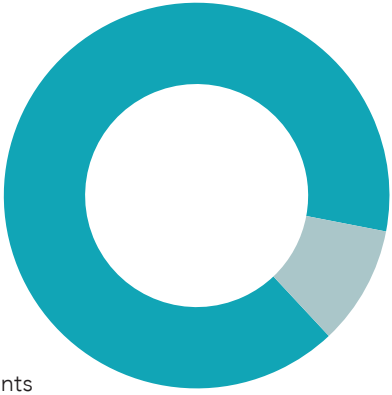
CLINICIAN PRODUCT SHEET

GENOME.ONE POLYCYSTIC KIDNEY DISEASE TEST

Genome.One offers a diagnostic genetic test for patients with polycystic kidney disease (PKD), with a focus on the most common form, autosomal dominant polycystic disease (ADPKD).

The Genome.One PKD genetic test combines whole genome sequencing (WGS) and a targeted analysis approach to assess genes associated with PKD. More than 90% of patients with a clinical diagnosis of ADPKD will have a disease-causing genetic variant in PKD1 or PKD2. Additional genes associated with conditions presenting with macro renal cysts are also analysed as part of this test.

Causes of ADPKD



Genetic causes 90%

- Autosomal dominant
- 85% due to PKD1 variants
- 15% due to PKD2 variants
- 100% penetrant
- Variants are often unique to a family
- 10% of cases are due to de novo mutations

Other causes 10%

No variants are found in known genes associated with ADPKD

Test specifications

Clinical accreditation	Accredited by NATA for Medical Testing to ISO 15189 requirements
Turnaround time	8 – 12 weeks
Cost	$2,400
Sample requirements	Whole blood 5mL adults, 2mL paediatrics or DNA (100 µL at 10 – 100 ng/µL)
Sequencing technology	Whole genome sequencing
PKD gene panel	PKD1, PKD2, HNF1B, GANAB, PKHD1, TSC1, TSC2, OFD1, UMOD
Clinical conditions covered	Autosomal dominant polycystic kidney disease (ADPKD) Autosomal recessive polycystic kidney disease (ARPKD) Tuberous sclerosis complex (TSC) Autosomal dominant tubulointerstitial kidney disease Oral-facial-digital syndrome type 1
Variants reported	SNVs, indels and CNVs classified as pathogenic (ACMG class 5), likely pathogenic (ACMG class 4) and variants of uncertain significance (ACMG class 3)
Analytical sensitivity	SNVs >99% Indels 1-19 bp >95% CNVs 49-500 bp >79% CNVs >500 bp >94%
Confirmatory testing	Sanger or MLPA confirmation performed for all reported variants. Long range PCR is used for variants in PKD1
Diagnostic yield	86% of patients with ADPKD are expected to receive a genetic diagnosis
Reflex testing	If a pathogenic variant (Class 4/5) is not found in the panel, Genome.One offers the option to expand testing to all genes. Contact us for more information, including costs
Predictive genetic testing in relatives	Contact Genome.One for further information
Genetic counselling	Recommended for patients before and after genetic testing. Genome.One offers specialist genetic counselling services at no additional cost
Secondary analysis	Secondary analyses available for pharmacogenomics and ACMG59 genes at extra cost, $400 each. Contact Genome.One for further information

How to arrange a test

Discuss the testing options with the patient and complete the patient consent form. Alternatively, contact us to arrange a pre-test consultation and consent with a Genome.One genetic counsellor. Contact details can be found on the back of this sheet.

Determine whether the costs of the test will be covered by your institution or privately paid for by the patient. Private patients will be sent an invoice by Genome.One for payment.

Complete either our online or paper test request form.

Give a copy of the completed request form to the patient for a whole blood sample collection (5mL adults, 2mL paediatrics).

You will receive a report detailing the results 8-12 weeks after the specimen reaches Genome.One.

Indications for genetic testing

Genetic testing using the Genome.One PKD test is recommended in patients:

- With a clinical or suspected diagnosis of PKD, with or without a family history
- When no prior genetic testing for PKD has been performed in that family
- When a molecular diagnosis of PKD has not yet been made in an accredited laboratory

Genetic testing may be especially beneficial:

- When the results would significantly affect clinical management
- When a relative is available as a potential living kidney donor
- For patients seeking information to assist with family planning and reproductive decisions (Genome.One does not offer preimplantation genetic testing)

Benefits of genetic testing for PKD

- The potential for earlier, more accurate diagnosis
- Guidance of prognosis – genetic variants in PKD1 are associated with a more severe, earlier-onset type of ADPKD, compared to variants in PKD2
- More informed management and treatment options
- Predictive testing for at-risk relatives who would like to determine their genetic risk, prior to the onset of renal cysts, for ongoing management, determining donor status, or family planning

What Genome.One offers

- Whole genome sequencing-based tests that overcome the challenges associated with sequencing PKD1, a gene complicated by the presence of six pseudogenes
- Targeted panel analysis to reduce costs and turnaround time compared with larger panels, while minimising the risk of incidental findings
- Expert pathology and genetic counselling support, with in-house genetic counselling services available to patients both before and after testing, at no additional cost
- Optional reanalysis of data in the future to answer clinical questions that may arise (additional costs may apply)
- Participate in secure data sharing and contribute variant information to database projects such as the ADPKD Mutation Database and ClinVar
- Streamlined ordering process through **www.genome.one**

Genetic counselling

The Human Genetics Society of Australasia recommends genetic counselling for all patients considering or undergoing genetic testing for PKD.

Genetic counselling aims to provide individuals and their families with information and support when there is a suspected genetic condition in the family. Genetic counselling is usually performed pre- and post-genetic testing to help patients understand the implications of genetic information for themselves and their family.

Genome.One offers genetic counselling to individuals undergoing genetic testing with our laboratory. You can refer your patient to our genetic counselling services using the contact details on the back.

Alternatively, a list of Australian genetic counselling services can be found on the Centre for Genetics Education website at:
www.genetics.edu.au/genetics-services/genetic-counselling-services

Privacy

The patient's blood or saliva sample is held securely in the Genome.One laboratory in accordance with applicable law and standard laboratory practice.

Their personal information will be securely stored in paper-based and electronic records in the Genome.One laboratory in accordance with the Genome.One privacy policy and applicable law. Deidentified genomic data is held on servers in the United States of America for the purposes of storage and highly specialised data processing and analysis. However, before any genomic data is transmitted, information identifying the patient is removed and replaced with a secure code. Only staff at Genome.One have the ability to link the patient code with their personal information.

Information from WGS screening will not be shared with other people without the patient's permission, except where this is required or permitted by law. Information from WGS is important for medical research about the genetic causes of disease.

When providing consent, the patient has a choice whether their deidentified genomic information can also be shared with researchers or included in research data banks.

The full Genome.One privacy policy is available at
www.genome.one/privacy-policy

Insurance information

Under current Australian law, a person's private health insurance will not be affected by their decision to have genetic testing, or by the result of genetic testing. However, genetic testing can have implications for a person's ability to obtain risk-rated insurance policies, including life insurance, disability insurance and income protection insurance. This could include denial of cover, exclusion from cover or increased premiums.

Patients outside of Australia should obtain advice about the implications of genetic testing for insurance in their home country.

Contact us for an example report or for any further information about the PKD testing process.

Contact details

Genome.One

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Genome.One mission statement

Genome.One is a pioneering health information company providing genetic answers to health questions, enhancing the lives of patients, families and communities across the world.

As a wholly-owned subsidiary of the Garvan Institute of Medical Research, we're backed by pioneering clinical discovery and translational medicine research excellence. Our laboratory is accredited by NATA for Medical Testing and meets ISO 15189 requirements.

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