

GENOMICS VIRTUAL LABORATORY

Taking the IT out of Bioinformatics

What is it?

The Genomics Virtual Laboratory (GVL) provides a cloud-based suite of genomics analysis tools for life science research and training.

What are its main features?

Biologists without computer science training can go straight to a user-friendly platform which hosts a suite of tried and tested bioinformatics tools and pipelines for fast, consistent, data analysis. The platform is constantly updated to have the latest features in use by expert bioinformaticians, so it avoids having to keep downloading new software types and versions locally.

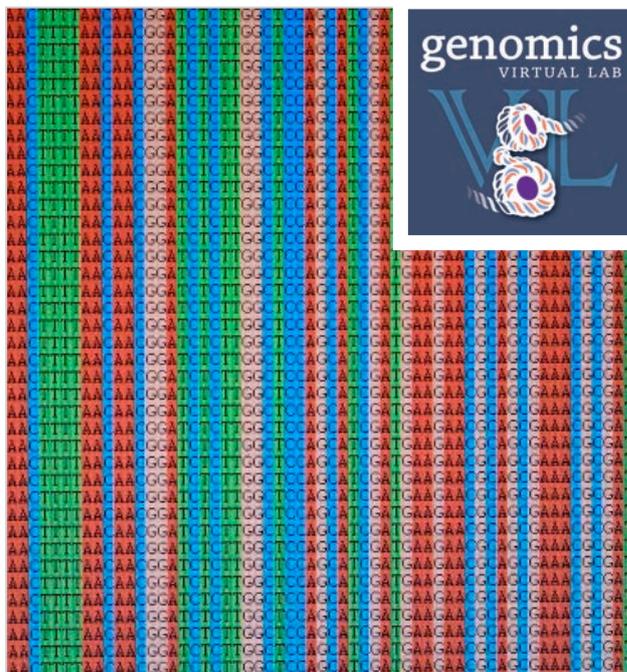
Adopted both locally and overseas, the GVL has already been recognised as a quality platform to help address the shortage of bioinformatics expertise around the world and manage the complex, multiple-layered data analysis tasks confronting life scientists today.

Who is currently using it?

Nationally and internationally it is being used both by life scientists working with genomic data and academics teaching genomics at undergraduate and post-graduate levels.

Who is it designed for?

Life scientists without access to bioinformatics expertise are the primary users of the GVL. Practising bioinformaticians who know how to find the right tool for the data analysis job, find that the GVL is working for them in other ways. Small bioinformatics groups or lone practitioners use the GVL to train their local teams to do their own simple bioinformatics tasks on the GVL, freeing up capacity to work on more complex research problems or to collaborate more broadly.



How do I get it?

Available on the OpenStack-based Nectar Research Cloud and the Amazon Web Services cloud, the principles, implementation and build process are designed to be cloud-agnostic, making it readily available to research groups around the world:

- launch a private server on the cloud, with the GVL pre-installed
- launch a new server instance on a public cloud, such as Nectar/OpenStack or Amazon/EC2
- build and deploy the GVL on a private cloud.

How do I learn more?

EMBL-ABR's website lists all training on offer across Australia. Tutorials are on the GVL website.

WEBSITE www.gvl.org.au

EMAIL help@gvl.org.au

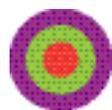
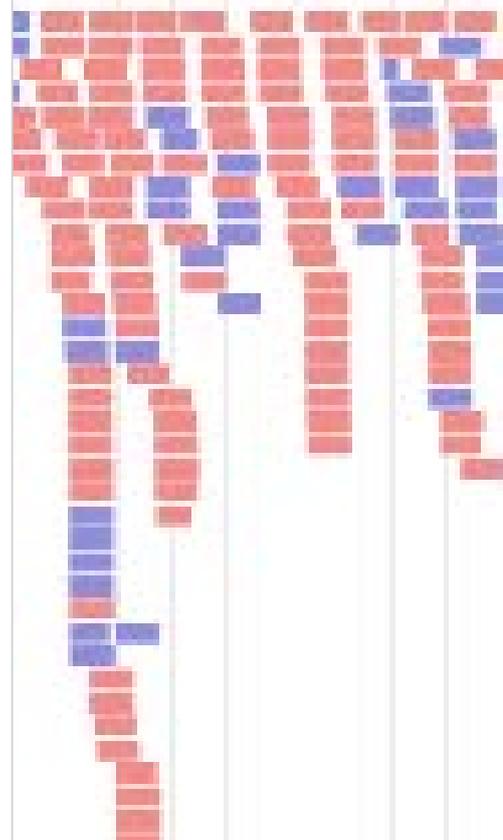
FOR GVL UPDATES

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The GVL comes in a range of 'flavours'

Several GVL 'flavours' are available to suit different kinds of genome analysis. Each has the basic GVL structure with customised toolsets optimised for different usage patterns. Other flavours, such as plant genomics, will be developed in future.



BASE

- Contains basic features with all options available for configuration.
- Use if you want to configure custom storage options, and individually select components to install.
- Preinstalled interfaces include: Cloudman, VNC, Command line access, Galaxy (standard GVL toolset)
- Option installations: RStudio, JupyterHub, PacBio's SMRT Analysis, Public Health Canada's IRIDA, WebApollo, Pathway Tools, LOVD, Cpipe, Pancancer BWA-Mem Workflow.



TUTORIAL

- Contains all the tools required for the GVL tutorials preinstalled.
- Use for educational purposes, and to complete GVL tutorials with the least hassle
- Includes Base features, plus RStudio and JupyterHub
- Optional installations: PacBio's SMRT Analysis, Public Health Canada's IRIDA, WebApollo, Pathway Tools, LOVD, Cpipe, Pancancer BWA-Mem Workflow



MICROBIAL

- similar to the GVL Base, but the Galaxy and command line tools optimised for microbial workflows
- Includes Base features, plus Galaxy microbial tools such as spades, prokka, artemis, snippy.
- now deploying metagenomics capabilities.
- Full range of optional installations available

"The GVL, and now the microGVL, is an exemplar of great Australian research collaboration and ingenuity: a virtual laboratory which brings the tested tools of bioinformatics to biologists who are wanting access to those skills. Such international recognition is further demonstration of Australia's capacity to compete in these complex, technically sophisticated fields."

Assoc Prof Andrew Lonie

Director Melbourne Bioinformatics &
EMBL-ABR



How is it funded?

The GVL is funded through the Nectar project which is an Australian Government project conducted as part of the Super Science initiative and financed by the Education Investment Fund.

Ongoing GVL development is currently being led by Melbourne Bioinformatics (formerly VLSCI) at the University of Melbourne in collaboration with the Research Computing Centre at the University of Queensland in conjunction with a range of other Australian institutions. For a full history of the project, go to: nectar.org.au/labs/taking-the-it-out-of-bioinformatics/.