

ANNUAL REPORT

2015

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ANNUAL REPORT

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Introduction



VHIR represents the best
of the excellence &
the internationalization
at Vall d'Hebron Barcelona
Hospital Campus



Dr. Vicenç Martínez Ibáñez

HUVH Manager

VHIR is a critical member of the new called Vall d'Hebron Barcelona Hospital Campus. It represents the best of our excellence and the internationalization and we are proud to have this such powerful research institute in which most of its researchers and Principal Investigators are at the same time leaders in the clinical practice at our hospital. They are some of the best of the world in their health areas thanks to the collaboration between basic, translational and clinical research. Our translational research is one of the top five in Europe as proved by our leadership in clinical trials, which is well known by the pharmaceutical companies that work with us.

During the last years VHIR has obtained great advances as a result of the effort of researchers and all the staff supporting them. This work has prepared VHIR for the future, on the same line of our hospital, in a new Strategic Plan that has in its mission and vision the work for the improvement of the life of our patients.

We are proud to remember that these excellent results have been possible even despite the economical crisis. We have found our own funding, reinforcing our historical partnerships and creating new alliances with the industry and promoting the innovation.

Dr. Joan Comella

VHIR's Director



From a strategic point of view 2015 has been a very important year for VHIR as we finished the 2011-15 Plan and prepared the new for the period 2016-20. Until now we have maintained and increased the scientific production with a global impact factor over 4,000, around 5 average, and 800 publications. We have also consolidated our Institute economically. This has been difficult due to Spanish public economic cuts that have reduced this funding. But we have compensated it with international –European and also from the United States- funding and also with clinical trials and agreements with international pharmaceutical companies.

In these last years we have become leaders in a new personalized medicine that takes care of each person and disease.

During 2015 we organized our first Scientific Retreat in which was established a new distribution of our research areas –from 10 to 8- to encourage the collaboration between research groups and researchers. We have also redistributed the research spaces of our buildings according to the competitive research projects of every group.

Our aim is always to collaborate with other leader institutions as for instance the alliance between basic and translational research institutes for the PhD4MD Program.

These findings, advances and every step of our day by day activity has been published not only in our website and media. We have increased during the last year our presence in social media, becoming also leaders on Twitter in the field of biomedicine in Spain. Moreover, our researchers have helped our outreach participating in a lot of activities with schools and young people.

We believe in what we do and must explain what we are doing, the research of today, the medicine of tomorrow.

2015 has been a very important year for VHIR as we finished the 2011-15 and prepared the 2016-20 Strategic Plan

Organization chart

annualreport2015.vhir.org/organization-and-staff/organization-chart/

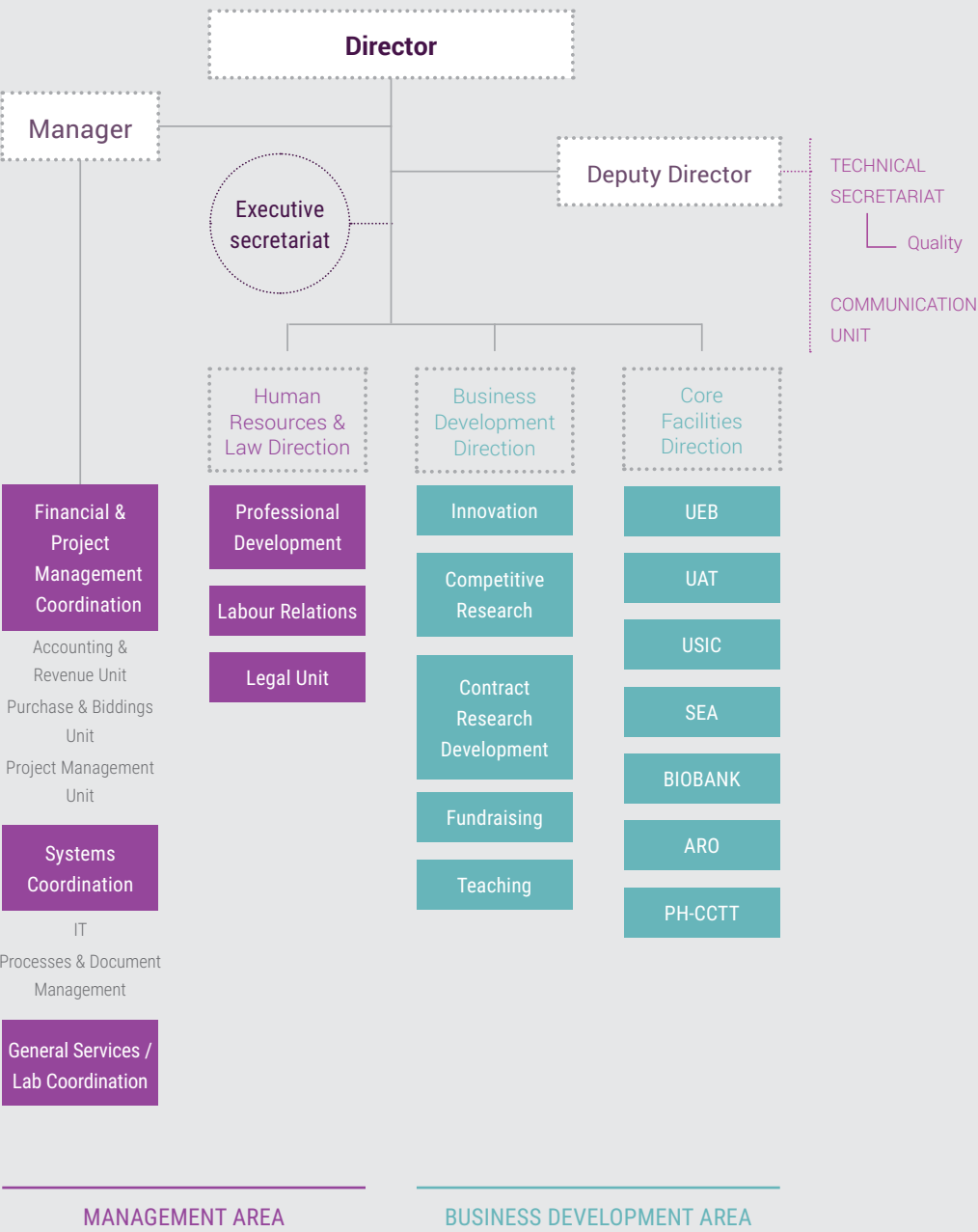
Governing bodies



Research



Administrative Structure



Research Areas

annualreport2015.vhir.org/research-areas

1 Longitudinal Areas

- 1.1 Digestive & Liver Diseases
- 1.2 Endocrinology & Nephrology
- 1.3 Gynecology, Pediatric Diseases & Experimental Surgery
- 1.4 Cardiovascular Diseases
- 1.5 Infectious Diseases
- 1.6 Neurosciences
- 1.7 Oncology
- 1.8 Respiratory & Systemic Diseases

2 Transversal Areas

- 2.1 Epidemiology, Pharmacology, New Therapies & Clinical Research
- 2.2 CIBBIM - Nanomedicine

1.1

Digestive & Liver Diseases

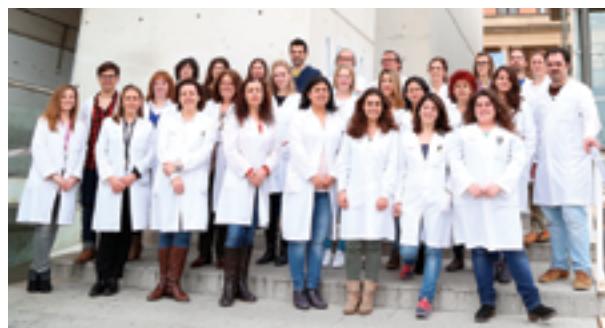
Overview

In the Physiology and Pathophysiology of the Digestive Tract group, the gastroenterology line investigates the integrated function of the intestinal tract including secretion, motility and absorption in health and disease. It also studies the interactions of intestinal inflammation with some aspects of enteric flora in inflammatory bowel disease.

The liver diseases group deals with viral hepatitis and liver cirrhosis and its complications. And the digestive transplants group studies mostly liver transplantation and the quality of life after it.

Publications

224	1,155 ^{.830}	5 ^{.160}
TOTAL	IMPACT FACTOR	AVERAGE IF



PHYSIOLOGY & PATHOPHYSIOLOGY OF THE DIGESTIVE TRACT

Fernando Azpiroz

Summary

After investigating relation between meals/ diet, intestinal content, gut function (reflex and sensory activity) and digestive sensations, we have moved a step forward to analyze the factors that determine the responses to meal ingestion both in healthy subjects and in patients with functional digestive symptoms. The Neuro-immuno-gastroenterology group is pursuing, through a holistic approach, the detailed knowledge of physiology and sequential pathophysiology of chronic intestinal inflammation, as a potential nexus to prevalent digestive diseases, associated with changes in motility and visceral sensitivity. In 2015, the "Gut Microbiota" group has received the Spanish National Grant (PI15/0076), has integrated a post-doctorate fellow with Belgium grant and has received a grant for a PhD student. The group has published 3 articles in Decil 1 (total impact factor = 57) and the PI is part of the editorial Board of the mSystem journal (American Society for Microbiology).

Publications

31	150 ^{.910}	4 ^{.868}
TOTAL	IMPACT FACTOR	AVERAGE IF



LIVER DISEASES

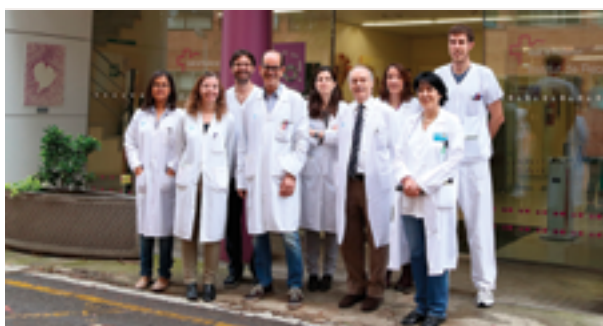
Rafael Esteban Mur

Summary

The most important feature of 2015 for the group has been the advent of the new oral antiviral therapies for hepatitis C. Our group has been involved in many of pivotal studies to clinically develop these drugs and we have developed a new technology to correctly identify the genotypes and subtypes of HCV that it is becoming very useful to correctly treat patients and it is being used by many research centers in Spain.

Publications

56	320.676	5.726
TOTAL	IMPACT FACTOR	AVERAGE IF



DIGESTIVE TRANSPLANTS

Ramon Charco

Summary

Our group is mainly focused on immunosuppression in liver transplantation and treatment of hepatocarcinoma and cholangiocarcinoma on cirrhosis. The new research lines are Microbiota and liver transplantation and liver bioengineering.

Publications

7	26.820	3.831
TOTAL	IMPACT FACTOR	AVERAGE IF

1.2

Endocrinology & Nephrology

Overview

The diabetes and metabolism group is addressed to the pathophysiology of diabetic retinopathy and obesity to discover new therapeutic targets. The Pediatrics Endocrinology group has the aim to do translational research into pediatric endocrine diseases, human growth disorders of sex development and familiar glucocorticoid deficiency. Finally, the nephrology group is focused in the progression of renal insufficiency and ateromatosis in chronic kidney disease.

Publications

44	154.748	3.517
TOTAL	IMPACT FACTOR	AVERAGE IF



GROWTH & DEVELOPMENT

Antonio Carrascosa Lezcano & Antonio Moreno Galdó

Summary

During 2015 the Research group of Paediatric Endocrinology has evolved to become the Growth and Development Group, in order to expand research to other aspects of Paediatrics, particularly Neonatology and Paediatric Pulmonology.

This year, our CIBERER Research group has received a very good evaluation (2012-2014, 88.4/100).

We have incorporated a Beatriu de Pinós Researcher and the Group has been awarded with a new FIS grant.

During 2015, Group activity has been oriented towards translational medicine on rare diseases. Of major impact are fields related to skeletal growth, disorders of sex development, familial glucocorticoid deficiency and rickets predisposing factors, ciliary dyskinesia and interstitial pneumonias. Also, the group continues its work in the updating of anthropometric growth charts for normal children to final adult height.

This year, we have implemented new techniques of next-generation sequencing that allowed us to obtain molecular diagnoses in paediatric patients previously lacking it.

Publications

9	20.193	2.238
TOTAL	IMPACT FACTOR	AVERAGE IF



NEPHROLOGY

Daniel Serón

Summary

Nephrology research is focused in the study of kidney transplant and chronic kidney disease outcomes. The main area of interest in renal transplantation is the evaluation of risk factors associated with subclinical inflammation in renal allograft biopsies and its relationship with main outcome variables. In the area of clinical nephrology main interests are the relationship between chronic kidney disease and cardiovascular disease as well as treatment of diabetic nephropathy and glomerular autoimmune diseases.

In 2015 a collaboration with the Oslo University Hospital has started to evaluate the relationship between early inflammation and donor specific antibodies and collaborative studies to evaluate the utility of microarrays to fine tune histological diagnosis in kidney transplantation have continued. This year we have started a project aimed to characterize the relationship between subclinical inflammation and endothelial dysfunction in kidney transplants and another project on IgA nephropathy. Finally, our participation in phase II and III clinical trials in renal transplantation and chronic kidney disease has continued.

Publications

10	35.639	3.569
TOTAL	IMPACT FACTOR	AVERAGE IF



DIABETES & METABOLISM

Rafael Simó

Summary

Our research is addressed towards gaining new insights in the pathogenesis and treatment of prevalent diseases such as diabetes and obesity. In fact, type 2 diabetes and obesity are the most prevalent metabolic diseases world-wide, reaching epidemic proportions, and constitute two of the biggest current health problems. Within the field of diabetes our main line of research is devoted to diabetic retinopathy (DR) which is the most common diabetic complication. Current treatments for DR are applicable only at advanced stages of the disease and are associated with significant adverse effects. Therefore, new pharmacological treatments for the early stages of the disease are needed. In this regard, treatments based on neuroprotection open up a new approach for preventing or arresting DR development. It should be noted that we are coordinating the first clinical trial using eye drops for the treatment of the early stages of DR. In addition, we are developing a new score system to better identify type 2 diabetic patients at risk of ischemic events and worse outcomes. Finally, we are evaluating the usefulness of the assessment of retinal neurodegeneration to identify diabetic patients at risk for developing Alzheimer's disease.

Publications

27	107.407	3.978
TOTAL	IMPACT FACTOR	AVERAGE IF

1.3

Gynecology, Pediatric Diseases & Experimental Surgery

Overview

The Maternal Fetal Medicine and the Bioengineering, orthopedics and surgery in pediatrics groups work in the same field, though with different interests. This last group is also in the field of surgery, as well as the General Surgery group and the New Technologies and Microsurgery in Craniofacial Surgery.

The area also includes leading groups on their respective fields, such as the Spine Research Unit, focused on the health related quality of life of patients with spinal disorders; the Genetics research groups, pioneer in Spain; and the clinical and basic research activity of the Ophthalmology group.

Finally, within this area, the Musculoskeletal Tissue Engineering group is focused on bone and soft tissue regeneration and tumors.

Publications

73	206.749	2.832
TOTAL	IMPACT FACTOR	AVERAGE IF



RECONSTRUCTIVE SURGERY OF THE LOCOMOTOR SYSTEM

César Galo García Fontecha

Summary

Our research group was created in January 2015 and during the first year of activity it has consolidated his position in research. We were working in 17 research projects, 5 clinical trials and 7 multicenter studies and 3 in the area of innovation publishing a total of twenty-three studies in peer review journals and book chapters.

Publications

12	31.308	2.609
TOTAL	IMPACT FACTOR	AVERAGE IF



NEW TECHNOLOGIES & MICROSURGERY IN CRANIOFACIAL SURGERY

Coro Bescós Atín

Summary

The aim of this group is the research and development of new technologies, such as the use of navigation and virtual planning for guided surgeries and the application of robotic surgery to our region.

Another goal is the development of new microsurgery techniques and indications in our patients to improve their quality of life.

They are also aim of this group, the application of graft enriched autologous fat stem cells as a reconstructive procedure in patients with sequelae due to cancer treatment , trauma or congenital sequels and printing 3D new structures for craniomaxillofacial reconstructive surgery. And the clinical research of rare tumors of the maxillofacial area and collaboration through research projects and clinical trials with other units or services.

Publications

2	4.104	2.052
TOTAL	IMPACT FACTOR	AVERAGE IF



OPHTHALMOLOGY

José García-Arumí

Summary

The Ophthalmology group focuses its research on modeling some of the most prevalent human retinopathies in murine models to develop novel strategies to treat such illnesses. In the lab we count with mice models of the wet and dry forms of Age-Related Macular Degeneration (AMD) and rat models of Diabetic Retinopathy and Retinitis Pigmentosa. The therapies advanced by our research team range from non-viral gene therapies to stem cell ocular transplants or topic treatments with eye-drops.

Clinical trials that we undertake now treat these diseases, with particular prevalence in macular degeneration. This condition has meant almost more than half of the studies conducted. Should also be mentioned that the studies are mostly implemented in stages III and IV, but we have also developed studies and initial phases for residual observational studies we have conducted.

Publications

7	16.707	2.387
TOTAL	IMPACT FACTOR	AVERAGE IF



MUSCULOSKELETAL TISSUE ENGINEERING

Màrius Aguirre Canyadell

Summary

Our group has been working in the evaluation of bone regeneration therapies in preclinical and clinical studies. We are evaluating mesenchymal stem cells expanded “ex vivo” associated with different scaffolds in ovine experimental models and also in an early phase clinical trial. We are also working in the osteoproliferative, revitalizing and osteointegrative capacity of vascularized periosteal flaps in a rat animal model.

During this year we have joined the PARITY trial and received full approval to start patient recruitment. PARITY is the first ever multi-centre, international, prospective randomized trial in the field of orthopedic oncology. This trial will enroll 600 patients and compare the rates of deep infection in endoprosthetic reconstruction of the lower limb between two prophylactic antibiotic durations (24 hours and 5 days).

Publications

4	10.641	2.660
TOTAL	IMPACT FACTOR	AVERAGE IF



SPINE RESEARCH UNIT

Ferran Pellisé Urquiza

Summary

The Vall Hebron Spine Research Unit main motivation is to improve Health Related Quality of Life of patients with spinal disorders and to identify the most suitable treatment for each patient.

One of the main projects performed during 2015 is the development of an Adult Deformity Surgery Complexity Index (ADSCI) and the external validation of a score that evaluates patients' health status before surgery. In the near future, a tool, based on both indexes, will be developed to help the clinician decide the best treatment for each patient with Adult Spinal Deformity.

The Spine Research Unit together with the HUVH Spinal Cord injury Unit and ICU have developed a prospective database where all patients with fractures with and without spinal cord injury will be introduced.

Also a database of adolescents with scoliosis treated with conservative treatment has been created in association with HUVH Rehabilitation Unit.

Publications

12	31.423	2.619
TOTAL	IMPACT FACTOR	AVERAGE IF



FETAL MATERNAL MEDICINE

Lluís Cabero & Elena Carreras

Summary

In 2015 we continued to work on the prediction and prevention of preeclampsia and intrauterine growth restriction; the relationship between congenital heart disease and abnormal angiogenesis in maternal blood from the first trimester of pregnancy; we also continued to work in our breast cancer during pregnancy program. We kept on working in preterm delivery both in singletons and twins, and we developed a network of hospitals in Europe to perform studies for the prediction and prevention of preterm labor. We improved our relationship with European partners in Fetal Medicine, with collaborations in the field of monochorionic complications and congenital diaphragmatic hernia. We developed our research project in prenatal mielomeningocele repair. We consolidated the use of new molecular techniques in both invasive and non-invasive prenatal diagnosis.

Publications

16	42.815	2.676
TOTAL	IMPACT FACTOR	AVERAGE IF



GENETICS MEDICINE

Eduardo Tizzano Ferrari

Summary

During the year 2015, the Medicine Genetics (MG) group established collaborations with other VHIR groups to expand the spectrum of diseases under investigation such as cystic fibrosis, hipotiroidism and neuromuscular disorders with defects in mtDNA in order to improve genetic diagnosis and to gain insight in personalized therapeutic approaches. Furthermore, the MG group initiated the coordination of a program of transversal research (PTR) of rare diseases (RD). The program, impelled by the VHIR, involves numerous groups and researchers devoted to RD in our Hospital with the main objective to expand the impact of translational research in these disorders.

Publications

15	46.141	3.076
TOTAL	IMPACT FACTOR	AVERAGE IF



GENERAL SURGERY

Manuel Armengol Carrasco

Summary

The General Surgery Group is organized across the department's sub-speciality programs and works to advance in the understanding of the causes and mechanisms underlying surgical pathologies, to deliver new knowledge and better integrated patient-centred solutions that improve surgical care and outcomes. The approach includes *in vivo*, *ex vivo* and *in vitro* human and animal studies.

Publications

18	63.096	3.505
TOTAL	IMPACT FACTOR	AVERAGE IF



BIOENGINEERING, CELL THERAPY & SURGERY IN CONGENITAL MALFORMATIONS

Vincenç Martínez Ibáñez

Summary

The Bioengineering, Cell therapy and Surgery in Congenital Malformations multidisciplinary research team has a large expertise in diagnosis and prenatal treatment of congenital malformations, clinical and basic research, advanced surgical techniques, stem cells biology, bioengineering, regenerative medicine and the development of new *in vivo* models in order to reproduce human pathologies. In the last year we focused our research on developing new animal models which mimic human pathologies and developing innovative therapies based on the use of advanced surgical technologies in combination with regenerative medicine, stem cells-based treatments and nanomedicine. In addition, as a result of pre-clinical research carried out in animal models, our clinical team members have successfully translated the minimally invasive fetoscopic prenatal surgical approach to the human clinics for the repair of Congenital diaphragmatic hernia (CDH) and Myelomeningocele (MMC) defects in human fetuses operated in the Vall d'Hebron University Hospital in Barcelona, being a worldwide pioneer team in the use of fetoscopy for the prenatal repair of human congenital malformations.

Publications

6	18.086	3.014
TOTAL	IMPACT FACTOR	AVERAGE IF

1.4

Cardiovascular Diseases

Overview

The Heart Area fights to minimize the impact of heart diseases based on equilibrated care, research and teaching. The Cardiocirculatory pathology group continues with the participation in the Network for Research of Cardiovascular Diseases of the ISCIII, with other heart research groups in Spain. The groups on this area are particularly focused on being more translational, with the application of their clinical and basic research to the treatment of patients.

Publications

88	452.917	5.147
TOTAL	IMPACT FACTOR	AVERAGE IF



REPARATIVE THERAPY OF THE HEART

Manuel Galiñanes Hernández

Summary

At present, our laboratory participates in highly relevant European projects. From 2014 we participate in the European project: "Defining the role of xeno-directed and autoimmune events in patients receiving animal-derived bioprosthetic heart valves -TRANSLINK" to investigate the role of immune reactions in the deterioration of implanted biological prosthetic valves. In addition, within this project, we investigate the role of oxidative and nitrosative stress as effectors of deterioration of bioprosthetic heart valves. The results of this project may strongly impact the treatment of heart valve diseases by extending the duration of the bioprostheses implanted, improving morbid-mortality in patients and allowing the indication of bioprosthetic heart valves in younger patients. Our group, also has made important progress to understand the mechanisms of ischaemic injury and protection in the human myocardium. It is expected that the knowledge obtained from these studies will lead to a more personalised cardioprotective strategies and a reduction in the morbidity and mortality after an ischaemic insult.

Publications

2	18.279	9.140
TOTAL	IMPACT FACTOR	AVERAGE IF



CARDIOCIRCULATORY PATHOLOGY

David García-Dorado

Summary

In 2015 we published important pre-clinical studies, including a new approach to limit reperfusion injury in patients based in the combination of therapeutic interventions with different mechanisms of action and additive effects on infarct size reduction, and identified an important mechanism of cardiac ageing and decreased tolerance to ischemia in aged hearts. We also published important clinical studies, including the results of the first independent clinical trial comparing losartan and propranolol in the prevention of aortic dilation in Marfan patients with overall neutral results

2015 witnessed the start of important projects of pre-clinical and clinical research led by our group, an international trial on reperfusion injury in patients with STEMI, and a multicentric trial in patients with bicuspid aortic valve, and saw the creation of the Research Area on Vascular Biology and Metabolism, including cardiovascular, neurovascular, diabetes, kidney, and nuclear medicine groups.

Publications

85	440.602	5.184
TOTAL	IMPACT FACTOR	AVERAGE IF



1.5

Infectious Diseases

Overview

The Infectious Diseases group focuses on improving the strategies of clinical problems observed in clinical practice. Microbiology studies mechanisms of resistance to antimicrobials, pathogenicity, taxonomy and epidemiology, and infectious diseases diagnostics.

The CRIPS group focuses on the most prevalent aspects of infections in the ICU, while the SODIR group works in the areas of shock, organ dysfunction and resuscitation. And finally, there is the group of Infection in immunocompromised pediatric patients, which is consolidating its work.

Publications

135	628.122	4.653
TOTAL	IMPACT FACTOR	AVERAGE IF



SHOCK, ORGAN DYSFUNCTION & RESUSCITATION

Joaquim Serra Vich (January-November, 2015) & Ricard Ferrer Roca (December, 2015)

Summary

The Shock, Organ Dysfunction & Resuscitation (SODIR) Research Group has the objective of integrating research and Innovation in the areas of severe sepsis and septic shock, organ dysfunction, resuscitation and monitoring in the critical ill patient and the application of artificial intelligence to obtain innovative solutions for critical ill patients.

During 2015, SODIR has been working in a project to improve patient safety in the ICU through the implementation of smart alarms and patient stratification techniques via automatic decision support systems. Also, noteworthy research into new biomarkers of ARDS, life support, sepsis and sedation.

Publications

8	37.148	4.644
TOTAL	IMPACT FACTOR	AVERAGE IF



MICROBIOLOGY

Tomàs Pumarola

Summary

The Research Group of Microbiology at Vall d'Hebron Research Institute (VHIR) focuses on the study of the microbiology aspects involved in the infectious diseases aimed at developing basic, translational and clinical research that could improve the outcomes of patients with infectious diseases. We work with special interest in studying the mechanisms involved in antimicrobial resistance, the sexually transmitted infectious diseases, the study of viral and fungal infection in immunocompromised patients, the microbial mechanisms involved in pathogenicity as well as microbial epidemiology.

Publications

37	153 ^{.17}	4 ^{.140}
TOTAL	IMPACT FACTOR	AVERAGE IF



INFECTIOUS DISEASES

Benito Almirante

Summary

During 2015 the Research Group on Infectious Diseases has developed projects related to new therapeutic options for multi-resistant bacterial infections, the epidemiology and therapy of tropical diseases in our country, with the epidemiology and prognosis of serious infections in immunocompromised patients and assessment of new strategies for antiretroviral treatment. Our group has published a more than 80 articles in indexed journals and has obtained 8 projects with competitive funding.

Our group has established research synergies with various national and international groups, through their participation in 3 Cooperative Research Networks from the Health Institute Carlos III, collaboration agreements with organizations such as IBEC, and agreements with international research groups in the field of international health.

In 2015 our group has launched a new line of research in the field of basic and translational research related to HIV eradication of patients infected with this virus. For the development of this research line we have hired several investigators and obtained national and international competitive funding.

Publications

72	371 ^{.638}	5 ^{.162}
TOTAL	IMPACT FACTOR	AVERAGE IF



INFECTION IN IMMUNOCOMPROMISED PEDIATRIC PATIENTS

Pere Soler Palacin

Summary

As a consolidated research group at VHIR and an AGAUR emerging research group, we have become established in 2015. The group has integrated the site of Drassanes-PROSICS in order to incorporate imported diseases and tuberculosis to our research lines, expanding the range of projects in which the group has been involved. Therefore, the number of publications and their impact factor has increased, an increment that will become even more noticeable along 2016.

The group has participated in several international projects and it's currently leading national and international projects in the fields of primary immunodeficiencies, tuberculosis and community-acquired infections.

We are extremely proud of the growth of the Immunology Collection at VHIR's Biobank with more than 100 samples by the end of 2015. This accomplishment has been achieved with the invaluable assistance of the Catalan Association of Primary Immunodeficiencies (ACADIP) and the Barcelona-PID Foundation, following our key principle to perform a translational and patient-centred research.

Publications

12	41.500	3.458
TOTAL	IMPACT FACTOR	AVERAGE IF



CLINICAL RESEARCH/INNOVATION IN PNEUMONIA & SEPSIS (CRIPS)

Jordi Rello

Summary

2015 has been the last year of the PCI Pneumonia in CIBERES. A new Pneumonia PCI will be effective in January 2016.

CRIPS is in process of internacionalization. INCOMED programme has funded a Post-doct Investigator, as part of the EU co-funding, for a project on rhinovirus in adults.

The ICASIS in april 2015 closed a cycle. It is planned to organize an International ICASIS in 2017, opening the market to Asia & Middle East. We have been sponsored by ESCMID to organize a PG course on septic shock in Istambul in September 2016. Moreover, an educational/research project, funded in australia is being prepared: "CRE reduct" focusing on stewardship of antibiotics. A collaboration with ESCMID will launch a Metanalyses and GRADE for Evidences in nebulisation in MV patients.

The PLUTO NETWORK has been closed, after 5 years, after enrolling all patients with Lung Trasplant in Spain in 2013. Finally, the report of H-index indicates that the first investigator is between the Top Three in Barcelona (number 1 in Spain in Critical Care).

This is a result of Team working.

Publications

27	120.724	4.471
TOTAL	IMPACT FACTOR	AVERAGE IF

1.6

Neurosciences

Overview

The Neuroscience area is consolidating its position as one of the largest clusters of research labs working on neurological diseases across Europe. They are 14 groups working all together, with more than a hundred fully dedicated researchers, very close to the top clinicians of the hospital. They are fully dedicated to the neurological patients from the beginning of the experiments to the end.

Publications

216	1,064 ³⁴¹	2.832
TOTAL	IMPACT FACTOR	AVERAGE IF



GENE THERAPY AT NERVOUS SYSTEM

Miguel Chillón Rodríguez

Summary

- Generation of two patents: EP15160093.9 and EP15195470.8
- Publication of 5 papers on the gene therapy field
- Creation of the Unitat Mixta UAB-VHIR as the first strategic Unit between UAB and VHIR.
- Successful financing from ACCIO to become qualified as TECNIO group
- Successful financing from Fundación Genzyme en Esclerosis Múltiple for our research in Multiple Sclerosis
- Successful financing from the Ministerio de Economía y Competitividad at RETOS Colaboracion-2015. In collaboration with the group of Dr. Assumpció Bosch
- Three PhD students defended their thesis
- Three Master students defended their Master work
- Due to the high increase in viral vector requests, our technological platform, the Vector Production Unit (VPU) has recruited a new highly qualified technician.

Publications

5	26.094	5.219
TOTAL	IMPACT FACTOR	AVERAGE IF



NEURAL DEVELOPMENT, REGENERATION & NEURODEGENERATION

Eduardo Soriano García

Summary

Throughout this year we have focused mainly on two hypotheses regarding the pathogenesis of Alzheimer's Disease (AD) and potential therapeutic strategies:

1) Reelin is an extracellular protein crucial for brain development, which is also expressed in the adult brain. Recent studies support the relationship between Reelin and AD and we have hypothesized that by regulating metabolism A β 42, phosphorylation of Tau and synaptic plasticity in adults, the Reelin cascade may be an important regulator of brain function and plasticity in adults. We tested the hypothesis that Reelin may be protective in AD by overexpression of Reelin (Reelin-OE mice) in a model of AD (J20). The Reelin-OE/J20 mice showed decreased plaque burden and rescue of synaptic and cognitive deficits, suggesting that Reelin protects from AD pathology.

2) Some human diseases (eg, cancer), are caused by somatic mutations that alter the function of specific cells. Through exome sequencing we have tested the hypothesis that somatic mutations are present in the brain of AD. We have found a remarkable number of specific SNVS. We believe these data reveal important new molecular and genetic information to understand the mechanisms that trigger the AD and open new therapeutic avenues.

Publications

5	23.309	4.622
TOTAL	IMPACT FACTOR	AVERAGE IF



TRANSLATIONAL BIOINFORMATICS

Xavier de la Cruz Montserrat

Summary

The Translational Bioinformatics group has followed two different directions to maximize the biomedical reach of its research: first, develop a better understanding of the molecular processes underlying disease and its treatment, and second, reinforce the collaborations with biomedical/clinical groups. For the first goal, we have focused our research in the direction of getting more accurate pathogenicity predictors for specific genes, like CADASIL and NF1. For the second goal we have focused on projects involving large scale sequencing experiments, of which our collaboration with the group of Dr. Seoane (VHIO) is an outstanding example (Mattos-Arruda et al., Nat. Comm., 2015).

We also have been actively involved in training activities, of which I would like to single out our specialised course on exome/panel sequencing. This course was given at the VHIR, in collaboration with the CNAG (February, 11th and 18th, 2015), and at Zaragoza, after an invitation by the Instituto De Investigación Sanitaria Aragón (IIS Aragón).

Publications

4	20.059	5.015
TOTAL	IMPACT FACTOR	AVERAGE IF



**PSYCHIATRY, MENTAL HEALTH
& ADDICTIONS**

Miquel Casas Brugué

Summary

Our group is a multidisciplinary team that over the past 12 years has focused his scientific activity in research of pathogenetic aspects (focused mainly on genetic determinants), clinical and therapeutic: 1) Disorders Neuro-psycho-development (emphasis on Disorder Attention Deficit Hyperactivity Disorder). 2) Personality Disorders (with special emphasis on borderline personality disorder). 3) Addictive Behaviors (with special emphasis on Dual Pathology and smoking). 4) Transcultural Psychiatry.

This pathologies are characterized by deficits in basic mental functions, high impulsiveness, learning difficulties, behavioral disorders and addictive behaviors, appearing in the infant stage and having a maximum hatching in adolescence, extend into adulthood and old age, conditioning most maturational and adaptive processes that characterize the human being and limiting the possibility to enjoy an autonomous healthy life, cooperative and contemplating the various peculiarities that differences between races, cultures and religions print the pathoplasty of these disorders.

Publications

42	150.156	3.575
TOTAL	IMPACT FACTOR	AVERAGE IF



PERIPHERAL NERVOUS SYSTEM

Josep Gámez

Summary

In 2015, Dr Gamez, as a member of ALSuntangled, has actively participated in the publication of scientific research data on MND off-label treatments.

Dr. Gamez was one of the lecturers of the III Catalan Ataxias meeting, organized by the Catalan Association for Ataxias in Barcelona, on January 2015, reviewing the usefulness of functional rating scales for the assessment and follow-up of ataxias. At the 19th International Congress of Parkinson's Disease and Movement Disorders held in San Diego, Dr Gamez presented the outcomes of the first study to investigate the [123I]-FP-CIT DaTSCAN SPECT as a disease pre-synaptic biomarker in Huntington's disease patients.

Dr. Gamez gave the keynote speech "From bench to bed: translational medicine applied to neuromuscular diseases" of the 30th Spanish Conference on Neuromuscular Diseases, talking about the benefits of the translational medicine, and the leadership of Vall d'Hebron in terms of patient care and research on neuromuscular diseases in Spain. Dr. Gamez presented the case of Vall d'Hebron as a success of translational medicine.

Publications

12	29.749	2.479
TOTAL	IMPACT FACTOR	AVERAGE IF



PEDIATRIC NEUROLOGY

Alfons Macaya Ruiz

Summary

Our group is focused on the application of NGS to molecular diagnosis and gene discovery in several neuropediatric disorders. In the field of epileptic encephalopathies we have identified novel variants in candidate genes, some of which were screened in zebra fish models. We continued our collaboration within the International Headache Genetics Consortium, the Myo-MRI Cost Action and the UCL-based SYNAPS project, thereby contributing substantial clinical, radiological and genomic data. In the field of neuromuscular disorders, we have demonstrated the beneficial effects of estrogens on myogenesis and inflammation in the mouse model of Dystrophin deficiency, the efficacy of several drugs with read-through action to restore dystrophin levels in myoblasts and differentiated myotubes of DMD patients carrying nonsense mutations, and the potential use of modified nanoparticles for muscle delivery of specific drugs. Finally, we have demonstrated the superior diagnostic accuracy, speed and cost effectiveness of exome capture and massive sequencing technologies over current approaches for the diagnosis of patients pediatric neuromuscular disorders.

Publications

7	22.445	3.206
TOTAL	IMPACT FACTOR	AVERAGE IF



NEUROVASCULAR DISEASES

Joan Montaner Villalonga

Summary

The clinicians of the study REVASCAT (published in the NEJM) have demonstrated that mechanical thrombectomy in the first 8h after stroke improves disability.

In order to improve thrombolytic therapy safety, we have shown that the plasmatic determination of the nuclear receptor NURR1 before the r-tPA administration can predict hemorrhagic complications.

We have ended the StrokeChip study to diagnose stroke by means of a blood test. With 1,325 recruited patients it is the most wide stroke population ever recruited worldwide.

In collaboration with the neurorehabilitation area of the HUVH we have shown that MMP-3 is increased after the rehabilitation therapy in patients with better motor and functional recovery. Experimentally we have demonstrated that MMP-13 is involved in the infarct development and tissular reorganization.

Publications

48	277.460	5.780
TOTAL	IMPACT FACTOR	AVERAGE IF



NEUROTRAUMATOLOGY & NEUROSURGERY RESEARCH GROUP (UNINN)

Juan Sahuquillo

Summary

This year, the UNINN has completed a study to establish the reference values for brain energy metabolites and glycerol using microdialysis in normal brain. Our group has successfully established tumoral organotypic brain slice cultures to study cellular and molecular processes of the brain *in vitro*, and has collaborated in the awarded study conducted by Dr. J Seoane, which has demonstrated that the presence of a brain tumor and its genetic profile can be determined through a liquid biopsy technique.

An additional study was conducted in collaboration with the ICFO directed to monitor brain metabolism and the regional cerebral blood flow through non-invasive techniques.

Regarding traumatic brain injury (TBI), the identification of serum and neuroradiological biomarkers for diagnosis and outcome prediction in mild TBI is approaching its end. We have also begun the inclusion of patients in the CENTER-TBI project (www.center-tbi.eu), aimed to improve care for TBI patients.

Publications

19	55.171	2.904
TOTAL	IMPACT FACTOR	AVERAGE IF



NEUROMUSCULAR & MITOCHONDRIAL PATHOLOGY

Ramon Martí

Summary

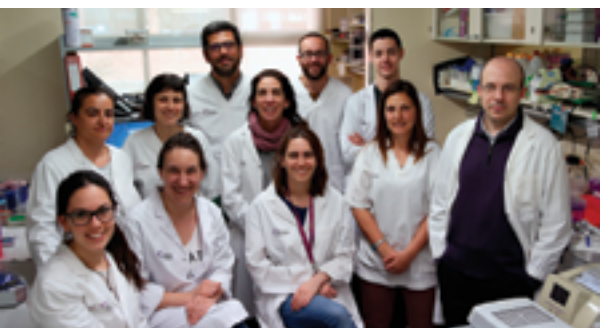
Over the year 2015 we have achieved significant advances in the research line of mtDNA depletion syndromes, specifically the myopathic form caused by TK2 deficiency. As a result, we have published an important report in Neurology, a high impact factor journal in the area of the neurosciences (Camara et al, Neurology, 2015) and we have obtained two patents (one shared with Columbia University of New York, VHIR participation, 20%; and another one shared with the CIBERER, VHIR participation, 70%).

In 2015 we have also achieved an important milestone, namely getting the Protocol Assistance by the EMA for the design of a clinical trial for MNGIE using an AAV vector, for which we obtained Orphan Drug Designation in 2014.

Finally, our European project EUROMAC reached an important milestone consisting on starting the register of patients procedure. In the frame of this project we also generated another important collaborative publication (Quinlivan et al, Neuromus Dis 2015).

Publications

12	60.471	5.039
TOTAL	IMPACT FACTOR	AVERAGE IF



NEURODEGENERATIVE DISEASES

Miquel Vila Bover

Summary

In 2015 we have continued our studies on the pathogenicity of α -synuclein and its potential role on neuron dysfunction/death in the context Parkinson's disease. We have also continued with the development of novel therapeutic tools to interfere with α -synuclein-mediated neurotoxicity. Moreover, in collaboration with other groups of the CIBERNED, we have identified pathological alterations in the epigenetic profile of dopaminergic neurons derived from patients with Parkinson's disease. These cells were obtained by reprogramming of skin cells into induced pluripotent stem cells and their subsequent differentiation into dopaminergic neurons.

Publications

9	84. ⁶⁶¹	9.407
TOTAL	IMPACT FACTOR	AVERAGE IF



MAGNETIC RESONANCE & NEURORADIOLOGY

Alex Rovira Cañellas

Summary

MRI studies with early stages multiple sclerosis (MS) patients have shown that cortical thinning and subcortical gray matter volume loss was related to the presence of juxtacortical lesions, though the cortical areas with the most marked thinning did not correspond to those with the largest number of juxtacortical lesions. A study from a large cohort of clinically isolated syndrome patients from our center established the value of baseline MRI in predicting the risk of conversion to MS and of developing significant disability. Multiparametric imaging studies in acute stroke patients confirmed that admission lesion core is associated with final infarct volume. Maximal admission lesion volume compatible with favorable outcome according to imaging modality and patient age could be set and used on admission to select candidates for endovascular procedures. Our group participated in the REVASCAT clinical trial, with patients with anterior circulation stroke within 8h after symptom onset, showing that stent retriever thrombectomy reduced the severity of post-stroke disability and increased the rate of functional independence. We also lead the MAGNIMS recommendations on the use of MRI in the diagnostic and monitoring process of MS in clinical practice.

Publications

30	235. ¹⁷⁶	7.839
TOTAL	IMPACT FACTOR	AVERAGE IF



HEADACHE & NEUROLOGICAL PAIN

Patricia Pozo Rosich

Summary

Our research group has the focus on studying the pathophysiology of migraine and other primary headaches using preclinical, translational and clinical research.

Publications

4	11.442	2.861
TOTAL	IMPACT FACTOR	AVERAGE IF



CLINICAL NEUROIMMUNOLOGY

Xavier Montalban Gairín

Summary

The Clinical Neuroimmunology Group has worked in identifying baseline clinical, radiological and biological features that might predict MS development and disability. We have confirmed the prognostic value of chitinase 3-like 1 in clinically isolated syndromes and demonstrated that NLRP3 inflammasome and IL-1 β mRNA levels are related to response to IFN-b. We focused on magnetic resonance imaging brain volumetry and the prognostic implications of pathological brain volume loss. We have described that sema3A and 7A expression correlated with inflammatory activity in MS lesions, signalling them as potential therapeutic targets in MS. We have initiated 5 clinical trials, including a phase I/IIa study on autologous mesenchymal stem cells and a single-centre phase I trial with alemtuzumab in progressive MS. In 2015, we have organized the 31st Conference of the European Committee for Treatment and Research in Multiple Sclerosis, having reached a record-breaking 9,000+ registered participants.

Publications

58	316.638	5.459
TOTAL	IMPACT FACTOR	AVERAGE IF



CELL SIGNALING & APOPTOSIS

Joan X. Comella Carnicé

Summary

Our main goal is to characterize the role of two death receptor antagonists, FAIM-L and Lifeguard, in nervous system physiology.

We characterized Lifeguard subcellular localization, showing that is most present in Golgi and reticulum. Its protection on FasL-induced cell death on neuroblastoma cell lines is dependent on calcium release inhibition at the reticulum, thus showing a previously undescribed molecular mechanism of action for this protein.

We studied the role of FAIM-L in neurons in Alzheimer's disease patients and animal models of the disease (mice APP/PS1). FAIM-L levels are downregulated both in AD patients and mice brains. Mice neurons in vitro cultivated with amyloid beta showed reduced FAIM-L levels. The protection afforded by TNF as a pro-inflammatory signal against amyloid beta toxicity is lost when FAIM-L levels decrease. Thus, FAIM-L can contribute to determine the protective or deleterious effects of TNF in neurons in a neuroinflammatory context.

Publications

4	16.966	4.242
TOTAL	IMPACT FACTOR	AVERAGE IF



1.7

Oncology

Overview

The Oncology research area is composed by groups and laboratories addressing the principal unsolved issues in cancer. With more than 4,000 new patients yearly that are being visited at the Medical Oncology department, it makes the basis for doing an important clinical and translational research. More than one third of the patients are actually included in Phase 1 clinical trials.

* These publications are from Oncology Area + Oncology Service.

Publications

130*	629.271	6.559
TOTAL	IMPACT FACTOR	AVERAGE IF



TRANSLATIONAL RESEARCH IN CHILD & ADOLESCENT CANCER

Josep Sánchez de Toledo

Summary

During 2015, the group of Translational Research in Child and Adolescent Cancer has consolidated their previously existing research cell lines and set the basis for the development of a new one related to personalized medicine. The members of the group have participated in 13 publications and two of the Principal Investigators have been awarded with grants from the Instituto de Salud Carlos III. In addition, the group has established and consolidated agreements with biotech companies to test and develop new therapeutic tools against the most aggressive pediatric solid tumors.

Publications

9	46.342	5.149
TOTAL	IMPACT FACTOR	AVERAGE IF



BIOMEDICAL RESEARCH IN UROLOGY

Joan Morote Robles

Summary

We discovered the oncogenic actions of the PTOV1 gene in metastatic dissemination of prostate cancer (PC), showed its implication in multiple processes controlling cell fate, and confirmed its role in inducing self-renewal potential of prostate cancer stem cells (CSC) and resistance to treatments. We found a significant repressor activity of PTOV1 on the expression of p53 in vitro and in tumors. We have started to grow and characterize CSC derived from patients with metastatic PC to identify more efficient targets to eradicate tumour resistance. Furthermore, a transcriptomic profile has been identified as a prognosis biomarker that differentiated early from indolent HGPIN cases and those that will transform into actual PC. With statistical models, we estimated that 33% to 47% of repeat biopsies could be prevented with a multiplex PCR model, representing an easy applicable and significant advantage over the current gold standard in urine sediment. In addition, our group demonstrated that Proliferative Inflammatory Atrophy (PIA), present in one third of prostate biopsies, is associated to lower risk of PC detection. Tumours accompanying PIA seem to be less aggressive and have a greater probability of being insignificant.

Publications

14	45.525	3.038
TOTAL	IMPACT FACTOR	AVERAGE IF



BIOMEDICAL RESEARCH IN GYNECOLOGY

Antonio Gil Moreno

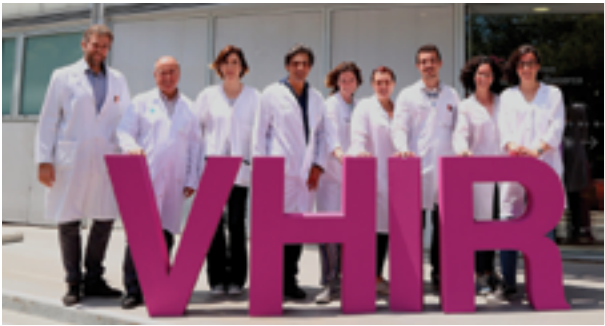
Summary

During 2015, the Biomedical Research Group in Gynaecology, led by Dr. Antonio Gil Moreno, has consolidated its structure. Dr. Gil has managed to increase the already high crosstalk between clinicians and basic and translational researchers generating a more fruitful research environment. Our research aims to improve the management of endometrial and ovarian cancer patients, as well as endometriosis.

As remarkable scientific achievements of 2015, we highlight the consecution of important national research grants that have allowed consolidating the ovarian cancer team, led by Dr. Anna Santamaria; as well as maintaining the scientific track of the endometrial cancer research line, led by Dr. Antonio Gil. The group has established a Patient-Derived Tumor Xenograft (PDX) Platform for Endometrial Cancer, and has performed a profound investment to improve diagnosis of endometrial cancer by exploring the diverse opportunities of uterine aspirates. The clinical group has obtained this year the important ESGO credentials for the formation of fellows in the Oncologist Gynaecology and mammary pathology specialties.

Publications

7	19.875	2.839
TOTAL	IMPACT FACTOR	AVERAGE IF



**BIOMEDICAL RESEARCH IN MELANOMA.
CANCER ANIMAL MODELS**

Juan Angel Recio Conde

Summary

Our main interest is to investigate the genetic and molecular mechanisms underlying skin cancer and melanoma development and progression for therapeutical purposes. Melanoma is the deadliest form of skin cancer, and If it is not recognized and treated at early stages, it becomes hard to treat and can be fatal. We have studied how UV radiation, the most relevant environmental insult associated to these diseases cooperates with BRAF an oncogene driver in melanomagenesis. We also are deciphering the role of the LKB1 tumor suppressor mutations in human samples, and how this protein regulates the transcription genome wide and in response to UV radiation. An important part of our investigations are performed in cooperation with clinicians to understand and solve challenges associated to patient's treatment and management. In this matter, we are conducting two different preclinical studies targeting cancer metabolism in melanoma using patient derived xenografts and defined the genetic evolution of benign lesions toward recurrent tumors in patients. Importantly these results promoted decision-driven therapies against melanoma.

Publications

14	82.317	5.800
TOTAL	IMPACT FACTOR	AVERAGE IF



**BIOMEDICAL RESEARCH IN CANCER
STEM CELLS**

Matilde E. Lleonart

Summary

We have recently shown that the over expression of the RPLP1 protein immortalizes the primary cells and contributes to the transformation. Furthermore, the P proteins over express in human cancer, with more prevalence in breast carcinoma. It is thought that the alteration of the P complex would have a direct affection in protein synthesis, causing to stop the cellular growth and, finally, apoptosis. Our group has discovered a different mechanism by which cancer cells stop the cellular cicle and autophagy when the P proteins are inhibited.

In conclusion, our results sustain the role of autophagy as a mechanism of survival in response to the stress caused by the deficiency of the P proteins.

Publications

13	85.552	6.581
TOTAL	IMPACT FACTOR	AVERAGE IF



TRANSLATIONAL MOLECULAR PATHOLOGY

Santiago Ramón & Cajal Agüeras

Summary

The group of Translational Molecular Pathology is interested in identifying new factors that confer resistance to cellular stress in tumor cells, factors that may be inhibited and become novel therapeutic targets. In this context, we focused on the association between the phosphorylated form of the eukaryotic translation initiation factor (eIF4E) and cellular resistance. We have recently published that p-eIF4E confers resistance to nutrient deprivation, oxidative stress and cisplatin treatment. Moreover, we have been working on the design and production of new and more potent MNK1/2 inhibitors as novel therapeutic in collaboration with Group d'Enginyeria Molecular in IQS. Other studies are focused on the identification and validation of new factors upregulated after hypoxia and other metabolic inhibitors, by RNA-Seq approach. The validation of these factors is ongoing. On the other hand, we have analyzed the function of YB-1 in breast cancer and discovered a novel interplay between YB-1 and IL-6 regulating EMT and metastasis, which also have been published in 2015. The group is also interested in the role and regulation of gap junctions in cancer and disease, with special emphasis in the study of the mechanisms which regulate the protein synthesis of the several isoforms.

Publications

50	270.397	5.419
TOTAL	IMPACT FACTOR	AVERAGE IF



EXPERIMENTAL HEMATOLOGY

Francesc Bosch Albareda

Summary

The Experimental Hematology group, directed by Dr. Francesc Bosch, focuses on the study of the mechanisms of pathogenesis and progression of hematological malignancies. The group also studies the *ex-vivo* effects and ways of action of new experimental therapeutic agents that are also tested in early clinical trials within our department. During 2015 we have used our recently described *ex vivo* co-culture system that mimics the favorable microenvironment found *in vivo* in chronic lymphocytic leukemia to pre-clinically test new agents that have entered first in human clinical trials this year in our department. Regarding the study of primary central nervous system lymphoma, we have established an *in vivo* orthotropic model using both cell lines and primary cells from patients and have tested several new therapeutic strategies. Finally, we are also studying new potential therapeutic options in acute myeloid leukemia, both pre-clinical and in early phase clinical trials.

Publications

43	189.681	4.411
TOTAL	IMPACT FACTOR	AVERAGE IF

1.8

Respiratory & Systemic Diseases

Overview

Systemic diseases are illnesses of unknown aetiology which present an autoantibody-mediated pathogenicity with a heterogeneous clinical behavior. The pneumology group is dedicated to inflammation and repair, respiratory failure, and tissue hypoxia. Immunology group is interested in the Immune tolerance and autoimmune diseases and Primary Immunodeficiency. In this area are also studied the ear, nose and throat disorders as well as the chronic fatigue syndrome.

Publications

106	498.743	4.705
TOTAL	IMPACT FACTOR	AVERAGE IF



SYSTEMIC DISEASES

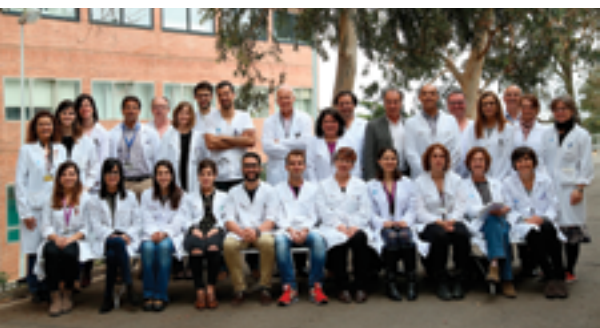
Miquel Vilardell Tarres

Summary

We have established that in patients with anti-MDA5 antibodies and clinically amyopathic dermatomyositis associated with rapidly progressive interstitial lung disease, therapy with hemoperfusion with polymyxin B and plasmapheresis may be a lifesaving strategy. We have also solved a controversy that has recently arisen about HHV-8 and systemic autoimmune diseases. Thus, according to our results, HHV-8 is usually not present in the blood from these patients. When a highly specific peptide is used, HHV-8 antibodies are rarely detected. We have also seen that miR-29c in urinary exosomes may be used as a predictor of early renal fibrosis in lupus nephritis. Regarding the allergy studies, we could demonstrate that the factor XII-driven contact system contributes to the pathogenesis of anaphylaxis. Finally, we have clinically and therapeutically defined the clinical presentation, histopathological characteristics, treatment and evolution of a series of 55 patients with IgG4-related disease.

Publications

25	180.093	7.204
TOTAL	IMPACT FACTOR	AVERAGE IF



PNEUMOLOGY

María Jesús Cruz Carmona & Jaume Ferrer Sancho

Summary

This year the research programs in this group have been focused in respiratory diseases which present high prevalence and morbidity, as well as important health cost, such as COPD, asthma, sleep apnea, cystic fibrosis or hypersensitivity pneumonitis. Among the most relevant contributions of the group during 2015, it should be noted the participation in the edition of the international clinical guides for COPD, studies about asthma and air pollution or studies focused on the effects of sleep apnea in elders, and the application of precision medicine for the treatment of this pathology. Currently, the Pneumology Service at the Vall d'Hebron University Hospital is one of the leading hospitals in lung transplants in Europe, which has allowed the research group to increase the samples in the pulmonary biobank at Vall d'Hebron, an important platform for future research studies in the field, in pathologies such as COPD, pulmonary fibrosis or cystic fibrosis.

Publications

73	281.674	3.859
TOTAL	IMPACT FACTOR	AVERAGE IF



IMMUNOLOGY

Ricardo Pujol Borrell

Summary

A year of advances in thyroid autoimmunity and in immunodeficiencies. The unexpected functional expression of TSHR by thymocytes and the ability of its autoantibodies from Graves' disease to activate TSHR, provides a long sought explanation for GD-associated thymic enlargement and for the origin of autoantibodies to TSHR (Giménez-Barcons et al JI 2015). In addition the first self-antigens from non thymic antigens have been detected in the human thymic HLA-DRs peptidome this opening a new window to understand central tolerance in a work lead by Dr D Jaraquemada of UAB-IBB (Alvarez I et al. JAI, 2015).

In a joint effort with other groups of VHIR and of BST, and using NGS, more patients are being diagnosed and treated for known and newly described immunodeficiencies. HUVH-VHIR-BST is becoming a major reference centre in this field. Other highlights include the initiation of the RAPID a HUVH-VHIR-BST join program for the quick diagnosis of newborn children with immunodeficiencies an the filing of the application for the reaccreditation as Centre of Excellence of the FOCIS (www.focisnet.org), that was confirmed in June 2016.

Publications

5	25.172	5.034
TOTAL	IMPACT FACTOR	AVERAGE IF



EAR, NOSE & THROAT DISORDERS

Juan Lorente Guerrero

Summary

Research lines developed by the group are directly related with the clinical practice, this being a very significant part of the day by day of the researchers at the group. This is the reason why our projects are all in the area of applied research. We work in direct collaboration with the VHIO in different clinical trials, for which patients are currently being recruited. Also, related to basic research, we work together with other groups within the Vall d'Hebron University Hospital, VHIR, VHIO, UAB and CSIC.

The results obtained have turned into knowledge for new medical and surgical therapeutic approaches in the pathology object of study.

Our main research lines during 2015 have been, essentially, the medical and surgical treatment of laryngeal carcinoma, Chronic Roncopathy, chronic sleep apnea and nasal mucosa inflammation.

Publications

1	1.022	1.022
TOTAL	IMPACT FACTOR	AVERAGE IF



CHRONIC FATIGUE

José Alegre-Martín

Summary

The CFS/ME Research Working Group is mainly focused on the study of the neuroimmune and inflammatory response pathways, bioenergetic and mitochondrial metabolism, neuropsychological impairment and neurocognitive functioning in CFS/ME by appropriately qualified healthcare professionals. The main aim is to improve diagnostic tools and identifying clinical and lab markers to assess therapeutic response through of intervention studies. Also, we are participating in clinical trials and the E.U. Framework Programme for Research and Innovation projects in order to improve the prognosis and quality of life in patients suffering CFS/ME. In December 2015, the Barcelona CFS/ME Working Group was selected to take part in the first European Network for the study of CFS/ME (EUROMENE) funded and supported by the E.U. Framework Programme H2020 through the Cost Action program.

Publications

5	17.606	3.521
TOTAL	IMPACT FACTOR	AVERAGE IF

2.1

Epidemiology, Pharmacology, New Therapies & Clinical Research

Overview

This area includes the Clinical Pharmacology group, that works on the effectiveness and the adverse effects of medicines. The Epidemiology group studies hospital epidemiology, preventive vaccines, health services and public health. The Cell and Gene Therapy Group aims to understand the immune aspects of hematopoietic gene therapy.

The Molecular Diagnosis and Therapy group is related to the Blood and Tissue Bank. And the group of Health Care Research generates knowledge in the activity of nurses and care, in order to translate the results to clinical practice.

Publications

22
TOTAL

60.562
IMPACT FACTOR

2.753
AVERAGE IF



MOLECULAR DIAGNOSIS & THERAPY

Francisco Vidal

Summary

Among achievements of our group in 2015 we can highlight the in-deep molecular analysis of all patients enrolled in the National Registry of von Willebrand Disease (VWD) in Spain that recruited more than 550 patients. The application of the NGS technology allows to shed light on the pathophysiological mechanisms of VWD, correlating the clinical phenotype with molecular defects.

Furthermore, the development of the study awarded by the 2013 European ASPIRE Hemophilia Awards. The overall objective is focused on the development of optimized molecular tools to perform functional studies in disease-relevant cells derived from hemophilic iPSc.

Finally, we designed a custom panel to simultaneously analyze the 23 essential genes involved in congenital bleeding disorders. This versatile approach is especially helpful when clinical diagnosis was unclear or controversial. The ultimate goal will be the refinement of genotype-phenotype correlation and to improve of the forecasting of hemorrhagic risk.

Publications

1
TOTAL

2.603
IMPACT FACTOR

2.603
AVERAGE IF



HEALTH CARE RESEARCH

Carme Fuentelsaz-Gallego

Summary

In 2015, the research group in health care has continued to work on its research areas. The group has different projects that are being finalized: exploration of opinions and experiences related to therapeutic adherence in adolescents; assessment of critical thinking in hospital nurses, according to the circular model of Alfaro-LeFevre; and needs of patients with inflammatory bowel disease.

Another project is a clinical trial about the “Eficacia de la posición de Sims modificada materna, respecto posiciones libres en la rotación de variedades fetales occipitoposteriores persistentes durante el trabajo de parto”.

Five of the members of the group are doing their PhD.

Publications

1	3.504	3.504
TOTAL	IMPACT FACTOR	AVERAGE IF



EPIDEMIOLOGY & PUBLIC HEALTH

Magda Campins Marti

Summary

The broad purpose of the Epidemiology and Public Health research group is contributing to increase the available scientific evidence regarding preventive interventions. We are primarily dedicated to epidemiology and prevention of infectious diseases, in both individual and population levels.

During 2015, we have been working in cooperative and singular research projects related with morbidity associated with vaccine-preventable diseases, mainly in vaccination coverage, efficacy, immunogenicity and safety. We also actualized the “Prevalence of Nosocomial Infections Study in Spain” (EPINE) that involved the participation of more than 250 hospitals. A competitive funding proposal was accepted to analyze the information collected in this study related with nosocomial infection by resistant microorganisms. We have also started a 3-year project to analyze the risk factors related with herpes zoster in Catalonia.

Publications

15	40.514	2.701
TOTAL	IMPACT FACTOR	AVERAGE IF



CLINICAL PHARMACOLOGY (FICF)

Joan-Ramon Laporte

Summary

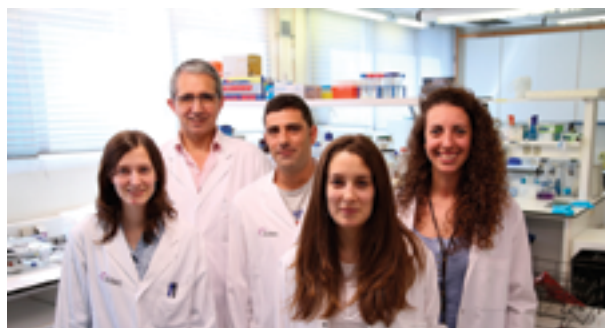
The FICF is a tenderer of an European Consortium led by the Utrecht University to perform post-authorisation effectiveness and pharmacoepidemiology research to generate evidence to support EMAs regulatory decision-making.

In 2015 several articles were published by FICF researchers, on pharmacovigilance and pharmacoepidemiology, drug utilization, and clinical trials. To note, four papers from the PROTECT project have been published (four led by members of our group and two in collaboration) in peer reviewed journals, focusing on sources of data on in-hospital consumption of medicines in Europe, and the utilization of respiratory medicines. The PROTECT final report has been elaborated and submitted.

The results of the study on the operative management of antithrombotic therapy have been presented in an international congress. There have been several publications in the research lines of acute renal failure, inappropriate use of medicines in the elderly patients, and in the study and pain treatment.

Publications

4	13.108	3.277
TOTAL	IMPACT FACTOR	AVERAGE IF



CELL & GENE THERAPY

Jordi Barquinero Mañez

Summary

In the context of an European consortium that we coordinate, we have established a cellular model of Royal Disease (RD), a form of hemophilia B that ran in the European royal families during the 19th and 20th centuries. With this model, that was based on induced pluripotent stem cells (iPSCs) from a hemophilic patient carrying the RD mutation, that were differentiated to "hepatocyte-like" cells, we have been able to characterize the RD mutation (that impairs the correct splicing) at the RNA level.

In addition, in collaboration with the group of Drs. C. Espejo and X. Montalban (Clinical Neuroimmunology Unit) we have found that myeloid-derived suppressor cells (MDSCs) transduced with an autoantigen induce tolerance in a murine model of multiple sclerosis (EAE). These cells induce apoptosis *in vitro* in CD4⁺ T cells from EAE mice, reduce the proportions of activated T cells and increase the proportions of B cells with a regulatory phenotype *in vivo*.

Publications

1	2.603	2.603
TOTAL	IMPACT FACTOR	AVERAGE IF

2.2

CIBBIM - Nanomedicine

Overview

The area studies the use of nanotechnology in biomedical applications mainly with two purposes: first, to improve therapeutic strategies and second, to improve the diagnostics. The work is divided in three different areas: to obtain new biomarkers and therapeutic targets; to obtain and generate new diagnosis systems, most of the based on the same biomarkers or targeting systems obtained in the first area; and a the third one devoted to the validation of those systems in preclinical models.

Publications

39

TOTAL

165³⁶⁰

IMPACT FACTOR

4²⁴⁰

AVERAGE IF



CIBBIM-NANOMEDICINE. MOLECULAR ONCOLOGY

Diego Arango

Summary

During the year 2015, our group was able to obtain funding from highly competitive calls like the Spanish Association Against Cancer (AECC) and the European Union (H2020). Two new international PhD students joined the group and one PhD thesis was defended, achieving the highest marks (Excellent Cum Laude). In addition, we published the results of several studies, including 1) the identification of novel therapeutic targets for patients with colorectal cancer, which also led to patent (*Bazzocco et al 2015 Clinical Cancer Research*), and 2) the characterization of the first available murine model of microvillus inclusion Disease (MVID), a devastating hereditary syndrome resulting from mutations in the gene MYO5B and that causes intractable, life-threatening watery diarrhea immediately after birth (*Carton et al 2015 Scientific Reports*). Importantly, our group also moved to a new location within the Vall d'Hebron campus, at the Collserola Building together with the rest of the groups of the Area of Oncology Research.

Publications

5

TOTAL

24⁴¹⁷

IMPACT FACTOR

5⁴⁸³

AVERAGE IF



FUNCTIONAL VALIDATION & PRECLINICAL RESEARCH (FVPR)

Ibane Abasolo Olaortua

Summary

FVPR is a technological platform able to perform, with a scientific, technological and regulatory perspective, a complete preclinical validation of a drug candidate or nanomedicine. Furthermore, FVPR also directly leads competitive research projects, in which we deepen in the use and translation of nanomedicines for treating cancer and lysosomal storage disorders.

As for the most relevant achievements of 2015, FVPR has published works related to internal projects (Fernández et al and Gener et al) as well as those developed in collaboration with biotech companies (Rocas et al.) and research groups (Romero-Hernandez et al., Rodriguez-Carmona et al., etc.). Non-competitive incomes in 2015 (222.000 €) came from collaborative projects with the industry (4 companies), groups within VHIR (10) and additional national and international research institutions (4).

Publications

2	4.872	4.872
TOTAL	IMPACT FACTOR	AVERAGE IF



CIBBIM-NANOMEDICINE. KIDNEY PHYSIOPATHOLOGY

Anna Meseguer Navarro

Summary

The most relevant event in 2015 in our research group has been the consolidation of new research lines on pediatric kidney rare diseases. We have managed to align interests to develop projects of translational relevance that have been funded by competitive calls as well the patient associations Asdent and Hipofam, with which we work together. This is an example of cooperation between patients, clinicians and basic researchers, only possible in an institution like ours, of which we are really proud. Beyond these two projects on rare diseases, we have been granted three competitive projects to continue our research line, related to the study of androgens in kidney physiopathology, damage mechanisms and fibrosis prevention, renal cancer and segmental and focal glomerulosclerosis. The most translational part of these projects has been developed with the collaboration of urologists integrated to the group and with the nephrology service at our Hospital.

Publications

4	8.198	2.050
TOTAL	IMPACT FACTOR	AVERAGE IF



CIBBIM-NANOMEDICINE. IMMUNE REGULATION & IMMUNOTHERAPY

Joan Sayós Ortega

Summary

During 2015 our group has been working in the conclusion of diverse projects related with the paper of the CD300 molecules in brain damage and demyelinating diseases. Some of the data generated has been already published during 2015 and we are working in two more manuscripts that we expect to submit in the next months. Moreover, we are finishing another project to characterize the nature of CD300f physiological ligand. Our data demonstrate that CD300f binds to different phospho and esphingolipids only in the presence of a presenting protein. We have identified that protein, opening the way to target this molecule to activate specific myeloid cells as a therapeutic approach to diverse pathologies. Finally, in this year our Group has engaged in new research projects, focusing its interest in diverse aspects of the Immune response, including tumor immunology and the role of innate immune system in diabetes and metabolic disorders.

Publications

5	29.393	5.879
TOTAL	IMPACT FACTOR	AVERAGE IF



CIBBIM-NANOMEDICINE. DRUG DELIVERY & TARGETING

Simó Schwartz

Summary

The group on Drug Delivery and Targeting seeks on the one hand, the identification of new disease biomarkers and therapeutic targets, with special focus on cancer molecular pathways and in the physiopathology of low prevalent diseases; and on the other hand, the development of new drug delivery strategies as applied nanomedicine, with a particular interest into new targeting approaches for clinical applications and further, new diagnostic tools based on nanotechnology applications for clinical uses.

Several *in vitro* and *in vivo* cancer models have been generated by the group for preclinical testing of nanomedicines, including the generation of specific bioluminescent cancer stem cell models. Finally, a new research line (DINA) has been opened with a main goal: the exploitation of nanostructures, nanomaterials and nanocomponents as transducers, biofunctionalization platforms and signal amplifiers for fast assay and biosensor development. A total of 14 patents have been issued by our group. Three patents from the group were either issued or advanced to National Phases in 2015.

Publications

18	80.186	4.455
TOTAL	IMPACT FACTOR	AVERAGE IF

Facts & Figures

annualreport2015.vhir.org/facts-and-figures

1 Research Activity

- 1.1 Publications
- 1.2 Research projects & networks
- 1.3 Clinical trials
- 1.4 Events & seminars
- 1.5 Master's Degree in Translational Biomedical Research
- 1.6 Thesis
- 1.7 WIDER - Barcelona

2 VHIR Statistics

- 2.1 Economic summary
- 2.2 Core Facilities
- 2.3 Innovation
- 2.4 Human resources
- 2.5 Media

3 Summary

1.1

Publications

	No. of Publications	Total IF
Papers in international journals	720	3,379.559
Papers in national journals	90	106.977
Editorials in international journals	11	76.522
Editorials in national journals	30	7.027
Clinical guides	27	249.667
Reviews in international journals	26	185.657
Reviews in national journals	6	6.491

844

NO. OF
PUBLICATIONS

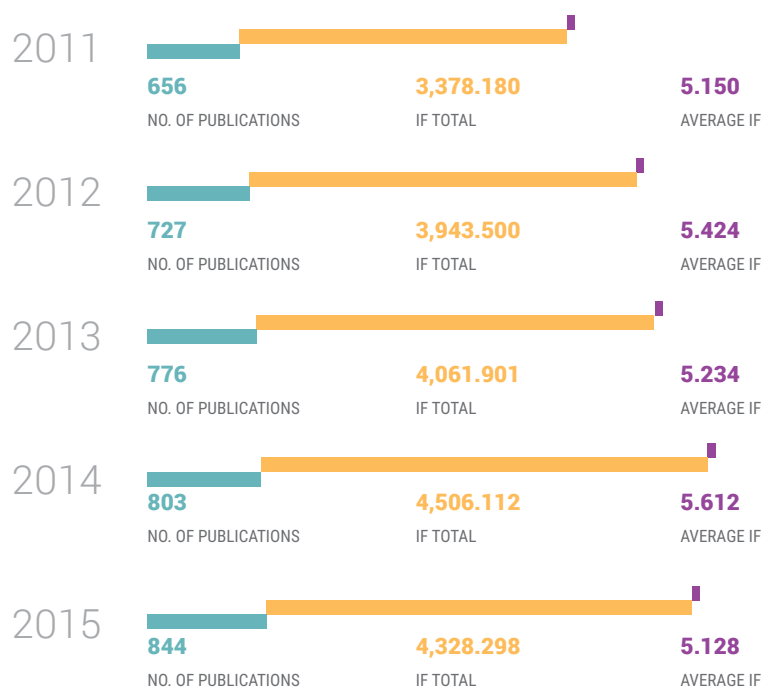
4,328^{.298}

TOTAL IF

5.128

AVERAGE IF

Evolution in the last 5 years

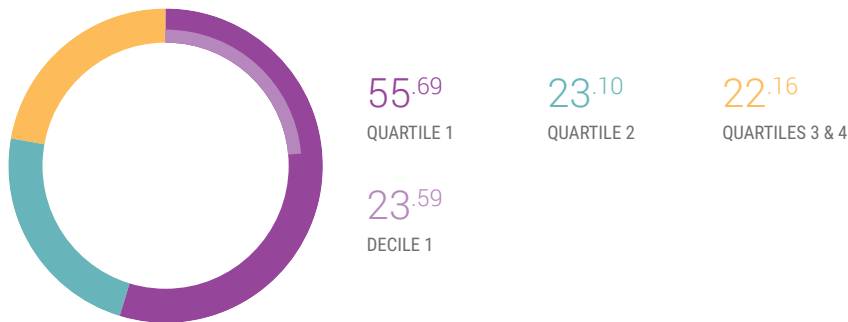


Impact factor and number of publications per Research Areas

	No. of Publications	Total IF	Average IF
Oncology VHIR+Oncology Service	189	1,246.085	6.593
Endocrinology & Nephrology	44	154.748	3.517
Cardiovascular Diseases	88	452.917	5.147
Neurosciences	216	1,064.341	4.928
Digestive & Liver Diseases	93	507.763	5.460
Infectious Diseases	135	628.122	4.653
Respiratory & Systemic Diseases	133	498.743	4.705
Gynecology, Pediatric Diseases & Experimental Surgery	86	206.749	2.832
Epidemiology, Pharmacology, New Therapies & Clinical Research	22	60.562	2.753
CIBBIM-Nanomedicine	39	165.360	4.240

* Publications participated by two or more research areas are analyzed independently, counting the publication and its impact factor in each of the participant areas.

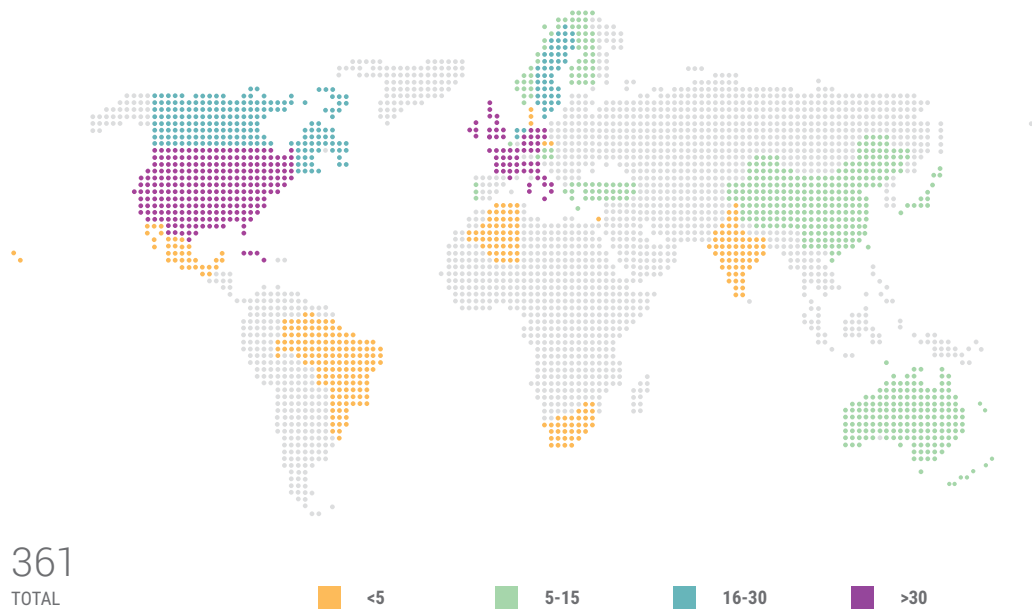
Distribution of publications per quartiles and first deciles



	No. of Publications	Total IF	Average IF	%	
Q1	470	3,492.177	7.430	55.69	
Q2	195	579.945	2.974	23.10	
Q3+Q4	187	319.371	3.168	22.16	
TOTAL	844	4,391.493	4.524		

	No. of Publications	Total IF	Average IF	%	% del 1r quart
D1	201	2,310.820	11.497	23.59	42.76%

International collaborations



Distribution of national and international journals

	No. of Publications	Total IF	Average IF
Papers in international journals	677	3,379.559	5.037
Papers in national journals	66	106.977	1.621
IF letters	18	151.058	8.392
Editorials in international journals	11	76.522	6.957
Editorials in national journals	3	7.027	2.342
Clinical guides	35	408.602	12.690
Reviews in international journals	26	185.657	7.141
Reviews in national journals	6	6.491	1.082
Reviews or editorials in international journals	1	2.613	2.613
Reviews or editorials in national journals	1	3.792	3.792
TOTAL	844	4,328.298	5.167

	No. of Publications	Total IF	Average IF	%
Nationals	76	124.287	2.209	9.00
Internationals	768	4,204.011	7.138	91.00
TOTAL	844	4,328.298	5.128	

Number of citations and publications in 2015

	Publications	Citations
Oncology VHIR+Oncology Service	134	407
Endocrinology & Nephrology	44	63
Cardiovascular Diseases	88	253
Neurosciences	216	1,115
Digestive & Liver Diseases	93	205
Infectious Diseases	135	338
Respiratory & Systemic Diseases	106	215
Gynecology, Pediatric Diseases & Experimental Surgery	73	50
Epidemiology, Pharmacology, New Therapies & Clinical Research	22	24
CIBBIM-Nanomedicine	39	56

1.2

Research projects & networks

National Projects

Instituto de Salud Carlos III	137
Ministerio de Economía y Competitividad	20
Ministerio Sanidad Servicios Sociales e Igualdad	11
Fundació La Marató de TV3	19
Asociación Española Contra el Cáncer	7
Fundació Catalana de Pneumologia	4
Col·legi Oficial d'Infermers/es de Barcelona	2
Gilead Sciences SL	1
Societat Catalana de Pneumologia	4
Sociedad Española de Neumología y Cirugía Torácica	3
Fundación de Investigación Médica Mutua Madrileña	2
TOTAL	210

Ongoing projects in 2015



International Projects

European Commission	36
National Institutes of Health (NIH)	8
ERA-NETs	1
TOTAL	45

Ongoing Research Projects according to Research Area

Oncology	33
Endocrinology & Nephrology	16
Cardiovascular Diseases	12
Neurosciences	64
Digestive & Liver Diseases	11
Infectious Diseases	29
Respiratory & Systemic Diseases	13
Gynecology, Pediatric Diseases & Experimental Surgery	6
Epidemiology, Pharmacology, New Therapies & Clinical Research	32
CIBBIM - Nanomedicine	1
TOTAL	217

Research Positions Granted

SENIOR RESEARCHERS

Miguel Servet Programme II	4
Strengthening of research activity Programme - Instituto de Salud Carlos III	2
Juan Rodés Programme	2

POSTDOCTORAL RESEARCHERS

Beatriu de Pinós Programme	1
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POST-MIR RESEARCHER

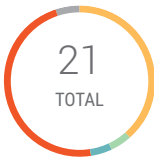
Río Hortega Programme	1
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PREDOCTORAL RESEARCHERS

Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR)	10
VHIR predoctoral grants	7

SUPPORT STAFF

Ministerio de Educación, Cultura y Deporte (MECD)	1
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8
SENIOR
RESEARCHERS

1
POSTDOCTORAL
RESEARCHERS

1
POST-MIR
RESEARCHERS

10
PREDOCTORAL
RESEARCHERS

1
SUPPORT STAFF

List of CIBER (Network Biomedical Research Center) projects with VHIR involvement

TITLE	PROJECT MANAGER	RESEARCH GROUP
CIBER-BBN	Schwartz Navarro, Simó	CIBBIM-Nanomedicine Drug Delivery and Targeting
CIBERESP	Ferreira González, Ignacio	Cardiovascular Pathology
CIBEREHD	Esteban Mur, Juan Ignacio	Liver Diseases
CIBEREHD	Esteban Mur, Rafael	Liver Diseases
CIBEREHD	Guarner Aguilar, Francisco	Physiology and Pathophysiology of the Digestive Tract
CIBEREHD	Azpiroz Vidaur, Fernando	Physiology and Pathophysiology of the Digestive Tract
CIBEREHD	Genescà Ferrer, Joan	Liver Diseases
CIBERRES	Muñoz Gall, Xavier	Pneumology
CIBERRES	Rello Coromines, Jordi	Clinical Research / Innovation in Pneumonia & Sepsis (CRIPS)
CIBERER	Carrascosa, Antonio	Growth and Development
CIBERER	Martí Seves, Ramón	Neuromuscular and Mitochondrial Pathology
CIBERDEM	Simó Canonge, Rafael	Diabetes and Metabolism
CIBERNED	Comella Carnice, Joan X.	Cell Signaling and Apoptosis
CIBERNED	Vila, Miquel	Neurodegenerative Diseases

List of ISCIII thematic network centers that the VHIR is involved in

Network	Project Manager	Duration
Red Temática de Investigación Cooperativa en Cáncer (RTICC)	Ramon y Cajal Agüeras, Santiago	01/01/2013-31/12/2016
Red de Investigación Renal	Serón Micas, Daniel	01/01/2013-31/12/2016
Enfermedades vasculares cerebrales (Ictus). Red INVICTUS	Montaner Villalonga, Joan	01/01/2013-31/12/2016
Red Española de Investigación en Patología Infecciosa	Almirante Gragera, Benito	01/01/2013-31/12/2016
Red de SIDA-RIS	Ribera Pascuet, Esteve	01/01/2013-31/12/2016
Red de Investigación Cooperativa en Enfermedades Tropicales RICET	Molina Romero, Israel	01/01/2013-31/12/2016

List of ISCIII thematic network centers that the VHIR is involved in

Network	Project Manager	Duration
Red Española de Esclerosis Múltiple	Montalban Gairín, Xavier	01/01/2013-31/12/2016
Prevención, detección precoz y tratamiento de la patología ocular prevalente, degenerativa y crónica.	García Arumí, José	01/01/2013-31/12/2016
Red Temática de Investigación Cooperativa en Cáncer - RTICC	Reventós Puigjaner, Jaume	01/01/2013-31/12/2016
Red Cardiovascular	García-Dorado García, David	01/01/2013-31/12/2016
Red de Salud Materno Infantil y del Desarrollo	Cabero Roura, Lluís	01/01/2013-31/12/2016

List of VHIR research groups recognized by the “Generalitat de Catalunya”

File	Project Manager	Duration
Chronic Fatigue (GRE)	Alegre Martin, José	01/01/2014-01/01/2016
Infectious Diseases (GRC)	Almirante Gragera, Benito	01/01/2014-01/01/2016
Molecular Oncology (GRC)	Arango Corro, Diego	01/01/2014-01/01/2016
General Surgery (GRC)	Armengol Carrasco, Manuel	01/01/2014-01/01/2016
Research Unit of the Digestive System (GRC)	Azpiroz Vidaur, Fernando	01/01/2014-01/01/2016
Translational Research in Hematology Unit (GRC)	Bosch Albareda, Francesc	01/01/2014-01/01/2016
Pediatric Endocrinology (GRC)	Carrascosa Lezcano, Antonio	01/01/2014-01/01/2016
Maternal Fetal Medicine (GRC)	Carreras Moratonas, Elena	01/01/2014-01/01/2016
Psychiatry, Mental Health and Addictions (GRC)	Casas Brugué, Miquel	01/01/2014-01/01/2016
Apoptosis and Neurodegeneration (GRC)	Comella Carnice, Joan Xavier	01/01/2014-01/01/2016
Hepatobiliary Diseases (GRC)	Esteban Mur, Rafael	01/01/2014-01/01/2016
Infectious in Immunocompromised Pediatric Patients (GRE)	Soler Palacin, Pere	01/01/2014-01/01/2016
Cardiocirculatory Pathology (GRC)	García-Dorado García, David	01/01/2014-01/01/2016

List of VHIR research groups recognized by the “Generalitat de Catalunya”

File	Project Manager	Duration
Bioengineering, Orthopedics and Pediatric Surgery (GRC)	García Fontecha, César Galo	01/01/2014-01/01/2016
Fundació Institut Català de Farmacologia (GRC)	Laporte Roselló, Joan-Ramon	01/01/2014-01/01/2016
Oncology and Molecular Pathology	Lleonart Pajarin, Matilde	01/01/2014-01/01/2016
Pediatric Neurology (GRC)	Macaya Ruíz, Alfons	01/01/2014-01/01/2016
Neuromuscular and Mitochondrial Pathology (GRC)	Martí Seves, Ramón	01/01/2014-01/01/2016
Cellular Pathology (GRC)	Meseguer Navarro, Anna	01/01/2014-01/01/2016
Clinical Neuroimmunology. Centre d'Esclerosi Múltiple de Catalunya - CEMCAT (GRC)	Montalban Gairín, Xavier	01/01/2014-01/01/2016
Neurovascular Diseases (GRC)	Montaner Villalonga, Joan	01/01/2014-01/01/2016
Pneumology (GRC)	Morell Brota, Ferran	01/01/2014-01/01/2016
Transcription, Translation and Mitosis in Therapy-resistant Prostate Cancer. TRAMIT-CAP (GRE)	Paciucci Barzanti, Rosanna	01/01/2014-01/01/2016
Microbiology (GRC)	Pumarola Suñé, Tomàs	01/01/2014-01/01/2016
Pathological Anatomy (GRC)	Ramon y Cajal Agüeras, Santiago	01/01/2014-01/01/2016
Multidisciplinary Research Group in Melanoma (GRC)	Recio Conde, Juan Angel	01/01/2014-01/01/2016
Clinical Research / Innovation in Pneumonia & Sepsis (CRIPS) (GRC)	Rello Condomines, Jordi	01/01/2014-01/01/2016
Biomedical and Translational Oncology Research Unit	Reventós Puigjaner, Jaume	01/01/2014-01/01/2016
Neurotraumatology and Neurosurgery Research Unit (UNINN) (GRC)	Sahuquillo Barris, Joan	01/01/2014-01/01/2016
Translational Research in Child Cancer (GRE)	Sánchez de Toledo Codin, Josep	01/01/2014-01/01/2016
Immunobiology (GRC)	Sayós Ortega, Juan	01/01/2014-01/01/2016
Drug Delivery and Targeting	Schwartz Navarro, Simó	01/01/2014-01/01/2016
Diabetes and Metabolism (GRC)	Simó Canonge, Rafael	01/01/2014-01/01/2016
Autoimmunity and Thrombotic Diseases (GRC)	Vilardell Tarres, Miguel	01/01/2014-01/01/2016

Granted Projects

National	No. of granted projects
Instituto de Salud Carlos III	42
Proyectos de Investigación en Salud	37
Desarrollo Tecnológico en Salud	2
Proyectos de Investigación en Medicina Personalizada	2
Acciones Complementarias	3
Ministerio de Economía y Competitividad	6
Fundació La Marató de TV3	5
Fundació Santiago Dexeus Font	3
Asociación Española Contra el Cáncer	3
Premi L'Óreal España	1
FIPSE	1
Sociedad Española de Alergología e Inmunología	1
Fundació SENEFRO	1
Societat Catalana de Pneumologia	1
Fundació Privada Daniel Bravo Andreu	1
Mutual Médica de Catalunya i Balears	1
Sociedad Española de Neurología	2
Asociación Española de Coloproctología	1
Fundación Genzyme	1

International	No. of granted projects
European Commission	6
Gilead Sciences International Ltd	2
European Foundation for the Study of Diabetes	2
National Institutes of Health (NIH)	1
Michael J. Fox Foundation	1
Migraine Research Foundation	1
World Health Organization	1



72
NATIONAL

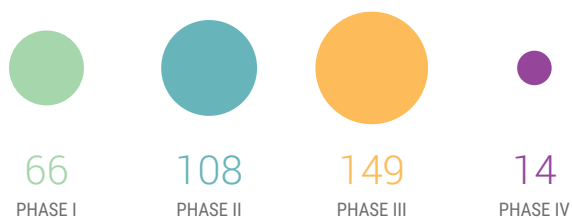
14
INTERNATIONAL

13,035,323.60
TOTAL FUNDING

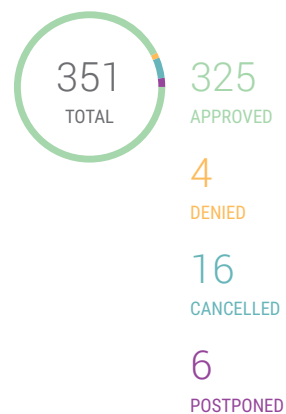
1.3

Clinical trials

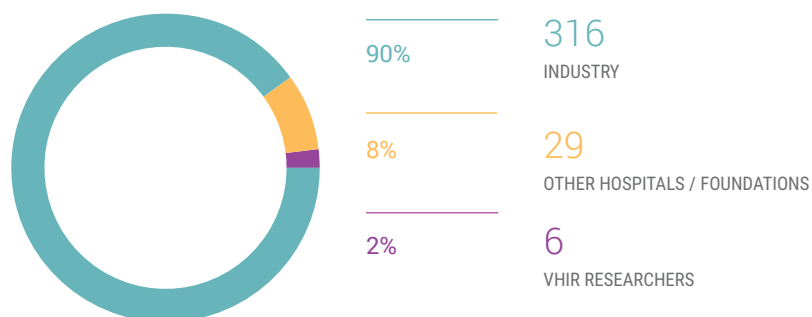
Clinical trials approved by CREC,
classified according to the trial phase



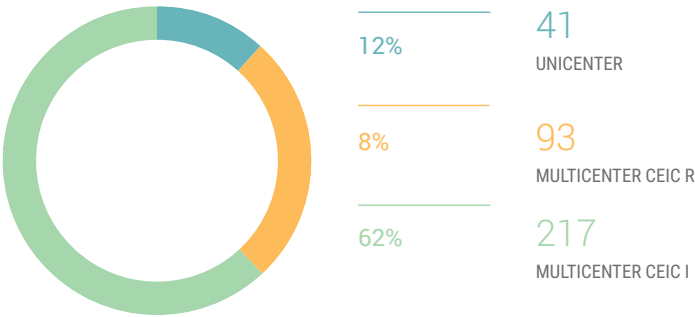
Clinical trials submitted
to CREC in 2015



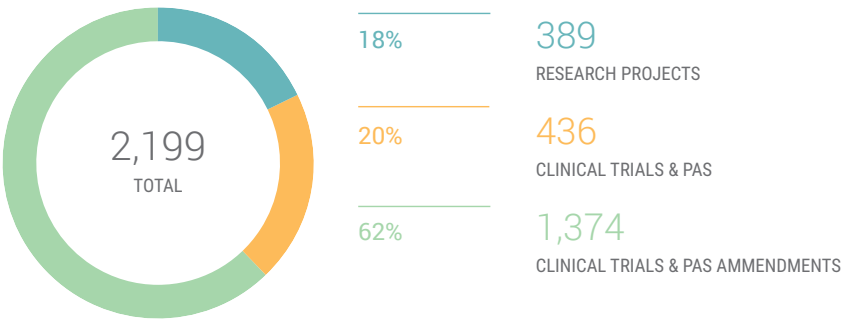
Clinical trials classified according to promoter



Clinical trials according to participants



CEIC



Clinical trials by HUVH services

Service	No. Clinical Trials
Allergology	4
Anesthesia	2
Cardiac Surgery	1
Cardiac Pediatrics	1
Cardiology	26
Pediatrics Cardiology	1
Dermatology	2
Image Diagnosis	1
Digestive	6
Endocrinology	14
General Surgery	4
Gynecology & Obstetrics	9
HDMI Genetics	1

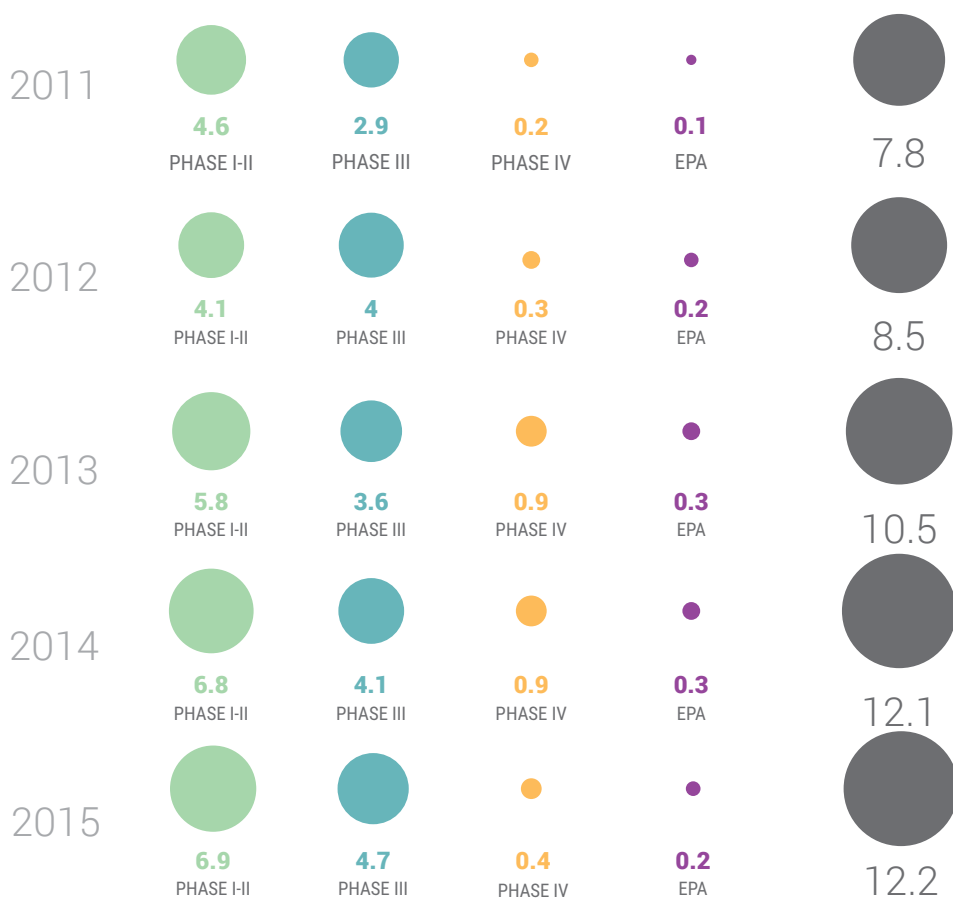
Hematology	1
Hemodynamics	2
Hemophilia	14
Infectious Diseases	30
Intensive Care Unit	7
Internal Medicine	52
Internal Medicine-Hepatology	12
Maxillofacial Surgery	1
Nephrology	25
Neuroimmunology	39
Neurology	30
Neurophysiology	1
Neurosciences	1
Neurotraumatology	1

Oftalmology	9
Oncology	379
Onco-genetics	3
Onco-hematology	90
Onco-pediatrics	7
Onco-radiotherapy	3
Others	26
Pediatrics	3
Pediatrics Surgery	1
Pediatrics Onco-hematology	6

Plastic Surgery & Burned	2
Pneumology	24
Pneumology Pediatrics	6
Pneumology Surgery	6
Preventive Medicine	4
Psiquiatry	7
Radiotherapy	1
Rehabilitation	3
Traumatology	4
Urology	3

TOTAL 875

Funding Evolution, including Overheads (M€)



1.4

Events & seminars



Extraordinary conferences

VHIR's 9 th Scientific Conference	1
19 th HUVH Annual Conference	1
TOTAL	2

Courses

VHIR/HUVH formation course	10
VHIR	10
UEB	4
UAT	5
Open Courses	1
Occupational hazard prevention	22
Innovation contest	2
Animal Lab Service	8
TOTAL	62

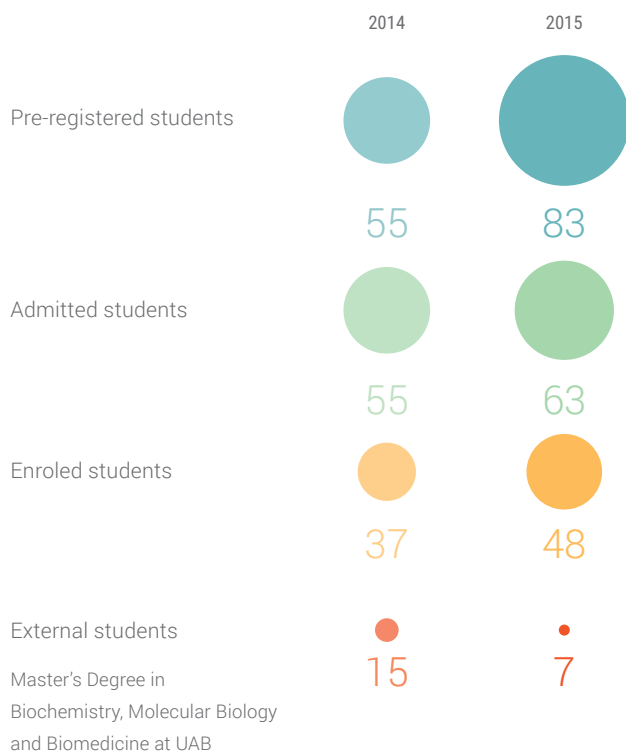
Sessions & seminars

VHIR seminars	27
Program for training in innovation at VHIR	8
HUVH sessions	5
VHIR-HUVH sessions	6
Oncology (VHIO)	1
Cardiology	31
Gastroenterology	36
Pneumology	1
Haemostasis and Thrombosis	4
Hematology	33
External activities	4
TOTAL	156

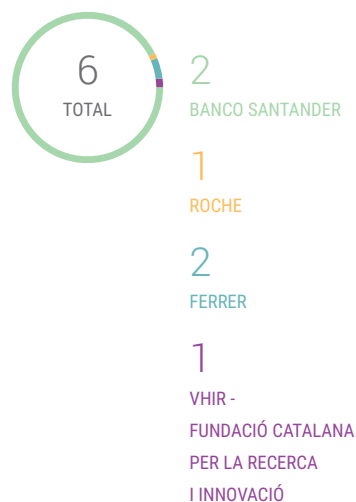
1.5

Master's Degree in Traslational Biomedical Research

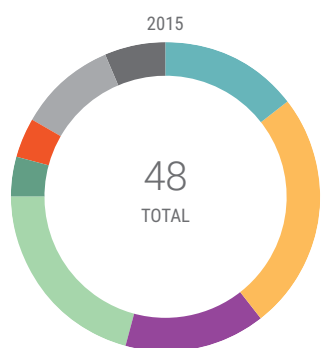
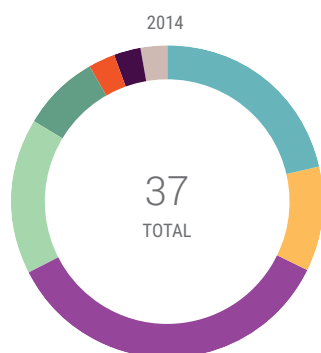
Enrolment to the studies



Grants for students (2015-2016)

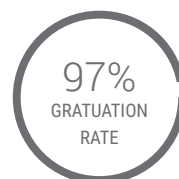


Students by previous degree



First edition of the course (2014-15)

8,5
AVERAGE GRADE



1.6

Thesis

36

DOCTORAL THESIS READ
(UAB)

The full list can be found at:
annualreport2015.vhir.org/facts-and-figures/thesis/

1.7

WIDER - Barcelona

On July 20, 2009, the Generalitat de Catalunya and Obra Social "la Caixa" signed with the HUVH and VHIR an agreement to promote a Endoscopic Surgery Center: **The World Institute for Digestive Endoscopy Research** (WIDER-Barcelona), **led by Dr. José Ramón Armengol**. The institute is focused on teaching, research and dissemination of gastrointestinal endoscopy in all its facets, both medical and surgical, with special attention to development of methodology known as transluminal endoscopic surgery through natural orifices (NOTES).

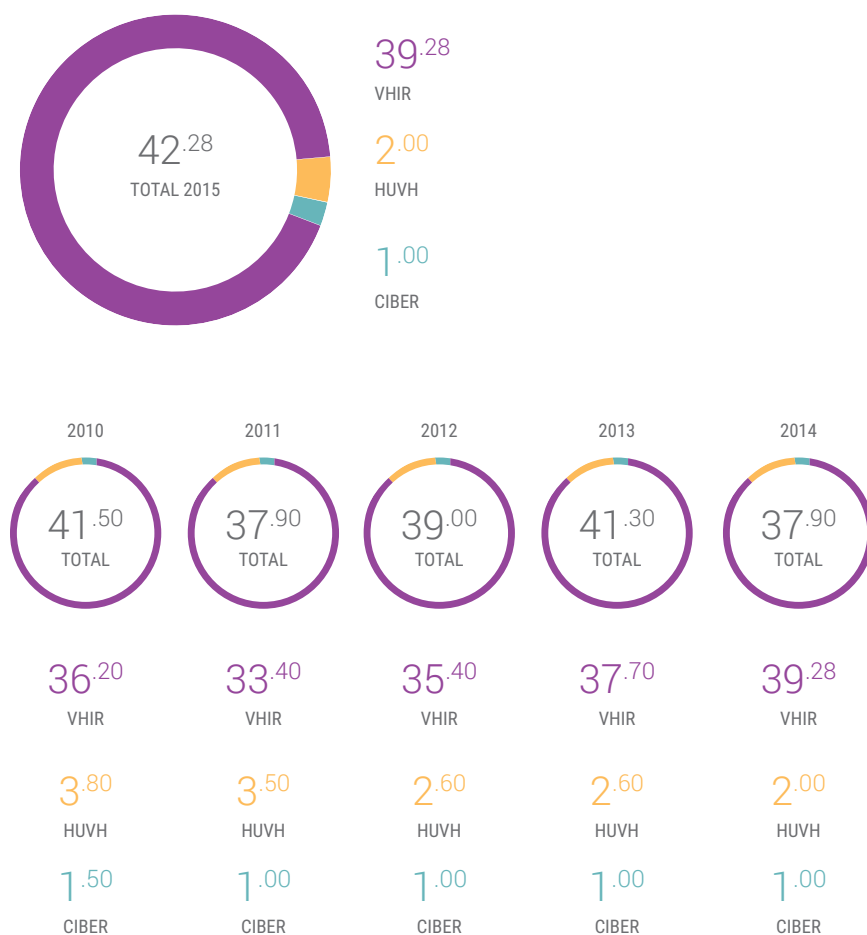
On the 23rd of November 2015, WIDER organized the 9th **Edition of the International Course in NOTES**, where over 130 doctors, surgeons and researchers from all over the globe participated.

This edition was divided in live sessions broadcasted from the VHIR's animal facilities, and conferences and discussions led by top researchers in this field. We can say that **the meeting has become the world's most outstanding forum about advanced endoscopic and transluminal surgery**. Moreover, the College of Physicians of Barcelona has recently distinguished the Digestive Endoscopy Unit of the Vall d'Hebron University Hospital with the Award for **Professional Excellence 2015**.

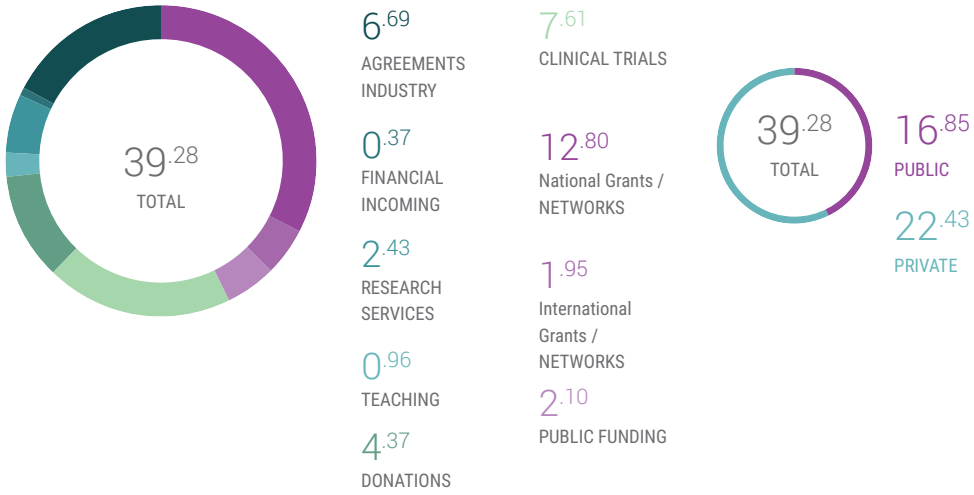
2.1

Economic summary

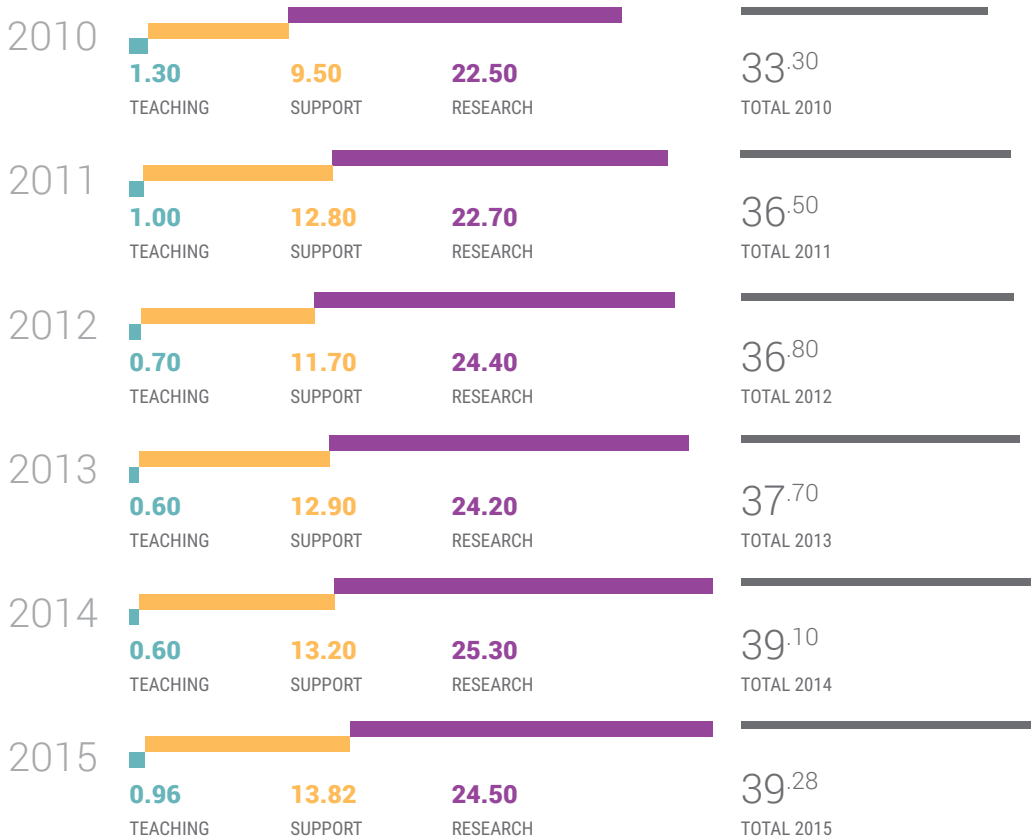
Total income in millions of euros



VHIR income breakdown (M€)



VHIR total income in millions of euros (M€)

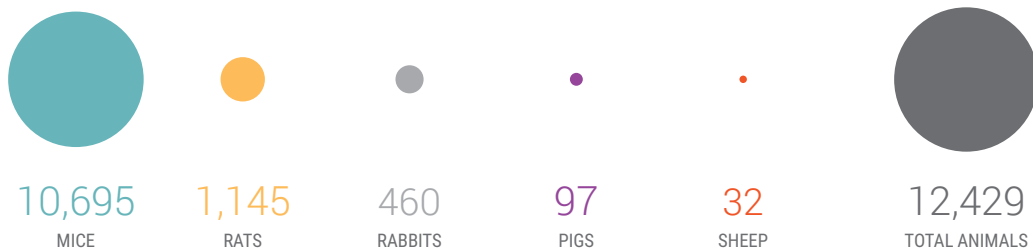


2.2

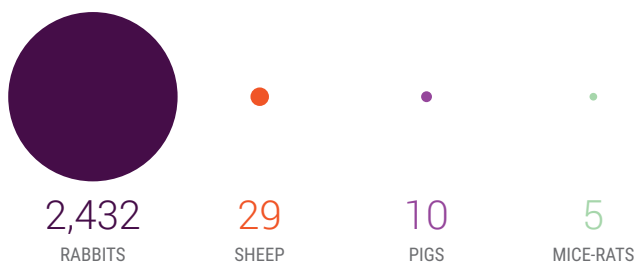
Core Facilities

Animal Lab Service

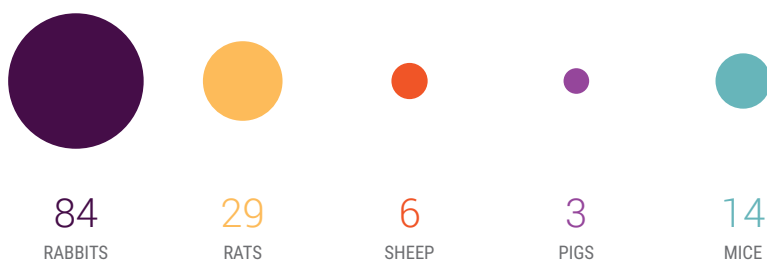
Animals used in research



Annual average of cages and individuals/day

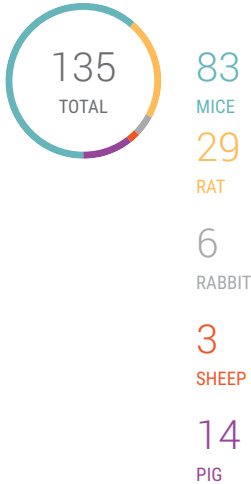


Active projects/procedures per species



Active projects/procedures per area and species

ANIMAL SPECIES	Mice	Rat	Rabbit	Sheep	Pig
Oncology	35				
Cardiovascular Diseases	6	3			2
Digestive & Liver Diseases	1	6			1
Respiratory & Sistemic Diseases	4				
Endocrinology & Nephrology	2	2			
Neurosciences	15	5			
Infectious Diseases	4	1	2		
Ginecology, Pediatric Diseases & Experimental Surgery	2	7	1	3	2
Epidemiology, Pharmacology, New Therapies & Clinical Research	3	2			
Nanomedicine	10	1			
Others	1	2	3		9
TOTAL	83	29	6	3	14



Molecular imaging plataform activity per group

RESEARCH GROUPS	Image Acquiring Hours	Image Quantification & Analysis Hours
Functional Validation and Preclinical Research	223.75	
Cell and Gene Therapy	3.00	2.00
Neurodegenerative Diseases	11.00	14.50
Pediatric Neurology	5.00	4.00
Translational Research in Child and Adolescent Cancer	1.75	1.75
Biomedical Research in Melanoma	1.25	

Molecular imaging plataform activity per group

RESEARCH GROUPS	Image Acquiring Hours	Image Quantification & Analysis Hours
Biomedical Research in Gynecology	12.25	
Experimental Hematology	31.25	
Pneumology	1.25	
Infectious Diseases	37.00	33.75
General Surgery	5.00	3.50
Others	14.00	20.00
VHIO	460.25	
TOTAL	806.75	79.50

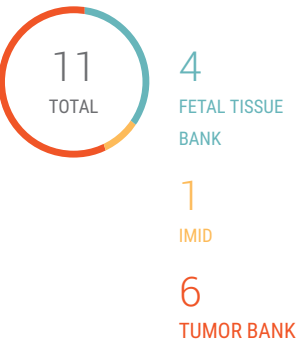
BIOBANK

Number of donations

Fetal Tissue Bank	28
Cardiology Bank	169
IMID	781
Immunology Bank	121
Nephrology Bank	26
Pediatric Endocrinology Bank	10
Pulmonary Bank	173
Tumor Bank	190
TOTAL	1,498

Number of Projects

WHICH HAVE ASKED FOR SAMPLES
(MATERIAL TRANSFER SERVICE)

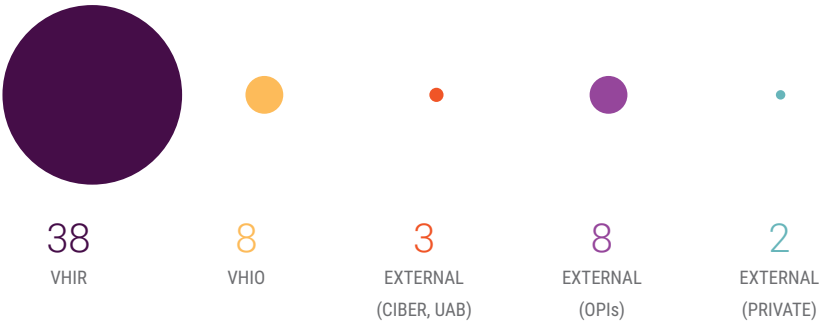


WHICH HAVE ASKED FOR SAMPLE
PROCESSING SERVICES

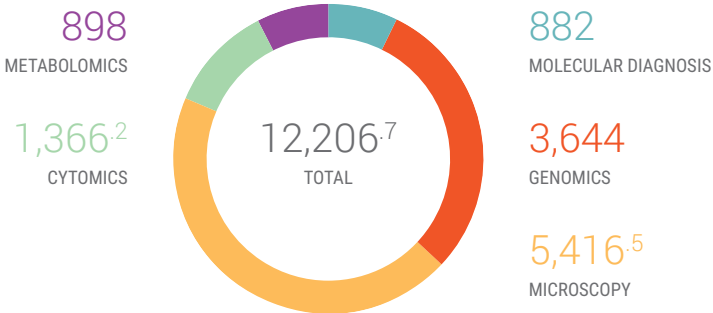


UAT (High Technology Unit)

User groups



Services performed



Courses organised

TITLE	CATEGORY
Flow citometry, theory and practical issues	Citometry Platform
The complete real-time PCR workflow: experimental design, applications, data analysis	Genomics Platform (in collaboration with UEB & Applied Biosystems)
Proteomics and Metabolomics Course	Metabolomics Platform
Human cell line authentication. Why is it so important?	Technological Update
Understanding Biological Heterogeneity through Mass Cytometry	Technological Update (in collaboration with Fluidigm)
Escolab students' visits	UAT staff participation
VHIR's Master	UAT staff participation

Current agreements with external services providers

NAME	SERVICES PROVIDED	
Instituto de Investigaciones Biomédicas Alberto Sols	Human cell line authentication	PUBLIC INSTITUTIONS
Centre for Genomic Regulation	Next Generation Sequencing	
Universitat Autònoma de Barcelona	Next Generation Sequencing	
Centro Nacional de Análisis Genómicos	Next Generation Sequencing	
Macrogen	Sanger's sequencing, Next Generation Sequencing	PRIVATE COMPANIES
BGI	Next Generation Sequencing	
OWL	Lipidomics Services	
Anaxomics	Systems Biology Solutions	

New internal services

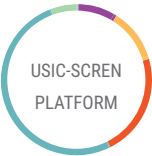
PLATFORM	SERVICE
Cytomics	Full processing of frozen biopsies (staining with CBA kit, Fortessa flow cytometry and data analysis)
Microscopy	Opening of a new microscopy room (Fluorescence microscopy+data analysis workstations)
Molecular Diagnosis	Microarrays full service (including RNA extraction from frozen biopsies, microarray processing and data analysis)
Molecular Diagnosis	Microarrays full service (including RNA extraction from RNA later stored tissue, microarray processing and data analysis)
Molecular Diagnosis	miRNA Genetitan plate arrays
Molecular Diagnosis	Amplification with WT Pico Kit (Affy) for challenging samples (low concentration, FFPE)
Molecular Diagnosis	miRNA library preparation for Illumina sequencing (NEB kit)
Metabolomics	Development of LC/MS/MS Method-Ethanolamines
Metabolomics	Development of LC/MS/MS Method-short chain fatty acids

USIC (Support to Clinical Trials Unit)

Clinical areas of services performed by USIC/USMIB

USIC-CARE PLATFORM	
% clinical trials USIC-Healthcare Area/ active clinical trials in HUVH	16%
% of the use of healthcare spaces	27,8%
Request of studies for medical consultation	148
Request of studies for day hospital	12
Request of studies for support of research nurse	102
No. of visits	2,801
No. intravenous treatments	131
No. principal investigators	45
Services/Units of HUVH	22
Clinical trials/active studies during 2015	142
Petitions of public funded studies	27
Petitions of private funded studies	115

No. spaces used for monitoring/auditories/center selection visits, start-up and close-out visits	220
--	-----



3
CONSULTING &
REGULATORY
METHODOLOGICAL
SUPPORT

4
PROJECT
MANAGEMENT

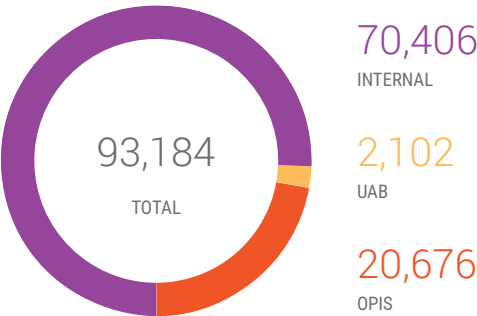
8
PROJECT
MONITORING

18
CENTRES
MONITORING

2
FV CLINICAL
TRAILS

UEB (Statistic and Bioinformatics)

UEB results by user type (€)



UEB results by user type (hours)



UEB services by type

	TOTAL (€)	TOTAL (hours)
Teaching activities (Courses & Personalized)	6,200.0	344
Advanced Data Analysis	1,599.0	62
High Throughput Data Analysis (Bioinformatics)	36,540.0	1,405
Data Analysis for Clinical Research (Biostatistics)	24,746.0	952
Statistical & methodological consultancy services	22,599.0	869
Scientific results communication		
Database & applications development	1,500.0	58
Report writing and Documentation development writings		
Booking of UEB resources	45	45
TOTAL	93,184.0	3,690.0

ARO (Academic Research Organization)
Work by HUVH services

Pediatric Nephrology	3	Hematology	1
Digestive System	1	Hepathology	3
Intensive Medicine	1	Colorectal Surgery	1
Ophthalmology	1	Allergology	1
Medical Oncology	8	Gynecologic Oncology	1
Neurology	2	Transplants	1
Infectious Diseases	3	Rehabilitation	1
TOTAL		28	

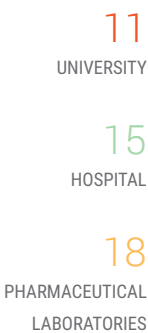
Services by phases of the studies (%)



Services by development area



Services by promoter (%)

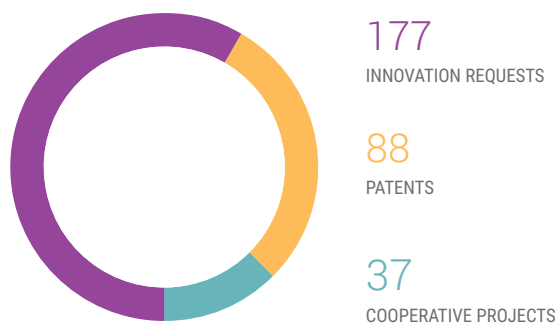


Services by centers participating

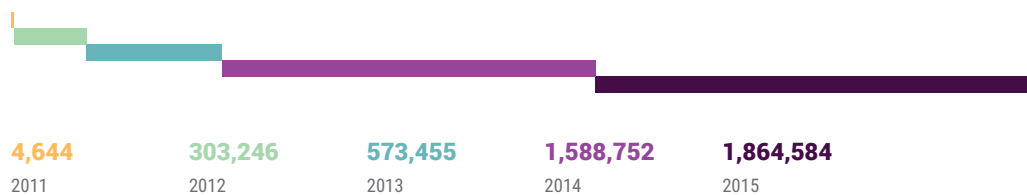


2.3

Innovation

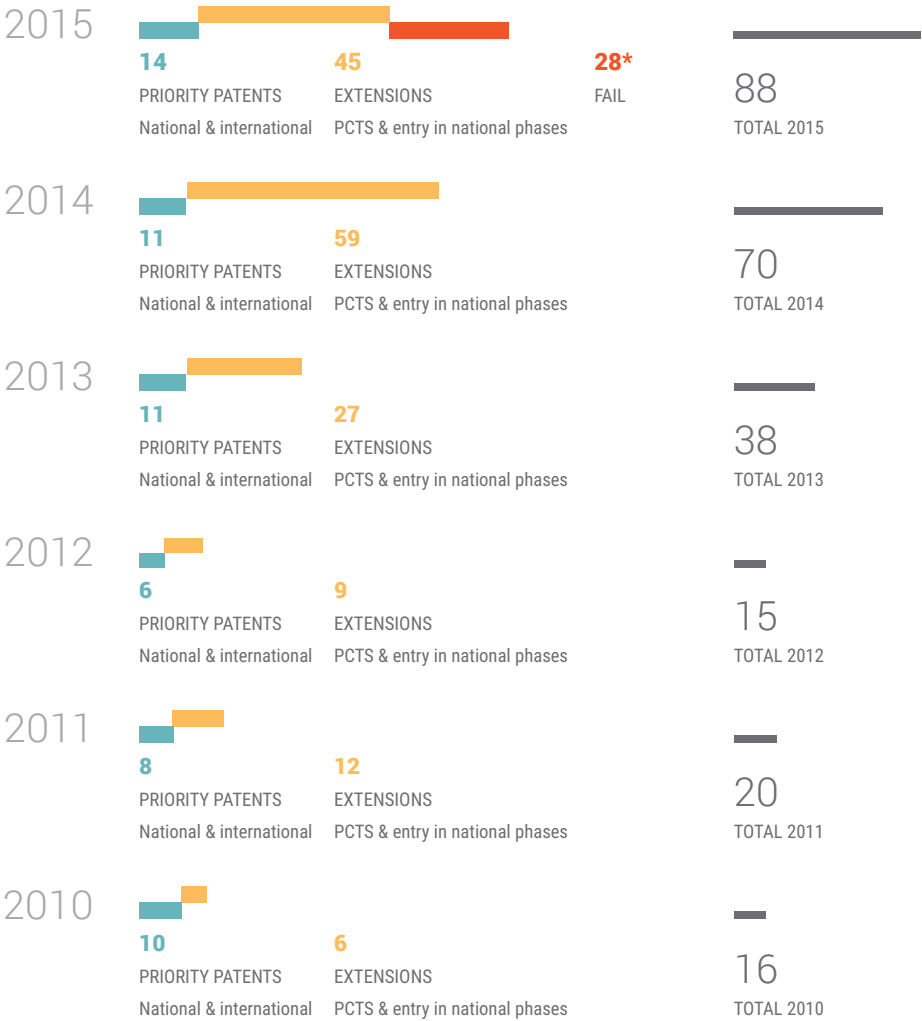


Evolution of committed revenues without royalties from exploitation



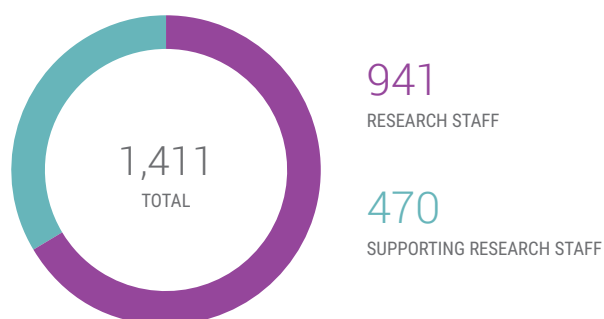
Evolution of patents

* From 2015, patents are separated by active (Priority and Extensions) and the failed ones.



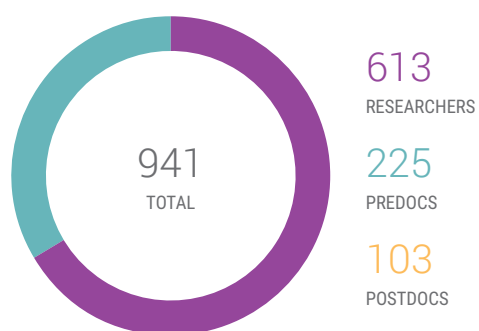
2.4

Human resources

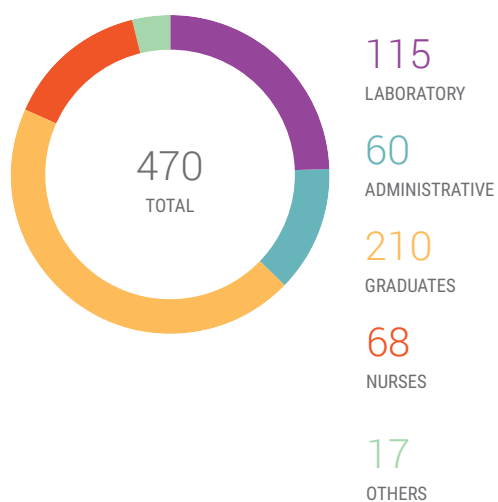


Distribution according to professional category

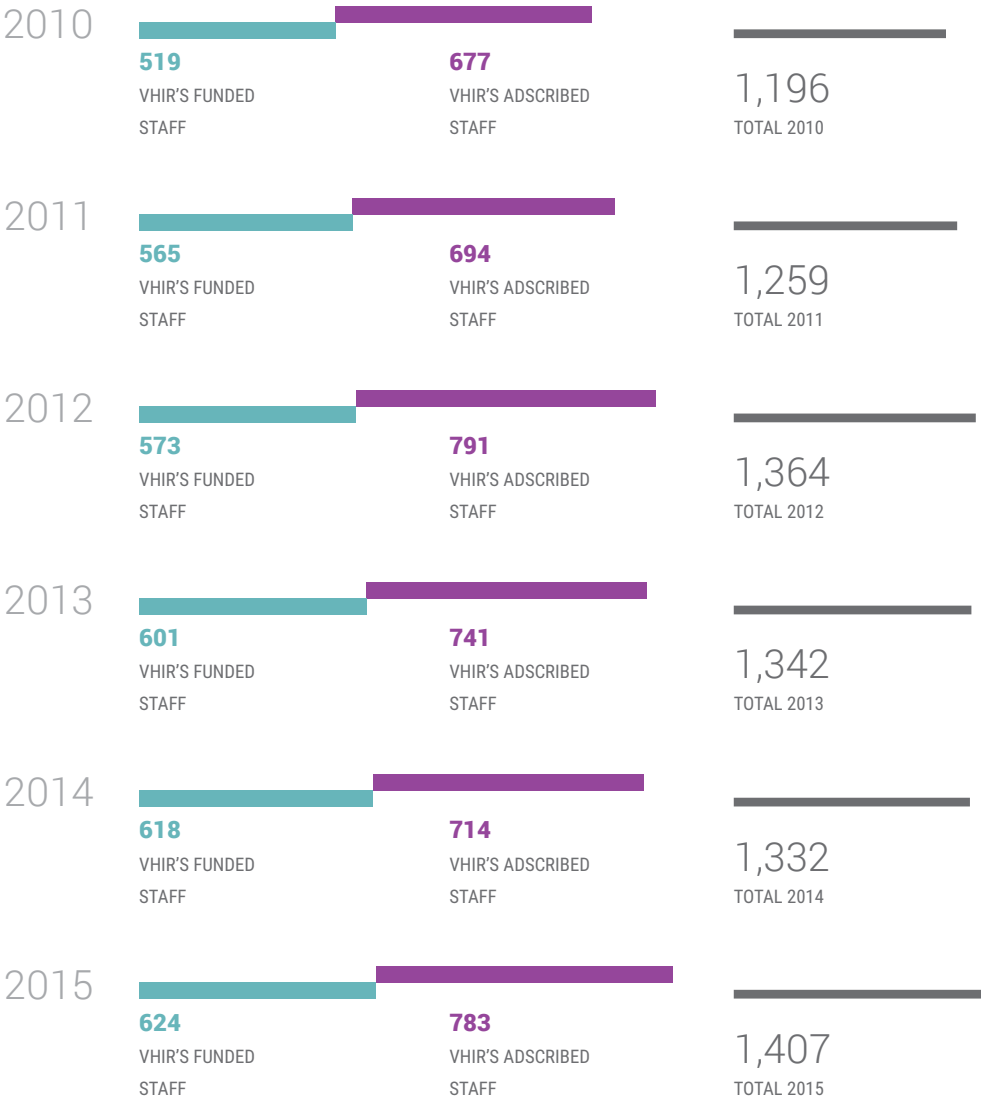
Research Staff:



Support:

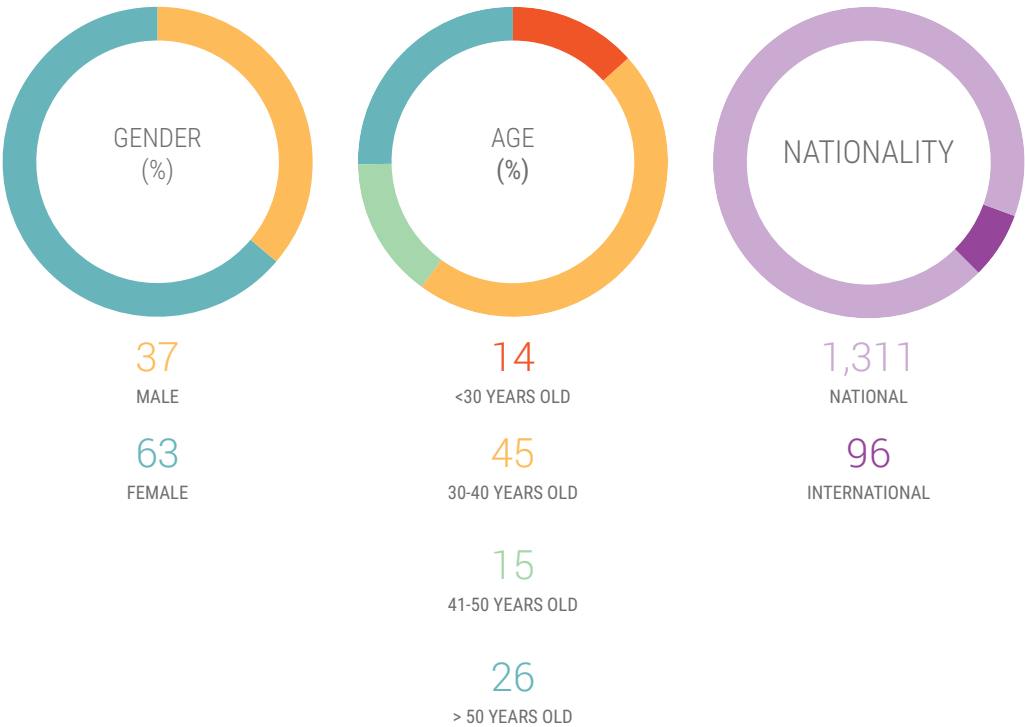


Evolution of the staff



Contracting entities

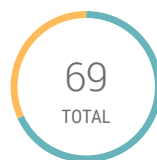
Staff by gender, age and nationality:



Internationalization



Country	Women	Men	Total
Argentina	2	1	3
Bolivia	1		1
Brazil	1		1
Canada		1	1
Chile	2	1	3
Colombia	6	1	7
Croatia	2		2
Cuba		2	2
Ecuador	2		2
France	4	2	6
Germany	1		1
Guatemala	1		1
India	1	1	2
Italy	11	3	14
Kazakhstan	1		1
Mexico	3	1	4
Netherlands	1	1	2
Norway		1	1
Palestine		1	1
Paraguay	1		1
Peru	1	3	4
Portugal	2		2
Romania	1		1
Switzerland	1		1
United Kingdom		2	2
United States	1		1
Venezuela	1	1	2



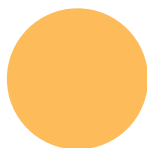
47
WOMEN

22
MEN

2.5

Media

Website vhir.org



1,116,317

VISITED PAGES



544,984

VISITS



344,884

SINGLE USERS



166

NEWS ON THE WEB

Social Media



3,445

PAGE LIKES



4,498

FOLLOWERS



3,545

FOLLOWERS



150,936

ACCUMULATED VIEWS

3

Summary

Staff

Staff with professional relationship with the Institute	1,411
Research staff	941
• Principal Investigators (PI)	210
• PhD researchers	103
• Collaborating researchers	211
• Researchers subordinated to short term projects	-
• Researchers in training	225
• Scientific support staff	470
• Core Facilities staff	90
Management and administration	62
General services and maintenance	19
Researchers funded partially or totally through competitive tenders and research networks	280
Staff ratio (Management and administration + General services and maintenance) / PIs	0.35

Research activity

Research projects granted on 2015	86
Ongoing research projects	290
Ongoing clinical trials	884

Scientific production

Total of publications	844
Original articles published in indexed journals	800
Total impact factor reached through indexed journals	4,328.298
Percentage of publications in the 1st decil	29.9%
Percentage of publications in the 1st quartile	32.1%
Ongoing clinical trials	884
Clinical guides	27
Granted patents or utility models*	8
Transferred patents or utility models*	9
Start-ups or spin-off created	0
Ratio published articles / researchers (senior, postdoc, in training)	1.60

Economic figures

Funds collected with a competitive origin (M€)	14.75
Funds collected with a non competitive origin (M€)	22.50
Direct funds from Generalitat de Catalunya (M€)	2.1
Total overheads from competitive and non competitive funded projects (M€)	5.17
Ratio (competitive + non competitive funds)/Direct funds from Generalitat de Catalunya (M€)	17.74

* No. of patents or utility models granted accumulated until 2015	39
No. of patents or utility models transferred accumulated until 2015	13

Highlights

annualreport2015.vhir.org/highlights

- 1 Scientific Highlights
- 2 Institutional Highlights

1

Scientific Highlights

January



15/1/2015

Abdominal distension can be corrected by muscular control techniques

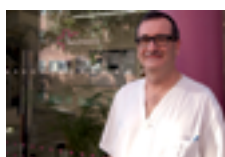
[View the news in the media](#)



20/1/2015

Schizophrenia, major depression and bipolar disorder share genetic risk factors

[View the news in the media](#)



30/1/2015

Researchers identify a gene associated to higher survival from sepsis due to pneumonia

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February



16/2/2015

VHIR researchers develop a methodology that will help doctors choosing the most efficient treatment for hepatitis C

[View the news in the media](#)



March



17/3/2015

Adolescents with ADHD resistant to medication reduce symptoms after a psychological treatment in group

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April



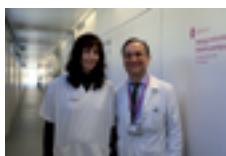
28/4/2015

Surgery improves survival of women over age 80 with breast cancer

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May



11/5/2015

Researchers identify a mechanism involved in the resistance to antitumor treatment

[View the news in the media](#)



September



3/9/2015

Patients with diarrhoea-predominant irritable bowel syndrome have less microbial diversity

[View the news in the media](#)



9/9/2015

VHIR researchers validate a new therapeutic target for colorectal cancer treatment

[View the news in the media](#)



29/9/2015

A new experimental drug to reduce clinical progression of primary progressive multiple sclerosis

[View the news in the media](#)



November



6/11/2015

New methodology to improve the drug response of breast and colon cancer with nanomedicine

[View the news in the media](#)



Europa Press



12/11/2015

Discovered an anti-diabetic treatment with added benefits for diabetic retinopathy

[View the news in the media](#)



RAC

December



14/12/2015

Vall d'Hebron' study detects high prevalence of schistosomiasis in an Angolan region

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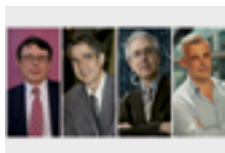


El País

2

Institutional Highlights

March



31/3/2015

Four biomedical research centres in Barcelona join forces to bridge the gap between investigation and clinical practice

[View the news in the media](#)

 [La Vanguardia](#)

April



14/4/2015

Roche's world leaders visit VHIR



20/4/2015

VHIR obtains the HR Excellence in Research recognition

May



8/5/2015

Cristina Garmendia, Jesús Fernández and Alfonso Beltrán open the Training Program on Innovation

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 [Gaceta Médica](#)

May



15/5/2015

VHIR celebrates the first scientific retreat to talk about the science made at Vall d'Hebron



23/5/2015

More than 2,000 people celebrated 20th birthday of the research at Vall d'Hebron with a solidarity party

[View the news in the media](#)



July



10/7/2015

A new therapeutic option for patients with cancer and a vascular anastomosis surgical device win the VHIR Health Innovation contest

[View the news in the media](#)



13/7/2015

VHIR collaborates with elementary schools and high schools to bring science closer to children and young students



31/7/2015

We launch our new webpage with the aim to show more and better our activity

September



21/9/2015

1,000 runners filled the streets of Horta with solidarity

November



5/11/2015

La Marató de TV3 funds 5 projects led by VHIR



12/11/2015

SOM Biotech and Vall d'Hebron successfully complete a clinical trial in patients with TTR amyloidosis

[View the news in the media](#)

 [El Periódico](#)

December



11/12/2015

The 19th Annual Conference brings the future of personalized medicine

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 [TVE \(13'\)](#)



28/12/2015

Friends of Vall d'Hebron fund the pre-doctoral program of 11 young researchers



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