

MOVERS

Richard Granger, director, Neukom Institute for Computational Science, Dartmouth College, Hanover, New Hampshire



1990–2006: Professor, University of California, Irvine

1980–89: Assistant rising to associate professor, University of California, Irvine

In 1971, when neuroscientist Hans-Lukas Teuber asked his class at Massachusetts Institute of Technology “How do we see a line as a line?”, Richard Granger’s mind blew a circuit. The first-year computer scientist became preoccupied with understanding how information was received and processed in the brain. He decided to refocus his career by integrating his long-standing love of computers with his new-found passion for unlocking the mysteries of the mind.

“A lot of the big questions are ones for which fields don’t yet exist,” says Granger. During his PhD in computer science at Yale, he designed computational tools to analyse psychological data related to fundamental aspects of memory — how to store, access and retrieve it — in order to gain insights into the neurobiological mechanisms at work. In 1980, as a young faculty member at the University of California, Irvine, he learned about brain circuitry by sitting through a graduate-level series of neuroscience courses. The primitive state of neuroscience as a field, the limited mathematical models and the sorry state of computers made him worry that delving into computational neuroscience was premature. But that didn’t dissuade him.

To circumvent these limitations, Granger built simplified, anatomically specific computer circuits to imitate real neurons from the bottom up. In 1990, while modelling the brain’s olfactory cortex (which was well understood anatomically), his circuit did something novel and surprising — it gave a series of meaningful responses to a single input. Since then, he has tried to tackle major questions such as how neurons interact and pass on messages to perform organism-level behaviours. In the past few years, Granger has received US patents in areas ranging from neurological diagnostics to financial analysis.

Once he heard of Dartmouth College’s new Neukom Institute for Computational Science, doing computation work in everything from scientific analyses to the creative arts, Granger knew the directorship was ideal for him. Carol Folt, Dartmouth’s dean of the faculty, agrees. She says Granger is one of the few people with the expertise and enthusiasm necessary not only to bring people from disparate areas together, but to help shape this new field.

Granger hopes to provide the spark to jumpstart the institute and ignite multiple collaborations. From basic work on perception to commercial applications of enhanced pattern recognition, he sees endless potential. The key, he says, is to look beyond what is known, to what is possible. ■ **Virginia Gewin**

RECRUITERS & ACADEMIA

Coming home

Returning home to Croatia after working as a postdoctoral fellow in the United States took preparation and patience. I had enjoyed my three years studying insulin resistance at two prominent US centres. Although I disliked the poor career prospects for postdocs and the lack of professional development, I loved my colleagues’ competitive spirit and the generous funding of the laboratory.

I always planned to return home, but the move required preparation because of Croatian hiring practices. Science is state-funded and scientists often stay where they trained, making institutions less open to postdocs from abroad. In an effort to retain professional contacts, I stayed in touch with my former professors via regular e-mails, visits during holidays and Christmas cards. When I started searching for jobs a year ago, I got two offers immediately. But it took ten months to secure a job. Positions first have to be approved by the government, then universities carry out a complicated protocol, followed by more government paperwork.

I now work as a research fellow and instructor. My monthly salary is about US\$900 after taxes, the laboratories are well equipped, and state funding is enough for respectable scientific production in terms of equipment,

papers and staff. Funding is limited, however. Science was hindered by war for the first 5 of Croatia’s 16 years of independence. And academic advancement requires a certain number of published articles, regardless of impact or importance.

There are problems with research logistics that I never encountered in the United States. Getting laboratory animals is mission impossible; on-site animal facilities are troublesome, and materials and equipment are expensive. Importing a \$10 rat from Italy costs \$200 for its transportation, quarantine and veterinary clearance.

Yet many people at the school have returned from abroad and started successful laboratories. Our new basic-science building is state-of-the-art. Fifteen years ago the school had no papers in respected international journals; now my department alone has two to four annually.

I came back to be an active part of the growth of Croatian science. Returning to a country in transition is both challenging and rewarding — though not recommended for gentle souls expecting a red carpet. ■

Livia Puljak, recently a postdoc at the University of Texas Southwestern Medical Center at Dallas, is now a research fellow at the University of Split Medical School in Croatia.

GRADUATE JOURNAL

Tables turned

It’s hard being a supervisor. When I was first told that an undergraduate student was coming to the lab, I thought, “Great. A slave!” Experiments would be finished quickly, coffee fetched diligently. I looked forward to instilling the joy of science into my new student, illuminating the path to a PhD. I would be the cool graduate student who shaped their scientific career.

But reality didn’t live up to my expectations. To begin with, I hadn’t realized how much teaching was involved, nor how often I would hear the words “What shall I do next?”. All the reading and other tasks I thought I could catch up on fell by the wayside as I had to supervise and then recheck different experiments. I started to dislike myself; I was selfish, intolerant and overbearing. I found it hard to let someone else be privy to my project; it was painful to watch others make mistakes. Often I had to bite my tongue or stop myself from taking over, reminding myself that I was in the same position once, eager to learn skills and needing to gain confidence.

Having experienced a short stint at supervising, my respect for my own PhD supervisor has grown immensely. How does she manage to be friendly but at the same time authoritative? How does she get us to realize our own mistakes and learn from them? She even looks as if she enjoys it. ■

Mhairi Dupré is a first-year PhD student in evolutionary developmental biology at the University of Oxford, UK.