Melbourne Genomics
Health Alliance

GenoVic
A clinical system for genomics

Genomics is a pillar of world-leading healthcare.

It enables early diagnosis and targeted treatment for people with genetic diseases. It helps Australians understand their risk of cancer and take protective steps. It helps people plan families. And it's the key to tracking and stopping the spread of viruses and antibiotic-resistant 'superbugs'.

Melbourne Genomics is an alliance of leading hospitals, research and academic institutions, working with the Victorian Government to embed genomics in our health system.

Safe, ethical use of genomic data is at the heart of our work.

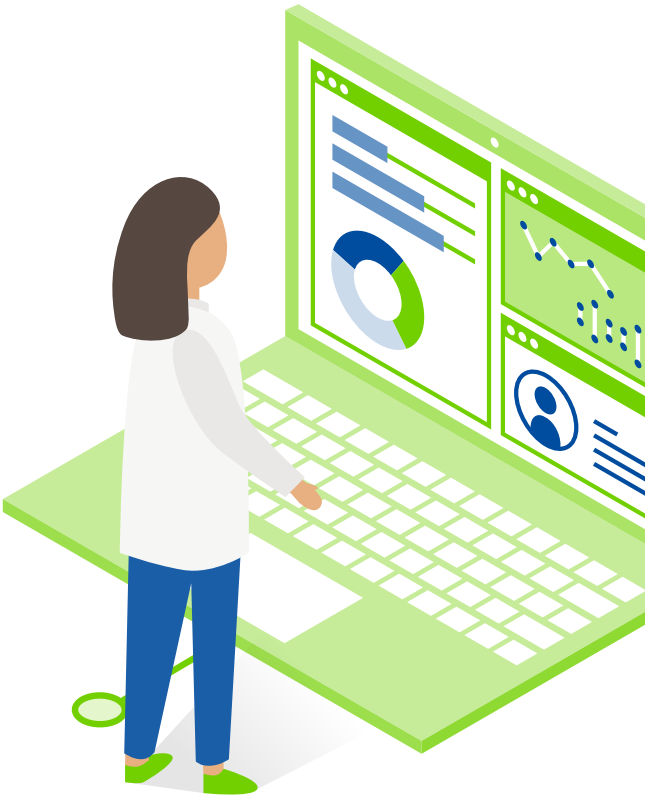
GenoVic, our clinical system for genomics, can facilitate each step of a genomic test, securely store the big data it generates, and enable that data to inform a patient's future care.

The value of genomic data

The ultimate promise of genomics is precision medicine: healthcare informed by our genetics, tailored to our environment and lifestyle, and guided by research insights from around the world.

For this to happen, a person's genome – and the results of previous genomic investigations – must be accessible to authorised medical providers, across that person's lifetime.

Genomics will generate between 2 and 40 billion gigabytes of data in the next 10 years, according to the UK's National Human Genome Institute.[1] According to KPMG International, driving value from genomics will require finding a secure way to store and analyse genomic data at scale.[2]



The challenge of managing genomic data

In Australia, the data generated from a genomic test is usually held by the lab that performs the test, in a format and system specific to that lab. It is difficult for clinical genomic data to be securely shared, or considered alongside other health datasets.

Furthermore, the genomic test itself requires multiple steps and tools. Large amounts of data must be transferred between these tools in a consistent way.

A shared clinical system for genomics solves these problems. It enables multiple medical laboratories to store, access and analyse genomic data: facilitating a lifetime of precision healthcare for patients, and fuelling research breakthroughs.

GenoVic was cited as an exemplar clinical system in the National Blueprint for Genomic Information Management.[3]

1. National Human Genome Research Institute, Fact Sheet: Genomic Data Science https://www.genome.gov/about-genomics/fact-sheets/Genomic-Data-Science
2. KMPG International (2019), *Driving value from genomics in Life Sciences* https://assets.kpmg/content/dam/kpmg/xx/pdf/2019/02/driving-value-from-genomics-in-life-sciences.pdf
3. Queensland Health on behalf of the Australian Health Ministers' Advisory Council (2020): *Blueprint for a National Approach to Genomic Information Management*.

Building GenoVic

From 2013-2020, Melbourne Genomics member laboratories conducted thousands of tests to establish the clinical utility of genomics.

At the time, there were no clinical-grade systems to support the end-to-end workflow of a genomic test. So we built one together.

Our system, GenoVic, combines purpose-built bioinformatics pipelines and a variant curation tool with the best testing products on the market – all orchestrated through a unique workflow system.

Five laboratories now use GenoVic to perform NATA-accredited genomic tests. This includes testing for inherited conditions and cancer.

How GenoVic works

GenoVic's unique design makes it simpler for laboratories to perform accredited genomic tests, and securely store clinical data.

It's designed for **clinical genomic testing**, with health data standards and high security.

It's **flexible** enough to accommodate multiple different workflows.

It's a platform for **multiple best-of-breed analytics tools** that can be added or removed as needed.

The big data from genomic tests is managed **securely in the cloud**.

Its **workflow engine** makes a complex test straightforward.

It's designed for **interoperability** with other health data systems, opening the door to precision medicine.

Visit **melbournegenomics.org.au** for detailed information on using GenoVic.

What's next for GenoVic?

GenoVic was built to endure long after Melbourne Genomics' program of work has been completed.

Our vision is that GenoVic becomes a shared system that supports the provision of genomic health investigations across Victoria, and beyond.

Our focus from 2021–2025

Innovation pathways

Ensuring GenoVic keeps pace with new developments in genomics

Privacy and security

Ensuring GenoVic continues to meet industry-wide cyber security standards

Data access and reuse

Enabling clinical data in GenoVic to be re-used to improve the health of patients, in an ethical way that merits trust

Service delivery

Evolving GenoVic as a mature clinical product, supporting a growing number of users

Talk to us about ...

- Using GenoVic in your lab
- Onboarding new technologies
- Using GenoVic with your existing data systems
- Managing genomic data

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Alliance members

The Royal Melbourne Hospital · The Royal Children's Hospital Melbourne · The University of Melbourne · WEHI brighter together · murdoch children's research institute · CSIRO · agrf · Peter Mac Peter MacCallum Cancer Centre Victoria Australia · Austin Health · Monash Health

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