (ISCIII) has worked throughout the year 2019 to improve the health of all citizens through science and the generation of new knowledge. As in previous years, we aim to provide in this report a cross-sectional view of the work carried out by the organization and, in general terms, of the main results obtained.

At the time of preparation of this document, while still immersed in the response to the SARS-CoV-2 pandemic that is hitting our country hard, it may seem somewhat distant and even unwarranted to make an analysis of the activities carried out in 2019. However, we believe that now more than ever it is a priority to undertake this analysis, and present it with rigor and transparency. In the upcoming economic, social and health reconstruction phase it will be essential to have information that allows taking stock, to recognize existing capacities that deserve and need greater support to offer a tangible return to the citizens, and to begin structuring strategic areas to respond coherently to emerging needs. The information included in this document aims to visualize the everyday's work performed by the researchers and the other professionals who make up the ISCIII, but also to identify areas for improvement that allow us to meet the great challenges that our country is facing.

As an implementing agent of the Spanish Science, Technology and Innovation System, the ISCIII carries out an important work through its centers, institutes and research units by contributing decisively to preserving the health of all citizens. The National Microbiology Center, the National Epidemiology Center, the National Environmental Health Center, the Research Institute for Rare Diseases, the Functional Unit for Research on Chronic Diseases, the National Center of Tropical Medicine, the Digital Health Research Unit, the Nursing and Healthcare Research Unit, the Central Scientific and Technical Units, the Biological Alert Laboratory Network, the Health Technology Assessment Agency, as well as the National Schools of Public Health and Occupational Medicine and the National Library of Health Sciences, all continued in 2019 to carry out in an effective manner their three functions, namely a) providing state-of-the-art scientific and technical services to the Spanish National Health System, b) research and c) teaching. Reading this scientific report offers the opportunity to gain a better understanding of the main lines of action of these centers and their impact on society, always aimed at improving health and focused on the needs of the citizens.



Among the functions performed by ISCIII's centers and units, it is important to highlight their capacity and dedication to offer scientific and technical advisory services that provide a basis for decision-making by the Spanish National Health System (SNS), in particular in the field of public health. This is a unique element that has a close conceptual relationship with the care services provided by other health centers, and when deployed in close interaction with purely investigative activities it acquires greater effectiveness, rigor and independence. This support is particularly relevant in cases of outbreaks or alerts related to infectious diseases. The National Microbiology Center and the National Epidemiology Center carry out surveillance, diagnosis, monitoring and notification tasks for infection control. In this regard, the role of the ISCIII in 2019 must be emphasized in providing scientific and technical information that was crucial for the management of the listeriosis outbreak declared in August by the Regional Government of Andalusia, the largest described in Spain to date.

Another of the ISCIII's main objectives is the promotion of excellence in research aimed at protecting and improving health throughout the country. The actions aimed at achieving this objective are included, above all, in the call for proposals of the Health Research and Development Strategy (AES), which takes place within the framework of the National Program for Knowledge Generation and Reinforcement of the Spanish R&D and Innovation System. In the 2019 AES, a firm commitment was made to the growth and regeneration of the scientific mission of the Spanish National Health System (SNS). As a result, the ISCIII funded the largest number of contracts for SNS scientists in recent years, specifically preserving the careers of women. At the same time, the average funding for research and innovation projects increased. Finally, a firm commitment to independent clinical research was made by launching a call for clinical trials for advanced therapies and other drugs, including those with low commercial interest but potentially important for the SNS and for patients. A comparable call in terms of funding and objectives has not been published in the past 10 years.

A remarkable element in the field of biomedical coordination in 2019 was the formal incorporation of the values of responsible research and innovation and scientific integrity in the network of Health Research Institutes through the adoption of a new accreditation guide that protects the individual and collective rights of scientists and citizens and effectively promotes their participation in the design of the SNS R&D system.

Other key elements of the ISCIII strategy to promote research and contribute to the cohesion of the SNS are the cooperative research structures that facilitate collaboration between the best groups in the country. Thus, the Thematic Networks for Cooperative Research and the Biomedical Research Networking Centers (RETICS, CIBER and CIBERNED) are already consolidated structures, and throughout 2019 they continued their activity with consistently strong performance. In addition, as part of its mission to promote excellence in research, three research foundations are affiliated to the ISCIII: the CNIC, the CNIO and the CIEN Foundation, focused on research in cancer, cardiovascular diseases and neurodegenerative diseases, respectively. Both the CNIC and the CNIO are considered to be among the world's top research centers in their areas of expertise.

In 2019, the ISCIII reinforced and strengthened its commitment to internationalization, both through participation in various joint initiatives and European and international calls, and by promoting the participation of

the SNS in European programs, chiefly Horizon 2020. In the Societal Challenge 1 "Health, Demographic Change and Wellbeing", the results of the Spanish participation in 2019 continued its successes of previous years. Nineteen percent of the granted projects were coordinated by Spain, making Spain for the first time the country that coordinates most Health Challenge projects in a given year. In terms of attracting funds, Spain received since 2014 a total of more than €280 million in H2020 grants for Societal Challenge 1, which represents a rate of return on EU-28 investment of 9.6%; in 2019 the rate of return was 12.73%. This accomplishment keeps Spain in fifth position in the health area, only behind the United Kingdom (16.8%), Germany (14.7%), the Netherlands (13.0%) and France (10.8%).

Finally, I would like to acknowledge the work and dedication of all the people who make up the ISCIII: they are essential for achieving the aims and carrying out the functions and responsibilities of the Institute, and make our institution a fundamental service for biomedical research and Public Health in Spain. To all, my gratitude and appreciation for your daily work, your great professionalism and your great involvement, which allows us to contribute to improving the health of all citizens and fighting diseases.

Raquel Yotti
General Director Institute of Health Carlos III



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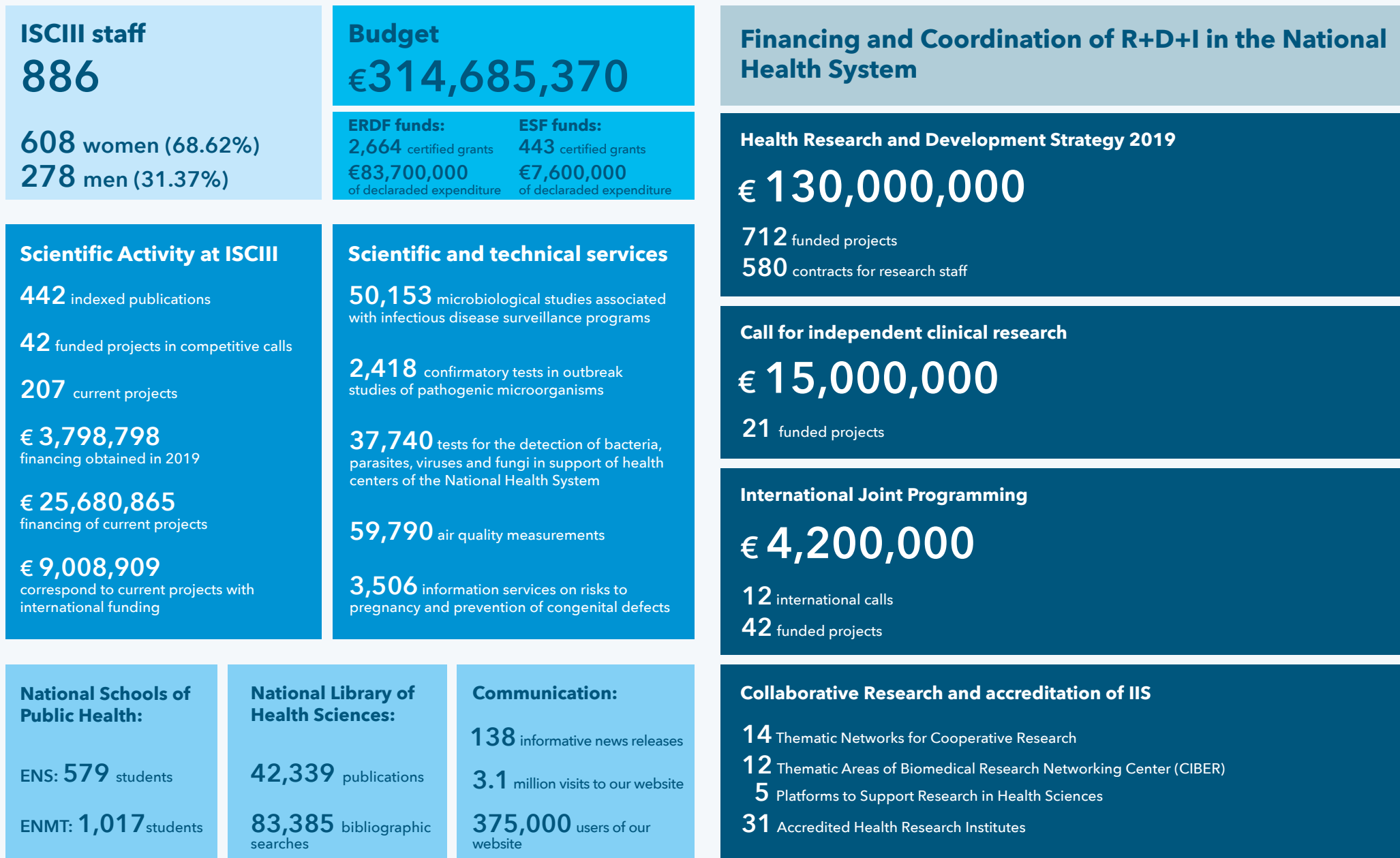




PRESENTATION
OF THE ISCIII



1.1. The ISCIII in numbers



A modern office interior featuring a large open-plan area with several long white tables and bright yellow chairs. The ceiling is white with recessed linear lighting. A glass railing is visible on the right side, and a yellow decorative element is on the ceiling. A blue vertical bar is on the right side of the image.

ORGANIZATION

2

2.1. Governance

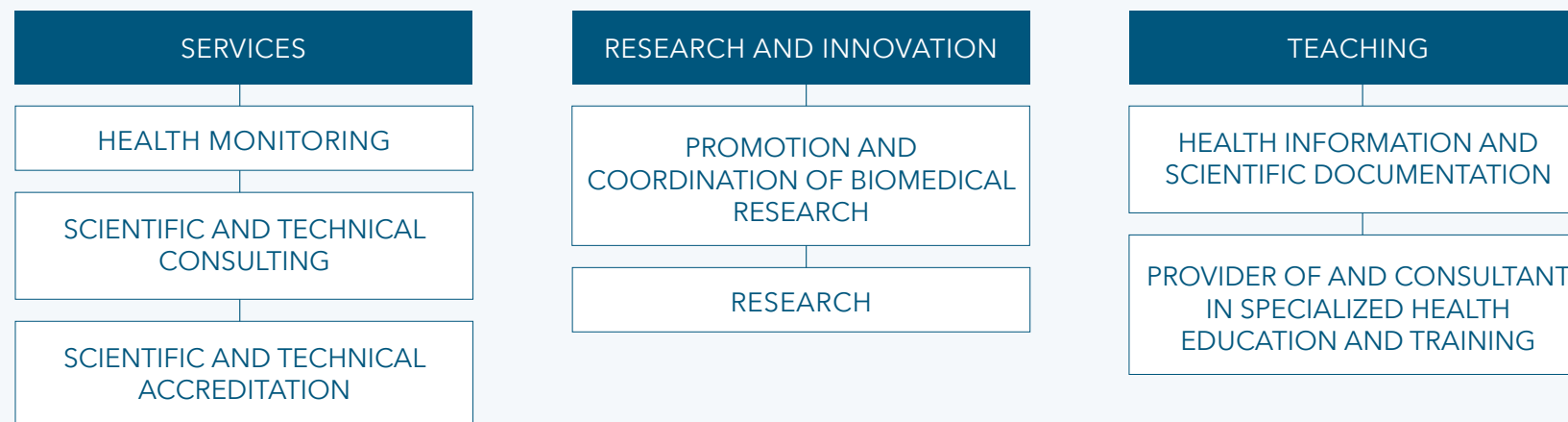
The ISCIII is a Public Research Entity and an autonomous legal entity (General Health Act 14/1986, Spanish Budget Act 37/1988, and Act 13/1986 for the Promotion and General Coordination of Scientific and Technical Research).

In accordance with the fourth additional provision of Royal Decree 865/2018, which implements the basic organic structure of the Ministry of Science, Innovation and Universities, the ISCIII depends organically on this Ministry, although it also functionally depends on the Ministry of Health (second additional provision of Royal Decree 1047/2018), due to its functions in the health sector. Therefore, the ISCIII has a twofold functional dependence on both Ministries, in the sphere of their respective competencies. Specifically, the ISCIII depends functionally on the Ministry of Health for its health planning and healthcare activities and, in coordination with the Ministry of Science and Innovation, for its applied research activities when they are translated to the SNS. For its remaining activities, it functionally depends on the Ministry of Science and Innovation, specifically on the General Secretariat for Research.

The Management Bodies of the ISCIII are the Board of Governors and the Directorate General, as stated in the bylaws of the ISCIII (Royal Decree 375/2001, of April 6), which also defines the functions, objectives and organizational structure of the entity.

Among the ISCIII's objectives are the promotion, development and provision of scientific and technical support to the SNS and to health research, through basic and applied research, evaluation, scientific and technical accreditation, health monitoring, scientific and technical advice, and health education and training in biomedicine and health sciences. Its functions indicate the special characteristics of the ISCIII, since in addition to providing advice and services to the SNS, it is a Public Research Entity (OPI) that performs the twofold function of producing science and financing the science and technology system, by taking on the planning, promotion and coordination of biomedical and health research and innovation, in accordance with the guidelines and objectives proposed by the Government regarding scientific policy. This function is carried out mainly through management of calls for grants associated with the Health Research and Development Strategy (AES). It also participates in the research programs of the European Union and the Autonomous Communities, through appropriate agreements and contracts.

Figure. Functions of the ISCIII



Royal Decree 375/2001, of April 6. By laws of the Institute of Health "Carlos III"; Spain's official state gazette: BOE-A-2001-8157, Article 4.



The mission of the ISCIII is to contribute to improving the health of all citizens through science and the generation of knowledge.

In relation to this mission, the **objectives** of the ISCIII are:

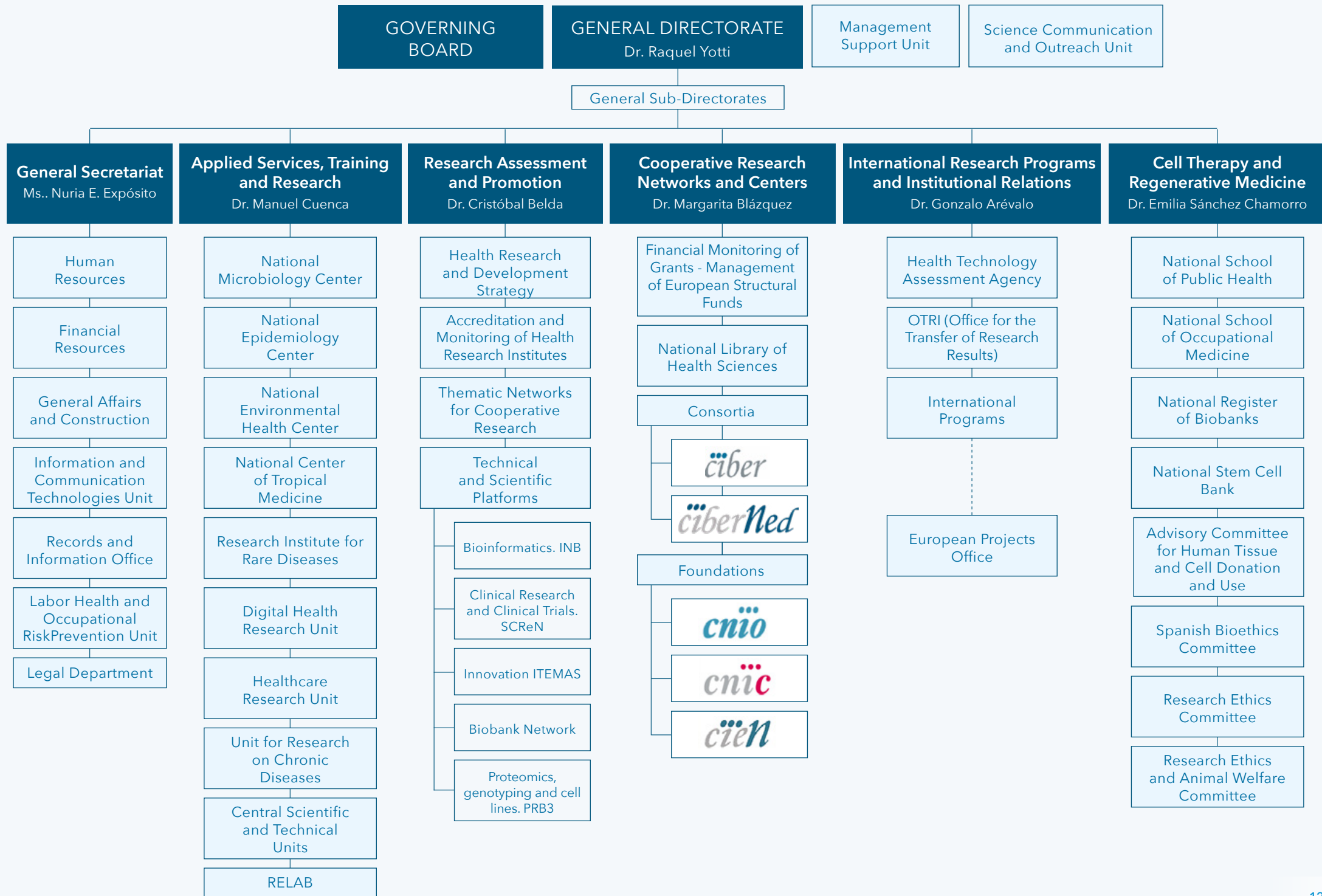
- **To promote research aimed at protecting and improving health**, by funding research excellence and highly competitive research through the Health Research and Development Strategy of the National R&D and Innovation (R&D&I) Plan, and by enabling greater national participation in international R&D&I programs and projects.
- **To develop**, through the centers and institutes directly managed by the ISCIII, **research of the highest level** aimed at solving health problems.
- **To structure research within the SNS**, through the centers managed by the ISCIII, research institutes, foundations, networks, consortia and platforms providing services.
- To manage, develop and offer Spain **state-of-the-art scientific and technical services** for the prevention and control of communicable and non-communicable diseases and for environmental health.
- To offer **scientific and technical advisory services** to inform decision-making regarding health technologies, biological products and health services of the SNS.
- To develop **teaching programs** aimed at the whole of the SNS, and to provide **health information services and scientific documentation services**.

The vision of the ISCIII is to be a national and international benchmark organization in public health and in the development and funding of biomedical research in Spain.

The main **values** on which the activity of the ISCIII is based are:

- **Social, health and environmental commitment**, understood as the application of science to achieve sustainable development goals (SDGs) to mankind, with special attention to goals related to health, gender equality and protection of the environment.
- **Public responsibility**, understood as an ethical commitment toward the citizens put into practice as transparent management, citizen participation, gender equality, citizen education, promotion of the scientific culture, and open science available to the whole community (**RRI principles: Responsible Research and Innovation**).
- **Scientific integrity**, which ensures compliance with all bioethical aspects of research, confidentiality, control of conflicts of interest, veracity of results, and respect for authorship and intellectual property.
- **Professionalism**, which implies a commitment to continuing education, responsibility for the quality of our services and openness to innovation and continuous improvement.
- **Collaboration and teamwork**, by setting up and proactively participating in multidisciplinary, multi-centric, national and international teams.





2.2. Human Resources

In 2019, the downward trend of ISCIll staff observed in recent years continued. The total number of employees on December 31, 2019, was 886, which is distributed over collectives, groups, and men and women, as detailed in the following Table.

31/12/2019		CIVIL SERVANTS	%	PERMANENT STAFF	%	TEMPORARY STAFF	%	TOTAL STAFF	%
A1/G1	WOMEN	170	61.82	14	77.78	104	67.97	288	64.57
	MEN	105	38.18	4	22.22	49	32.03	158	35.43
	TOTAL	275		18		153		446	
A2/G2	WOMEN	63	79.75	3	100	1	100.00	67	80.72
	MEN	16	20.25	0	0.00	0	0.00	16	19.28
	TOTAL	79		3		1		83	
C1/G3	WOMEN	71	78.02	43	68.25	40	80.00	154	75.49
	MEN	20	21.98	20	31.75	10	20.00	50	4.51
	TOTAL	91		63		50		204	
C2/G4	WOMEN	38	69.09	20	66.67	0	0.00	58	68.24
	MEN	17	30.91	10	33.33	0	0.00	27	31.76
	TOTAL	55		30		0		85	
E/G5	WOMEN	0	0.00	33	64.71	0	0.00	33	61.11
	MEN	1	100.00	18	35.29	2	100.00	21	38.89
	TOTAL	1		51		2		54	
WOMEN		342	68.26	113	68.48	145	70.39	600	68.81
MEN		159	31.74	52	31.52	61	29.61	272	31.19
TOTAL		501		165		206		872	
FGIN INTERNS	WOMEN							8	
	MEN							6	
	TOTAL							14	
TOTAL								886	

Table. List of ISCIll staff in 2019 distributed over collectives, groups and gender

As a consequence of the 2017, 2018 and 2019 Public Employment Offers (OEP) an increase in the number of employees is foreseen; the point of inflection was in July 2020, with the incorporation of the first civil servants from the 2017 OEP. The following table details the increase in vacancies, both for external recruitment and for internal promotion, derived from the OEP in 2017, 2018 and 2019.

Table. Executive summary OEP 2017-2019 ISCIII

OEP 2017 EXTERNAL RECRUITMENT							
LEVELS (7)	C1 5024 RESEARCH ASSISTANTS	A2 6156 SPECIALIST TECHNICIANS OPIs	A1 6155 SENIOR SPECIALIST TECHNICIANS	A1 6152 TENURED SCIENTISTS	A1 6151 SCIENTIFIC RESEARCHERS	A1 6150 RESEARCH PROFESSORS	TOTAL
No. of positions offered	16	16	17	10	3	1	63
OEP 2017-2018 INTERNAL PROMOTION							
LEVELS (7)	C1 5024 RESEARCH ASSISTANTS	A2 6156 SPECIALIST TECHNICIANS OPIs	A1 6155 SENIOR SPECIALIST TECHNICIANS	A1 6152 TENURED SCIENTISTS	A1 6151 SCIENTIFIC RESEARCHERS	A1 6150 RESEARCH PROFESSORS	TOTAL
No. of positions offered	9	11	17	5	13	2	57
OEP 2018-2019 EXTERNAL RECRUITMENT							
LEVELS	C1 5024 RESEARCH ASSISTANTS	A2 6156 SPECIALIST TECHNICIANS	A1 6155 SENIOR SPECIALIST TECHNICIANS	A1 6152 TENURED SCIENTISTS	A1 6151 SCIENTIFIC RESEARCHERS	A1 6150 RESEARCH PROFESSORS	TOTAL
No. of positions offered	28	18	42	20	1	1	110
OEP 2019 INTERNAL PROMOTION							
LEVELS	C1 5024 RESEARCH ASSISTANTS	A2 6156 SPECIALIST TECHNICIANS	A1 6155 SENIOR SPECIALIST TECHNICIANS	A1 6152 TENURED SCIENTISTS	A1 6151 SCIENTIFIC RESEARCHERS	A1 6150 RESEARCH PROFESSORS	TOTAL
No. of positions to be covered	2	4	8	5	5	2	26

2.3. Financial Resources

The budget approved for the ISCIII in 2019 was €271,339,180. This amount was increased by various budgetary modifications that resulted in an increase of €43,346,190, so that the **final budget for 2019 amounted to €314,685,370**. Thanks to these modifications, figures similar to the budget allocated to the agency between 2010 and 2011 were reached. Ninety-three percent of the budget was executed. The following table shows the evolution of the Institute's budget since 2008.

Table. Evolution of the ISCIII budget from 2008-2019

EXPENDITURE (in thousands of €)	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Initial credit	367,246.84	369,704.33	332,412.38	300,052.03	293,446.46	279,965.92	286,762.84	273,820.83	272,128.90	269,957.38	271,339.18	271,339.18
Amendments	24,050.61	4,296.20	1,457.00	1,000.00	57.65	10,550.16	7,909.44	5,279.46	4,632.11	4,279.80	4,541.63	43,346.19
Final Credit (FC)	391,297.45	374,000.53	333,869.38	301,052.03	293,504.11	290,516.08	294,672.28	279,100.29	276,761.01	274,237.18	275,880.81	314,685.37
Net liabilities recognized (NLR)	371,785.88	354,328.54	315,322.57	290,551.31	272,760.22	273,278.58	271,977.10	271,730.91	262,716.23	257,642.51	260,825.88	292,962.15
% NLR/FC	95.01	94.74	94.44	96.51	92.93	94.07	92.30	97.36	94.93	93.95	94.54	93.10
INCOME (in thousands of €)	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Initial forecasts	367,246.84	369,704.33	332,412.38	300,052.03	293,446.46	279,965.92	286,762.84	273,820.83	272,128.90	269,957.38	271,339.18	271,339.18
Amendments	24,050.61	4,296.20	1,457.00	1,000.00	57.65	10,550.16	7,909.44	5,279.46	4,632.11	4,279.80	4,541.63	43,346.19
Final forecasts (FF)	391,297.45	374,000.53	333,869.38	301,052.03	293,504.11	290,516.08	294,672.28	279,100.29	276,761.01	274,237.18	275,880.81	314,685.37
Net assets recognized (NAR)	371,712.90	327,819.35	230,697.78	315,736.61	226,552.63	224,278.53	354,107.01	283,753.13	275,272.66	222,471.91	365,432.15	323,930.09
% NAR/FF	94.99	87.65	69.10	104.88	77.19	77.20	120.17	101.67	99.46	81.12	132.46	102.94

A photograph of a yellow building facade. In the center, there is a white doorway with a decorative arch and a small window above it. Above the doorway is a balcony with a black metal railing. The balcony railing has a repeating pattern of vertical bars with decorative finials. The building's walls are a bright yellow color. On the right side of the image, there is a vertical green bar with a white number '3' at the top. A dark blue rectangular box is overlaid on the left side of the image, containing white text.

RESEARCH AND
INNOVATION
ACTIVITY
MANAGEMENT

3

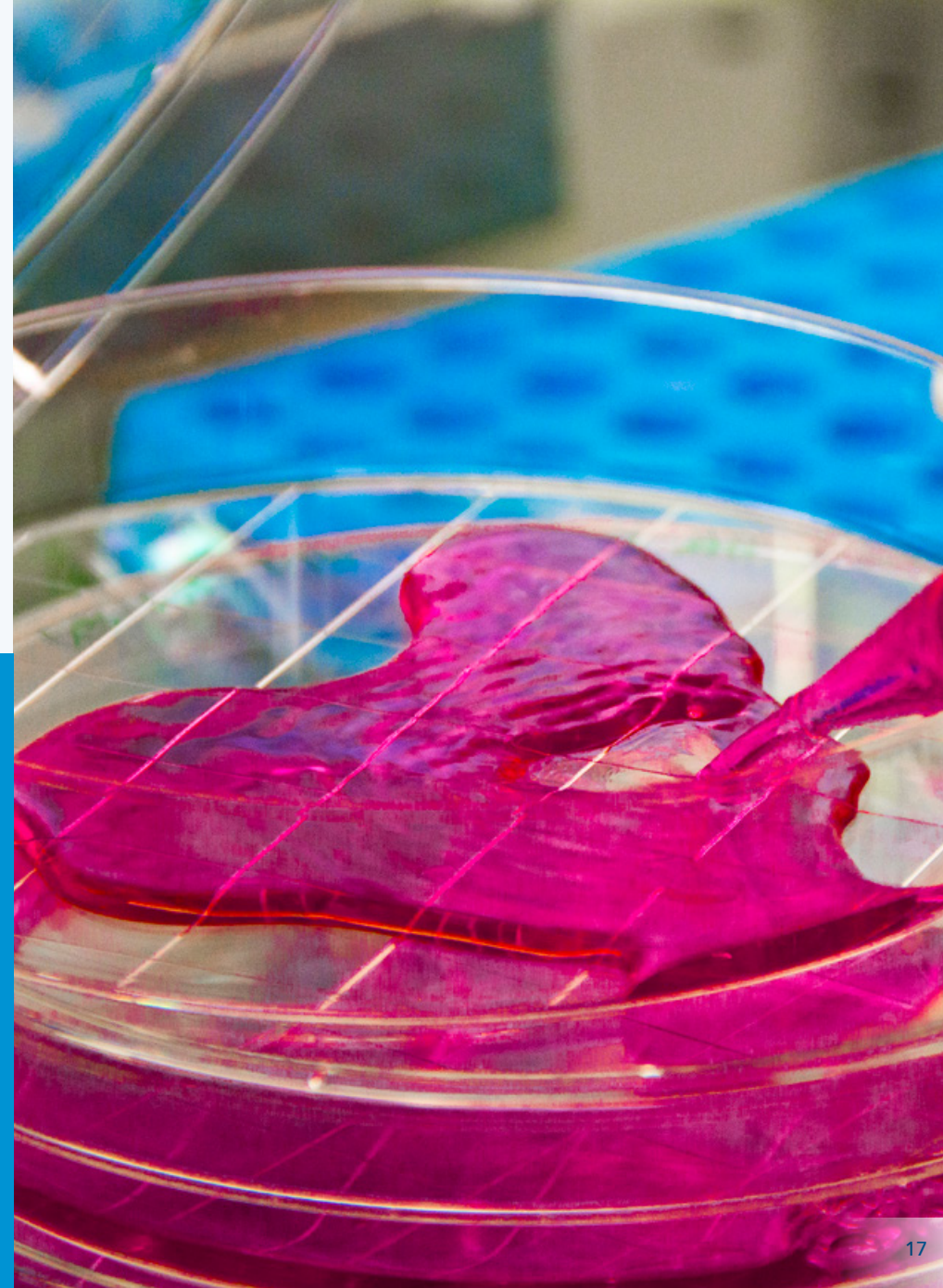
3.1. Health Research and Development Strategy

The Health Research and Development Strategy (hereinafter, AES) is part of the Spanish National Plan for Scientific and Technical Research and Innovation for the period 2017-2020 (hereinafter, the Spanish National R&D&I Plan).

The Spanish National R&D&I Plan 2017-2020 comprises four National Programs, divided into Subprograms, and two R&D Strategies that are integrated into the fourth of these programs: the National R&D&I Program devoted to the Challenges of Society.

The first of the indicated challenges is the Health, Demographic Change and Well-being Challenge, which includes, as a specific programmatic action, the Health Research and Development Strategy 2017-2020. This strategy aims to contribute to promote the health and well-being of the citizens and to develop preventive, diagnostic, therapeutic, rehabilitation and palliative aspects of disease by reinforcing and increasing the international competitiveness of R&D&I of the Spanish National Health System (SNS) and healthcare sector-related companies, with the aim of placing Spain in an avant-garde scenario in which health acts as a fundamental axis of economic and social development.

To achieve these objectives, the AES 2019 proposes a set of synergistic and complementary instrumental actions that are part of the National Subprograms for Training, Incorporation and Mobility of the National Program for Training Talent and Its Employability in R&D&I, and the National Subprograms for Institutional Reinforcement and for Knowledge Generation; these latter Subprograms form part of the National Program for Knowledge Generation and for Reinforcement of the Spanish R&D&I System.



National Program for Training Talent and Its Employability in R&D&I

National Subprogram for Training:

- Predoctoral contracts for training in health research
- Grants for Training in Health Research Management (FGIN)
- 'Río Hortega' contracts

National Subprogram for Incorporation:

- Contracts for health research management in Health Research Institutes (IIS)
- 'Miguel Servet' contracts
- 'Sara Borrell' contracts
- 'Juan Rodés' contracts
- Contracts for the reinforcement of research activity in the SNS
- Bioinformatics technical research support staff contracts at the ISS

National Subprogram for Mobility:

- Mobility of SNS healthcare professionals and researchers (M-BAE)
- Mobility grants for research staff

National Program for Knowledge Generation and Reinforcement of the Spanish R&D&I System

National Subprogram for Knowledge Generation:

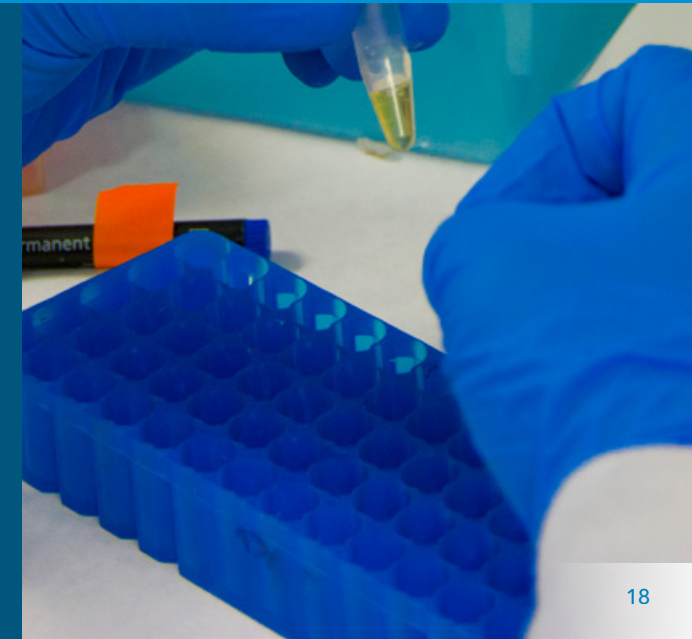
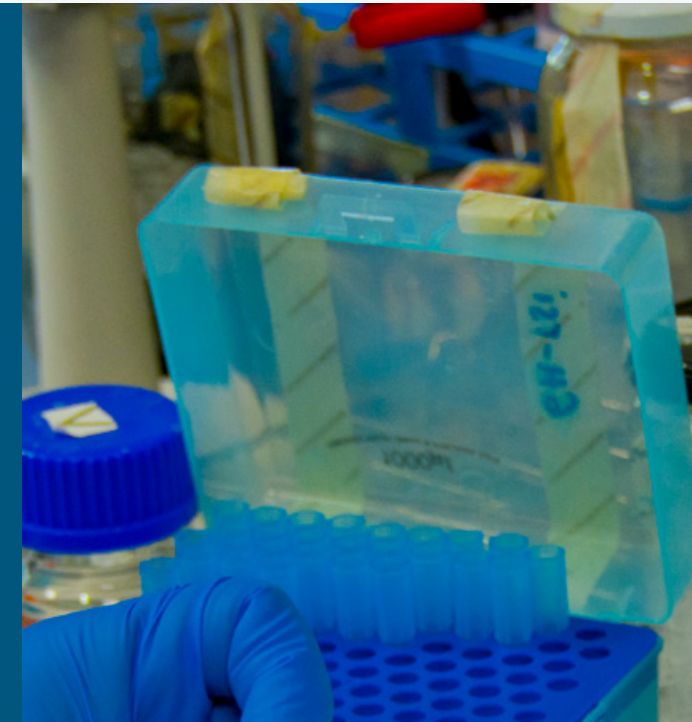
- Research Projects in Health
 - A. Research Projects in Health
 - B. Technological development projects in health
- International joint programming projects
- Independent clinical research projects

National Subprogram for Institutional Reinforcement:

- Incorporation of New Groups into the CIBER Consortium

As a novelty, in the 2019 call, grants were awarded for independent clinical research projects, included in the National Subprogram for Knowledge Generation.

The General Sub-Directorate for Research Assessment and Promotion of the ISCIII was the body competent for managing this procedure, and the ISCIII was the managing body for the activities arising from the AES, which were carried out through a single competitive call.



3.1.1. National Program for Training Talent and its Employability

National Subprogram for Training:

The **predoctoral contracts for training in health research** are intended for the initial training of researchers in health sciences and technologies through the completion of a doctoral thesis. There are two modalities:

PFIS Contracts: predoctoral contracts for training in health research:

Aimed at researchers whose group leaders obtained an AES health research project through the 2018 call.

Through the 2019 call, 133 PFIS contracts were funded, which is 195% more than in the 2018 call. The distribution is shown in the following table.

AUTONOMOUS COMMUNITY	PFIS 2019							Success rate
	Eligible Applications			Funded				
	F	M	T	F	M	T	Amount (€)	
Andalucía	27	9	36	15	6	21	1,730,400	58.33
Aragón	2	1	3	1		1	82,400	33.33
Asturias	1	2	3	0	2	2	164,800	66.67
Baleares	1	0	1	1	0	1	82,400	100.00
Canarias	0	1	1	0	0	0	0	0.00
Castilla y León	6	2	8	3	1	4	329,600	50.00
Castilla-La Mancha	3	1	4	3	0	3	247,200	75.00
Cataluña	49	21	70	33	12	45	3,708,000	64.29
C. Valenciana	16	5	21	9	4	13	1,071,200	61.90
Extremadura	2	1	3	2	1	3	247,200	100.00
Galicia	5	3	8	4	1	5	412,000	62.50
Madrid	26	16	42	17	9	26	2,142,400	61.90
Murcia	1	1	2	1	1	2	164,800	100.00
Navarra	6	3	9	3	1	4	329,600	44.44
País Vasco	6	0	6	3	0	3	247,200	50.00
TOTAL	151	66	217	95	38	133	10,959,200	61.29

F=Female; M=Male; T=Total.

Success rate is the ratio of funded and eligible applications, expressed in %.

i-PFIS Contracts: IIS-enterprise doctor fellowships in health sciences and technology:

This is the fifth year that these contracts are offered; they are meant for public-private collaboration achieved by carrying out part of the training programs in workplaces in private companies and accredited Health Research Institutes (IIS).

AUTONOMOUS COMMUNITY	i-PFIS 2019							Success rate
	Eligible Applications			Funded				
	F	M	T	F	M	T	Amount (€)	
Andalucía	4	3	7	1	1	2	164,800	28.57
Aragón	2	0	2	0	0	0	0	0.00
Baleares	1	0	1	0	0	0	0	0.00
Castilla y León	0	1	1	0	0	0	0	0.00
Cataluña	4	4	8	1	0	1	82,400	12.50
C. Valenciana	2	0	2	0	0	0	0	0.00
Galicia	1	0	1	1	0	1	82,400	100.00
Madrid	4	2	6	1	0	1	82,400	16.67
Murcia	1	1	2	1	0	1	82,400	50.00
Navarra	1	0	1	0	0	0	0	0.00
TOTAL	20	11	31	5	1	6	494,400	19.35

For both modalities, these amounts correspond to the total duration of the grant. The financial allocation is €20,600 per year for a maximum of 4 years.

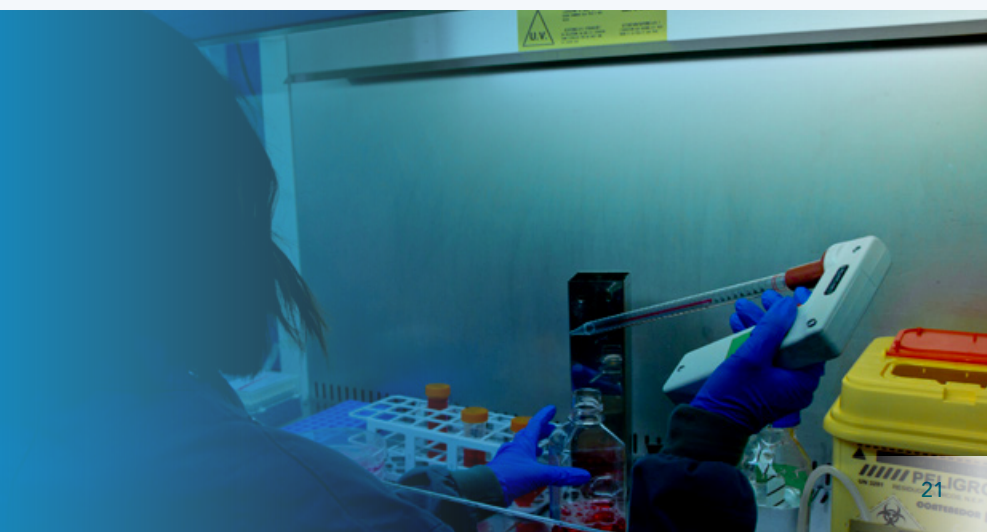


'Río Hortega' contracts:

These contracts are meant for hiring professionals who have successfully completed Specialized Healthcare Training (FSE), **exclusively in public healthcare institutions:**

AUTONOMOUS COMMUNITY	'Río Hortega' contracts 2019							Success rate
	Eligible Applications			Funded				
	F	M	T	F	M	T	Amount (€)	
Andalucía	24	9	33	16	7	23	1,235,863	69.70
Aragón	2	2	4	2	2	4	214,928	100.00
Asturias	2	0	2	1	0	1	53,732	50.00
Baleares	2	0	2	1	0	1	53,732	50.00
Canarias	2	1	3	1	0	1	53,732	33.33
Cantabria	1	1	2	1	0	1	53,732	50.00
Castilla y León	2	0	2	2	0	2	107,464	100.00
Castilla-La Mancha	1	0	1	0	0	0	0	0.00
Cataluña	34	21	55	25	11	36	1,934,352	65.45
C. Valenciana	9	5	14	9	3	12	644,784	85.71
Galicia	4	4	8	3	3	6	322,392	75.00
Madrid	32	19	51	22	13	35	1,880,620	68.63
Murcia	4	3	7	2	1	3	161,196	42.86
Navarra	2	0	2	2	0	2	107,464	100.00
País Vasco	2	1	3	1	0	1	53,732	33.33
TOTAL	123	66	189	88	40	128	6,877,696	33.33

The financial allocation for the Río Hortega contracts was €20,600 per year for trained nurses and €26,866 per year for the other trained professionals during two years. In the 2019 call, 128 contracts were funded, which is 180% more than in the previous call.



With regard to the **grants for Training in Health Research Management (FGIN)**, 20 eligible applications were received and 7 were granted; the gross financial allocation is €21,000 per year for a duration of 36 months.

National Subprogram for Incorporation:

This was the 6th year that **contracts for Health Research Management (GIS) in accredited Health Research Institutes** were offered. They are aimed at managers so that they may carry out support activities for managing R&D&I activities.

Those IIS who had an active Health Research Management Contract granted in the 2017 or 2018 AES were not allowed to participate in this call.

AUTONOMOUS COMMUNITY	GIS 2019							Success rate
	Eligible Applications			Funded				
	F	M	T	F	M	T	Amount (€)	
Andalucía	2	1	3	1	1	2	161,196	66.67
Aragón	1	0	1	1	0	1	80,598	100.00
Baleares	0	1	1	0	1	1	80,598	100.00
C. Valenciana	0	1	1	0	1	1	80,598	100.00
Madrid	2	0	2	2	0	2	161,196	100.00
Murcia	2	0	2	1	0	1	80,598	50.00
TOTAL	7	3	10	5	3	8	644,784	66.67

The financial allocation for these contracts is €26,866 per year during 3 years.



Miguel Servet contracts:

The **Miguel Servet contracts** are meant for doctors who 1) obtained their PhD degree between January 1, 2008 and December 31, 2014; or 2) finished or are in the last (third) year of a Sara Borrell contract or finished a Río Hortega contract or are in its last (second) year and obtained a PhD degree.

The financial allocation for these contracts is €40,500 per year during 5 years. They are complemented by an additional aid of €40,000 to cover expenses directly related to carrying out their research activities.

Forty-nine Miguel Servet contracts were funded, which is 213% more than in the previous call. Their distribution is as follows.

AUTONOMOUS COMMUNITY	Miguel Servet 2019							Success rate
	Eligible Applications			Funded				
	F	M	T	F	M	T	Amount (€)	
Andalucía	16	9	25	6	3	9	2,182,500	36.00
Aragón	3	0	3	1	0	1	242,500	33.33
Asturias	2	1	3	0	1	1	242,500	33.33
Baleares	2	3	5	1	1	2	485,000	40.00
Canarias	2	1	3	0	0	0	0	0.00
Cantabria	1	0	1	0	0	0	0	0.00
Castilla y León	3	3	6	0	0	0	0	0.00
Castilla-La Mancha	1	1	2	0	1	1	242,500	50.00
Cataluña	25	15	40	9	9	18	4,365,000	45.00
C.Valenciana	12	3	15	6	0	6	1,455,000	40.00
Galicia	3	4	7	0	2	2	485,000	28.57
Madrid	12	7	19	3	2	5	1,212,500	26.32
Murcia	2	2	4	0	1	1	242,500	25.00
Navarra	0	1	1	0	1	1	242,500	100.00
País Vasco	8	2	10	2	0	2	485,000	20.00
Rioja (La)	1	0	1	0	0	0	0	0.00
TOTAL	93	52	145	28	21	49	11,882,500	33.79

Miguel Servet type II contracts:

The **Miguel Servet type II contracts** are meant for doctors with still active Miguel Servet type I contracts granted in the 2014 AES or earlier calls, with an outstanding track record during their contract period.

AUTONOMOUS COMMUNITY	Miguel Servet type II 2019							Success rate
	Eligible Applications			Funded				
	F	M	T	F	M	T	Amount (€)	
Andalucía	1	5	6	1	5	6	607,500	100.00
Castilla y León	2	0	2	2	0	2	202,500	100.00
Cataluña	4	3	7	4	3	7	708,750	100.00
Galicia	0	1	1	0	1	1	101,250	100.00
Madrid	6	2	8	6	2	8	810,000	100.00
Murcia	1	0	1	1	0	1	101,250	100.00
Navarra	1	0	1	1	0	1	101,250	100.00
País Vasco	1	0	1	1	0	1	101,250	100.00
TOTAL	16	11	27	16	11	27	2,733,750	100.00

The financial allocation for these contracts is €45,000 in the first year. Afterwards, it is co-funded at 75% and 50% in the following years. They have a duration of 3 years.

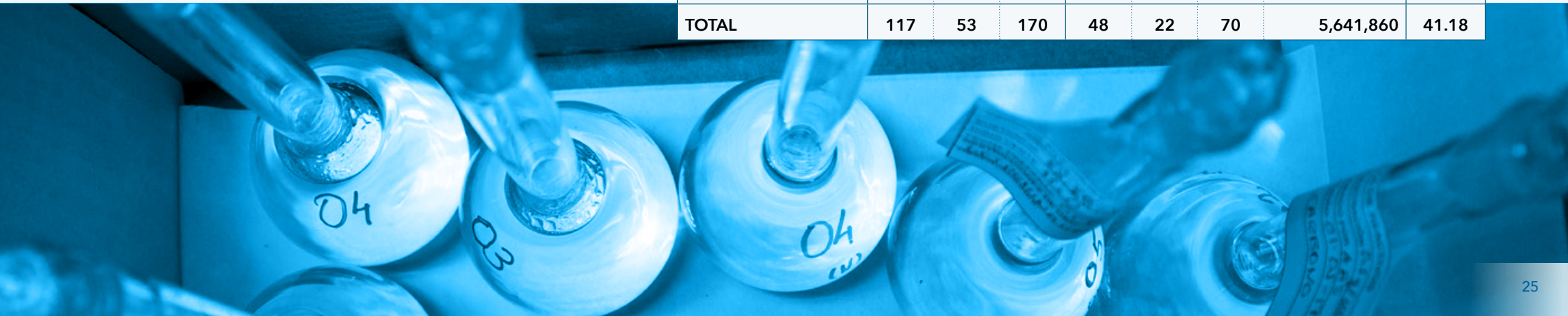


'Sara Borrell' contracts:

The 'Sara Borrell' contracts are meant for recently-qualified doctors in centers included in the SNS. 70 contracts were funded, 212% more than in 2018.

The financial allocation for these contracts is €26,866 per year during 3 years.

AUTONOMOUS COMMUNITY	Sara Borrell 2019							Success rate
	Eligible Applications			Funded				
	F	M	T	F	M	T	Amount (€)	
Andalucía	14	11	25	6	5	11	886,578	44.00
Aragón	2	1	3	1	1	2	161,196	66.67
Asturias	1	4	5	0	2	2	161,196	40.00
Baleares	0	1	1	0	1	1	80,598	100.00
Canarias	5	0	5	1	0	1	80,598	20.00
Cantabria	1	2	3	1	0	1	80,598	33.33
Castilla y León	3	4	7	2	0	2	161,196	28.57
Castilla-La Mancha	3	0	3	1	0	1	80,598	33.33
Cataluña	38	17	55	16	9	25	2,014,950	45.45
C.Valenciana	16	2	18	6	1	7	564,186	38.89
Extremadura	1	0	1	1	0	1	80,598	100.00
Galicia	2	0	2	1	0	1	80,598	50.00
Madrid	20	9	29	7	2	9	725,382	31.03
Navarra	4	0	4	1	0	1	80,598	25.00
País Vasco	4	2	6	3	1	4	322,392	66.67
Rioja (La)	3	0	3	1	0	1	80,598	33.33
TOTAL	117	53	170	48	22	70	5,641,860	41.18



Juan Rodés Contracts:

The **Juan Rodés Contracts** are intended for Specialist medical staff, which holds a PhD degree or have previously completed a 'Río Hortega' contract or holds a 2017 'Río Hortega' contract. They are implemented in SNS healthcare facilities that are part of an accredited IIS.

The healthcare-related part is to be carried out in an IIS hospital. The recipient of the contract must simultaneously carry out the research activity according to the proposal submitted. The financial allocation for these contracts is €45,000 per year during 4 years. Thirty-three Juan Rodés contracts have been funded:

AUTONOMOUS COMMUNITY	Juan Rodés 2019							Success rate
	Eligible Applications			Funded				
	F	M	T	F	M	T	Amount (€)	
Andalucía	4	4	8	4	3	7	1,260,000	87.50
Aragón	1	0	1	1	0	1	180,000	100.00
Baleares	1	0	1	1	0	1	180,000	100.00
Castilla y León	1	0	1	1	0	1	180,000	100.00
Cataluña	7	4	11	6	4	10	1,800,000	90.91
C.Valenciana	0	1	1	0	1	1	180,000	100.00
Galicia	1	0	1	0	0	0	0	0.00
Madrid	6	4	10	5	4	9	1,620,000	90.00
Murcia	0	1	1	0	1	1	180,000	100.00
Navarra	2	0	2	2	0	2	360,000	100.00
TOTAL	23	14	37	20	13	33	5,940,000	87.50



Contracts for the intensification of research activity in the SNS :

The objective of the **contracts for the intensification of research activity in the SNS** is to hire specialist physicians or professionals who hold a degree in nursing or physiotherapy in SNS centers so that they may perform part of the clinical care activities of professionals who are simultaneously carrying out research activities. These grants will allow the recruitment of staff in 2020 and, where appropriate, in 2021 to free up time equivalent to 50% of the clinical care activities in annual calculation of the staff who will replace the candidate.

The financial allocation for these contracts is €30,000 for physicians and €20,000 for nursing or physiotherapy staff.

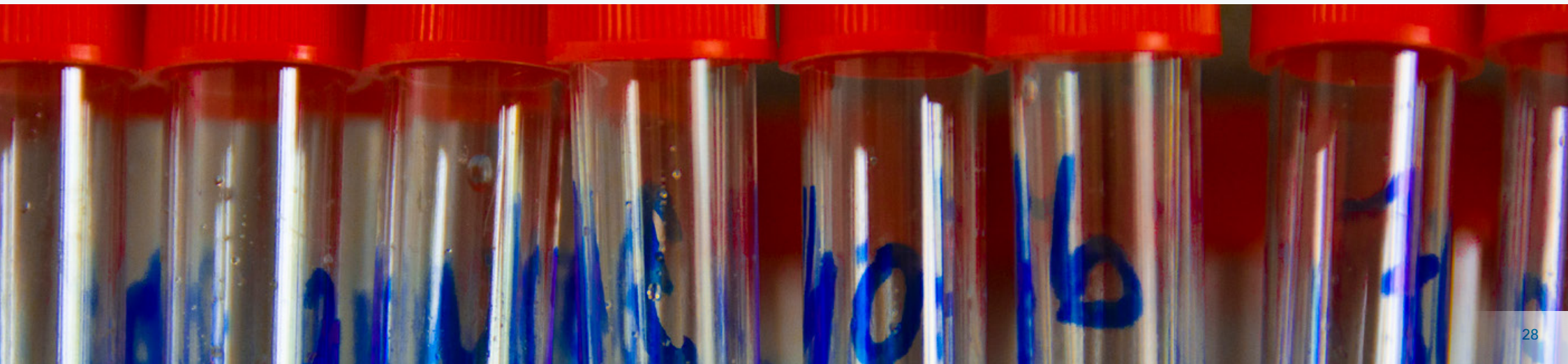
AUTONOMOUS COMMUNITY	Intensification 2019							Success rate
	Eligible Applications			Funded				
	F	M	T	F	M	T	Amount (€)	
Andalucía	2	8	10	1	7	8	360,000	80.00
Aragón	0	1	1	0	1	1	60,000	100.00
Asturias	1	1	2	1	1	2	90,000	100.00
Baleares	0	1	1	0	1	1	60,000	100.00
Canarias	0	1	1	0	1	1	30,000	100.00
Castilla y León	1	1	2	1	1	2	120,000	100.00
Castilla-La Mancha	1	0	1	1	0	1	60,000	100.00
Cataluña	8	15	23	7	14	21	1,020,000	91.30
C. Valenciana	2	3	5	1	3	4	180,000	80.00
Extremadura	0	1	1	0	1	1	60,000	100.00
Galicia	0	1	1	0	1	1	30,000	100.00
Madrid	3	11	14	2	10	12	540,000	85.71
Murcia	1	3	4	1	3	4	190,000	100.00
Navarra	1	1	2	1	1	2	60,000	100.00
País Vasco	1	1	2	0	0	0	0	0.00
TOTAL	21	49	70	16	45	61	2,860,000	80.00

Bioinformatics technical support staff contracts for research at the ISS:

The purpose of these contracts is to hire staff for two years to carry out scientific and technical activities in the IIS.

The financial allocation for these contracts is €26,866 per year during two years.

AUTONOMOUS COMMUNITY	Bioinformatics 2019							Success rate
	Eligible Applications			Funded				
	F	M	T	F	M	T	Amount (€)	
Andalucía	0	3	3	0	2	2	107,464	66.67
Aragón	1	0	1	0	0	0	0	0.00
Baleares	0	1	1	0	1	1	53,732	100.00
Cantabria	2	0	2	1	0	1	53,732	50.00
Cataluña	0	1	1	0	1	1	53,732	100.00
C .Valenciana	0	1	1	0	0	0	0	0.00
Galicia	1	1	2	1	0	1	53,732	50.00
Madrid	1	4	5	0	2	2	107,464	40.00
Navarra	1	0	1	0	0	0	0	0.00
País Vasco	1	0	1	1	0	1	53,732	100.00
TOTAL	7	11	18	3	6	9	483,588	66.67



National Subprogram for Mobility:

The objective of these grants is to fund stays in one of the following modalities:

Mobility of SNS healthcare professionals and researchers (M-BAE) for funding stays of SNS healthcare professionals and researchers in prestigious national or foreign institutions.

The financial allocation for these contracts from €80 to €115 per day of the stay at the center, according to whether it is a Spanish or a foreign center, and its duration varies between 60 and 365 days.

Mobility of research staff contracted within the framework of the AES (M-AES):

This grant is aimed at those who hold a PFIS, i-PFIS, Rio Hortega, Sara Borrell, Juan Rodes, or Miguel Servet contract. It is meant for stays abroad.

The financial allocation is €80 or €115 per day during the placement at the center, depending on whether the stay is at a Spanish or a foreign center, for a duration between 60 and 180 days in the case of PFIS, i-PFIS, Rio Hortega, Juan Rodes, and Miguel Servet contract holders, and up to 365 days for Sara Borrell contract holders.

AUTONOMOUS COMMUNITY	M-BAE 2019							Success rate
	Eligible Applications			Funded				
	F	M	T	F	M	T	Amount (€)	
Andalucía	1	0	1	1	0	1	7,015	100.00
Cantabria	0	1	1	0	1	1	9,315	100.00
Castilla y León	0	1	1	0	1	1	10,580	100.00
Cataluña	2	1	3	2	1	3	65,780	100.00
C. Valenciana	1	0	1	1	0	1	14,640	100.00
Madrid	1	1	2	1	1	2	21,275	100.00
TOTAL	5	4	9	5	4	9	128,605	100.00

AUTONOMOUS COMMUNITY	M-AES 2019							Success rate
	Eligible Applications			Funded				
	F	M	T	F	M	T	Amount (€)	
Andalucía	5	3	8	3	3	6	106,605	75.00
Aragón	2	0	2	2	0	2	20,010	100.00
Asturias	0	1	1	0	0	0	0	0.00
Canarias	1	0	1	1	0	1	14,030	100.00
Castilla y León	1	0	1	1	0	1	11,270	100.00
Cataluña	6	10	16	6	10	16	260,705	100.00
C. Valenciana	0	2	2	0	2	2	41,400	100.00
Galicia	1	0	1	1	0	1	10,465	100.00
Madrid	7	2	9	7	2	9	137,770	100.00
Murcia	1	0	1	1	0	1	10,580	100.00
Navarra	2	0	2	1	0	1	7,015	50.00
TOTAL	26	18	44	23	17	40	619,850	50.00

3.1.2. National Program for Knowledge Generation and Reinforcement of the Spanish R&D&I System

National Subprogram for Knowledge Generation:

The Health Research and Development Strategy 2019 included a set of instrumental activities framed within Subprograms. Each of the subprograms involved one or several actions.

Within the Subprogram for Knowledge Generation, calls were launched for Research Projects in Health (both for Research Projects in Health and for Technological Development Projects in Health), for complementary actions to international joint programming initiatives and for Independent Clinical Research Projects.

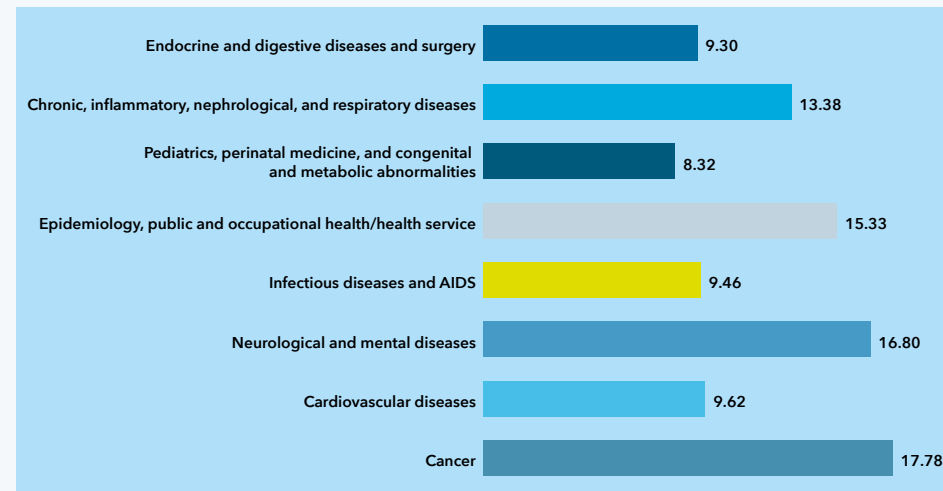
Research projects in health

The objective of this call was to fund projects in any of the following types:

- **Research projects in health.** Projects of proven quality whose principle objectives were to:
 - a) transfer and apply scientific and technical knowledge in order to improve the prevention, diagnosis, and treatment of diseases as well as activities promoting public health and health services.
 - b) foster synergies, promote talent and employability, and strengthen the governance structures that add scientific and technical skills to SNS healthcare facilities.
 - c) promote the funding of emerging researchers' first research projects that are of proven quality.

A total of 1,501 applications were received and 613 were funded for a total of €70,141,228.

The regions that requested most projects were Catalonia (35.91%), Madrid (23.12%), and Andalusia (10.79%). This was also the case in terms of funding: 36.87%, 22.35%, and 9.79%, respectively.



Graph. Funding for research projects in health, % Concession according to thematic area

- **Technological development projects in health.** These are applied projects that have the objective of promoting innovation in SNS healthcare centers and the transfer of innovative solutions as well as the generation of benefits for the community. At the same time, they allow for alliances to be established between research bodies and companies in the pharmaceutical, biotechnology, and medical and healthcare technology sectors.

A total of 120 applications were received and 36 were funded for a total of €2,935,350. Grants were distributed in Andalusia, Aragon, Asturias, the Canary Islands, Cantabria, Castile-La Mancha, Castile and Leon, Catalonia, the Valencian Community, Galicia, Madrid, Murcia and Navarre.

Complementary actions to international joint programming initiatives

The objective of this action is to fund research projects participating in calls launched by international joint programming initiatives in health. These projects are carried out within the framework of transnational consortia for which ISCIII has committed to support relevant collaborative projects and in which Spanish research teams participate together with teams from other countries.

The public international calls within the framework of the complementary actions were:

- **AAL** Active and Assisted Living Program (3 years).
- **AAL** Active and Assisted Living Program (1 year).
- **ERA PerMed** ERA-net in Personalized Medicine.
- **ERACoSysMed**: ERA-NET in Systems medicine to address clinical needs.
- **EU-CELAC IG** Interest Group of the European Union and the Community of Latin American and Caribbean Countries.
- **ERA-Net JPI EC AMR** Joint Programming Initiative on Antimicrobial Resistance Research (JPI AMR).
- **ERA-Net ERA-CVD** European Research Area Network on Cardiovascular Diseases (ERA-CVD).
- **The National Science Foundation (NSF, United States of America), the Spanish State Research Agency (Agencia Estatal de Investigación, AEI), and the Spanish Institute of Health Carlos III (ISCIII) for Collaboration in Computational Neuroscience.**

A total of 128 applications were received and 42 were funded for a total of €4,228,737.

PROGRAM	GROUPS	RESEARCHERS
AAL - 1 year	2	5
AAL - 3 years	1	4
CRCNS	1	2
CYTED	1	8
EJP RD	4	16
ERA PerMed	3	18
ERACoSysMED	1	2
ERA-CVD	2	5
EuroNanoMed-3	8	47
JPI HDHL - 1 year	2	8
JPI HDHL - 3 years	5	18
JPND-JPco-fuND	4	18
NEURON	8	36

Table. Number of groups and researchers participating in European Programs



Independent clinical research projects

The objective of this action is to promote independent clinical research, involving medicinal products for human use and/or advanced therapies, by funding projects not supported by the pharmaceutical industry. This action is intended to promote translational research and the transfer and application of scientific and technical knowledge to improve the treatment of diseases.

A total of 58 applications were received and 21 were funded for a total of €14,999,998.96. Grants were distributed in Andalusia, Castile and Leon, Catalonia, the Valencian Community, Galicia, Madrid, Murcia and the Basque Country.

Table. Independent clinical research projects applied for and awarded by gender of the principal investigator

Autonomous Communities	APPLICATIONS		AWARDED		Funding (€)
	M	F	M	F	
Andalucía	7	1	4	1	2,846,476.93
Aragón	1	1	0	0	0.00
Baleares	2	0	0	0	0.00
Cantabria	2	0	0	0	0.00
Castilla y León	1	1	0	1	1,173,150.00
Cataluña	9	5	4	2	5,025,154.56
Com Valenciana	1	1	1	0	322,769.70
Galicia	2	0	1	0	969,200.10
Madrid	13	3	2	3	3,793,122.37
Murcia	2	0	1	0	377,300.00
Navarra	2	0	0	0	0.00
País Vasco	4	0	1	0	492,825.30
TOTAL	46	12	14	7	14,999,998.96



A summary of all data on the National Subprogram for Knowledge Generation is detailed below.

Table. Amount granted and success rate by grant and by gender

ACTION	ELIGIBLE	ELIGIBLE WOMEN	ELIGIBLE MEN	AWARDED	% AWARDED	AWARDED WOMEN	AWARDED MEN	% AWARDED WOMEN	% AWARDED MEN	AMOUNT (€)
DTS	120	40	80	36	30.00	8	28	20	35	2,935,350
PI	1,501	679	822	613	40.84	251	362	36.97	44.04	70,141,228
AC	128	48	80	42	32.81	15	27	31.25	33.75	4,228,737
ICI	58	12	46	21	36.21	7	14	58.33	30.43	14,999,998.96
TOTAL	1,807	779	1,028	712	36.21	281	431	36.07	41.93	92,305,314

DTS: Technological development projects in health
PI: research projects in health
AC: complementary actions to international joint programming initiatives
ICI: independent clinical research projects

Table. Distribution of grants funded according to Autonomous Community

AUTONOMOUS COMMUNITY	DTS		PI		AC		TOTAL	
	PROJECTS	AMOUNT (€)	PROJECTS	AMOUNT (€)	PROJECTS	AMOUNT (€)	PROJECTS	AMOUNT (€)
Andalucía	8	655,600	60	6,643,838	3	248,025	71	7,547,464
Aragon	1	72,600	12	823,756			13	896,356
Asturias	4	345,400	12	1,420,540			16	1,765,940
Baleares			9	621,638			9	621,638
Canarias	1	29,150	7	452,540			8	481,690
Cantabria	2	95,700	6	678,084			8	773,784
Castilla y León	2	167,750	21	2,667,273			23	2,835,023
Castilla La Mancha	1	83,050	6	545,468			7	628,518
Cataluña	4	324,500	226	25,969,170	22	2,298,782	252	28,592,452
Com. Valenciana	4	363,000	33	3,701,874	2	227,224	39	4,292,099
Extremadura			1	183,920	1	24,200	2	208,120
Galicia	2	152,900	32	3,379,784	3	347,149	37	3,879,833
Madrid	5	455,400	137	16,339,780	8	787,824	150	17,583,004
Murcia			10	1,064,316			11	1,142,416
Navarra	1	78,100	29	4,076,672	1	99,994	31	4,288,866
País Vasco	1	112,200	10	1,253,137	2	195,536	12	1,448,673
Rioja (La)			2	319,440			2	319,440
TOTAL	36	2,935,350	613	70,141,230	42	4,228,734	691	77,305,316

National Subprogram for Institutional Reinforcement:

Within the National Subprogram for Institutional Reinforcement, a call for proposals was issued for the incorporation of new groups into the CIBER (Biomedical Research Networking Centers) consortium.

Incorporation of new groups into the CIBER Consortium

This action aimed to develop and strengthen the CIBER Consortium by reinforcing the areas of Respiratory Diseases, Bioengineering, Biomaterials and Nanomedicine, Rare Diseases and Mental Health. In accordance with the call, eight groups were selected.

Table. Incorporation of groups into CIBERs. Distribution by thematic area and gender

Thematic Area	APPLICATIONS		AWARDED				Funding (€) 2019
	M	F	M	% Awarded Men	F	% Awarded Women	
Respiratory diseases	2	0	2	100.00	0	0.00	90,000
Bioengineering, biomaterials and nanomedicine	3	1	1	100.00	0	0.00	45,000
Rare diseases	20	10	3	75.00	1	25.00	180,000
Mental health	2	0	1	100.00	0	0.00	45,000
TOTAL	27	11	7	87.50	1	12.50	360,000

Autonomous Community	APPLICATIONS		AWARDED	
	F	M	F	M
Andalucía	4	0	0	0
Aragón	1	0	0	0
Asturias	1	0	1	0
Castilla y León	1	1	1	0
Cataluña	9	2	2	0
Com Valenciana	1	2	0	1
Galicia	1	1	0	0
Madrid	8	3	2	0
Murcia	1	1	1	0
País Vasco	0	1	0	0
TOTAL	27	11	7	1

3.2. Health Research Institutes

Evaluation, accreditation and monitoring program:

Its competencies in evaluation, accreditation and monitoring of the IIS, the General Sub-Directorate for Assessment and Promotion of Research developed during 2019 the following activities:

- a) **IIS Technical Evaluation Guide**, approved by Ministerial Decree of April 12, 2019, of the Minister of Science, Innovation and Universities. In force since April 16, 2019.
- b) Setting up the **system of indicators for annual monitoring** of accredited IIS.
- c) **Institutional IT platform** of the ISCIII for shared work with the IIS.
- d) **IIS Forum**, established on November 20, 2019.
- e) **Procedures for accreditation, renewal of accreditation and authorization of significant changes**, according to Royal Decree 279/2016, of June 24.

The IIS are listed in the following table:

PROCEDURE	IIS	DATES OF APPLICATION/ RESOLUTION	STATUS
ACCREDITATION (n=5)	IdiSNA	29/12/2017-24/01/2020	FAVORABLE
	IdisBA	18/05/2018-24/01/2019	FAVORABLE
	IIS GALICIA SUR	18-02-2019/31-01-2020	WITHDRAWN
	ISABIAL	04-03-2019/22-02-2020	FAVORABLE
	IIS HM HOSPITALES	05-04-2019/03-09-2019	UNFAVORABLE
RENEWAL OF ACCREDITATION (n=20)	IBSAL	15-06-2018/28-01-2019	FAVORABLE
	IMIM	17-07-2018/28-01-2019	FAVORABLE
	IRB-LLEIDA	17-07-2018/14-05-2019	FAVORABLE
	IIS PdH	15-11-2018/11-07-2019	FAVORABLE
	IDIBAPS	12-12-2018/26-07-2019	FAVORABLE
	IDIBELL	05-12-2018/07-06-2019	FAVORABLE
	VHIR	12-12-2018/26-07-2019	FAVORABLE
	IIS GTP	11-12-2018/26-07-2019	FAVORABLE
	IIS LA FE	12-12-2018/07-06-2019	FAVORABLE
	IBIS	12-12-2018/07-06-2019	FAVORABLE
	IIS BIOCRUCES	15-07-2019/17-03-2020	FAVORABLE
	IBIMA	12-07-2019/19-02-2020	FAVORABLE
	IMIB	15-07-2019/17-03-2020	FAVORABLE
	IDIVAL	09-09-2019/22-06-2020	FAVORABLE
	INIBIC	09-09-2019/17-03-2020	FAVORABLE
IIS LA PAZ	15-11-2019/	PENDING	
IIS ARAGÓN	15-11-2019/	PENDING	
IDIS	18-11-2019/	PENDING	
Ibs GRANADA	27-05-2020/	PENDING	
IIS FJD	04-06-2020/	PENDING	
SIGNIFICANT CHANGE (n=8)	IBIMA	23-01-2019/06-03-2019	FAVORABLE
	IIS PdH	21-02-2019/20-05-2019	UNFAVORABLE
	IIS LA PAZ	28-02-2019/11-06-2019	WITHDRAWN
	IIS LA PAZ	28-02-2019/11-06-2019	UNFAVORABLE
	IIS LA FE	14-03-2019/26-06-2019	FAVORABLE
	IIS LA PAZ	07-06-2019	FAVORABLE
	IIS PdH	24-07-2019	WITHDRAWN
IIS BIOCRUCES	10-12-2019/19-12-2019	WITHDRAWN	

TECHNICAL AND
SCIENTIFIC
ACTIVITIES



4.1. Intramural Research

Intramural research refers to research carried out at ISCIII's own centers and units through competitive research projects, management assignments and collaboration agreements. Sources of funding for these competitive projects are varied in nature. They include programs of the Spanish National R&D&I Plan 2017-2020; Health Research and Development Strategy programs within that Plan; ISCIII's Intramural Research Program; and other regional, national, and international public and/or private calls.

The information presented in this section brings together the results of scientific production from the ISCIII's centers and National Schools based on studies and indicators: analysis of scientific publications, research projects, and the hiring of research and research support staff.

Research coordination:

The objective of the Research Coordination Area (ACI) is to manage and coordinate activities related to research carried out at ISCIII within the framework of national and international calls.

Reporting to the General Sub-Directorate for Applied Services, Training, and Research, the ACI's main tasks are:

- Disseminating calls from public and private funding agencies for grants to fund projects and human resources, and advising researchers on the preparation and submission of proposals.
- Management, monitoring and justification of national and international projects, agreements, contracts, and assignments.
- Monitoring and justification of the grants for the recruitment of research staff.
- Economic monitoring and statistical analysis of the state of intramural research.
- Promotion and handling of management agreements, contracts and assignments.



Table. Projects granted in 2019 by program

Funding	Program	Research Area	No. of Projects	Total Funding (€)
External funding	INTERNATIONAL *		11	1,125,033.24
		Infectious diseases	4	213,751.57
		Epidemiology and public health	3	221,230.42
		Rare diseases	2	461,457.50
		Health technology assessment	1	50,000.00
		Others	1	178,593.75
	NATIONAL R&D&I PLAN		6	720,660.00
		Infectious diseases	1	217,800.00
		Rare diseases	1	55,660.00
		Digital health, chronicity and care	3	387,200.00
		Others	1	60,000.00
	MINISTRY OF HEALTH		1	73,460.00
		Epidemiology and public health	1	73,460.00
AUTONOMOUS COMMUNITIES		2	260,744.71	
	Infectious diseases	2	260,744.71	
OTHERS		1	63,234.60	
	Epidemiology and public health	1	63,234.60	
ISCIII Funding	AESI Projects		21	1,555,664.11
		Infectious diseases	15	1,205,322.11
		Epidemiology and public health	4	231,542.00
		Digital health, chronicity and care	2	118,800.00
TOTAL			42	3,798,796.66

* 6 projects and 5 subprojects (EU, ECDC, etc.); AESI-Projects: Strategic Action in Intramural Health research projects



Table. Current projects for 2019 by research program/area

Funding	Program	Research Area	No. of Projects	Funding (€) Total	Funding (€) 2019	Funding	Program	Research Area	No. of Projects	Funding (€) Total	Funding (€) 2019	
External funding	INTERNATIONAL *		48	9,008,909.84	2,117,978.18	ISCIII Funding	AESI Projects		93	7,161,726.18	1,777,004.17	
		Epidemiology and public health	11	988,633.38	332,996.40			Epidemiology and public health	23	1,146,172.00	299,053.00	
		Infectious diseases	11	1,780,777.02	486,324.14			Infectious diseases	44	4,168,327.66	1,047,509.00	
		Rare diseases	1	386,957.50	22,762.22			Rare diseases	12	1,125,402.64	304,816.00	
		Digital health, chronicity and care	2	606,083.12	188,768.67			Digital health, chronicity and care	10	637,273.88	105,876.17	
		Environment and health	3	1,850,469.14	271,252.27			Environment and health	1	20,650.00	5,850.00	
		Health technology assessment	2	326,943.43	63,502.07			Health technology assessment	1	28,500.00	0.00	
		Others	18	3,069,046.25	752,372.41			Others	2	35,400.00	13,900.00	
	NATIONAL R&D&I PLAN		32	3,988,630.48	1,080,868.55		NETWORKS		12	3,779,180.65	755,238.97	
		Epidemiology and public health	1	6,000.00	0.00			Epidemiology and public health	3	1,397,314.25	278,862.85	
		Infectious diseases	18	2,261,287.60	507,952.00			Infectious diseases	9	2,381,866.40	476,376.12	
		Rare diseases	4	332,796.48	243,978.05			OTHERS		8	404,079.48	29,673.57
		Digital health, chronicity and care	8	1,142,440.00	328,938.50				Epidemiology and public health	2	153,735.00	0.00
	Others	1	246,106.40	0.00	Infectious diseases		2		87,207.63	21,500.00		
	MINISTRY OF HEALTH		1	54,844.00	0.00		Rare diseases		2	95,636.85	8,173.57	
		Epidemiology and public health	1	54,844.00	0.00		Digital health, chronicity and care		1	17,500.00	0.00	
	AUTONOMOUS COMMUNITIES		6	548,978.73	174,600.20		Others	1	50,000.00	0.00		
		Epidemiology and public health	1	20,657.83	0.00		TOTAL		207	25,680,865.15	6,031,963.64	
		Infectious diseases	4	480,544.71	141,150.00							
	Rare diseases	1	47,776.19	33,450.20								
	OTHERS		7	734,515.79	96,600.00							
		Epidemiology and public health	1	63,234.60	1,100.00							
		Rare diseases	1	278,946.00	28,500.00							
Digital health, chronicity and care		1	335,000.00	67,000.00								
	Others	4	57,335.19	0.00								

* 48 projects and 10 subprojects (EU, etc.)

Table. Human Resources Calls 2019; number of contracts awarded per center

CENTER*	NATIONAL R&D&I PLAN	AUTONOMOUS COMMUNITIES	OTHERS	AESI-HR	TOTAL
CNM	2	8		6	16
CNE		1	1		1
IIER				1	1
UFIEC		1			1
TOTAL	2	10	1	7	20

* CNM: National Microbiology Center; CNE: National Epidemiology Center; IIER: Research Institute for Rare Diseases; UFIEC: Functional Unit for Research into Chronic Diseases

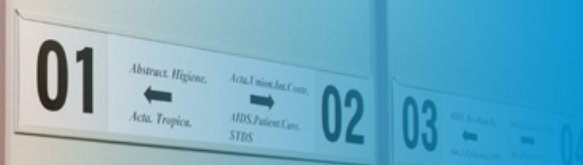
4.2. Publications of the Centers and Units

The table shows the most prominent indicators of the indexed scientific publications carried out by ISCIII staff in 2019:

SGSAFI, AETS, ENS, ENMT CENTERS	No. OF INDEXED PUBLICATIONS	CUMULATIVE IF	AVERAGE IF	% Q1	% D1
CNM	220	1,033.054	4.70	33.2	21.4
CNE	109	489.461	4.49	36.7	22.0
UFIEC	39	201.844	5.18	48.7	20.5
IIER	25	102.624	4.10	48.0	8.0
CNSA	9	45.781	5.09	22.2	66.7
CNMT	11	50.577	4.60	18.2	54.6
UITES	2	5.732	2.87	50.0	0.0
INVESTEN	7	14.260	2.04	14.3	14.3
UCCTs	7	33.633	4.80	57.1	28.6
AETS	7	14.261	2.04	14.3	0.0
ENS	5	79.648	15.93	80.0	80.0
ENMT	1	3.980	3.98	100.0	0.0
TOTAL	442	2,074.855	4.69	36.0	22.9

IF: Impact factor; Q1: first quartile; D1: first decile

CNM: National Microbiology Center
 CNE: National Epidemiology Center
 UFIEC: Functional Unit for Research into Chronic Diseases
 IIER: Research Institute for Rare Diseases
 CNSA: National Environmental Health Center
 CNMT: National Center of Tropical Medicine
 UITES: Digital Health Research Unit
 INVESTEN: Healthcare Research Unit
 UCCTs: Central Scientific and Technical Units
 AETS: Health Technology Assessment Agency
 ENS: National School of Public Health
 ENMT: National School of Occupational Medicine



4.3. Highlighted activities of the Centers and Units

The distribution of staff and activities by centers/units of the General Sub-directorate for Applied Services, Training and Research are shown in the following table:

Table. Distribution of General Sub-Directorate for Applied Services, Training and Research staff and activities by centers/units

	CNM	CNE	CNMT	CNSA	IIER UIAC	UFIEC	UITES	INVESTEN	UCCTs	RE-LAB
Staff	213	51	11	69	35	38	6	2	34	2
Ongoing and awarded projects	120	20	4	13	18	19	14	4	9	
Ongoing and awarded (HR) contracts	85	22	2	17	17	28	3	7	5	
Patents	4	0	0	0	0	1	0	0	0	
No. of publications	220	109	11	9	25	39	2	7	7	
Books	6			1	1	1	0	1	0	
Theses defended	10	1		0	1	4	0	0	0	
TFG and TFM (presented)	46	1	4	3	14	18	1	6	5	
No. Of stays and students received	92	25	6	18	22	35	1	9	5	

CNM: National Microbiology Center; CNE: National Epidemiology Center; CNMT: National Center of Tropical Medicine; CNSA: National Environmental Health Center; IIER: Research Institute for Rare Diseases; UIAC: Research Unit on Congenital Anomalies; UFIEC: Functional Unit for Research into Chronic Diseases; UITES: Digital Health Research Unit; INVESTEN: Healthcare Research Unit; UCCTs: Central Scientific and Technical Units; RE-LAB: Biological Alert Laboratory Network; HR: human resources; TFG / TFM: Bachelor's Theses / Final Master's Degree Projects, respectively.

It is worth mentioning that the researchers of the General Sub-Directorate for Applied Services, Training and Research Centers published 429 papers in indexed journals listed in the Journal Citation Report during 2019: 380 articles, 33 reviews, 13 letters and 3 book chapters.

Among these articles, 22.6% (109) were published in journals located in the first decile of their subject category and 35.7% (130) were in the first quartile. The cumulative impact factor reached 1,976.966 points, and the average impact factor per article was 4.61. All publications together received a total of 800 citations, which represents an average of 1.9 citations per publication.

4.3.1. National Microbiology Center (CNM)

The National Microbiology Center (CNM) has the specific mission of providing scientific and technical support to the General State Administration, the Autonomous Communities, and the Spanish National Health System (SNS) in the field of infectious diseases. Its activity is based on prevention and control, diagnosis, advice and research in this field. One of its main strengths is the ability to combine biomedical research with quality support activities for the SNS in such a way that they reinforce each other.

Highlighted activities:

- Interventions of the Rapid Response System (RRS) of the CNM in alerts activated by the health authorities, and also at the request of the RE-LAB. In 2019, it intervened in 15 alerts and incorporated into its Service Portfolio two real-time PCR techniques for the diagnosis of imported viral diseases: Lassa Hemorrhagic Fever and monkeypox.
- Characterization by complete genomic sequencing of the listeriosis outbreak declared in August by the Regional Government of Andalucía, the largest described in Spain to date. Molecular study of 433 isolates received at the CNM identified the strain responsible for the outbreak and confirmed the clonal relationship of 266 isolates (222 clinical, 42 food and 2 surface isolates).
- Scientific and technical participation in the national survey of the Ministry of Health on the seroprevalence of rubella, measles, mumps, poliomyelitis, diphtheria, tetanus, pertussis, chickenpox, hepatitis viruses A, B, C, D and E, meningococcus and HIV.
- The use of massive sequencing in the study of outbreaks and surveillance, in accordance with the recommendations of the European Center for Disease Prevention and Control (ECDC). In 2019, massive sequencing of multidrug-resistant *Mycobacterium tuberculosis*, *Salmonella enterica*, verotoxigenic *Escherichia coli*, Dengue 1 and 2 viruses, hepatitis E, measles and mumps was started; routine massive sequencing had already been implemented in carbapenemase-producing bacteria, *Listeria monocytogenes*, meningococcus and multidrug-resistant gonococcus surveillance.
- The creation of the National Network of Laboratories for the surveillance of resistant microorganisms (RedLabRA), coordinated and guided by the CNM.
- The CNM has a quality management system for its tests and services based on the ISO 15189, 17025 and 9001 standards. In 2019 155 tests (carried out in 18 Units) were accredited by ENAC (Spanish National Accreditation and Certification Body), and 2 Units were certified by AENOR (Spanish Association for Standardization and Certification).



Scientific and technical activities

- The scientific and technical activities of the CNM cover the following topics: RRS in biological alerts, scientific and technical advice to the National Health System, service portfolio for microbiological diagnoses, study and control of outbreaks, microbiological surveillance programs, and participation in research networks and projects.
- The CNM operates 24 Microbiology Surveillance programs relevant to Public Health, which are reviewed and renewed annually. This surveillance allows us to become aware of evolutionary patterns, study the circulating clones and detect early changes in trends, both in Spain and as in comparison to the rest the European countries. This knowledge sets the basis for the implementation of health measures that favor the control and prevention of infectious diseases.
- The CNM service portfolio consists of 362 techniques for diagnosis and/or reference of infectious diseases.
- In 2019, around 56,000 samples/strains associated with requests for diagnosis and/or reference were studied, and around 100,000 tests were made.
- In 2019, 85 research projects and 36 agreements were active. In addition, the CNM participated in 2 CIBERs and 9 RETICS, and coordinated one of them.

Participation in international committees, consortia and networks

CNM professionals participate in a large number of transnational initiatives, up to 80 in 2019. These include collaborations with the ECDC, as CNM professionals are national contact points for many health problems, the WHO and International Committees. Some examples are:

- Participation in ECDC Networks for Antimicrobial Resistance Surveillance (EARS-Net), Food- and Waterborne Diseases (FWD-Net), Tuberculosis, Invasive Meningococcal Disease (EU-Ibis), Invasive Bacterial Disease (EU-IBD), and Vaccine-Preventable Diseases.
- Participation in WHO Networks and Committees on Polio and other enteroviruses (WHO European Regional Polio Laboratory Network, European Non-polio Enterovirus Network), on the Diagnosis of Neglected Tropical Diseases, and on the European Laboratory Initiative (ELI) on Tuberculosis, HIV and Viral Hepatitis.
- CNM researchers participated in the *Insthovicetes* study group of the International Committee on Taxonomy of Viruses, in the Scientific Board of the *Agence Nationale de Recherche sur le SIDA*, in the European Consortium of Infectious Diseases of the INSERM (French National Institute of Health and Medicinal Research), and in the Global AMR R&D Hub for the international fight against antimicrobial resistance.
- Collaboration in the coordination of the thematic network of the Ibero-American Science and Technology Program for Development 'ViroRed'.

Especially noteworthy are the designations of the Parasitology Reference and Research Laboratory (RRL) as a WHO collaborating Center, of the Vaccine-Preventable Bacterial Diseases RRL as an external Reference Laboratory for the PAHO/WHO SIREVA II network, and of the Respiratory Viruses RRL as a National Influenza Center of the WHO.



4.3.2. National Epidemiology Center (CNE)

Highlighted activities:

- The CNE is a national benchmark for Public Health Surveillance and it manages the National Network for Epidemiological Surveillance RENAWE.
- It provides updated information on mortality in Spain and facilitates its visualization through its own interactive servers.
- It develops research projects in public health, participates in research networks of excellence and has an extensive network of collaborators.
- It contributes to the training of epidemiologists and specialists in preventive medicine and public health.

Scientific and technical activities

In close collaboration with the Ministry of Health, the CNE participates in all activities, plans and actions for the control, prevention and/or eradication of diseases. The areas of activity are focused on:

Chronic Diseases: The CNE provides relevant information on cancer, cardiovascular and metabolic diseases, neurodegenerative diseases and disability by monitoring mortality and investigating the main risk factors.

Communicable Diseases and risk behaviors: Surveillance of communicable diseases (RENAWE) and outbreaks in the EU, coordinated by the ECDC, the WHO and the European Food Safety Authority (EFSA). The CNE collaborates among others in the elimination of tuberculosis in Spain, the surveillance of infections related to healthcare, the analysis of daily mortality, the strategic plan against hepatitis C, the evaluation of policies for early diagnosis of HIV and the evaluation of risk behaviors and socially vulnerable populations.

The main lines of research according to thematic area are:

Environmental Epidemiology of Cancer: a) Geographic distribution of cancer mortality, spatiotemporal evolution and its relationship with environmental and social determinants. b) Environmental and lifestyle risk factors. c) Genetic and molecular epidemiology of cancer, and d) impact of air pollution on the health of the population.

Applied Epidemiology: a) Aging and predictors of mortality and disability. b) Dementias, parkinsonisms, and prion diseases. c) Morbidity and mortality due to external causes.

Cardiovascular and metabolic diseases and their risk factors: a) Impact of Act 28/2005 on Health Measures against smokin. b) Addictions, obesity and cardiovascular risk factors. c) Role of heavy metals in chronic diseases.

HIV/AIDS/STIs: Natural history of HIV infection (CoRIS and GEMES cohorts). Epidemiology and progression of HIV infection in immigrants. Diagnostic delay of HIV infection. Reproductive health of HIV+ women. Human papillomavirus epidemiology. Methodology of longitudinal cohort studies on HIV+ subjects.

Risk behaviors and socially vulnerable populations: Translation of the experience of Spain and European countries regarding policies to reduce the harm from substance use to some Eastern European countries, in collaboration with CHAFA (Consumers, Health, Agriculture and Food Executive Agency). Evaluation of the impact of social inequalities and different socio-economic determinants on mortality.

Communicable diseases: a) Effect of risk factors and evaluation of intervention measures for the prevention of communicable diseases. b) Evaluation of the effectiveness of the flu vaccine in Spain and in Europe. c) Development of methodology for assessing the severity of influenza epidemics and pandemics. d) Co-infection of HIV and hepatitis C and B virus, papilloma virus and sexually transmitted infections. e) HIV pharmacoepidemiology. f) health inequalities of the HIV-positive population; and g) use, acceptability and impact of pre-exposure prophylaxis (PrEP) in the HIV-negative population at risk.

4.3.3. National Environmental Health Center (CNSA)

The National Environmental Health Center (CNSA) contributes to protecting the health of the Spanish population by evaluating its exposure to environmental pollution. The CNSA's laboratories operate under a quality management system and are accredited according to the UNE-EN ISO/IEC 17025 standard by the Spanish National Accreditation Entity (ENAC) for 128 tests.

Highlighted activities:

- Design, coordination and certification of laboratories for the quality assessment/quality control program for sample analysis in Human Biomonitoring studies on a European scale (HBM4EU). The program included 73 biomarkers of 9 groups of priority chemical substances due to their health hazard. Laboratories from 25 European countries participated. <https://www.hbm4eu.eu/online-library/?mdocs-cat=mdocs-cat-8&mdocs-att=null>.
- Preparation of personal exposure maps to atmospheric thoracic (PM10), breathable (PM2.5) and breathable high-risk (PM1) particles based on the daily activity and mobility of volunteers in a comparative study in 6 European countries (ICARUS. H2020).
- Participation in the preparation of the draft of the National Plan for Health and Environment at the request of the Ministry of Health. Coordinators in the thematic areas of Air Quality in Indoor Environments and Human Biomonitoring, and collaborators in thematic areas of Environmental Radioactivity and Urban Air Quality.
- Participation in the emergency drill of national interest "Aragon 2019", coordinated by the UME (Military Emergency Unit of the Ministry of Defense); the CNSA participated in the State Committee for Operational Coordination (CECO) of the Ministry of the Interior and in the Operational Command Post of the Ministry of Defense, and the Alerts Unit of the CNSA participated in field actions.
- Leadership and supervision of Pillar 2 (European HBM Platform) of the European Initiative for Human Biomonitoring - HBM4EU, which includes the design of population studies, chemical analysis of samples and statistical analysis to provide reference values for exposure to priority chemical substances in different age groups of the European population in the period 2015-2020.



Scientific and technical activities

- Carrying out more than 103,000 analyses and preparing export reports and certifications, issued by the different units of the center, and participation in 15 national laboratory intercomparing exercises.
- To be highlighted are the following activities carried out by the National Reference Laboratory of Air Quality (RD 102 / 2011 and RD 39/2017):
 - 105 reports derived from management assignments, contracts and organization of intercomparing exercises and two technical documents (LNR01/2019 and LNR02/2019) for the development of the protocol for the participation in particle mass intercomparing exercises and for the evaluation of type approval reports of benzene analyzers.
 - Organization of on-site ozone and sulphur dioxide intercomparing exercises for Spain and Portugal, and of particle mass intercomparing exercises at the national level.
 - Participation in international intercomparing exercises organized by the World Meteorological Organization (WMO), the Norwegian Institute for Air Research (NILU), the Joint Research Center (JRC) in Ispra (EC - Italy), the German Institute for Occupational Safety and Health (IFA), and ACTRIS (EC).
- As depositary of the National Ozone Standard (RD 250 / 2004), calibration of 19 ozone transfer standards, organization of the intercomparing exercise of ozone analyzers with accredited national laboratories and participation in the intercomparing of National Standards organized by the International Bureau of Weights and Measures (BIPM).
- In the Biomonitoring area, participation in the international intercomparing exercises QMEQAS of Canada, G-EQUAS of Germany, and the Quality Assurance program of HBM4EU.
- Report of the national study Human Biomonitoring in Adolescents (BEA) and the final 2015-2019 report of the management delegation agreements between MITECO (Ministry for Ecological Transition and Demographic Challenge) and ISCIII for "research on the presence of persistent organic pollutants and other compounds in the human population" (SEG-1321/15).
- Participation in international environmental radioactivity intercomparing exercises organized by the JRC of the European Commission and the International Atomic Energy Agency (IAEA).

Participation in national and international consortia and committees

- EURADOS (European Radiation Dosimetry Group) WG2 'Harmonization of Individual Monitoring in Europe' and WG3 'Environmental dosimetry'.
- European Network of National Air Quality Reference Laboratories (AQUILA).
- Technical Committee for Quality (TC-Q) of the European Association of National Metrology Institutes (EURAMET).
- Management Board as Pillar leader and WP leader of the European Human Biomonitoring Initiative (HBM4EU).
- Steering committee of the Partnership for Chemicals Risk Assessment (PARC), for the Horizon Europe Program.
- Electronic Working Group CODEX ALIMENTARIUS "methylmercury in fish".
- Technical Committees for Standardization CEN/TC 264/Air quality WG 12 and WG 42; Secretariat and members of the Technical Subcommittee for Standardization AEN/CTN 77/environment SC 2/Air of AENOR; AEN/CTN 77/environment of AENOR; AEN/CTN 77/SC 1 Water; AEN/CTN 215 "Equipment and methods of measurement related to electromagnetic fields in the human environment".
- Managing Council of the National Radiation Protection R&D Platform (PEPRI).
- National Technical Group on Persistent Organic Pollutants (MITECO).
- National Technical Group on Contaminants in Food of AESAN
- State Committee for Animal Welfare CECOBA and the PARERE network
- Honorary presidency of the Spanish Network for the Development of Alternative Methods (REMA).
- Commission of Associated Laboratories of the Spanish Metrology Center (CEM).
- Seminar on Environmental Health, Ministry of Health.
- Associate Editor of the Revista de Salud Ambiental (Spanish Journal of Environmental Health).
- Research Ethics Committee of the Institute of Health Carlos III.
- Speakers at the UN Climate Change Conference 2019, COP25.
- Experts for post-nuclear or radiological accident recovery: CONFIDENCE.

4.3.4. Research Institute for Rare Diseases (IIER)

The objective of the IIER is to promote and carry out research and provide benchmark healthcare training and innovation in healthcare for people with rare diseases.

Highlighted activities:

The IIER conducts basic and translational research in the field of rare diseases, toxic oil syndrome, and autism spectrum disorders (ASD). The main lines of research are:

- The role of abnormalities in the innate immune system in rare diseases.
- The study of rare pediatric tumors: genetic abnormalities and advanced therapies.
- Gene and cell therapy in congenital muscular dystrophies and rare tumors.
- The involvement of microRNAs in rare disease development and their role as biomarkers.
- The application of new genetic analysis technologies for diagnosing rare diseases.
- Epidemiology of rare diseases.
- Risk factors and prevention of congenital anomalies.
- Collaboration in CIBERER-ISCIII research activities and the ISCIII's Biobank platform.
- In the field of translational research, participation in several clinical trials, projects on quality of life of patients with toxic oil syndrome, as well as the completion of clinical practice guidelines for Fabry disease.
- Development of three-dimensional cultures (organoids) in order to model rare diseases that affect the liver.
- Identification of disease-modifying genes in rare lung diseases.
- Research on epigenetic and gene regulation mechanisms in striated muscle and some associated rare diseases.



Scientific and technical activities

The undiagnosed rare diseases program - SpainUDP:

The IIER collaborates with the Undiagnosed Diseases Network International (UDNI <http://www.udninternational.org/>). The network, created in 2015, is implementing communication systems for complex cases and opening lines of collaboration among groups. The IIER collaborates with several hospitals in Spain, such as the Puerta de Hierro University Hospital and the Virgen del Rocío Hospital, but actually it collaborates with all hospitals in Spain that require diagnosis of this type of complex patients. This program contributes not only to providing diagnostic services but also to research. It is also a partner in the European SOLVE-RD project <http://solve-rd.eu/>.

National Rare Diseases Registry: In 2019, work on the development of the National Rare Disease Registry (ReeR) was kept up, while continuing to participate in the meetings of the Ministry of Health's working groups aimed at creating standardization and data validation processes. Furthermore, the IIER continues with the Rare Disease Patient Registry Platform collaborating on the Xeroderma Pigmentosum Registry, with the Spanish Academy of Dermatology, with the registry of rare eye pathologies in collaboration with the thematic Eye Diseases Network Oftared and the ONERO Observatory (National Observatory for Rare Eye Diseases), and on the registry of immunodeficiencies in collaboration with three medical societies.

National Rare Disease Biobank: The National Rare Disease Biobank (BioNER- <http://bioner.isciii.es/>) keeps its activity within ISCIII's Biobank Platform (<https://redbiobancos.es/>) and the European Eurobiobank network (<https://rd-connect.eu/what-we-do/biosamples-data/>). It currently is coordinator of EUROBIOBANK, is establishing a collaboration with the European Biobank Infrastructure BBMRI-ERIC (<http://www.bbMRI-eric.eu/>), and collaborates in pillar 2 of the EJP-RD (<https://www.ejprarediseases.org/>).

Genetic diagnosis service: The genetic diagnosis service carries out its activities in the diagnosis of diseases with a genetic basis such as retinoblastoma, infantile sarcomas, alpha-1 antitrypsin deficiency and bullous epidermolysis. In addition to the study of different types of cancer through panel massive sequencing, it is also in charge of the genetic diagnosis of the undiagnosed rare diseases program and the National Rare Disease Biobank (BioNER). The service is accredited by the National Accreditation Entity (ENAC) for identifying genetic abnormalities in retinoblastoma according to the quality standard UNE-EN ISO 15189: 2013. This year, 2,291 tests were carried out on 274 cases.

Functional Unit for Research on Congenital Anomalies (UFIAC):

In this Unit the ECEMC (a scientific group of ASEREMAC-the Spanish Association for the Registry and Study of Congenital Malformations) carries out its activity, within the framework of the agreement established with the ISCIII, **under the technical coordination of the IIER**. The **ECEMC** is a clinical-epidemiological research program on congenital defects. It has a multidisciplinary and translational approach that has been operating since 1976 and has a clinical network that includes more than 300 physicians (mainly pediatricians) working in hospitals throughout Spain. Since 1991, it has two information services on teratogens, one for health professionals (**SITTE-Telephone Information Service on Teratogens**) and the other for the general public (**SITE-Telephone Information Service for Pregnant Women**). Three research lines are developed: (a) Epidemiological surveillance of congenital defects in the ECEMC and analysis of associated variables and factors; (b) Clinical and etiological study of children with congenital defects; and (c) Epidemiological analysis of teratogens.

The IIER also implements the following programs: **1)** Follow-up of the Toxic Oil Syndrome cohort with more than 13,000 patients followed up yearly, **2)** Collaboration on the development of the population-based screening program for early detection of Autism Spectrum Disorders (ASDs) in collaboration with the University of Salamanca, **3)** Participation as partners in the EJP RD (European Joint Program on Rare Diseases), where IIER is co-leader in two work packages and is member of the Executive Committee, **4)** Participation in the international networks EUROCAT, ICBDSR and ENTIS, and in the JRC-EUROCAT NTD Working Group.

Participation in consortia and committees

The IIER is member of the International Rare Disease Research Consortium (IRDiRC) representing ISCIII, and is a member of the International Conference of Orphan Drugs and Rare Diseases (ICORD). The IIER provides external consultancy to the AEMPS (Spanish Agency of Medicines and Medical Devices of the Ministry of Health) and is an expert member of the European Medicines Agency and Clinical Advisory Committee (CAC) of the "European Rare Disease Models & Mechanisms Network (RDMM-Europe)", established by "Solve-RD-solving the unsolved rare diseases". It is also a member of the Advisory Board of the Spanish Federation of Rare Diseases (FEDER) and the Rare Diseases Commission of the Spanish Association of Human Genetics.

4.3.5. Functional Unit for Research into Chronic Diseases (UFIEC)

Highlighted activities:

The Functional Unit for Research into Chronic Diseases (UFIEC) (<https://www.isciii.es/QuienesSomos/CentrosPropios/UFIEC/>) carries out different types of activities: basic and translational research, reference diagnostics, and training on chronic diseases. The unit is a resource for scientific and technical support for the most prevalent chronic diseases in the context of the SNS. Its vision is to serve as a Reference Center for Biomedical Research on Chronic Diseases and as a resource for scientific and technical support, acting in accordance with the guidelines of the WHO and the European Commission. Currently, the UFIEC comprises units with strength in research and molecular diagnosis, including technical support services to the ISCIII.



Scientific and technical activities

Activities of the UFIEC include basic and translational research in cancer (colon, ovarian, breast, thyroid, lung and nervous system), neurodegenerative diseases (Alzheimer's, Parkinson's, amyotrophic lateral sclerosis, multiple sclerosis, prionopathies, etc.), and inflammatory, metabolic and mitochondrial pathologies. It addresses aspects of regenerative medicine (stem cells, iPSCs and organoids), pharmacological targets (signaling and structural models), detection of new biomarkers, cellular senescence, animal models and computational biology. Additionally, the UFIEC carries out other scientific and technical activities, among which the reference molecular diagnosis of human prionopathies (included in the ECDC surveillance program) stands out. It also provides transversal services related to cutting-edge techniques such as optical imaging platforms for *in vivo* monitoring of animal models (IVIS), the Luminex platform and equipment for structural analysis of proteins.

The UFIEC has ongoing collaborations with national and international research groups from CSIC, CNIC, CNIO, the CIEN Foundation, universities from different Autonomous Regions, the Aragonese Institute of Health Sciences, RCSI Dublin, the National Polytechnic Institute of Mexico, Universities of Buenos Aires, Geneva, Leuven, Michigan and Santiago de Chile, and with healthcare groups from several hospitals.

The UFIEC's research activity was funded mainly through funds obtained in competitive calls, both from public institutions (7 projects from the Ministry of Science and Innovation, 2 from the Strategic Action in Intramural Health, 1 intramural project, CIBERs and RETICs), and private institutions (1 from the Spanish Foundation for the Promotion of Research in Amyotrophic Lateral Sclerosis (FUNDELA) and 2 from the Spanish Association Against Cancer (AECC). IDP Pharma and the James McDonnell Foundation fund neuro-oncology projects, and several groups have scientific and technical agreements with companies (Biocross SL, ProAlt, S.L., Sanofi-Aventis).

Participation in Committees and Consortia

UFIEC staff participates in different scientific and technical committees at the national and international level, such as the OEBA (Spanish Organ in Charge of Animal Welfare), the Biosafety Commission, the ISCIII National Biobank, the Spanish National Agency for Assessment and Forecasting, Technical Commissions of the ISCIII's Health Research and Development Strategy, the Committee of Nanotechnologies of the Spanish Association for Standardization (UNE), the ECDC, the European Union Network of Laboratories for the Validation of Alternative Methods (EU-NETVAL), and the International Agency for Research on Cancer (IARC).

Furthermore, UFIEC groups participate in several collaborative consortia: CIBERONC, CIBERNED, MinE International Consortium for the study of Amyotrophic Lateral Sclerosis, DEGESCO Consortium on the genetics of dementia, Thyroid Cancer Study Group (TIROSEEN), and RETICS on Asthma, Adverse Drug Reactions and Allergy (ARADyAL).

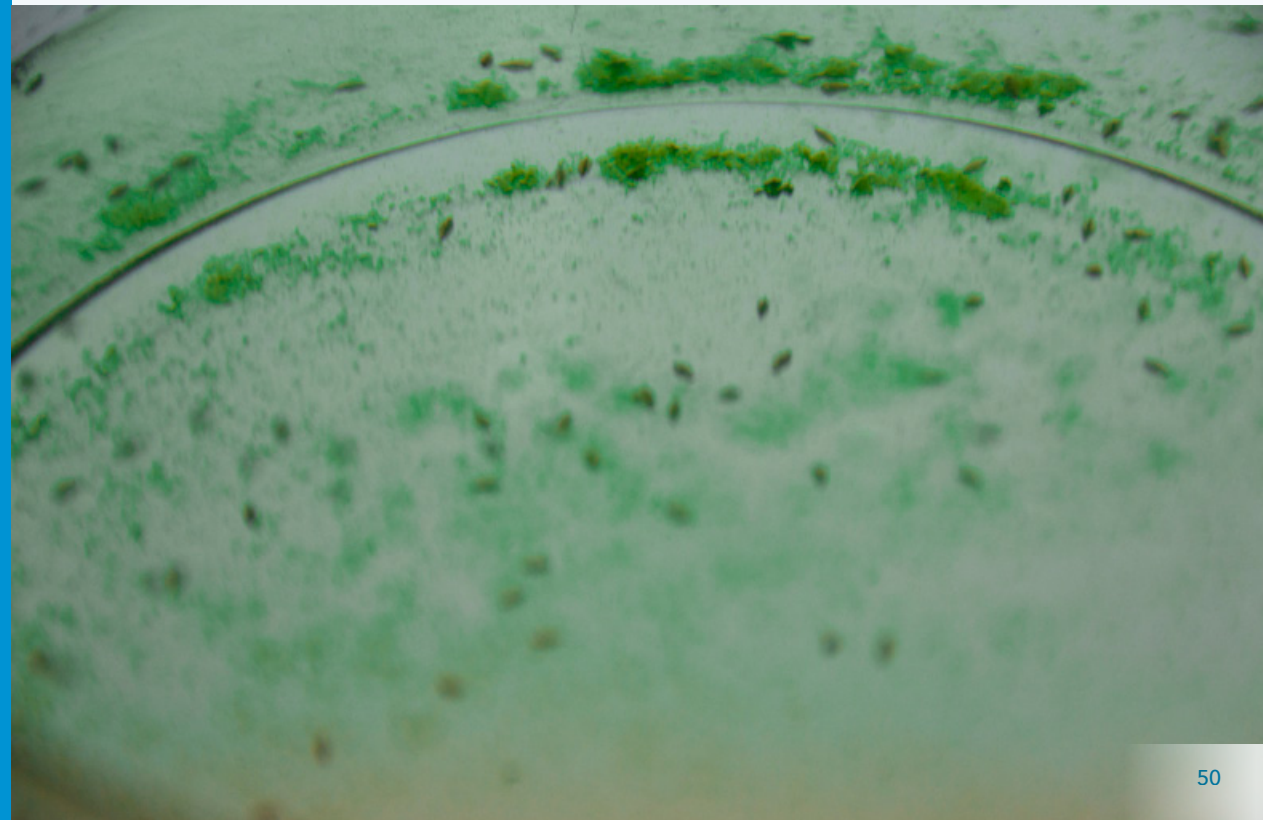
4.3.6. National Center of Tropical Medicine (CNMT)

Highlighted activities:

- Technical Support to the Programs of Control and Fight against Malaria, Tuberculosis and HIV/AIDS of the Ministry of Health and Social Welfare of the Republic of Equatorial Guinea. The Spanish Agency for International Development Cooperation (AECID) through the Spanish Foundation for International Cooperation, Health and Social Policy (FCSAI).
- Mapping of Onchocerciasis, Lymphatic Filariasis and Loiasis in Continental Equatorial Guinea for the development of control and prevention strategies for these diseases, funded by Fundación Probitas.
- Evaluation of HIV-PMTCT (Prevention of Mother-to-Child Transmission of HIV) services in Equatorial Guinea. Funding Agency: IMIENS (Joint Research Institute-National School of Public Health).
- Knowledge and Access to Diagnosis and Treatment of Tuberculosis in Equatorial Guinea 2019-2021, Strategic Action in Intramural Health (AESI) P118CIII/00023.
- Accessibility and use of health services for the diagnosis of Chagas disease in the Community of Madrid. AESI Project.
- Evaluation of the 2019-20 flu vaccination program. Ministry of Health. Member of the working group.
- Eleven training stays for Resident Medical Interns linked to actions of ongoing projects and 6 Master's theses.
- Co-organization of the XI SEMTSI Congress - Challenges in Global Health. Held from 28th to 30th October 2019 in Avila, Spain.

Participation in national and international consortia and committees

- Co-ordination of the Network for Collaborative Research on Tropical Diseases (RICET), RETICs; AES-AESI.
- Participation in the Board of Directors of the Spanish Society of Tropical Medicine and International Health (SEM-TSI).



4.3.7. Digital Health Research Unit (UITES)

Highlighted activities:

The Digital Health Research Unit (UITES) promotes and develops R&D&I and Training activities in the field of ICT applied to Health. Its lines of activity are: a) Development of PITES: Open Platform for Innovation in Telemedicine and e-Health, with specific actions in the fields of Active and Assisted Living (AAL) and Mobile Health (mHealth); b) Standardization and interoperability of information systems and electronic health records (EHR); c) Creation of repositories for the secondary use of information and knowledge extraction; d) ICT empowerment of patients and professionals; e) Reliability analysis of complex monitoring environments and the safe use of medical devices in assisted environment contexts (AAL); f) Analysis of guarantees, protection, safety and electromagnetic compatibility (EMC) of telemedicine applications; and g) Evaluation of mobile telehealth e-services.

Scientific and technical activities

During 2019, there were 14 (10 national and 4 international) projects active, including participation in the AIDS Research Network (RIS), the Healthcare Services for Chronic Diseases Research Network (REDISSEC), and projects in collaboration with IMIENS.



4.3.8. Healthcare Research Unit - INVESTÉN-ISCIII

The Healthcare Research Unit (Investén-ISCIII) has been working for years on promoting research in nursing care and other disciplines related to this field. Its resources are offered to all National Health System (SNS) professionals interested in care research.

The Unit's activities aim to develop strategies and promote actions for the promotion and coordination of multidisciplinary and translational research in healthcare, strengthening the link between clinical practice and research, and enabling the implementation of safe and quality care to improve population's health.

Highlighted activities:

- Since the establishment of the Regional Coordination Centers in December 2018, 5 Autonomous Communities joined: Andalusia, the Canary Islands, the Balearic Islands, the Basque Country and the Principality of Asturias. A total of 14 new centers from these 5 communities were added to the program. Currently, and including the third national cohort, there are in total 41 centers and more than 300 health institutions are Centers Committed to Excellence in Care.
- Selection of Teresa Moreno-Casbas as a Fellow of the American Academy of Nursing.

Scientific and technical activities

In 2019, INVESTÉN coordinated research projects and activities, and promoted training and dissemination activities as well as scientific publications related to the following lines of activity:

- Increasing the presence and visibility of care research led by nursing professionals, physiotherapy professionals and other professionals in health sciences.
- Promoting the exchange of transnational knowledge and incorporation of scientific activity in care at the European and international level.
- Promoting training in research methodology for professionals involved in the provision of care.
- Increasing scientific rigor in the research activity of nurses, physiotherapy professionals and other professionals in health sciences.
- Improving the transfer of research results in care and the application of evidence in clinical practice.

Participation in national and international consortia and committees

Collaboration agreements with each of the 17 Autonomous Communities and with two international institutions, the Registered Nurses' Association of Ontario (RNAO), Canada, and the JBI Research Institute in Australia.



4.3.9. Central Scientific and Technical Units (UCCTs)

The Central Scientific and Technical Units (UCCTs), area of the General Sub-Directorate for Applied Services, Training and Research, are composed by 6 Units:

- Veterinary Unit
- Histology Unit
- Flow Cytometry Unit
- Electron and Confocal Microscopy Unit
- Genomics Unit
- Bioinformatics Unit

The primary objective is to provide service, scientific and technical assistance to support both diagnostics and research projects that are performed in the ISCIII.

Highlighted activities:

- Complete sequencing of the genome of the isolates from the *Listeria monocytogenes* in Andalusia during summer of 2019.
- The UCCTs have a quality management system for the laboratories implemented based on the ISO 9001 and 15189 standards. Three Units (Veterinary, Confocal Microscopy and Flow Cytometry) have their services certified by AENOR, and tests of two other Units, Electron Microscopy and Genomics, are ENAC-accredited.
- *In vivo* diagnosis of several cases of human botulism at the national level.

Scientific and technical activities

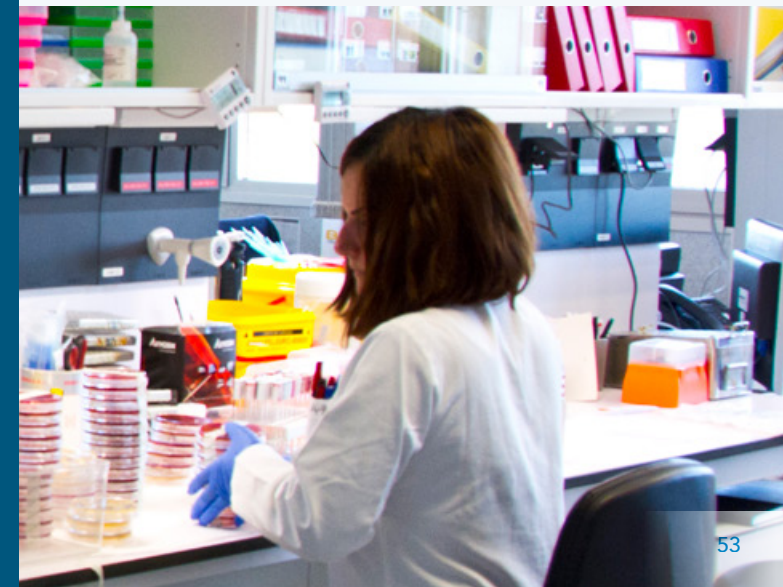
- Genomic sequencing of more than two thousand bacterial isolates within the surveillance and control programs carried out at the CNM.
- Diagnosis by means of electron microscopy techniques.
- Research support for the examination and analysis of biological samples by means of optical confocal microscopy and electron microscopy.
- Genomic typing of bacteria and other microorganisms.
- *In vivo* support to a total of more than 250 experiments carried out at CNM, UFIEC and IIER.
- Analytical flow cytometry, preparative cytometry and mass cytometry analysis of microscopic images for research.

Participation in national and international consortia and committees

The Microscopy Unit is part of REMOA (Advanced Optical Microscopy Network) and the Laboratory Network of the Autonomous Community of Madrid. It also forms part of the Spanish Network of Virus Biophysics.

The Veterinary Unit is a member of SECAL, the Spanish Society for Laboratory Animal Sciences and the TRANSGENIC network of genetically modified animals.

On October 16, the Bioinformatics Unit organized the annual meeting of the Association of Bioinformatics Students at the Research Center for Plant Biotechnology and Genomics (CBGP) of the Polytechnic University of Madrid; the Bioinformatics Unit also participated in WG3 and WG4 of the Global Microbial Identifier initiative <https://www.globalmicrobialidentifier.org/>



4.3.10. Biological Alert Laboratory Network, RE-LAB

Highlighted activities:

The ISCIII coordinates the Biological Alert Laboratory Network (RE-LAB), which is configured as a scientific and technical infrastructure composed by 12 reference laboratories specialized in microbiology and the Rapid Identification Laboratory (LABIR) of the Military Emergency Unit, as a collaborating laboratory, within its competences in the field of civil protection. The role of this network is fundamental in the mitigation of the risks derived from both the intentional release of biological agents by non-state stakeholders and in the accidental release of such agents.

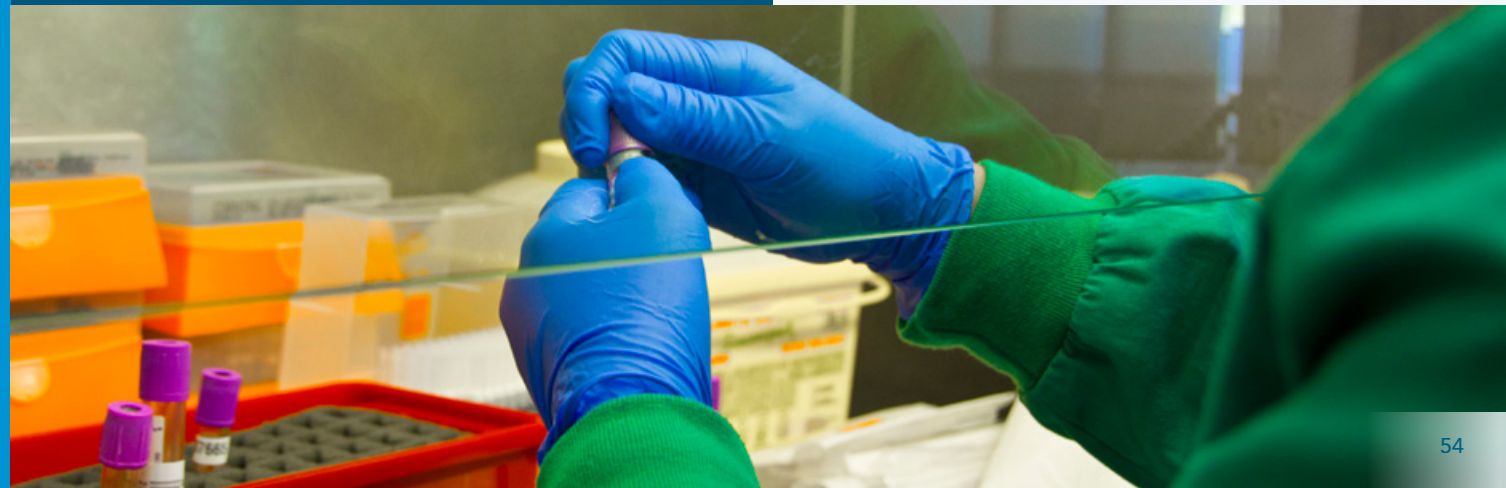
Its purpose is to provide operational support to the National Security System against risks and threats posed by biological agents. It is an important element in the case of terrorist threats of biological nature in Spain. Under its control, a coordinated response with the competent health authorities can be organized, especially with the Health Alert and Emergency Coordination Center of the Ministry of Health and with the law enforcement agencies, to give a rapid and effective response to incidents of a biological nature.

Scientific and technical activities

- The RE-LAB Management Unit coordinated the network reference laboratories' response to alerts regarding postal deliveries containing possible biological threat agents that occurred throughout the year.
- It renewed the certification by AENOR according to ISO: 9001-2015 within the Quality Management System of the General Sub-Directorate of Applied Services, Training and Research.
- It participated in the meetings of the National Community of Security Users (CoU Spain).
- It promotes the participation of the network laboratories in the H2020 Security Challenges calls and disseminates information about other calls of interest.
- It managed the inclusion of the ISCIII in the List of National Organizations collaborating with the European Food Safety Authority (EFSA), participating as the ISCIII's point of contact.

Participation in Committees and working groups

- Specialized Committee on the Non-Proliferation of Weapons of Mass Destruction, a support body of the National Security Council within the framework of the National Security System, on behalf of the Ministry of Science, Innovation and Universities.
- Working Group for the creation and implementation of the National Bio-custody Commission created within the Specialized Committee on Non-Proliferation of Weapons of Mass Destruction, to comply with the mandate of the National Bio-custody Plan (Order PCI/168/2019), developed by the Committee and approved by the National Security Council in January 2019.
- Interministerial Working Group for the implementation of the NRBQ Action Plan of the European Union coordinated by the Ministry for Home Affairs.



4.3.11. Health Technology Assessment Agency (AETS)

The Health Technology Assessment Agency (AETS) addresses the SNS' needs for scientific information and evidence related to determining the policy on healthcare benefits and improving its quality and efficiency. Thus, the AETS offers objective assessments of the health, social, ethical, organizational, and economic impacts of health techniques, procedures, and interventions to provide a scientific basis for the decisions made by authorities and other healthcare agents.

Highlighted activities:

The AETS completed 25 health technology assessment reports within the "Spanish Network of Agencies for Assessing National Health System Technologies and Performance" (REDETS). It also performed teaching activities, projects, consultancy, and participated in consortia.

Technical and scientific activities

Since 2012, the main AETS' activities were part of the "Spanish Network of Agencies for Assessing National Health System Technologies and Performance" (REDETS). The activities carried out in 2019 were:

- Reports on the effectiveness and safety of different products and technologies commissioned by the Ministry of Health and the Spanish Network of Agencies for Assessing National Health System Technologies and Performance.
- Situation Report on the Post-polio Syndrome: Update. Health Technology Assessment Agency (AETS).
- Monitoring Studies.
- Evaluation of technologies using the New and Emerging Health Technologies Detection System (SINTESIS).
- 'GuíaSalud' Program for Clinical Practice Guidelines (CPG) in the SNS.

Participation in national and international consortia and committees

- Spanish Network of Agencies for Assessing National Health System Technologies and Performance (REDETS).
- Permanent member of the EUnetHTA Executive Board.
- International Information Network on new or emerging Health Technologies, to support decision-making on their appropriate use and need of re-assessment (EUROSCAN).
- International Network of Agencies for Health Technology Assessment (INAHTA).

The AETS represents the ISCIII in:

- Commission on Benefits, Insurance and Funding of the SNS
- Committee for the Designation of Centers, Services and Reference Units (CSUR)
- Advisory Committee for Orthoprosthetic Benefits
- Advisory Committee for Dietetic Product Benefits
- Medicinal Products Committee of the AEMPS



4.3.12. National Library of Health Sciences (BNCS)

The National Library of Health Sciences (BNCS) provides documentary support to the SNS and acts as a point of reference for all central and regional healthcare administration units. It also offers bibliographic support to the teaching, scientific and research activities of the ISCIII at the library branches in both campuses. It develops and updates various projects to make the health sciences literature produced in Spain visible through the database **IBECS** (<http://ibecs.isciii.es>) and the portal **SciELO España** (<http://scielo.isciii.es>), and by providing tools to access scientific information such as the collective catalog of health sciences journals in Spanish libraries **CNCS** (<http://cncs.isciii.es/>) and the adaptation of the **DeCS** thesaurus to Spanish. It makes the scientific and institutional production of the ISCIII and its foundations (CNIC and CNIO) available to all researchers through the institutional repository **REPISALUD** (<https://repisalud.isciii.es/>).

Highlighted activities:

- Beginning of a collaboration with the Secretary of State for Digitalization and Artificial Intelligence (Ministry of Economic Affairs and Digital Transformation), with the BioASQTask MESINESP (Medical Semantic indexing in Spanish) project, which applies natural language technologies to the IBECS database to develop automatic indexing tools that improve information retrieval.
- Organization of the first BNCS/FECYT OpenAire Advance Workshop on "The role of biomedical libraries in the context of open access". The event was attended by 135 people and was also broadcasted via streaming.

Table. Initiatives for the dissemination of Spanish scientific information

1.1- Virtual Health Library - Spain (http://bvsalud.isciii.es)	
IBECS Spanish Health Sciences Bibliographic Index	228 indexed journals 185,263 articles, an increase of 10,972 records 56,848 links to full-text articles included in SciELO España and in open-access journals
SciELO España Collection of Spanish open-access health science journals	60 publications. More than 39,000 full-text articles (html, XML and pdf), 36.5 million visits (more than 3 million/month) and more than 43 million pages downloaded Integrated into the Web of Science (WoS) (SciELO Citation Index) Presence in Google Scholar, Hispana, DOAJ, OAISTER, ROAR, OpenDOAR, Recolecta, OpenAire and BASE
DeCS Descriptores de Ciencias de la Salud	Adapted translation of the trilingual (ES/EN/PT) biomedical term thesaurus compiled by BIREME based on the National Library of Medicine's MeSH 294 new descriptors and 1,214 terms, synonyms and scope notes modified
1.2 National Health Sciences Catalog (CNCS)	
CNCS National Health Sciences Catalog	579,000 collections from 260 libraries in the 17 Autonomous Communities and 28,100 journals were integrated 30,000 visits to pages of the Catalog and 1,700 visits to the CNCS website and blog Obtained the CNCS brand from the OEPM
1.3 BNCS Social Networks	
Twitter profiles	@BNCSisciii @scielospain @bvs_spain @REPISALUDisciii
1.4 Institutional Repository (REPISALUD)	
REPISALUD Unified open-access platform for the scientific and technical production of ISCIII, CNIC and CNIO	Signing of the INEOS agreement with FECYT Inclusion of patents and research data API connection of FECYT with SCVs of ISCIII researchers Dissemination in Open Aire, Open Doar and Buscarepositorios

BIREME: Latin American and Caribbean Center on Health Sciences (PAHO Specialized Center; PAHO: Pan American Health Organization); MeSH: Medical Subject Headings, thesaurus of the National Library of Medicine (NLM) used in the Pubmed database; NLM: National Library of Medicine, part of the NIH; OEPM: Spanish Patent and Trademark Office; INEOS Agreement: pilot project 'Infrastructures and Standards for Open Science'; FECYT: Spanish Foundation for Science and Technology; SCV: Standardized Curriculum Vitae.

Table. Library, publishing and exhibition services

1. Library services	
In-library consultation	3,106 in-person users, 198 new reader sign-ups
Collections	Bibliographic collections: 42,339 publications , of which 38,069 are monographs and 2,623 are journals . An increase of 1,384 282 active subscriptions (99% electronic) More than 85,000 accesses to full-text books and electronic journals
Bibliographic searches	In databases subscribed to by the BNCS: 83,835 (not including free databases such as PubMed, etc.)
Interlibrary loans and document requests	6,096 (3,612 from ISCIII researchers, 93.3% obtained in an average time of less than 1 day) 2,484 from other Spanish libraries with an average delivery time of less than 4 hours 74% of the applicant libraries are from health centers
2. Editorial program	
http://publicaciones.isciii.es	17 titles published: 15 monographs (13 electronic and 2 paper plus electronic) and 2 periodicals in electronic format 2,626 subscribers to alerts
3. Museum of Public Health and Hygiene	
Guided group tours by appointment	67 guided tours and 1,243 visitors (adults from cultural centers and undergraduate nursing students and students undertaking vocational training in the healthcare sector)
4. Collaborations	
PAHO/WHO BIREME Red Scielo.org FECYT	Coordination of the Virtual Health Library Coordination of the portal SciELO España INEOS projects

Museum of Public Health and Hygiene

It is a state-owned museum, located within the ISCIII premises. It owns a noteworthy collection that includes a bacteriological laboratory from the first third of the 20th century. It also owns a documentary archive from the former Directorate General of Health, a library and the historical archive of clinical records from the former hospitals for infectious diseases. The BNCS coordinates the Institute's Editorial Program and the visits and activities of the Museum of Public Health and Hygiene. The Museum offers a program for guided group tours open to the general public. During 2019, the visits indicated in point 3 of the table above on Library Services were organised.





ACTIVITIES RELATED
TO TRAINING,
SCIENCE
COMMUNICATION
AND OUTREACH,
AND TRANSFER
OF RESULTS

5.1. National School of Public Health

The National School of Public Health (ENS), founded in 1924, specializes in postgraduate training and continuing education in the areas of public health, health management and administration, and international health. It carries out research, technical studies and consultancy for public administrations and scientific, healthcare, and development cooperation entities.

Highlighted activities:

- Implementation of a new Diploma of specialization in Senior Management and Administration of Nursing Services and Units (I Edition).

Table. Regulated Education ENS 2016-2019

	2019	2018	2017	2016
Master's Degrees	4	4	4	4
Diplomas	4	4	3	3
Short Courses	16	20	21	29
Hours taught	4,009	4,031	3,852	3,525
ECTS ¹ Equivalent	265	275	321	282
Students	575	369	466	393

¹ ECTS: European Credit Transfer System, a system adopted by all universities in the European Higher Education Area (EHEA) to guarantee the homogeneity and quality of the studies they offer.

Table. 2019 Training offer

Activities	Academic load (teaching hours)	ECTS
Master's Degree in Public Health	1,500 (750)	60
University Master's Degree in Healthcare Administration	1,500 (750)	60
Master's Degree in Systems Management and Information and Communications Technology in Health	1,500 (750)	60
Master's Degree in Bioinformatics Applied to Personalized Medicine and Health	750 (300)	60
Diploma of specialization in Senior Management and Administration of Nursing Services and Units (online)	250	10
Specialization in Health Law and Bioethics Diploma (Online)	150	10
Specialization in Public Health for Development Aid Diploma (blended)	250	10
Diploma in Public Health and Gender (XI Edition)	200	10
In-person continuing education courses/workshops	609	25

Students in training	2019	2018	2017	2016
Total number of MIR in training programs (R1, R2, R3, R4)	10	9	8	8
Number of Master's Degree and Diploma students	235	205	225	192
Number of students in continuing education	331	164	241	201
Total students	575	369	466	393

Activities with UNED/IMIENS (Joint Research Institute - National School of Public Health)

Projects:

- Accessibility, transition through the process and reasons for abandoning assisted reproduction treatments. A mixed methodological approach. IMIENS 2019.
- Bank Fraud and Health. IMIENS 2017-002. Funding 2018-2019.
- Evaluation of HIV-PMTCT (Prevention of Mother-to-Child Transmission of HIV) services in Equatorial Guinea. 2018 Call.
- Modeling the natural history of Buruli ulcers and the impact of strategies to improve its diagnosis and reduce its impact. 2019 Call.
- Effect of healthy habits messages in TV food ads on adolescent attitudes: a randomized intervention study. National School of Public Health, Madrid, 2018-2019. Project funded by IMIENS in the Resolution of February 14, 2019, of the call for joint ISCIII-UNED research projects 2018. BICI No. 19, 25 February 2019.

Courses:

- University Master's Degree in Healthcare Administration.
- Master's Degree in Public Health (blended).
- Several diploma and 'university expert' courses.
- IMIENS Seminar - Arboviral diseases: sharing experiences, 13 December 2019.



5.2. National School of Occupational Medicine

Highlighted activities:

- The National School of Occupational Medicine (ENMT-ISCIII) is a National Reference Center of the International Occupational Safety and Health Information Center (CIS) of the International Labor Organization.
- Moreover, as a reference center, the ENMT continues to lead the first stage in training specialists in Occupational Medicine for the multidisciplinary teaching units in Occupational Health of 12 Autonomous Communities.
- Through the ENMT, the ISCIII accredits and certifies the training program "Diploma in Occupational Health Nursing" organized with the Spanish Federation of Specialists in Occupational Nursing (FEDEET).
- National Training Center for MIRs (Medical Internship Residents) in Occupational Medicine.

The ENMT-ISCIII is the ISCIII's specialized center for training, consulting and research in occupational medicine and nursing. Its mission is to contribute, together with other bodies of the General State Administration, Autonomous Communities and social partners, to strengthening the preventive system and improving workers' health.

Procedures for the formalization of new agreements in the fields of training, research and scientific associations have been initiated: agreements between the ISCIII and the Regional Government of Extremadura and between the ISCIII and Quirón Prevención, both for the training of specialists in Occupational Medicine and Occupational Nursing; agreements with the National Institute of Safety and Health at Work and with the Spanish Association of Specialists in Occupational Medicine for the stimulation of training, research and innovation in occupational safety and health.



Teaching activities

Table. Courses taught at ENMT during 2019

COURSES	FORMAT	CCT*/ECTS CREDITS	No. OF STUDENTS	TRAINING HOURS
Occupational diseases for primary care physicians	e-learning	6.9 CCT	60	98
Introductory course to dermatoscopy for occupational health physicians	IN-PERSON	0.7 CCT	17	7
Introductory course to mediterranean nutrition and diet in the healthy workplace, 2nd edition	e-learning	8.3 CCT	29	60
Prescription of physical exercise for healthcare professionals, 5th edition	e-learning	6.5 CCT	83	50
Refresher course in hearing loss due to occupational exposure to noise	IN-PERSON	0.9 CCT	10	6
Refresher course in functional tests	e-learning + IN-PERSON WORKSHOP	8.2 CCT	32	55
Course in occupational epidemiology and collective health surveillance	IN-PERSON	-	39	10
Opening day of the academic year 2019-2020	IN-PERSON	-	76	3
Prescription of physical exercise for healthcare professionals, 6th edition	e-learning	6.5 CFC	71	50
Occupational diseases for primary care physicians	e-learning	6.9 CCT	62	98
University master's degree in medical evaluation of inability to work and dependency (ISCIII-UAH -INSS -IMSERO)	e-learning	60 ECTS	6	420
University expert degree in medical evaluation of inability to work and dependency (ISCIII-UAH -INSS -IMSERO)	e-learning	42 ECTS	19	294
Cineforum conference	IN-PERSON	-	79	4
Workshop healthy nutrition in the workplace	IN-PERSON	-	130	5
4th workshop on occupational nursing	IN-PERSON	0.4 CCT	64	4
7th workshop on systematic review in occupational medicine	IN-PERSON	6.9 CCT	93	98
Presentation day master's dissertations (Master in Medical Evaluation of Inability to Work and Dependency)	IN-PERSON	-	14	10

*CCT: Course submitted to the evaluation (of teachers and contents) by the Commission for Continuous Training of the National Health System.



Table. Global Training Indicators

GLOBAL TRAINING INDICATORS	2019
Total number of MIRs in training programs (R1, R2, R3, R4)	153
Number of students in continuing in-person education	524
Number of students in online education	321
Number of students in postgraduate education in agreements with Universities	39
Total number of teaching hours in training	1,709

Science outreach

Publishing of the [Occupational Medicine and Safety Journal](#). The 4 usual yearly issues were prepared, although they could not be published.

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Original articles	16	24	23	17	17	15	12	11	6	7
Case Studies	-	-	-	-	10	8	5	4	4	6
Review articles	4	2	4	8	16	11	8	4	7	10
Others	10	10	11	7	15	7	9	6	6	7
Total articles	30	36	35	32	58	41	34	25	23	30
Supplements	-	1	-	1	2	-	1	-	-	-



5.3. Teaching Activities in the Centers and Units

Highlighted activities:

The ISCIII's own centers and units carry out teaching activities associated with their research work and scientific and technical support; the most important activities were hosting training stays and participation in doctoral programs and postgraduate programs.

Teaching activities




The most significant teaching activities of the ISCIII's Centers and Units are detailed below:

- Training stays: more than 200 people made training stays at the ISCIII in 2019, most importantly hospital residents in training, undergraduate and graduate student internships, researchers in training and collaborating scientific staff. The percentage of international stays was 15%.
- Participation in doctoral programs, postgraduate training, university courses and academic activities: more than 2,500 hours of classes were given by the professionals of the centers and units.
- Participation of the centers and units in the organization and coordination of teaching activities, the coordination of master's courses, and the organization of programs and activities should be mentioned.
- Internal teaching programs continued with seminar cycles at both campuses, which included more than 100 teaching activities organized and delivered by research, scientific and technical staff of the ISCIII.



5.4. Science Communication and Outreach Unit

Highlighted activities	The ISCIII's new Digital Contents Program, which falls under the Science Communication and Outreach Area, started in May 2019.	The new ISCIII website was launched in July.	In May the LinkedIn account was reactivated and in June the official Twitter account was opened.
	138 informative items were published on the website: https://www.isciii.es/Noticias/Noticias/Paginas/default.aspx	15 dissemination items were published on the website: https://www.isciii.es/InformacionCiudadanos/DivulgacionCulturaCientifica/DivulgacionISCIII/Paginas/default.aspx	22 news and informative videos were published.

Visits and followers in 2019	Website: Almost 3.1 million visits and almost 375,000 users.	Twitter: 17,000 followers in the 7 months of the account's existence, 442 tweets and more than 40,000 interactions per day.	LinkedIn: More than 9,000 followers in the 8 months of the account's existence.
			

Events organized
Knowing the ISCIII: January 15th at the Chamartín Campus.
Day of Women and Girls in Science: Conference "Women and Science: my research experience", held by Margarita Salas. February 13 at the Majadahonda Campus of the ISCIII.
Summer courses at the Menéndez Pelayo International University (UIMP), June 1 to 3 in Santander: <ul style="list-style-type: none"> - Responsible Research and Innovation in Spain and its model of incorporation into the IIS. - XIII e-Health and Telemedicine Meeting. The digital transformation of Health.
Outreach seminar on the European Cancer Mission . June 25 at the Chamartín Campus of the ISCIII.
Researchers' night: "Pathogens without borders: tropical diseases and globalization" . September 27, National Center of Tropical Medicine, Chamartín Campus of the ISCIII.
Science Week: <ul style="list-style-type: none"> - "Escape Room: Counting Sheep". November 4 at the Chamartín Campus of the ISCIII. - "Taking a walk through the history of Health": Visits to the National Museum of Health Care and Public Hygiene. November 7 and 8 at the Chamartín Campus of the ISCIII. - "Environmental Vigilantes". Visit to the National Environmental Health Center. November 13 at the Majadahonda Campus of the ISCIII.

5.5. Office for the Transfer of Research Results (OTRI)

In accordance with its bylaws, ISCIII's Office for the Transfer of Research Results (OTRI) is responsible for managing and coordinating the transfer of research results under the supervision of the General Sub-Directorate for International Research Programs and Institutional Relations.

Highlighted activities:

Patent management: In 2019, the OTRI had a portfolio of 78 patents, including granted and filed patents, belonging to 19 patent families. Twelve of these are Spanish and 66 are foreign or in the process of internationalization. A new family of patents was incorporated related to the invention: *Therapeutic target and monoclonal antibodies against it for diagnosis and treatment of Alzheimer's disease.*

Licenses of Materials and Know-How: Various national and international agreements were processed in order to transfer and license the use of materials.

Consulting and advising activities

Consulting and advising activities were carried out in relation to queries made by ISCIII researchers on patentability issues of research results, confidentiality agreements, co-ownership agreements and processing of various types of documents, such as internal ISCIII procedures.





INTERNATIONALIZATION

6

The internationalization of the Spanish Science, Technology and Innovation System is one of the priority areas and the central focus of the Spanish Science, Technology and Innovation Strategy 2013-2020. The General Sub-Directorate for International Research Programs and Institutional Relations of the ISCIII is working both on the promotion of participation in European and international R&D&I programs and on European and international programming in the fields of Research Infrastructures, International Joint Programming Initiatives (including ERA-NETs), Joint Transnational Calls, and other International Consortiums.



6.1. International research infrastructures

International Scientific Infrastructures are understood to be major scientific equipment, sets of instruments and knowledge-based resources, which, given their scientific and technological complexity and the very high investments they require, can only be accessed in a framework of international collaboration. In the case of international health research infrastructures, these infrastructures are distributed among different member states.

The ISCIII considers the European Research Infrastructures as a key element in structuring the Health R&D&I system. Specifically, it participates and links them to the national platforms, to make these available in the European and international context and to facilitate European and international access.

During the year 2019, the ISCIII had an active presence in the following infrastructures:

- **ELIXIR: European Life Sciences Infrastructure for Biological Information:** Decentralized European infrastructure for bioinformatics, in which Spain participates along with 21 other countries. The Spanish scientific hub is supervised by the INB (Spanish National Bioinformatics Institute), a virtual platform financed by the ISCIII. Spain hosts the EGA (European Genome Phenome Archive) database with real-time visualization of archived genomic data.
- **EATRIS-ERIC: Decentralized European Infrastructure for Translational Medicine:** with the aim of developing translational research, in particular in preventive, diagnostic and therapeutic strategies in biomedical research and development. The Spanish hub of EATRIS is organized around the accredited health research institutes.
- **ECRIN-ERIC: Decentralized European Clinical Research Infrastructure Network:** Focused on promoting and supporting multi-center, multinational non-commercial clinical trials, it was the first European infrastructure recognized as an ESFRI 'landmark'. The participation of Spain in this platform allows it to align the activities of the European initiative with the national platform SCReN, which acts as the scientific hub.
- **EU-Openscreen-ERIC: Decentralized infrastructure for Chemical Biology and Screening of Compounds for Therapeutic Activity.** The aim of this infrastructure is to coordinate the national infrastructures distributed throughout the EU. Spain has 5 recognized scientific partner sites that in turn participate in the National Platform for Drug Screening, which is funded by the Spanish State Research Agency.
- **IARC: International Agency for Research on Cancer:** IARC's mission is to monitor human cancer, identify its causes, elucidate mechanisms of carcinogenesis and develop scientific strategies for its control, training in cancer research and dissemination of scientific information.
- **Euro-Biolmaging: Decentralized infrastructure for the digitalization of medical imaging and biological microscopy:** it aims to provide scientists in Europe open access to state-of-the-art imaging technologies at all levels of biological and biomedical research. In 2019, efforts have been made to incorporate Spain into this initiative.

6.2. International joint programming¹

In its role as a funding agency for research in health and biomedicine, the ISCIII participates in different European and international research programs together with R&D&I funding bodies in these countries. The main objective of these public-public partnerships is to develop joint research and innovation agendas, and to implement them through calls for transnational research projects. Their funding derives from national funds, where each national agency finances the research of its own country, generally with partial co-funding from the European Union. In the case of the ISCIII, this funding is implemented through the Health Research and Development Strategy, specifically in the call for projects of international joint programming 2019. These initiatives where the ISCIII participated during 2019 are:

1) Joint Programming Initiatives (JPIs):

- **Joint Programming Initiative on Neurodegenerative Disease Research (JPND):** In an increasingly aging society, coordination and alignment of transnational research programs on neurodegenerative diseases is a need. In 2019 the call for transnational research projects on **Personalized Medicine for degenerative diseases** was launched with a budget of 30 million Euros, with national and EC funding. As a result, 18 projects were funded, 4 of them with Spanish ISCIII-funded participation.
- **Joint Programming initiative on Antimicrobial Resistance Research (JPI AMR):** The aim of this initiative is to develop joint research programs to combat antimicrobial resistance. The last call for research projects was for the development of **new diagnostic methods and surveillance against antimicrobial resistance**. Twelve projects were funded, one of them with Spanish ISCIII-funded participation.
- **Joint Programming Initiative “A Healthy Diet for Healthy Life” (JPI HDHL):** The aim of this initiative is to coordinate European research on nutrition, diet, health and physical activity to prevent or minimize diet-related chronic diseases. This year, two activities were launched in which the ISCIII participated: a call for working groups on nutrition and food safety and another call for research projects on the impact of food processing and food components on body weight regulation and overweight-related metabolic diseases. Seven ISCIII-funded Spanish groups participate in the seven projects selected for funding.
- **Joint Programming Initiative “More Years, Better Lives - The Potential and Challenges of Demographic Change” (JPI MYBL):** The demographic change and the aging of our society require coordinated research between the different European research programs. The required research areas involve different sectorial policies ranging from health and well-being, education and teaching, work and productivity, and housing to urban and rural development and mobility. In 2019 a major event on policy integration in aging societies took place with international experts with particular focus on national and regional social and health systems.



¹ <https://www.isciii.es/QueHacemos/Internacional/FinanciacionInternacional/Paginas/IniciativasProgramacionConjunta.aspx>

2) ERA-NET Cofund and European Joint Program (EJP):

Of all the ERA-Net Cofunds, the following are coordinated by the ISCIII:

- **ERA PerMed:** this ERA-Net of research in Personalized Medicine is coordinated by the ISCIII at the European level. From Spain, besides the ISCIII, the Center for the Development of Industrial Technology (CDTI), the Regional Government of Navarra, the Department of Health of the Catalanian Regional Government, and the Scientific Foundation of the Spanish Association against Cancer participate as funders. In 2018 it launched its first call for projects with a budget of 30 million Euros, co-funded by the EU, and in 2019 it launched its second call with the same budget. As a result, 22 joint projects were funded, nine of them coordinated by women researchers, for a total of 24.5 million Euros.
- **EuroNanoMed III:** This initiative is also coordinated by the ISCIII and 27 funding agencies from 21 countries and regions participate, including the CDTI, the State Research Agency from Spain. In 2019 the tenth call for R&D&I projects in nanomedicine was launched, which involved an investment of 11 million Euros in 13 research projects; 12 Spanish groups participate, 8 of which are funded by ISCIII, and 3 acting as coordinators.

In addition to the coordinated ERA-NETs, ISCIII participates as a funding body in other European strategic priority themes such as Neurosciences (**NEURON-3**), Cardiovascular Diseases (**ERA-CVD**), Systems Medicine (**ERACoSysMed**), the Human Brain Project (**FLAG-ERA III**), Rare Diseases (in the framework of the **European Joint Programme for Rare Diseases - EJP RD**), and finally those under the umbrella of the JPIs described above, such as JPcofuND 2 (JPND), JPI-EC-AMR (JPI AMR), ERA-HDHL and HDHL-INTIMIC (both from JPI HDHL).



3) Initiatives based on Article 185 of the Treaty on the Functioning of the European Union

The ISCIII actively participates in two public-public initiatives created under Article 185 of the TFEU (Treaty on the Functioning of the European Union) where both the European Commission and the Member States contribute resources to fund research projects.

- **EDCTP (European and Developing Countries Clinical Trials Partnership).** This is the main Global Health program at the European level and its mission is to reduce poverty and improve health in Sub-Saharan African countries by funding collaborative clinical research, and to increase research capacity so that it results in the development of new or better medical interventions against poverty-related infectious diseases. There is a growing participation of Spanish research groups. Up to 2019, 12 projects have been funded by this program with Spanish participation, 9 of them coordinated by Spanish groups.
- **AAL-2 (Active Assisting Living):** This program aims to find innovative solutions based on information and communication technologies to improve the quality of life of older adults. In 2019, three projects were financed through ISCIII funding.

4) Other international initiatives

As a result of different international agreements, the ISCIII participated as a sponsor in the following international calls in 2019:

- With the **United States**, specifically with the National Science Foundation and the National Institutes of Health, ISCIII and AEI (the Spanish State Research Agency) participated in the call for Collaborative Research in **Computational Neuroscience (CRCNS)**. In 2019, the ISCIII funded a bilateral project with the United States.
- A call for collaborative projects between European countries and **Latin American and Caribbean countries** was organized through the Ibero-American Program on Science and Technology for Development (**CYTED**). In 2019, a call for research projects in **cardiovascular diseases** was launched, through which a project with Spanish participation was funded.

Summary of the AES 2019 calls for International Joint Programming Initiative Projects

A total of 42 groups were funded by the ISCIII through the different programs in which it participates, with an approximate investment of 4.2 million Euros.

Table. Funding of AES 2019 international joint programming projects with the participation of Spanish groups

Program *	Participating Groups	Eligible	Funded	Budget awarded (€)
EJP RD	77	15	4	368,566.00
ERA PerMed	59	11	3	320,045.00
JPND-JPco-fuND	47	10	4	399,764.64
EuroNanoMed-3	41	15	8	1,069,398.00
JPI HDHL-3 years	31	12	5	358,087.40
NEURON	31	18	8	918,622.56
CYTED	18	14	1	57,233.00
AAL	11	11	3	124,388.00
ERA-CVD	10	9	2	262,805.95
ERACoSysMED	7	3	1	99,999.24
CRCNS	6	1	1	199,999.69
JPI HDHL-1 year	2	2	2	49,827.80
Total	358	132	42	4,228,737.28

* The acronyms of the programs included in the table are defined in the text of the section on International Joint Programming.

6.3. Promotion of International Programs and International Consortia

One of the functions of the ISCIII is to promote the structuring of the SNS and, in order to do so, the promotion of the internationalization of its activity is one of the cornerstones of its international activity. Most of this promotion was focused on the H2020 Framework Program, but it also supported the participation in other European and international initiatives.

Moreover, the internationalization of the activity goes through counseling the ISCIII centers themselves. In this regard, the ISCIII submitted 26 proposals to various international programs in 2019 (H2020, Third Health Program, Interreg Sudoe, Michael J. Fox Foundation), and 5 of them were funded.

1) Promotion of Participation in H2020

During 2019 the European Projects Office of ISCIII worked intensively on awareness, promotion and dissemination activities of the EU Framework Program for Research and Innovation, Horizon 2020, with particular attention to all existing opportunities for the area of health sciences and in the field of the SNS.

Activity during this time focused on promotion, training, and help in preparing proposals. The European Projects Office organized 12 courses, workshops and web seminars, as well as 28 information days and other training actions held throughout the country. In order to contribute to these dissemination, consulting, and training activities, more than 30 communications with information of interest were sent to distribution lists of researchers and research managers, with records of more than 1,300 contacts, and the website was updated continually. It is available at <http://eu-isciii.es>.

It should be noted that in 2019, in preparation for the next Horizon Europe Framework Program (2021-27), work was carried out in the field of missions, and in particular the **Cancer Mission. Two workshops were organized** to encourage and prepare the Spanish participation in this Framework Program. Similarly, 2019 was a very important year to formalize the Spanish participation in the European **1 Million Genomes** initiative, and the ISCIII has been structuring the participation of the different centers in this initiative.

In **Societal Challenge 1 "Health, Demographic Change and Wellbeing"**, as part of the calls managed directly by the European Commission, the results of the Spanish participation in 2019 continued its success from previous years. As many as 188 participations were registered, involving almost 82 million Euros for Spanish entities, **12.8% of the EU funds**. Spain is leading 19 of the 98 projects awarded, and is for the first time the country coordinating most projects in the Health Challenge in a single call for proposals. Altogether and since the launch of Horizon 2020 in 2014, Spain coordinated 91 projects out of a total of 638 actions funded (**14.26%**). In terms of attracting funds, Spain received more than €280 million Euros in H2020 grant support, which represents a rate of **return on EU-28 investment of 9.6%**. This accomplishment keeps Spain in fifth position in the health area, only behind the United Kingdom (16.8%), Germany (14.7%), the Netherlands (13.0%) and France (10.8%).

Concerning this rate of return, the tractor effect of the ISCIII environment together with the SNS is remarkable, with nearly 50% of the successful participations and 45% of the returns (EU 28).

Subject	Course/ Workshop	Web seminar	Information day
H2020 General	2	1	2
Societal Challenge 1	2	1	16
ERC	2		7
RI		1	2
L&F Aspects	2	1	1

ERC: European Research Council; RI: Research Infrastructures; L&F: Legal and Financial

Table. Summary of the participation of Spanish entities in H2020 Societal Challenge 1. Data accumulated until 2019. Source: EC Dashboard

H2020	Participations	Projects coordinated	EU Contribution
ES	997	150	€439,156,661
UE28	9,092	958	€4,318,047,318
[ES/UE28]	11.0%	15.7%	10.2%

ES: SPAIN; EU28: EU of the 28 Member States; ES/EU28: % ES of the total of the EU28

2) EU Health Program

The ISCIII has the responsibility of being the National Contact Point of this program, promoting participation in the program, offering advice to interested parties and collaborating in the outreach activities of the program. In this regard, in addition to the continuing provision of advice, the ISCIII collaborated with a total of 6 related events. The EU Health Program for 2019 was adopted on March 29. The call had a budget of 64 million Euros for funding grants, tenders, joint actions, awards and other actions. The main topics funded in 2019 were: implementation and validation of GCPs (Good Clinical Practices); EU Guidelines on the wise use of Antimicrobials; the development of Rare Diseases Registries for the European Reference Networks; and preparedness and response to biological and chemical terrorism attacks.

3) Other international consortia

In addition to the initiatives and programs mentioned above, the ISCIII participated in the international initiatives listed below. These consortia are mostly related to existing programs in one way or another and the role of the ISCIII is to align them with the funding activities:

- IRDiRC: International Rare Diseases Research Consortium
- GloPID-R: Global Research Collaboration for Infectious Disease Preparedness
- CEPI: Coalition for Epidemic Preparedness Innovation
- TDR on Research on Diseases of Poverty
- ICPeMed: International Consortium for Personalized Medicine
- PMC: Personalized Medicine Coalition
- ICGC: International Cancer Genomics Consortium
- RIMAIS: Red Iberoamericana Ministerial para la Investigación en Salud

It is worth mentioning that the ISCIII hosted in November the central 2019 ICPeMed event (2nd Workshop of the ICPeMed International Consortium). Critical elements for the implementation of personalized medicine were discussed, such as citizen participation, ethical implications, transfer of clinical research to the market and its impact on the sustainability of health systems. Thus, more than 200 researchers convened and 5 satellite events were held at the ISCIII, which transformed Madrid and the ISCIII into the center of personalized medicine.

On the other hand, the ISCIII continued to fulfil its tasks as technical secretariat of the RIMAIS. This intergovernmental Network consisting of Spain and the Latin American and Caribbean countries (ALAC) is one of the most important platforms of scientific and technical cooperation in the field of health, and it has the aim of promoting bi-regional research on health priorities.



A close-up photograph of a laboratory experiment. A glass pipette is shown dispensing a clear liquid into a test tube. In the foreground, several other test tubes are visible, some containing white substances. The background is a solid teal color. A dark blue rectangular box is overlaid on the left side of the image, containing the word 'BIOETHICS' in white capital letters. On the right side, there is a vertical blue bar with a white number '7' at the top.

BIOETHICS

7

7.1. National Stem Cell Bank

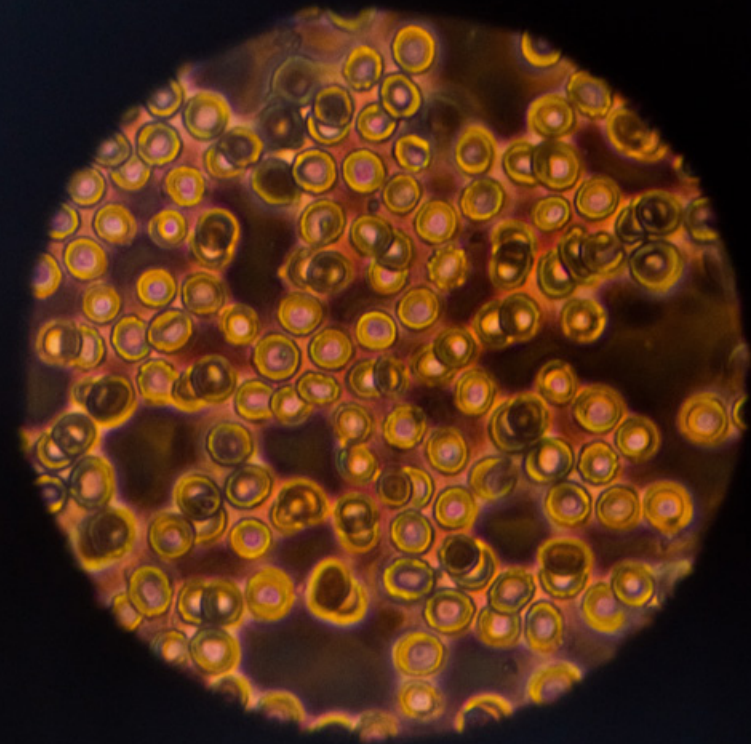
The Management, Presidency, and Secretariat of the Technical Commission for the National Stem Cell Bank (BNLC) falls under the General Sub-Directorate for Research on Cellular Therapy and Regenerative Medicine. It is a biobank network with hubs in Granada, Barcelona, and Valencia, that makes all stem cell lines produced in Spain available to the scientific community.

List of deposited cell lines:

During 2019, 18 induced pluripotent stem (iPS) cell lines were deposited in the BNLC. These cell lines were established in the following research centers: 3 lines in the Príncipe Felipe Research Center; 1 in the National Cardiovascular Research Center (CNIC); 2 lines in the Jiménez Díaz Foundation; 3 lines in the Institute of Ocular Microsurgery (IMO); 2 lines in the Hospital del Mar Medical Research Institute (IMIM); 6 in the CSIC's Cajal Institute; and 1 line in the Center for Molecular Biology 'Severo Ochoa'.

List of requested cell lines:

In 2019, the transfer of 14 iPS cell lines for seven projects carried out by seven researchers (six of them from foreign institutions) was requested and approved. The following lines were requested: [AS] FiPS 1-Ep6F-2, [AS] FiPS 2-Ep6F-28, [AS] FiPS 3-Ep6F-8, FiPS Ctrl 2-Ep6F-8, FiPS Ctrl 1-Ep6F-5, CT PBiPS1-Sv4F-1, G15.AO, iCAS9-FL-BCL-iPSC, SP02#1, FiPS Ctrl2-SV4F-1, FiPS Ctrl1-R4F-4, FiPS Ctrl2-R4F-5, and FiPSAG07645-4F-17.



7.2. Advisory Committee for Human Tissue and Cell Donation and Use

By Act 14/2007, of July 3, on Biomedical Research, the Advisory Committee for Human Tissue and Cell Donation and Use was created as the collegiate body, affiliated to ISCIII. It is a permanent and consultative body that is designed to advise and orient regarding research and experimentation with human embryonic samples and tissues, and to contribute to the updating and dissemination of scientific and technical knowledge in this matter.

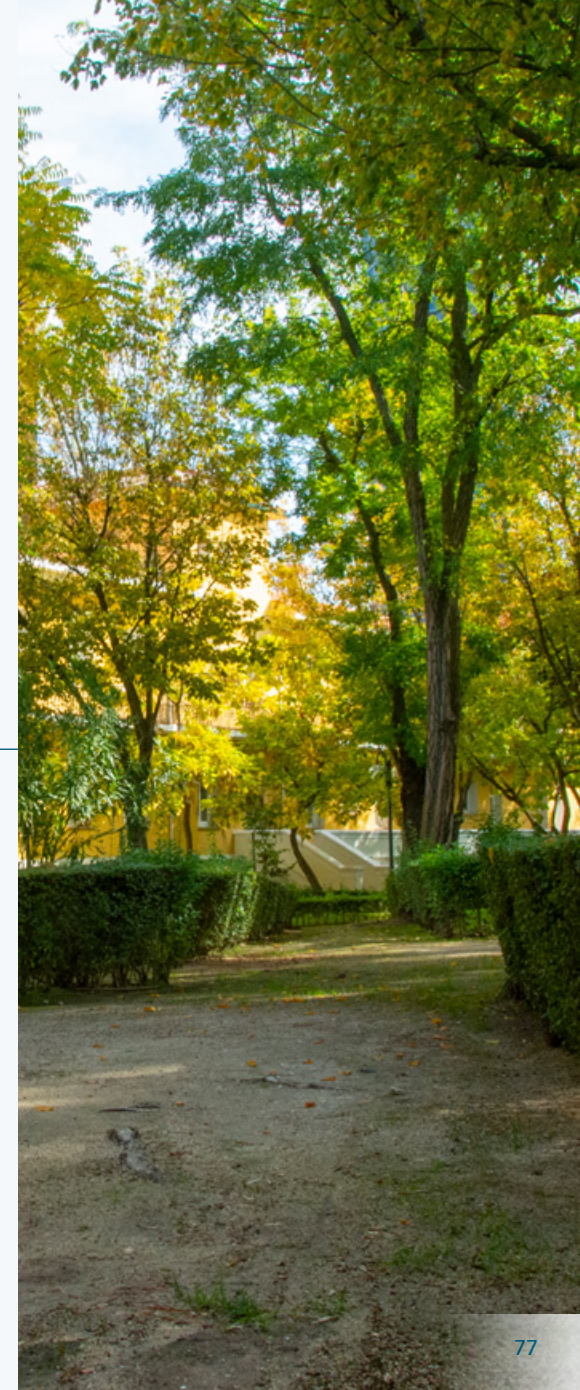
By order CNU/401/2019, of March 28th, on the appointment and renewal of members of the Advisory Committee for Human Tissue and Cell Donation and Use, published in the Spanish State Gazette (BOE) of April 8th, 2019, half of the members of the Committee were renewed. Four members ceased to be so and seven were appointed, four of them by designation of the Inter-regional Council of the SNS and another four by designation of the General State Administration (two proposed by the Ministry of Health, one proposed by the Ministry of Justice and one proposed by the Ministry of Science and Innovation).

During 2019, three meetings of the Commission were held, on April 10th, September 3rd and December 17th, during which a total of 39 research projects received information.

7.3. National Register of Biobanks

The General Sub-Directorate for Research on Cellular Therapy and Regenerative Medicine coordinates the activity of the National Register of Biobanks, created by the Act on Biomedical Research and developed by the Royal Decree 1716/2011, of 18 November, which establishes the basic requirements for authorization and operation of biobanks for biomedical research purposes and the processing of biological samples of human origin, and that regulates the operation and organization of the National Registry of Biobanks for biomedical research.

On 31 December 2019, a total of 99 biobanks and 1,807 collections were included in the Register; three new biobanks and 134 new collections were registered during 2019.



7.4. Bioethics Committee of Spain

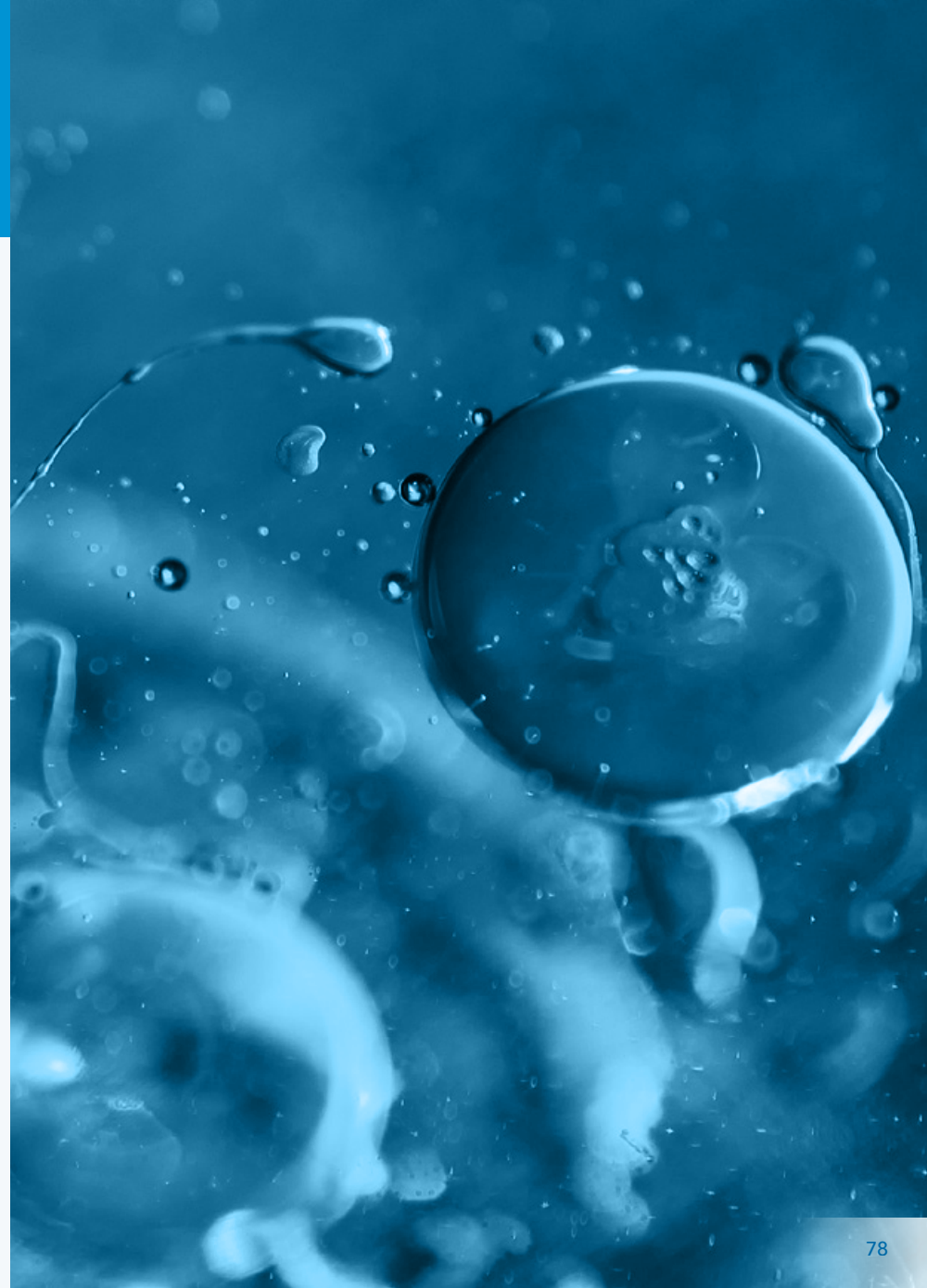
The Spanish Bioethics Committee (CBE), created by Act 14/2007, of 3 June, on Biomedical Research, is an independent collegiate body for consultation on matters related to the ethical and social implications of Biomedicine and Health Sciences.

During the year 2019, 7 ordinary plenary meetings were held.

Documents approved: In 2019, the CBE approved and published the "Declaration of the Bioethics Committee of Spain on genome editing in humans" and the "Report of the Spanish Bioethics Committee assessing the Draft Additional Protocol to the Oviedo Convention concerning Human Rights and Biomedicine on the protection of human rights and the dignity of persons with mental disorders with regard to involuntary placement and involuntary treatment."

At the request of the Ministry of Health, an evaluation and opinion report was prepared on the provisional version of the Recommendation (2156-2019) of the Parliamentary Assembly of the Council of Europe "Anonymous donation of sperm and oocytes: balancing the rights of parents, donors and children". The Committee also responded to the request of the Office of the High Commissioner for Human Rights for a "Report of the Special Rapporteur on the sale and sexual exploitation of children, including child prostitution, child pornography and other child sexual abuse material".

The Committee also reported on the meeting of the NEC Forum ("Meeting of the National Ethics Councils (NEC) Forum and the European Group on Ethics in Science and New Technologies (EGE)"), held on April 4 and 5 in Iasi, Romania, as well as on the Meeting of the Network of Bioethics Councils, Commissions and Committees of Autonomous Regions (REDECABE), held in La Rioja on November 15.



7.5. Research Ethics Committee

Projects reported on: In 2019, the Research Ethics Committee (CEI) evaluated 117 requests for reports on research projects involving human beings. These projects came from ISCIII's centers and from the Foundations affiliated to the Institute.

Training and dissemination activities: The CEI organized and held the bioethics seminar "Ethics in research involving human beings. Good scientific practices" at the ENS on October 3rd; it also organized the V Bioethics Congress: "Ethical and legal guarantees in research with human beings", on November 26th and 27th in ISCIII's Ernest Lluch hall.

The CEI prepared and coordinated the drafting of the Code of Good Scientific Practices of the ISCIII, approved by the Board of Directors on December 19th.

7.6. Research Ethics and Animal Welfare Committee

Evaluation activities: In 2019, 42 research projects involving the use of animals were evaluated. These projects were from ISCIII centers and from the Foundations affiliated to the Institute.



7.7. Technical Unit for Thalidomide Victims

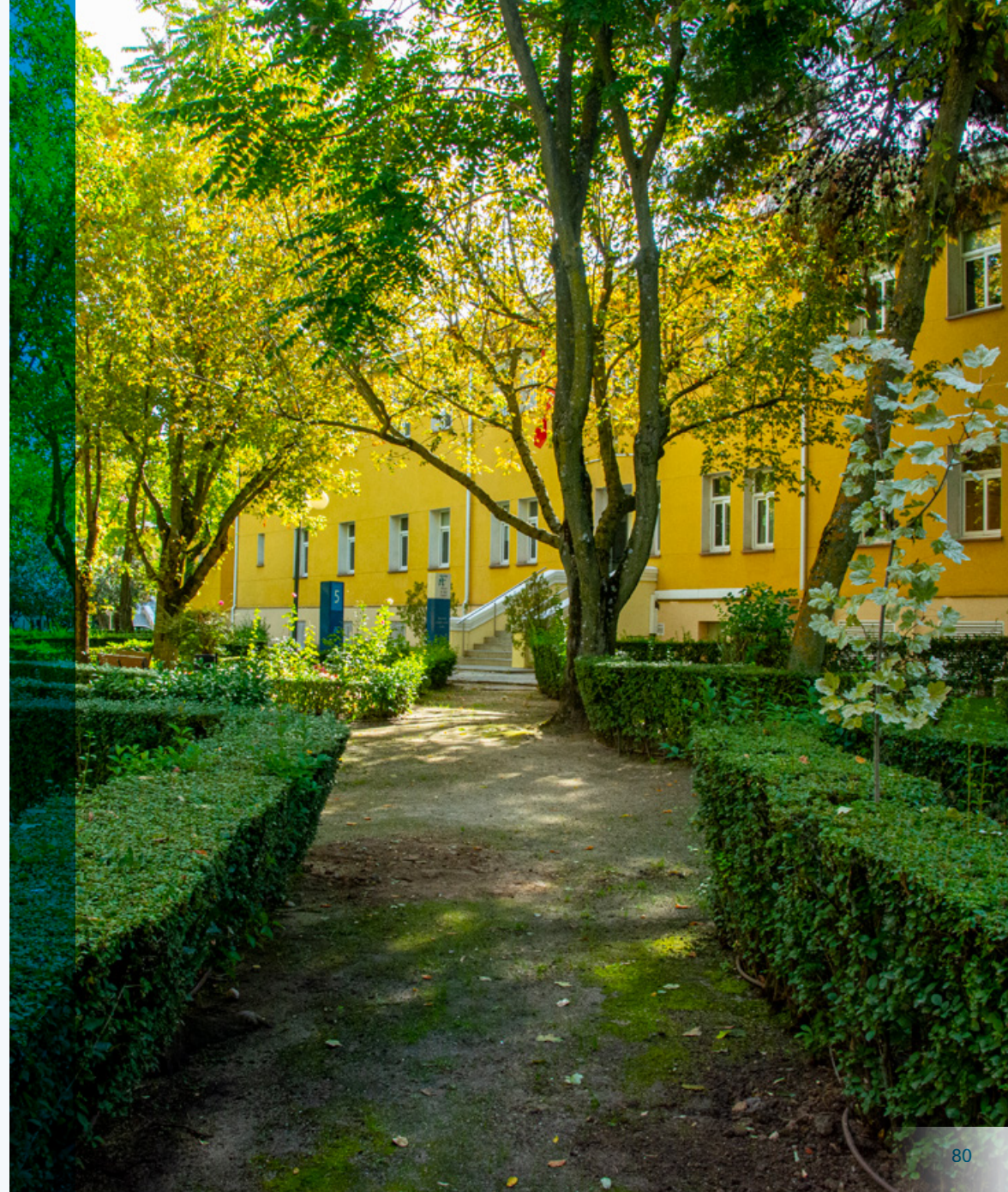
The Health and Social Services Commission of the Spanish Parliament approved on November 24, 2016 a non-legislative motion (PNL) on the protection of people affected by Thalidomide.

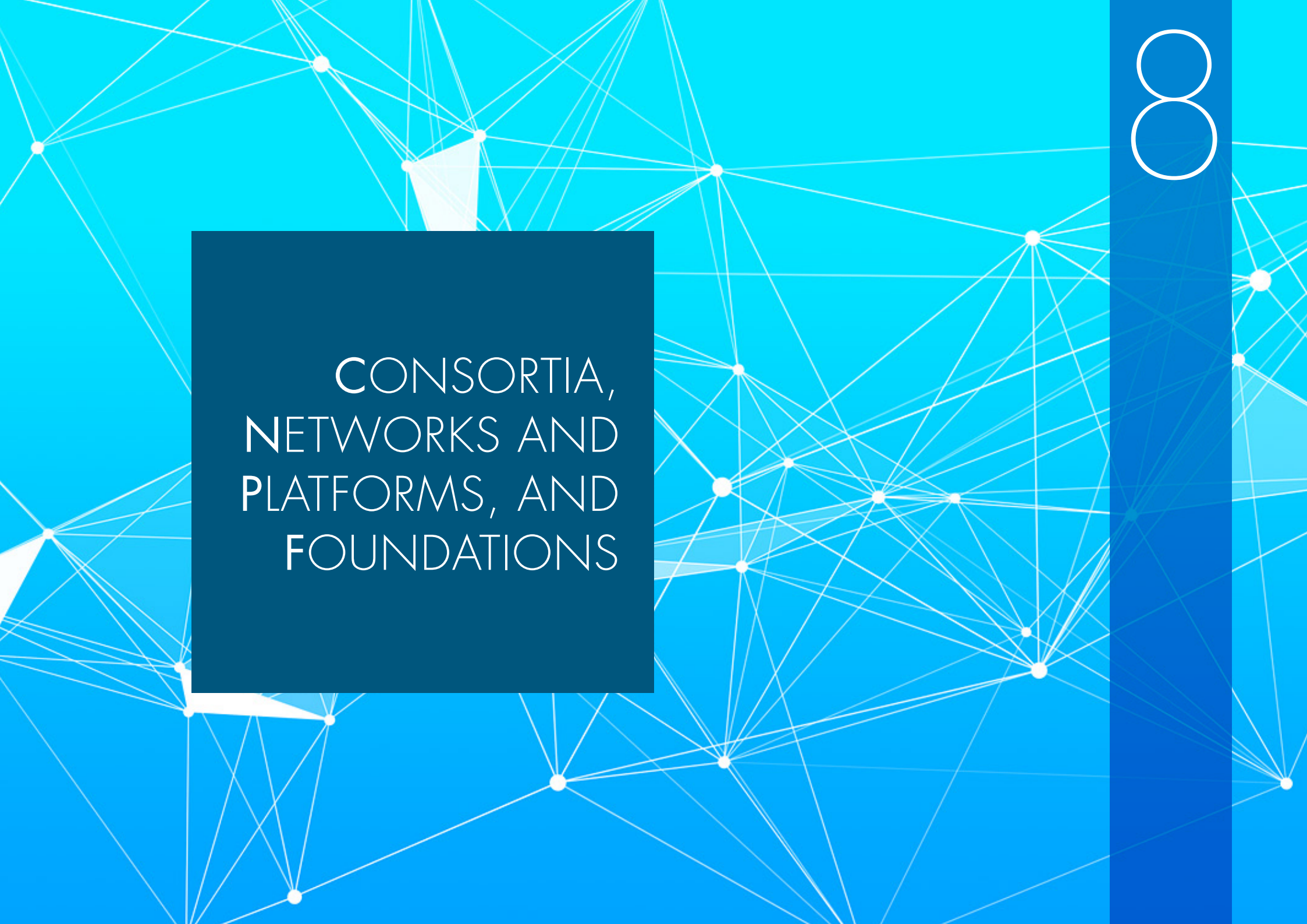
At its meeting on November 8, 2017, the SNS Inter-regional Council created two specific working groups: the Institutional Commission for Thalidomide and the Scientific and Technical Committee for Thalidomide.

The Institutional Commission for Thalidomide is formed by the Ministry of Health, the Ministry of Labor and Social Security, the Ministry of Finance and Public Administration, and the Ministry of Economy, Industry and Competitiveness, as well as the Autonomous Communities, the Collegiate Medical Organization and the Association of Victims of Thalidomide in Spain.

Scientific and Technical Committee for Thalidomide: The Secretary General of Health and Consumer Affairs, by resolution of February 13, 2019, entrusted the ISCIII with the creation of a Technical Unit to coordinate all actions of the Evaluation Units created in the Autonomous Communities, and to establish an information system to channel the reports from persons applying to participate in the procedure vis-à-vis their final assessment by the Scientific and Technical Committee (consisting of 7 members).

During 2019, the Sub-Directorate General of Cell Therapy and Regenerative Medicine of the ISCIII coordinated all information that was generated in this process, provided support to the Scientific and Technical Committee and collected all documentation generated by the Evaluation Units of the Autonomous Communities.



A background of a network diagram with white nodes and lines on a blue gradient. A dark blue rectangle is centered on the left side, containing the title text.

CONSORTIA, NETWORKS AND PLATFORMS, AND FOUNDATIONS



In 2019, the General Sub-Directorate for Networks and Cooperative Research Centers carried out the following activities:

Justification and economic monitoring of the grants during 2019:

- Total number of dossiers monitored economically: 5,579
- Number of grant dossiers that presented economic justification in 2019: 3,069
- Number of records and documents to be reviewed: 391,663
- Number of dossiers closed: 945

Management of European funds: ERDF (European Regional Development Fund) and ESF (European Social Fund)

Table. Summary of grants and allocations from the European ERDF and ESF funds

	No. of grants certified	Amount of expenditure declared (millions of euros)
European Regional Development Fund (ERDF)	2,664	83.7
European Social Fund (ESF)	443	7.6
Total	3,107	91.3

ERDF funds:

- The ISCIII participates as an Intermediate Organization in the Spanish Pluri-regional Operational Program 2014-2020 (POPE), by co-funding research projects granted by the Health Research and Development Strategy through the European Regional Development Fund (ERDF).
- In addition to acting as a point of contact with the ERDF Management Authority of the Ministry of Finance and representing the ISCIII in the Monitoring Committee of the POPE, the procedure for both administrative and on-site verification of operations co-funded by the ERDF is centralized in the ISCIII from the General Sub-Directorate for Networks and Cooperative Research Centers.

During the year 2019, the necessary procedures were carried out in the General Sub-Directorate for Networks and Cooperative Research Centers to achieve ERDF certification of 2,664 research projects aimed at promoting research and innovation in health, for an amount of expenditure of 83.7 million euros.

ESF funds:

- The ISCIII participates in the 2014-2020 Employment, Training and Education Operational Program (POEFE) of the European Social Fund (ESF). During the year 2019, €7,613,834.31 were certified, which corresponds to €4,237,460.12 of ESF aid to be received by ISCIII, in accordance with the co-financing rate established for European Funds.
- The certification corresponding to 2019 included 443 AES Human Resources grants (480 annuities in total) corresponding to 18 ESF operations, all of which were verified both administratively and on-site (for a selected sample of grants).

The 2019 ESF Annual Implementation Report sent to the National Managing Authority also included data on both financial and physical (participant) indicators of the AES Human Resources grants co-funded by the ESF that became effective in 2019.

Specifically, in Axis 1 of the POEFE, which concerns employment and to which ISCIII contributes through the 2019 AES grants for the recruitment of health research staff in 2019, 125 grants corresponding to the AES 2018 call started to be exercised. Combined, this axis already includes 545 grants.

Regarding Axis 3, which concerns education, the ISCIII contributes through training actions for health research staff of the AES. In 2019, 159 grants from the AES 2018 call were implemented and a total of 530 grants are already included in this axis.

All new grants have associated indicator data, collected through questionnaires to the staff hired through the new grants. The percentage of complete data in the 2019 report was 95%.

Lastly, with regard to Technical Support, in 2019 a Technical Support contract was implemented to assist with on-site verification. A total of 32 projects from 12 operations were verified.

Monitoring of Consortium activities (CIBER and CIBERNED)

Table. Quality indicators of the Consortia in 2019

	CIBER	CIBERNED	Total Consortia
Meetings of Boards of Governors	2	2	4
Meetings of Standing Committees	8	5	13
Area Steering Committee meetings	49	1	50
Recruitment files approved	41	3	44
Activity agreements, co-ownership agreements and service contracts approved	24	11	35
Agreements with consortium members	90	31	121

CIBER: Public Consortium of Biomedical Research Networking Centers

CIBERNED: Public Consortium of Biomedical Research Networking Centers - Neurodegenerative Diseases

Activity monitoring of Foundations

The General Sub-Directorate for Networks and Cooperative Research Centers, as secretary of the board of trustees of the three foundations affiliated to the ISCIII (FCNIC, FCNIO and FCIEN), has the functions assigned to it by the bylaws of the foundations and carries out, among others, the following activities:

Table. Activities of the Foundations in 2019

2019	Trustee meetings held	Delegate Commission meetings held	Recruitment files approved	Agreements, addenda and other accords approved
FCNIO	2	11	41	64
FCNIC	2	9	14	46
FCIEN	2	3	4	3
Total	6	23	59	113

FCNIO: Spanish National Cancer Research Center Foundation; FCNIC: Spanish National Center for Cardiovascular Research Foundation; FCIEN: Spanish Network for Cooperative Research in Neurological Diseases Foundation



8.1. Public Consortia of Biomedical Research Networking Centers

The activity of the Consortia CIBER (Public Consortium of Biomedical Research Networking Centers) and CIBERNED (Public Consortium of Biomedical Research Networking Centers - Neurodegenerative Diseases) can be consulted on their respective websites at the following URLs:



The most relevant activities of each scientific area of the CIBER Consortium are described below:

Area Bioengineering, Biomaterials and Nanomedicine (CIBER-BBN): Implementation of the European project SAFE-N-MEDTECH; CIBER participates through the ICTS NANBIOSIS infrastructure. The project consists of the creation of platforms that facilitate the development of medical devices based on nanotechnology in compliance with European regulatory frameworks.

Thematic Area of Pathophysiology of Obesity and Nutrition (CIBEROBN): Implementation of several projects funded by the EU and the NIH (National Institutes of Health of the USA) covering primary and secondary prevention as well as all stages of life: child, adult and aging.

Thematic Area of Liver and Digestive Diseases (CIBEREHD): Collaborative research activity of excellence, increasing knowledge of the pathophysiology and treatment of liver and digestive diseases, resulting in modifications in the prevention, prediction, diagnosis and treatment of these diseases.

Area of Respiratory Diseases (CIBERES): Development of a method to predict the aggressiveness of a type of pneumonia. A CIBERES team has developed a method to predict whether it requires hospitalization in the ICU or will evolve into a milder form of the disease.

Thematic area of Rare Diseases (CIBERER): Nature Medicine published the first results of a clinical trial of gene therapy in patients with Fanconi's Anemia, carried out within the EUROFANCOLEN program, showing for the first time the generation of blood cells in these patients from their own stem cells after correcting their genetic defect.

Area of Diabetes and Associated Metabolic Diseases (CIBERDEM): It identified the protein Mitofusin-2 as a key factor in the protection against non-alcoholic fatty liver disease (NAFLD), the most common chronic liver disease worldwide. Studying ways to increase Mitofusin-2 levels may be important for the treatment of NAFLD.

Area of Mental Health (CIBERSAM): 770 scientific articles were published with very important advances in the genetics of mental disorders, automatic learning models for neuroimaging-based diagnosis, factors associated with the burden of mental disorders, and new treatments for treatment-resistant depression.

Area of Cardiovascular Diseases (CIBERCV): Four CIBERCV groups participated in an H2020 IMI2 project for the early identification of myocardial damage in patients with Diabetes Mellitus Type 2.

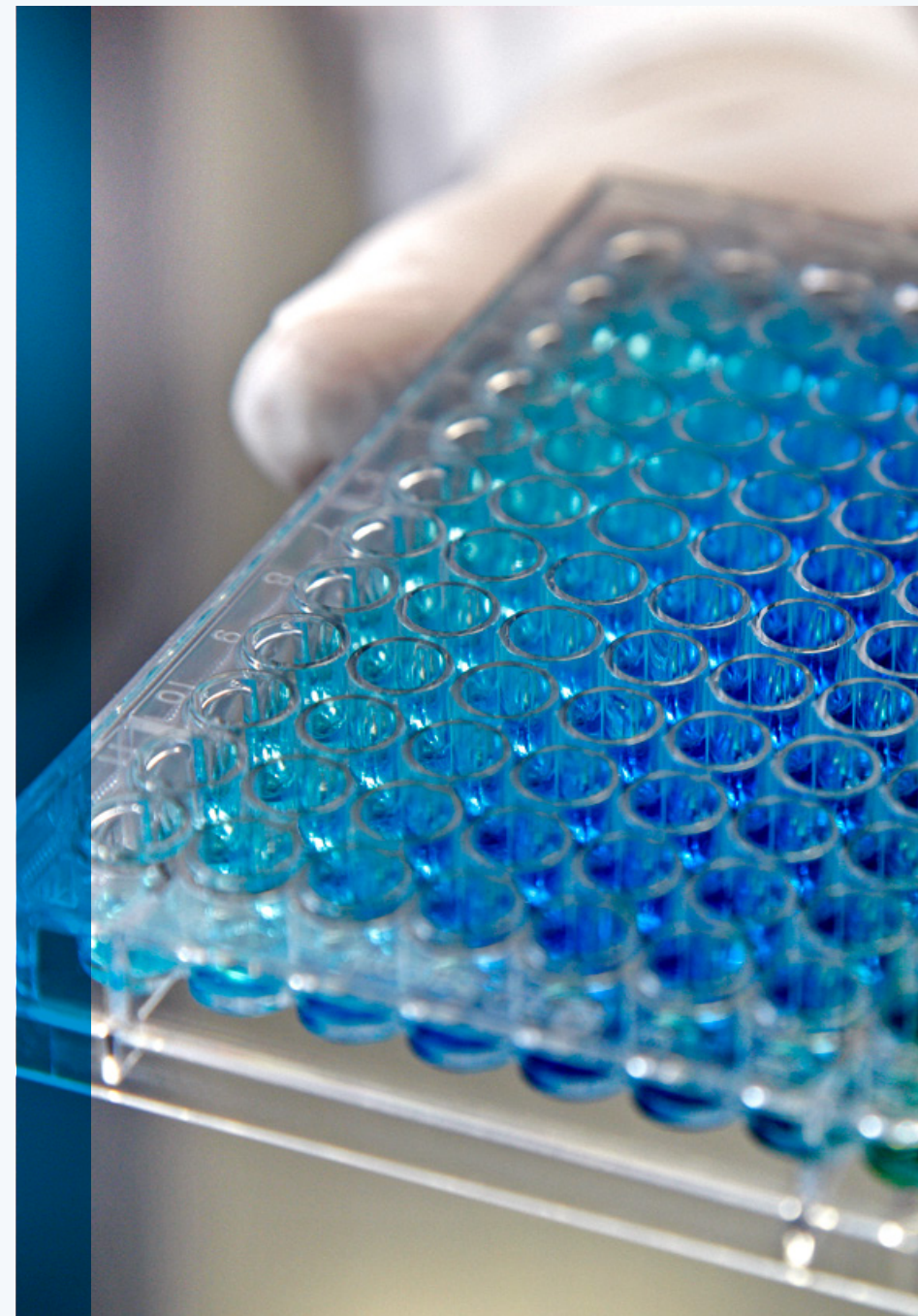
Area of Cancer (CIBERONC): In addition to sustaining collaborative research of excellence, it coordinated the creation of a document that compiles the contributions of researchers from all areas of CIBER for the Mission Board of the Cancer Mission in Horizon Europe. It sets out challenges for the next decade, and it will be very useful for the Cancer Mission to take the Spanish perspective into account.

Thematic area of Frailty and Healthy Aging (CIBERFES): Launch of the CIBERFES-coordinated H2020 project DIABFRAIL-LATAM, and direction of the EIT-HEALTH project POSITIVE, which will evaluate the effectiveness of a technological platform for the detection, intervention and non-invasive monitoring at home of frail elderly people or those at risk of becoming frail.

CIBER and CIBERNED Publications

	PUBLICATIONS	Q1	%	D1	%
CIBER	7,643	4,439	58.08	2,060	26.95
BBN	646	428	66.25	156	24.15
CV	787	457	58.07	182	23.13
DEM	345	215	62.32	87	25.22
EHD	754	441	58.49	244	32.36
ER	627	378	60.29	164	26.16
ES	731	364	49.79	134	18.33
ESP	1,149	623	54.22	311	27.07
FES	275	158	57.45	63	22.91
OBN	746	402	53.89	296	39.68
ONC	813	495	60.89	233	28.66
SAM	770	478	62.08	190	24.68
CIBERNED	708	479	67.66	224	31.64

In addition, researchers of different CIBERNED groups filed 4 new patent applications and one PCT (Patent Cooperation Treaty) extension. For the first time, a CIBERNED paper with Spanish authors and carried out entirely in Spain, was the subject of an editorial in the journal Nature.



8.2. Thematic Networks for Cooperative Research

- The thematic networks for cooperative research in health (RETICS) are structures formed by a variable group of biomedical research centers and groups. They are of a multidisciplinary nature and their objective is to carry out cooperative research projects of general interest.
- They promote collaboration between SNS research groups that work on related subjects while facilitating the structuring of research carried out in the SNS. There are currently 14 thematic networks for cooperative research in health.

Network	Principal Investigator		Co-workers		Total	2019 Funding (€)
	M	F	M	F		
Prevention activities and health promotion in primary care (REDIAPP)	12	0	69	113	194	353,999.80
Infectious diseases (REIPI)	14	1	105	149	269	919,949.80
Eye diseases (OFTARED)	19	4	116	105	244	353,000.00
Kidney diseases (REDINREN)	24	5	109	153	291	668,999.10
Tropical diseases (RICET)	14	4	51	83	152	476,999.60
Cerebrovascular diseases (INVICTUS+)	17	5	79	112	213	477,999.50
Multiple sclerosis (REEM)	15	7	58	74	154	428,997.80
Inflammation and rheumatic diseases (RIER)	12	3	42	64	121	550,999.90
Adverse reactions to allergens and drugs (ARADyAL)	14	12	50	87	163	474,000.00
Maternal and child health and development (SAMID)	6	7	54	106	173	485,999.80
Chronic disease-oriented health services (REDISSEC)	6	11	98	120	235	432,999.60
AIDS (RIS)	26	5	113	153	297	1,438,999.10
Cell Therapy (TERCEL)	27	5	143	209	384	1,273,999.10
Addictive Disorders (RTA)	14	4	49	70	137	663,999.60
Total	220	73	1,136	1,598	3,027	9,000,942.70

Table. Annual funding per network and composition of the research team by gender

Table. Annual funding of ISCIII units participating in Networks and composition of unit members by gender

ISCIII GROUPS IN NETWORKS	Principal Investigator		Co-workers		Total	2019 Funding (€)
	M	F	M	F		
Infectious diseases	1	1	8	10	20	90,491.68
Tropical diseases	2	2	10	21	35	214,712.00
Chronic disease-oriented health services	0	1	7	5	13	36,555.61
AIDS	5	1	17	36	59	411,976.84
Total	8	5	42	72	127	753,736.13

Information on scientific and other activities of the Networks can be accessed through the following link [RETICS](#)

8.3. Platforms to Support Research in Health Sciences and Technology

The purpose of the platforms to support research in health sciences and technology is to provide high-level scientific, technical and technological support to research groups, to promote transversal projects within their areas of activity, to promote Spanish participation in international programs and platforms, and to promote innovation in health technologies as an instrument that contributes to the sustainability of the SNS. There are currently 5 platforms to support research in health sciences and technology.



Table. Annual funding per Platform and composition of unit members by gender

PLATFORM	Unit Heads		Co-workers		Total	2019 Funding (€)
	M	F	M	F		
Biobanks (RNBB)	22	16	116	219	373	2,140,979.50
Bioinformatics (INB)	11	4	64	29	108	1,162,571.63
Innovation in medical and healthcare technologies (ITEMAS)	20	9	118	100	247	1,594,303.70
Proteomics, genotyping and cell lines (PRB3)	17	6	52	99	174	1,672,177.61
Clinical research and clinical trials units (SCREN)	20	12	85	145	262	2,162,280.00
Total	90	47	435	592	1,164	9,182,312.44

Table. Annual funding of ISCIII units participating in Platforms and composition of unit members by gender

ISCIII GROUPS IN PLATFORMS	Unit Heads		Co-workers		Total	2019 Funding (€)
	M	F	M	F		
Biobanks	1	0	1	6	8	30,900.00
Bioinformatics	0	1	3	1	5	40,542.00
Total	1	1	4	7	13	71,422.00

Information on scientific and other activities of the Platforms can be accessed through the following link [PLATAFORMAS](#)

8.4. Foundations

8.4.1. Spanish National Cancer Research Center Foundation (CNIO)

In 2019, the scientific activity of the CNIO (www.cnio.es) was carried out by a total of 457 researchers and technicians organized in 23 Research Groups, 4 Clinical Research Units, 17 Support Units and the Biobank across 5 Research Programs (Molecular Oncology, Structural Biology, Human Cancer Genetics, Clinical Research and Biotechnology) plus 2 Sections in the Experimental Therapies Program. The CNIO gives support to scientific activity through Scientific Management, the Technology Transfer Office, Communications, International Relations, Philanthropy and Development, Institutional Image and Outreach, Technical Management and Administration. The total number of CNIO staff at the end of the year was 547 employees.

Scientific production

In 2019, the CNIO published a total of 230 scientific articles. Of these, 33 were published in journals with impact factors of between 10 and 15, and 24 articles were published in journals with an impact factor greater than 15. The year 2019 was the second most productive in history in terms of publishing high-impact articles. According to the Scimago ranking, in 2019 the CNIO ranked tenth among the world's cancer centers; it ranked first in Spain and third in Europe. According to the Nature Index, the CNIO ranks second among cancer centers in Europe and seventh worldwide.

Competitive funding

In 2019, 136 research projects were active, of which 18 were international collaborative projects and 35 were national collaborative projects.

Training

In 2019, the CNIO signed agreements with the Universidad de Alcalá de Henares, Universidad San Pablo CEU, Universidad de Barcelona, Universitat Oberta de Catalunya, Universidad Castilla La Mancha and Universidad de Oviedo. Agreements were also signed with several public high schools and the Virgen de Mirasierra School. Fourteen doctoral theses were defended. Seventeen of the 100 PhD students working at the CNIO in 2019 were graduates from foreign universities. In 2019, the fourth call of the CNIO Friends Postdoctoral Fellowship Program was launched, resulting in the hiring of four scientists. Twenty medical residents from 10 different hospitals visited the CNIO for three-month stays. A total of 132 students participated in MSc/BSc laboratory training programs and 15 vocational training technicians participated in the Workplace Training Program (FCT). Two specialists were beneficiaries of the Jesús Serra Foundation's Visiting Researcher Program.

Events

The Women in Science Office (WISE) organized 10 conferences (<http://www.cnio.es/es/women-science/events.asp>) and collaborated in the organization of the 'Stem Talent Girl' masterclasses given during the academic year, between November 2018 and June 2019. The CNIO also organized outreach activities for the public, including guided tours of the facilities. During 2019 the CNIO received a total of 907 people from high schools and the general public; it participated in the 10th edition of Researchers' Night and in the 19th Science and Innovation Week, and 253 people attended these events; the CNIO, in collaboration with the "la Caixa" Foundation, also organized the conference "New Horizons in Cancer Research: from Bench to Bedside".



Innovation

- The CNIO's Technology Transfer & Valorization Office (OTTV) processed a total of 281 transfer records concerning intellectual property of CNIO researchers (68% of them with foreign entities), 161 of which correspond to signed agreements. Around 35% of these signed agreements were collaborative research agreements with private entities, which represent a volume of 1.5 million Euros of income for CNIO out of a total of 1.7 million Euros. About 4% are license agreements of intellectual property assets generated by the CNIO, which generated a net income of 674,894 euros.
- 15 new ideas were incorporated into the OTTV portfolio, of which 2 turned into priority patent applications and 4 PCT (Patent Cooperation Treaty) applications were filed. In coordination with external patent agents, the TTVO manages a portfolio of 34 patent families.
- One project (Mimopancreas for the treatment of diabetes) was awarded a Caixa Impulse grant and another (NanoBRIGHT for brain diseases) received European support through the FET-OPEN call.
- The Department of Innovation actively participated in the organization of SOMMa's 100xScience event in San Sebastian by presenting 4 innovation projects with a gamified activity aimed at society.
- A collaborative research project was signed with the Spanish company Lipotrue S.L., and six projects were signed with international companies (Janssen Cilag, Acceleron Pharma, Cell Marque Co., Becton Dickinson and Eli Lilly and Co.).

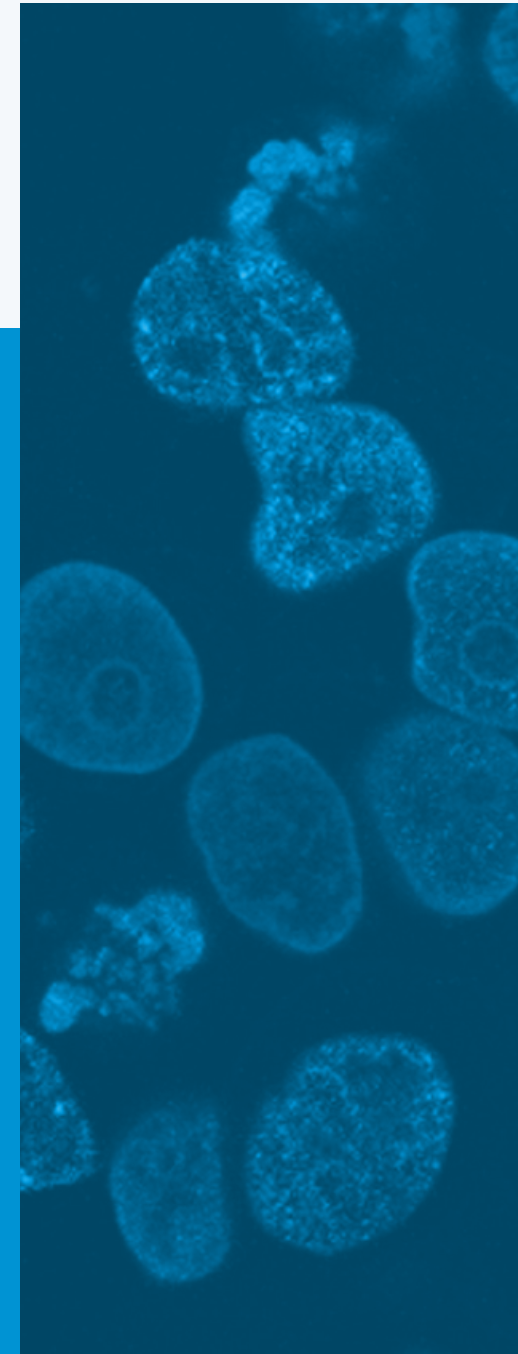
Science and Society

In June 2019, the third edition of the educational and outreach project CNIO & the City was launched.

In 2019 the CNIO held the second edition of "CNIO Arte" with the participation of scientist Ignacio Cirac, director of the Max Planck Institute (Germany) and Chema Madoz, winner of Spain's National Photography Award (2000). The profits of 'CNIO Arte' are entirely allocated to the philanthropic platform "CNIO Friends".

Milestones

- Incorporation of four new Research Groups at the CNIO that further strengthen the center's basic research: two groups in the Molecular Oncology Program (Transformation and Metastasis, and Topology and DNA Breaks), and two in the Structural Biology Program (Computational Cancer Genomics and Computational Oncology).
- Creation of the Philanthropy office, to centralize and optimize efforts aimed at attracting donors and preserving relationships with them. This office will manage the CNIO Friends initiative and will seek to establish strategic collaborations at the corporate level.
- Income of 515,000 Euros from donations through the CNIO Friends platform, and 303,000 Euros from legacies and bequests.
- The CNIO's website received an honorable mention in the new media category of the XXXII "Prismas" Awards of the Casa de las Ciencias for science outreach 2019, the most prestigious awards in scientific culture in Spain.



8.4.2. National Center for Cardiovascular Research Carlos III (CNIC)

- The Carlos III Spanish National Cardiovascular Research Center (F.S.P), CNIC (www.cnic.es), is a state public sector foundation under the Ministry of Science and Innovation, and was created through an ISCIII initiative. It receives private support from the Pro CNIC Foundation www.fundacionprocnic.es. The objective of the CNIC is to promote cardiovascular health through basic and clinical research and training, by contributing to the advancement of scientific knowledge in the cardiovascular area and to the translation of this knowledge to the prevention, diagnosis and treatment of cardiovascular diseases.
- In 2019, scientific activity was carried out by a total of 381 researchers and technicians belonging to 31 Research Groups (www.cnic.es/en/research/laboratories) and 11 Technical Units (www.cnic.es/en/investigacion/unidades-tecnicas) grouped into three multidisciplinary research areas: Vascular Pathophysiology, Myocardial Pathophysiology and Cell and Developmental Biology. These areas constitute and interconnect the two major research departments of the CNIC: Basic Research and Clinical Research. The CNIC's accreditation as a "Severo Ochoa Center of Excellence" was renewed for the period 2016-2019 (extended until 31/12/2020) and it is part of the Severo Ochoa and Maria Maeztu Alliance (SOMMa).
- The CNIC was recognized as one of the four centers of excellence in cardiovascular biomedical research in the European Union in the report The ERA-CVD Strategic Research Agenda (SRA-CVD): "Challenges and Opportunities for Cardiovascular Disease Research (2019)", which analyzes the current state of research in this area. Also in 2019, according to the Scimago institutions ranking, the CNIC occupied first place in Europe among cardiovascular research centers and second place worldwide (only behind the US National Heart, Lung and Blood Institute (NIH)).

Scientific production

The CNIC produced 263 publications (80% articles, 9% reviews and 11% other kinds of publications); 248 of them appeared in JCR-indexed journals, 79% in first quartile journals and 45% in first decile journals. A total of 79 publications were in journals with impact factors (IF) of more than 10; 56% of the publications were led by a CNIC researcher. In regards to collaboration, 29% of the publications were created in collaboration with other national institutions; 51% with both national and international institutions; 13% solely with international institutions; and lastly, 7% of the publications were by CNIC authors alone. This year, 39% of the publications were published in Golden Open Access. All publications can be accessed at: <https://www.cnic.es/es/investigacion/publicaciones/resultados?y=2019>

R&D&I activities: Competitive Funding

Seventy-one projects were started with national competitive funding for a total amount of 8.16 million euros. With regard to international funding, 13 projects were started with funds mainly from European Union calls (Horizon 2020) for a total of 2.86 million euros: two ERC Consolidator projects and the REANIMA cardiac regeneration project stand out with a total funding of 8 million euros over 5 years, of which the CNIC will receive 1.38 million euros. Information on projects and clinical studies is available at www.cnic.es/en/research.

R&D&I activities: Technology Transfer

The CNIC collaborates with companies and public entities to ensure the highest efficiency in the transfer of research results. In 2019, five new patent applications were filed with the European Patent Office and three patents were extended internationally through the PCT treaty. As of December 31, 2019, the CNIC holds 19 patent families, five of which are licensed. Some of these patent families are exclusively owned by the CNIC, others are co-owned with Spanish or foreign public entities and still others are jointly owned with companies (<https://www.cnic.es/en/noticias/otri-or-how-capitalize-investment-talent-and-resources-academic-centers>).

Training

The Center's training activities are coordinated through a comprehensive training plan, called CNIC-JOVEN (<https://www.cnic.es/en/training-cnic>). This is a plan designed to bring biomedical research closer to young people and to create a pool of future researchers of excellence in the cardiovascular field. In 2019, the CNIC had 519 participants in different training programs and workshops.

8.4.3. Research Center for Neurological Diseases Foundation (FCIEN)

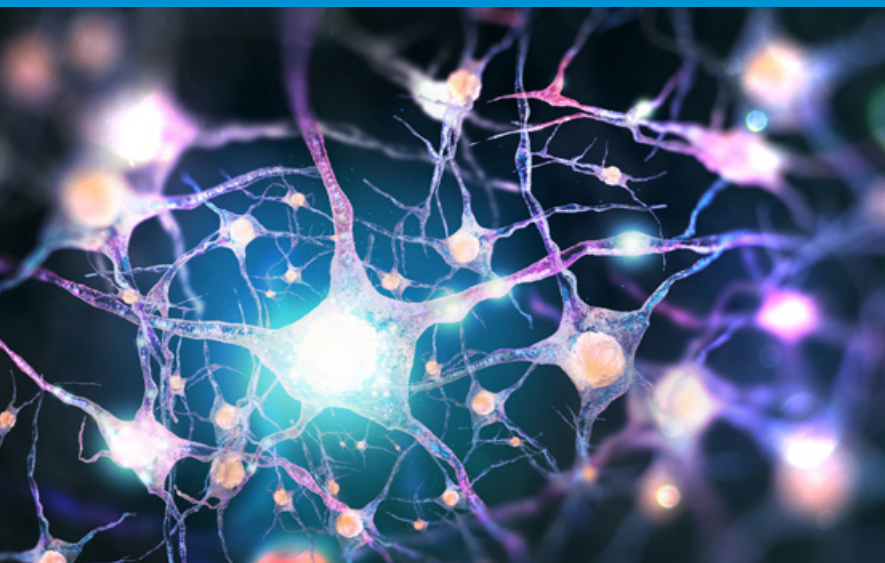
The Research Center for Neurological Diseases Foundation (CIEN; <https://www.fundacioncien.es/>) was created on 27 December 2002 through an agreement of the Council of Ministers. It falls currently under the Ministry of Science and Innovation through the ISCIII. Its objectives include supporting, promoting, and coordinating research on neurological diseases, especially neurodegenerative diseases. The FCIEN's strategic position in neurodegenerative disease research is strengthened by its scientific collaboration and management role in the CIBER Consortium in the area of neurodegenerative diseases (CIBERNED). Since 2010, the development of a biobank of neurological samples (CIEN Tissue Bank) that participates in the ISCIII-sponsored Spanish National Biobank Network Platform has reinforced its position.

Important milestones of the CIEN Foundation in 2019:

- In 2019, researchers of the CIEN Foundation published 20 scientific papers in specialized journals, 18 (90%) of which were published in first and second quartile journals, with a mean impact factor of 8.326. This is an increase of 39% compared to the previous year.

Other highlighted activities:

- Start of the project "Family History of Alzheimer's disease in Elderly People: Influence of Subjective Cognitive Decline (ERAD)" funded by the Ministry of Science, Innovation and Universities through the Spanish National R&D&I Program for Research Aimed at the Challenges of Society (RTI2018-098762-A-C32).
- Launch of the "Spain-Portugal Longevity Research Program +90 (PILEP+90)" funded by the General Foundation of the University of Salamanca (0348_CIE_6_E).
- Organization of the VII Edition of the International Congress on Research and Innovation in Neurodegenerative Diseases (CIIEN) in Valencia, which has become the leading international congress in our country in the area of neurodegenerative diseases.
- Organization of the II Conference 'Female Neuroscientists Today: Sowing Role Models', on the occasion of the International Day of Women and Girls in Science.
- The VII Vallecas Project Volunteer Day was held in recognition of these people's collaboration with research.
- Organization of the Annual Conference of the Spanish National Biobank Network at the CIEN Foundation, with the participation of all biobanks of the Network and the launch of the Working Group of Neurological Tissue Banks within the RNB (Spanish National Biobank Network). Organization of the pre-congress meeting of the WG-BTN of the X National Congress of Biobanks.
- Creation of the Iberian Neuropathology Working Group, in which the Spanish Neuropathology Club and the Portuguese Society of Neuropathology participate (Salamanca, October, 2019).
- Collaboration with the Center for Molecular Biology "Severo Ochoa" for the study of microRNAs and proteins in tears of patients with mild cognitive impairment (MCI) and dementia.
- Collaboration agreement with the Dementia Unit of the Hospital Princesa Leonor for the establishment of a cohort of patients with MCI.
- Organization of the 1st edition of the Memorables Film Festival, a short film festival dedicated to Alzheimer's disease, whose main objective is to show and promote the creation and dissemination of short films that have this disease as their main theme.





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