Medical Technology Innovation

To tap Asia's fast-growing healthcare markets, medical technology (medtech) companies are in the race to develop disruptive innovation and novel products tailored to address the region's unmet healthcare needs. As a leading medtech site in the region, Singapore has built up core capabilities and the requisite talent base to fuel companies' innovation and growth in Asia.

Your listening post in Asia

Strategically located at the heart of Asia, where companies can reach key markets in Asia within a seven-hour flight radius, Singapore presents an ideal listening post to feel the pulse of Asia's fast-growing healthcare markets and identify unique Asian clinical needs for innovation. Coupled with its strong intellectual property protection and its base of voice-of-customer and regulatory specialists, Singapore presents a strong partner to scout for innovation gaps and introduce novel medical devices in Asia's fast-expanding markets.

Strong track record

30 global medtech companies are carrying out R&D activities that include value engineering, product development and process development; they include 3M, AB Sciex, Becton Dickinson, Dx Assays, Essilor, Fluidigm, Hill-Rom, Hoya, Life Technologies, Siemens Medical, Thermo Fisher Scientific, Welch Allyn.

To nurture a vibrant eco-system for local start-ups, SPRING Singapore launched a S$75 million Technology Enterprise Commercialisation Scheme (TECS) in April 2008 to provide technology start-ups and enterprising public sector researchers with early-stage funding support for POC/POV studies.

Furthermore, Singapore's public-sector research institutes have established strong capabilities in biomedical engineering research that can be translated into novel medical devices.

- Institute of Materials Research & Engineering (IMRE) has developed a new range of patented microneedles that can be used in various drug delivery intervals with minimal pain. This innovative device has attracted a joint venture with Sumitomo Corporation to form a spin-off company called Micropoint Technologies.
- Institute of Bioengineering and Nanotechnology (IBN) has developed an all-in-one automated, portable PCR platform, called the MicroKit, which enables speedy gene extraction and detection from a variety of biological samples. The MicroKit has been licensed by SG Molecular Diagnostics and will be launched in global markets.
- Singapore Immunology Network (SIgN) has developed a portfolio of technologies to create a versatile Personalised Peptide Vaccine (PPV) platform to predict and optimise peptide vaccines for use at an individual and population level. This portfolio of technologies have been licensed to Rhapsody Biologics, who is in talks with major pharmaceutical companies to develop vaccines based on the PPV platform.
- IBN has developed novel drug-loaded contact lenses as well as the world's first photochromic contact lenses and aims to develop contact lenses that darken upon exposure to sunlight to protect the eyes against harmful ultraviolet radiation and glare. IBN is working with Carl Zeiss to develop technologies and treatments associated with IBN's innovative ocular biomaterials.

Access to Asia-ready medtech innovators

Singapore has established a strong foundation in science and engineering with more than 30,000 research scientists and engineers, and an annual cohort of more than 8,500 science and engineering graduates from local universities — National University of Singapore (NUS) and Nanyang Technological University (NTU). This base will continue to grow with the launch of the Singapore University of Technology and Design in partnership with Massachusetts Institute of Technology (MIT) and Zhejiang University.

The 1,000 square-metre Khoo Teck Puat Advanced Surgery Training Centre (ASTC) in National University Health System (NUHS) Campus presents cutting-edge facilities and technology that enable medtech companies to carry out surgical training and pre-clinical research.

In clinical research, Singapore is expanding its base of clinical innovators through graduate programmes at the Duke-NUS Graduate Medical School, National University Health System (NUHS)'s partnership with Harvard University's Beth Israel Deaconess Medical Center in education, research and clinical care, as well as Agency for Science, Technology and Research (A*STAR) Biomedical Engineering Programme that connects research engineers in A*STAR with clinician scientists in Singapore's hospitals to develop cost-effective, innovative and clinically impactful solutions for healthcare systems.

Singapore is aware that medical device innovation is a multidisciplinary process. At the same time, medtech companies require globally-oriented talent who are attuned to Asia's healthcare needs.

Key programmes to address these needs include:

- EDB and A*STAR's collaboration with Stanford University to launch the Singapore-Stanford Biodesign Program.
- A*STAR's collaboration with Boston-based Center for Integration of Medicine and Innovative Technology (CIMIT).
- EDB's Medtech IDEAS (Innovate, Design, Engineer for Asia in Singapore) programme to train multidisciplinary teams of engineers, VOC specialists and regulatory experts in companies' global and Singapore-based R&D facilities.

World-class infrastructure to meet end-to-end research needs

- Starting up: Companies can establish their labs in plug-and-play infrastructure that are equipped with the required amenities, or choose to set up their facilities in phases within the Biopolis or Fusionopolis where they will be co-located with public-sector research institutes.
- Prototyping: Companies can work with public-sector research institutes (e.g. Singapore Institute for Manufacturing Technology — SIMTech, Institute of Microelectronics' wafer foundry), tertiary institutions (e.g. Nanyang Polytechnic) or local suppliers to develop prototypes for POC studies.
- Preclinical & clinical research: Companies can leverage cutting-edge infrastructure and capabilities at NUHS's Advanced Surgery Training Centre or Innoheart for pre-clinical studies, as well as Singapore's 15 hospitals and medical institutes that offer core capabilities in key therapeutics (e.g. cancer, cardiovascular diseases, neurodegenerative diseases, infectious diseases and eye disease). These institutes (e.g. National Heart Centre, Singapore Eye Research Institute) are premier institutes in Asia that can help companies to gather pan-Asian insights.
- Process Development: SIMTech and automation houses are excellent partners for developing processes and technologies to produce innovative devices in commercial quantities.