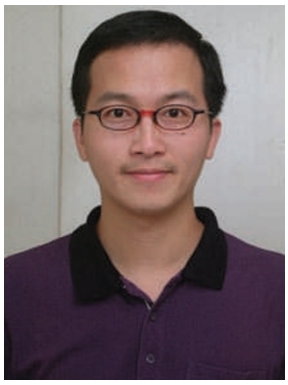
Q&A

Cheng-An Lin, a biomedical engineer at Chung Yuan Christian University (CYCU) in Taiwan, received the 2010 Young Investigator Award from the International Society for Optical Engineering (SPIE) on 25 January.

Has the SPIE award affected your career outlook?
This is the first time I've received an international award, and it is very important to me. In January I was appointed as assistant professor in the department of biomedical engineering at CYCU, and I want to do all I can to highlight our university, which is doing quality research comparable to that done by public universities with more funding. I want to help grow its reputation. I figure I have about 50 years to help make this the greatest biomedical department in the world, one that is attractive to more international students.

What research won you the award?
I wrote a paper describing a novel method of synthesizing fluorescent gold nanoclusters — nanoparticles that are smaller and more suitable than quantum dots for molecular imaging inside the human body — while I was a postdoc at the Center for Nano Bioengineering at CYCU. Traditional quantum dots are made with toxic ions, such as cadmium. We wanted to find a way to make quantum dots using gold nanoclusters as a fluorescent tracer for molecular imaging because gold is a bioinert and biocompatible material, and it would allow us to track cells — for example, an antibody that is a marker for cancer — over a long period of time. I got the award because I am standing on the shoulders of giants: my previous mentors.

What spurred your interest in photonics?
My family expected me to be a medical doctor. However, physics and chemistry captured my interest while I was in high



school, so I pursued bachelor and doctoral degrees in biomedical engineering at CYCU. Initially, I studied the biological effects of ultrasound stimulation. But in 2002, the National Science Council began promoting a national nanotechnology programme, and Walter Chang, my PhD mentor, decided to focus our efforts on nanobiotechnology. Nanobiophotonics — generating photons to image or manipulate biological materials at the nanoscale — was quite new in Taiwan at that time, and our initial efforts to synthesize fluorescent nanocrystals failed. However, collaborators in Germany helped us gain the necessary skills.

How did you come to work with these collaborators?
It was really difficult to start from zero when working to synthesize quantum dots. In 2005, Professor Chang arranged for me to visit Wolfgang Parak's group, then at the Ludwig Maximilian University of Munich, for two months to learn these skills. After that experience, I was able to travel to the university again for a year's visit through a joint fellowship, organized by the National Science Council and the German Academic Exchange Service. I not only learned the technical aspects of working with quantum dots, but also how to organize and write a research paper.

Do you have other plans for helping your university?
I hope to develop some promising nano-related products and patent them, especially for clinical use. Once they are on the market, the benefit of the technology transfer will come back to our university for research and education efforts.

What has been your biggest challenge?
It is an ongoing challenge to find ways to talk across fields and engage collaborators who are eager to use our expertise to create new technology or devices. Often the biggest problem facing interdisciplinary teams is that team members don't understand each other. Yet, we want to do state-of-the-art research that will have a big impact on the tools used in biomedical research. To that end, we talk to medical doctors to find out how best to focus our limited resources to meet their research needs.

What is the best piece of advice a mentor gave you?
This is the English translation of a famous saying in Chinese: 'Work with science, keep doubting; work with others, keep undoubting'. Basically, it means that you should always question your data while openly sharing knowledge and credit with your collaborators.

What are the most important steps to scientific success?
Be a good mentor; select an important topic; keep a creative mind; practise your lab skills; work hard; and always be loyal to your adviser. ■

Interview by Virginia Gewin

IN BRIEF

Postdoc pay uncertain

A proposed 6% pay rise for federally funded US postdocs is "far from a done deal", said Francis Collins, the director of the National Institutes of Health (NIH), at the US National Postdoctoral Association's annual meeting in Philadelphia, Pennsylvania, on 12–14 March. Collins said that some congressional appropriators have expressed reservations about President Barack Obama's proposed change because of the US$1.4-trillion 2011 federal budget deficit. If implemented, the pay increase would be the first significant rise in several years. Collins encouraged meeting attendees to continue to campaign for higher pay.

UK science enrolment up

The number of physics, chemistry and maths undergraduates in English universities and colleges rose by almost 7% between 2005 and 2008 to 47,269, according to a report published on 11 March by the Higher Education Funding Council of England. The increase comes in the wake of a 2005 government initiative to boost enrolment in science, technology, engineering and maths, according to the *Strategically Important and Vulnerable Subjects* (go.nature.com/2G8iZF) report. The initiative included more funding to train science instructors, doubling the number of science and engineering school clubs and establishing a National Science Competition to showcase student achievements.

Tax threat for postdocs

Postdocs in Canada hope to overturn a proposal in the 2010 Canadian budget that would tax their salaries. Marianne Stanford, chair of the Canadian Association of Postdoctoral Scholars (CAPS), says that the taxation would create an unfair disparity between postdocs and graduate students, because graduate students' compensation is not taxed. "Theoretically, the students — who have not yet earned their PhDs — could be bringing home a higher pay cheque," she says. If passed, the budget would also include Can$45 million (US$44 million) over five years to fund 140 new postdoctoral fellowships that would each pay Can$70,000 annually. CAPS is seeking to meet with federal officials before the budget goes to a vote this spring.