Coming Full Circle

I grew up in Hong Kong in a family that valued knowledge and education. Under the British educational system there, you were not allowed to ask “why?” but if you did well, you could get ahead and could get out of poverty in one generation. A lot of students hoped to become professionals. I was no different. I figured being a physician was pretty good.

The Institute for International Education administrated a competitive scholarship program for Hong Kong high school graduates to attend liberal arts colleges in the States. I was lucky enough to be one of the finalists. I was assigned to the University of Chicago, where I caught the bug of research and curiosity.

I went into medical school wanting to study traditional Chinese medicine using a Western approach. In Hong Kong, I saw that herbal remedies worked in many patients. I started an M.D./Ph.D. track in synthetic organic chemistry, thinking it would be helpful in studying Chinese medicine. When the time came for me to pursue postdoctoral training, I realized I couldn’t do serious research in Chinese medicine without being in China or interacting with the people there.

Because pursuing postdoctoral training in China was not feasible in 1990, that’s when I stumbled into the human genome project. I was at Washington University for postdoctoral training and joined Maynard Olson’s group. He was one of the founders of the project and invented yeast artificial chromosomes, making genome mapping easier. I started working on SNPs (single-nucleotide polymorphisms) because we both realized the genetic markers we were using would not be sufficient for the more complex diseases.

My first role model was Albert Dorfman. He discovered the genetic defect behind Hurler’s syndrome. In his human genetics course, we were talking about diseases due to a missing or mutated enzyme. I naively said, “Why don’t we just put the enzyme back?” It was such a stupid question. Dorfman didn’t bat an eye, he just said, “That is exactly what we need to do, we need to figure out how to do it.” My other role models were my Ph.D. advisor, Josef Fried, a very good bio-organic chemist, and Olson. They were very sharing sci-

entists. Unlike those who guard their projects with the highest secrecy, they want to advance the field. They don’t care who gets there first. They freely share reagents and ideas. They are strong and successful enough and don’t need all the credit. That made a huge impression on me. Friends have worked in very competitive labs, and I am very happy I was trained in a completely different environment.

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They taught me not to be afraid to take risks. When I first tried to design a genotyping method for SNPs, I came up with this idea of energy transfer. All my chemist friends told me it wouldn’t work. We decided to try it anyway. And sure enough, it actually worked and led to all the other later methods we’ve developed. Students should also not be afraid to seek out experts and ask questions. Most people are willing to help or collaborate.

The best way to keep up with the literature, for me anyway, is to review papers and grant applications. The authors always have introductions and conclusions that summarize the current situation. And if you go to the smaller research meetings, people actually discuss their current work, not something they’ve already published. A lot of times we

keep up by monitoring some key groups’ publications, and usually that’s all we can do.

My hobbies are spending time with my three boys and going to their soccer games. When the kids were growing up, I played soccer with them. My oldest is 15, and he’s beating me now. I also play chess with my youngest child.

It’s really exciting that the genome project is coming together. I’ll probably go back to Chinese medicine. Unlike Western medicine, the Chinese medical doctors monitor patients daily and adjust herbal concoctions on the fly. That fits in well with the future hope of personalized medicine based on the genome project, which may come together with all traditional medicines and their more holistic approach. Maybe the genome project, looking at everybody as unique individuals, will actually bring us back to that and close the circle.

As told to Lynne Lederman, Ph.D., a medical writer based in Wellesley, MA.