2018
RESEARCH AND TEACHING REPORT BST

Generalitat de Catalunya
Departament de Salut

Banc de Sang i Teixits

2018
RESEARCH AND TEACHING REPORT BST

Generalitat de Catalunya
Departament de Salut

Banc de Sang i Teixits

Index

2

Index

Enric Argelagués Vidal
CEO

Introduction by the CEO

We are proud to present the Report containing the research activity carried out in 2018 by the Banc de Sang i Teixits. This has been a year of intense activity, with over 60 active projects headed or co-headed by BST professionals in the fields of haemotherapy, cell therapy, biological safety and tissues, as defined in the current Strategic Innovation and Research Plan.

This includes applications for RETOS calls, in which we were awarded 4 projects, acting as the driving agency in conjunction with other leading centres to carry out research into immunohematology, tissues and cell therapy.

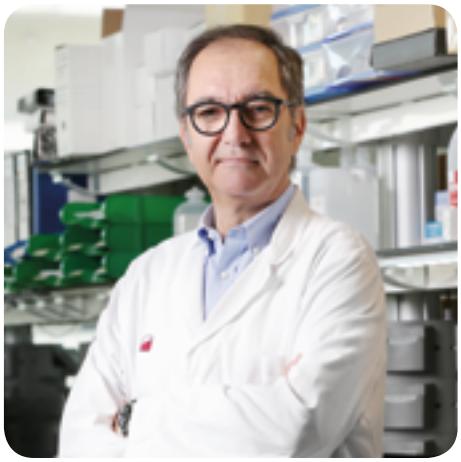
We also took part in new clinical trials, such as PERISCOPE, to improve myocardial regeneration after infarction, PRETIC, to assess transfusions in multiple trauma cases, and VIRO-T-CELL, which aims to use T-cells to treat opportunistic infections in bone marrow transplant patients.

We have published 30 articles in scientific journals, 44% of them of the first quartile. We have increased the quality and quantity of scientific production by 20% over the previous year. It has also been a year of completion for a number of key projects, such as the European Euro GTP-II, which has led to a guide to good practices to ensure safety and efficacy in the use of tissues and cells following community guidelines.

Finally, I'd like to stress our satisfaction with our internal research calls, in which 20 projects have obtained BST funding for research and innovation, in the second year of the strategic plan.

It is our great pleasure to share the results of this work, which will undoubtedly contribute substantially to improving the medical treatment received by hundreds of patients.

Enric Argelagués Vidal



Joan Garcia
Scientific Director

Introduction by the Scientific Director

This year we are proud to present the Banc de Sang i Teixits research report 2018.

This was the second year of the strategic plan that started in 2017, which, logically, should be a year of marked acceleration in our research activity.

As with everything, there have been ups and downs, but in the end I believe we have achieved our goal.

We have increased our human capital. Overall numbers of professionals working in research have increased by almost 15%, and the number of active projects is growing steadily and sustainably, as access to funding has also risen, now exceeding €450,000.

The BST has maintained its efforts in promoting research and innovation, providing a large volume of structural resources and maintaining its funding from extramural competitive bids.

We now have 20 projects funded through these bids and, as described below, we are strengthening the support platforms. In this context, reorganisation of the cell lab has optimised its support for research and in 2019 a further boost will be given to the genome lab, while for the first time the BST biobank will be integrated into the research structure.

Overall, scientific production has developed positively, with striking qualitative and quantitative improvements, including two new doctoral theses.

We continue to emphasise our desire to integrate our research with that of Catalan hospitals, where we are already involved with two accredited institutes, and our desire to work with centres outside Catalonia, through projects such as T-CELBAN, which is described below.

The report contains specific indicators regarding all this, but this year we wanted to add a new section: 'key achievements', which reflects what we consider to be the most important milestones for the year.

Finally, I'd like to stress the efforts we have made in transmitting our knowledge and training students and professionals in our field. We received student visits from 50 schools and training centres. We continue to train junior doctors of Catalonia: in 2018, a total of 18 future haematologists passed through our facilities. In conjunction with the European School of Transfusion Medicine, we ran a successful new refresher course and started the latest University Master's Degree Course on Cell and Tissue Transfusion Medicine.

None of this would have been possible without the commitment and efforts of everyone in the organization.

We would like, without exception, to thank all of them.

Joan Garcia

Highlights

This year we'd like to start our annual report by highlighting a number of key actions and achievements from 2018. We consider it important to bring attention to our most positive results, which have been achieved thanks to efforts of the whole organization.
A brief description is given here, but more detailed information is provided in the report.

- Through our successful competitive bid for Ministry of Science Innovation and Universities 'RETOS' subsidies, we obtained funding for 4 projects, for a total of 1.9 million euros over 4 years. Two things are particularly worth highlighting regarding this achievement. Firstly, the BST is acting as the public company driving all these projects, with the associated responsibility and implicit recognition of its experience this involves. Secondly, the projects involve collaboration with institutions such as the Germans Trias i Pujol Science Research Institute (IGTP) at the Heart Failure Research and Heart Regeneration Research Group (ICREC); the Center of Regenerative Medicine in Barcelona (CMRB); the Hospital de La Fe Haematology and Haemotherapy Department; the Valencian Community Transfusions Centre; and the Josep Carreras Leukaemia Research Institute.

- Once again, the BST has been a sponsor and co-sponsor of clinical trials. In 2018 the Spanish Agency of Medicines and Medical Devices (AEMPS) approved two such trials. The first, 'PERISCOPE', headed by the ICREC, in conjunction with the Institute for Bioengineering of Catalonia (IBEC), is in the field of myocardium regeneration. The second 'PRETIC', headed by the Girona BST, in conjunction with the Medical Emergency Services (SEM) and other departments at the Hospital Josep Trueta, is studying the action of tranexamic acid and fibrinogen in transfusions in multiple trauma patients.

- In 2018 the European project EURO GTP II came to a successful conclusion. This is an innovative project, carried out by a consortium headed by the Banc de Teixits, which has generated a guide to good practices to ensure safety and efficacy in the use of tissues and cells, in accordance with European directives. These good practices are based on an analysis that assesses risk factors associated with new products.

- With regard to scientific production, mention should be made of four high-impact-factor publications with BST investigators as the first authors:

  Borràs N et al. HAEMATOLOGICA 2017 Dec;102(12):2005-2014. Quartile 1. IF (Impact Factor) 9.090
  Borràs N et al. HAEMATOLOGICA 2018 Oct 25. Quartile 1. IF 9.090
  Closa L et al. FRONT IMMUNOL 2018 Dec 19;9:2991. Quartile 1. IF 5.511
  Enrich E. et al. BONE MARROW TRANSPLANT 2018 Jun;53(6):741-748. Quartile 1. IF 4.497
  These and other publications have helped increase the quality and quantity of BST scientific production by 20% compared to the previous year.

- Finally, we' d like to highlight the growing involvement of BST services in clinical research by hospital teams in Catalonia, especially in relation to clinical trials for medicinal products resulting from their research and others promoted by the pharmaceutical industry.

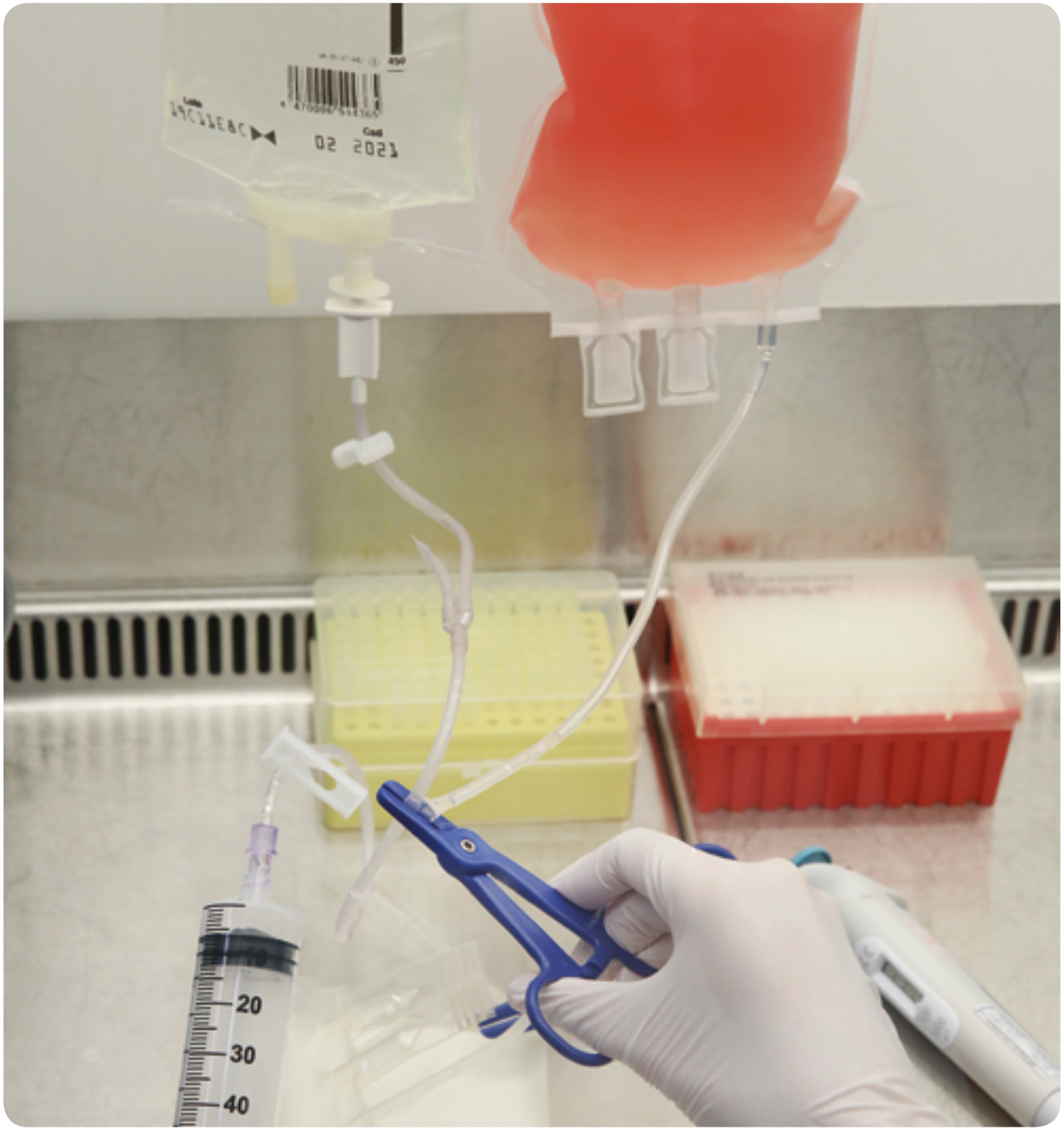
Laia Closa

Emma Enrich

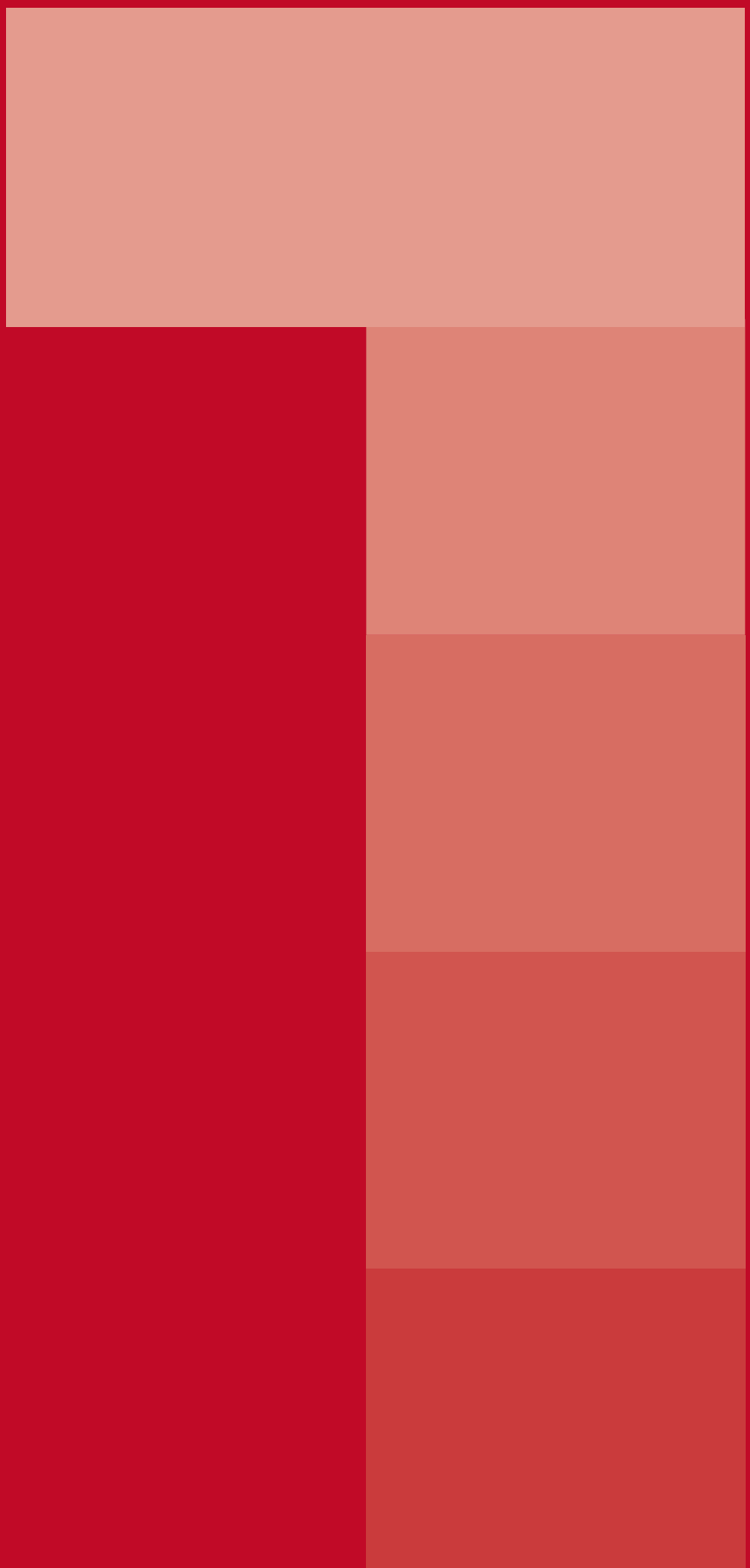
Nina Borràs

Antoni Bayés

Jordi Vila


02 2021
20
30
40

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

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

Return to index

1.1.2. Board of Directors Committees

Economic and audit
Ivan Planas Miret
Emili Sullà Pascual

R&D&i
Francesc Gòdia Casablancas
Roberto Gili Palacios
Miquel Rullant Bañeres

Tissue Strategic
Antoni Castells Garagou
Francesc Gòdia Casablancas

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 and Donation
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

Director of the Tissue Bank
Anna Vilarrodona Serrat

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, Londres (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 (Holanda)

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 650 professionals. The BST also has headquarters in the major hospitals of Catalonia. The BST corporate headquarters is run on criteria of maximum efficiency.

650 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 2018

	No.	FDA	No. of men	FDA men	No. of women	FDA women
Principal investigators	3	1.4	3	1.4	0	0
Senior investigators	24	14.4	7	3.3	17	11.1
Investigators	35	19.0	9	1.7	26	17.3
Technical staff	8	5.7	1	0.2	7	5.5
TOTAL	70	40.5	20	6.6	50	33.9

Evolution of the research staff since 2010

Return to index

1.5.2.
Economic data

BST research income for 2018

126,871€

Agreements with industry

1,972,869€

Own funds*

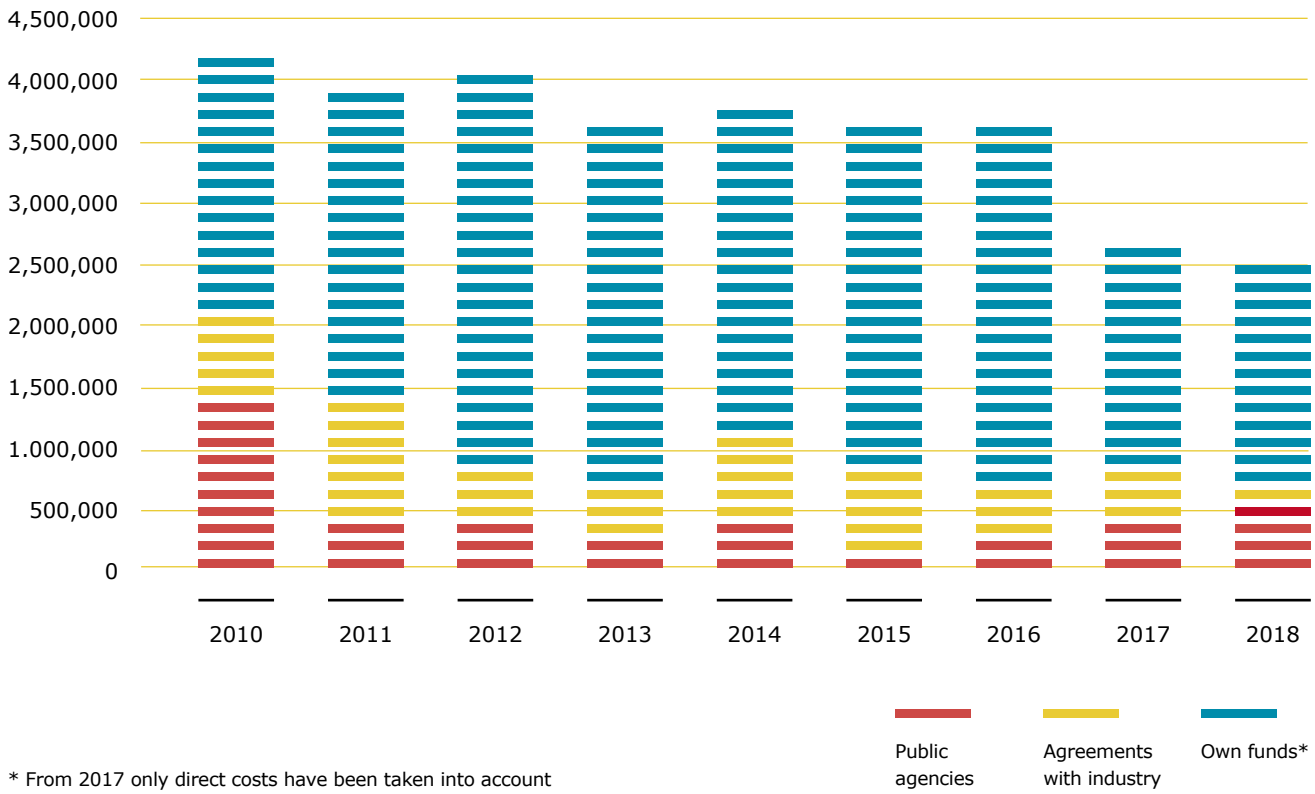
* Includes expenses for full-time or part-time staff and internal research funding

450,718€

Projects funded by public agencies

Total 2,550,458€

Research income



* From 2017 only direct costs have been taken into account

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

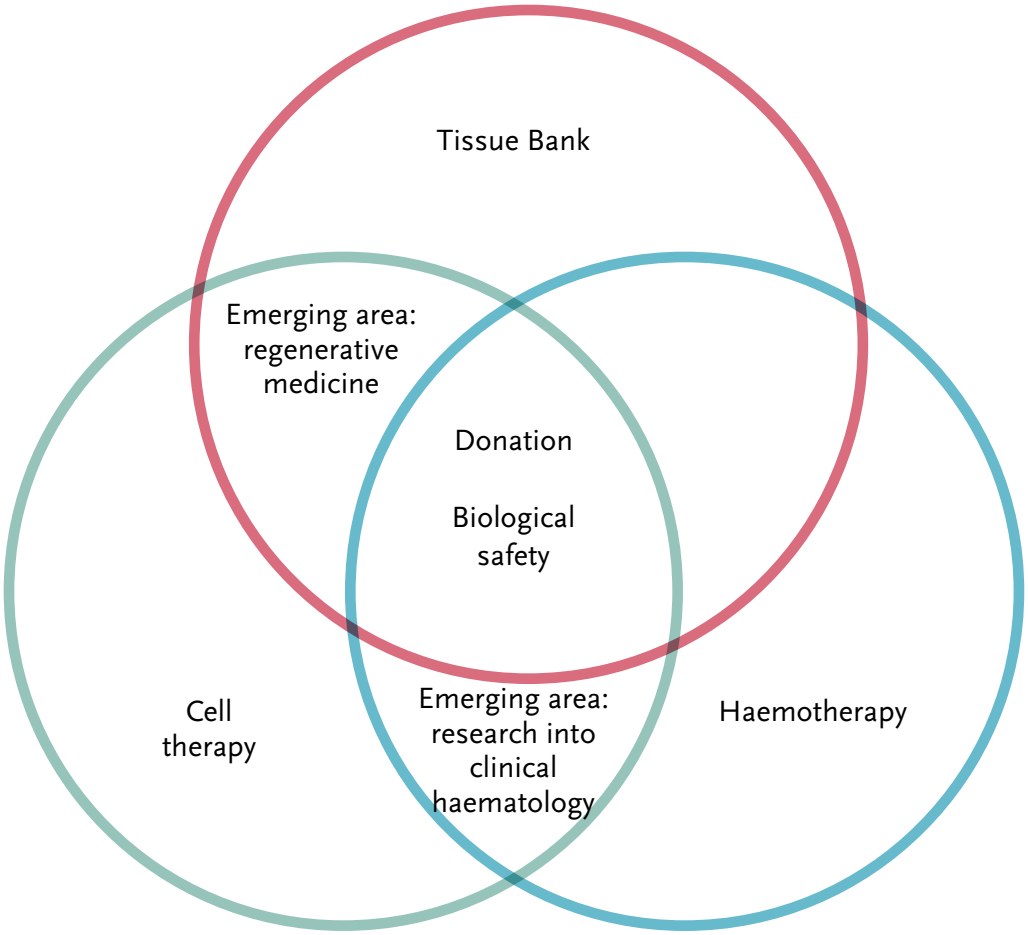
5 Research Programmes

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 2018

	PRINCIPAL INVESTIGATOR BST	COLLABORATION
PUBLIC AGENCIES		
ACCIÓ		1
European Commission	1	2
Government of Catalonia Ministry of Health	2	
Marató de TV3 Foundation		1
Spanish Multidisciplinary Group in Digestive Cancer		1
Erasme Hospital Brussels		1
Carlos III Health Institute	1	5
Spanish Ministry of Science, Innovation and Universities	4	
Spanish Ministry Health Social Services & Equality		1
Vall d'Hebron Institute of Oncology		2
AGREEMENTS WITH INDUSTRY		
Baxalta	1	
Celgene Corporation		3
Gilead Sciences, Inc		1
Grífols, S.A.	3	
Igenomix, S.L.		1
Kite Pharma, Inc.		1
Merck KGaA		1
Molmed S.p.A		1
Novartis Farmacéutica, S.A.		2
Shire P.L.C	1	
Therakos, Inc		1
OWN FUNDS		**29**
TOTAL		**67**

Return to index

1.5.5. Doctoral theses

These are the doctoral theses read or directed by BST investigators in 2018.

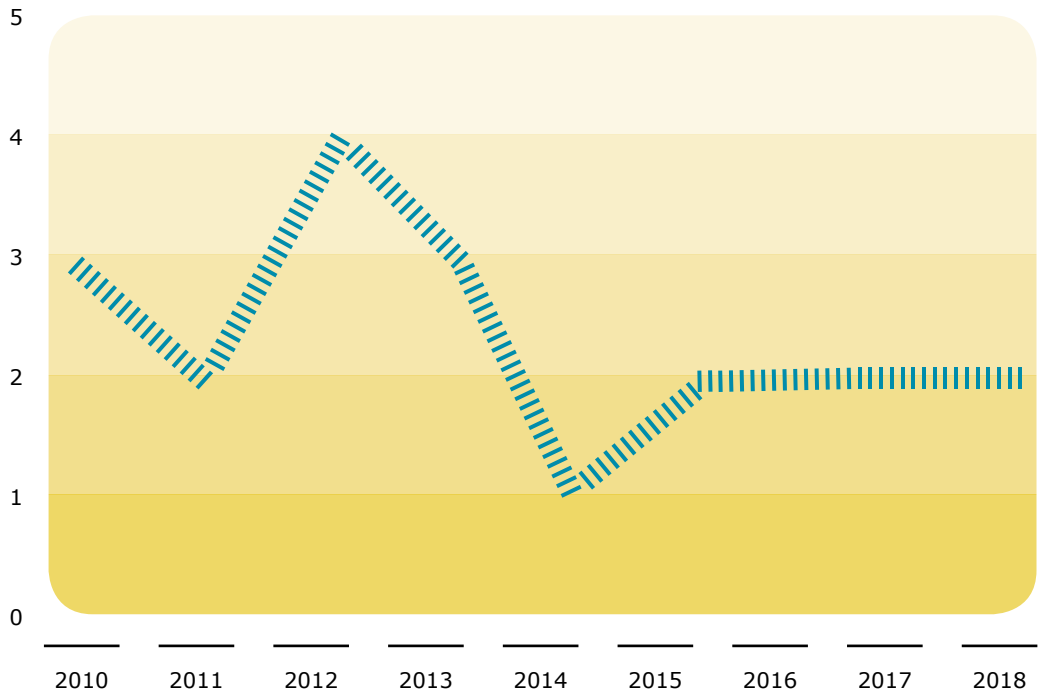
Theses

PHD STUDENT	THESIS TITLE	DIRECTORS	DEPARTMENT
Nina Borras Agustí	Application of the new technologies of NGS to the molecular diagnosis of the Spanish registry of von Willebrand disease. Genetic, epidemiological study and genotype-phenotype correlation	Irene Corrales Insa, Francisco Vidal Perez	UB, Department of Genetics, Microbiology and Statistics
Daniel Vivas Pradillo	Optimisation of a Tissue Engineering Product based on Mesenchymal Stromal Cells aiming to regenerate bony tissue	Irene Oliver Vila, Joaquim Vives Armengol	UB, Faculty of Pharmacy and Food Sciences

Nina Borras Agustí

Daniel Vivas Pradillo

Evolution of doctoral theses since 2010



Return to index

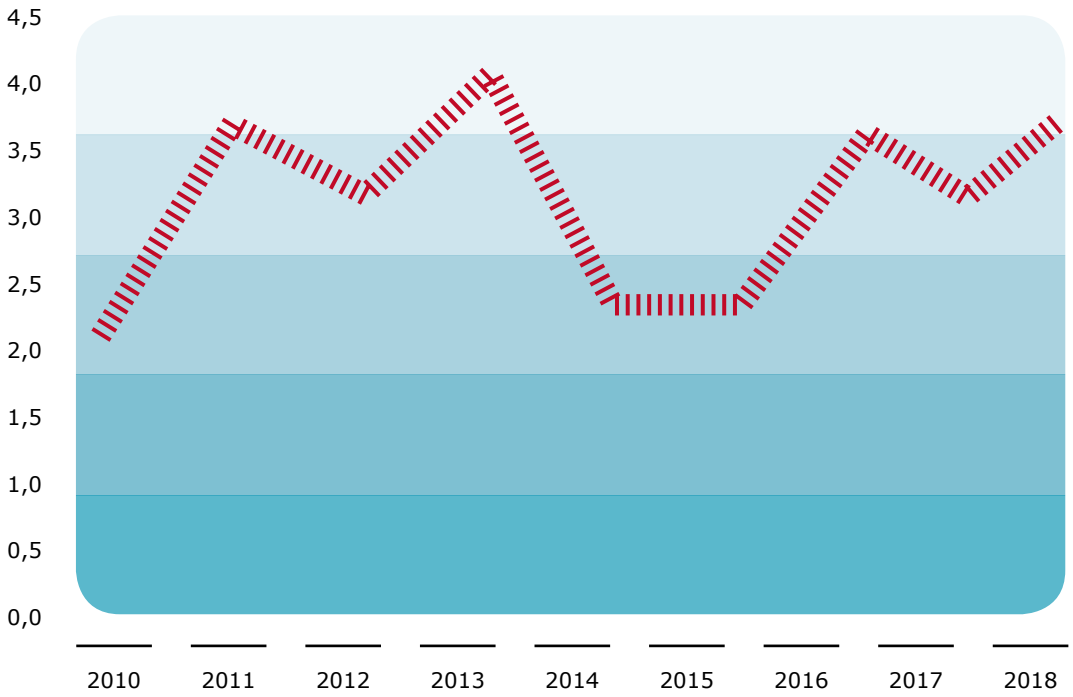
1.5.6. Publications

A total of 30 articles were published in scientific magazines by BST investigators in 2018 with an impact factor of 111. A 44% of the articles were published in magazines of the first quartile

The impact factor for 2018 was calculated using Journal Citation Reports (JCR) from 2017. The calculation included original articles, revisions and editorials.

Publications and Impact Factor

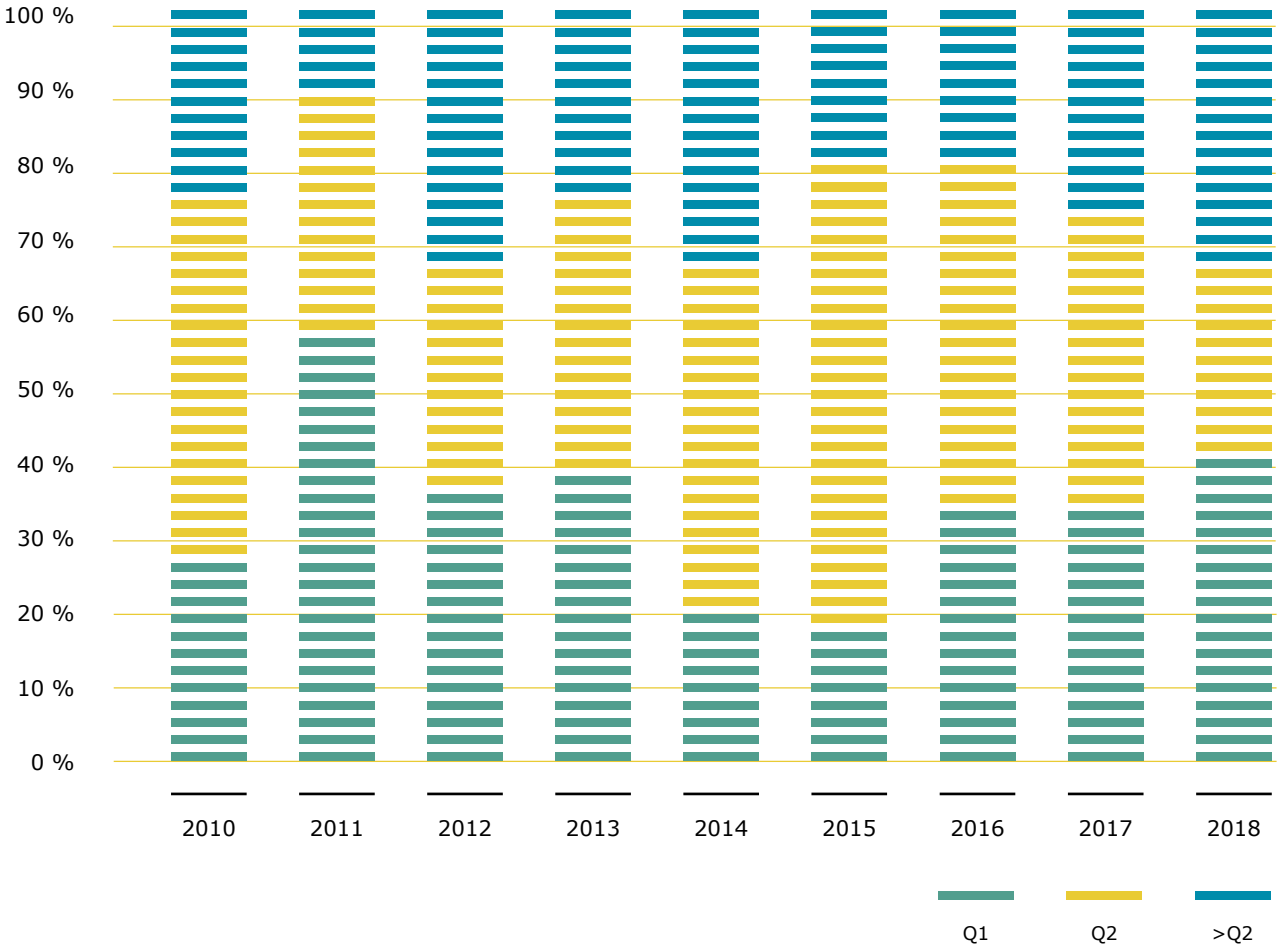
Average Impact Factor



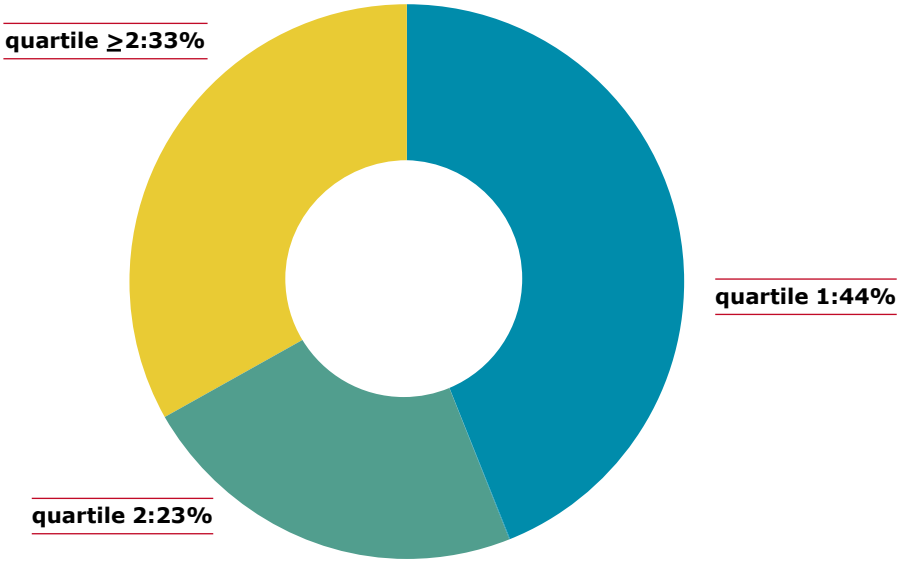
Evolution of the scientif production over the last 9 years

Return to index

Classification of publications



BST publications 2018



Return to index

1.5.7. Patents

Currently the BST has 5 patents. One of them is being processed in Europe and the other four are granted in Spain. Some of those granted in Spain are also granted in other countries such as the USA, Mexico, Belgium, Germany, France, the United Kingdom, Italy and the Netherlands.

1.6. Innovation

One of the objectives of this report is to highlight the innovative capacity of BST professionals through the creation of new products and services as a result of internal R & D.

In this context, in 2018, 9 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 2018 (innovation index = 2.3)	
DEPARTMENT	**DESCRIPTION**
TRANSFUSIONAL SAFETY LABORATORY	Diagnostic test of Hepatitis E (HEV NAT)
IMMUNOHAEMATOLOGY LABORATORY	Study of Vel Genotipe Study of York Genotipe Neutralization with recombinant proteins Compatibility tests in patients treated with monoclonal antibodies
CELL THERAPY SERVICE	KIR genotype study by NGS:
TISSUE BANK	Plasma rich in platelets from umbilical cord blood Eye drops from plasma of umbilical cord blood Cellular selection CD133

Return to index

1.7. The Banc de Sang i Teixits website

Web

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.

The 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

Return to index

BST research activity

BST research activity

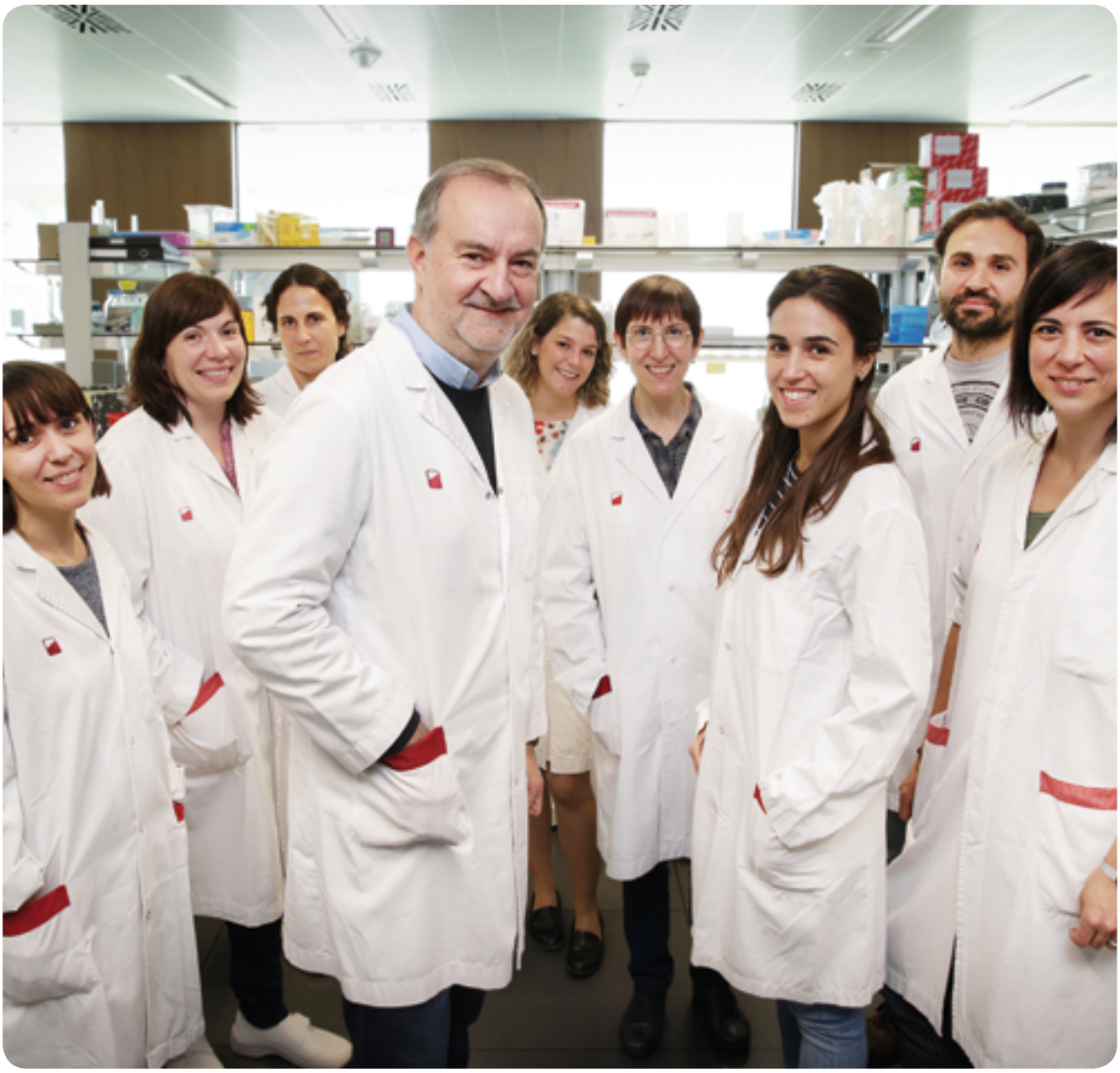
2.1. Haemotherapy programme

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.

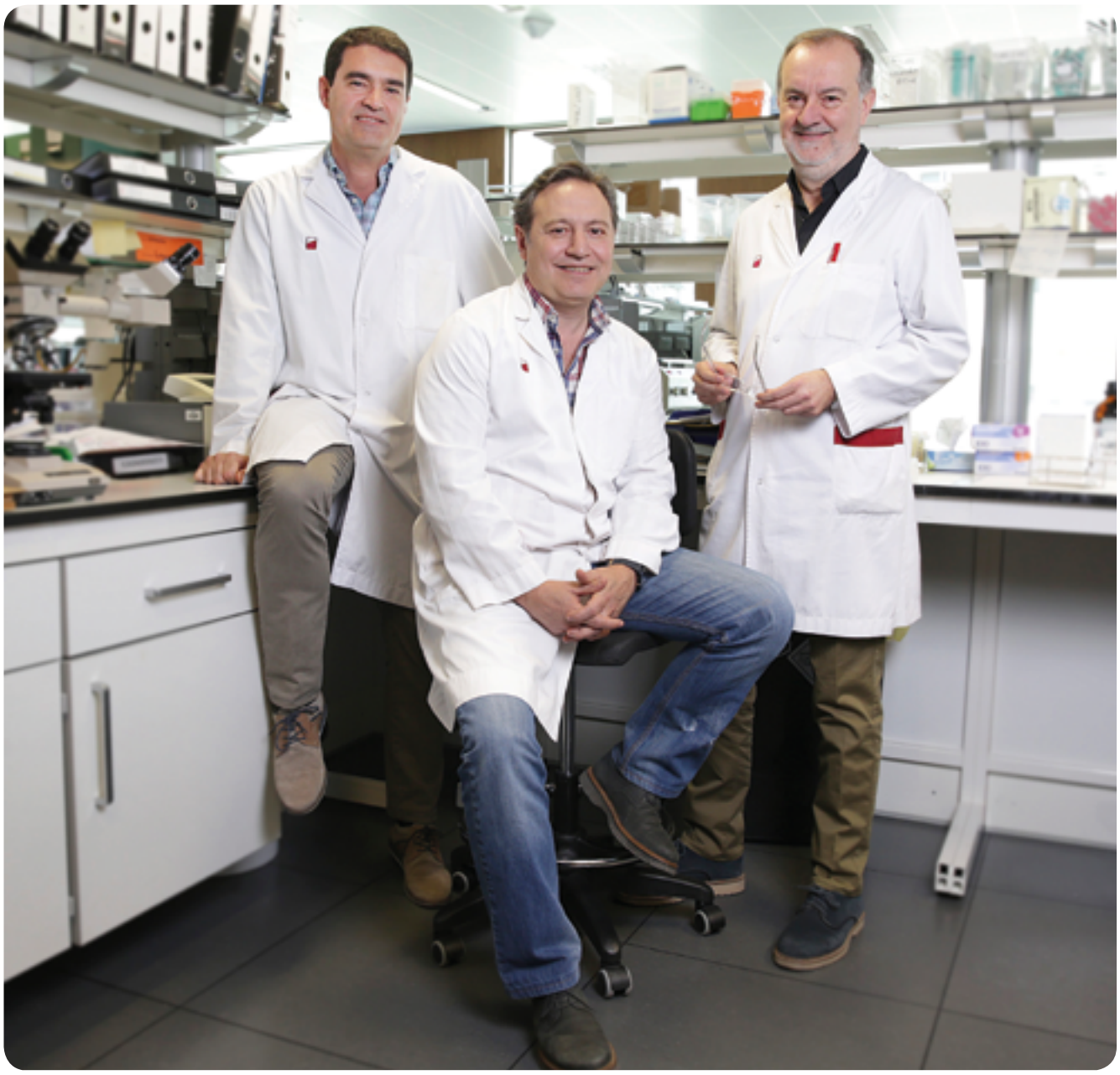


Return to index

Directors
Eduard Muñiz Diaz
Joan Ramon Grífols Ronda

Technical staff
Natàlia Comes Fernandez
Sergio Huertas Torres
Lorena Ramírez Orihuela

Investigators
Nina Borràs Agustí
Virginia Callao Molina
Jose Luís Caro Oleas
Laia Closa Gil
Irene Corrales Insa
Iris Garcia Martinez
Cecilia Gonzalez Santesteban
Laura Martín Fernández
Laia Miquel Serra
Núria Nogués Gálvez
Rafael Parra Lopez
Maricel Subirà Casellas
Francisco Vidal Pérez
Jordi Vila Bou



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 - 2019

Principal investigator: Núria Nogués Gálvez
ID-VITRORED: Obtaining in vitro red blood cells from IPSCs of donors with selected erythrocyte phenotypes and optimized by genomic editing, as an alternative to the current red cell panels
Funding organisation: Spanish Ministry of Science, Innovation and Universities
File number: RTC-2017-6367-1
Duration: 2018 - 2021

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 – 2019

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 – 2019

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 - 2019

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 - 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 - 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 - 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 - 2019

Principal investigator: Virginia Callao Molina i Maricel Subirà Casellas
Epidemiological study of blood transfusion in Catalonia – 2018
Funding organisation: BST
File number: I.2018.029
Duration: 2018 - 2019

Principal investigator: Rafael Parra López
Study of Coombs Direct samples in DG Gel
Funding organisation: Grífols, S.A.
File number: I.2018.035
Duration: 2018

Principal investigator: Jordi Vila Bou
Study on the effects of transfusion of RBC concentrates, tranexamic acid and fibrinogen concentrate for the treatment of hemorrhage secondary to severe trauma in the pre-hospital care phase
Funding organisation: BST
File number: 2018-001867-22
Duration: 2018 – 2020

Principal investigator: Anna Bigas Salvans (IMIM), Núria Nogués 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: Javier Martínez Picado (IRSICaixa), Joan Ramon Grífols Ronda (BST)
Low viral reservoir in treated patients (LoViReT) - Phase II: predictors of HIV reservoirs - extremely low in patients who have initiated antiretroviral therapy in the chronic phase of the infection
Funding organisation: Merck KGaA
File number: I.2017.016
Duration: 2018 - 2019

Principal investigator: Isabel Sánchez Ortega (ICO Duran i Reynals), Isabel González Medina (BST)
Phase III, randomized, open-label, multicentre study of ruxolitinib versus the best therapy available in patients with chronic graft-versus-host disease refractory to corticosteroids after allogeneic stem cell transplantation
Funding organisation: Novartis Farmacéutica, S.A.
File number: 2016-004432-38
Duration: 2018 - 2019

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 - 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 - 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: European Commission
File number: 779316
Duration: 2017 - 2019

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 – 2019

Principal investigator: Albert Oriol (Hospital Germans Trias i Pujol), Joan Ramon Grífols (BST)
Multicenter study, phase II to determine the efficacy and safety of BB2121 in patients with relapsed and refractory multiple myeloma
Funding organisation: Celgene Corporation
File number: 2017-002245-29
Duration: 2018

Principal investigator: Josep Tabernero Caturla (Hospital Vall d'Hebron), Isabel González Medina (BST)
Open phase II study with the anti-PD-L1 monoclonal antibody Atezolizumab in combination with Bevacizumab in patients with advanced colorectal cancer resistant to chemotherapy and molecular signature similar to microsatellite instability
Funding organisation: Vall d'Hebron Instituto de Oncología
File number: 2016-002001-19
Duration: 2018 - 2019

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, Jiménez-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. QUARTILEE 1. IMPACT FACTOR 9.090

Borràs N, Orriols G, Batlle J, Pérez-Rodríguez A, Fidalgo T, Martinho P, López-Fernández MF, Rodríguez-Trillo Á, Lourés E, **Parra R**, Altisent C, Cid AR, Bonanad S, Cabrera N, Moret A, Mingot-Castellano ME, Navarro N, Pérez-Montes R, Marcellini S, Moreto A, Herrero S, Soto I, Fernández-Mosteirín N, Jiménez-Yuste V, Alonso N, de Andrés-Jacob A, Fontanes E, Campos R, Paloma MJ, Bermejo N, Berrueco R, Mateo J, Arribalzaga K, Marco P, Palomo Á, Castro Quismondo N, Iñigo B, Nieto MDM, Vidal R, Martínez MP, Aguinaco R, Tenorio JM, Ferreiro M, García-Frade J, Rodríguez-Huerta AM, Cuesta J, Rodríguez-González R, García-Candel F, Dobón M, Aguilar C, **Vidal F**, **Corrales I.** Unraveling the effect of silent, intronic and missense mutations on VWF splicing: contribution of next generation sequencing in the study of mRNA. HAEMATOLOGICA 2018 Oct 25. QUARTILEE 1. IMPACT FACTOR 9.090

Mensa-Vilaró A, Bravo García-Morato M, de la Calle-Martin O, Franco-Jarava C, Martínez-Saavedra MT, González-Granado LI, González-Roca E, Fuster JL, Alsina L, Mutchinick OM, Balderrama-Rodríguez A, Ramos E, Modesto C, Mesa-Del-Castillo P, Ortego-Centeno N, Clemente D, Souto A, Palmou N, Remesal A, Leslie KS, Gómez de la Fuente E, Yadira Bravo Gallego L, Campistol JM, Dhouib NG, Bejaoui M, Dutra LA, Terreri MT, Mosquera C, González T, Cañellas J, García-Ruiz de Morales JM, Wouters CH, Bosque MT, Cham WT, Jiménez-Treviño S, de Inocencio J, Bloomfield M, Pérez de Diego R, Martínez-Pomar N, Rodríguez-Pena R, **González-Santesteban C**, Soler-Palacín P, Casals F, Yagüe J, Allende LM, Rodríguez-Gallego JC, Colobran R, Martínez-Martínez L, López-Granados E, Aróstegui JI. Unexpected relevant role of gene mosaicism in patients with primary immunodeficiency diseases. J ALLERGY CLIN IMMUNOL 2018 Sep 29. QUARTILEE 1, IMPACT FACTOR 13.258

Jiménez-Yuste V, Álvarez-Román MT, Martín-Salces M, De la Corte-Rodríguez H, Altisent C, **Parra R**, Núñez R, Pérez R, García-Candel F, Bonanad S, Querol F, Alonso N, Fernández-Mosteirín N, López-Ansoar E, García-Frade LJ, Bermejo N, Pérez-González N, Gutiérrez-Pimentel MJ, Martinoli C, Fernández-Arias I, Kim HK. Joint status in Spanish haemophilia B patients assessed using the Haemophilia Early Arthropathy Detection with Ultrasound (HEAD-US) score. HAEMOPHILIA 2018 Nov 16. QUARTILEE 2, IMPACT FACTOR 2.768

Mingot-Castellano ME, **Parra R**, Núñez R, Martorell M. Improvement in clinical outcomes and replacement factor VIII use in patients with haemophilia A after factor VIII pharmacokinetic-guided prophylaxis based on Bayesian models with myPKFiT®. HAEMOPHILIA 2018 Sep;24(5):e338-e343. QUARTILE 2, IMPACT FACTOR 2.768

Del Rey J, **Vidal F**, **Ramírez L**, **Borràs N**, **Corrales I**, **Garcia I**, Martinez-Pasarell O, Fernandez SF, Garcia-Cruz R, Pujol A, Plaja A, Salaverria I, Oliver-Bonet M, Benet J, Navarro J. Novel Double Factor PGT strategy analyzing blastocyst stage embryos in a single NGS procedure. PLOS ONE 2018 Oct 17;13(10):e0205692. QUARTILE 1. IMPACT FACTOR 2.766

Pérez-Rodríguez A, Batlle J, **Corrales I**, **Borràs N**, Rodríguez-Trillo Á, Lourés E, Cid AR, Bonanad S, Cabrera N, Moret A, **Parra R**, Mingot-Castellano ME, Navarro N, Altisent C, Pérez-Montes R, Marcellini S, Moreto A, Herrero S, Soto I, Fernández Mosteirín N, Jiménez-Yuste V, Alonso N, de Andrés Jacob A, Fontanes E, Campos R, Paloma MJ, Bermejo N, Berrueco R, Mateo J, Arribalzaga K, Marco P, Palomo Á, Castro Quismondo N, Iñigo B, Nieto MDM, Vidal R, Martínez MP, Aguinaco R, Tenorio M, Ferreiro M, García-Frade J, Rodríguez-Huerta AM, Cuesta J, Rodríguez-González R, García-Candel F, Dobón M, Aguilar C, Batlle F, **Vidal F**, López-Fernández MF. Role of multimeric analysis of von Willebrand factor (VWF) in von Willebrand disease (VWD) diagnosis: Lessons from the PCM-EVW-ES Spanish project. PLOS ONE 2018 Jun 20;13(6):e0197876. QUARTILE 1. IMPACT FACTOR 2.766

Planelles D, Balas A, **Caro JL**, Rodríguez-Cebriá M, Vicario JL. HLA-B*56:55:01:02, -C*03:374 and -DPB1*13:01:03 Characterized by next generation sequencing. HLA 2018 Sep 24. QUARTILE 3. IMPACT FACTOR 2.558

Storry JR, Clausen FB, Castilho L, Chen Q, Daniels G, Denomme G, Flegel WA, Gassner C, de Haas M, Hyland C, Yanli J, Keller M, Lomas-Francis C, **Nogues N**, Olsson ML, Peyrard T, van der Schoot E, Tani Y, Thornton N, Wagner F, Weinstock C, Wendel S, Westhoff C, Yahalom V. International Society of Blood Transfusion Working Party on Red Cell Immunogenetics and Blood Group Terminology: Report of the Dubai, Copenhagen and Toronto meetings. VOX SANG 2018 Nov 12. QUARTILE 3. IMPACT FACTOR 2.107

Misra MK, Augusto DG, Martin GM, Nemat-Gorgani N, Sauter J, Hofmann JA, Traherne JA, González-Quezada B, Gorodezky C, Bultitude WP, Marin W, Vierra-Green C, Anderson KM, Balas A, **Caro-Oleas JL**, Cisneros E, Colucci F, Dandekar R, Elfishawi SM, Fernández-Viña MA, Fouda M, González-Fernández R, Große A, **Herrero-Mata MJ**, Hollenbach SQ, Marsh SGE, Mentzer A, Middleton D, Moffett A, Moreno-Hidalgo MA, Mossallam GI, Nakimuli A, Oksenberg JR, Oppenheimer SJ, Parham P, Petzl-Erler ML, Planelles D, Sánchez-García F, Sánchez-Gordo F, Schmidt AH, Trowsdale J, Vargas LB, Vicario JL, Vilches C, Norman PJ, Hollenbach JA. Report from the Killer-cell Immunoglobulin-like Receptors (KIR) component of the 17th International HLA and Immunogenetics Workshop. HUM IMMUNOL 2018 Oct 12. QUARTILE 4, IMPACT FACTOR 1.994

Jordan M, Aguilera X, González JC, Castillón P, Salomó M, Hernández JA, Ruiz L, Mora JM, Camacho-Carrasco P, Prat-Fabregat S, **Bosch A**, Rodriguez-Arias A, Martínez-Zapata MJ; TRANEXFER Group. Prevention of postoperative bleeding in hip fractures treated with prosthetic replacement: efficacy and safety of fibrin sealant and tranexamic acid. A randomised controlled clinical trial (TRANEXFER study). ARCH ORTHOP TRAUMA SURG 2018 Dec 11. QUARTILE 2, IMPACT FACTOR 1.967

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
Belén Álvarez Palomo
Míriam Aylagas García
Raquel Cabrera Perez
Ester Cantó Puig
Margarita Codinach Creus
Ruth Coll Bonet
Emma Enrich Rande
Clara Frago Orduña
Marta Grau Vorster
María Inmaculada Lopez Montañés
Lluís Martorell Cedres
Clementine Mirabel
Elena Pasamar Garijó
Núria Ribó Petmaché
Luciano Rodríguez Gómez
Francesc Rudilla Salvador
Dinara Samarkanova
Sílvia Torrents Zapata
Daniel Vivas Pradillo
Joaquim Vives Armengol

Return to index

Research projects

Projects with PI or CO-PI from the BST

Principal investigator: Joan Garcia López
Pericardial matrix with mesenchymal stem cells for the treatment of patients with infarcted myocardial tissue
Funding organisation: Spanish Ministry of Science, Innovation and Universities
File number: SAF2017-84324-C2-2-R
Duration: 2018 - 2021

Principal investigator: Sergi Querol Giner
iPS-PANIA: Allogeneic IPSC from umbilical cord blood units homozygous for high prevalence haplotypes
Funding organisation: Spanish Ministry of Science, Innovation and Universities
File number: RTC-2017-6000-1
Duration: 2018 - 2021

Principal investigator: Sergi Querol Giner
T-CELBANC: Creation of a national bank of specific T lymphocytes for immediate use in opportunistic post-transplant infections
Funding organisation: Spanish Ministry of Science, Innovation and Universities
File number: 2017-6368-1
Duration: 2018 – 2021

Principal investigator: Francesc Rudilla Salvador
Generación de células T virus–específicas para prevenir y tratar las infecciones por herpes virus después de un trasplante alogénico de células madre hematopoyéticas
Funding organisation: BST
File number: I.2018.30
Duration: 2018 - 2021

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: Margarita Codinach Creus
Completion of the development of an Advanced Therapy Medicine for the prenatal repair of myelomeningocele in humans
Funding organisation BST
File number: I.2017.056
Duration: 2018 - 2019

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 2019

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

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

Projects with PI or CO-PI from the BST

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 - 2019

Collaboration projects

Principal investigator: Pere Barba Suñol (Hospital Vall d'Hebron), Rafael Parra Lopez (BST)
A Phase II, Single-Arm, Multi-Cohort, Multi-Center Trial to Determine the Efficacy and Safety of JCAR017 in Adult Subjects with Aggressive B-Cell Non-Hodgkin Lymphoma
Funding organisation: Celgene Corporation
File number: 2017-000106-38
Duration: 2018 - 2019

Principal investigator: Elena Elez Fernandez (VHIO), Rafael Parra Lopez (BST)
A single arm Phase I-II multicenter trial with avelumab plus autologous dendritic cell vaccine to determine safety and preliminary efficacy of the combination in pre-treated mismatch repair-proficient metastatic colorectal cancer patients
Funding organisation: Spanish Multidisciplinary Group in Digestive Cancer
File number: 2016-003838-24
Duration: 2018 - 2019

Principal investigator: Susana Rives Sola (Hospital Sant Joan de Déu), Enric Garcia Rey (BST)
A phase Ib/II, open-label, single arm, multicohort, multicenter trial to evaluate the safety and efficacy of JCAR017 in pediatric subjects with relapsed/ refractory B-cell acute lymphoblastic leukemia and B-cell non-Hodgkin lymphoma
Funding organisation: Celgene Corporation
File number: 2018-001246-34
Duration: 2018 - 2019

Principal investigator: Alena Gros Vidal (VHIO), Rafael Parra López (BST)
Personalized non-invasive cell therapies for the treatment of solid tumors
Funding organisation: Hospital Vall d'Hebron Instituto de Oncología
File number: I.2018.36
Duration: 2018 - 2021

Principal investigator: Anna Sureda Balari (ICO Duran i Reynals), Sergi Querol Giner (BST)
ZUMA 7: A Phase III, Randomized, Open-Label Study Evaluating the Efficacy of Axicabtagene Ciloleucel versus Standard of Care Therapy in Subjects with Relapsed/Refractory Diffuse Large B Cell Lymphoma
Funding organisation: Kite Pharma, Inc.
File number: 2017-002261-22
Duration: 2018 - 2019

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 – 2019

Collaboration projects

Principal investigator: David Valcárcel Ferreiras (Hospital Vall d'Hebron), Sergi Querol Giner (BST)
Regeneració endometrial en el Síndrome de Asherman i endometri atròfic mitjançant trasplantament autòleg de cèl·lules mare de la medul·la òssia
Funding organisation: Igenomix, S.L.
File number: I.2017.007
Duration: 2018 - 2019

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 - 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 - 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 2019

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 – 2019

Principal investigator: Ferran Pellisé Urquiza (Hospital Vall d'Hebron), Joaquim Vives Armengol
Combinatorial treatment of neural precursor cells and a new Fasudil nanoconjugate for clinical application in acute spinal cord injury
Funding organisation: Marató de TV3 Foundation
File number: 384/C/2017
Duration: 2018 - 2020

Principal investigator: Alena Gros Vidal (Hospital Vall d'Hebron), Sergi Querol Giner (BST)
Cell therapy with TILs for patients with solid tumors: preclinical expansion, validation and sending of IMPD / clinical trial to AEMPS
Funding organisation: BST
File number: I.2018.028
Duration: 2018 - 2021

Publications

Enrich E, Vidal F, Sánchez-Gordo F, Gómez-Zumaquero JM, Balas A, **Rudilla F**, Barea L, Castro A, Larrea L, Perez-Vaquero MA, Prat I, **Querol S**, Garrido G, Matesanz R, Carreras E, Duarte RF. Analysis of the Spanish CCR5-Δ32 inventory of cord blood units: lower cell counts in homozygous donors. BONE MARROW TRANSPLANT 2018 Feb 6. QUARTILE 1. IMPACT FACTOR 4.497

Mirabel C, Puente-Massaguer E, **del Mazo-Barbara A**, **Reyes B**, Morton P, Gòdia F, Vives J. Stability enhancement of clinical grade multipotent mesenchymal stromal cell-based products. JOURNAL OF TRANSLATIONAL MEDICINE 2018 Oct 24;16(1):291. QUARTILE 1, IMPACT FACTOR 4.197

Grau-Vorster M, **Rodríguez L**, T**orrents-Zapata S**, **Vivas D**, **Codinach M**, **Blanco M**, **Oliver-Vila I**, **García-López J**, **Vives J.** Levels of IL-17F and IL-33 correlate with HLA-DR activation in clinical-grade human bone marrow-derived multipotent mesenchymal stromal cell expansion cultures. CYTOTHERAPY 2018 Nov 15. QUARTILE 1. IMPACT FACTOR 3.993

Enrich E, **Campos E**, **Caro-Oleas JL**, **Herrero-Mata MJ**, **Rudilla F**. Identification of the novel HLA-B*57:91 allele, by next-generation sequencing in a Spanish individual. HLA 2018 Jan;91(1):69-70. QUARTILE 3. IMPACT FACTOR 2.558

E**nrich 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 2018 Feb;91(2):140-141. QUARTILE 3. IMPACT FACTOR 2.558

Vivas D, **Caminal M**, **Oliver-Vila I**, **Vives J.** Derivation of Multipotent Mesenchymal Stromal Cells from Ovine Bone Marrow. CURR PROTOC STEM CELL BIOL 2018 Feb 28;44:2B.9.1-2B.9.22. QUARTILE 4. IMPACT FACTOR 0

Ortí G, García-Cadenas I, López L, Pérez A, Jimenez MJ, Sánchez-Ortega I, Alonso L, Sisinni L, Fox L, Villacampa G, Badell I, de Heredia CD, Parody R, Ferrà C, Solano C, Caballero D, Martino R, **Querol S**, Valcárcel D. Donor lymphocyte infusions for B-cell malignancies relapse after T-cell replete allogeneic hematopoietic cell transplantation. BONE MARROW TRANSPLANTATION 2018. Dec 13. QUARTILE 1. IMPACT FACTOR 4.497

Sisinni L, Gasior M, de Paz R, **Querol S**, Bueno D, Fernández L, Marsal J, Sastre A, Gimeno R, Alonso L, Badell I, López-Granados E, Torres J, **Medina L**, Torrent M, Diaz de Heredia C, Escudero A, Pérez-Martínez A. Unexpected High Incidence of Human Herpesvirus-6 Encephalitis after Naive T Cell-Depleted Graft of Haploidentical Stem Cell Transplantation in Pediatric Patients. BIOL BLOOD MARROW TRANSPLANT 2018 Jul 19. QUARTILE 1. IMPACT FACTOR 4.484

Franco-Jarava C, Wang H, Martin-Nalda A, Alvarez SD, García-Prat M, Bodet D, García-Patos V, Plaja A, **Rudilla F**, Rodriguez-Sureda V, García-Latorre L, Aksentijevich I, Colobran R, Soler-Palacín P. TNFAIP3 haploinsufficiency is the cause of autoinflammatory manifestations in a patient with a deletion of 13Mb on chromosome 6. CLIN IMMUNOL 2018 Mar 20;191:44-51. QUARTILE 2. IMPACT FACTOR 3,557

Lin X, **Torrabadella M**, Amat L, **Gómez S**, **Azqueta C**, **Sánchez M**, Cuadras D, Martínez Lorenzo MJ, Brull JM, Gayà A, Cemborain A, Pérez Garcia C, Arroyo J, **Querol S**, Gómez Roig MD. Estimated fetal weight percentile as a tool to predict collection of cord blood units with higher cellular content: implications for prenatal selection of cord blood donors. TRANSFUSION 2018 May 6. QUARTILE 2, IMPACT FACTOR 3.423

Ortí G, Sanz J, García-Cadenas I, Sánchez-Ortega I, Alonso L, Jiménez MJ, Sisinni L, **Azqueta C**, Salamero O, Badell I, Ferra C, de Heredia CD, Parody R, Sanz MA, Sierra J, Piñana JL, **Querol S**, Valcárcel D. Analysis of relapse after transplantation in acute leukemia: A comparative on second allogeneic hematopoietic cell transplantation and donor lymphocyte infusions. EXP HEMATOL 2018 Mar 8. QUARTILE 3. IMPACT FACTOR 2.436

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.

Return to index

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.

Director
Ricardo P Casaroli Marano

Investigators
Elba Agustí Robira
Caterina Aloy Reverte
Patricia Ayza Latorre
Rita Baptista Piteira
Cristina Castells Sala
Oscar Fariñas Barbera
Xavier Genís Planella
Patricia Lopez Chicon
Laura López Puerto
Nuria Nieto Nicolau
Nausica Otero Areitio
Marisa Pérez Rodriguez
Tatiana Riba Tietz
José Ignacio Rodríguez Martínez
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 - 2019

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 - 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 - 2018

Principal investigator:
Oscar Fariñas Barbera
Preservation in fresh osteochondral allografts
Funding organisation: BST
File number: I.2017.010
Duration: 2017 - 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 - 2019

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 - 2020

Principal investigator:
Oscar Fariñas Barbera
DBM Development of demineralised bone matrix with human collagen
Funding organisation: BST
File number: I.2015.023
Duration: 2016 - 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 - 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 - 2020

Projects with PI or CO-PI from the BST

Principal investigator: Caterina Aloy
Isolation and expansion of the keratinocytes of the epidermis
Funding organisation: BST
File number: I.2017.057
Duration: 2018 - 2019

Principal investigator: Cristina Castells Sala
Development of a method of decellularization of cardiac valves to be used in valve replacement surgeries
Funding organisation: BST
File number: I.2018.027
Duration: 2018 - 2021

Joint projects

Principal investigator: Samir Sarikouch (Universitat de Hannover), José Luís Pomar Moya-Prats (Hospital 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 - 2018

Publications

Fernandez-Robredo P, Recalde S, Hernandez M, Zarranz-Ventura J, Molins B, **Casaroli-Marano RP**, Adan A, Saenz-de-Viteri M, García-Layana A. Novel Association of High C-Reactive Protein Levels and A69S at Risk Alleles in Wet Age-Related Macular Degeneration Women. FRONT IMMUNOL 2018 Aug 14;9:1862. QUARTILE 1. IMPACT FACTOR 5.511

Freitas-Simoes TM, Cofán M, Blasco MA, Soberón N, Foronda M, Corella D, Asensio EM, Serra-Mir M, Roth I, Calvo C, Valls-Pedret C, **Casaroli-Marano RP**, Doménech M, Rajaram S, Sabaté J, Ros E, Sala-Vila A. The red blood cell proportion of arachidonic acid relates to shorter leukocyte telomeres in Mediterranean elders: A secondary analysis of a randomized controlled trial. CLIN NUTR 2018 Feb 17. pii: S0261-5614(18)30074-8. QUARTILE 1. IMPACT FACTOR 5.496

Castella M, Boronat A, Martín-Ibáñez R, Rodríguez V, Suñé G, Caballero M, Marzal B, Pérez-Amill L, Martín-Antonio B, Castaño J, Bueno C, Balagué O, González-Navarro EA, Serra-Pages C, Engel P, Vilella R, Benitez-Ribas D, Ortiz-Maldonado V, Cid J, **Tabera J**, Canals JM, Lozano M, Baumann T, **Vilarrodona A**, **Trias E**, Campo E, Menendez P, Urbano-Ispizua Á, Yagüe J, Pérez-Galán P, Rives S, Delgado J, Juan M. Development of a Novel Anti-CD19 Chimeric Antigen Receptor: A Paradigm for an Affordable CAR T Cell Production at Academic Institutions. MOL THER METHODS CLIN DEV 2018 Dec 6;12:134-144. QUARTILE 2. IMPACT FACTOR 3.681

de Castro-Miró M, Tonda R, Marfany G, **Casaroli-Marano RP**, Gonzàlez-Duarte R. Novel mutation in the choroideremia gene and multi-Mendelian phenotypes in Spanish families. BR J OPHTHALMOL 2018 Jan 24. QUARTILE 1. IMPACT FACTOR 3.384

Gelber PE, Erquicia JI, Ramírez-Bermejo E, **Fariñas O**, Monllau JC. Fresh Osteochondral and Meniscus Allografting for Post-traumatic Tibial Plateau Defects. ARTHROSC TECH 2018 May 28;7(6):e661-e667. QUARTIL 4. FACTOR D'IMPACTE 0

Gelber PE, Perelli S, Ibañez M, Ramírez-Bermejo E, **Fariñas O**, Monllau JC, Sanchis-Alfonso V. Fresh Osteochondral Patellar Allograft Resurfacing. ARTHROSC TECH 2018 May 14;7(6):e617-e622. QUARTIL 4. FACTOR D'IMPACTE 0

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).

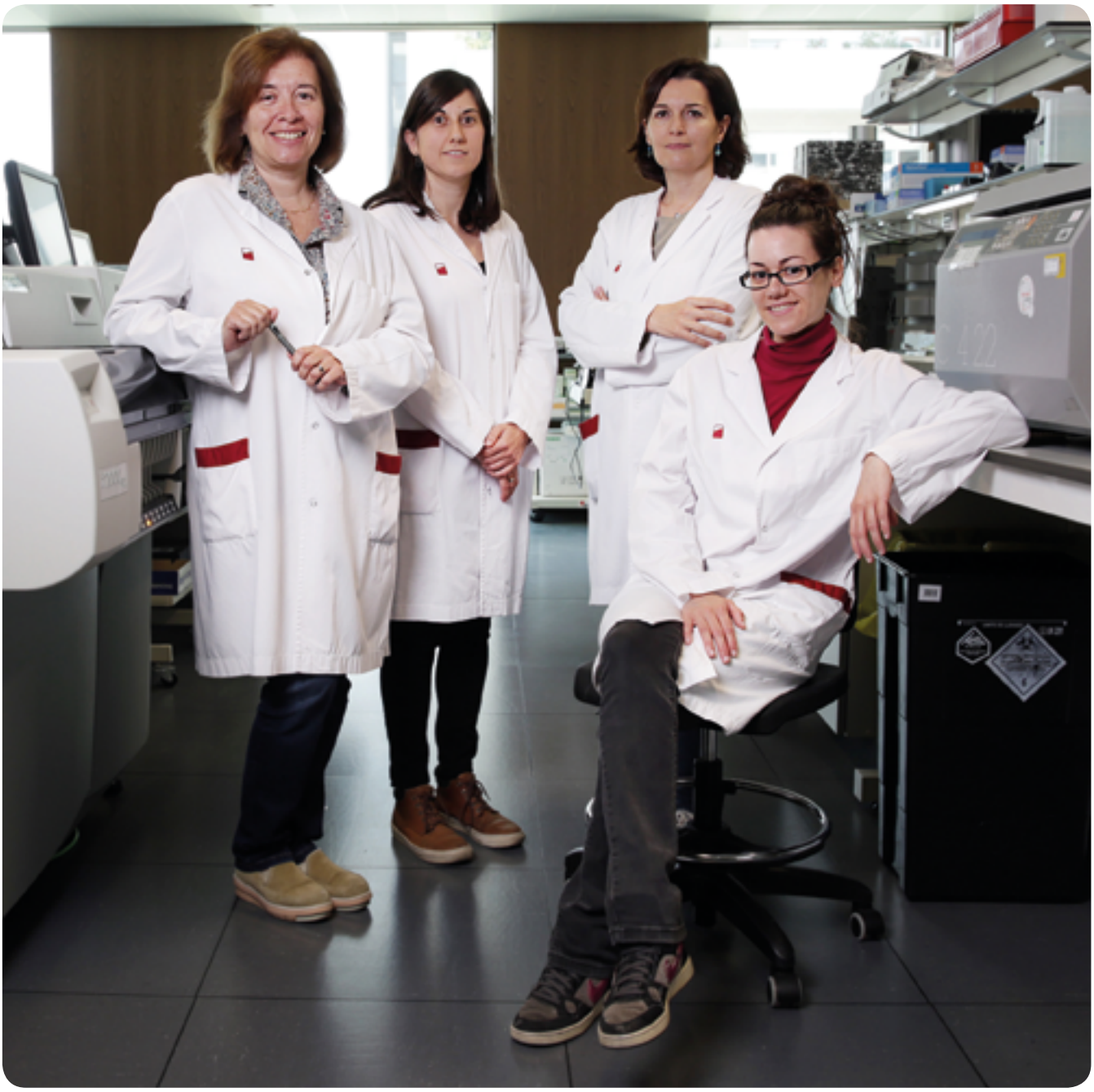
The final end-point of these lines is to improve physiopathological and epidemiological knowledge and the detection of infectious agents relevant to the safety of blood, cells, tissues and breastmilk.

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
Maria Costafreda Salvany
Carmen De la Torre-Monmany Rial
Meritxell Llorens Revull
Maria Piron

Technical staff
Ester Garcia Polo
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 - 2019

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 - 2019

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 - 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 - 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 - 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 - 2018

Publications

Riveiro-Barciela M, **Bes M**, Quer J, Valcarcel D, Piriz S, Gregori J, Llorens M, Salcedo MT, **Piron M**, Esteban R, Buti M, **Sauleda S.** Thrombotic thrombocytopenic purpura relapse induced by acute hepatitis E transmitted by cryosupernatant plasma and successfully controlled with ribavirin. TRANSFUSION 2018 Oct 4. QUARTILE 2, IMPACT FACTOR 3.423

Leiby DA, O'Brien SF, Wendel S, Nguyen ML, Delage G, Devare SG, Hardiman A, Nakhasi HL, **Sauleda S**, Bloch EM; WPTTID Subgroup on Parasites. International survey on the impact of parasitic infections: frequency of transmission and current mitigation strategies. VOX SANG 2018 Dec 6. QUARTILE 3. IMPACT FACTOR 2.107

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.

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
Carlos Hobeich Naya
Francisco Vidal Perez

Return to index

3.2. Cell platform

During 2018 the expansion and re-modeling works were carried out, concentrating all cellular analysis activity of the BST in a single platform.

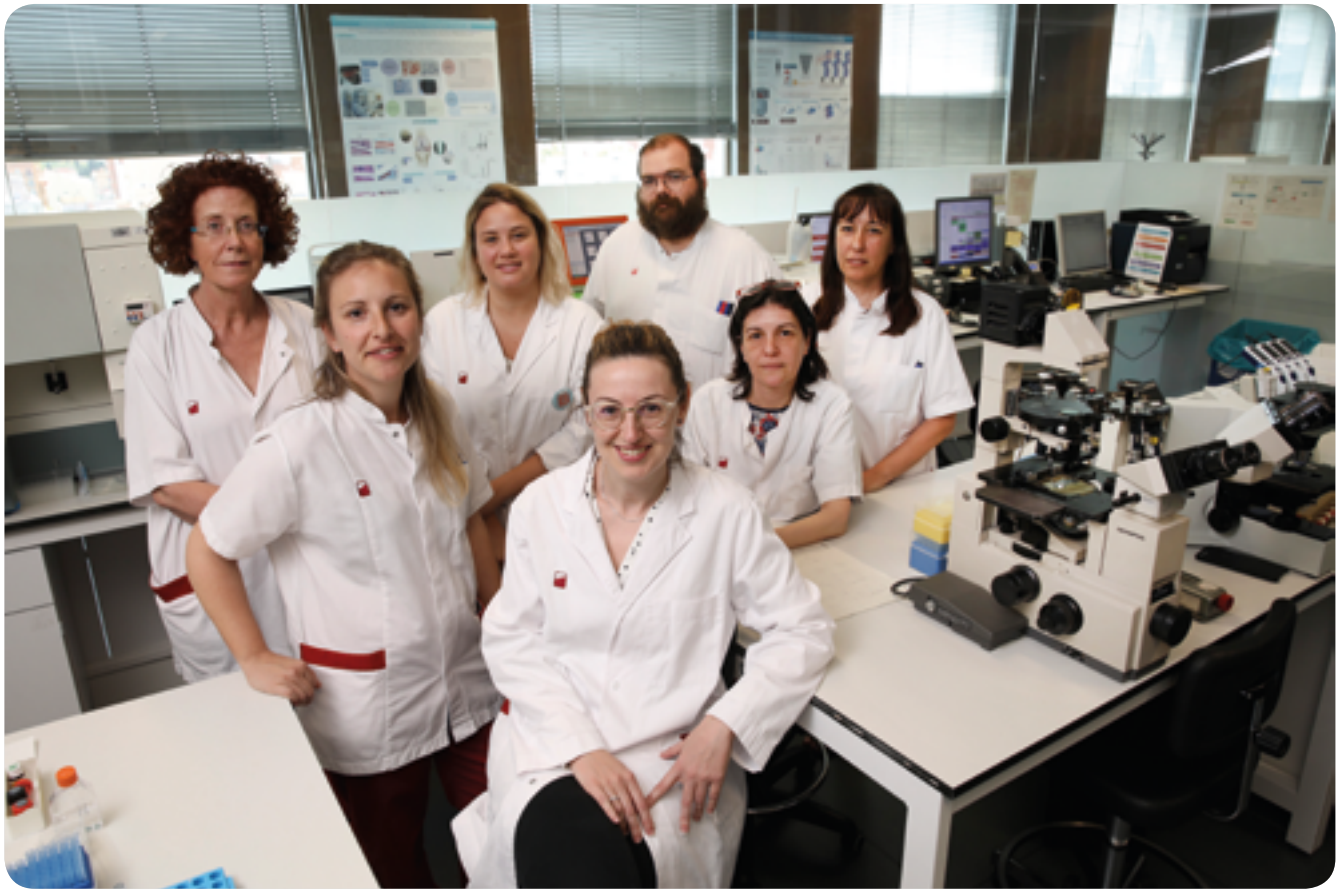
Its functions include the maintenance and supply of the necessary equipment to researchers working in cell culture and characterisation (mainly cytometry, microscopy and metabolism analysis), as well as the basic training in their correct use.

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.

Director
Maria Gloria Soria Guerrero

Investigators
Francisco Javier Algar Gutierrez
Begoña Amill Camps
Margarita Blanco Garcia
Margarita Codinach Creus
Ruth Forner Gómez
Mireia Lloret Sanchez
Isabel Tarragó Canela
Silvia Torrents Zapata



Return to index

3.3. Clinical development

The clinical development platform supports the BST teams and their collaborators in the development of clinical trials carried out with products generated by their research and those promoted by their public and private collaborators. In addition, it is the communication channel with the regulatory agencies.Its responsible is Ruth Coll Bonet.

Director
Ruth Coll Bonet

3.4. Biobank

The BST Biobank started its activity in 2007 with a provisional authorization that became final in 2011 after the entry into force of Royal Decree 1716/2011. Finally he obtained the administrative authorization on 04/12/2013 in accordance with the new regulations.

The Biobank of the BST is public and non-profit and welcomes biological samples of human origin, which come from donations from donors of whole blood, umbilical cord blood and tissues.

The purpose of the biobank is to support biomedical research, thus offering an indispensable tool to the scientific community at a national and international level.

It is specialized in products of human origin, including normal samples (cells and tissues), being one of the few exceptions in this aspect, and pathological samples, mostly derived from serological studies.

The BST Biobank is accredited by the General Directorate of Health Planning and Research and is a member of the Spanish Biobank Network and involves the entire organization under the direction of Joan Garcia Lopez and the coordination of Pilar Monleon Martinez.

As an example of its activity, it should be mentioned that during 2018 the BST Biobank has supported 49 research projects and has supplied more than 22,000 samples with an approximate turnover of € 148,000.

The detail of the activity of the BST Biobank can be found in its 2018 report.

Director
Joan Garcia Lopez

Coordination
Pilar Monleon Martinez

Ruth Coll

Pilar Monleon

Return to index

4. Education

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).

Currently led by 5 associate professors: Joan Garcia Lopez (Director), Eduard Muñiz Diaz (Deputy Director), Enric Contreras Barbeta, Núria Nogués Gálvez and Joaquim Vives Armengol.

The CMT3 has opted for fully online training.

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 the first semester of its third course, accreditated 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 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 (40% international)

2014-2016 40 students

Bolivia 1	Peru 1	Egypt 1	Russia 1
Algeria 1	USA 1	Venezuela 1	Nigeria 1
Panama 1	Ecuador 1	Philippines 1	Germany 1
Jamaica 1	Canada 1	United Kingdom 1	Paraguay 1
Chile 2	India 2	Saudi Arabia 2	Mexico 3
		Colombia 4	Spain 11

2016-2018 27 students

Peru 1	USA 1	Norway 1	Mexico 1
Colombia 1	Honduras 1	Haiti 1	Arab Emirates 1
	Ecuador 3	Canada 3	Spain 13

2018-2020 33 students

Switzerland 1	Canada 1	Grenada 1	USA 1
Arab Emirates 1	Argentina 1	Costa Rica 1	Belgium 1
Russia 1	Andorra 1	Egypt 1	Portugal 1
Uruguay 2	Peru 2	Mexico 3	Colombia 4
			Spain 10

Currently, the possibility of integrating the University of Leiden to become an interuniversity and international master is under study.

Return to index

4.2. The trainig of residents

Currently, the possibility of integrating the University of Leiden to turn it into an interuniversity and international master is under study.

Under the tutorship of Eduardo Muñiz 23 residents of various hospitals in Catalonia have received specialized training in the facilities of the BST.

In addition, 4 residents of other parts of Spain have supplemented their training in the BST and 10 hematologists and graduates from other spanish and international institutions have carried out training stays in our institution.

The detail of this activity can be consulted in the memory of the resident training plan for the year 2018.

4.3. The collaboration with ESTM

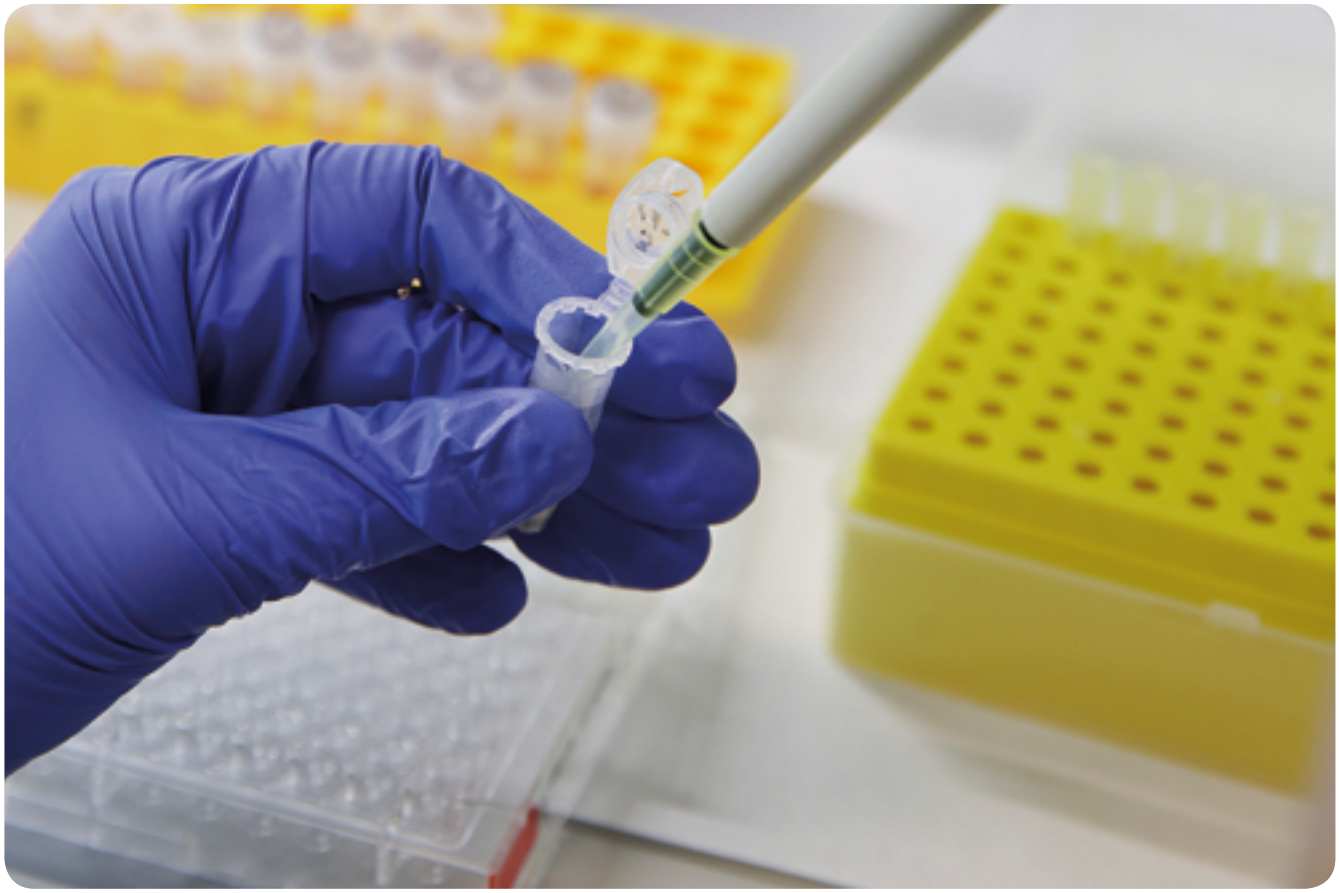
Since 2014 BST has a collaboration agreement with the European School of Transfusal Medicine (ESTM) to promote training and education in its field of action.

In 2018 the BST has organized the course "TRANSFUSION-TRANSMITTED INFECTIOUS DISEASES AND BLOOD SAFETY" under the direction of Silvia Sauleda and Eduardo Muñiz with great scientific and assistance success.

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.



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

Helena Garrigos

Antoni Salvà

Some of the projectes carried out in BST during 2018 were funded by the Spanish Research Agency – Spanish Ministry of Science, Innovation and Universities / European Regional Development Fund (ERDF) with the main goal:
Promote the technological development, the innovation and quality research

Banc de Sang i Teixits

Edifici Dr. Frederic Duran i Jordà
Pg. Taulat, 106-116
08005 Barcelona

Tel. 93 557 35 00
Fax 93 557 35 01
bancsang.net

Núria Sordé disseny

Generalitat de Catalunya
Departament de Salut

Banc de Sang i Teixits