

# Barcelona Science Plan 2020-2023



Ajuntament de  
Barcelona





Any major city like Barcelona needs a policy of its own regarding science. Our society is immersed in dramatic and rapid changes in science and technology, changes that pose opportunities as well as doubt and uncertainty. Changes that provide hope for progress in many areas, but also concern about the ethical issues involved (biogenetics, transhumanism, use of big data, etc.), as well as about the dilemmas arising from the commercialisation and capacity for controlling personal information that many of these developments seem to implicate.

The aforementioned opportunities and doubts affect daily city life in Barcelona and its residents as a whole, and they demand with great urgency the development of a science and knowledge policy of the city's own that goes beyond urban planning or conference organisation. We need a science policy that interrelates with the culture and education policies already developed, in a way that multiplies the potential of each of these on its own, in order to create a strong platform for scientific experimentation and dissemination that makes citizen science and life-long learning possible. A science policy that interrelates and harmonises with the policies of economic and social innovation, labour, transportation or ageing. A science policy that harnesses the potential of the plurality of approaches proper of the exact, experimental and technological sciences, of life and health sciences, and of social sciences and humanities, all of which are present in our city, with an extensive network of consolidated research centres and internationally renowned experts.

Our city possesses the potential to do this, thanks to one of the most important concentrations of universities and research centres in Europe, as it seeks to work with the rest of local stakeholders, both scientific and institutional, in order to strengthen its capacities and project this great metropolis to the world as a hub of knowledge and scientific innovation.

We need this policy, which is already grounded on solid foundation, to translate scientific developments and knowledge into real change in urban lifestyle, in our ways of consuming and living. A perspective is needed that respects the values inherent in our city and community: equality of gender, income, age, and cultural identity, opening science to the dilemmas of our era, with transparency, promoting shared knowledge and open science while finding a place for citizen participation in the larger debates ahead.

With this main goal, we have created the Barcelona Science Plan 2020-23. This plan was drafted during several different work sessions and discussed with all City Council departments, as well as a large number of related administrations, offices and institutions, following interviews with individuals and organisations holding expertise on the subject. It is grounded on 4 main axes, 15 objectives and 51 actions that form our roadmap and work plan for the next three years.

**Joan Subirats i Humet**

Deputy Mayor for Culture, Education, Science and Community

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## Barcelona Science Plan 2020-2023

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Between 1980 and 2007, the Barcelona City Council, despite not having an office, organisational structure or policy specifically devoted to science, strengthened ties with research centres, universities and other institutions in the knowledge sector by leasing land, which proved critical for the emergence of the multiple scientific stakeholders that today make up the city's strong research and innovation ecosystem. Also during this period, the Museum of Natural Science was founded, and public dissemination of science was increasingly promoted.

In 2007, a step forward was taken with the creation of the programme, Barcelona Science, which promotes initiatives such as the annual Science Festival and EscoLab tours, both of which are still underway. In 2012, within the framework of this programme, the Office of Citizen Science was created, which carries out scientific projects that encourage citizen participation.

During the past term of government, the Barcelona City Council opted for a university and science policy that moved in two different directions. In 2016, measures for universities were adopted that stressed their working relationship with the city on common initiatives and the increased integration of the university and its community in the city in academic, cultural, economic and social terms. In 2018, in agreement with several different research centres, businesses, universities, levels of government and civic groups, the first Barcelona Science Plan was drafted, with the goal of boosting Barcelona as a city of science.

Within the framework of this plan, a favourable environment is created for the city's research and technology centres, universities and entrepreneurial and productive sector to develop innovative solutions in terms of quality of life and ageing, as well as mobility and respect for the environment. It involves both the city's researchers and residents, and strives for the promotion of culture and science education.

The most significant developments in 2019 include new municipal grants for research, the first City and Science fest, support for urban projects that catalyse research and innovation, the awarding of the first Hypatia Prize, and the launch of urban innovation laboratories.

Following this path, we now wish to take a step forward and create a Barcelona City Council science policy. For this purpose, we have created a new governmental office, the Sixth Deputy Mayor's Office for Culture, Education, Science and Community, which includes science for the first time as an area of City Council policy making. This office is equipped with the resources and organisational structure needed from a technical standpoint in order to implement science and university policy as a whole, and, in particular, the Barcelona Science Plan 2020-2023, detailed on the following pages.

### Axes

The Barcelona Science Plan 2020-23 is built on four main axes or working priorities:

**1. Barcelona, European city of science:** Improving the international visibility of Barcelona's university and research institutions and scientific community, as well as Europe's as a whole; forging alliances among key cities and organisations in the knowledge sector; and working to harness the potential of Barcelona as a hub of thought and dialogue on the European stage with regards to the ethical, political and social debates surrounding scientific advancements.

**2. Research for tackling urban challenges:** Providing municipal funding specifically for research; facilitating the use of urban space for research; and improving relations between the Barcelona City Council and the research and university ecosystem to join together the city's scientific stakeholders in the search for innovative, fair and effective solutions to urban challenges.

**3. Science culture by and for citizens:** Turning science into a shared common value among all Barcelona residents through the promotion of citizen science, living labs and action research, encouraging quality science education for all as well as access to scientific dissemination.

**4. Science, art, innovation and society:** Cultivating creative synergies among art, science and technology; promoting knowledge transfer to Barcelona's social and economic stakeholders; and fostering relationships between the city's innovation and science sectors.



**Axis 1.**

**Scientific  
Barcelona  
within Europe**

### Introduction to the axis

In recent years, several European cities such as Vienna, Amsterdam, Paris, London and Berlin, among others, have launched science policies of their own. Barcelona wishes to join this initiative and work to make science a motor for change also on a local level and for improving quality of life for its residents.

Barcelona has, on the one hand, a very high number of professionals, students and researchers, a large network of first-rate research centres and public universities, and a strong productive sector, all of which help consolidate and project Barcelona as a city of science, to Europe and beyond. On the other hand, the Barcelona City Council has a long history of bilateral and consortium agreements with cities in Europe and beyond, which provide added value in illustrating the role of Barcelona in scientific debates on solutions to worldwide urban challenges in the 21st century, as well as its role, alongside that of Barcelona's social and economic stakeholders, in finding practical solutions required by cities to urgent problems.

Along the path to connecting scientific Barcelona with Europe, advancements must be made over the next three years in the following areas: recognising scientific achievements made by the local research community; consolidating the Barcelona Hypatia European Science Prize, devoted to recognising European scientific careers of excellence; facilitating, on behalf of the Barcelona City Council, bilateral and consortium work with other European cities to advance in cooperation and collaboration on solutions to worldwide urban challenges; and holding discussions with the EU regarding the city's research interests and those of its universities and research centres.

These objectives must be approached from a perspective integrating multilayer coordination among all administrations involved, without losing sight of the central role that close proximity confers to local government.

Taking into account the characteristics of Barcelona's scientific and technological ecosystem, the city's tradition of social justice policy, and current needs considering the social and ethical impact of science, during this term of government we are setting a goal for Barcelona to become a central hub in the ethical debates surrounding scientific advancements in digitalisation, biogenetics, biomedicine or artificial intelligence. In this sense, we will work to make Barcelona a point of reference in these debates, through specific events and through its different organisations in culture, education and innovation. We will do so in collaboration with local, state and European stakeholders, both in science and policy, who are key in these disciplines.



### Objectives and actions

#### **Objective 1: To consolidate the Barcelona Hypatia European Science Prize and advance in the recognition of this prize within the EU**

##### **Actions:**

- Organisation of three new editions of the Hypatia Prize (2020-23).

#### **Objective 2: To make Barcelona a European hub in the ethical, political and social debates surrounding scientific advancements in digital technologies, biogenetics, biomedicine or artificial intelligence**

##### **Actions:**

- To create a map of local, state, European and international stakeholders, both in science and policy, who play a key role in these areas; to form and launch a steering committee.
- To organise debates on these topics within the framework of biennials and other forums that can be arranged during the current term of government.
- To favour the development by the city's laboratories and athenaeums of a joint programme of related actions.
- To promote sojourns in Barcelona for scientific, political and social figures of reference in ethical debates surrounding scientific advancements.
- To assist with collaborative projects involving research centres, organisations and enterprises that work in data democratization and with ethical criteria in fields such as biogenetics and biomedicine.
- To participate in a city protocol for establishing municipal ethical criteria for technological and digital implementation.

#### **Objective 3: To recognise scientific achievements made by the local and international research community**

##### **Actions:**

- To award prizes recognising scientific merit within the framework of the three editions of the City of Barcelona Prizes (2020-23).
- To make visible, through the Barcelona Science website and in collaboration with the media, contributions made by renowned researchers, including both locals as well as visitors who come to the city to deliver lectures, conduct research or provide advice.
- To publish a book on scientific Barcelona which recognises the contributions made and international influence exerted by the scientific community of the city throughout the 20<sup>th</sup> century.

**Objective 4: To reach agreements with cities in Europe and beyond for developing and sharing solutions to current urban challenges, and to foster collaboration among key stakeholders in these corresponding cities**

**Actions:**

- To design a collaborative project among cities linking their city councils and research centres and universities, respectively.
- To hold discussions with the European Commission regarding the city's research interests and those of its research centres and universities.
- To develop a communication plan for Barcelona as a city of science.

**Axis 2.**

**Research  
for tackling  
urban  
challenges**

### Introduction to the axis

Barcelona, an international city, faces significant challenges, such as inequality, climate change, energy transition, gentrification, digitalisation of the economy and society, and ageing. To overcome these challenges, which are global, posing tests to cities and regions around the world, innovative, transformative solutions are needed, which are usually born of cutting-edge scientific research committed to protecting the environment and the social needs of citizens.

Barcelona, thanks to its rich framework of research and technology centres, universities and economic infrastructure, and also thanks to its position, along with the metropolitan area, as a city of reference in the implementation and deployment of the most advanced and imaginative technologies, fulfills the conditions for launching a science policy that can boost the research and knowledge that its stakeholders as a whole can generate regarding global urban problems.

In this context, the Barcelona Science Plan for the next three years will focus on establishing a permanent dialogue between the Barcelona City Council and the city's scientific ecosystem. This will serve to increase research funding, to encourage foreign researchers to come to Barcelona and help develop the local and global solutions that we need, and to help promote urban projects that involve conducting research in our city. In this sense, projects will be favoured that seek to provide solutions, using ethical and social criteria, for guaranteeing a present and future that are ecologically sustainable and fair for all.

This boost to research will be based on a plural and multidisciplinary approach, understanding that dialogue among the sciences themselves and among sciences and the city's stakeholders –social (organisations and the third sector as a whole), political (administrations and social movements), and economic (businesses, unions and cooperatives)- is the way to developing complex solutions for the complex problems we face. Gender parity will be a key criterion for advancing on this axis of the plan, guaranteeing the participation of women in the development of solutions to problems and in the generation and management of knowledge. The promotion of knowledge sharing will also prove key. In this sense, the use of open access data will be encouraged and knowledge will be guaranteed as commons, meaning that open, shared knowledge accessible to all will be ensured.

### Objectives and actions

#### **Objective 5: To favour dialogue and collaboration among scientific stakeholders, universities and the Barcelona City Council**

##### **Actions:**

- To create a digital tool through the platform Decidim, to enable dialogue among scientific stakeholders and the Barcelona City Council regarding research.
- To promote the participation of research centres and universities in boards, committees or advisory councils for developing solutions to key challenges facing the city.
- To increase the participation of the Barcelona City Council in European and international research projects led by research centres and universities, ensuring a smooth coordination between international relations and science management in support of the different fields participating in these projects.
- To strengthen agreements for Barcelona City Council practicum and industrial doctorate programmes that stress urban challenges, testing new working practices proposed by project researchers.
- To define priority actions in scientific research for the city's universities and for the Barcelona City Council within the framework of the different bilateral agreements made with these universities and their corresponding monitoring committees.

#### **Objective 6: To consolidate funding for research for tackling the most urgent urban challenges**

##### **Actions:**

- To expand funding for calls for research proposals.
- To assess the research needs of the different departments of the Barcelona City Council in order to specify the coordination mechanisms of municipal funding for research.
- To create a repository of the most significant research conducted on Barcelona in different scientific disciplines.
- To communicate local research needs to the city's scientific stakeholders.

#### **Objective 7: To guarantee affordable housing for foreign and visiting researchers over the three years of the plan**

##### **Actions:**

- To grant between five and ten social housing units of medium duration (one to two years) during the 2020-23 period, for visiting researchers working at the city's various research institutes and centres.
- To create ten new short-term (one to six months) housing units during the 2020-23 period for visiting scientists.

### **Objective 8: To launch urban projects that catalyse the city's research and innovation activities**

#### **Actions:**

- To further the urban and scientific project, the Knowledge Citadel, by participating in the second phase of development of the new facility on the grounds of the former Fish Market; to promote the link between the Institute of Marine Sciences and the Barceloneta beach through the dissemination project on marine life, Barcelona, A Sea of Science; and to assist with the renovation project involving the Martorell building.
- To develop a network of university infrastructures in Barcelona, connecting them with other local organisations in research, innovation and culture, through bilateral agreements with these corresponding universities.
- To promote research centres, organisations and businesses that foster the democratization of data and, in more general terms, of science, and that help define ethical criteria for scientific advancements, especially in biogenetics and biomedicine.

## **Axis 3.**

# **Science culture by and for citizens**

### Introduction to the axis

Any local science policy absolutely must include citizen participation so that science becomes a shared common value among all residents, neighbourhoods and stakeholders, and not the heritage of just some. In this sense, local policy, characterised by its close proximity to the people, represents the sphere of influence *par excellence* for allowing residents to participate in the definition, analysis and solution of common problems, and for advocating the right to knowledge for everyone, a right often not practiced and with access deficiencies, depending on neighbourhood, income, nationality or ethnicity.

For this reason, this Barcelona Science Plan seeks to foster a culture of science among all Barcelona residents by promoting science programmes and activities in the education system and in the whole of public facilities, giving special priority to perspectives of gender, territory, income, nationality and ethnicity, thereby ensuring criteria of fairness in the city's science policy.

At the same time, we also consider it essential to work on improving lifelong science education with local universities and the city's extensive network of cultural and educational organisations, placing special emphasis on providing fair access for youth and for senior citizens with fewer resources.

These efforts in education will be accompanied by activities to foster and vitalise scientific dissemination, through biennial events in science and thought, and through programmes that bring science to our streets and neighbourhoods. In addition, we deem it important to bring residents into contact with research, enabling them to have a better understanding of scientific problems and deeper involvement. Our goal is to encourage more open knowledge and strengthen social support for scientific experimentation, taking the science, knowledge, doubts and uncertainties of the general public as our point of departure. For this reason, we will expand the initiatives of the Barcelona Office of Citizen Science, we will facilitate action research and living labs, and we will work to create a facility in the city that enables its residents to interact with science.



### Objectives and actions

**Objective 9: To reinforce educational science programmes and science activities throughout the entire education system, giving priority to perspectives of gender, territorial equality and income**

**Actions:**

- To launch STEAM (science, technology, engineering, arts and math) programmes and other science programmes in the city's schools, and to monitor these in different City Council departments in order to share good educational practices in research and science, including environmental justice, urban climatology and gender equality as transversal values.
- To develop new science education programmes, in particular for post-basic education, such as "Resident Scientists" for vocational education and digital democracy programmes.
- To design educational tools and resources in science, together with the city's research centres and organisations such as the Natural Science Museum and the Zoo.
- To create a working roadmap on lifelong science education as a collaboration among Barcelona's universities, City Council and educational and cultural organisations.

**Objective 10: To strengthen scientific dissemination and outreach activities**

**Actions:**

- To hold the City and Science Biennial events in 2021 and in 2023.
- To overhaul and redefine the annual Science Festival, opting for territorial decentralisation and collaboration with the city's various districts and facilities.
- To boost scientific dissemination at the city's facilities: museums, libraries, civic centres, innovation factories and laboratories, zoo, etc.
- To provide support for events related to science organised in collaboration with other City Council departments, in three priority areas: leading healthy eating, climate crisis solutions and ethical debates on science.
- To consolidate funding for the popularisation and promotion of science culture.

**Objective 11: To promote scientific thought among residents**

**Actions:**

- To expand the initiatives of the Office of Citizen Science in the social sciences, with concrete projects in connection with developing solutions to urban challenges.
- To increase the participation of the city's public facilities and social organisations and groups in citizen science projects.

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- To link the Office of Citizen Science with European research projects in which the Barcelona City Council participates, in order to boost citizen science experiences in the framework of these collaborative arrangements.
- To foster the city's own living labs and in collaboration with organisations and research institutes and centres.
- To promote action research projects and processes among Barcelona's residents, scientific stakeholders and administration, in order to enhance city policy.

### **Objective 12: To create and vitalise Barcelona Science facilities**

#### **Actions:**

- To define the programme in functional terms as promoting interaction between residents and research and scientific knowledge, conference and meeting facilities, science cafes, dissemination and outreach events, art and science exhibits and projects, etc.
- To set up a pilot programme at a facility in the city as a collaboration between the Barcelona City Council and the city's universities and research centres.

## Axis 4.

# Science, art, innovation and society

### Introduction to the axis

Open science, rooted in and committed to its environment, is one that relates to various stakeholders (and is also influenced by these), who partake in or require scientific knowledge to explain, or even transform, our surroundings. In this regard, the relationships among the university, industrial and economic, scientific, social and artistic communities are a key motor for change and for transforming the world.

Barcelona does not start from scratch on this working priority, as it has an active base, as well as projects and events with a strong local impact and international projection, which bring together art, science, technology and society. Building on this, in the present plan we seek to enhance these relationships and foster projects and events that reinforce this complementariness, in the most experimental and imaginative way possible.

Spotlighting this synergy between art and science and its creative potential will be achieved by helping the ISEA 21 festival take root in our city, encouraging joint projects between the city's research centres and arts centres, and supporting our alliance with CERN for fostering artists' residencies. Moreover, the connection between the creative process and technology, which can take place in both scientific and artistic production, will remain a focal point of the present plan by linking the city's innovation and technological facilities with scientific and artistic stakeholders.

Finally, the transfer of scientific knowledge to the social and economic arenas will also constitute an objective. Here we will make efforts to guarantee this transfer to stakeholders that do not possess human and material resources for research their own, but that contribute to favouring an economic dynamisation of the city based on sustainability of the environment and of life for all.

### Objectives and actions

#### **Objective 13: To cultivate relationships among art, science, technology and society**

##### **Actions:**

- To foster, within the framework of the Collide International programme in alliance with CERN, artists' residencies at CERN and at creation factories in Barcelona.
- To provide support to new joint projects between the city's research centres and its cultural and arts centres.
- To help the International Symposium on Electronic Art (ISEA) take root in our city in June 2021.

#### **Objective 14: To encourage links between the city's scientific stakeholders and its innovation projects and facilities**

##### **Actions:**

- To assist in catalysing relationships between scientific stakeholders and the Laboratory of Democratic Innovation (LID) and i.Lab initiatives.
- To strengthen the scientific dimension of arts athenaeums.

#### **Objective 15: To facilitate knowledge transfer to social and economic stakeholders that have few or no resources for research of their own and that work to create a fair, environmentally sustainable economy**

##### **Actions:**

- To incorporate this objective in existing agreements with universities and research centres.
- To organise, together with universities, a knowledge transfer platform geared toward the social and economic sectors, with effective advisory and practical transfer methodologies.
- To participate in a transversal innovation working group representing different departments and areas of the Barcelona City Council, in order to facilitate knowledge transfer for solving urban problems and to develop innovative ways of facing emerging challenges.

### Governance

The Barcelona Science Plan 2020-23 will be equipped with a specific organisational structure for its implementation, vitalisation and follow-up. Along these lines, a structure will be created for the technical management and implementation of science and university policy within the Sixth Deputy Mayor's Office for Culture, Education, Science and Community, which will include a team comprising at least six technical administrator positions in charge of the plan and science and university policy as a whole.

This structure will work with the rest of the different areas and departments within City Council that play an important role in boosting science policy, such as Education, Health, Culture, Social Rights, Urban Ecology, Economy, Innovation and International Relations, among others. Thus, the management will participate in several transversal discussions of topics in which science and universities are key.

Externally, the plan will be linked to two different boards in which universities and research centres participate. These will provide ongoing advice on science policy and will be involved in work related to the needs and potential of the city's various scientific stakeholders. Both boards, the Scientific Advisory Council and the Municipal Advisory Council on Universities, created in 2017 and 2018, respectively, comprise a large number of representatives from Barcelona's science and university network.

In budgetary terms, the plan will enjoy an increased investment of 1 million euros as compared with spending in 2019, which totalled 11 million euros.



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