



MEDICAL DEVICES AND TECHNOLOGY

Medical technology innovations have an important role to play in meeting the challenges of population ageing, wellness and preventative medicine, emerging and chronic diseases, escalating pressure on health systems and increasing healthcare expectations. Queensland's healthcare sector has spawned a range of medical device and technology innovations, from minimally invasive devices for medical imaging through to state-of-the-art in-vitro diagnostics. Queensland is home to many small to medium medical device companies such as biotechnology company Factor Therapeutics which is developing advanced wound care therapeutics.

- Factor Therapeutics – wound care
- Melcare Biomedical – honey-based eye care and wound care products
- ImpediMed – bioimpedance devices with a focus on medical applications
- Ellume – advanced point of care diagnostic tests
- Magnetica – super conducting magnets.

Queensland is also home to multinational companies such as Cook Medical – the largest privately held medical device manufacturing company in the world. The company has achieved success with its cardiovascular stents and IVF products to assist families. To assist the development of early stage medical device companies, Cook Medical recently launched its Asia-Pacific Commercialisation and Development Centre in Brisbane.

Health management is being transformed in the digital age with Queensland based researchers in areas such as e-health, big data analysis, mobile technologies and digital health care services. These will help improve health services, clinician decision making, and health outcomes.

In Queensland, the sector benefits from an environment that supports innovation, embraces new technology, and provides advantages for start-ups and established enterprises alike.

Discover more about the life sciences opportunities in Queensland

The **Queensland Science Capability Directory** provides information on Queensland's key research capabilities, science expertise, and collaboration and investment opportunities.

➔ qld.gov.au/ScienceDirectory

On the road to success

Home diagnostic platform

Ellume Pty Ltd is developing state-of-the-art point of care diagnostic tests that exploit highly sensitive quantum dot-based technology to enable efficient real-time detection of common infections, such as influenza and chlamydia. The Ellume diagnostic assays are designed to be connected to digital technologies to assist in delivering convenient, accurate health care to consumers. ➔ www.ellume.com.au

“We were able to establish our diagnostics development team because we had access in Queensland to a range of first rate scientists with relevant technical and commercial experience.”

Dr Sean Parsons,
Managing Director, Ellume Pty Ltd

Early detection of lymphedema

ImpediMed Ltd is a medical device company that has commercialised state-of-the-art bioimpedance technology developed in Queensland for the early detection of lymphedema. Lymphedema can be a major complication following significant medical interventions, such as mastectomy in women. Early detection of lymphedema can assist clinicians to prevent the development of debilitating side effects of mastectomy surgery in women. ImpediMed's L-DEX device was the first US FDA cleared device designed to assess secondary unilateral lymphedema of the arm and leg in women, and the leg in men. ➔ www.impedimed.com

Specialist oncology eHealth systems

Queensland-based Charm Health Pty Ltd is Australia's leading developer and supplier of specialist oncology eHealth systems. The company's flagship product is the CHARM™ Oncology Information Management Solution (OMIS), which offers a complete cancer treatment management solution in one package. Charm Health has

deployed its OMIS to over 45 sites that are the leading public and private health providers of cancer care. CHARM™ ensures the most up-to-date patient information is available to all healthcare providers, in real time.

➔ www.charmhealth.com.au

Fundamental change to vaccine delivery

Vaxxas is pioneering a next-generation vaccine delivery platform — the Nanopatch™ — that uses thousands of microscopic projections to deliver vaccines to the abundant biological cells immediately below the surface of the skin.



“The best place that we've found to develop the Nanopatch™ technology is right here — Queensland is a wonderful place to do business, it's very straight-forward.”

David Hoey, CEO Vaxxas

Therapeutic application of medical honey

Melcare Biomedical develops and manufactures therapeutic products for skin, wound and eye care using standardised medical honeys. Using predominantly plant-derived ingredients, including honey from *Leptospermum species*, the company aims to offer sustainable, environmentally friendly products. Melcare Biomedical continues to drive international research into the medical use of standardised honeys. The company strongly supports the broader medical use of honeys in developing countries through empowering them with local capability. For further information please see ➔ www.melcare.com

Exciting opportunities for investment and collaboration

Molecular diagnostic test for the detection of esophageal adenocarcinoma

QIMR Berghofer researcher, Associate Professor Michelle Hill, has developed a non-invasive liquid biopsy test for the detection of esophageal adenocarcinoma (EAC) and Barrett's esophagus. EAC is associated with increasing incidence and mortality in industrialised nations. The diagnostic test is based on a modified glycosylation signature observed specifically in the presence of EAC, providing a non-invasive approach for EAC detection.

QIMR Berghofer seeks a collaborative partner to facilitate in co-developing this technology. Contact: Dr Goslik Schepers, Head of Business Development, QIMR Berghofer, goslik.schepers@qimrberghofer.edu.au.

A new approach to treating amblyopia (lazy eye)

Amblyoptica (Holding) Pty Ltd is working with the Queensland Eye Institute to undertake a clinical trial of a new medical device to treat amblyopia in children and adults. While many children are treated with conventional patching methods, approximately 60% do not respond to this treatment and carry amblyopia into adult life. The new device uses the 'good' eye and the brain to teach the amblyopic eye how to see. Subject to ethics approval, the trial with the Queensland Eye Institute aims to test the validity of this new approach to treatment. ➔ www.amblyoptica.com

Rapid screening test for heart failure

Queensland University of Technology researchers are developing a rapid screening test to allow primary healthcare physicians to detect heart failure at a very early stage. Up to 45% of patients die within a year of first admission to hospital. No screening test is currently available to identify people at risk for developing early stage heart failure at the time when intervention would be most effective. This technology will allow patients to begin treatment and lifestyle changes earlier, saving lives and improving quality of life. QUTbluebox seeks an industry partner to co-develop and license the technology. Contact: enquiries@qutbluebox.com.au.

Next generation magnetic resonance imaging (MRI) technologies

Working in a strategic collaboration with Professor Stuart Crozier and The University of Queensland, Magnetica Ltd has successfully developed a 3T extremity superconducting magnet and key components, including 3T Gradient Coils and Radio Frequency (RF) Coils. These developments offer the capacity to transform imaging of extremities such as knees and hands to provide cost-effective high-resolution medical images. With further investment, Magnetica plans to increase its R&D activities to expand the portfolio of custom MRI components. ➔ www.magnetica.com

Queensland offers

- Highly skilled researchers with international experience and connections
- Sophisticated research environment with integrated facilities
- Ongoing investment by government to support commercialisation of innovation
- R&D tax incentives up to 43.5%, and a rapid clinical trials approval system (CTN/CTX)
- A pipeline of opportunities in health, medical devices and technology
- Ideal location at the crossroads of the Asia-Pacific.

Facilities and capabilities

Queensland boasts a critical mass of research centres across biotechnology, food and agriculture, health and medical sciences, and offers distinct advantages for conducting clinical trials. Queensland has nine universities, including three of Australia's 10 largest universities.

Australian National Fabrication Facility (ANFF) is host to several nodes in Queensland. The ANFF enables users to process or manipulate materials and transform these into structures that have application in sensors, pharmaceutical and medical devices, and nano-electronics.

Medical Engineering Research Facility (MERF) supports the medical devices R&D cycle in a state-of-the-art QUT facility. MERF provides preclinical research models for the assessment of new biomaterials, medical devices, implants and surgical techniques. Services are provided in a responsive, GLP-accredited environment.

Queensland is also well supported by clinical trial specialists, regulatory consultants, and a range of specialists in R&D and company, tax and commercial law. Queensland is an excellent springboard to Australasia and the rapidly developing Asia-Pacific region.

The Herston Biofabrication Centre brings together clinicians, scientists, researchers and engineers to focus on developing next generation fabrication technologies combined with biological systems.

Life Sciences Queensland Limited (LSQ) is Queensland's peak industry group, working to assist the growth of individual firms and organisations, and build the profile, capacity and capability of the sector to ensure long-term economic, social and environmental benefits to Queensland. ➔ www.lsq.com.au

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