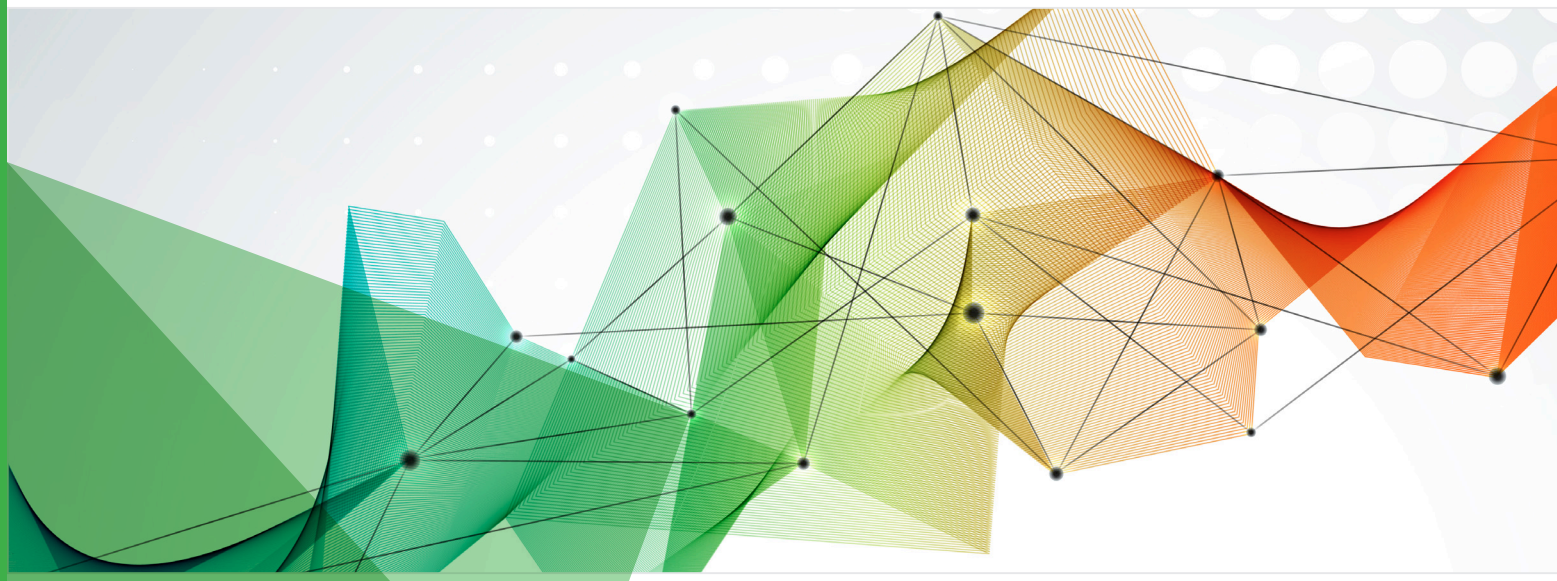
AUSTRALIAN HUB

Australia's critical life science infrastructure

EMBL Australia Bioinformatics Resource



Upcoming 2016 EMBL-ABR Hub events Melbourne, Australia

24 October
Annotation & curation best-practice workshop

25 October
Data life-cycle workshop - Plants

26 October
Data life-cycle workshop - Animals

27 October
Data life-cycle workshop - Microbes

28 October
Data life-cycle workshop - Health

7 December
'All hands' meeting

8 December
Meeting: Australian training opportunities

9 December
Web resources for biology & open source best-practice workshop

12 December
BioSchemas hackathon

Sign up for news updates at:
www.embl-abr.org.au

Australian life science research is recognised globally for its contributions to health through genomics supported by bioinformatics, its unique and diverse ecology and evolution datasets, and its 'smart science' approach.

Over the past 15 years our ability to generate data has dramatically increased, and large complex data sets are now essential to our ability to accelerate scientific knowledge, to combat disease and understand the natural world. Life science stands at the cusp of a big-data revolution that is happening worldwide.

Global initiatives have been established to support researchers deal with the challenges of large complex data sets, sharing, exploring, analysing – ensuring economic, social and health benefits and maximising the impact of data - driven science.

Over the past 10 years, Australian institutions have established a number of local initiatives focused at increasing the understanding and capability in bioinformatics to support life sciences. EMBL Australia Bioinformatics Resource (EMBL-ABR) is a coordinated, national approach to support Australian research collaborations and participation in global life sciences data initiatives such as Big Data to Knowledge (NIH), CyVerse (NSF) and EMBL-EBI and ELIXIR (Europe).

EMBL-ABR's Mission

- increase Australia's capacity to collect, integrate, analyse, exploit, share and archive the large heterogeneous data sets now part of modern life sciences research
- contribute to the development of and provide training in data, tools and platforms to enable Australia's life science researchers to undertake research in the age of big data
- showcase Australian research and datasets at an international level
- enable engagement in international programs that create, deploy and develop best practice approaches to data management, software tools and methods, computational platforms and bioinformatics services.

EMBL-ABR builds on a strong history of locally-based solutions around Australia that enable high performance computing, research and clinical data management, bioinformatics, computational biology, education and training. For example, the Victorian Life Sciences Computation Initiative (VLSCI) node in Melbourne supported over $50M of publicly-funded life science research in 2015, including:

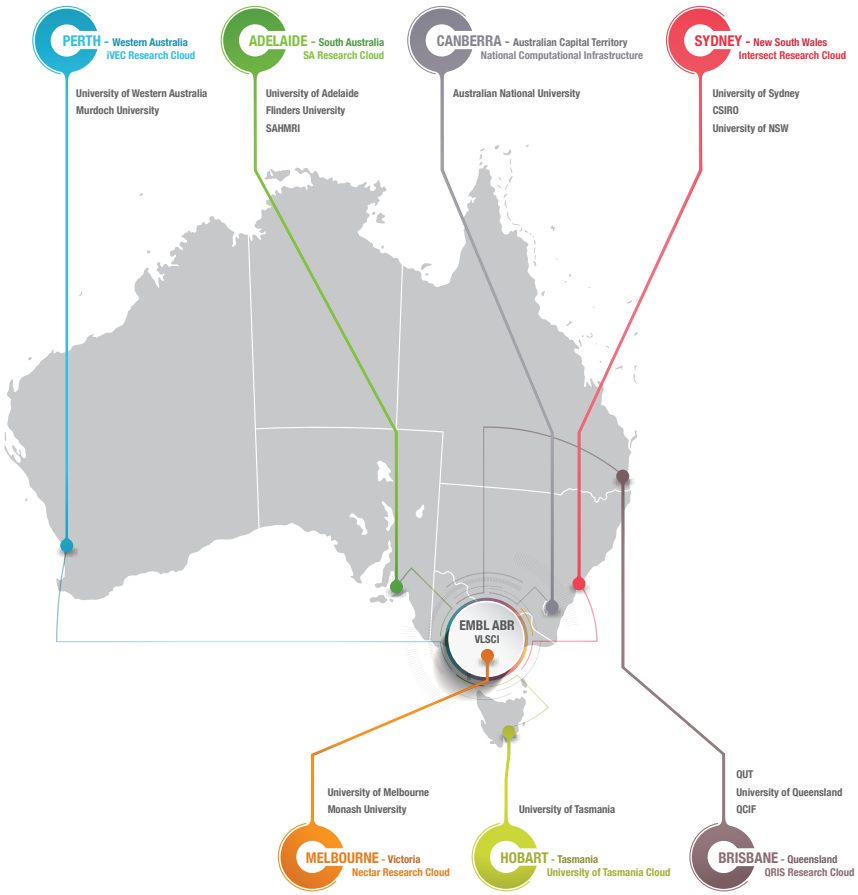
- providing the bioinformatics and analysis environment for the Melbourne Genomics Health Alliance
- rolling out the Australian-made Genomics Virtual Laboratory - a cloud based suite of genomics analysis tools
- facilitating research in genetic epidemiology - identifying genetic risk factors for disease across vast data environments.

Towards 2022

EMBL-ABR has the networks, expertise and experience to drive, develop and represent Australia's maturing bioinformatics community to meet its short and long term needs, at both the national and international level.

We are in the right position to organise the local centres of bioinformatics excellence into a national network, building Australia's national level identity in bioinformatics and ensuring it has the ability and capability to interact with important international efforts.

EMBL-ABR is a truly national resource with Nodes around Australia.



"Bioinformatics is an increasingly international endeavour and building a truly global infrastructure for data requires tight collaboration between partners across continents. EMBL-ABR is well placed to serve the local needs of its users and at the same time act as the reference point for global collaborations in data transfer, exchange, storage, compute and training."

Niklas Blomberg, ELIXIR Director

"Organising at the national level will be critical if Australian bioinformatics and EMBL-ABR are to achieve the greatest scientific impact. Modern biology is data-driven, and largely species agnostic when it comes to managing Big Data, solving visualisation challenges, and modeling interactions. A national framework makes this work efficient, and accelerates progress by allowing solutions and resources to flow freely across different communities and areas of expertise. An insight from CyVerse (formerly iPlant Collaborative) was that tackling grand challenges in biology exceeds the resources of single groups or institutions. iPlant's evolution from serving plant science into serving all life science was natural because bioinformatics challenges aren't welded to the domains of life science from which they originate (eg image processing for wheat fields and neurons can have a lot in common)."

Jason Williams, Education, Outreach, and Training lead, CyVerse

"The future of biological research will be built, in part, on the foundation of strong bioinformatics. A coordinated, national approach will connect to international efforts while understanding and serving the unique needs of Australian science. EMBL-ABR's 'informatics infrastructure' can efficiently accelerate science by disseminating best practices and facilitating reproducibility."

Paul Flicek, Senior Scientist and Team Leader, Vertebrate Genomics, EMBL-EBI

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