Why the mentoring of students in research institutes is on life-support.

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The location, personnel, and motivation for scientific research have undergone significant changes in the last quarter of the 20th century. Today, graduate students are often situated in research institutes that are separated from their host university and have their own research focus and administration. In Toronto, the University Health Network, Samuel Lunenfeld and Hospital for Sick Children research institutes, among others, host a large number of graduate students: 373, 94, and approximately 500, respectively (1,2,3). These students are not hospital employees and have identical rights and needs as graduate students located in the university proper. Too often, the unique station of graduate students in hospital-based research institutes is lost in the midst of high-pressure science.

Research institutes are primarily answerable to the foundations and corporate partners that provide funding. In turn, foundations and corporations are accountable to their sponsors and stockholders. Sponsors and stockholders are not forgiving of waste and mismanagement of funds, thus there is significant pressure on institute-based research scientists to rapidly produce clinically relevant data. These are important motivations; however, issues have arisen in the treatment of graduate students whose interests do not fully overlap with those of their host research institute or hospital. In this article, I will argue that the training and mentorship of these graduate students is often damaged. Whether this decline in the quality of training is a direct effect of the altered balance in the distance, both physically and psychologically, between research institutes, universities, and private enterprise, is a topic of debate. What is not disputable is that students in research institutes have vocalized many problems and issues in their training.

Graduate students join research laboratories to learn how to think as a scientist. Data generation is necessary for a successful thesis, but graduate students’ primary motivation is to learn from successes as well as failures. Therefore, it is a problem when graduate students situated in research institutes are not treated as “scientists-in-training” but are treated as hospital employees. There are many facets in the training of a scientist, such as: close guidance by the supervisor in the scope, planning and implementation of research; experimental analysis and strategies for clear data representation; assistance in the learning of presentation skills, involving the technical facets in the design of a presentation, oral speaking style, and question answering skills; and the proper reading of a scientific article and criticism of its methods, data or conclusions. Graduate students that are situated in a large research institute have vocalized grievances in all of these aspects of their training.

Most especially, many graduate students express their issues with the time, quality and professionalism of the guidance offered by their supervisors. Research scientists often have many commitments beyond student mentorship, such as clinical rounds and administrative obligations, making it difficult to arrange meetings. These duties are necessary to the functioning of a research institute, but for graduate students whose primary source of knowledge, inspiration and guidance is their supervisor, it is frustrating when they play second fiddle to bureaucracy and paperwork. Graduate students also vocalize their issues with supervisors that are too critical,
inconsiderate, are not encouraging, or do not reward hard work. This is very supervisor-specific, but even one student that feels neglected is unfortunate. Certainly, there is little formal training in how to be a graduate supervisor for new faculty, who rather learn supervisory style in a trial-and-error basis, but graduate students would like to urge supervisors to consider improving their management practices and interpersonal skills.

Another major concern is that research scientists in research institutes too often show a lack of interest in student life and student-centric events, which include research symposiums and social events. This complaint is raised at every Medical Biophysics Retreat and Departmental Meeting. It is a fact that most supervisors actively disengage from student-centric events. These events are opportunities to meet other scientists, learn networking skills, to share experiences, ideas and techniques, and to receive advice about science in general. When the greater proportion of faculty is not in attendance at departmental social events, students interpret this as a lack of interest in student life away from the bench. This is frustrating and insensitive, but most importantly, harmful to the growth of graduate students as well-rounded scientists. Meeting other scientists with common interests and skills to arrange collaborations and sharing of materials or expertise is a critical component in the life of all successful scientists. Sadly, most research scientists put other duties ahead of attendance at every single departmental event. Therefore, students miss a vital opportunity to learn these collaborative skills.

Why should graduate supervisors even care about the concerns of their graduate students? If students are producing data for grant applications, what is the problem? There is a host of reasons why supervisors should view their students are more than “data generators”. Graduate students have the best holistic appreciation and understanding of the data produced in the lab. They are best suited in its interpretation, dissemination, transfer and implementation. Graduate students contribute more time, dedication and emotional investment to the lab than any other employee. Graduate students provide a stabilizing influence in the lab, which intrinsically has a high personnel turnover rate, and their experience is invaluable for the training of new lab members. Graduate students are often important contributors to lab finances by obtaining fellowships, the majority of which is given to the laboratory. Even in the absence of these powerful motivations, courtesy and decency should be enough motivation for graduate supervisors to improve their mentoring.

Aside from these reasons, supervisors are reminded of the guidelines mandated by the University of Toronto School of Graduate Studies. Most especially, “within the context of their roles as supervisors, a faculty member’s primary task is to guide and inspire his or her students to reach their scholarly potential.” SGS publishes a handbook on Graduate Supervision Guidelines for Students, Faculty and Administrators that is available online (4). Incidentally, many of the issues I raise here are listed in this handbook as “responsibilities of the supervisor”, therefore supervisors are encouraged to read and implement these guidelines.

According to graduate students, how can graduate supervisors in research institutes improve their teaching and mentorship skills? Overwhelmingly, students would like faculty to show more enthusiasm and genuine involvement in the lives of their students beyond discussion of lab work. Graduate supervisors should be more active in departmental affairs, student seminars, social events and opportunities to meet students outside of their own lab. Graduate students would like their supervisors to regard them as more than “data producers”. Supervisors could be more sensitive to the level of commitment contributed by students to the lab as a student’s emotional well-being is often very intertwined with success and happiness in their lab environment. Practically, graduate supervisors should show more interest in their student’s affairs by their time and availability for discussions; a good way to do this is to schedule regular meetings and ensuring each student has at least an allotted amount of interaction time. Supervisors should communicate conference and meeting opportunities and relevant literature to their students as they become aware of them, and be willing to support student attendance for at least
one conference a year. Supervisors can also ask their student’s opinion and analysis of papers.

Most supervisors are responsible enough to do all these things. However, there are some graduate supervisors that should be reminded what it means to be a research mentor. I’d like these graduate supervisors to remember they were all graduate students themselves and to think about how they wanted to be treated by their supervisors. I’d like to urge each research scientist located in a high-pressure research institute to step back and re-evaluate their mentorship practices. Modern research requires new ways of designing and implementing experiments in multi-disciplinary fashion that requires much more than technical skills. Graduate supervisors need to be reminded of the true meaning of graduate supervision, which is to help students meet their full potential as free and creative thinkers able to tackle the toughest challenges in modern life sciences research.

References:

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