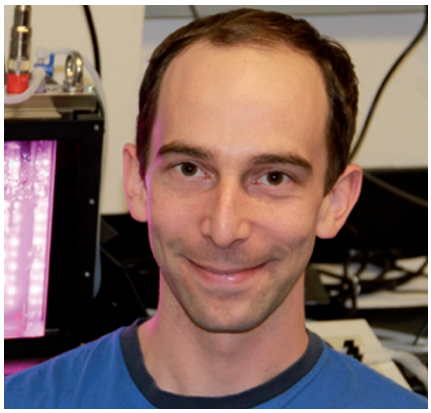
TURNING POINT
Martin Jonikas

Martin Jonikas, a plant biologist at the Carnegie Institution for Science in Stanford, California, won one of four grants for research to increase the efficiency of photosynthesis, awarded jointly on 28 March by the US National Science Foundation (NSF) and the UK Biotechnology and Biological Science Research Council (BBSRC).



How did you become interested in biology?
During my undergraduate degree in aerospace engineering at the Massachusetts Institute of Technology in Cambridge, I took a required course in molecular biology. Biological machines can make complex proteins that humans can't, and I thought that biology was going to become a major frontier for engineering. I wanted to be part of it.

Did you go straight into plant biology?
No, I did a PhD at the University of California, San Francisco, on basic molecular biology. We used genome-wide screening to identify a new pathway required for protein folding in yeast. While planning research proposals to apply for positions as a fellow, I realized that no one was applying high-throughput genetic tools to photosynthesis, one of my areas of interest, and that I could fill that niche. The time spent refining proposals helped me to secure a position as a 'staff associate' at the Carnegie Institution for Science.

How is that different from a normal postdoc?
I have a five-year non-tenure-track position. I'll be working to characterize the genes at work in photosynthesis and to make it more efficient. One of the benefits is that I can run a lab and assemble a team, so we can work on problems in depth and do exciting research.

How did you get your grant?
It was an unusual process. Last September, the NSF and the BBSRC assembled about 30 researchers to brainstorm on how to improve photosynthesis. I thought that this was a wonderful opportunity, and a grant would just be the cherry on top. One of the constraints on photosynthesis is that the primary enzyme that converts carbon dioxide into sugars, Rubisco, works best under higher carbon dioxide levels than exist in the atmosphere today. But some plants can concentrate carbon dioxide around Rubisco. Three colleagues and I suggested characterizing the components of this concentration mechanism, and trying to put them into some crop plants. We're not claiming that we will change agriculture, but we think we are onto a real opportunity to improve photosynthesis.

What has been the biggest challenge during your first year in this position?
The hardest thing about starting a lab is recruiting. I'm competing with high-profile researchers who have established track records and funding. Yet it's crucial to get good people. No matter how good a scientist you are, you only have so much time. I've hired five people so far.

How did you overcome that challenge?
The key is to be active. I e-mail friends and colleagues and let them know I'm looking for excellent people. I can offer exciting projects not being done in other labs. I've also made it clear that I will help new hires to get what they need to make their dreams come true. Many will want faculty positions after leaving my lab. To get them, they might need something I can't provide, such as a letter from someone established in the field, but I will help them to get those letters.

So you could be competing against your postdocs for jobs?
We've created a niche for ourselves in the field of functional genomics of plants, so hopefully there will be plenty of room for us all to have exciting careers. I am laying plans to avoid competition and create win–win situations for everybody.

Past attempts to improve photosynthesis have failed. Are you concerned?
Yes. It is risky and we may not achieve it. But given our approach, we're bound to discover important and fascinating biology. ■

INTERVIEW BY VIRGINIA GEWIN

AGRICULTURAL SCIENCE

African spending up

Research opportunities have emerged in some sub-Saharan nations as a result of their increased agricultural-research spending between 2000 and 2008. *African Agricultural R&D in the New Millenium: Progress for Some, Challenges for Many*, released on 7 April by the International Food Policy Research Institute in Washington DC, surveys 32 countries. The region's total agricultural-research budget was US$1.7 billion in 2008, up from $1.4 billion in 2001; Nigeria alone contributed some 23% of the latest figure. Nigeria and other countries have increased salary levels and improved infrastructure, which has resulted in more researchers being hired, says report co-author Nienke Beintema. Ghana, Tanzania and Uganda showed similar trends. But spending fell in nations such as Ethiopia and South Africa.

CLEAN ENERGY

Boost for solar research

A US federal grant to fund photovoltaic research is expected to create hundreds of academic and industrial jobs. On 5 April, the US Department of Energy awarded US$57 million to the College of Nanoscale Science and Engineering (CNSE), part of the State University of New York at Albany, to support the Photovoltaic Manufacturing Initiative, a partnership between academia and industry that aims to help the nation regain competitiveness in solar technologies. Administrators say the grant will lead to jobs for physicists, materials scientists and chemists, as well as graduate-fellowship opportunities. Pradeep Haldar, a nanoengineer at the CNSE, expects that within five years, large manufacturers will create jobs to take advantage of the college's expertise and technology.

BIOMEDICINE

NIH spared budget slash

The US National Institutes of Health (NIH) has dodged major disruption. As part of President Barack Obama's budget deal for fiscal year 2011, the agency's funds have been cut by US$260 million, less than 1% of its $31-billion spending plan, rather than by the $1.6 billion sought by Republicans. "This is a bruising rather than a big gash," says Bill Talman, president of the Federation of American Societies for Experimental Biology (FASEB) in Bethesda, Maryland. The 2012 budget will be the next fight: FASEB is advocating that the NIH increase spending to $35 billion.