Instituto de Salud Carlos III

CALLE PROFESOR SEGOVIA DE ARANA

30 ANIVERSARIO (1986-2016)

Instituto de Salud Carlos III

Annual Report 2016

MINISTERIO DE ECONOMÍA, INDUSTRIA Y COMPETITIVIDAD

Instituto de Salud Carlos III

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Introduction

In 2016, Carlos III Institute of Health (ISCIII) commemorated the 30th anniversary of its creation. ISCIII was created by Law 14/1986 of 25 April, the General Health Law, which founded it as a body for scientific and technical support for the General State Administration and the Health Departments of the Autonomous Regions. The creation of ISCIII and the publication of its organisation and structure in January 1988 provided Spain with an essential tool for promoting and financing biomedical research, benchmark scientific-technical services for the National Health System, and postgraduate healthcare training.

Since its establishment, the Carlos III Institute of Health has contributed to transforming the National Health System, increasing the volume of biomedical research at the service of patients and citizens. It is little wonder that today, Spain occupies an important place in biomedical scientific production. It promotes the process of transferring basic science to clinical practice and healthcare policy decisions by strengthening tools for cooperative (CIBER and RETIC) and translational research (IIS). Furthermore, it supports investigators who carry out and contribute to health research by funding approximately 700 new health and biomedicine research projects each year.

The reference centres and units (National Microbiology Centre, National Epidemiology Centre, National Environmental Health Centre, Research Institute for Rare Diseases, Functional Unit for Research into Chronic Disease, Telemedicine and E-health Research Unit, and the Healthcare Research Unit) have been successfully carrying out their roles, providing services, research, and teaching. Especially significant in 2016 was the participation in the control of indigenous cases of Crimean-Congo haemorrhagic fever in the summer; support to the Autonomous Communities and local administrations for air quality control programmes and to the Ministry of Health, Social Services, and Equality in the creation of a rare diseases registry; as well as an immediate response to infectious disease and bioterrorism incident alerts. Likewise, it has supported and developed a plan for modernization of the Majadahonda campus facilities, in which the completion of the new building for the National Microbiology Centre stands out.

I cannot finish this introduction without paying a heartfelt posthumous homage to the memory of Dr José María Segovia de Arana, an emblematic figure in Spanish medicine to whom healthcare in Spain owes an unpayable debt.

Photograph of the Directors of ISCIII from its creation until now (except J.R. Ricoy)(From left to right: A.L. Andreu, A. Campos, J.A. Gutiérrez, F. de Pablo, R. Nájera, J.J. Navas, J. Arenas, F. Gracia, J. Borrell and J.F. Crespo)

Professor Segovia led a generation of professionals who modernised public medicine in Spain. For them, clinical excellence, ethics in service, and a commitment to knowledge were three indispensable pillars of a new way of considering how to practice medicine. This new approach had to bring together care, teaching, and research and needed a well-developed, organised public health system framework. Along with many others, he did not stop at asking for it, but rather he went a step further and worked to make it a reality.

His strategic vision and managerial abilities were key to the success in the creation of the Spanish National Health System. Along with other achievements, his name is associated with specialised medical training through the Medical Residency (MIR) system and with the training requirements for specialists. In fact, he was the first president of the National Council on Medical Specialisations. He is also associated with the link between universities and hospitals and the creation of the Healthcare Research Fund (FIS), which is currently managed by ISCIII through Strategic Action in Healthcare (AES).

With our gratitude for having forged a project that we feel proud to inherit, the cover of this scientific annual report is dedicated to him and to his memory.

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1 Organisation

1 Organisation

1.1 Governing Bodies

Carlos III Institute of Health (ISCIII) is a Public Research Entity (OPI) and an autonomous legal entity whose aim is to develop and offer high-quality scientific and technical services to the National Health System (SNS) and to society as a whole.

In accordance with Additional Provision Four of Royal Decree 531/2017, dated 26 May, which develops the basic organisational structure of the Ministry of Economy, Industry and Competitiveness, ISCIII reports to the Ministry of Health, Social Services, and Equality (MSSSI) for the health, planning, and medical assistance activities it carries out. It reports to the MSSSI in coordination with the Ministry of Economy and Competeness through the Secretary of State for Research, Development, and Innovation, for applied research activities that are able to be transferred to the National Health System (SNS).

ISCIII associates with SNS research centres in order to contribute to structuring its research. It also accredits the Health Research Institutes (IIS) and Cooperative Research Networks in order to focus research on the intended objectives, to promote excellence in research, and to provide its own resources for research.

1.2 Centres, Units, Schools, and Foundations

ISCIII Centres and Units, of national and international reference, carry out research activities in the fields of biomedicine, environmental health, and public health in general. In each field of research, programmes are designed to approach diseases from a preventive, diagnostic, and therapeutic standpoint, with researchers and technologists from all scientific disciplines working together. Their priorities mainly include research on infectious, chronic, rare, neurodegenerative, tropical, and occupational diseases; telemedicine; environmental health; epidemiology; public health; and healthcare.

ISCIII also provides advanced scientific and technical services of national reference which fully incorporate new technologies in order to improve health and social welfare.

Their services are focus on reference laboratories, surveillance and alerts, scientific and technical training and health education, scientific information and documentation, consulting on the transfer of research results, and the evaluation of technology and procedures applicable to clinical practice.

Centres and Units

National Microbiology Centre (CNM)

Centres and Units National Epidemiology Centre (CNE)

National Environmental Health Centre (CNSA)

National Centre of Tropical Medicine (CNMT)

Research Institute for Rare Diseases (IIER)

Research Centre on Congenital Anomalies (CIAC)

Telemedicine and E-health Research Unit

Healthcare Research Unit (Investén-ISCIII)

Functional Unit for Research into Chronic Diseases (UFIEC)

Biological Alert Laboratory Network (RE-LAB)

Health Technology Assessment Agency (AETS)

National Library of Health Sciences (BNCS)

UCM-ISCIII Joint Centre for Research on Human Evolution and Behaviour

Schools

Through the National School of Health (ENS) and the National School of Occupational Medicine (ENMT), ISCIII carries out training, continuing education, and specialisation in the fields of health and health administration and management for medical and non-medical staff, without prejudice to the competences of other public bodies. It also contributes to the development of methodological, social science, and economic disciplines related to health.

Foundations

The following Foundations are affiliated with ISCIII: the Spanish National Cancer Research Centre (CNIO), the Spanish National Centre for Cardiovascular Research (CNIC), and the National Centre for Research on Neurodegenerative Diseases (CIEN), which carry out their activities in the fields of oncology, cardiovascular disease, and neurological research, respectively.

1.3 Human Resources

In 2016, the trend of recent years of reducing ISCIII's own staff continued. The total number of employees is 952, comprising 514 civil servants, 178 permanent staff members, and 260 temporary staff members (247 of whom are linked to projects)

In regards to their functions, the staff is distributed as follows: 159 scientists (17%), 371 technologists (39%), 91 research support staff (9%), and 331 management staff (35%).

Changes in human resources (2011-2016)

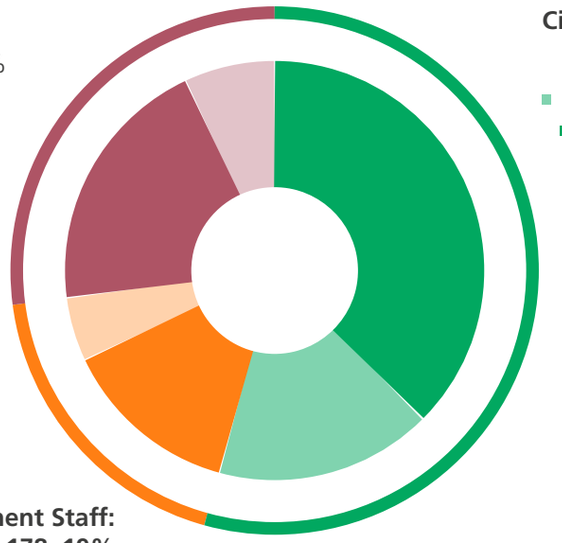
Staff Changes Carlos III Institute of Health 2011/2016		2011			2012			2013			2014			2015			2016			Percent change in Staff 2011-2016		
		♀	♂	Total	♀	♂	Total	♀	♂	Total	♀	♂	Total	♀	♂	Total	♀	♂	Total	♀	♂	Total
Civil Servants	A1	167	130	297	166	123	289	167	124	291	165	124	289	164	117	281	153	110	263	-8,38	-15,38	-11,45
	A2	79	24	103	76	24	100	71	23	94	71	21	92	68	20	88	65	16	81	-17,72	-33,33	-21,36
	C1	105	25	130	97	26	123	93	25	118	91	23	114	91	21	112	78	18	96	-25,71	-28,00	-26,15
	C2	81	21	102	76	23	99	71	20	91	63	19	82	55	17	72	56	15	71	-30,86	-28,57	-30,39
	E	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	0,00	0,00	0,00
	Suma	**433**	202	**635**	**416**	**198**	**614**	**403**	**194**	**597**	**391**	**189**	**580**	**379**	**177**	**556**	**353**	**161**	**514**	**-18,48**	**-20,30**	**-19,06**
Permanent Staff	G1	12	1	13	12	1	13	10	1	11	10	1	11	9	0	9	10	1	11	-16,67	0,00	-15,38
	G2	4	0	4	4	0	4	4	0	4	4	0	4	4	0	4	3	0	3	-25,00	0,00	-25,00
	G3	70	27	97	65	26	91	64	25	89	62	25	87	59	24	83	53	20	73	-24,29	-25,93	-24,74
	G4	34	13	47	33	13	46	33	13	46	28	11	39	27	7	34	23	8	31	-32,35	-38,46	-34,04
	G5	53	19	72	50	18	68	50	17	67	47	18	65	45	17	62	43	17	60	-18,87	-10,53	-16,67
	Suma	**173**	**60**	**233**	164	58	222	161	56	217	151	55	206	144	48	192	132	46	178	**-23,70**	**-23,33**	**-23,61**
Temporary Staff	G1	124	50	174	130	40	170	113	41	154	107	38	145	112	37	149	132	46	178	6,45	-8,00	2,30
	G2	15	2	17	13	2	15	8	4	12	6	3	9	4	3	7	3	3	6	-80,00	50,00	-64,71
	/G3	85	17	102	77	7	84	59	7	66	58	6	64	51	5	56	62	11	73	-27,06	-35,29	-28,43
	G4	2	0	2	2	0	2	1	0	1	1	0	1	1	0	1	0	1	1	-100,00	0,00	-50,00
	G5	2	2	4	4	2	6	4	2	6	1	2	3	0	1	1	0	2	2	-100,00	0,00	-50,00
	Suma	**228**	**71**	**299**	**226**	**51**	**277**	**185**	**54**	**239**	**173**	**49**	**222**	**168**	**46**	**214**	**197**	**63**	**260**	**-13,60**	**-11,27**	**-13,04**
		834	333	**1167**	806	307	**1113**	749	304	**1053**	715	293	**1008**	691	271	**962**	682	270	**952**	**-18,23**	**-18,92**	**-18,42**
	Total....	**1167**			**1113**			**1053**			**1008**			**962**			**952**			**-18,42**		
		2011			2012			2013			2014			2015			2016					

Distribution by Gender

Civil Servants	514	♀	353
		♂	161
Permanent Staff	178	♀	132
		♂	46
Temporary Staff	260	♀	197
		♂	63
	952		

Scientific Staff	159	♀	93
		♂	66
Technological Staff	371	♀	272
		♂	99
Research Support Staff	91	♀	72
		♂	19
Management Staff	331	♀	246
		♂	85
	952		**952**

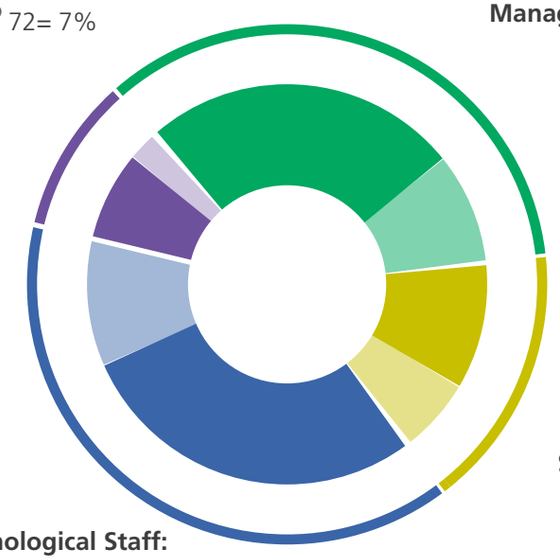
Temporary Staff:
260; 27%
♂ 63 =6%
♀ 197= 21%



Civil Servants:
514; 54%
♂ 161 =17%
♀ 353=37%

Permanent Staff:
178; 19%
♂ 46 =5%
♀ 132= 14%

Research Support Staff:
91; 9%
♂ 19 =2%
♀ 72= 7%



Management Staff:
331; 35%
♂ 85= 9%
♀ 246=26%

Scientific Staff:
159; 17%
♂ 66 =7%
♀ 93=10%

Technological Staff:
371; 39%
♂ 99 =10%
♀ 272= 29%

1.4 Economic Resources

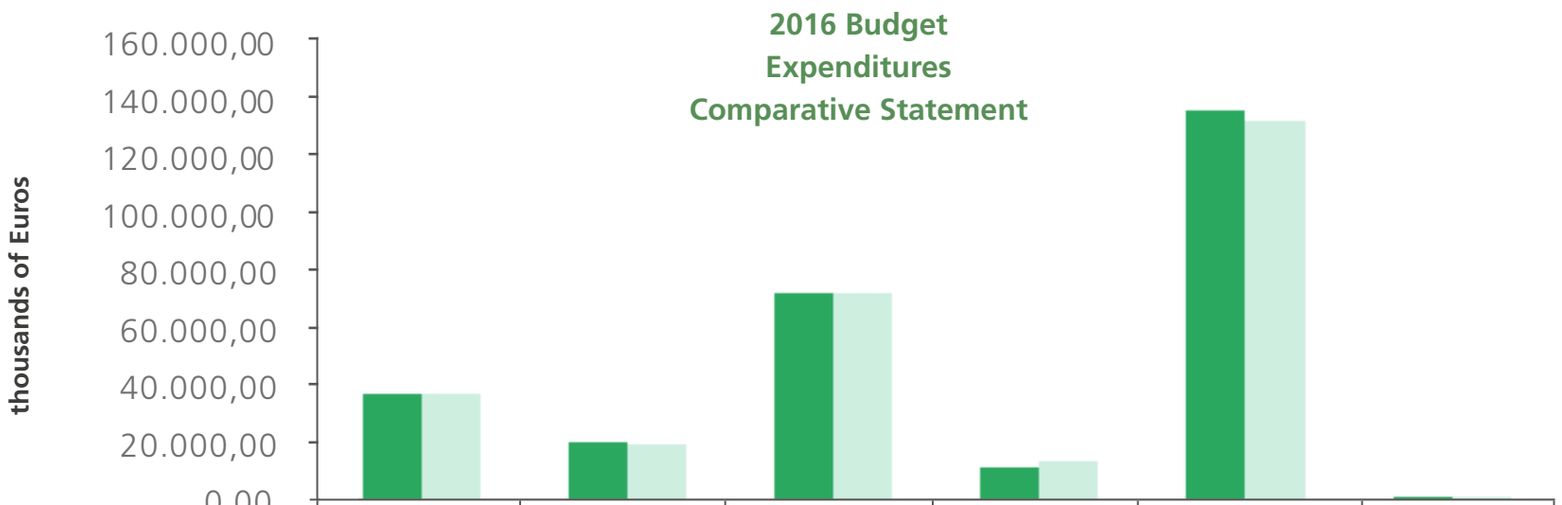
Budget approved for the 2016 fiscal year

The credit approved for the Carlos III Institute of Health for the 2016 fiscal year is 272,128.90 thousand Euros, 1,691.93 thousand Euros less (-0.62%) than the 2015 fiscal year.

The distribution of funds is as follows:

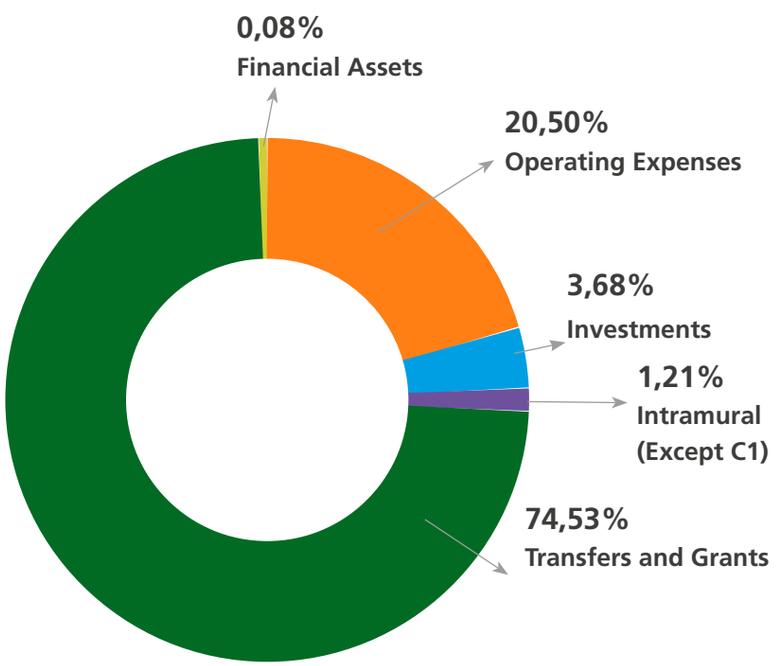
EXPENDITURES

1 "Staff Costs"	36.455,60	36.455,60	-	-
2 "Current Expenditures for Goods and Services"	19.689,46	19.324,15	-365,31	-1,86
4 "Current Transfers"	71.279,80	71.917,12	637,32	0,89
6 "Real Investments"	10.965,00	12.979,53	2.014,53	18,37
7 "Capital Transfers"	135.204,97	131.226,50	-3.978,47	-2,94
8 "Financial Assets"	226,00	226,00	-	-
TOTAL	**273.820,83**	**272.128,90**	**-1.691,93**	**-0,62**

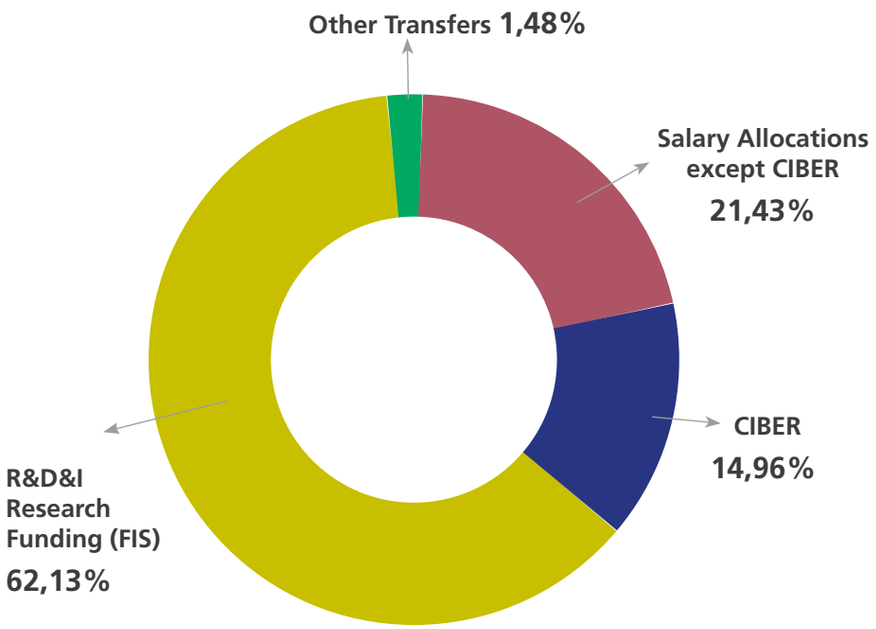


Chapter	1 "Staff Costs"	2 "Current Expenditures for Goods and Services"	4 "Current Transfers"	6 "Real Investments"	7 "Capital Transfers"	8 "Financial Assets"
2015	36.455,60	19.689,46	71.279,80	10.965,00	135.204,97	226,00
2016	36.455,60	19.324,15	71.917,12	12.979,53	131.226,50	226,00

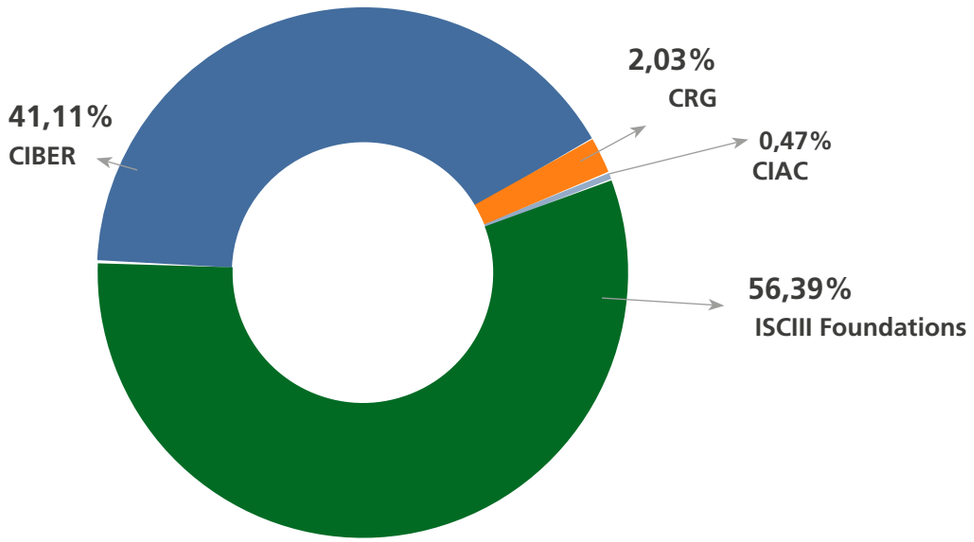
2016 Budget
Distribution of Expenses



2016 Budget
EXPENDITURES
Distribution of Transfers and Grants

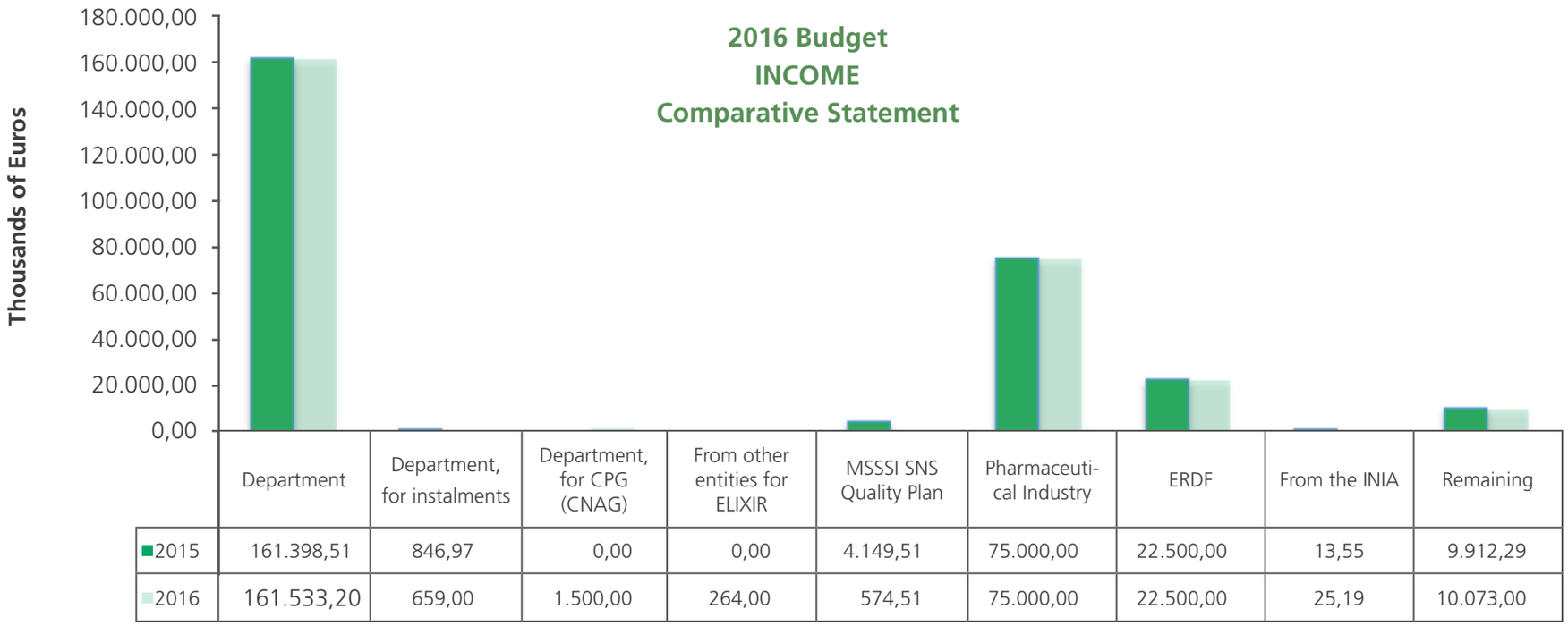


2016 Budget
EXPENDITURES
Distribution of salary allocations



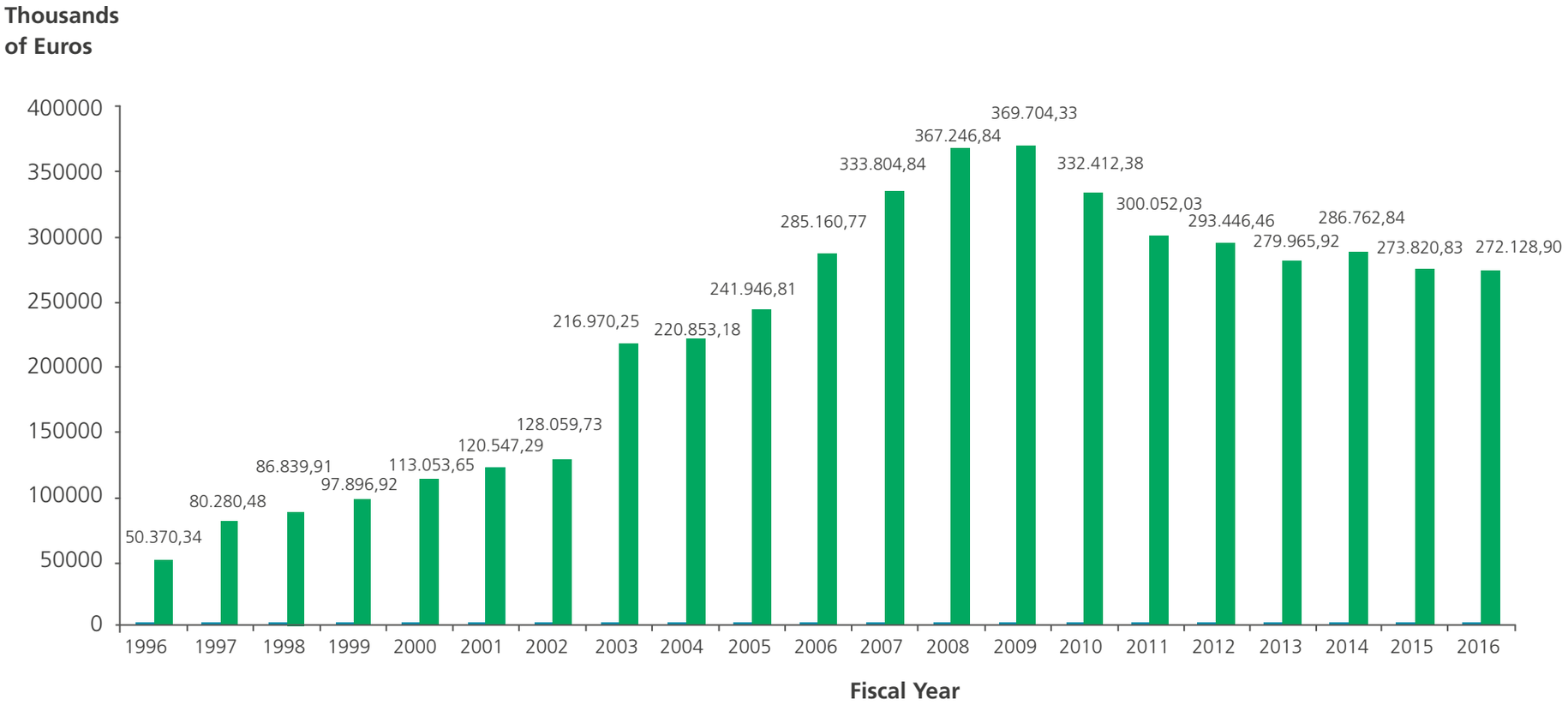
INCOME

Department	161.398,51	161.533,20	134,69	0,08
Department for ELIXIR, ECRIN, EATRIS, EuBI, and EU-OPENSCREEN	846,97	659,00	-187,97	-22,19
From the department for the Centre for Genomic Regulation (CRG) Foundation for genomic studies of the National Genome Analysis Centre (CNAG)		1.500,00	1.500,00	
From other organisations for ELIXIR		264,00	264,00	
MSSSI SNS Quality Plan	4.149,51	574,51	-3.575,00	-86,15
Pharmaceutical Industry	75.000,00	75.000,00	0,00	0,00
ERDF	22.500,00	22.500,00	0,00	0,00
From INIA	13,55	25,19	11,64	85,90
Remaining	9.912,29	10.073,00	160,71	1,62
TOTAL	**273.820,83**	**272.128,90**	**-1.691,93**	**-0,62**

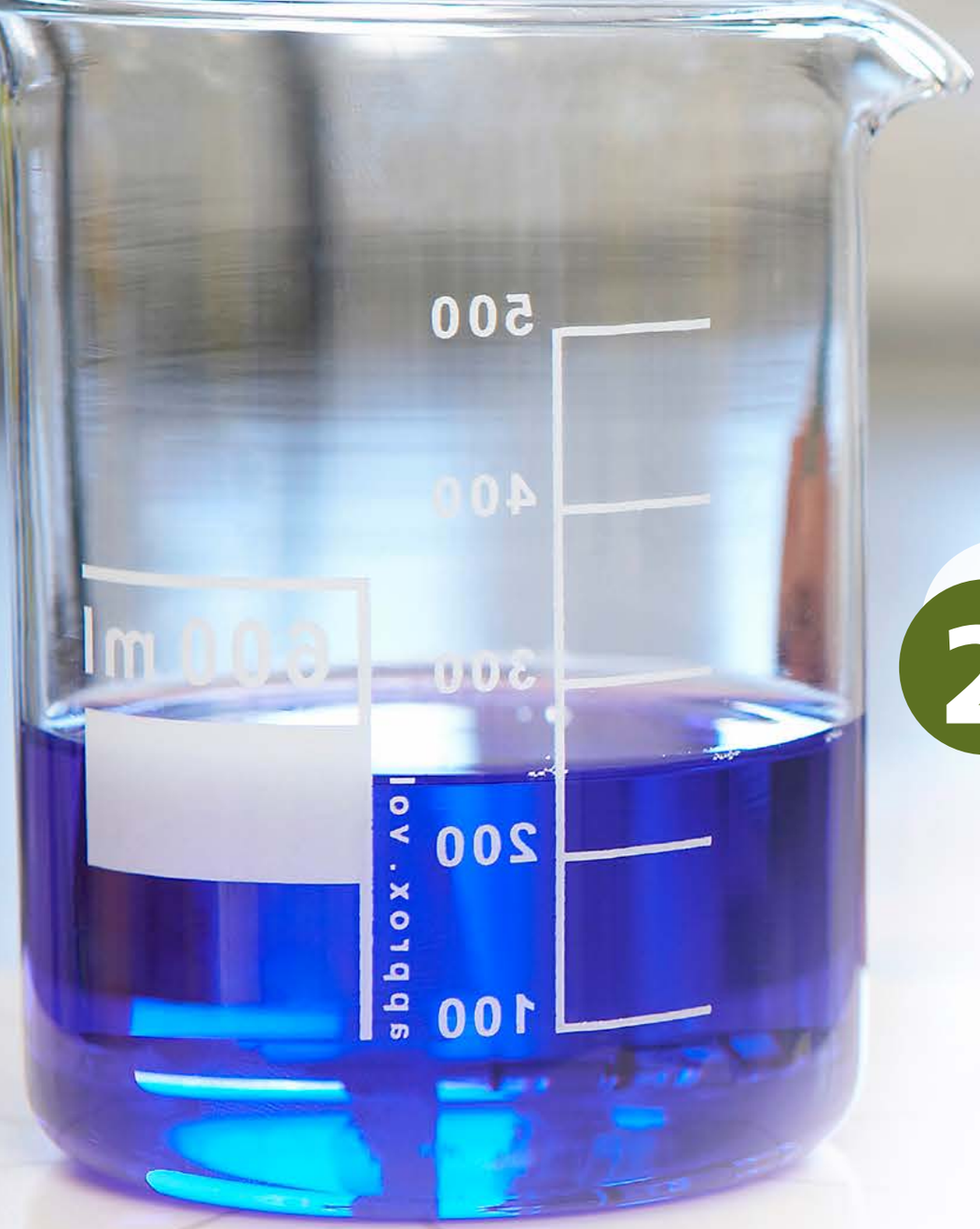


A total of 60.15% of the credits approved in the expenditure statement are financed with transfers from the department and 27.56% by incomes from the execution of the provisions of Additional Provision Six of Law 29/2006, dated 26 July, on guarantees and rational uses of medicines and pharmaceutical products. Finally, changes in the budget approved for the organisation during the 1996-2016 period are shown below.

CARLOS III INSTITUTE OF HEALTH
Evolution of Approved Budget 1996 - 2016



1 Organisation



2 Research and Innovation Activity Management

2 Research and Innovation Activity Management

The Carlos III Institute of Health (ISCIII) is the Public Research Entity that promotes, manages, evaluates, and finances biomedical research in Spain through the Strategic Action in Health, within the framework of the Spanish State Plan for Scientific and Technical Research and Innovation 2013-2016.

2.1 STRATEGIC ACTION IN HEALTH 2013-2016

Se contemplan cuatro Programas Estatales en el Plan Estatal de Investigación Científica y Técnica y de Innovación para el periodo 2013-2016 (en adelante, Plan Estatal I+D+I), desplegados en Subprogramas, y dos Acciones Estratégicas que se integran en el cuarto de los programas identificados: el Programa Estatal de I+D+I Orientada a los Retos de la Sociedad.

La Acción Estratégica en Salud 2013-2016 (en adelante, AES) está incluida en el Reto en Salud, Cambio Demográfico y Bienestar, plenamente alineado con Horizonte 2020. Se trata de una acción programática de carácter específico, cuya finalidad es contribuir a fomentar la salud y el bienestar de la ciudadanía y a desarrollar los aspectos preventivos, diagnósticos, curativos, rehabilitadores y paliativos de la enfermedad, reforzando e incrementando para ello la competitividad internacional de la I+D+I del Sistema Nacional de Salud (en adelante, SNS) y de las empresas relacionadas con el sector, con la vocación de situar a España en un escenario de vanguardia en el que la salud actúe como eje fundamental de desarrollo económico y social.

Para la consecución de estos objetivos, la AES propone un conjunto de actuaciones instrumentales, sinérgicas y complementarias que se encuadran en los Subprogramas Estatales de Formación y de Incorporación, del Programa Estatal de Promoción del Talento y su Empleabilidad y en los Subprogramas Estatales de Fortalecimiento Institucional y de Generación de Conocimiento, del Programa Estatal de Fomento de la Investigación Científica y Técnica de Excelencia del Plan Estatal I+D+I. Cada uno de los subprogramas se articula a través de una o varias actuaciones. Las desarrolladas al amparo de la AES en el pasado año 2016 han sido:

National Programme for Training Talent and Its Employability

Subprograma Estatal de Formación:

- Pre-doctoral contracts for training in research into health
- Grants for training in health research management (FGIN)
- Río Hortega contracts

National Sub-programme for Incorporation:

- Contracts for health research management in IIS
- Miguel Servet type I and II contracts
- Sara Borrell contracts
- Juan Rodés contracts
- Contracts for the intensification of research activity in the SNS

National Sub-programme for Mobility:

- Mobility grants for research staff

National Programme for Fostering Excellence in Scientific and Technical Research

National Sub-programme for Knowledge Generation

- Integrated projects of excellence in the IIS
- Health research projects
  - A. Research projects in health
  - B. Technological development projects in health
- Additional activities in the international programme

National Sub-programme for Institutional Reinforcement

- Incorporation of new thematic areas and groups into the CIBER consortium
- Thematic Networks for Cooperative Research in Health (RETICS)

CAs a novelty, during the 2016 call, grants for the Thematic Networks for Cooperative Research in Health (RETICS), within the National Programme for Institutional Reinforcement, were included. Furthermore, the pre-doctoral contracts for training in research into health, within the National Programme for Training Talent and Its Employability, were also included.

The Carlos III Institute of Health is the managing body for AES activities, which are implemented via a single competitive call. ISCIII's Sub-Directorate General for Research Assessment and Promotion is the competent body for managing this procedure.

2.1.1 National Programme for Training Talent and Its Employability

National Sub-programme for Training:

The **pre-doctoral contracts for training in research into health** are aimed at the initial training of health science and technology researchers through the writing of a doctoral thesis. There are two modalities:

PFIS contracts: pre-doctoral contracts for training in research into health. Aimed at researchers whose group leaders were awarded a health research project from the AES that does not include funding for staff and, for the 2014 and 2015 calls, which lasts for three years.

Autonomous Regions	PFIS 2016							
	Eligible Applications			Funded				Success Rate
	W	M	T	W	M	T	Amount in Euros	
Andalusia	19	10	29	3	0	3	247,200	10.34%
Aragon	7	1	8	2	0	2	164,800	25.00%
Asturias	5	0	5	0	0	0	0	0.00%
Balearic Islands	3	0	3	1	0	1	82,400	3.33%
Basque Country	4	2	6	0	1	1	82,400	16.67%
Canary Islands	1	2	3	1	1	2	164,800	6.67%
Cantabria	3	0	3	0	0	0	0	0.00%
Castile and Leon	5	7	12	0	0	0	0	0.00%
Castile-La Mancha	0	1	1	0	0	0	0	0.00%
Catalonia	58	27	85	9	3	12	988,800	14.12%
Extremadura	2	0	2	0	0	0	0	0.00%
Galicia	8	4	12	0	0	0	0	0.00%
La Rioja	1	0	1	0	0	0	0	0.00%
Madrid	34	13	47	2	1	3	247,200	6.38%
Murcia	4	4	8	0	0	0	0	0.00%
Navarre	5	1	6	1	0	1	82,400	16.67%
Valencian Community	16	10	26	1	1	2	164,800	7.69%
TOTAL	**175**	**82**	**257**	**20**	**7**	**27**	2.224.800	10,51%

2 Research And Innovation Activity Management

i-PFIS contracts: IIS-company doctorates in health sciences and technology. This is the third year that this type of contract is offered. They are aimed at public-private collaboration achieved by carrying out part of the training programmes in workplaces at businesses entities and accredited Health Research Institutes (IISa).

Autonomous Regions	i-PFIS 2016							
	Eligible Applications			Funded				Success Rate
	W	M	T	W	M	T	Amount in Euros	
Andalusia	3	3	6	0	2	2	164,800	33.33%
Aragon	1	1	2	1	0	1	82,400	50.00%
Catalonia	3	4	7	2	2	4	329,600	57.14%
Galicia	1	0	1	0	0	0	0	0.00%
Madrid	6	1	7	4	1	5	412,000	71.43%
Valencian Community	2	1	3	1	0	1	82,400	33.33%
TOTAL	**16**	**10**	**26**	**8**	**5**	**13**	**1.071.200**	**50,00%**

2 Research And Innovation Activity Management

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

In terms of the **grants for training in health research management (FGIN)**, 17 eligible applications were received and eight were granted, with a financial allocation of €21,000 and duration of three years.

The **Río Hortega contracts**, are work contracts for professionals who have successfully completed Specialised Healthcare Training:

The financial allocation is €26,866 per year for a duration of two years. No contracts were awarded to professionals with Specialised Healthcare Training in Nursing.

Autonomous Regions	Río Hortega 2016							
	Eligible Applications			Funded				Success Rate
	W	M	T	W	M	T	Amount in Euros	
Andalusia	22	12	34	4	4	8	429,856	23.53%
Aragon	5	1	6	1	0	1	53,732	16.67%
Asturias	2	0	2	1	0	1	53,732	50.00%
Balearic Islands	4	0	4	1	0	1	53,732	25.00%
Basque Country	2	0	2	1	0	1	53,732	50.00%
Canary Islands	0	1	1	0	0	0	0	0.00%
Cantabria	1	3	4	0	2	2	107,464	50.00%
Castile and Leon	3	0	3	0	0	0	0	0.00%
Catalonia	39	22	61	9	9	18	967,176	29.51%
Galicia	4	3	7	0	1	1	53,732	14.29%
La Rioja	2	0	2	0	0	0	0	0.00%
Madrid	42	14	56	6	4	10	537,320	17.86%
Murcia	2	1	3	2	0	2	107,464	66.67%
Navarre	1	2	3	0	0	0	0	0.00%
Valencian Community	2	4	6	2	1	3	161,196	50.00%
TOTAL	**131**	**63**	**194**	**27**	**21**	**48**	**2.579.136**	**24,74%**

2 Research And Innovation Activity Management

National Sub-programme for Incorporation:

This was the third year that contracts for **health research management (GIS) in accredited health research institutes (IISa)** were offered. They are aimed at managers so that they may carry out support activities for managing R&D&I in the IISa. Those IISa that have already received this type of contract cannot apply for another.

Autonomous Regions	GIS 2016							
	Eligible Applications			Funded				Success Rate
	M	H	T	M	H	T	Amount in Euros	
Andalusia	1	1	2	1	0	1	80.598	50,00%
Aragon	2	0	2	1	0	1	80.598	50,00%
Basque Country	2	0	2	1	0	1	80.598	50,00%
TOTAL	**5**	**1**	**6**	**3**	**0**	**3**	**241.794**	**50,00%**

The financial allocation for these contracts is €26,866 per year for a duration of three years.

The **Miguel Servet type I** contracts are aimed at doctors with an accredited research trajectory in centres within the scope of the SNS. They also include a three-year research project.

Autonomous Regions	Miguel Servet Type I 2016							
	Eligible Applications			Funded				Success Rate
	W	M	T	W	M	T	Amount in Euros	
Andalusia	19	9	28	2	0	2	632,500	7.14%
Aragon	2	1	3	1	1	2	648,000	66.67%
Asturias	2	0	2	0	0	0	0	0.00%
Balearic Islands	3	1	4	1	0	1	324.000	25.00%
Basque Country	5	2	7	0	0	0	0	0.00%
Cantabria	3	0	3	1	0	1	324,000	33.33%
Castile and Leon	2	2	4	0	0	0	0	0.00%
Castile-La Mancha	1	0	1	0	0	0	0	0.00%
Catalonia	24	9	33	5	2	7	2,253,000	21.21%
Extremadura	1	1	2	0	0	0	0	0.00%
Galicia	7	5	12	1	0	1	324,000	8.33%
La Rioja	1	0	1	0	0	0	0	0.00%
Madrid	18	11	29	4	1	5	1,498,500	17.24%
Murcia	3	2	5	0	0	0	0	0.00%
Navarre	2	1	3	0	0	0	0	0.00%
Valencian Community	13	3	16	3	0	3	968,300	18.75%
TOTAL	**106**	**47**	**153**	**18**	**4**	**22**	**6.972.300**	**14,38%**

The financial allocation for these contracts is €40,500 per year for a duration of five years. The sum of these grants is shown in the above table.

The **Miguel Servet type II** contracts are aimed at doctors in the final year of a Miguel Servet contract.

Autonomous Regions	Miguel Servet Type II 2016							
	Eligible Applications			Funded				Success Rate
	W	M	T	W	M	T	Amount in Euros	
Andalusia	3	1	4	2	1	3	293,625	75.00%
Aragon	0	1	1	0	1	1	101,250	100.00%
Asturias	0	2	2	0	2	2	192,375	100.00%
Balearic Islands	0	1	1	0	1	1	91,125	100.00%
Basque Country	0	2	2	0	2	2	192,375	100.00%
Catalonia	6	10	16	6	10	16	1,539,000	100.00%
Galicia	1	2	3	1	2	3	303,750	100.00%
Madrid	6	6	12	5	5	10	961,875	83.33%
Valencian Community	5	3	8	5	3	8	759,375	100.00%
TOTAL	**21**	**28**	**49**	**19**	**27**	**46**	**4.434.750**	**93,88%**

The financial allocation for these contracts is either €40,500 or €45,000 in the first year. It is then co-funded at 75% and 50% in the following years. They are for a duration of three years.

2 Research And Innovation Activity Management

The **Sara Borrell contracts** are aimed at recently-qualified doctors in centres within the scope of the SNS.

Autonomous Regions	Sara Borrell 2016							
	Eligible Applications			Funded				Success Rate
	W	M	T	W	M	T	Amount in Euros	
Andalusia	23	7	30	8	2	10	805,980	33.33%
Aragon	1	0	1	0	0	0	0	0.00%
Asturias	2	1	3	2		2	161,196	66.67%
Balearic Islands	3	0	3	0	0	0	0	0.00%
Basque Country	4	1	5	1	0	1	80,598	20.00%
Canary Islands	1	1	2		1	1	80,598	50.00%
Cantabria	1	0	1	0	0	0	0	0.00%
Castile and Leon	3	1	4	0	0	0	0	0.00%
Catalonia	41	12	53	7	1	8	644,784	15.09%
Galicia	9	1	10	3	0	3	241,794	30.00%
Madrid	21	10	31	2	0	2	161,196	6.45%
Murcia	2	0	2	0	0	0	0	0.00%
Navarre	5	0	5	0	0	0	0	0.00%
Valencian Community	6	4	10	1	2	3	241,794	30.00%
TOTAL	**122**	**38**	**160**	**24**	**6**	**30**	**2.417.940**	**18,75%**

The financial allocation for these contracts is €26,866 per year for a duration of three years.

2 Research And Innovation Activity Management

The **Juan Rodés contracts** are for medical staff who have previously completed a Río Hortega Contract. They are carried out in SNS healthcare facilities that are part of an IISa.

Autonomous Regions	Juan Rodés 2016							
	Eligible Applications			Funded				Success Rate
	W	M	T	W	M	T	Amount in Euros	
Andalucía	4	1	5	3	1	4	540.000	80,00%
Aragón	2	1	3	0	0	0	0	0,00%
Cataluña	6	2	8	4	2	6	810.000	75,00%
C. Valenciana	4	0	4	3	0	3	405.000	75,00%
Galicia	0	1	1	0	0	0	0	0,00%
Madrid	8	2	10	7	1	8	1.080.000	80,00%
País Vasco	0	1	1	0	0	0	0	0,00%
TOTAL	**24**	**8**	**32**	**17**	**4**	**21**	**2.835.000**	**65,63%**

The financial allocation for these contracts is €45,000 per year for a duration of three years.

The objective of the **contracts for the intensification of research activity in the SNS** is for the hiring of specialised physicians or professionals who hold a degree in nursing so that they may perform part of the medical care activities of professionals who are simultaneously carrying out research activities.

In 2016, it was calculated that 30% of the workday dedicated to providing health-care had been freed up annually.

Autonomous Regions	Intensification							
	Eligible Applications			Funded				Success Rate
	W	M	T	W	M	T	Amount in Euros	
Andalusia	5	17	22	2	7	9	153,000	40.91%
Aragon	3	4	7	2	1	3	54,000	42.86%
Asturias	0	3	3	0	1	1	18,000	33.33%
Balearic Islands	2	2	4	0	1	1	18,000	25.00%
Basque Country	2	2	4	0	0	0	0	0.00%
Canary Islands	0	3	3	0	1	1	18,000	33.33%
Cantabria	0	3	3	0	1	1	18,000	33.33%
Castile and Leon	1	5	6	0	2	2	36,000	33.33%
Castile-La Mancha	0	2	2	0	0	0	0	0.00%
Catalonia	15	27	42	6	15	21	378,000	50.00%
Galicia	1	6	7	1	3	4	72,000	57.14%
Madrid	11	25	36	1	13	14	252,000	38.89%
Murcia	0	5	5	0	3	3	54,000	60.00%
Navarre	0	3	3	0	1	1	18,000	33.33%
Valencian Community	2	8	10	0	2	2	36,000	20.00%
TOTAL	**42**	**115**	**157**	**12**	**51**	**63**	**1.125.000**	**40,13%**

The financial allocation for these contracts is €18,000 per year for physicians and €9,000 for nursing staff.

National Sub-programme for Mobility:

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

Mobility of healthcare professionals and researchers of the SNS (M-BAE)

The objective of this grant is to fund SNS healthcare professionals' and researchers' placements at prestigious national or foreign institutions.

Autonomous Regions	BA 2016							
	Eligible Applications			Funded				Success Rate
	M	H	T	M	H	T	Amount in Euros	
Andalusia	4	0	4	2	0	2	27,500	50.00%
Aragon	1	1	2	1	1	2	21,000	100.00%
Basque Country	1	0	1	1	0	1	7,000	100.00%
Cantabria	0	1	1	0	1	1	21,000	100.00%
Castile and Leon	0	1	1	0	0	0	0	0.00%
Castile-La Mancha	1	0	1	1	0	1	21,000	100.00%
Catalonia	3	5	8	2	3	5	98,000	62.50%
Extremadura	1	0	1	0	0	0	0	0.00%
Galicia	0	1	1	0	1	1	10,500	100.00%
Madrid	1	3	4	1	2	3	38,500	75.00%
Murcia	0	1	1	0	1	1	17,500	100.00%
Valencian Community	3	1	4	2	1	3	35,000	75.00%
TOTAL	**15**	**14**	**29**	**10**	**10**	**20**	**297.000**	**68,97%**

The financial allocation is €2,500 per month if the receiving centre is Spanish and €3,500 per month if it is a foreign centre. It has a duration of between two and six months.

Mobility of research staff contracted within the framework of the AES (M-AES) This grant is aimed at those who have PFIS, i-PFIS, Río Hortega, Sara Borrell, Juan Rodés, and Miguel Servet Type I and II contracts. It is to be used for placements abroad.

Autonomous Regions	MV 2016							
	Eligible Applications			Funded				Success Rate
	M	H	T	M	H	T	Amount in Euros	
Andalusia	4	1	5	4	1	5	46,000	100.00%
Asturias	1	0	1	1	0	1	12,000	100.00%
Basque Country	1	0	1	1	0	1	6,000	100.00%
Canary Islands	0	1	1	0	1	1	12,000	100.00%
Castile and Leon	1	0	1	1	0	1	8,000	100.00%
Catalonia	11	4	15	10	4	14	114,000	93.33%
Galicia	3	1	4	3	1	4	30,000	100.00%
La Rioja	2	0	2	1	0	1	6,000	50.00%
Madrid	2	1	3	2	0	2	12,000	66.67%
Valencian Community	6	2	8	3	2	5	54,000	62.50%
TOTAL	**31**	**10**	**41**	**26**	**9**	**35**	**300,000**	**85.37%**

The financial allocation is €2,000 per month for a duration of between two and nine months, depending on the candidate's profile.

A total 336 grants were funded for a total amount of €24,666,920.

2 Research And Innovation Activity Management

NATIONAL PROGRAMME FOR FOSTERING EXCELLENCE IN SCIENTIFIC AND TECHNICAL RESEARCH

National Sub-programme for Knowledge Generation:

Within the Sub-programme for Knowledge Generation, grants are offered for Integrated Projects of Excellence in the IIS, Health Research Projects (both for the Research Projects in Health and for the Technological Development Projects in Health modalities), and Transnational Activities within the International Programme.

Integrated Projects of Excellence

The objective of this call is to fund research projects with novel approaches and methods of proven quality that represent a significant advance in the field of health science and technology research in the IIS as well as the Severo Ochoa Centres of Excellence.

The projects needed to have a link with businesses or other public or private entities interested in their execution and results.

The total number of applications received was 27. A total of 10 grants were awarded for a total of €4,937,438.

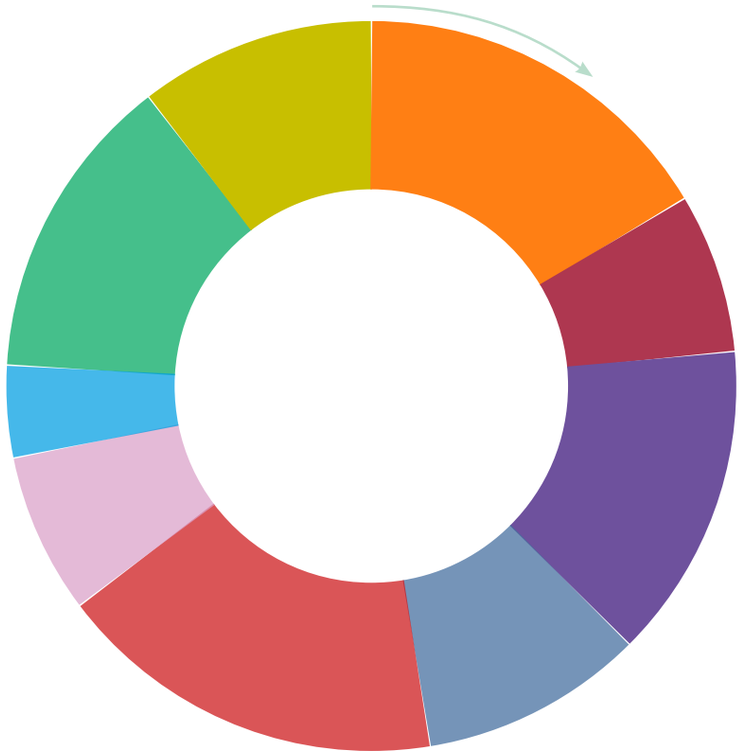
Research Projects in Health

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

- **Research Projects in Health.** Projects of proven quality whose principle objectives were to: a) transfer and apply scientific and technical knowledge to improving the prevention, diagnosis, and treatment of diseases as well as activities promoting public health and health services; b) foster synergy, drive 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.

Se presentaron 1.731 solicitudes, resultando financiadas 636, con un importe de 60.991.931 euros.

Las Comunidades que más proyectos solicitaron fueron, Cataluña (31%), Madrid (24%) y Andalucía (12%). El mismo orden se dio en la financiación: 32%, 26% y 11%.



16% | Cancer

7% | Cardiovascular Diseases

14% | Neurological And Mental Illness

10% | Infectious Diseases And Aids

18% | Epidemiology, Public And Occupational Health / Health Sciences

7% | Paediatrics, Perinatal Medicine And Congenital And Metabolic Abnormalities

4% | Bbiotechnology, Bioengineering and Genomic Technology

14% | Chronic, Inflammatory, Nephrological And Respiratory Diseases

10% | Endocrine And Digestive Diseases And Surgery

- **Technological Development Projects in Health.** Development projects based on already-proven preliminary experiences. It seeks to drive them during their development phase.

A total of 125 requests were received and 27 were funded for a total of €1,885,510. Grants were distributed across Andalusia, Basque Country, Castile and Leon, Catalonia, Extremadura, the Community of Madrid, and the Valencian Community.

Transnational Activities in the International Programme

The objective of this action is to fund research projects in the international health programme within the framework of transnational consortia in which ISCIII has committed to supporting relevant collaborative projects where Spanish research teams participate alongside teams from other countries.

The public international calls within the framework of the additional activities were:

- **AAL:** Active and Assisted Living Programme.
- **JPI-MYBL:** Joint Programming Initiative More Years, Better Lives: The Potential and Challenges of Demographic Change.
- **ERA-Net LAC:** Network for the European Union, Latin America and the Caribbean Countries on Joint Innovation and Research Activities.
- **EDCTP:** The European & Developing Countries Clinical Trials Partnership.
- **Infect-ERA:** Coordination of European funding for infectious diseases research.
- **JPI AMR**: Joint Programming Initiative on Antimicrobial Resistance Research.
- **ERA-CVD**: European Research Area Network on Cardiovascular Diseases.
- **NEURON:** Network of European Funding for Neuroscience Research.
- **JPND:** EU Joint Programme - Neurodegenerative Disease Research.
- **E-Rare:** ERA-Net for Research Programmes on Rare Diseases.
- **TRANSCAN:** ERA-Net on Translational Cancer Research.
- **JPI HDHL:** Joint Programming Initiative A Healthy Diet for Healthy Life.
- **EuroNanoMed:** European Network for translational collaborative RTD projects on Nanomedicine.

A total of 87 applications were submitted and 32 were funded at a cost of €3,244,709.

Table. Number of Research Groups Participating in European Programmes

AAL	2	8
E-RARE	3	15
EDCTP	0	0
ERA-CVD	6	19
ERA-Net LAC	4	23
EuroNanoMed	4	16
Infect-ERA	0	0
JPI AMR	5	20
JPI HDHL	0	0
JPI MYBL	0	0
JPND	1	1
NEURON	4	20
TRANSCAN	3	6
TOTAL	**32**	**128**

A summary of general information on the National Sub-programme for Knowledge Generation is detailed below.

PI	1,774	1,731	636	36.74	60,991,932
PIE	28	27	10	37.04	4,937,438
DTS	128	125	27	21.60	1,885,510
AC	87	87	32	36.78	3,244,709
TOTAL					**71.059.589**

Table. Distribution of Grants Funded by Autonomous Communities

	PI		PIE		DTS		AC		
Autonomous Regions	**No. of Grants**	**Pi Amount**	**No. of Grants**	**Pie Amount**	**No. of Grants**	**Dts Amount**	**No. of Grants**	**Ac Amount**	**Total**
ANDALUSIA	68	6,473,657	1	493,625	3	194,480	3	399,978	7,561,740
ARAGON	9	345,516	1	384,775	0	0	0	0	730,290
ASTURIAS	11	1,104,851	0	0	0	0	0	0	1,104,851
BALEARIC ISLANDS	8	518,788	0	0	0	0	0	0	518,788
BASQUE COUNTRY	17	1,439,295	0	0	1	99,550	0	0	1,538,845
CANARY ISLANDS	12	938,990	0	0	0	0	0	0	938,990
CANTABRIA	12	1,347,638	0	0	0	0	0	0	1,347,638
CASTILE - LA MANCHA	3	253,737	0	0	0	0	0	0	253,737
CASTILE AND LEON	20	1,888,205	0	0	1	88,550	0	0	1,976,755
CATALONIA	199	19,569,875	3	1,597,899	8	617,430	13	1,088,636	22,873,839
EXTREMADURA	7	495,495	0	0	1	44,550	0	0	540,045
GALICIA	26	2,505,063	1	523,820	0	0	1	99,999	3,128,882
LA RIOJA	3	204,369	0				0	0	204,369
MADRID	161	15,591,334	4	1,937,320	8	508,750	11	1,225,149	19,262,553
MURCIA	8	880,275	0	0	0	0	0	0	880,275
NAVARRE	27	2,963,290	0	0	0	0	4	430,948	3,394,238
VALENCIAN COMMUNITY	45	4,471,555	0	0	5	332,200	0	0	4,803,755
TOTAL	**636**	**60.991.932**	**10**	**4.937.438**	**27**	**1.885.510**	**32**	**3.244.709**	**71.059.589**

2 Research And Innovation Activity Management

National Sub-programme for Institutional Strengthening

Incorporation of New Thematic Areas and New Groups into the CIBER Consortium

The aim of this action is to strengthen and reinforce the CIBER Consortium by creating new thematic areas (Frailty and Healthy Ageing, Cardiovascular Diseases, and Cancer) and bolstering the existing areas of activity through the incorporation of new groups (Bioengineering, Biomaterials, and Nanomedicine; Epidemiology and Public Health). A total of 221 applications were submitted and 113 groups were selected, with €7,930,000 in funding for 2016 and €7,800,000 for 2017.

Thematic	Number of Requests	Number Granted	2016-2017 Funding
Bioengineering, Biomaterials, and Nanomedicine	13	2	€85,000.00
Cancer	94	50	€7,470,000.00
Cardiovascular Diseases	68	40	€6,570,000.00
Epidemiology and Public Health	3	1	€45.000.00
Frailty And Healthy Ageing	43	20	€1,560,000.00
TOTAL	**221**	**113**	**15.730.000,00**

Autonomous Regions	Number Of Requests	%	Granted	%	Success Rate
Andalusia	19	8.60	9	7.96	47.37
Aragon	2	0.90	1	0.88	50.00
Asturias	5	2.26	2	1.77	40.00
Basque Country	5	2.26	2	1.77	40.00
Canary Islands	1	0.45	0	0.00	0.00
Cantabria	6	2.71	3	2.65	50.00
Castile - La Mancha	6	2.71	3	2.65	50.00
Castile And Leon	11	4.98	8	7.08	72.73
Catalonia	69	31.22	26	23.01	37.68
Extremadura	3	1.36	1	0.88	33.33
Galicia	4	1.81	3	2.65	75.00
Madrid	56	25.34	37	32.74	66.07
Murcia	5	2.26	2	1.77	40.00
Navarre	11	4.98	7	6.19	63.64
Valencian Community	18	8.14	9	7.96	50.00
TOTAL	**221**	**100**	**113**	**100**	**51,13**

Thematic	Number Of Groups	Number Of Researchers	2016-2020 Funding
Asthma, Adverse Reactions, and Allergies (ARADYAL)	26	157	2,370,000.00
Eye Diseases (OFTARED)	23	235	1,764,999.95
Cerebrovascular Diseases (INVICTUS PLUS)	22	190	2,389,997.50
Collaborative Tropical Disease Research (RICET)	18	150	2,384,998.00
Research Network on Preventive Activities and Health Promotion in Primary Care	12	178	1,877,998.10
Research Network for Inflammation and Rheumatic Diseases (RIER)	15	115	2,754,999.50
Health Services Research on Chronic Patients Network (REDISSEC)	17	213	2,164,998.00
Kidney Research Network (REDINREN)	29	286	3,344,995.50
Maternal and Child Health and Development Research Network	13	146	2,429,999.00
Cellular Therapy Network (TerCel)	32	343	6,369,995.50
Addiction Disorders Network	18	129	3,319,998.00
Spanish Multiple Sclerosis Network	22	154	2,144,989.00
Spanish Network for Research in Infectious Diseases	15	233	4,599,749.00
Spanish AIDS Research Network (RIS)	31	250	7,194,995.50
TOTAL	**293**	**2.779**	**45.112.712,55**

Autonomous Regions	Number of Groups	%	2016-2020 Funding	%
Andalusia	35	11.95	6,280,389.50	13.92
Aragon	5	1.71	622,611.00	1.38
Asturias	4	1.37	371,068.50	0.82

2 Research And Innovation Activity Management

Table. RETICS. Number of Groups and Funding by Autonomous Community

Balearic Islands	3	1.02	566,593.50	1.26
Basque Country	12	4.10	1,673,540.00	3.71
Canary Islands	6	2.05	828,784.00	1.84
Cantabria	5	1.71	684,821.50	1.52
Castile - La Mancha	8	2.73	548,658.00	1.22
Castile And Leon	11	3.75	1,670,669.00	3.70
Catalonia	69	23.55	10,536,153.10	23.36
Extremadura	1	0.34	149,154.50	0.33
Galicia	11	3.75	1,923,218.00	4.26
La Rioja	2	0.68	36,019.50	0.08
Madrid	84	28.67	14,349,962.95	31.81
Murcia	6	2.05	1,158,283.50	2.57
Navarre	7	2.39	662,172.50	1.47
Valencian Community	24	8.19	3,050,619.00	6.76
Total	**293**	**100**	**45.112.718,05**	**100**

2 Research And Innovation Activity Management

2.2 BIOMEDICAL RESEARCH NETWORKING CENTRES (CIBER)

In 2016, the CIBERs' main milestones were:

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The Mental Health Area (CIBERSAM) identified genetic markers of lithium response in bipolar disorder, paving the way to personalised medicine for this disorder; a new therapeutic target for schizophrenia (C4 protein); and an innovative strategy for studying the neurobiology of depression through RNA interference; amongst many other advances. It participates in the European PRISM and RADAR projects and led the worldwide consensus on the humanisation of agitation treatment.

The Respiratory Diseases Area (CIBERES) conducted a clinical trial titled "Effect of diet on gastrointestinal adverse events in patients with IPF treated with pirfenidone," which was sponsored by CIBERES and funded by Roche.

The Physiopathology of Obesity and Nutrition Area (CIBEROBN) began coordinating the European project "Effects of Nutrition and Lifestyle on Impulsive, Compulsive, and Externalizing behaviors (Eat2beNICE)." The Mediterranean diet was incorporated into the Australian nutritional guides as a tool for preventing Type II Diabetes. With the SEEDO Foundation, the "Aligera tu vida" [Lighten your Life] project to prevent obesity was launched.

The Diabetes and Associated Metabolic Diseases Area (CIBERDEM) gave a huge boost to the Di@bet.es II epidemiological study, which will determine the prevalence of Type II Diabetes in Spain. It participated in the first clinical trial on topical ocular neuroprotective agents for the treatment of diabetic retinopathy and also participated in the development of four clinical guides and consensus documents, three of which were international. These include: report from IPITA-TTS, Opinion Leaders Meeting on the Future of β-Cell Replacement, and the Uppsala Consensus Statement on Environmental Contaminants and the Global Obesity Epidemic.

The Epidemiology and Public Health Area (CIBERESP) researchers' MCC study results highlighted xenoestrogens' influence on breast cancer risk; trihalomethanes' influence on colorectal cancer risk; and confirmed the link between consuming red and cured meat and colon cancer. It linked working night shifts with stomach cancer and chronic lymphatic leukaemia. Furthermore, it analysed the evolution in inequalities in suicide and in the main causes of mortality in various autonomous communities during the economic recession and their repercussions on the health system.

The Bioengineering, Biomaterials, and Nanomedicine Area (CIBERBBN) obtained H2020 funding through the European Smart-4-Fabry (Smart multifunctional GLA-nanoformulation for Fabry disease) project, which is coordinated by CIBER and has overall funding of €5.8 million over four years (€1.6 million for the CIBER). Various BBN groups which collaborate on this line of research are participating in this project, which is focused on the development of nanodrugs based on GLA for the treatment of Fabry disease.

The Rare Diseases Area (CIBERER) strengthened the Undiagnosed Rare Diseases Programme with the aim of contributing to a precise molecular diagnosis for clinical cases that remain unresolved after applying "all" available protocols in the SNS' portfolio of services. It continued to promote therapeutic strategies for rare diseases and has sponsored six orphan drugs, three of which were also designated as such by the FDA, for gene therapy and drug repositioning. In collaboration with the Spanish Agency of Medicines and Medical Devices, it edited the guide http://www.ciberer.es/media/810678/guia-medicamentos-huerfanos.pdf, which explains to researchers how to develop orphan drugs for rare diseases

The Liver and Digestive Diseases Area (CIBEREHD) highlighted the successful evaluation of the therapeutic effectiveness of injecting mesenchymal stem cells for fistulising Crohn's disease, conducted research on new antiviral agents against the Hepatitis C virus, developed pharmacovigilance alert procedures relating to the risk of tumour reactivation associated with treatment for chronic hepatitis C, established genetic profiles for the risk of hereditary colorectal cancer, and identified new therapeutic strategies for patients with advanced liver disease.

ciberNed isciii

▶ www.ciberned.es

The Neurodegenerative Disease CIBER continued carrying out the 2015-NIRG-340709 and Sat CIEN-02 international projects financed by the Alzheimer's Association, the Stimulating Intrinsic Repair for DMD (ERA-Net E-Rare) project, and participated in the JPND-Comprehensive Unbiased Risk factor Assessment for Genetics and Environment in Parkinson's Disease project. They were awarded with an Innovative Training Network Marie Sklodowska-Curie action, and with the 2016 Basic Research Pilot Grant Award (funded by The Association for Frontotemporal Degeneration). Furthermore, five new clinical guides were published and 64 clinical trials continued active.

Scientific Production

CIBERNED: Paredes MF, James D, Gil-Perotin S, Kim H, Cotter JA, Ng C et al. Extensive migration of young neurons into the infant human frontal lobe. Science. 2016 Oct 7; 354(6308)pii: aaf7073.doi:10.1126/science.aaf7073P-MID:27846470

CIBERSAM: Hou L, Heilbronner U, Degenhardt F, Adli M, Akiyama K, Akula N, et al. Genetic variants associated with response to lithium treatment in bipolar disorder: a genome-wide association study. Lancet. 2016 Mar 12; 387(10023):1085-93. doi: 10.1016/S0140-6736(16)00143-4. PMID: 26806518

CIBERES: Hernández G, Vaquero C, Colinas L, Cuena R, González P, Canabal A, et al. Effect of Postextubation High-Flow Nasal Cannula vs Noninvasive Ventilation on Reintubation and Postextubation Respiratory Failure in High-Risk Patients: A Randomized Clinical Trial. JAMA. 2016 Oct 18;316(15):1565-1574. doi: 10.1001/jama.2016.14194. Erratum in: JAMA. 2016 Nov 15;316(19):2047-2048. Erratum in: JAMA. 2017 Feb 28;317(8):858. PMID:27706464

CIBEROBN: Estruch R, Martínez-González MA, Corella D, Salas-Salvadó J, Fitó M, Chiva-Blanch G, et al, PREDIMED Study Investigators. Effect of a high-fat Mediterranean diet on bodyweight and waist circumference: a prespecified secondary outcomes analysis of the PREDIMED randomised controlled trial. Lancet Diabetes Endocrinol. 2016 Aug;4(8):666-76. doi: 10.1016/S2213-8587(16)30085-7 PMID:27283479

CIBERDEM: Lagarrigue S, Lopez-Mejia IC, Denechaud PD, Escoté X, Castillo-Armengol J, Jimenez V, et al. CDK4 is an essential insulin effector in adipocytes. Journal of Clinical Investigation. 2016 Jan; 126(1):335-48. doi: 10.1172/JCI81480.PMID:26657864

CIBERESP: Regidor E, Vallejo F, Tapia Granados JA, Viciana-Fernández FJ, de la Fuente L, Barrio G, Mortality decrease according to socioeconomic groups during the economic crisis in Spain: a cohort study of 36 million people. Lancet, 2016 Nov 26; 388(10060): 2642-52. doi: 10.1016/S0140-6736(16)30446-9PMID:27745879

CIBERBBN: Tekeli I, Aujard I, Trepat X, Jullien L, Raya A and Zalvidea D. Long-term in vivo single-cell lineage tracing of deep structures using three-photon activation Light SciAppl. 2016; 5: e16084; doi:10.1038/lsa.2016.84

CIBERER: Dopazo J, Amadoz A, Bleda M, Garcia-Alonso L, Aleman A, Garcia-Garcia F, et al. 267 Spanish Exomes Reveal Population-Specific Differences in Disease-Related Genetic Variation. Mol Biol Evol. 2016May;33(5):1205-18. doi:0.1093/molbev/msw005PMID: 2676416

CIBEREHD: Panés J García-Olmo D, Van Assche G, Colombel JF, Reinisch W, Baumgart DC, et al. Expanded allogeneic adipose-derived mesenchymal stem cells (Cx601) for complex perianal fistulas in Crohn's disease: a phase 3 randomised, double-blind controlled trial. Lancet. 2016 Sep 24;388(10051):1281-90. doi: 10.1016/S0140-6736(16)31203-X PMID:27477896

2.3 THEMATIC NETWORKS FOR COOPERATIVE RESEARCH IN HEALTH (RETICS)

SPANISH MATERNAL AND CHILD HEALTH AND DEVELOPMENT RESEARCH NETWORK (SAMID) - RD12/0026

Website: http://www.redsamid.net/es/

The milestones that stand out the most were on the part of the obstetrics teams. They include: (i) prevention of prematurity; (ii) methods for detecting slowed intrauterine growth; and (iii) evaluation of foetuses with intrauterine heart diseases. In neonatology: (i) validated tools for detecting predictive signs of neurological damage through imaging; (ii) biomarkers of oxidative stress in resuscitation, respiratory, and neurological pathology; (iii) prototype human milk pasteuriser; and (iv) experimental and clinical models of toxins in the perinatal period. Experimental models of cardiac arrest in resuscitation in the post-neonatal period were developed. A course on animal testing in paediatrics was organised. All these contributions were funded through competitive national and international grants and published in journals of impact.

INFLAMMATION AND RHEUMATIC DISEASE RESEARCH (RIER) - RD12/0009

Website: http://www.red-rier.org

The RIER's most significant results in 2016 were in the clinical trials programmes, which were focused on improving predictive ability in chronic arthritis and translational research focusing on the biological factors in its etiopathogenesis and clinical expression. The RIER has various multi-centric cohorts of chronic arthritis patients, which has allowed for advances in the stratification of rheumatoid arthritis in terms of its clinical variability, therapeutic response, and cardiovascular comorbidity. The cellular and molecular pathology of ar-

thritis study programme has also produced numerous advances that are able to be translated to this disease's prognosis and therapy.

Fifty-two projects have been carried out. Of those, 12 are collaborative amongst the network's various groups and six of them have international funding. The beginning of a multi-centric project, funded by ISCIII, in the personalised medicine programme (REMRABIT) that is aimed at improving prediction in the use of biological therapies in rheumatoid arthritis is of particular note. In 2016, results were published in 166 articles in indexed journals. More than half of these journals belong to the first quartile (total IF of 810) and more than a third are collaborative. In terms of results transfer, five clinical practice guidelines and participation in 50 clinical were stand out.

HEALTH SERVICES RESEARCH ON CHRONIC PATIENTS NETWORK (REDISSEC) - RD12/0001

Website: http://www.redissec.com/es

REDISSEC led over 140 projects, over 50% of which were in collaboration with two or more groups in the network. This resulted in publications (506 by REDISSEC), reports, contracts and agreements, software, and clinical practice guidelines. Furthermore, the work carried out was disseminated through the annual REDISSEC Workshops and in national and international congresses. The network is present in various international forums and consortia: B3 EIP/AHA, Joint Action CHRODIS, Joint Action EUnetHTA II and III (European Union Network for Health Technology Assessment), the MasterMind project and WHO Europe (The European Observatory of Health Systems and Policies). The network has organised calls for mobility between groups as well as international mobility. It is currently carrying out the first University Expert in Health Services and Chronicity Research Training Course (with 25 students), in collaboration with the University of Alcalá, as the network's own training programme. In addition to its own website, REDISSEC sponsors various other platforms: the RECH website (Spanish Hospitals Costs Network; https://www.

rechosp.org/rech/faces/es/jsf/index.jsp), the CAMISS project (Health Services Research for Breast Cancer http://www.camiss.info), the PYDeSalud website for empowering patients with chronic diseases (www.pydesalud.com), the Multimorbidity and Polypharmacy Project (http://multipap.es/), the Predictive Factors of Poor Progress of Colon and Rectal Cancer Project (http://cancer-colonyrecto.webnode.es/), and the ATLAS of Variations in Medical Practice (http://www.atlasvpm.org/).

CEREBROVASCULAR DISEASES NETWORK (STROKE) (INVICTUS) - RD12/0014

Website: http://www.renevas.es

Since the start of its activity, the INVICTUS Network has established collaborations for carrying out research projects. Of these, the PANA and REESTORE projects, amongst others, stand out. The PANA and REESTORE projects had participation from various groups in the network and European Union funding was obtained though the H2020 Programme. The EFE Agency chose groups from the INVICTUS Network as part of the top 12 Spanish research projects of 2013 for the development of a method for minimising brain damage.

The launch of clinical studies in which various groups of the INVICTUS network participate should be highlighted. For example, the GLIA study was the first multi-centric, prospective study designed to find the blood sugar threshold that conditions progress in patients with acute ischemic stroke; the H-ATOMIC study, aimed at validating an etiologic classification of intracerebral haemorrhage; the HERO study; the TLR4 study; the ESTOICA study; and the AMASCIS study are all of note. The REVASCAT study on the usefulness of recanalisation for patients with moderate-to-severe large-vessel occlusion gave rise to publications in high impact factor journals (Chamorro et New Engl J Med. 2015.11;372(24):2296-306), the DIAS-3 Study (Dávalos and Lancet Neruol 2015 14(6):575-84). Furthermore, a preclinical study for developing rGOT as a blood glutamate scavenger has been carried out and a contract with a pharmaceutical company has been signed for a patent licence. In regards to patents, a new medicine (Code: CBG000592. Protected by Patent: EP15382229.1) to reduce glutamate levels, similar to oxaloacetate and GOT and with neuroprotective effects in models of ischemia, was identified and validated through the drug repositioning strategy. In addition, it patented a series of aptamers which act as TLR4 antagonists (P201430955) which was then licensed by a biotechnology company.

Various clinical practice guidelines on the prevention of stroke and transient ischemic attacks, on the treatment of acute ischemic stroke, and on managing intracerebral haemorrhages were created.

SPANISH NETWORK ON MULTIPLE SCLEROSIS (REEM) - RD12/0032

Website: http://www.reem.es/

The main milestones achieved by the Spanish Network on Multiple Sclerosis in 2015 were the identification of various biomarkers for MS:

Biomarkers for follow-up and monitoring of MS by means of measuring the levels of chinatase protein and oligoclonal IgM bands in patients' cerebrospinal fluid. Development of imaging markers through optical coherence tomography to predict clinical consequences in patients with optic neuritis outbreaks.

These biomarkers are being implemented in the majority of National Health System hospitals. As such, they may be used for monitoring patients with MS.

The main milestones achieved by the network in 2016 were the identification of different biomarkers for MS: biomarkers in blood or cerebrospinal fluid for follow-up and monitoring of MS by means of measuring micro-RNAs, oligoclonal IgM bands, Chinatase, and neurofilaments or soluble beta interferon receptors in patients with MS. Achievements also include the development of imaging markers through magnetic resonance and optical coherence tomography to predict the clinical consequences in patients with MS. In specific, a cut-off point for retinal nerve fibre layer width (88 µm) was identified as the point at which the risk of the disability increases very significantly.

SPANISH NETWORK FOR RESEARCH IN INFECTIOUS DISEASES (REIPI) - RD12/0015

Website: http://www.reipi.org

Amongst the main milestones achieved by REIPI in 2016, the high level of internationalisation should be noted. It acts as a national coordinating entity for the following European networks: CLIN-Net, LAB-Net, and EPI-Net. In addition, one of its groups coordinates the ECDC's EARS-Net. The REIPI groups coordinate and participate in numerous European projects funded by IMI, H2020, and JPI-AMR. Several groups coordinate an international consortium for the clinical study of bacteraemia caused by to multidrug-resistant enterobacteriaceae in transplanted patients (Increment-SOT). Furthermore, an international technological platform for the universal design of bacterial vaccines was created.

Specific aspects of interest include the development of new diagnostic methods for Aspergillus fumigatus as well as work on protocols for the study of microbiota in patients with chronic respiratory infections and of Clostridium difficile through faecal transplant. The resistome of the multidrug-resistant Pseudomonas aeruginosa high-risk clone was characterised through sequencing its complete genome. A new species of the genus Acinetobacter (Acinetobacter dijkshoorniae), which causes infections in humans, was described. The rapid detection of clonal complexes of methicillin-resistant Staphylococcus aureus through MALDI-TOF mass spectrometry was standardised.

A new family of antiviral peptides for adenovirus in immunocompetent and immunocompromised patients was discovered. It was also shown that flu vaccination in solid-organ transplant patients was more effective when two doses were administered.

In terms of clinical aspects, what stands out are the development of a predictive score for mortality in patients with ESBL-producing Enterobacteriaceae (ESBL-E) and Carbapenemase-producing Enterobacteriaceae (CPE) bacteraemia. Alternatives were evaluated for treating ESBL-E. Furthermore, the protective value against mortality of gentamicin gut decontamination in high-risk patients colonised by CPE was described. Recruitment continued for different randomised studies coordinated by the REIPI. The network participated in the publication of four clinical guidelines, one of which was international. Lastly, an application developed for the online completion of case report forms (eCRF) was registered.

NETWORK FOR EYE DISEASES (OFTARED) - RD12/0034

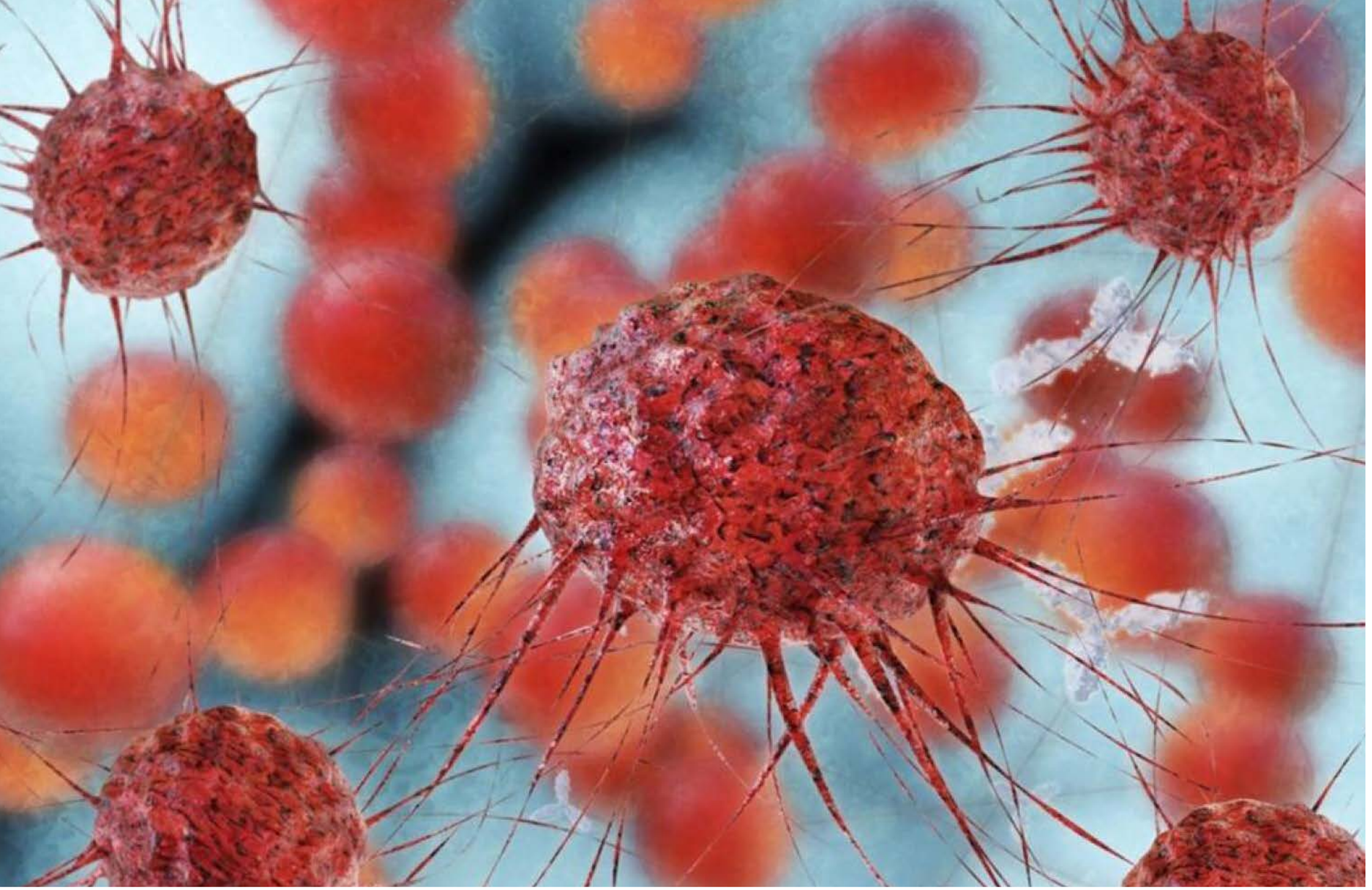
Website: http://www.oftared.com

The continuation of collaborative work, the increase in the number of D1 and Q1 indexed publications, the projects awarded, and the training activities are particularly noteworthy. The agreements with the Association for Sufferers of Glaucoma and their Families (AGAF) and the Association for Macula-Retina Patients and their Families, amongst others, should be highlighted. Three other associations were contacted. Specific projects with Aniridia and Down España, the Spanish Federation for Down Syndrome, Associations began. Along these lines, the possibility of housing an OFTARED centre within the ERN of Rare Ophthalmic Disorders was also explored. The activity of the opthalmic explants biobank, with 1,177 specimens across 16 centres, and the Keratoconus database, with information on 2,962 patients across 10 centres, is also noteworthy. Two clinical guides on "managing retinal complications of high-degree myopia" and "living with glaucoma" were edited and the network collaborated with the University of Valencia's Master's in Molecular and Genetic Ophthalmobiology. Work was also done on transferring a patent for an artificial tear to a Spanish laboratory.

NETWORK FOR COLLABORATIVE RESEARCH ON CANCER (RTICC) - RD12/0036

Dirección web: http://www.rticc.org

Amongst the relevant activities and results from 2016 within the framework of the eight programmes that form the RTICC, the publication of 920 scientific articles in high-impact journals stands out. The RTICC is present in various studies and research projects. Of these, projects and studies the MIRROR Study, in which various RTICC groups collaborate; with nearly €6 million EU-funded MoTriColor project, is coordinated in Spain by Dr Tabernero and in which various RTICC groups participate; and Dr Xosé R. Bustelo being granted the AECC project "Cli-



nical-Translation Utility of New Tumoral Treatments," on which Dr Balbino Alarcón and Dr Marcos González IPS from two other RTICC groups are collaborating.

Various groups from the RTICC's Epidemiology Programme participate in different programmes for the cohort study titled "European Prospective Investigation into Cancer and Nutrition (EPIC) Study," in which over half a million participants (521,000) recruited from 10 European countries have been studied for nearly 15 years. Programmes include, for example, the PanGenEU or the EUR-GAST Study and other consortia and cooperative programmes on both the European and international level (IARC, European Partnership Action Against Cancer, Joint Action on Rare Cancers, and EPICURE). The collaboration of various groups from the RTICC's colon and digestive tract programme with the Spanish Registry of Hereditary Pancreatic Cancer (Pan-Gen-FAM) and the joint project between the RTICC and the Treatment of Digestive Tumours (TTD) Group, which involves collaboration across 40 centres and hospitals and 1,500 patients in order to carry out different joint clinical trials and projects, are also noteworthy.

A European patent for 32 biomarkers used as a diagnostic method for endometrial cancer has been submitted. The biomarkers will be validated for a more extensive population in the future.

This year, the RTICC's Training and Mobility Programme awarded 37 training grants totalling €90,216.22 (21 for travel expenses, 13 for training placements, and three for organising courses). The IX RTICC Annual Meeting was held in Madrid on 1 October 2016 and the VI RTICC Young Researchers' Meeting was held in Salamanca on 23 September 2016. The latter was attended by 99 RTICC researchers under age 35 and included 48 communications (12 oral presentations and 36 posters) during the event.

The main milestone of the RTICC this year was its integration into the CIBER Consortium as a new thematic area on cancer (Ciberonc). It comprises groups that have been competitively selected through the AES' 2016 call.

RESEARCH NETWORK ON ADVERSE REACTIONS TO ALLERGENS AND DRUGS (RIRAAF) - RD12/0013

Website: https://chirimoyo.ac.uma.es/riraaf/

RIRAAF has a database with clinical and laboratory data on 11,000 instances of allergic episodes from 1,300 patients that have been phenotyped using precise protocols. Work is being done to provide access to this data from mobile devices (the European Mr Symbiomath project). RIRAAF has made a significant effort in translating the results into patents and clinical practice guidelines.

Specific achievements include the identification of antigenic determinants of drugs and the intracellular structures (exosomes) that are relevant in immune recognition as well as exploring new approaches to diagnosis using dendrimeric nanostructures and precisely-defined phenotypes. In regards to drug reactions, genetic data was integrated, the epistatic interactions were analysed, and consensus documents on communicating the results of pharmacogenomic tests were developed. Progress was made on diagnosis of allergic reactions using with microarrays through obtaining a significant number of biological samples and allergenic proteins. Identifying the allergens in breast milk and amniotic fluid as well as the role of nanovesicles (exosomes derived from pollen) as allergen transporters was of great importance. Lastly, immunotherapy prototypes with nanostructures that include allergenic peptides were also designed.

ADDICTIVE DISORDERS NETWORK - RD12/0028

Website: http://redrta.es/

In 2016, the Addictive Disorders Network continued carrying out its scientific activities on two integrated research projects on psychiatric comorbidity in cocaine addicts and on the medical consequences of alcoholism. Milestones of the alcohol programme include registering the cohort of patients being treated for alcohol use on an online platform (CohRTA); identifying targets (ligands and receptors) for the diagnosis, prognosis, and treatment of alcoholism such as lysophosphatidic acid (LPA1R), fractalkine, (CX3CLR1), anandamide/2-AG (CB2), oleoylethanolamide (PPAR-alpha); as well as the role of natural immunity and the TLR4 receptor. In regards to the project on psychiatric comorbidity in patients addicted to cocaine, the multi-centric studies published on the prevalence and characteristics of cocaine-addicted patients who have comorbidities stand out. Also of note is the identification and publication of reliable biomarkers for consumption, severity, and psychiatric comorbidity (immunological, growth factors, and endocannabinoids). A bioinformatics platform for the analysis of candidate genes for dual pathology (Psygenet) and a mobile application for screening interviews on dual pathology in addiction for use by healthcare professionals were developed.

KIDNEY DISEASES NETWORK (REDINREN)

Website: http://redinren.org/

The RedinRen network's main milestones are the identification and characterisation of new therapeutic targets in the renal and vascular pathology of kidney disease, including miRNAs, cytokines and receptors, and intracellular signalling pathways, with patents on new therapeutic approaches; the identi

Malaria prevention and control project in Puerto Iguazú, Argentina. Agustín Benito Llanes. CNMT.

TROPICAL DISEASES NETWORK (RICET)

Website: http:// www.ricet.es

fication and patenting of new biomarkers of acute kidney failure and chronic kidney disease, including miRNAs, proteins, and metabolites; the characterisation of the molecular mechanisms of the toxicity of excess phosphate in the kidney and cardiovascular system; the execution of clinical trials aimed at optimising the guidelines on immunosuppression in glomerular pathology and liver transplant; the development of large cohorts with the biobank (for example, 5,000 patients in the ILERVAS Project, 3,500 in the NEFRON project, and others) and the National Registry of Autosomal Dominant Polycystic Kidney Disease; the implementation of a practical and precise technique for measuring renal function with clinical and preclinical applications; and the development of a biobank certified by quality agencies that houses 10,500 samples and collaborates on seven research projects.

The network's achievements include the consolidation of the clinical-epidemiological network on imported tropical diseases. Twenty-seven centres from eight autonomous communities registered a total of 15,885 diagnoses of pathologies imported by immigrants and travellers.

The network developed QuantiFERON-leishmania for the study of leishmaniasis outbreaks in Spain and its applications in clinical trials and in the monitoring of immunocompromised patients.

It developed of a set of tools for an impact analysis model for climate change and global change.

Likewise, it development of diagnostic tools for arboviruses (Dengue Fever, Zika, Chikungunya) and molecular markers for their vectors (i) Aedes for Virosis, (ii) Bulinus for Schistosomiasis, (iii) Lymnaea for Fascioliasis, and (iv) Triatominae for Chagas disease.

Biomarkers for Chagas Disease pathology, which exhibit a different pheno-

typic and functional profile depending on the stage and severity of the disease, were identified and developed. The existence of an active mechanism for silencing its functional activity regulated by the overexpression of certain inhibitory receptors was shown.

A high-performance screening platform for discovering new antiparasitics was implemented. It is screening over 100,000 natural product extracts in order to discover new agents against malaria, leishmaniasis, Chagas disease, and sleeping sickness.

Lastly, it is noteworthy that 11 articles were published in first quartile journals that are of high scientific impact.

TerCel isciii

CELL THERAPY NETWORK (TERCEL) - RD12/0019

Website: http:// www.red-tercel.com

The TerCel groups' and private industry's collaborative research has generated new knowledge that allowed for applications of mesenchymal stem cells in inflammatory diseases: Panés J, García-Olmo D, et al. Expanded allogeneic adipose-derived mesenchymal stem cells (Cx601) for complex perianal fistulas in Crohn's disease: a phase 3 randomised, double-blind controlled trial. Lancet. 2016; 388(10051):1281-90. Similarly, cellular drugs for osteoarticular pathology are successfully being developed: Horizon 2020, Ref Project Respine. Noriega DC et al, Transplantation, 2016, PubMed PMID: 27661661. Advances in the basic science of cardiac regeneration are also of note. EU Horizon 2020 MSCA-ITN-2016-722427. Developmental Cell. 2016 Dec 19;39(6):724-739.

RETIC-RIS | Red Española de Investigación en SIDA (RIS)

SPANISH AIDS RESEARCH NETWORK (RIS) – RD12/0017

Website: http://www.retic-ris.net

Within the immunopathology and vaccination programme, the RIS' Elite Controller cohort, with over 600 patients, complements the Long-Term Non-Progressors cohort. The Biobank has launched a repository of viruses and viral envelopes — highly valuable scientific material — which will be available to both RIS and external researchers. In the field of vaccines, the participation of the network's groups in all European consortia on vaccines in the H2020 programme, taking on a coordinating role in some work packages, should be noted.

The cohort of HIV patients (CoRIS), which recruited more than 10,000 patients with samples in the Biobank, collaborates with CASCADE, HIV-CAUSAL, EuroCoord, and ART-Collaboration and has updated the satellite non-AIDS disease, hepatitis, and resistance databases. The database is currently being updated to include new patients.

redIAPP Red de Investigación en Actividades Preventivas y Promoción de la Salud isciii

PRIMARY CARE PREVENTION AND HEALTH PROMOTION RESEARCH NETWORK (REDIAPP) - RD12/0005

Website: http://www.rediapp.org

In 2016, 291 publications were produced (IF=963.447), of which 42 were joint publications (IF=125.467). The redIAPP currently has 18 active network projects in which several groups are participating. The total number of active projects of the different groups is 128. It should be noted that in the AES' 2016 call, four new projects were awarded to the network.

A new phase has begun in the EIRA3 hybrid trial on a complex, multi-risk, primary care intervention to promote healthy behaviours across seven autonomous communities after analysing its feasibility and pertinence in previous phases. In the lifestyle field, it was able to be shown that sedentarism is directly associated with some parameters of arterial ageing, especially Ambulatory Arterial Stiffness Index (AASI) and pulse pressure. These findings confirm that interrupting time spent being sedentary must be a complementary advised in addition to physical activity recommendations in order to prevent cardiovascular diseases. The Spanish version of a Brief Physical Activity Assessment Tool (SBPAAT) was also successfully validated. In the cardiovascular area, it was demonstrated that in the general population with a low incidence of coronary heart disease and stage 3 chronic kidney disease, a decrease in the glomerular filtration (GF) rate is associated with a greater risk of cardiovascular disease and all-cause mortality. However, including GF values does not improve the calculation of cardiovascular risk in our geographic area. In terms of stud-

ying the diagnostic and prognostic delays for cancer, in collaboration with the Ca-PRI international network, it was verified that a delay of over five weeks increases the risk of advanced disease. In the depression prevention line of research, work is continuing on innovative interventions in primary healthcare: a new intervention (ePREDICT), based on a decision-making support system available online and as a mobile application, is being designed. The improvements suggested by professionals and patients who took part in a previous trial have been incorporated in order to improve its effectiveness and implementation. The cost-effectiveness and cost-benefit of computer-based cognitive-behavioural therapies were also proven in a clinical trial. Furthermore, using the SIDIAP database, which contains 1.6 million patients and 2.9 million prescriptions, initial medication non-adherence and its predictive factors were studied. It was found that initial medication non-adherence occurred with 17.6% of prescriptions. Finally, the collaboration on organising the International Meeting on Mindfulness (Zaragoza, June 2016), with 700 participants, is also worth noting.

red envejecimiento y fragilidad

AGEING AND FRAILTY NETWORK (RETICEF) - RD12/0043

Website: http://www.reticef.es/

In 2016, RETICEF consolidated several of its actions that were started in previous years, especially in terms of carrying out European projects. Its work includes carrying out the third wave of the Toledo Study for Healthy Ageing, which will finish in mid-2017 following both the clinical-anthropometric and laboratory phenotyping of 2,600 subjects aged over 65; executing several joint studies amongst groups in the network; and publishing over 20 collaborative works and several doctoral theses.

The two most important achievements that should be highlighted are the work carried out so far on integrating the new Frailty and Healthy Ageing (CIBERfes) thematic area into the CIBER consortium, which will replace the network starting in 2017. It will have similar objectives and several groups from RETICEF, which were selected on a competitive basis through the 2016 AES call, will form part of it. Furthermore, the participation (including the coordination) of various groups in the European Joint Action on the Prevention of Frailty network, which started on 1 January 2017 and which brings together 24 EU member countries and more than 40 partners, should be highlighted.

RIC | isciii

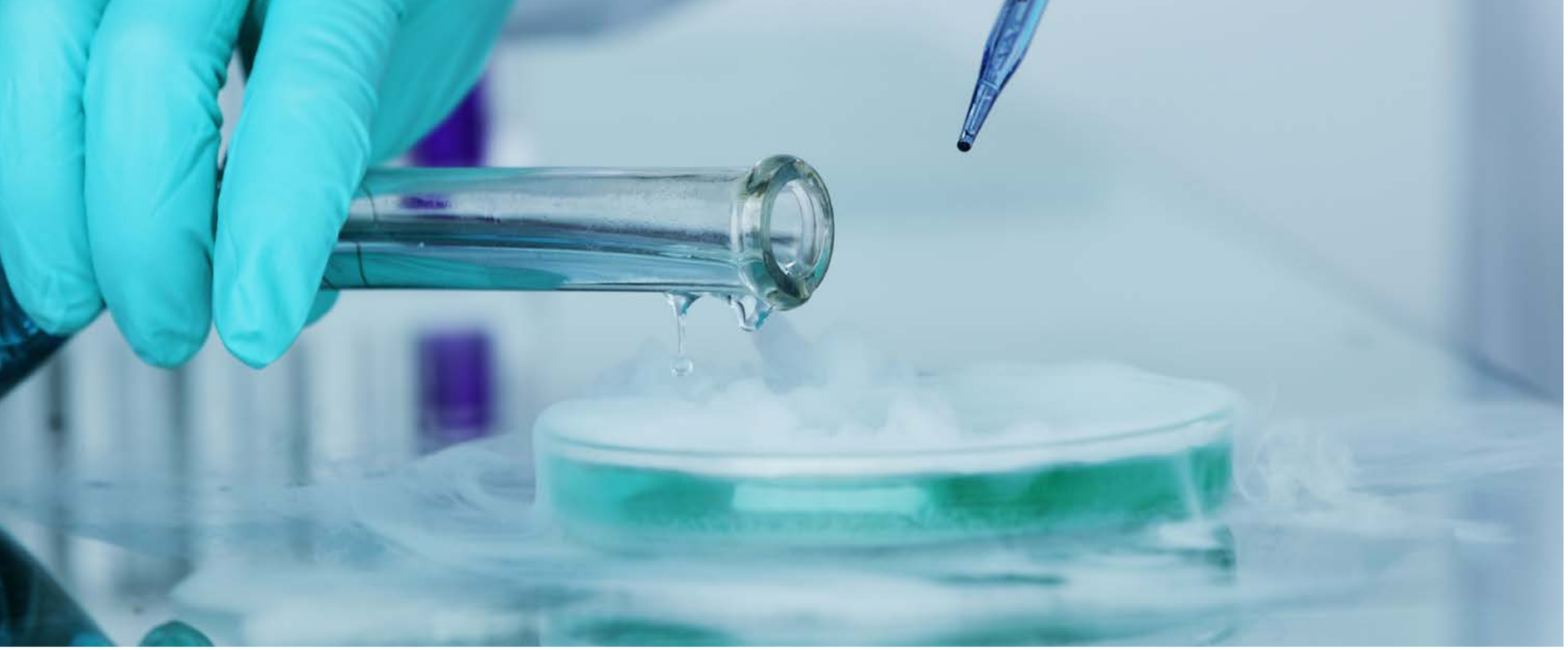
CARDIOVASCULAR DISEASES NETWORK (RIC) - RD12/0042

Website: http://www.redcardiovascular.com

Throughout 2016, consolidation and reinforcement of the cooperative activity of the seven RIC programmes resulted in very visible and relevant contributions in various areas in the cardiovascular field. Activities focused on myocardial protection and regeneration, on the characterisation of the genetic and scarring substrates of sudden death from arrhythmias, and on multi-centric registries and studies on heart failure.

In regards to training, it is worth highlighting the boost that the consolidation of Jordi Soler-Soler contracts for young post-doctoral and post-MIR researchers, funded by RIC coordinating funds, has given to cooperative scientific activity.

Without a doubt, the main milestone of the RIC in last year was its reorganisation as a new thematic area for cardiovascular diseases within the CIBER Consortium (CiberCV). It comprises 40 groups selected on a competitive basis through the AES' 2016 calls.



2.4 PLATFORMS TO SUPPORT RESEARCH IN HEALTH SCIENCES AND TECHNOLOGY

PRB2 PLATAFORMA EN RED DE RECURSOS BIOMOLECULARES Y BIOINFORMÁTICOS

BIOMOLECULAR AND BIOINFORMATICS RESOURCES PLATFORM (PRB2) - PT13/0001

Website: http://www.prb2.org/es/home

The Biomolecular and Bioinformatics Resources Platform (PRB2) comprises five work programmes: proteomics (ProteoRed), genomics (CeGen), bioinformatics (INB), DNA banks (BNADN), and cell lines (BNLC).

Its main objective is to provide high-tech support to the scientific community and, as a priority, to the SNS. All work programmes are demonstrated to be in high demand; this is reflected in mentions of the platform in the acknowledgements of 146 indexed publications.

The PRB2 also carries out scientific and technological research projects that allow it to keep up with the latest advances in its areas of activity. The result of this research activity is its participation in the main national and international research consortia and the publication of 422 articles last year.

Finally, the platform's activities are disseminated through its website and its members participate in the most important scientific congresses, conferences, and meetings in their respective fields. Furthermore, training courses are organised for both its own personnel and the research community in general. This year, amongst the courses in the field of health, the "IV DCEXS Symposium: Innovative in Silico Strategies in Biomedical Research," the "VI Scientific Meeting on Clinical Proteomics," and the "I Clinical Bioinformatics Meeting" stand out. It also organises training placements not only for its own personnel in the most prestigious labs in their field but also for external personnel in the platform's laboratories.

CLINICAL TRIALS PLATFORM - PT13/0002

Website: https://www.scren.es/

The SCReN (Spanish Clinical Research Network) platform is a clinical research support structure comprising 29 research units, or UICECs (Clinical Research and Trials Units), in hospitals and primary care centres throughout the SNS.

Currently, 102 professionals are working on providing services to independent, highly-complex, multi-centric clinical research projects. These professionals are funded by the 2013-2016 National R&D&I Plan and by the Sub-Directorate General for Research Assessment and Promotion - Carlos III Institute of Health (ISCIII) and are co-financed with ERDF funds. The following activities are being carried out: comprehensive management and regulatory support for a total of 74 clinical trials, monitoring of more than 800 recruitment centres, pharmacovigilance tasks for 38 clinical trials, data management for 15 clinical trials, and biostatistics and methodology management for 18 projects.

Furthermore, it should be noted that the Quality Area is working together with each one of the programmes and UICECs on implementing a total of 41 standard operating procedures (SOPs) that will be part of the SCReN's future quality management system.

INNOVATION PLATFORM - PT13/0006

Website: www.itemas.org

The ITEMAS Platform's 2016 accomplishments were:

Important innovative activity that is reflected in the following figures: 797 ideas gathered, 599 innovation projects in the development phase, 391 in transfer, and 326 that have reached the market.

ITEMAS' innovation indicators show that in the last five years, 191 patents and 176 software registrations were obtained, generating approximately €10 million.

The "ITEMAS Collection," which comprises five books, was published. They were written collectively by the platform's collaborators and members, relying on the PONS IP and RCD-Rousaud Costas Duran firms for advice on legal matters. This set of practical guides and manuals summarizes the know-how acquired over the years and is a milestone in the development of health innovation management in Spain. Since its publication in October 2016, more than 1,725 printed copies and 1,000 digital copies have been distributed.

ITEMAS has eight centres whose management systems have been certified in accordance with the UNE 166002:2014 standard. Six centres were certified recently in 2016 and the two others were certified in 2015.

The ITEMAS Platform participates in the "In Search of an Oslo Manual for Hospitals" project, funded by the COTEC Foundation.

Thanks to the agreement with SEMICROL, ITEMAS has tailor-made innovation management software, Fund@net Innova, which facilitates the work of innovation support unit managers.

ITEMAS had its own stand at the MEDICA Congress, held in November. A dossier with the platform's technological offer was put together for the event.

Thanks to the agreement signed with the Spanish Patent and Trademark Office (OEPM), ITEMAS' members and collaborators have benefitted from a 30% discount on the price of Patent Technological Reports and Technology Surveillance Reports. Furthermore, three simultaneous workshops on finding information on patents in free online databases were organised and taught by OEPM patent examiners.

BIOBANKS PLATFORM - PT13/0010

Website: http://www.redbiobancos.es

The Biobanks Platform brings together 52 centres and over 600 agents across Spain. Its main objectives are to strengthen the national biobank system, which offers quality service to the research community in accessing quality human biological samples along with accompanying information. All of this is carried out in strict compliance with the ethical and legal requirements that guarantee respect for donors' rights. To do so, the platform continuously improves its sample handling processes. In addition, it spearheads numerous training and dissemination actions.

Last year, over 2,500 requests were responded to and a total of 275,000 samples provided. This resulted in work that generated over 900 scientific articles and six patents.

2 Research And Innovation Activity Management

2.5 HEALTH RESEARCH INSTITUTES (IIS)

In 2016, the Carlos III Institute of Health ordered the accreditation of three Health Research Institutes to be renewed. They are the following:

The Hospital Clínico de Valencia's Healthcare Research Institute Foundation, INCLIVA.

The Maimónedes Biomedical Research Institute of Cordoba, IMIBIC.

The Biodonostia Healthcare Research Institute, BIODONOSTIA.

The technical commission for accreditation was also renewed in 2016. Two new experts were included and previous members departed.

The accreditation unit and the technical commission for accreditation continued to respond to requests for information regarding accreditation requirements, conditions, and processes for SNS hospitals that are considering the possibility of creating a Health Research Institute.

Furthermore, the unit and the technical commission prepared a draft of a new accreditation assessment guide, as required by Royal Decree 279/2016, dated 24 June, on the accreditation of biomedical or healthcare research institutes.

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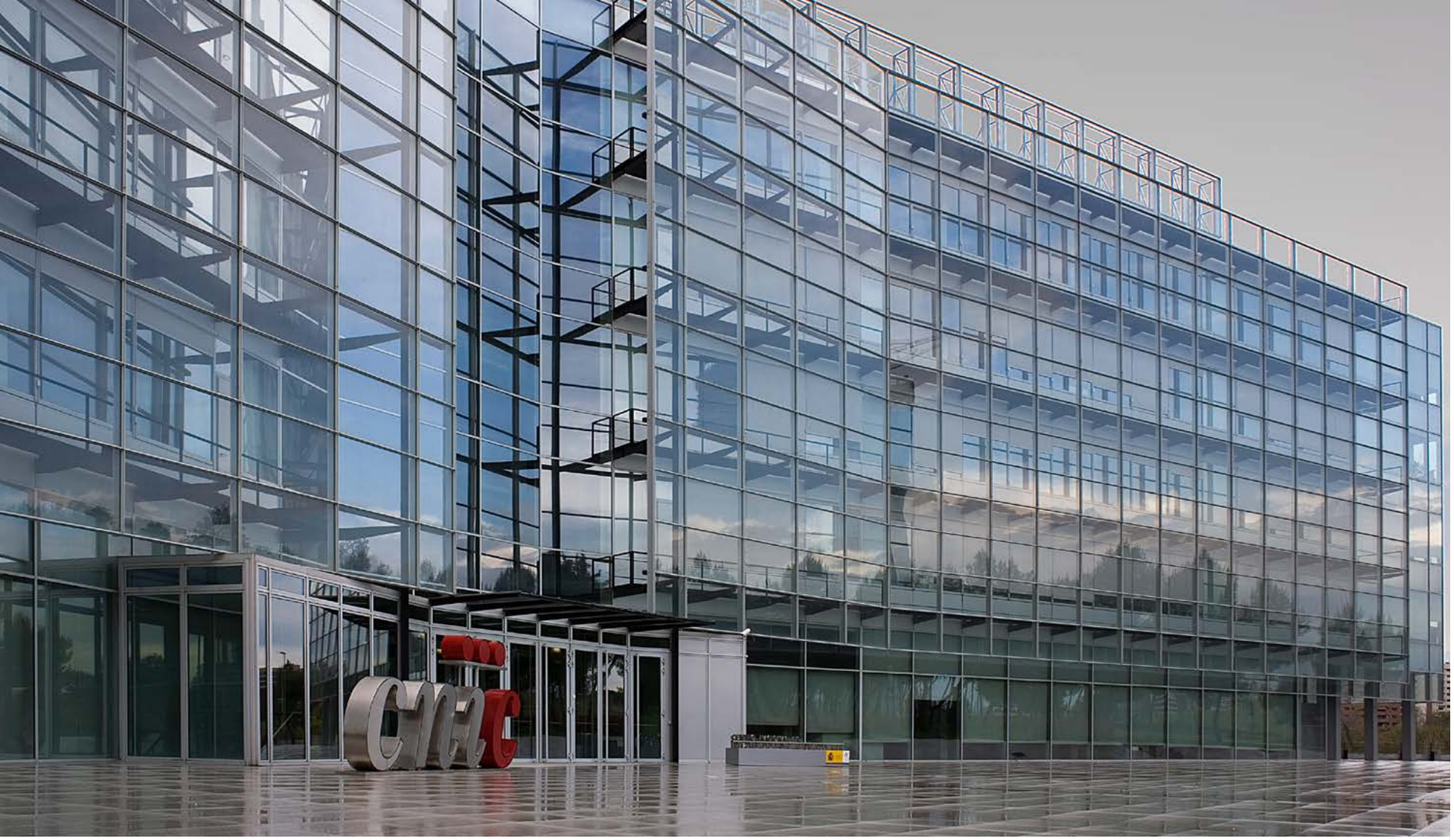


2.6 FOUNDATIONS

CARLOS III NATIONAL CENTRE FOR CARDIOVASCULAR RESEARCH FOUNDATION

http://www.cnic.es

The Carlos III Spanish National Centre for Cardiovascular Research (CNIC) Foundation is a national public foundation under the Ministry of Economy, Industry and Competitiveness, created through an ISCIII initiative. It receives private financial support through the Pro CNIC Foundation, whose goal is to promote cardiovascular health in individuals through basic research, translational medicine, and training. It aims to contribute to advances in scientific knowledge in the cardiovascular field and the translation of research to the prevention, diagnosis, and treatment of cardiovascular diseases.

The CNIC's scientific area is organised into two departments: Basic Research and Clinical Research. They are entirely interconnected through six multidisciplinary programmes grouped into three research areas: Vascular Pathophysiology, Myocardial Pathophysiology, and Cell Developmental Biology.

In addition to these areas of research, the CNIC has Technical Units that provide fundamental scientific services to the CNIC's research laboratories and external users. The units also offer specialised training on using equipment and on employing various techniques. The CNIC currently has the following units: Proteomics, Genomics, Cellomics, Microscopy, Transgenesis, Comparative Medicine, Pluripotent Cell Technology, Viral Vectors, Bioinformatics, and the Advanced Imaging Unit.

The CNIC renewed its accreditation as a "Severo Ochoa Centre of Excellence" for the 2016-2019 period.

Scientific Production

In 2016, the CNIC produced 233 publications, 218 of which were published in high-impact journals. During this year, the CNIC has continued its international collaborations. As such, 63% of publications were on studies carried out with the collaboration of foreign institutions, 31% with Spanish institutions, and the remaining 6% were produced solely by CNIC researchers. Of the publications, 55% had a CNIC scientist as the principal author. The mean impact of all articles was 8.498.

Fundraising

Between 2008 and 2016, the CNIC Foundation has secured over €50.4 million from national competitive funds, the majority of which are public.

In 2016 alone, CNIC researchers participated in over 90 national calls and were successful in 44 proposals, 39 of which were from national public funds. These included the prestigious accreditation as a "Severo Ochoa Centre," granted for the 2016 to 2019 period.

In terms of competitive international funds, the CNIC has secured over €34 million. In recent years, a trend has emerged in which the level of international funds secured by the Centre is approaching the amount of national funds received.

The Centre took part in 34 projects funded by the European Commission as part of FP7. It is currently involved in 16 projects funded as part of the new H2020 Programme.

The CNIC's international excellence can also be seen in the high levels of participation and the success of its research groups in European Research Council (ERC) projects. It was awarded five ERC projects as part of FP7 and four as part of the H2020 Programme.

Technology Transfer

The CNIC is very active in the transfer of its research results and its current technological offer. Seven patent requests were filed in 2016, taking into account extensions and new requests. The requests were made to both the Spanish Patent and Trademark Office (OEPM) and other international patent offices (EPO, USPTO, JPO). Four of the currently-active patent families have already been licensed to businesses for their development and commercialisation. Furthermore, the CNIC also generated results of interest to the private biotechnology/pharmaceuticals sector. In 2016, this resulted in the signing of two scientific collaboration agreements with different businesses in order to carry out joint projects.

Training

The centre's training activities are coordinated through the comprehensive training plan, called CNIC-JOVEN, which is designed to bring young people into biomedical research and create a pool of future researchers of excellence in the cardiovascular field.

In 2016, the CNIC had 628 participants in different training programmes and workshops. Participants came from all career levels: senior high school students (Acércate Programme: eight participants); undergraduate students (Cicerone Programme: 24 participants); postgraduate students (Master's Degree Fellowship Programme: 19 participants); Postgraduate Programme: 14 participants; Pre-doctoral Programme: 101 participants; Pre-doctoral "La Caixa"-Severo Ochoa Programme: two participants; Doctoral Thesis Defence: nine participants; and medical professionals (Invesmir: three participants; and Res@CNIC: 15 participants). Through the European COFUND programme, four new researchers were hired.

The training offer is rounded out with a continuing education programme. Courses organised as part of this programme include the cardiovascular pathophysiology course (76 attendees) and vascular biology course (280 attendees). A new statistics course was organised and took place over several sessions; a total of 84 researchers attended.

2 Research And Innovation Activity Management

Fundación Centro de Investigación Enfermedades Neurológicas

RESEARCH CENTRE FOR NEUROLOGICAL DISEASES FOUNDATION

The Research Centre for Neurological Diseases Foundation (FCIEN) was created on 27 December 2002 through an agreement of the Council of Ministers. It is currently under the Ministry of Economy, Industry and Competitiveness through the Carlos III Institute of Health.

Supporting, promoting, and coordinating research on neurological diseases, especially on neurodegenerative diseases, are amongst some of the fundamental objectives. Its role in unifying and coordinating outstanding Spanish research groups in this field also stands out amongst its aims.

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), part of the CIBERNED biobank platform, has reinforced this position. The cooperation between the FCIEN and CIBERNED has been recognised by the European Union through the inclusion of both entities in the International Network of Centres of Excellence in Neurodegeneration (COEN) within the Joint Programme for Neurodegenerative Diseases.

The CIEN Tissue Bank participates in the Spanish National Biobank Network Platform, sponsored by ISCIII.

Scientific Production

In 2016, 29 original articles were published in specialised journals. Of these, 24 (82.759%) were classified in the first and second quartile. The mean impact factor was 6.792, a significant increase (43.959%) with respect to 2015.

During this year, the CIEN Foundation has increased its international collaborations. As such, 53.6% of articles published were based on studies carried out in collaboration with foreign institutions and the remaining were with Spanish institutions. The following publications are of note:

Ávila-Villanueva M, Rebollo Vázquez A, Ruiz Sánchez de León JM, Valentí M, Medina M, Fernández Blázquez MA. Clinical relevance of specific cognitive complaints in determining mild cognitive impairment from cognitively normal states in a study of healthy elderly controls. Frontiers in aging neuroscience. 2016 Sept 20; 8:233. Epub 2016/09. Eng

Pisa D, Alonso R, Rábano A, Horst MN, Carrasco L. Fungal Enolase, β-Tubulin, and Chitin Are Detected in Brain Tissue from Alzheimer's Disease Patients. Frontiers in microbiology. 2016 Nov 7 Volume: 7 Issue: Pages: 1772. Pubmed ID: 27872620

Fernández-Blázquez MA, Avila-Villanueva M, Maestu F, Medina M. Specific Features of Subjective Cognitive Decline Predict Faster Conversion to Mild Cognitive Impairment. Journal of Alzheimer's disease: JAD. 2016 Mar 8;52(1):271-81. PubMed PMID: 27060949. Epub 2016/04/12.

Lastres-Becker I, García-Yague AJ, Scannevin RH, Casarejos MJ, Kugler S, Rábano A, Cuadrado A. Repurposing the NRF2 Activator Dimethyl Fumarate as Therapy Against Synucleinopathy in Parkinson's Disease. Antioxidants & redox signaling. 2016 Jul 10;25(2):61-77. PubMed PMID: 27009601. Pubmed Central PMCID: PMC4943471. Epub 2016/03/25.

Méndez-Bertolo C, Moratti S, Toledano R, Lopez-Sosa F, Martinez-Alvarez R, Mah YH, Vuilleumier P, Gil-Nagel A, Strange BA. A fast pathway for fear in human amygdala. Nature neuroscience. 2016 Aug;19(8):1041-9. PubMed PMID: 27294508. Epub 2016/06/14.

Pajares M, Jiménez-Moreno N, Garcia-Yague AJ, Escoll M, de Ceballos ML, Van Leuven F, Rabano A, Yamamoto M, Rojo AI, Cuadrado A. Transcription factor NFE2L2/NRF2 is a regulator of macroautophagy genes. Autophagy. 2016 Oct 2; 12(10):1902-16. PubMed PMID: 27427974. Epub 2016/07/19.

Minikel EV, Vallabh SM, Lek M, Estrada K, Samocha KE, Sathirapongsasuti JF, et al. Quantifying prion disease penetrance using large population control cohorts. Sci Transl Med. 2016 Jan 20;8(322):322ra9. doi: 10.1126/scitranslmed.aad5169. PMID: 26791950

Naranjo JR, Zhang H, Villar D, González P, Dopazo XM, Morón-Oset J, Higueras E, Oliveros JC, Arrabal MD, Prieto A, Cercós P, González T, De la Cruz A, Casado-Vela J, Rábano A, Valenzuela C, Gutiérrez-Rodriguez M, Li JY, Mellström B. Activating transcription factor 6 depression mediates neuroprotection in Huntington disease. J Clin Invest. 2016 Feb;126(2):627-38. doi: 10.1172/JCI82670. Epub 2016 Jan 11. PMID: 2675648

Williams KL, Topp S, Yang S, Smith B, Fifita JA, Warraich ST, et al. CCNF mutations in amyotrophic lateral sclerosis and frontotemporal dementia. Nature communications. 2016;7:11253. PubMed PMID: 27080313. Pubmed Central PMCID: PMC4835537. Epub 2016/04/16.

Fundraising

- The FCIEN extended its commitment to the Youth Employment Operational Programme of the Community of Madrid's Department of Education, Youth, and Sport in 2016.
- A post-doctoral researcher from the Mental Health and Neuroscience Department of the Hospital for Sick Children, University of Toronto, Canada, was hired.
- It received a Mapfre and Queen Sofia Foundation grant for the hiring of a researcher specialised in biomedicine for the FCIEN and a prestigious international research centre.

Patents

In 2016, the FCIEN continued its participation as the co-owner of three active patents, both in national and international phases. Two of these are licensed to Raman Health Technologies.

Projects Funded

The FCIEN was awarded a project from the US Alzheimer's Association's "New Investigator Research Grant" through the UPM. The contract for Linda Zhang, from the University of Hong Kong, was formalised.

Clinical Trials

The FCIEN started the "Clinical Trials Programme," a clinical research project that includes the design and organisation of clinical trials. In 2016, two clinical trials were designed and one of them began.

It also received approval from the Spanish Agency of Medicines and Medical Devices and from the Belvitge Hospital's Ethics Committee for the Sat-CIEN-02 clinical trial.

Collaboration Agreements

- An agreement was signed with Con Neuron Bio for the execution of joint projects in the field of Alzheimer's diagnostics. The objective is to bring together the knowledge and experience of specialists who form part of the Alzheimer's Project Support Unit (UIPA) along with scientists and recently-achieved developments of the Neuron Bio biotechnology company in the field of diagnostics of this disease.
- An agreement was signed with Torrejón University Hospital that will allow both institutions to advance research on neurodegenerative pathologies, discover how they affect cerebral tissue, and develop new lines of research that allow for improved early diagnosis and treatment of these diseases.

Training

In 2016, the FCIEN collaborated with Spanish universities on student internships.

Following its first edition in 2015, the 2016 FCIEN Seminar Series has become a near-weekly training activity. Speakers from FCIEN as well as guest speakers from other institutions present their work and then discuss, in accordance with the vocation for training that characterises the FCIEN.

Outreach Activities

- II edition of the "Kilometres to Remember" campaign for fighting neurodegenerative diseases, in collaboration with the SARquavitae Foundation.
- The "Measuring Non-Motor Symptoms of Parkinson's Disease: 10 years since NMSQuest" Meeting, in collaboration with King's College London (University of London) and the National Parkinson Foundation, was held at the Carlos III Institute of Health, Madrid (March 2016).
- IV edition of the International Congress on Research and Innovation in Neurodegenerative Diseases (CIEN) (September 2016).
- Alzheimer León's Mano Amiga Awards Ceremony. During the ceremony, the public welcomed H.M. Queen Sofia of Spain and the nearly €12,000 that was raised through the "Invest in Research and Together We Can Eradicate Alzheimer's" campaign was awarded to the CIEN Foundation (October 2016)
- The scope of the "Memory Tree" in the Villa de Vallecas Municipal Market was widened, with a "Memory Tree" also inaugurated in the Madrid Town Hall. (December 2016).
- In 2016, the FCIEN's presence in the media increased by 46.39% with respect to 2015.

2 Research And Innovation Activity Management

SPANISH NATIONAL CANCER RESEARCH CENTRE FOUNDATION

https://www.cnio.es/es

In 2016, the CNIO's scientific activity was carried out by a total of 422 researchers and technologists organised into 22 Research Groups, five Clinical Research Units, and 19 Support Units across Research Programmes (Molecular Oncology, Cancer Cell Biology, Structural Biology and Biocomputing, Human Cancer Genetics, and Biotechnology) as well as two drug discovery sections in the Experimental Therapeutics Programme. The CNIO scientists' and technologists' activities are supported by various departments and areas responsible for different auxiliary tasks, including Scientific Management, the Technology Transfer Office, Communications, International Relations, Technical Management, and Administration.

Scientific Production

In 2016, the CNIO published a total of 239 articles. Of these, 28 were published in journals with impact factors of between 10 and 15 and 32 articles were published in journals with an impact factor greater than 15. Below are some of the most significant publications of 2016:

Mosteiro LL, Pantoja C, Alcazar N, Marión RM, Chondronasiou D, Rovira M, et al. Tissue damage and senescence provide critical signals for cellular reprogramming in vivo. Science. 2016; 354 (6315): pii: aaf4445. doi:10.1126/science.aaf4445PMID:27884981

Ambrogio C, Gómez-López G, Falcone M, Vidal A, Nadal E, Crosetto N, et al. Combined inhibition of DDR1 and Notch signaling is a therapeutic strategy for KRAS-driven lung adenocarcinoma. Nat Med. 2016; 22(3): 270-7. doi:10.1038/nm.4041PMID:26855149

Gomes AL, Teijeiro A, Burén S, Tummala KS, Yilmaz M, Waisman A, et al. Metabolic Inflammation-Associated IL-17A Causes Non-alcoholic Steatohepatitis and Hepatocellular Carcinoma. Cancer Cell. 2016 Jul 11; 30(1):161-75.doi: 10.1016/j.ccell.2016.05.020 PMID:27411590

Burén S, Gomes AL, Teijeiro A, Fawal MA, Yilmaz M, Tummala KS, et al. Regulation of OGT by URI in Response to Glucose Confers c-MYC-Dependent Survival Mechanisms. Cancer Cell. 2016 Aug 8; 30(2): 209-307. doi: 10.1016/j.ccell.2016.06.023 PMID:27505673

Uluçkan Ö, Jimenez M, Karbach S, Jeschke A, Graña O, Keller J,et al. Chronic skin inflammation leads to bone loss by IL-17-mediated inhibition of Wnt signaling in osteoblasts. Sci Transl Med. 2016 Mar 16; 8(330): 330ra37.doi: 10.1126/scitranslmed.aad8996 PMID:27089206

Ruiz S, Mayor-Ruiz C, Lafarga V, Murga M, Vega-Sendino M, Ortega S, Fernandez-Capetillo O. A Genome-wide CRISPR Screen Identifies CDC25A as a Determinant of Sensitivity to ATR Inhibitors. Mol Cell. 2016 Apr 21; 62(2): 307-13. doi: 10.1016/j.molcel.2016.03.006 PMID:27067599

Murga M, Lecona E, Kamileri I, Díaz M, Lugli N, Sotiriou SK, et al. POLD3 Is Haploinsufficient for DNA Replication in Mice. Mol Cell. 2016 Sep 1; 63(5):877-83.doi: 10.1016/j.molcel.2016.07.007 PMID:27524497

Lecona E, Rodriguez-Acebes S, Specks J, Lopez-Contreras AJ, Ruppen I, Murga M, et al. USP7 is a SUMO deubiquitinase essential for DNA replication. Nat Struct Mol Biol. 2016 Apr; 23(4):270-7. doi: 10.1038/nsmb.3185 PMID:26950370

Bär C, Povedano JM, Serrano R, Benitez-Buelga C, Popkes M, Formentini I, Bobadilla M, Bosch F, Blasco MA. Telomerase gene therapy rescues telomere length, bone marrow aplasia and survival in mice with aplastic anemia. Blood. 2016 Apr 7; 127(4):1770-9. doi: 10.1182/blood-2015-08-667485 PMID:26903545

Richart L, Carrillo-de Santa Pau E, Rio-Machin A, Pérez de Andrés M, Cigudosa JC, Sanchez-Arevalo Lobo VJ, Real FX. BPTF is required for c-MYC transcriptional activity and in vivo tumorigenesis. Nat Commun. 2016 Jan 5; 7:10153. doi: 10.1038/ncomms10153 PMID:26729287

Nóbrega-Pereira S, Fernandez-Marcos PJ, Brioche T, Gomez-Cabrera MC, Salvador-Pascual A, Flores JM, et al. G6PD protects from oxidative damage and improves healthspan in mice. Nat Commun. 2016 Mar 15; 7: 10894.doi: 10.1038/ncomms10894 PMID:26976705

Llanos S, García-Pedrero JM, Morgado-Palacin L, Rodrigo JP, Serrano M. Stabilization of p21 by mTORC1/4E-BP1 predicts clinical outcome of head and neck cancers. Nat Commun. 2016 Feb 2: 7: 10438.doi: 10.1038/ncomms10438 PMID:26832959

Varela E, Muñoz-Lorente MA, Tejera AM, Ortega S, Blasco MA. Generation of mice with longer and better preserved telomeres in the absence of genetic manipulations. Nat Commun. 2016 Jun 2; 7: 11739. doi: 10.1038/ncomms11739 PMID:27252083

Montero JJ, López de Silanes I, Graña O, Blasco MA. Telomeric RNAs are essential to maintain telomeres. Nat Commun. 2016 Aug 17; 7: 12534. doi: 10.1038/ncomms12534 PMID:27531349

Pérez-Guijarro E, Karras P, Cifdaloz M, Martínez-Herranz R, Cañón E, Graña O, et al. Lineage-specific roles of the cytoplasmic polyadenylation factor CPEB4 in the regulation of melanoma drivers. Nat Commun. 2016 Nov 18; 7: 13418. doi: 10.1038/ncomms13418 PMID:27857118

Pancaldi V, Carrillo-de-Santa-Pau E, Javierre BM, Juan D, Fraser P, Spivakov M, et al. Integrating epigenomic data and 3D genomic structure with a new measure of chromatin assortativity. Genome Biol. 2016 Jul 8; 17(1):152. doi: 10.1186/s13059-016-1003-3 PMID:27391817

Rodriguez-Rivas J, Marsili S, Juan D, Valencia A. Conservation of coevolving protein interfaces bridges prokaryote-eukaryote homologies in the twilight zone. Proc Natl Acad Sci U S A.2016 Dec 27; 113(52): 15018-23. doi: 10.1073/pnas.1611861114 PMID:27965389

García-Fernández M, Karras P, Checinska A, Cañón E, Calvo GT, Gómez-López G, et al. Metastatic risk and resistance to BRAF inhibitors in melanoma defined by selective allelic loss of ATG5. Autophagy. 2016 Oct 2; 12(10): 1776-90. doi:10.1080/15548627.2016.1199301 PMID:27464255

Juan D, Perner J, Carrillo de Santa Pau E, Marsili S, Ochoa D, Chung HR, et al. Epigenomic Co-localization and Co-evolution Reveal a Key Role for 5hmC as a Communication Hub in the Chromatin Network of ESCs. Cell Rep. 2016 Feb 9; 14(5):1246-57.doi: 10.1016/j.celrep.2016.01.008 PMID:26832418

Navarro P, Bueno MJ, Zagorac I, Mondejar T, Sanchez J, Mourón S, et al. Targeting Tumor Mitochondrial Metabolism Overcomes Resistance to Antiangiogenics. Cell Rep. 2016 Jun 21; 15(12):2705-18. doi: 10.1016/j.celrep.2016.05.052 PMID:27292634

García-Carpizo V, Sarmentero J, Han B, Graña O, Ruiz-Llorente S, Pisano DG, et al. NSD2 contributes to oncogenic RAS-driven transcription in lung cancer cells through long-range epigenetic activation. Sci Rep. 2016 Sep 8 6: 32952. doi: 10.1038/srep32952 PMID:27604143

Nieto-Soler M, Morgado-Palacin I, Lafarga V, Lecona E, Murga M, Callen E, et al. Efficacy of ATR inhibitors as single agents in Ewing sarcoma. Oncotarget. 2016 Sep 13; 7(37):58759-67. doi: 10.18632/oncotarget.11643 PMID:27577084

Morgado-Palacin I, Day A, Murga M, Lafarga V, Anton ME, Tubbs A, et al. Targeting the kinase activities of ATR and ATM exhibits antitumoral activity in mouse models of MLL-rearranged AML. Sci Signal. 2016 Sep 13; 9(445): ra91. doi: 10.1126/scisignal.aad8243 PMID:27625305

García-Donas J, Beuselinck B, Inglada-Pérez L, Graña O, Schöffski P, Wozniak A, et al.Deep sequencing reveals microRNAs predictive of antiangiogenic drug response. JCI Insight. 2016 Jul 7; 7(10):e86051. doi:10.1172/jci.insight.86051PMID:27699216

Fundraising

The CNIO funded a substantial part of its research through competitive projects from both national and international institutions as well as private entities. In 2016, funding was obtained for 164 projects; funding for 30 of them came from international consortia (four of which were led by the CNIO) and funding for 34 came from national consortia (12 of which were coordinated by CNIO).

International Consortia: 18 projects were funded by the European Commission, one by the Interreg Sudoe Programme, two by the Melanoma Research Alliance (MRA), three by the US NIH, one by the Paradifference Foundation, three by the US Department of Defense, one by the Volkswagen Foundation, and one by Worldwide Cancer Research (WCR).

Individual International Projects: seven were financed by WCR, one by the Prostate Cancer Foundation, nine by the European Commission, one by the European Foundation for the Study of Diabetes (EFSD), one by the Howard Hughes Medical Institute (HHMI), one by the MRA, and one by the US Department of Defense.

Collaborative National Projects: nine were funded by the Autonomous Community of Madrid; nine by the Carlos III Institute of Health (ISCIII); five by the Ministry of Economy, Industry, and Competitiveness (MEIC); three by the Ministry of Health, Social Services, and Equality (MSSSI); four by the Spanish Association Against Cancer (AECC); three by the TV3 Marathon Foundation; and one by the Knowledge Foundation Madri+d.

Individual National Projects: 17 were funded by ISCIII, 36 by MINECO, one by the BBVA Foundation, one by the Spanish Society of Medical Oncology (SEOM), two by the AstraZeneca HealthCare Foundation, two by the FERO Foundation, one by the Atresmedia Corporation, one by the Olga Torres Foundation, and one by the Neurofibromatosis Project Foundation.

Training

The CNIO actively participates in the postgraduate programmes of various Spanish academic institutions, both in teaching as well as in offering the possibility of taking on students for training internships. In 2016, the CNIO signed new agreements with several universities: the Autonomous University of Barcelona, the National Distance Education University (UNED), the Claude Bernard Lyon 1 University, the Francisco de Vitoria University, the University of Navarre, the University of Cordoba, and the CEU San Pablo University. Agreements have also been signed with the International School of Protocol, the La Caixa Foundation, and the Claudio Galeno Institute for Higher Professional Training in Healthcare (ISFPS) in Madrid.

In 2016, a new agreement with the Jesús Serra Foundation was signed in order to continue the Visiting Scientists Programme, which was funded for five more years.

Ten doctoral theses were defended in 2016. The La Caixa Foundation awarded two grants to students to complete their doctoral thesis at the CNIO. Of the 110 Pre-doctoral students working at the CNIO in 2016, over 25% came from foreign universities.

The CNIO has a post-doctoral training programme subsidised by the Fundación Banco Santander in order to attract scientists who have spent part of their scientific career in England or the US. At the end of 2016, a scientist from New York University was awarded this grant. In addition, it offers the possibility of following a business management and administration course at the IE Business School in order to bring scientists closer to the market.

Thanks to the CNIO Friends philanthropic platform, the first call of the CNIO Friends Post-Doctoral Contract Programme was issued in 2016; two scientists were hired for a period of two years. A third Juegaterapia-CNIO Friends Post-Doctoral contract was created in order to carry out a paediatric cancer project. It was created as a result of an agreement signed with the Juegaterapia (Play Therapy) Foundation.

The CNIO had 51 post-doctoral students in 2106

There are three continuing education programmes for resident physicians. These are carried out by means of three-month placements in CNIO research groups. In 2016, the CNIO had 17 resident physicians from different hospitals.

In 2016, two laboratory internship programmes were carried out. These programmes are carried out every year and aimed at university students in their final or penultimate year. There were 95 students, six of whom were then taken on as pre-doctoral students.

In addition, 26 technicians completing professional training courses took part in the Workplace Training Programme through agreements with various secondary education institutions. Five of them were later hired as laboratory technicians.

Events

The following events were organised in the CNIO in 2016:

The CNIO Frontiers Meeting: CFM, Cancéromatics III-Tumor Heterogeneity held from 13-16 November. Five international events: PancreOs Kick-off meeting on 17 March; Blueprint, Roadmap, ENCODE and 1000 genomes: browse through them with Ensembl on 4-5 April; Making Access to Personalised Medicine a Reality for Patients on 15 September; the VII National Biobank Congress and I Latin-American Biobank Congress on 16-18 November; Senescence & Cancer: II Annual Meeting of the Spanish Network of Cellular Senescence on 25 November. Likewise, training courses and workshops were also organised.

Within the CNIO Distinguished Seminars programme, 23 internationally-recognised speakers were invited. Five of these seminars were sponsored by the Banco Sabadell Foundation. Additionally, CNIO scientists also organised 49 ad-hoc seminars in 2016.

The Women in Science and Engineering Office (WISE Office) organised nine conferences within the WISE Seminars series (http://www.cnio.es/es/women-science/events.asp). The DEAN office, through the student and post-doctoral associations, also organised a series of seminars.

Milestones

The International Relations department was established in 2016. It is actively involved in ensuring that the European Responsible Research and Innovation (RRI) concept is a reality at the CNIO. Since the department's creation, numerous international collaborations have been started.

At the start of 2016, a new junior group was incorporated into the Molecular Oncology Programme: the Cellular Signalling and Metabolism group. It is directed by a researcher from MIT's Whitehead Institute for Biomedical Research.

In 2016, the selection process was completed for the 2017 incorporation of two new junior groups into the Structural Biology Programme. They will be led by researchers from the Structural Biology Laboratory at the University of Basel, Switzerland and the MRC Laboratory of Molecular Biology from Cambridge, UK, respectively.

In addition, the new Text Mining Unit was created. It is financed through the Digital Agenda for Spain's Advancement of Language Technology Plan within the framework of a mandate from the Secretary of State for Telecommunications from the Ministry of Energy, Tourism and the Digital Agenda (MINETAD). The CNIO's two pre-existing bioinformatics units were merged: the Structural and Biocomputational Biology Programme's Bioinformatics Unit and the Clinical Research Programme's Translational Bioinformatics Unit. The result is the creation of the Bioinformatics Unit.

The income generated from intellectual property rights exceeded €650,000 in 2016. This income includes both income from patents as well as income from the commercialisation of scientific tools such as, for example, monoclonal antibodies. New contracts signed with industry in 2016 have secured €3.8 million in future income, nearly 10% the CNIO's annual budget.

The CNIO Friends post-doctoral contracts programme was implemented in 2016. Thanks to the "CNIO Friends" micro-sponsorship charitable initiative launched in 2014, two young researchers have been able to be hired.

The CNIO started to participate in the Women for Africa Foundation's "Science by Women" programme, welcoming two female African researchers for a period of six months.

2 Research And Innovation Activity Management

3 Technical and scientific activities

3. TECHNICAL AND SCIENTIFIC ACTIVITIES

3.1 CENTRES AND UNITS

NATIONAL MICROBIOLOGY CENTRE

The National Microbiology Centre (CNM) has the specific mission of providing scientific and technical support to the General State Administration, the Autonomous Communities (ACs) and the National Health System (SNS) in preventing, diagnosing, and treating infectious diseases.

Highlighted Activities

The CNM's Alert System operated 24 hours a day for seven days a week throughout 2016. During this time, the Alert System intervened in all the health alerts activated by the Centre for Coordination of Alerts and Emergencies (CCAES), at the request of the Autonomous Communities, as well as in all occasions it was required to do so at the request of RE-LAB. In this context, in 2016, a first case of indigenous Crimean–Congo haemorrhagic fever spread by a tick bite and a second case contracted by a health worker tending to the first case were reported. This resulted in intense diagnostic activities by the alert system along with the Arbovirus Unit. In order to conduct a risk estimation, a comprehensive study on the prevalence of Crimean–Congo haemorrhagic fever on over 9,000 Hyalomma ticks across four Autonomous Communities began in 2016 and ended in March 2017.

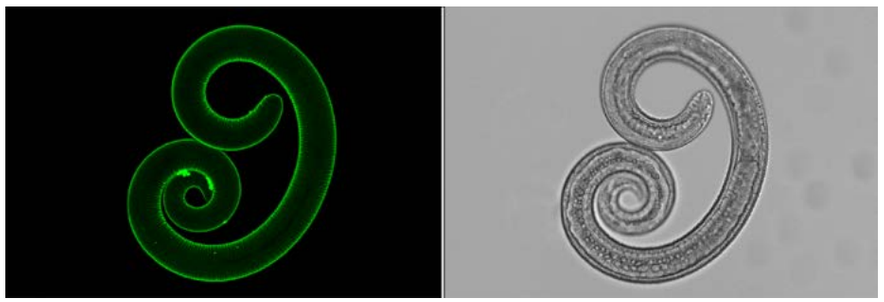
In regards to international outbreaks, there was a strong and growing demand for Zika virus diagnostic procedures in 2016. In this context, over 2,400 serological tests and around 1,000 neutralisation procedures were completed in 2016.

On the national level, the centre actively participated in the study of an enterovirus outbreak that started in Catalonia and subsequently spread with greater or lesser intensity, probably due to circulation of the enterovirus A71, which was previously uncommon (Clin Microbiol Infect. 2017 Mar 23. pii: S1198-743X(17)30185-4).

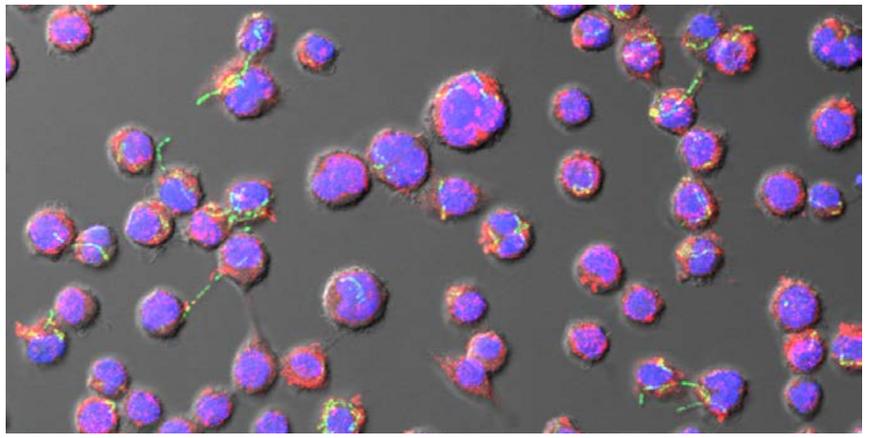
Scientific and Technical Activities

The CNM operates 25 microbiology surveillance programmes for infections relevant to public health, which are revised and renewed annually. These programmes generate very important information for knowledge on the diseases being monitored, allowing for control and/or prevention measures to be developed by health authorities.

The CNM received around 80,000 requests for diagnoses and/or references through its sample management programme. It has performed over 120,000 tests in all of its activities for surveillance programmes, alerts, outbreaks, service portfolio, and contracts with institutions and businesses. In addition, more than 100,000 samples of DNA were sequenced by the CNM's Genomics Unit.



Trichinella spiralis. Esperanza Rodríguez de las Parras, Sonsoles Jiménez Sánchez. CNM



Neutrófilos y Streptococcus pneumoniae. José Yuste, Fernando González – Camacho, Elisa Ramos Sevillano. CNM.

Scientific Production

In 2016, the data generated from research projects being conducted as well as the diagnostics and surveillance programmes carried out by the various units of the CNM was used over 150 publications in national and international journals as well as in many presentations at scientific congresses and meetings. Several patents and utility models were also developed. Amongst the most significant publications are:

Nakajima R, Escudero R, Molina DM, Rodríguez-Vargas M, Randall A, Jasinskas A, et al. Towards Development of Improved Serodiagnostics for Tularemia by Use of Francisella tularensis Proteome Microarrays. J Clin Microbiol. 2016 Jul; 54(7): 1755-65.doi: 10.1128/JCM.02784-15 PMID:27098957

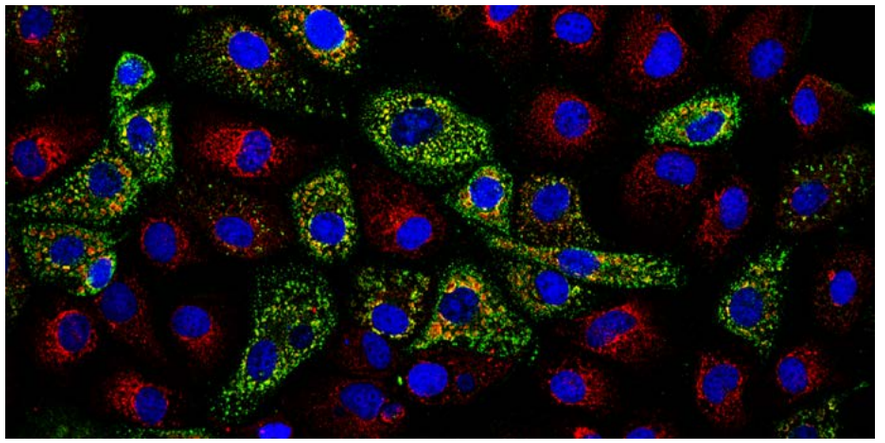
Oteo J, Pérez-Vázquez M, Bautista V, Ortega A, Zamarrón P, Saez D, et al. Spanish Antibiotic Resistance Surveillance Program Collaborating Group. The spread of KPC-producing Enterobacteriaceae in Spain: WGS analysis of the emerging high-risk clones of Klebsiella pneumoniae ST11/KPC-2, ST101/KPC-2 and ST512/KPC-3. J Antimicrob Chemother. 2016 Dec; 71(12): 3392-9. doi:10.1093/jac/dkw321 PMID:27530752

Connor TR, Owen SV, Langridge G, Connell S, Nair S, Reuter S, et al. What's in a Name? Species-Wide Whole-Genome Sequencing Resolves Invasive and Noninvasive Lineages of Salmonella enterica Serotype Paratyphi B. MBio. 2016 Aug 23; 7(4). pii: e00527-16. doi: 10.1128/mBio.00527-16 PMID:27555304

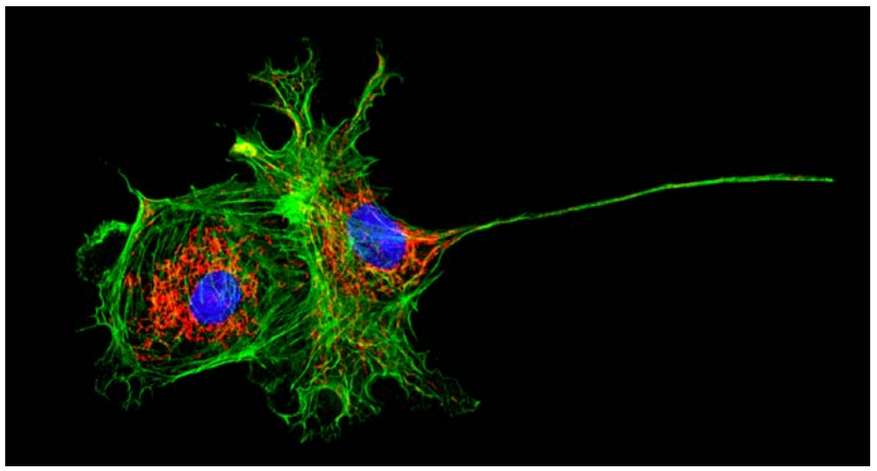
Abad R, Medina V, Stella M, Boccadifuoco G, Comanducci M, Bambini S, et al. Predicted Strain Coverage of a New Meningococcal Multicomponent Vaccine (4CMenB) in Spain: Analysis of the Differences with Other European Countries. PLoS One. 2016 Mar 7; 11(3): e0150721.doi: 10.1371/journal.pone.0150721 PMID:26950303

Fernandez-Garcia MD, Bangert M, de Ory F, Potente A, Hernandez L, Lasala F,et al. Chikungunya virus infections among travellers returning to Spain, 2008 to 2014. Euro Surveill. 2016 Sep 8; 21(36). doi: 10.2807/1560-7917.ES.2016.21.36.30336 PMID:27631156

Pozo F, Juste J, Vázquez-Morón S, Aznar-López C, Ibáñez C, Garin I, et al. Identification of Novel Betaherpesviruses in Iberian Bats Reveals Parallel Evolution. PLoS One. 2016 Dec 30;11(12):e0169153 doi: 10.1371/journal.pone.0169153 PMID:28036408



Cell culture infected with rotavirus. *Javier Maria Rodríguez, Fernando González Camacho, Daniel Luque. CNM.*



Fluorescence in a cell culture. *Fernando González Camacho, Silvia Hernández. CNM*

Jimenez-Sousa MÁ, Gutiérrez-Rivas M, Álvaro-Meca A, García-Álvarez M, Harrigan PR, Fedele CG, et al. NS3 Resistance-Associated Variants (RAVs) in Patients Infected with HCV Genotype 1a in Spain. PLoS One. 2016 Sep 29; 11(9): e0163197.doi: 10.1371/journal.pone.0163197 PMID:27685471

Martín V, Perales C, Fernández-Algar M, Dos Santos HG, Garrido P, Pernas M, et al. An Efficient Microarray-Based Genotyping Platform for the Identification of Drug-Resistance Mutations in Majority and Minority Subpopulations of HIV-1 Quasispecies. PLoS One. 2016 Dec 13; 11(12): e0166902.doi: 10.1371/journal.pone.0166902 PMID:27959928

Valero C, de la Cruz-Villar L, Zaragoza Ó, Buitrago MJ. New Panfungal Real-Time PCR Assay for Diagnosis of Invasive Fungal Infections. J Clin Microbiol. 2016 Dec; 54(12): 2910-8.doi:10.1128/JCM.01580-16 PMID:27629898

Moya L, Herrador Z, Ta-Tang TH, Rubio JM, Perteguer MJ, Hernandez-González A, et al. Evidence for Suppression of Onchocerciasis Transmission in Bioko Island, Equatorial Guinea. PLoS Negl Trop Dis. 2016 Jul 22; 10(7): e0004829. doi: 10.1371/journal.pntd.0004829 PMID:27448085

Participation in International Consortia

CNM professionals participate in a large number of international consortia, networks, and projects. For strategic reasons, participation in the 3rd Health Programme with the EMERGE: Efficient response to highly dangerous and emerging pathogens at EU level project is particularly noteworthy.

The CNM collaborates on the coordination of the ViroRed thematic network for the Ibero-American Programme of Science and Technology for Development (CYTED), which currently comprises laboratories from health institutes and universities in 14 Latin American countries, Spain, and Portugal.

In this matter, the renewal of the Leishmania Unit of the Parasitology Research and Reference Laboratory as a WHO Collaborating Laboratory as well as the renewal of the Neisseria, Listeria, and Bordetella Unit of the Vaccine-Preventable Bacterial Disease Research and Reference Laboratory as an external Reference Laboratory for the SIREVA II Network of the Pan-American Health Organization (PAHO) are particularly noteworthy.

Training

Numerous teaching and educational activities were carried out in 2016. Over 200 external rotations were received and national and international visitors took part in development and training activities.

The most significant activities in this regard are:

- Official Master's Degree in Microbiology for Public Health and Infectious Disease Research coordinated by the University of Alcalá de Henares, with over 60 professors from the CNM taking part.
- Master's Degree in Virology from the Complutense University of Madrid (UCM) in which, through a collaboration agreement between ISCIII and UCM, 20 CNM researchers either gave lessons or coordinated courses.

NATIONAL EPIDEMIOLOGY CENTRE.

The goal of the National Epidemiology Centre (CNE) is to analyse the state of public health in Spain and the impact of health policies on the population. The CNE is responsible for 1) the National Network for Epidemiological Surveillance (RENAVE); 2) training epidemiologists; 3) epidemiological research and; 4) Spain's contribution to European Epidemiological Surveillance for the European Centre for Disease Prevention and Control (ECDC)

Scientific and Technical Activities

Within the scope of its healthcare competencies and under the tutelage of the MSSSI, the CNE collaborates in all activities, plans, and actions to control, prevent, and/or eliminate diseases. The activity areas are focused on:

Chronic Diseases and Health Policy Impacts: 1) Monitoring cancer in Spain, a national reference unit for studying the spatial and temporal distribution of cancer and its genetic molecular epidemiology, especially in breast cancer. 2) Epidemiology of cardiovascular and neurodegenerative diseases. Monitoring the impact of health policies, ageing, disability, and the methods for assessing them. Registry of diseases caused by prions. Mental health epidemiology. 3) Analysing the state of health: updating mortality, inequality analysis, and social determinants online. Epidemiology of deaths due to external causes and analysis of disability and accident rates.

Communicable Diseases: 1) Epidemiological surveillance of 60 notifiable diseases and outbreaks that the RENAVE was notified about. Management of surveillance through the online notification platform (SiViEs). Consulting for the Health Alerts and Emergency Coordination Centre (CCAES) on communicable disease surveillance. Point of contact for international bodies on matters of communicable disease surveillance. Development of the daily mortality rate surveillance system (MoMo). Management of surveillance systems involved in monitoring of flu activity and respiratory viruses. Implementation of a sur-

veillance system for healthcare-associated infections (HCAIs). Participation in developing the Strategic Plan on Control of Antimicrobial Resistance. 2) HIV/Aids and risk behaviours: surveillance of alcohol and psychoactive substance consumption and assessment of policies for its control, in collaboration with the Spanish National Drug Strategy and the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA); evaluation of policies on early diagnosis of HIV (rapid tests and self-tests, in collaboration with the Spanish National AIDS Plan); evaluation of social conduct and inequalities.

Epidemiology and Public Health Research

2016 Scientific Activity				
National Research Projects	Competitive Projects	International Research Projects	National	Publicaciones internacionales
25	33	**11**	**16**	**153**

The main lines of research according to thematic area were: 1) Environmental Epidemiology and Cancer: Environmental, occupational, and lifestyle epidemiological studies. **2) Applied Epidemiology:** Impact of Law 28/2005, on Healthcare Measures Against Smoking. Ageing and predictors of mortality and disability. Dementia, Parkinsonism, and prion diseases. Addiction, obesity, and cardiovascular risk factors. **3) Analysis of the state of health:** Gender-based violence. Morbidity and mortality due to external causes. **4) HIV/Aids:** Natural infection history of HIV (CoRIS and GEMES cohorts). Epidemiology and progression of HIV infection in immigrants. Diagnostic delay in HIV infection. Reproductive health of HIV+ women. Human papillomavirus epidemiology. Methodology of longitudinal cohort studies on HIV+ subjects. **5) Risk Behaviours and Socially-Vulnerable Populations:** Project translating the experience of Spain and European countries in relation to policies to reduce the harm from substance use to some Eastern European countries, in collaboration with CHAFEA. Assessment of social inequalities in mortality and the impact of different socio-economic determinants on it. **6) Communicable Diseases:** Study of the incidence of communicable disease, risk factors, and epidemiological analysis. Assessment of the effectiveness of the flu vaccine in Spain and Europe. Contributions to the polio, measles, rubella, and tuberculosis control and elimination plans. Participation (contribution to the ECDC and WHO) in communicable disease surveillance in Europe. Estimation of the disease burden of the flu. Development. Methodology for assessing the severity of flu epidemics and pandemics. la gravedad de las epidemias y pandemias de gripe.

Scientific Production

Alejos B, Hernando V, Iribarren J, Gonzalez-García J, Hernando A, Santos J, et al. CoRIS (Cohort of the Spanish Network on HIVAIDS Research). Overall and cause-specific excess mortality in HIV-positive persons compared with the general population: Role of HCV coinfection. Medicine (Baltimore). 2016 Sep;95(36):e4727. doi: 10.1097/MD.0000000000004727 PMID:27603368

Álvaro-Meca A, Díaz A, de Miguel Díez J, Resino R, Resino S. Environmental Factors Related to Pulmonary Tuberculosis in HIV-Infected Patients in the Combined Antiretroviral Therapy (cART) Era. PLoS One. 2016 Nov 3; 11 (11):e0165944. doi: 10.1371/journal.pone.0165944 PMID:27812194

Brugal MT, Molist G, Sarasa-Renedo A, de la Fuente L, Espelt A, Mesias B, et al, Spanish Working Group for the Study of mortality among Drug Users. Assessing gender disparities in excess mortality of heroin or cocaine users compared to the general population. Int J Drug Policy. 2016 Dec; 38: 36-42. doi: 10.1016/j.drugpo.2016.10.009 PMID:27842252

Chang Y, Ryu S, Choi Y, Zhang Y, Cho J, Kwon MJ et al. Metabolically healthy obesity and development of chronic kidney disease: a cohort study. Ann Intern Med 2016 Mar 1; 164: 305-12.doi: 10.7326/M15-1323.PMID: 26857595

De Pedro-Cuesta J, Martínez-Martín P, Rábano A, Ruiz-Tovar M, Alcalde-Cabero E, Calero M. Etiologic Framework for the Study of Neurodegenerative Disorders as Well as Vascular and Metabolic Comorbidities on the Grounds of Shared Epidemiologic and Biologic Features. Front Aging Neurosci 2016 Jun 13; 8: 138doi: 10.3389/fnagi.2016.00138 PMID:27378910

Gherasim A, Pozo F, de Mateo S, Aspiritxaga Gamarra I, García-Cenoz M, Vega T et al., cycEVA team and the VEVA Working Group. Waning protection of influenza vaccine against mild laboratory confirmed influenza A(H3N2) and B in Spain, season 2014-15. Vaccine. 2016 Apr 29;34(20):2371-7. doi: 10.1016/j.vaccine.2016.03.035PMID:27020713

Jung M, Kuniholm MH, Ho GY, Cotler S, Strickler HD, Thyagarajan B, et al. The distribution of hepatitis B virus exposure and infection in a population-based sample of U.S. Hispanic adults. Hepatology 2016 Feb;63(2):445-52. doi: 10.1002/hep.28328 PMID:26523403

Kissling E1, Nunes B, Robertson C, Valenciano M, Reuss A, Larrauri A, et al. I-MOVE case–control study team. I-MOVE multicentre case-control study 2010/11 to 2014/15: Is there within-season waning of influenza type/subtype vaccine effectiveness with increasing time since vaccination? Euro Surveill. 2016 Apr 21;21(16). doi: 10.2807/1560-7917.ES.2016.21.16.30201PMID:27124420

Palmera-Suárez R, López-Cuadrado T, Brockhaus S, Fernández-Cuenca R, Alcalde-Cabero E, Galán I. Severity of disability related to road traffic crashes in the Spanish adult population. Accid Anal Prev. 2016 Jun;91:36-42.doi: 10.1016/j.aap.2016.02.024 PMID:26950034

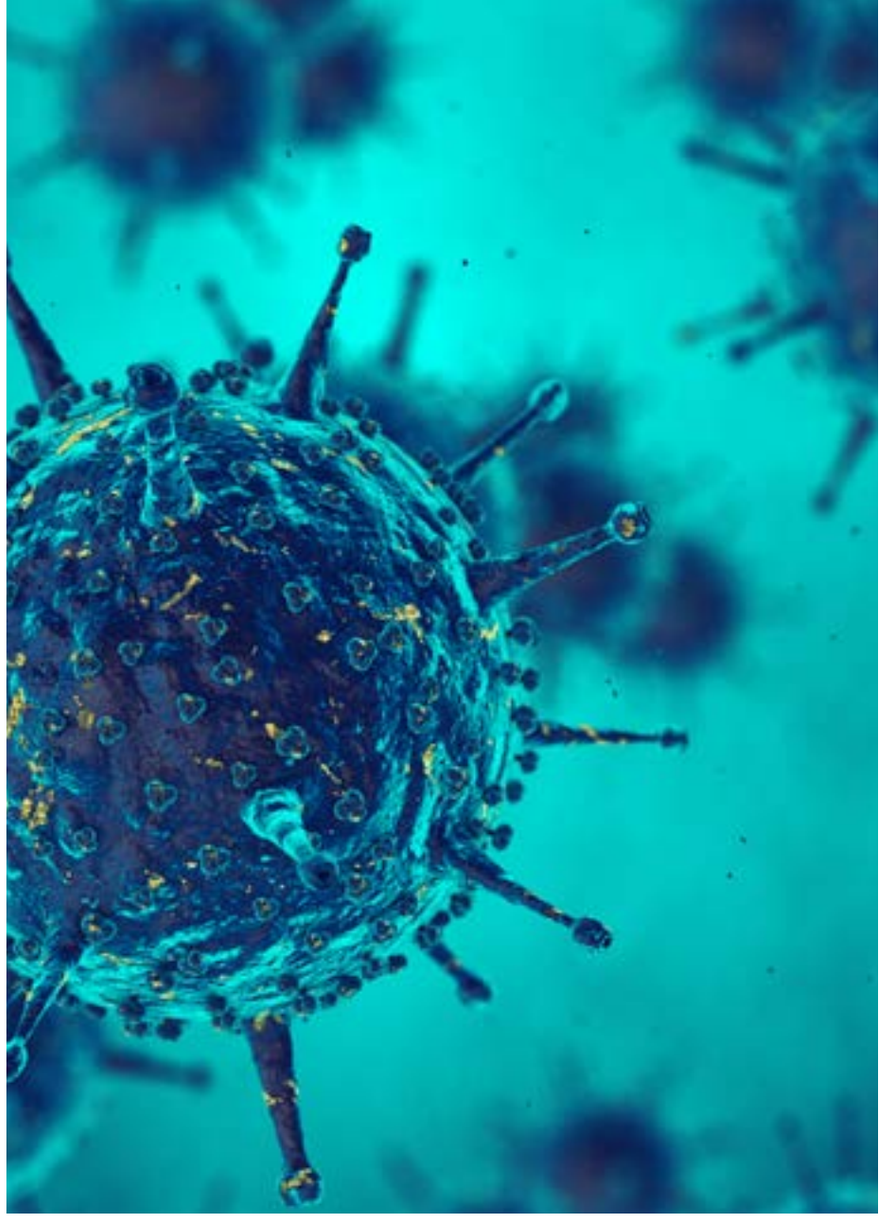
Pastor-Barriuso R, Fernández MF, Castaño-Vinyals G, Whelan D, Perez-Gomez B, Llorca J, et al. Total Effective Xenoestrogen Burden in Serum Samples and Risk for Breast Cancer in a Population-Based Multicase-Control Study in Spain. Environ Health Perspect. 2016 Oct;124(10):1575-1582. doi: 10.1289/EHP157. PMID: 27203080

Regidor E, Vallejo F, Granados JA, Viciana-Fernandez FJ, de la Fuente L, Barrio G. Mortality decrease according to socioeconomic groups during the economic crisis in Spain: a cohort study of 36 million people. Lancet. 2016 Nov 26; 388(10060): 2642-52doi: 10.1016/S0140-6736(16)30446-9 PMID:27745879

Risco-Risco C, Masa-Calles J, Noemí López-Perea, Echevarría JE, Rodríguez-Caravaca G. Epidemiología del sarampión en personas vacunadas, España 2003-2014. Enferm Infecc Microbiol Clin. 2016 Jun 1. pii: S0213-005X(16)30106-9. doi: 10.1016/j.eimc.2016.05.001. PMID:27262819

Training

Applied Field Epidemiology Programme (PEAC): Led by the CNE since 1994. In 2016, three epidemiologists were trained (within the EPIET Programme) and took part in 11 epidemiological studies. On the international level, the PEAC participates in the global Training Programs in Epidemiology and Public



Health Interventions Network (TEPHINET) and collaborated with MSF on two missions. In addition, the PEAC programme also includes the European Medi-PIET project, led by the Spanish ISCIII-FIAPP consortium. The PEAC produced four international publications and two national publications. It coordinated a work group to reform the PEAC (emerging from the Presentation on Surveillance). Furthermore, it conducted a survey on training needs in the epidemiology and public health departments of Autonomous Communities and the General State Administration in order to adapt them to current needs.

The CNE took part in 94 seminars, was involved in 77 teaching programmes, had seven MIR rotations, directed 17 doctoral theses, and participated in 12

thesis committees. Five theses were defended.

NATIONAL ENVIRONMENTAL HEALTH CENTRE

The National Environmental Health Centre (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 National Accreditation Entity (ENAC) for 156 tests.

Highlighted Activities

- Scientific and technical support for the Autonomous Communities of Castile-La Mancha and Madrid following the fire at a used tyre dump in Seseña (Toledo).
- The European HBM4EU project for the development of the European Human Biomonitoring Initiative as part of the H2020 programme. Management committee.

Scientific and Technical Services

Completion of 150,000 tests, 150 bioassays, and 30 calibrations of ozone transfer standards against the national calibration standard.

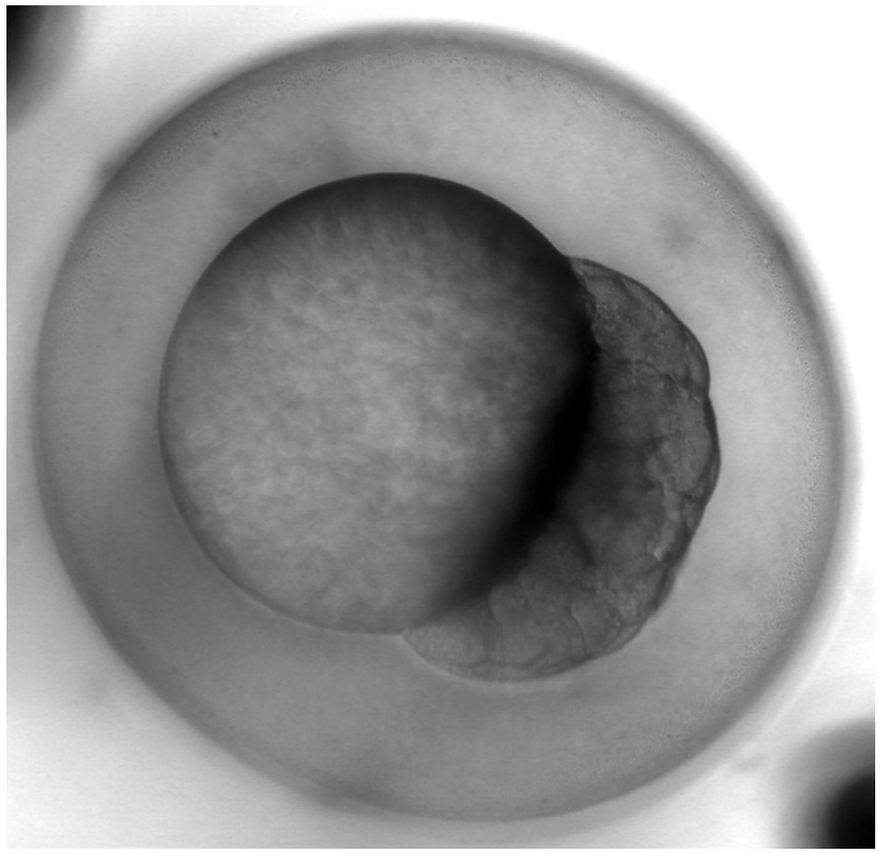
Creation of 112 reports for the European Food Safety Authority (EFSA) as experts in active substance and phytosanitary product risk assessment.

Organization of three comparative exercises with 17 on-site ozone air quality networks from Autonomous Communities and local authorities as well as the creation of two technical documents, as a National Reference Laboratory for air quality (RD102/2011).

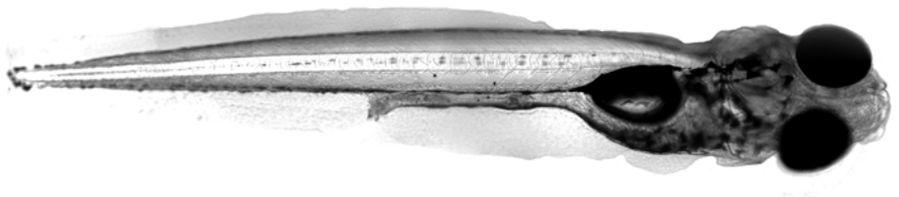
Supervision of five air quality surveillance networks and one test laboratory in accordance with Directive 2015/1480/EC.

Participation in the Governing Boards for both the National Radiation Protection R&D Platform (PEPRI) and the COST EMF-MED Action Group, a European network for cooperation on research and technology on the beneficial biological effects of electromagnetic fields.

Scientific and technical support and consulting for the Command Post during the 2016 SUR Emergency Exercises. Ministry of Defence's Military Emergencies Unit.



Zebra fish embryo. *Aránzazu Sanchis Otero, Jesús Pablo García Cambero. CNSA.*



Zebra fish embryo. *Jesús Pablo García Cambero. CNSA.*

Scientific Production

Beccaceci S, Brown, RJ, Butterfield DM, Harris PM., Otjes RP, Van Hoek C, et al.Standarisation of a European measurement method for the determination of anions and cations in PM2,5: results of field trial campaign and determination of measurement uncertainty. Environ Sci Process Impacts. 2016 Dec 8;18(12): 1561-71.doi:10.1039/c6em00549g PMID:27886312

Bartolomé M, Gallego-Picó A, Huetos O, Lucena MA, Castaño A. A fast method for analysing six perfluoroalkyl substances in human serum by solid-phase extraction on-line coupled to liquid chromatography tandem mass spectrometry, Anal bioanal Chem. 2016 Mar;408(8):2159-70.doi: 10.1007/s00216-016-9319-0 PMID:26790871

Molina MC, González N, Simarro R, Bautista LF, Vargas C, García-Cambero JP et al. Bioremediation techniques for naproxen and carbamazepine elimination. Toxicity evaluation test. Chim Oggi. 2016 Apr; 34(2): 52-5.

Carballo M, Aguayo S, González M, Esperón F, de la Torre A. Environmental assessment of tetracycline´s residues detected in pig slurry and pultry manure. J Environ Prot. 2016. 7: 82-92. doi: 10.4236/jep.2016.71008

Ruiz Gimeno C, Moracho J, Sánchez L, Ballesteros C, Medina P, Castro J. Estudio estadístico de la actividad desarrollada en la Uindad de Dosimetría Ambiental y personal del Servicio de Radioprotección del Centro Nacional de Sanidad Ambiental. Radioprotección. 2016 Ene; 84:17-21

Fundraising

European H2020 ICARUS Project (air quality and climate change).

AESI Project for the creation of a "National Centre for Coordinating Biomonitoring Studies of the Spanish Population".

Extension of ISCIII-MAGRAMA management delegation "Research and surveillance of persistent organic pollutants in humans."

Management delegation, with AEMET, for the analysis of samples from the EMEP/VAG/CAMP network and support for managing network quality. Seven new collaboration agreements on matters of air quality were signed.

AESI 2016 Project "Evaluation of the toxicological role of PAHs associated with PM10 particles through an alternative model with zebrafish embryos."

The management delegation agreements with the INIA, the MSSSI (assessment of the risk to human health of phytosanitary products), AEMET, and MAGRAMA (air quality) as well as over 400 collaboration agreements for dosimetric control with different entities, both public and private, remain active.

Projects: BRIDGE-Health (EC 3rd Health Programme) "Advanced health surveillance technology;" DGU-CAM, "Use of embryos for toxicological analysis: Pedagogical Impact;" Alfonso X El Sabio University, "Development of a measuring system for the dielectric characterisation of toxicological trial organisms;" on drug residue in water (CAM); and the CEN/TC 264 WG/34 "Development of a normalised method for measuring anions and cations in PM2.5 atmosphere particles."

Noteworthy Actions at International Meetings

- Castaño, A. & Berglund, M.: Quality Assurance in Human Biomonitoring. 2nd International Conference on Human Biomonitoring, Berlin (Germany), April, 2016.
- Castaño, A. HBM4EU Launch Event. European Parliament. 2016

Participation in Standardisation and Institutional Representation Committees

- Presidency of the AEN/CTN 77 "Environment" Technical Standardisation Committee, presidency and membership in the AEN/CETN 77/SC2 "Air" Subcommittee, membership in the AEN/CTN/SC1 "Water" Subcommittee, and membership in the AEN/CTN 215 "Electromagnetic Fields" committee.
- Participation in the 12, 34, 42 WGs of the CEN/TC 264 "Air Quality."
- Members of the Steering Group for the European Human Biomonitoring Initiative (EHBMI), D.G. for Research (EC).
- Membership in the Quality and Treatment Commission of the Spanish Association of Water Supply and Sanitation. AEAS and Work Group III: Water Quality for the Climate Change and Health Observatory (OSCC).
- Participation in the "Analysis Methods" work group on the implementation of RD 314/2016, on radioactive substances in water intended for human consumption.

Training

Organising and teaching of internal and external seminars, teaching in six courses (4 Master's courses) organised by various Spanish universities and the ENS. Co-directing of end-of-degree projects (TFG) and mentoring of external internships in collaboration with the Complutense University of Madrid, King Juan Carlos University, and Alfonso X El Sabio University. Collaboration with the Czech Academy of Sciences' Institute of Photonics and Electronics. Mentoring of internships for Specialised Technicians in Environmental Health and Chemistry.

NATIONAL STEM CELL BANK (BNLC)

The Management, Presidency, and Secretariat of the Technical Commission for the National Stem Cell Bank is under the Sub-Directorate General for Research on Cellular Therapy and Regenerative Medicine. It acts as a networked biobank with hubs in Granada, Barcelona, Valencia, and San Sebastián. It ensures that all stem cell lines that come from Spain are available to the scientific community.

Cell Lines Deposited in 2016

A total of 27 induced pluripotent stem cells (iPS) were deposited in the BNLC in 2016. These stem cell lines were developed in the following research centres: eight in the Centre of Regenerative Medicine in Barcelona (CMRB), six in the "Alberto Sols" Biomedical Research Institute (IIB), four in the INBIOMED Foundation, three in the National Cardiovascular Research Centre (CNIC), three in the Research Centre for Energy, Environment and Technology (CIEMAT), two in the Príncipe Felipe Research Centre, and one in the University of Valencia.

Lines Requested

In 2016, the transfer of twenty stem cell lines were requested and approved for eleven projects being carried out by six researchers.

- Embryonic lines: the ES2, ES4, ES10, VAL-9 lines were requested for ten research projects.
- iPS Lines: the XF-iPSF44-3F-1; CBiPS30-4F-5; SP02#1; SP08#1; SP13#4; RP1-FiPS4F1 lines were requested for nine projects.
- Adult cell lines: mesenchymal stem cells from bone marrow were requested for one project.

OFFICE FOR THE TRANSFERENCE OF RESEARCH RESULTS (OTRI)

In accordance with its Statute, ISCIII's OTRI is responsible for managing and coordinating the transfer of research results. The OTRI fosters relationships amongst science, technology, and business in addition to contributing to the application and commercialisation of the results of R&D generated at ISCIII. Its main objective is to bring ISCIII's knowledge and skills to the SNS and to society.

It manages the technical aspects related to the negotiation and writing of contracts, the preparation of patent requests, the organisation and dissemination of the technological offer, direct contact with businesses, and more. It seeks to identify the technological requirements of different socioeconomic sectors and promote the transfer of technology between the public and private sector. In 2016, of its main activities, the following were of note:

Patent Management

In 2016, OTRI has a portfolio of 52 patents, between those that have been requested and those granted. Of these, 10 are Spanish national patents and are 42 foreign. In total, they belong to a total of 25 priority patents or patent families. The new patent requests processed are:

- Methods for Generating Induced Pluripotent Stem Cells
- Maca extract and procedures for obtaining compounds that have antiviral activity from maca

The above two patents are jointly held. The first was applied for as a priority patent in the US jointly with the University of Michigan and the Progress and Health Foundation, with an additional PCT application submitted for it as well. The other patent is held jointly with the Complutense University of Madrid.

Intellectual Property Registries

Three works were able to be registered as intellectual property in 2016. All of them correspond to software developments for mobile applications.

Licenses for Materials and Know-How

Various national and international agreements were processed in order to transfer and license the use of materials.

Dissemination of the Technological Offer: Attending Fairs and Congresses

In 2016, the OTRI actively participated in the TRANSFIERE2016 European Meeting on Science, Technology, and Innovation, held in Malaga, and Biospain2016 (8th International Meeting on Biotechnology), held in Bilbao. At both events, ISCIII participated with a stand, where the Institute's technical and scientific offer was disseminated, and held meetings with businesses in the sector. Additionally, it continued disseminating its technological offer via email and through online portals such as the Enterprise Europe Network (EEN) and ISCIII's own website.

Other Activities: Consulting and Advising

Advisory services were provided for consultations from ISCIII researchers on issues of the possibility of patenting research results, processing various types of documents, ISCIII's internal procedures, motions, parliamentary questions, and draft regulations. Of these, the Royal Decree approving the Regulation of the Patent Law stands out.

Scientific Culture Unit

ISCIII's Scientific Culture and Innovation Unit (UCCIII+i), which was formally created at the end of 2014, aims to promote scientific culture and innovation in society in the fields of Health, Biomedicine, and Environmental Health by means of disseminating ISCIII's scientific activities as well as through specific activities carried out for this purpose.

In 2016, the UCCIII+i continued its consolidation within ISCIII and carried out a project funded by the Spanish Foundation for Science and Technology (FECYT) titled ISCIII's Outreach for all (ISCIII within the reach of all). The most noteworthy activities were:

- Radio workshop: En-réd-ate con la radio [Get tangled up with the radio]. (As part of European Researchers' Night).
- Co-organisation of three visits to ISCIII's Museum of Public Health and Hygiene. (As part of Science Week).
- Presentation of a collection of books titled Más que salud [More than Health] in the La Casa del Libro bookshop on Madrid's Gran Vía. (As part of Science Week).
- We continue researching HIV: What are the CoRIS Cohort and the HIV Biobank and what are they for? (As part of Science Week).
- Workshop: Scarf or fan? Development of a mobile application on the effects of temperature on health. (As part of Science Week).
- Several educational visits to ISCIII's gardens for schools. (Eight schools with a total of approximately 800 students).
- "Disseminating Science" training workshop.
- Collaboration with the BNCS on the coordination and launch of the Más que salud [More than Health] collection. The first three books in the collection have been published: Antibiotic Resistance, Rare Diseases, and Air Pollution.
- Lo invisible [The Invisible] photo exhibition, which attempts to bring the general public closer to the research work done at ISCIII. It uses fluorescence microscopy as a work tool. The technique used creates beautiful photos.

Agency for Health Technology Assessment (AETS)

The AETS addresses the SNS' needs for scientific information and evidence related to determining its policy on healthcare benefits and improving its quality and efficiency. In order to do so, the AETS offers objective assessments of the health, social, ethical, organisational, and economic impacts of health techniques, procedures, and interventions to provide a scientific basis for the decisions made by authorities and other healthcare agents. Since 2012, part of the AETS' technical services have belonged to the "Spanish Network of Agencies for Assessing National Health System Technologies and Performance."

The AETS' participation in activities for European cooperation on Health Technology Assessment was particularly noteworthy in 2016.

Scientific and Technical Activities

The Spanish Network of Agencies for Assessing National Health System Technologies and Performance's Work Plan.

Health Technology Evaluation Reports

- Petö Method for rehabilitating children with infantile cerebral palsy or related neurological conditions.
- Hyperbaric oxygen therapy as a complementary therapy for complex regional pain syndrome or reflex sympathetic dystrophy (CRPS Type 1 - RSD)
- The effectiveness of fine-needle aspiration versus lymph node biopsy in the diagnosis of lymphoid neoplasia.
- Analysis of the efficacy, safety, and efficiency of plasmapheresis in treating Alzheimer's disease.
- The efficacy and safety of radical cytoreductive surgery with hyperthermic intraperitoneal chemotherapy (RCS+HIPEC) in treating peritoneal carcinomatosis.

Monitoring Studies

- Left atrial appendage closure (occluder) device.
- Biodegradable oesophageal stents for benign pathologies.

SINTESIS - New Technologies. New and Emerging Health Technology Detection System.

Ten emerging technologies were identified and analysed in 2016.

Research Projects

"EUnetHTA Joint Action 3 - European Network for Health Technology Assessment." A joint initiative of European Member States funded by the Programme of Community Action in the Field of Public Health. (2016 – 2020).

CHRODIS The Joint Action on Chronic Diseases and promoting healthy ageing across the life cycle (CHRODIS-JA).

FIS PI15/01377 "Effectiveness and cost-effectiveness of a multi-component strategy to implement clinical practice guidelines and improve health outcomes in people with systemic lupus erythematosus." (2016-2018).

Longitudinal Study of Active Ageing (ELEA). IMSERSO National Plan.

FID Health Programme

In 2016, the FID Health Programme continued. It seeks to identify, assess, and select innovative proposals from health administrations within the Public Procurement for Innovation framework in order to secure funding from multi-regional ERDF funds. ISCIII, through the AETS, provides support for the execution of the programme's second call.

Scientific Production

Asensio del Barrio C, Carmona Alférez R, Sarría Santamera A, Fernández Ramos A. Efectividad terapéutica y seguridad de la radioembolización con microesferas marcadas con Itrio-90 en tumores hepáticos: Revisión sistemática y Meta-análisis [Internet]. Madrid: AETS- ISCIII– MEIC; 2016 [citado 27 de marzo de 2017] p. 288. http://gesdoc.isciii.es/gesdoccontroller?action=download&id=01/12/2016-c47efc2c7f

Bouza C, Lopez-Cuadrado T, Amate-Blanco JM. Use of explicit ICD9-CM codes to identify adult severe sepsis: impacts on epidemiological estimates. Crit Care. octubre de 2016;20(1):313. doi:10.1186/s13054-016-1497-9. PMID: 27716355

Bouza C, López-Cuadrado T, Amate-Blanco JM. Characteristics, incidence and temporal trends of sepsis in elderly patients undergoing surgery. Br J Surg. 2016Ene;103(2):e73-82. doi: 10.1002/bjs.10065. PMID: 26670423

Custodio E, Herrero M, Bouza C, López-Alcalde J, Benito A, Alvar J. Nutritional supplements for patients being treated for active visceral leishmaniasis (Protocol). Cochrane Database of Systematic Reviews 2016, Issue 6. Art. No.: CD012261. doi: 10.1002/14651858.CD012261

García-Lizana F, Castro-Rodríguez M, Carantoña E, Traver-Salcedo V, De-Manuel E, Fico G, y col. Análisis de la estrategia de la cooperación para la innovación europea sobre el envejecimiento activo y saludable y su impacto en España. Logros y propuestas de mejora para el período 2016-2020 [Internet]. Madrid: AETS-ISCIII- MEIC; 2016 p. 106. http://gesdoc.isciii.es/gesdoccontroller?action=download&id=21/12/2016-a6d66c494f

García-Lizana F. Evaluar para publicar vs Evaluar para transformar. En: eSalud aplicaciones y tendencias [Internet]. 1ra ed. Madrid: Fundación Gaspar Casal; 2016 [citado 24 de marzo de 2017]. p. 283. Disponible en: http://www.fgcasal.org/publicaciones/Libro_eSalud_aplicaciones_y_tendencias.pdf

Imaz-Iglesia I, García-Pérez S, Nachtnebel A, Martín-Águeda B, Sánchez-Piedra C, Karadayi B, y col. Biodegradable stents for the treatment of refractory or recurrent benign esophageal stenosis. Expert Rev Med Devices. 2016 Jun;13(6):583-99. doi: 10.1080/17434440.2016.1184967. PMID: 27152556

Rodríguez-Blázquez M, Andrés MJ, Damián J, João Forjaz M, Almazán –Isla J, Alcalde-Cabero E, Castellote JM, González-Enríquez J, y col. Associations between chronic conditions, body functions, activities limitations and participation restrictions: cross-sectional approach in Spanish non-clinical populations. BMJ Open. 2016; 6:e010446. doi:10.1136/bmjopen-2015-010446. PMID: 27301483

Training and Consulting

The AETS participates as a teacher in post-graduate academic activities and as a centre for health professionals' rotations. Furthermore, the AETS is a member of the Executive Board of the EUnetHTA; the Commission for Benefits, Insurance, and Financing; and the SNS' Interterritorial Board on Reference Centres, Services, and Units.

Verification of onchocerciasis transmission in Equatorial Guinea. Agustín Benito Llanes. CNMT.

NATIONAL CENTRE OF TROPICAL MEDICINE

The National Centre of Tropical Medicine (CNMT) was created by an Order of 27 December 2001 (published in the Official State Gazette on 11 January 2002) to respond to growing international mobility (immigration and travelling) and also the increased Spanish presence in programmes for international cooperation. Its aims include reinforcing care, research, and teaching on tropical diseases and establishing programmes for scientific and technical cooperation with countries where these pathologies exist.

Highlighted Activities

Renewal of the Collaborative Tropical Disease Research Network (RICET). RD16CIII/0003/0001. End: 2021

Beginning of studies to certify the elimination of onchocerciasis on Bioko island, Equatorial Guinea. TaskForce NTDs Project through the FCSAI.

Projects and Activities for International Cooperation on Development

Extension of the pilot project for implementing continuous improvement plans for managing malaria, HIV/AIDS, and tuberculosis in hospitals in the provinces of Litoral, Kié-Ntem, and Wele-Nzas, Equatorial Guinea. AECID Management Agreements with the FCSAI Foundation in which the CNMT acts as coordinator and PI.

"Strengthening Epidemiological Surveillance in Equatorial Guinea." The CNMT participates as PI in this agreement between the FRS and the FCSAI. Start: 31/07/2015. End: 31/07/2018.

Verification of the interruption of onchocerciasis transmission on Bioko island, Equatorial Guinea, funded by the Task Force NTDs through the FCSAI Foundation. The CNMT participates as PI. Start: 01/06/2016. End: 30/06/2017.

Functional characterisation of the MBL (Mannose-Binding Lectin) of T. brucei gambiense involved in resistance to the human serum. TRPY 1283/15 Project.

Coordination of the Collaborative Tropical Disease Research Network (RICET):

Programme for the Prevention and Control of High-Impact Imported and/or Re-emerging Tropical Diseases. RD12/0018/0001.

Technical Support for the National Public Health Laboratory in Equatorial Guinea funded by the Ministry of Health and Social Welfare of Equatorial Guinea. Project-Santé/BAD. TRVE 1242/15.

Scientific Production

Romay-Barja M, Ncogo P, Nseng G, Santana-Morales MA, Herrador Z, Berzosa P, et al. Caregivers' Malaria Knowledge, Beliefs and Attitudes, and Related Factors in the Bata District, Equatorial Guinea. PLoS One. 2016 Dec 30;11(12):e0168668. doi: 10.1371/journal.pone.0168668 PMID:28036341

Amor A, Rodriguez E, Saugar JM, Arroyo A, López-Quintana B, Abera B, et al. High prevalence of Strongyloides stercoralis in school-aged children in a rural highland of north-western Ethiopia: the role of intensive diagnostic work-up. Parasit Vectors. 2016 Dec 1;9(1):617. doi:10.1186/s13071-016-1912-8 PMID: 27903301

Hernández-González A, Moya L, Perteguer MJ, Herrador Z, Nguema R, Nguema J, et al. Evaluation of onchocerciasis seroprevalence in Bioko Island (Equatorial Guinea) after years of disease control programmes. Parasit Vectors. 2016 Sep 20;9(1):509. doi: 10.1186/s13071-016-1779-8 PMID:27645887

Fagundez G, Perez-Freixo H, Eyene J, Momo JC, Biyé L, Esono T,, et al. Treatment Adherence of Tuberculosis Patients Attending Two Reference Units in Equatorial Guinea. PLoS One. 2016 Sep 13;11(9):e0161995. doi: 10.1371/journal.pone.0161995 PMID:27622461

Herrador Z, Siles-Lucas M, Aparicio P, Lopez-Velez R, Gherasim A, Garate T, Benito A. Cystic Echinococcosis Epidemiology in Spain Based on Hospitalization Records, 1997-2012. PLoS Negl Trop Dis. 2016 Aug 22;10(8):e0004942. doi: 10.1371/journal.pntd.0004942 PMID:27547975

Moya L, Herrador Z, Ta-Tang TH, Rubio JM, Perteguer MJ, Hernandez-González A, et al. Evidence for Suppression of Onchocerciasis Transmission in Bioko Island, Equatorial Guinea. PLoS Negl Trop Dis. 2016 Jul 22;10(7):e0004829. doi: 10.1371/journal.pntd.0004829 PMID:27448085

Blasco-Hernández T, Miguel LG, Navaza B, Navarro M, Benito A. Knowledge and experiences of Chagas disease in Bolivian women living in Spain: a qualitative study. Glob Health Action. 2016 Jan;9(1):30201. doi: 10.3402/gha.v9.30201 PMID:28157048

Alvarez P, Fernández McPhee C, Prieto L, Martín L, Obiang J, Avedillo P,, et al.. HIV-1 Variants and Drug Resistance in Pregnant Women from Bata (Equatorial Guinea): 2012-2013. PLoS One. 2016 Oct 31;11(10):e0165333. doi: 10.1371/journal.pone.0165333 PMID:27798676

Romay-Barja M, Cano J, Ncogo P, Nseng G, Santana-Morales MA, Valladares B, et al. Determinants of delay in malaria care-seeking behaviour for children 15 years and under in Bata district, Equatorial Guinea. Malar J. 2016 Mar 31;15:187. doi: 10.1186/s12936-016-1239-0 PMID:27036554

Guerra M, Neres R, Salgueiro P, Mendes C, Ndong-Mabale N, Berzosa P, et al. Plasmodium falciparum Genetic Diversity in Continental Equatorial Guinea before and after Introduction of Artemisinin-Based Combination Therapy. Antimicrob Agents Chemother. 2016 Dec 27;61(1). pii: e02556-15. doi: 10.1128/AAC.02556-15 PMID:27795385

RESEARCH INSTITUTE FOR RARE DISEASES

The functions of the Research Institute for Rare Diseases (IIER) include diagnosing, researching, and registering rare diseases, including congenital anomalies, autism spectrum disorders, and toxic oil syndrome.

Scientific and Technical Activities

Biobank

The National Rare Disease Biobank (BioNER) continues its activity at the heart of ISCIII's Biobank Platform as well as at the European Eurobiobank and RD-CONNECT networks. In 2016, 115 new donors were recorded. Eva Bermejo took control of scientific management of ISCIII's National Biobank in 2016.

Genetic Diagnosis Services

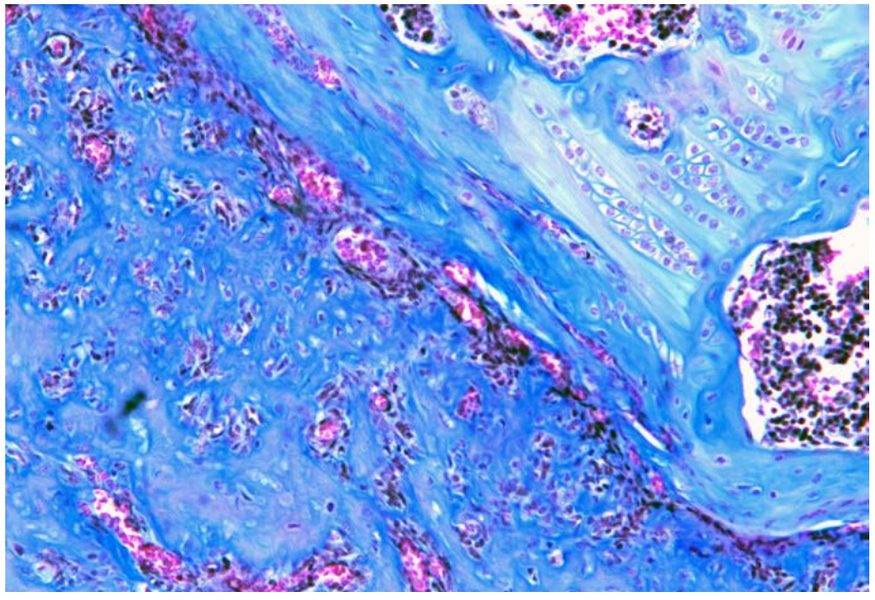
The genetic diagnosis unit is the only Spanish laboratory accredited according to the ISO15189 quality standard, granted by ENAC, for identifying genetic abnormalities in retinoblastoma. It diagnoses rare childhood tumours and alpha-1 antitrypsin deficiency. It is also responsible for genetic diagnosis for the rare undiagnosed disease programme and for BioNER. Over the course of this year, 4,663 tests were carried out on 448 cases.

Patient and Organisation Consultation System

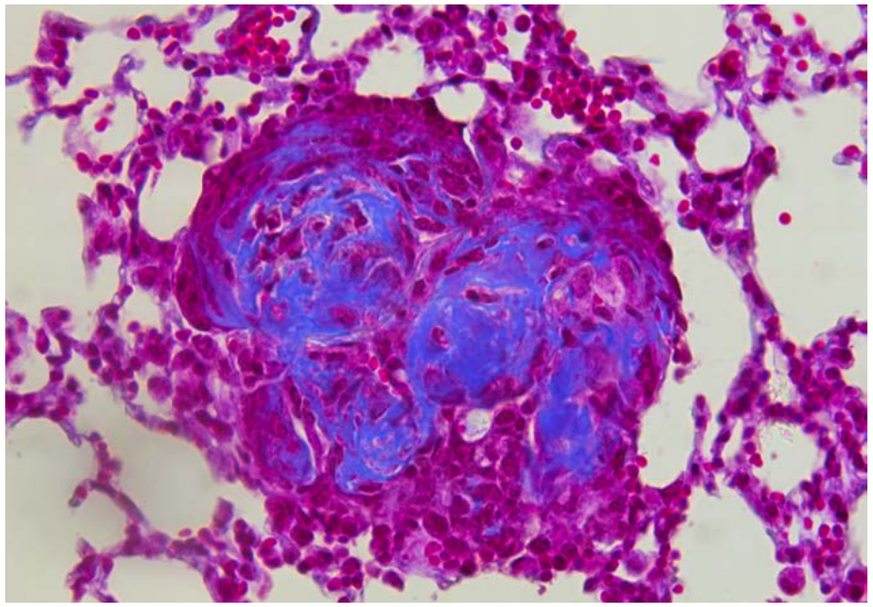
A total of 739 consultations were received, of which 324 were on issues related to rare diseases and the remaining 415 were related to toxic oil syndrome.

Lines of Research in Rare Diseases

The IIER conducts basic and translational research in the field of rare diseases, toxic oil syndrome, and autism spectrum disorder. The main lines of research are: 1) role of abnormalities in the innate immune system in rare diseases, 2) the study of rare paediatric tumours: genetic abnormalities and cellular therapy, 3) gene and cellular therapy in congenital muscular dystrophy and rare tumours, 4) the involvement of microRNAs in rare disease development and their role as biomarkers, 5) applying new genetic analysis technology to diagnosing rare diseases, 6) the epidemiology of rare diseases, 7) risk factors and the prevention of congenital anomalies, work carried out in collaboration with the CIAC (see this centre's section in the annual report), 8) collaboration on CIBERER research activities and ISCIII's Biobank platform, 9) in the field of translational research, participation in different projects on quality of life and



Osteosarcoma cells *developing on the compact bone surface of the tibia. Masson's Trichome Stain. Stefano Gambera, Javier García Castro. IIER.*



Lung metastases from osteosarcoma: *the image indicates development of a lung nodule by bone matrix-producing osteosarcoma cells (blue). Masson's Trichome Stain. Stefano Gambera, Javier García Castro. IIER*

economic impact of patients with lupus erythematosus as well as the development of clinical practice guidelines and analysis of the cost-effectiveness of broadening the neonatal screening programme, 10) development of three-dimensional cultures (organoids) in order to model rare diseases that affect the liver, and 11) identification of disease-modifying genes in rare pulmonary diseases.

Special Programmes

The IIER operates the following programmes: 1) monitoring the toxic oil syndrome cohort in a total of 14,322 cases, identifying 196 instances of death in 2016, 2) collaboration on the development of a population-based screening programme for the early detection of ASDs in Salamanca and Zamora provinces, in collaboration with the University of Salamanca, with over 20,000 children screened since its beginnings and contributions made to the validation process of the new MCHAT-R screening tool, 3) at the Cellular Biotechnology unit, participation in a Phase 1 Clinical Trial (EudraCT: 2008-000364-16; clinicaltrial.gov number: NCT01844661), 4) management and coordination of the European project on ASD in the European Union.

The Rare Undiagnosed Disease Programme - SpainUDP

The IIER, which started this programme in 2011, collaborates with the Undiagnosed Diseases Network International. The network, created in 2015, is implementing communication systems for complex cases and opening lines of collaboration amongst groups. The IIER has a case registration system and a process for analysing them. It collaborates with the Puerta de Hierro University Hospital on those cases that require specific studies on the clinical phenotype. This programme contributes not only to providing diagnostic services but also to research. In 2016, the programme received 80 requests (66 from consultations and 14 from the rare disease registry), of which 51 were accepted. Of these, eight left the programme in 2016; nine are pending; 30 are being studied and four have been resolved.

National Rare Diseases Registry

In 2016, the National Rare Diseases Registry (ReeR) was developed. Three work groups were created in the MSSSI: 1) procedures manual, 2) standardisation, and 3) data access. Moreover, SpainRDR continued its work, now operating solely from ISCIII and focusing on patient registries. In 2016, new registries were incorporated and negations were opened with three other expert groups and/or medical societies. The number of cases added to the patient registry in 2016 was 314.

SpainMDB http://spainmdb.isciii.es Spain Mutation Database

This is an information system that stores all data on mutations found in Spanish patients affected by rare diseases and cancer.

ISCIII Dissemination

Posada de la Paz M, Alonso Ferreira V, Bermejo Sánchez E. Enfermedades Raras. (Colección Más que Salud). Madrid: Instituto de Salud Carlos III; Los Libros de la Catarata; 2016.

Scientific Production

Aggarwal N, Kropke J, Matamala N, Martinez-Delgado B, Martínez MT, Golpo H, et al. Alpha1-antitrypsin regulates transcriptional levels of serine proteases in blood mononuclear cells. Am J Resp Crit Care Med. 2016 May 1; 193(9):1065-7. doi:10.1164/rccm.201510-2062LE PMID: 27128707

Blas-Rus N, Bustos-Morán E, Pérez de Castro I, de Cárcer G, Borroto A, Camafeita E, et al. Aurora A drives early signalling and vesicle dynamics during T-cell activation. Nat Commun. 2016 Apr 19; 7:11389. doi: 10.1038/ncomms11389. PMID: 27091106

Ruiz-Pinto S, Pita G, Patino-Garcia A, Garcia-Miguel P, Alonso J, Perez-Martinez A, et al. Identification of genetic variants in pharmacokinetic genes associated with Ewing Sarcoma treatment outcome. Ann Oncol. 2016 Sep;27(9):1788-93. doi: 10.1093/annonc/mdw234 PMID: 27287205

Jimenez-Garcia L, Herranz S, Higueras MA, Luque A, Hortelano S. Tumor suppressor ARF regulates tissue microenvironment and tumor growth through modulation of macrophage polarization. Oncotarget. 2016 Oct 11;7(41):66835-50. doi: 10.18632/oncotarget.11652. PMID: 27572316

Matamala N, Vargas MT, González-Cámpora R, Arias JI, Menéndez P, Andrés-León E, et al. MicroRNA deregulation in triple negative breast cancer reveals a role of miR-498 in regulating BRCA1 expression. Oncotarget 2016 Apr 12;7(15):20068-79. doi: 10.18632/oncotarget.7705 PMID:26933805

García-Pérez J, Morales-Piga A, Gómez-Barroso D, Tamayo-Uria I, Pardo Romaguera E, Fernández-Navarro P, et al. Risk of neuroblastoma and re-

sidential proximity to industrial and urban sites: A case-control study. Environ Int; 2016 Jul-Aug;92-93:269-75.doi:10.1016/j.envint.2016.04.023 PMID: 27123770

Melen GJ, Franco L, Ruano D, González-Murillo Á, Alfranca A, Casco F, et al. Influence of carrier cells on the clinical outcome of children with neuroblastoma treated with high dose of oncolytic adenovirus delivered in mesenchymal stem cells. Cancer lett. 2016 Feb 28; 371(2): 161-170. doi:10.1016/j.canlet.2015.11.036 PMID:26655276

Martinez-Cruzado L, Tornin J, Santos L, Rodriguez A, García-Castro J, Morís F, et al. Aldh1 Expression and Activity Increase During Tumor Evolution in Sarcoma Cancer Stem Cell Populations. Sci Rep.2016 Jun 13; 6:27878. doi: 10.1038/srep27878 PMID:27292183

Nieto-Soler M, Morgado-Palacin I, Lafarga V, Lecona E, Murga M, Callen E, et al. Efficacy of ATR inhibitors as single agents in Ewing sarcoma. Oncotarget. 2016 Sep 13;7(37):58759-67. doi: 10.18632/oncotarget.11643 PMID: 27577084

Jimenez-Garcia L, Traves PG, Lopez-Fontal R, Herranz S, Higueras MA, de Las Heras B, et al. 8,9-Dehydrohispanolone-15,16-lactol diterpene prevents LPS-triggered inflammatory responses by inhibiting endothelial activation. Biochem J. 2016 Jul 15;473(14):2061-71. doi: 10.1042/BCJ20160343. PMID: 27154204

Gainotti S, Turner C, Woods S, Kole A, McCormack P, Lochmüller H, et al. Improving the informed consent process in international collaborative rare disease research: effective consent for effective research. Eur J Hum Genet; 2016 Aug. 24(9):1248-54; doi: 10.1038/ejhg.2016.2 PMID: 26860059

Hansson MG, Lochmüller H, Riess O, Schaefer F, Orth M, Rubinstein Y, et al. The risk of re-identification versus the need to identify individuals in rare disease research. Eur J Hum Genet; 2016 Nov. 24(11):1553-1558; doi: 10.1038/ejhg.2016.52 PMID: 27222291

Mutz CN, Schwentner R, Kauer MO, Katschnig AM, Kromp F, Aryee DN, et al. EWS-FLI1 impairs aryl hydrocarbon receptor activation by blocking tryptophan breakdown via the kynurenine pathway. FEBS letters. 2016 Jul;590(14):2063-75. doi: 10.1002/1873-3468.12243 PMID:27282934

García-Pérez J, Morales-Piga A, Gómez J, Gómez-Barroso D, Tamayo-Uria I, Pardo Romaguera E, et al. Association between residential proximity to environmental pollution sources and childhood renal tumors. Environ Res; 2016 May; 147:405-14;doi: 10.1016/j.envres.2016.02.036 PMID: 26950029

García-Pérez J, Morales-Piga A, Gómez-Barroso D, Tamayo-Uria I, Pardo Romaguera E, et al. Residential proximity to environmental pollution sources and risk of rare tumors in children. Environ Res; 2016 Nov; 151:265-274; doi: 10.1016/j.envres.2016.08.001 PMID: 27509487

Sánchez-Díaz G, Arias-Merino G, Villaverde-Hueso A, Morales-Piga A, Abaitua-Borda I, Hens M, et al. Monitoring Huntington's Disease Mortality across a 30-Year Period: Geographic and Temporal Patterns. Neuroepidemiology; 2016 47(3-4):155-63; doi: 10.1159/000452860PMID: 27883994

Training

The IIER contributes to post-graduate training for professionals in the field of rare diseases and autism, including modules in Master's degree programmes at public universities. It forms part of different Expert Committees. The director of the IIER is an Independent Expert in the European Commission Expert Group on Rare Diseases and also part of the Advisory Committee for the European Platform on Rare Diseases Registries of the European Commission's Joint Research Centre in Ispra, Italy. On her part, Dr Eva Bermejo, IIER scientist, is Chair of the Executive Board of the International Clearinghouse for Birth Defects Surveillance and Research (ICBDSR).

TELEMEDICINE AND E-HEALTH RESEARCH UNIT (INVESTÉN-ISCIII)

The Telemedicine and e-Health Research Unit promotes and carries out R&D&I activities and training in the field of ICT applied to health. Its lines of activity are: a) development of PITES, the open telemedicine and e-health innovation platform, with specific actions in the Active and Assisted Living (AAL) and mobile health (mHealth) fields; b) standardisation and interoperability of infor-

mation systems and of the electronic health record (EHR); c) security of telemedicine applications; d) empowerment in ICT for patients and professionals and; e) evaluation of mobile telehealth services.

Scientific and Technical Activities

The main objective of the unit's research and training activities is the development of "open source" architecture to support collaborative research environments in online mobile health service ecosystems. This infrastructure, which is defined, developed, implemented, and maintained by the unit, provides support to several research projects run by the unit and by other research groups.

- Platform for the central node.
- Telemedicine and e-health innovation platform for chronic and dependent patients.
- Platform for Developing and Testing Telemedicine Services. This provides laboratory and deployment support in real environments for proof of concept, pilots and clinical trials. It provides the following services: content and collaborative work management services; real-time communication services (videoconferences, video calls); non-real time communication services (private messaging); interactive voice services; social interaction services (forums, chat); streaming services for multimedia distribution; and e-learning service for personalised, self-directed training plans.
- Platform for experimental studies management. This platform provides methodological support for pilot studies and clinical trials. It comprises: a web service for EDC (based on OpenClinica); online randomisation service; online survey services (based on LimeSurvey); and multimedia training content management service.
- Interoperability platform based on the UNE-EN ISO 13606 standard [https://hce13606.telemedicina.isciii.es:8443/interServer/]. It provides the following services: repository service for clinical information extracts; repository service for archetypes (concept models); clinical information search services; data mining management services; pseudonymisation service for standardised clinical information (module able to be installed locally in the client) in accordance with the UNE-EN ISO 13606 standard; and a local and external demographic information server (module able to be installed locally in the client).
- LABTIC. Telemedicine and e-Health research laboratories providing: AAL technology and signal and event analysis laboratory; experimentation in telehealth services laboratory; teleconsultation; simulation of virtual meetings in real-time or non-real time; audiovisual and usability laboratory: creation of multimedia materials; evaluation of the usability of services, applications, and devices; and connectivity and device testing laboratory: portable devices, information systems, wireless networks, VSAT links, and IP networks.

2016 New Projects

AESI-PI15CIII/00003, 2016-2018. Telemedicine and e-health innovation platform: ICT for R&I challenges in health services - PITES-TIiSS (PI: Mario Pascual Carrasco).

FISPI PI16/00769. Effectiveness and cost-effectiveness at five years of complex interventions for knowledge transfer based on ICT to improve the health of DM2 Patients (INDICA-DOS). PI: Pedro Serrano Aguilar.

SPANISH AIDS RESEARCH NETWORK (RIS) RD16CIII/0002/0003. 1 January 2017 – 31 December 2021. Coordinator: José Alcamí Pertejo. Group PI: Adolfo Muñoz Carrero.

Scientific Production

Lozano-Rubí R, Muñoz Carrero A, Serrano Balazote P, Pastor X.OntoCR: A CEN/ISO-13606 clinical repository based on ontologies. J Biomed Inform 2016 Apr; 60: 224-33. doi:10.1016/j.jbi.2016.02.007 PMID:26911524

Training

- II Master's Degree in Management of Information Systems and Technology and Communications in Health. National School of Public Health - ISCIII. 2015-2016. Various subjects. Professors: Santiago Pérez de la Cámara, Mario Pascual Carrasco, Adolfo Muñoz Carrero, Pilar García-Sagredo, Montserrat Carmona Rodríguez.
- Master's Degree in Telemedicine and Bioengineering. Escuela Técnica Superior de Ingenieros de Telecomunicación de Madrid [Higher Technical School of Telecommunications Engineers of Madrid]. Subject: Standardisation of electronic medical records. Professor: Adolfo Muñoz Carrero. November 2016, Madrid.
- EC_EJ71-2016-17: Expert in Health Services and Chronic Disease Research. University of Alcalá, 2015-2016. Subject: E-Health, ICT and Health. Professor: Mario Pascual Carrasco.
- X E-Health and Telemedicine Meeting. ICT for Chronic Disease Health Services: the Person and their Environment. Menendez Pelayo International University. June 2016, Santander. Management and secretariat for the course.

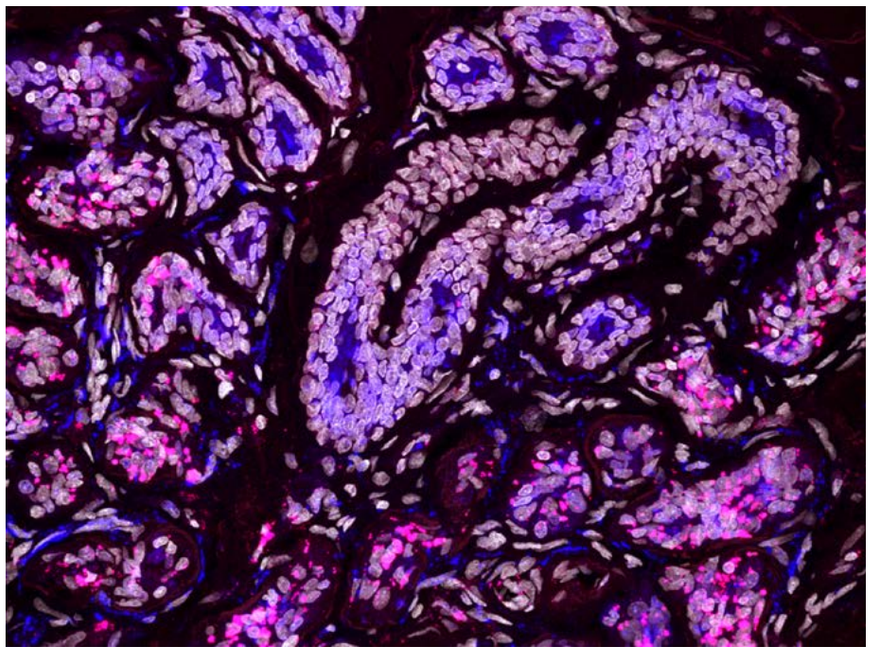
- Training on organisational support for complex interventions. Education and training for patients and professionals. HADAP Project; HAZLO Project. Professors: Montserrat Carmona Rodríguez, María José De Tena Dávila.
- Health Sciences Studies. Master's Degree in Telemedicine. UOC. Open University of Catalonia. Subject: AAL Environment: Preferred Environment for Teleassistance. Professor: Victoria Ramos González.
- Scientific Advances in Medical Bioelectromagnetism and on the Environment (III). University of Alcalá de Henares. Subject: Mobile Phone Antennae. Measuring and Monitoring in Cities. July 2016. Professor: Victoria Ramos González.
- Training placement at ISCIII, Photonic and Electronic Institute, Prague (Czech Republic). Short Term Scientific Mission (STSM) within the framework of the COST BM1309 Action. April 2016. Victoria Ramos González, Ondrej Kucera.

FUNCTIONAL UNIT FOR RESEARCH INTO CHRONIC DISEASES

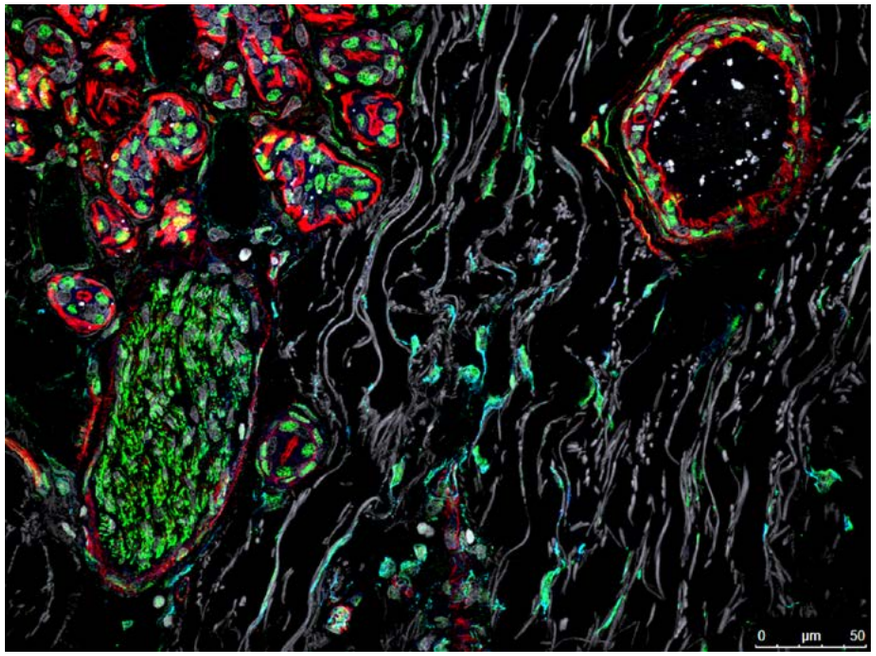
The Functional Unit for Research into Chronic Diseases (UFIEC) aims to carry out basic and translational research, reference diagnostics, and chronic disease training, thus becoming a resource for scientific and technical support for the most prevalent diseases in the context of the National Health System. The UFIEC's objective is to become a national and international reference centre for biomedical research on chronic diseases and a resource for scientific and technical support for the SNS, in accordance with guidelines of the WHO; the European Commission; and the Ministry of Health, Social Services, and Equality. Currently, the UFIEC comprises units on research and benchmark molecular diagnosis (human prionopathies). It also provides transversal services such as the Histology Unit and various other platforms that provide technical support to ISCIII.

Scientific and Technical Activities

The UFIEC's activities are aimed at neurodegenerative diseases (Alzheimer's and Parkinson's disease, amyotrophic lateral sclerosis, multiple sclerosis, prionopathies, etc.); cancer (ovarian, breast, thyroid, lung, colon, nervous system); and inflammatory, metabolic, and mitochondrial pathologies. It addresses aspects of regenerative medicine (stem cells, iPSCs), pharmacological targets (signalling, structural models), cellular senescence, and animal models. The



Skin sample for the study on Alzheimer's. *Miguel Calero, Alejandra Kun. UFIEC.*



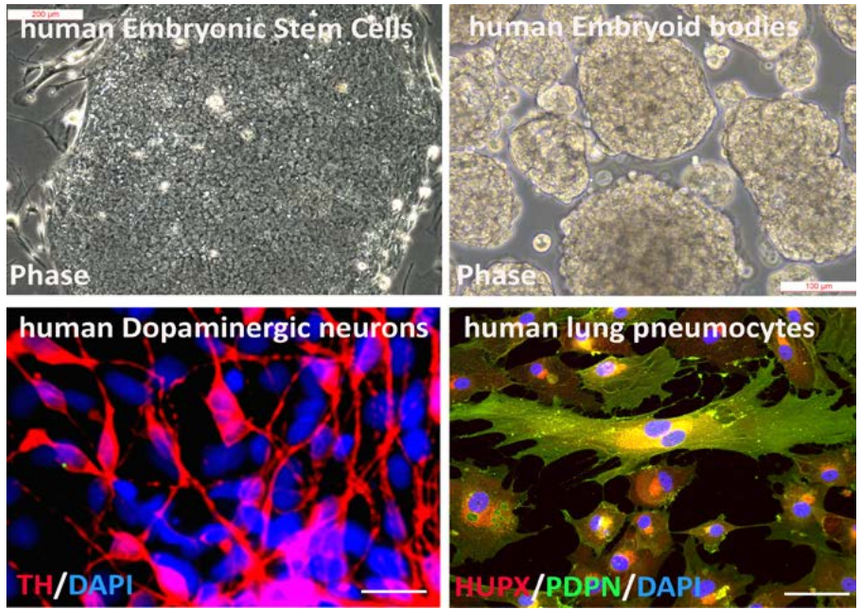
Skin sample for the study on Alzheimer's. *Miguel Calero, Alejandra Kun. UFIEC.*

UFIEC has a high level of scientific output with many high-impact articles in different fields of chronic diseases published.

- Benchmark molecular diagnosis of human prionopathies (diseases included within the ECDC's surveillance programme).
- Transversal research support services such as the Histology Unit, the optical imaging platform for in vivo monitoring of animal models (IVIS), the Luminex platform, and the structural protein analysis teams that provide technical support to all ISCIII.

Scientific Production

A total of 26 works in international journals were published, 32 communications were given, and two patents were requested. Below are some of the most significant publications in 2016:



Human embrionic stem cells (hESCs) in proliferation. *Images provided by Alberto Zambrano and Isabel Liste. Neural Regeneration Unit (UFIEC).*

Minikel EV, Vallabh SM, Lek M, Estrada K, Samocha KE, Sathirapongsasuti JF et al. Quantifying prion disease penetrance using large population control cohorts. Sci Transl Med. 2016; 8:322ra9. doi: 10.1126/scitranslmed.aad5169. PMID: 26791950

Barbáchano A, Fernández-Barral A, Pereira F, Segura MF, Ordóñez-Morán P, Carrillo-de Santa Pau E, et al. SPROUTY-2 represses the epithelial phenotype of colon carcinoma cells via upregulation of ZEB1 mediated by ETS1 and miR-200/miR-150. Oncogene. 2016; 35: 2991-3003. doi: 10.1038/onc.2015.366. PMID: 26455323

Leoni SG, Sastre-Perona A, De la Vieja A and Santisteban P. Selenium increases TSH-induced sodium/iodide symporter expression through Txn/Ape1-dependent regulation of Pax8 binding activity. Antioxid Redox Sign. 2016; 24:855-66. doi: 10.1089/ars.2014.6228. PMID: 26650895

Garcia-Jimenez C, Gutierrez-Salmerón M, Chocarro-Calvo A, Carcía-Martinez JM, De la Vieja A. From obesity to diabetes and cancer: epidemiological links and role of therapies. Br J Cancer. 2016; 114:716-22. doi: 10.1038/bjc.2016.37. PMID: 26908326

Anta B, Pérez-Rodríguez A, Castro J, García-Domínguez CA, Ibiza S, Martínez N, et al. PGA1-induced apoptosis involves specific activation of H-Ras and N-Ras in cellular endomembranes. Cell Death Dis. 2016; 7:e2311. doi: 10.1038/cddis.2016.219 PMID: 27468687

Schmitz M, Ebert E, Stoeck K, Karch A, Collins S, Calero M et al. Validation of 14-3-3 Protein as a Marker in Sporadic Creutzfeldt-Jakob Disease Diagnostic. Mol Neurobiol. 2016; 53:2189-99. doi: 10.1007/s12035-015-9167 PMID: 25947081

García-Romero N, González-Tejedo C, Carrión-Navarro J, Esteban-Rubio S, Rackov G, Rodríguez-Fanjul V, et al. Cancer stem cells from human glioblastoma resemble but do not mimic original tumors after in vitro passaging in serum-free media. Oncotarget. 2016; 7:65888-901.doi: 10.18632/oncotarget.11676 PMID: 27589567

Franco ML, Melero C, Sarasola E, Acebo P, Luque A, Calatayud-Baselga I, et al. Mutation in TrkA Causing Congenital Insensitivity to Pain with Anhidrosis (CIPA) Induce Misfolding, Aggregation, and Mutation-dependent Neurodegeneration by Dysfunction of the Autophagic Flux. J Biol Chem. 2016; 291: 21363-74. doi: 10.1074/jbc.M116.722587 PMID: 27551041

Nadezhdin KD, García-Carpio I, Goncharuk SA, Mineev KS, Arseniev AS, Vilar M. Structural Basis of p75 Transmembrane Domain Dimerization. J Biol Chem. 2016; 291: 12346-57. doi: 10.1074/jbc.M116.723585 PMID: 27056327.

De Pedro-Cuesta J, Martínez-Martín P, Rábano A, Alcalde-Cabero E, José García López F, Almazán-Isla J et al. Drivers: A Biologically Contextualized, Cross-Inferential View of the Epidemiology of Neurodegenerative Disorders. J Alzheimers Dis. 2016; 51:1003-22. doi: 10.3233/JAD-150884. PMID: 26923014

De Pedro-Cuesta J, Martínez-Martín P, Rábano A, Ruiz-Tovar M, Alcalde-Cabero E, Calero M. Etiologic Framework for the Study of Neurodegenerative Disorders as Well as Vascular and Metabolic Comorbidities on the Grounds of Shared Epidemiologic and Biologic Features. Front Aging Neurosci. 2016 Jun 13; 8:138. doi: 10.3389/fnagi.2016.00138. PMID: 27378910

Martínez-Suárez JV, Ortiz S, López-Alonso V. Potential impact of the resistance to quaternary ammonium disinfectants on the persistence of Listeria monocytogenes in food processing environments. Front Microbiol. 2016; 7: 638. doi: 10.3389/fmicb.2016.00638 PMID: 27199964

Ortiz S, López-Alonso V, Rodríguez P, Martínez-SuárezJV. The connection between persistent, disinfectant-resistant Listeria monocytogenes strains from two geographically separate Iberian pork-processing plants: Evidence from comparative genome analysis. Appl Environ Microb 2016; 82:308-317. doi: 10.1128/AEM.02824-15. PMID: 26497458

Vilar M and Mira H. Regulation of Neurogenesis by Neurotrophins during Adulthood: Expected and Unexpected Roles. Front Neurosci. 2016 10: 26. doi: 10.3389/fnins.2016.00026. PMID: 26903794

Bravo B, Gallego MI, Flores AI, Bornstein R, Puente-Bedia A, Hernández J et al. Restrained Th17 response and myeloid cell infiltration into the central nervous system by human decidua-derived mesenchymal stem cells during experimental autoimmune encephalomyelitis. Stem Cell Res Ther. 2016; 7:43. doi: 10.1186/s13287-016-0304-5. PMID: 26987803

Palmer C, Coronel R, Liste I Treatment of Parkinson's disease using human stem cells. J. Stem. Cell. Res. Med. 2016 1: 71-77. doi: 10.15761/JSCRM.1000113

Participation in International Committees.

The UFIEC, through Dr Pilar Sánchez, is represented in the Scientific Committee of the IARC (International Agency for Research on Cancer), which belongs to the WHO. Its goal is to coordinate cancer research on the international level; deliver social and medical cancer prevention recommendations; and produce case studies on carcinogenic agents that include data on epidemiology, basic science, and biostatistics. Furthermore, Dr Miguel Calero is a national expert on the surveillance and diagnosis of human prion diseases for the ECDC.

Training

UFIEC groups play an important role in providing teaching and training on research. In 2016, they contributed to training via seven finalised or in-progress doctoral theses, seven Master's Degree final projects, four Bachelor's Degree final projects, and six internships for Higher Professional Training (FPII) students, in addition to participating in classes and seminars.

HEALTHCARE RESEARCH UNIT (INVESTÉN-ISCIII)

The Healthcare Research Unit (Investén-ISCIII) has worked for years on promoting research in nursing care and other disciplines related to this field. Its resources are public and available for all SNS professionals interested in care research. The unit's goal is to develop a national strategy to promote and coordinate multidisciplinary and translational research in care, strengthening its integration into the everyday clinical practice, with the goal of ensuring that care is of a higher quality and that it is based on valid and trustworthy research results. The unit is organised into five areas: 1) Strategic Planning, 2) Training, 3) Consultancy, 4) Transferring and Using Results, and 5) Research and Innovation in Care. Furthermore, it has the collaboration of an advisory body, the Consulting Commission, whose duties include advising the unit on issues in order to promote and facilitate research in care.

Scientific and Technical Activities

Participation in two new national and international consortia.

Recognition as a WHO Europe collaborating centre candidate.

Celebration of the 20th anniversary of the unit's creation.

Projects 2016

- Joanna Briggs Institute European Region Best Practices Symposium 2016.
- Organisation of the XX International Nursing Research Conference.
- Dysphagia Care Technical Workshop.
- Course on the implementation of best practices guidelines, two courses on systematic reviews, and an accreditation course for leaders in systematic reviews by the Joanna Briggs Institute.
- Collaboration agreements with 16 autonomous communities and two international institutions.
- Organisation of online courses: "Research Methodology Applied to Healthcare" and "Evidence-Based Clinical Practice."

New 2016 Projects

- SueñOn® Project.
- European Project: Chronic diseases and promoting healthy ageing across the life cycle (CHRODIS-JA).
- European Innovation Partnership on Active and Healthy Ageing. A2 and A3 action groups.
- The Centros Comprometidos con la Excelencia en Cuidados® [Centres Committed to Excellence in Care], in collaboration with the Registered Nurses Association of Ontario (RNAO), Canada.

Scientific Production

Fernández-Domínguez JC; Sesé-Abad A; Morales-Asencio JM; Sastre-Fullana, Fernández-Domínguez JC; Sesé-Abad A; Morales-Asencio JM; Sastre-Fullana, P; Pol-Castaneda S; de Pedro-Gómez, JE. Content validity of a health sciences evidence-based practice questionnaire (HS-EBP) with a web-based modified Delphi approach. 1464-3677,1353-4505 Int J Qual Health Care. 2016 Dec 1; 28(6):764-73.doi: 10.1093/intqhc/mzw106 PMID:27655793

Caballero, P., Delgado-Garcia, B. E., Orts-Cortes, I., Moncho, J., Pereyra-Zamora, P., & Nolasco, A. (2016). Validation of the spanish version of Mackey childbirth satisfaction rating scale BMC Pregnancy and Childbirth. 2016 Apr 16; 16: 78. doi:10.1186/s12884-016-0862-7PMID:27084092

Gómez-García T, Ruzafa-Martínez M, Fuentelsaz-Gallego C, Madrid JA, Rol MA, Martínez-Madrid MJ, Moreno-Casbas T; SYCE and RETICEF Group Nurses' sleep quality, work environment and quality of care in the Spanish National Health System: observational study among different shifts. BMJ Open. 2016 Aug 5;6(8):e012073. doi: 10.1136/bmjopen-2016-012073 PMID:27496241

BIOLOGICAL ALERT LABORATORY NETWORK (RE-LAB)

The Biological Alert Laboratory Network (RE-LAB) was created through Ministerial Order PRE/305/2009, dated 10 February, modified by Order PRE/2565/2015, dated 26 November, as a scientific and technical infrastructure for operational support to the National Security System for responding to threats posed by dangerous biological agents.

Scientific and Technical Activities

- – Coordination of the laboratory response to alerts about postal consignments that contain potential biological weapons recorded throughout the year by various public institutions and private entities across the nation.
- Organisation of a bioterrorism drill for a foot-and-mouth virus threat with the involvement of a cattle ranch in Castile and Leon. Entities participating in the drill include the Ministry of Agriculture, Fisheries, Food, and Environment's (MAPAMA) Sub-Directorate General for Animal Health, Hygiene, and Traceability; veterinary services of MAPAMA and the autonomous community of Castile and Leon; National Security Forces and Corps (the National Police Corps and Civil Guard); and the Central Veterinary Laboratory of Algete, as the national reference laboratory for foot-and-mouth virus.

Highlighted Activities:

- Incorporation of three new reference laboratories into RE-LAB: the Centre for Rickettsiosis and Diseases Spread by Arthropod Vectors of the Biomedical Research Centre of La Rioja (CIBER), the Basque Institute for Agricultural Research and Development (NEIKER-Tecnalia); and the Canary Island University Institute for Tropical Diseases and Public Health, part of the University of La Laguna. Furthermore, it has become a collaborating laboratory of the Military Emergencies Unit's Rapid Identification Lab (LABIR).
- Incorporation of the Chemical, Biological, Radiological and Nuclear (CBRN) Units of Catalonia's Mossos d'Esquadra and the Basque Country's Ertzaintza police forces as new focal points of the RE-LAB.

- Participation in work groups and institutional representation.
- Participation in the National Work Group for implementing the EU Action Plan on Chemical, Biological, Radiological and Nuclear (CBRN) Security, coordinated by the Spanish Presidency's Department of National Security.
- Participation in the Interministerial Group for Biological and Toxic Weapons (GRUPABI), coordinated by the Sub-Directorate General of Non-Proliferation and Disarmament of the Ministry of Foreign Affairs and Cooperation (MAEC) and coordination of the information provided by RE-LAB laboratories in order to create the Spanish declaration on confidence-building measures for the Biological Weapons Convention.
- Participation in the in the Interministerial Contact Group for Resolution 1540 of the United Nations Security Council, coordinated by the MAEC.

Scientific Production

Cañavate, C. Red Nacional de Laboratorios de Alerta Biológica. En: Actores no estatales y proliferación de armas de destrucción masiva. La Resolución 1540: una aportación española. Instituto Español de Estudios Estratégicos. Ministerio de Defensa, Secretaría General Técnica, editor. 1ª ed. España: 2016. p. 59-65

Training

Participation in Specialisation Courses for Specialised Technicians in the Disarmament of Chemical, Biological, Radiological and Nuclear Explosive Devices (EOD-CBRN), organised by the National Security Forces and Corps.

NATIONAL LIBRARY OF HEALTH SCIENCES

The National Library of Health Sciences (BNCS) was created as a National Centre of the Carlos III Institute of Health on 2 August 1996 (RD 1893/1996). It takes on the management and coordinating tasks for all of the Institutes' libraries. Likewise, the BNCS offers its services to the National Health System, providing documentary support and acting as a point of reference on a wide range of issues related to scientific information on health for all national and autonomous community healthcare administration units.

In 2016, remodelling works were completed on the headquarters (Chamartín Campus). New stacks for the archive were acquired and housing of all the BNCS' printed resources was centralised, bringing together all material from the Chamartín and Majadahonda locations.

Initiatives for Dissemination of Spanish Scientific Information

Since its creation in 2001, the Spanish Virtual Health Library has belonged to the International Network of Virtual Health Libraries. This network currently has the participation of 30 countries in Latin America, Africa, and Asia. It comprises over 90 national, thematic, and institutional virtual libraries and is coordinated by BIREME (Latin American and Caribbean Center on Health Sciences Information).

In 2016, the portal's content was updated with highlighted news and widgets to search "Tripdatabase," "MedlinePlus," "Autonomous Community search," and "DeCS search." It includes two new sections: "External Resources - Professionals" and "External Resources - Citizens and Patients," for consulting information offered by external websites through the virtual health library portal.

Virtual Health Library Spain provides access to the following document products:

1.1- Virtual Health Library - Spain (http://bvsalud.isciii.es)

IBCS Spanish Health Sciences Bibliographic Index http://ibecs.isciii.es	227 indexed journals 157,729 articles 26,803 links to full-text articles included in SciELO Spain.
SciELO Scientific Electronic Library Online Collection of Spanish Health Sciences Journals. Open access to journals, articles, and statistics. http://scielo.isciii.es	60 publications (2 new titles added in 2016). Over 32,000 full-text articles (html and pdf). Over 8.3 million visits and over 11.8 million pages downloaded. The SciELO page accounts for 92.90% of ISCIII's web traffic. Integrated into the Web of Science (WoS) through the SciELO Citation Index. Available on Google Scholar Available in open-access directories: Hispana/DOAJ/OAISTER/ROAR/OpenDOAR Ranked 26th portal in the world according to Webometrics 271 DOI on articles stored in Crossref.
LIS-España Health Information Finder	Health sites subject to quality control. 2,345 entries in Information for Professionals. 1,915 entries in Information for Citizens. The database has been migrated to a new platform in order to improve management. The content of the LIS-Regional portal was integrated
DeCS Health Sciences Descrwiptors	Spanish (Spain) translation of the trilingual (ES/EN/PT) biomedical term thesaurus created by BIREME based on the National Library of Medicine's MeSH. Translation of 2,109 new terms. Translation of 811 modified terms. Review of the translation of 1,626 already-existing terms.

1.2 National Health Sciences Catalogue (CNCS)	
CNCS National Health Sciences Catalogue	140,000 bibliographic records from 287 libraries. Information downloaded from 19,194 journals. 67,927 paper collections and 382,377 digital collections integrated.

1.3 BNCS Social Networks	
Channels	TCorporate Twitter account (@BNCSisciii), 415 followers. SciELO España Twitter account (@scielospain), 3.9K followers. BVS Spain Twitter account (@bvs_spain), 2.3k followers. IMIENS Corporate Twitter account (@IMIENS_UNED), since August 2016, 374 followers. Corporate Pinterest account (https://es.pinterest.com/bncsalud).

Library Services

The BNCS provides access to ISCIII researchers, National School of Public Health and National School of Occupational Medicine students, and any user identified as a researcher, teacher, or health professional in the National Health System. In 2016, 2,995 in-person users were assisted. The library manages bibliographic resources that comprise 40,049 publications, of which 35,090 are monographs, 2,623 are periodicals, and the rest are audiovisual materials. Of all the periodicals, 283 are subscription journals whose publishers are the most important in the field of health sciences. In 2016, 821 publications were catalogued and 221 books were lent out. As part of the collaboration agreement between ISCIII and the CNIC and CNIO foundations, over 900 titles (journals, monograph series, and electronic books) can be jointly accessed online. Similarly, full-text books and electronic journals have been accessed more than 70,000 times.

A total of 102,311 direct bibliographic searches in databases subscribed to by the BNCS, such as Web of Science (88%), SCOPUS (7.2%), and Journal Citation Reports (4.5%), were made.

In 2016, the inter-library lending service and document request services responded to 9,341 requests. Of these, 5,201 were from ISCIII researchers. A total of 94.46% of these documents were obtained, with the average time for obtaining them of below 24 hours. There were 4,140 requests from other Spanish academic and health system libraries. The material was provided in 76% of cases, with an average time for providing them of less than two hours.

Editorial Programme

In 2016, 17 publications were edited within the framework of this programme. Of these, 13 were in digital format: eleven monographs and two periodicals (Boletín Epidemiológico Semanal [Weekly Epidemiological Bulletin] and Medicina y Seguridad del Trabajo [Occupational Medicine and Safety]). In addition, an institutional brochure in English was reprinted.

This year, a started. Under the title "Más que salud," the first three volumes of the collection have been published: "La contaminación del aire", "Enfermedades raras" y La resistencia a los antibióticos"

Free access to all of ISCIII's electronic publications from 2009 on is available online at http://publicaciones.isciii.es/.The portal has an alert system for registered users that has 2,263 subscribers.

Museum of Public Health and Hygiene

The Museum of Public Health and Hygiene is part of the Directory of Museums and Collections in Spain. Following the implementation of the Ministry of Culture's Domus Integrated Documentation and Museum Management System, it also belongs to the Digital Network of Spanish Museum Collections. This network includes a collective online catalogue, CER.ES (http://ceres.mcu.es), which brings together information and images from the museums that belong to it. The Museum of Public Health currently includes 1,376 bibliographical documents in its catalogue which can be consulted online through the Cata-

logue of the National Library of Health Sciences, 494 anatomical pieces, and 441 Autopsie Image documents carried out in the Hospital del Rey between 1925 and 1957. In 2016, two fact sheets on notable pieces were produced in Spanish and English. There were also 15 guided visits, three of which took place as part of Science Week 2016. The other visits were for students from the National School of Public Health and groups of professionals, students, and people interested in the history of public health in Spain.

Activities Related to Open Access to Science

In 2016, ISCIII, together with the CNIC and CNIO, signed the Berlin Declaration in support of the open access movement. Since 2003, this movement has gained support amongst academic and research organisations worldwide. By the end of 2016, 579 institutions had signed the declaration.

The BioMed Central (BMC) publishing house is one of the most widely-recognised platforms for open access biomedical journals. Since 2005, ISCIII researchers have published regularly in BioMed Central journals. ISCIII's association with this platform, signed in July 2015, streamlines and facilitates the publishing process for individual articles and helps reduce publishing costs, in addition to showing ISCIII's support for the open access movement. In 2016, 43 articles by the institution's researchers have benefitted from agreement, 30 of which were new submissions for review. The most-requested journals were BMC Public Health (5 articles) and BMC Medicine (4 articles). Furthermore, five articles were published over the course of the year.

Training

The BNCS taught modules on scientific documentation in different diploma, expert, and Master's degree courses at the National School of Public Health, the National School of Occupational Medicine, UNED, and the Community of Madrid, amongst others. Furthermore, they held workshops for Carlos III Institute of Health staff on PubMed and scientific information available online.

Congresses

- Primo-Peña, Elena. Member of the organising committee for the I BiblioMadSalud Workshop, ICOMEM, Madrid, 29 November 2016.
- Primo-Peña, Elena. Contributing to Open Access? Training to Train (Presentation). I BiblioMadSalud Workshop, ICOMEM, Madrid, 29 November 2016.
- Primo-Peña, Elena. Databases, SciELO España, Roundtable: Debate on Publishing Electronic Journals: Current Problems. VI UNE Workshops - Electronic Book Training Workshop 2016. Spanish University Publishers' Association (UNE), Madrid, 6 and 7 June 2016.
- Primo-Peña, Elena. The Health Science Library as a creator of document information products: The case of the National Library of Health Sciences. At the II Health and Information Workshop. Complutense University of Madrid, 2 December 2016

JOINT CENTRE FOR RESEARCH ON HUMAN EVOLUTION AND BEHAVIOUR (ISCIII-UCM)

This centre has three areas of work: human evolution, ancient DNA, and cognitive neuroscience. In addition to research related to the Atapuerca archaeological site, the team collaborates on other archaeological sites including: Pinilla del Valle (Madrid), Valle del Tejadilla (Segovia), Aroeira (Portugal), El Gegant (Barcelona), and Olduvai (Tanzania).

Human Evolution

As part of the line of research on human evolution, work continues on the study on different skeletal elements from the Sima de Atapuerca (Burgos) site in order to better understand the evolution of human anatomy, including the inner ear:

Quam R, Lorenzo C, Martínez I, Gracia-Téllez A, Arsuaga JL. The bony labyrinth of the middle Pleistocene Sima de los Huesos hominins (Sierra de Atapuerca, Spain). J Hum Evol. 2016; 90:1-15.

Rodríguez L, Carretero JM, García-González R, Lorenzo C, Gómez-Olivencia A, Quam R, Martínez I, Gracia-Téllez A, Arsuaga JL. Fossil hominin radii from the Sima de los Huesos Middle Pleistocene site (Sierra de Atapuerca, Spain). J Hum Evol. 2016; 90:55-73.

The origin of the accumulation of skeletons is hugely significant in social and cognitive evolution because it could possibly be evidence of the first funerary behaviour in history:

Aranburu A, Arsuaga JL, Sala N. The stratigraphy of the Sima de los Huesos (Atapuerca, Spain) and implications for the origin of the fossil hominin accumulation. Quat Int. 2016; Doi: 10.106/j.quaint 2015.02.044.

Sala, N., Pantoja-Pérez, A., Arsuaga, J.L., Pablos, A., Martínez, I. The Sima de los Huesos crania: Analysis of the cranial breakage patterns. J Archaeol Sci. 2016; 72: 25-43.

Participation in organising the sixth edition of the European Society for the

Study of Human Evolution (ESHE) congress, in collaboration with the Regional Archaeological Museum, was very significant for the human evolution area. Sp was the organisation of the international symposium on the human face, held at the Ramón Areces Foundation, in collaboration with professors from New York University.

Ancient DNA

The most important news of the year in this field was the sequencing of nuclear DNA of various individuals from Sima de los Huesos, in collaboration with the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany. The information obtained confirmed the thesis, which was previously based on anatomical evidence, that has been held by the team up until now: the hominids of Atapuerca are evolutionarily related to Neanderthals.

Meyer, M., Arsuaga, J.L., de Filippo, C., Nagel, S., Aximu-Petri, A., Nickel, B., et al. Nuclear DNA sequences from the Middle Pleistocene Sima de los Huesos hominins. Nature. 2016; 531(7595): 504-507.

Furthermore, the study of human population dynamics in the Holocene was continued. To do so, sampling and sequencing was carried out on human remains from the Iberian peninsula, Mexico, and Morocco, with chronologies that range from the Mesolithic era to Iron Age.

Lastly, work continued on the line of research on wildlife, both in palaeontology and in genetics. Collaboration with Stockholm and Uppsala Universities (Sweden) on ancient DNA, both animal and human, continued:

Rodríguez-Varela R, García N, Nores C, Álvarez-Lao D, Barnett R, Arsuaga JL, Valdiosera C. Ancient DNA reveals past existence of Eurasian lynx in Spain. J Zool. 2016; 298:94-102

Cognitive Neuroscience

Open lines of work include study of the neurophysiologic foundations of superior cognitive processes – and amongst them, language, specifically - clinical cognitive neuroscience, and social emotions. Within this last line of research, a study on guilt and vengeance began in 2016.

Hernández-Gutiérrez, D.; Jiménez-Ortega, L.; Fondevila, S.; Casado, P.; Muñoz, F.; Martín-Loeches, M. Do discourse global coherence and cumulated information impact on sentence syntactic processing? An event-related brain potentials study. Brain Res. 2016; 1630: 109-119.

Moreno, E.; Casado, P.; Martín-Loeches, M. Tell me sweet little lies: an event-related potentials study on the processing of social lies. Cogn Affect Behav Neurosci. 2016; 16:616-625.

De Vega, M.; Morera, U.; León, I.; Beltrán, D.; Casado, P.; Martín-Loeches, M. Sentential negation might share neurophysiological mechanisms with action inhibition. Evidence from frontal theta rhythm. J Neurosci. 2016; 36: 6002-6010.

Collaboration with Other Teams: University of La Laguna, King Juan Carlos University, Humboldt University of Berlin's Psychobiology Department, Georg-August-Universität Göttingen, and the University of Colorado at Colorado Springs, USA.

Disseminating Knowledge

This team's priority is to disseminate scientific content, especially that which originates from research, in society. In this sense, a huge effort has been made to do so through three temporary exhibitions:

SKULL 4. Museum of Human Evolution of Burgos. The fossil, a complete skullcap dating back 450,000 years, was discovered in Sima de Los Huesos at the Cueva Mayor in the Atapuerca Mountains in July 1992. The results of the mitochondrial genome analysis of a human from Sima de los Huesos, published in the journal Nature in 2013, were also presented. This was an unprecedented milestone in work on ancient DNA, given that the age of the fossil several hundreds of thousands of years older than any other hominid sequenced.

FROM "EXCALIBUR" TO BLACK HOLES. Museum of Human Evolution of Burgos. Adaptation of an exhibition from the Planetarium of Madrid. The narrative focuses on the capacity to conduct science. More than 300 years ago, the human brain, which in its infancy produced Excalibur (a hand axe found in the Sima de los Huesos in Atapuerca) and collected human corpses at the bottom of a chasm, discovered one of the laws that governs the universe and, therefore, our lives.

ART AND FLESH. Complutense Art Centre. This exhibition is structured around an extraordinary collection of 17th century anatomical wax sculptures. The installation provides visitors with the keys to a unifying narrative of knowledge in which human beings are the protagonists, not just an object of knowledge but also a subject whose values make up the fundamentals of our coexistence.

RESEARCH CENTRE ON CONGENITAL ANOMALIES (CIAC)

At ISCIII's Research Centre on Congenital Anomalies (CIAC), the ECEMC (the scientific group of the ASEREMAC - The Spanish Association for Registering and Studying Congenital Malformations), within the framework of the agreement with ISCIII, carries out its activities. The ECEMC (The Spanish Collaborative Study on Congenital Malformations) is a clinical and epidemiological research programme on congenital defects which has a multidisciplinary and translational focus. The ECEMC is structured as a thematic network for cooperative research. It is based on a permanent system for registering newborn babies with congenital defects and is a hospital-based case-control study.

The ECEMC provides two information services on teratology: one for medical professionals (SITTE - Telephone Information Service on Teratology) and another for the general public (SITE - Telephone Information Service for Pregnant Women).

The group has formed part of the thematic area of ISCIII CIBER Consortium on Rare Diseases (CIBERER) since its founding in 2006. It is also included in the following international networks:

- ICBDSR (International Clearinghouse for Birth Defects Surveillance and Research www.icbdsr.org),
- EUROCAT (European Surveillance of Congenital Anomalies www.eurocat-network.eu), and
- ENTIS (European Network of Teratology Information Services www.entis-org.eu).

Scientific and Technical Activities

- Maintenance of the ECEMC Clinical Network (over 400 doctors across Spain).
- Dysmorphological and clinical evaluation of 932 newborn babies and foetuses with congenital defects (CD) in Spain.
- Cytogenetic study (high resolution and molecular): 194 samples (ECEMC scope).
- Response to 692 consultations from doctors to SITTE and 2,527 to SITE
- Epidemiological surveillance of CD in Spain (ECEMC scope)
- European surveillance of CD in the EUROCAT scope (www.eurocat-network.eu).
- Global epidemiological surveillance of CD in the ICBDSR scope (www.icbdsr.org).
- Contribution to establishing global surveillance standards for congenital defects related to prenatal exposure to the Zika virus in the ICBDSR.
- Presidency of the ICBDSR Executive Committee.
- Participation in the "Spanish Agency of Medicines and Medical Devices' (AEMPS) Experts' Network".
- Participation in Joint Research Centre-EUROCAT activities.
- Execution of the AES' "Research on the clinical and etiological aspects of congenital atypical cranio-facial fissures" project. PI: E. Bermejo-Sánchez.
- Participation in the "Collaborative projects on the mortality/survival of

selected non-cardiac defects" (17 sub-projects), in the ICBDSR scope.

- Participation in the "ICBDSR-Global Epidemiology of Gastroschisis Project" in the ICBDSR scope.
- Defence of two doctoral theses (Director: Prof. M.L. Martínez-Frías).
- Participation in three international and two national congresses and scientific meetings.
- Participation in organising the second World Birth Defects Day (WBDD) (3 March 2016) and coordination in 2016 for the third WBDD to be held in 2017.
- Participation in organising the "43rd Annual Meeting of the International Clearinghouse for Birth Defects Surveillance and Research, and Gastroschisis Workshop," Magdeburg, Germany, 18-21 September 2016.
- Organisation of the "XXXIX ECEMC Annual Meeting" and the "CD Research Update Course." Ciudad Real, 20-22 October 2016 [2.2 CF-CPS Community of Madrid-SNS Credits. File 07-AFOC-04755.3/2016].
- Organisation, together with the Ministry of Health of Castile and León, of two editions of "Workshops on Clinical Teratology." Avila and Zamora.
- Participation in the "31st EUROCAT Registry Leaders' Meeting" as Spain-Hospital Network. Milan, Italy. 15-16 June 2016.
- Teaching in the Official Master's Degree "Current Knowledge on Rare Diseases." International University of Andalusia.
- Teaching in the "Master's Degree in Pharmacoepidemiology and Pharmacovigilance." School of Medicine. University of Alcalá de Henares.
- Teaching in the "IX Specialist Course on Child Disability, Diagnosis, and Rehabilitation." Complutense University of Madrid's own degree.
- Participation as teachers in continuing education activities on 31 occasions.
- Publication of a new "Propositus: ECEMC Information Sheet," available at http://www.fundacion1000.es/boletines-ecemc.
- Participation in the monograph: "Spanish Guidelines for the Management of Congenital Aniridia". Pérez de Toledo J, Gris O, Pérez Santonja JJ, Teus MA. Ed. Spanish Aniridia Association. ENE Ediciones. Madrid, 2016. pp. 16-27 (ISBN 978-84-85395-73-6). (English translation of the Spanish version published in 2008, for inclusion in Aniridia Europe http://www.aniridia.eu/): http://s1.aniridia.eu/wordpress/wp-content/uploads/2014/10/Spanish-Guidelines-for-the-Management-of-Congenital-Aniridia.pdf

Scientific Production

Bermejo Sánchez E, Martínez-Frías ML. Epidemiology of congenital Aniridia: Review of the literature and analysis of data of ECEMC.Spanish Collaborative study of congenital malformationa. En: Alvarez de Toledo J, Gris O, Pérez Santonja JJ and Teus MA Ed.Spanish Guidelines for the Management of Congenital Aniridia. Madrid: Spanish Aniridia Association; ENE Ed; 2016. p. 19-30 http://s1.aniridia.eu/wordpress/wp-content/uploads/2014/10/Spanish-Guidelines-for-the-Management-of-Congenital-Aniridia.pdf

3.2 INTRAMURAL RESEARCH

Intramural research is that which is carried out at ISCIII's own centres and associated joint units through the execution and carrying out of competitive research projects, management delegation agreements, and collaboration agreements. Sources of funds for these competitive projects are diverse in nature. They include National Plan (PN) programmes; Strategic Action in Health programmes within the PN; ISCIII's Intramural Research Programme; 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 ISCIII's schools and centres through various studies and indicators: analysis of scientific publications, research projects, and the hiring of research and research support staff

This information has been collected and analysed through Research Coordination Area (ACI).

Projects Granted in 2016 Calls by programme

FUNDING	Programme	Number of Projects	Total Funding (Euros)
External Funding	International Agreements*	13	3,673,546.95
	National R&D&I Plan	13	1,395,147.60
	MSSSI	1	39,844.00
	Autonomous Communities	1	4,849.17
	Others	2	22,410.00
ISCIII Funding	AESI Projects	18	1,935,785.45
	AESI Networks	12	3,779,180.65
TOTAL			**10.850.763,82**

*** 11 projects and two sub-projects (EU, ECDC, etc.)**

SCIENTIFIC RESEARCH COORDINATION AREA

Its purpose is to manage and coordinate activities relating to research carried out at ISCIII within the framework of national and international calls.

Under the Sub-Directorate General for Applied Services, Training and Research, it carries out tasks including disseminating calls for grants to fund projects and human resources; advising researchers on the preparation and submission of proposals; management of national and international projects, agreements, contracts, and assignments; and their monitoring and justification. It is also responsible for the monitoring and justification of funds for hiring research staff and the economic monitoring and statistical analysis of the state of intramural research.

2016 Current Projects by programme

FUNDING	Programme	Number of Projects	Funding (Euros)	
			Total	2016
External Funding	International*	56*	8,978,921.85	1,339,982.49
	National R&D&I Plan	38	4,447,539.02	887,480.38
	MSSSI	1	54,844.00	39,844.00
	Autonomous Communities	7	232,604.58	31,238.01
	Others	11	579,980.19	172,391.00
ISCIII Funding	FIS	56	5,904,006.16	807,390.45
	AESI	43	3,791,129.08	1,503,064.25
	Networks	14	3,162,042.72	1,064,831.36
	Others	28	1,469,575.19	260,964.87
TOTAL		**254**	**28,620,642.79**	**6,107,186.81**

*** 43 projects and 13 sub-projects (EU, etc.)**

Projects Granted by Thematic Area 2016

Thematic Area	Number of Projects
Infectious diseases: bacteriology	3
Infectious diseases: mycology	3
Infectious diseases: parasitology	7
Infectious diseases: virology	5
Neurological diseases	1
Rare diseases	2
HIV/AIDS epidemiology	1
Health technology evaluation	2
Genomics, microscopy, bioinformatics	1
Immunology	5
Cancer research	5
Nursing research	2
Public health research	2
HIV/AIDS research	8
Others (FIS, ENS, OPE, OTRI, Biobanks, Bioethics)	10
Environmental toxicology	3
TOTAL	**60**

Human Resources Calls 2016
Number of contracts granted per Centre

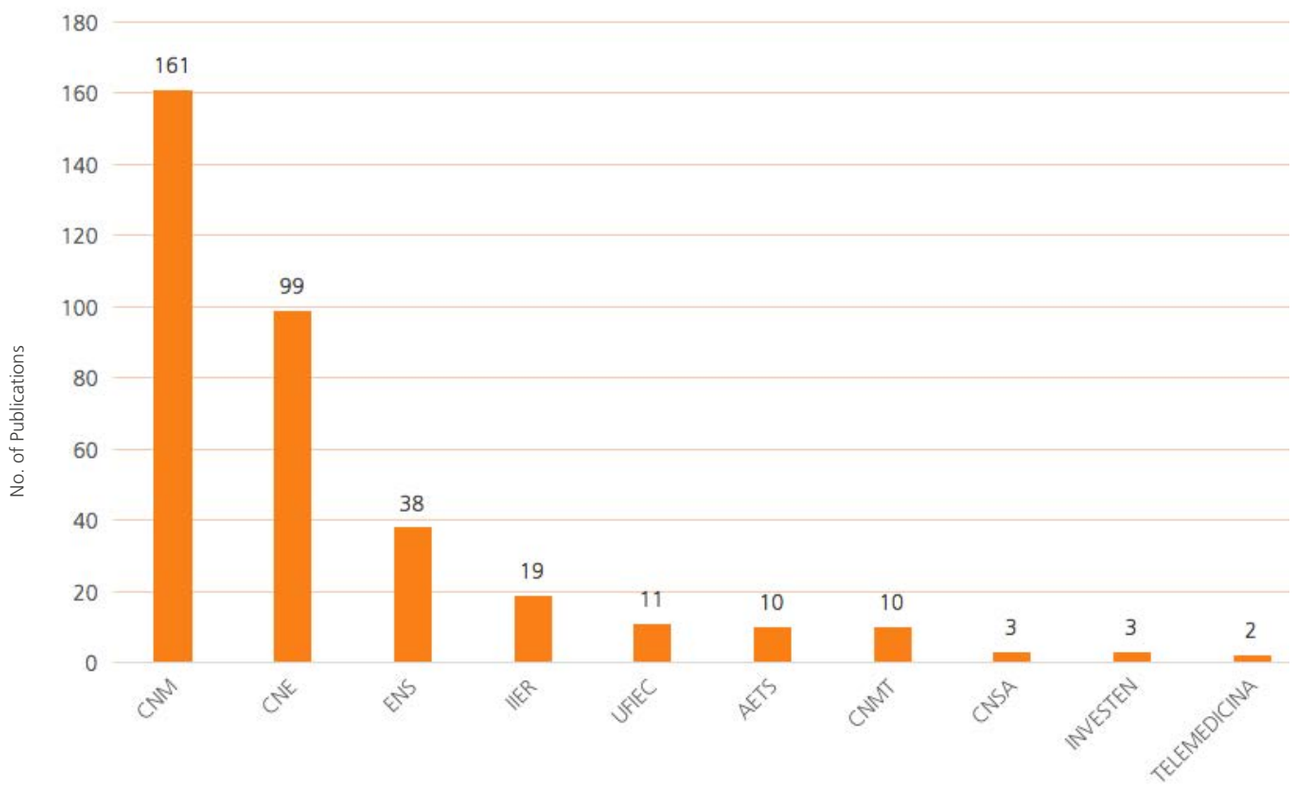
Centre	National R&D&I Plan (*)	Others	Total
CNM	1	2	3
CNE		2	2
ENS	1		1
IIER	1	1	2
TOTAL			**8**

(*) Calls pending resolution were excluded.

Table of Publications and Theses 2016

Centre	Publications	Theses
AETS	10	2
CNE	99	4
CNM	161	5
CNMT	10	1
CNSA	3	-
ENS	38	4
IIER	19	3
INVESTEN	3	1
TELEMEDICINA	2	-
UFIEC	11	-
TOTAL	**356**	**20**

2016 Publications



4 Training activities

4. TRAINING ACTIVITIES

4.1 NATIONAL SCHOOL OF PUBLIC HEALTH

The National School of Public Health (ENS), founded in 1924, specialises in postgraduate training and continuing education in the field of Public Health, Health Management and Administration, International Health, and related fields. It carries out research, technical studies, consulting, and other services in these areas for various public administrations and scientific, healthcare, and development aid entities.

Highlighted Activities

In 2016, important advances in the development of the National School of Public Health Joint Research Institute (IMIENS) were made by ISCIII and IMIENS. It consolidated the standards development processes, educational curriculum, dissemination, research teams, and affiliation of members of both institutions to IMIENS in addition to laying the foundation for obtaining its own funding to support the execution of joint research activities.

The second noteworthy activity was the advances made in introducing new technology to the educational curriculum, especially in regards to blended learning.

An example of this is the health management, administration, and policy seminars (GAPS: https://www.youtube.com/channel/UCyowEAZyasIXI_Ykt-0cHuqQ)

ENS Regulated Education 2016

Centro	Publicaciones	Tesis
Master's Degrees	4	4
Diplomas	3	2
Short Courses	29	30
Teaching hours taught	3,525	3,236
ECTS1 Equivalent	282	260
Students	393	532

(1) ECTS: European Credit Transfer System, equivalent to 25-30 learning hours.

2016 Training Offer	Teaching load (Hours in relation to ECTS credits)
Master's Degree in Public Health	1,500
University Master's Degree in Healthcare Administration	1,500
Master's Degree in Management of Information Technology and Systems and Communications in Health	1,500
Master's Degree in Bioinformatics and Computational Biology	1,500
Higher Diploma in Health Promotion	420
Higher Diploma in International Public Health	420
Specialist Diploma in Public Health and Gender	160
In-person continuing education courses/ workshops	775

Students and people in training at the ENS	2016	2015
Number of MIR in training at the ENS/ISCIII public health and preventative medicine teaching unit (R1, R2, R3, R4)	8	7
Number of MIR who have done a rotation at the ENS	11	
Number of contracts associated with training in research	3	
Number of students in Master's Degree and Diploma Programmes	192	281
Number of students in continuing education	201	251
Total students	**393**	**532**

Scientific Production

There were 37 national publications and 81 international publications. Of these, the following are of note:

Regidor E, Vallejo F, Granados JA, Viciana-Fernández FJ, de la Fuente L, Barrio G. Mortality decrease according to socioeconomic groups during the economic crisis in Spain: a cohort study of 36 million people. Lancet. 2016 Nov 26; 388:2642-52. doi: 10.1016/S0140-6736(16)30446-9 PMID:27745879

Carmona R, Díaz J, Ortiz C, Luna MY,Mirón IJ, Linares C. Mortality attributable to extreme temperatures in Spain: A comparative analysis by city. Environ Int. 2016 May; 91:22-8. doi: 10.1016/j.envint.2016.02.018 PMID:26900891

Blaya-Nováková V, Prado-Galbarro FJ, Sarría-Santamera A. Effects of anual influenza vaccination on mortality in patients with heart failure. Eur J Public Health. 2016 Oct;26(5):890-2. doi:10.1093/eurpub/ckw141PMID:27615735

Repullo JR. Austerity: reforming systems under financial pressure. In: Greer SL, Wismar M, Figueras J. Strengthening Health System Governance. Better policies, stronger performance. Maidenhead, Berkshire (UK): Open University Press - Mc Graw Hill.2016: 208-22

Repullo JR, Freire JM. Implementando estrategias para mejorar el gobierno institucional del Sistema Nacional de Salud. Gac Sanit. 2016 Nov;30(S1):3–8. doi: 10.1016/j.gaceta.2016.04.016 PMID:27837793

4.2 NATIONAL SCHOOL OF OCCUPATIONAL MEDICINE: 2016 ACTIVITIES

The National School of Occupational Medicine (ENMT-ISCIII) is the Carlos III Institute of Health's (ISCIII) specialised centre for training, consulting, and research in occupational medicine and nursing. Its mission is to contribute, along with other bodies of the General State Administration, Autonomous Communities, and social actors, to strengthening the prevention system and improving workers' health.

The National School of Occupational Medicine is a national reference centre for the International Occupational Safety and Health Knowledge Network (CIS) of the International Labour Organisation. Furthermore, as a reference centre, the ENMT continues leading the first stage in training specialists in occupational medicine, providing 11 teaching units in the Advanced Course on Occupational Medicine. In terms of strategy, in 2016, the ENMT has been working in collaboration with the INHST in aligning the Strategic Action in Health with the Spanish Strategy on Occupational Safety and Health 2015 – 2020, which involves active participation and increased visibility of ISCIII in the development of the aforementioned strategy.

In 2016, seven new agreements were signed, bringing the total number of agreements in force to 46. These agreements were made in the fields of training, research, and the creation of good practices guidelines and were signed with the following national entities and associations: framework agreement for collaboration between ISCIII and the Spanish Scientific Society of Evaluative Medicine in the scope of Social Security; the Spanish Association of Specialists in Occupational Medicine; Mugenat Mutua Universal; the Spanish Ministry of the Interior through the Directorate General of Civil Protection and Emergencies; the MAPFRE Foundation-FCSAI; renewal of the framework collaboration agreement with the National Social Security Institute; addendum to the agreement with the General Union of Workers to carry out a study on "Musculoskeletal Disorders: Repetitive Tasks and Physical Fatigue; Neuromuscular Evaluation and its Occupational Implications."

In 2016, 10 lines of research related to the ENMT's "Ergonomics and Human Factors" Research Unit continued.

Indicators for the Occupational Medicine and Safety Journal	2015	2016
Original articles	15	12
Medical inspection articles	8	5
Review articles	11	8
Others	7	9
Total articles	**41**	**34**
Journal supplements	**-**	**1**

In the following tables, important information on the ENMT is summarised:

2016 Training Activities	Format	Hours Completed	Cec/Ects Credits
PSYCHOSOCIAL INTERVENTION WITHIN COMPANIES BY THE OCCUPATIONAL HEALTH UNIT	ENMT Online	40	5.2 CEC
IV SCIENTIFIC WORKSHOPS ON OCCUPATIONAL HEALTH REVIEW STUDIES	ENMT In-Person	10	-
PRACTICAL APPLICATION OF HEALTH SURVEILLANCE PROTOCOLS COURSE	ENMT Online	25	4.5 CEC
INTRODUCTION TO DERMATOSCOPY FOR OCCUPATIONAL HEALTH PHYSICIANS I	ENMT In-Person	7	0.9 CEC
INTRODUCTION TO DERMATOSCOPY FOR OCCUPATIONAL HEALTH PHYSICIANS II	ENMT In-Person	7	0.9 CEC
IV NATIONAL WORKSHOP ON TRAINING AND PROFESSIONAL DEVELOPMENT IN OCCUPATIONAL NURSING	ENMT In-Person	7	1 CEC
OCCUPATIONAL DISEASES FOR PRIMARY CARE PHYSICIANS	ENMT Online	40	6.9 CEC
THE PRESCRIPTION OF PHYSICAL EXERCISE BY HEALTHCARE PROFESSIONALS	ENMT Online	50	6.3 CEC
INTRODUCTION TO EPIDEMIOLOGICAL STUDIES AND APPROACHES TO OUTBREAKS IN OCCUPATIONAL HEALTH	ENMT Online	70	6.3 CEC
ADVANCED OCCUPATIONAL MEDICINE COURSE - CUSMET	ENMT In-Person	800	-
MASTER'S DEGREE IN MEDICAL ASSESSMENT OF OCCUPATIONAL DISABILITY AND DEPENDENCY (UAH-INSS-IMSERSO)	ENMT Online	**200**	60 ECTS

* CEC – Continuing Education Credits; ECTS – European Credit Transfer System.

Overall Training Indicators	2015	2016
Total number of MIR in training programmes (R1, R2, R3, R4)	127	**130**
Number of students in in-person continuing education	166	**222**
Number of students in online training	347	**223**
Number of students in continuing education through agreements	22	**40**
Total number of teaching hours completed	**1,921.5**	**1,256**

Overall Indicators of Research, Scientific Activity, and Scientific Dissemination

Activity	2015	2016
Research projects associated with teaching programmes	57	**77**
Publications in scientific journals	9	**2**
Communications/Speeches	15	**1**
Original articles in the Occupational Medicine and Safety journal	41	**34**

5 Internationalisation

5.1 International Programmes

5.2 European Projects Office

5 INTERNATIONALISATION

5.1 International Programmes

Europeanisation and Internationalisation

ISCIII, through the Strategic Action in Health, participates in coordinating skills and R&D&I funding programmes amongst European regions and countries (ERA-NET and ERA-NET Cofund), joint programmes under Article 185 of the Treaty on the Functioning of the European Union (TFEU), Joint Programme Initiatives (JPIs), and European Joint Programmes (EJP) such as the "European Human Monitoring Initiative EJP (HBM4EU)," leading, from the SGPIIRI, the work package on internal calls. ISCIII holds the position of President of the AAL, JPI AMR, and the ECRIN-ERIC Assembly of Member Countries. It also participates in the ESFRI Health & Food Strategic Working Group. Furthermore, it is the national point of contact for the Third EU Health Programme 2014-2020.

ISCIII coordinates EU-LAC Health which has created a roadmap for strengthening healthcare research cooperation amongst EU countries and CELAC (Community of Latin American and Caribbean States). It provides support to the health work group of the Joint Initiative for Research and Innovation (JIRI) between the EU and the CELAC.

Likewise, ISCIII participates in three global research consortia:

- IRDiRC: International Rare Diseases Research Consortium.
- GloPID-R: Global Research Collaboration for Infectious Disease Preparedness, aimed at providing an effective response within 48 hours following a significant outbreak of a new or re-emerging infectious disease with pandemic potential.
- IC PerMed: International consortium for Personalized Medicine, officially launched in November 2016. ISCIII participates in the CSA, which includes the International Consortium's secretariat along with PT DLR (Germany), ANR (France), and MoH (Italy).

International Scientific Infrastructure

ISCIII has the legal mandate to represent Spain and fund its contribution to the IARC (the WHO's International Agency for Research on Cancer) and to three European research infrastructures:

- ECRIN-ERIC (9 countries): European clinical trial platform which received around €13 million in returns in 2016. The scientific component is SCReN, a network platform funded by ISCIII.
- EATRIS-ERIC (12 countries): translational medicine. Pursuant to RD 339/2004, accredited IIS are eligible for scientific participation.
- ELIXIR (20 countries and the EMBL): data on omics, which received around €2 million in returns in 2016. The Spanish National Bioinformatics Institute, a network platform funded by ISCIII, is the scientific component.

Similarly, ISCIII works in three other infrastructures that are currently being prepared. They are included in the ESFRI roadmap:

- ERINHA: biosafety level 4 (BSL4) laboratories for pathogens that pose a high risk to the community. ISCIII is participating in the in Second Preparatory Phase and co-leads the work package on the legal framework.
- Euro-BioImaging, medical imaging and biological microscopy digitisation.
- EU-Openscreen, chemical biology and molecule screening for therapeutic activity.

Coordination and Alignment of National R&D&I Programmes and their Funding

In 2016, ISCIII participated in:

- Two joint programmes under Article 185 of the Treaty on the Functioning of the European Union (TFEU), a decision made jointly by of the European Parliament and the European Council: EDCTP-2 (15 European countries and 49 Sub-Saharan African countries) and AAL-2 (17 European countries and Canada).
- 3 ERA-NETs (ERANET LAC, Infect-ERA, EuroNanoMed II).
- 9 ERA-NET Cofunds (ERA-CVD, NEURON-III, E-RARE-3, TRANSCAN-2, ERACoSysMed, EuroNanoMed III, which ISCIII coordinates; Jpco-fuND, ERA HDHL, JPI-EC-AMR.
- 4 JPIs (JPND, JPI AMR, JPI HDHL y JPI MYBL).
- 13 joint transnational calls within the framework of these initiatives, funding 32 Spanish scientific research groups for a total of €3,244,709 under "additional costs" (19% more than 2015).

Complementary Actions to the Joint Programming Initiatives

Through the initiatives of the Joint Programming Initiatives, ISCIII participates in transnational research consortia - ERA and international – with the goal of supporting significant projects involving Spanish research groups working with teams from other countries through the coordination and mobilisation of resources in strategic areas of European interest.

The objective of this action is to support the participation of Spanish research teams by means of funding collaborative international health projects within the framework of transnational consortia within the European Research Area. This national support is implemented through annual calls from ISCIII's Strategic Action in Health (AES): "Complementary Actions to the Joint Programming Initiatives."

In 2016, a total of 87 proposals were submitted, of which 86 were deemed eligible and, following the corresponding international evaluation, 32 proposals were recommended for funding. ISCIII allocated €3.24 million to finance these 32 projects, which had Spanish participation. Their distribution according to EU Programme is as follows:

PROGRAMME	PARTICIPANTS (Groups)	ELIGIBLE (Invited)	FUNDABLE	% SUCCESS RATE FUNDED/ REQUEST	% SUCCESS RATE FUNDED/ ELIGIBLE	BUDGET Euros (overhead included)
AAL-2	4	4	2	50,0	50,0	247.990
EDCTP-2	1	0	0	0	0	0
ERA-Net LAC	25	19	4	16,0	21,1	475.017
Infect-ERA	15	1	0	0,0	0,0	0
EuroNanoMed-II	17	16	4	23,5	25,0	380.011
ERA-CVD	25	12	6	24,0	50,0	649.140
E-RARE-3	11	7	3	27,3	42,9	233.305
NEURON-III	10	6	4	40,0	66,7	346.467
TRANSCAN-2	21	8	3	14,3	37,5	320.553
JPI EC AMR/ (JPI AMR)	13	9	5	38,5	55,6	545.158
ERA HDHL/ (JPI HDHL)	6	2	0	0,0	0,0	0
JPco-fuND (WG)	4	1	1	25,0	100,0	47.069
JPI MYBL	2	1	0	0,0	0,0	0
TOTAL	**154**	**86**	**32**	**20,78**	**36,78**	**3.244.709**

Initiatives based on Article 185 of the Treaty on the Functioning of the European Union (TFEU).

Objective: to integrate the Member States' research efforts into the definition and funding of a joint research programme for the EU.

1. AAL-2 (Active and Assisted Living). Joint Research Programme 2014-2020 to finance applied research for improving the lives of the elderly and to strengthen the European industrial fabric through demand for new products, systems, and/or services based on information and computer technology. It funds projects, the AAL Annual Forum, and other support measures. A total of 17 European countries and Canada participate with €175 million and it is co-funded with another €175 million from the EU. ISCIII participated in the 2016 call ("Living Well with Dementia") and funded two Spanish groups with €247,990.
2. EDCTP-2 (European & Developing Countries Clinical Trials Partnership). Joint Research Programme 2014-2020 to fund clinical trials across 15 European countries and 49 Sub-Saharan African countries. Its thematic range was expanded to include negledted diseases. Co-funding from the EU has gone from €200 million to €683 million. ISCIII's annual commitment is €200,000.

ERA-Nets and ERA-Nets Cofund

Objective: The coordination of R&D&I programmes and funding amongst European countries and regions. One of its greatest achievements was launching joint calls for transnational research projects whose procedures were common and agreed upon by all participating agencies.

ERA-Nets

1. ERA Net-LAC: Network of the EU, Latin America and the Caribbean Countries on Joint Innovation and Research Activities. A total of 18 funding entities from eight European countries and eight CELAC countries participate. In the last call, 14 transnational health projects received €10.4 million in funding. Of this, ISCIII financed four projects that had Spanish participation, providing €475,017 in funding for the following topics: Cancer, Improving the quality of care and quality of life of dying cancer patients; Infectious diseases, Research in prevention of infectious diseases and promotion of well-being; ICT in relation to HEALTH, Improving wellbeing and inclusiveness through e-health, m-health, and active and assisted living (AAL) solutions.
2. Infect-ERA: Coordination of European funding for human infectious diseases research. ERA-Net on human infectious diseases. A total of 14 funding entities from 12 countries participate. ISCIII took part in the 2016 call (2 topics, a) host-pathogen interactions and b) development of innovative strategies for the diagnostics and treatment of highly clinically-relevant microbial infections), with an initial commitment of €250,000.
3. EuroNanoMed II: European network for transnational collaborative RTD projects in the field of nanomedicine. A total of 20 funding entities from 16 countries participate. In the 2016 call, on diagnostics, therapeutic targets, and regenerative medicine, 11 projects were funded for almost €10 million. Of these, ISCIII financed four scientific groups based in Spain, offering a total of €380,011. In November 2016, the continuation of ERA-Net y ERA-Net Cofund (EuroNanoMed-III), coordinated by ISCIII, began.

ERA-Nets Cofund

1. ERA-CVD: European Research Area Network on Cardiovascular Diseases. Heart Failure. ERA-Net Cofund for funding cardiovascular disease research (2015-2020). Consortium comprising 19 partners from 14 countries. In the 2016 call, ISCIII initially committed €500,000 and provided €649,140 in funding to six Spanish groups.
2. NEURON-III: The Network of European Funding for Neuroscience Research. External Insults to the Nervous System. ERA-Net Cofund for neuroscience research excluding neurodegeneration (2015-2019). A total of 23 funding entities and two research entities from 14 countries participate. The topic of the 2016 call was "Brain Disorders and Injuries Caused by External Insults, such as Brain and Spinal Cord Trauma, Infections, and Toxic Influence." ISCIII provided €346,467 in funding to four Spanish groups.
3. E-Rare-3: ERA-Net for Research Programmes on Rare Diseases. Clinical research for new therapeutic uses of already existing molecules (repurposing) in rare diseases. ERA-Net Cofund for funding rare disease research (2015-2019). A total of 26 funding entities from 17 countries participate. In the 2016 call, 19 transnational projects were funded. ISCIII provided €233,305 in funding to three Spanish groups.
4. TRANSCAN-2: ERA-Net on Translational Cancer Research. Immunology and immunotherapy of cancer: strengthening the translational aspects. ERA-Net Cofund for funding translational cancer research (2015-2019). A total of 28 funding entities from 19 countries participate, including two Spanish funding entities: ISCIII and FICYT. In the 2016 call, €17.2 million in funding was provided for 16 transnational projects. ISCIII provided €320,353 in funding to three scientific groups located in Spain.

5. ERACoSysMed (ERA-Net Cofund for funding Systems Medicine (2015-2019). A total of 14 funding entities from 14 countries participate. The "Collaboration on Systems Medicine" call was launched at the end of 2016.
6. JPco-fuND: (Establishing synergies between the JPND Research and H2020). In the 2016 call for working groups, ISCIII provided €47,069 in funding to one scientific group.
7. JPI-EC-AMR: ERA-Net cofund on Antimicrobial Resistance Research. Call: Transmission Dynamics. ISCIII participated with €0.5 million.
8. ERA HDHL. ERA-Net cofund on Biomarkers for Nutrition and Health. Call: Biomarkers for Nutrition and Health. ISCIII provided €0.5 million.

Joint Programme Initiatives (JPIs)

Objective: Strengthen coordination and integration of Member States' research programmes in order to provide answers to common issues, avoid redundancy, and promote research of excellence.

1. JPND (Alzheimer and Neurodegenerative Diseases). A total of 28 countries participate and ISCIII collaborates on the JPND's Strategic Research Agenda implementation plan. JPsustaiND is the JPND's CSA for sustainability and globalisation. ISCIII co-leads the development and implementation of a structure for the JPND's sustainability, the extension of its capabilities, and the alignment of national neurodegeneration research programmes.
2. JPI AMR (Antimicrobial Resistance). A total of 22 countries participate. The AEI and ISCIII participate on behalf of Spain. The objective is to address the growing problem of antimicrobial resistance through a common strategic agenda for research. EXEDRA is the support CSA. ISCIII leads the sustainability work package and participates in the internationalisation work package (Latin America and the Caribbean) and the Virtual Institute work package.
3. JPI HDHL (Healthy Diet for a Healthy Life). A total of 25 countries participate. The objective is to coordinate research on the impact of diet and lifestyle on health in different countries. The AEI and ISCIII participate on behalf of Spain. HDHL CSA 2.0 (initiative to support and implement decisions made by the management board). ISCIII leads the Secretariat of the Stakeholders Advisory Board (SHAB) work package and is involved in the sustainability and internationalisation work package (Latin America and the Caribbean). Joint Actions (not co-funded by the EC) are funded in kind by Spain.
4. JPI-MYBL (More Years, Better Lives - The Potential and Challenges of Demographic Change). A total of 15 European countries, Canada, and Israel participate. The AEI and ISCIII participate on behalf of Spain. The objective is to coordinate and converge the different national and European programmes related to demographic change, which cover many research areas – health, social welfare, education, work and productivity, housing, urban and rural development, and mobility – with a multidisciplinary and transnational focus. J-AGE II is the support CSA for the JPI (a continuation of J-AGE) dedicated to implementing the Strategic Research and Innovation Agenda (SRIA), mainly through annual joint calls. ISCIII leads the "implementation" work package, is responsible for three joint transnational calls, and manages the Secretariat for the 2016 and 2017 Calls. In the 2016 joint call (Topic: "Welfare, Wellbeing and Demographic Change: Understanding Welfare Models"), MINECO was the only Spanish funding entity. Of the 21 proposals presented (a total financial commitment of €7,570,500), five projects were funded for a total of €3,128,743. They have participation from 21 research groups from 10 different countries.

The EU Health Programme 2014-2020 from the Directorate General for Health and Food Safety (DG SANTE)

2016 Work Programme. Approved budget for 2016 of around €58 million for funding grants (€36.3 million), prizes (€60,000), procurement (€15 million), and other actions (€6.8 million).

Calendar established in the 2016 call for proposals:

- Adoption of the Work Programme (2016 WP): 1 March.
- Publication of the 2016 WP: 7 March 2016.
- Closure of the call for project funding (HP-PJ 2016): 2 June.

2016 TOPICS:

- Migrant Health: BPs in providing care for vulnerable migrants and refugees, €4.5 million.
- Exchanging knowledge and BPs to reduce underage drinking and binge drinking amongst youth, €1.2 million.
- Illicit drug use, €600,000.
- Support for MS and entities interested in leading the fight against chronic diseases, €2.5 million.
- European Reference Networks (ERNs), €2.5 million.
- New rare disease registries, €1.2 million.
- Selection and protection of donors, €50,000.

Joint Actions, with a budget of €13.8 million, on:

- JA-01-2016 Quality of HIV/AIDS/STI, viral Hepatitis and tuberculosis prevention and linkage to care (€2 million).
- JA-02-2016 Action on chronic diseases (€5 million).
- JA-03-2016 Tobacco control (€2 million).
- JA-04-2016 Antimicrobial resistance and Health Care Associated Infections (€4 million).
- JA-05-2016 Authorisation of preparation processes in blood and tissues and cells (€800,000).

Deadline for designating representatives of the Ministry of Health, Social Services, and Equality (MSSSI) for Joint Actions – nominations - 16 June 2016

EU Health Strategy. Investment in research on evidence in health.

CHRODIS. ISCIII is the coordinator of this Joint Action, which has 26 participating countries and 67 partners. It is funded by the Commission within the framework of the Second Community Action Programme in the Field of Health 2008-2013. The Ministry of Health, Social Services, and Equality (MSSSI) participates, along with the Ministries of Health from other participating countries, by leading the activities in order to explore mechanisms for sustainability of the project when it comes to an end.

5.2 European Projects Office

The European Projects Office offers information and consulting services mainly of the National Health System (SNS) researchers in order to foster greater participation on international research activities. Though it focuses on EU funding, it also provides support for any other international initiative. It promotes and facilitates this participation through advising on preparing proposals, organising and participating in informational workshops, organising training courses, and disseminating information on calls and tenders from different programmes.

For the European Projects Office, 2016 was a period of intense activity. It continued its work on raising awareness, promoting, and disseminating the Horizon 2020 (H2020) programme and the opportunities that are available in the area of health sciences. Activity during this time focused on promotion, training, and help on preparing proposals. The European Projects Office organised 34 courses, cooperated on 54 training actions, organised more than 23 informational workshops on open calls, and collaborated on 43 workshops organised by other entities across 10 different autonomous communities. In order to contribute to its dissemination, consulting, and training activities, 12 informational newsletters were published and the website was updated continually. It is available at http://eu-isciii.es.

In the area of health, Spain has led a total of 62 projects out of the 450 actions funded since beginning of H2020 (2014-2016 period). It is the second country in terms of projects coordinated (14.2%), behind only the United Kingdom and ahead of Germany and the Netherlands. For the H2020 Societal Challenge 1, Spain has secured overall funding of over €111 million over three years, with a return of over 8.95% on the EU28 funding, meaning that Spain is returned more funds than it provides and is no longer a net contributor to health research in this programme. This milestone places Spain in fifth position in the area of health, behind only the United Kingdom (18.85%), Germany (14.94%), the Netherlands (12.98%), and France (10.44%). On this rate of return, ISCIII environment, along with the SNS, has a pull effect, accounting for 42% of successful project participation and 46% of project leadership, excluding the EU28 SME instrument.

In 2016, ISCIII consolidated its position in terms of projects and increased funding received as part of H2020 by 47% with respect to FP7 funding, again exceeding the €2 million threshold. Furthermore, it should be noted that in 2016, 30 proposals were submitted to H2020 and eight of them were funded. This is a success rate of approximately 27%, much higher than the rate for the H2020 health programme, which is around 10%.

6 Regulations, ethics

6.1 Commission for Guarantees on the Donation and Use of Human Cells and Tissue; the National Registry of Research Projects; the National Registry of Biobanks.

6.2 Activity of the Research Ethics Committees (CEI) and the Research Ethics and Animal Welfare Committee (CEIyBA).

6 STANDARDISATION AND ETHICS

6.1 Commission for Guarantees on the Donation and Use of Human Cells and Tissue; the National Registry of Research Projects; the National Registry of Biobanks.

6.1.1 Commission for Guarantees on the Donation and Use of Human Cells and Tissue and the National Registry of projects using cells or tissues of human embryonic origin.

Law 14/2007, dated 3 July, on Biomedical Research, creates the Commission for Guarantees on the Donation and Use of Human Cells and Tissues, a collegiate body affiliated with the Carlos III Institute of Health. It is permanent and has an advisory role. It is aimed at providing advice and guidance on research and experimentation with human embryonic biological samples and at contributing to updating and disseminating scientific and technical knowledge on this matter.

In 2016, the Commission held four meetings: on 15 March, 9 June, 29 September, 19 December, during which 32 research projects received information.

6.1.2 National Registry of Biobanks

The Sub-Directorate coordinates the activity of the National Registry of Biobanks. It was created by the Biomedical Research Law and implemented by Royal Decree 1716/2011, dated 18 November, which establishes the basic requirements for authorising and operating biobanks for biomedical research purposes and for handling biological samples of human origin. It regulates the operation and organisation of the National Registry of Biobanks for biomedical research.

As of 31 December, 92 biobanks and 1,416 collections are registered in the registry. In 2016, one biobank and 128 collections were registered.

The Spanish Bioethics Committee

The Spanish Bioethics Committee, created by Law 14/2007, dated 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.

Documents created in 2016:

- "Ethical and Legal Issues on Rejecting Vaccines and Proposals for a Necessary Debate."
- "Ethical and Legal Considerations on the Use of Mechanical and Pharmacological Restraints in the Social and Health Fields."
- Adherence to the "Declaration on Ethics and Responsibility in the Sustainability of the National Health System," written by various autonomous community ethics committees and the Spanish Bioethics Committee..

6.2 Activity of the Research Ethics Committees (CEI) and the Research Ethics and Animal Welfare Committee (CEIyBA).

Resolution R-119/16, dated 24 February 2016, from the Director General of ISCIII, modifies the Research Ethics and Animal Welfare Committee of the Carlos III Institute of Health and creates the Research Ethics Committee (CEI), in accordance with the Law 14/2007, dated 3 July, on Biomedical Research, and the Research Ethics and Animal Welfare Committee (CEIyBA).

6.2.1 Research Ethics Committee

Projects reviewed: In 2016, 86 research projects on human beings were reviewed. These projects came from ISCIII's own centres and from the Foundations affiliated with the Institute.

Training and Dissemination Activities: organisation and execution of the III Bioethics Congress: "VI Workshops on the Ethical Aspects of Biomedical Research: New Challenges, New Solutions," on 25 and 26 November in the Carlos III Institute of Health's Ernest Lluch conference hall.

6.2.2 Research Ethics and Animal Welfare Committee

A total of 41 projects from ISCIII's own centres and the Foundations received advice in 2016.

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MINISTERIO DE ECONOMÍA, INDUSTRIA Y COMPETITIVIDAD

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