

# SINGAPORE: SCIENTIFIC PRODIGY

**In this article, Sam Myers, Southeast Asia Regional Director for the Science and Innovation Network (SIN), provides his insight into how Singapore has risen to become a world-class centre for R&D.**

During my three years in Singapore, some things, such as the weather, have remained constant day-in day-out. The same cannot be said for investment in science and its related infrastructure, which have grown rapidly. Back at the turn of the millennium the total R&D spend (GERD) stood at 1.9% of GDP, after which the Government set the ambitious target of 3% GERD by 2010. The country is on course to meet this: the latest figure hit 2.8%, with 72% coming from the private sector (2008). Earlier this year the Government's Economic Strategies Committee revised the target upwards to 3.5% by 2015. So how has Singapore invested this funding, and how did it achieve its ranking by the Boston Consulting Group as the most innovative country in the world in 2009?

Many people compare Singapore to a well-run company. The small city-state has been adept at leveraging off its historical manufacturing strengths to climb up the value chain. Manufacturing accounts for more than a quarter of GDP, and there has been a Government-driven shift from electronics and silicon production into interactive and

digital media, and from chemicals and pharmaceutical manufacturing into biomedical research. Tailored packages of incentives have attracted the R&D operations of multinational companies such as Rolls Royce, GSK and Shell, which have fuelled this transition. Like any corporation, the island also faces a number of challenges: no significant natural resources, scarcity of land, and difficulty meeting growing water and energy demands. Science funding has been harnessed to address these challenges, and the Government has positioned the country to be a regional hub for R&D and a gateway to Asia for the western world.

This investment is complemented by policies to develop human capital and scientific infrastructure. Many eminent foreign researchers, including a sizeable number of Brits, run labs and hold senior advisory positions in Singapore, such as Sir George Radda, Sir David Lane and Sydney Brenner. In parallel, home-grown talent is being cultivated through scholarships at top international universities. Many choose UK institutions such as Cambridge, Oxford and Imperial College, and there is a requirement that such students 'repay' the sizeable investment in their education by working for several years in Singapore upon completion of their programme. Academic excellence is celebrated and rewarded in Singapore, and there are few problems in recruiting the brightest young minds to the sciences. In fact three-quarters of the current 21-strong Cabinet hold a science degree and just under half went to Cambridge.

The Government has also built a world-class infrastructure to attract and support these researchers: just 18 months ago I witnessed the opening of the iconic state-of-the-art "Fusionopolis" which hosts engineering and physical science research alongside the biomedical hub, Biopolis. Once the next phase is complete, some 10,000 scientists will work within a 4km radius. These impressive buildings co-locate public R&D labs alongside private companies with shared services such as animal facilities and clean rooms. They provide a 'live-work-play' environment to encourage researchers to interact with each other outside the lab – and to spend even longer hours in the lab!

This strategy has built Singapore into a global R&D player in little over a decade. The next big challenge comes in translating this investment into economic wealth. A number of hurdles need to be overcome, such as increasing the availability of private equity to support spin-outs, and growing the entrepreneurial talent pool. More needs to be done to stimulate inter-disciplinary research: the co-location of Biopolis alongside Fusionopolis by itself is not enough.

There is every reason to believe Singapore will rise to meet these challenges, and UK researchers stand to benefit from this impressive growth story. The SIN team was established in the British High Commission in 2003, to help UK researchers identify Singaporean partners, and access scientific resources across Southeast Asia. Since then we

have organised over 50 workshops, introducing hundreds of UK scientists to local counterparts and stimulating new partnerships and collaborations in a range of priority areas ranging from stem cells to renewable energy. These have resulted in numerous joint scientific papers, grants and industry R&D partnerships. Most recently, 6 successful infectious disease projects were announced under the £2m UK-Singapore collaborative fund, which we facilitated between the UK's Medical Research Council and A\*STAR. These projects address drug resistance and the development of novel detection devices in a region which is a hotspot for the emergence of infectious diseases.

The SIN team will continue to keep the UK science base up to speed with developments in Singapore and help our researchers access the opportunities provided by this scientific prodigy.

SIN represents and serves UK science and innovation interests overseas and is jointly owned by the Department for Business, Innovation and Skills and the Foreign and Commonwealth Office. The network comprises of 90 officers based in 25 countries of key scientific interest, and works on behalf of Government Departments, Research Councils, Universities, charities and industry. To find out more, please visit: [www.bis.gov.uk/sin](http://www.bis.gov.uk/sin). Any readers interested in finding out more about opportunities in Southeast Asia are invited to contact Sam Myers at: [sam.myers@fco.gov.uk](mailto:sam.myers@fco.gov.uk)