On MD/PhD Programs and Becoming a Clinician-Scientist

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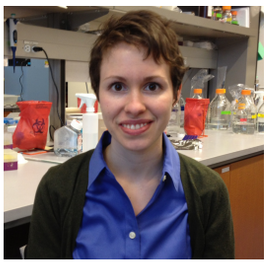
Do you think going through medical school is tough? Imagine going through graduate school at the same time. Michael Kozoriz and Clara Westwell-Roper are doing just that, through the seven-year University of British Columbia (UBC) MD/PhD integrated program. At UBC, trainees complete Year 1 MD requirements in their first year, and spend the next three years pursuing graduate courses and thesis research, as well as Year 2 MD requirements. Prior to starting Year 3 of the MD Program, the trainee defends his or her thesis and then completes his or her MD degree with two years of hospital-based rotations.

Kozoriz, a seventh-year in the MD/PhD Program, successfully defended his thesis on the role of the gap junction protein connexin43 in neuroprotection during stroke, and he is currently completing his final MD year. Fourth-year Westwell-Roper is working on her PhD research, investigating mechanisms for manipulating the immune response to islet amyloid polypeptide in type 2 diabetes. Although their research interests differ, both students entered the dual-degree Program because they enjoyed basic science and working with people. Westwell-Roper recalled an early summer job working on drugs for regulating immune cell function while watching a piano teacher cope with an autoimmune disease (Westwell-Roper C 2012, oral communication, March 30). Similarly Kozoriz saw the potential to combine his prior Masters in Science with his passion for working with the elderly and the disabled during a happenstance job as an in-home caregiver in England (Kozoriz MG 2012, oral communication, March 30).

Pursuing a concurrent MD and PhD gives trainees such an "opportunity to see basic science articulated and translated, and to take clinical questions and explore them at the molecular level," says Westwell-Roper. Graduate studies, in particular, provide rigorous training in research methods and allow trainees to satisfy their creative side. "In medicine, people are often diagnosed with nonspecific "viral illnesses" or given arbitrary treatments," says Kozoriz, "whereas in the lab setting, you ask questions and seek answers. What is the virus? What is the best treatment and can we come up with something better?" Clinical exposure, however, provides much-needed context on "understanding the disease [trainees] work on in the lab at the level of the whole person, and at the social level," notes Westwell-Roper.

The MD/PhD Program also gives trainees a sense of how their future clinical and research practices might be integrated; though this is not without its difficulties given the academic demands of both programs. Westwell-Roper recounts, "It's challenging to spend the night in the lab and then go to [small-group] sessions in the morning!" It is also hard to predict how long one's PhD research will take, which can extend the lack of earning years. Kozoriz, however, notes that there is plenty of financial support for MD/PhD students in Canada and says that most trainees graduate debt-free thanks to scholarships and research stipends.



In these photos: Dr. Michael Kozoriz (left); Clara Westwell-Roper (right)

The MD/PhD Program offers benefits over completing a PhD before or after medical school or residency. It provides training in critical evaluation of published work in parallel with education in basic physiology and clinical practice that may be relevant to research projects. Students' research interests can also evolve with their exposure to medicine, according to Westwell-Roper, whose initial interest in the immune mechanisms of transplant rejection shifted to a focus on understanding protein aggregation in chronic disease as her clinical interest in geriatric medicine grew. The UBC MD/PhD Program also hosts seminars for trainees and advocates for scheduling to balance research and clinical demands, something that may not be available to graduate students with medical degrees.

Nevertheless, if you are a medical student or resident interested in graduate studies, it is not too late. Some institutions offer entry into an MD/PhD program after acceptance to medical school. Many residencies also offer the Clinician-Investigator Program to provide funding and time during residency for graduate studies and research. In addition, there are some MD-only Clinician-Scientists. "In Canada, there remains a shortage of Clinician-Scientists," notes Kozoriz, and there is increasing support from Canadian and American funding agencies for scientists with clinical backgrounds. It seems that regardless of one's path to becoming a Clinician-Scientist, the journey will have many challenges. But according to Westwell-Roper, "If you have enthusiasm for a scientific area, it's a lot of fun and very rewarding!"

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