

look into the future

annual report 2020

01



**The future
is unpredictable
but we can be ready
to change it.**



Ikerbasque 2020

In 2020, the world awoke from a dream in which we felt safe, at least from a virus that would upset our lives so much.

This has focused all our attention on science.

We have asked for immediate answers and solutions, but during this past year it has become clear that time is an ally of science.

Without various steps there are no tests.

Without processes there is no evidence.

Without mistakes there are no correct answers.

The calm and attention to detail with which scientists work is what this report represents, as well as their steadfast vision of the future.

The Basque Government created Ikerbasque to reinforce the Basque scientific system through the attraction, recovery and retention of researchers from all around the world.

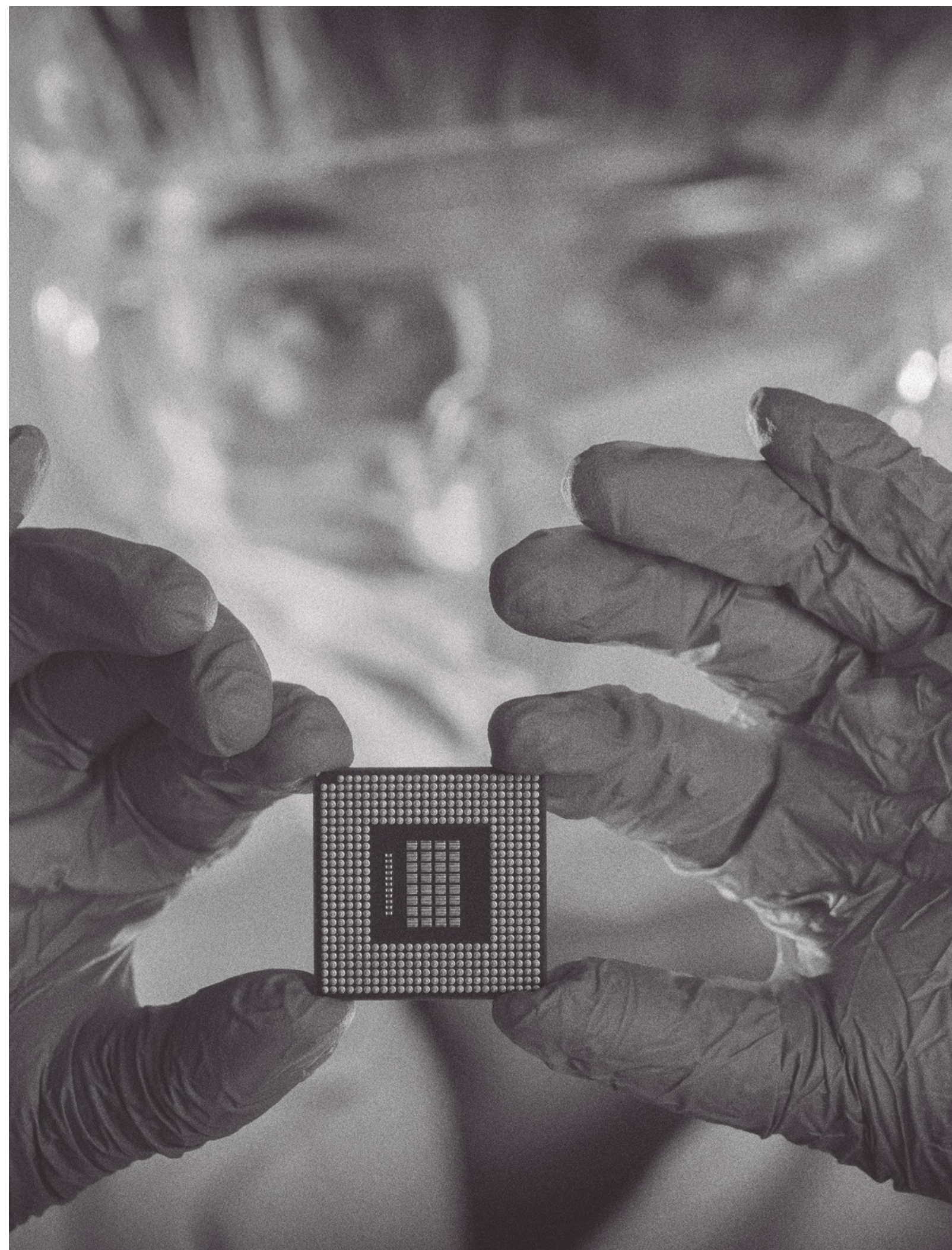
The Basque Foundation for Science is a consolidated organization with **290 researchers from 36 different countries**, from all fields of knowledge and with a firm commitment to the hiring of female researchers, as well as to promoting the return of Basque researchers who are currently working outside of the Basque Country.

For all of this, **Ikerbasque** provides a comprehensive offer that has long term stability, covering the different stages of the researcher's career. Our researchers develop their work in the different universities and research centers of the Basque Country. It is all about our allies, those who make it possible for us to achieve our goals and who allow us to see ourselves as an organization unrestricted by our physical boundaries.

Since Ikerbasque's creation, we have sought to be a stable yet motivating platform from which scientists and scientific institutions in the Basque Country can continue asking themselves new questions and contributing to the challenge of generating new knowledge

Science as hope

And the dream of a better future



New Incomers



Joxe Aizpurua
Mondragon University

Detect, diagnose and predict power and energy component and system failures.



Stefano Balbi
BC3

Development of models for the analysis of ecosystems.



Michael Barton
BCAM

New models of industrial production for manufacturing.



Ana Beloqui
Polymat

Design and the use of polymers to improve the stability of proteins, mainly enzymes.



Lorea Blázquez
Biodonostia

Editing the hidden messages in our genes.



Sandra Camarero
Polymat

Smart materials for tissue regeneration.



Montserrat Casas
CIC energiGUNE

New materials to build more efficient batteries.



Miguel Cazalilla
DIPC

Looking for new alloys with interesting electrical properties.



Bo Chen
DIPC

High-pressure chemistry, nanoscale chemistry and physics, carbenes and diradicals.



Adai Colom
Biofisika Institute

The forces involved in different cell and tissue process,



Irene de la Cruz
UPV/EHU

Development of grammatical structures across the lifespan in both monolingual and multilingual populations.



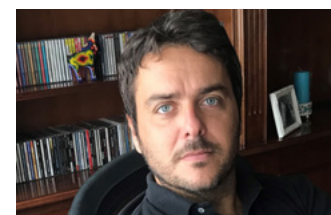
Lionel Dupuy
Neiker

Interactions between plants with their environment.



Borja Erice
Mondragon University

materials and structural components subjected to extreme loading conditions.



Luca Fanelli
UPV/EHU

Mathematical theory: Spectral Theory, Harmonic Analysis and Dispersive PDE's.



Joan Fernández
Mondragon University

Circular Economy and Sustainable Development.



Paula Jauregui
AZTI

Food bioprocessing and valorisation of agri-food by-products.



Gonzalo Jiménez-Osés
CIC bioGUNE

Computer simulations to understand biological phenomena such as host-pathogen interactions and protein function.



Marina Kalashnikova
BOBL

Environmental and neurobiological precursors of language development in the first years of life.



Catarina Lopes
CIC energiGUNE

Functional materials for energy storage applications.



Isabel Mendizabal
CIC bioGUNE

Analysis of DNA regulation in populations and diseases.



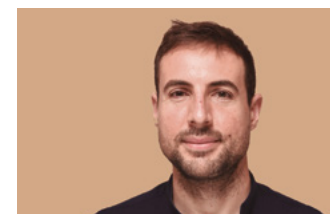
Jone Michelena
UPV/EHU

Cell cycle control and genome integrity maintenance.



Vladimiro Mujica
DIPC

Nanoscience.



Ernesto Panadero
University of Deusto

Educational assessment and self-regulated Learning.



Martin Ramstedt
International Institute for the Sociology of Law (IISL/IISJ)

Law & Society: Socio-legal studies.



Mikel Sanz
UPV/EHU

Quantum computing.



Martin Schnell
CIC nanoGUNE

Development of infrared imaging to detect cancer automatically.



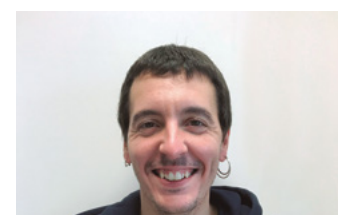
Valentina Shevtsova
Mondragon University

Fluid behaviour in microgravity.



Unai Silván
BOMaterials

Cell-material interactions for the design of functional biomaterials that promote optimal biological responses.



Igor Tascón
Biofisika Institute

Molecular mechanisms of membrane proteins involved in human diseases.



Ignacio Torres
Achucarro

Neurobiology of insulin peptides.



Irune Villaluenga
Polymat

Design of new materials for batteries.



Qi Zhang
BOMaterials

Functional materials for energy.

Researchers Profile

290

Researchers



170

Research Professors

Senior independent researchers in all areas of knowledge with extensive research experience and leadership skills. They are assigned permanently to Basque universities and research centers.



42

Research Associates

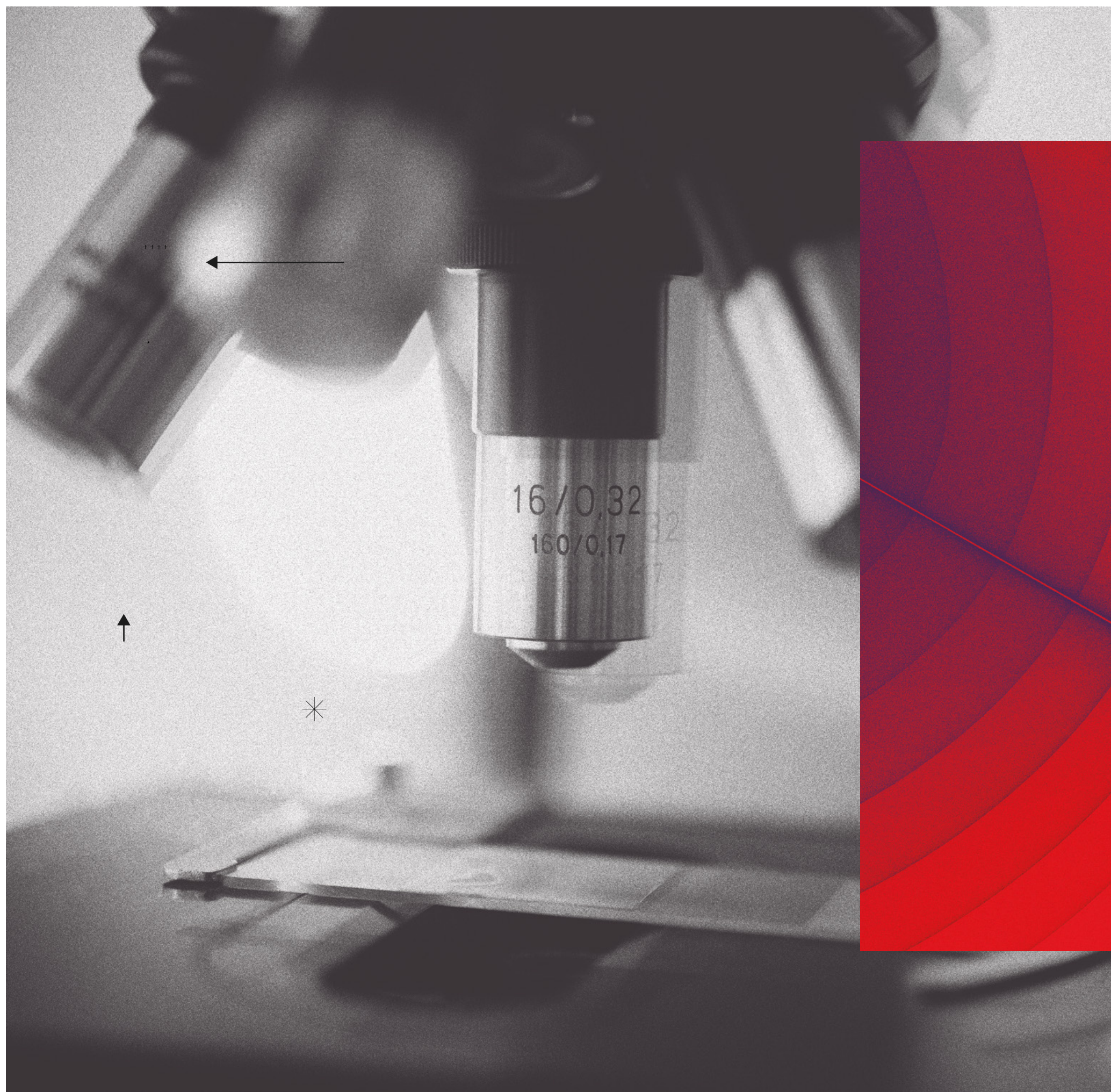
Researchers with an established scientific career in all areas of knowledge. They have demonstrated maturity, intellectual independence and leadership ability. Ikerbasque offers them permanent research positions.



78

Research Fellows

Young researchers with a promising scientific career and international experience. Ikerbasque offers them 5— year research positions with the aim of establishing a track towards an independent research career.

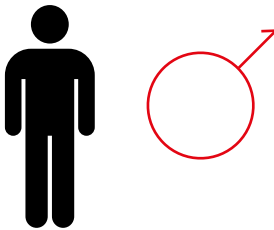


Researchers Profile

Distribution
by sex

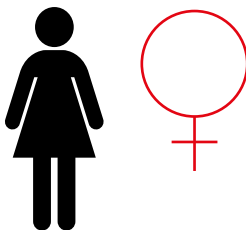
219

Men



71

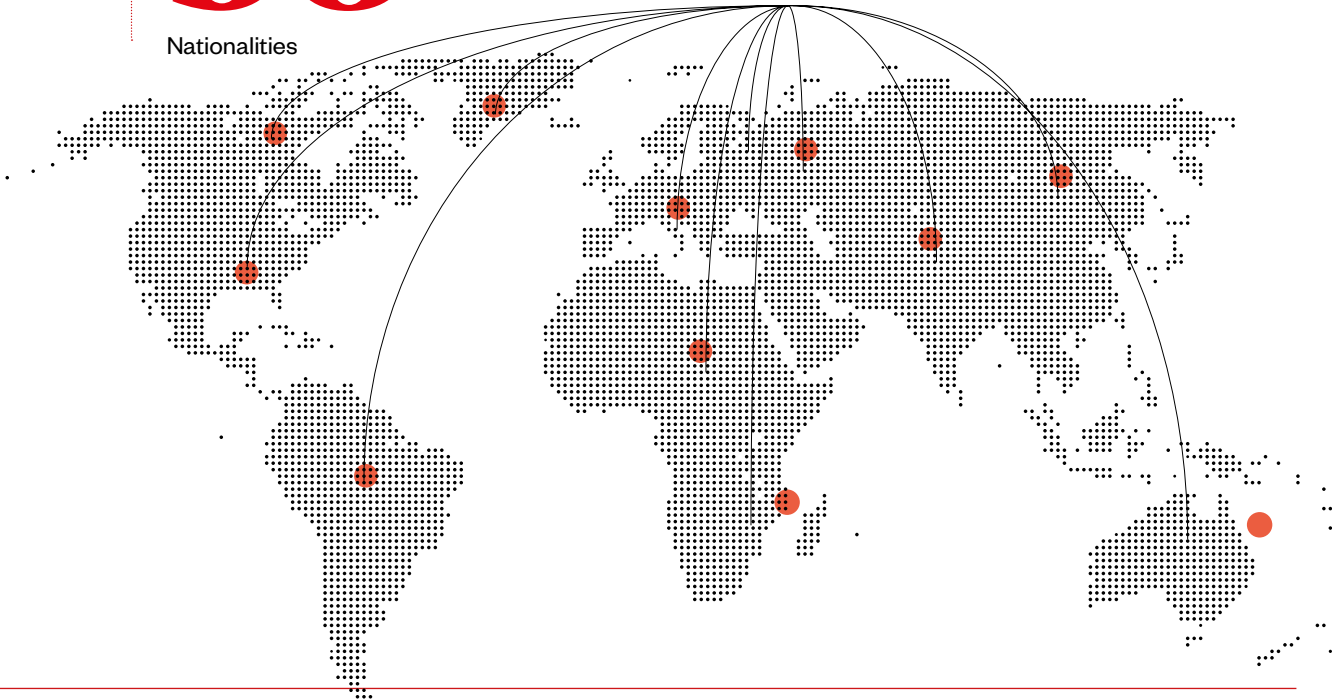
Women



Nationality
of Researchers

36

Nationalities



Distribution
by knowledge
field

Life & Medical Sciences

65

Social Sciences & Humanities

34

Total

Experimental Sciences

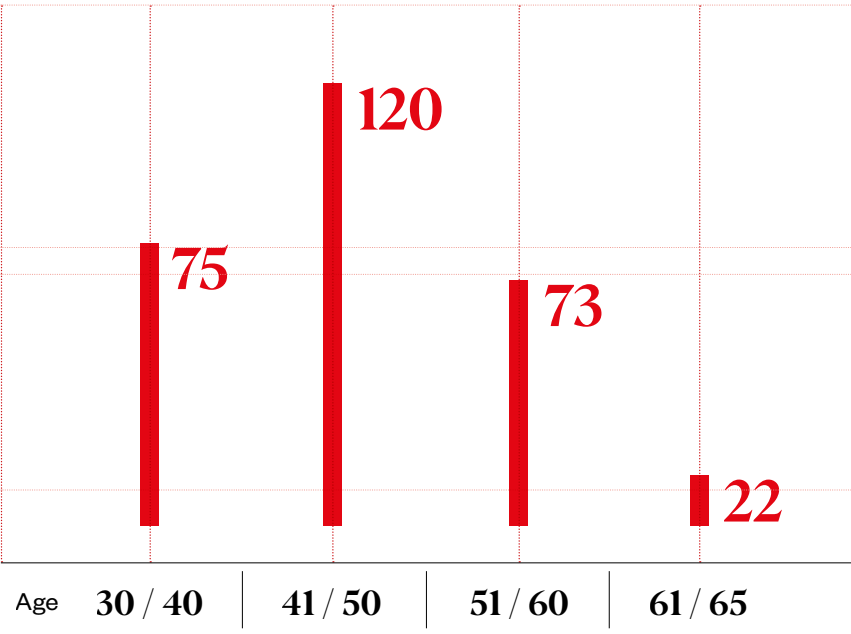
153

Engineering & Technology

38

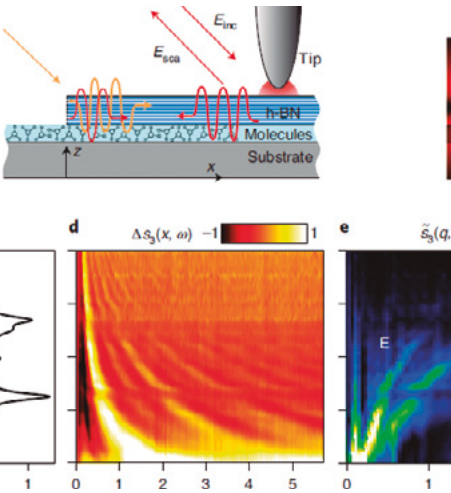
290

Distribution
by age



Relevants Publications

+



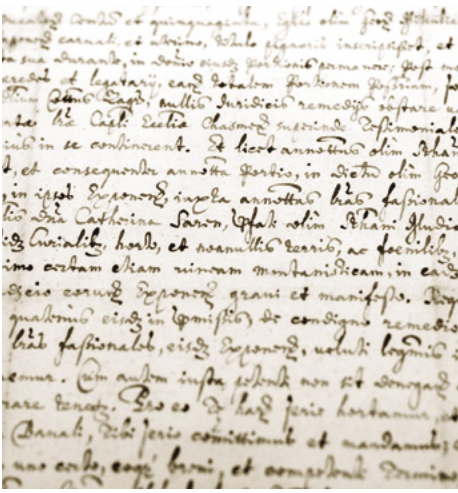
Strong coupling between propagating phonon polaritons and organic molecules observed for the first time

Five Ikerbasque Researchers have participated in an ambitious project led by Alexey Nikitin (DIPC) and Rainer Hillenbrand (CIC nanoGUNE BRTA). The scientific team has employed a spectroscopic nanoimaging technique to study how infrared nanolight - in form of phonon polaritons - and molecular vibrations interact with each other. The images reveal that vibrational strong coupling can be achieved, which is a phenomenon that has recently attracted wide attention for its potential use to control fundamental physical and chemical material properties. The work has been published in Nature Photonics



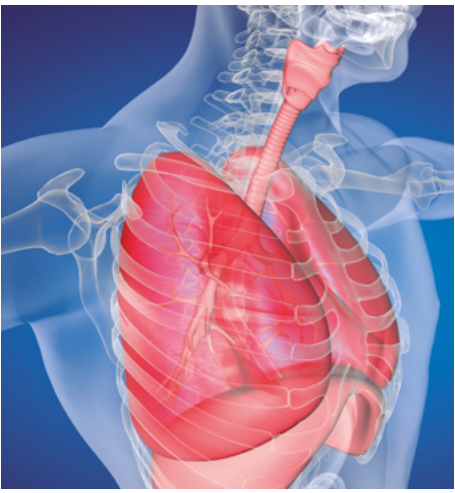
Mechanism to obtain metal “nanoscrews”

Led by the Ikerbasque professor Luis Liz-Marzán CIC biomaGUNE has developed a mechanism by which gold atoms are deposited by means of chemical reduction onto previously formed gold nanorods to produce a quasi-helicoidal structure. This geometry enables these “nanoscrews” to interact with circularly polarized light much more efficiently than what is achieved with any other known object. These properties could lead to the detecting of biomolecules in a very selective and very sensitive way. This piece of research was echoed by the prestigious scientific journal Science.



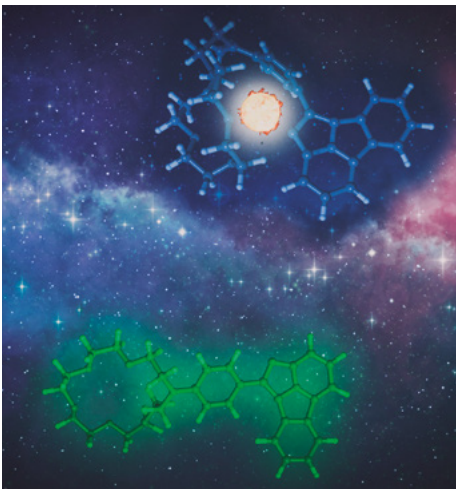
The Languages of Early Medieval Charters

Francesca Tinti, Ikerbasque researcher at UPV/EHU has published a new volume with Brill. The book is the first major study of the interplay between Latin and Germanic vernaculars in early medieval records. The contributions in this volume bring to the fore the crucial question of language choice in the documentary cultures of early medieval societies. Specifically, they examine the interactions between Latin and Germanic vernaculars in the Anglo-Saxon and eastern Frankish worlds and in neighbouring areas. The chapters are underpinned by an important comparative dimension on account of the two regions’ shared linguistic heritage and numerous cross-Channel links.



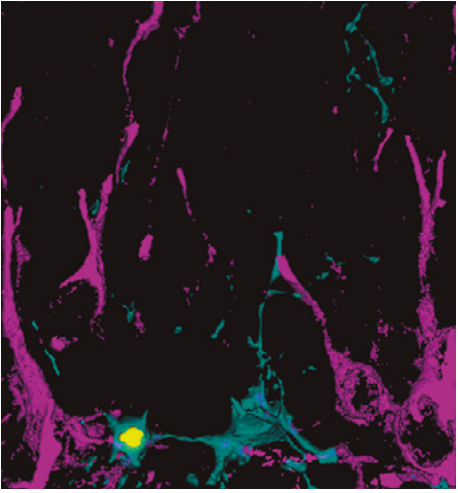
The genetic characteristics that affect the development of COVID-19

Jesús Bañales (Ikerbasque researcher at Biodonostia) Has led an international study in which it has been described that the vulnerability of certain people to developing severe clinical reactions from the SARS-COV-2 virus may be influenced by their genetic characteristics for the first time. This work, published in the New England Journal of Medicine, indicates that variants of two regions of the human genome are associated with an increased risk of developing respiratory failure in patients with SARS-COV-2 infection.



A blue spark to shine on the origin of the Universe

An interdisciplinary team of scientists led by Juan José Gómez Cadenas (DIPC) and Fernando Cossio (UPV/EHU) Has demonstrated that it is possible to build an ultra-sensitive sensor based on a new fluorescent molecule able to detect the nuclear decay key to knowing whether or not a neutrino is its own antiparticle. The results of this study, published in the prestigious journal Nature, have great potential to determine the nature of the neutrino and thus answer fundamental questions about the origin of the Universe.



Life after death (of neurons)

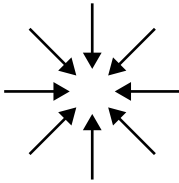
Amanda Sierra, Ikerbasque Researcher at Achucarro Has led a study that shows that microglia act as a sensor for the death of newborn cells, contributing to the balance between life and death. When the microglia detect a lot of newborn cell death, they signal to the neuron production system that there is a surplus being generated and it must stop production. In contrast, when death is low, the hippocampus can permit more new neurons and the brake must be released. The results published in the Journal of Neuroscience may have important implications for the understanding of neurodegenerative diseases.

Relevant
Data

€ 35 Million

Return
of investment

Total funds that Ikerbasque
researchers obtained
from competitive calls in 2020



1,345

Articles

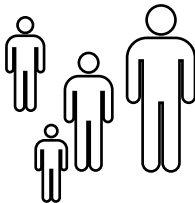
published by Ikerbasque
researchers in indexed publications



1,190

People

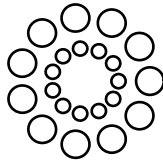
working in research groups
led by Ikerbasque researchers



14

ERC

Ikerbasque researchers are
leading 14 ERC grants. The ERC
(European Research Council) is the
main European organization that
promotes research projects based
on scientific excellence



+200,000

Citations

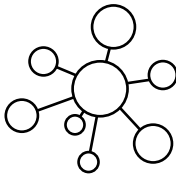
Ikerbasque has obtained more than
200,000 citations since its creation



812

Projects

with external funding in which Ikerbasque
researchers participate

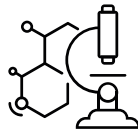


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155

Correlation between productivity
and quality

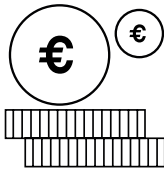
290

Researchers



€ 19 Million

Annual
Budget of Ikerbasque



“

**“Science is always
worth it because
its discoveries,
sooner or later,
are always applied**

Severo Ochoa

”



Host Centers

Ikerbasque researchers have joined the following centers in the Basque Country.

Achucarro
Basque center for neurosciences

Azti
Marine and food innovation

BC3
Basque centre for climate change

BCAM
Basque center for applied mathematics

BCBL
Basque center on cognition brain and language

BCMaterials
Basque center for materials, applications & nanostructures

Biocruces Bizkaia
Health Research Institute

Biodonostia
Health Research Institute

Biofisika Institutua
Basque centre for biophysics

CIC energiGUNE
Energy cooperative research center

CIC bioGUNE
Center for cooperative research in biosciences

CIC biomaGUNE
Center for cooperative research in biomaterials

CIC nanoGUNE
Nanoscience cooperative research center

CFM-MPC
Materials physics center

Deusto
University of Deusto

DIPC
Donostia international physics center

Globernance
Institute for democratic governance

IISL/IISJ
Law&Society: Socio-legal studies

Neiker
Basque Institute for Agricultural Research and Development

Polymat
Basque center for macromolecular design and engineering

Tecnalia
Technology corporation

Tecnun
University of Navarra

Mondragon Unibertsitatea
University of Mondragon

UPV/EHU
University of the Basque Country



