RÉGION
BOURGOGNE
FRANCHE
COMTÉ

aer
regional economic
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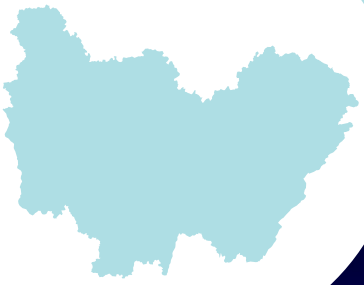
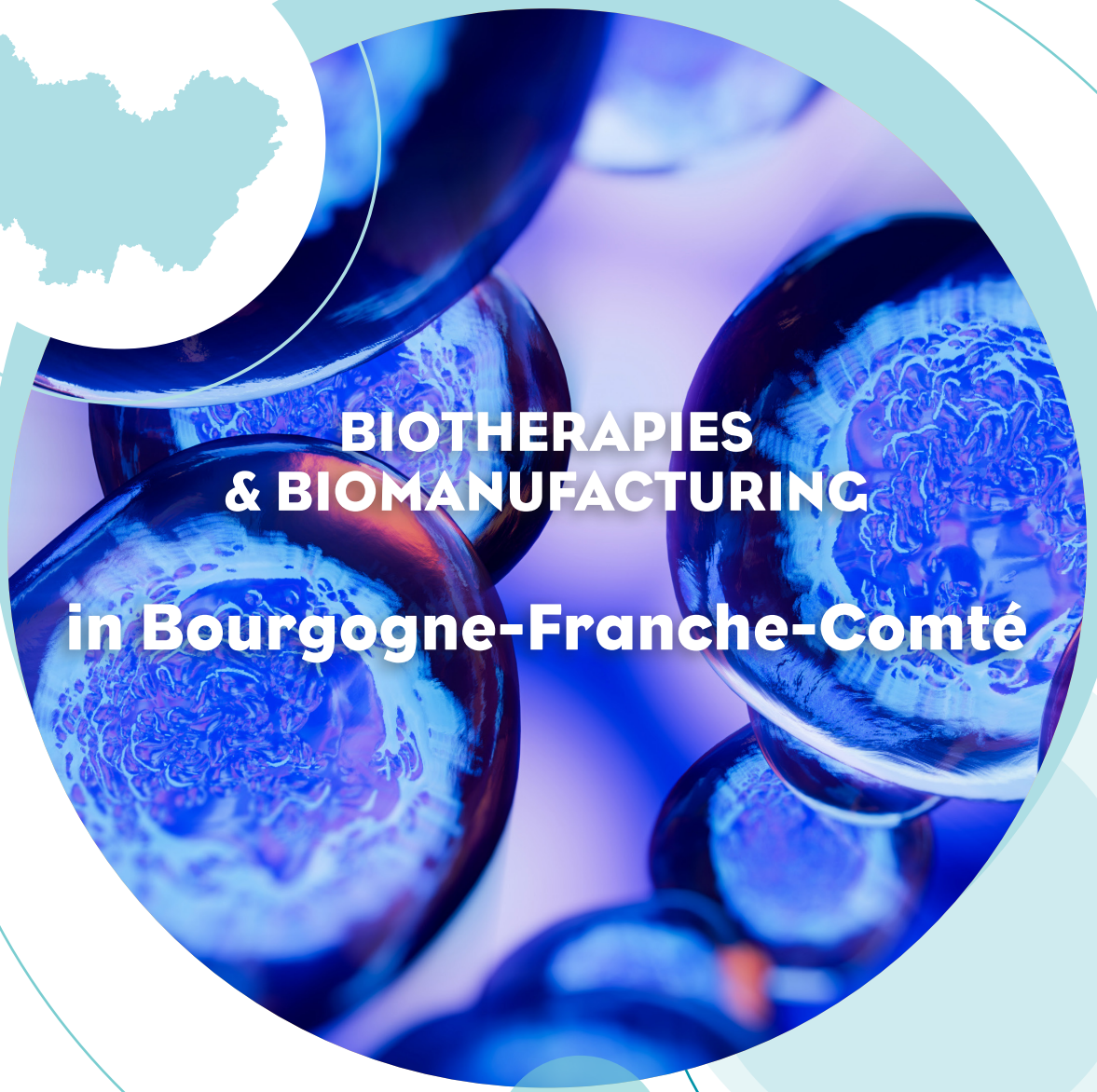
bourgogne-franche-comté





BIOTHERAPIES & BIOMANUFACTURING

in Bourgogne-Franche-Comté

BIOTHERAPIES: A STRATEGIC CHALLENGE FOR FRANCE...

A revolutionary advance in the area of medicinal products, biotherapies are a set of therapies produced from living organisms (cells, genes, micro-organisms, tissues, bacteria, yeasts) or substances collected from living organisms (antibodies, hormones, organ extracts, etc.). They are also referred to as biological medicinal products, advanced therapy medicinal products (ATMPs) and more broadly, innovative therapies.

As such, they are a decisive opportunity for patients and are likely to play a major role in the therapeutic solutions developed to combat a number of diseases. Making these biopharmaceuticals available to patients is therefore a challenge for all health professionals. On the one hand, the aims are to foster their development and industrialise their production in France while guaranteeing sufficient quantities, a high level of quality, rapid production, and affordability.

On the other hand, as demonstrated in particular by the COVID-19 pandemic, there is a need to build up France's health independence in the global arena, to guarantee that the most innovative treatments are available to patients.

Faced with these challenges and in light of the major assets at France's disposal in the global race to develop ecosystems dedicated to new biotherapies, the French government has launched an acceleration strategy aimed at making France a European leader.

More specifically, French industry has set a target of increasing the share of biological products that are made in France and approved by the European Medicines Agency from 5 to 20% within a 10-year period.

The action plan put forward to reach this target revolves around five priorities:

- creating a scientific and industrial supervisory structure for the sector called the "France BioLEAD Alliance";
- increasing support for research and supporting the development and industrialisation of technological innovations;
- consolidating a network of industrial integrators to move from the experimental stage to an industrial proof-of-concept stage;
- making France more attractive to grow the community of industrial stakeholders involved in the sector;
- developing and maintaining key competencies in France by organising appropriate initial and continuing training schemes.

... AND BOURGOGNE-FRANCHE-COMTÉ

The Bourgogne-Franche-Comté region has everything it needs to be a key player in this new sector. For the past several years, it has been developing an ecosystem enabling it to affirm its **leading role at national level,** thanks to renowned stakeholders that have been active for many years:

- the **RIGHT research laboratory and the Bourgogne-Franche-Comté French Blood Service**, in close collaboration with practitioners and researchers from Besançon University Hospital, for the development of new medicinal products;
- the **Facility for Innovation in Biotherapy** (PIBT), which is coordinated by the Bourgogne-Franche-Comté French Blood Service and was awarded "Integrator for the Great Biopharmaceuticals Challenge" status;
- the **FEMTO-ST laboratory**, a research unit in the areas of engineering science and micro-nano-technologies, associated with the CNRS for the industrialisation of biopharmaceuticals;
- **Femto Engineering and Bionoveo** as part of the FC'INNOV foundation for the transfer of research to companies;
- a **community of outstanding businesses**;
- the **INTHERAPI graduate school** of Bourgogne-Franche-Comté University to train young people through research and provide future skills for the academic and industrial spheres;
- a favourable regional environment benefiting from the **strong involvement of local authorities** including the Bourgogne-Franche-Comté region, which included "personalised and integrated care" in its smart specialisation strategy recently approved by the European Commission.

Editorial

Marie-Guite Dufay

President of the
Bourgogne-Franche-Comté
Regional Council

Preparing for the future of medicine in Bourgogne-Franche-Comté

A current trend in medicine is to further personalise the patient experience to increase treatment efficacy and improve the patient's response. This in turn requires improving the referral of patients, through more accurate diagnoses, and developing more targeted therapies. Today, most new medicinal products are derived from biotechnology.

Bourgogne-Franche-Comté has made the development of biotherapies a strategic orientation for its regional ecosystem by fostering synergies between research, technology transfer, and companies.

Just as it did for the hydrogen sector in which the region believed very early on, massively investing to ultimately become a driving force within Europe, Bourgogne-Franche-Comté is now determined to play a major role in these medicinal products of the future. The sector of biotherapies and biomanufacturing is opening up regionally from research laboratories to companies thanks to the work done by dedicated technology transfer officers, with financial support from local authorities.

The Bourgogne-Franche-Comté region is investing to consolidate and develop this virtuous ecosystem, in which researchers and businesses can find infrastructure and tools to develop the medicine of the future benefiting patients and also contribute to French medical sovereignty.

Researchers, start-ups and companies in this cutting-edge area of medicine will be able to turn to our region for the equipment and support they need to innovate and thereby benefit from rare and attractive training courses, outstanding research teams, and strong and recognised industrial facilities. Are you a stakeholder in this ecosystem? Bourgogne-Franche-Comté welcomes you!

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RÉGION BOURGOGNE FRANCHE COMTÉ

BOURGOGNE-FRANCHE-COMTÉ

A 70-YEAR MEDICAL ADVENTURE IN BIOTHERAPIES

1948

Creation of the **Regional Transfusion and Intensive Care Centre** in Besançon (CRTS)

1969

The Regional University Hospital's haematology laboratory is transferred to the CRTS and **fundamental research is undertaken** through close collaborative work between the haematology, nephrology and hepatology departments in the areas of haemopoietic stem cell transplantation and organ transplants.

1979

1st allogeneic bone marrow transplant at Besançon University Hospital

1995

The CRTS creates the **Cord Blood Bank** (FACT-accredited since 2005)

1997

Opening of a **cell and gene therapy unit** at the CRTS (JACIE1-accredited since 2008)

2001

Creation of the Inserm/University of Franche-Comté/EFS research unit dedicated to graft-host interactions and tissue engineering, which will become **RIGHT** in 2012.

2007

The Bourgogne-Franche-Comté French Blood Service creates the **Bio-Engineering facility**, a centralised location for research activities, associate laboratories, and the facility for the production of advanced therapy medicinal products

2011

The **Labex LipsTIC** is selected as part of the Programme d'Investissements d'Avenir (PIA) focused on the **use of lipids in the prevention and treatment of inflammatory diseases and cancer**. Its members include 19 research teams, located primarily in Bourgogne-Franche-Comté.

2013

The University of Franche-Comté creates **FC'INNOV**, a partnership-based foundation at the intersection of academic research and the business community.

2015

UCPVax, a **universal cancer treatment vaccine**, is developed by RIGHT and selected as one of the top 10 therapeutic innovations.

Besançon University Hospital is **authorised by the French Ministry of Health to carry out the UCPVax clinical trial** and produces the vaccine.

Launch of the collaborative product **MiMédI – Microtechniques pour les Médicaments Innovants [Microtechnology for Innovative Medicinal Products]**

2017

Creation of **MED'INN Pharma** and **Lymphobank**, spin-offs of RIGHT

2018

RIGHT's work on **IL-1RAP-targeted** CAR-T cells is selected by Inserm from 34 major scientific breakthroughs.

2020

The Facility for Innovation in Biotherapy of the Bourgogne-Franche-Comté French Blood Service is awarded "Industrial Integrator for the Great Biopharmaceuticals Challenge" status.

RIGHT becomes part of the OPALE Carnot Institute, which carries out partnership-based research in the area of leukaemia.

Creation of **CANCELL THERAPEUTICS**, a spin-off of RIGHT and the Bourgogne-Franche-Comté French Blood Service, to develop IL-1RAP-targeted CAR-T cell therapy.

Proof of concept for **CD123-targeted CAR-T cells** developed by RIGHT for the treatment of pDC leukaemia. The clinical assessment of CD123-targeted CAR-T cells is supported by the French National Cancer Institute (INCa) and the French Ministry of Health.

2021

The Bourgogne-Franche-Comté French Blood Service becomes the **biggest national cord blood bank**.

Creation of **"Bionoveo"** within FC'INNOV, dedicated to technology transfer in the area of health

BioInnovation, a 4000 m² development centre dedicated to biotherapies, is inaugurated in Besançon

1st edition of the **Innovative Therapies Days** in Besançon

BOURGOGNE-FRANCHE-COMTÉ

CUTTING-EDGE INTERDISCIPLINARY RESEARCH

Within the same ecosystem, health sciences and engineering sciences laboratories effectively cooperate to innovate and carry out productive interdisciplinary research for biotherapies.

RIGHT:
GRAFT-VERSUS-HOST AND GRAFT-VERSUS-TUMOUR INTERACTIONS & CELL AND GENE ENGINEERING

Right
UNITÉ DE RECHERCHE EN SANTÉ

The RIGHT Mixed Research Unit on "Graft-versus-host and graft-versus-tumour interactions & cell and gene engineering" studies the immune system and interactions with a graft or tumour. Studying these interactions enables new treatments to be developed that are made with biological medicinal products in order to modulate the immune system to keep it from becoming overactive, prevent it from rejecting a graft, or increase its ability to eliminate a tumour.

EFS
ÉTABLISSEMENT FRANÇAIS DU SANG
Du donneur aux patients

RIGHT is supervised by the **Bourgogne-Franche-Comté** French Blood Service (EFS-BFC), **Inserm** and the **University of Franche-Comté**.

Inserm

In close collaboration with **Besançon University Hospital,** its clinical research centre (CRC) and the EFS-BFC, RIGHT has carried out various **clinical cell and gene therapy studies** and now has a number of biological collections including more than 3,000 patients living with breast, colorectal or bronchial cancer, leukaemia, etc.

UNIVERSITÉ DE FRANCHE-COMTÉ

RIGHT is part of the OPALE Carnot Institute, whose mission is to carry out partnership-based research in the area of leukaemia.

This research has resulted in therapeutic prospects that currently cover the following fields:

cancer treatment

Based on the laboratory's cellular engineering and immunotherapy expertise, work is being undertaken to activate or reprogramme T cells, which play a critical role in defending the body against cancer.

The aim is to directly stimulate the patient's anti-tumour T cells using innovative therapeutic vaccines, or else to selectively collect these T cells from the patient or a compatible donor, modify them in an aseptic environment, and inject them back into the patient (CAR-T cells) so they may specifically eradicate the tumour cells. These immunotherapies are used in addition to or in combination with traditional therapies (chemotherapy, radiation therapy and surgery).

Two CAR-T cell projects are currently being transferred for a 2023 clinical trial in humans and several clinical trials assessing the UCPVax vaccine, whether alone or in combination, are being carried out in collaboration with Besançon University Hospital, UBFC and the EFS in France.

inflammation

This work is based on the anti-inflammatory properties of certain cells, particularly "apoptotic" cells or myeloid suppressor cells, to achieve a tolerance effect and reduce disease-related inflammation.

The promotion of part of this work gave rise to the creation of Med'Inn'Pharma, which is developing a bioidentical (human-derived) complex biopharmaceutical with pro-resolutive properties, i.e. that stop inflammation and allow tissue repair. This drug candidate reaching the clinical trial stage could change the lives of 400 million patients.

RÉGION BOURGOGNE FRANCHE COMTÉ

BOURGOGNE-FRANCHE-COMTÉ

CUTTING-EDGE INTERDISCIPLINARY RESEARCH

Beyond the purely biological dimension of the innovative therapies and cutting-edge research developed and carried out at RIGHT, **FEMTO-ST** boasts familiar and internationally renowned expertise in engineering sciences encompassing the microscopic world of cells, their characterisation using physical methods, and their ultra-precise and ultra-rapid manipulation.

FEMTO-ST

femto-st SCIENCES & TECHNOLOGIES

This research institute, supervised by Bourgogne-Franche-Comté University and the CNRS, has seven scientific departments and has built up a strong international reputation in the areas of applied physics and original interdisciplinary research.

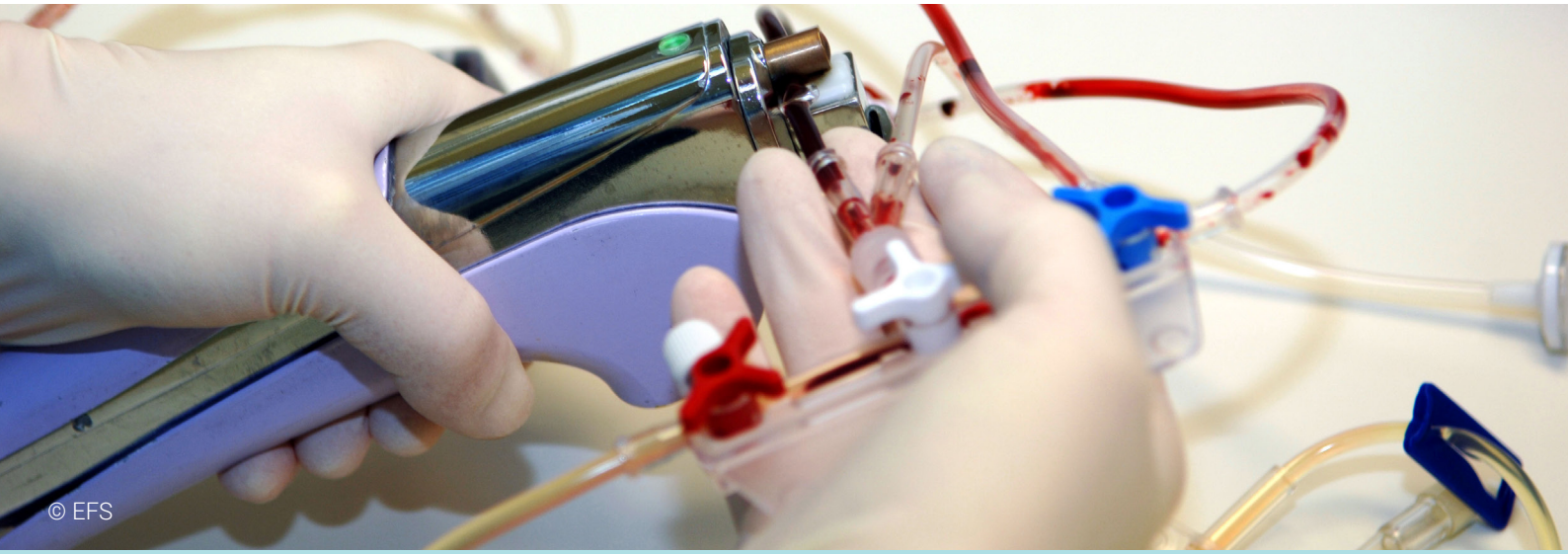
Strong ties have been developed with RIGHT, providing innovative therapy concepts with state-of-the-art technological solutions for their industrialisation, thanks in particular to expertise in **robotic micromanipulation** (AS2M department), the **production of functionalised micro-fluidic systems for sorting and identification** (MN2S department), **artificial intelligence** (DISC department) and **robotic vision to characterise the properties of cells and monitor the biological environment.**

These interdisciplinary interactions of top-level academic quality represent a major asset in terms of our ecosystem's ability to innovate for the high-tech industrial manufacturing of biopharmaceuticals.

RÉGION BOURGOGNE FRANCHE COMTÉ

BOURGOGNE-FRANCHE-COMTÉ

FROM BLOOD COMPONENTS...
... TO BIOMANUFACTURING



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With nearly 9,800 employees and 13 regional services, the French Blood Service is **France's sole civil blood transfusion operator.** Placed under the supervision of the French Ministry of Health, its core business is focused on **helping the country to achieve self-sufficiency in labile blood products** (LBPs) in conditions of optimum quality and safety.

While carrying out its public service transfusion mission for patients, the EFS is also involved in several non-core activities (health centres, cell and tissue engineering, etc.). Moreover, it is pursuing an ambitious research policy and playing an active role in European and international cooperation. All this has led it to establish close relations with multiple health agencies, researchers, universities, pharmaceutical companies and biotechnology firms.

France's leading supplier of cells and tissue for grafts, the EFS is also the country's **biggest producer of advanced therapy medicinal products** (ATMPs) for phase I and II clinical trials.

FACILITY FOR INNOVATION IN BIOTHERAPY (PIBT): SUPPORTING PROJECTS FROM THE DEVELOPMENT OF DRUG CANDIDATES TO CLINICAL TRIALS

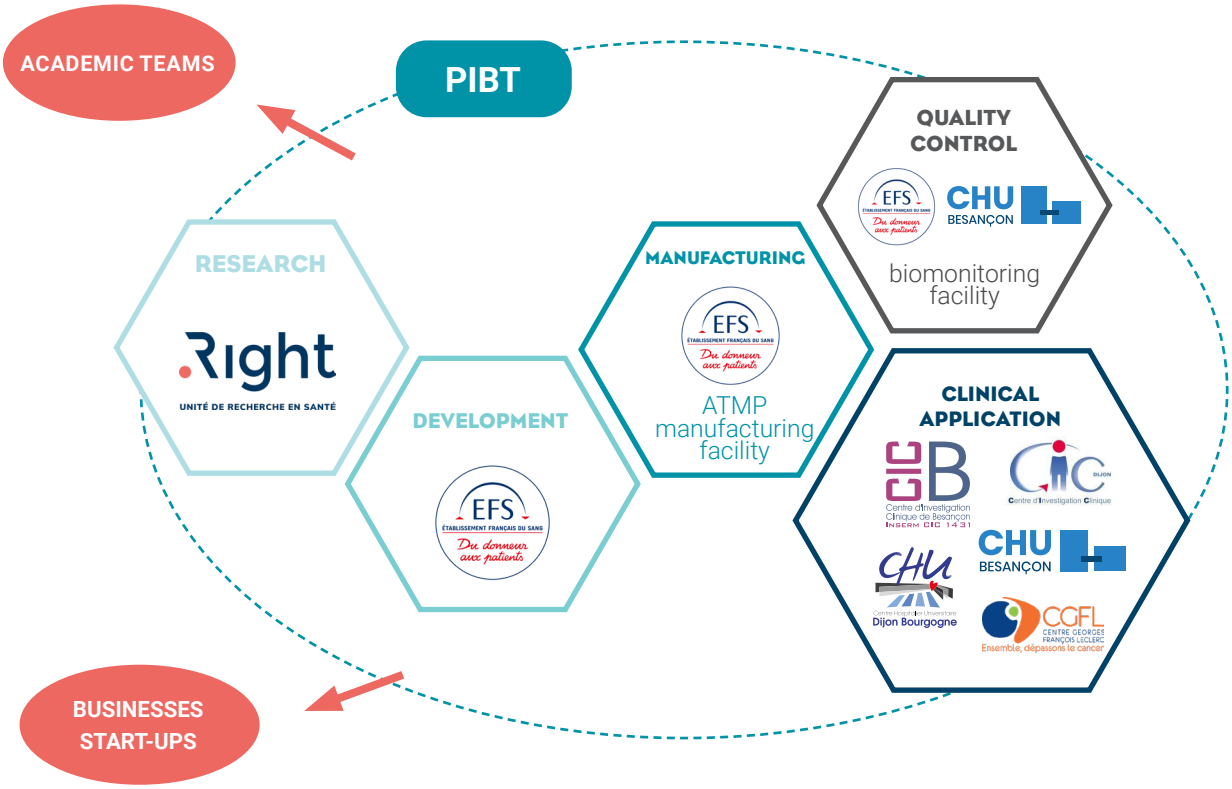
Awarded "Industrial Integrator for the Great Biopharmaceuticals Challenge" status, the PIBT is committed to offering an environment conducive to the development of innovative biopharmaceuticals and manufacturing processes by providing the scientific and technical expertise required for the successful implementation of projects.

The PIBT's ambition is to drive innovation in the area of biomanufacturing by rallying the stakeholders and skills needed to carry out every project, such as:

- The historical expertise of the RIGHT laboratory and the EFS network to develop drug candidates and establish proof of concept
- The microtechnological expertise of FEMTO-ST and FC'innov to remove numerous technical barriers in current manufacturing processes,
- The clinical expertise of regional hospitals to identify clinical needs and direct, validate and implement therapeutic strategies

The PIBT relies on strong and efficient partnerships with local authorities, the Microtechnology Cluster and training organisations in order to ensure continuity in the assistance provided to projects.

This pooling of local skills will lead to the development of powerful, breakthrough manufacturing processes ensuring that these medicinal products are made available to patients more quickly.



BOURGOGNE-FRANCHE-COMTÉ

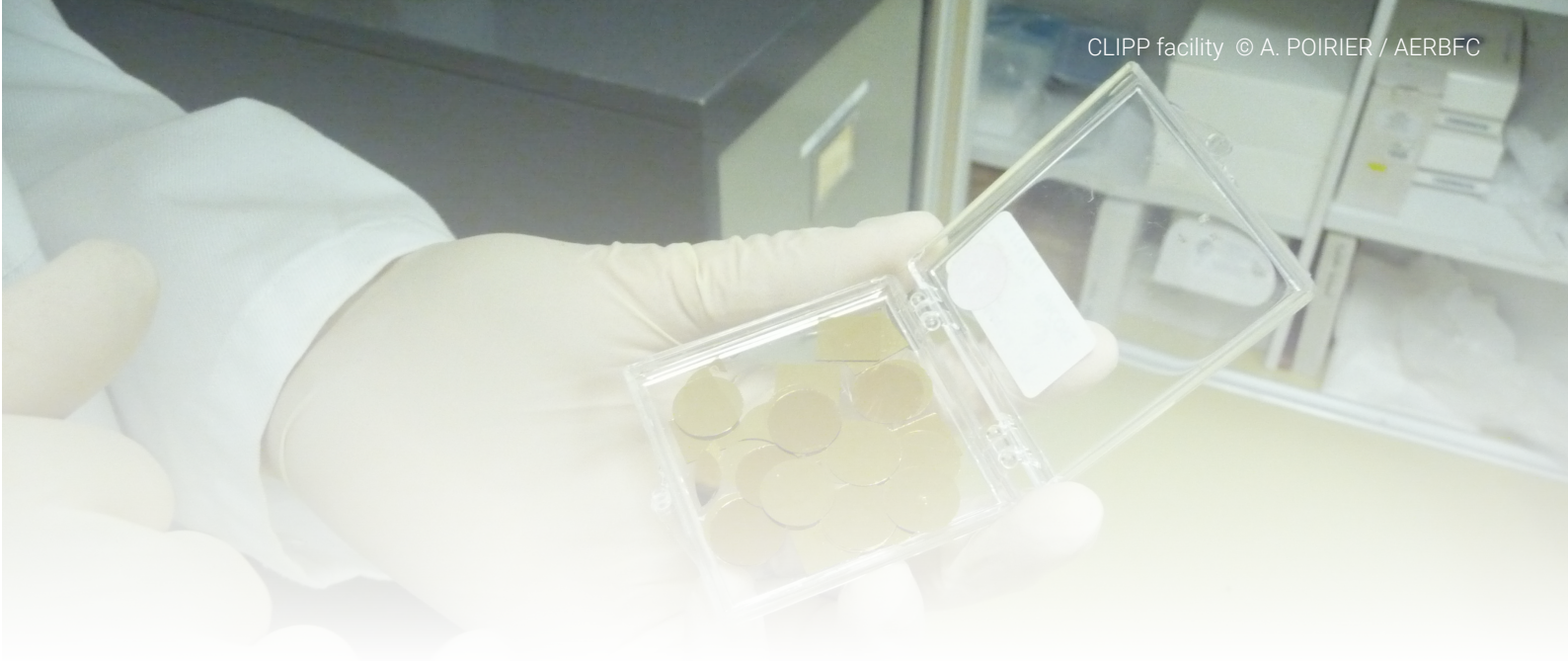
FROM BLOOD COMPONENTS....
.... TO BIOMANUFACTURING

© EFS

In conjunction with research teams, the **Besançon and Dijon University Hospitals**, with their respective clinical research centres, and the **Georges-François Leclerc Centre** (CGFL) in Dijon aim to **foster the implementation of clinical trials evaluating advanced therapy medicinal products** and blood products. They provide logistical and technical support for the design and conduct of research projects in the areas of cell therapy, gene therapy, vaccinology, transplantation, and immunotherapy.

The associated **biomonitoring facility** performs analyses for the biological monitoring of treated patients. Directly linked to the manufacturing facility, it complies with the pharmaceutical requirements for subcontracted analyses.

Biotherapy research projects thus benefit from real continuity and synergies between clinical research and immunological monitoring.



CLIPP facility © A. POIRIER / AERBFC

CLINICAL RESEARCH CENTRE OF BESANÇON UNIVERSITY HOSPITAL

The Clinical Research Centre of Besançon University Hospital is a research facility certified by Inserm and the Directorate General of Health Care Provision (DGOS) for its activities relating to:

- **Biotherapies:** development and evaluation of biotherapies in oncology and haematology, transplantation, tissue and organ grafts, biotherapy of inflammatory diseases, medically assisted reproduction, human papillomaviruses
- **Technological innovations:** microsystems and biological qualifications, health technology for neuropsychiatry, ethics and medical progress, emergence in technological innovations for health

The CRC Oncology design office can supply collections, develop immunotherapies and organise clinical trials.

CLIPP PROTEOMICS FACILITY

CLIPP is an **analytical and service facility** for academic research laboratories and the R&D centres of biotechnology and health companies in both France and abroad. Its expertise in the field of proteomics draws on knowledge and know-how in (bio)chemistry, physico-chemistry, nano- and micro-engineering, biostatistics and bioinformatics.

Its work focuses on:

- **The nanobiocharacterisation of biological targets** (from molecules to cells)
- **Biochip engineering and multiphysics coupling**
- **The detection and characterisation of protein targets** in biological samples
- **Biostatistical tools** for the analysis of big data

CLIPP is also an innovation and transfer facility that opens up prospects for commercial activities.

BOURGOGNE-FRANCHE-COMTÉ

FROM RESEARCH...
.... TO TECHNOLOGY TRANSFER

To move from research to technology transfer, it is crucial to have effective tools in place through dedicated entities. That's why unique channels have been put in place in the Bourgogne-Franche-Comté region to facilitate this transfer.

FC'INNOV
A FOUNDATION DEDICATED TO INNOVATION

The FC'INNOV partnership-based foundation was created in 2013 by the University of Franche-Comté; in 2022, it was joined by the Bourgogne-Franche-Comté French Blood Service and SUPMICROTECH-ENSMM (microtechnology engineering school) as founding member.

FC'INNOV's mission is to **contribute to scientific innovation in conjunction with the business community** to transfer academic research results to industry. It carries out development work based on breakthrough technologies derived from technological research conducted at FEMTO-ST and RIGHT. The foundation's members include **Bionoveo and FEMTO Engineering.**

BIONOVEO

Bionoveo is involved in the **maturation and development of scientific research projects** focused on biomanufacturing with a view to their transfer to manufacturers. The centre has the biological, technical and methodological skills needed to develop new therapeutic and diagnostic strategies.

To achieve its mission, Bionoveo relies on the expertise and equipment of the Bourgogne-Franche-Comté French Blood Service (EFS) and RIGHT. Its partnership with the Facility for Innovation in Biotherapy also provides access to labile blood products for research purposes and to all the facility's state-of-the-art equipment.

Services offered:

- **Developing or increasing the reliability of new protocols**
- **Developing and manufacturing biopharmaceuticals**
- **Validating breakthrough technologies and implementing them in biomanufacturing processes**

FEMTO ENGINEERING

FEMTO Engineering is the FC'INNOV foundation's **engineering centre.** It conducts **technological research and development work** in six major sectors of technology: Electrical engineering, Optical engineering/photonics and femtosecond laser machining, Digital electronics engineering and hyperfrequencies, Cleanroom micro-technology, Robotic systems, and Artificial intelligence. All this stems from the research work of FEMTO-ST, with which it closely collaborates on scientific matters.

FEMTO Engineering has been a member of Carnot Télécom & Société Numérique since July 2016, on account of its mission and its efficient implementation of research work in partnership with companies.

BOURGOGNE-FRANCHE-COMTÉ

FROM TECHNOLOGY TRANSFER...
...TO BUSINESS CREATION

DECA-BFC:
A CERTIFIED PUBLIC RESEARCH INCUBATOR

DECA-BFC
Incubateur de Talents

Created at the initiative of the French Ministry for Higher Education and Research, the Bourgogne-Franche-Comté region, and the region's eight higher education and research institutions, the DECA-BFC regional incubator provides **tailored support for start-up projects, whether derived from or related to public research**. It relies on a team with complementary skills that networks with all the stakeholders in the innovation ecosystem.

It offers 18 to 24 months of incubation with step-by-step guidance alongside innovative start-ups, including the funding of services, the optimisation of public funding, turnkey hosting, and workshops on entrepreneurship led by experts.

BIOINNOVATION: A BIOTECH DEVELOPMENT CENTRE

BIO INNOVATION HEALTH TECH CENTER

BioInnovation, located within the Besançon health technology centre, is a **gateway to the Med-Biotech ecosystem in Bourgogne-Franche-Comté.** This development centre is designed to promote cross-disciplinary collaborative practices to **accelerate clinical and technological developments and secure regulatory phases of industrialisation and marketing**.

BioInnovation brings together a set of services, expertise and equipment in a single location:

- **a leading technical facility in biology open to manufacturers**: cell colonisation measurements, biological system activity analysis, biological formulation analysis, preliminary biocompatibility tests;
- **modular and flexible laboratories with containment level L1 or L2** depending on the biosafety level associated with the biological agents handled;
- **a medical design, simulation and prototyping workshop,** to facilitate acquisition and validation of Proof of Concept and prepare projects' transition into the clinical world,
- a business centre (conference and meeting rooms, showroom),
- leasing solutions for offices and laboratories.

PROJECTS TO TREAT LEUKAEMIA ORIGINATING IN BOURGOGNE-FRANCHE-COMTÉ

CANCELL THERAPEUTICS

Building on more than 20 years of experience in cell and gene therapy, the founders of Cancell Therapeutics had the idea of using **CAR-T cell technology to target an original antigen (IL-1RAP) expressed by leukaemic cells**. Their work has established in-vitro and in-vivo proof of concept in mice. The start-up was created in 2020 and the goal is to conduct an initial clinical trial in humans with the IL-1RAP-targeted CAR-T cell medicinal product and then obtain marketing authorisation.

CARLA

After more than six years of work carried out by the RIGHT UMR in conjunction with the EFS-BFC, Inserm, UBFC/UFC and Besançon University Hospital, this academic project intends to **improve the treatment of patients with "pDC leukaemia",** an aggressive form of leukaemia with a particularly poor prognosis. The first clinical trials using CAR-T cells developed by the RIGHT UMR are expected in 2024. This project is supported by Besançon University Hospital, the national reference centre for the diagnosis of this type of leukaemia.

BOURGOGNE-FRANCHE-COMTÉ

FOCUS ON A MAJOR PROJECT

MiMédi
Microtechniques pour les Médicaments Innovants

Manufacturing innovative medicinal products requires complex technology to be put in place in a controlled environment such as a cleanroom. Furthermore, their traditional manufacturing represents a significant cost due to the complexity of the production "line" to be put in place and the numerous manual steps to be performed.

Launched in 2017, the European project MiMédI – Microtechniques pour les Médicaments Innovants [Microtechnology for Innovative Medicinal Products] – is part of the smart specialisation programme (RIS3). With a total cost of €15 million, it received €11,283,209.47 in co-funding from the European Regional Development Fund and €584,000 from BPI via the Regional Innovation Aid Fund.

This project has helped establish close collaborative links between several partners:

- **RIGHT,**
- **EFS-BFC,**
- **FEMTO-ST,**
- **FEMTO Engineering,**
- **Besançon University Hospital and its CRC 1431**
- and a whole industrial ecosystem: ILSA, AUREA Technology, Diaclone, Med'Inn Pharma, and Smaltis.

This large-scale project is designed to develop innovative manufacturing methods and facilities, in particular a **modular bio-reactor** featuring various modules representing the different stages of manufacturing of a biopharmaceutical. The goals are to **reduce manufacturing costs** and improve patient proximity.

THE PROJECT STAKEHOLDERS

This project will offer a wide range of contributions, including:

- **simplification of the manufacturing range** through multiple technological and conceptual contributions in the fields of microfluidics, acoustics, vision, automation, and nano- and microtechnology,
- **optimisations to ATMP manufacturing** through microtechnological contributions to reduce manufacturing costs and both increase the number of and improve access to therapeutic strategies during in-human evaluation stages,
- **creation of the company CellQuest.**

BOURGOGNE-FRANCHE-COMTÉ

A COMMUNITY OF COMPANIES*

INVOLVED IN BIOTHERAPIES AND BIOMANUFACTURING

In our territory with strong environmental and societal qualities, innovative industries in a dynamic research and innovation system are developing cutting-edge technologies and skills in the area of health.

© RD Biotech

PHARMACEUTICAL DEVELOPERS

ADHARA (URGO GROUP)
GENESIS research project designed to create a totally innovative artificial skin therapeutic solution and make it as widely accessible as possible

CANCELL THERAPEUTICS
CAR-T cell technology to combat leukaemia

MED'INN PHARMA
Development of human-derived bioidentical drug candidates with pro-resolutive properties that stop inflammation and allow tissue repair

VETOQUINOL
Company dedicated to animal health that develops biotherapies

EQUIPMENT SUPPLIERS

AUREA TECHNOLOGY
Manufacture and marketing of high-performance optical measuring instruments

CELLQUEST
Solutions for the industrial manufacturing of complex biotherapies

ILSA
Laboratory instruments for in-vitro diagnostics, biotechnology, agri-food and the environment

MACOPHARMA
Key player in the medical devices industry for blood processing solutions

PURELAB PLASTICS
Pipetting solutions for research and the production of innovative therapies

* Non-exhaustive list

PURVEYORS OF SOLUTIONS

BIOMNIGÈNE
Molecular biology services including next-generation sequencing (NGS)

DIACLONE
Development of monoclonal antibodies and immunoassays

LYMPHOBANK
Supplying placental and adult blood cells for research purposes and providing cell immunotherapy services

ONCODESIGN
Preclinical pharmacological assessment services for new cancer therapies

RD BIOTECH
Outsourced development and production of plasmids, GMP-grade plasmid DNA, expression vectors, antibodies, recombinant proteins, cells, analytical services, and ELISA kits

SMALTIS
Laboratory specialising in microbiology, offering tailored high value-added solutions

SON
Production of nanoparticles whose unique technology enables them to be bi-functionalised

SERVICE PROVIDERS

ALCIS
Regulatory support, quality systems, and design and manufacture of medical devices

CISTEO MÉDICAL
Contract development and manufacture of medical devices and support for regulations and standards

ICTA
Contractual research organisation (CRO): clinical development plan services and full-service or bespoke clinical studies

STATICE
Provision of microtechnology and biomaterial services, regulatory affairs

BOURGOGNE-FRANCHE-COMTÉ

TARGETED TRAINING AND A POOL OF INTERDISCIPLINARY EXPERTISE

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Bourgogne-Franche-Comté University's project "Soutien de la Formation par la Recherche dans les Initiatives d'excellence" [Support for training via research within Initiatives of Excellence] aims to offer a range of training programmes from Master's to PhD level within three Graduate Schools (GSs) or University Research Schools (EURs). These GSs combine Master's and PhD courses with the research work of the laboratories on the Bourgogne-Franche-Comté site, thereby promoting an **interdisciplinary** approach through a broad scientific spectrum focusing on the site's three major areas of research:

- **EIPHI** in the areas of engineering sciences, physical sciences and mathematics
- **TransBio** in the fields of the environment, agrology, food and ecology,
- **INTHERAPI** in the area of health.

Each GS aims to develop strong interactions with socioeconomic partners in order to **meet current and future expectations in terms of industrial and societal innovation, entrepreneurship and the creation of new knowledge** and thereby guarantee the employability of students. The training programmes are modular and multidisciplinary, enabling each student to build a tailored curriculum leading to a customised diploma with high added value.

The 3 Graduate Schools are linked to 3 doctoral schools: environments and health (ES), engineering science and microtechnology (SPIM) and Carnot-Pasteur (CP), covering the **fields of mathematics, physics, chemistry, and sciences of the universe.** They are connected to one another through a **strong strategy for interdisciplinary studies** allowing them to effectively address a wide variety of complex topics such as the biomanufacturing of innovative medicinal products at the INTHERAPI and EIPHI GSs.

INTHERAPI GS

The INTHERAPI GS offers 7 Master's programmes:

- **Master's in Drug Science:** Innovative Drugs – University of Bourgogne-Franche-Comté
- **Master's in Image and Signal Processing**, with 2 options: Computer Vision for Robotics (VISOT) or Medical Imaging for Applications (MaIA) – Erasmus Mundus – University of Burgundy
- **Master's in Molecular Chemistry**: T2MC – University of Bourgogne-Franche-Comté
- **Master's in Health Biology**: Cellular and molecular signalling (CMS) – University of Burgundy/University of Franche-Comté
- **Master's in Nutrition & Food Science**: Health and Nutrition pathway – University of Burgundy/Agro Dijon Institute
- **Master's in Health**: Immune Interactions and Cell Engineering – University of Franche-Comté/University of Burgundy

BOURGOGNE-FRANCHE-COMTÉ

ENTITIES SUPPORTING THE ORGANISATION OF THE BIOTHERAPIES SECTOR

MICROTECHNOLOGY CLUSTER

A competitiveness cluster since 2005, the PMT Microtechnology Cluster brings together the regional sector of health technology based on excellence in microtechnology. It structures local medtech industries on the one hand and biotech, pharmaceutical and biomanufacturing sectors on the other. More than 110 members are actively involved in the PMT Santé cluster's activities.

Dedicated to the regional and national structuring of the biomanufacturing sector, the Microtechnology Cluster is involved in:

- exchanges between hubs and clusters involved in biomanufacturing, for example in conjunction with the France BioLEAD Alliance (AFB),
- disseminating calls for projects and supporting and certifying its members' projects,
- promoting the regional sector.

PMT Santé

PMT Santé leads a Biotech Pharma committee, whose members include all regional stakeholders – businesses, research laboratories, training organisations – and which carries out a range of activities including informational meetings and pooled training.

PMT Propulseur

The Microtechnology Cluster runs the Propulseur **accelerator of regional and sectoral start-ups** specialising in smart systems, biotechnology and biomanufacturing. After conducting a 360° review, it provides managers with individual and tailored assistance.

THE REGIONAL ECONOMIC AGENCY OF BOURGOGNE-FRANCHE-COMTÉ

aer
regional economic
agency of
bourgogne-franche-comté

The AER BFC — the Regional Economic Agency of Bourgogne-Franche-Comté — provides its services to welcome new companies and support investors in their business projects.

It has all the resources required to offer you a tailor-made solution, from defining your specifications until you move into your premises, and beyond.

With backing from Bourgogne-Franche-Comté Regional Council, the AER BFC supplies a broad range of services for business growth in the region:

- **Economic data**
- **Land and real estate availability**
- **Site visits**
- **An interface between the public and the private sectors**
- **Technical, legal and financial aid**

BOURGOGNE-FRANCHE-COMTÉ

AN ANNUAL EVENT
DEDICATED TO INNOVATIVE THERAPIES

After the 1st edition in 2021 and the 2nd in 2022, the ITD event has established itself in the landscape of dedicated international events.

Therefore, every year in autumn, Besançon hosts the Innovative Therapies Days, bringing together leading global players specialising in the **development, manufacturing and regulatory supervision of innovative therapies.**

Clinicians, scientists, and industrial partners present their latest scientific advances in the fields of **CAR-T cell development,** stem cells or pluripotent cells, in addition to discussing their transfer to clinical trials and the challenges ahead in their industrial production.

This wide-ranging group of stakeholders – from the academic world and the private sector, based locally and internationally – also shares a vision of how innovative therapies will be used in the medicine of tomorrow. Interaction between partners is a key focus of the Innovative Therapies Days, with an **exhibitor village, B2B sessions, and discussion time.**

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