Mapping of ecosystem around Tecnalia

TECNALIA2BIO4 project

Plan de Recuperación, Transformación y Resiliencia

Funded by the European Union
NextGenerationEU

BRTA

Basque Research and Technology Alliance (BRTA) is an alliance of 17 R&D centres and cooperative research centres: Azterlan, Azti, Ceit, CIC bioGUNE, CIC biomaGUNE, CIC energiGUNE, CIC nanoGUNE, Cidetec, Gaiker, Ideko, Ikerlan, Leartiker, Lortek, Neiker, Tecnalia, Tekniker and Vicomtech, with the support of the Basque Government.

https://brta.euskadi.eus/en/home/

Research agenda - Personalised Health

Download the BRTA personalised health research agenda

https://brta.euskadi.eus/contenidos/recurso_tecnico/brta_comun/en_def/adjuntos/Personalized-health_BRTA-research-agenda_ENG.pdf

TECNALIA

Biomaterials

Research group focuses on developing innovative medical devices for the prevention, diagnosis, prognosis, and treatment of human health conditions. Our work includes advanced biomaterials for tissue regeneration and combined therapies, as well as precise and portable diagnostic systems such as point-of-care devices, transdermal patches, and ingestible pills. We also provide biocompatibility testing and analytical validation of medical devices in compliance with ISO 10993 under Good Laboratory Practices (GLP).

Research lines

- Biomaterials synthesis, processing and characterization
- Surface modification, characterization and manufacture
- Biocompatibility and biological evaluation

Assets

- Smart patches for transdermal biomarker monitoring or active substances delivery
- Advanced biomaterial for 3D cell culture applications
- Portable PoC biofluid ion detector
- Colorimetric microfluidic enzyme stability assays
- Portable photo-electrochemical microfluidic immunoassay

TECNALIA

Healthy Food

Innovative and sustainable technologies applied to the food sector to increase its competitiveness through the production of the ingredients and foods of the future, and the valorisation of their by-products. Experience in identifying and obtaining active compounds that positively affect health. We establish technologies to ensure these compounds' functionality and bioavailability, and develop healthy, natural, high–nutritional–value functional foods to support precision nutrition strategies. These strategies use food to prevent diseases and improve quality of life, particularly by promoting active and healthy aging.

Research lines

- Natural food ingredients
- Encapsulation, stabilization and controlled release
- Functional foods
- Omics for personalized nutrition

Assets:

- Polyphenol extract with neuroprotective effect
- Combined GABA and probiotic functional ingredient
- Natural capsaicin extract from habanero chili
- Natural acid-stable blue food dye
- Stable fermentation processes for obtaining active compounds, proteins and bioplastics

TECNALIA

Medical devices

We design and develop advanced medical devices to support the elderly, disabled, chronically ill, and injured. We are experts in transferring engineering and medical advances into market ready medical technologies. We develop, test and validate solutions applied to rehabilitation, restauration and modulation of the nervous system through the development of both non-invasive and implantable devices, brain-machine-neuronal interfaces and neuro-prostheses. We create disruptive human-machine interfaces that allow intuitive information transfer. We employ early end-user involvement to ensure research relevance and validity from day 1.

Research lines

- Biolectronics and Neural interfaces
- Life science robotics
- Neurorehabilitation engineering
- Digital patient

Assets:

- Printed flexible-stretchable multielectrode array sensors
- Multichannel smart neurostimulators
- In vivo tissues bioprinting with advanced bioinks and robotic system
- Instrumented pills for biomarker monitoring
- Soft wearable systems for high resolution haptic and tactile feedback

TECNALIA

Pharmaceutical development

We focus on advanced pharmaceutical development for innovative, generic, and OTC medicines, as well as food supplements, nutraceuticals, cosmetics, biocides, and personal hygiene products. We perform galenic formulation, fine-tune analytical techniques, validate methods, and conduct stability studies and in vitro dissolution profiling.

We also provide expert services in pilot manufacturing, scaling, clinical trials and effectiveness assessment.

Research lines

- Pharmaceutical development
- GMP manufacturing
- Pharmacogenetics
- Biocide efficacy assessment

Services:

- Industrial scaling and quality control
- Manufacturing of pilot lots, bio-batches and registration lots
- Coordinating third-party industrial batch production.
- Oversee clinical trials for bioequivalence, pharmacokinetics, and nutritional effects.
- Effectiveness assessment of protection products from haematophagous arthropods

TECNALIA

Digital Health

We develop solutions that modernise public-private health services, that allow access and sharing of knowledge, guaranteeing the reliability and inviolability of health records, that support and facilitate clinical decision-making, and promote the patients adherence to their treatments and enable training of healthcare professionals under real conditions.

We work on research and development of digital medical devices, AI-driven diagnostic tools, and personalized therapies, by leveraging digital twins, brain–computer interfaces, trustworthy AI, and quantum computing.

Research lines

- Digital transformation of clinician, patient and healthcare processes
- Advanced clinical metadata analysis
- Cross-country medical data interoperability
- Customised health devices and applications,
- Gamification
- Virtual professional training
- Virtual medicine
- Virtual assistants (*PLN-Speech*)
- Artificial intelligence and clinical decision support systems.

CIC biomaGUNE

The Centre for Cooperative Research in Biomaterials – CIC biomaGUNE is a non-profit research organisation established in December 2006 in the Science and Technology Park of Gipuzkoa (San Sebastián, Spain). As part of the Basque Research & Technology Alliance (BRTA), it specialises in biomaterials and molecular/functional imaging at the nanoscale, conducting interdisciplinary research at the chemistry–physics–biology interface, promoting both fundamental studies and technology transfer through its advanced platforms and one of Europe's largest preclinical imaging facilities.

Research Groups

- Biomolecular Nanotechnology
- BioNanoPlasmonics
- Radiochemistry & Nuclear Imaging
- Magnetic Resonance Imaging
- Soft Matter Nanotechnology
- Glycotechnology
- Carbon Bionanotechnology
- Molecular & Functional Biomarkers
- Heterogeneous Biocatalysis
- Hybrid Biofunctional Materials
- Bottom-up Cell Biology and Bioengineering
- Regenerative Medicine & Disease Models

CIC bioGUNE

CIC bioGUNE is a multidisciplinary research centre in the Basque Country dedicated to unraveling molecular and cellular mechanisms of disease and translating this knowledge into innovative diagnostics and therapies. Its cutting-edge scientific infrastructure includes advanced equipment for nuclear magnetic resonance (NMR) now recognized as an ICTS, electron microscopy and X-ray diffraction facilities, a monoclonal antibody production unit, and core technology platforms for genome analysis, proteomics, metabolomics, as well as an animal facility.

Research Groups

- Synthetic Biology Lab
- Ubiquitin-likes And Development Lab
- Integrative Genomics Lab
- Chemical Immunology Lab
- Cancer Therapy Resistance Lab
- Computational Biology Lab
- Cancer Cell Signaling And Metabolism Lab
- Computational Chemistry Lab
- Chemical Glycobiology Lab
- Prion Research Lab
- Precision Medicine and Metabolism Lab
- Inflammation and Macrophage Plasticity Lab
- Exosomes Lab & Metabolomics Platform
- Cancer Glycoimmunology Lab
- Liver Disease Lab
- Cancer Heterogeneity Lab

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BIO4 CAMPUS

CIC nanoGUNE

CIC nanoGUNE is a Basque research centre in Donostia/San Sebastián focusing on Quantum Nanoscience, Nanomaterials, and Nanomedicine. Housed in a purpose-built 6200 m^2 facility, its architecture provides an EMI-free, ultralow-vibration environment for fabricating and characterizing materials at the nanoscale. It contains a ~300 m^2 cleanroom with strictly controlled air purity and 15 ultra-sensitive laboratories progressively outfitted with state-of-the-art equipment, including electron and scanning-tunneling microscopes, advanced nanofabrication and characterization tools, as well as specialized electron microscopy, nanooptics, and nanobio facilities.

Research Groups

- Nanobiosystems
- Nanomagnetism
- Quantum Hardware
- Nanooptics
- Self Assembly
- Nanodevices
- Electron Microscopy
- Theory
- Nanomaterials
- Quantum-Probe Microscopy
- Nanoengineering

Cidetec

Cidetec comprises three specialised centres—Surface Engineering, Energy Storage, and Nanomedicine—housed mainly at the Miramón Scientific and Technological Park in San Sebastián, with additional battery-testing facilities at the MUBIL Smart Mobility Hub. Its infrastructure includes Dry Rooms for new materials R&D, pilot plants for electrode and cell manufacturing, robotic and automated painting and brush-plating booths, climate and altitude chambers, adiabatic calorimetry units, vibration and mechanical-shock test benches, powertrain and power-electronics test benches, advanced microscopy and characterization laboratories, controlled-environment cell-culture labs, and a cosmetics pilot plant.

Research Groups

- Energy Storage
- Surface Engineering
- Nanomedicine