

THE UNLIMITED POWER OF RESEARCH



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GOBIERNO VASCO

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DEPARTAMENTO DE EDUCACIÓN

ikerbasque
Basque Foundation for Science

ikerbasque

The world is full of borders and obstacles.
As people we also have our own limitations.
We call them fears, prejudices, insecurities.
But they are no more than reactions to the unknown.

To break through these barriers and move
forward we need to know.

To experiment, discover and innovate with
an open mind. Because without research there
is no development. There is no future.

The challenges of tomorrow will be solved by
what we learn today. Now is the moment to be
ready for new challenges.

In 2007, The Basque Government created
Ikerbasque to reinforce the Basque scientific system
through the attraction, recovery and retention
of researchers from all around the world.

Nowadays, The Basque Foundation for Science is
a consolidated organization with **373 researchers
from 35 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.

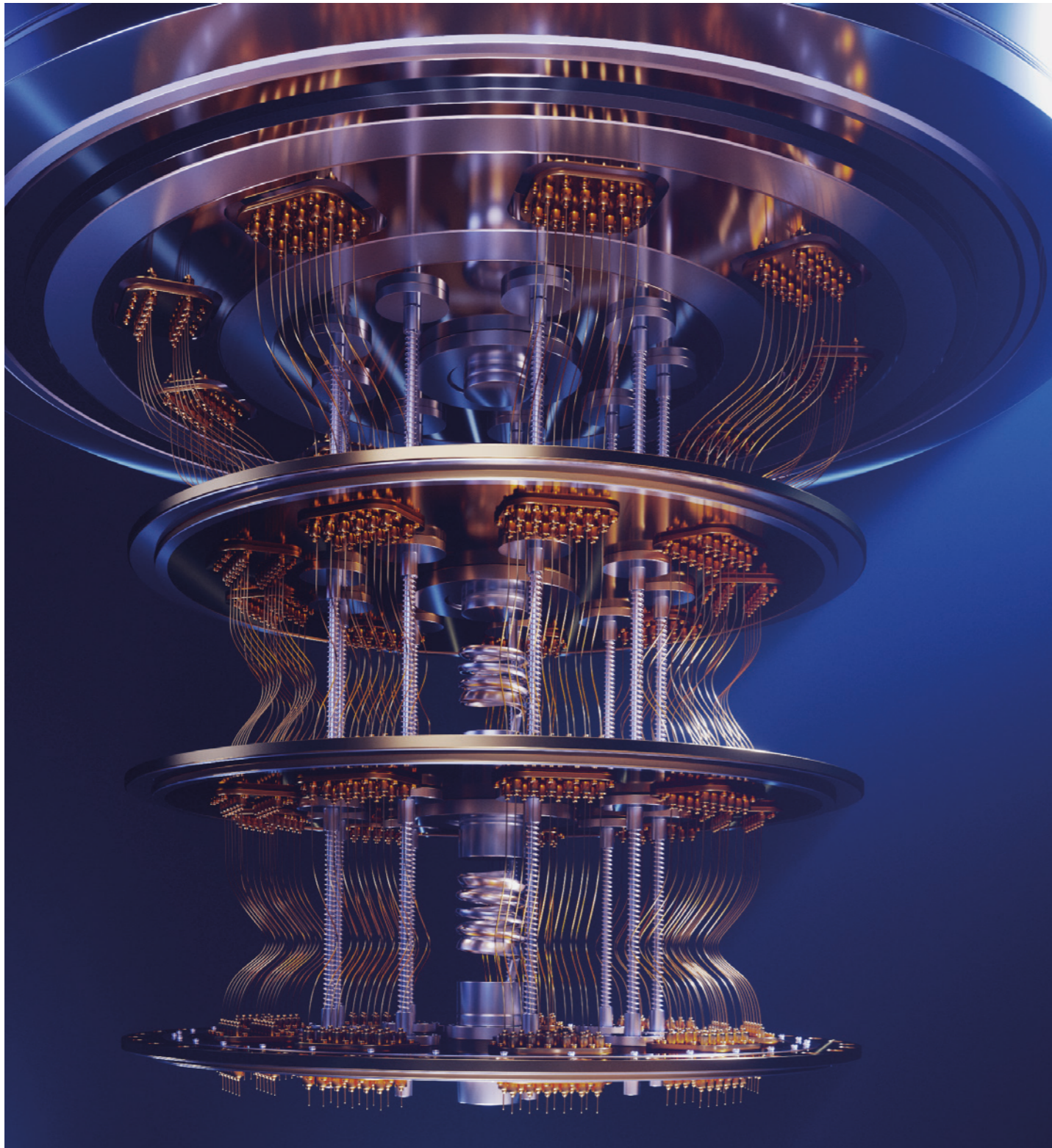
Our researchers develop their work in the different
universities and research centers of the Basque
Country. It is all about our allies, those who make
it possible for us to achieve our goals and who allow
us to see ourselves as an organization unrestricted
by our physical boundaries.

This report brings together the projects of a
whole year in which we have investigated without
fear or mental barriers. And with unlimited effort
and enthusiasm.

Because only in this way, as a society,
can we reach as far as we set out to go.

**THE UNLIMITED
POWER OF
RESEARCH**

THE TWELVE CHALLENGES FOR 2024



1

Basque Country to reach **9,000 annual** scientific publications.

2

60% of scientific productions publications to be carried out with **international collaboration**.

3

A **third** of Basque Country's publication to appear in the **top 10% of maximum impact journals (D1)**.

4

BERCs to publish **1,700 scientific articles**, **18%** of the Basque total.

5

Ikerbasque to hire **100 new researchers**.

6

Ikerbasque to recruit **30 Basque fellows**.

7

More than 40% of new research staff recruited by Ikerbasque in 2024 to be **women**.

8

Ikerbasque researchers to publish more than **1,600 scientific articles** in 2024.

9

50% of Ikerbasque publications in 2024 to appear in the **top 10% of maximum impact journals (D1)**.

10

Ikerbasque to archive a return of **150 million euros**.

11

Ikerbasque researchers to develop **20 ERCs**.

12

Ikerbasque researches to lead, **1,500 people in their research groups**.

NEW INCOMERS



**JAVIER
AIZPURUA**
DIPC
Theory of Nanophotonics.

**LAURA
AMO**
Biobizkaia
Immunology.



**JAVIER
AUYERO**
UPV/EHU
Sociology of Urban
Marginality and
Collective Action.

**MARCIN
BALCERZYK**

Bioaraba
Prediction of results of the patients with hemorrhage, dose verification in proton therapy, new boron delivery drugs for Boron Neutron Capture Therapy.



**SARA
BARJA**
UPV/EHU
Electrocatalysis at
the atomic scale.

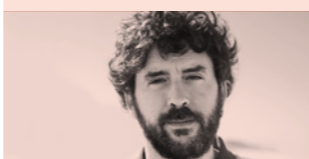
**MAGDALENA
BOBOWIK**
UPV/EHU
Social psychology of
intergroup relations.



**IGOR
CALZADA**
UPV/EHU
Emerging Digital Citizenship
Regimes.

**IVÁN
CÁRCAMO**

Biobizkaia
Applying human genetics and functional genomics to discover causal genes for cardiometabolic disease



**TERESA
CARDOSO**
Biobizkaia
Liver disease in acquired
and inherited metabolic
disorders.

**JAVIER
CARRASCO**
CIC energiGUNE
Modelling and
computational simulations
of functional materials for
energy.



**AMAIA
CARRIÓN**
BCBL
Genetic underpinnings of
reading ability and associated
brain phenotypes.

**LUCREZIA
COSSETTI**
UPV/EHU
Dispersive Partial Differential
Equations, Spectral Theory,
Hardy-type inequalities.



**RICARDO
DÍEZ-MUIÑO**
DIPC
Theoretical study of the
dynamics of physical
and chemical processes
at surfaces and low
dimensional systems.

**AMAIA
ERCILLA**
CIC bioGUNE
Genome homeostasis
in pathophysiology.



**ASIER
ERRAMUZPE**
Biobizkaia
Computational
Neuroscience and
Biomedical Engineering.

**FRANCESCO
FANELLI**
BCAM
Analysis of PDEs: PDEs from
fluid mechanics, hyperbolic
operators, well-posedness,
asymptotic analysis, Fourier
analysis methods.



LOLA FARIÑAS
University of Deusto
Advanced ultrasonic
technologies for complex
material characterization
and process monitoring.

**HECTOR
FLORES**
Achucarro
Neuropathology of
the interorganellar
contact sites.



**FRANCISCO
GIL BEA**
Biogipuzkoa
Neuroprotective therapies
for neurodegenerative disea-
ses focusing on brain energy
metabolism.

**MIKEL
GONZÁLEZ**
BC3
Climate Policy, Energy
Economics, Public
Economics.



SARA LENZI
University of Deusto
Data sonification and
auditory display for real-time
monitoring and anomaly
detection. Design methods
for human-data interaction.



**SERGIO
LUCARINI**
BCMaterials
Multiphysics-Multiscale
Modeling of Smart Materials.

**SHRIPAD
MAHULIKAR**
UPV/EHU
Aerospace Engineering.



**NOEMÍ
JIMÉNEZ**
UPV/EHU
Lipidomics in cell biology:
understanding lipid diversity
and uncovering new lipid
functions in cells.



**DANIELE
MANTIONE**
Polymat
Conductive polymeric
materials, polymers for
energy and environment.

**VÍCTOR
M. EGUILUZ**
BC3
Complex systems and
integration of human-
biological-physical scales.



**JOAQUÍN
PÍRIZ**
Achucarro
Brain Circuits of Emotions.

**ILEANA
QUINONES**
Biogipuzkoa
Neurobiological
underpinnings of typical
and pathological language
functions.



**MURUGAN
RAMALINGAM**
UPV/EHU
Biomaterials, Stem Cell
Technology, Bioprinting,
Tissue Engineering and
NanoMedicine.

**ANA
RUIZ-SÁENZ**
CIC bioGUNE
Resistance to targeted
therapies and cancer
progression.



**ROBERTA
RUTIGLIANO**
UPV/EHU
Family demography, low and
late fertility, intergenerational
support, grandparenting.



**DMITRY
SINELSHCHIKOV**
Biofisika Institutua
Dynamical systems with
applications to biophysics,
physics and medicine.



**FEDERICO
SORIA**
Achucarro
Matrix-glia interactions
in the healthy and
diseased brain.

**CLAIRE
TONNÉLÉ**
DIPC
Computational chemistry;
Photophysics and
photochemistry of organic
(supra)molecular systems.



JAIME VALLS
AZTI
Robotics: modelling sensor
behaviours for perception and
mapping, computational Intel-
ligence in HRI and condition
assessment for infrastructure
maintenance.

BILGE YABANCI
University of Deusto
Political sociology of
autocratization; civil society
and social movements in
undemocratic regimes;
polarization, social stigma
and refugees.



373 RESEARCHERS



191 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.

106 Research FELLOWS

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

76 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.



RESEARCHERS PROFILE



NATIONALITY OF RESEARCHERS

35
NATIONALITIES

Argentina
Australia
Austria
Belgium

Brazil
Canada
Chile
China

Croatia
Cuba
Czech Republic
Denmark

France
Germany
Greece
Hungary

India
Ireland
Israel
Italy

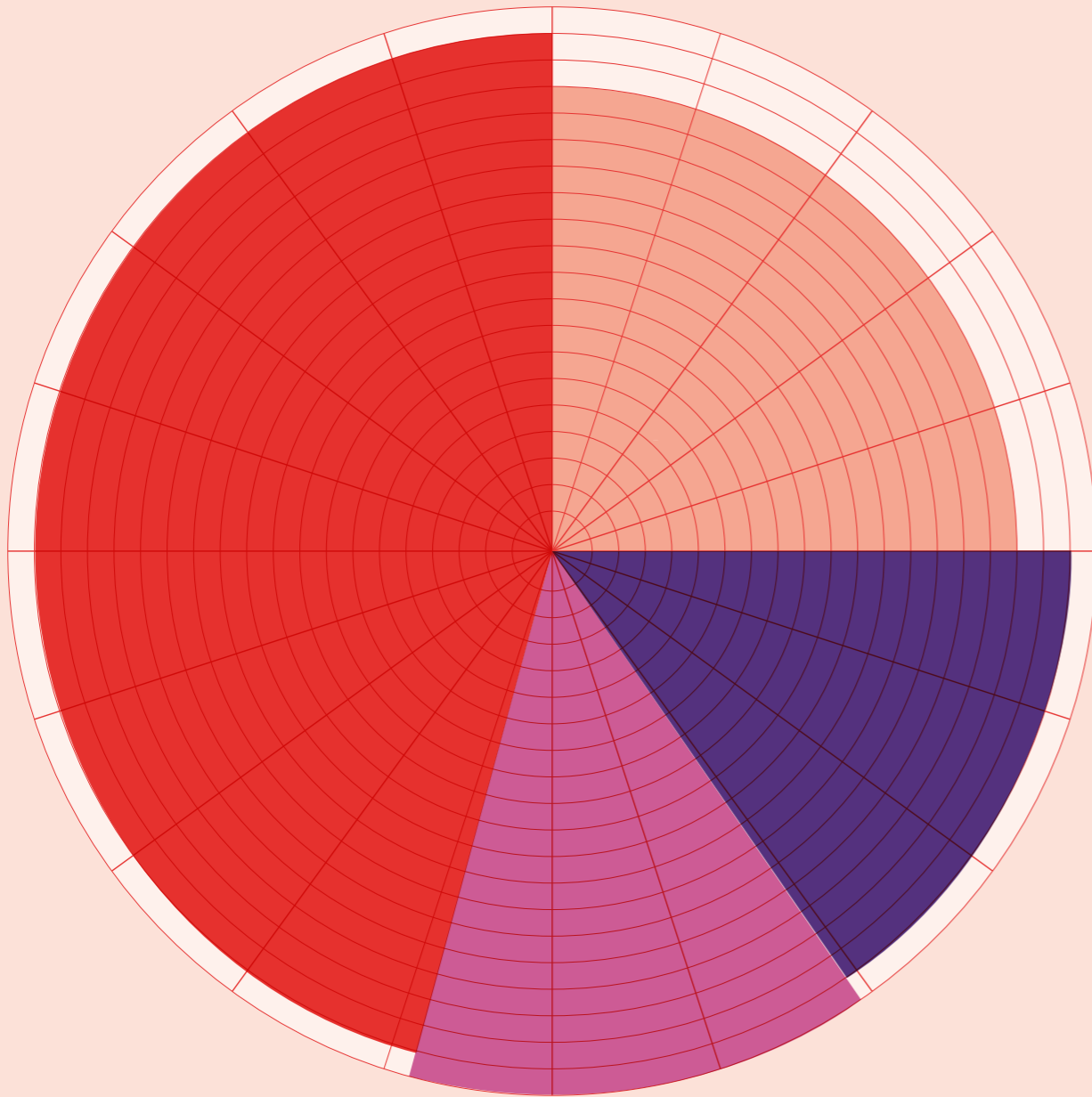
Macedonia
Mexico
Pakistan
Poland

Portugal
Romania
Russia
South Korea

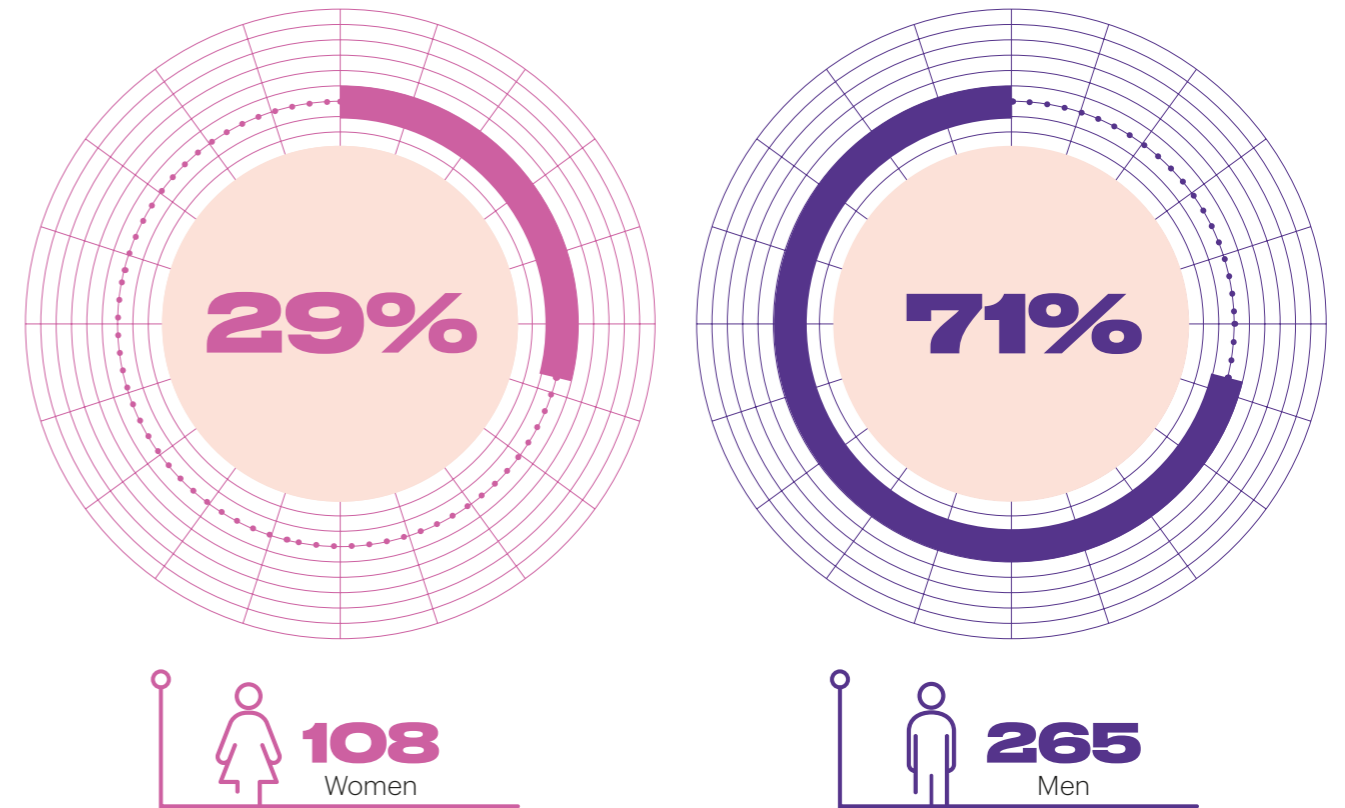
Spain
Sweden
Switzerland
Turkey

Ukraine
United Kingdom
United States

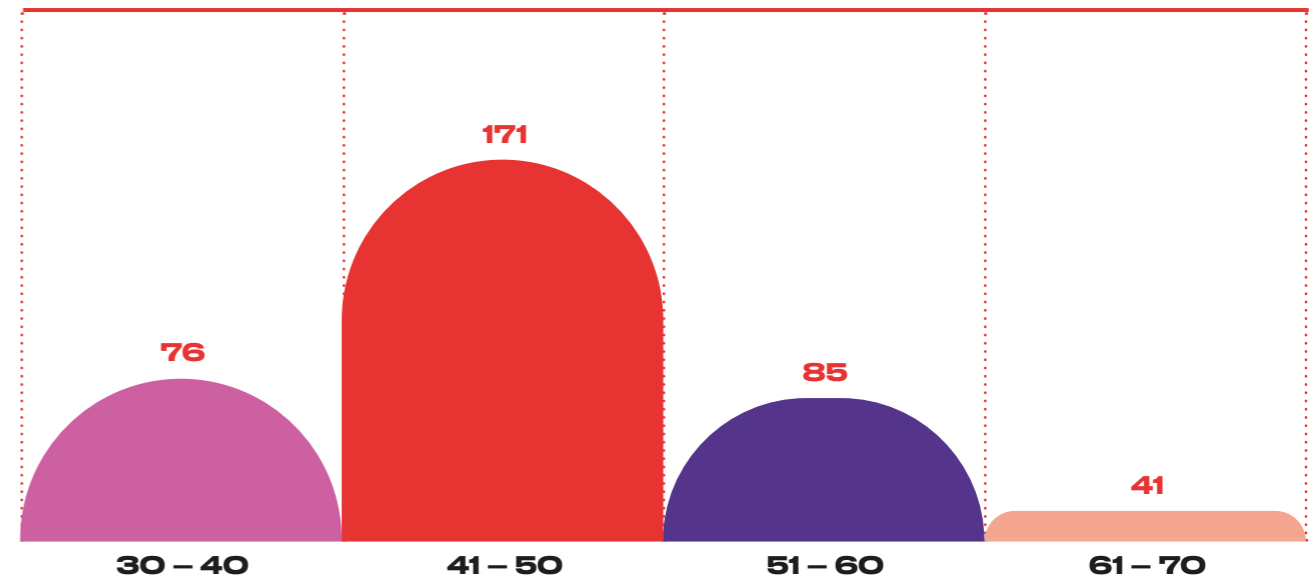
DISTRIBUTION BY KNOWLEDGE FIELD



DISTRIBUTION BY SEX



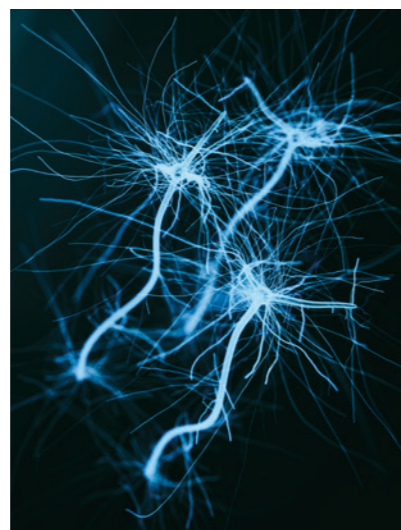
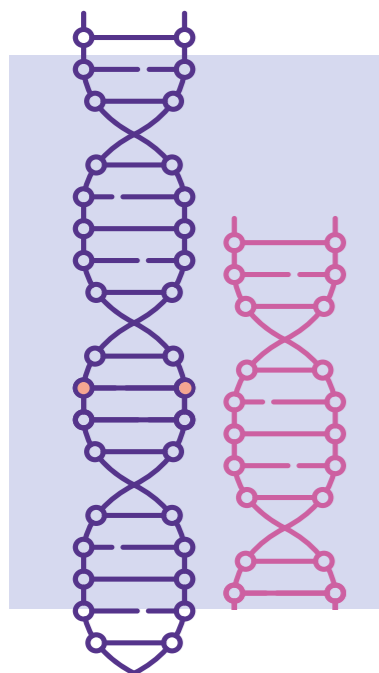
DISTRIBUTION BY AGE



RELEVANT PUBLICATIONS

2.6 BILLION-YEAR-OLD ANCESTORS OF THE CRISPR GENE-EDITING TOOL ARE RESURRECTED

An international study led by CIC nanoGUNE Ikerbasque researcher Raúl Pérez-Jiménez reconstructs for the first time ancestors of the well-known CRISPR-Cas system from 2.6 billion years ago and studies their evolution over time. The results suggest that the revitalised systems not only work, but also that they are more versatile than current versions and could have revolutionary applications. The work, published in the prestigious scientific journal *Nature Microbiology*, opens up new avenues in the manipulation of DNA and in the treatment of diseases such as cancer or diabetes.



CRUCIAL BREAKTHROUGH IN ALZHEIMER RESEARCH

An international study, involving the participation of Amaia Arranz, Ikerbasque Researcher from the Achucarro Basque Center for Neuroscience, shows a mechanism of neuronal death in Alzheimer's disease which could pave the way for new therapies or drugs. An in-depth understanding of the mechanisms that underlie this neuronal death is essential in the quest for treatments and effective therapeutic targets. Given that currently no drugs exist that can cure or effectively alleviate the symptoms of the disease, these discoveries open the door to the possibility of developing therapies that prevent the loss of neurons, which could then delay or even halt the progression of the disease. The study was published in the prestigious journal *Science*.

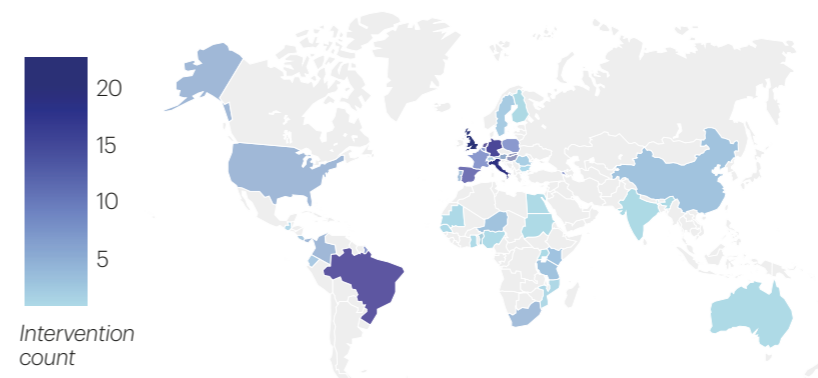
ANCIENT BALKAN GENOMES REVEAL HOW SLAVIC EUROPE WAS FORMED

Iñigo Olalde, Ikerbasque researcher at the UPV/EHU, together with the Institute of Evolutionary Biology (IBE: CSIC-UPF) and Harvard University, has led a study in which they have reconstructed the genomic history of the first millennium of the Balkan Peninsula for the first time. To do so, the team recovered and analysed ancient genomes from 146 people who lived in what is now Croatia and Serbia during that period. The work, published in the prestigious journal *Cell*, reveals the Balkans as a global and cosmopolitan frontier of the Roman Empire and reconstructs the arrival of Slavic peoples in this region.



GLOBAL RESEARCH SHOWS THAT CITIES ARE NOT TAKING ADVANTAGE OF THE FULL POTENTIAL OF NATURE-BASED SOLUTIONS

A study, done by the Basque Center for Climate Change (BC3) and the University of Almería, with the participation of Marta Olazabal and Unai Pascual, shows how the application of nature-based solutions worldwide directly influences the climate-biodiversity-society nexus and how these solutions foster real long-term change when used to help cities adapt to climate change. The study identifies critical strategies to advance the application of such solutions in the adaptation of cities to climate change. The study, published in the journal *Nature Sustainability*, used data from 216 projects implemented in 130 cities across the world.



EXOTIC STARS USED TO TUNE INTO THE HUMMING OF THE COSMIC SYMPHONY

Jose Juan Blanco-Pillado, Ikerbasque researcher at the UPV/EHU, participated in an international consortium that has been compiling data on pulsars for 15 years using some of the largest radio telescopes in the world, which has allowed them to find evidence of oscillating waves with periods ranging from years to decades. These results have been made possible by a precise observation of a set of cosmic clocks (pulsars) in our galaxy. The results obtained break new ground in the universe of gravitational waves and are published in the prestigious journal *The Astrophysical Journal Letters*.

ULTRASMALL CALCIUM CARBONATE NANOPARTICLES COULD IMPROVE THE DIAGNOSIS OF ATHEROSCLEROSIS

Jesús Jiménez Cabello and Susana Carregal of CIC biomaGUNE have designed and compared nanoparticles which provide information about the development phase of plaque in atherosclerosis. In this study, they have come up with a pioneering and simple nanoprobe, which could inspire new designs for non-invasive contrast agents for atherosclerosis and other diseases. In this work, published in the prestigious journal *ACS Nano*, the team compared different nanoparticles designed specifically for different features of atherosclerosis (such as calcification or inflammation), which provide useful information about the phase or state of the plaque development.



RELEVANT DATA



111
PHD THESES MENTORED IN 2023



1,530
ARTICLES

Published by Ikerbasque researchers in indexed publications.



1,639
PEOPLE

Working in research groups led by Ikerbasque.



1,222
PROJECTS

With external funding in which Ikerbasque researchers participate.



373
RESEARCHERS



€ 24MM
ANNUAL BUDGET



€ 45MM
RETURN ON INVESTMENT

Total funds that Ikerbasque researchers obtained from competitive calls in 2023.



23 **ERC**

Led by Ikerbasque researchers in 2023. The ERC (European Research Council) is the main European organization that promotes research projects based on scientific excellence.

ACCUMULATED DATA



€380 MM Return on investment since 2007

+13,700 Articles published by Ikerbasque researchers in indexed publications

415,000 Citations

37 spin-off Created by Ikerbasque researchers

46 ERC Obtained by Ikerbasque researchers

219 H-index

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.

BIOARABA

Health Research Institute

BIOBIZKAIA

Health Research Institute.

BIOFISIKA INSTITUTUA

Basque centre for biophysics.

BIOGIPUZKOA

Health Research Institute.

CIC bioGUNE

Center for cooperative research in biosciences.

CIC biomaGUNE

Center for cooperative research in biomaterials.

CIC energiGUNE

Energy cooperative research center.

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.

ISL/IISJ

Law&Society: Socio-legal studies.

MONDRAGON

University of Mondragon.

NEIKER

Basque Institute for Agricultural Research and Development.

POLYMAT

Basque center for macromolecular design and engineering.

TECNALIA

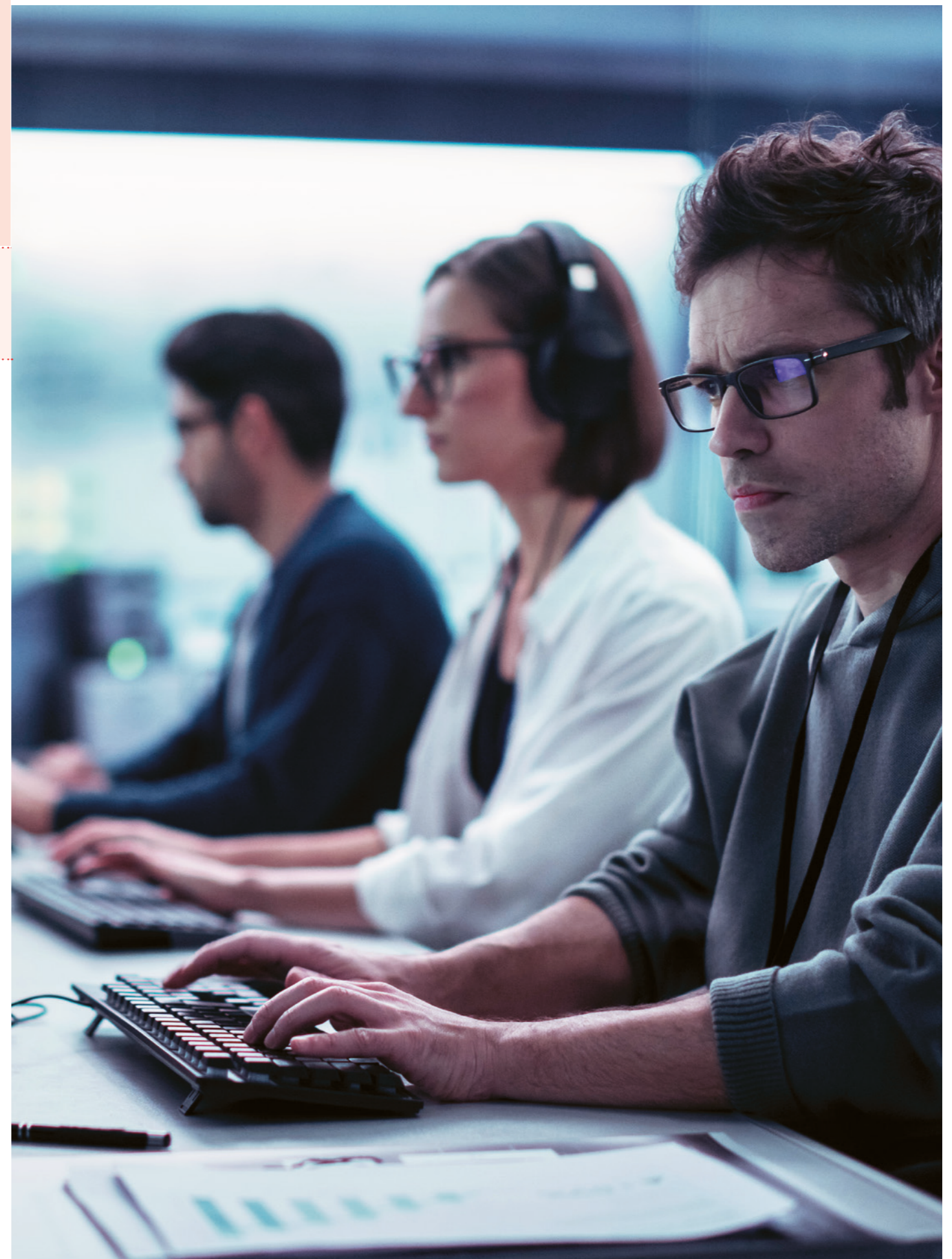
Technology corporation.

TECNUN

University of Navarra.

UPV/EHU

University of the Basque Country.



INVENTION, IT
MUST BE HUMBLLY
ADMITTED, DOES
NOT CONSIST
IN CREATING
OUT OF VOID,
BUT OUT OF
CHAOS.

— MARY W. SHELLEY

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