



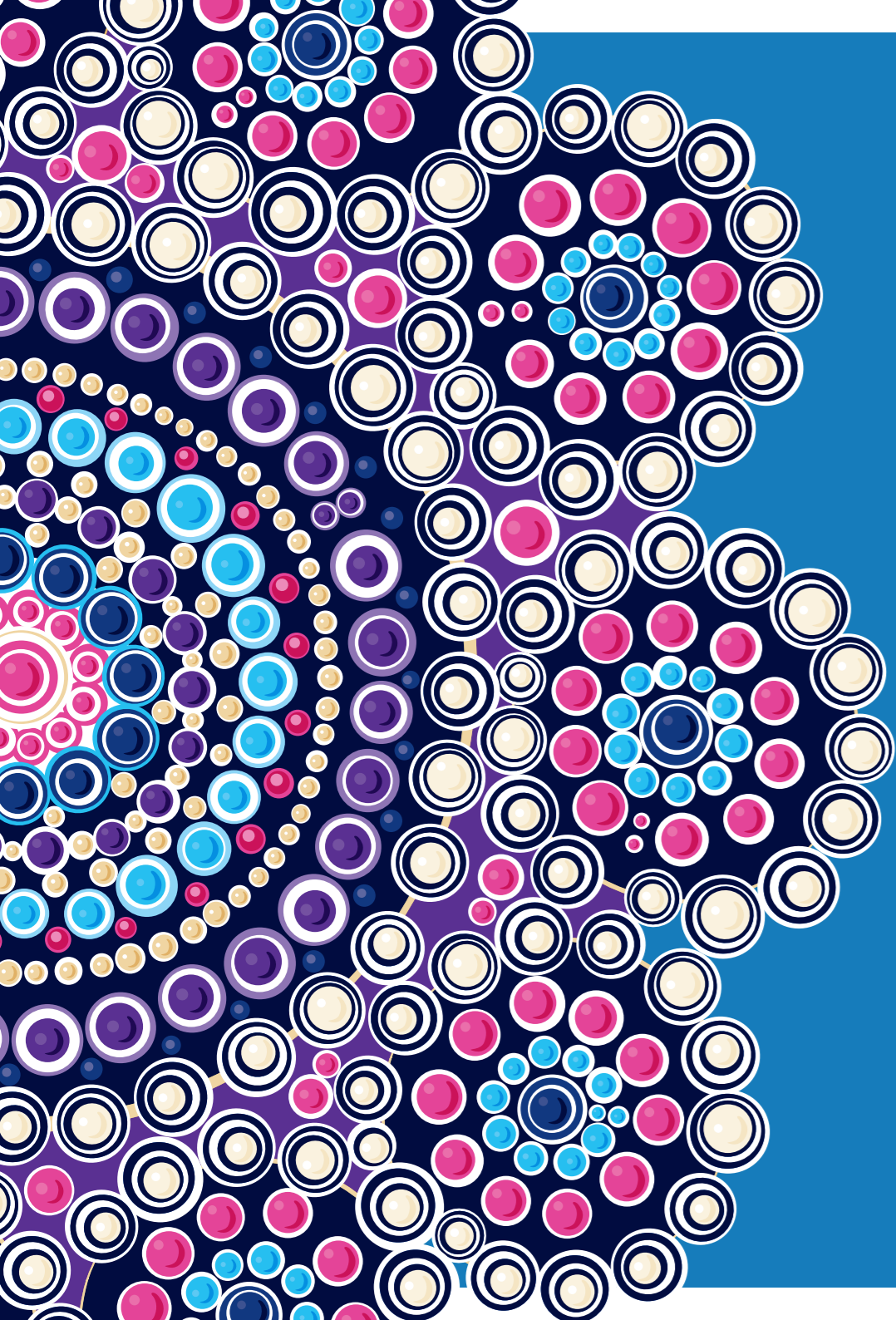
Health  
Pathology

NSW Health Pathology

# Research Services

[www.pathology.health.nsw.gov.au](http://www.pathology.health.nsw.gov.au)

for all of  
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NSW Health Pathology recognises the rights of Aboriginal and Torres Strait Islander Peoples – the first innovators, and the Traditional Custodians of the lands we now call Australia.

NSW Health Pathology acknowledges the critical role we have in supporting improved health, safety and wellbeing in Aboriginal and Torres Strait Islander communities throughout NSW. We respect that Aboriginal and Torres Strait Islander Peoples have the answers to their wellbeing and their voices must be listened to.

Read about our **Innovate Reconciliation Action Plan**.

A special thank you to the Office for Health and Medical Research, who helped support the development of this prospectus.

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# Welcome

NSW Health Pathology has a long history of delivering highly specialised pathology and forensic services for everyone in NSW, regardless of where they live, their age or their culture.

As a public health organisation, we have a responsibility to ensure new tests and technology are rapidly translated into clinical and scientific practice. We do this through strategic partnerships, collaborations and through providing high-quality, consistent statewide services for research.

Our recently released [Research Strategy](#) sets two key goals for our research services: to be partners in translational research where discoveries move rapidly from lab to community; and to uncover answers that matter by pursuing innovation possibilities in all we do.

As we implement this Strategy and our new [Research Governance Framework](#), we are committed to increasing the number of research projects we lead and support, especially those of strategic focus such as addressing Aboriginal and Torres Strait Islander health, safety and wellbeing.

We are also increasing our research collaborations. We are actively looking to partner with industry in Australia and internationally as well as with medical research institutes, universities, clinical researchers and research organisations. We want to partner on developing new tests, evaluating new diagnostic and forensic technology and developing evidence-based decision support tools, artificial intelligence and machine learning through the use of pathology and forensic data.

We offer end-to-end services for research, with statewide specimen collection, processing, testing, packaging and transport through more than 150 facilities across NSW, processing in 60 networked laboratories and state-of-the-art storage technology in the NSW Health Statewide Biobank. We have a [single application \(access request\) process](#), and research costs can be estimated easily through our standardised [statewide pricing guideline](#).

We can provide you with expert interpretation, robust results and externally audited quality systems. We are experienced managers of large datasets and we use secure, trusted digital platforms that enable fast and convenient access to data and results.

This Prospectus summarises the broad range of services we can provide to our research partners. You can find more information by visiting our [website](#) or contacting us at the address on the back cover of this document.

We look forward to becoming your trusted partner in research.



**Professor Rob Lindeman**

Director,  
Clinical Operations



**Dr Shaun Roman**

Associate Director,  
Research







## About NSW Health Pathology

NSW Health Pathology is Australia's largest public pathology provider. We deliver expert pathology and forensic services for the people of NSW and beyond.

Our Board is responsible for overseeing our overall strategic direction and performance, and reports to the NSW Minister for Health.

### Who we are

Our expert pathologists are medically trained clinicians who work in public hospitals and modern laboratories across the state.

We also have teams of scientists, technicians, forensic specialists, forensic medicine social workers and support staff.

Every day, we perform more than 100,000 clinical and scientific investigations to help protect the health and safety of the people of NSW.

Our pathologists, scientists and forensic specialists are some of the most highly regarded in the country.

### What we do

We provide pathology and forensic services to clinicians, justice partners and patients in hospitals, communities and critical care settings across NSW. We provide rapid interpretation and advice to ensure quality care and health outcomes.

We work closely with Local Health Districts, hospitals, medical research institutes, universities and commercial partners. We conduct our own research and collaborate with partners to provide a full range of services for research in Australia and internationally.

Our pathology services touch people at every stage of life. Our Forensic & Analytical Science Service (FASS) provides independent analysis to NSW Police and the Coroner. We are proud of the extensive breadth and depth of our research in this unique field. Our ability to build knowledge and capacity in our staff and partners contributes to our determination to deliver smarter services for better outcomes.

We manage the NSW Health Statewide Biobank on behalf of NSW Health.

All our laboratories are accredited to NATA ISO 15189 standards. FASS meets [ISO/IEC 17025](#) NATA accreditation standards.

Read about our organisational [Strategic Direction](#).

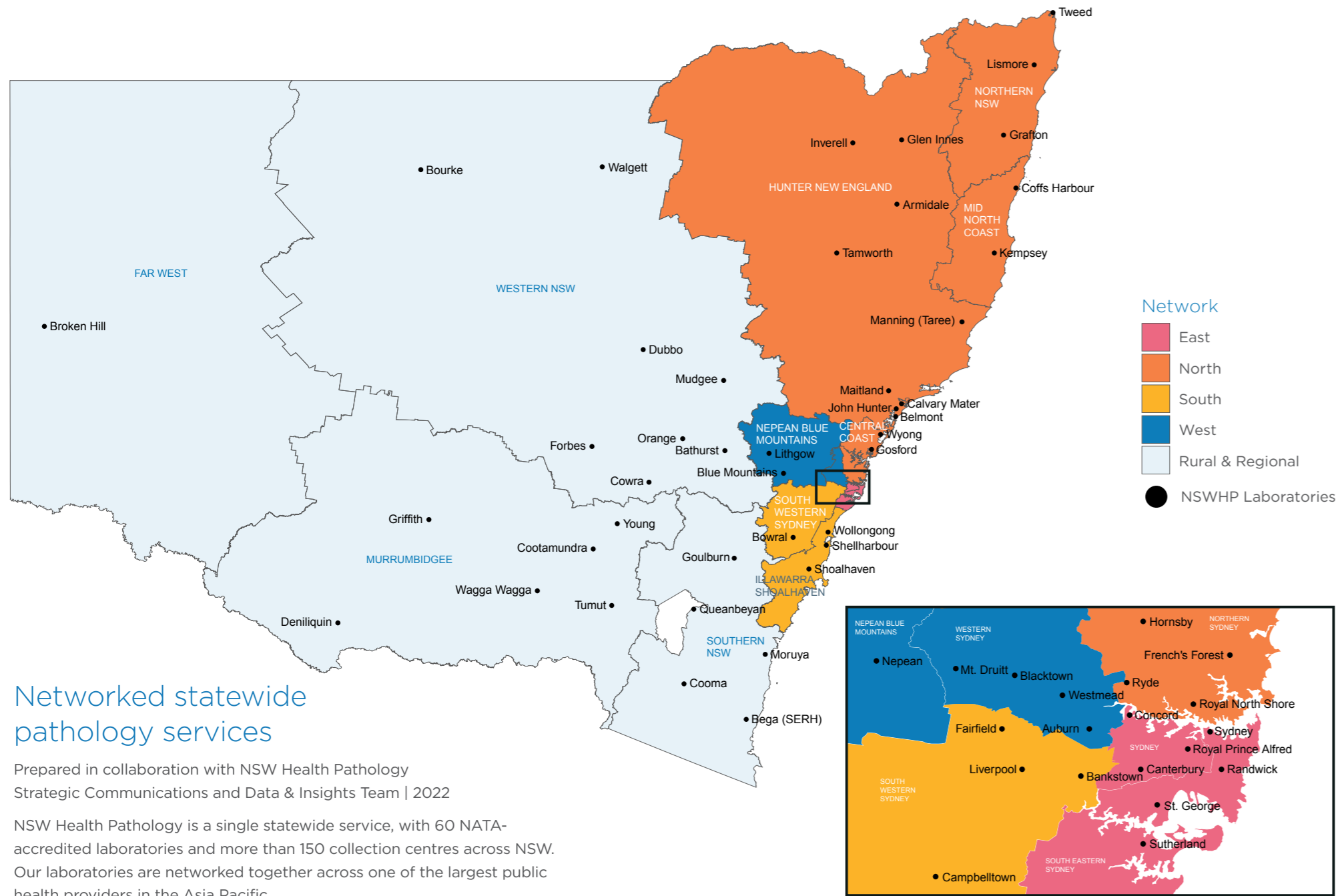
### Our Purpose

Creating better health and justice systems.

### Our Mission

Partnering with our customers and communities to ensure our health and justice systems deliver the outcomes that matter to them.





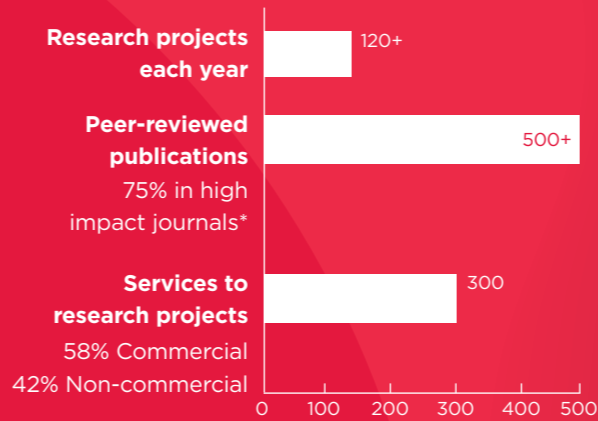
## Networked statewide pathology services

Prepared in collaboration with NSW Health Pathology Strategic Communications and Data & Insights Team | 2022

NSW Health Pathology is a single statewide service, with 60 NATA-accredited laboratories and more than 150 collection centres across NSW. Our laboratories are networked together across one of the largest public health providers in the Asia Pacific.

## Our Research

Our vision and aspiration is to be partners in translational research, where discoveries move rapidly from the lab to the community. We aspire to uncover answers that matter by pursuing innovation possibilities in all we do.



Read more about our collaborations and research activity.

Read about our [Research Strategy - Towards 2025](#).

\* SCImago Journal Rank (SJR) indicator





# What we offer

Research is part of our core business, and we are ready to help you translate your research project into practice.

### Support:

We support our research partners with a reliable, efficient, first-class pathology and forensic science testing service.

### Collaboration:

We are committed to collaborating as investigators with our colleagues in Local Health Districts, universities, medical research institutes, government and police on research projects that could range from discovery science to clinical efficacy and utility studies.

### Reach:

We support all research through delivering integrated statewide services across NSW including biobanking support through NSW Health Statewide Biobank and access to data.

## NSW Health Pathology: end-to-end research services from Australia's largest public pathology and forensic science provider

 <p><b>APPLICATION PROCESS</b></p> <ul style="list-style-type: none"> <li>Single point of contact</li> <li>Transparent pricing</li> <li>Single application</li> </ul>	 <p><b>SAMPLE COLLECTION</b></p> <ul style="list-style-type: none"> <li>&gt;5000 trained staff</li> <li>&gt;60 NATA-accredited laboratories</li> <li>&gt;150 collection centres across NSW</li> </ul>	 <p><b>PROCESSING</b></p> <ul style="list-style-type: none"> <li>Most comprehensive range of services offered, integrated statewide</li> <li>Secure sample tracking, processing, storage and destruction</li> </ul>	 <p><b>DATA</b></p> <ul style="list-style-type: none"> <li>Large dataset management capability</li> <li>Modern, secure data transfer methods</li> <li>Easily digestible, customisable and fit-for-purpose reports</li> </ul>	 <p><b>TRANSPORT AND STORAGE</b></p> <ul style="list-style-type: none"> <li>Transport services across our statewide laboratory network</li> <li>Modern, purpose-built NSW Health Statewide Biobank</li> </ul>
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### Statewide pricing

To ensure we continue to deliver better services, value for money and outcomes that matter to our partners, we have developed a standardised approach to pricing pathology services for external research across all of NSW. This makes it easier to estimate pathology-related expenses for your research project and ensures consistency across all pathology services in NSW. For more information on our statewide pricing, please visit [our website](#). For specific test information (requirements and location), please go to [NSW Health Pathology's Test Catalogue](#).

# Our research services

Through our extensive range of research services, we can meet all our partners' pathology and forensic science needs, from basic biomedical science such as biomarker discovery, through to verification, validation (efficacy) and utility (effectiveness) studies.

Our laboratories are available to industry and non-industry research partners to support research and development, including analytical and/or clinical validation of new tests, evaluations of new technology, services for research using accredited or unaccredited tests, and support to store biospecimens in NSW Health's Statewide Biobank.

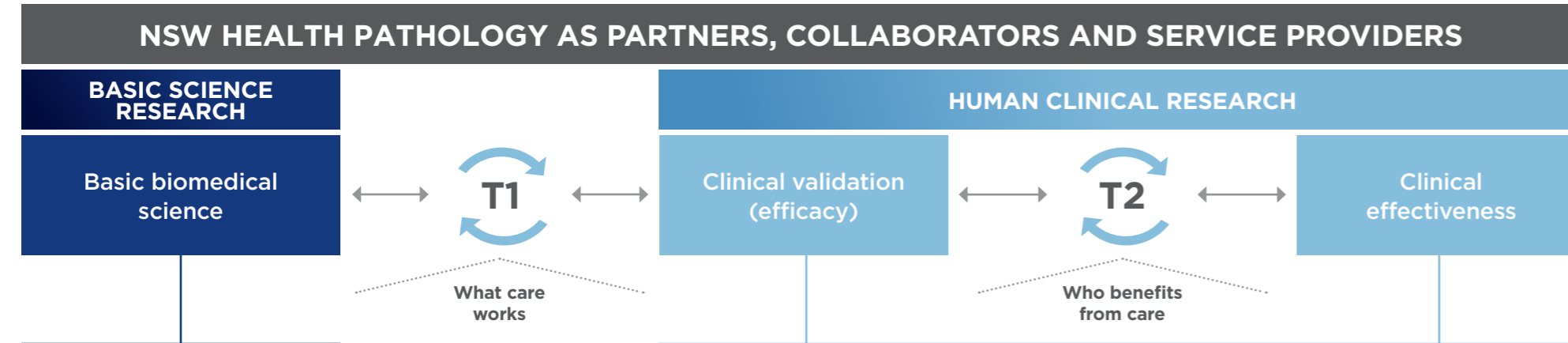
We support the development of new tests through analytical verification, validation and clinical effectiveness and utility studies. We support our partners to generate sufficient data for accreditation in Australia and internationally.

We can help you leverage organisational resources to seek funding through the NHMRC, Ministry of Health and other funding providers.





## Focus areas and flagships



### OUR FOCUS AREA 1

#### 1. Biomarker discovery

We acknowledge the significant contributions NSW Universities and Medical Research Institutes play in delivering advancements in basic science research.

We are committed to building strong partnerships that establish dedicated centres of excellence in **biomarker discovery**.

### COLLABORATION AND SERVICES

We acknowledge the world leading clinical research, knowledge and expertise within NSW Local Health Districts. NSW public hospitals conduct and lead ground breaking research that needs to be supported and underpinned by an efficient, high quality pathology service.

We are committed to collaborating as investigators with our Local Health District, University and medical research colleagues on research projects to validate clinical efficacy.

Where we are not collaborating, we will support all research through the delivery of integrated research services:

- Statewide services for research
- NSW Health Statewide Biobank
- Data access



### OUR FOCUS AREAS 2-6

#### 2. Diagnostic tests (development and optimisation)

#### 3. Technology evaluations (applications and replacement)

#### 4. Innovative service models (quality improvement, surveillance and monitoring)

#### 5. Evidence-based diagnostic pathways for decision making

#### 6. Big data and data analytics (artificial intelligence and machine learning)

We acknowledge that as health service providers, our strengths lay in translating research outcomes into practice and through taking our learnings back to our Basic Science and Human Clinical Research partners.

We understand that to be leaders we must deliver value through shared investment in our areas of **strategic focus**.

## FLAGSHIPS

Our flagship programs represent areas of strategic significance for NSW Health Pathology.

We commit ourselves to investing in opportunities and driving change together, with our communities across the following three programs:

1. Aboriginal and Torres Strait Islander health
2. Genomics
3. Point of Care





## Logistics and pre-analytical services

### Collection

We provide complete logistical solutions, with sample collection from more than 150 NATA-accredited collection centres across NSW.

Our expertly trained phlebotomists (blood collectors) operate across a range of hospitals, medical clinics, centres and attend patient visits in the home at selected locations in NSW.

### Collection services

- Statewide provision for rapid processing and storage solutions with advanced centrifugation technologies and aliquoting methods
- Statewide capability for cold storage options ranging from 2°C to -80°C for specific research samples
- Processes customised for each project, depending on the defined research protocol
- Data entry of research samples into our laboratory information management system for specimen tracking and future data extraction for research.



### Case study:

## In-service and at-home pathology collections support memory and ageing

The Sydney Memory and Ageing Study (MAS) is one of Australia's largest and longest running studies of ageing and cognitive health. MAS, which began in 2005, is investigating rates and predictors of healthy cognitive ageing, mild cognitive impairment and dementia in older Australians.

NSW Health Pathology has been the service provider for in-service and at-home blood collections for older participants throughout the study. We have performed about 2400 blood collections over more than 14 years.

We helped to set up new collection sites and performed safe and reliable at-home testing among this vulnerable population during the COVID-19 pandemic restrictions.

"NSW Health Pathology provides us with pathology reports in a timely fashion and has assisted with setting up our online billing and pathology results portal," says Study Coordinator Dr Katya Numbers, of the Centre for Healthy Brain Ageing, University of New South Wales Sydney.

"The MAS study is grateful for the blood collections services provided by NSW Health Pathology over the years, which have allowed us to examine many important metabolic and inflammatory blood biomarkers, resulting in many important publications and funding opportunities."

Dr Katya Numbers



**Case study:**

**Towards better diagnosis and treatment of people with tick-borne illnesses**

A growing number of patients around Australia suffer from chronic, debilitating symptoms that appear to be related to a tick bite. There are few studies in Australia that focus on these patients and their illness.

NSW Health Pathology and the Northern Sydney Local Health District are jointly supporting a clinical research program funded by The Snow Foundation. The research focuses on people with tick-borne illnesses and their symptoms. The study will lead to more certainty around diagnosis, new prognostic tools, more tailored treatment options, and an evidence-based clinical pathway.

The researchers are studying a collection of patient samples collected over two years. They are using sophisticated methods such as metagenomics, transcriptomics, proteomics and metabolomics to

identify any microbial agents of tick-borne diseases in Australia. They are using biomarker tests to deepen the understanding of the level of inflammation, immune response, and the presence and degree of cellular dysfunction in patients with tick-borne illness.

NSW Health Pathology is supporting pathology testing, specimen collection and transport to the NSW Health Statewide Biobank, where the samples are processed and stored.

Dr Katerina Mitsakos, Clinical Research Program Manager of the Microbiology & Infectious Diseases Department at Royal North Shore Hospital, says working with NSW Health Pathology and the NSW Health Statewide Biobank has enabled the team to bring this comprehensive research program to fruition.

“These high-quality collections will be linked to well-annotated patient clinical and pathological data. Their storage at the Biobank will deliver an invaluable quality bio resource for current and future medical research in years to come.”

Dr Katerina Mitsakos



**Storage**

We can store samples in Australia’s largest purpose-built biobank. The NSW Health Statewide Biobank is a state-of-the-art facility that offers central storage, new technology and access to linked statewide data.

The NSW Health Statewide Biobank is ISO 9001 certified and is a member of the International Society of Biological and Environmental Repositories.

**Transport**

We expertly transfer samples across our statewide laboratory network, including the NSW Health Statewide Biobank and our FASS sites. Our new akuna electronic specimen tracking system provides a statewide chain of custody, ensuring consistent and high-quality monitoring of specimen movements online from collection to lab reporting.

**Biobanking services**

- Large-scale technology to store and process human tissue, blood, DNA and tumour samples (FFPE or fresh frozen)
- End-to-end logistics support from sample collection to sample storage, access and retrieval
- Sample receipt and processing
- Peripheral blood mononuclear cell (PBMC) processing (using Lymphoprep/Sepmate) – storage media (PBS, FCS, cryostor)
- Blood DNA and RNA extraction
- Tissue processing; microtomy and cryosectioning
- Tissue/slide staining, including immunohistochemistry
- Slide scanning
- Consolidation and storage of bulk samples (frozen, slides or Guthrie cards)
- Retrieval and sample dispatch
- Facility rent/access.





## Clinical streams

Our clinical streams are focused on the big picture: what we do and the way we do it. Members work together and approach problems from a statewide perspective to maximise whole service outcomes.

### Glossary

- **Anatomical Pathology (Histology and Cytology):** The diagnosis and study of diseases of various tissues and/or cells under a microscope to enhance diagnosis and management of disease.
- **Chemical Pathology/Clinical Biochemistry:** The study and investigation of the biochemical basis of disease processes, with particular emphasis on metabolic and endocrine diseases, bone disease, inborn errors and lipid disorders.
- **Genetics and Genomics:** The investigation of both inherited and acquired genetic diseases, which is a key enabler for precision and predictive medicine.
- **Haematology and Transfusion:** The diagnosis and treatment of people who have disorders of the blood and bone marrow, both malignant and non-malignant.
- **Immunology:** Testing to assess immune function.
- **Microbiology:** Testing for bacterial (including mycobacteriology), viral, fungal and parasitic infections.
- **Forensic Medicine:** Independent, objective analysis and expert medical advice for the Coroner.
- **Point of Care Testing:** Pathology testing performed by, or on behalf of, a medical practitioner at the time of the consultation to diagnose acute conditions or monitor chronic conditions.

## Anatomical Pathology (Histology and Cytology)

We are the largest single anatomical pathology service provider in Australia, providing services to all NSW public hospitals and many private hospitals. The patient population we serve represents the largest cohort of patients with tissue in a single pathology service in Australia.

We have many partnership opportunities for anyone wanting to study diseases that involve tissue biopsy for diagnosis or resection for treatment. We work with all solid tumour types as well as a large range of non-neoplastic diseases.

We hold Australia's largest cohort of cancer specimens (all solid tumour types) and specimens from other diseases available for study (such as solid organ transplant biopsies and interstitial lung disease biopsies).

Our research partners have access to large statewide cohorts of tissue specimens, formalin-fixed paraffin embedded (FFPE) and prospectively collected fresh frozen tissue. A single NSW Health Pathology site specific assessment/application covers all sites.

We are rolling out a new single laboratory information management system from 2023. We are also planning to incorporate structured pathology reporting of all solid

tumours so all relevant histology data points can be readily extracted.

Our leading anatomical pathologists have international recognition in areas including melanoma, gastrointestinal, urology, pulmonary, lymphoid, endocrine and breast pathology.

Many of our anatomical pathologists have edited or authored chapters in the definitive World Health Organization classifications of tumours, which inform the diagnostic criteria on which all tumour diagnoses are made.





#### Histology and Cytology services

- Biological tissue receipt, handling, packaging, storage and transportation
- Tissue retrieval and dispatch
- Macroscopic examination and selection of specific tissues e.g. Tumour
- Tissue processing (fresh or fixed) embedding, microtomy and cryosectioning
- Fresh tissue snap freezing
- Tissue/slide staining e.g. H&E, other stains
- Slide scanning
- Immunohistochemical studies
- Immunofluorescence studies
- In-situ hybridisation studies (brightfield and fluorescent)
- Molecular testing
- Electron microscopy
- Histological (or cytological) assessment of slides e.g. To confirm diagnosis, assess percentage tumour cell content or other parameters
- FFPE block selection e.g. Identification of optimal tumour block for a research project from a resection specimen
- FFPE assessment of adequacy
- Macroscopic and microscopic pathological assessment
- Report interpretation
- Second opinions
- Autopsy services.



“Our expertise gives you access to the highest quality pathology diagnoses and histological parameters for research purposes.”

Wendy Cooper,  
Clinical Stream Lead

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**US**





## Chemical Pathology

Our chemical pathologists are leaders in mass spectrometry, proteomics and metabolomics.

We offer collaboration opportunities with other clinical and laboratory specialties, including the FASS and universities, as well as global collaboration opportunities in areas such as steroid analysis and new protein and lipid biomarkers.

### Chemical Pathology services

- Routine biochemical analyses and interpretation
- Mass spectrometry, including gas chromatography (GC), liquid chromatography (LC) and tandem mass spectrometry (LC-MS/MS)
- Drug level monitoring
- Metabolic testing e.g. Hormones, enzymes, lipids and carbohydrates
- Validation/verification of new specialised (bespoke) biochemical assays
- Specialist areas including inherited metabolic diseases, trace metals and environmental monitoring, drugs of abuse and nutrition.



## Case study:

### Embedded in the health system: BCAL's breast cancer test meets real-life needs

BCAL Diagnostics is partnering with NSW Health Pathology to use its sophisticated mass spectrometry services to discover a new biomarker to improve the early diagnosis and monitoring of breast cancer.

NSW Health Pathology was able to quickly create and validate tests to a clinical standard, allowing BCAL to collect the data it needed for commercialisation.

Dr Amani Batarseh, Chief Scientist at BCAL, says the advantage of working with NSW Health Pathology is that it exposes the BCAL team to the realities of routine clinical sample analysis.

"This partnering will provide the BCAL team valuable insight into the implementation of a new test into the workflow and logistics of a routine clinical pathology laboratory," she says.

In addition, the BCAL team will observe how the test compares with similar tests in the market, providing key lessons that will enable BCAL to optimise the test to meet the end user needs.

"Engaging with NSW Health Pathology and the NSW Health Statewide Biobank teams has been key to assisting BCAL Diagnostics in progressing our clinical studies in Australia,"

Dr Amani Batarseh





## Genetics and Genomics

We are an industry leader in investigating inherited and acquired genetic disorders, including cancer as a genetic disease.

Genomic and genetic medicine identifies the genetic differences that have significance for health outcomes. This may be through predisposition to disease or risk of adverse responses to treatment (predictive medicine) or through targeted therapies based on genetic variation (precision medicine). Genomic and genetic medicine information is used to develop the most appropriate and timely treatment plan for each patient to prevent, delay or manage disease.

### Genetic and Genomics services

- Human exome and genome sequencing of rare diseases and cancer applications
- Reproductive genetics and genomics using karyotyping, arrays and next generation sequencing for carrier screening and prenatal testing
- Pathogen whole genome sequencing for Covid-19 and other pathogens of public health and hospital system significance
- Oncology-related genetic testing for inherited predispositions and acquired mutations in tumours
- Rare disease diagnosis using exome/genome and gene panel testing
- Genotyping using various technologies
- Genomic data management including storage, analysis, interpretation and sharing
- Genomic technologies include:
  - next generation sequencing (targeted and whole genome/exome)
  - microarrays
  - karyotyping
  - high-throughput genotyping (mass array, RT-PCR)
  - targeted sanger sequencing
  - automated DNA/RNA extraction
  - DNA fragment analysis
- Pharmacogenomic testing using high-throughput genotyping panels.

Our Genetics and Genomics service is involved as a partner in several significant grants that cover a broad range of applications from:

- reproductive carrier screening for couples planning a family (Mackenzie's Mission)
- acute care genomics for critically ill children
- automated systems for high-throughput analysis of genomic data
- delivering a Clinical Metagenomics Platform for Australia
- PPHAGE (Precision Public Health in Australia through Integrated Pathogen Genomics).

In addition, we are partnering with new grant proposals to explore functional genomics to better understand genetic variation, the creation of genetic databases for diverse populations, and the importance of genomics to Indigenous communities using culturally appropriate pathways.







**Case study:**

**Improving early identification of coronary artery disease and atherosclerosis**

BioHEART-CT is a longitudinal, prospective cohort study with a parallel biobank of participant blood samples that is designed as a platform for discovering biomarkers of early coronary artery disease.

A blood-based biomarker for detection of atherosclerosis before a cardiac event would allow for effective early treatment to prevent heart attack.

NSW Health Pathology has supported BioHEART-CT since the study's inception, from the design of protocol, to transporting, aliquoting and storing of blood samples. Together, the team has recruited more than 3,000 patients from across NSW.

The patients will be followed up annually, including via linkage methods with the support of NSW Health's Centre for Health Record Linkage (CHeReL).

The NSW Health Statewide Biobank has attracted academic and industry collaborators from around the world. It is a key platform for an NHMRC Centre for Research Excellence and an MRFF Frontiers Program aimed at innovative approaches to reduce heart attack.

Study lead Professor Gemma Figtree says NSW Health Pathology's role is essential in providing the appropriate skills and test quality needed for this important work.

"They have supported us through all the logistical steps," Professor Figtree says.

"When we said we couldn't compromise on our approach and the study protocol, they worked with us to find ways of overcoming obstacles."

Professor Gemma Figtree

**Haematology and Transfusion**

Our clinical haematologists hold dual roles. They provide direct clinical care to patients in hospitals, and conduct diagnostic work in our laboratories.

Any test we run in our diagnostic laboratories, we can also perform for research purposes.

**Haematology and Transfusion services**

- Full blood counts, films, manual differentials, malaria identification
- Blood group, phenotyping, blood group antibody identification
- Coagulation, routine (APTT, PT, INR, Fibrinogen, DD) and specialised tests
- Diagnostic bone marrow aspirate/trephine reporting
- Flow cytometry for haematological malignancies, lymphoid subsets
- Haemoglobinopathy testing
- Genetic testing, molecular, cytogenetics and FISH
- DNA or RNA extraction
- Cell sorting
- Clinical biomarker testing
- CAR T-cell therapies
- Viral specific T-cell therapies
- Haemovigilance
- Anti-thrombotic studies
- Reference testing laboratory.





## Immunology

Our immunology staff provide guidance and testing to assess immune function, which is often disordered in disease. We are constantly researching and developing new assays to assist in clinical disease management.

We perform an extensive range of assays in our laboratories, encompassing broad areas of organ specific autoimmunity and immune-mediated diseases, allergy and immunodeficiency.

This work requires significant expertise and in-depth knowledge of immune mechanisms in disease and assay performance, providing a valuable source of information to help answer research questions.

### Immunology services

- Assay development and validation
- Clinico-pathological, inter-assay and genotype-phenotype correlation
- Specialised immunochemistry
- Serology including ELISA, RIA, IIF, DIF, CLIA, ELIA, CIEP, LIA and ALBIA
- Flow cytometry – phenotyping, surface and cytoplasmic, phosphoflow, functional (activation), in-house transfected cell-based assays
- Other functional assays, including lymphocyte, NK and IFNg release (IGRA)
- Immunogenetics, particularly HLA and complement loci.

## Microbiology

Our specialist microbiology pathologists and scientific microbiologists offer a range of expertise in diagnostic testing.

We have expertise and in-depth knowledge and understanding of the ecology, epidemiology, basic biology and immune response, and novel and molecular-based diagnostic methods and genetics of these pathogen groups. We are experts in testing for drug resistance and its mechanisms.

We also offer public health microbiology services in each of the subdisciplines.

### Microbiology services

- Bacterial, mycobacterial and fungal culture
- Viral culture and viral quantification
- Antibacterial and antifungal susceptibility testing
- Antiviral resistance testing
- PCR, RT-PCR and other molecular methods for diagnosis of infections
- Serology for a broad range of infectious diseases e.g. ELISA, neutralisation assays, antigen detection, immunofluorescence
- Genetic studies and next generation sequencing for a range of public health uses and nosocomial pathogens for surveillance, tracking of infection and microbiome purposes
- Air sampling
- Testing of water and other environmental samples for sterility
- Antimicrobial drug discovery
- Mechanism of action studies e.g. Entry, replication, virus release and spread assays, bacterial pathogenesis, fungal pathogenesis and virulence
- Microneutralisation and viral neutralisation involving immunostaining and replicating viral particles
- Bespoke assay development and validation.



“NSW Health Pathology have been invaluable in our research endeavours. We have collaborated with them on many projects including over 10 international clinic trials for patients with motor neurone disease and other neurological conditions. The NSW Health Pathology team always maintains a high standard of courtesy, professionalism and efficiency. Our projects would not be possible without them.”

Dr Hannah Timmins, PhD, Clinical Research Manager, Brain and Mind Centre, The University of Sydney.



### Forensic & Analytical Science Service

We provide independent and objective expert scientific analysis to support criminal investigations, the justice system and the NSW community, in addition to providing forensic examinations and supporting families through the coronial process.

The Forensic & Analytical Science Service (FASS) is a keen contributor to services as well as collaborations. We provide analytical and clinical capability coupled with specialist expertise and a depth of knowledge built through decades of experience.

We have a wide variety of high-end instrumentation and established workflows and processes for identification, imaging and comparison of substances from a broad range of different matrices and biological fluids.

Our laboratories deliver rapid turnaround times. As well as delivering traditional matrices and methodologies, we are able to rapidly develop, validate and operationalise bespoke analytical services.

Within FASS, our Forensic Medicine service provides independent, objective analysis and expert medical advice to the NSW Coroner as well as supporting families across the coronial process and system.

Forensic Medicine (NSW) is committed to research – to developing and using knowledge in the service we provide to the communities of NSW. Research within Forensic Medicine plays an important role in identifying trends in causes of death and in prevention strategies.





“NSW Health Pathology services are fundamental to statewide drug surveillance through the contributions of the labs at the Forensic & Analytical Science Service and the logistical support within the Local Health Districts.

“Blood, urine and drug specimens are quickly transported, analysed and reported to improve clinical care of individual patients as well as to aid public health investigations of clusters of poisonings. The rapid turnaround time and expert analysis allows real-time drug surveillance and responses to incidents of concern. Insights on trends relating to drug purity, emerging drugs and adulterants of concern inform program and policy development across the alcohol and other drug sector.”

**Jared Brown** - Manager (Toxicity Response, Epidemiology and Surveillance), **Centre for Alcohol and Other Drugs, NSW Ministry of Health Senior Poisons Specialist (Toxicovigilance), NSW Poisons Information Centre, Sydney Children’s Hospitals Network**

**Dr Thanjira Jiranantakan** - Medical Advisor, **Centre for Alcohol and Other Drugs, NSW Ministry of Health. Clinical Toxicology Fellow, NSW Poisons Information Centre, Sydney Children’s Hospitals Network**

### Forensic and Analytical Science Service and Forensic Medicine

#### Physical chemistry

- High-end microscopy and micro-analysis techniques for trace materials, such as paint, glass, fibres and gunshot residues
- Complex chemical and unknown materials identification and comparison, including ignitable liquids, explosives, inks and dyes, personal care products and building materials
- Environmental water contamination screening for pesticides, heavy metals, microbiological agents and legionella

#### Biological

- DNA autosomal and lineage marker testing and comparison
- Massively parallel sequencing
- Recovery of DNA from minute or highly compromised materials, including skeletal remains
- Biological fluid identification

#### Forensic medicine

Forensic Medicine comprises of a multi-disciplinary team of professionals in the areas of:

- forensic pathology
- forensic medical imaging
- forensic mortuary technicians
- social work
- nursing

#### Drug and pharmaceutical

- Screening, identification and purity:
  - illicit drugs
  - pharmaceuticals
  - new and/or novel psychoactive substances
  - analogues of illicit drugs
  - performance and image enhancing drugs, including steroids
  - botanical
  - cutting agents/adulterants
  - precursors and chemicals used in the manufacture of illicit drugs
  - other forensically relevant chemicals
- Toxicology and therapeutic monitoring:
  - ability to screen for over 300 drugs and alcohol in the blood, urine and oral fluid
  - identification of the presence of an extensive range of therapeutic and illicit substances and their metabolites.







### Point of Care Testing

NSW Health Pathology's reputation in Point of Care Testing is world leading. We offer the world's largest integrated Point of Care Testing program, with more than 400 handheld devices used by nearly 175 regional and rural emergency departments across NSW enabling sample analysis to be performed close to or near the patient.

We also provide staff training, technical support, ongoing monitoring and software that transmits results into a patient's electronic medical record.

For researchers, we offer procurement and formal reporting and documentation. We can assist with ethics and scientific assessments for clinical trials.

There are opportunities for research partnerships in implementation, evaluation and the health economic analysis of Point of Care technology in NSW.

#### Point of Care services

- Patient testing (information and data)
- Integration of new markers
- Devices/detection systems
- Evaluation and clinical trial services
- Regulatory technology assessments
- Prototype innovation.





# What next?



Complete our **NSW Health Pathology Research Application (Access Request) form** for services for research or alternatively, contact us at **NSWPath-Research@health.nsw.gov.au** to discuss potential partnerships.

## Once we receive your request we will:



1. Provide you with a quote



2. Send you an agreement for review/sign-off



3. Once signed, provide you with a research referral request form for you to provide to your research participants.

**You can read more by going to our website:**  
[www.pathology.health.nsw.gov.au/research/research-services](http://www.pathology.health.nsw.gov.au/research/research-services)



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