

A commercial-scale viral vector manufacturing facility

Project overview



The NSW Government is building a world-leading viral vector manufacturing facility, the first of its kind in Australia.

Viral vectors are a key component of gene therapies and increasingly are being used in therapeutic and preventative health interventions, including vaccines.

The NSW Government has committed to expand and operate an advanced Good Manufacturing Practice (GMP) grade viral vector manufacturing facility in the Westmead Health and Innovation District in western Sydney. The manufacturing facility will have the production capacity to meet the growing demand for clinical-grade viral vectors for use in gene therapy and cell therapy research and clinical trials in Australia and internationally.

Investing in viral vector manufacturing will secure viral vector supply and give patients access to ground-breaking therapies to create better health outcomes and help save lives. Investment in this medical and scientific innovation will also help create jobs and opportunities for local businesses, diversify local industries, and boost Australia's global position as an advanced manufacturing industry.

The story so far

NSW is a globally recognised leader in developing and delivering gene therapies and cell therapies. Existing infrastructure supports these technologies from discovery through to clinical trials for paediatric and adult patients.

Stage 1 involved the construction of a 25-litre capacity pilot facility within the Westmead Health and Innovation District. Now operational, the pilot facility has established a workforce with specialist skills and is actively manufacturing viral vectors. This facility is aiming to obtain GMP certification, to enable the licensed production and sale of clinical-grade viral vectors.

Stage 2, which will see the expansion of the pilot facility to a commercial-scale viral vector manufacturing facility with a 550-litre capacity has commenced and is expected to be completed within the next two years. The Stage 2 facility will further build capability while achieving financial sustainability by capturing the burgeoning national and international market for viral vectors.

The commercial-scale facility will provide jobs for highly skilled staff, attract additional workers nationally and internationally and supply a larger and more varied customer base. In doing so, the Stage 2 facility will support the development of intellectual property (IP) and attract further private investment.

Viral vectors

Gene therapies treat genetic diseases by replacing a faulty gene, adding healthy genes to help the body fight disease, or switching off genes that are causing disease.

Viral vectors are modified viruses used to safely deliver gene therapies into targeted cells in the body. Viruses are ideal vectors to transport genetic information into our cells. They help advance the treatment of genetic diseases and cancer, and vaccine development.

Commercial-scale production requires an advanced GMP-licensed manufacturing facility that can grow large batches of special cells for harvesting viral vectors, which are then quality-controlled and packaged for use.



Benefits of an advanced biomanufacturing industry in NSW

The very high and increasing demand for viral vectors, and a global shortage in their manufacture, has resulted in up to two-year wait times for the supply of GMP-grade viral vectors to domestic and overseas cell therapy and gene therapy developers.

Currently, there are no Good Manufacturing Practice (GMP) licensed viral vector manufacturers in Australia. A commercial-scale GMP viral vector manufacturing facility will fill this gap, contributing to Australian and overseas markets, with the potential to bring in industry investment, boosting Australia's manufacturing and medical research sectors. Countries in the northern hemisphere, including the USA, Canada, the United Kingdom and Germany, are increasing their viral vector manufacturing capacity, while in the South East Asia region there is only one small-scale (15-litre) facility in Singapore.

The production of clinical-grade viral vectors in Australia will significantly cut waiting times for patients and researchers needing access to these innovative therapies. It will also help reduce our dependency on international providers.

As an emerging new technology, many viral vector-based gene therapies and cell therapies are still in the clinical trial stages. Having the capability to produce enough viral vectors to support local and international clinical trials offers a significant advantage to Australians for health outcomes and investment opportunities.

The facility will be a catalyst for investment and innovation in cell therapies and gene therapies, and will grow capacity, stimulate significant revenue and create jobs in production and supply, medical research and clinical trials, and other science, engineering, and business areas. Developing the technology to manufacture viral vectors locally will also support Australia to retain high-value intellectual property.



Australia's strong health system has performed better than many countries during the COVID-19 pandemic. This, combined with a well-developed clinical trials sector, provides an opportunity to attract new medical research, technology and clinical trials to Australia, positioning Australia as a leader in viral vector manufacturing in the Asia-Pacific region.

Viral vectors represent a new and effective way of developing and producing vaccines to treat infections such as COVID-19. The Oxford AstraZeneca and Johnson & Johnson Janssen vaccines rely on viral vector technology.

Like viral vectors vaccines, mRNA vaccines also provide your cells with the instructions for how to make a particular antigen. mRNA vaccines can be faster, cheaper, more adaptable and easier to mass-produce than other vaccines.

Local expertise

Australia has substantial clinical and scientific research talent and NSW is a leader in the development and delivery of therapies for genetic diseases, cancers, and viral infections.

NSW is at the forefront of international gene therapy research, paving the way for cell therapies and gene therapies in Australia. The country's first gene therapy clinical trial for a genetic disease was conducted in NSW in 2002. Since then, NSW Government-led initiatives in genomics and newborn screening have attracted additional clinical trials, leading to early access to cutting-edge cell and gene therapies for Australian patients.

The facility is located in Westmead and is part of the Westmead Health and Innovation District, one of the largest health, education, research, and training precincts in Australia. It includes four hospitals, four world-leading medical research institutes, two multidisciplinary university campuses, including the largest clinical school in Australia, and the largest research-intensive pathology service in NSW.

The viral vector manufacturing facility draws on the precinct's partner universities, medical research institutes, adult and paediatric hospitals, and training providers in manufacturing and vector technology. It provides a single point of entry to an ecosystem of globally recognised industry leaders, providing cell and gene therapy services from discovery through to clinical trials.



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