NSW GOVERNMENT | Industry & Investment

New South Wales Biomedical Industry

Growth industry profile

Sydney

Introduction

NSW is home to a vibrant and growing biomedical industry, underpinned by an excellent healthcare system, world-class education and research institutions, a highly skilled workforce, and a low risk business environment.

The statistics tell an impressive story.

Seventy-five per cent of multinational pharmaceutical companies in Australia are headquartered in NSW, and almost half of all medical device firms are based here. And NSW businesses invest more than a third of the national total in research and development in the health and medical sciences.

Our biomedical companies drive innovation and productivity, enhance value-adding export capacity and create rewarding, high skilled jobs. The sector generates valuable improvements in the health and quality of life of our residents.

It also helps our economy.

Exports of medical devices, pharmaceuticals and medicinal products generate annual income of more than $3 billion for NSW.

The State's outstanding biomedical research infrastructure is clustered into 8 research hubs with more than 70 biomedical research centres. This environment allows NSW companies, from start-ups to international market leaders, to excel across all biomedical fields.

The NSW Government's commitment to encouraging investment in innovative industries is strong, and is set out in our State Plan. The Government is assisting the State's biomedical industry to meet the challenges of bringing products and services to an increasingly global marketplace by providing assistance for a range of activities:

- business planning and process development
- intellectual property protection
- proof of concept
- regulatory approvals
- product design and testing
- international market development and research, and
- funding for research and development institutions.

This profile gives an overview of the State's position in the biomedical industry and the world-class activities of NSW companies and research institutions.

ResMed employs more than 1,000 people in Sydney in research and development, manufacturing and other core functions, with 97 per cent of our sales being outside of Australia. Our location and facilities attract high-calibre professionals to all areas of the business, which enables us to consistently offer high-quality products and services for people with sleep and respiratory disorders worldwide. ROB DOUGLAS, CHIEF OPERATING OFFICER (SYDNEY), RESMED

NSW biomedical industry

Biotechnology is the application of information about living organisms to develop new products and processes. It covers numerous technologies, platforms and industry segments, and has created thousands of products across the areas of agriculture, human and animal health, environmental management and industrial processes.

In NSW, the biomedical sector is the strongest area of biotechnology capabilities. It comprises more than half of the biotechnology sector, and includes diagnostics, medical devices, pre-clinical and clinical trials, human therapeutics and vaccines.

NSW has world class biomedical expertise and high quality research institutions.

Leading research areas include platform technology; strong basic research groups, particularly vascular biology, neurobiology, infectious disease and immunology, cancer research, and cell and tissue engineering; and, particularly cardiovascular, respiratory, mental health, renal and liver diseases, HIV; and clinical trials.

Companies of all sizes located in NSW operate at the international forefront of their respective biomedical fields, from established international leaders, such as Cochlear (hearing devices) and ResMed (respiratory devices), through to new generation enterprises. These include Cellabs (diagnostics for tropical and infectious diseases), Medivac (biological waste treatment), Pharmaxis (chronic respiratory and autoimmune diseases), Advanced Surgical Design and Manufacture (total knee replacement and orthopaedic accessories), Tyrian Diagnostics (proteomics and diagnostics), SIRTex (implantable cancer treatments), and National Diagnostic Products (diagnostics for diabetes).

Companies in NSW can be confident that their intellectual property rights are protected by a strong legal framework. NSW is rated well above most locations in the Asia Pacific for intellectual property protection and business efficiency.

For cost, quality, and speed, Sydney is the first choice for companies seeking competitive advantages when choosing clinical development partners.

NSW is the established base for Australian biotechnology and pharmaceutical companies. Around 75 per cent of multinational pharmaceutical companies in Australia are headquartered in NSW.

NSW is Australia's manufacturing leader, and employed 46 per cent, or 9,600 people, of the national total in pharmaceutical and medicinal product manufacturing in 2008. Manufacturing sites operate under Good Manufacturing Practice.

NSW is the recognised leader of the Australian medical device industry. In 2006–2007, there were more than 630 medical device companies in Australia. Of these, 45 per cent are located in NSW.

NSW is home to 11 universities, four major national research facilities, 10 Cooperative Research Centres, the headquarters of nine Australian Research Council Centres of Excellence and more than 30 health and medical research institutes supported by 11 major teaching hospitals. Many of these are located in regional areas of the State.

Australia has the fifth largest biotechnology industry in the world, as measured by the number of public and private companies. Almost three-quarters of all listed biotechnology and medical device companies in Australia with a market capitalisation greater than $200 million are headquartered in NSW.

As Australia's business capital and a leading financial centre in Asia, Sydney offers access to venture capital, other sources of investment finance and business services.

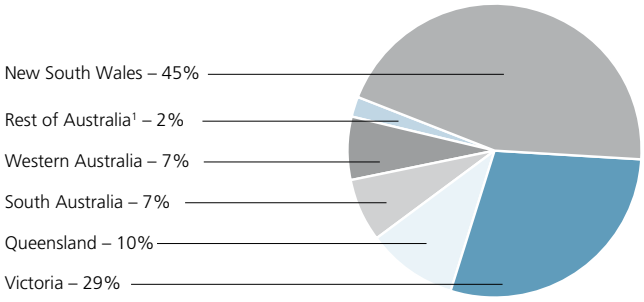
NSW produces more graduates in the combined fields of health, natural and physical sciences, and engineering than any other state. In 2007, almost 79,000 students in NSW were undertaking study in these fields.

Courtesy of Cochlear Ltd

NSW exported around A$1.9 billion worth of medicinal and pharmaceutical products in 2007–08, representing 48 per cent of the national share.

NSW has also experienced considerable export success in the medical device industry, with average annual growth of 18 per cent since 1997–98. In 2007–08, NSW exports reached A$1.14 billion, representing almost three-quarters of total Australian exports for the industry. Exports to the US accounted for half of total NSW device exports, with the other major markets being the UK, France and New Zealand.

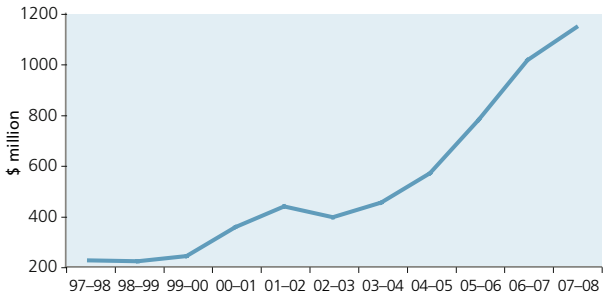
Medical device companies



1 Includes R&D performed overseas by Australian businesses.

Source: Derived from ABS data, 2006–07.

NSW medical device exports[1]



1 Includes catheters, syringes, needles, electro-diagnostic apparatus, optical instruments and apparatus, dental equipment, pacemakers, hearing devices and other artificial parts of the body, orthopaedic appliances, mechano-therapy appliances, therapeutic respiratory apparatus.

Source: Derived from ABS data on request, 2007–08 (final).

Being in NSW, we've attracted skilled staff from over a dozen countries. Sydney really is Australia's international business hub. DR JENNY HARRY, CEO, TYRIAN DIAGNOSTICS

Company snapshots

NSW biomedical companies operate in leading edge areas of technology and innovation. Ranging from start-ups to international market leaders, these companies demonstrate NSW's strengths across the spectrum of biomedical activities

Cochlear Limited is one of Australia's best known success stories in the field of medical devices and is the global leader in implantable and acoustic stimulation solutions for the hearing impaired. The company employs over 2,000 people worldwide. Listed on the Australian Stock Exchange, Cochlear™ manufactures and sells systems to more than 100 countries. For 25 years Cochlear has developed, manufactured and marketed over 120,000 cochlear implants or bone conduction implants worldwide.

Innovative engineering combined with scientific discipline have cemented Cochlear's position as a global leader over recent years. The company participated in more than 79 collaborative research programs across 19 countries in 2007–08. Cochlear has won many prestigious awards, including the 2007 Australian Exporter of the Year Award.

Polartechnics develops, manufactures and markets a group of unique patent protected screening devices for the detection of pre-cancer and cancer – TruScreen, SolarScan and MediScan. Polartechnics is focused on screening systems for cervical cancer and related high risk HPV infection, and melanoma, an aggressive deadly skin cancer. These inventions form a biophysical technology platform using opto-electronic measurements of human tissue interpreted through customised algorithms.

Polartechnics, has operations centres in Sydney, Australia and New Malden, United Kingdom. Polartechnics is in partnerships with medical product distributors in Australia and New Zealand; East Asia including China, Korea and Taiwan; South East Asia; South Asia throughout India; Eastern Europe including Greece, Hungary, Turkey; Middle East including Egypt and UAE; and the United Kingdom and Ireland.

ResMed is a leading Australian developer and manufacturer of respiratory medical equipment for the screening, treatment and long-term management of sleep-disordered breathing (SDB). Listed on the NYSE and ASX for the past six years, ResMed has been on the Forbes list of 200 Best Small Companies in America for eight consecutive years.

The company employs over 1,600 staff worldwide. Over 900 people are located in Sydney where the research and development, plus the majority of manufacturing is carried out. Products are marketed and distributed in over 60 countries by direct offices as well as distributors with extensive knowledge and experience of local markets. This ensures that ResMed supplies the right products to the right markets – a key factor in the company's business strategy.

EnGeneIC has developed a proprietary drug delivery vector, called an EDV (EnGeneIC Delivery Vehicle), that is uniquely differentiated from all currently known vectors and drug targeting systems. EDVs are anucleate bacterial minicells which can also be loaded with a variety of conventional and molecularly targeted chemotherapy drugs and targeted to receptors on cancer cells. Typical doses of drugs delivered via EDVs are around 1,000 times less than the dose of the free drug required for equivalent or better tumour shrinkage. Accordingly, EDV-delivered drugs show minimal toxic side effects and hence provide an enormous increase in therapeutic index in comparison to drugs alone.

EDVs are expected to be safe drug delivery vehicles for targeted delivery of cytotoxics to effect tumour regression in a wide variety of cancers, and potential tailor made therapy with the possibility of using cocktails of different drugs. EnGeneIC has also developed proprietary scale-up manufacturing technology allowing the production of clinically meaningful doses of EDVs at high purity and low cost.

Special Phage Holdings (SPH) is a biopharmaceutical company that develops and commercialises bacteriophage (phage) therapy products. Phages are able to destroy antibiotic-resistant bacteria in an ecologically-friendly and extremely safe way.

Winner of the 2008 NSW BioFirst Commercialisation Award, SPH has built an extensive collection of proprietary therapeutic phages and developed several prototype products, some of which are now entering clinical trials. The sectors of activity covered by SPH include human health, veterinary medicine and aquaculture.

Novotech is the largest independent Contract Research Organisation in Australia, with offices in five countries, and a network of strategic partners on six continents. They assist biotechnology and pharmaceutical companies to bring new products to the global market by offering a full range of ICH compliant clinical services from first human exposure through to completion of Phase III trials.

The company was awarded Australian CRO of the Year for 2008 by Frost & Sullivan. Based in the Asia-Pacific, including operations in India and South Korea, Novotech is the ideal gateway for outsourcing clinical trials in the region.

Giaconda Limited's focus is the commercialisation of therapies for gastrointestinal diseases and hepatitis C disorders. The company is developing four therapeutic products and one colonoscopy product preparation. The company has three products in Phase III and two products in Phase II clinical trials.

Giaconda's products are targeted towards the treatment of serious conditions that are not adequately addressed by any existing therapy. In this way, Giaconda's products are intended to satisfy the significant unmet medical needs of the gastrointestinal market, which is estimated to be worth almost US$50 billion per annum.

Biomedical Research and Development

NSW biomedical research institutions foster excellence and drive innovation to achieve health, environmental and economic outcomes. These NSW based organisations are among the many positioning the State as a leader in biomedical research.

The Australian Proteome Analysis Facility is Australia's premier proteomic institution. It was the birthplace of the term proteomics in 1995, and the first high throughput proteomics lab worldwide. The consortium is dedicated to providing infrastructure, expertise and training in proteomics, which involves the study of proteins.

The Facility is working to find better ways of diagnosing and managing human health and disease. Advances benefit a range of fields including clinical diagnostics, agricultural crop breeding, bacterial pathogenicity, drug toxicity monitoring, biotechnology, pharmacology and drug target discovery.

The Garvan Institute of Medical Research is the largest medical research institute in NSW with around 400 scientists, students and support staff. The Garvan is pioneering research into some of the most common diseases affecting Australians. Significant breakthroughs have been made in the areas of cancer, diabetes, obesity, pituitary disease, osteoporosis, arthritis, asthma, Alzheimer's disease and bipolar disorder.

Selective protection of Garvan's IP has generated a patent portfolio containing potential prognostic and diagnostic markers, therapeutic targets, technology platforms and screening models in therapeutically-focused areas.

The George Institute for International Health, which employs almost 200 staff at facilities in Australia, China and India, conducts a global program of clinical and epidemiological research, health policy development and capacity building. Its main targets are cardiovascular diseases, neurological diseases, renal diseases, diabetes, arthritis, injuries and critical illness.

The Institute's research projects currently run in over 300 hospitals or research centres in 30 countries. The Institute works closely with a range of international agencies including the World Health Organisation and the Global Forum for Health Research.

The Hunter Medical Research Institute, based in regional NSW, is recognised as one of the State's leading medical institutes. Over 500 affiliated researchers are based in six key programs. Each program is working at multiple levels from basic biological mechanisms, to developing better methods for the treatment and diagnosis of disease, through to translating discoveries into commercial products and health policy. The Institute is the headquarters for a number of state-wide and international programs.

The National Centre in HIV Epidemiology and Clinical Research, located in Sydney, was established to fulfil a number of key roles in Australia's fight against HIV/AIDS. The Centre's work has since expanded to encompass hepatitis B and C, and sexually transmissible infections, and the Centre is recognised internationally as a leader in the field of research into HIV/AIDS and viral hepatitis.

The Centre's primary functions relate to the coordination of national surveillance programs, clinical research and clinical trials.

The Prince of Wales Medical Research Institute is the largest institute dedicated to neuroscience in NSW. The Institute conducts research into movement disorders, neural injury, autonomic dysfunction, pain, falls in older people, ageing and dementia, and functional, neuroanatomical and cellular investigations of the brain. Its 'brain bank' facilitates study of neurodegenerative disorders including Alzheimer's and Parkinson's disease, while its Spinal Injuries Research Centre studies nerve injury, degeneration and regeneration. New programs in molecular, cellular and genetic neuroscience address psychiatric, psychological and neurological disorders.

The Westmead Millennium Institute is one of Australia's premier medical research institutes. Closely affiliated with both Westmead Hospital and the University of Sydney, research extends from the laboratory to the patient. The Institute's research spans infectious and immune diseases, cancer and leukaemia, mental illness and liver, kidney, eye, heart and respiratory disease, using the basic tools of molecular and cell biology, genetics and epidemiology, imaging technology and clinical research.

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