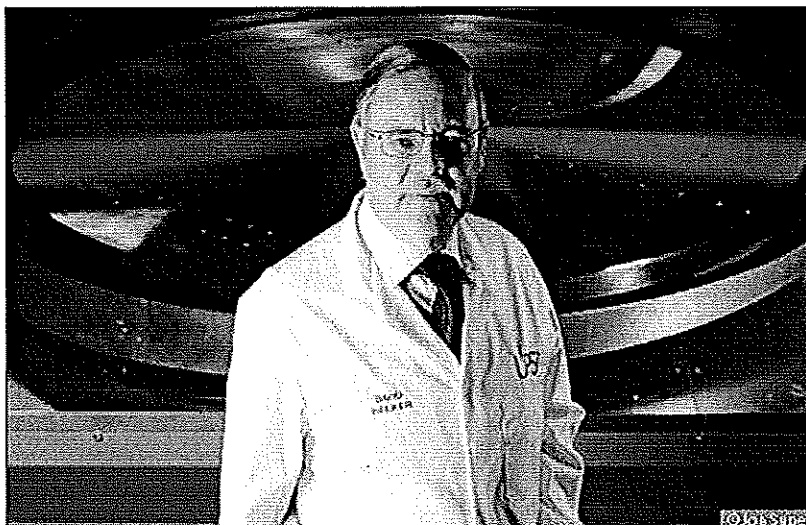


Scientist to entrepreneur

By Clive Cookson

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Reflection of things to come: David Walker with the optical glass polishing machine

The dragons were sitting in an elegant den at the Royal Society in London, Britain's national academy of sciences. Overlooked by portraits of great 18th-century scientists, the judges heard four powerful pitches for science-based businesses.

These included an image analysis system to assess the facial mobility of people who are suffering from paralysing diseases or have had surgery on the face; a "text mining" tool to extract chemical information from the world's scientific literature; an educational venture, called Big Bang in a Box, to sell images of high-energy particle collisions at Cern's new atom smasher; and a lightweight material stronger than steel, for use in body armour and the aerospace industry.

The Dragons' Den competition – modelled on the popular venture capitalist television format – was the climax of a Business of Science programme put on by Imperial College Business School for the Royal Society's University Research Fellows. These are some of Europe's brightest scientists, typically in their 30s, who are funded for five years to work in a UK university.

"This programme is an important initiative that helps the research fellows understand the rapidly evolving relationship between science and industry and what it means to be a scientific entrepreneur," says Sir Peter Williams, the society's vice-president.

"It has been designed to show our scientists just how their work fits into the global economy and allows them to begin to think about how best to exploit opportunities."

The programme has run since 2006, in three three-day modules spread over the year. The first unit, science and the economy, analyses the changing economic and political context of research. The second, leadership effectiveness, shows how to manage research teams. The third module, scientific entrepreneurship, looks more specifically at the commercialisation of research, including issues such as funding and protecting intellectual property and culminates in the Dragons' Den competition.

"Researchers completing the programme come out with an excellent understanding of what it is to run global science-based firms," says Sir Peter. "They are given the skills to be industry leaders and top-class players in the UK's evolving knowledge economy."

But it "is not just about turning scientists into entrepreneurs", says David Gann,

Investing in science

Unusually for a scientific academy, the Royal Society has begun to invest directly in science-based businesses.

Its Enterprise Fund made its first investment last August in Novacem, a spin-out from Imperial College London, which is developing a "green cement" that absorbs carbon dioxide from the atmosphere.

The Enterprise Fund was one of the initiatives to mark this

professor of innovation management at Imperial. "Many of the Royal Society fellows will not be interested in setting up businesses themselves but they need to know what questions to ask when others want to commercialise their research – or what to do when they make a patentable discovery."

Sofia Pascu, a Romanian-educated chemist running a drug delivery research group at Bath University, says: "We were very naive at the beginning of the course and we have learnt a lot."

Prof Gann, however, does not think "naive" is the right description for scientists entering the course. "It is more that the educational system has not given them time to think about things outside their own field of science," he says. "These people have been very focused on their own subject."

Some participants have entrepreneurship on their minds from the start. One is David Walker, who attended the Imperial/Royal Society programme in its first year. He is now research director for science-based businesses that develop ultra-precise polishing machines and processes for optical surfaces: Zeeko and Zeeko Research, its operation at the OpTIC-Glyndwr innovation centre in north Wales, where Prof Walker is based.

OpTIC will shortly polish prototype mirror segments for the European Southern Observatory's proposed 42-metre Extremely Large Telescope using a Zeeko machine. The resulting industry consortium is bidding for what would be a £200m contract to supply mirrors for the telescope itself.

"The [Royal Society] programme came at a pivotal point in my career and changed my perspective from the inward view of academia to the macro view that industry takes," says Prof Walker, who continues to head academic research at University College London and Glyndwr University, while directing Zeeko's work at OpTIC. "It helped me to see the value of thinking globally and then developing a strategy to get there."

In more specific terms, "intellectual property has been the biggest issue for me so far", he says.

"The practical information on the publish versus patent problem is something I've used since the programme – and negotiations with my parent organisations, which view the role and ownership of IP in different ways, have been brought into sharp focus by the programme."

The Royal Society approached Imperial five years ago about running the programme as part of a campaign to get research fellows to "engage more with the way the world works", says Prof Gann.

Imperial College was already providing short business courses for its own scientists and engineers, which were adapted to suit the Royal Society fellows.

"We meet our own scientists more frequently for shorter periods of time," says Nelson Phillips, programme director.

Twenty to 30 Royal Society research fellows take the programme in a typical year. "It is not compulsory but it is made clear to them that it is highly desirable to attend the course," says Prof Gann.

The programme includes personal coaching, lectures and informal sessions with successful entrepreneurs, and discussions with intellectual property specialists and university technology transfer officers.

"We see a lot of movement in their ideas during the three days of the entrepreneurship module," says Prof Gann. Participants then split into four groups to come up with a business proposition, based on their scientific expertise and what they learnt on the course.

All four pitches impressed the dragons. But the winner was ... Starshield, the ultralight composite material. Its concept, financial planning and marketing proposal were as strong as the material itself.

As the programme closed, it was not hard to imagine a fresh entrepreneurial gleam in the scientists' eyes.

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year's 350th anniversary of the Royal Society's foundation. The aim is to invest in early stage companies "founded on outstanding science".

The fund is using a "venture philanthropy" model to support science-based businesses. It has raised £6.5m of its £20m total from donors such as Lord David Sainsbury, former science minister and supermarket chief executive.

The philanthropic structure will make it possible to put all gains back into the fund for reinvestment in scientific innovation, making it a "sustainable living endowment".

Sir Martin Wood, founder of Oxford Instruments and a fellow of the Royal Society, is both a donor to the Enterprise Fund and a direct investor in another science-based business.

"Entrepreneurs creating and growing new companies desperately need access to reasonably priced risk capital and consistent long-term support from investors," he says. "The Enterprise Fund is a powerful and visionary initiative to address the current lack of such support."



Entrepreneurs