Transition from a Medical Student to a Teacher in Physiology

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Dr. Stephen Y. W. Shiu

In response to an invitation by the editorial board of Caduceus to submit an article, I would like to take this opportunity to share with the fellow students of the Medical Faculty some of my experience from a medical student to a teacher in physiology. Since I am not old enough to have made any significant contribution, I hope many of you who are going to read this article will not treat this as an autobiography, but read it in the perspective of finding out what some of your predecessors have encountered as they advanced their career in the biomedical profession.

Like many of you who were born in Hong Kong and received both primary and secondary education here, I entered the Medical School of HKU in 1981 after attaining good results in the Hong Kong Advanced Level Examination. To be frank, I have never thought of becoming a doctor at that time. Instead, I was so fascinated by chemistry during my secondary school years that I intended to study chemistry abroad. However, my applications to several overseas universities had been unsuccessful. As a result, I decided to stay in Hong Kong to continue my university education. Because of good A level performance, peer pressure and the promising prospect of a secure and respectable job as a doctor, I fill in Medicine as my only choice when submitting my application to the University of Hong Kong.

Workload in the medical school was heavy and the majority of students performed quite well after going through a transitional period from a relatively passive learner in the high school to an active learner in the university. On completion of my preclinical years in 1984, I took the intercalated BSc course in neuroscience under joint supervision by the Department of Physiology and Biochemistry. That was the first time when I was exposed to a research environment and my desire to become a scientist returned. However, this time it was changed from a chemist to biomedical scientist. The BSc year provided me with very unique and invaluable experience as it was also the very first time that I could select topics that interested me for in-depth study, and under the guidance of my supervisors, I was totally responsible for my own learning.

Looking back, this year of science training proved very useful in helping me to transit completely from a dependent to an independent learner. It also provided me with the opportunity to prepare myself for later postgraduate research studies.

Since then, I have decided to pursue an academic career in biomedicine upon completion of my MBBS professional training.

When I re-joined my clinical years, a lot of adjustments need to be made again. I had to integrate myself into a new class of colleagues and restructured the way of learning as, by this time, I was convinced that training of a scientist is very different from a clinician. Throughout the clinical years, my colleagues and I started to come into frequent contacts with patients and, day by day, many of us in our white coats with the stethoscopes sticking out from the pockets, looked more and more like a clinician. A sense of responsibility towards patients developed during the clinical years as we saw for ourselves what we would do in a few years' time could mean life or death to many people who came to us for help.

With hard work and good luck, I passed my professional examinations and graduated with MBBS in 1987. After serving my pre-registration internship year in Queen Mary Hospital, I became a research postgraduate student in Oxford University studying molecular biology from 1988 to 1991.

I would never forget the three years of postgraduate life in Oxford when I had to adapt myself not only to an unfamiliar field of study, but also to a new living environment. Vividly, I could still remember a researcher in Oxford asked me whether I knew anything about PCR or DNA cloning. With minimal knowledge of molecular biology at that time, I had to admit to him that I knew very little in those areas, though I had received little training in molecular biology during my undergraduate days. I was confident that I would be able to teach myself to become a molecular biologist. Perseverance and determination are important attributes that help one to achieve his goal. With my training in both medicine and molecular biology, the academic stimulation that I received in Oxford further motivated me to pursue a career in Molecular Medicine. After obtaining my D. Phil in 1991, I returned to Hong Kong to take up the job of Clinical Lecturer in the Department of Microbiology.

During my two and a half years in Microbiology Department, I engaged myself in the teaching of basic and clinical virology to medical and dental students, conducted research in molecular virology, and provided clinical service in diagnostic medical microbiology. I left the Department of Microbiology in 1994, initially planning to seek a job that could allow me to devote more time on research. However, life does not always turn out to be the way that we expect just like the experiments we perform. An unexpected opportunity arose and I became a full time clinician as a medical officer in Internal Medicine at the Eastern Hospital, after spending most of the past six years at the laboratory bench doing molecular biology experiments. It is a great challenge to me as many of my colleagues did have a lot of reservations whether I still remembered how to manage patients suffering from various types of acute emergencies, I opened my medical books and journals again to revise and keep myself updated with recent advancements in medical management. Fortunately, I was able to revive my medical knowledge database which had been safely kept in my memory for the past six years, and managed to discharge my clinical duties satisfactorily.

Although it was only for six months that I worked at the front-line caring for acutely ill hospital patients, I benefited greatly from this period of professional training in medicine. It stimulated me to reflect on my past and future research direction which should be more focused on the molecular aspects of human diseases. I also felt the growing importance of molecular and cellular medicine in the management of many human diseases, which currently showed poor responses to conventional treatments due to a lack of understanding of the pathogenesis at the genetic, cellular, tissue and organ-system levels. Hence, understanding the basic structural-functional or genotypic-phenotypic characteristics of human cells, tissues, and organ-systems are fundamental to the search of better management of these diseases. This might partly explain why I returned to Physiology, the discipline which involves the study of function.

In January 1995, I took up the Lectureship in Physiology. In the department of Physiology, I continue to focus my research on basic and applied molecular medicine and contribute to the teaching of basic and clinical physiology to medical, dental and nursing students. After spending more than one year in

teaching students in their preclinical years, I find that it is common to hear complaints from the students about the copious amount of information that the teachers bombard on them during lectures. I can assure them that they are no exceptions to their predecessors. When I was a medical student, all my classmates, including myself, often grumbled about the enormous amount of information that needed to be memorized.

Some of the topics that we had been taught were easy to be remembered because they were more factual and hence not so difficult to be understood. However, some conceptual topics were not so easy to be dumped into the memory. Many of the problems that my students face in their studies are in no way different from what we used to have. I would advise my students to take an active role in the procurement of knowledge by developing their own learning methods with the guidance and support of their teachers during this transitional phase from a dependent to an independent learner.

In my opinion, memorizing important facts is vital to medical training as clinicians need to make many clinical decisions in their patient management based on established facts instead of pure speculations. It does not mean that all students have to act like bookworms as some of you may have heard the cynical comment that I occasionally make about the wish to remember the whole textbook just by swallowing it. Understanding and memorizing are both important and complementary as students will find it easy to remember some of the facts by understanding the concepts and principles involved. Although some important biomedical observations are conflicting and difficult to be interpreted in terms of known scientific concepts and principles, they still need to be remembered as they may have practical implications in the management of many clinical diseases. It is worth noting that the basic pathogenesis of many of these diseases is still elusive to our understanding.

On and off, I have also noted comments made by medical students concerning the relevance of preclinical subjects to their professional training. Having been a medical student myself, I can understand why they have such comments.

After becoming a teacher in a preclinical department, I try to help the medical students by drawing their attention to the clinical relevance of what

they are being taught in the preclinical years. This will not only stimulate their interest in the preclinical subjects, but also highlight the importance of some relevant scientific concepts and principles that are crucial to their future clinical skill development. To make them realize the clinical relevance of memorizing some of these facts and concepts, I believe, is a powerful stimulus to motivate the students to learn more actively and to equip themselves with the scientific and genetic literacy that their profession will demand them to posses as we enter the new era of molecular, cellular and integrative medicine.

Soon we shall be approaching the end of the 20th century and witnessing the change in sovereignty of the territory.

I would encourage my fellow students to take a broader and positive outlook into the 21st century. The future of Hong Kong medical and health care system will depend on how well they perform their duties as clinicians to their patients. I am optimistic that Hong Kong will continue to play an important role in biomedicine both nationally (as part of China) and internationally. Hong Kong people will continue to enjoy first-class health care, comparable to or better than that in the west, provided by our medical graduates if our teachers and students will work together to face the challenges that our profession will encounter both before and beyond 1997.