

## Constructing the tools...

- to improve and harmonise data standards (Lead: BBMRI)
- to improve protocols and options for secure access to biological data (Lead: ECRIN)
- to implement technical integration based on harmonised standards (Lead: ELIXIR)

## ...and putting them to the test:

- Personalised medicine—understanding disease pathogenesis and improving biomarker and treatment selection by integrating complex data sets: ELIXIR, BBMRI, ECRIN, EATRIS
- Interoperability of image data sets from different biological scales: Euro-Biolmaging, BBMRI, EATRIS, Infrafrontier, ELIXIR
- PhenoBridge—Linking phenotype data to cross the species bridge between mouse and human: Infrafrontier, BBMRI, ELIXIR, Instruct
- From cells to molecules—integrating structural data: Instruct, ELIXIR
- Describing diseases—integrating disease-related data and terminology from different types of samples: ELIXIR, BBMRI

Working together in BioMedBridges, the biomedical sciences research infrastructures are developing common solutions to challenges within the technical, ethical and data-security realms.

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Launched in January 2012, BioMedBridges is a four-year initiative funded with €10.6 million by the European Commission under FP7 Combination of Collaborative Projects and Coordination and Support Actions for Construction of New Infrastructures – Implementation Phases, Work programme topic INFRA-2011-2.3.2: Implementation of common solutions for a cluster of ESFRI infrastructures in the Life Sciences.



# BioMedBridges

## Building Bridges between Biology and Medicine

BioMedBridges is a joint effort of ten **biomedical sciences research infrastructures** on the ESFRI roadmap.

Together, the partners will **strengthen biomedical resources by developing technical bridges** to allow interoperability between data and services in the biological, medical, translational and clinical domains.

# Why link up?

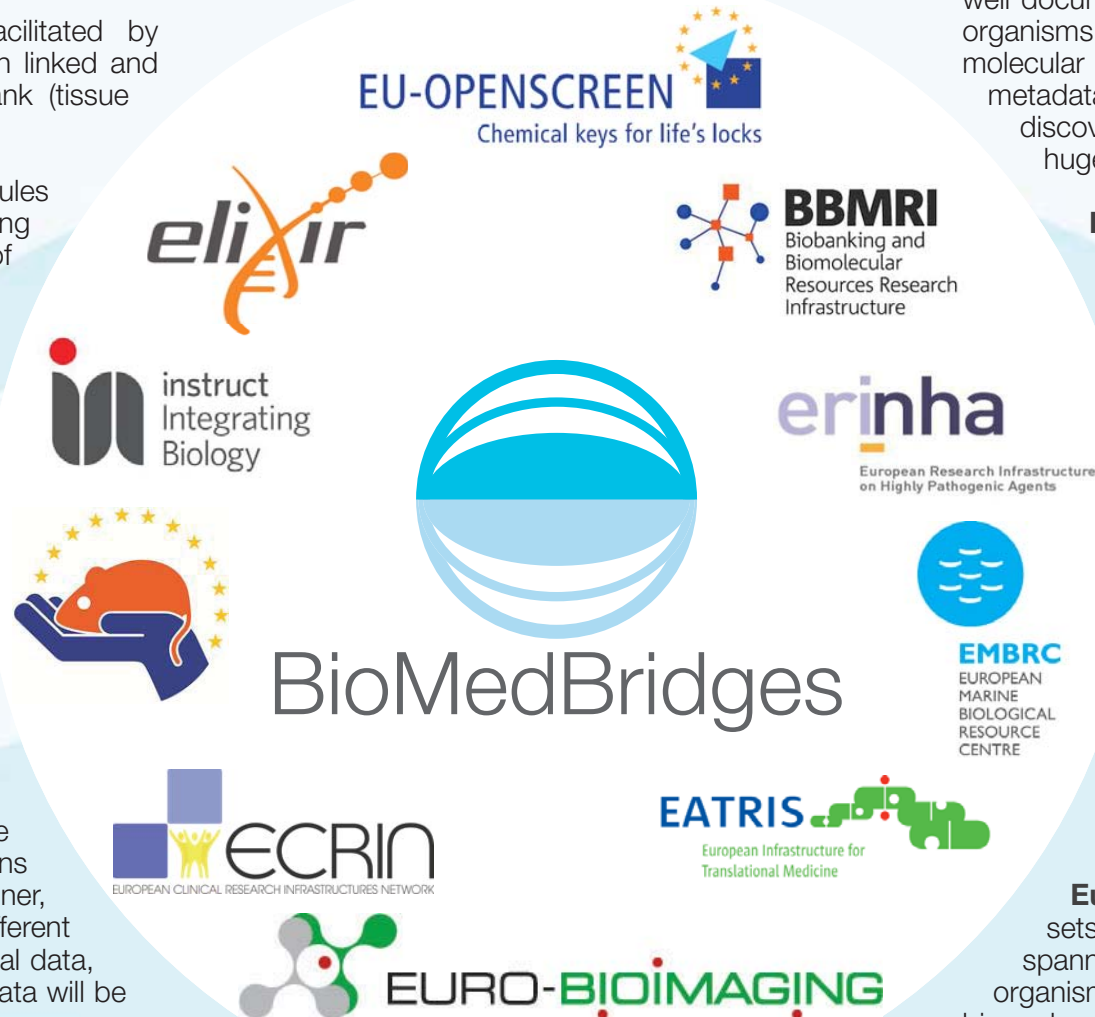
Using the tools provided by **BioMedBridges**, each European research infrastructure will be able to deliver **real and sustained improvement** in data services, which will benefit the other infrastructures and the global research community.

**ELIXIR**—New discoveries will be facilitated by revealing possible connections between linked and accessible biomolecular, clinical, biobank (tissue sample) and image data.

**Instruct**—Structural data on biomolecules will be linked with clinical data, maximising its value by enabling its use in studies of important biological and medical problems.

**Infrafrontier**—The mouse is an important model organism for studying human disease. Harmonising ontological descriptions of phenotype in mouse and human and improving links between mouse model data and human data, using diabetes and obesity as examples, will increase the relevance of data that is generated in mouse studies for clinical studies.

**ECRIN**—Data relevant to personalised medicine that is generated by the different research infrastructures will be made available to scientists and clinicians in an ethical, robust and sustainable manner, and mechanisms of interoperability for different data types will be developed. Clinical trial data, biomolecular data and basic research data will be better linked.



**EU-OPENSREEN**—The enormous effort involved in high throughput screening for chemical tools and drugs will be supported by building targeted strategies based on integrated clinical, cheminformatic, and biomolecular data.

**BBMRI**—Modern clinical research will be significantly supported by linking large collections of high quality, well documented samples from humans and model organisms. By integrating data from biobanks and molecular research, and by improving access to metadata, the descriptions and therefore discoverability of biomedical samples will be hugely improved.

**ERINHA**—Strains of known species and unknown species of pathogens will be more easily distinguished and accurately identified by linking to biomolecular data. This is important in controlling epidemics and in security applications.

**EMBRC**—Links to metagenomics data will help characterise poorly understood ecosystems and cheminformatics data to characterise the activity of isolated natural products.

**EATRIS**—In personalised medicine, decisions about treatment options will be supported by access to integrated data and information from multiple reference resources and analysis platforms.

**Euro-Biolmaging**—Extensive image data sets representing different biological scales spanning biomolecules, cells, tissues and organisms will be linked, enabling drug-target and biomarker discovery for human disease.