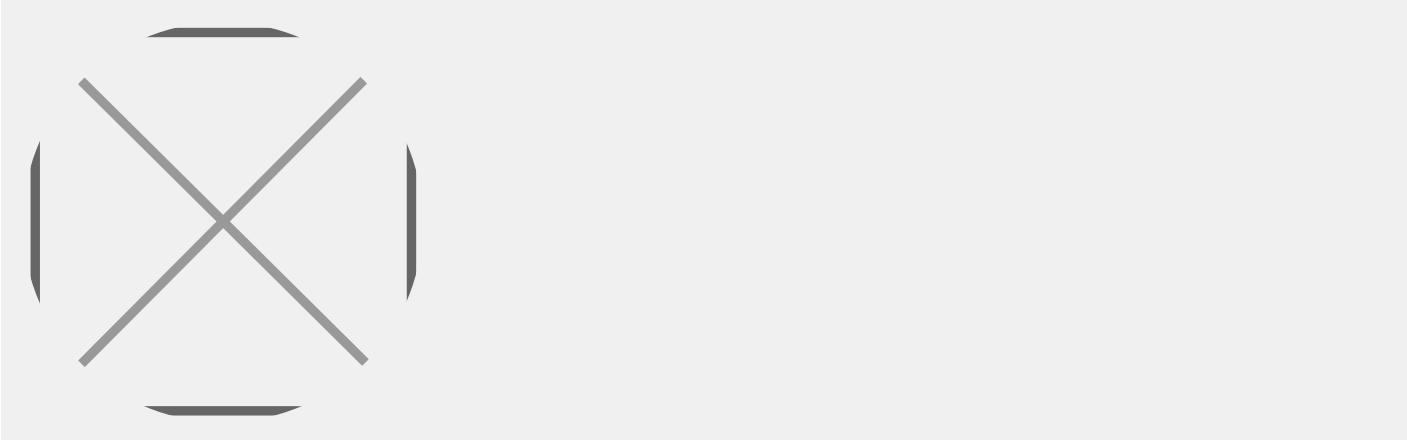
Interview with Mark Ferguson, Director General, Science Foundation Ireland



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Dr. Ferguson, when you were recently appointed to direct SFI, local newspapers ran headlines such as "New SFI head to drive economic impact from research investments." What do you understand as the mission of this organization, and what is your strategy for running it?

At SFI, we are focused on two principles: excellence and impact. Both are important—we will only fund excellent research, but we will also only fund C8research that is potentially impactful.

Ireland is a small country with approximately four million people. We cannot do everything well. Therefore, we have to focus on our unique selling points if we aim to lead. For instance, Ireland has a very high density of pharmaceutical and medical device companies, and we should support their work.

In Ireland, there is a good connection between academia and industry, but we need to increase and deepen the level of discourse and we need to look more closely at areas of interface where academics and business people can interact. In the Irish science base, there has always been a focus on industrial engagement at all levels: collaboration with multinational companies, indigenous companies, and start-ups. In this way, we are able to ensure that Irish taxpayers fund not only excellent research, but research that has economic relevance.

In an open letter to the Irish Times, a number of Ireland's prominent scientists criticized SFI for neglecting basic research in favor of short-term economic impact. What is your

response to such critiques?

We are not abandoning basic research, we will still fund excellent basic research particularly in priority areas. The issue is that our current portfolio is unbalanced. As Ireland's scientific investment agency, we are funding an abundance of fundamental research, and not enough translational research—which is problematic. It is a question of balance between long, short and medium-term.

Another issue is finding a balance the appropriate balance between various areas of science. There are certain things that Ireland is good at; equally, there are areas where we do not have critical mass or impact—such as nuclear physics. It is not about picking winners, but rather about picking our races: we want to fund excellent impactful research in the broad areas of pharmaceuticals, Life sciences medical devices, ICT and renewable energy.

We must be focused. This means, by definition, that there are some areas that will be of lower priority. This is not to say they are not important—I only mean to say that that will have less emphasis in Ireland. This does not mean, moreover, that we will be inactive in these areas. We will simply fund less. e.g. small support grants to facilitate collaboration with other stronger groups to encourage participation in EU corsortia. Given our limited resources, we must discern where Ireland has a real chance to succeed and focus our major research funding there.

I would also like to clarify that our emphasis on collaboration with industry does not equate to an emphasis on the short-term. Major industries, and large corporations, are often interested in projects that have a longer horizon. However, these projects often do not warrant 100% funding from the interested company—therefore, collaborating with agencies like SFI is beneficial to both parties.

For a small country with a limited budget, I think it is very important to use the state's capital catalytically. We must be able to incentivize the community to win European or commercial money or money from philanthropic organizations. For this, partnership is key.

We have put some new initiatives on the table in Ireland that you will not find in other countries. Currently, if a company wants to collaborate in an academic project that is partly funded or almost completely funded by SFI, the way it works is that we put out a call for proposals, the academic community finds an industrial partner, and they apply. This is the mechanism you find everywhere else in the world. What we have additionally said to industry is, if a company or a group of companies wants to engage in a project, they can approach us strategically and present the case. If we agree on a common agenda and approach then we can strategically co fund and manage the project.

Clearly, certain immediate industry problems are best addressed by a consultancy—there will be little interface between SFI and industry in such cases. We are more interested in problems that require a new scientific or technical approach or are strategic in nature. With that said, we are trying to be as ‘user-friendly’ as possible.

Another approach is our Centres Programme which has been very well received. This which is co-funded with Industry in areas of strategic national importance. Thus far, we have had a hundred expressions of interest, and thirty-five pre-proposals. Eleven pre-proposals are now going to become full proposals. At SFI, we currently have enough money to fund about five, some of which are in the pharmaceutical sphere.

All projects that move forward receive international peer review for scientific excellence from researchers at the finest institutions in the world, such as Harvard, Cambridge, and MIT. They also independently are peer reviewed internationally for potential impact using company R&D directors, VC’s, Tech Transfer Officers fro, the world’s leading universities. Over €55 million of industry cash, and over €160 million Euros of industry in-kind contribution, have been pledged. This clearly demonstrates that the proposed Centres are relevant.

In research not everything will work. We do not know the outcome beforehand—this is the very nature of research. However, I think what we are doing is making research relevant, and helping companies secure a greater-than-average chance that their initiatives will be impactful and quickly adopted.

How would you appraise Irish researchers’ fundamental willingness to engage with industry?

For instance, in a recent report on the Czech Republic, Focus Reports found that there is reluctance on the part of the scientific community to ‘cheapen’ their work by making it industry-driven—leading to a huge gap in commercialization!

This is where Ireland has a real strategic advantage. SFI is only twelve years old, but from the beginning, it was always linked to enterprise. SFI is funded by the Department of Jobs, Enterprise and Innovation, and it always has been. We are a sister agency of the IDA and Enterprise Ireland. This should give you an idea of our intent.

IDA is broadly charged with attracting multinational companies to Ireland, whilst Enterprise Ireland is broadly responsible for looking after indigenous companies. SFI is agnostic: we are interested in both multinationals and locals, and we get involved a bit further up the chain. We have always set out to build bridges.

Simply put, the journey of SFI over the last twelve years has been one of taking science in Ireland from nowhere to somewhere, and from bad to good. Now, we must progress from good to

excellent. This journey will be difficult for us, as it is not linear. For this reason, we need to be clear that as a small country we must focus to maximize resources—including capitalizing upon the presence of the very excellent companies that have invested in Ireland, many of which have cutting-edge research centers and production facilities. We need to build a research base that is synergistic with these companies. If we put the pieces together, we can lead the world in particular areas.

To answer your question, I think that in Ireland, academia and industry are far closer than in certain countries where the two cultures have developed in isolation. It is unusual for the national science investment agency to be under the economic ministry—it is more often the case that the agency is looked after by the ministry of education. I believe that it is a big advantage to be where we are.

What makes Ireland competitive?

There are many factors. Looking at the competition to attract multinationals, we can consider a very broad range of factors such as corporation tax, availability of land, ease of doing business, language, availability of skilled educated workers and interactions with the research base.

In terms of local spin-off companies, it is about making sure there is a flow of ideas and venture capital. Ireland has taken some of its state pension fund money and invested in world-leading international venture capital organizations, mandating that these investment firms will maintain some presence in Ireland. Incidentally, the government has not mandated that these enterprises have to spend their money in Ireland—a very sensible decision that I support. Venture capital firms should invest in the best projects. If the best projects are not in Ireland, then we are not doing our job properly.

Another question is whether we can develop the talent: whether we can offer appropriately trained people with the right graduate education. Are there research groups in Ireland for interested companies to interact with? Are their plans executable here? These are important elements and our quality of relevant trained graduates and research excellence in this sense is something that we want to promote internationally.

Does our approach work for Ireland? If you look at the job announcements this year from our sister agency IDA, you will find that two thirds of all newly created jobs have a previous link with SFI. This demonstrates our scientific pedigree. If a company is assessing the market, a mixture of human and scientific factors will weigh into the decision. These might not be the deciding factors—corporation tax, for instance, might be more important—but they must be part of the package.

One of the advantages of a small country with joined up thinking is that it is quite easy for us to have an integrated strategy. The limitations of small size are in many ways outweighed by our

communal nature.

Ireland can also be competitive because it has a good track record. There has been major multinational investment in Ireland for decades—notably in the pharma sector—and the vast majority of companies have had a good experience.

What about brain drain? In our conversation with Professor Radomsky, head of the pharmacy school at Trinity College, he mentioned that Ireland educates its people very well—investing a great deal to do so—but talented individuals are leaving the country at a level he has not seen elsewhere.

I try to look at this objectively. Ireland's greatest export has always been people. There are four million people in Ireland and there are seventy million people who claim to be Irish all around the world. This tells you that we have a huge resource in our diaspora.
SFI also has a scientific diaspora network: The Wild Geese Network. We engage with them both at a university level and a corporate level worldwide. We need to engage with that community in order to drive projects in Ireland.

Looking at the figures, there are no more people leaving Ireland than there have been in the past. There has always been quite a large number of people leaving. However, I think it is a good thing for people to get experience elsewhere—we do have programs to bring them back. But we do not want people to emigrate because they do not see any future or prospects here. Instead, we want; what I call positive emigration, i.e. people leaving to get experience elsewhere with a view to returning.

There are austerity measures in Ireland, and I think the state has done very well to respond to the economic crisis in a mature way—but the road has not been without its fair share of pain. There have been cuts in salaries and services. The country has a limited amount of money that it needs to spend very sensibly.

Obviously there are some people who will be touched by the environment and will want to go. I do not think this is a major trend, but we need to recognize it. However, just as we were the first country into austerity, I personally believe that we might be one of the first countries out of austerity. That is a major strategic advantage.

I understand that people today feel nostalgic about the past, when money was plentiful and we did not have to prioritize so severely. But we are not going to waste a good crisis! The crisis forces us to focus and be more competitive

You mention austerity—a number of people from different agencies, including IBIA and Pharmachemical Ireland, have told us that despite the fiscal crisis, SFI in particular has enjoyed relative stability in its budget. This is interesting because typically, when a government faces a

recession, science programs are the first to be cut. The state here seems to truly believe that science and knowledge creation is crucial to the economy.

That is absolutely correct. If you look at the cuts in the public sector, the science budget has been relatively lightly touched. We have faced some austerity, but it has been nowhere near the magnitude we saw in other programs.

There are a couple of important points here. First, this sends a signal at a very high level that science, the knowledge economy, and the smart training of people is very important for economic recovery. The second takeaway is that we have to be relevant—because in a time of austerity, science is getting money that is not going toward building roads or adding hospital workers. Again, we absolutely must be impactful!

In broad strokes, can you explain what you aim to achieve with "Agenda 2020" in the coming years?

Firstly, I will stress again that our mission, is about excellence and impact. Secondly, we want to foster partnerships both nationally and internationally.

Thirdly, we must have excellent public outreach. We have a responsibility to educate the public on what the scientific community is doing. Here, again, Ireland has an advantage as a small country. Public outreach is important because increasingly, scientific discoveries will impact citizens' lives and legal frameworks. If you are going to have a sensible, enlightened political and legislative system, then you need an informed public. Polarized views either way—pro or anti—are not a good thing. Understanding and trust in science is very important.
Our fourth objective is to function as an efficient public service organization that is lean and appropriately staffed. The technical and scientific staff within SFI are on five year contracts to keep the science current. We hope that most of them will be hired by either industry or academia. We get better tech transfer because our people understand what is going on in Irish Research and we get people to come in because they know SFI is a great place to work.

This is all very important in times of austerity. You will see that with Agenda 2020 we have committed to spend no more than 5% of our budget on all administrative cost—95% of money will go towards research. This is a good example of how an effective and efficient public service agency should work.

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