



The Molecular Man

PROFESSOR PAUL WARING HAS LONG BEEN INTERESTED IN HOW DISEASES WORK. THE RESULTS OF THAT INTEREST WILL HAVE GLOBAL IMPACT NOW THAT HE IS TAKING ON A HIGH-LEVEL ROLE WITH GENENTECH, ONE OF THE WORLD'S LEADING BIOTECH COMPANIES. HE SPOKE TO MICHELLE GRIFFIN ON THE EVE OF HIS MOVE TO THE US.

PHOTOGRAPHER: EAMON GALLAGHER

"I find humanitarian work very rewarding. There's a big reward-to-effort ratio. A small effort on your behalf can have a big effect, as the needs are so enormous."

The world's oldest biotech corporation was founded in 1976 by venture capitalist Robert Swanson and biochemist Dr Herbert Boyer, who pioneered the development of recombinant DNA technology with Dr Stanley Cohen. Many of their drugs, such as the breast cancer treatment Herceptin and colon cancer drug Avastin, are at the forefront of the new revolution in targeted genetic medicine therapies for cancer patients. Professor Waring, until recently the director of pathology at the Peter MacCallum Cancer Centre in Melbourne, was hired to head Genentech's pathology team after a worldwide search to find the right candidate.

In an interview at his office at the Peter Mac shortly before his move to San Francisco to take up the position, Professor Waring spoke enthusiastically about the prospects of his new job. He will direct the development of all the tests needed to match patients with the new targeted therapy drugs developed by Genentech.

"They were looking", he says, "for an academic pathologist with a credible research background, an interest in targeted therapies and a number of years of management at a senior level. That I was also a molecular pathologist was a bonus, and to make full use of my skills, they appointed me as director of molecular genetics as well."

Professor Waring says he trained himself as a molecular pathologist as the new discipline developed over the last decade. In 1990, after completing his anatomical pathology training at the Sir Charles Gardiner Hospital in Western Australia, he moved to Melbourne to study for his PhD at the Walter and Eliza Hall Institute under Professor Donald Metcalf. "Professor Metcalf discovered the colony stimulating factors (which aid the production of white blood cells) and had built a team of people around him that had made Melbourne, and the Walter and Eliza Hall Institute, famous

around the world," says Professor Waring. "I had the great fortune of spending three and a half years in his lab."

He then did further research at Stanford University in California before returning to Melbourne in 1997 as an associate professor in pathology at the University of Melbourne and as a locum pathologist at the Royal Melbourne Hospital and Peter Mac. Later, he moved to the Ludwig Institute for Cancer Research and became head of molecular pathology at the RMH in April 2000. He was appointed director of pathology at Peter Mac in 2001.

Professor Waring didn't plan to become a pathologist. Born in 1956, he grew up in Lincolnshire, UK, the oldest of five sons of a Royal Air Force navigator whom he describes as "a Cold War warrior". "He flew in Vulcan bombers as part of Britain's nuclear defence system. He died in 1966, when his plane crashed into the top of a mountain in Wales. My mother was widowed at 34 and had five sons, the youngest being three months old. We struggled."

Professor Waring remembers that in the weeks following his father's death, his mother travelled to London to insist that the RAF Benevolent Fund pay for her sons' education at Rossall School, a private school in Lancashire. "She wouldn't leave until they agreed to pay (our) school fees, so I went to this great school and got a privileged education."

Inspired by his late father's adventurous life, the young secondary school graduate decided to go and see the world. He applied for a scholarship to study geology at the University of Western Australia, arriving in Perth in 1975, aged 19. "Geology was my passion at the time," says Professor Waring. "Geology and biology were my two favourite subjects at school. While a first-year science student at the UWA, I realised that medicine was a career option I'd never considered before. I

didn't know anyone who was a doctor. I got straight As in first year, applied, and was accepted into the medical course."

Professor Waring says he was always more interested in the pathology of diseases than clinical work. "I think what really interested me from the start was how and why diseases develop. I think that's what drove me to pathology: the prospect of looking down a microscope and understanding what makes diseases tick was what interested me."

He did spend some time out in the field, way out in the field, working as a flying doctor in the Kimberly region of northern Australia for six months in 1994. That experience was the start of Professor Waring's interest in humanitarian aid, which has developed alongside his work as a researcher in molecular pathology. "I've always had a humanitarian streak," he says. "I find humanitarian work very rewarding. There's a big reward-to-effort ratio (working with poor communities); a small effort on your behalf can have a big effect, as the needs are so enormous."

In 1993, soon after Professor Waring finished his PhD at the Walter and Eliza Hall Institute, he travelled with his family to Eritrea with the aim of helping the new nation's laboratory service. "I thought it very important every now and then, perhaps every seven years or so, to have a major reality check," he says.

After reading Thomas Keneally's novel *Towards Asmara*, about Eritrea's struggle for independence, he was inspired to volunteer his own services. He was impressed by the resourcefulness of the Eritreans. They had built an underground hospital and laboratory in a remote region near the Sudanese border. Hidden from aerial bombardment, they co-ordinated a public health program for all of liberated Eritrea. He was also impressed by their ingenuity, as they had invented a mobile solar-powered blood bank that could be carried on to the battlefields by camel.



Paul Waring observes Jaqueline Wong as she performs Protein Truncation Testing on breast cancer genes. Photography: Eamon Gallagher

Professor Waring arrived in Asmara with his wife, Lyn (also a pathologist but in the field of microbiology), and their oldest daughter, Michelle, then six, who would be the first foreign child to go to school in the nation after it won independence from Ethiopia. He obtained a grant from AusAid and had planned to bring a teaching microscope with him, but he was persuaded by the head of Eritrea's labs to bring instead a computer and a laser printer. The labs were so threadbare that microscope slides were reused thousands of times. The lab director desperately needed the computer so he could apply for grants from the non-government agencies moving into the country.

"Rather than using rickety old typewriters, we could produce high-quality grant applications," Professor Waring says. "I spent weeks listening to the stories told by the freedom fighters and began to understand the frustrations and aspirations of the laboratory director. Together we sat at the computer and wrote a comprehensive grant application for a national health laboratory service. With the director's vision backed by my credibility as a pathologist, we made several presentations to donor agencies. A year later we were successful in securing two grants for a total of US\$950,000 from USAID to repair, refurbish and re-equip the central laboratory and to establish a laboratory scientist training program for the rural areas.

"It's a very humbling experience to see the sacrifices they were prepared to make. Some of the laboratory scientists who were freedom fighters weren't given a salary for over 20 years. They were given food, sandals, a pair of shorts, and a gun. They were so grateful for any assistance."

Although Professor Waring left Eritrea when his wife was expecting their second child, (Sarah, now 11, who was followed by Laura, now seven), he was Eritrea's pathology consultant for the next six years, analysing the slides they sent him and faxing back the results. "What I learnt from this is that you get so much more back in terms of satisfaction and the friends you make," says Professor Waring. "It was the best time of my life."

In a way, Professor Waring sees his new work with Genentech as part of a continuum with that work in Eritrea. "Working for a company like Genentech, my work is now going to have a global reach. The drugs they have developed are used to treat hundreds of thousands of people worldwide each year. As my career has progressed, I've tried to put myself in a position where I have more and more of an impact. But with each of those steps, you are distancing yourself more and more from the patients, so you don't get that immediate reward - the satisfaction comes from spreading yourself like veneer."

For more information about Genentech visit www.gene.com 🇪🇪