

EMBL-EBI workshop: Tools for functional genomics data

Introduction to EMBL-EBI resources

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UNIVERSITAT
POLITÈCNICA
DE VALÈNCIA

A bit about your speaker...

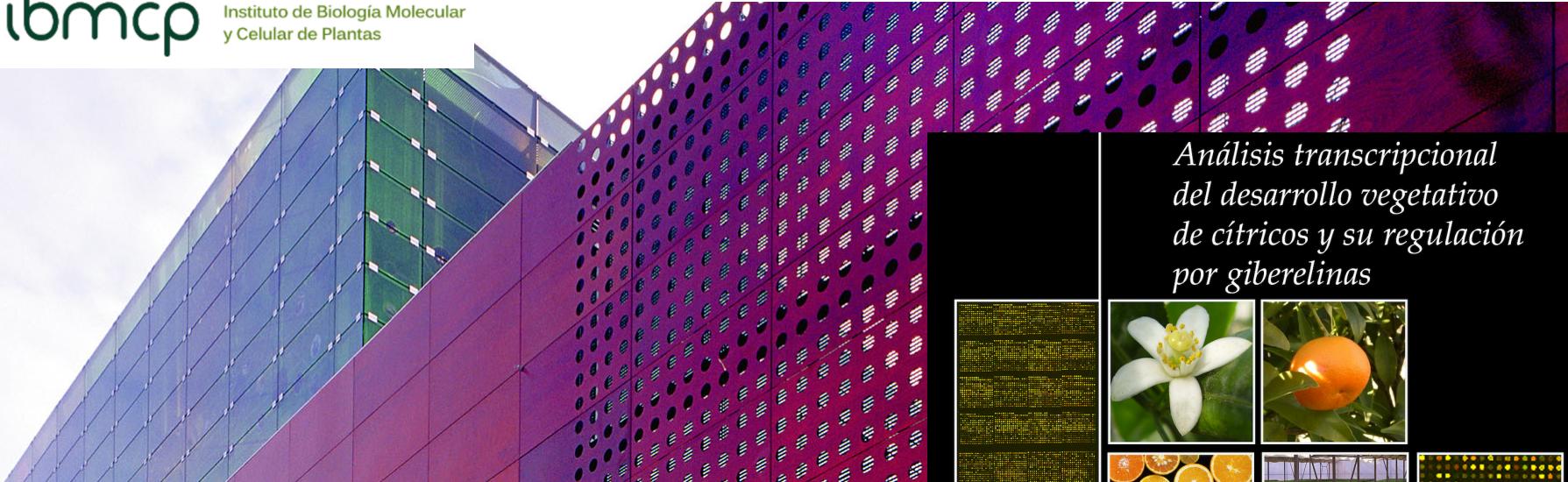


- Agronomic Engineer, major in Biotechnology
- Cloning and characterisation of a GA 20-oxidase gene from *Citrus sinensis* (L.) Osbeck. Prof. José Luis García Martínez (CSIC)

A bit about your speaker...

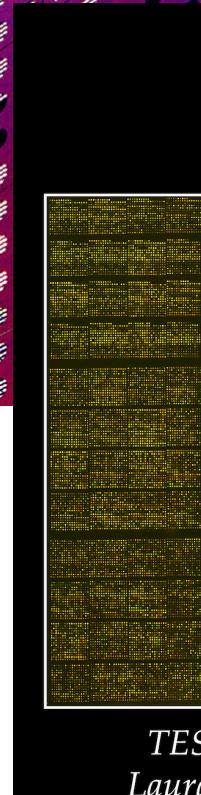
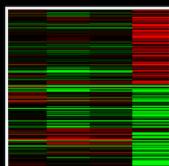
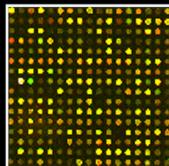


Instituto de Biología Molecular
y Celular de Plantas



<http://www.ibmcp.csic.es>

*Análisis transcripcional
del desarrollo vegetativo
de cítricos y su regulación
por giberelinas*



*TESIS DOCTORAL
Laura Huerta Martínez*

A bit about your speaker...

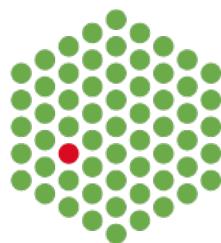




WELLCOME
GENOME
CAMPUS



EMBL-EBI



The European Bioinformatics Institute (EBI)

The home for big data in biology

The screenshot shows the EMBL-EBI homepage with a dark teal background featuring a globe composed of binary code. At the top left is the EMBL-EBI logo and tagline "The home for big data in biology". To the right is a box stating "3.5 petabytes Total volume of data downloaded in 2016." Below this is a link "More about EMBL-EBI's impact in our annual report" and a note "Data from 2016". The main search interface includes a dropdown menu ("All"), a search bar ("Find a gene, protein or chemical") with a magnifying glass icon, and a button "Find a tool". Below the search bar is an example search term "blast keratin bf1". Other links include "Our unique Search service helps you explore dozens of biological data resources.", "More about EBI Search", "Find a tool for your data analysis.", "Share your scientific data with the world.", and "Deposit data".

To provide freely available data and bioinformatics services to the scientific community

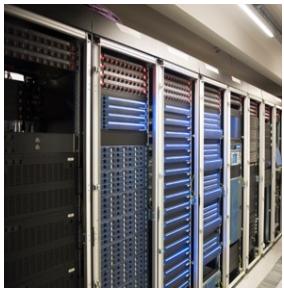
www.ebi.ac.uk/

What is EMBL-EBI?

- Europe's home for biological data services, research and training
- A trusted data provider for the life sciences
- Part of the European Molecular Biology Laboratory, an intergovernmental research organisation
- International: 600 members of staff from 60 nations
- Home of the ELIXIR Technical hub.

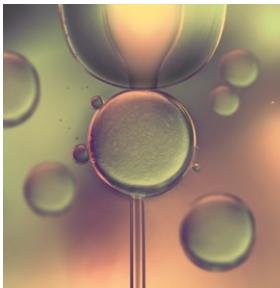
What is EMBL-EBI? – Our mission

Services



Deliver scientific services

Research



Deliver excellent research

Training



Train the next generation of scientists

Industry



Engage with European industry

ELIXIR



Coordinate bioinformatics in Europe



Services

To provide freely available data and bioinformatics services to all facets of the scientific community in ways that promote scientific progress





Research

To contribute to the advancement of biology through investigator-driven research in bioinformatics





Training

To provide advanced bioinformatics training to scientists at all levels, from PhD students to independent investigators





Industry

To help disseminate
cutting-edge
technologies to
industry

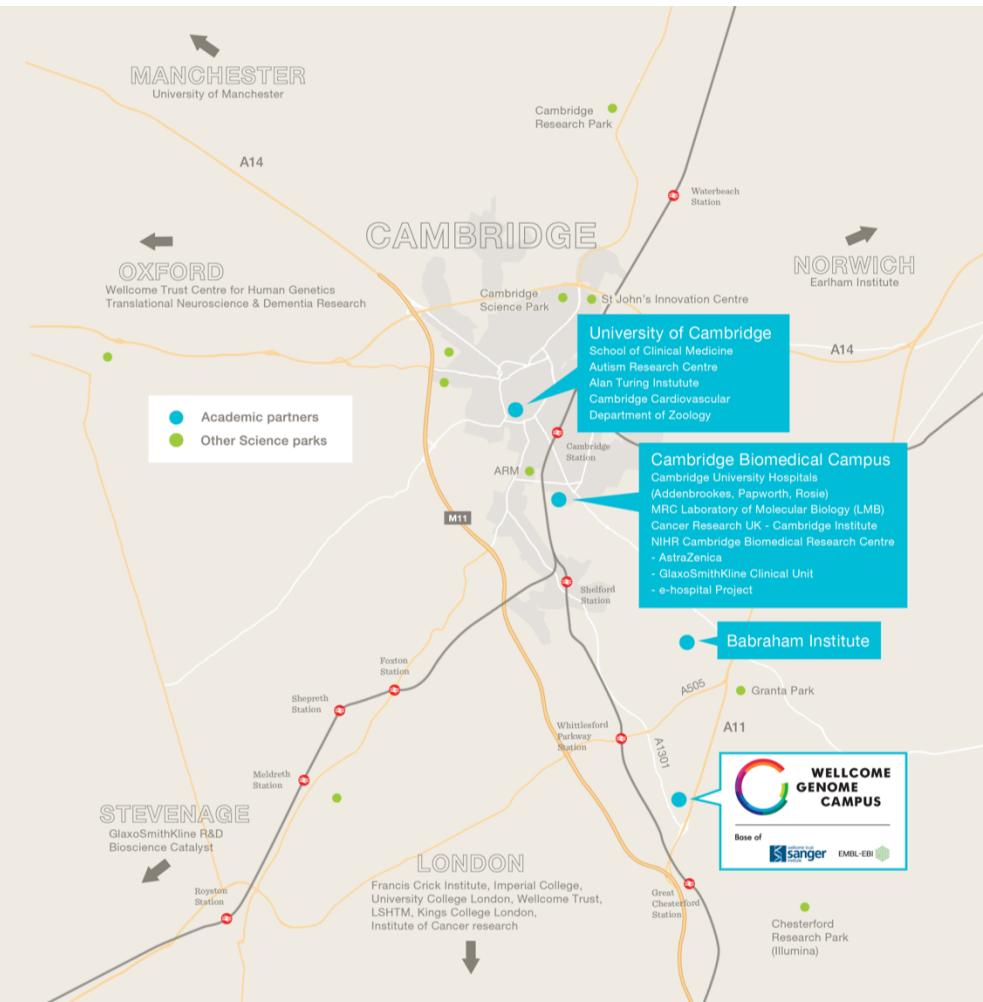




To support, as an
ELIXIR Node, the
coordination of
biological data
provision in Europe



The Wellcome Genome Campus



The European Molecular Biology Laboratory

+80 nationalities

Heidelberg, Germany



Main Laboratory

>1600 personnel

Hinxton, Cambridge, UK



Bioinformatics

6 sites in Europe

Grenoble, France



Structural Biology



Barcelona, Spain



Monterotondo, Rome, Italy



Hamburg, Germany

EMBL member states



Austria, Belgium, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Luxembourg, the Netherlands, Norway, Portugal, Slovak Republic, Spain, Sweden, Switzerland and the United Kingdom

Associate member states: Argentina, Australia

Prospect member states: Montenegro, Lithuania



Source of funding

- EMBL-EBI is primarily funded by EMBL member states.
- Other major funders:
 - European Commission
 - Research Councils UK
 - National Institutes of Health
 - Wellcome Trust
 - Industry Programme



How we are organised

Services

Ewan Birney and Rolf Apweiler
Directors

Research

Genes, Genomes & Variation
RNA, Protein & Metabolite Expression
Proteins & Protein Families
Molecular & Cellular Structures
Chemical Biology
Molecular Systems
Cross-Domain Resources
Archival Resources

Genomics - Sequence analysis methods
Proteins & Protein Structures - Multi-dimensional statistical analysis
Chemical Biology - Data-driven biological discovery
Pathways & Systems – from plant biology to mammalian development and disease

Training Programme • Industry Programme •
Systems Applications • Systems Infrastructure • Administration • Web Production •
Web Development • External Relations

Bioinformatics services

Data and tools to support life science
research

www.ebi.ac.uk/services

“Essential to research”

70%

of users agreed EMBL-EBI services are “essential to their research”*

*From a survey of over 1800 users in 2013 and 2014

Top 1

for the processes of generation and scholarly communication of scientific knowledge*

*From the Ranking Web of Research Infrastructures

Europe PMC offers
4.4 million

full-text articles, 1.2 million of which are Open Access

Over

350 000
scientists used EMBL-EBI’s online training in 2016

Saving cost, enabling innovation

79%

“EMBL-EBI services reduced the cost of exploiting relevant data.”

93%

“EMBL-EBI services reduced the time needed to find required data.”

79%

“EMBL-EBI services permitted us to explore more novel research questions.”

81 %

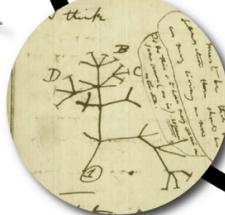
“EMBL-EBI services reduced duplication of effort.”

What services do we provide?

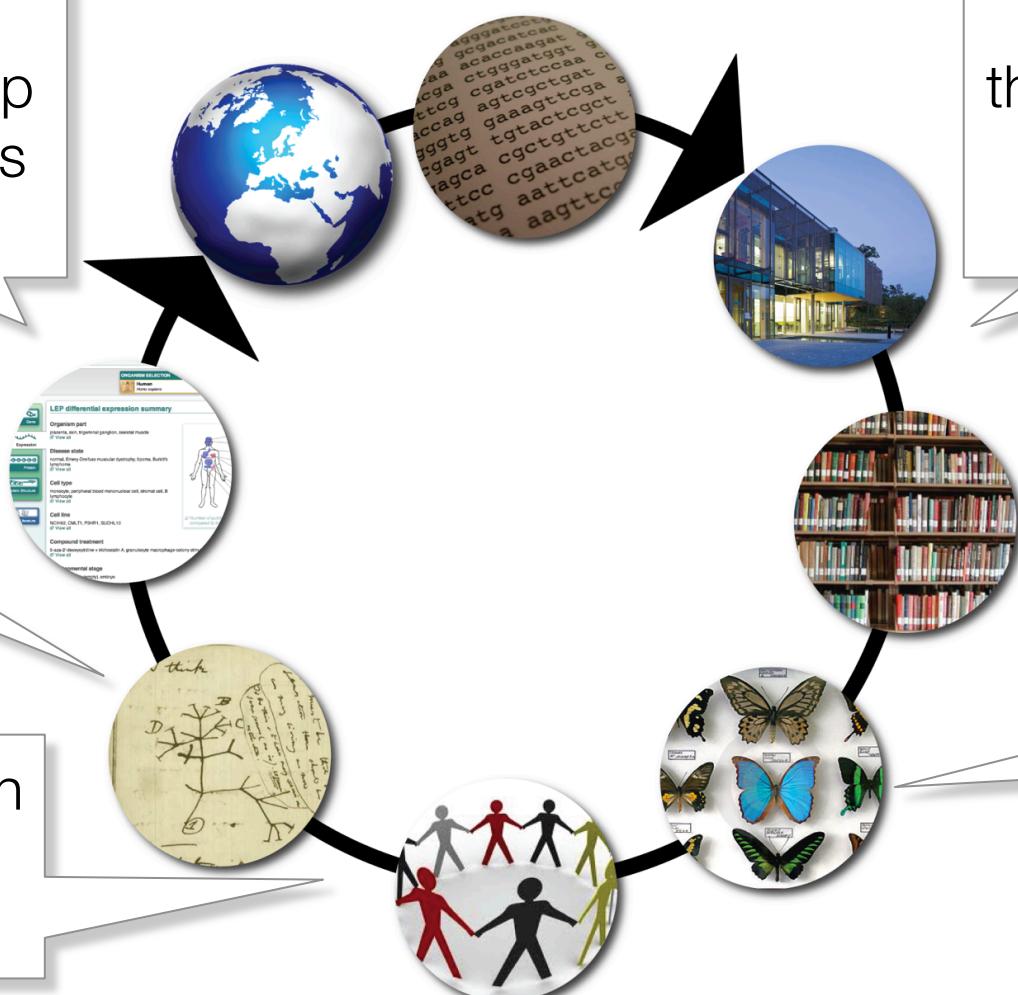
...provide tools to help researchers use it



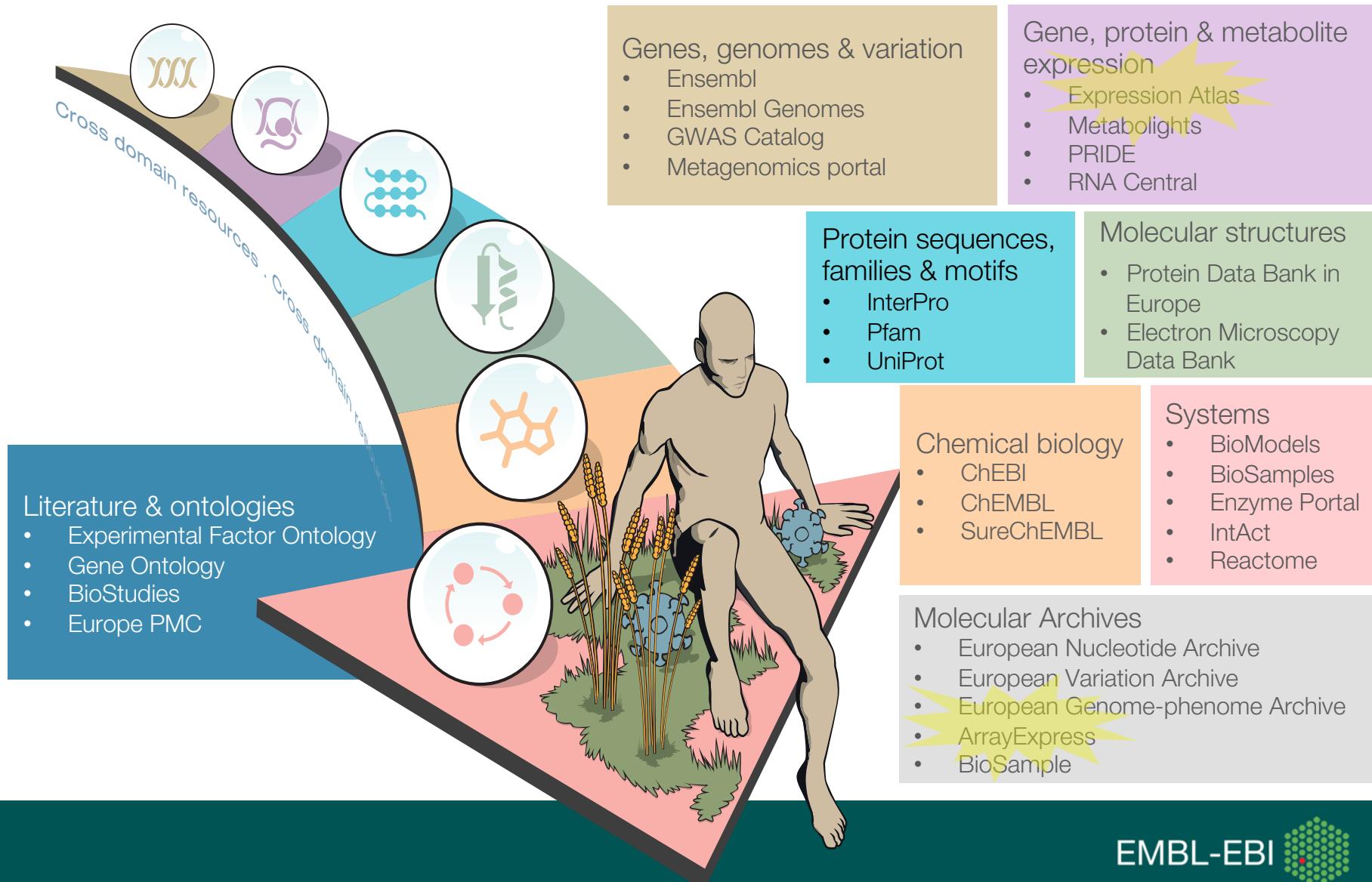
Analyse it



Share it with other data providers



Data resources at EMBL-EBI



Training

Overview

Train at EMBL-EBI

Train outside EMBL-EBI

Train online

Webinars

About

10 Years

Contact

Bioinformatics training

EMBL-EBI Training

For scientists working at all levels

We train scientists at all levels to get the most out of publicly available biological data.

Follow us on Twitter and sign up to the EMBL courses and conferences newsletter.

www.ebi.ac.uk/training

Sponsoring 10 years of public training → Topic filtered by Gene expression [X]

Filter by: Topic

- biomodels
- DNA & RNA
- genomes
- Gene expression
- Proteins
- Structures
- Systems
- Ontologies
- Chemical biology
- Literature
- Cross domain

Filter by: Type

Train at EMBL-EBI

Train outside EMBL-EBI

Training events

May 2018

24

EMBL-EBI Workshop: Tools for functional genomics data

Conrad Hotel, Seoul, South Korea - 10 Gukjegeumyung-ro, Yeoeuido-dong, Yeongdeungpo-gu, Seoul, Seoul, South Korea

24th May

This course will provide participants with an introduction to functional genomics resources at EMBL-EBI, in particular to ArrayExpress and the submission tool Annotare.

Online courses

Start now

[ArrayExpress: Discover functional genomics data quickly and easily](#)

Author(s): Anja Füllgrabe

ArrayExpress is a database of functional genomics data. This course will give you an overview of how these data are stored in ArrayExpress and will teach you how to effectively search and retrieve data from the ArrayExpress website . Course...

Start now

[ArrayExpress: Quick tour](#)

Author(s): Melissa Burke



Celebrating 10 Years of Training

Building capacity: bioinformatics training

Train online

We provide free access to materials from EMBL-EBI courses, allowing you to choose when, where and how you learn

Webinars

Our collection of free seminars focuses on our range of data resources and new features and tools to boost your research

Courses at EMBL-EBI

Our on-site training courses help life-science researchers in all domains to make the most of public data resources

Courses at host sites

We send our expert trainers to host organisations throughout the world, where they provide training on bioinformatics

Research

Leading computational biology
research since 1994

www.ebi.ac.uk/research

Research groups at EMBL-EBI



Alex Bateman Ewan Birney Pedro Beltrao Alvis Brazma Rob Finn Paul Flicek Andrew Leach Moritz Gerstung



Nick Goldman Zamin Iqbal John Marioni Evangelia Petsalaki Oliver Stegle Janet Thornton Virginie Uhlmann Daniel Zerbino

Postdoctoral fellowships at EMBL-EBI

Interdisciplinary

EI³POD projects bring together scientific fields that are usually separate, or transfer techniques to a novel context.

Genome Campus

ESPODs: joint Sanger–EMBL-EBI fellowships combine experimental and computational approaches.

Biomedicine

EBPODs are joint projects with EMBL-EBI, NIHR Cambridge Biomedical Research Centre and the University of Cambridge School of the Biological Sciences.

Industry engagement

Support and collaboration

www.ebi.ac.uk/industry

EMBL-EBI industry programme members

Pharmaceutical

abbvie



Celgene

Lilly

NOVARTIS

SANOFI

astellas
Leading Light for Life

Biogen

genzyme

MedImmune



astex[®]
pharmaceuticals

**Boehringer
Ingelheim**

gsk

MERCK

Pfizer
ucb

AstraZeneca

Bristol-Myers Squibb

janssen
JANSSEN PHARMACEUTICAL COMPANIES OF JOHNSON & JOHNSON

MSD
Be well

Roche

Agri-food and consumer goods

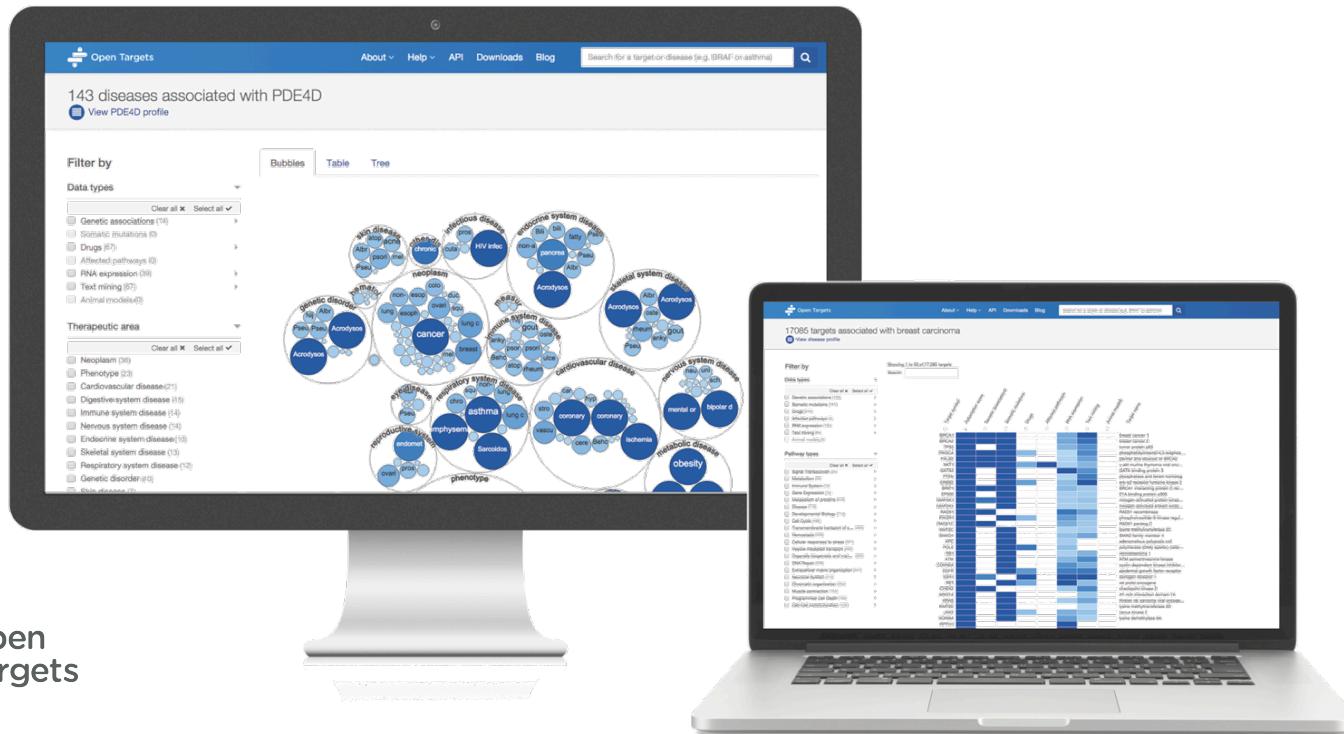
Bayer CropScience

syngenta

Unilever

Open Targets: Target Validation Platform

A partnership to transform drug discovery through the systematic identification and prioritisation of targets



Elixir

Supporting the coordination of
biological data provision in Europe

www.elixir-europe.org



ELIXIR unites Europe's leading life science organisations in managing and safeguarding the data generated by publicly funded research.

It coordinates, integrates and sustains data resources across its member states, enabling scientists to access services that are vital for their research.



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