2017
SCIENTIFIC REPORT

Generalitat de Catalunya
Departament de Salut

Banc de Sang i Teixits

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Banc de Sang i Teixits

1

Index

2

Index

Enric Argelagués Vidal
General manager

Introduction by the CEO

The Scientific Report we present here covers the first year of the new Strategic Research Plan, which places special emphasis on our main areas of specialisation in this field.

One new feature is that, for the first time, we have earmarked internal funding for projects presented by our investigators in the plan's five lines: Haemotherapy, Tissues, Cell Therapy, Biological Safety and Donation. The initiative has been very well received and we have already funded 15 projects, most of them in conjunction with external institutes and/or research centres.

In addition, we now have over 30 projects receiving external funding and in total have provided around 3 million euros for research. Almost 10% of professionals in the Banc de Sang i Teixits (Blood and Tissue Bank) are directly or indirectly involved in internal or external research projects. In 2017, we were authors of 29 publications, 80% of which were in first or second-quartile journals.

We close this first year of the new strategic plan with the satisfaction of having motivated and guided groups and research initiatives which, thanks to internal or external funding, have started to advance in the right direction. Always with the goal that characterises and gives meaning to our activity: finding the best therapeutic solutions for patients in our specialities. I would like to thank everyone who has contributed to making this possible.

Enric Argelagués Vidal

Joan Garcia
Scientific director

Introduction by the scientific director

In January 2017, the research activity at the Banc de Sang i Teixits (Blood and Tissue Bank) began a new cycle with the implementation of the strategic plan that will guide us up to the year 2020 (PER 2017-20).

Essentially and broadly speaking this promotes quality research and the transfer of results to patients and society, while also promoting and integrating the BST in the Catalan, Spanish and international scientific networks.

One little noticed but significant change has been the functional consolidation of research and teaching under the umbrella of the Chair of Transfusion Medicine, Cellular and Tissue Therapy (CMT3) at the Autonomous University of Barcelona (UAB), which I currently lead.

For the first time, the classic BST research report will include both activities: creation and knowledge transfer.

Change is not always easy and activating the new plan is no exception. However, the strength of more than 60 professionals linked to research has produced remarkable achievements. The internal scientific committee that represents them is fundamental in leading this new stage.

Thanks to a specifically earmarked budget, we have been able to launch a new system of competitive intramural calls for projects. I am most impressed by the fact impressive that 18 projects have been submitted, of which, after external assessment, 15 very high quality ones have been approved.

At the same time, a significant effort has been made to access competitive external financing. Indeed, having obtained more than € 340,000 in this way, we might venture to say that we are coming out of a period of 'drought'. Taking into account the previous projects, the BST fully or partially finances 28 projects with its own funds, while 34 receive external financing.

With the intention of improving support for research groups and their projects, we have identified and backed the creation of two core platforms: Cell Characterization and Culture and Genomics, both with prospects that will surely go beyond the BST.

Scientific production was practically the same as the figures of 2016. This is not a positive development, but we understand that once the inertia characteristic of scientific publications has been overcome, the changes we have introduced will generate better results in the coming years. In the short term, the defense of two new doctoral theses and the generation of nine new products and services confirm both the scientific and academic outlook and the innovation of BST professionals. In this context, we have developed a protocol for the protection of industrial secrets that we will be deploying during 2018 in order to adequately protect our knowledge.

One of the key elements of the PER 2017-20 is the integration in the research institutes of hospitals with the ambition of standardising our research with that of hospital research groups and establishing new partnerships. In 2017 the first milestones were reached: the research groups in Transfusional and Cellular Medicine at the Vall d'Hebron Research Institute (VHIR) and the Bioengineering of Tissue and Regenerative Medicine group were accredited. During the coming years we will do everything possible to accredit our research groups with the rest of the institutes where we work.

In the teaching field, the Chair, with the support of the UAB and the Health and Aging Foundation, also at the UAB, maintains the offer of the EMTACT university master's degree, which is just over half way through its second course in its current format. We are now preparing the third course and are progressing in making it the first EU interuniversity and international master's degree in this specialty, due to begin, if all goes well, in October 2020.

Thinking also about the future, in conjunction with the ESTM, we are preparing new refresher courses and developing new educational degree and postgraduate proposals that will be released in the coming academic years.

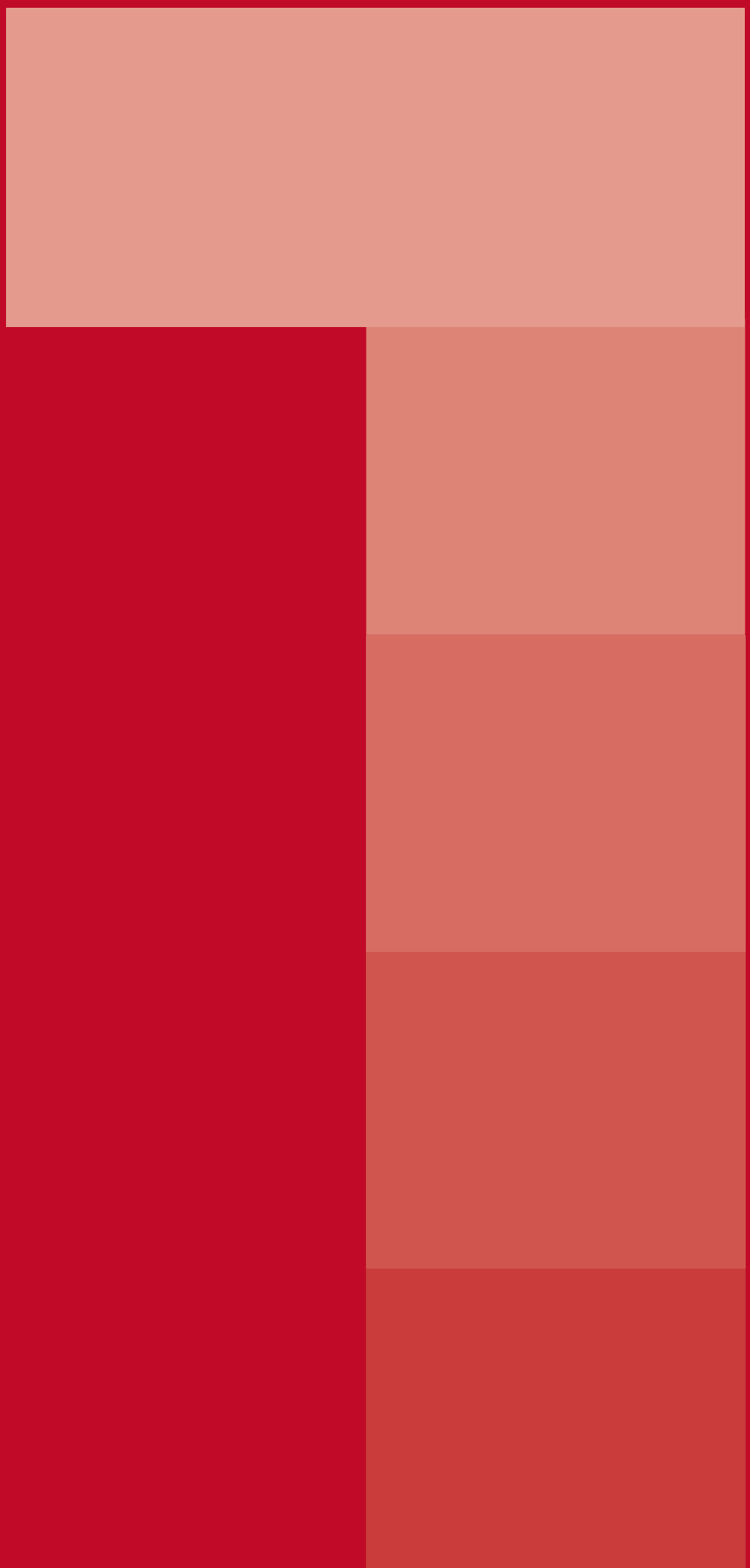
In conclusion, we have embarked on a new journey, although, as usual, the initial results could have been better and there are a number of internal and external challenges that need to be addressed as soon as possible.

However, one thing I am sure of with regard to research and education in the BST: the most important factor is people. There are people who are excited, motivated and who, little by little, feel challenged. Overall, however, and I have no doubt that we all realise research, innovation and teaching are the keys to our future.

Together, we progress.

Joan Garcia

Banc de sang i teixits



Banc de Sang i Teixits

The Banc de Sang i Teixits (BST) is a public company run by the Catalan Ministry of Health whose mission is to guarantee the supply of blood of sufficient quality for all the citizens of Catalonia. The BST manages and administers the donation, transfusion and analysis of blood and blood plasma. It also acts as a centre for obtaining and processing tissues and cord blood units and develops other lines of activity as a centre specialising in immunobiology, molecular analysis, cell therapy and regenerative medicine.

- The BST is the backbone of the haemotherapy system in Catalonia.
- Its activity extends to all public and private centres in Catalonia as well as others in Spain, providing an accessible service to donors and customers.
- The BST aims to be a leading centre in management, innovation and research into haemotherapy and tissues.

The BST participates in its own research projects or in collaboration with all the centres of the Catalan Health Institute, a large part of the public hospital network and Catalan universities, while also promoting strategic alliances with research centres and industry.

1.1. Governing Bodies

The governing bodies of the Banc de Sang i Teixits are the Board of Directors, its committees and the Tissue Strategic Committee.

1.1.1. Board of Directors

Chair
Manel Peiró Posadas

Vice-chair
Pilar Magrinyà Rull

Secretary
Rafael Gomáriz Parra

Members
Antoni Castells Garagou, Enric Contreras Barbeta, Francesc Gòdia Casablancas, Miquel Rutllant Bañeras, Emili Sullà Pascual, Roberto Gili Palacios, Vicenç Martínez Ibáñez, Ivan Planas Miret, Maria Antònia Viedma Martí

Return to index

1.1.2. Board of Directors committees

Economic and audit
Ivan Planas Miret, Emili Sullà Pascual and Carmen Garcia Jarque

R&D&i
Francesc Gòdia Casablancas, Roberto Gili Palacios, Miquel Rullant Bañeres and Joan Garcia Lopez

Tissue Strategic
Antoni Castells Garagou, Maria Antònia Viedma Martí, Francesc Gòdia Casablancas, Enric Argelagués Vidal, Isabel López Asión, Esteve Trias Adroher and Santiago Suso Vergara

1.2. Executive and management bodies

1.2.1. Executive Committee

CEO
Enric Argelagués Vidal

Deputy Managing Director
Isabel López Asión

Director of People and Values
Esther Solà Saplana

Director of Communications
Aurora Masip Treig

Director of Operations and Engineering
Ivan Cano Chaves

Health Care Director
Lluís Puig Rovira

Director of Information and Communication Technologies
Antoni Masi Roig

Director of Hospital Services
Enric Contreras Barbeta

1.2.2. Territorial Centres Committee

CEO
Enric Argelagués Vidal

Deputy Managing Director
Isabel López Asión

Health Care Director
Lluís Puig Rovira

Head of the Immunohaematology Laboratory
Eduard Muñiz Díaz

Head of Clinical Haematology Service
Ramon Salinas Argente

Hospital Service Managers
Alba Bosch Llobet, Isabel Gonzalez Medina, Joan Ramon Grífols Ronda, Rafael Parra Lopez

Territorial Service Managers
Virginia Callao Molina, Anna Millan Alvarez, Juan Manuel Sánchez Villegas

Return to index

1.3. Advisory Bodies

1.3.1. Internal Scientific Committee

The Internal Scientific Committee is the advisory body in charge of overseeing tasks linked with the promotion and development of the R&D&I in the organisation.

The committee's tasks include:

- Reviewing the R&D&I policy and assuring its dissemination
- Coordinating the development of the Strategic Plan for R&D&I and evaluating its degree of attainment
- Ensuring the achievement of annual R&D&I targets
- Heading activities associated with the Technology Watch (vigilance, forecasts, analysis, etc.)
- Periodical reviews of scientific production, financial aspects and personnel in the Research Area
- As the unit responsible for the programmes, taking part in research activities and assessing improvements in projects (anticipating deviations and problems)
- Reviewing the methodology of the continuous improvement process

Members

Scientific Director
Joan Garcia Lopez

Research Programme Coordinators
Sílvia Sauleda Oliveras, Aurora Masip Treig, Eduard Muñiz Díaz, Sergi Querol Giner, Ricardo Casaroli Marano, Joan Ramon Grifols Ronda,

Representative of the territorial centers
Enric Contreras Barbeta

Management representantive
Isabel López Asión

External Scientific Committee Chair
Alejandro Madrigal

Research and Education
Ruth Coll Bonet, Miriam Requena Montero, Elisabet Tahull Navarro

Return to index

1.3.2. External Scientific Committee

The new Strategic Research Plan for R&D&I has reestablished the External Scientific Committee.

The committee's tasks include:

- Annual assessment of R&D&I activity in the BST
- Giving opinions and suggestions on the adequacy and monitoring of the Strategic Research Plan for R&D&I
- Makes recommendations on the lines of research and programmes (promoting, auditing, redirecting, etc.)
- Providing guidance on how to increase external resources for research and on possible partnerships
- Performing external technology watch functions

Composition

Alejandro Madrigal (president)
Scientific Director of the Anthony Nolan Research Institute, London (UK)

Prof. Catherine Bollard
Director of the Center for Cancer and Immunology Research at the Children's Research Institute, Washington (USA)

Prof. Antony Atala
Director of the Wake Forest Institute for Regenerative Medicine (USA)

Prof. Masja de Haas
Sanquin Research and Dept. of Immunohaematology and Blood Transfusion, LUMC, Leiden (Holland)

Return to index

1.4. Location

Pg. del Taulat 106

The Banc de Sang i Teixits corporate headquarters are on the corner of the roads Passeig Taulat and Lope De Vega, in the Barcelona 22@ technological district. The building is the centre for the different lines of activity and a large number of the organisation's 700 professionals. The BST also has headquarters in the major hospitals of Catalonia. The BST corporate headquarters is run on criteria of maximum efficiency.

700 professionals

technological district 22@ in the Barcelona

Return to index

1.5. Summary of research activity

1.5.1. Research and technical staff

Research staff 2017

	Num	FDA	Number of men	FDA men	Number of women	FDA women
Principal investigators	3	1.4	3	1.4	0	0
Senior investigators	21	10.7	7	3.7	14	7
Investigators	33	17.8	10	2.7	23	15.1
Technical staff	9	5.4	0	0.0	9	5.4
TOTAL	66	35.3	20	7.8	46	27.5

Evolution of the research staff since 2010

Return to index

1.5.2. Dades econòmiques

BST research income for 2017

546,228€

Agreements with industry

1,834,499€

Own funds*

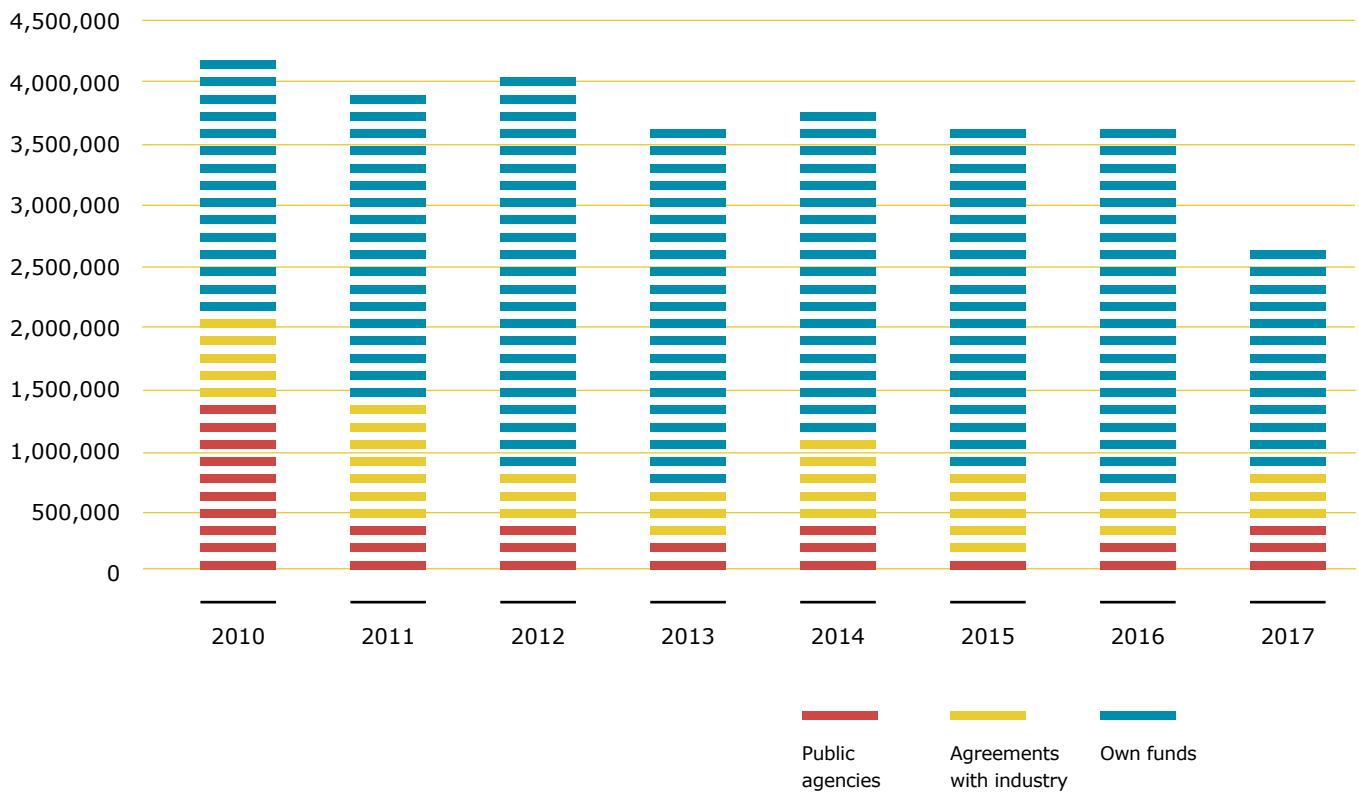
* Includes expenses for full-time or part-time staff and internal research funding

342,883€

Projects funded by public agencies

Total 2,723,610€

Research income. Organisation of the BST research



Return to index

1.5.3. Research Organization in BST

The R&D&I Strategic Plan 2017-2020 defines 5 Research Programmes

R&D&I 2017-2020

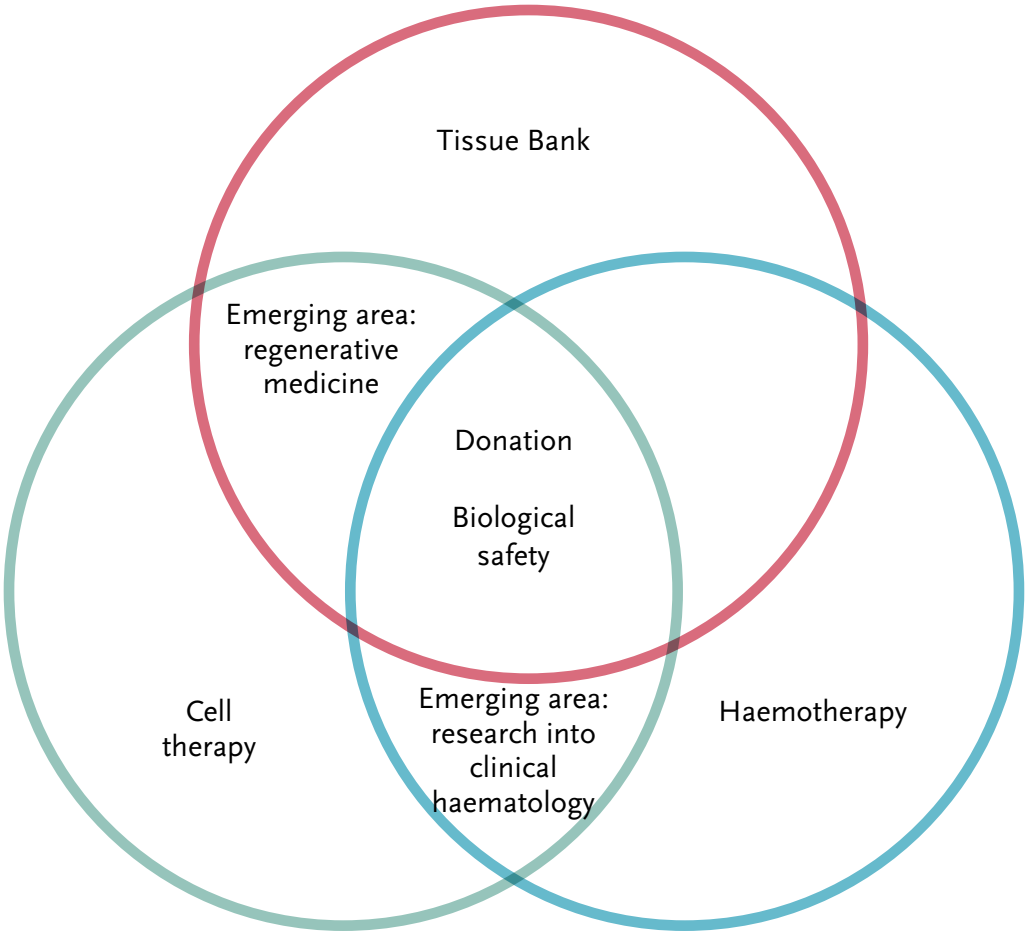
5 Research Programmes

Three trunk programmes:

- **Haemotherapy:** immunohaematology, transfusion, molecular diagnosis, process development (Eduard Muñiz Díaz and Joan Ramon Grífols Ronda)
- **Tissue Bank:** development of products and processes of the tissue bank. Regenerative Medicine (Ricardo Casaroli Marano)
- **Cell therapy:** immunobiology of transplants / immunotherapy, regenerative medicine (Sergi Querol Giner)

Two cross-sector programmes:

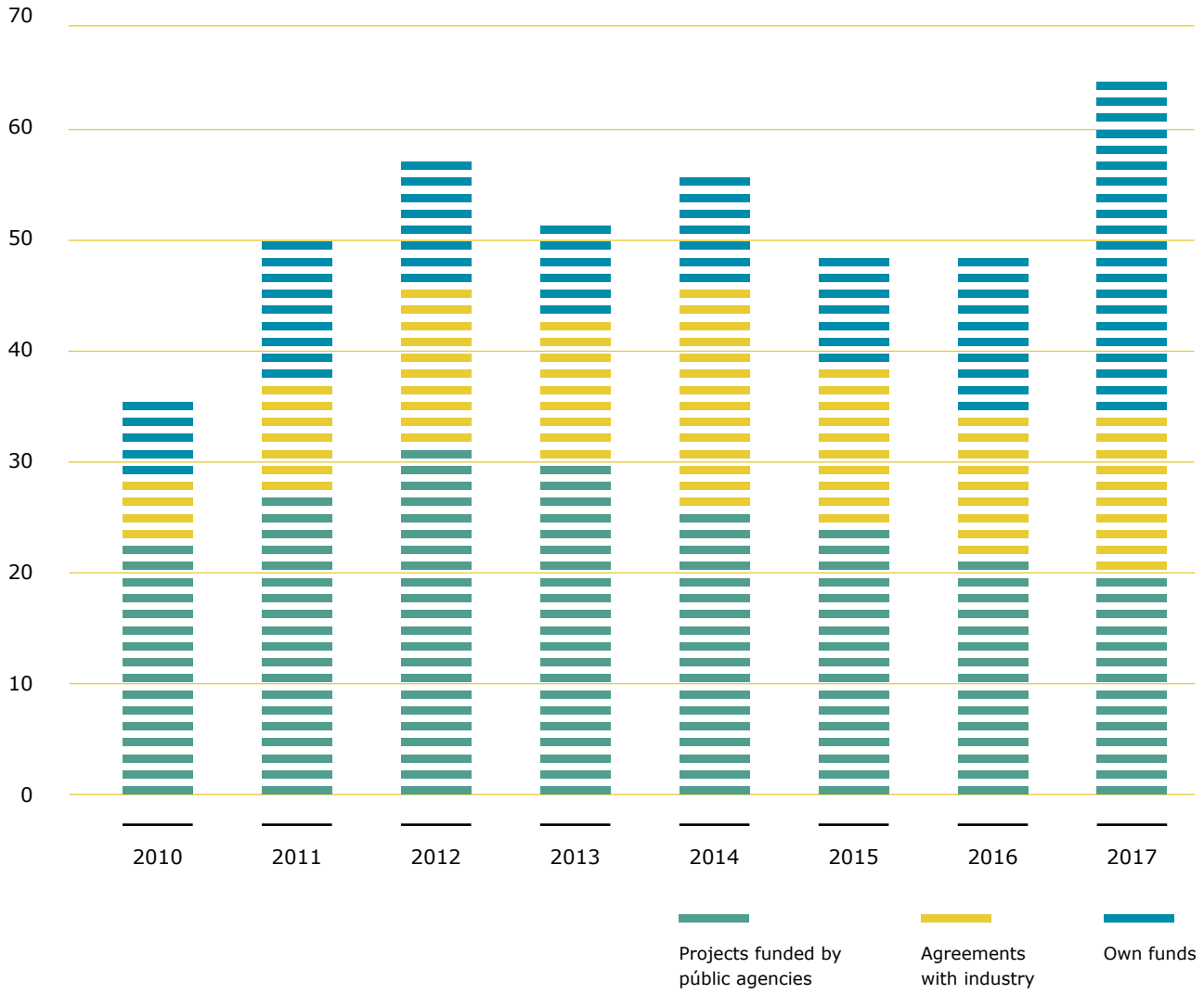
- **Biological safety:** emerging pathogens, epidemiological studies, product harmonisation (Sílvia Sauleda Oliveras)
- **Blood, cell and tissue donation:** study of donation behaviours, donation ethics, promotion of donation, donor protection, well-being and comfort (Aurora Masip Treig)



Return to index

1.5.4. Research projects

Research projects



Return to index

Ongoing projects in 2017

	PRINCIPAL INVESTIGATOR BST	COLLABORATION
PUBLIC AGENCIES		
ACCIÓ	1	1
European Commission	2	6
Carlos III Health Institute	2	
Government of Catalonia Ministry of Health		5
Spanish Ministry Health Social Services & Equality		
Marató de TV3 Foundation	2	
AGREEMENTS WITH INDUSTRY		
Albumedix A/S	1	
Baxalta	1	
Gilead Sciences, Inc		1
Grifols, SA	2	1
Immatics Biotechnologies GmbH		1
Molmed SpA		1
Novartis Farmacéutica, SA		2
Sanofi, SA		1
Shire PLC	1	
Sotio AS		1
Therakos, Inc		
OWN FUNDS		**28**
TOTAL		**62**

Return to index

1.5.5. Doctoral theses

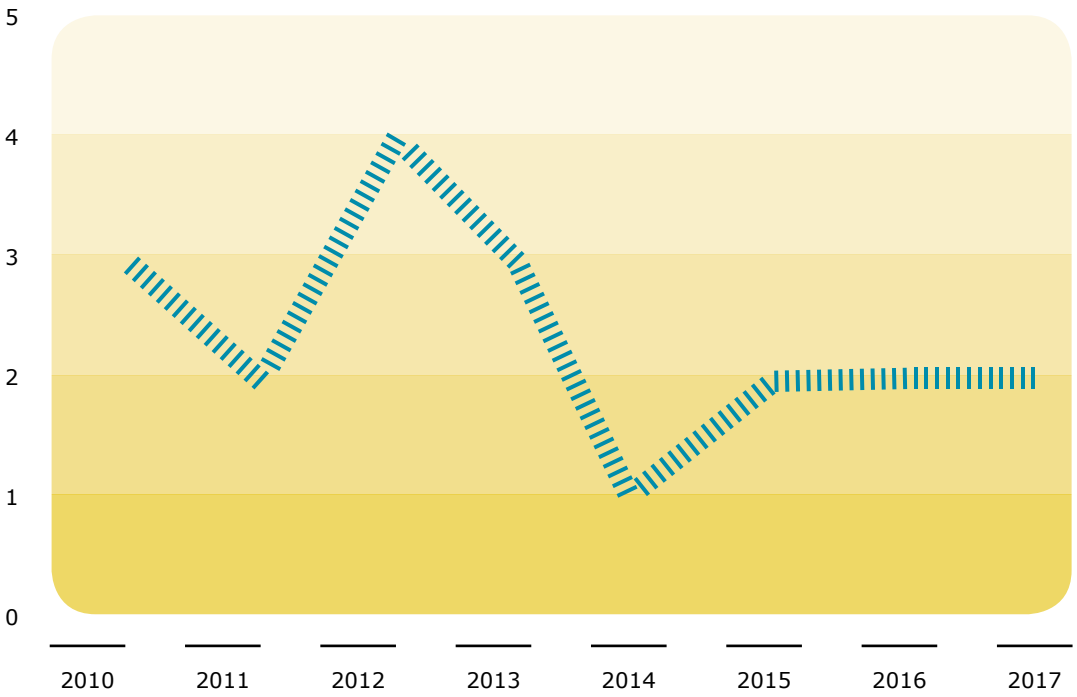
These are the doctoral theses read or directed by BST investigators in 2017.

Nerea Castillo
Nuria Nieto

Tesis

PHD STUDENT	THESIS TITLE	DIRECTORS	DEPARTMENT
Nerea Castillo	Kinetics and predictive factors of the study of the kinetics of immune reconstitution and its predictive factors in umbilical cord blood transplantation	Sergi Querol, Josep Maria Ribera	UAB, Medicine Department
Nuria Nieto	Cell therapy for the repair and regeneration of the ocular surface: therapeutic potential of the mesenchymal stem cells	Ricardo Casaroli	UB, Surgery and Surgical Specialties Department

Evolution of doctoral theses since 2010



Return to index

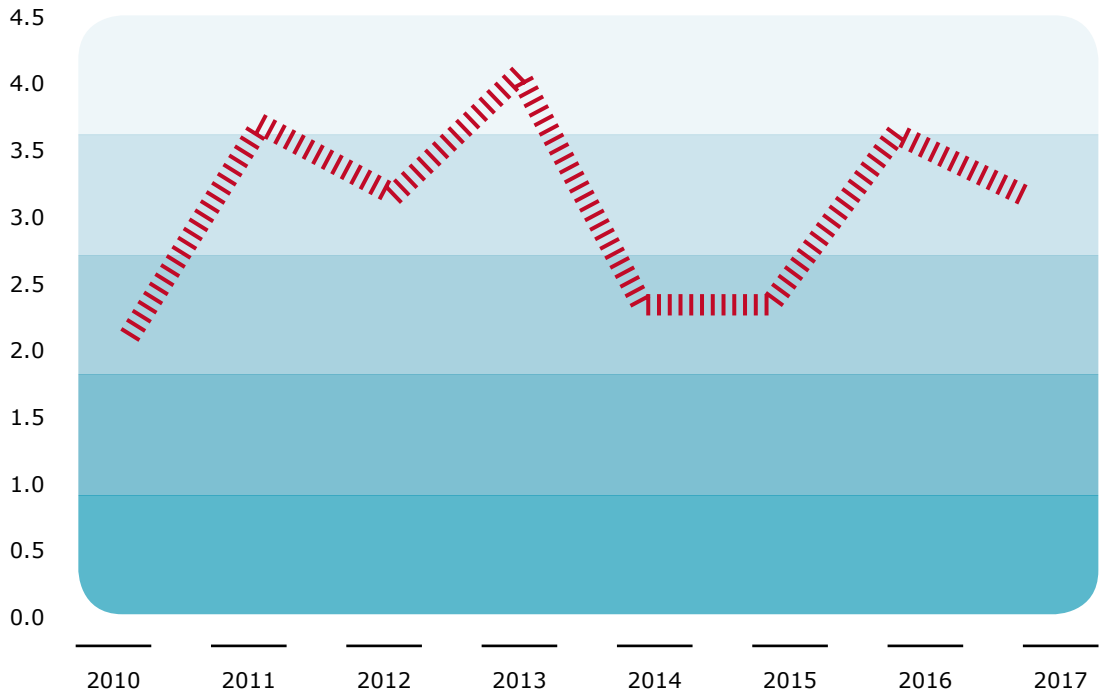
1.5.6. Publications

A total of 29 articles were published in scientific magazines by BST investigators in 2017 with an impact factor of 92.

The impact factor for 2017 was calculated using Journal Citation Reports (JCR) from 2015. The calculation included original articles, revisions and editorials.

Publications and Impact Factor

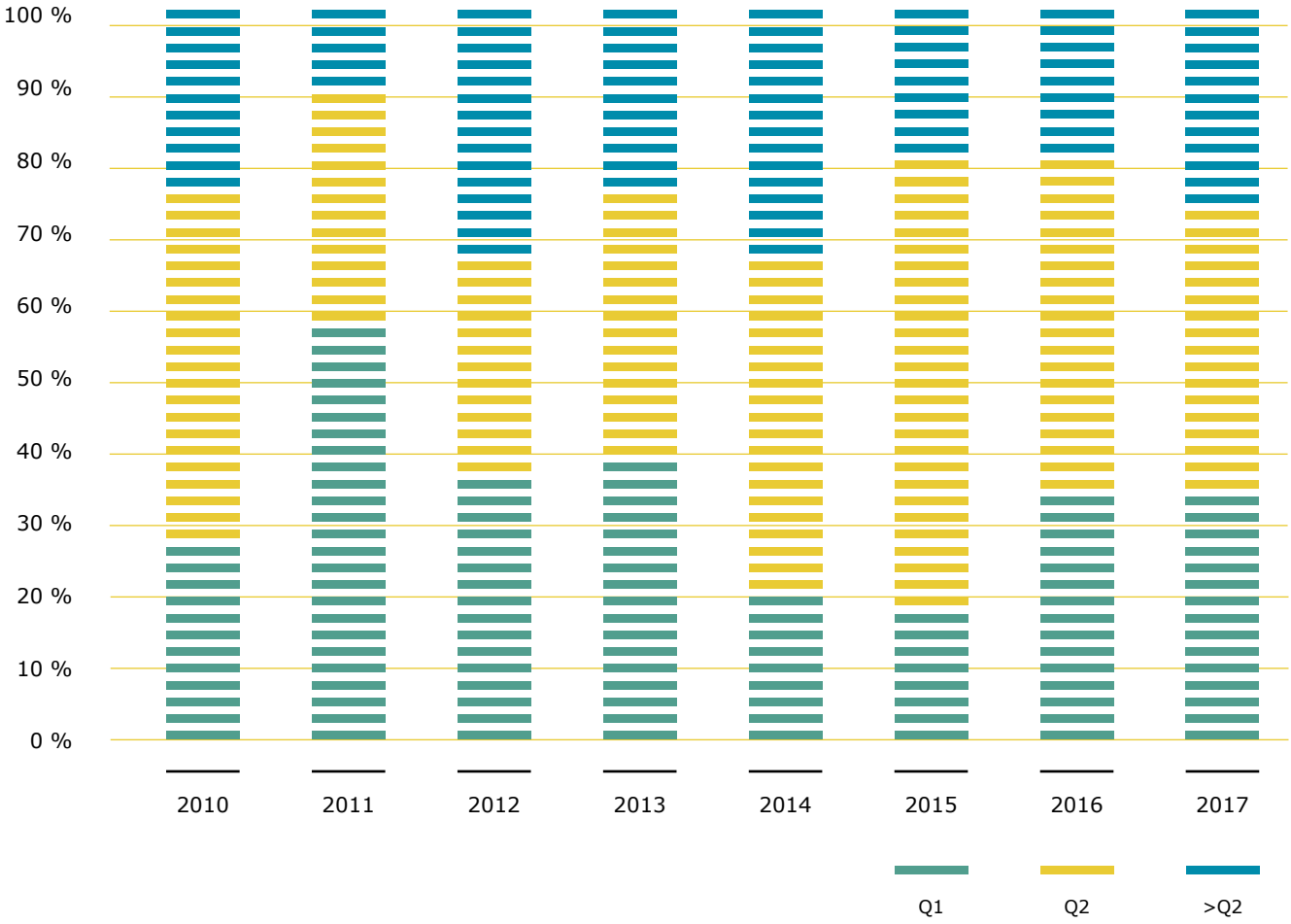
Average Impact Factor



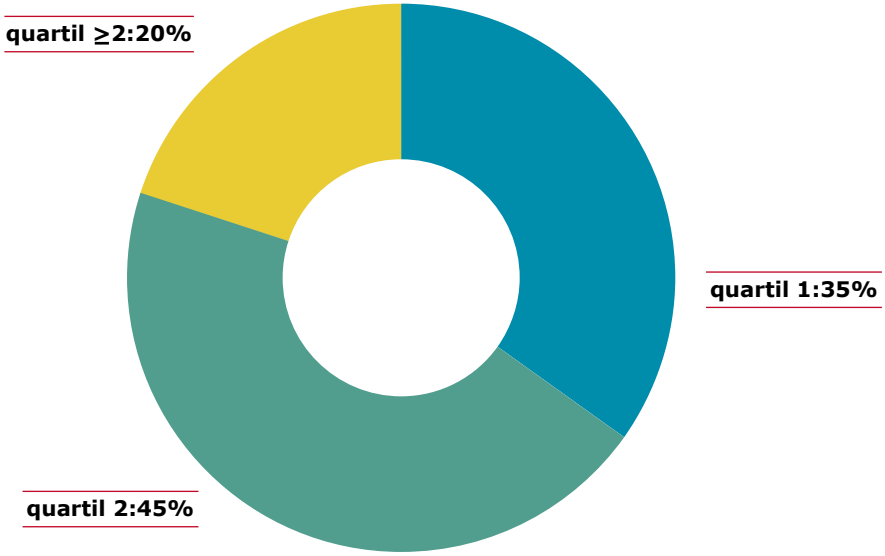
Evolution of the scientif production over the last 8 years

Return to index

Classificació de les publicacions



BST publications 2017



Return to index

1.5.7. Patents

BST has 5 patents granted to Spain, a patent granted to Mexico and to 6 European countries and a patent granted to the USA.

A project of incorporation of a protocol of security measures for the protection of industrial secrets has begun during 2017. The internal situation in the BST has been evaluated and, in collaboration with an external consultancy, an advanced version of this protocol has been generated that will be implemented in 2018.

1.6. Innovation

In the 2015 research report, the ability of BST professionals to innovate was highlighted through the creation of new products and services arising from internal R & D.

In this context, in 2017, nine new products and services were incorporated, as shown in the following table. A further step forward was the definitive inclusion of a new parameter, the innovation index (I), which relates annual turnover of new products to global billing.

INTERNAL INNOVATION IN PRODUCTS OR SERVICES 2017 (innovation index = 2.1)	
DEPARTMENT	**DESCRIPTION**
TRANSFUSIONAL SAFETY LABORATORY	Incorporation of hepatitis E virus markers. Healthcare markers: HEV NAT (TMA, Panther Elite, Grifols) qualitative test HEV IgG (Mikrogen) HEV IgM (Mikrogen) Research markers: HEV RNA (in-house real time PCR) quantitative test HEV genotype (in-house development, Sanger sequencing)
IMMUNOHAEMATOLOGY LABORATORY	Determination of foetal Kell blood group in maternal plasma with next-generation sequencing technology
CELL THERAPY SERVICE	Double TCR alpha / beta CD19 depletion of peripheral blood apheresis products. To treat patients receiving a haploidentical transplant Production of pools of cryopreserved platelets with low concentrations of DMSO
TISSUE BANK	Pre-dissected corneal endothelial membrane, to be implanted using the DMEK technique in corneal endothelial pathologies Fresh osteochondral tissue preserved at 4ºC, for the treatment of young patients with large osteochondral lesions, maintaining the viability of chondrocytes Tendinous tissue from donors older than 60 years, validated by biomechanical study, by ligamentous replacement in cases of joint instability Lyophilized amniotic membrane extract for topical application in corneal surface pathologies

Return to index

1.7.

Innovation

The Banc de Sang i Teixits website

The Blood and Tissue Bank has two web sites www.bancsang.net and www.donarsang.gencat.cat. Both have versions in Catalan, Spanish and English.

www.bancsang.net includes information on the whole organisation. The contents are divided into six content blocks (Corporate Information, Donors, Recipients, Professionals, Innovation and Education).

The page is regularly updated with news and has an application for managing online orders. It includes documentation in PDF and video.

www.donarsang.gencat.cat website is addressed to donors and potential donors and aims to portray donation as an act of solidarity, civic engagement and citizens' participation.

It provides full information on the need to donate blood, its uses and the state of the reserves. It also provides a town or postcode search for upcoming mobile blood drives. It also features a news section on donating blood.

In the site private area, donors can modify their contact details and view their donation history and blood type.

The blog bancsang.net/blog contains information on the corporate, welfare and scientific activity of the Banc de Sang i Teixits and is addressed to the general public. It has an email newsletter which anyone can subscribe to and receive email content updates.

The blog moltesgracies.net contains stories of people who needed blood and tissues for their treatment. It includes a form so that recipients can explain their story. The aim is to publicise the importance of donations, putting a face to people who benefit from them directly.

www.bancsang.net
www.donarsang.gencat.cat.
www.bancsang.net
bancsang.net/blog
moltesgracies.net

Tornar índex

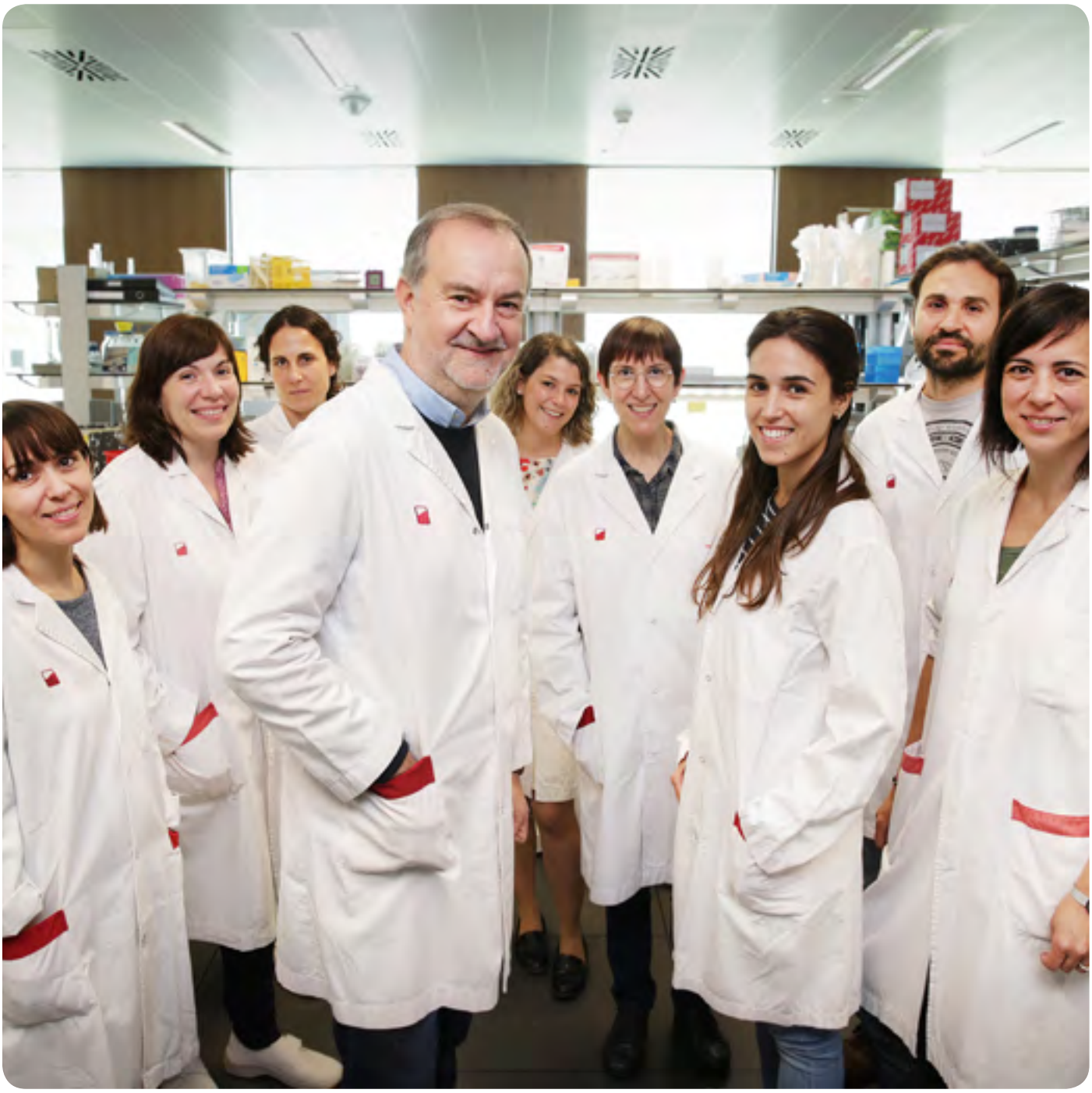
BST research activity

2 BST research activity

Directors
Eduard Muñiz Diaz
Joan Ramon Grífols Ronda

Technical staff
Natàlia Comes Fernandez
Lorena Ramírez Orihuela

Investigators
Nina Borràs Agustí
Jose Luís Caro Oleas
Irene Corrales Insa
Anna Ester Condins
Jesús Fernandez Sojo
Cecilia Gonzalez Santesteban
Laia Miquel Serra
Núria Nogués Gálvez
Pilar Ortiz Murillo
Rafael Parra Lopez
Cristina Prieto Fernandez
Marta Rodriguez Aliberas
Gemma Viche Pinas
Francisco Vidal Pérez



Return to index

2.1. Haemotherapy programme

The purpose of research in the haemotherapy programme is to help create knowledge on the practice of transfusion medicine and related technologies.

Researchers in the programme are currently studying the basic biology and clinical implications of a wide range of problems related to transfusion, immune responses to transfused blood and the underlying mechanisms, as well as practices in the blood processing, storage and safety.

This also includes the research and development of diagnostic and decision-making techniques and procedures that make transfusion safer, more effective and more efficient.

The programme is characterised not only by its core importance, but also by the simultaneous involvement of central laboratories and regional centres.

Return to index

Projects with PI or CO-PI from the BST

Research projects

Principal investigator:
Núria Nogués Gálvez
Development of new blood group genotyping strategies based on NGS technology for its application in the resolution of complex immunohaematological problems
Funding organisation: BST
File number: I.2017.053
Duration: 2017 to 2019

Principal investigator:
Eva Alonso Nogués
Invasive procedures in the septic patient and applicability of the viscoelastic tests to determine the suitability of the previous transfusion of blood components
Funding organisation: BST
File number: I.2017.018
Duration: 2017 to 2018

Principal investigator:
Irene Corrales Insa
Research on the molecular basis of haemorrhagic diathesis associated with connective tissue anomalies through the study of the clinical exome with NGS
Funding organisation: BST
File number: I.2017.037
Duration: 2017 to 2019

Principal investigator:
Joan Ramon Grífols Ronda
Detection of hypercoagulability in metastatic and high-risk melanoma
Funding organisation: BST
File number: I.2017.021
Duration: 2017 to 2018

Principal investigator:
Francisco Vidal Pérez
Development and implementation of new tools for massive molecular analysis for the comprehensive approach to the diagnosis and investigation of congenital coagulopathies
Funding organisation: Carlos III Health Institute
File number: PI15/01643
Duration: 2016 to 2019

Principal investigator:
Francisco Vidal Pérez
Study of the molecular and clinical profile of VWD: extension of the Spanish VWD cohort (pcm-evw.es) and diagnosis improvement through new technologies
Funding organisation: Baxalta
File number: H16-32544
Duration: 2016 to 2019

Principal investigator:
Francisco Vidal Pérez
Molecular diagnosis of haemophilia in Cuba. Study of genetic variability and population epidemiology
Funding organisation: BST
File number: I.2016.023
Duration: 2016 to 2018

Principal investigator:
Francisco Vidal Pérez
Study of genetic and biological parameters influencing factor VIII half-life in severe haemophilia A subjects
Funding organisation: Shire
File number: I.2017.067
Duration: 2017 to 2018

Principal investigator:
Anna Bigas Salvans (IMIM), Núria Nogué Gálvez (BST)
Haematopoietic regeneration from pluripotent stem cells
Funding organisation: Government of Catalonia Ministry of Health
File number: STL002/16/00299
Duration: 2017 to 2019

Joint projects

Principal investigator: Joan Ramon Grífols Ronda
To evaluate the behaviour of MDmulticard cards in the typing of patients treated with the drug Daratumumab
Funding organisation: Grífols
File number: I.2017.012
Duration: 2017 to 2018

Principal investigator: Mercè Boada Rovira (Fundació ACE), Pilar Ortiz Murillo (BST)
Multicentre, randomised, controlled study to evaluate the safety and efficacy of short plasma exchange followed by long plasmapheresis with infusion of human albumin combined with intravenous immunoglobulin in patients with mild-moderate Alzheimer's disease
Funding organisation: Grífols
File number: IG1002
Duration: 2012 to 2017

Principal investigator: Joan Carles Galcerán (Hospital Vall d'Hebron), Rafael Parra Lopez (BST)
Phase III randomised, double-blind, multicentre, parallel groups trial, to evaluate the safety and efficacy of DCVAC / PCa versus placebo in men with metastatic castration-resistant prostate cancer eligible for first line chemotherapy
Funding organisation: Sotio
File number: 2012-002814-38
Duration: 2016 to 2017

Principal investigator: Susana Rives Solà (Hospital Sant Joan de Déu), Enric Garcia Rey (BST)
Pilot study of the infusion of autologous T lymphocytes genetically modified to express anti-CD19 in patients with CD19 + leukaemia or lymphoma resistant or refractory to treatment
Funding organisation: Carlos III Health Institute
File number: ICI14/00224
Duration: 2016 to 2017

Principal investigator: Cristina Diaz Heredia (Hospital Vall d'Hebron), Rafael Parra Lopez (BST)
Single-group study to evaluate the efficacy of UVADEX® (methoxsalen) sterile solution in conjunction with the CELLEX® photopheresis system of THERAKOS® in paediatric patients with acute steroid-refractory GVHD
Funding organisation: Therakos
File number: 2014-004806-14
Duration: 2016 to 2018

Principal investigator: Josep Gámez Carbonell (Hospital Vall d'Hebron), José Luís Caro Oleas (BST)
Analysis of genetic factors of susceptibility and phenotype modifiers in familial and sporadic forms of autoimmune myasthenia gravis using NGS techniques
Funding organisation: Carlos III Health Institute
File number: PI16/01673
Duration: 2017 to 2019

Principal investigator: Eva Martinez Cáceres (Hospital Germans Trias i Pujol), Joan Ramon Grífols Ronda (BST)
Induction of tolerance with dendritic cells treated with vitamin D3 and loaded with myelin peptides in patients with multiple sclerosis
Funding organisation: IGTP
File number: I.2017.022
Duration: 2017 to 2018

Principal investigator: Pilar Paniagua Iglesias (Hospital de Sant Pau), Alba Bosch Llobet (BST)
Evaluation of the degree of compliance and clinical impact of mass transfusion protocols
Funding organisation: Carlos III Health Institute
File number: PI16/01134
Duration: 2017 to 2019

Principal investigator: Gemma Mur Bonet (Hospital Vall d'Hebron), Rafael Parra López (BST)
A phase I trial of actively personalised peptide vaccinations plus immunomodulators in patients with newly diagnosed glioblastoma concurrent to first line temozolomide maintenance therapy
Funding organisation: Immatics Biotechnologies GmbH
File number: 2013-002801-71
Duration: 2015 to 2017

Principal investigator: Cristina Diaz Heredia (Hospital Vall d'Hebron), Rafael Parra López (BST)
Combined phase I / II dose-finding and comparative, open, randomised trial to evaluate the efficacy and safety of plerixafor with standard regimens for the mobilisation of haematopoietic stem cells to peripheral blood, and subsequent collection by apheresis, compared to only standard regimens for mobilisation in paediatric patients, from 2 to <18 years, with solid tumours that have the requirements for autologous transplantation
Funding organisation: Sanofi
File number: 2010-019340-40
Duration: 2014 to 2018

Publications

Borràs N, Batlle J, Pérez-Rodríguez A, López-Fernández MF, Rodríguez-Trillo Á, Lourés E, Cid AR, Bonanad S, Cabrera N, Moret A, **Parra R**, Mingot-Castellano ME, Balda I, Altisent C, Pérez-Montes R, Fisac RM, Iruín G, Herrero S, Soto I, de Rueda B, Jimenez-Yuste V, Alonso N, Vilariño D, Arija O, Campos R, Paloma MJ, Bermejo N, Berrueco R, Mateo J, Arribalzaga K, Marco P, Palomo Á, Sarmiento L, Iñigo B, Nieto MDM, Vidal R, Martínez MP, Aguinaco R, César JM, Ferreiro M, García-Frade J, Rodríguez-Huerta AM, Cuesta J, Rodríguez-González R, García-Candel F, Cornudella R, Aguilar C, **Vidal F**, **Corrales I**. Molecular and clinical profile of von Willebrand disease in Spain (PCM-EVW-ES): Comprehensive genetic analysis by next-generation sequencing of 480 patients. HAEMATOLOGICA 2017 Dec;102(12):2005-2014. QUARTILE 1, IMPACT FACTOR 7.702

Martorell L, Luce E, Vazquez JL, Richaud-Patin Y, Jimenez-Delgado S, **Corrales I**, **Borras N**, Casacuberta-Serra S, Weber A, **Parra R**, Altisent C, Follenzi A, Dubart-Kupperschmitt A, Raya A, **Vidal F**, Barquinero J. Advanced cell-based modeling of the royal disease: characterization of the mutated F9 mRNA. J THROMB HAEMOST 2017 Aug 21. QUARTILE 1. IMPACT FACTOR 5.097

Martínez C, Gayoso J, **Canals C**, Finel H, Peggs K, Dominietto A, Castagna L, Afanasyev B, Robinson S, Blaise D, Corradini P, Itälä-Remes M, Bermúdez A, Forcade E, Russo D, Potter M, McQuaker G, Yakoub-Agha I, Scheid C, Bloor A, Montoto S, Dreger P, Sureda A; Lymphoma Working Party of the European Group for Blood and Marrow Transplantation. Post-Transplantation Cyclophosphamide-Based Haploidentical Transplantation as Alternative to Matched Sibling or Unrelated Donor Transplantation for Hodgkin Lymphoma: A Registry Study of the Lymphoma Working Party of the European Society for Blood and Marrow Transplantation. J CLIN ONCOL 2017 Oct 20;35(30):3425-3432. QUARTILE 2, IMPACT FACTOR 3.212

Martin-Fernandez L, Gavidia-Bovadilla G, **Corrales I**, Brunel H, **Ramírez L**, López S, Souto JC, **Vidal F**, Soria JM. Next generation sequencing to dissect the genetic architecture of KNG1 and F11 loci using factor XI levels as an intermediate phenotype of thrombosis. PLOS ONE 2017 Apr 26;12(4):e0176301. QUARTILE 1, IMPACT FACTOR 3.057

Esteban J, de la Morena-Barrio ME, Salloum-Asfar S, Padilla J, Miñano A, Roldán V, Soria JM, **Vidal F**, Corral J, Vicente V. High incidence of FXI deficiency in a Spanish town caused by 11 different mutations and the first duplication of F11: Results from the Yecla study. HAEMOPHILIA 2017 Nov;23(6):e488-e496. QUARTILE 2, IMPACT FACTOR 2.673

Iorio A, Barbara AM, Makris M, Fischer K, Castaman G, Catarino C, Gilman E, Kavakli K, Lambert T, Lassila R, Lissitchkov T, Mauser-Bunschoten E, Mingot-Castellano ME, Ozdemir N, Pabinger I, **Parra R**, Pasi J, Peerlinck K, Rauch A, Roussel-Robert V, Serban M, Tagliaferri A, Windyga J, Zanon E. Natural history and clinical characteristics of inhibitors in previously treated haemophilia A patients: a case series. HAEMOPHILIA 2017 Mar;23(2):255-263. QUARTILE 2, IMPACT FACTOR 2.673

Khair K, Mazzucconi MG, **Parra R**, Santagostino E, Tsakiris DA, Hermans C, Oldenburg J, Spotts G, Steinitz-Trost K, Gringeri A. Pattern of bleeding in a large prospective cohort of haemophilia A patients: A three-year follow-up of the AHEAD (Advate in HaEmophilia A outcome Database) study. HAEMOPHILIA 2017 Oct 17. QUARTILE 2, IMPACT FACTOR 2.673

Daniels G, Finning K, Lozano M, Hyland CA, Liew YW, Powley T, Castilho L, Bonet Bub C, Kutner JM, Banch Clausen F, Christiansen M, Sulin K, Haimila K, Legler TJ, Lambert M, Ryan H, Ní Loingsigh S, Matteocci A, Pierelli L, Dovc Drnovsek T, Bricl I, **Nogués N**, **Muñiz-Diaz E**, Olsson ML, Wikman A, de Haas M, van der Schoot CE, Massey E, Westhoff CM. Vox Sanguinis International Forum on application of fetal blood grouping: summary. VOX SANG 2017 Dec 28. QUARTILE 3, IMPACT FACTOR 2.565

Martínez de Lagrán I, Marcos P, Batlle M, **Alonso E**, Plana A, Tomasa T. Leukapheresis in the management of drug rash with eosinophilia and systemic symptoms syndrome. MED INTENSIVA 2017 Apr;41(3):191-193. QUARTILE 4, IMPACT FACTOR 1.193

Castrillo A, Jimenez-Marco T, Arroyo JL, Jurado ML, Larrea L, **Maymo RM**, Monge J, Muñoz C, Pajares Á, Yáñez M; Spanish Society of Blood Transfusion and Cellular Therapy (SETS) blood component. Collection, storage, inspection and quality control of platelet concentrates obtained by apheresis: The situation in Spain. TRANSFUS APHER SCI 2017 Feb 22. pii: S1473-0502(17)30010-1. QUARTILE 4, IMPACT FACTOR 0.963

Enrich E, Mongay L, Caro-Oleas JL, Herrero-Mata MJ, Rudilla F. HLA-DQB1*02:102, a novel allele identified by next-generation sequencing in a Spanish individual. HLA 2017 Nov 14.

Return to index

2.2. Cell therapy programme

The aim is for cell therapy at the BST to become a platform for knowledge and cell production for the Catalan health system, permitting an effective response to the needs of patients and physicians treating them.

BST wants to facilitate the introduction of new advanced therapies in the health system, making its clean rooms available to investigating physicians who need to carry out proof-of-concept tests.

It also seeks to carry out product scaling and, among other things, take on the challenge of bioreactor production and running clinical trials in conjunction with the Agencia Española del Medicamento (Spanish Medicines Agency).

The Cell Therapy Service has two research lines of its own: one on cellular immunotherapy, which aims to create a bank of specific T-cells for the most prevalent viruses among transplant patients; and another that promotes the use of mesenchymal stem cells, obtained from Wharton's jelly, for a variety of applications, such as the treatment of graft-versus-host disease or the induction of osteogenesis.

Director
Sergi Querol Giner

Investigators
Carme Azqueta Molluna
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Raquel Cabrera Perez
Jose Luís Caro Oleas
Nerea Castillo Flores
Margarita Codinach Creus
Ruth Coll Bonet
Ana Del Mazo Bárbara
Emma Enrich Rande
Clara Frago Orduña
Susana Garcia Gomez
Marta Grau Vorster
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Sílvia Torrents Zapata
Elena Valdivia Garcia
Daniel Vivas Pradillo
Joaquim Vives Armengol

Return to index

Research projects

Projects with PI or CO-PI from the BST

Principal investigator:
Sergi Querol Giner
Prophylactic infusion of donor lymphocytes in cord blood transplant
Funding organisation: Marató de TV3 Foundation
File number: 20133230
Duration: 2014 to 2017

Principal investigator:
Sergi Querol Giner
Clinical efficacy of umbilical cord blood platelet gel in diabetic foot ulcers
Funding organisation: BST
File number: 2015-000510-22
Duration: 2015 to 2017

Principal investigator:
Luciano Rodriguez Gomez
Validation of manufacturing and quality control, according to good manufacturing practices of a tissue engineering drug for the treatment of myocardial injury after infarction
Funding organisation: BST
File number: I.2017.041
Duration: 2017 to 2018

Principal investigator:
Francesc Rudilla Salvador
Use of "third party" T-specific lymphocytes against viral antigens, from a registry of voluntary donors, for the treatment of CMV, EBV and ADV infections in allogeneic haematopoietic progenitor cell transplant recipients
Funding organisation: BST
File number: I.2017.042
Duration: 2017 to 2019

Principal investigator:
Joaquim Vives Armengol
Fibrin Sealant Grifols as scaffold in advanced therapies. 3D printing scaffolds for advanced trauma applications. In vitro study
Funding organisation: Grífols
File number: I.2016.035
Duration: 2017 to 2018

Principal investigator:
Joaquim Vives Armengol
Evaluation of Albix as a cryoprotector agent of MSC
Albix® as stabiliser agent for T lymphocytes
Funding organisation: Albumedix
File number: I.2017.023
Duration: 2017 to 2018

Principal investigator:
Ruth Coll Bonet
Safety of a double infusion of Wharton's jelly mesenchymal stem cells in spinal cord injury
Funding organisation: BST
File number: I.2017.052
Duration: 2017 to 2020

Principal investigator:
Sergi Querol Giner
Phase I / II, multicentre, randomised, open clinical trial of two treatment arms to evaluate the safety and efficacy of umbilical cord blood drop in the treatment of neurotrophic keratitis
Funding organisation: BST
File number: I.2016.010
Duration: 2017 to 2019

Principal investigator:
Joaquim Vives Armengol
Study of the anti-inflammatory and immunomodulatory properties of the advanced therapy drugs developed in the Cell Therapy Service
File number: I.2015.012
Funding organisation: BST
Duration: 2016 to 2018

Projects with PI or CO-PI from the BST

Principal investigator: José Luís Caro Oleas
Development and validation of a protocol for KIR genotyping using NGS technology and its application in different areas of the hospital care
Funding organisation: BST
File number: I.2017.035
Duration: 2017 to 2019

Principal investigator: Josep Maria Canals Coll (Universitat de Barcelona), Joan Garcia Lopez (BST)
ADVANCE(CAT) Accelerator for the development of advanced therapies in Catalonia
File number: COMRDI15-1-0013
Funding organisation: ACCIÓ
Duration: 2016 to 2019

Principal investigator: Antoni Bayés Genís (Hospital Germans Trias i Pujol), Joaquim Vives Armengol (BST)
Cardiopoiesis with biomatrix to regenerate post-infarct scar: From bench to bedside (first-in-man trial)
Funding organisation: Government of Catalonia Ministry of Health
File number: SLT002/16/00234
Duration: 2017 to 2019

Collaboration projects

Principal investigator: Isabel Sanchez Ortega (ICO), Sergi Querol Giner (BST)
Phase III, randomised, open-label, multicentre trial of ruxolitinib versus the best therapy available in patients with chronic corticosteroid-refractory graft-versus-host disease after allogeneic stem cell transplantation
Funding organisation: Novartis
File number: 2016-004432-38
Duration: 2017 to 2018

Principal investigator: Joan Bagó Granell (Hospital Vall d'Hebron), Joan Garcia Lopez (BST)
Prospective, randomised trial comparing spinal fusion in patients with degenerative pathology of the lumbar spine, using autologous mesenchymal cells immobilised in human bone particles, with respect to the autologous iliac crest graft from the patient
Funding organisation: Spanish Ministry of Health, Social Services and Equality
File number: EC10-209
Duration: 2012 to 2018

Principal investigator: Xavier Montalbán Gairin (Hospital Vall d'Hebron), Joan Garcia Lopez (BST)
Transplantation of autologous bone marrow-derived mesenchymal stem cells as a potential therapeutic strategy for the treatment of multiple sclerosis
Funding organisation: Spanish Ministry of Health, Social Services and Equality
File number: EC10-266
Duration: 2012 to 2018

Collaboration projects

Principal investigator: Marius Aguirre Canyadell (Hospital Vall d'Hebron), Joan Garcia Lopez (BST)
Autologous cell therapy with adult stem cells in osteonecrosis of the femoral head
Funding organisation: Spanish Ministry of Health, Social Services and Equality
File number: EC10-208
Duration: 2012 to 2018

Principal investigator: Joan Carles Monllau Garcia (ICATME), Joan Garcia López (BST)
Phase I / IIA pilot clinical safety and efficacy trial in the repair of meniscus injury by infiltration of autologous mesenchymal cells
Funding organisation: Spanish Ministry of Health, Social Services and Equality
File number: EC11-436
Duration: 2012 to 2017

Principal investigator: Fernando Granell Escobar (Hospital ASEPEYO), Joan Garcia Lopez (BST)
Phase IIa, single-centre, prospective, randomised, parallel, two treatment arm, open with blind evaluation and single-dose pilot clinical trial for the evaluation of adult autologous 'ex vivo' expanded mesenchymal stem cells conjugated on bone matrix of allogeneic origin in the treatment of non-hypertrophic non-union of long bones
Funding organisation: ASEPEYO and BST
File number: 2013-005025-23
Duration: 2016 to 2017

Principal investigator: Pere Barba Suñol (Hospital Vall d'Hebron), Sergi Querol Giner (BST)
Use of third party specific T lymphocytes against viral antigens, from a registry of voluntary donors, for the treatment of CMV, EBV and adenovirus infections in an allogeneic haematopoietic cell transplant recipient
Funding organisation: Carlos III Health Institute
File number: PI16/01433
Duration: 2017 to 2019

Principal investigator: Cristina Diaz Heredia (Hospital Vall d'Hebron), Sergi Querol Giner (BST)
FANCOSTEM: Phase I / II clinical trial to evaluate the safety and efficacy of mobilisation and collection of CD34 cells after treatment with plerixafor and filgastrim in patients with Fanconi anaemia for later use in gene therapy trials
Funding organisation: Spanish Ministry of Health, Social Services and Equality
File number: EC11-559
Duration: 2012 to 2018

Principal investigator: Jordi Sierra Gil (Hospital de Sant Pau), Sergi Querol Giner (BST)
TK008: Randomised phase III trial on haploidentical haematopoietic cell transplantation with or without a support strategy with donated HSV-TK lymphocytes in patients with acute high-risk leukaemia
Funding organisation: Molmed
File number: 2009-012973-37
Duration: 2017 to 2018

Principal investigator: Susana Rives Solà (Hospital Sant Joan de Déu), Sergi Querol Giner (BST)
Expanded treatment protocol for relapsed/refractory paediatric/young adult acute lymphoblastic leukaemia patients to be treated with CTL019
Funding organisation: Novartis
File number: 2016-001991-31
Duration: 2017 to 2018

Publications

Reyes B, Coca MI, Codinach M, López-Lucas MD, **Del Mazo-Barbara A, Caminal M, Oliver-Vila I**, Cabañas V, Lope-Piedrafita S, **García-López J**, Moraleda JM, Fontecha CG, **Vives J.** Assessment of biodistribution using mesenchymal stromal cells: Algorithm for study design and challenges in detection methodologies. CYTOTHERAPY 2017. QUARTILE 2, IMPACT FACTOR 3.625

Oliver-Vila I, Ramírez-Moncayo C, Grau-Vorster M, Marín-Gallén S, Caminal M, Vives J. Optimisation of a potency assay for the assessment of immunomodulative potential of clinical grade multipotent mesenchymal stromal cells. CYTOTECHNOLOGY 2017 Dec, QUARTILE 3, IMPACT FACTOR 1.864

Celay J, Lozano T, Concepcion AR, Beltrán E, **Rudilla F**, García-Barchino MJ, Robles EF, Rabal O, de Miguel I, Panizo C, Casares N, Oyarzabal J, Prieto J, Medina JF, Lasarte JJ, Martínez-Climent JÁ. Targeting the anion exchanger 2 with specific peptides as a new therapeutic approach in B lymphoid neoplasms. HAEMATOLOGICA 2017 Nov 30. QUARTILE 1, IMPACT FACTOR 7.702

Roura S, Gálvez-Montón C, **Mirabel C, Vives J**, Bayes-Genis A. Mesenchymal stem cells for cardiac repair: are the actors ready for the clinical scenario? STEM CELL RES THER 2017 Oct 27;8(1):238. QUARTILE 1. IMPACT FACTOR 4.504

Nikolajeva O, Rocha V, Danby R, Ruggeri A, Volt F, Baudoux E, **G Gomez S**, Kögler G, Larghero J, Lecchi L, Martinez MS, Navarrete C, Pouthiers F, **Querol S**, Kenzey C, Szydlo R, Gluckman E, Madrigal A. Umbilical Cord Blood Cytomegalovirus Serostatus Does Not Have an Impact on Outcomes of Umbilical Cord Blood Transplantation for Acute Leukaemia. BIOL BLOOD MARROW TRANSPLANT 2017 Oct;23(10):1729-1735. QUARTILE 1, IMPACT FACTOR 3.980

Chaverri D, **Vives J.** Towards the clinical use of circulating biomarkers predictive of bone union. BIOMARK MED 2017 Nov 28 QUARTILE 3, IMPACT FACTOR 2.179

Joshi N, **Rodríguez L**, Reverté-Vinaixa MM, **Navarro A.** Platelet-Rich Plasma Injections for Advanced Knee Osteoarthritis: A Prospective, Randomized, Double-Blinded Clinical Trial. THE ORTHOPAEDIC JOURNAL OF SPORTS MEDICINE 2017 February 13.

2.3. Tissue Bank

The Tissue Bank R&D programme focuses on translational research as well as the development, optimisation and innovation of procedures and techniques for improving the usefulness, quality and safety of human tissues and cells for therapeutic or bio-replacement purposes. Likewise, researchers also coordinate their projects, analyse their feasibility and, where possible, raise funds for development through competitive public calls for applications (Spanish and European Community), private entities, foundations and businesses related to the sector. Our research programme enhances self-sustainability and innovation on the basis of collaboration with the private sector in coordination with leading national and international clinical translational research groups. Translational research is a tool for continuous improvement and focusses on responding to therapeutic indications, through the use of effective and appropriate approaches and procedures. The strategy of our R&D programme promotes different research lines of research considered strategic for the organisation, taking into consideration other aspects such as the fact that our first priority is the patient. The fundamental pillars for all of this are our ethical and regulatory framework, quality and excellence and our commitment to sustainability.

Return to index

Director
Ricardo P Casaroli Marano

Investigators
Elba Agustí Robira
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Cristina Castells Sala
Oscar Fariñas Barbera
Xavier Genís Planella
Patricia Lopez Chicon
Eva Martínez Conesa
Nuria Nieto Nicolau
Nausica Otero Areitio
Marisa Pérez Rodriguez
Jordi Pous Miralles
Tatiana Riba Tietz
Andres Savio Lopez
Jaime Tabera Fernandez
Esteve Trias Adroher
Anna Vilarrodona Serrat

Return to index

Research projects

Projects with PI or CO-PI from the BST

Principal investigator: Esteve Trias Adroher
Euro-GTP-II: Good practices for demonstrating safety and quality through recipient follow-up
Funding organisation: European Commission
File number: 709567
Duration: 2016 to 2019

Principal investigator: Esteve Trias Adroher
Clinical research amniotic membrane extract. Study on the safety and efficacy of a new form of presentation of the amniotic membrane for topical use on the ocular surface.
Funding organisation: BST
File number: I.2015.024
Duration: 2015 to 2017

Principal investigator: Ricardo Casaroli Marano
Therapeutic potential of induced pluripotent progenitor cells and mesenchymal progenitor cells of the bone marrow stromal nestin positive for the regeneration of the ocular surface
Funding organisation: Carlos III Health Institute
File number: PI14/00196
Duration: 2015 to 2017

Principal investigator: Ricardo Casaroli Marano
Cell therapy in the ocular surface: role and biosubstitutive applications of human adult mesenchymal stem cells for corneal regeneration
Funding organisation: Marató de TV3 Foundation
File number: 120630
Duration: 2013 to 2017

Principal investigator: Ricardo Casaroli Marano
Ex vivo culture and expansion of human corneal endothelial cells in biocompatible biomimetic substrates: Functional characterisation and clinical applicability
Funding organisation: Ocular Microsurgery Institute and the BST
File number: I.2017.013
Duration: 2016 to 2019

Principal investigator: Ricardo Casaroli Marano
Analysis of the in vitro composition and functionality of the amniotic membrane extract and umbilical cord plasma as therapeutic agents for the repair and regeneration of the ocular surface
Funding organisation: BST
File number: I.2017.036
Duration: 2017 to 2018

Principal investigator: Oscar Fariñas Barbera
Preservation in fresh osteochondral allografts
Funding organisation: BST
File number: I.2017.010
Duration: 2017 to 2018

Principal investigator: Patricia Lopez Chicon
Optimisation of the conditions of the products destined to tissue transplantation preserved at room temperature
Funding organisation: BST
File number: I.2017.038
Duration: 2017 to 2018

Principal investigator: Marisa Perez Rodriguez
Study of the biological properties of a dermal matrix of human origin for its application in pelvic organs prolapse correction surgery
Funding organisation: BST
File number: I.2017.039
Duration: 2017 to 2020

Projects with PI or CO-PI from the BST

Principal investigator: Oscar Fariñas Barbera
DBM Development of demineralised bone matrix with human collagen
Funding organisation: BST
File number: I.2015.023
Duration: 2016 to 2018

Principal investigator: Marisa Perez Rodriguez
Development of a dermal matrix from cutaneous tissue of the bank. Subproject 3: Study of the biological properties of a dermal matrix of human origin for its application in breast reconstruction surgeries
Funding organisation: BST
File number: I.2017.014
Duration: 2016 to 2018

Principal investigator: Núria Nieto Nicolau
Obtaining a decellularized nerve matrix for the regeneration of peripheral nerves
Funding organisation: BST
File number: I.2017.055
Duration: 2017 to 2020

Principal investigator: Nausica Otero Areitio
Development of the technique for obtaining and improving ocular tissue quality for DMEK -DESCEMET'S MEMBRANE ENDOTELIAL KERATOPLASTY.
Funding organisation: BST
File number: I.2016.036
Duration: 2015 to 2017

Principal investigator: Eva María Martínez Conesa
Study of the preservation of lyophilised amniotic membrane
Funding organisation: BST
File number: I.2017.001
Duration: 2017

Principal investigator: Oscar Fariñas Barbera
Tendon allograft age criterion enlargement
Funding organisation: BST
File number: I.2017.009
Duration: 2017

Joint projects

Principal investigator: Josep Nart Molina (Universitat Internacional de Catalunya), Anna Villarrodona Serrat (BST)
Comparative histological and volumetric changes in guided bone regeneration (GBR) technique using two different graft materials (xenograft Bio-Oss® - Geistlich vs Cortical Particulate Allograft– BST) and the same resorbable membrane (pericardium-BST): a double-blind trial
Funding organisation: Universitat Internacional de Catalunya and BST
File number: PER-ECL-2013-06
Duration: 2014 to 2017

Principal investigator: Samir Sarikouch (Universitat de Hannover), José Luís Pomar Moya-Prats (H Clínic), Esteve Trias Adroher (BST)
ARISE: Aortic valve replacement using individualised regenerative allografts: bridging the therapeutic gap
Funding organisation: European Commission
File number: SEP-210137838
Duration: 2014 to 2018

Publications

Rajaram S, Valls-Pedret C, Cofán M, Sabaté J, Serra-Mir M, Pérez-Heras AM, Arechiga A, **Casaroli-Marano RP**, Alforja S, Sala-Vila A, Doménech M, Roth I, Freitas-Simoes TM, Calvo C, López-Illamola A, Haddad E, Bitok E, Kazzi N, Huey L, Fan J, Ros E. The Walnuts and Healthy Aging Study (WAHA): Protocol for a Nutritional Intervention Trial with Walnuts on Brain Aging. FRONT AGING NEUROSCI 2017 Jan 10;8:333. QUARTILE 1, IMPACT FACTOR 4.348

Silva LMP, Arantes TE, **Casaroli-Marano R**, Vaz T, Belfort R Jr, Muccioli C. Quality of Life and Psychological Aspects in Patients with Visual Impairment Secondary to Uveitis: A Clinical Study in a Tertiary Care Hospital in Brazil. OCUL IMMUNOL INFLAMM 2017 Oct 11:1-9. QUARTILE 2, IMPACT FACTOR 2.0481

Delas B, Julio G, Fernández-Vega Á, **Casaroli-Marano RP**, Nadal J. Reduction of foveal bulges and other anatomical changes in fellow eyes of patients with unilateral idiopathic macular hole without vitreomacular pathologic changes. GRAEFES ARCH CLIN EXP OPHTHALMOL 2017 Nov;255(11):2141-2146. QUARTILE 2, IMPACT FACTOR 1.991

Martínez García de la Torre RA, **Nieto-Nicolau N**, Morales-Pastor A, **Casaroli-Marano RP**. Determination of the Culture Time Point to Induce Corneal Epithelial Differentiation in Induced Pluripotent Stem Cells. TRANSPLANT PROC 2017 Dec;49(10):2292-2295. QUARTILE 4, IMPACT FACTOR 0.867

2.4. Biological safety

The Transfusion Safety Laboratory (LST) comprises the Healthcare Unit and the R&D&I Transmissible Agents Unit. The R&D&I activity of the LST can be classified in the following main lines:

A. Viral hepatitis (HBV, HCV and HEV) and co-infection with HIV.
B. Epidemiological research and development of new tools for the detection of emerging infectious agents (Chagas disease, HTLV-I/II, Chikungunya virus, malaria, XMRV).

The final end-point of these lines is to improve physiopathological and epidemiological knowledge and the detection of infectious agents relevant to the safety of blood, cells, tissues and breastmilk.

It should also be stressed that the activity undertaken to improve knowledge of the presence of pathogens from other countries among the BST Catalan reference population. The objectives of studies performed along these lines is to plan and establish strategies to guarantee the safety of blood products based on the correct selection of blood donors and the application of diagnostic tests. It must be borne in mind that the BST is the only centre that distributes blood products in Catalonia and is directly responsible for maintaining and promoting research along these lines.

Director
Sílvia Sauleda Oliveras

Investigators
Marta Bes Maijó
Natàlia Casamitjana Ponces
Mertixell Llorens Revull
Maria Piron
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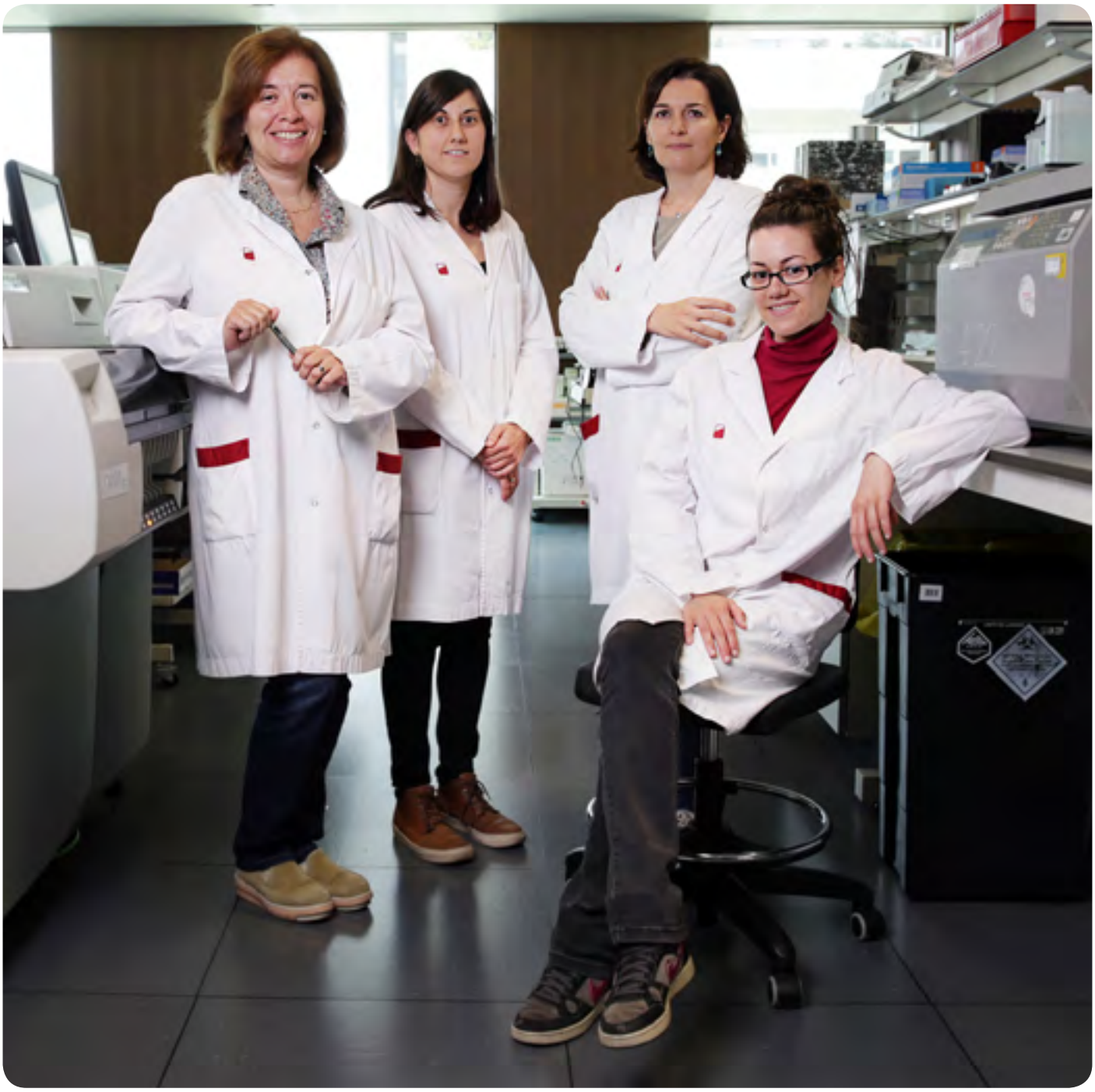
Angeles Rico Blázquez



Return to index

Research projects

Projects with pi OR CO-PI from the BST

Principal investigator: Maria Piron
Development of real time protocols for PCRs (ZIKA, Dengue, Chikungunya, HTLV-I, HTLV-II, etc.) as screening tools or supplementary analyses of emerging infectious pathogens and a field study of emerging pathogens in high-risk travellers and immigrant donors.
Funding organisation: BST
File number: I.2016.037
Duration: 2009 to 2017

Principal investigator: Maria Piron
Platform of epidemiological surveillance of arbovirosis in blood donors of Catalonia
Funding organisation: BST
File number: I.2017.040
Duration: 2017 to 2019

Principal investigator: Sílvia Sauleda Oliveras
Hepatitis E and transfusion safety: Validation of an in-house method of screening for HEV RNA in blood donations and a prevalence study in oncohaematological patients
Funding organisation: BST
File number: I.2015.009
Duration: 2016 to 2017

Principal investigator: Marta Bes Maijó
Epidemiological and pathophysiological evaluation of hepatitis E virus infection in blood donors
Funding organisation: BST
File number: I.2017.051
Duration: 2017 to 2020

Joint projects

Principal investigator: Rafael Esteban Mur (Hospital Vall d'Hebron), Marta Bes Maijó (BST)
Resistant mutations to the new VHC treatments, a key to optimising clinical and budget efficiency
Funding organisation: Carlos III Health Institute
File number: PI15/00829
Duration: 2016 to 2018

Principal investigator: Josep Quer Sivila (Hospital Vall d'Hebron), Sílvia Sauleda Oliveras (BST)
Development of diagnostic applications in VHC infection based on real-time single-molecule sequencing (SMRT-NGS)
Funding organisation: Carlos III Health Institute
File number: PI16/00337
Duration: 2017 to 2019

Principal investigator: Maria Buti Ferret (Hospital Vall d'Hebron), Marta Bes Maijó (BST)
Carotid atherosclerosis and chronic hepatitis B: role of persistent viral suppression and immune-mediated response. A prospective study
Funding organisation: Gilead
File number: I.2017.008
Duration: 2017 to 2018

Publications

Bes M, Piron M, Casamitjana N, Gregori J, Esteban JI, Ribera E, Quer J, **Puig L**, Sauleda S. Epidemiological trends of HIV-1 infection in blood donors from Catalonia, Spain (2005-2014). TRANSFUSION 2017, 57;2164–2173. QUARTILE 2, IMPACT FACTOR 3.042

Domanović D, Tedder R, Blümel J, Zaaijer H, Gallian P, Niederhauser C, **Sauleda Oliveras S**, O'Riordan J, Boland F, Harritshøj L, Nascimento MSJ, Ciccaglione AR, Politis C, Adlhoch C, Flan B, Oualikene-Gonin W, Rautmann G, Strengers P, Hewitt P.Hepatitis E and blood donation safety in selected European countries: a shift to screening? EURO SURVEILL 2017 Apr 20;22(16). pii: 30514. QUARTILE 1, IMPACT FACTOR 5.983

Riveiro-Barciela M, **Bes M**, Rodríguez-Frías F, Tabernero D, Ruiz A, Casillas R, Vidal J, Homs M, Nieto L, **Sauleda S**, Esteban R, Buti M. Serum Hepatitis B core-related antigen is more accurate than HBsAg to identify inactive carriers, regardless of HBV genotype. CLIN MICROBIOL INFECT 2017 Mar 10. QUARTILE 1, IMPACT FACTOR 4.575

de Mendoza C, Caballero E, Aguilera A, Requena S, de Lejarazu RO, **Pirón M**, González R, Jiménez A, Roc L, Treviño A, Benito R, Fernández-Alonso M, Aguinaga A, Rodríguez C, García-Costa J, Blanco L, Ramos JM, Calderón E, Eirós JM, **Sauleda S**, Barreiro P, Soriano V; Spanish HTLV Network. HTLV-1 infection and disease in Spain. AIDS 2017 May 1. QUARTILE 1, IMPACT FACTOR 4.407

Laperche S, **Sauleda S**, **Piron M**, Mühlbacher A, Schennach H, Schottstedt V, Queirós L, Uno N, Yanagihara K, Imdahl R, Hey A, Klinkicht M, Melchior W, Muench P, Watanabe T. Evaluation of the sensitivity and specificity performance of the Elecsys® HTLV-I/II assay in a multicenter study in Europe and Japan. J CLIN MICROBIOL 2017 Jul. QUARTILE 2, IMPACT FACTOR 3.631

Salvador F, Sulleiro E, **Piron M**, Sánchez-Montalvá A, **Sauleda S**, Molina-Morant D, Moure Z, Molina I. Strongyloides stercoralis infection increases the likelihood to detect Trypanosoma cruzi DNA in peripheral blood in Chagas disease patients. TROP MED INT HEALTH 2017 Nov;22(11):1436-1441 QUARTILE 2, IMPACT FACTOR 2.519

Salvador F, Sulleiro E, Piron M, Sánchez-Montalvá A, Sauleda S, Molina I. Seroprevalence of Strongyloides stercoralis infection among HTLV-I infected blood donors in Barcelona, Spain: a cross-sectional study. ACTA TROP 2017 Sep 19. QUARTILE 2, IMPACT FACTOR 2.218

2.5. Blood, cell and tissue donation programme of

This is a newly created programme in the PER 2017-20.

Directed by Aurora Masip Treig, its objective is the development of projects that improve, among other aspects, our knowledge of the behaviour of donors and their affective and decision mechanisms to better adapt donations to therapeutic needs, preserving the well-being and ethical and social values of donors.

Among other priorities, research will be directed to the study of ethical principles, promotion, donation behaviours and, above all, the protection, well-being and comfort of the donor.

Some of the projects carried out in the BST during 2017 were funded by the Spanish Ministry of Economy and Competitiveness and co-financed by the European Regional Development Fund (ERDF)

Return to index

3. The core facilities

The central platforms, or core facilities, are shared research resources that provide access for BST researchers and associated institutions to instruments, technologies and services, as well as expert consultations and collaborations.

The BST has organised these platforms, consolidating the laboratories of the healthcare divisions, using their technological capabilities and opening the general research resources up to general use.

3.1. Genome platform

The Banc de Sang i Teixits Genome Platform has arisen from the growing need to adapt molecular diagnostic protocols to the new massive, or next-generation, sequencing platforms (NGS) and the interest in applying this technology to different research and innovation projects. The extensive experience in the development of NGS applications is complemented by a strong support structure in equipment. Currently, the platform has two Illumina next-generation sequencers, MiSeq and NextSeq 500, which allow significant scalability to address protocols ranging from the identification of point variants in one or few genes to the sequencing of complete exomes. The platform functions include management and optimisation of the use of NGS technology, and offering technical support to researchers who want to apply high-performance genome analysis techniques to their work in designing and developing projects and in executing and analysing data. In this context, it is essential to support projects from their origin in order to determine the most appropriate strategy to achieve the objectives.

Director
Irene Corrales Insa

Investigators
Nina Borras Agustí
Natàlia Comes Fernandez
Irene Corrales Insa
Carlos Hobeich Naya
Francisco Vidal Perez

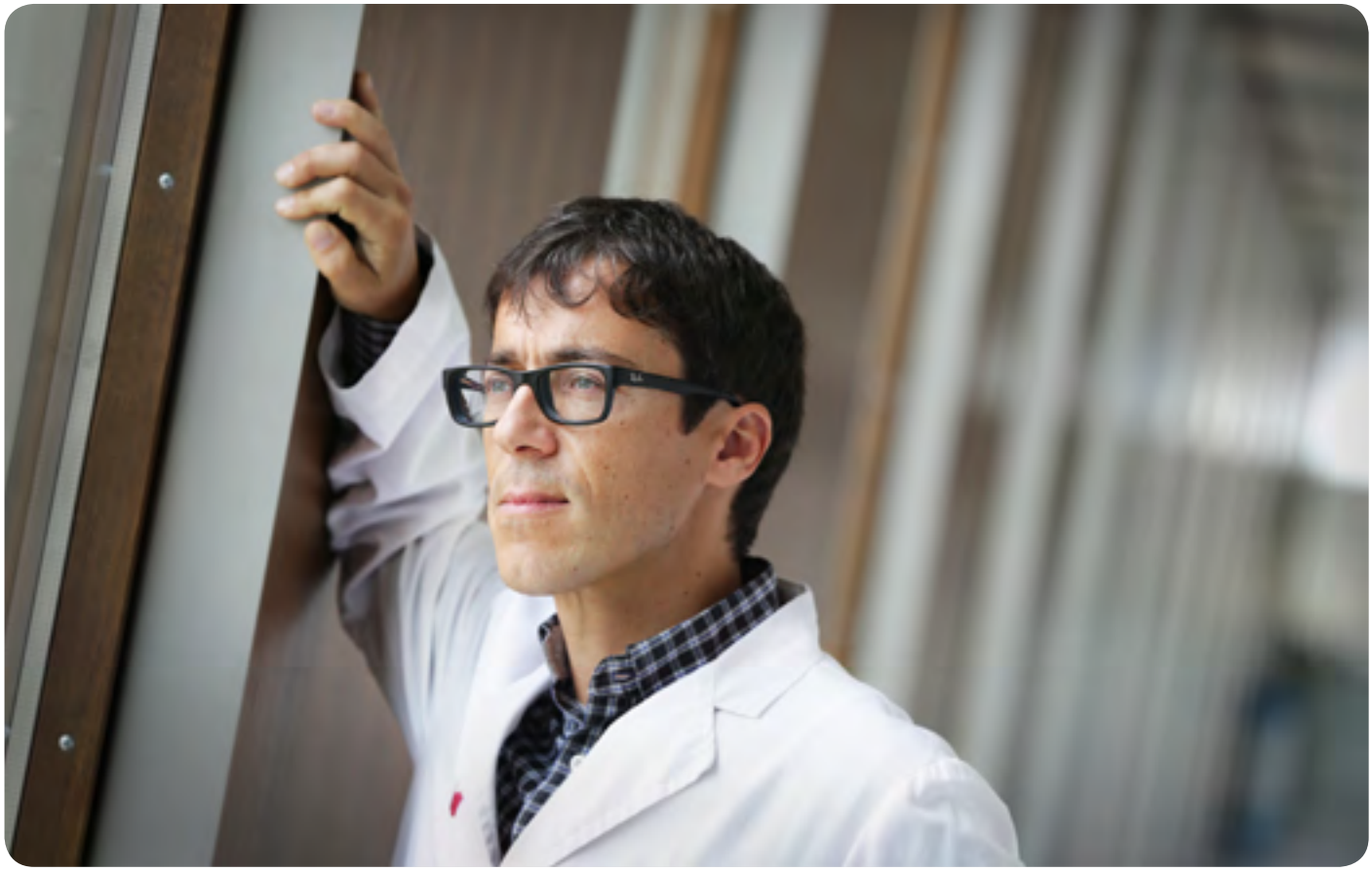
Return to index

3.2. Cell characterisation and culture platform

The functions of the platform include the maintenance and supply of the necessary equipment to researchers working in cell culture and characterisation (mainly cytometry, microscopy and metabolism analysis), as well as the basic training in their correct use.
In addition, the experience of the platform's professionals will be used to support and offer added value to the research and healthcare activities of BST researchers, including technical support in the design and execution of projects and in data management and analysis.
In short, the functions of the platform will include: user training; organisation of the uses of the devices and incident management; supervision, maintenance and calibration / verification of the devices; development and updating of standard operating procedures; and support for users in the design and execution of tests with cells and technological surveillance, among others.
The person in charge of the platform is Joaquín Vives Armengol.

Director
Joaquim Vives Armengol

Investigators
Clemetine Mirabel



Return to index

4. Education

The BST is involved in significant educational work. This is partly through the framework of the Chair (CMT3) and partly through training and educational partnerships with other institutions, as discussed below.

4.1. The Chair of Transfusional Medicine and Cellular and Tissue Therapy (CMT3)

The CMT3 was created in 2008 through collaboration between the BST, the UAB and the Dr. Robert Foundation (now replaced by the Health and Ageing Foundation).

The mission of the Chair is:

Promoting, contributing to and consolidating training, research and consulting in the area of transfusion medicine and cellular and tissue therapy

Acting as an international benchmark in training in transfusion medicine and cellular and tissue therapy (MT3).

The CMT3 has opted for fully online training.

Since its creation, CMT3 has led a European project included in the Erasmus Subprogramme "Education, Audiovisual & Culture Executive Agency" and has also participated in the EUROCORD-ED project, within the Leonardo da Vinci subprogramme.

4.2. The international master's degree

With regard to postgraduate training, after its development as a master's degree, the European Master's Degree in Transfusion Medicine and Advanced Cell Therapies (EMTACT) is coming to the end of its second course, since its accreditation as an official UAB master's known as degree the Master's degree in transfusion medicine and advanced cell therapies. Notably, more than 30 BST professionals participate in this programme and no more than 40% of the authors of the materials are international.
The following image shows the origin of the students of the two official editions of the master's degree.

Return to index

Master's degree in transfusion medicine and advanced cell therapies country of origin of student's (65% international)

2014-2016

Philippines 1	United Kingdom 1	Algeria 1	Panama 1
Canada 1	Germany 1	Russia 1	Venezuela 1
Chile 2	Saudi Arabia 2	USA 1	Nigeria 1
India 2	Ecuador 3	Paraguay 4	Spain 11

40 students

2016-2018

Arab Emirates 1	Peru 1	Haiti 1	Hondures 1
Colombia 1	EEUU 1	Mexico 1	Norway 1
	Spain 13	Canada 3	Ecuador 3

27 students

Recently, our experience in online education, specifically in relation to the master's degree, was publicised at the annual meeting of the EAIE (European Association of International Education).

Return to index

4.3. DoHeCa, Donor Health Care Project

The end of 2013 saw the start of the DoHeCa project funded by the European Commission (file: 538986-LLP-1-2013-1-ERASMUS-EQR) and led by the Dutch Blood Bank Sanquin. The aim of this 3-year project is to implement a European master's degree in donation, transfusion and transplantation of blood, cells, tissues and organs. Our Tissue Bank was one of 15 partners, along with prestigious universities, hospitals and blood and tissue banks from 8 countries of the European Union.

4.4. Various education projects

The BST participates in the training of the professionals doing thesis projects and doctoral theses. It also collaborates in training for different degrees (nursing, medicine, biology, education, economics and pharmaceutics) through agreements with the University of Barcelona, UAB, the Pompeu Fabra University, the UPC-Barcelona Tech University, UIC and the Rovira I Virgili University.

The BST collaborates in secondary education (laboratory, administration, ICT, audiovisual, protocol and marketing technicians) through agreements with different secondary schools and also organises work placement for different professionals through partnerships in most Latin-American countries (such as Argentina, Uruguay, Colombia and Mexico) and other European countries, such as the United Kingdom, Portugal, Sweden and Italy.

The BST has been accredited as a teaching unit (Official State Bulleting (BOE) Royal Decree 495/2010 of April 30) since October 2010, with responsibility for the training of haematology and haemotherapy residents in Catalonia.

Return to index

5. The BST Research and Education team

Apart from the people directly involved, a large number of professionals from the different BST departments work to ensure the smooth progress of research and education. Their contribution should also be acknowledged.

Specific mention should be made of people in the Research and Education team:

Return to index

BST Project manager
Elisabet Tahull

Head of Clinical Development
Ruth Coll

BST administrative assistant
Míriam Requena

Educational programme technician at the Health and Ageing Foundation
Marina Vilarmau

Coordinator of UAB educational projects
Remei Camps

Director of the Health and Aging Foundation
Antoni Salvà

Administrative assistant at the Health and Ageing Foundation
Helena Garrigos

Return to index

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