



# **ANNUAL REPORT 2017**



**Health Research Institute of  
Santiago de Compostela**



## ANNUAL REPORT 2017

### EDITION

*José Castillo Sánchez*

Scientific Director of the Health Research  
Institute of Santiago de Compostela

### APROBATION

Direction Board of the Institute met in Santiago  
on April, 10, 2018

### PRODUCTION

Technical Secretary of the Health Research  
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Technical Research Management and Promotion



# **ANNUAL REPORT 2017**

## DIRECTOR CIENTÍFICO

José Castillo Sánchez




Un año más, la presentación de esta memoria brinda la oportunidad de conocer los logros, mejoras y el avance de nuestros investigadores. Este informe refleja el esfuerzo de los 80 grupos que constituyen el Instituto. Es el momento en el que podemos presumir de lo que hemos trabajado y de lo que hemos conseguido, pero también nos permite reflexionar sobre nuestros objetivos y fijar nuevas metas que nos ayuden a seguir creciendo y a mostrar el avance en la generación del conocimiento en salud a las instituciones que depositan su confianza y recursos en nosotros.

## SCIENTIFIC DIRECTOR

Once again this year, the presentation of the annual report is an opportunity to get to know the achievements, improvements and the progress our researchers have made. This report bears witness to the effort of the 80 groups that make up the Institute. This is the one time when we can boast of the work done, of what we have achieved. But it is also an opportunity to reflect on our objectives and set new goals that help us to continue to grow and show the progress in the generation of knowledge in health sciences to those institutions that have placed their trust and resources in us.





Desde su creación, el IDIS ha promovido la configuración de equipos multidisciplinares capaces de abordar varias facetas de la investigación traslacional, teniendo en cuenta la necesidad de generar innovación y transferir los resultados a nuestro sistema de salud. Desde el principio, hemos logrado mantener un crecimiento progresivo de la cantidad y calidad científica, que se estructura en seis áreas de investigación (oncología; genética y biología de sistemas; endocrinología; plataformas y metodologías; neurociencias e inflamación). La investigación aplicada es el presente de la investigación biomédica: acercar los resultados del laboratorio al paciente con mayor inmediatez y eficiencia, desarrollando nuevos diagnósticos o métodos terapéuticos que beneficien a la población y den sentido a nuestro trabajo. Nuestros aliados en esta misión son la industria médica, farmacéutica y biotecnológica.

Since its inception, the IDIS has encouraged the formation of multidisciplinary groups that are able to address several facets of translational research, being very aware of the need to generate innovation and transfer results into our health system. From the very beginning, we have been able to maintain a progressive growth in the amount and quality of research, which comprises six areas of research (oncology; genetics and systems biology; endocrinology; platforms and methodologies; neurosciences and inflammation). Applied research is the now of biomedical research: taking laboratory results to patients as soon and as efficiently as possible, developing new diagnostics or therapeutic methods for the benefit of the members of the public and giving meaning to our work. Our allies in this mission are the medical, pharmaceutical and biotechnological industries.

Podemos estar orgullosos de la posición reconocida del IDIS a nivel nacional e internacional, simplemente con visualizar los números alcanzados nos podemos permitir una modesta satisfacción. Pero este lugar nos implica la responsabilidad de liderar la I+D+i en el ámbito biosanitario.

La excelencia de nuestro instituto se basa en el capital humano. Es el momento de expresar nuestra admiración y agradecimiento a nuestra gente, que permiten que el IDIS continúe avanzando. Nuestro potencial humano y nuestra implicación en este proyecto son la garantía del éxito.

We can be proud of the recognition of the IDIS in both Spain and abroad. By just looking at the figures achieved we can be modestly satisfied. But this place of recognition also entails the responsibility of being a leader in R&D&I in the bio-health domain.

Excellence in our institute is based on human capital. It is the time to show our admiration and appreciation to our people, who make the continuous progress of IDIS possible. Our human potential and our devotion to the project are the guarantee of success.



José Castillo Sánchez

Director Científico del IDIS  
*Santiago de Compostela, 10 de abril de 2018*

Scientific Director of the IDIS  
*Santiago de Compostela, 10 April 2018*

*“Podemos estar orgullosos  
de la posición reconocida  
del IDIS a nivel nacional  
e internacional”*



*“We can be proud of  
the recognition of the IDIS in  
both Spain and abroad”*

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**81**

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10



**84**

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01



## **EXECUTIVE SUMMARY**

The **Biomedical Research Institute of Santiago de Compostela** is a translational research centre for innovation and transfer knowledge that optimizes existing synergies between the *Xerencia de Xestión Integrada de Santiago de Compostela* and the *University of Santiago de Compostela*. It is accredited as a medical research centre of the National Health System by the *Institute of Health Carlos III*.



## Mission

We are a translational biomedical research centre that joins professionals with a shared objective: to improve people's health.



## Vision

We want to become a reference as an organizational and governance model, encouraging participation, collaboration and transparency.



## Values

Responsibility, continuous improvement, horizontal communication, transformative research, integration and leadership.







Total funds raised  
**32.402.824 €**

46

Staff contracts

162

Observational studies

940

Contracts and  
provision of services

113

Donations

134

Clinical trials

75

Projects

50

Seminars

31

Requested  
patents

8

Short  
training  
exchanges

7

Granted  
patents

219

Traineeships

653

Published  
articles

55

Thesis

# 02



## **GLOBAL ANALYSIS**

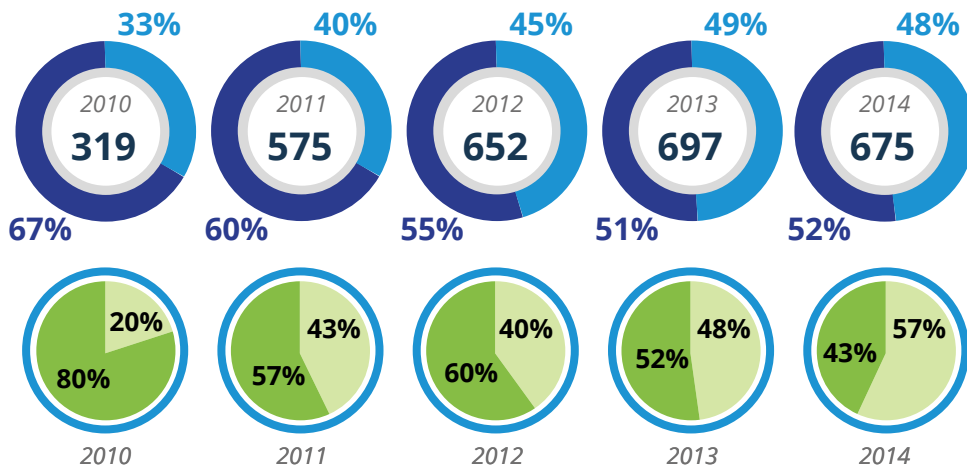
## Number of groups per area

**1064 people** are  
integrated in  
**80 groups**  
organized in  
**6 research areas:**

Oncology, 15 groups;  
Genetics and  
Systems Biology, 12;  
Endocrinology, 14;  
Neurosciences, 16;  
Platforms and  
Methodology 10;  
and Inflammation, 13;  
There is also a support  
area (*technical secretariat  
and common support  
platforms for research*)  
with 3 groups.



## History of a joint venture: human resources in figures



SERVIZO  
GALEGO  
de SAÚDE



Fundamental  
Researchers

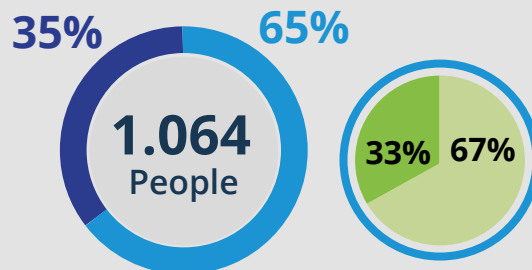
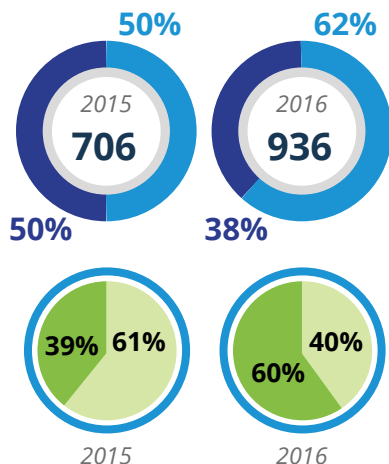


Medical  
Staff



USC  
UNIVERSIDADE  
DE SANTIAGO  
DE COMPOSTELA

2017



26%

Support  
Staff

22%

Postdoctoral  
Researchers

25%

Predocctoral  
Researchers

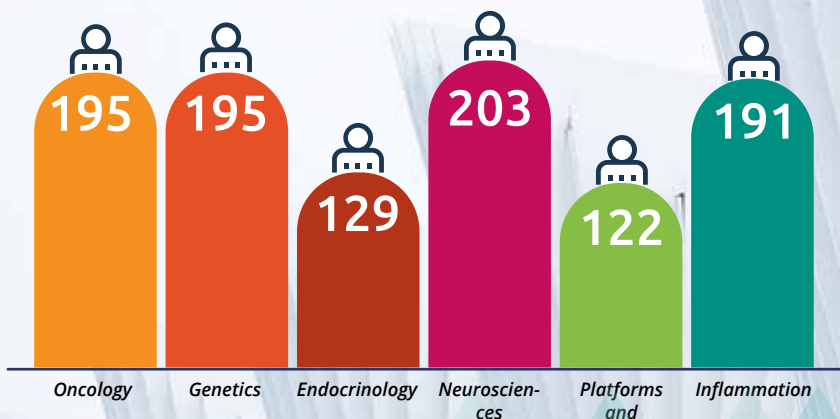
27%

Senior  
Researchers

## Number of researchers per area

The clinical partners are integrated in the areas of Oncology, Endocrinology, Neurosciences and Inflammation.

In 2017, 13 new groups joined the institute.



*These  
**80 groups** are  
divided into*

**39**

Consolidated

**625** *researchers*

**31**

Emerging

**283** *researchers*

**10**

Clinical partners

**127** *researchers*



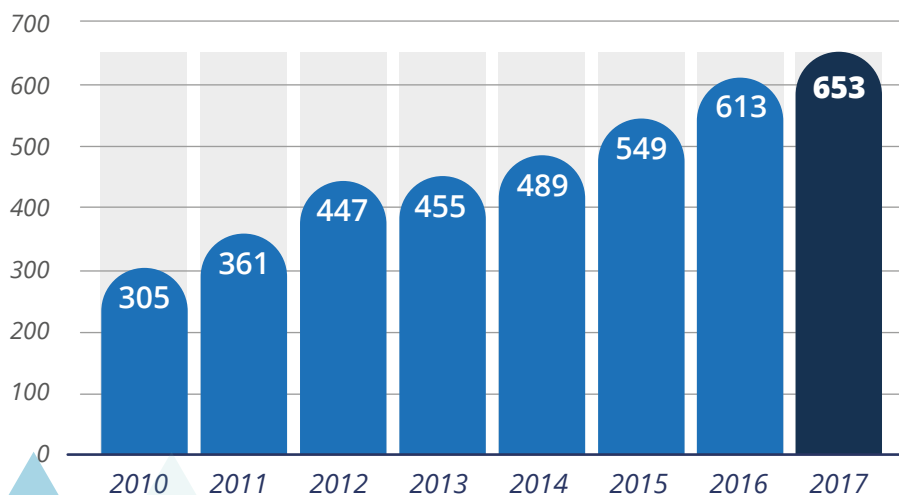
**653**

scientific articles,  
editorials and  
reviews  
published



## Number of published articles each year

The Institute has published 653 original scientific articles, editorials and reviews in 399 international journals indexed in the Journal Citation Report with an **cumulative impact factor** of 3.358 points and an **average impact factor** of 5,14 points.

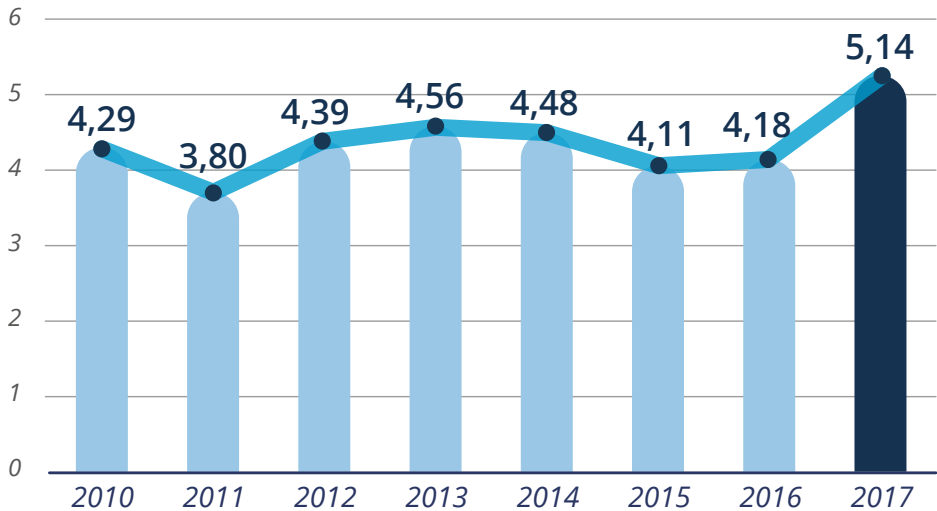


## Cumulative impact factor

The upward trend of the cumulative impact factor is maintained and it moves from 1.308 in 2010 to 3.358 in 2017.



## Average impact factor



## Number of published articles in the first decile

A remarkable increase in the first decile for the same period from 68 articles published in 2010 to 149 in 2017.



**3.358**

*Cumulative  
impact factor*

**5,14**

*Average  
impact factor*

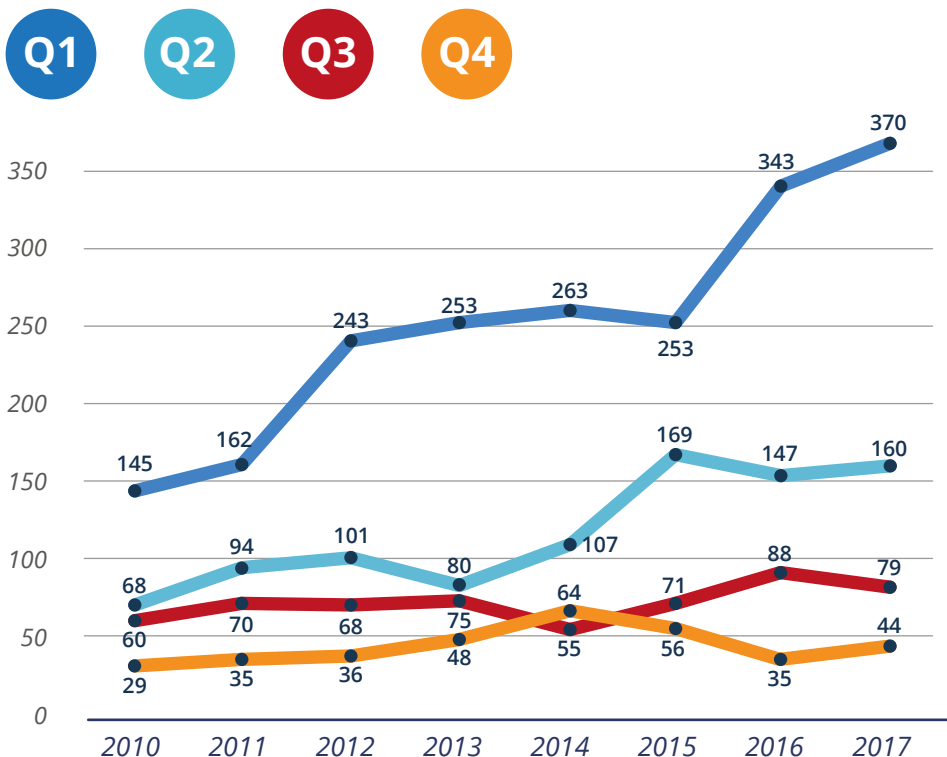
**149**

*published  
articles in D1*

**653**

*published  
articles*

## Number of **articles** by year published in each quartile

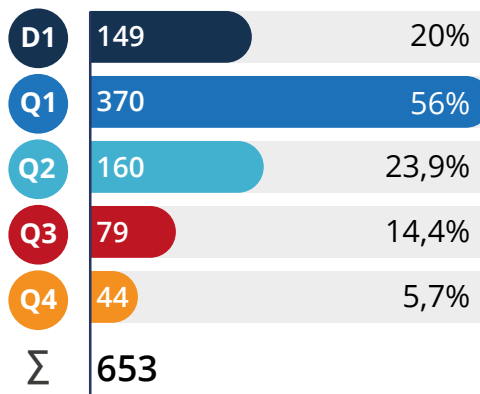


## Number and % of the total number of publications and articles in 2017

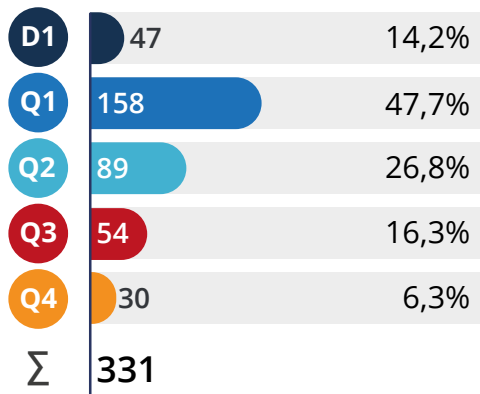
The number of articles per quartile increased gradually during the period of 2010-2017 almost in every quartile and every year.

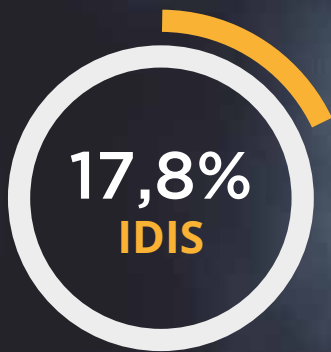
Taking into account the relevance of the authors in the articles signature, we identify those in which the first or the last author is assigned to an IDIS group. We define them as articles of our own.

### Total



### Owns









# 116

ARTICLES PUBLISHED in  
collaboration between  
the IDIS groups



# 302

ARTICLES PUBLISHED in  
collaboration between the  
groups of the centres  
outside of Spain

### Number and % of articles published in collaboration between the IDIS groups and the groups of the centres outside of Spain

In 2017, 17,8% of the work  
were carried out by teams in  
which members of more than  
one IDIS group were involved.

46,25% were done  
in collaboration with  
researchers from centres  
outside of Spain.



**32.402.824 €**

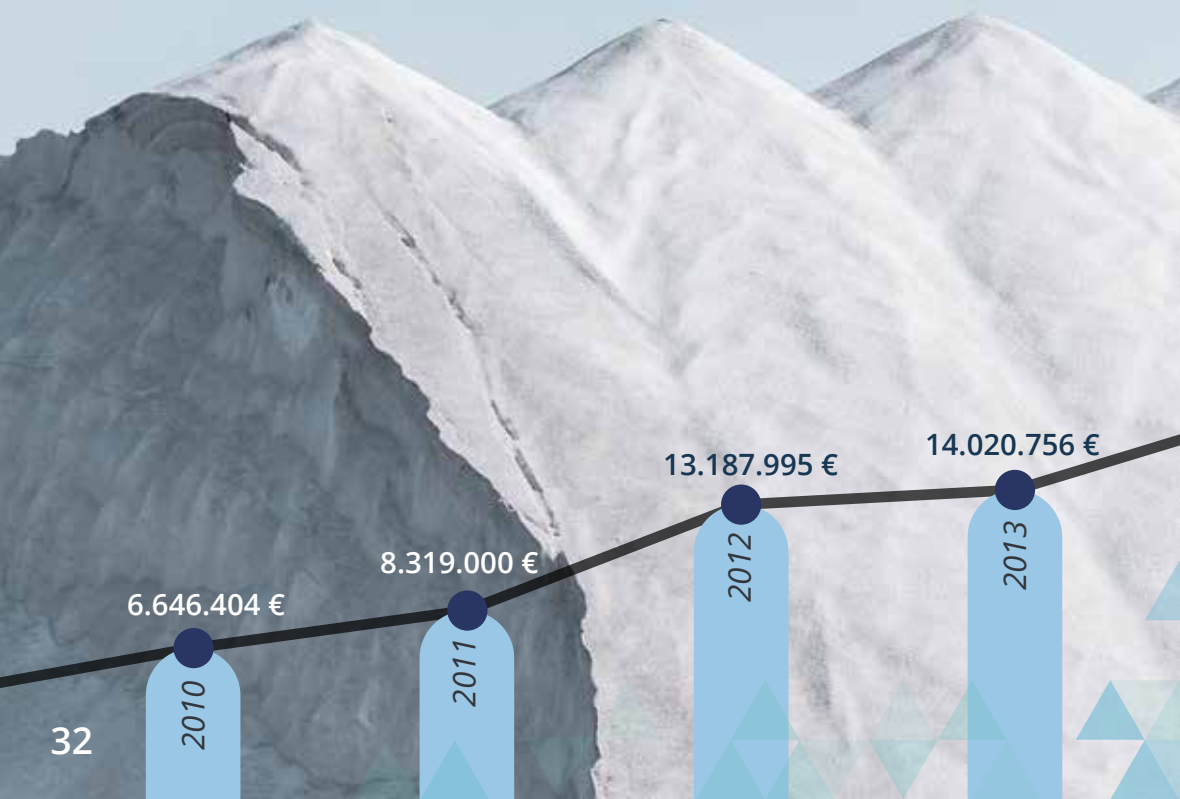
*total funds raised  
in 2017*

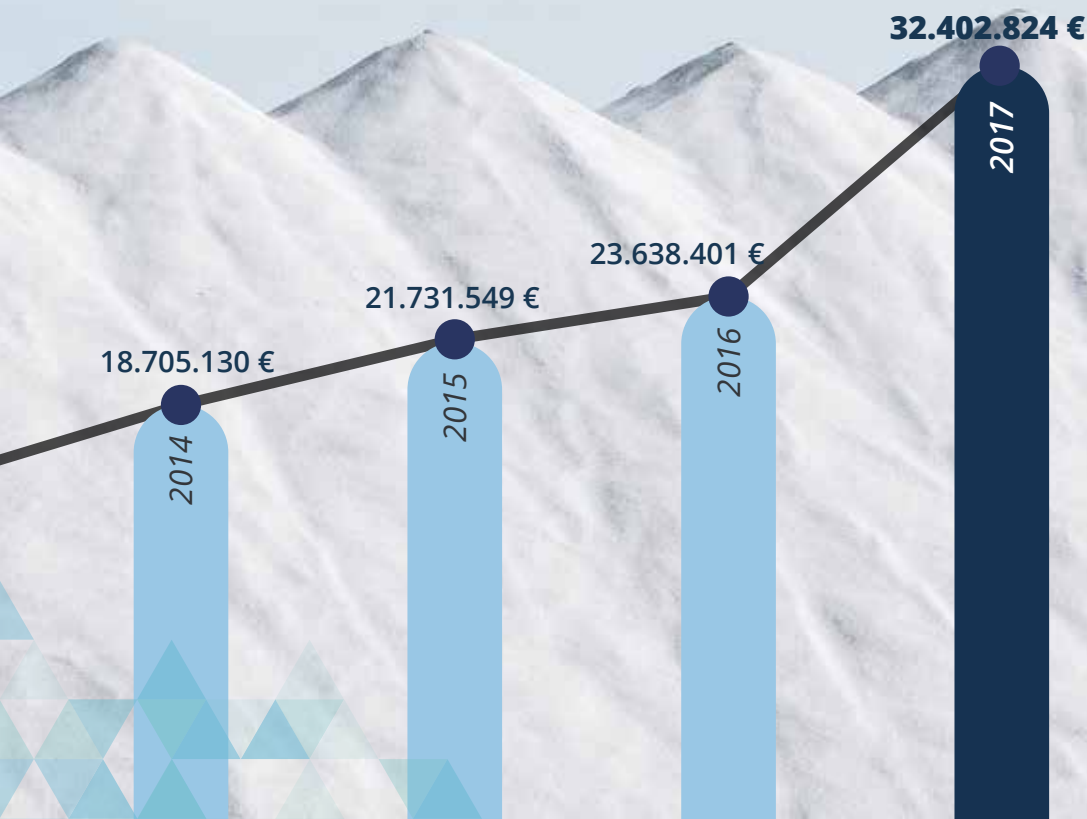
## Summary of the funds raised in 2017

During 2017, the funds raised in competitive calls for research projects, the recruitment of staff, infrastructures, agreements, contracts and provision of services, donations, clinical trials and observational studies **generated 32.402.824 €** which will complement the resources of the institutions that take part in IDIS.




CONCEPT	NUMBER	AMOUNT
Projects	75	14.326.044€
Human resources	46	3.418.075€
Donations	113	1.548.809€
Contracts and provision of services	940	8.863.350€
Transfer	1	8.000€
Studies (clinical trials, CT, Observational studies, OS)	296	4.238.546€

## Amounts raised

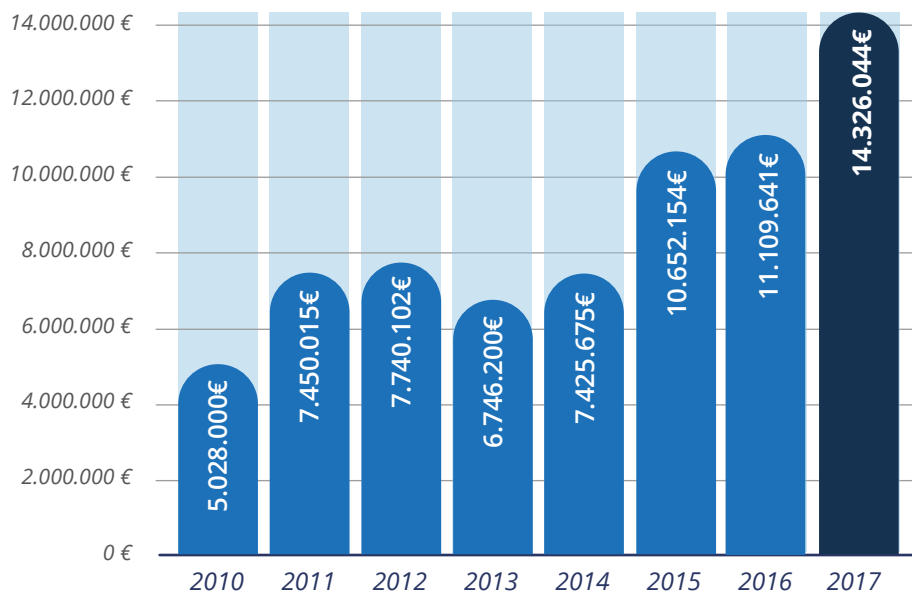




## Number and amount of **funds raised in 2017** for projects by location

	2016	2017
 <b>International projects</b>	<b>9 projects</b> <b>2.595.805 €</b>	<b>9 projects</b> <b>3.254.094 €</b>
 <b>National projects</b>	<b>59 projects</b> <b>8.185.731 €</b>	<b>46 projects</b> <b>4.641.815 €</b>
 <b>Regional projects</b>	<b>5 projects</b> <b>328.108 €</b>	<b>20 projects</b> <b>6.430.136 €</b>
<b>Total projects</b>	<b>73 projects</b> <b>11.109.641 €</b>	<b>75 projects</b> <b>14.326.044 €</b>

## Amount of funds raised by year for projects





Number of  
**clinical trials and  
observational studies**

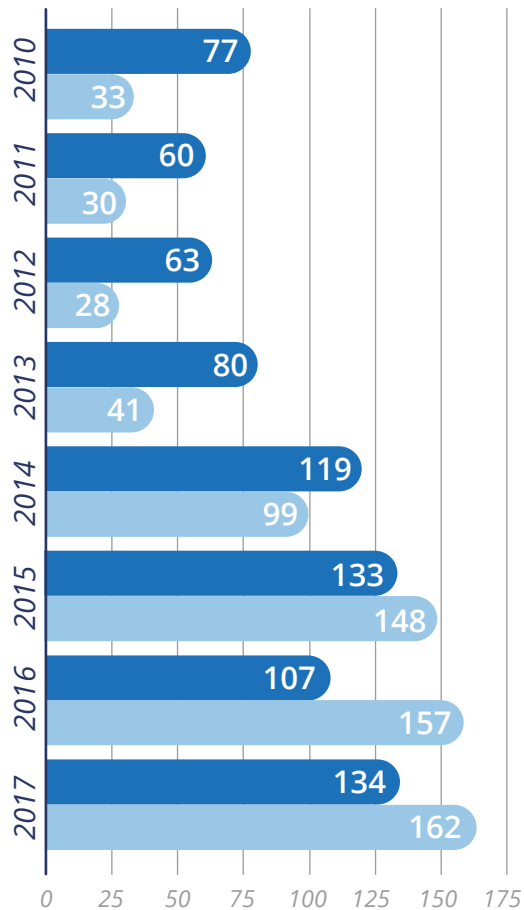




Clinical  
Trials



Observational  
Studies



03



## **2017 ACHIEVEMENTS**

## **IDIS CREATES A SOFTWARE TO PREDICT STROKE SEVERITY MEASURING BRAIN TEMPERATURE.**

Researchers from the IDIS Clinical Neurosciences Research Laboratory, together with the company Conexiona Telecom, have recently announced the commercialization of a software which predicts the possible worsening and approach of stroke measuring brain temperature. The new product will be commercialized by the spin off LINCbiotech-Brain Health Innovation from 2019.

## **IDIS COORDINATES THE SPANISH NETWORK RECLIP TO FACILITATE PEDIATRIC CLINICAL TRIALS.**

The Spanish Pediatric Clinical Trials Network (RECLIP) made up of more than 40 pediatric research units in Spain and coordinated from IDIS Santiago, was born with the main goal of developing the adequate infrastructure to carry out pediatric clinical trials.

## **NEW EFFORT TO CAPTURE AND FORMING SCIENTIFIC TALENT.**

Call and resolution of the IDIS Predoctoral Grants Program. Five new trainees integrate Neurology, Genetics, Vaccines, Infections and Paediatrics (GENVIP), Endocrine Physiopathology, Traslational Medical Oncology and Biodiscovery HULA-USC research groups.

## **TEN RESEARCH GROUPS JOINED THE INSTITUTE.**

6 clinical partner groups and 4 emerging groups were added to the institute in 2017: Intraocular Tumours in Adults, Semergal, Surgical Oncology, Oral Sciences (OSRG), Healthy ageing, fragility and chronicity, Research in Primary Care, Life Support and Medical Simulation, Genetics of Gastrointestinal Tumours, Stem Cells and Human Diseases, DNA Repair and Genome Integrity and Musculoskeletal Pathology.

### **NEW LAB FACILITIES FULLY OPERATIONAL IN 2017.**

1000 new square meters of modern and fully equipped new research laboratories entered into operation in 2017. Precision oncology, vaccines, epigenomics, musculoskeletal pathology related research lines are now better served with cutting-edge research spaces.

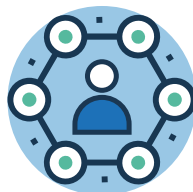
### **INDEPENDENT EVALUATION.**

Fourteen research groups defended their performance and explained their plans for the future before IDIS's External Scientific Committee.

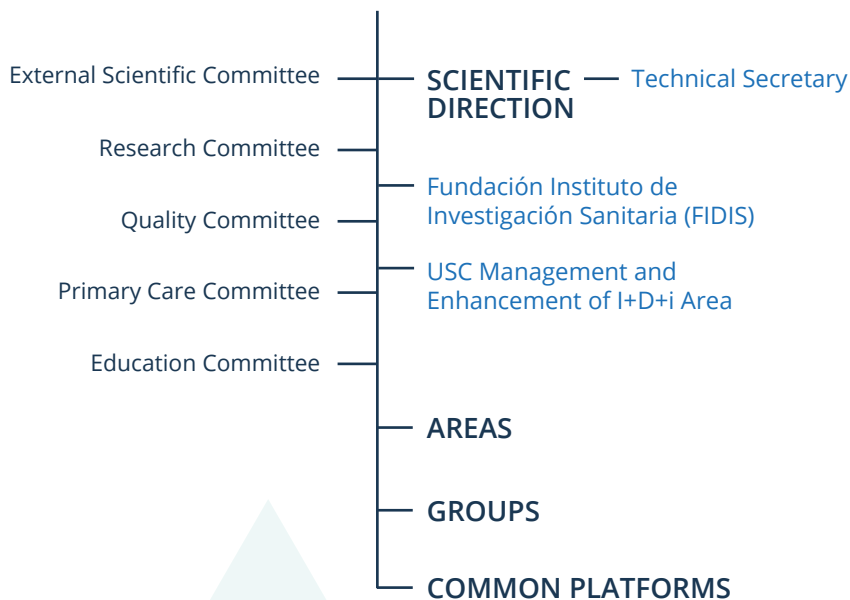
04

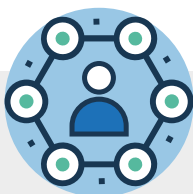


**STRUCTURE**



## DIRECTION BOARD





## DIRECTION BOARD

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María Gómez-Reino Garrido (without vote)

José Castillo Sánchez (without vote)

### SCIENTIFIC DIRECTION

José Castillo Sánchez





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Melchor Álvarez de Mon Soto  
María del Carmen Ayuso García  
Joan Xavier Comella Carnicé  
Xosé García Bustelo  
Mario da Rocha Barbosa



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Ángeles Fernández Rodríguez  
Uxía Ferrer Ozores  
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Mar Lale Candal  
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Miguel Ángel Caínzos Fernández  
Manuel Collado Rodríguez  
Fernando Domínguez Puente  
José Antonio Ferreiro Guri  
Miguel Gelabert González  
Arturo González Quintela  
Francisco Gude Sampedro  
Celia María Pombo Ramos  
Anxo Vidal Figueroa



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Manuel Portela Romero

### SECRETARY

Yolanda Liste Martínez

Paula Antelo País

Rosendo Bugarín González

Rosa Ana Castelo Domínguez

Sergio Cinza Sanjurjo

Carmen Fernández Merino

Pilar Gayoso Diz

Daniel Rey Aldana

Jesús Sueiro Justel

Xoán Vázquez Lago

Manuel Vidal Fernández Fernández



## TECHNICAL SECRETARY

Isabel Lista García

Yolanda Liste Martínez

Ricardo Julio Rodríguez Fernández

**ONCOLOGY A001**Coordinator: **Rafael López López**

<b>C010</b>	Genetics of Human Diseases	<i>Fernando Domínguez Puente</i>
<b>C011</b>	Pathology	<i>José Ramón Antúnez López</i>
<b>C025</b>	NANOBIOFAR	<i>María José Alonso Fernández</i>
<b>C030</b>	Traslational Medical Oncology	<i>Rafael López López</i>
<b>C032</b>	Molecular Imaging	<i>Álvaro Ruibal Morell</i>
<b>E004</b>	Molecular Oncology	<i>José Antonio Costoya Puente</i>
<b>E018</b>	Cell Cycle and Oncology (CiClon)	<i>Anxo Vidal Figueroa</i>
<b>E028</b>	Stem Cells in Cancer and Aging	<i>Manuel Collado Rodríguez</i>
<b>E031</b>	Oncologic Endocrinology	<i>Román Pérez Fernández</i>
<b>E032</b>	Preclinical Animal Models	<i>Laura Sánchez Piñón</i>
<b>E033</b>	Viruses and cancer	<i>María del Carmen Rivas Vázquez</i>
<b>E037</b>	DNA Repair and Genome Integrity	<i>Miguel González Blanco</i>
<b>AC01</b>	Lymphoproliferative Disorders	<i>José Luis Bello López</i>
<b>AC06</b>	Intraocular Tumours in Adults	<i>Antonio Piñeiro Ces</i>
<b>AC08</b>	Surgical Oncology	<i>Manuel Bustamante Montalvo</i>



## GENETICS AND SYSTEMS BIOLOGY A002

Coordinator: **Ángel Carracedo Álvarez**

<b>C005</b>	Genetics	<i>Ángel Carracedo Álvarez</i>
<b>C009</b>	Digestive Diseases	<i>Juan Enrique Domínguez Muñoz</i>
<b>C020</b>	Genetics, Vaccines, Infections and Paediatrics (GENVIP)	<i>Federico Martinón Torres</i>
<b>E012</b>	Comparative Genomics of Human Parasites	<i>Julio Manuel Maside Rodríguez</i>
<b>E015</b>	Population Genetics in Biomedicine (GenPoB)	<i>Antonio Salas Ellacuriaga</i>
<b>E016</b>	Genetics of Neurological Disorders	<i>María Jesús Sobrido Gómez</i>
<b>E017</b>	Cancer Genetics	<i>Ana Paula Vega Gliemmo</i>
<b>E020</b>	Psychiatric Genetics	<i>Javier Costas Costas</i>
<b>E021</b>	Genetics and Developmental Biology of Kidney Diseases	<i>Miguel Ángel García González</i>
<b>E027</b>	Escherichia coli	<i>Jorge Blanco Álvarez</i>
<b>E035</b>	Genetics of Gastrointestinal Tumours	<i>Clara Ruiz Ponte</i>
<b>E036</b>	Stem Cells and Human Diseases	<i>Miguel Ángel Fidalgo Pérez</i>



## ENDOCRINOLOGY A003

Coordinator: **Felipe Casanueva Freijo**

<b>C001</b>	Neoplasia and Endocrine Differentiation	<i>Clara Álvarez Villamarín</i>
<b>C006</b>	Molecular Endocrinology	<i>Felipe Casanueva Freijo</i>
<b>C008</b>	Obesity and Nutrition	<i>Carlos Diéguez González</i>
<b>C012</b>	Metabolic Disorders	<i>María de la Luz Couce Pico</i>
<b>C019</b>	Thyroid and Metabolic Disorders Unit (UETeM)	<i>David Araújo Vilar</i>
<b>C022</b>	Paediatric Nutrition	<i>Rosaura Leis Trabazo</i>
<b>C029</b>	Neurobesity	<i>Miguel López Pérez</i>
<b>C031</b>	Molecular Metabolism	<i>Rubén Nogueiras Pozo</i>
<b>E006</b>	Cytokines and Obesity (Citobes)	<i>María del Carmen García García</i>
<b>E023</b>	Obesidomics	<i>María Pardo Pérez</i>
<b>E025</b>	Cellular Endocrinology	<i>Jesús Pérez Camiña</i>
<b>E026</b>	Endocrine Physiopathology	<i>Luisa María Seoane Camino</i>
<b>E039</b>	Diabetes	<i>Sulay Tovar Carro</i>
<b>AC04</b>	Paediatric Endocrinology	<i>Manuel Pombo Arias</i>
<b>AC08</b>	Surgical Oncology	<i>Manuel Bustamante Montalvo</i>



## NEUROSCIENCES A004

Coordinator: **José Castillo Sánchez**

<b>C004</b>	Neurobiology	<i>Antonio Canedo Lamas</i>
<b>C007</b>	Neurology	<i>José Castillo Sánchez</i>
<b>C015</b>	Neurobiology of the Visual System	<i>Francisco González García</i>
<b>C018</b>	Experimental Neurology of Parkinson´s Disease	<i>José Luis Labandeira García</i>
<b>C026</b>	BIOFARMA	<i>María Isabel Loza García</i>
<b>C033</b>	Design, Synthesis and Medical Evaluation of Bioactive Compounds and New Materials	<i>Antonio Mouriño Mosquera</i>
<b>C034</b>	Physics of Polymers and Colloids	<i>Victor Mosquera Tallón</i>
<b>C035</b>	R&D in Drugs Dose Forms and Delivery Systems	<i>Ángel Concheiro Nine</i>
<b>C036</b>	Magnetism and Nanotechnology (NanoMag)	<i>José Rivas Rey</i>
<b>C037</b>	Trace Elements, Spectroscopy and Speciation	<i>Pilar Bermejo Barrera</i>
<b>C038</b>	Analytical Chemistry of Compounds of Alimentary, Environmental and Biological Interest	<i>Antonia María Carro Díaz</i>
<b>E014</b>	Prion Diseases	<i>Jesús Rodríguez Requena</i>
<b>E019</b>	Cell Stress	<i>Juan Bautista Zalvide Torrente</i>
<b>E029</b>	Cognitive Neuroscience	<i>Fernando Díaz Fernández</i>
<b>AC03</b>	Critical Patient	<i>Julián Álvarez Escudero</i>
<b>AC11</b>	Life Support and Medical Simulation	<i>Antonio Rodríguez Núñez</i>



## PLATFORMS AND METHODOLOGY A005

Coordinator: **Juan Jesús Gestal Otero**

<b>C002</b>	Experimental Surgery	<i>Miguel Ángel Caínzos Fernández</i>
<b>C013</b>	Epidemiology, Public Health and Evaluation of Health Services	<i>Juan Jesús Gestal Otero</i>
<b>C017</b>	Research Methodology	<i>Francisco Gude Sampedro</i>
<b>C021</b>	Clinical Analysis	<i>Santiago Rodríguez-Segade Villamarín</i>
<b>C024</b>	Radiology	<i>Miguel Souto Bayarri</i>
<b>E002</b>	Biostatistics	<i>Carmen María Cadarso Suárez</i>
<b>E013</b>	Microbiology	<i>María Luisa Pérez del Molino Bernal</i>
<b>E034</b>	Clinical Pharmacology	<i>María Jesús Lamas Díaz</i>
<b>AC09</b>	Oral Sciences (OSRG)	<i>Inmaculada Tomás Carmona</i>
<b>AC10</b>	Healthy ageing, fragility and chronicity. Research in Primary Care	<i>Pilar Gayoso Diz</i>





## INFLAMMATION A006

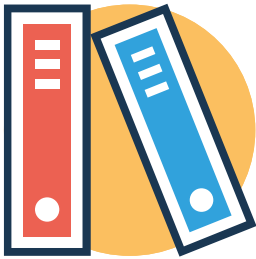
Coordinator: **José Ramón González Juanatey**

<b>C003</b>	Hypertension	<i>Carlos Calvo Gómez</i>
<b>C014</b>	Rheumatology	<i>Juan Jesús Gómez-Reino Carnota</i>
<b>C016</b>	Cardiology	<i>José Ramón González Juanatey</i>
<b>C027</b>	Neuroendocrine Interactions in Rheumatic and Inflammatory Diseases (Neirid)	<i>Oreste Gualillo</i>
<b>C028</b>	Experimental and Observational Rheumatology	<i>Antonio González Martínez-Pedrayo</i>
<b>C039</b>	Biodiscovery HULA-USC	<i>Luis Miguel Botana López</i>
<b>C040</b>	Oral Medicine and Surgery (OMEQUI)	<i>Pedro Diz Dios</i>
<b>E001</b>	Cardiovascular Genetics	<i>María José Brión Martínez</i>
<b>E009</b>	Cellular and Molecular Cardiology	<i>Francisca Lago Paz</i>
<b>E030</b>	Platelet Proteomics	<i>Ángel García Alonso</i>
<b>E038</b>	Musculoskeletal Pathology	<i>Rodolfo Gómez Bahamonde</i>
<b>AC05</b>	Pneumology	<i>Luis Guillermo Valdés Cuadrado</i>
<b>AC07</b>	Semergal	<i>Sergio Cinza Sanjurjo</i>

The background of the entire page is a complex, repeating geometric pattern. It consists of numerous triangles of various sizes, some pointing upwards and some downwards. The color palette is primarily shades of blue, ranging from a deep navy blue to a very light, almost white blue. Interspersed among the blue triangles are several triangles in a muted sage green color. The overall effect is a modern, textured, and somewhat crystalline background.

# **ANNUAL REPORT 2017**

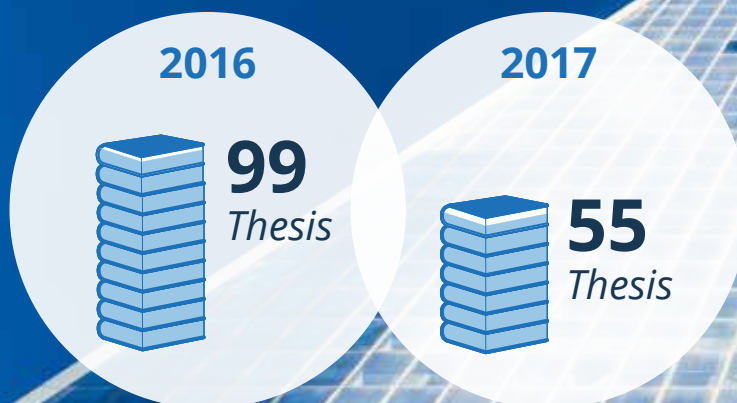
05



## **RECURRENT TRAINING**

## Training activities in 2017

In 2017, **50 seminars** were organized, **55 doctoral thesis** were directed by IDIS' researchers, **211 professional training placement** and **8 short training exchanges** were organized in collaboration with the *Medicina Intercambios Galicia Association (M.E.I.GA.)*, member of the *International Federation of Medical Students' Associations (IMFSA)*.





**50**

*Seminars*



**55**

*Doctoral thesis*



**211**

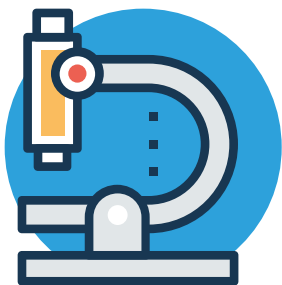
*Professional  
training placement*



**8**

*Short training  
exchanges*

06



## **INNOVATION AND TRANSFER**

## The main initiatives of **technology transfer** during 2017

Transfer  
acceleration through  
public funding  
and private  
investment

**ITEMAS network:** innovation in Medical and Health Technologies Network funded by the Instituto de Salud Carlos III.

**CÓDIGO MÁIS project:** valorization program of SERGAS and USC.

**Farma-Biotech:** a program to facilitate collaboration between the pharmaceutical industry and the Spanish biotechnology sector.

**CaixaImpulse Program:** funding for creating and implementing a valorisation and commercialisation plan aimed at making use of protected or protectable assets resulting from research.

**Kærtor Foundation:** The Kærtor Foundation is an initiative of global reach, a pioneer in open innovation and public-private co-development in drug discovery.

## Adopting the Public-Private Partnership Model

Three P3 ongoing initiatives where public IDIS partners share risks with private investors...

- **Roche-CHUS**, Precision Oncology Joint Unit.
- **Esteve-USC**, Drug Discovery Joint Unit.
- **Everis-Gradiant-CHUS**, e-Health Joint Knowledge Centre.

## Disseminating our research

**BioInvestor Day**: training and networking, a meeting point for researchers, investors and technology transfer experts.



## Partnering

**TITTAN:** a European Network for Technology, Innovation and Translation in Ageing, it aims to tackle that challenge, by improving the quality and performance of the European regional healthcare systems in relation with the healthy and active ageing. IDIS participates acts as a stakeholder.

## Entrepreneuring

**LincBiotech:** new IDIS spin off which aims to provide new processing and medical image analysis solutions to help as decision-making systems for neurological diseases.



## Ensuring and enforcing property rights effectively to ensure the stimulation of investment in research and innovation...

**31**  
**Requested**

**5** National or regional phase  
**8** International extension  
**16** Priority

**7**  
**Granted**

**2** United states of America  
**1** Europe  
**3** Spain  
**1** Japan

## Clinical trials and observational studies

**134**  
**Clinical  
trials**

**16** National or regional phase  
**17** International extension  
**1** Priority

**162**  
**Observational  
studies**

**90** National  
**24** International  
**8** Regional  
**40** Local

The background of the entire page is a complex, repeating geometric pattern. It consists of numerous triangles of various sizes, some pointing upwards and some downwards. The color palette is primarily shades of blue, ranging from a deep navy blue to a very light, almost white blue. Interspersed among the blue triangles are triangles in shades of green, from a muted sage green to a bright, vibrant green. The overall effect is a modern, textured, and somewhat abstract design.

# **ANNUAL REPORT 2017**

07



**PLATFORMS**

*Experimental  
Biomedicine Centre  
(Cebeqa)*

*Proteomics*

*Citometry*

*Epidemiology  
And Clinical Research  
Unit*

*Imaging*

**Bibliosaúde**



SERVIZO  
GALEGO  
de SAÚDE

*Pet Radiopharmacy  
Unit Galicia  
Cyclotron*

*Genomics*

*Radiophysics  
Laboratory*

07 Platforms

*Microscopy*

*Liquid Biopsy  
Unit*

*9,4 Magnetic  
Resonance*

*Sequencing  
And Fragment  
Analysis Unit*



*Biobank*

*Drug  
Screening Platform  
(Usef)*

*Molecular  
Imaging Unit  
Micropet/spect/ct Scan*

**CiMUS**



## **Proteomics**

**Susana Belén Bravo López**

*susana.belen.bravo.lopez@sergas.es*

The proteomics platform was created to enhance, give support and offer a complete infrastructure in the field of proteomics to the Institute's researchers and other public and private bodies. It is equipped with the latest generation technology that allows the development of both studies of characterisation of complete proteomes as well as studies of analysis of differential expression.

## **Liquid Biopsy Unit**

**Laura Muinelo Romay**

*laura.muinelo.romay@sergas.es*

The service for the analysis of circulating cells works with the CellSearch<sup>TM</sup> system (Veridex) that allows, through the use of immunomagnetic techniques of enrichment and identification by immunofluorescence, isolate and quantify present cells in peripheral blood. Its main application is aimed to the detailed analysis of circulating tumor cells (CTC), even though the computer also allows identify other kind of cells such as endothelial. In addition, the platform has the capacity to carry out studies with circulating DNA.



## Flow Citometry

**Tomás Sobrino Moreiras**

*tomas.sobrino.moreiras@sergas.es*

It is a technique of cells analysis that allows one to measure the characteristics of light scattering and fluorescence that cells have when they pass through a ray of light. This platform's main aims are:

- To advise users of the IDIS on the principles and applications of flow cytometry analysis and cell sorting.
- To develop, optimize and perform new analytic applications demanded by the users of the IDIS.
- To do cellular isolation through cell sorting.
- Quantify different soluble cytokines using multiplex tests.

## Magnetic Resonance Imaging

**Ramón Iglesias Rey**

*ramon.iglesias.rey@sergas.es*

Magnetic Resonance Imaging is perhaps the most versatile neuroimaging technique that exists today. The use of this platform in its different variants (anatomical, functional, spectroscopy and molecular imaging) allows one to perform a complete follow-up, non-invasive (in vivo) and longitudinal in time of the process associated with neurovascular diseases and other such as plasticity, reorganization and functional recovery in animal models.

## Biobank

**Lydia Fraga Fontoira (Manager).** *Phone. (+34) 981 955 148*

*biobanco.apa.santiago@sergas.es - lydia.fraga.fontoira@sergas.es*

It is a store of biological samples associated with clinical information, which are collected, processed and handled with quality and excellence criteria. The objective is to implement them, in a non-profit way, to serve the medical community in order to promote biomedical research. Biobanks can be directly aimed at diseases (e.g., Bank of Tumours) or at population and epidemiological outbreaks.

Biobanks are essential tools to make biomedical research easier. That is why they are so relevant and also for the increasing demand of the highest quality biological samples in order to develop research processes.

The specific aims of Santiago's Biobank are:

- To increase the quantity and quality of the samples available to the scientific community.
- To manage the specific collections linked to projects and research groups that increase the added value of the Biobank.
- To serve as support and advice platform for researchers who work on projects that require collecting human samples.
- To promote the intrahospital integration and the central management of the CHUS' samples collections.
- To integrate the Biobank as support platform for the IDIS' researchers.
- To unify standard operating procedures and policies for quality assurance applicable to all collections managed by the Biobank.

## Confocal Microscopy

**Marta Picado Barreiro**

*marta.picado.barreiro@sergas.es*

The confocal scanning microscope is well-known for its ability to perform optical sectioning: a thin plane or section within a thick turbid medium is non-invasively imaged with high resolution and contrast. Real-time in vivo confocal fluorescence microscopy. Nuclear, cellular and morphologic detail is imaged in living intact tissue without having to excise physically and prepare thin sections or cultures.

The services include the infrastructure and specialised staff to perform analysis as...

- 3D imaging reconstruction
- Multiple labeling
- Colocalization
- In vivo fluorescence imaging

## Molecular Imaging Unit

**Pablo Aguiar Fernández**

*pablo.aguiar.fernandez@sergas.es*

Our mission is to bridge the gap between in vitro biomedical research and in vivo preclinical and clinical imaging, providing novel molecular imaging biomarkers and imaging probes to gain information about physiology and pathology in vivo. We offer a core facility to provide opportunities for in vivo molecular imaging based on PET, SPECT and CT technologies.

- **Neurology:** brain metabolism (FDG-PET), perfusion imaging (HMPAO-SPECT), in vivo hypoxia (FMISO-PET) and in vivo quantification of the dopamine receptors (DATSCAN-SPECT) in rodents.
- **Oncology:** evaluation of tumours and therapies follow-up in rodents based on the “gold standard” in clinical oncology (FDG-PET) and also Choline-PET, proliferation (FLT-PET) and hypoxia imaging (FMISO-PET). Monoclonal antibody (mAb) PET imaging with Zr-89 is still in testing.
- **Pharmacokinetics and drug development:** biodistribution studies from different routes of drugs administration such as intravenous, intraperitoneal, intravitreal and topical.

Pharmacokinetics studies providing an extensive kinetic modelling analysis, such as biopermanence studies of ophthalmic formulations.

- **Inflammation:** metabolism (FDG-PET) and CT imaging of intestinal inflammation rat models.
- **Cardiology:** ECG-based gated FDG-PET for myocardial viability studies in rats.
- **Urology:** in vivo quantification of renal function in mice with dimercaptosuccinic acid labeled with  $^{99m}\text{Tc}$  (DMSA-SPECT) and metabolic imaging of renal lesions (FDG-PET).
- **Molecular imaging biomarkers:** great effort is being invested to provide quantitative molecular imaging biomarkers as end result of each experiment using well-known imaging analysis software like PMOD (PMOD, Switzerland).
- **Translational molecular imaging:** our facility also provides infrastructure for clinical PET and dedicated breast PET imaging, regularly involving physicians and scientists from the Nuclear Medicine Department at CHUS, thus ensuring studies planning which allow truly translational studies from mouse to man.

The background of the entire page is a complex, repeating pattern of triangles. The triangles are in various shades of blue (from light sky blue to a deeper navy blue) and green (from pale mint to a slightly darker sage green). Some triangles are solid, while others are white, creating a tessellated effect. The pattern is denser at the top and fades out towards the bottom.

# **ANNUAL REPORT 2017**

08



## **COMPETITIVE FUNDING**

During 2017, **32.402.824 € were raised** in the following concepts: projects, human resources, transfer, donations, contracts, provision of services, agreements and studies.

**Total 32.402.824 €**



**75** *Projects*  
**14.326.044 €**



**46** *Human resources*  
**3.418.075 €**



**113** *Donations*  
**1.548.809€**





**940** *Contracts and provision of services*  
**8.863.350 €**



**1** *Transfer*  
**8.000 €**



**296** *Studies*  
*(Clinical trials, CT, Observational studies, OS)*  
**4.238.546 €**



**75 Projects 14.326.044 €**



**9** *International projects*  
**3.254.094 €**



**46** *National projects*  
**4.641.815 €**



**20** *Regional projects*  
**6.430.136 €**



## 40 Human resources 3.418.075 €

CONCEPT	NUMBER	AMOUNT
FPU Grant	6	488.798.88 €
Juan Rodés	1	180.000.00 €
MA-E Grant	1	6.000.00 €
Miguel Servet I	1	202.500.00 €
Miguel Servet II	3	391.500.00 €
Postdoctoral Grant	6	471.891.56 €
Predocctoral Grant	15	1.060.168.51 €
Predocctoral i-PFIS Grant	1	82.400.00 €
Predocctoral PFIS Grant	2	164.800.00 €
PRINCIPIA Grant	6	60.000 €
Research Management Grant	1	8.059.800 €
Río Hortega	2	161.196.00 €
Technical Assistant PTA Grant	1	68.221.76 €

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# **ANNUAL REPORT 2017**

09



## **STRATEGIC ALLIANCES**

3

## PLATFORMS

**Red Biobancos**  
Instituto de Salud Carlos III

**itemas** *isciii*



Spanish  
Clinical  
Research  
Network  
ISCIII

7

## RETICS

Biomedical Research  
Networking  
Centres

**INVICTUS**

INVICTUS (1), Cerebrovascular diseases (stroke)

**RIC**  
RESEARCH IN CARDIOVASCULAR DISEASES

RIC, Cardiovascular Diseases

**OftaRed**  
RETICS Ophthalmology Center

OFTARED, Eye Diseases

**REDIAPP**  
RESEARCH NETWORK ON PREVENTIVE ACTIVITIES AND HEALTH PROMOTION IN PRIMARY CARE

REDIAPP, Research Network on Preventive Activities and Health Promotion in Primary Care

**RIER**  
RESEARCH IN RHEUMATIC DISEASES

RIER, Rheumatic Diseases

**REN**  
RESEARCH NETWORK ON KIDNEY DISEASES

REDINREN, Kidney Diseases

**Cell Therapy Network**

Cell Therapy Network

3

## CIBER

Networks for  
Cooperative Research  
in Health

*cïberobn*

CIBEROBN (1),  
Physiopathology of Obesity  
and Nutrition

*cïberer*

CIBERER,  
Rare Diseases

*cïberesp*

CIBERESP,  
Public Health and  
Epidemiology

2

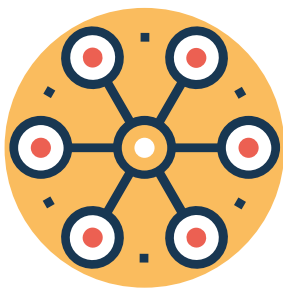
## OTHERS

**EATRIS**   
European Infrastructure for  
Translational Medicine

**EIR** | EUROPEAN INSTITUTE  
FOR BIOMEDICAL  
IMAGING RESEARCH

(1) Scientific Direction IDIS

# 10



## **AREAS**

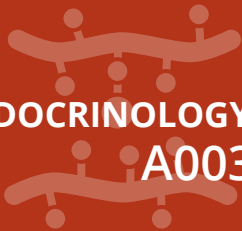




**GENETICS**  
**A002**



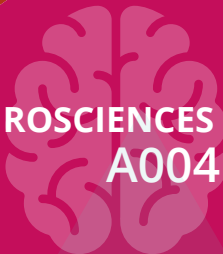
**ONCOLOGY**  
**A001**



**ENDOCRINOLOGY**  
**A003**



**INFLAMMATION**  
**A006**

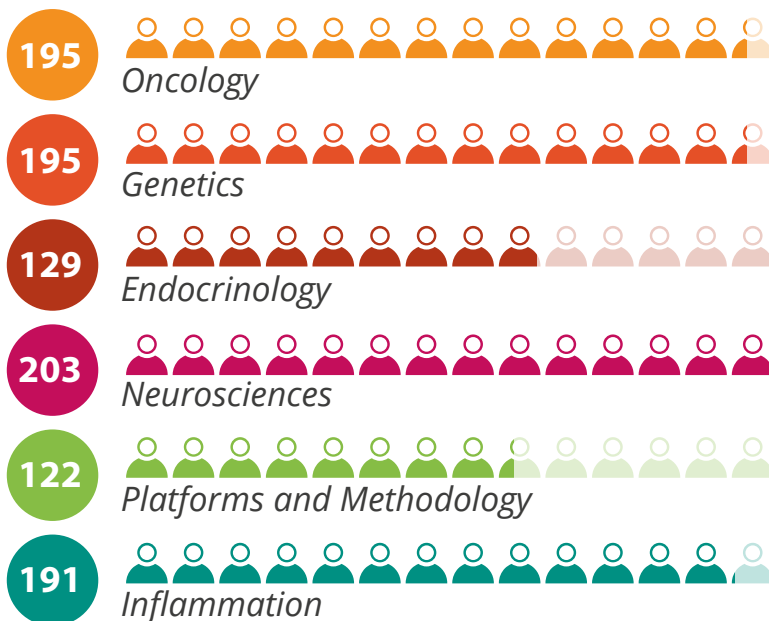


**NEUROSCIENCES**  
**A004**



**PLATFORMS AND  
METHODOLOGY**  
**A005**

## Members



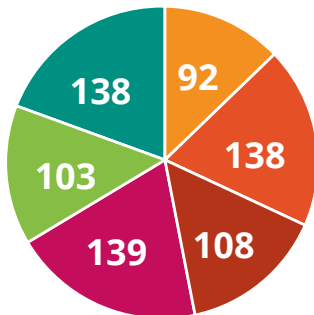
**1064 people**  
are integrated in  
80 groups

**6 research**  
areas



## Publications

653



$\overline{fi}$

5,71

5,31

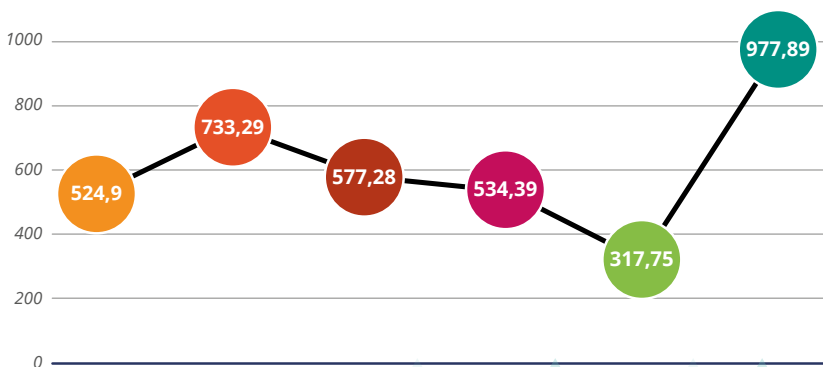
5,34

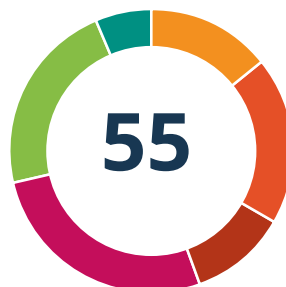
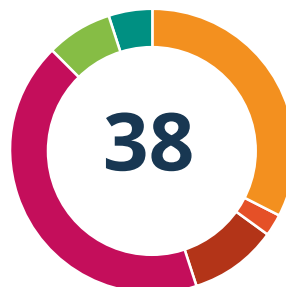
3,84

3,08

7,09

$\Sigma fi$



 *Oncology* *Genetics* *Endocrinology* *Neurosciences* *Platforms and Methodology* *Inflammation**Projects**Contracts**Clinical Trials**Thesis**Patents*

**ONCOLOGY A001**Coordinator: **Rafael López López**

	<b>n</b>	<b>Σ fi</b>	<b>fi</b>	<b>AMOUNT</b>
<i>Articles published</i>	<b>92</b>	<b>524,9</b>	<b>5,71</b>	<b>-</b>
<i>Projects</i>	<b>11</b>	<b>-</b>	<b>-</b>	<b>999.368 €</b>
<i>Contracts and Agreements</i>	<b>21</b>	<b>-</b>	<b>-</b>	<b>675.203 €</b>
<i>Clinical Trials</i>	<b>50</b>	<b>-</b>	<b>-</b>	<b>-</b>
<i>Patents</i>	<b>13</b>	<b>-</b>	<b>-</b>	<b>-</b>
<i>Thesis</i>	<b>9</b>	<b>-</b>	<b>-</b>	<b>-</b>

- **C010** Genetics of Human Diseases
- **C011** Pathology
- **C025** NANOBIOFAR
- **C030** Translational Medical Oncology
- **C032** Molecular Imaging
- **E004** Molecular Oncology
- **E018** Cell Cycle and Oncology (CiClon)
- **E028** Stem Cells in Cancer and Aging
- **E031** Oncologic Endocrinology
- **E032** Preclinical Animal Models
- **E033** Viruses and cancer
- **E037** DNA Repair and Genome Integrity
- **AC01** Lymphoproliferative Disorders
- **AC06** Intraocular Tumours in Adults
- **AC08** Surgical Oncology



## GENETICS AND SYSTEMS BIOLOGY A002

Coordinator: **Ángel Carracedo Álvarez**

	<b>n</b>	<b><math>\Sigma f_i</math></b>	<b><math>\overline{f_i}</math></b>	<b>AMOUNT</b>
<i>Articles published</i>	<b>138</b>	<b>733,29</b>	<b>5,31</b>	<b>-</b>
<i>Projects</i>	<b>15</b>	<b>-</b>	<b>-</b>	<b>3.574.411 €</b>
<i>Contracts and Agreements</i>	<b>41</b>	<b>-</b>	<b>-</b>	<b>1.217.164 €</b>
<i>Clinical Trials</i>	<b>37</b>	<b>-</b>	<b>-</b>	<b>-</b>
<i>Patents</i>	<b>1</b>	<b>-</b>	<b>-</b>	<b>-</b>
<i>Thesis</i>	<b>12</b>	<b>-</b>	<b>-</b>	<b>-</b>

- **C005** Genetics
- **C009** Digestive Diseases
- **C020** Genetics, Vaccines, Infections and Paediatrics (GENVIP)
- **E012** Comparative Genomics of Human Parasites
- **E015** Population Genetics in Biomedicine (GenPoB)
- **E016** Genetics of Neurological Disorders
- **E017** Cancer Genetics
- **E020** Psychiatric Genetics
- **E021** Genetics and Developmental Biology of Kidney Diseases
- **E027** Escherichia coli
- **E035** Genetics of Gastrointestinal Tumours
- **E036** Stem Cells and Human Diseases



## ENDOCRINOLOGY A003

Coordinator: **Felipe Casanueva Freijo**

	<b>n</b>	<b><math>\Sigma</math> fi</b>	<b>fi</b>	<b>AMOUNT</b>
<i>Articles published</i>	<b>108</b>	<b>577,28</b>	<b>5,34</b>	<b>-</b>
<i>Projects</i>	<b>7</b>	<b>-</b>	<b>-</b>	<b>241.320 €</b>
<i>Contracts and Agreements</i>	<b>13</b>	<b>-</b>	<b>-</b>	<b>152.175 €</b>
<i>Clinical Trials</i>	<b>14</b>	<b>-</b>	<b>-</b>	<b>-</b>
<i>Patents</i>	<b>4</b>	<b>-</b>	<b>-</b>	<b>-</b>
<i>Thesis</i>	<b>7</b>	<b>-</b>	<b>-</b>	<b>-</b>

- **C001** Neoplasia and Endocrine Differentiation
- **C006** Molecular Endocrinology
- **C008** Obesity and Nutrition
- **C012** Metabolic Disorders
- **C019** Thyroid and Metabolic Disorders Unit (UETeM)
- **C022** Paediatric Nutrition
- **C029** Neurobesity
- **C031** Molecular Metabolism
- **E006** Cytokines and Obesity (Citobes)
- **E023** Obesidomics
- **E025** Cellular Endocrinology
- **E026** Endocrine Physiopathology
- **E039** Diabetes
- **AC04** Paediatric Endocrinology





## NEUROSCIENCES A004

Coordinator: **José Castillo Sánchez**

	<b>n</b>	<b><math>\Sigma</math> fi</b>	<b><math>\overline{fi}</math></b>	<b>AMOUNT</b>
<i>Articles published</i>	<b>139</b>	<b>534,39</b>	<b>3,84</b>	<b>-</b>
<i>Projects</i>	<b>20</b>	<b>-</b>	<b>-</b>	<b>3.537.366 €</b>
<i>Contracts and Agreements</i>	<b>28</b>	<b>-</b>	<b>-</b>	<b>2.580.627 €</b>
<i>Clinical Trials</i>	<b>4</b>	<b>-</b>	<b>-</b>	<b>-</b>
<i>Patents</i>	<b>17</b>	<b>-</b>	<b>-</b>	<b>-</b>
<i>Thesis</i>	<b>17</b>	<b>-</b>	<b>-</b>	<b>-</b>

- **C004** Neurobiology
- **C007** Neurology
- **C015** Neurobiology of the Visual System
- **C018** Experimental Neurology of Parkinson´s Disease
- **C026** BIOFARMA
- **C033** Design, Synthesis and Medical Evaluation of Bioactive Compounds and New Materials
- **C034** Physics of Polymers and Colloids
- **C035** R&D in Drugs Dose Forms and Delivery Systems
- **C036** Magnetism and Nanotechnology (NanoMag)
- **C037** Trace Elements, Spectroscopy and Speciation
- **C038** Analytical Chemistry of Compounds of Alimentary, Environmental and Biological Interest
- **E014** Prion Diseases
- **E019** Cell Stress
- **E029** Cognitive Neuroscience
- **AC03** Critical Patient
- **AC11** Life Support and Medical Simulation



## PLATFORMS AND METHODOLOGY A005

Coordinator: **Juan Jesús Gestal Otero**

	<b>n</b>	<b><math>\Sigma</math> fi</b>	<b>fi</b>	<b>AMOUNT</b>
<i>Articles published</i>	<b>103</b>	<b>317,75</b>	<b>3,08</b>	-
<i>Projects</i>	<b>8</b>	-	-	<b>270.589 €</b>
<i>Contracts and Agreements</i>	<b>24</b>	-	-	<b>264.334 €</b>
<i>Clinical Trials</i>	<b>9</b>	-	-	-
<i>Patents</i>	<b>3</b>	-	-	-
<i>Thesis</i>	<b>14</b>	-	-	-

- **C002** Experimental Surgery
- **C013** Epidemiology, Public Health and Evaluation of Health Services
- **C017** Research Methodology
- **C021** Clinical Analysis
- **C024** Radiology
- **E002** Biostatistics
- **E013** Microbiology
- **E034** Clinical Pharmacology
- **AC09** Oral Sciences (OSRG)
- **AC10** Healthy ageing, fragility and chronicity. Research in Primary Care



## INFLAMMATION A006

Coordinator: **José Ramón González Juanatey**

	<b>n</b>	<b><math>\Sigma</math> fi</b>	<b><math>\overline{fi}</math></b>	<b>AMOUNT</b>
<i>Articles published</i>	<b>138</b>	<b>977,89</b>	<b>7,09</b>	<b>-</b>
<i>Projects</i>	<b>10</b>	<b>-</b>	<b>-</b>	<b>705.267 €</b>
<i>Contracts and Agreements</i>	<b>41</b>	<b>-</b>	<b>-</b>	<b>461.620 €</b>
<i>Clinical Trials</i>	<b>76</b>	<b>-</b>	<b>-</b>	<b>-</b>
<i>Patents</i>	<b>2</b>	<b>-</b>	<b>-</b>	<b>-</b>
<i>Thesis</i>	<b>4</b>	<b>-</b>	<b>-</b>	<b>-</b>

- **C003** Hypertension
- **C014** Rheumatology
- **C016** Cardiology
- **C027** Neuroendocrine Interactions in Rheumatic and Inflammatory Diseases (Neirid)
- **C028** Experimental and Observational Rheumatology
- **C039** Biodiscovery HULA-USC
- **C040** Oral Medicine and Surgery (OMEQUI)
- **E001** Cardiovascular Genetics
- **E009** Cellular and Molecular Cardiology
- **E030** Platelet Proteomics
- **E038** Musculoskeletal Pathology
- **AC05** Pneumology
- **AC07** Semergal





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2017**



XUNTA DE GALICIA  
CONSELLERÍA DE SANIDADE