

Gene and gene-modified cell therapy

NSW is a global centre of excellence for viral vector development and for gene and cell therapy research and clinical delivery.

The state has a complete gene therapy pipeline spanning design, construction, and testing of gene therapies through to commercial-scale production and patient treatment. Research teams work collaboratively to exploit synergies across different technologies, including gene editing technology that combines viral vector and RNA capabilities. There is also shared translational support, such as the statewide NSW Health Pathology genomics service which is Australia's largest public pathology provider.

NSW has sponsored research and licensing agreements with European and US leading biopharma companies. NSW is also driving the use of new therapeutic tools by taking advantage of existing advanced manufacturing infrastructure and health system readiness.

The NSW Government has established a research and clinical delivery program in cell therapies, including CAR T-cell therapies and antigen-specific immune effector cells for pathogens and cancer.



CASE STUDY

Multi-million-dollar government investment in the region's first Viral Vector Manufacturing Facility

This project is the first GMP-grade clinical and commercial viral vector manufacturing facility in the Southeast Asia-Pacific region. The new facility at the Westmead Health and Innovation District will ensure a reliable and reasonably priced domestic viral vector supply for use in cell and gene therapy development and delivery. This will remove the bottleneck in taking these therapies from bench to bedside due to a global shortage in manufacturing capacity and exponentially increasing demand.

The Stage 1 'pilot' facility is manufacturing clinical-grade viral vectors on site and working towards GMP accreditation in early 2023. It currently supports a small number of local clinical trials for advanced therapeutics. Stage 2 of the project, currently in planning, will see the 25L viral vector pilot facility expanded to a commercial-scale viral vector manufacturing facility with a 550L capacity.

The viral vector manufacturing facility is a unique opportunity for industry to co-invest with the NSW Government in world-leading technology. There are partnership opportunities at all stages of the viral vector manufacturing process, including logistics, raw material supplies and manufacturing, process development, health data sciences and software engineering.