

Greener grass on the Emerald Isle

When it comes to research, what has the Republic of Ireland got that other countries lack? **Anthony King** quizzes some of the brightest and best new arrivals – and the man who is making it all happen

The foundation head

The cornerstone of Irish research funding is Science Foundation Ireland (SFI), where an affable biologist called Frank Gannon has just taken charge. He took up the post in July, moving from Heidelberg in Germany where he was executive director of the European Molecular Biology Organisation (EMBO) and a senior scientist at the European Molecular Biology Laboratory.

His appointment means that SFI is led by an active research scientist for the first time since it was set up in 2001. “We are attuned to how science works,” says Gannon. “I’ve been a scientist all my life. If you have an active scientist at the top, it means that you understand what is needed.”

He is keen to emphasise the subtle difference between a funder and a foundation. “SFI is a foundation: it is looking at what is needed to achieve top-class science,” he says. So rather than simply deciding whether to fund particular projects, the foundation has the job of ensuring Irish science is working well overall. “We are constantly looking at other ways of improving the proposition of working in Ireland.” Apart from the funding, the fact the Irish government has put science at the heart of its policy has been instrumental to the foundation’s success.

The foundation has an annual budget of €160 million and since 2001 has approved 1600 awards across its many programmes. As a result of this largesse, he says, many Irish

scientists have been persuaded to build a career in the country and many more have been brought to Ireland.

The foundation’s awards are open to researchers from anywhere in the world, though they must carry out their research in Ireland. This September, SFI announced 33 new awards, with 10 going to researchers outside Ireland. The largest single award, €3.5 million, went to John Boland of Trinity College Dublin (see “The professor”).

Ireland’s focus on science is set to continue, says Gannon. “The government’s National Development Plan is an integrated plan – you can’t take a bit out of it and achieve the goals necessary for the future of the Irish economy,” he says. The country cannot afford to change horses in mid-stream, either, because it has no other untapped economic resources to turn to. Gannon sums up the bottom line: “Do the research well, create a reputation for excellence, have a critical mass of scientists performing at that level, and the economic consequences will follow.”

SFI wants to recruit an extra 350 or so more top researchers to become senior scientists on its projects, and is looking to scientists from outside Ireland. The lures are generous grants and a focus on quality. SFI doesn’t prioritise disciplines, says Gannon: “Group leaders can come from any area. Every decision is made solely on the quality of the application.”

On the sensitive issue of the high cost of living in Ireland, Gannon points out that salaries in Ireland for academics are higher than in many other parts of the world.



Furthermore, researchers whose work yields profitable patents will receive an extra boost, courtesy of the Irish government. “If you have an invention in Ireland, you don’t pay income tax on royalties,” says Gannon.

The professor

“The advantage of Ireland is clear – it has the best funding environment in the world.” John Boland is in confident mood. His Centre for Research on Adaptive Nanostructures and Nanodevices (CRANN) at Trinity College, Dublin is celebrating a highly fruitful recruitment drive in which it signed up seven new group leaders. “We recruit internationally and we’ve been very successful,” says Boland. Recent signings have come from Canada, Germany, France and Switzerland.

Boland returned to Dublin five years ago



The breathtaking scenery of the west coast is one of the perks of living and working in Ireland

that offers industry a chance to taste the research on offer in the universities by going into partnership with academics.

CRANN, which has computer and electronics giants Intel and Hewlett-Packard as its partners, will eventually house more than 100 researchers in a purpose-designed building. At his campus in the US, Boland was never once approached by industry, but Intel turned up within a few weeks of his arrival at Trinity College. "One unique ingredient in Ireland is the desire of multinationals to shift from manufacturing to research and development," he says. Besides hosting researchers from Intel and HP, his centre has already helped to design a platform for Intel to test the proposed marriage of silicon-based electronics and nanoscience.

Boland says he is impressed by the vitality of Irish science and is optimistic the funding spree will continue. "Other than this knowledge-based economy, there is no plan B," he notes. Part of Plan A is to bring students in from abroad. Ireland needs more foreign students, he says.

There are clearly many advantages of coming to Ireland. So what about the drawbacks? "The biggest problem is housing," he says. Many would-be buyers are surprised by the equity they need to buy a house, though the market appears to be softening. The country also levies a hefty stamp duty on those buying property (although first-time buyers are exempt). Finding schools for the kids can also be an issue in some areas, he says.

So what would his advice be for anyone thinking of moving to Ireland? "Strike the best deal you can – and get a sense from the funding agency of the value of your science to Ireland and its fundability within the Irish context." Then take the plunge.

The industry scientist

Simon Hufton moved to Dublin last summer to lead a drug discovery team at pharmaceuticals giant Wyeth. "We're applying technologies to improve antibodies and protein-based drugs that could one day benefit patients with cancer, cardiovascular disease and neurological diseases," he says. His team of nine scientists are based at the Conway Institute at University College

after more than 20 years in the US. He left Ireland to study for a PhD in chemical physics at the California Institute of Technology in Pasadena, then worked for IBM for 10 years before moving to the University of North Carolina at Chapel Hill as professor of chemistry and applied and materials science. He was there for eight years. "I was quite happy and didn't think I would leave, until I was attracted by the opportunities back home," he says.

Some of his colleagues thought he was crazy. In the past Irish science barely made it onto the map, having been starved of funding for years. "There was no history, it was a big

unknown," he remembers.

Six years into a multi-million-euro national funding drive under the direction of the SFI, things now look very different. Boland recently received his second five years of funding. This is a tremendous boost, he says, because it offers security and means he won't have to spend all his time writing grants.

Funding wasn't the only thing that persuaded Boland to return with his wife and two teenage sons. He found SFI's work to raise the status of science in Ireland "compelling" and believed there was a chance he could have a hand in its development. Maybe it was big-fish-in-a-small-pond syndrome, he says, but he has certainly managed to improve research standards across the Republic and hopefully attract new talent to Ireland.

Boland's nanoscience centre is a CSET, or Centre for Science, Engineering and Technology, under an SFI-funded programme

"If you have a scientist at the top, we understand what is needed"

The insider Ireland

Dublin, where they can take advantage of the institute's facilities while building links between Wyeth and the university.

In 1991, after finishing his PhD at Nottingham University, on the subject of a membrane receptor of the bacterium *Escherichia coli*, Hufton picked up some postdoctoral experience in the UK before moving to the University Hospital Maastricht in the Netherlands, to work on antibody engineering. He got involved in a biotech spin-off and eventually moved to a larger company as director of research and technology. After 10 years in the Netherlands, he decided to return to the UK to join biotech company Syngenta in the south of England.

When the opportunity to work with Wyeth in Ireland came up, he seized it. "I'd visited Dublin before. I knew it was a nice city and a vibrant, exciting place to be," he says. His family in the north of England were pleased his move abroad was closer to home this time, while colleagues saw it as a great opportunity. "A relocation company helped me find a house to rent and schools for the children," he says. "The company also helped me sort out tax and social security."

The cultural differences between the Republic of Ireland and the UK are far less than those between the Netherlands and the UK, not least because of the language, he says. But one difference Hufton appreciates is being able to avoid Dublin traffic by cycling to work on cycle paths, something that most cyclists in the UK can only dream about. But he found the cost of living caught him by surprise. "The cost of houses is quite incredible," he says. Like a lot of people in Dublin, he is waiting for a fall in prices before buying a house.

On balance, though, he believes the benefits of Dublin life far outweigh the costs. "I like it here and my family likes it here. There's generally a high quality of life. Though the city can be crowded, it's very easy to get out into the countryside."

The student

Alice Moroni blended two of the great passions in her life – science and food – by studying food technology in Milan, in her native Italy. "Food is something Italian people are proud of," she says.

Nevertheless, the lure of pasta and passata was not enough, and earlier this year she moved to University College Cork to take up a

rather less palatable job that could nevertheless make life more bearable for street cleaners and anyone who has ever got home to find chewing gum welded to their shoes. Her PhD project is to develop biodegradable chewing gum using cereal proteins. "When they told me about the project I found it really practical," says Moroni.

Food science and technology are areas of strength for University College Cork. Moroni joins a research group led by German food technologist Elke Arendt and involving more than 20 people from eight European

"It's a young population and everybody is striving to succeed"

countries. "I've never been in such a group," she says. "It's wonderful. You can exchange ideas and experiences with people who come from different universities, so you can really learn and improve yourself."

Moroni finished her master's thesis in Germany, but she prefers Ireland. The pace of life is slower and there's a more comfortable atmosphere at work, she says. "And there's always something going on in Cork. There are lots of musical events, which I like. I prefer Cork to Milan, which is too crowded. Cork has everything you want, an opera house, cinema... but it's not too busy."

Moroni easily found accommodation within 20 minutes' walk of the university. The cost of living in Milan and Cork is similar, with the exception of accommodation. "In Milan I'd pay almost double for the room I have," she says.



Another advantage Cork has over Milan is the proximity of the great outdoors. Moroni has joined fishing trips and enjoyed touring west Cork, and Connemara in county Galway, but was particularly inspired by the Dingle Peninsula in nearby Kerry. "The first time I was there, I was shocked. I couldn't talk, it was so beautiful and amazing."

Although she sometimes misses the food and sun back home, Moroni says Irish people have a similarly outgoing disposition to Italians and are very easy to get along with. But she has discovered that Ireland has the edge in two important respects: there are more career choices and more money for research.

The entrepreneur

Australian Mark Heffernan and his wife Patricia decided to up sticks and head for Ireland in 2003. It was wing-and-a-prayer stuff since neither of them had employment waiting for them. "My wife landed a job pretty much straight away because she's a teacher. I took maybe six months to work out my business model," Heffernan says.

Colleagues back home were surprised at the career move, but he saw opportunities in Ireland that were lacking in Australia. "We decided to move to Europe to work for a few years, and chose Ireland because of the investments that organisations like Science Foundation Ireland had made in early-stage biological research at universities."

What Heffernan brought with him to Ireland was a PhD from Monash University in Melbourne, and experience in business development and licensing with two early-stage biotech companies. "I visited key universities around the country looking for promising new intellectual property to roll into a company," he says. Enterprise Ireland, the government agency given the task of building a sustainable biotech industry, offered support from day one.

Within the first year, Heffernan had founded Opsona with three top researchers from Trinity College Dublin. Trinity had plenty of interesting discoveries ripe for development, says Heffernan, and Opsona is now an 18-strong company at the forefront of research into receptors on immune cells that are believed to play a big role in autoimmune

conditions such as asthma and allergies. Modulating the receptors may provide a key to treating or even preventing these diseases. "For us, it's an incredibly exciting area and there are plenty of discoveries to be made," he says.

Heffernan believes there is a lot more untapped potential in Irish universities. Producing sustainable biotech start-ups is one of the stated goals of the Irish government. "The missing link is primarily entrepreneurs," he says. "The sector hasn't moved as quickly as I thought it would, but perhaps that's because there are not enough people identifying the opportunities."

What of the quality of life in Dublin? Heffernan and his wife have two young children, and he says the support network for kids is great, with excellent swimming pools, parks and sporting facilities. There are, of course, some disadvantages, including the high cost of living – especially house prices. And needless to say the weather isn't wonderful compared with Melbourne.

Heffernan's biggest gripe, though, is the traffic. He has to get up before 7 am to miss the traffic, while living only 10 miles away from work. The infrastructure is being improved, but it still has a lot of catching up to do. And people work long hours, which has a big impact on their quality of life. "It's a young population and everybody is striving to succeed," he says.

Despite these drawbacks, says Heffernan, the people are fantastic and very professional, there is excellent funding for start-ups and the quality of the science is second to none.

The senior scientist

"Remedi is completely novel and cutting edge," says Cindy Coleman, who this year moved across the Atlantic from Boston to Galway to join the Regenerative Medicine Institute (Remedi). The institute combines gene therapy and stem cell research. "Remedi is better placed than the research institutes in the US," she says, citing funding opportunities, the equipment available and the proximity of the university health clinic.

Coleman's research group is researching how to use stem cells from bone marrow to repair the damage to cardiac tissue caused by heart attacks. She sees enormous potential in her lab's proximity to not just the clinic but also local industry, believing that this makes for good cooperation. "It gives you hope that

you might actually be helping some people."

Coleman completed her doctorate at Thomas Jefferson University in Pennsylvania in 2002, and then worked at the US National Institutes of Health for two years, specialising in regenerative medicine. She worked in industry for two years before joining Remedi in January this year.

"Phenomenal" is how Coleman describes the support provided to Irish science, "even [for] little things, such as funding for undergraduate students to work during the summer and for community education and involvement in science." Coleman is also impressed by the potential for young researchers to set up their own laboratory groups using cash from Science Foundation Ireland. "For people like me who are moving country, there are a lot of great opportunities," she says. "I don't see as many openings in the US for new investigators as I do here."

A lot of big names in the US have returned to Ireland in recent years, she points out, which is forcing the scientific community there to take Ireland more seriously.

Remedi is funded as a Centre for Science, Engineering and Technology and has links to other universities, with medical technology company Medtronic as an industry partner. Networking is easy in Ireland. "Because Ireland is small it is easy to bounce over to other labs and collaborate," says Coleman. "Next week I'm going over to University College Dublin to do a couple of experiments."

Outside work, Coleman's biggest surprise was that the cost of living in Galway is essentially as high as it is back home in Boston. She and her partner are renting at present, but hope to buy within six months.

She says Galway is a fun place to live: "It has a different heartbeat from other cities. It's energetic, and generally quite young." There are other benefits, too. There is a focus on family and general happiness rather than work, says Coleman, which is less true in the US. "The quality of work is just as good and you have more vacation time. We've more family balance than before."

She says postdocs, especially in the US, can benefit enormously from international experience, and Ireland is as good a place as any to consider. "There are some really great programmes here, with postgraduate funding for two or three years. You can travel abroad but still return home."

Anthony King is a freelance writer based in Dublin

If you're a fan of Irish pubs, then the nightlife in big cities like Dublin can be a real bonus