



MALADIES INFECTIEUSES ÉMERGENTES

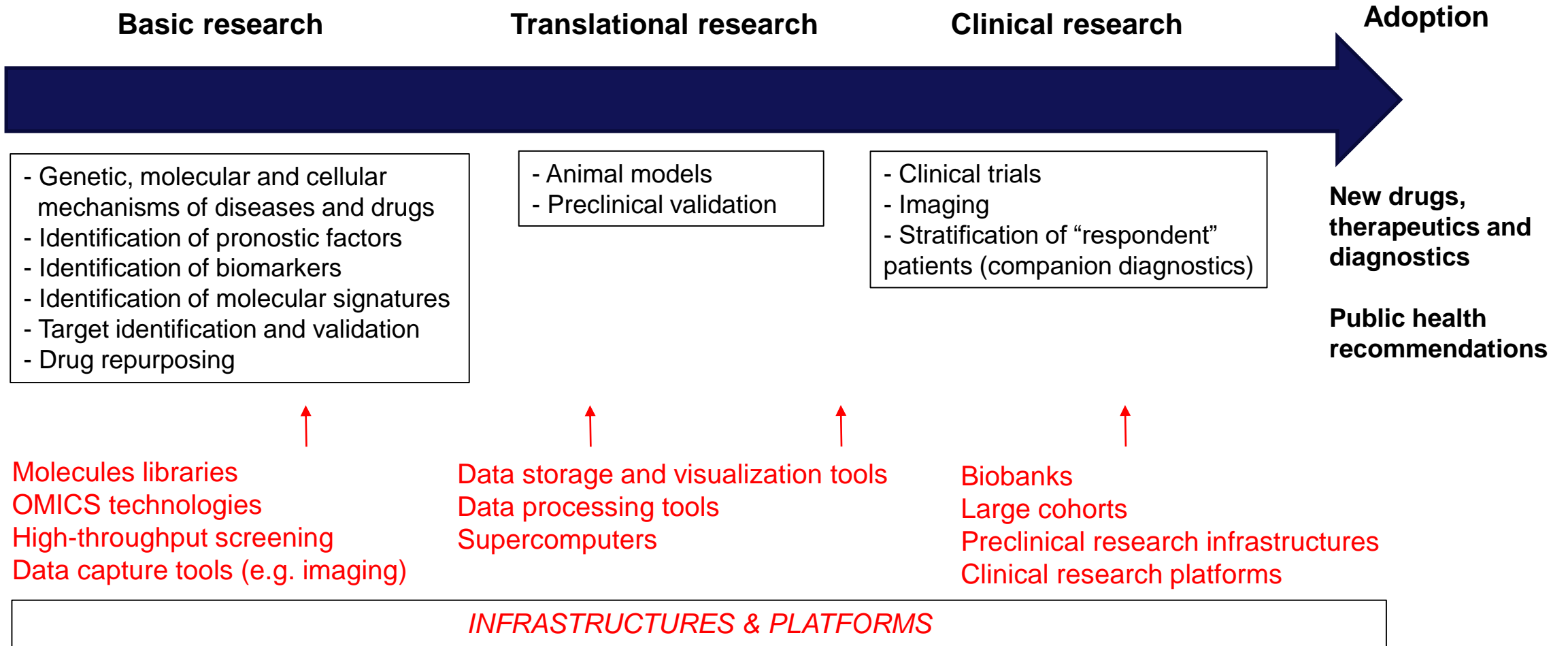
Inserm

Institut national
de la santé et de la recherche médicale

Personalised Medicine Research, Infrastructures/Platforms

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PM research: from basic research to clinical research



Challenges for PM research

- Mutualisation of advanced and expensive PM technologies (omics, NGS, imaging...)
- Development of a big data infrastructure for pooling various data sources and ensure data quality, accessibility and usability access
- Ensuring the continuum from basic to clinical research
- Strengthening interactions between public and private sector to foster innovation

How to develop infrastructures and platforms for PM research?

The example of French initiatives for PM

- Impulse at the national level for mobilizing funding and stakeholders:
 - **2015: “Plan France Médecine Génomique 2025”** → Develop the medical and industrial PM sector and integrate genetic analyses into healthcare practice
 - Development of high-throughput genomic sequencing platforms (AURAGEN, SEQUOIA)
 - **2021: “Plan Innovation Santé 2030”** → Investment in biotherapies, digital health and infectious diseases
- Building on existing structures and resources:
 - University-hospital research model fostering interactions between research and clinical practice
 - Creation of **“France Génomique”**: national genomics infrastructure grouping sequencing and bioinformatics platforms and large computing facilities (e.g. CEA TGCC - high-performance computation center)
 - Existing structuration and tools developed for PM research on cancer and rare diseases (large cohorts, biobanks, implantation of local healthcare and research centers...)
 - Pooling of the main national health databases into the **Health Data National System (SNDS)** and creation of the **Health Data Hub**
 - Evolution of the ethics and regulatory framework (e.g. bioethics, data protection laws)

The example of infectious diseases

Applications of PM in infectiology

- Genetics of micro-organisms
- Diagnosis techniques using sequencing approaches
- Understanding of genetic mechanisms of diseases
- Understanding genetic and molecular mechanisms of drug resistance
- Understanding individual host response to pathogens
- Co-development of therapies and companion diagnostics

The example of infectious diseases and the work of ANRS | MIE

Creation in 2021 of the ANRS | Maladies infectieuses émergentes

- National research agency in the fields of HIV/AIDS, sexually transmitted infections, viral hepatitis, TB and (re-)emerging infectious diseases
- **Missions:** research animation, coordination, evaluation and funding
- **All scientific areas:** basic research, translational research, clinical research, epidemiology, modelization, SHS, public health...
- **All thematic fields:** research on preventive means and strategies, pathogenesis, vaccines, diagnostic techniques, treatments, public health interventions and strategies, healthcare organization and health systems, social and societal aspects...
- **Integrative approach** “One Health” and “Global health”

The example of infectious diseases and the work of ANRS | MIE

ANRS | MIE's work in supporting research infrastructures and platforms

- Creation and participation to research platforms at the national (e.g. IDMIT, GEPC) and regional level (e.g. EU-RESPONSE)
- Capacity and infrastructure strengthening through supported projects (e.g. EMERGEN, AFROSCREEN for sequencing)
- Operational support and guidance to supported research projects for access to biobanks, clinical sites, research infrastructures...
- Links with industrial partners to foster transfer of research results and access to products useful for research
- Participation to the “**PariSanté Campus**” initiative gathering French actors of innovation and digital health

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Collaborations with African partners (1)

- International sites:**

→ Support the development of research in Southern countries by structuring teams and facilitating the implementation of research programs



ANRS Site Burkina Faso
Centre Muraz, Bobo Dioulasso



ANRS Site Senegal
Centre de recherche clinique de Fann
(Dakar)



ANRS Site Cameroon
Hôpital central de Yaoundé



ANRS Site Côte d'Ivoire / PAC-CI
Hôpital de Treichville (Abidjan)



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Collaborations with African partners (2)

AFRO-SCREEN

- **Multicentric and multipartner project in Western and Central Africa** (13 countries – 19 laboratories) in response to SARS-CoV-2 variants surveillance needs

→ General objectives:

- Strengthen laboratories sequencing capacities to monitor the evolution of SARS-CoV-2 variants and other emerging pathogens
- Track the dynamics of their dissemination while articulating efforts with the application of preventive measures to control or restrict the variants circulation



Thank you for your attention