

The Australian Bioinformatics Commons as an exemplar of international engagement in research infrastructure

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ABSTRACT

As for many other research disciplines, rapid advances in digital technologies and methods are proving transformational in life sciences. Internationally, major life sciences infrastructure initiatives are increasingly defining global scale data infrastructures; most notably, the US-based National Institutes of Health through their Data Commons program [1], the pan-European ELIXIR program [2] and the European Bioinformatics Institute (EBI) [3]. These initiatives are building data infrastructures that are, in many ways, equivalents of the global data-focussed infrastructures driving advances in astronomy and physics - infrastructures like the Hubble Telescope [4], the Square Kilometre-Array (SKA) [5], the Laser Interferometer Gravitational-Wave Observatory (LIGO) [6], and the Large Hadron Collider [7]. Like in astronomy and physics, it is clear that world-class life sciences research in Australia will depend on digital methods, data resources, and communities, that are globally sourced and supported, and to which we contribute.

Understanding discipline requirements and describing them in appropriate language to digital resource providers is something that some disciplines do well, and as a consequence those disciplines do well in accessing digital resources. However, for such a large and diverse research community as life sciences, finding consensus on what digital research infrastructure to invest in at national scale, and how it relates to international initiatives, is challenging.

Therefore, sponsored by Bioplatforms Australia [8], the ARDC [9] and AARNet [10], we have been undertaking a research infrastructure program called the Australian Bioinformatics Commons (BioCommons) Pathfinder [11] that strongly engages the research community, international infrastructure initiatives, and national digital resource providers, recognising that Australia must understand, participate in and contribute to global life science-enabling endeavours as a first class partner, and presenting this as a clear vision of implementable requirements to national providers. The BioCommons Pathfinder project explores five challenges in life sciences that are also more general challenges:

- Access to cloud infrastructure to help mix international and Australian data in new ways for new science
- Democratising access to world's best practice tools and methods for Australian researchers
- Making Australian generated research data at rest more FAIR in a global context
- Building Australian reference data assets for Australian research questions
- Tailoring combined e-infrastructures to provide a user experience harmonised with discipline research practice

In this talk we discuss the vision of an Australian BioCommons and how it is being informed by close engagement with, and participation in, international programs. We also discuss the development of a national capability that can provide Australian researchers with access to global research infrastructure in which we are first order contributors.

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