ELIXIR Pilot Actions

ELIXIR integrates Europe's best bioinformatics resources so that scientists can make the most of the data deluge. ELIXIR's first pilot actions are scalable, technical projects that tackle major European challenges in life-science data access, high-performance computing and the interoperability of public biological and biomedical data resources.

ELIXIR

Pilot actions

Contact us

To learn more about ELIXIR and its mission to support life science research, visit our website or contact us to arrange a visit to the Wellcome Trust Genome Campus.

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Private, virtual workspaces in the ELIXIR data infrastructure

ELIXIR-Facing Cloud Support and Virtual Machines

Scientists often wish to compare their research results with large reference datasets, but do not have the capacity to download or manage such massive files locally. The ELIXIR-facing cloud will allow researchers to create a virtual working environment right next to the reference data, with seamless access through their host institute. EMBL-EBI and SIB Swiss Institute of Bioinformatics are collaborating to achieve this unprecedented feat in bioinformatics that will provide crucial support to life scientists working in all domains.

Seamless, uninterrupted transfer of major datasets across Europe

ELIXIR Data Input/Output (IO) for the Continuous Transfer of Major Archive Resources to a Remote European Location

Bioinformatics resources can contain several petabytes (10^{15} bytes) or data, and downloading these for analysis behind a firewall is often necessary. But the task of transferring them is subject to the vagaries of web traffic, which can be slow and unpredictable. Europe's Research and Education Networks, including JANET and GEANT, have upgraded the physical infrastructure to allow for dedicated, secure and private transfer of data between institutes. Capitalizing on this development, the Finnish Node of ELIXIR and EMBL-EBI are building tools for the transfer of major European Genome-phenome Archive (EGA) datasets between the UK and Finland. Once they are scaled up, these tools will enable the transfer of massive datasets between European institutes over allocated lines in a timely and predictable manner.

Interoperability of protein resources for drug discovery

Improving Links Between the Human Protein Atlas (HPA) and EMBL-EBI Protein Resources

An impressive amount of work has gone into creating protein and protein expression resources in Europe, each of which contains valuable information for biomedical research. Navigating seamlessly between these resources would be invaluable for scientists who need to make informed decisions about their research into new drug targets and are exploring links between different proteins in healthy and diseased tissues. In this action, the Swedish ELIXIR Node is working with EMBL-EBI to make the Human Protein Atlas interoperable with PRIDE, the proteomics resource; InterPro, the database of protein families and motifs; and the Gene Expression Atlas. These well-established resources underpin R&D into many important aspects of genetic diseases such as tissue specificity.

Secure access to genomic data

Distributed Authentication of the European Genome-phenome Archive (EGA)

The EGA facilitates biomedical discoveries by enabling the secure sharing of research data that matches genetic information to disease characteristics. It is strictly governed by the data access committees (DACs) associated with each study, and is highly protective of deposited information. Continually improving secure access to these data is a key driver behind this collaboration between EMBL-EBI and the Finnish Node of ELIXIR. Researchers will apply for authorisation using their host institute credentials, streamlining the process for managing account information and adding an extra layer of accountability. The action is also supporting DACs by developing advanced electronic application tools. Endorsed by Geant3Plus, this action has become a priority model for similar projects.

Safeguarding resources that link genes with disease

Establishing the EGA as a Joint Venture

The EGA holds approximately half a petabyte of data, and this volume is growing rapidly. These data are a goldmine for biomedical researchers, and it is imperative that the archive continues to run smoothly and can grow to meet demand. This Pilot Action demonstrates how ELIXIR Nodes can support one another in expanding Europe's bioinformatics capacity. The Centre for Genomic Research (CRG) in Barcelona has partnered with EMBL-EBI to further develop the EGA, and in a short time has eased considerable pressure on the project and opened up new avenues for development.