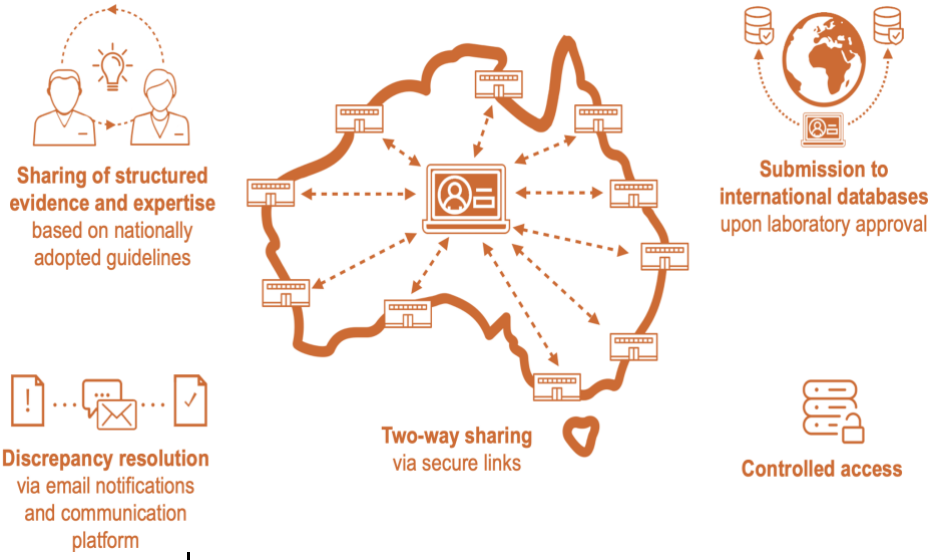
Australian Genomics

Resource Snapshot

June 2024

Shariant

Shariant is a controlled access platform enabling Australian diagnostic laboratories to automate sharing of structured scientific evidence about clinically interpreted variants; communicate in real-time to resolve variant interpretation differences; access national expertise; and contribute knowledge internationally.



Background

As Australia moves towards personalised health care, the complex task of decoding the clinical significance of DNA variants is growing exponentially. Diagnostic genomic laboratories often operate as data silos, making it difficult for one laboratory to know if others have relevant evidence, leading to risks of misdiagnosis and conflicting medical actions across patients.

Sharing variant interpretations is encouraged by Australian governing bodies. However, manual submission to existing databases is time-consuming, and diagnostic laboratories lack the resources to share.

Project aims

This project supports Australian diagnostic genomic laboratories in meeting the technical and administrative demands for clinical knowledge sharing.

Developed by Australian Genomics in collaboration with **SA Pathology** and **QIMR Berghofer Medical Research Institute**, Shariant unites diagnostic laboratory data silos to promote consistency and streamline national variant knowledge sharing.

Establishment

Shariant began in 2016 with a national working group to standardise clinical variant classification across Australian diagnostic laboratories. In 2017, a project coordinator was appointed to oversee the project, engage with laboratories, and develop the ethical and legal framework. By mid-2018, SA Pathology's VariantGrid software was chosen by an expert committee, and a software engineer was funded to adapt the software, in consultation with laboratories, to establish Shariant. The platform launched in early 2019. The project benefitted from significant in-kind contributions, including expert group membership, SA Pathology's bioinformatician, and free access to the VariantGrid software.

Key products

Shariant is the first and only national controlled access platform enabling Australian diagnostic genomic laboratories to:

- **Automate** sharing of **structured** scientific evidence about clinically interpreted variants
- Communicate in **real-time** to resolve variant interpretation differences
- Access national **expertise**
- Contribute knowledge **internationally.**

By sharing key variant knowledge, laboratories can better interpret genomic tests and improve patient outcomes. Shariant has also recently extended to further support cancer genomics testing and precision oncology.

By sharing variant knowledge, laboratories can better interpret genomic tests and improve the outcomes of testing for Australian patients and their families.

Exchange of **structured** information is **automated** via **secure** links to and from Shariant, to minimise administrative burden on laboratories, with full technical support provided.

Each laboratory can view interpretations from other contributors in their local system or via **controlled access** login to the website, enabling **real-time** access to existing expertise during routine diagnostics.

Shariant notifies laboratories of clinically significant interpretation differences in **real-time**. Discussion is streamlined between laboratories with an in-built communication platform, an important feature for triaging and resolving discrepancies.

Revised interpretations are available to all contributors, prompting review and update of results to clinical services and patients.

Laboratories can also opt to share summary level information with **international** databases via an automated submission from Shariant.

Impact

- Thirteen diagnostic genomic laboratories, including most major public services, actively contribute to Shariant. An additional 19 laboratories across Australia and New Zealand have been prioritised for connection.
- Shariant has shared >31,500 variant interpretations.
- The platform has identified discrepancies in ~13% of variants submitted by multiple laboratories, resolving 51% of clinically significant discrepancies to date, through cross-laboratory collaboration.

Discrepancy resolution via Shariant had an immediate knock-on effect, providing a diagnosis and triggering better access to risk-reducing heart screening for 8 patients and their families."

- Professor Zornitza Stark, Clinical Geneticist, Victorian Clinical Genetics Services

- Shariant has **88 registered users** and **16,700 view events** since tracking began in 2022. Actual use is higher, as most laboratories integrate Shariant data into their local systems.
- Monthly user group meetings, with over 70 members, facilitate discussions about platform updates and outcomes. It is the **largest, recurring national forum** for diagnostic genomic laboratories to collaborate on implementation of guidelines, fostering a community of best practice.
- Shariant's success has led to laboratory demand for additional functionality to capture more complex clinical genomic data, such as structural variation, cytogenetics, and RNA sequencing.
- Shariant has enabled over 6,900 submissions from laboratories to the international database, ClinVar, driving a 2000% increase in Australia's international knowledge sharing and boosting global collaborations.

Conclusion

Given the rapid growth in large-scale genomic testing in Australia, Shariant has and will continue to be instrumental in ensuring healthcare professionals deliver robust and consistent genomic results, thereby improving the diagnosis and treatment of Australian patients and their families.

KEY OUTPUTS

Shariant Website: https://shariant.org.au/
Publication: Shariant platform: Enabling evidence sharing across Australian clinical genetic-testing laboratories to support variant interpretation (https://doi.org/10.1016/j.ajhg.2022.10.006)