

MOVERS

Philip Bucksbaum, director, Stanford Ultrafast Science Center, Stanford, California



1990-2005: Professor of physics, University of Michigan, Ann Arbor, Michigan

1982-90: Physicist, AT&T Bell Laboratories, Murray Hill, New Jersey

1980-82: Postdoc, AT&T Bell Laboratories, Murray Hill, New Jersey, and Lawrence Berkeley National Laboratory, Berkeley, California

Fateful friendships may have played an important role in Philip Bucksbaum's career, but staying true to his interests in physics has been the key to his success. It was tagging along to a room-mate's physics class, during his first year as an undergraduate at Harvard, that triggered his interest in physics. The class, taught by Nobel laureate Edward Purcell, prompted Bucksbaum's most pivotal career decision: to become a physicist. "That class changed my whole view of things," he says.

Bucksbaum did his physics PhD at the University of California, Berkeley, where a lifelong friendship with Steven Chu — then a fellow graduate student, now director of the Lawrence Berkeley National Laboratory and Nobel prizewinner in physics — would influence his career. After realizing their common interests, Bucksbaum and Chu worked with others in Eugene Commins's lab to test the subtle effects of the electroweak forces at work in atoms.

Graduate research proved a tremendous experience for him. "In grad school somebody else finds the money and you get to devote all of your energy to your experiment," he says. There are few other opportunities to concentrate so single-mindedly on a high-risk, high-payoff project, he adds.

After receiving an offer for a postdoctoral fellowship at the University of Oxford, UK, Bucksbaum gave a talk at Bell Labs in Murray Hill, New Jersey, where Chu had ended up. Bell Labs offered Bucksbaum a postdoc to pursue his interests in picosecond spectroscopy — he turned down Oxford and spent the next decade at Bell. During that time laser pulses became more than 1,000 times faster, drastically increasing the range of fast-moving physical phenomena that scientists can measure.

In 1990, Bucksbaum joined the University of Michigan, where he eventually became the director of the National Science Foundation's ultrafast science centre. He now directs the new Stanford Ultrafast Science Center, where one of the world's first X-ray free-electron lasers is now under construction. He says this technology will not only lead to a revolution in the ability to image small molecules and their motion, but will also have an impact outside physics in disciplines such as chemistry, biology and materials science.

Although key friendships have influenced Bucksbaum's career, he cautions young scientists to do the kind of science they want to do, not something they think they should do. "Have confidence in your own curiosity and be fearless about pursuing it," he says. ■

Virginia Gewin

SCIENTISTS & SOCIETIES

Back to high school

Researchers spend a lot of time teaching students in universities, but how many venture into secondary schools? Thanks to the Researchers in Residence programme, more than 3,500 PhD students and postdoctoral researchers in Britain have been placed in more than 2,000 secondary schools across the country since the programme began in 1995. They have worked with some 400,000 pupils between the ages of 11 and 18.

Funded by Research Councils UK and the Wellcome Trust, the project aims to inspire secondary-school students by showing them how science can have an impact on people's lives.

It has benefits for researchers as well, such as improving their communication skills. Although many past participants have remained in academic research, they now try to include more public outreach activities in their work. Others can be found in the world of science communication including publishing, the media, hands-on activity centres and museums. Some have gone on to train as school teachers.

Once recruited, researchers discuss with the host teachers how they can contribute to the classroom, making each experience unique. But certain activities have proved popular over the years, such as giving presentations about their research and the latest

developments in their particular field, helping out with laboratory exercises and hosting visits to their research facilities.

Although the researchers are not acting as teachers, they do usually end up doing some teaching. But their decision to teach a lesson is entirely their own. Many start by giving talks about their research, often accompanied by a demonstration and/or an activity for the students to carry out. Often, this leads to teaching a lesson. Researchers typically spend about a day and a half per week doing these activities for an agreed period of time, usually an academic year but sometimes longer.

Since the publication in 2002 of a major review of the British science, engineering and technology workforce, researchers face new requirements for skills training, including communication skills. And with growing pressure from UK research councils on scientists to engage in more public outreach, the Researchers in Residence programme is a good way for young scientists to get started on this skill development. For more information, e-mail: m.m.brodie@shu.ac.uk.

Marilyn Brodie is the Researchers in Residence project manager at the Centre for Science Education, Sheffield Hallam University, UK.

ALUMNUS JOURNAL

The winding road

The path to success in academic science is often fraught with unexpected turns. No matter how much you plan your route, be prepared to make adjustments. During 2004, while I was a Graduate Journal writer for *Naturejobs*, I finished my PhD at Rockefeller University in New York. I decided to move to France for my first postdoc, to gain an international perspective.

I was having a good experience at the Pasteur Institute when an unexpected family situation forced me to return to the United States. Although I enjoyed the laid-back atmosphere (and the cafeteria) at the Pasteur, I learnt that with shrinking funds and a scarcity of tenured or tenure-track academic positions, it is equally difficult in the United States and Europe for new PhDs to penetrate the hierarchy as independent researchers.

I recently began a postdoc at the National Institutes of Health (NIH) in Bethesda, Maryland. Growing up nearby, I often visited the lab at the National Cancer Institute where my grandmother, Alfreda Simmons, worked. She was one of the few African-American women doing lab work at the NIH at the time, and it is fitting that I'm now at the same place, developing vaccines for cancer and HIV.

Travelling down my winding academic career path has taught me how to cope with unforeseen detours. But my goal remains the same: distinguishing myself as a top-notch independent investigator in the not-too-distant future. ■

Tshaka Cunningham is a postdoctoral fellow at the National Cancer Institute.