



## INTERVIEW SPOTLIGHT

# dr.patangi rangachari

## FINDING THE RIGHT MENTAL COUNTRY

The Meducator recently sat down with Dr. Patangi Rangachari, Professor (Emeritus) of Medicine at McMaster University and 3M National Teaching Fellow, to discuss his experiences as a professor and his perspective on health professional education. From his policy of “drift” to the notion of a “pluripotent student”, Dr. Rangachari emphasized that students should be in no rush to make their career choice. He shared his insight into the purpose of learning and described the potentially detrimental effects of not choosing the right “mental country”.

■ COULD YOU PROVIDE US WITH SOME BACKGROUND ON YOUR EDUCATION, FROM WHEN YOU WERE A STUDENT TO YOUR CAREER NOW AS AN EDUCATOR?

Growing up, I spent four years in a school run by the Irish Christian Brothers whose approach to education was very simple: they simply caned their students. To add to this, they basically had no concept of teaching science. So, initially, I had absolutely no interest in science and wanted to be a historian. However, one of the papers that we had to study dealt with the development of science and I began to realize that it wasn't as dull as my teachers were desperately making it out to be; it actually had a rich history. Soon afterward, I started to negotiate with my chemistry teachers to let me take test tubes home. I set up a lab at home where I could do chemistry experiments, [and make] telescopes and microscopes. Basically, my teachers had nothing to do with my sudden interest in science. A classmate who went on to become a distinguished organic chemist was the true spark. I wanted to become a chemist, but my attempts were de-railed by a bureaucratic blunder and the only spots open were in a pre-med program. However, I soon realized that the chemistry that I wanted to do was actually biochemistry, and the only way





■ Dr. Patangi Rangachari lecturing first year students in a cellular biology class at Health Sciences Centre, McMaster University

I could do this was to first get into a medical school. So I drifted into medical school without any intention of helping anybody. This school had an amazing array of teachers. My biochemistry professor had received his doctorate working with Jacques Monod, who had discovered the *lac* operon, and my professor of physiology had studied at Oxford, and was one of the world's premier sensory physiologists and a personal friend of Hodgkin, Huxley, Sanger and other eminent scientists. These were the people that were at the cutting edge of research. It was exhilarating to be around these people, and their enthusiasm was very infectious. By contrast, the clinical years were dreadfully dull. In fact, after I was done my studies, I dumped my stethoscope in the bin. I was hoping to stay and get my post-graduate degree, but India is always filled with politics and so I was advised to leave because I would not have been able to survive there with all the tensions. I started looking for spots to go to, and ended up in Edmonton, at the University of Alberta.

Although I did my Ph.D. in Edmonton, I desperately wanted to go to California because this was an exhilarating time and San Francisco was the place to be. At the research institute, I worked amongst outstanding scientists – the atmosphere was absolutely giddy with excitement. I went on to Paris, then India, and back to Paris. While in France, my former Ph.D. supervisor,

who had moved to Hamilton, had invited me to come to McMaster. I only came because I got a scholarship from the Canadian Heart Foundation. To be honest, I thought the concept of problem-based learning in the medical school here was a joke, but that was before I sat in on a tutorial. I saw students arguing passionately about complicated topics, but when I asked my supervisor how many classes in pharmacology the students had taken, he said none – the students were just learning it on their own. Absolute revelation and I got completely hooked. In between then and now, I went to Harvard and came back but there was a phase transition and I moved into education.

■ YOUR EXPERIENCES SUGGEST THAT STUDENTS HAVE A LOT TO GAIN FROM NOT RUSHING TO BEGIN THEIR CAREER. WHAT ARE YOUR THOUGHTS ON THE INCREASING NUMBER OF STUDENTS MOVING TO PROFESSIONAL EDUCATION BEFORE FINISHING THEIR UNDERGRADUATE DEGREE?

One of my students came to see me at the end of her second year in the B.H.Sc. Program, as she was interested in applying to medical school. I knew she was a terrific





**DR. PATANGI RANGACHARI** is an expert on problem-based learning at McMaster University. He believes in allowing students to explore answers to their questions, free from the constraints of traditional lecturing and testing. As a professor emeritus, he continues to share his enthusiasm for trying non-conventional educational approaches with students in the Bachelor of Health Sciences program. He also recently published a book titled *Students Matter: The Rewards of University Teaching*, with 12 other educators from around the world.

kid, and I replied, “Are you nuts?” She said that she would be losing one year. I asked, “What exactly are you going to be losing?” I eventually dissuaded her from applying. And afterwards, she did one of my later courses and she said she was glad she stayed.

Where is the hurry? All of the best students I’ve had in the medical program came in with a range of experiences. One was a lawyer working in Ethiopia with refugees. She drifted and got interested in health while she was practicing law. Another was a businesswoman with a million dollar portfolio in California. When one of her close friends died of AIDS, she got involved in palliative care, and suddenly had another way of looking at the world. The point is these are not ordinary professions. These require multiple proficiencies in dealing with many different things and there is no hurry. Ask yourself what you are going to do with that extra year. There is an old story about a Chinese philosopher who landed in New York. The taxi driver dragged the philosopher into his cab and raced through the streets of Manhattan and got him to the hotel. The driver remarked, “I did it in one less minute”. The philosopher then asked, “What are you going to do with that extra minute?”

#### WHAT SKILLS SHOULD UNDERGRADUATE SCIENCE STUDENTS ACQUIRE BEFORE GRADUATING AND PURSUING HIGHER EDUCATION?

I want students to be like pluripotent stem cells: “educator-blasts” that can differentiate in any environment. I mean, just look at my own life. I wanted to be a historian and ended up being a pharmacologist. I just navigated my way through life. People have to be pluripotent because times change, positions change, and avenues of exploration discontinue.

#### THE NEXT GENERATION OF PHYSICIANS HAS BEEN TRAINED IN AN EXTREMELY COMPETITIVE ENVIRONMENT DUE TO SHEER NUMBERS ALONE. WOULD YOU SAY THAT THESE DOCTORS ARE PART OF A WELL-FILTERED GROUP OR WOULD YOU SAY THE CURRENT COMPETITION IS PRODUCING A MORE HOMOGENOUS POPULATION OF DOCTORS?

The point is that these doctors are filtered against one set of criteria. There is a very interesting writer by the name of Freeman Dyson who by profession is a particle physicist. In his book *Disturbing the Universe*, he writes about the fact that the great phase transitions in our world have happened because the rules of the game have changed. These are qualitative, not quantitative, shifts. We did not get the Agricultural Revolution because we had more intensive, better-trained hunter gatherers. He has commented on the rapidity with which a dominant technology that appears permanent, disappears to be replaced by another. These

phase transitions produce radical societal changes. Evolution works this way: the niche changes, and living beings adapt. And now, by actually selecting people for one pathway, we are preventing them from adapting to a changing environment. By having excessive criteria for selecting “in-ness”, we forget that the rules of the game will change. We didn’t get the computer revolution because we had better valves; we started changing the valves into semi-conductors. We didn’t get better photographs because we had better film; we changed the way that images are captured.

So yes, you need intensive training but progress depends on the margins of incomprehensibility. Phase transitions are going to happen. You are not going to be able to predict what will happen, but you can develop a mindset that is ready to take advantage of the circumstances. That’s what I mean by being pluripotent: to have the skills necessary to navigate your way through life.

Filtering is fine and I have no problem with it. But don’t be too satisfied that you have done a good job with a filter. In a sense, all these filtering mechanisms are like the passport and immigration processes. A lot of these people getting into medical school are in a sense immigrating to a new country. They are so busy trying to fill the forms and get the visas that they never ask the question of whether or not they should actually go to the country. And once they are there, all the disappointment begins and they realize that maybe this is the wrong place to be. This is exactly like getting into medical school. You do your MCAT, do the pre-requisites, kill yourselves getting high GPAs, fill out forms and get into medical school. A lot of medical residents are facing mental dilemmas and issues now because fundamentally they should not be doctors. They got into medical school because they had worked and prepared themselves but they never asked, “Is this the right country for me?”

I find life exciting because I got into the country I wanted to be in. Not just Canada; the mental country I want to be in. And that’s what students should think

about. You’re going to be in that mental space for the next 50 years of your life. And you need to think about that mental space. It’s not easy to do.

■ **STUDENTS MATTER: THE REWARDS OF UNIVERSITY TEACHING, A BOOK YOU CO-WROTE WITH 14 OTHER BIOMEDICAL SCIENTISTS AND EDUCATORS FROM AROUND THE WORLD, WAS RECENTLY RELEASED. COULD YOU PROVIDE OUR READERS WITH SOME BACKGROUND ON THE MOTIVATION FOR WRITING THIS BOOK?**

The idea of this book started when Dr. Howard Barrows, the “inventor” of the simulated patient approach and one of the early proponents of problem-based learning, was alive. We often met to talk about teaching. Some books on education at the time claimed that university professors neglected students and focused more on their own research priorities. We wanted to counter that argument and point out that many practicing scientists are not only serious about their own research, but also spend a lot of time teaching and improving the learning experience for students. Teaching is not simply an add-on, but a key component of what we do on a daily basis. It is an obligation. In this book, we wanted to share our experiences in teaching, discuss why we became teachers, and inspire others to teach.

Dorsey JK, Rangachari PK, Barrows HS, Brink CB, Costa MJ, Duffin JM, et al, editors. Students Matter: The Rewards of University Teaching. 1st ed. Carbondale: SIU School of Medicine; 2012.

## interview conductors



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