European Research Infraestructures in the field of personalised medicne

Curso UIMP – Medicina de Precisión: Ciencia y tecnología al servicio de la transformación del Sistema Sanitario

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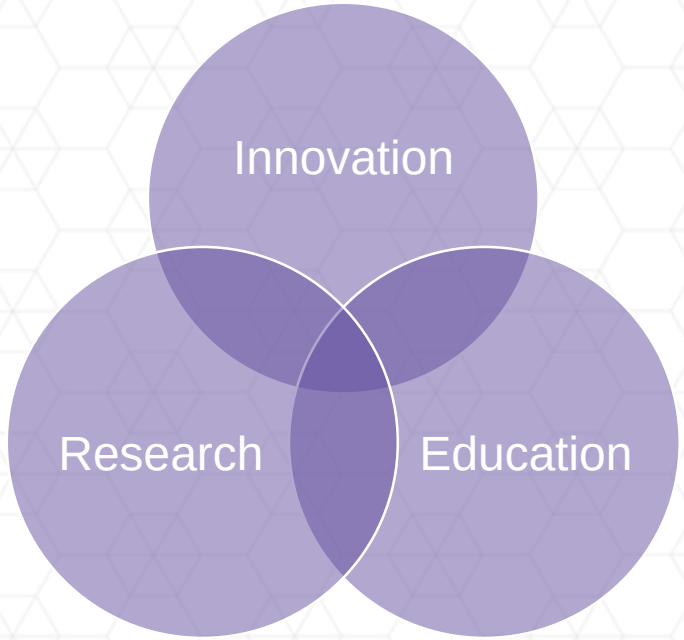
RESEARCH INFRASTRUCTURES

Research infrastructures**: facilities that provide resources and services** for research communities to conduct research and foster innovation. They are a key element to structure the R&I ecosystem and **the European Research Area**. They can be used beyond research e.g. for education or public services and they may be single-sited, distributed, or virtual.



RESEARCH INFRASTRUCTURES

- ✓ RI are an **essential pillar of the ERA**, ecosystems for scientific excelence, transnational services, education and skills
- ✓ RI are **strategic investments**, research with impact that addresses complex societal challenges
- ✓ RI are **knowledge and innovation hubs**, basis of European competitivness

"RIs aim to help scientists with the resources they wouldn't be able to have otherwise, like laboratory equipment, guidance, or other scientific specialties"

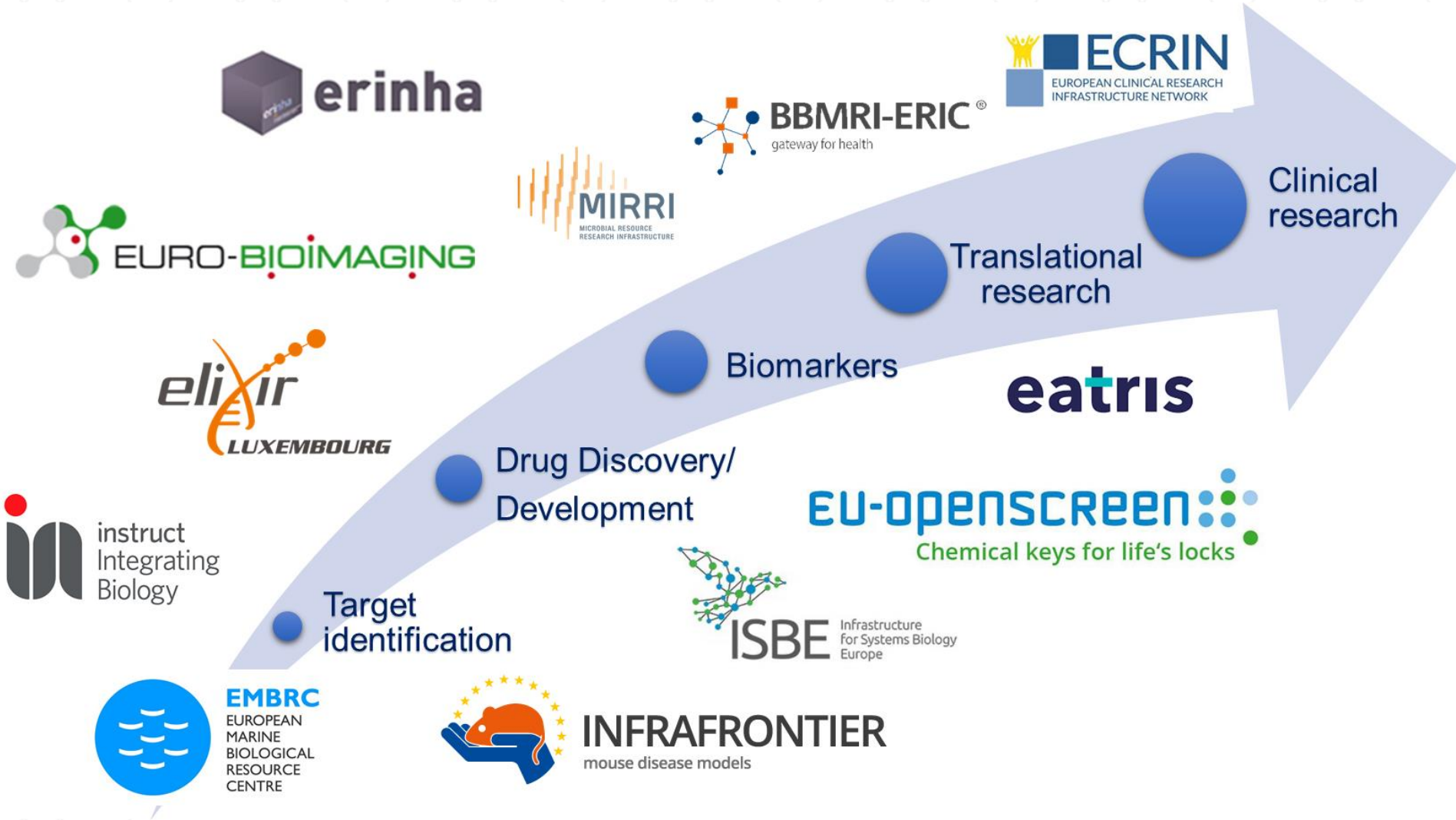
RESEARCH INFRASTRUCTURES

RESEARCH INFRASTRUCTURES

And the most important asset …..people!

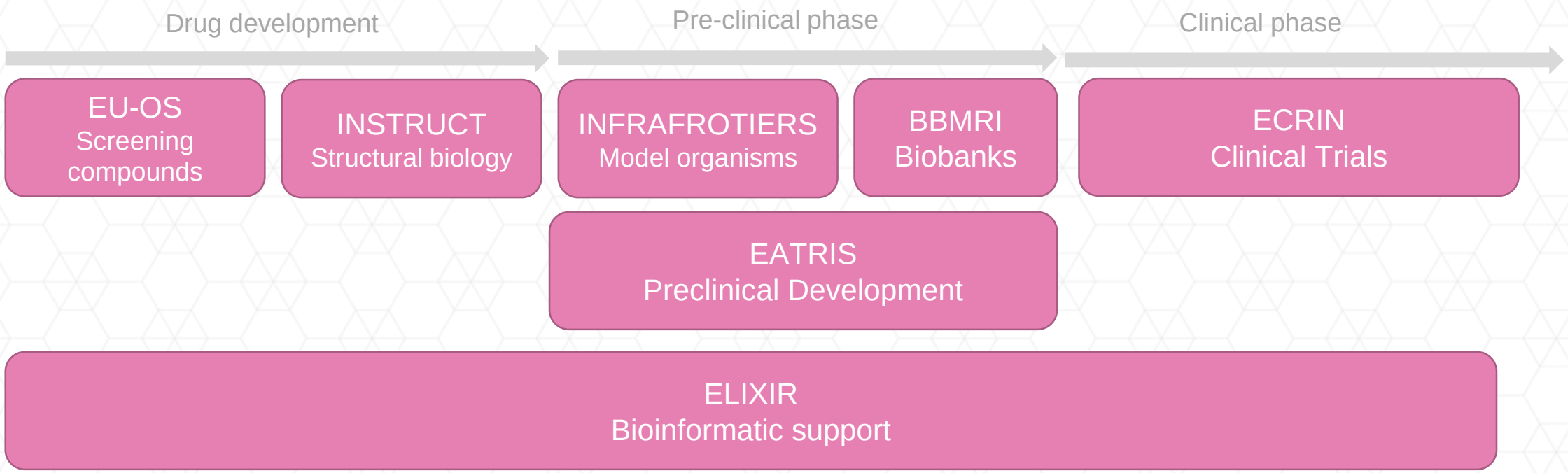
The best brains in science and technology

RESEARCH INFRASTRUCTURES IN BIOMEDICAL SCIENCES



RESEARCH INFRASTRUCTURES IN BIOMEDICAL SCIENCES

Complementarity (and overlap) among the RIs



EU-AMRI

"The optimization and the acceleration of the research process requires a high level of knowledge and coordination, as well as the application of standards and quality to reduce uncertainty along the biomarker pipeline. This is possible only if there is an effective interaction between private-public networks. In Europe this collaboration is facilitated by research infrastructures."

RESEARCH INFRASTRUCTURES IN SPAIN

ELIXIR	• INB and IMPaCT
EATRIS	• Health Research Institutes
BBMRI	• Biobanks platform
ECRIN	• SCREN
ERINHA	• National Centre of Microbiology

RESEARCH INFRASTRUCTURES IN BIOMEDICAL SCIENCES

ESFRI European Strategy Forum on Research Infrastructures

Since its establishment in 2002, ESFRI's main objectives are:

- to support a coherent **and strategy-led approach** to policy making on research infrastructures in Europe;
- to facilitate multilateral initiatives leading to a **better use and development of research infrastructures** acting as an incubator for pan-European and global research infrastructures;
- to establish a **European Roadmap for research infrastructures** (new and major upgrades, pan-European interest) for the coming 10-20 years, stimulate the implementation of these facilities, and update the Roadmap as the need arises;
- to ensure the follow-up of implementation of already ongoing ESFRI projects after a comprehensive assessment, as well as the **prioritisation of the infrastructure** projects listed in the ESFRI Roadmap.

Coordination of efforts and definition of a European strategy in RIs

RELEVANCE OF RIs AND PERSONALISED MEDICINE IN HORIZON EUROPE

Research infrastructure ecosystem:

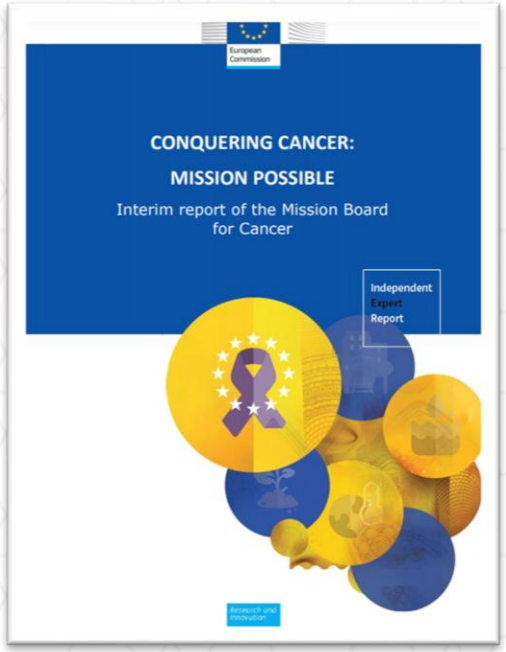
- Resources and services for researchers and industry
- European AND national infrastructures
- Equipment / sets of instruments
- Collections, archives, datasets
- Computing networks
- Communication systems
- Single sited, distributed, virtual

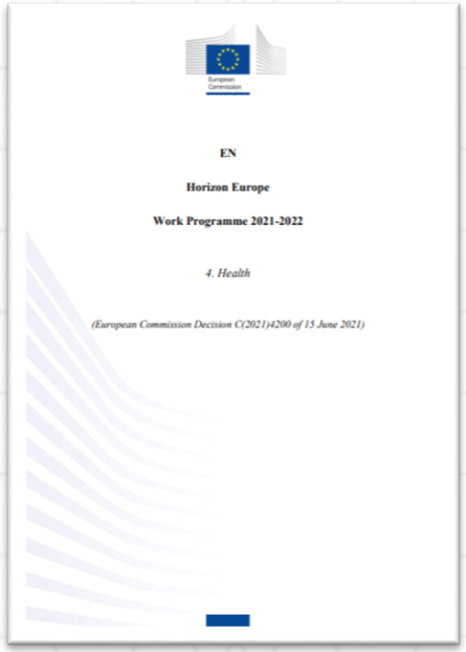
- Curiosity driven frontier research
- Supporting innovation
- Creating (open) data
- Education
- Researcher careers
- Integrated in regional innovation hubs
- Pan-European networks

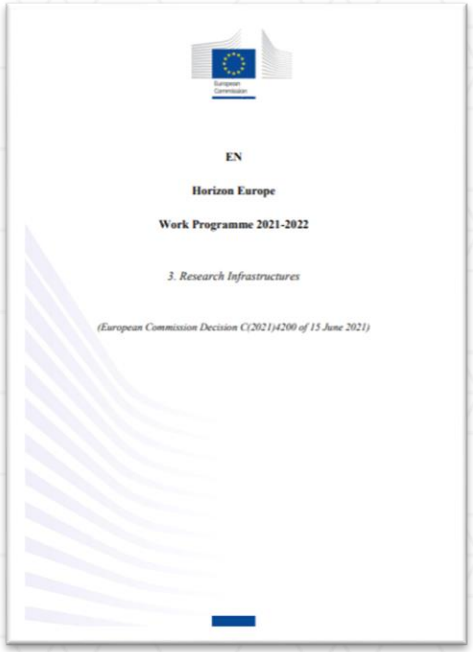
Contribution to EU key objectives:

- Green Deal (e.g. battery alliance)
- Recovery and Resilience (e.g. R&I services)
- Response to pandemics (e.g. COVID19 data platform)
- ERA objectives (e.g. education, innovation)
- EC priorities (e.g. open data platforms, innovation)

RELEVANCE OF RIs AND PERSONALISED MEDICINE IN HORIZON EUROPE







Recommendation 1: Launch UNCAN.eu – a European Initiative to Understand Cancer

Recommendation 2: Develop an EU-wide research programme to identify (poly-)genic risk scores

The digital transformation of health and care will certainly help to increase the capacity of health care systems to deliver more personalised and effective health care with less resource wasting.

Synergies with RI are encouraged

RI services (e.g. access to unique scientific tools and facilities, samples provision, processing and analysis, data and modelling services) will be directed to support an effective and responsive health system and to accelerate the transition towards a green and digital future.

EATRIS, EUROPEAN INFRASTRUCTURE FOR TRANSLATIONAL MEDICINE

To accelerate the translation of research discoveries into patient benefit.

We support academia, industry, patients and policy makers.

“One size does not fit all” so we want to create a space where stakeholders can collaborate to support patient-centric research.

EATRIS, EUROPEAN INFRASTRUCTURE FOR TRANSLATIONAL MEDICINE

EATRIS countries

Bulgaria, Croatia, Czech Republic, Finland, France, Italy, Latvia, Luxembourg, Netherlands, Norway, Portugal, Slovenia, Spain, Sweden

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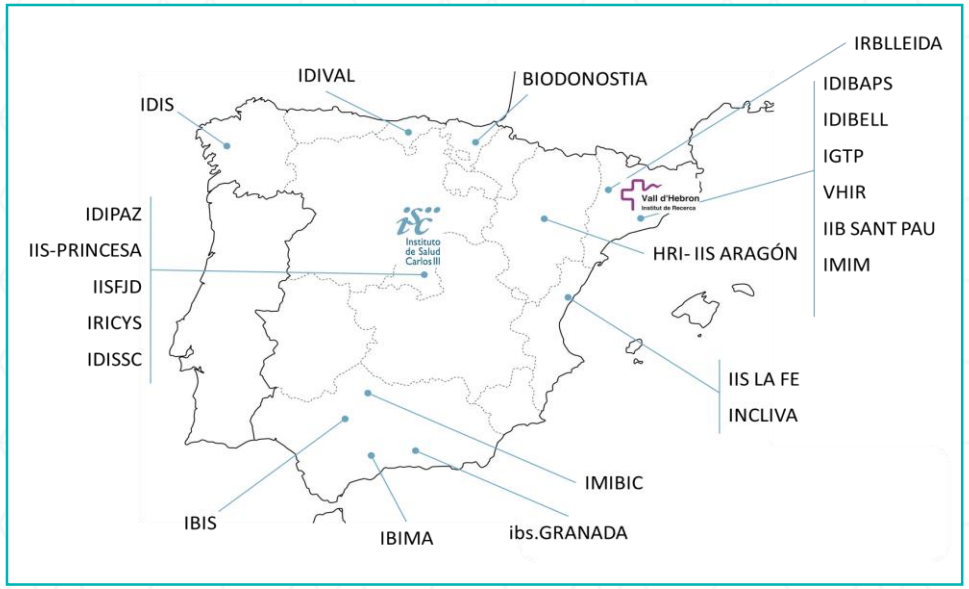
Research Institutes

5 Scientific Platforms

- ATMPs
- Biomarker
- Imaging & Tracing
- Small Molecules
- Vaccine, inflammation and immune monitoring



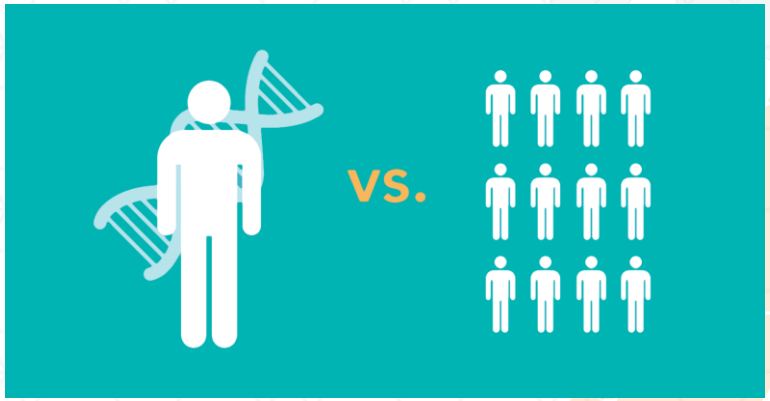
EATRIS in the Personalised Medicine Landscape

Validation of Personalized Biomarkers

Educational programs on Personalised Medicine

Public-private collaborations for developing patient-tailored solutions

Support consortia on Personalized Medicine oriented calls



“One size does not fit all”

Therefore a need for patient stratification

EATRIS in the Personalised Medicine Landscape

Validation of Personalized Biomarkers

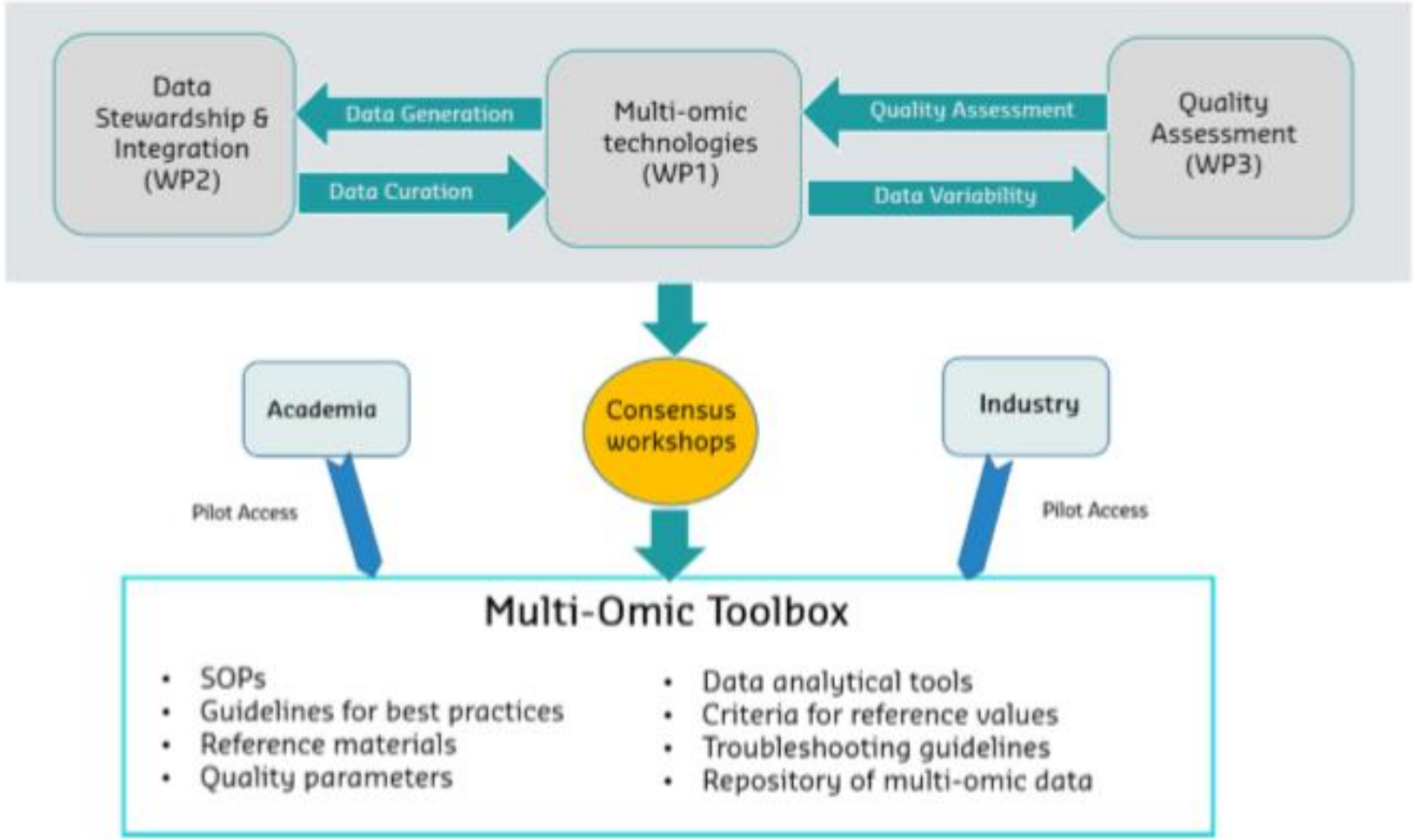


Figure 5: EATRIS-Plus science and technology-driven work plan

EATRIS in the Personalised Medicine Landscape

Validation of Personalized Biomarkers

The FDA's Working Group on Epigenome Quality Control (EpiQC)

Internal collaboration between researchers, core laboratories and assay providers

Goal of the EpiQC

To inform researchers, and simplify applications of epigenomics assays to the context of gene regulation, clinical diagnostics, prognosis, and systems biology, by:

- ✓ Generating standards for main epigenomics assays
- ✓ Identifing best practices for :
  - Laboratory methods
  - Sequencing methods and data generation
  - Computational algorithms

Through assay and data analysis pipelines comparisons

EATRIS in the Personalised Medicine Landscape

Educational programs on Personalised Medicine

eatris

Open e-learning platform

transmed academy

EATRIS in the Personalised Medicine Landscape

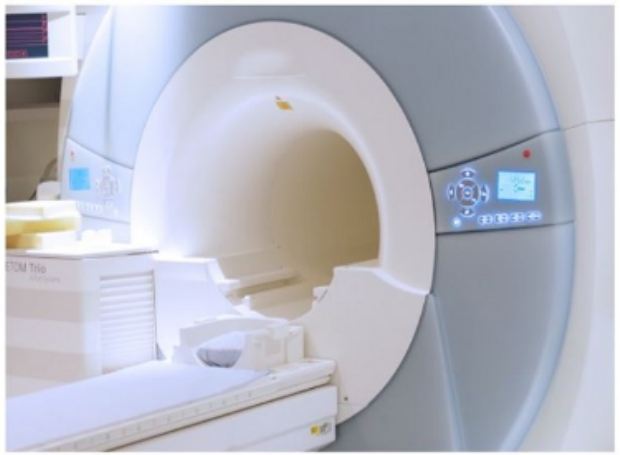
Public-private collaborations for developing patient-tailored solutions

News

UNIQUE HUB COLLABORATION – IMAGING METHOD DEVELOPMENT IN INFLAMMATORY DISEASES

International multi-site collaboration hub will implement new clinical imaging tools and deliver several projects per year with enhanced speed and throughput.

Amsterdam, The Netherlands, June 4, 2018 – The European Infrastructure for Translational Medicine (EATRIS) has formed a collaboration with GlaxoSmithKline (GSK) to deliver a clinical and scientific expert network for the development and application of innovative imaging methods for inflammatory diseases.



Advanced imaging. The initiative is aimed at optimising existing imaging technologies for drug development and clinical translation of emerging probes.

While existing clinical imaging tools provide useful endpoints in clinical trials, they typically lack sufficient cellular and molecular information to fully understand drug response. Imaging has the potential to interrogate inflammatory cell populations, quantitatively in different tissues. This alliance aims to unlock this potential by delivering new clinical tools. Applying imaging in information-rich, small cohort studies can provide a high, immediate impact to enhance R&D productivity: developing our understanding of disease in the patient; enriching clinical trial cohorts; measuring therapeutic response.

The imaging hub aims to achieve these goals by (1) optimising existing magnetic resonance imaging (MRI) and positron emission tomography (PET) technology for drug development; and (2) translating emerging PET and optical cell-specific probes towards the clinic. The first three projects with a focus around immune cell specific imaging have now been initiated.

EATRIS in the Personalised Medicine Landscape

Support consortia on Personalized Medicine oriented calls

HEALTHYCLOUD
Health Research & Innovation Cloud

EU-PEARL
EU PATIENT-CENTRIC CLINICAL TRIAL PLATFORMS

B Beyond 1MG one Million Genomes

PERMIT
PERsonalised MedicIne Trials

EUPATI
European Patients' Academy on Therapeutic Innovation

EPF European Patients Forum

CHALLENGES IN THE IMPLEMENTATION OF PERSONALISED MEDICINE

Standardisation	• Experts groups involved that can contribute to standardise
Training in PM	• Pillar for the RIs to provide training
Regulatory issues	• Contact with regulatory agencies in different countries
Internationalisation	• Working together with EU and International organisations

European Research Infrastructures…

MAKE SCIENCE HAPPEN

PROMOTE INNOVATION

TACKLE SOCIETAL CHALLENGES

DELIVER BIG RESULTS

https://toolkit.ri-vis.eu/key-messages