



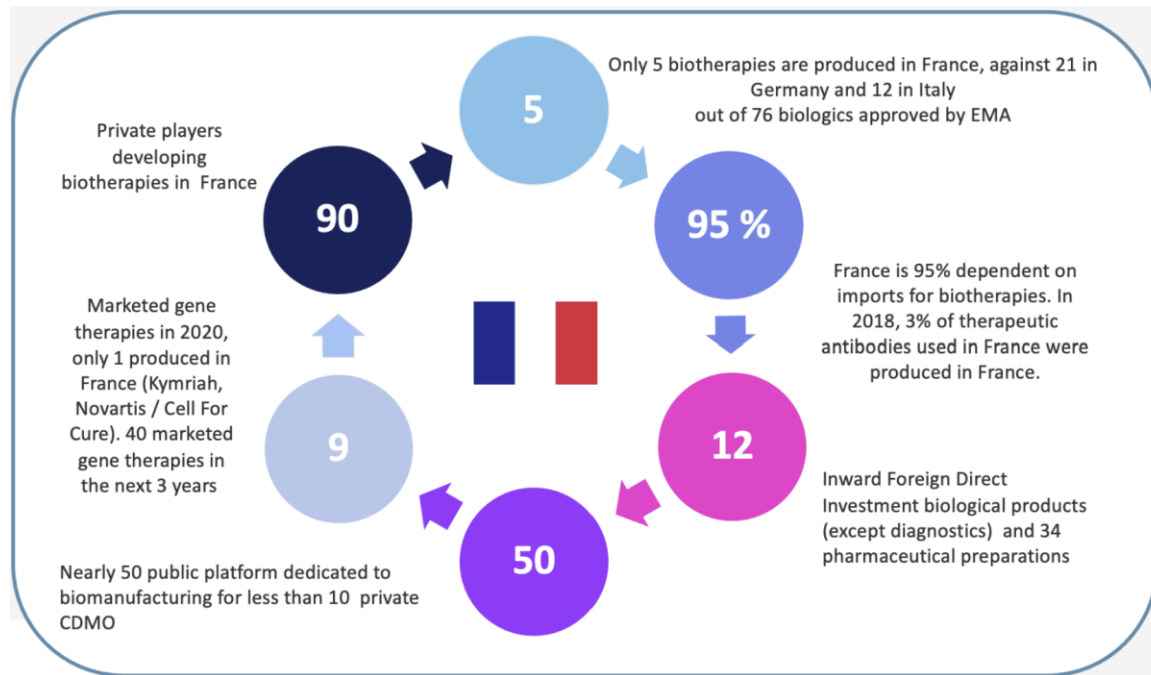
Research Program (PEPR) Biotherapies and Bioproduction of Innovative Therapies

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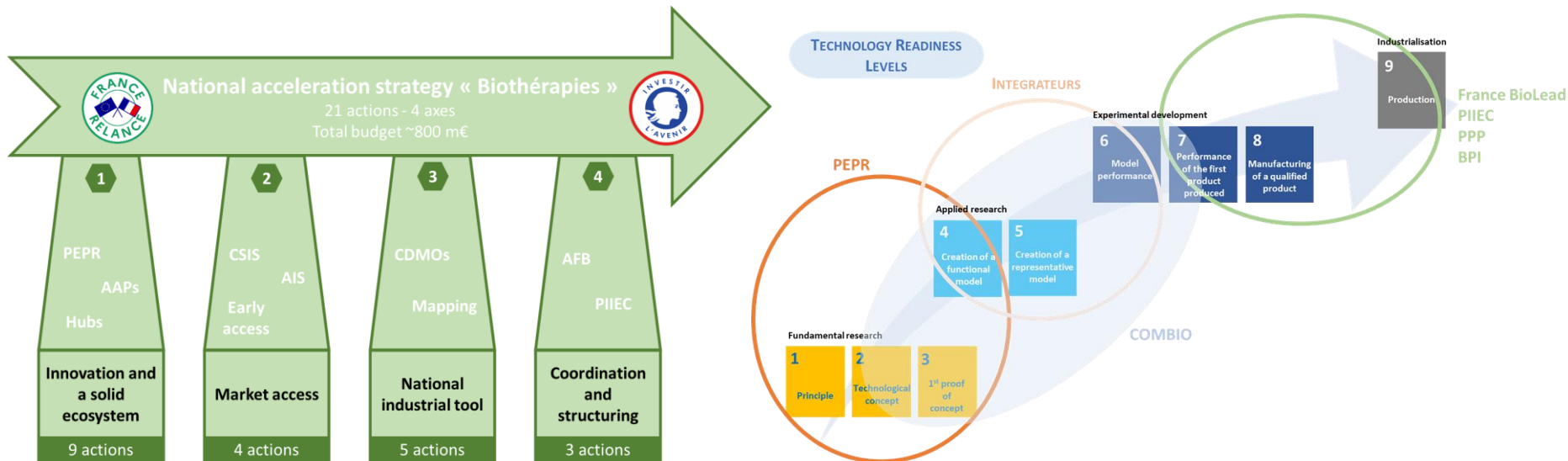
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The need to foster the development of biotherapies in France



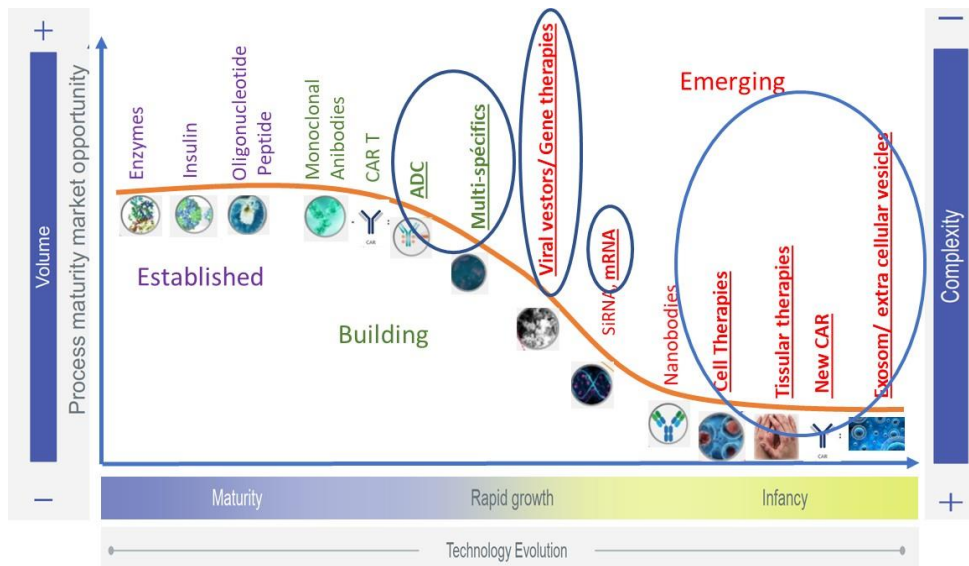
Comprehensive overview of the French BBTI Acceleration Strategy



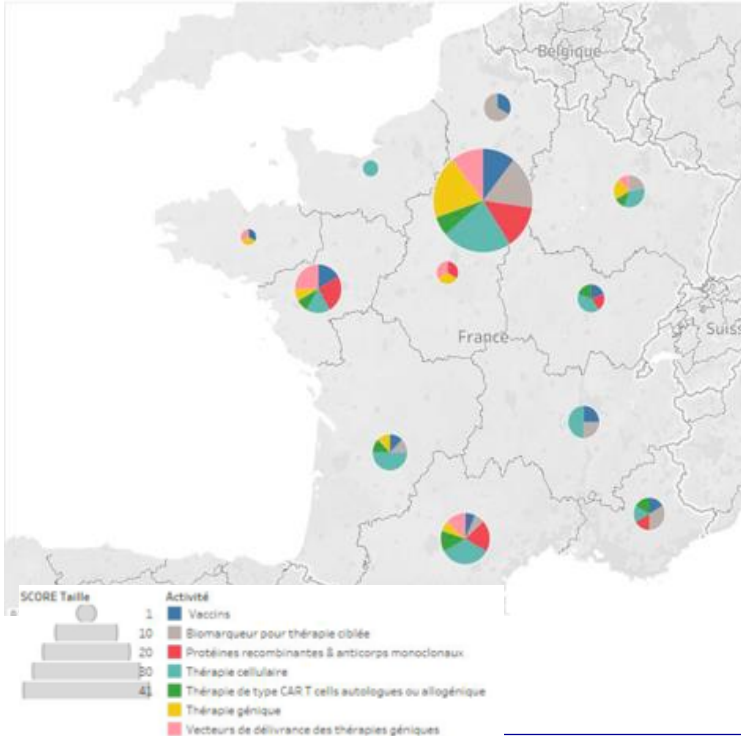
Catalyze innovation and development of a robust French ecosystem

Objectives:

- Launch **scientific challenges**
- Structure **research communities** to foster breakthrough
- Consolidate the **excellence of French research**
- Bring **innovative approaches** within the international competition



4 main axes and 2 cross-cutting objectives



Anticipate the scale-up of cell therapies and the emergence of tissue therapies

Accelerate the deployment of gene therapies

Develop engineering to benefit biotherapies and bioprocesses (oncology)

Support an emerging industrial sector centered around the use of extracellular vesicles

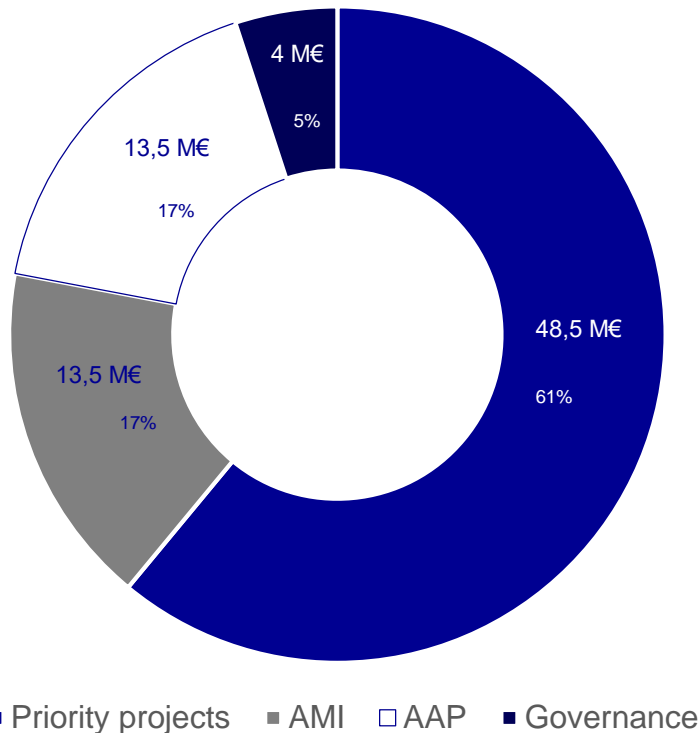
➤ Address the technological challenges associated with the production and deployment of current biotherapies

➤ Prepare the future innovative biotherapies and jointly develop their modes of production

Actions and budget

Budget of **80 millions €** over **7 years** for three main types of actions:

- **74M €** dedicated to call for projects to found disruptive proposals **focused on the main scientific axes**;
- Foster **education and training** of students and young scientists in the community
- Promote **international visibility** of the French academic community



The governance programme focus on 4 main actions

Call for projects

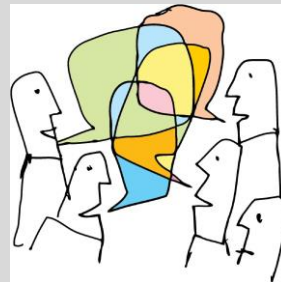


**and projects
follow up**

**Foster
education and
training**



**Support
Communication
and
dissemination**



**Promote
European
visibility**



Three calls for projects

Support projects at low TRL (1-4), funding dedicated to French academic groups:



Priority projects

- ✓ 12 projects launched in 2023
- ✓ 3 for each axes: cell therapies, gene therapies, biomanufacturing and EVs
- ✓ 4 years duration, average 4M € each
 - ✓ 3 to 11 academic partners

<https://pepr-biotherapies.fr/projets/>

2nd call for projects

- ✓ Focus on the 4 scientific axes opening to emerging therapeutics
- ✓ Aim to found groups that could not profit from the first call
- ✓ 54 proposals under evaluation
- ✓ Results available in January 2025

3rd call (expression of interest)

- ✓ **multidisciplinary projects integrating new expertises and approaches** for innovative biotherapeutics and/or their manufacturing (4 scientific axes)
- ✓ Look for the **expression of interest of experts in data science, engineering, chemistry, social science and ethics**

Call to be launched in December 2024

12 targeted projects already started

Axis 1: Cell therapies

IPSC France

AL. Bennaceur (Cithera)

Bioengineered Skin France

N. Fortunel (LGRK, CEA)

iChondro

F. Djouad (IRMB)

Axis 2: Gene Therapies

Bioscale

O. Adjali (TaRGeT)

QualAAV

P. Hantraye (MIRCent)

EDITO

T. Cronin (Univ. Nantes)

Axis 3: Engineering for biotherapies and bioprocesses

ACCREDIA

B. Maillere (CEA)

RNAvac

C. Pichon (Univ. Orléans)

THERA-B

A. Galy (ART-TG)

Axis 4: Extracellular vesicles

STROMAEV

D. Noël (IRMB)

Bacter-EV-Booster

JM. Chatel (Micalis)

CARN

F. Gazeau (LMSC)

1st call for projects published in 2024

Open between April and September 2024 to support innovative and disruptive research projects around the PEPR's 4 scientific axes

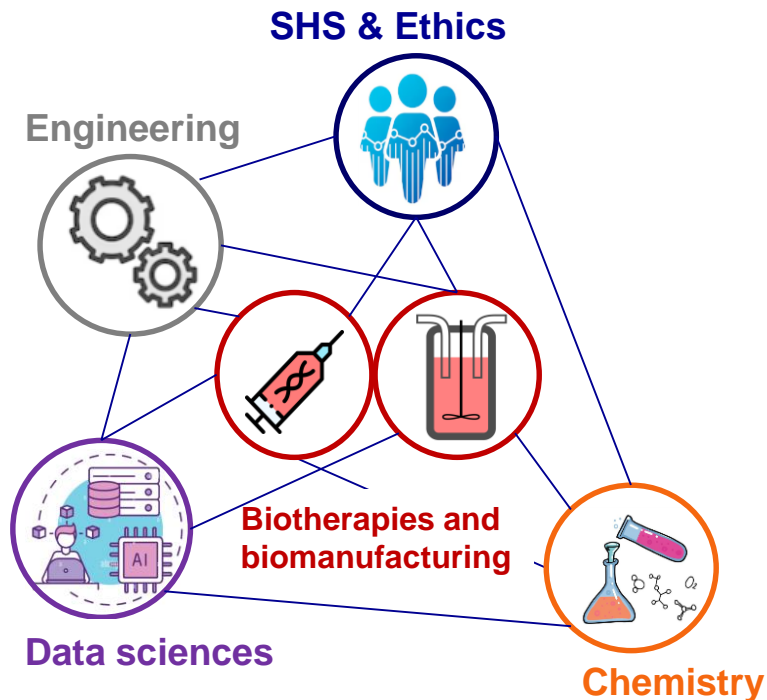
Targeted topics :

- Large-scale manufacturing of **cell therapies** and the emergence of **tissue therapies**
- **Gene therapies:** preclinical development of new non-viral vectors, synthetic biology, automation of production processes, etc.
- **Developing engineering for biotherapies and bioprocesses:** continuous bioproduction, large-scale purification, PAT, microfluidic technologies, AI, AQbD, etc.
- **Emerging fields in biotherapies:** extracellular vesicles, therapeutic antibodies, microbiota-based biotherapies, phagotherapy, etc.

Evaluation on going

Evaluation jury selected by ANR (54 application)

2nd calls for projects to be published in 2024



Build **multidisciplinary project, integrating new expertise and approaches** for designing innovative biotherapeutics and/or their manufacturing

Specifically look for the **expression of interest of experts in complementary domains**



Launching of the 3rd call for projects by the end of 2024

Scientific axes of the 2nd call for projects

Field 1: Design of new biotherapies

Bioconjugation, bioorthogonal chemistry, vectorization, nucleic acid analogues, artificial biomolecules, design of pro-drugs associated with biotherapeutic products

Field 2: Improving process reproducibility and efficiency

1. Improve bioproduction conditions: process optimization, reproducibility, efficiency, automation, characterization, stability, artificial intelligence, machine learning, deep learning

2. Modeling tools for the automation of bioproduction processes: Modeling biological and physical systems in bioreactors, multiscale modeling to simulate bioproduction processes

Field 3: Improving the perception and acceptability of biotherapies

Acceptability of new biotherapies, economic models to analyze the cost of biotherapies and their biomanufacturing, simplification and harmonization of consents

Timing of the 2nd call for projects

Focus on multidisciplinary and integration of new stakeholders

Call launching: December 2024-January 2025

Estimated **start of projects:** Q4 2025

Minimum **4 academic partners**

Maximum project duration: **4 years**

Topics: **Data science**
Engineering
Chemistry
Social sciences and ethics

CONSTRUCTION OF THE CALL

Workshop with a panel of experts and PEPR pilots

1

FRANCE
biblead

LAUNCH OF THE CALL

Opening of the 1st phase open by the end of 2024

2

WE ARE
HERE

BUILDING OF CONSORTIA

Selection of letters of intent by the PEPR SAB and pilots

3

WRITING OF FULL PROJECTS

4

EVALUATION OF PROJECTS BY ANR

5



Our latest news

