

## BUSINESS

# Scientists, meet capitalists

*US agencies and scientific societies aim to create jobs by teaching researchers how to be entrepreneurs.*

BY EUGENIE SAMUEL REICH

It will be a presentation unlike any Satish Kandlikar has given before. At a meeting on 14 December, the mechanical engineer, who works at the Rochester Institute of Technology in New York state, will speak to venture capitalists at Stanford University in California about a technology to cool and extend the life of light-emitting diodes. He's not raising money, but — along with 20 other researchers — he'll be playing the role of entrepreneur in front of a roomful of instructors from the business world.

The moment is also a first for the Innovation Corps (I-Corps), launched in July by the US National Science Foundation (NSF). The programme has given Kandlikar and 20 other principal investigators US\$50,000 each to develop a business plan centred on their NSF-funded research. At the Stanford meeting, grant recipients will seek feedback on their ideas. Turning research into products is not a task his team has much experience with, says Kandlikar: "As researchers, we have no idea how to commercialize a product. The programme is the driving force."

US science agencies have long encouraged their grantees to build bridges with industry. Through the Small Business Innovation Research programme, founded in 1982, the NSF, the US Department of Energy and other agencies allocate 2.5% of their grant money each year to business ventures. Many US universities also help faculty members to patent and commercialize their research.

Now, with unemployment high and cuts to federal budgets looming, science agencies want to cast themselves as part of the economic solution, rather than expensive add-ons. Across government, agencies are finding ways to link their activities to job creation. The NSF's move to encourage academics to reinvent themselves as entrepreneurs, and perhaps found firms, takes the drive to commercialize to a new level. The I-Corps is already gearing up to receive its next round of applications in January.

The approach is spreading. Concerned

that US research jobs in chemistry are in decline, the American Chemical Society (ACS), based in Washington DC, has begun an entrepreneurship training programme, with a first round of applications due on 15 January. The idea is to try to get chemists to create their own opportunities.

"When my students say 'I want to get out and do something to help the world'; I say basically you have to start your own company now," says George Whitesides, a prominent Harvard University chemist who chaired a recent ACS panel to study innovation, chemistry and jobs. Whitesides was speaking on 2 November at a meeting of the President's Council of Advisors on Science and Technology in Washington DC.

But many academics are reluctant to take a chance with a start-up, says Henry Sauermaann, an economist at the Georgia Institute of Technology in Atlanta who has studied scientists' career choices. "Their main concern is lack of job security and stability," he says.

Sociologist Waverly Ding at the University of Maryland, College Park, who has studied academic entrepreneurship, adds that programmes such as the I-Corps may work well for established investigators. But younger scientists have a harder time raising capital, and taking time away from research is less likely to benefit them, she says.

Sauermaann believes that entrepreneurship programmes should focus on educating academics about what such choices involve. Errol Arkilic, one of three NSF programme officers organizing the I-Corps, says this is the intention. That's why the venture capitalists on hand to assess business plans at the Stanford meeting later this month will be acting as instructors, not as potential investors.

"The programme was established to help researchers understand the commercial viability of their research," not to help them found companies and create jobs, says Arkilic — although he adds that the NSF would not be unhappy to see that as an outcome.

Kandlikar wants his work to yield economic benefits, but the effort is already taking its toll, with his group spending about 100 hours a week on its business plan. Like science, the market demands devotion. ■

British government around the Chagos Islands in the Indian Ocean, spans 544,000 km<sup>2</sup> and is a no-take zone throughout. An alliance of campaigning conservation groups, including the WWF and the Pew Environment Group, argues that more of the Coral Sea should receive this level of protection.

"I would like to have seen more protection for coral reefs," says Terry Hughes, director of the ARC Centre of Excellence for Coral Reef Studies at James Cook University in Townsville, Queensland. "More than 20 of them would be outside the no-take area and vulnerable to catch-and-release fishing".

As *Nature* went to press, the Australian government had not responded to specific criticisms of the plan. But Robin Beaman, a marine geologist at James Cook University, says that the reserve does "broadly protect the range of habitats" in the sea. Beaman's research helped to inform the government's proposal. "I can vouch for the huge effort that government agencies and other organizations have put into trying to understanding the ecological values of this vast area," he says.

Reserves proposed earlier this year for Australia's southwestern and northwestern coastal regions have also been criticized for failing to give habitats adequate protection. In August, 173 marine scientists signed an open letter to the government saying they were "greatly concerned" that the proposals for the southwestern region had not been based on the "core science principles" of reserves — the protected regions were not, for instance, representative of all the habitats in the region, they said.

Critics say that the southwestern reserve offers the greatest protection to the offshore areas where commercial opportunities are fewest and where there is little threat to the environment, a contention also levelled at the Coral Sea plan.

Public consultation on the proposal will conclude in February. ■



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