

THE LITTLE LAND'S PLAN TO ATTRACT BIG BIOTECH...

A small European country bets that investing in a highly educated, technology-trained population will pay off in multi-national industries and an indigenous biotech sector

By Chris Tachibana

It's a small, Northern European country, with a homogenous population of over 5 million. They have Vikings and famous scientists in their history, rugged castles on their coasts, and ale on the table for all occasions. Thinking of Denmark? In 2006, this country adopted an aggressive plan to become "internationally renowned for the excellence of its research", and backed it with 8.2 billion euros. The country is Ireland, and the plan is the Strategy for Science, Technology and Innovation (SSTI).

A progress report and explanation of the plan was provided by Professor Frank Gannon, Director of Science Foundation Ireland (SFI), and Professor Ciaran Regan, coordinator of a collaborative initiative with Wyeth, in a December 2008 webinar from the American Association for the Advancement of Science. The Irish plan funds "high-quality research" and provides incentives for partnerships between universities and industry. Investments in human capital are a cornerstone

of the strategy, which doubles the annual output of science Ph.D.s by 2013, and recruits immigrant scientists and students. Officially, the goal is to use "new knowledge for economic and social progress, within an innovation driven culture". In practice, Ireland wants to raise its own businesses up to the level of foreign companies with branches in Ireland, and encourage the foreign companies to spend their R&D euros in Ireland, instead of back in their home countries.

Like Ireland, Denmark released an ambitious plan in 2006. The "Progress, Innovation and Cohesion" strategy aims to ensure the country's continuing competitiveness in the world technology market, and promote industry R&D within Denmark. Similar to the Irish plan, it doubles the number of Ph.D. scholarships, but the Danish plan focuses on reforming and reorganizing education and research by restructuring universities and increasing competition for public funding. Funding for R&D will be from a combination of increasing public financing to 1% of gross domestic product (GDP), from 0.76% in 1999, and encouraging funding from public and private companies to reach 3% of GDP by 2010.

Are Ph.D.s the chickens or the eggs?

Like the Danish plan, the Irish strategy includes



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reforms in education and management. During the webinar, though, Professors Gannon and Regan focused on the plan's bottom-up emphasis on the training and mentoring of new Ph.D.s.

When asked where all these Ph.D.s would go, Professor Gannon speculated about whether the Ph.D.s were the chickens or the eggs in the cycle of education and technology growth that the SSTI hopes to nurture. He meant that a crop of new Ph.D.s, trained in issues like improving productivity and innovation, will feed the existing industry and seed an indigenous technology sector that will complete the cycle by creating a demand for even more educated workers. The cycle should drive Ireland into a high-tech economy.

Regarding the current economic crisis, the SFI philosophy is that funding science education now, will give Ireland an advantage when the economy recovers. Dr. Gannon even supported so-called "high risk" projects as those that are often the most innovative, pointing to their Research Frontiers program that encourages Ph.D. projects in novel areas, with strong mentoring to ensure project completion. This position was backed by an industry representative at the webinar, Dr. Davinder Gill, Vice-President of Biologic Technologies for Wyeth, New Jersey, whose Dublin campus is the largest biotech facility in the European Union. Dr. Gill agreed that R&D spending must continue despite economic conditions. His view, however, was that R&D would generate the innovations in efficiency necessary to develop the most useful medicines in the shortest time, with the lowest price.

The implementation

Even with the increase in output, home-grown Ph.D.s will not meet the planned Irish demand. According to Professor Gannon, 50% of their lab personnel are not native Irish, so Ireland recognizes the need to import scientists from other countries. Denmark, Sweden and Ireland have all moved recently to ease the entry of skilled foreign researchers. But the Irish system accelerates the turnaround for researcher work visas, with the goal of making Ireland "competitive in the international talent stakes". Of course, as Professor Gannon pointed out, the reason for the non-discrimination, funding and competitive

salaries, is to support career development for scientists who intend to stay in Ireland.

The SSTI also creates infrastructure to encourage collaboration between industry and research. Ireland, like Denmark and Sweden, already has a relatively high rate of collaboration between industry and academia and other publicly-financed research organizations, according to the Organisation of Economic Co-operation and Development, which tracks statistics of its member countries as part of its mission to guide economic growth and stability. Ireland is pushing hard for more, though, with Ph.D. and post-doc advisors encouraged to mentor their students specifically for jobs in all sectors, with a goal of finding their own niche, be it in academics, industry or regulation. In the area of technology transfer and growth, Professor Regan said the first "harvest" of Ph.D.s was beginning. This critical mass of trained scientists is being leveraged to gain outside funding and consortia, providing a return on the original investment. The industry viewpoint from Dr. Gill was supportive. The combination of industry incentives and strong academic training facilities had produced a positive atmosphere for recruitment in Ireland, he said, and Wyeth has been pleased with the outcome of its investments there. His priority, naturally, was for new Ph.D.s with specific training in the commercial aspects of research, like drug and process development.

The secret advantage

Dr. Gill pointed out that a disadvantage of Ireland's

small size is the lack of large centers and mega-facilities, for example for proteomics or crystallography. Nonetheless, all webinar participants agreed that Ireland's small size provides a unique advantage: an interconnected research community, similar to Denmark, where everyone knows everyone else and their field of interest, and has their number on speed-dial. An applicant to a lab or degree program is quickly routed to the most suitable research project, by exploiting the power of the network to find the most appropriate program for that particular applicant. Professor Gannon encouraged scientists who are interested in working in Ireland to contact Science Foundation Ireland and take advantage of the accessibility and connectedness of the Irish science community. In fact, publicity seems to be the agenda. In a recent survey cited by Professor Gannon, the Irish population already has a high regard for science and technology research, with 70% agreeing that research investments in the knowledge economy are a cornerstone for the Irish future. The task now is to exploit that goodwill and spread the message of potential careers in research in Ireland, not only to young Irish students, but those from other lands as well.

For more information please view:

"Strategy for Science, Technology and Innovation" (SSTI) - www.entemp.ie/science/technology/sciencestrategy.htm

Science Foundation Ireland - www.sfi.ie
AAAS (Science in Ireland)

- www.sciencecareers.org/webinar