

Living Sciences in Ireland

THE COUNTRY

Ireland, its people and its government, have positioned themselves to be at that cutting edge where industry meets technological advance. The country has increasingly become a hub for excellence at the high end of the business of life science including pharmaceuticals, medical devices and related industries.

Ireland has invested in education – today, there is a third level college close to almost every Irish town. The net effect is that Ireland now has more than twice the US / European per capita average in science and engineering graduates. Ireland also has one of the youngest populations – with over 36% of the population under the age of 25. Business and education work together in Ireland to further develop the educational needs of the Life Science industry in Ireland.

Ireland has reached out for new industries, new technologies and new ways of linking education to business. The living sciences have found an enthusiastic home there, as can be seen from the list of world leading companies who have chosen to set up there – Amgen, Medtronic, Boston Scientific, Abbott Laboratories, Gilead and Pfizer to name a few.

Ireland's Life Science sector represents one of the best testaments to the innovative capacity of the Irish economy. Supported by the strength of multinational companies as well as by the entrepreneurial spirit of home-grown companies, the sector has grown to employ about 40,000 people, adding some \$60bn to the Irish economy.



INDUSTRIES TRANSFORM

The companies that had originally chosen Ireland as their European base have developed their Irish operations as their host country was developing. This is clearly exemplified in the story of the Wyeth Corporation's relationship with Ireland. Wyeth came to Ireland in 1974. It still manufactures infant nutritional products at its plant in Limerick. In 1990, it set up Fort Dodge Laboratories in Sligo to manufacture animal vaccines. Two years later, Wyeth Medica Ireland was established in Newbridge and employs 1,300 people in the manufacture of ethical pharmaceuticals: it is one of the largest solid dosage plants in Europe.

The sales and marketing operation of Wyeth Pharmaceuticals in Dublin employs over 70 people. In early 2007 it announced that it would be investing \$32 million in the creation of additional dedicated R&D and process development facilities at its Grange Castle Biopharmaceutical Campus in Dublin.

This year, Gilead Sciences of California announced that it would be investing over \$80 million in Ireland, also at Clondalkin. This biopharmaceutical company discovers, develops and commercializes innovative therapeutics for infectious diseases and areas of unmet medical need, such as the potential treatment of HIV, hepatitis B and C and pulmonary arterial hypertension.

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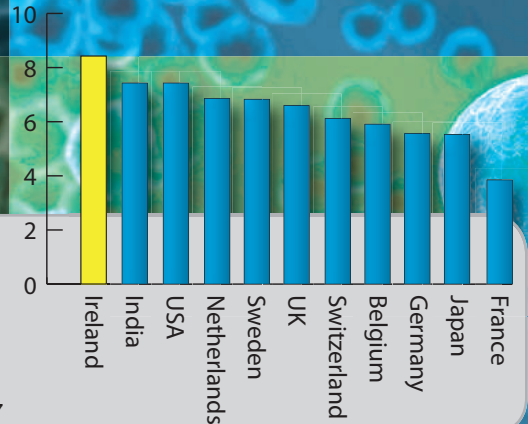
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Flexibility and adaptability of people are high when faced with new challenges Country Score (out of 10)

Source: IMD World Competitiveness Yearbook 2007



Ireland is the seventh freest economy in the world, according to The Index of Economic Freedom 2007

There has been a rapid growth of biotechnology investment in Ireland in recent years. The world's largest biotech company Amgen is investing more than \$1 billion and aims to employ more than 1,100 people in Cork by 2010. Dr. Fabrizio Bonanni, Senior Vice President of Manufacturing, Amgen, said "As demand for our products continued to grow in Europe, our company recognized the need for capacity closer to this important market. We considered several attractive sites in other countries for these projects and finally chose Ireland due to its thriving biotechnology community, infrastructure to support biologics manufacturing and pro-business environment." Like others in the industry, Amgen acknowledged the availability of highly skilled and educated people particularly in the areas most required.

Pfizer operates six manufacturing plants in Ireland in addition to a corporate bank and a European financial center. Novartis placed its global procurement center for RPI in Ireland. Merck operates a Center of Excellence in originating designing and managing European clinical trials in Ireland. Centocor (J&J), and Genzyme are also in Ireland.

Along with the foreign direct investment into Ireland, there is the indigenous Elan Corporation. It now operates across three continents employing almost 2,000 people. It has a focus on multiple sclerosis, Alzheimer's disease and other neurodegenerative diseases such as Parkinson's.

Managers of global companies based in Ireland saw the opportunity to develop their business in the highly educated and creative environment that is modern Ireland. This did not come by chance but was largely driven by those managers in Ireland who found a state and educational system that was eager to respond.



EDUCATION AND BUSINESS

Leaders in bioprocessing world-wide had determined that a critical limiting factor on this emerging industry was that there was not a pool of suitably skilled potential employees. Managers in Ireland saw this as an opportunity to make a qualitative leap forward for their enterprises, themselves and their country.

Two years ago, four leading Irish colleges University College Dublin, Trinity College Dublin, Dublin City University and Sligo Institute of Technology set up the National Institute for Bioprocessing, Research and Training. The Irish government is providing the funds for its world class research and training programs. This Institute, set up by a consortium from four major academic centers is one of very few in the world. It focuses on scale up capability within which training and research can take place. It now provides a steady output of people required across the spectrum of the bioprocessing skills, from PhDs to technicians educated in industry best practices and a real time environment.

Last September, the healthcare company Organon and the National Institute for Bioprocessing, Research and Training announced the formation of a research collaboration which will focus on the control and understanding of glycosylation in CHO cell culture. The collaboration is designed to combine the Institute's academic resources with the existing manufacturing know-how of Organon to improve the control of the cell culture process.



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Other biotechnology centers in Ireland include the Alimentary Pharmabiotic Center in Cork, Biomedical Diagnostics Institute in Dublin and the Regenerative Medicine Institute in Galway.

Trinity College Dublin has opened a \$6 million bioengineering research center where research is being conducted into arthritis and osteoporosis. Opsona Therapeutics, a spin-off from Trinity, is working to identify new drugs and vaccines to prevent and treat anti-immune and inflammatory diseases: this company is working with the Wyeth Corporation.

Diabetica is a new company which was set up to commercialize work from the Diabetes Research Group in the University of Ulster. Biancamed, which came out of work in University College Dublin is researching sleep disorders. In the south of the country, the Alimentary Pharmabiotic Center at University College Cork was the spring-board for the company Alimentary Health: this works on the discovery, development and commercialization of proprietary treatments for gastro-intestinal disorders and other inflammatory conditions.

In 2007, a combined funding of \$1.3 billion dollars is being invested in bioscience in Ireland.

FIRING ON ALL CYLINDERS

The pharmaceutical industry in Ireland now employs seventeen thousand people directly and it accounts for over \$35 billion in exports. Thirteen of the world's top fifteen pharmaceutical companies operate in Ireland and six of the top ten drugs are manufactured there.

There are over 140 companies in Ireland engaged in the manufacture and development of medical devices. They employ 26,000 people and export medical products amounting to approximately \$8 billion per annum. A recent Government survey has shown that 80% of the companies in the sector are "innovation active".

When Ireland started on this journey it was outside the family of states that now make up the European Union. Today it operates in a single market that has a population more than a hundred times its own size. The 500 million people of the EU constitute an internal market that is 70% bigger than that of the United States.

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Ireland has long been seen as a bridge from the industrial worlds of the US to those of the European Union. Yet 'bridge' is an inadequate metaphor. It suggests something fairly rigid standing on fixed points which safeguards those upon it from the waters beneath. Ireland is not static. The spirit of enterprise runs through its veins. The surest measure of this is how it is transformed itself as the industries that arrived on its shores transformed themselves. With the flowering of partnerships between business and research facilities, it was inevitable that amongst the most exciting and frontier shifting group of industries – the life sciences – should develop so dramatically in Ireland.



Image of W.B. Yeats, poet and Nobel Prize winner,
by Louis le Brocquy.

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