

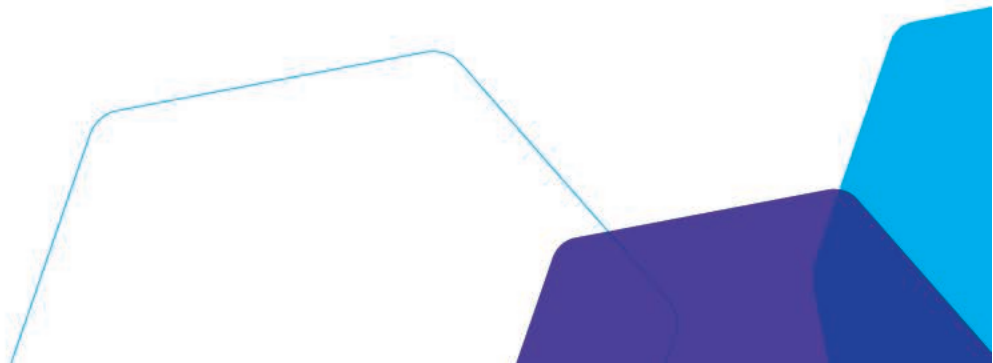


Barcelona Institute of  
Science and Technology

# 2018

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BARCELONA INSTITUTE  
OF SCIENCE AND  
TECHNOLOGY  
ANNUAL REPORT



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Technology (BIST), May 2019  
C/ Comte d'Urgell 187 – Building 12A (BIST)  
08036 Barcelona

**bist.eu**

Design: Ondeuev.net  
Text & graphics: Jenny Kliever  
Photography: Albert Mallon, Miquel Monfort, BIST, BIST centres  
Printed by: Artyplan



Barcelona Institute of  
Science and Technology

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BARCELONA INSTITUTE  
OF SCIENCE AND  
TECHNOLOGY  
ANNUAL REPORT 2018





**Barcelona Institute of  
Science and Technology**

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## BIST CENTRES







**Barcelona Institute of  
Science and Technology**

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## MEMBERS OF THE BOARD OF TRUSTEES



# TABLE OF CONTENTS

<b>FOREWORD</b>	<b>10</b>
Andreu Mas-Colell, BIST President	11
Gabby Silberman, BIST Director General	13
<b>ABOUT BIST</b>	<b>15</b>
Introduction	15
BIST Board of Trustees	16
BIST Mission & Strategic Objectives	17
BIST Research	18
BIST Research Centres	20
BIST Team & Working Groups	24
<b>RESEARCH</b>	<b>28</b>
2018 BIST Conference	29
BIST Ignite Programme	31
BIST joint scientific paper affiliation	34
BIST Initiative in Chemical Biology	36
BIST Microscopy Programme	37
BIST Graphene & 2D Materials Programme	38
BIST infrastructures	39
<b>EDUCATION &amp; TALENT</b>	<b>40</b>
BIST Master of Research	41
BIST Graduate Centre	43
Marie Skłodowska-Curie COFUND Programmes	46
BIST Transferable Skills Training Programme	48
BIST Empowering Women in Science Programme	52
BIST Career Service Programme	53



<b>IMPACT</b>	<b>54</b>
BIST KTT priorities	55
BIST From Science to Business Course	56
FEDER Acceleration Programme	57
BIST international promotion	58
BIST Centres outreach	60
BIST Centres spin-offs	62
<b>IDENTITY</b>	<b>64</b>
Building the BIST community	65
BIST newsletter	67
BIST communications tools	69
BIST social media	70
BIST medial relations	72
<b>INSTITUTIONAL</b>	<b>74</b>
BIST institutional relations	75
BIST at the Escola Industrial	77
<b>FACTS &amp; FIGURES</b>	<b>78</b>

# FOREWORD



## ANDREU MAS-COLELL

*BIST President*

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It is a pleasure to preface a new BIST annual report. You can verify in reading it that the year 2018 has been one of consolidation. We already have in place a well constituted team and a set of effective and tested programmes, all decidedly oriented towards the fulfillment of our founding mission. We think we are getting there although we are aware that much work is still needed and that we are not yet completely there. But morale is high, the sense of purpose intense, and the target well defined. To recall: our mission is to help our seven centres articulate themselves into a multidisciplinary platform which is flexible and effective enough to facilitate the life of each of them, and which is large enough to have significant visibility and standing in the international, and especially European, scenes.

We live in a world marked by a sino-american conflict that has science and technology at its centre. Europe can be a bridge but for this it is indispensable that European science be strong. In coming years, Brexit, the shape and budget of the next framework programme, or the commitment of the different European states, will be factors of uncertainty. In this context the voice of BIST, modest but clear, will always be heard in favor of anything that strengthens European science.

I would like to note that while we proudly carry the name of Barcelona in our own we are nonetheless well aware that we extend much beyond the strict boundaries of the city. We are present in four municipalities (Barcelona, Tarragona, Castelldefels and Cerdanyola) and in five university campuses. The institutions residing in these campuses, the universities first and foremost, enrich us. We hope that we also enrich them and we certainly aim at a synergetic interaction with all of them.

On behalf of the Board of BIST I would like to thank all the persons and institutions, internal or external to our organization, that make possible what we do and that give us the opportunity to try to do it well. Allow me to especially thank the Diputació de Barcelona, a signatory of the 2008 National Pact for Research and Innovation, for facilitating the location of our central offices at the magnificent Escola Industrial campus. It has helped us immeasurably.



## GABBY SILBERMAN

*BIST Director General*

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The 2018 annual report of the **Barcelona Institute of Science and Technology (BIST)** presents the highlight projects undertaken by the institute during the past year and demonstrates how our commitment to the BIST mission and strategic objectives have translated into concrete, tangible success stories.

On the research front, the **BIST Ignite Programme** celebrated its second year of funding highly innovative and multidisciplinary collaborative research projects within the BIST community. To date, over 120 researchers working on 18 different projects have been awarded a total of EUR 650,000. All projects have demonstrated very high potential for impact on society and for pushing the frontiers of knowledge into new domains. Several of the projects have received significant media attention.

On June 27, the **2018 BIST Conference** took place at the *CosmoCaixa Science Museum* with more than 20 prestigious speakers including Professor Barry Barish, recipient of the 2017 Nobel Prize in Physics.

The BIST team was also hard at work implementing the EU Horizon 2020 Marie Skłodowska-Curie Cofunds, the **PREBIST Programme** for PhD students and **PROBIST Programme** for post-

doctoral researchers. The programmes, which received more than 3,000 applications, have culminated in the hiring of 25 PhD students and 31 postdoctoral researchers by the BIST centres.

Also on the education front, the **BIST-UPF Master of Multidisciplinary Research in Experimental Sciences** graduated its inaugural class and launched its second edition in 2018. Of the graduates, 86% have gone on to start a PhD either at a BIST centre or at a prestigious international institute such as the Vienna Biocenter in Austria or the Max Delbrück Center for Molecular Medicine in Germany, among others. The second edition of the programme saw a big increase both in the number of applications and number of accepted students, and a doubling of the number of countries of origin for accepted students.

Finally, in terms of international visibility, the number of scientific publications produced by BIST centre researchers increased by 19% from 2017 and placed BIST in a distinguished position on the Nature Index: 111th worldwide and 24th in Europe (as of November, 2018). This achievement is the result of the joint scientific paper affiliation in use by the BIST centres since 2016.

These successes would not have been possible without the dedication and support of many individuals and groups, including the directors of the BIST centres, the BIST working groups, technical committees, evaluation panels task forces, and our generous stakeholders.

It is my pleasure to invite you to read in detail about these projects, among many more, in the following pages.

# ABOUT BIST

The Barcelona Institute of Science and Technology (BIST) is a scientific foundation of seven of Catalonia's research centres of excellence. Its main objective is to build new scientific collaborations among these centres, thus promoting multidisciplinary projects to push ever further the frontiers of knowledge. Each BIST centre has reached a high level of excellence in its respective areas of expertise.

The BIST scientific community is formed by the following **BIST centres**:

- Centre for Genomic Regulation (CRG)
- Institute for Bioengineering of Catalonia (IBEC)
- The Institute of Photonic Sciences (ICFO)
- Institute of Chemical Research of Catalonia (ICIQ)
- Catalan Institute of Nanoscience and Nanotechnology (ICN2)
- Institute for High Energy Physics (IFAE)
- Institute for Research in Biomedicine (IRB Barcelona)

# BARCELONA INSTITUTE OF SCIENCE AND TECHNOLOGY BOARD OF TRUSTEES

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**Mr. David Nogareda**

*FemCAT Foundation*

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*Director, IFAE*

**Prof. Francesc Posas Garriga**

*Director, IRB Barcelona*

## DIRECTOR GENERAL

**Prof. Gabby Silberman**

*Director General, BIST*





*Board of trustees annual meeting, June 26, 2018, BIST head office*

The BIST Board of Trustees is formed by representatives from the scientific and institutional communities, as well as the government and the seven BIST centres.

## BIST MISSION & STRATEGIC OBJECTIVES

The mission of the Barcelona Institute of Science and Technology is to promote excellent research in a multidisciplinary environment. We are committed to the development and training of scientists to maximize science impact in society.

The aims of the **Barcelona Institute of Science and Technology** are:

- 1.** To consolidate excellent multidisciplinary research across the BIST community
- 2.** To develop world class postgraduate education and training
- 3.** To build BIST as a stimulating and supportive work environment
- 4.** To boost the scientific, economic and social impact of research

Since we believe societal challenges need to be addressed from a multidisciplinary approach, BIST aims to become an international reference in excellent research and to improve Catalonia's competitive position in the global scientific landscape.

# BARCELONA INSTITUTE OF SCIENCE AND TECHNOLOGY RESEARCH

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The research done at the centres of the Barcelona Institute of Science and Technology can be broadly grouped into two categories: applied research and fundamental research. Within applied research, the main research lines are: health, energy and sustainable processes, information and quantum technologies, and advanced materials. Within fundamental research, the main areas are: principles of the universe, and principles of life. The seven BIST centres all work within more than one of these areas, focusing on research excellence and societal impact. More information about the BIST centres can be found in the following section.



## APPLIED RESEARCH

---

**HEALTH**

**ENERGY &  
SUSTAINABLE  
PROCESSES**

**INFORMATION &  
QUANTUM  
TECHNOLOGIES**

**ADVANCED  
MATERIALS**

## FUNDAMENTAL RESEARCH

---

**PRINCIPLES  
OF THE  
UNIVERSE**

**PRINCIPLES  
OF LIFE**

# BARCELONA INSTITUTE OF SCIENCE AND TECHNOLOGY CENTRES

*All BIST research centres have been accredited as Severo Ochoa Centres of Excellence, are members of the Catalan Association of Research Entities (ACER) and of the Research Centres of Catalunya (CERCA), and receive support from the Catalan Institution for Research and Advanced Studies (ICREA).*



## CENTRE FOR GENOMIC REGULATION (CRG)

[www.crg.eu](http://www.crg.eu)

CRG is an international biomedical research institute of excellence founded in December 2000 and based in Barcelona. With over 400 scientists, 59% of which are international, the CRG's excellence is based on an interdisciplinary, motivated, and creative scientific team supported by high-end and innovative technologies.





## **INSTITUTE FOR BIOENGINEERING OF CATALONIA (IBEC)**

[www.ibecbarcelona.eu](http://www.ibecbarcelona.eu)

IBEC was established in 2005 and currently has 22 research groups and 341 researchers and staff from 38 different countries. IBEC conducts excellent interdisciplinary research at the frontiers of engineering and life sciences to generate new knowledge by combining fields like nanomedicine, biophysics, biotechnology, tissue engineering and the applications of health information technology.



## **THE INSTITUTE OF PHOTONICS SCIENCES (ICFO)**

[www.icfo.eu](http://www.icfo.eu)

ICFO was created in 2002 and now hosts over 400 ICFOrians with more than 50 nationalities in 26 research groups. It is a centre of research excellence with research lines that encompass diverse areas in which photonics plays a decisive role, with an emphasis on basic and applied themes relevant to medicine and biology, advanced imaging techniques, information technologies, a range of environmental sensors, tunable and ultra-fast lasers, quantum science, photovoltaics and the properties and applications of nano-materials such as graphene, among others.



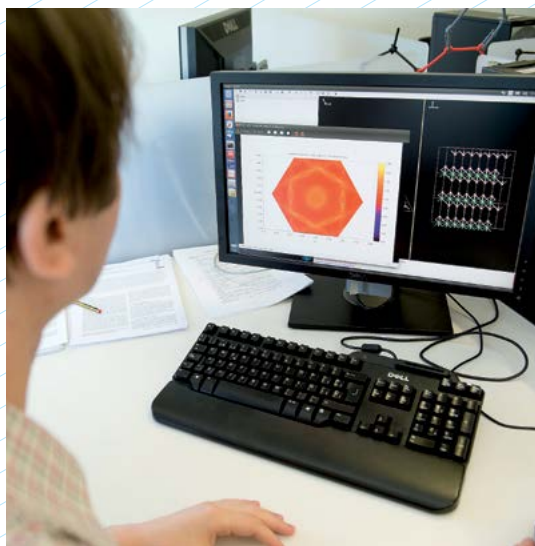
## BIST RESEARCH CENTRES



### INSTITUTE OF CHEMICAL RESEARCH OF CATALUNYA (ICIQ)

[www.iciq.org](http://www.iciq.org)

ICIQ is committed to performing excellent research at the frontier of knowledge in two main areas: Catalysis and Renewable Energy. ICIQ started its research activities in 2004 and hosts over 300 employees. Its 20 research groups work on computational chemistry, carbon dioxide recycling, renewable fuels, catalysis, and artificial photosynthesis.



### CATALAN INSTITUTE OF NANOSCIENCES AND NANOTECHNOLOGY (ICN2)

[www.icn2.cat/en/](http://www.icn2.cat/en/)

ICN2 is a non-profit international research institute located close to Barcelona, Spain. Its research lines focus on the newly-discovered physical and chemical properties that arise from the behaviour of matter at the nanoscale. ICN2 has over 200 members and 17 research groups.



## INSTITUTE FOR HIGH ENERGY PHYSICS (IFAE)

[www.ifae.es/eng/](http://www.ifae.es/eng/)

IFAE conducts experimental and theoretical research at the frontiers of fundamental physics, namely in particle physics, astrophysics and cosmology. IFAE also works at the cutting edge of detector technology, putting their know-how to the service of practical challenges.



## INSTITUTE FOR RESEARCH IN BIOMEDICINE (IRB BARCELONA)

[www.irbbarcelona.org/en](http://www.irbbarcelona.org/en)

IRB Barcelona is a world-class research centre devoted to understanding fundamental questions about human health and disease. It was founded in 2005 and now hosts more than 400 employees from 35 countries who share the common goal of contributing to the advancement of the biomedical sciences through investigator-driven research, and improving quality of life by applying advances in this field.

## BIST TEAM & WORKING GROUPS

The Barcelona Institute of Science and Technology has a small core team to coordinate the various activities within the areas of research, education & talent, impact, identity, and institutional development.

In addition to the core team, 13 working groups comprised of representatives from the seven BIST centres, and a coordination committee comprised of the centres and BIST directors all work together to streamline the BIST activities. This structure allows for collaboration among all seven centres in every one of the BIST strategic areas.

The coordination committee and all working groups meet regularly throughout the year to build a common vision and mount joint activities and programmes.

## BIST TEAM



Front row, left to right: **Jenny Kliever**, Communications & Media Relations, **Òscar Gimeno**, General Manager, **Clara Barreneche**, Head of Innovation & Business Development, **Maria Yubero Gómez**, International Programmes Manager.

Back row, left to right: **Margarita Navia**, Head of Strategic Projects, **Gabby Silberman**, Director General, **Núria Bayó**, Head of Academic Programmes & Organizational Effectiveness, **Àlex Gonzalez**, Office Manager & Institutional Relations, **Donna M. Ramírez**, Academic Programmes



## BIST COORDINATION COMMITTEE



**LUIS SERRANO**

Director of the Centre for Genomic Regulation (CRG)



**JOSEP SAMITJÓ**

Director of the Institute for Bioengineering of Catalonia (IBEC)



**LLUÍS TORNER**

Director of The Institute of Photonic Sciences (ICFO)



**MIQUEL A. PERICÀS**

Director of the Institute of Chemical Research of Catalonia (ICIQ)



**PABLO ORDEJÓN**

Director of the Catalan Institute of Nanoscience and Nanotechnology (ICN2)



**RAMON MIQUEL**

Director of the Institute for High Energy Physics (IFAE)



**FRANCESC POSAS GARRIGA**

Director of the Institute for Research in Biomedicine (IRB Barcelona)



**GABBY SILBERMAN**

Director of the Barcelona Institute of Science and Technology (BIST)

# BIST

## WORKING GROUPS

WG = Working Group

PWG = Programme Working Group

TF = Task Force



BIST Working Groups Meetup, January 23, 2019

### Advanced Optical Microscopy PWG

Timo Zimmermann, CRG  
Lorenzo Albertazzi, IBEC  
María García-Parajo, ICFO  
Pablo Loza, ICFO  
Julien Colombelli, IRB Barcelona  
Margarita Navia, BIST

### People WG

Imma Falero, CRG  
Damjana Kastelic, CRG  
Olalla Bagues, CRG  
Carolina Marí, IBEC  
Neus Vilalta, IBEC  
Laia Miralles, ICFO  
Mery Gil, ICFO  
Leticia Chico, ICIQ  
Alicia Monleón, ICIQ  
Rocío Pérez, ICN2  
Julio Gómez, ICN2  
Quim Bosch, IFAE  
Maribel Labrid, IRB Barcelona  
Leyre Caracuel, IRB Barcelona  
Núria Bayó, BIST  
Maria Yubero, BIST

### Research WG

Pia Cosma, CRG  
Pau Gorostiza, IBEC  
Niek van Hulst, ICFO  
Arjan Kleij, ICIQ  
Jose A. Garrido, ICN2  
Sebastian Grinstein, IFAE  
Angel R. Nebreda, IRB Barcelona  
Margarita Navia, BIST

### Projects TF

Michela Bertero, CRG  
Teresa Sanchis, IBEC  
Núria Beltri, ICFO  
Lorena Tomás, ICIQ  
Dulce Tienda, ICN2  
Marta Balza, IFAE  
Jorge Domínguez, IRB Barcelona  
Óscar Gimeno, BIST

### Chemical biology PWG

Pau Gorostiza, IBEC  
Pau Ballester, ICIQ  
Daniel Ruiz, ICN2  
Ernest Giralt, IRB Barcelona  
Margarita Navia, BIST

### Big data PWG

Roderic Guigó, CRG  
Paul Vershure, IBEC  
Oriol Bardés, ICFO  
Núria López, ICIQ  
Manuel Delfino, IFAE  
Gonzalo Merino, IFAE  
Modesto Orozco, IRB Barcelona  
Ramon Roca-Sastre, IRB Barcelona  
Margarita Navia, BIST

### Managers WG

Bruna Vives, CRG  
David Badia, IBEC  
Dolors Mateu, ICFO  
Lluís Solà, ICIQ  
Lluís Bellafont, ICN2  
Quim Bosch, IFAE  
Margarida Corominas, IRB Barcelona  
Òscar Gimeno, BIST

### Infrastructure WG

Mònica Morales, CRG  
Isabel Oliveira, IBEC  
Gisela Colet, ICIQ  
Gustavo A. Ceballos, ICN2  
Juan Cortina, IFAE  
Goretti Mallorquí, IRB Barcelona  
Margarita Navia, BIST

### Academic WG

Luciano Di Croce, CRG  
Elena Martinez, IBEC  
Robert Sewell, ICFO  
Mónica H. Pérez-Temprano, ICIQ  
Arben Merkoci, ICN2  
Rafel Escribano, IFAE  
Roger Gomis, IRB Barcelona  
Núria Bayó, BIST  
Donna Ramirez, BIST

### Graphene PWG

Javier Ramón, IBEC  
Frank Koppens, ICFO  
Alba Rosado, ICFO  
Miquel A. Pericàs, ICIQ  
Jose A. Garrido, ICN2  
Jose Gabriel Macias Montero, IFAE  
Margarita Navia, BIST

### Communications WG

Glòria Lligadas, CRG  
Guillermo Orts, IBEC  
Brook Hardwick, ICFO  
Ariadna Goenaga, ICIQ  
Àlex Argemí, ICN2  
Sebastián Grinschpun, IFAE  
Silvia Benaiges, IRB Barcelona  
Jenny Kliever, BIST

### Escola Industrial TF

Michela Bertero, CRG  
David Badia, IBEC  
Lluís Solà, ICIQ  
Juan Cortina, IFAE  
Òscar Gimeno, BIST  
Àlex González, BIST

### Knowledge and Tech. Transfer WG

Silvia Tortola, CRG  
Xavier Rúbies, IBEC  
Silvia Carrasco, ICFO  
Lluís Solà, ICIQ  
Jordi Reverter, ICN2  
Isaac Esparbé, IFAE  
Cristina Horcajada, IRB Barcelona  
Clara Barrenche, BIST

# RESEARCH

Consolidating excellent multidisciplinary collaborative research across our community is at the heart of the mission of the Barcelona Institute of Science and Technology.

Each of the seven BIST centres conducts cutting-edge world-class research in their respective areas of expertise. BIST and its centres believe giving impulse to collaboration among their talented researchers will help address the complex and multifaceted challenges we face as a society today.

BIST aims to strengthen the competitive posture of its research centres through the design of targeted actions to foster scientific collaboration.



## 2018 BIST CONFERENCE

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The 2018 BIST Conference, the second annual international scientific conference organized by BIST, took place on June 27, 2018, at the CosmoCaixa Science Museum in Barcelona. It gathered the BIST research community to present and discuss cutting edge research carried out at the BIST centres and internationally, with a focus on multidisciplinary topics. The conference also served to increase awareness of joint activities and potential collaborations among the centres and BIST constituents.



More than 20 prestigious speakers formed the conference programme, including Professor Barry Barish of the California Institute of Technology, recipient of the 2017 Nobel Prize in Physics, who gave the keynote speech about gravitational waves. The full-day event also included three dialogue sessions: The energy re-evolution: To be clean or not to be, Biosensors for diagnostics, and Tissue modelling and engineering. The afternoon finished with flash talks by BIST Ignite Programme project members, a talk by Professor Marileen Dogterom of the Technische Universiteit Delft, and closing remarks by BIST board of trustees members Professors Miquel Salmeron and M. Carme Calderer.

About 300 attendees registered for the event, including BIST researchers and staff, members of the BIST board of trustees, and other external stakeholders.

The dedicated conference webpage ([bist.eu/conference-2018](http://bist.eu/conference-2018)) includes the detailed programme, full list of speakers, and a video.



# BIST IGNITE PROGRAMME

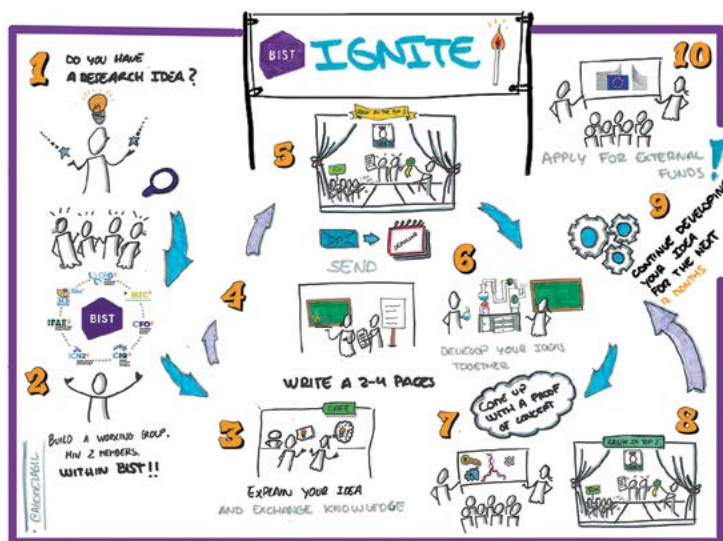


## Overview

The BIST Ignite Programme was started in December 2016 to promote new collaborations among researchers from the BIST community. Its goal is to facilitate the exchange of knowledge in different scientific fields to help develop new approaches to complex research questions.

The programme features a two-phase funding scheme composed of two competitive calls, one for each phase. It begins with a “seeding” phase through an open internal call for proposals of original ideas to compete for EUR 20,000 of funding per project. After eight months of developing seeding phase projects, groups may apply for additional grants of EUR 50,000 each under the follow-up “boosting” phase, based on the results obtained during the first eight months as well as their vision and plans for the future.

To be considered for funding under the BIST Ignite Programme, projects must involve researchers from at least two different BIST centres and should explore new questions and technological challenges through novel multidisciplinary approaches.





## BIST IGNITE PROGRAMME SECOND EDITION

### WINNING PROJECTS

Seeding phase winners announced April 2018

Boosting phase winners announced January 2019

- **Q-SPET** ("Quantum-controlled Single Protein Electron Transport"), led by Pau Gorostiza of IBEC and Niek F. van Hulst of ICFO
- **PHASE-CHROM** ("Role of phase separation in gene regulation and chromatin architecture"), led by Juan Andrés Torreno of ICFO and Catalina Romero of CRG
- **SOLHYCAT** ("Carbon Materials as Charge Transfer Platforms to Convert Sunlight into Fuel with a Nanocrystal-Molecular Catalyst hybrid"), led by Antoni Llobet of ICIQ and Víctor F. Puntes of ICN2
- **2DNanoHeat** ("Nanoscale Heat Transport in 2D layered materials"), led by Klaas-Jan Tielrooij of ICFO and Marianna Sledzinska of ICN2
- **ENGUT** ("Engineered models of intestinal epithelial tissue: assessing in vivo-like functional properties"), led by Elena Martínez of IBEC, and Emilio Gualda of ICFO



## Results

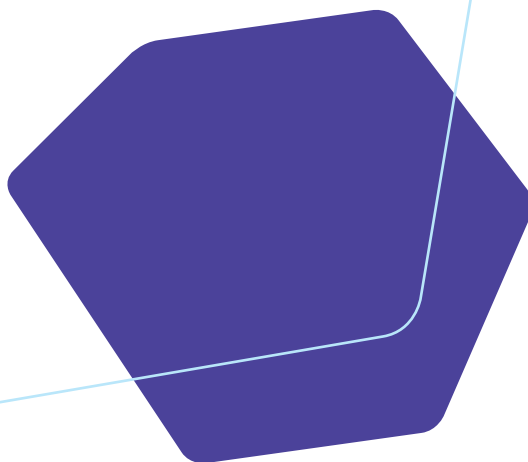
The second edition of the BIST Ignite Programme seeding phase call closed on January 15, 2018. Nineteen proposals were received and five were funded. The evaluation committee was highly impressed with the quality of all proposals and, as in the past, had difficulty choosing only five.

The five winning projects developed their proof of concepts throughout 2018 and presented their results and ideas in the form of applications for the boosting phase by the end of the year.

The third edition of the programme's seeding phase was launched on October 22, 2018, and closed on January 14, 2019.

To date, over 120 researchers working on 18 different projects have been awarded a total of EUR 650,000. All projects have demonstrated very high potential for impact on society and for pushing the frontiers of knowledge into new domains. Several of the projects have received significant media attention.

A dedicated programme webpage is continuously updated and maintained: [bist.eu/ignite](https://bist.eu/ignite).

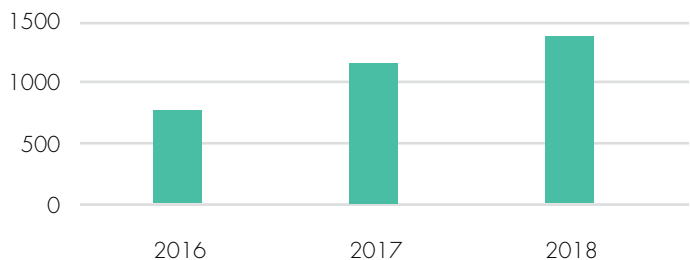


## BIST JOINT SCIENTIFIC PAPER AFFILIATION

The centres of the Barcelona Institute of Science and Technology have been signing all scientific publications jointly as of October 2015. This standardization has had a significant and immediate impact on the visibility of the research done at the BIST centres, both at the local and international levels.

From October 2015 to December 2018, according to the publications indexed in the Web of Science and Scopus databases, researchers of the seven BIST centres have published 3,478 original articles. Of these, 1,393 were published in 2018, compared to 1,175 in 2017 and 824 in 2016, representing an increase of 19% and 43%, respectively. This has placed BIST in a distinguished position on the Nature Index: **111th worldwide and 24th in Europe** (as of November, 2018).

### Publications by BIST centres per year



Source of information: Web of Science Core Collection and Scopus

In terms of order of signatures on publications, BIST researchers occupy outstanding positions (first author and/or corresponding author) in 1,800 of the 3,478 documents (51.8 %).

Fifty-three publications have also been identified since 2016 with authors from more than one of the seven BIST centres, illustrating how BIST researchers have embraced opportunities to collaborate with their peers in other BIST centres.

The impact of BIST publications has been calculated directly (citations obtained) and indirectly (position of journals in their respective categories). In the Scopus database, BIST publications have accumulated 35,060 citations in 39 months, with an average of 10.17 citations per publication. This is a **70% increase from 2017**.

As for indirect impact, the latest editions of the Journal Citation Reports (JCR 2017) and the Scimago Journal Rank (SJR 2017) have been used as sources of information to calculate the position of the papers published by the BIST centres. The majority of BIST publications can be found in journals of the first quartile (Q1) in both databases: 2,706 publications in Q1 journals, JCR 2017 (77.8 % of the total), and 3,052 publications in Q1 journals, SJR 2017 (87.8 % of the total).

## BIST STRATEGIC RESEARCH PROGRAMMES

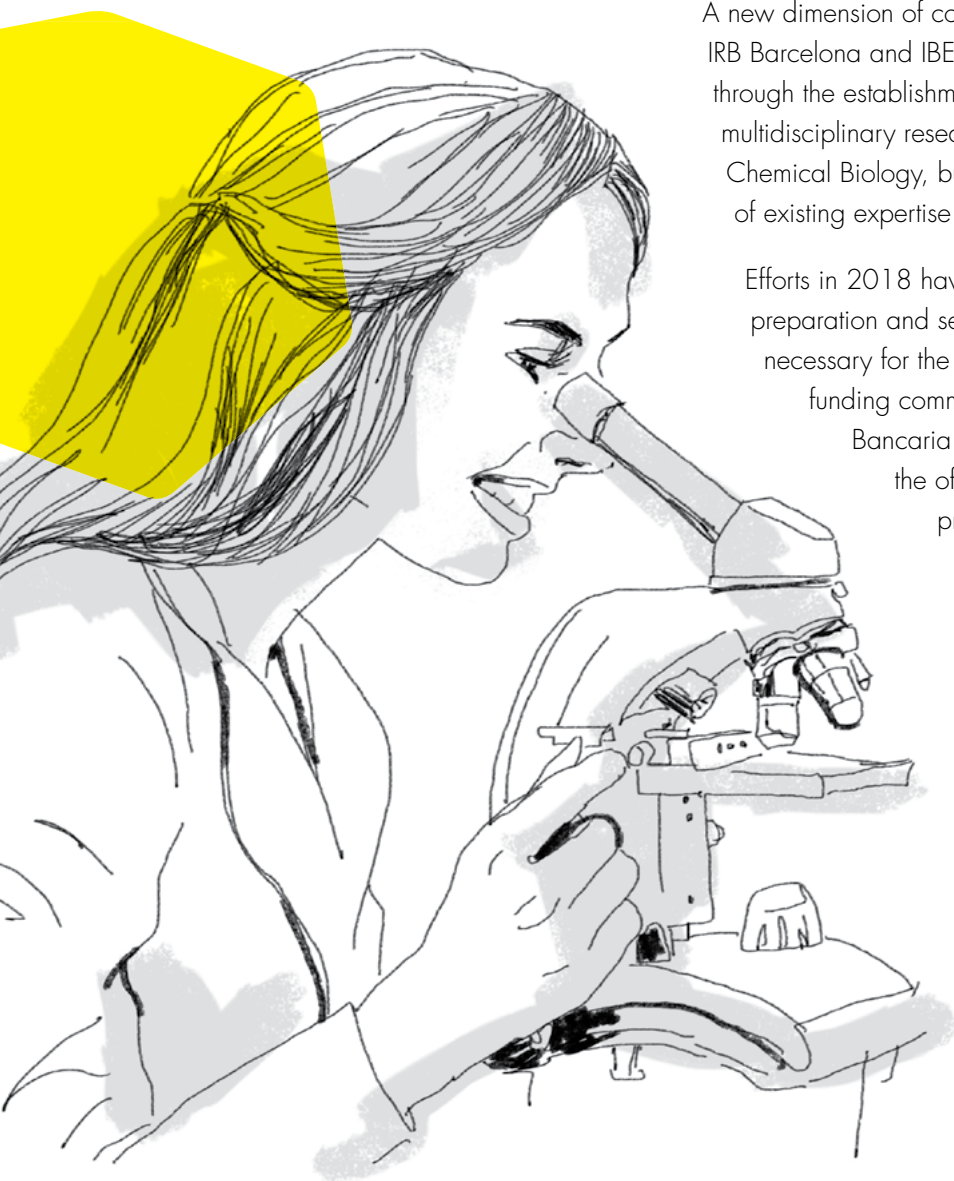
As part of the mission of the Barcelona Institute of Science and Technology to foster multidisciplinary research and new collaborations within the BIST centres, the following research lines have been pursued: Chemical Biology, Microscopy, and Graphene and 2D Materials.

### BIST INITIATIVE IN CHEMICAL BIOLOGY

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A new dimension of collaboration between IRB Barcelona and IBEC is envisioned through the establishment of a strong multidisciplinary research programme in Chemical Biology, built on the foundations of existing expertise within each centre.

Efforts in 2018 have focused on project preparation and securing the financing necessary for the project. A multi-year funding commitment from Fundació Bancaria La Caixa will enable the official launching of the programme in 2019.



## BIST MICROSCOPY PROGRAMME

Considering the research interests and strengths of the BIST centres, two strategic work areas within the Microscopy Programme have been identified: 1) Advanced Electron Microscopy (AEM), and 2) Advanced Optical Microscopy (AOM).

**AEM** is used to obtain information about materials and biological entities at the atomic scale, a tool of great importance in some of the leading research being carried out at the BIST centres, and at other research institutions in Catalonia. BIST is coordinating joint proposals, combining efforts among the BIST centres and non-BIST actors like the ALBA synchrotron and the Consejo Superior de Investigaciones Científicas (CSIC), to provide BIST and other Catalan scientists with access to world-class equipment and expertise.

**AOM** helps directly visualize biological processes at the cellular and subcellular level. Some of the BIST centres already have powerful AOM facilities with top-level technical expertise, though there is room for growth and further collaboration. The aim of this programme is to help the centres maintain their world-leading position in AOM by catalyzing, synergizing, and complementing their already outstanding work.

The objectives for 2018 included preparing an application for FEDER funding for both electron and advanced optical microscopes, and to begin deployment of the AOM roadmap. Milestones achieved include:

- **The Winter School and Symposium on Microscopy, Nanoscopy and Imaging Sciences**, held from January 29 to February 8, 2018.
- The AEM proposal for acquiring a Transmission Electron Microscope for materials and a Cryogenic Electron Microscope for structural biology, both to be located at the ALBA Synchrotron, continued through 2018. A proposal for co-funding the equipment was presented in response to a FEDER call in May 2019.
- The AOM roadmap included the following activities:
  - The **2018 Advanced Optical Microscopy Retreat** took place on September 17-18, 2018, at the EADA Montserrat Hotel and Training Centre with a focus on bioimaging analysis and computational tools in AOM. Researchers from IFAE and the scientific information port (PIC), as well as experts from other Catalan institutes participated.
  - The acquisition of new instrumentation aimed at keeping the BIST centres at the forefront of advanced optical imaging technology was co-financed by BIST, ICFO, and the Ministerio de Ciencia, Innovación y Universidades.
  - A portfolio of transversal collaborative projects was created for the BIST centres working in AOM. Planned for a 2019 launch, these projects will facilitate collaborations among the BIST centres and capitalize on their expertise to remain at the forefront of advanced optical imaging techniques.

## BIST GRAPHENE & 2D MATERIALS PROGRAMME

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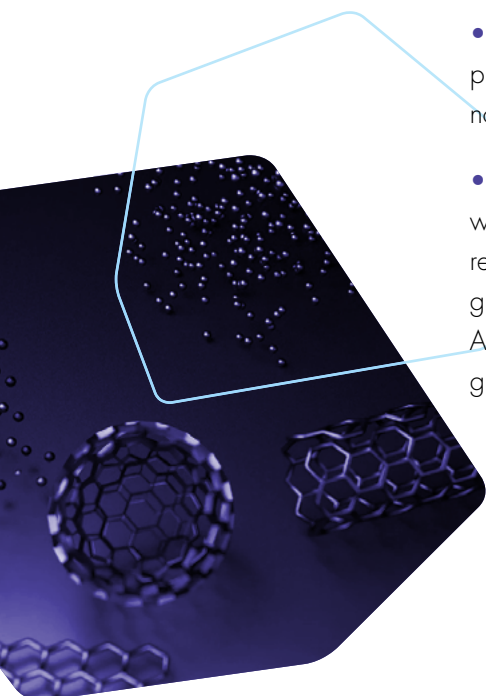
Graphene and 2D materials are currently the focus of attention in research and industrial communities worldwide. Within its centres, BIST already has very strong, internationally recognized groups working in these areas, including those at ICFO and ICN2, leading centres in the European Graphene Flagship programme.

BIST now aims to approach the fundamental science and applications of graphene and 2D materials in a multidisciplinary manner. With the leadership of the BIST centres, Barcelona is striving to become a benchmark location for 2D materials research and lead in the race to bring their applications to market.

To help facilitate this goal, BIST and its centres have participated in joint research programmes and activities throughout 2018, sharing the expertise of ICFO and ICN2 with other BIST centres.

### Specific milestones included:

- Participation (with matching funds) in the GraphCAT RIS3CAT proposal, led by ICN2 and ICFO, and including IFAE and other non-BIST centres and universities.
- The Graphene Open Day on May 16, 2018, at ICFO, which brought together not only the graphene and 2D materials research community, but also centres interested in learning what graphene can do for them and what they can do for graphene. An outcome of the event was information about possible synergies between research areas at BIST centres.



# BIST INFRASTRUCTURES



The centres of the Barcelona Institute of Science and Technology each have cutting-edge research infrastructures and BIST aims to promote an optimized and efficient use of these to facilitate carrying out joint BIST projects with greater scope and impact, bringing benefits to all.

During 2018, Open IRIS software was installed in several of the BIST centres through an agreement signed and supported by BIST. Co-development of the software with Open IRIS is envisioned starting in 2019, to ensure all of the BIST needs are covered.

An online catalogue of the core facilities available at BIST centres was also created in 2018 and can be accessed through the BIST website: [bist.eu/facilities](https://bist.eu/facilities).

# EDUCATION & TALENT

Encouraging young people to begin a research career, training them to develop it successfully, and supporting their professional transitions are core elements of the Barcelona Institute of Science and Technology mission and key instruments for promoting excellent multidisciplinary research. For this reason, BIST and its centres offer high impact postgraduate education, and coordinate the academic programmes already offered at the BIST centres in order to increase efficiency and impact.

BIST also aims to attract, retain, and develop the brightest researchers and professionals by providing career development activities to meet their needs at all stages of their professional growth. We are also dedicated to providing a supportive working environment for the entire BIST community.

By innovatively educating and training talented scientists to face complex projects that solve societal needs at all stages of their careers, BIST is on its way to becoming an international reference. BIST researchers are involved in cutting-edge collaborative research projects in a multidisciplinary environment, learn invaluable transferrable skills, and receive support at transition points of their careers.





# BIST-UPF MASTER OF MULTIDISCIPLINARY RESEARCH IN EXPERIMENTAL SCIENCE

The **Master of Multidisciplinary Research in Experimental Sciences** is a joint academic programme of the Department of Experimental and Health Sciences of Pompeu Fabra University (DCEXS- UPF) and the Barcelona Institute of Science and Technology. It has been running since 2017 and is the first of its kind in Spain, a pioneering programme focused on hands-on research at research centres of excellence. It equips students with everything they need to become excellent researchers in today's multidisciplinary landscape, and prepares them to ultimately pursue a PhD, thereby pouring highly trained research talent both into Catalan research centres, as well as international institutions.



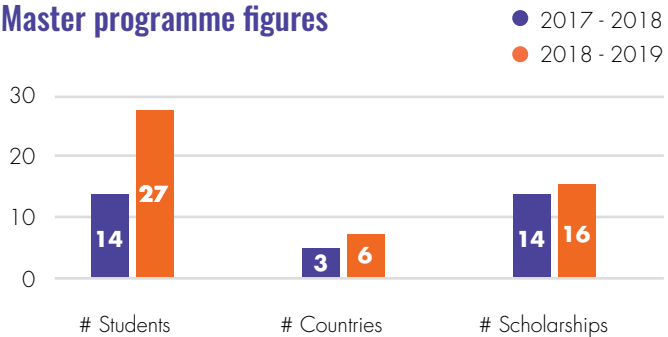
## 2018 BIST-UPF MASTER MILESTONES



The BIST-UPF Master inaugural class of 14 students completed the programme in 2018. All graduates have continued in positions related to research, with 12 currently pursuing PhD programmes, seven of which are working at BIST centres. Some of the non-BIST institutes the graduates are currently working at include the Vienna Biocenter (Austria), EPFL Lausanne (Switzerland), and the Max Delbrück Center for Molecular Medicine (Germany).

The second edition of the programme was also launched in 2018, with a list of 91 project proposals from group leaders at BIST centres and the DCEXS, 36 more proposals than in 2017. An extensive recruitment campaign was launched to attract international candidates and 27 students from six different countries were selected and started the programme in September 2018.

### Master programme figures



## BIST DOLORS ALEU GRADUATE CENTRE

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In order to promote top-quality post-graduate and continuous learning education at the Barcelona Institute of Science and Technology, the creation of a **BIST Dolors Aleu Graduate Centre** is envisioned. This project will be an important vehicle for promoting talent in the BIST community by offering academic programmes and training courses that adapt to the needs of researchers and staff within the BIST community and relevant external institutes.

In 2018, a proposal for the graduate centre was prepared by a working group composed of representatives from the BIST centres and from the UPF, and was submitted by the UPF to the General Directorate of Universities. The application is currently being evaluated.

The possibility of collaborating with the Universitat Politècnica de Catalunya (UPC) and/or the UPF to develop a new master's degree related to the development of medical devices was also explored throughout 2018.

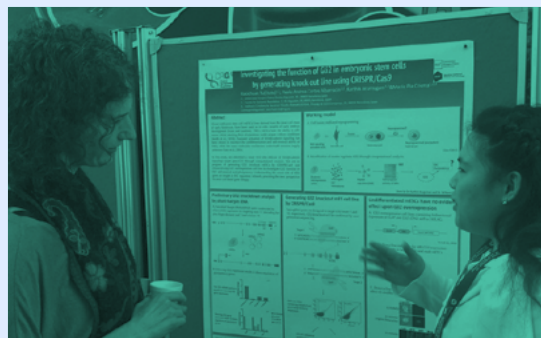
# 2018 BIST-UPF MASTER ACTIVITIES

## BIST Winter School and Symposium

The first edition of the **BIST Winter School** took place from January 29 to February 9, covering microscopy, nanoscopy, and imaging science. Designed by the BIST scientific community, the



programme included classes on theory and practical application given by 25 different researchers. The course culminated in the **2018 BIST Symposium on Microscopy, Nanoscopy, and Imaging Science** on February 9, which



brought together international experts in the fields of optical microscopy, electron microscopy, scanning probe microscopy, Raman imaging technologies, and imaging approaches in astrophysics and cosmology. The event was open to the entire scientific community and included a poster session where the BIST Master students presented their research. The full programme can be found at [bist.eu/events/event/bist-symposium-on-microscopy-nanoscopy-and-imaging-sciences](http://bist.eu/events/event/bist-symposium-on-microscopy-nanoscopy-and-imaging-sciences).

## BIST Colloquium Series

As part of the master programme, all students attend the **BIST Colloquium Series**, monthly lectures and discussion sessions with highly recognized researchers from prestigious international research centres. The colloquia provide broad exposure to multidisciplinary research in experimental sciences, give students the opportunity to learn about different fields of study and to discuss their career plans, and are open to the entire BIST community. The dedicated webpage for the colloquia can be found at [bist.eu/colloquia](http://bist.eu/colloquia).

## BIST-UPF Master Welcome Event

To kick off the second edition of the master programme, a welcome event was held on September 12 at La Pedrera in Barcelona. The event served to welcome the new cohort to the programme and to celebrate the graduation of the inaugural class. The event included an inspirational talk by Dr. Elisabet Romero, ICIQ Group Leader and recent recipient of an ERC Starting Grant, a welcome talk by two graduating



students, Sonia Paz and Jia Liang Sun, and a time for networking and getting to know one another.

## BIST-UPF Master Training Days

As part of the initial training for the second cohort of BIST-UPF Master students, a seminar series with BIST centre researchers was organized from September 17 - October 19. The seminars took place at the seven BIST centres and the DCEXS in rotation, allowing students to get to know the facilities and areas of expertise at each centre as well.

# Master of Multidisciplinary Research in Experimental Sciences

# Welcome Event 2017/2018

The BIST research centres are:









Member institutions of the board:










# MARIE SKŁODOWSKA-CURIE COFUND PROGRAMMES

In 2017, the Barcelona Institute of Science and Technology successfully obtained a total of nearly **EUR 10 Million** in Marie Skłodowska-Curie Cofunding from the European Commission for the **PREBIST** and **PROBIST** programmes. The funding allows 28 PhD students and 61 postdoctoral fellows, more than ever before, to complete cutting-edge research in one of the five participating BIST centres of excellence (ICFO, ICIQ, ICN2, IFAE, IRB Barcelona) and associated institutions, including hospitals, private companies, and other academic centres. Fellows also receive world-class professional development and career training.

**BIST** Barcelona Institute of Science and Technology [blst.eu/prebist](http://blst.eu/prebist)

## PREBIST PhD Fellowships

Launch your scientific doctoral career in our international PhD focused on excellent research in a multidisciplinary environment

**28 four-year fellowships available**

**TWO CALLS:**  
1 Nov. 2017 (deadline 7 Jan. 2018)  
15 Mar. 2018 (deadline 14 May 2018)

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 754558

The main objective in 2018 was to consolidate these programmes and incorporating the first groups of PhD students and postdoctoral researchers into the BIST centres.

Two international recruitment calls for PhD students were launched in 2018, with a total of 883 applications received from 87 different countries. Of these, 25 excellent fellows were selected by a panel of external experts and interviewed by the panel and the principal investigators at the BIST centres. The selected fellows are from 18 different countries and are 32% female, 68% male.

Two international calls were also launched to recruit postdoctoral researchers for the PROBIST programme which yielded 791 applications from over 75 different countries. Of these, 31 fellows were selected in 2018 from 18 different countries with a split of 35% female, 65% male.

PREBIST and PROBIST fellows also participate in professional training activities such as the “**How to succeed in your PhD**” course, the **GRAD-School** for PhD students, and the **Leadership in Action Course** for postdoctoral researchers. These will be offered to the fellows throughout the course of their time at the BIST centres. In 2018, the postdoctoral fellows also had the opportunity to help organize and/or attend events such as the 2018 BIST Post-Doc Day. More information about these courses and events can be found in the following sections.

**ARE YOU PROBIST?**

**Postdoctoral Researcher Programme**

Join our international multidisciplinary postdoctoral programme (PROBIST) and boost your scientific career

**Deadline: 26/11/2018**

[www.bist.eu/probist](http://www.bist.eu/probist)

**30 fellowships** available to develop a three year research project at scientific centres of excellence in Barcelona.

**BIST** Barcelona Institute of Science and Technology

**The participating BIST centres of excellence are:**

ICFO<sup>9</sup> ICIQ<sup>9</sup> ICN2<sup>9</sup> IFAE<sup>9</sup> IRB<sup>9</sup>

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska Curie grant agreement No. 754312

# BIST TRANSFERABLE SKILLS TRAINING PROGRAMME

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The Barcelona Institute of Science and Technology is dedicated to helping researchers gain the skills necessary at all stages of their professional careers, to build support networks in the BIST community, and to promote a culture of talent development. As such, BIST and the BIST centres first designed transferable skills training courses for PhD students, postdoctoral researchers, and group leaders in 2016 and 2017, utilizing best practises from the BIST centres. These courses have now been consolidated into a cohesive annual programme with a common vision for training methodology, target audiences, and execution plans. Additional courses have also been added to the programme in 2018 to address the needs of senior postdoctoral researchers and senior group leaders.

## PhD student training at BIST

In 2018, the Barcelona Institute of Science and Technology and its seven centres organized two consecutive editions of the **“How to be an effective researcher”** course, on January 16-17 and January 18-19 at the Fundació Catalana de l’Esplai in Barcelona. The course is one of the flagship courses of Vitae, a global leader in supporting the professional development of researchers. Fifty-four first-year PhD students participated and learned about managing a doctoral project, communicating effectively, negotiating, collaborating, and giving and receiving feedback. The course trainers came from both the Vitae network and from within local research centres. A third edition of the course was also piloted with only internal trainers (Leticia Chico, ICIQ Head of Human Resources, Alicia Monleón, ICIQ People Officer, and Ekaterina Smirnova, ICIQ Postdoctoral Researcher) from May 23-24 at ICIQ with 14 participants. Training local researchers to tutor these courses is a strategic objectives that will allow BIST to eventually have the needed expertise in-house.





A three-day Vitae **GRADSchool** course was also run from July 4-6 with local and Vitae trainers at the Montanyá Hotel & Lodge near Barcelona. Twenty-eight PhD students in their 3rd and 4th year participated and learned about effective communication in complex situations, teamwork and team dynamics, giving and receiving feedback, problem solving, project management, and research ethics.

### Postdoctoral researcher training at BIST

Three courses were run for postdoctoral researchers in 2018. The Vitae **Leadership in Action** course took place from April 11-13 at the Montserrat Hotel & Training Center in Collbató with 38 participants. The course followed an experiential learning model and trained participants in situational leadership. The **"Professional Development for Postdoctoral**

**Researchers”** course, developed by hfp consulting, a consultancy focused on personalized professional training for scientists, took place at the BIST head office from October 3-5 with 15 senior postdoctoral researchers. And finally the **“Self-analysis and making career choices”** course was run on July 26 by consultant Sarah Blackford to help postdoctoral researchers identify their next professional milestone. Twenty-four postdoctoral researchers and two PhD students participated.



The 2nd edition of the **BIST Postdoc Day** also took place on October 22, 2018 at the CosmoCaixa Science Museum in Barcelona. The event was organized by a committee of postdoctoral researchers, including a PROBIST fellow, with the support of BIST. The Committee was composed by Jenny Kechagia (IBEC), Ekaterina Smirnova (ICIQ), Alicia Monelón (ICIQ), Olga Dolgova (CRG), Emigdio Chávez (ICN2), Marta Kovatcheva (IRB Barcelona), Maria Alejandra Ortega (IBEC), Marius Costache (ICN2), and Marius Costache (ICN2).

Two-hundred postdocs participated in the full-day event centered on career development with stimulating discussions and intimate breakout sessions with leaders in a broad spectrum of scientific professions including academia, industry, entrepreneurship, scientific communication, global science, and philanthropy. A dedicated webpage was also created for the event:

[bist.eu/2nd-bist-postdoctoral-day-careers-at-the-bench-and-beyond](http://bist.eu/2nd-bist-postdoctoral-day-careers-at-the-bench-and-beyond).





## Principal investigator training at BIST

On October 8-10, 2018, ICIQ with the support of BIST organized the first “**Leadership and Management Skills for Senior Group Leaders**” course in Montbrió del Camp, Tarragona. The course was led by hfp consulting and focused on how to effectively manage teams and research projects. Fourteen senior group leaders and one core facilities manager participated in the course and asked that a follow-up meeting be organized every six months to share their experiences with the group. The first follow-up will take place in 2019.

Over 200 researchers were trained through the BIST Transferable Skills Training Programme in 2018, representing a doubling of the programme’s capacity from 2017.





## BIST EMPOWERING WOMEN IN SCIENCE PROGRAMME

A goal for the Barcelona Institute of Science and Technology is to address the gap that exists between the number of women in the BIST centres who are research associates or senior postdoctoral researchers (41%) and the number who are group leaders (only 15%). BIST aims to recognize the value and excellent research done by the female scientists at the BIST centres and to support them in their path to achieving group leader positions.

On February 11, 2018, the International Day for Women and Girls in Science, BIST launched its first call for the **BIST To the Mothers of Science** supporting grant. The initiative grew from the CRG Women Scientists Support Grant (WOSS) and because of its success within CRG, was extended to the entire BIST community and a coaching component was added.

Forty-six candidates applied for the grant in 2018 and 11 were selected by an expert external panel in coordination with internal panels at each BIST centre. The recipients were granted a EUR 400 stipend per month for up to 12 months. The nineteen finalists, including the 11 grant recipients, also participated in a coaching programme guided by Victoria Conesa of onbalance, which included two group sessions and two individual sessions.

A dedicated webpage for the Mothers of Science programme can be found here: [bist.eu/women-in-science](http://bist.eu/women-in-science).





# TO THE MOTHERS OF SCIENCE

Supporting grant for BIST scientists

**10 fellowships**

At BIST, we want to recognize and support the work and value of scientist mothers so that they become pioneers in their fields.

Apply at [www.bist.eu](http://www.bist.eu)

Deadline: 12/03/2018

BIST

Barcelona Institute of Science and Technology

# BARCELONA INSTITUTE OF SCIENCE AND TECHNOLOGY

## CAREER SERVICE PROGRAMME

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The BIST People Working Group, along with input from a group of 40 postdoctoral researchers and an external consultant, prepared a proposal in 2018 for creating a professional **career service programme** that would be co-developed by the human resources departments at all of the BIST centres.

A career service programme is intended to support researchers in the development of their career plans, and especially at transition points, by taking their personal goals into account. This encourages researchers to be more proactive in setting career objectives and to be more productive in their current as well as future positions.

**The proposal consists of four components:**

1. Training and support for human resources staff at BIST and the BIST centres
2. Launching the career service programme
3. Organizing a career development week with workshops and talks on the various career options available to researchers
4. Organizing a jobs fair to help researchers network and search for new positions

# IMPACT

The Barcelona Institute of Science and Technology is dedicated to driving knowledge to society. BIST works in coordination with the knowledge and technology transfer units at the seven BIST centres to enable translation and commercialization of the intellectual and industrial property rights portfolio.

BIST aims to bring the outcomes of the research done at the BIST centres to society by establishing mechanisms to route basic research towards commercial and social innovation and by raising the awareness and understanding of science among the general public.

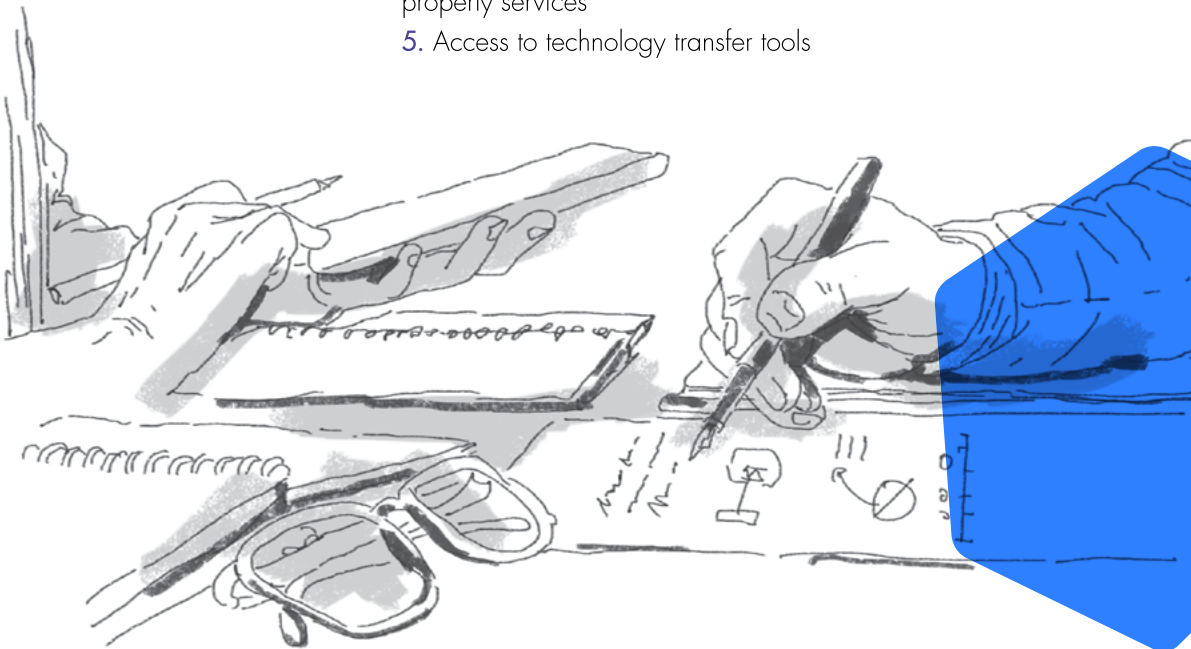


## BIST KTT PRIORITIES

A head of innovation and business development was hired at the Barcelona Institute of Science and Technology in 2018. She, along with the BIST KTT Working Group, have been working to define the priorities and goals within this area for BIST and its centres.

The working group has been sharing best practises and identifying opportunities for promoting new activities and programmes within this area which has allowed them to identify priority areas to explore together in the future:

1. Funding sources for science-based projects and start-ups
2. Training for researchers
3. Training for KTT staff
4. Access to specialized services such as legal and intellectual property services
5. Access to technology transfer tools



## BIST FROM SCIENCE TO BUSINESS COURSE

Among the efforts by the Barcelona Institute of Science and Technology to bring more knowledge about technology transfer into the BIST centres, it has partnered with the ESADE Business School in Barcelona to create and deliver the **From Science To Business** course. The course aims to equip researchers with the necessary tools for bringing their ideas to the market, thereby taking this important area of work to the next level within the BIST centres and working towards placing BIST in a leading position within Catalonia.

The initiative, first offered by ICFO and now open to the entire BIST community, is aimed at senior researchers, postdoctoral researchers, and doctoral students. It focuses on helping

researchers familiarize themselves with the business world, understand how companies work and create value, and become acquainted with the BIST scientists involved in the process of creating new companies.

In 2018, the course took place from June 11-14 with 24 participants. A welcome event kicked the course off at the BIST headquarters in Barcelona in the afternoon of June 11 for attendees to get to know each other and to participate in a panel discussion with local entrepreneurs in the scientific field. The following three days were spent at the ESADE Creapolis Campus in Barcelona with full-day lectures and work sessions. Participants rated the course







extremely highly, with an average score of 4.68 out of 5 for overall satisfaction (i.e. to what extent the programme met the participants' expectations) and an average score of 4.81 out of 5 for the quality of the teaching sessions.

## FEDER ACCELERATION PROGRAMME

The BIST Knowledge and Technology Transfer (KTT) Working Group worked on a proposal in 2018 to apply for 2019 FEDER (*Fondo Europeo de Desarrollo Regional*) funding for the "creation of aggregated technology acceleration entities".

The proposal, developed jointly by KTT representatives from all seven BIST centres, aims to create a structured KTT department wherein all BIST centres would share best practises and build joint projects and initiatives such as training activities, marketing campaigns, and benchmarking, among others.

The FEDER call for proposals is expected to open in 2019.

## BIST INTERNATIONAL PROMOTION

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The Barcelona Institute of Science and Technology aims to be an active player in the scientific landscape at the European level, to position itself as an institute of reference for excellent science and technology, and to increase its visibility and prestige. Specific actions were taken towards these goals in 2018.

### BIST and EIT Health

In 2018, BIST became a core partner of the EIT Health consortium, a network of best-in-class health innovators backed by the European Union.



BIST organized meetings among EIT Health executives and representatives from the BIST centres in 2018 to discuss potential programmes for the three EIT Health pillars: Innovation, Campus, and Acceleration. BIST also actively participated in events and meetings organized by EIT Health, both in Barcelona and in Europe, to get to know the consortium's European partners. This has led to the identification of some common challenges experienced at institutes around Europe as well as at the BIST centres, laying the path for possible collaborations to spearhead these challenges together.

Finally, BIST participated in the EIT Health Summit in Lodz, Poland in December 2018, an annual conference that gathered about 300 EIT Health community members. This participation has

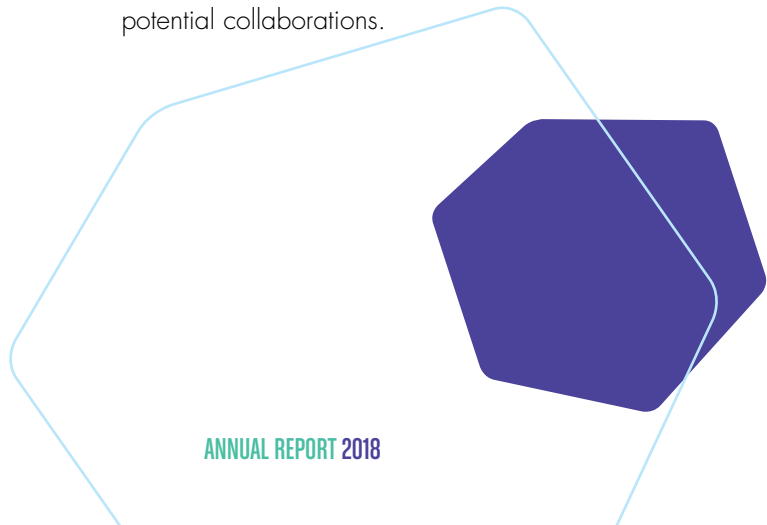
allowed BIST to position itself as a science and technology player in the European health innovation community.

### **BIST international promotion**

BIST participated in conferences, fairs, and events in Barcelona and abroad throughout 2018, under the framework of business promotion and development. Two examples are the 11th edition of the Rendez-vous Carnot in Lyon, France in October 2018, and the High Level Forum in Grenoble, France in November 2018.

Rendez-vous Carnot is one of the most important technology transfer congresses in France. It brings together the most important actors in the fields of research and development, with 2,800 visitors and 400 exhibitors. BIST held more than 20 meetings with key players and potential partners during the congress, including with the centres of the Carnot Institute, industrial associations, technology services companies, French regional agencies, and companies looking for specific technologies. Collaboration opportunities were identified and follow-up for possible joint projects is under way.

The High Level Forum in Grenoble is an International Forum on "Leading Innovation Ecosystems" organized by the Grenoble Innovation Campus for Advanced New Technologies (GIANT). The event brought together 360 participants and allowed BIST to connect with an international community of public and private representatives of 40 hubs of innovation around the world, in order to share strategies and best practices, as well as explore potential collaborations.



## OUTREACH AT THE BARCELONA INSTITUTE OF SCIENCE AND TECHNOLOGY

A top priority for all BIST centres is bringing science to society through training and dissemination activities. These are geared towards many audiences, including primary and secondary students, and the general public. BIST provides support to these activities by facilitating collaboration among the centres, promoting joint activities, and running dissemination campaigns. Some of the activities carried out by the BIST centres in 2018 are highlighted below.

### YoMo 2018

The Barcelona Institute of Science and Technology had a dedicated BIST stand at the Youth Mobile Festival (YoMo) in Barcelona in 2018, with each BIST centre showing off some of their best science demos. Activities included turning mobile phones into microscopes, learning how to make fuel out of sunlight and water, and playing with a quantum eraser. The event took

place from February 27 to March 2, 2018 at La Farga L'Hospitalet and was geared towards school children and teachers. About 15,000 people attend YoMo every year.

### Barcelona Science Slam

The 2018 Barcelona Science Slam took place on May 31 at Bar Mau Mau in Barcelona,

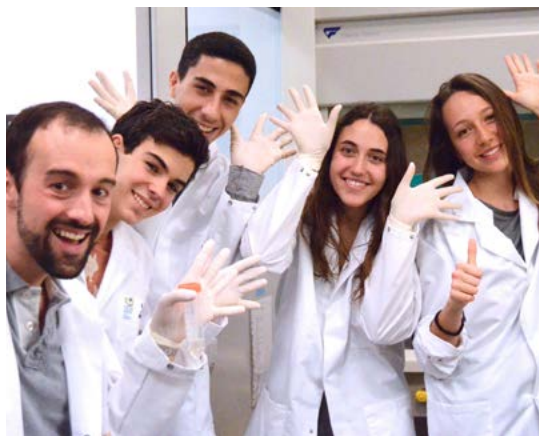




co-organized by BIST and the BIST centre CRG. The night included eight captivating presentations from PhD students in the BIST community who explained their research projects in 5 minute engaging, clear, and fun talks. About 50 people attended, including members of the general public.

### Crazy about Science

Crazy about Science is a year-long science mentorship programme in which research centres from the Barcelona Institute of Science and Technology took part in 2018. Organized by the *Fundació Catalunya-La Pedrera*, it gives



students in the first year of their baccalaureate the opportunity to be integrated into international science research centres and complete hands-on work in cutting-edge laboratories. Through this, students become well positioned for a possible professional career in scientific research. About 40 students participated in programmes of the BIST centres.

### Barcelona International Youth Science Challenge

Six of the BIST centres hosted students for the Barcelona International Youth Science Challenge (BIYSC) from July 9-20, 2018. The initiative, organized by the *Fundació Catalunya-La Pedrera* is a two-week international excellence programme that was developed to offer participants world class experience working on research projects, attending scientific lectures and debates, and enjoying the company of peers from around the world that share the same passions. Participants are international high-school students aged 16-18.



# BIST CENTRES SPIN-OFFS

## IMPACT

The centres of the Barcelona Institute of Science and Technology currently have 25 active spin-offs that together employ more than 100 people. This represents 90% of all spin-offs created by the BIST centres since 2004. Further details can be found on the BIST impact page: [bist.eu/impact](http://bist.eu/impact).



**AHEAD  
THERAPEUTICS**

### AHEAD THERAPEUTICS

<http://www.aheadtherapeutics.com/>  
Founded in 2017 as a spin-off of ICN2, IGTP and ICREA, Ahead Therapeutics develops and commercializes treatments for various auto-immune disorders with a special focus on Diabetes I and Multiple Sclerosis.



### APPLIED NANOPARTICLES

<https://www.appliednanoparticles.eu/>  
A spin-off of ICN2, UAB and ICREA that was created in 2013 and works on biogas production



### BIOD

<http://biod.es/bio-optical-detection/>  
A spin-off of ICN2, CTB, UPM, ISOM and IDM that was created in 2010 and develops proprietary technology for measuring biochips and biosensors.



### COSINGO

<http://www.cosingo.com/>  
A spin-off of ICFO founded in 2008 that offers optical engineering services.



### DROPLITE

<http://www.droplite.com/>  
A spin-off of ICFO founded in 2018. Droplite is a biotech company that develops lab-on-a-chip devices and medical rapid diagnostics.



### EARTH DAS

<http://earthdas.com/>  
Created in 2016 as a spin-off of ICN2, EarthDas is focused on graphene-based energy storage and mobility technologies.



### FUTURECHROMES

<http://futurechromes.com/>  
A spin-off company created in 2014 with participation from ICN2. FUTURECHROMES works on the creation of advanced photochromes.



### GRAFENICALAB

<http://grafenicalab.com/>  
A spin-off of ICN2 that was created in 2016 and offers state-of-the-art patented technology to print flexible graphene sensors and electronic devices on any surface.



### HEMOPHOTONICS

<http://hemophotonics.com/>  
Founded in 2013 as a spin-off of ICFO, HemoPhotonics commercializes portable, non-invasive and real-time blood flow monitoring devices.



### INBIOMOTION

<http://www.inbiomotion.com/>  
A spin-off of IRB Barcelona and ICREA that was founded in 2010 and develops biomarkers to predict bone metastasis.



### IPROTEOS

<http://www.iproteos.com/>  
Launched in 2011, this spin-off of IRB Barcelona and UB develops new therapeutic approaches to neurological and vascular diseases.



## IMPACT



### MICROOMICS

<http://www.microomics.eu/>

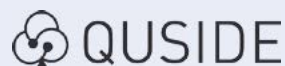
A spin-off of CRG that was created in 2017 and specializes in microbiome analysis, transforming metagenomics data into knowledge to provide innovative solutions to a variety of industries.



### PAPERDROP DIAGNOSTICS

<http://paperdropdx.com>

This spin-off of ICN2 created in 2016 is a nanobiotech company focused on the development of new diagnostic tools.



### QUSIDE

<http://www.quside.com/>

This spin-off of ICFO founded in 2017 exploits photonics technologies and leverages the maturity of the semiconductor manufacturing industry to develop quantum technologies for the cyber-security and super-computation worlds.



### NANOTARGETING

<http://www.nanotargeting.eu/>

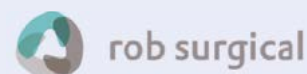
A spin-off of ICN2 and Nanonica holding, founded in 2011, that develops new drugs using nanoparticles.



### PROCARELIGHT

<https://www.procarelight.com/>

A spin-off of ICFO founded in 2012 that works in safety issues related to laser and light emitting systems.



### QuSide

**Spin-off of ICFO founded in 2017**, exploits photonics technologies and leverages the maturity of the semiconductor manufacturing industry to develop quantum technologies for the cyber-security and super-computation worlds.



### NBD NOSTRUM BIODISCOVERY

<http://nostrumbiodiscovery.com/>

A spin-off of IRB Barcelona, BCN-CNS, UB, and ICREA created in 2015 that offers specialized services for drug development based on bioinformatics.



### QGENOMICS

<https://qgenomics.com/>

A spin-off of CRG and UPF that was created in 2008 and offers analysis and interpretation services of genomic data.



### ORCHESTRA SCIENTIFIC

<https://www.orchestrasci.es/>

A spin-off of ICIQ founded in 2017 that commercializes scientific instrumentation and proprietary technology for CO2 capture from industrial emissions and biogas upgrading.



### SENSIA

Founded in 2004, this spin-off of ICN2 develops analytical instrumentation based on graphene biosensing.



### RADIANTIS

<http://www.radiantis.com/>

A spin-off of ICFO established in 2005 that manufactures systems for laser tuning and instrumentation for optical diagnostics



Is now part of:



### SIMUNE

<https://www.simuneatomistics.com/>

Established in 2014, this spin-off of ICN2 develops advanced materials to meet industry and research needs.



### SURGITRAINER

<http://surgitrainer.com/>

A spin-off founded in 2015 by CREB-UPC with the support of IB-Sant Pau and IBEC to provide training and accreditation in minimally invasive surgical techniques.

### SIGNADYNE

A spin-off of ICFO created in 2011 and acquired by Keysight Technologies in 2016. It produces control, test and measurement systems for several industries.

# IDENTITY

The Barcelona Institute of Science and Technology aims to foster a sense of belonging to the BIST community, encouraging its members to work together in creative and collaborative ways and strive towards common goals. A further BIST goal is promoting the BIST brand in order to increase the visibility of its centres and increase awareness of the excellent research they carry out.





## BUILDING THE BIST COMMUNITY



Building the BIST community permeates all activities carried out by the Barcelona Institute of Science and Technology. The goal has been to promote a sense of belonging to BIST, complementary to the affiliation of each member of the centres' collectives, and to build an internal BIST identity. While each of the BIST centres already has a well-established brand and internal community, the goal of BIST is to also create a sense that together BIST is more than the sum of its parts. This challenge has been tackled through strategic messaging and branding for all activities and programmes run by BIST in 2018. Actions included organizing community events such as working group meet-ups, and ensuring the entire BIST community is always up to date with BIST news via strategic channels such as newsletters, social media engagement, and the BIST website, among others.



## Messaging & branding for highlighted BIST programmes

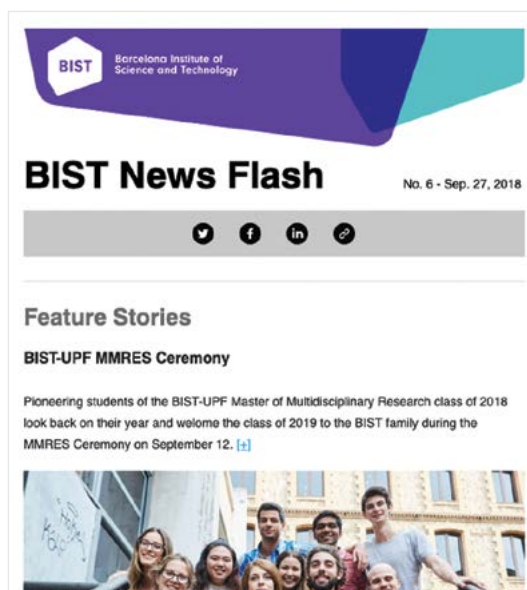
- BIST Winter School on Microscopy, Nanoscopy and Imaging Sciences (February)
- BIST Symposium on Microscopy, Nanoscopy and Imaging Sciences (February)
- To the Mothers of Science supporting grant (February-April)
- 2018 Youth Mobile Festival (February-March)
- 2nd annual Banco Sabadell Foundation Science and Engineering Award (March-July)
- From Science to Business Course (June)
- Leadership in Action course (April)
- 3rd annual Barcelona Science Slam (May)
- 2018 BIST Conference (June)
- GradSchool course (July)
- BIST Master graduation ceremony & welcome event (September)
- 2nd BIST Postdoctoral Day (October)
- BIST Leadership course for senior postdoctoral researchers (October)
- BIST Working Groups Meet-up (December)
- BIST Master of Multidisciplinary Research in Experimental Sciences
- PROBIST & PREBIST programmes
- Ignite programme for collaborative research project



# BIST NEWSLETTER

In January 2018, the Barcelona Institute of Science and Technology sent its first newsletter to the entire BIST community - over 2,000 people. The objective of this periodic newsletter, sent every one to two months, is to make information about BIST, the BIST centres, and relevant programmes and events easily accessible by the entire BIST community, thereby improving and centralizing the flow of information from BIST to its relevant stakeholders. All editions of the newsletter have also been posted to a dedicated page on the BIST website ([bist.eu/newsletter-2/](http://bist.eu/newsletter-2/)) along with an open subscription, thereby making the newsletter accessible to external audiences. Finally, the newsletter was sent to relevant media contacts throughout 2018, leading to several impacts in media outlets.

In 2018, eight editions of the newsletter were sent with an average number of opens (number of times the email was opened, including duplicates) of 3,769, and an average number of total clicks on specific news stories of nearly 400.



## BIST Working Groups meet-ups

An important part of building the BIST community is fostering networking opportunities among the many working groups, technical committees, organizing committees, and review panels heavily involved in projects of the Barcelona Institute of Science and Technology every year. In total, these add up to over 100 people. BIST has held two working group meet-ups, one on December 14, 2017, and the second on January 23, 2019. The aim of both was to offer a space for members to get to know each other, jumpstart new ideas, and be recognized for the work done over the previous year. Around 65 BIST members attended each event, with representatives from each group present, as well as many of the directors of the BIST centres. More information about the events can be found on our website at the following links:

December 14, 2017 Meet-up:

[bist.eu/bist-working-groups-meet-up](http://bist.eu/bist-working-groups-meet-up)

January 23, 2019 Meet-up:

[bist.eu/bist-working-groups-meetup-today](http://bist.eu/bist-working-groups-meetup-today)



## BIST COMMUNICATIONS TOOLS

Developing strategic and targeted communications materials is key for engaging both the internal BIST community and external stakeholders, as well as the general public. In addition to the BIST newsletter, several other communications tools were developed, updated and utilized throughout 2018.

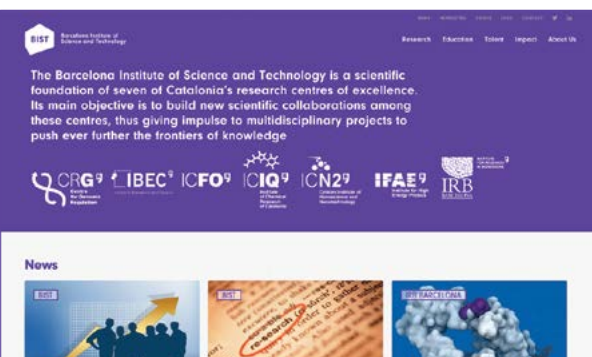
### BIST website

The BIST website is an invaluable conduit of information about BIST, its mission and strategic objectives, activities and programmes, and of course its centres.

The impact of the BIST website has increased steadily since its launch in 2016, as has the amount of information published to the website. Improvements made to the BIST website during 2018 included the creation of the following new pages:

- **Newsletter page** (<https://bist.eu/newsletter-2/>)
- **Graphene@BIST page** (<https://bist.eu/graphene/>)
- **Facilities page** (<https://bist.eu/facilities/>)
- **2018 Conference page** (<https://bist.eu/conference-2018/>)
- **Women in Science page** (<https://bist.eu/women-in-science/>)
- **New Annual Reports page** (<https://bist.eu/annual-reports/>)

In terms of impact, the number of website sessions increased by 74% from 2017 and the number of users by 67%. In addition, the number of countries users were from grew from 165 in 2017 to 198 in 2018, a 20% increase.



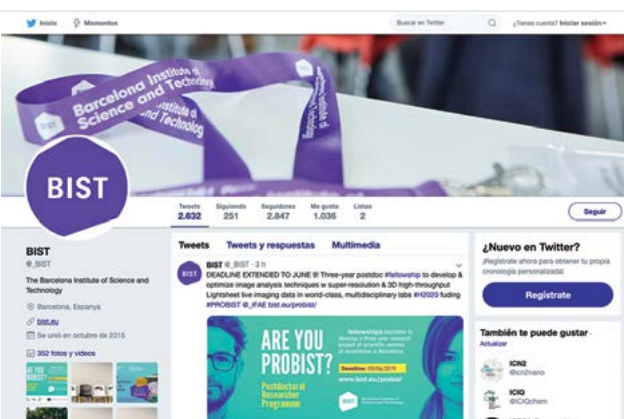
# BARCELONA INSTITUTE OF SCIENCE AND TECHNOLOGY

## SOCIAL MEDIA

The Barcelona Institute of Science and Technology **Twitter**, **LinkedIn**, and **Facebook** accounts were maintained throughout 2018, with an increase in activity and engagement as compared to previous years. The BIST twitter account ([twitter.com/\\_BIST](https://twitter.com/_BIST)), the most popular of the BIST social media accounts, increased its total number of followers by 37% (to 2,341) and its number of tweet impressions by 43% (to 527,900) from 2017. Facebook ([facebook.com/BISTCommunity](https://facebook.com/BISTCommunity)) and LinkedIn ([linkedin.com/company/bist---barcelona-institute-of-science-and-technology](https://linkedin.com/company/bist---barcelona-institute-of-science-and-technology)) accounts also saw an increase in their followers, ending 2018 with a total number of 165 and 979 followers, respectively.

### 2017 BIST Annual Report

The 2017 BIST Annual Report was written in 2018 and presented to the BIST Board of Trustees during their meeting on June 26, 2018. It served as an overview of all of the projects undertaken during the year. A dedicated webpage was also created, with PDF versions of BIST annual reports available for download: [bist.eu/annual-reports](https://bist.eu/annual-reports).





## BIST marketing materials

Throughout 2018, many new marketing materials were developed and used at BIST events and during meetings and activities as branding materials. Materials were also chosen for their environmentally-friendly attributes, such as reusable coffee mugs, water bottles, and tote bags. Other materials include lanyards, notebooks, pens, roll-ups, and thermoses.





## BARCELONA INSTITUTE OF SCIENCE AND TECHNOLOGY MEDIA RELATIONS

A key element for building the identity of the Barcelona Institute of Science and Technology is gaining visibility in the media. To work towards this goal, a media strategy was executed in 2018 including two key elements: 1) sending out press releases more frequently and consistently to become better known amongst desired media sources, and 2) setting up meetings between the BIST Director General, Gabby Silberman, and local journalists. A third element includes the invitation of key international journalists to Barcelona to learn about BIST and its centres and to promote BIST as an institute of reference, a planned action for 2019.

### Media actions

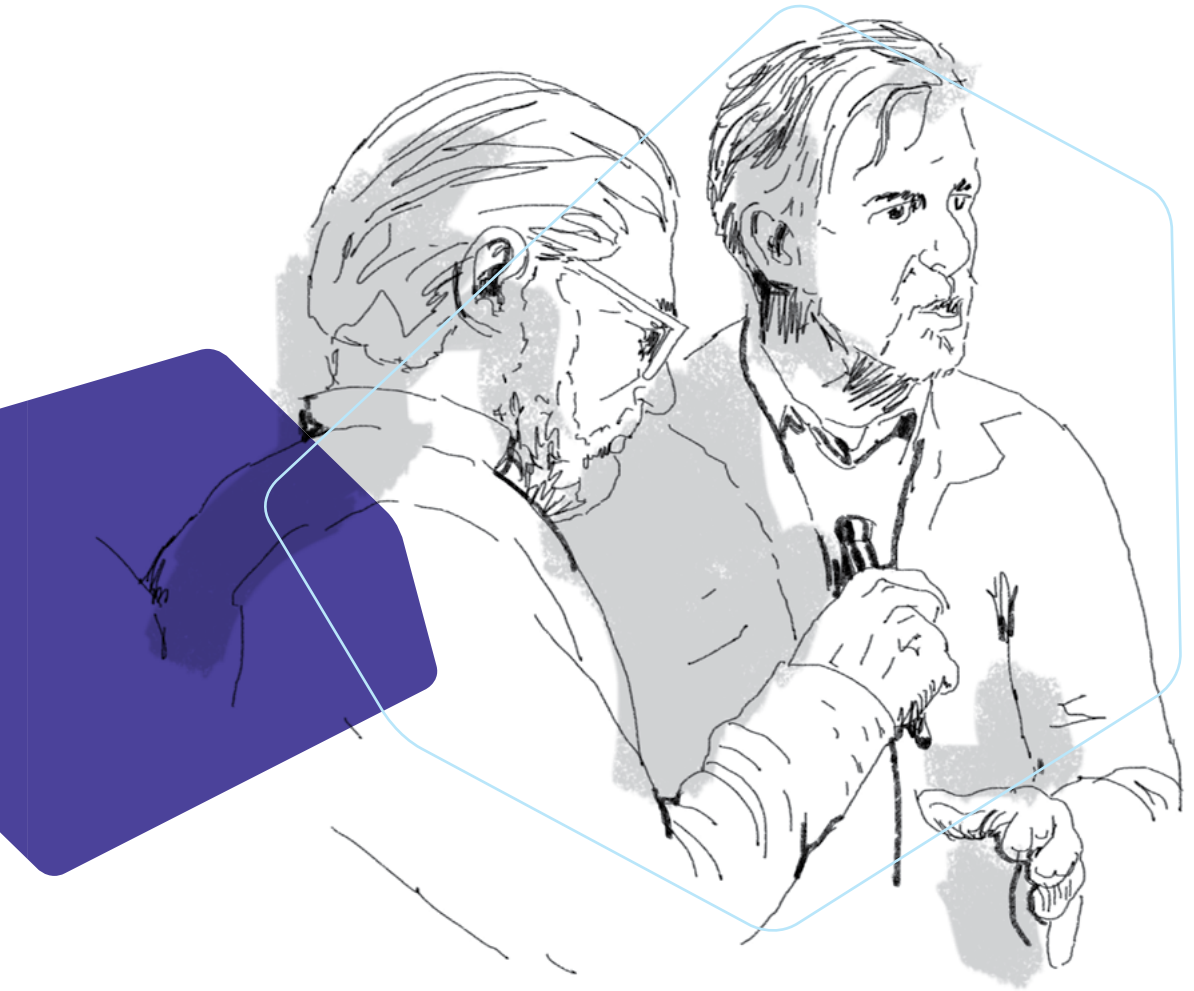
In 2018, BIST sent seven press releases to the media, organized five personal interviews with either the BIST Director or its Board President, held two press conferences on the BIST premises, and had articles published about its activities in such high impact news outlets as La Vanguardia, El País, El Periódico, and EFE, among others.





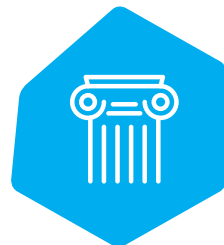
### **BIST impact monitoring**

To better monitor BIST appearances in the media, the BIST Communications Working Group worked throughout 2018 to contract a clipping service platform shared amongst all BIST centres, thereby centralizing efforts and enabling all centres access to each other's impacts. The chosen platform, Rebold, has been active since March 2019 for BIST and its seven BIST centres and will allow more accurate and effective follow up of the BIST and centres media impacts, both locally and internationally.



# INSTITUTIONAL

The Barcelona Institute of Science and Technology aims to continuously strengthen its structure through consolidating and optimizing its governance and operations. Both elements provide the guidance and leadership for BIST to accomplish its strategic mission and objectives. BIST aims to build strong institutional governance and effective management tools in addition to consolidating its work spaces and fostering institutional relationships locally and internationally.



# BIST INSTITUTIONAL RELATIONS



A key action towards achieving multidisciplinary collaborations with external institutes, as well as promoting the visibility of BIST at a local and international level, is fostering relationships with a wide network of leading companies, research centres, universities, and other institutions.

Throughout 2018, BIST forged relationships with relevant local and international entities, some of which have led to institutional collaborations. Some of these include the Institut de l'Escola del Treball and the Escola Superior de Relacions Públiques, with whom a collaboration has been initiated to help promote possible internships at BIST. BIST also became a core partner of EIT (European Institute of Innovation & Technology) Health in 2018, and continued to develop the BIST-UPF Master of Multidisciplinary Research in Experimental Science with the Pompeu Fabra University (UPF). More information about some of these collaborations can be found in the Impact and Education & Talent sections.

# BIST AT THE ESCOLA INDUSTRIAL

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The Barcelona Institute of Science and Technology has had its headquarters at the **Diputació de Barcelona** (Barcelona Provincial Council) in the art-nouveau buildings of the former *Escola Industrial* since April 2017. Moving its executive and management offices to this privileged location has allowed BIST to grow both in personnel and in space and resources for activities. Improvements were made to the space throughout 2018 including new infrastructures for the meeting and activity rooms as well as the working spaces for BIST personnel. External signage has also been added throughout the Escola Industrial premises in order to increase the visibility and presence of BIST. Finally, art pieces representing scientific phenomena were loaned to BIST by Barcelona-based digital artist Anna Rierola and are prominently featured in our offices.



# FACTS & FIGURES

## BIST KEY FIGURES 2018



### PEOPLE

2,464 BIST Community

40%

International

44%

Women

172

Principal  
Investigators (PIs)

598

Postdoctoral  
Researchers

670

PhD Students

10

BIST core team



### OUTREACH

400+

outreach activities

30,000+

people reached



### PUBLICATIONS 1,393



111th World

*Nature Index WFC position (March 2019)*



24th Europe



### INNOVATION

25

active spinoff companies  
(as of December 2018)

40

new patent  
applications (2018)



### ERC GRANTS

108

total ERC Grants  
(as of May 2019)

20

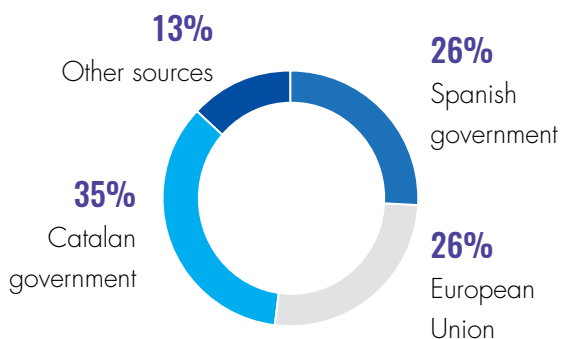
new ERC Grants  
(2018)

11

ERC Proof of Concept  
Grants (2018)

## € FUNDING

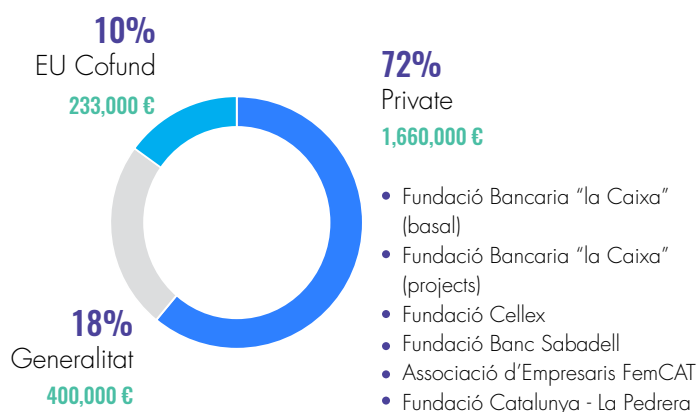
143M<sub>EUR</sub>  
BIST & BIST  
centres budget



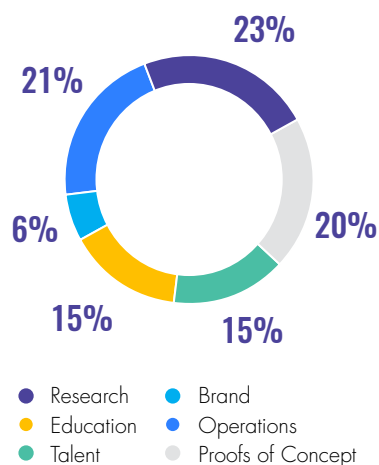
2.3M<sub>EUR</sub> BIST budget



### Sources



### Activities



164M<sub>EUR</sub> H2020 contributions to BIST & BIST centres  
(cumulative to June 2019)

