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2003

Peter Gunning

Peter Gunning took the long way round from Australia to California, backpacking across Europe, Canada, and the United States to reach Stanford a little disheveled. "Peter looked like something from the Australian desert," recalls neuroscientist Eric Shooter, who being British thought he had some idea of what to expect from Down Under.

Despite the startling appearance, Shooter had every confidence in Gunning's scientific talent. "I expected great things of him. He came with a ringing recommendation and the longest thesis I have ever seen. Peter was an extremely bright, gregarious, and interactive person, the sort of guy who comes into a lab and in a short time has all his fellows organized into collaborative research. And that is precisely what happened."

Gunning's success in the lab was predictable but Shooter has been pleasantly surprised by Gunning's emergence as a senior administrator in Australia's burgeoning biomedical research system. At 52, Gunning is research director of the Children's Hospital at Westmead (CHW), where he still leads the Oncology Research Unit and serves as a Principal Research Fellow of the National Health and Medical Research Council (NHMRC), the Australian equivalent of the NIH. He continues as Professor and Sub-Dean of Research for one of the University of Sydney's Faculty of Medicine "precincts" at Westmead, a research cooperative that includes CHW and the independently funded Children's Medical Research Institute (CMRI). Gunning remains firmly plugged into global science as a reviewer and contributor to major journals, a speaker at international conferences, and a member of numerous societies, including the ASCB.

Gunning's position puts him at the center of the Westmead "hub," the largest biomedical/hospital complex in the Southern Hemisphere. Colorado State University's Jim Bamburg, an ASCB member and another former Shooter-post doc, did an Australian sabbatical in 1992-93 with Gunning who was then at CMRI. "I could see that he was somewhat frustrated with the scientific system within Australia and wanted to see a stronger focus on certain areas," says Bamburg. "He thought it would take some leadership and so he finally took the bull by the horns himself." In 1997, Gunning gave up his primary post with CMRI to establish CHW's Oncology Research Unit where he remains a tireless advocate of collaboration among institutions and between basic and clinical researchers. "I don't know any Australian scientist who doesn't know Peter," says Bamburg.

A native of Melbourne, Peter Gunning inherited his passion for science and for cricket from his father, an industrial chemist. The younger Gunning started Monash University determined to become a "real" chemist, but early in his second year, he sampled biochemistry and was hooked. Graduating in Biochemistry and Genetics, Gunning continued at Monash in neuroscience with doctoral and then post-doctoral work under Laurie Austin and Peter Jeffrey on RNA synthesis in rat neurons. In 1977, Gunning did the expected for bright young Australian researchers—he went abroad. After a decade at Stanford, Gunning then did the unexpected—he returned home to launch his independent research career in Australia.

Gunning's time at Stanford was prolonged for scientific and personal reasons. After two- plus years of work on nerve growth factor function in a PC12 cell model system, Gunning remembers, "Eric took me aside in a fatherly way and said that if I was planning to go back to Australia, I needed to think about what technologies I needed to master now."

To learn recombinant DNA, Gunning moved to Larry Kedes's lab just as Stanford made Paul Berg's patented DNA cloning technique available. Kedes and Gunning set out to clone human actin. By 1983, they were cloning full-length cDNAs that they later used as probes to clone the major isoforms of actin and eventually the entire human contractile apparatus. Many of their papers laid out the ground rules for actin cloning and became standard citations (one 1983 paper in *Molecular Cell Biology* has over 1400 citations). Cloning the contractile apparatus opened up new approaches to morphogenesis. The idea of isolating a "master regulator" that controlled gene expression seemed within reach, Gunning recalls. "In retrospect, it's so obvious that it's almost funny, but in the 1980s, we were thinking a lot more simplistically about morphogenesis. It's clear now that we are looking at a combinatorial mechanism with very fine controls including feedback regulation that acts with great subtlety to coordinate expression both between and within families of genes."

Regulating Gunning's career plans on a personal level was his deepening relationship with Edna Hardeman, a graduate student in Bob Simone's lab. They married in 1981. When Hardeman began a post-doc in Helen Blau's lab, Gunning expected to stay at Stanford a while longer. Looking ahead, he knew that the double career problem was difficult in America but finding separate jobs for two cell biologists in Australia's small scientific community seemed impossible.

In 1982, Gunning took Hardeman to visit his parents in Melbourne. The landscape reminded her of California and Texas where she'd grown up. They visited again in 1985 and heard talk that Australian bioscience was changing. There was money for new disciplines like molecular biology and innovative ideas for reorganizing the country's scientific resources. In 1987, they returned to Australia to set up separate but collaborative labs at CMRI in Sydney.

There, Gunning honed his contractile protein isoform clones into genetic tools for dissecting cell structure. "We used the cytoskeletal clones to demonstrate that different isoforms of actin encoded different structural information and that their mRNAs could be differentially sorted within a cell," he says. "It led to the idea that isoform sorting could play a key role in architectural design." The muscle work led to collaborations with Hardeman, but recognizing an opportunity to explore the medical implications of his work on the cytoskeleton, Gunning moved to the nearby Children's Hospital in 1997 to establish the Oncology Research Unit. With Sydney's major hospitals, medical school, and research facilities now clustered at Westmead, Gunning saw around him a critical mass—rare in Australia—for novel collaborations between basic and clinical researchers. Today his lab at CHW is only 40 meters away from Hardeman's at CMRI and while they continue to collaborate, they have also developed independent projects.

But their finest collaboration by far, says Gunning, is their 10-year-old-son, Ewan Gunning Hardeman, a fourth-grader who loves biology, roller coasters, the family menagerie, and, like his dad and granddad, playing cricket. The livestock has, at various times, included cats, dogs, lizards, sharks, frogs, rabbits and "yabbies" ("like crawfish," Gunning explains). "One of the important things about our house is our very long drive-way which is a perfect cricket pitch. Unfortunately, Ewan has also collected three windows with very savage hook shots and Edna's rose bushes have taken a pounding," his father says with quiet pride.