SPOTLIGHT ON THE UNITED KINGDOM

Collaborative research: New opportunities for scientists in the UK

Significant investment in UK science has meant the development of new research collaborations between academic institutions, industry and other groups.

“To achieve the necessary level of interdisciplinarity, you’re going to need to collaborate. It’s as simple as that.”

Jim Smith, National Institute of Medical Research

Paying tribute to his colleagues as he collected his second Nobel Prize for Physics, the late US physicist, John Bardeen, remarked: “Science is a collaborative effort. The combined results of several people working together is often much more effective than could be that of an individual scientist working alone.”

Bardeen’s words on December 10, 1972, resonate even more four decades later. Across disciplines, borders and research sectors, new collaborative institutes and partnerships are springing up in the UK to concentrate expertise. Research funding agencies are looking more favourably at collaborative projects with partners from different fields and organizations. But what are the forces driving these changes? Is collaboration always a good thing, and how does the new environment affect the job opportunities of early-career scientists?

Jim Smith, director of the National Institute of Medical Research, is unequivocal: “in the past individual groups could make significant contributions on their own, but nowadays, to really achieve things, you need to involve more expertise than any single group can have,” the developmental biologist says. “To achieve the necessary level of interdisciplinarity, you’re going to need to collaborate. It’s as simple as that.”

Working together

Biomedicine’s increasing dependence on other disciplines is why the Francis Crick Institute, at which Smith is a research director, sees fostering collaborations as a core priority. The institute is a £650 million alliance between University College London (UCL), Imperial College London, King’s College London, the Medical Research Council, Cancer Research UK and the Wellcome Trust. Newly-appointed Crick scientists from these partner organizations will begin working at the institute’s headquarters in London during the first half of 2016. Researchers at the institute will seek to better understand, prevent, diagnose and treat major illnesses such as cancer, heart disease, stroke and neurodegenerative diseases.

Other new institutes are also in the pipeline. The £235 million Sir Henry Royce Institute for Material Research and Innovation, known to some as the “Crick of the North”, will be based at the University of Manchester with researchers collaborating from the universities of Sheffield, Leeds, Liverpool, Cambridge, Oxford and Imperial College London. Another recently announced initiative is the Alan Turing Institute where mathematicians and computer scientists from the universities of Cambridge, Edinburgh, Oxford, Warwick and UCL will collaborate on the collection, analysis and interpretation of “big data” projects. North of the border, the universities of Edinburgh and Glasgow will partner with US genetics technology leader, Illumina, to establish the Scottish Genomes Partnership. This will provide scientists and clinicians with state-of-the-art sequencing equipment for use in research as well as for rapid screening and diagnosis services.

Finding funding

Funding agencies are also driving researchers to collaborate while increasingly asking for evidence of societal impacts. “They provide funding that requires these multi-centre relationships and want to see the science they are paying for having...
an impact,” says Kenneth Seamon, director of scientific development at the Cambridge Cancer Centre, a collaboration between the University of Cambridge, independent institutes, the Cambridge University Hospitals NHS Foundation Trust and industrial partners that facilitate links between research scientists and clinical services.

While most scientists see these moves as positive, some also warn that associations driven by managers and funders may not always be the most productive. “It’s great that larger groups are pooling their resources to tackle bigger problems,” says David Hume, director of the Roslin Institute, the animal health and welfare research centre, part of the University of Edinburgh. “However, enforced collaborations can create artificial partnerships involving a lot of management but not much real gain. A more bottom-up approach with more input from scientists can be more productive.”

Biochemist Jeremy Nicholson, of Imperial College London (see box), also fears independence and diversity could be sacrificed if funding is concentrated in fewer hands. “Putting these resources together does make Britain more competitive,” says Nicholson, “but lots of fantastic, original ideas have come from people in small departments of small universities working on apparently crazy notions.” To illustrate, he cites the work of George Gray and colleagues at the University of Hull who in 1973 published details of a new liquid crystal technology that is now used in billions of mobile phone screens, computers and televisions worldwide.

Assessing science

The UK government distributes £2 billion a year in block grants to higher education and research institutions. Grants received for 2015-16 will be determined by a new method of assessing the quality of research, which was introduced by the Higher Education Funding Council for England (HEFCE). The Research Excellence Framework (REF) exercise, whose results were published in December 2014, weighs a measure of the societal impacts of the research conducted. It’s a system that does not apply to separate collaborative research institutions, which have their own funding arrangements, however some have begun to wonder whether it is inevitable that they will be subjected to a formalized assessment of societal impact.

For David Sweeney, director of HEFCE, achieving significant societal impacts is central to the rationale for the very existence of the new research institutes, but it does not follow that a REF-like system should be applied to their public purse funding. “You couldn’t conceive of something like the Crick or the Turing without, in the next breath, talking about their wider impacts,” he says. “But that’s not to say you should assess impact in the same way as universities.”

Seamon agrees that while the “impact agenda” will continue to be important in the calculations of funders, differences in the structures and objectives of the organizations involved would thwart any attempt to impose a common impact assessment system. “Funding organizations are putting more and more effort into evaluating the impact of work they fund, but I doubt that it will be formalized at a higher level because each funding organization has its own requirements and aims.”

New opportunities

This changing landscape has important implications for early-career researchers. For one thing, this new environment favours those who are good at interacting with others and promoting their ideas. “The greater emphasis on collaboration means scientists with good networking and communications skills are more likely to prosper,” says Hume.

As well as breaking down barriers between academia and industry, researchers are finding new opportunities in other sectors, as illustrated by the Cambridge Conservation Initiative, a collaboration between the University of Cambridge and various conservation organisations. It funds research proposals that include combined inputs from academia and conservation groups. “It enables a number of postdocs to be employed for short periods with groups that want to make a difference,” says zoologist Bill Sutherland, of the University of Cambridge, who adds that several have gone on to work with government bodies and NGOs.

There are also new opportunities for those who wish to pursue fundamental research. The Crick, for example, will appoint its group leaders earlier in their careers than normal, giving them longer to achieve their aims with 12-year appointments, reviewed mid-stage. “It now takes longer to achieve something really important than it used too, so we want to give people a good long time,” says Smith. “I began my own independent career at 28-29, but nowadays it’s closer to 38-39. That’s 10 years people are losing and I think people are often at their most interesting and productive earlier in their careers.”

This content was commissioned and edited by the Naturejobs editor.
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