

The State of Women in Life Sciences at McGill: A Summary and Report of the Win4Science Forum

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This report is available for download at the Department of Pharmacology & Therapeutics website
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INTRODUCTION

With women representing slightly greater than 50% of the population in Canada, the underrepresentation of women in Life Sciences is noticeable. Progress towards equity, diversity, and inclusion within Life Sciences has been at the centre of public commitments from the Canadian Federal government, granting agencies, and post-secondary institutions for over a decade. However, despite these efforts, real progress is slow. Therefore, renewed commitments to diversity, equity, and inclusion must be met with new approaches. A first, important step in what must be a collaborative effort to bridge the gender gap and foster lasting equality in the Life Sciences is to listen to women researchers. To understand their experiences, consider their concerns, and celebrate their successes.

A number of international bodies have published reports and declarations in an effort to mandate equitable and diverse practices. The United Nations Sustainable Development Goals set a goal of achieving gender equality by 2030, through the empowerment of women and girls with education (1). UNESCO published a report *Science Report: towards 2030*, outlining that women make up only 30% of the global research pool. The report also addresses what has come to be known as the “leaky pipeline” phenomenon. That is, there is a progressive increase in gender inequity with each increasing stage of education and academic career advancement. UNESCO’s report states that women have achieved equality at the levels of Bachelor’s and Master’s degrees, with women receiving 53% of degrees. However, this equality is reduced at the PhD level, with women receiving 43% of degrees, and further declines to 28% at the level of researchers (2).

The North American Gender 11 Summit Declaration focuses on acting to increase learning excellence through specified action items that are geared towards instituting systemic change, and moving towards the improvement of equity, diversity, and inclusion. One such item is to “increase the diversity of those in leadership positions and roles with the goal of equitable representation” (3).

The Canadian Institutes of Health Research (CIHR) published an Equity Strategy with the goal of identifying and remediating systematic biases in their grant funding system, in an effort to create an equitably accountable agency for providing research funds to academic researchers (4).

Additionally, the Government of Canada, through the Minister of Science and Sport, has renewed its commitment to take action to improve equity, diversity, and inclusion in the Canadian research community through the development of a “Made-in-Canada” approach to the Athena SWAN initiative (5).

The UK-based Athena Scientific Women’s Academic Network (SWAN) initiative celebrates higher education institutions that have committed to and implemented practices that have worked to advance equity, diversity, and inclusion in the Life Sciences (6).

The Win4Science is an initiative of the Department of Pharmacology and Therapeutics, in McGill University's Faculty of Medicine. The idea to support women in pharmacology came from the Department's Chair, Dr. Gerhard Multhaupt, upon seeing a similar initiative for women in physics. The initiative's Director Dr. Lisa Munter, and the Department's Research Officer Bobbi Bidochka both decided to dedicate their time and work on the idea and develop Win4Science into what it is today.

Win4Science has three integral phases. The first consisting of an awareness campaign of seminars with expert speakers, a mentorship program to connect young students with visible role models through workshops, and training workshops. The second, fundraising for practical and tangible solutions, including salary stipends, administrative assistance, augmented domestic costs, and support to attend conferences. The third Win4Science program is to lobby and advocate for women in Life Sciences through an annual Forum, with the goal of instituting meaningful and lasting community, institutional and structural changes.

The inaugural annual Win4Science Forum held on May 24, 2018 was a world-café style symposium where challenges and opportunities at each academic career level of PhD trainee, Post-Doctoral trainee, and Professor were discussed. **The overall goal of the Forum was to identify challenges facing women researchers in the Life Sciences, develop actionable items, and determine how Win4Science can best focus its efforts.**

This report summarizes, discusses, and outlines actionable next steps for the progression towards developing a diverse, equitable, and inclusive environment for female researchers in the Life Sciences to ultimately build an academia that will maximize intellectual capital and bring equal human rights to the workplace.

The Win4Science Initiative has been made possible by the support and dedication of several groups and individuals.

The Win4Science Forum Organizing Committee includes Dr. Aimee Ryan, Bobbi Bidochka, Dr. Carolyn Baglolle, Dr. Chirine Toufaily, Dr. Jean-François Trempe, Dr. Lisa Munter, Mary-Rose Bradley-Gill (PhD candidate), Dr. Saleem Razack, Sameer Zuberi and Vanessa (Yi-Chen) Sung (PhD candidate). The Office of Social Accountability and Community Engagement was responsible for the quantitative analysis presented in this report (www.mcgill.ca/med-saceoffice).

The Win4Science Forum held on May 24, 2018, was sponsored by the Departments of Anatomy and Cell Biology, Biology, Biochemistry, Experimental Medicine, Human Genetics, Integrated Program in Neuroscience, Pharmacology and Therapeutics, and Physiology, along with the Office of Social Accountability and Community and Engagement, the Faculty of Medicine and L'Oréal Canada.

WIN4SCIENCE FORUM

The 1st annual Win4Science Forum brought together women (and men) of varying professional levels who were introduced to the topic of challenges of women in Life Sciences, with discussions following in a world café format with round table discussion based on specific questions provided (Appendix A). While individual sessions were dedicated to discussing problems at each career level of PhD students, Post-Doctoral students, and Professors, there were common themes throughout the duration of the Forum. The main themes of discussion centered around mentorship, bias, recruitment and promotion, family planning and childcare, and monetary support.

Mentorship

The issue of mentorship was acknowledged by Forum attendees to be multi-faceted. Female mentors were noted as having the potential to offer more helpful advice, as they may have experienced the same situations as those they are mentoring. Additionally, there was a desire for more informal mentorship opportunities, and community-based mentorship; explicitly, alcohol-free mentorship times, seminar series or workshops dedicated to running a lab including finances, lab management, human resources, and dealing with conflict. Forum attendees at the PhD and Post-Doctoral levels addressed the “leaky pipeline” in academia, due to the lack of visible female role models in Faculty or leadership positions, as one of the biggest reasons for leaving academia. Mentorship was identified as playing a key role in the outlook of female researchers on pursuing academic careers.

Female-to-Female Mentorship

There was full agreement among Win4Science Forum attendees that mentorship plays a big role in the academic career outlook of PhD and Post-Doctoral students. Female mentorship from Faculty members or supervisors was identified as having the potential to offer better advice and a different perspective than a male mentor. Individuals noted that equal opportunities were not given to female and male students by male supervisors. This compounded with the fact that men tend to be more confident in asking for more time with a supervisor which results in more face-to-face time, leads to better relationships, more mentorship, and more project development for male students. If the female representation of the Faculty can be increased, female trainees will have more choice with female supervisors and more opportunity to create more social ties outside of the professional sphere.

Community-Based Mentorship

It was acknowledged that a lot of mentorship happens in a more social or personal setting. Having a team of mentors, or community-based mentorship, would allow for multiple perspectives on a situation and deeper discussion on matters at hand. This type of mentorship was noted to be particularly important for Post-Doctoral students as they have less sense of community which may lead to feelings of isolation. Recommendations for community-based

mentorship opportunities include informal discussions or sessions on salary negotiation, leadership, and effectively giving and receiving objective criticism. Sessions on how to effectively run a lab should be provided to Post-Doctoral students and early career Professors, including information on: financials, lab management, and conflict resolution.

Additionally, mitigating bias in reference letters, grant writing, and reviewer comments should be addressed among mentors and mentees. Personal history and strategies from women with respect to dealing with this bias may help guide trainees and younger Faculty.

Actionable Items:

1. *Community-Based Mentorship Opportunities – these opportunities should include alcohol-free events and take place between 10am-4 pm in an effort to avoid times of childcare related activities.*
2. *Develop and enforce requirements of mentorship for current female Faculty members.*
3. *Hold seminar series sessions focused on women dedicated to: salary negotiation, leadership, lab management, acting as an effective peer reviewer, the importance of female mentorship.*

Bias

Bias, both implicit and explicit, against women in science has been well documented. A 2010 report by the American Association of University Women (AAUW) discusses the continued prevalence of bias and stereotypes in STEM fields (6). The Win4Science Forum discussion reiterated that there is continuing bias experienced by Women in Life Sciences. Explicit bias, including gender-specific remarks and racism remain pervasive. Implicit bias, such as unconscious bias and imposter syndrome, the psychological feeling that you are unqualified to be in the position you are in, and the persistent fear of being exposed as a “fraud”, were discussed by Forum attendees as needing more open discussion and exposure.

Implicit Bias

The Forum discussion overwhelmingly surrounded two types of implicit bias: unconscious bias and imposter syndrome. Unconscious bias from men against women was said to be a universal experience by every woman.

Unconscious bias during the hiring process was cited by women at the Forum to be the single most important barrier to career progression, in their experience. Unconscious bias in search and select committees as well as in the process of promotion to full Professor may play an important role in the two main points of drop-off in the “leaky-pipeline”; at the steps from Post-Doctoral student to Assistant Professor, and from Associate Professor to full Professor. This bias was also discussed in the context of grant application reviewers. The equity strategy implemented by the

CIHR now requires the mandatory completion of an unconscious bias module for all peer reviewers before gaining access to an application.

Other prevalent forms of unconscious bias experienced by women of all academic stature were stated to be in the processes of grant review, reference letters, and the peer-review process. A study, performed at the McGill University Health Centre, described the presence of bias in the peer review process of grant applications (7), reinforcing the need to not only recognize that gender bias exists within the grant review process, but that more action needs to be taken to understand why this occurs and take steps to mitigate this bias. Data have demonstrated that gender stereotypes bias how recommenders on hiring committees describe female applicants compared to male applicants in the Life Sciences (8). A number of resources are available to both men and women including a “Gender Bias Calculator” (9) for reference letters which has been developed to combat this bias. Analysis of the gender of peer reviewers in STEM fields revealed that there is a significant gender-preference towards men, when appointing reviewers in the peer-review process of paper submission (10). Other forms of unconscious bias manifest in the forms of micro-aggressions and a lack of political correctness. Attendees felt that the perpetrators of these biases did not have a malicious intent. In fact, many women strongly felt that most men did not intend to treat women differently and that it was a result of not being aware of how their actions were being perceived by others. In fact, many women felt that they have in the past been a transgressor of unconscious bias against other women. Informational sessions about sensitizing both men and women against these biases was stated as necessary to bring attention to these issues and begin to take action towards obtaining equity in the workplace.

The second type of implicit bias experience by women was imposter syndrome. Impostor syndrome is disproportionately experienced by women, most notably high achieving women (11). Discussion at the Win4Science Forum acknowledged that men tend to apply for jobs even if they do not meet all of the qualifications. Whereas women in the same position tend to not apply for a job unless they meet most, if not all, of the qualifications. Forum attendees further elucidated on this topic stating that they fear being “tokenized” if offered a job or promotion. This fear of being wanted because you are a woman, and not because you are the superior candidate.

Explicit Bias

A number of personal stories of women experiencing overt bias from men were shared amongst attendees highlighting overt sexism and racism. With women feeling as if they are still perceived as less competent than men, as evidenced by having their input ignored by men or being talked over in meetings. Additionally, there was discussion surrounding the societal and cultural pressure on women to look a certain way. In Life Science academia, there is a pressure on women to look professional but not too feminine; to “brand” themselves in order to be taken seriously. Science may be a masculinized institution due to longstanding male traditions which are imposed on women as early as at the undergraduate level.

Actionable Items:

1. *Equity/ Sensitivity Training – Two-sided approach*
 - a. *Training as an applicant, employee, or mitigating imposter syndrome.*
 - b. *Training as a reviewer, employer, peer, or hiring committee member*
Training should include “Top-Down” reform, with particular attention paid to how individuals and committees think, act, and acknowledge their bias.
2. *Unconscious Bias training for all search and select and promotional committee members.*
3. *Identification Number on Grant Applications – all grant applications should be given an ID number for the project proposal instead of having the name of the applicant, to mitigate gender bias.*

Recruitment and Promotion

Issues discussed at the Win4Science Forum regarding the recruitment and promotion of women both into and within the Faculty largely surrounded the current metrics for promotion and the lack of visible leaders in higher academic positions. Conclusions from the Forum state that we need to redefine what *constitutes* excellence and quality from the Top-Down. We need to recognize that atypical or non-standard qualities and skills are equally as valuable as more traditional, often male-oriented, metrics.

Visible Leaders in higher Academic Positions

A majority of trainees at the PhD and Post-Doctoral cited the distinct lack of visible role models in leadership positions as a potential deterrent to pursuing an academic career. With professors providing additional commentary that a lack of leadership in higher academic positions, such as Department Chairs, as a deterrent to further career advancement. The potential cause of this lack of visible female role models was determined to be two-fold. Attendees discussed the intrinsic habit of people to relate to role models who are like them. People are drawn to those who look like them which may then reinforce a lack of diversity in leadership. This may manifest itself as women seeing a lack of women Department Chairs or leadership, and thus not identifying themselves in such a role. Additionally, attendees discussed the possibility that women may take more time to feel prepared for positions of leadership when compared to men. Leadership positions, such as Department Chair, may be seen as unattractive to women. With these positions requiring additional work and opportunities for confrontation with male colleagues. The second barrier to higher rate of female academic leadership was cited by Forum attendees to be a result of the current merit-based promotional system.

Merit System

The traditional, and current, merit system for promotion to full Professor and tenure-track rely on metrics such as publications, citations, as well as past grants and funding. It has previously been published that women receive less overall funding when compared to men (12). Women are also disproportionately asked to perform more administrative roles. The merit-based system of promotion needs to be adapted to credit previously unrecognized roles such as committee participation, time spent on mentorship, and community involvement. The steep drop-off of female representation at the level of Assistant Professor, 48.7%, to Associate Professor, 40.9% in the Faculty of Medicine at McGill University in 2014, compared to full Professor, 27.9%, needs to be addressed. Forum attendees discussed the possibility of checking the academic file of female Associate Professors who have not been promoted within the expected timeline for roles and skills performed that fall outside of the current merit system. Working with the Department Chair to then mentor these women or acknowledge the contribution they have already made, may increase the female representation at the level of full Professor.

Actionable items:

- 1. Revise the current merit-based system of promotion to include metrics such as mentorship, committee membership, and community engagement.*
- 2. Set clear and transparent goals for increasing female representation, with particular focus at promotion to full Professor.*

Maternity Leave & Childcare

Women in Life Sciences have different academic career trajectories and experiences than men, particularly when it comes to family planning, maternity leave, and childcare. The impact of family and childcare on women in science cannot be understated. While sessions on family planning may play an important part in mapping out an academic career path, the role of the partner cannot be overlooked. Open discussion on family planning and paternity leave were highlighted at the Forum to be potential pathways to a more equitable division of labor when it comes to childcare. Published data describe that men on paternity leave tend to take this time to publish academic articles (13). The perception of maternity leave as a “career interruption”, and the limited access to public daycare were two themes common to the majority of discussions that took place throughout the Forum, at all academic levels.

Maternity Leave

Academic interruptions such as maternity leave can have a negative impact on the career progression of a woman. Forum attendees discussed the implicit negative connotation of the “career interruptions” section on grant applications on women who have taken maternity leave. It was noted that the responsibility of changing the societal and institutional perception of maternity leave on academic productivity falls onto the departments and granting agencies who

write these applications to change this practice. It was the view of the Forum participants that women should not be penalized financially or academically for having children.

There was much discussion over the current regulations and mandates in the Faculty of Medicine over maternity leave, particularly as it relates to PhD and Post-Doctoral trainees. The regulations may differ depending on the source of trainee funding, and within McGill University it may be at the discretion of the individual supervisor. As science “does not stop”, many trainees expressed fear that if they were to go on maternity leave that their project would be taken away from them.

A suggested solution of hiring a research assistant to replace the researcher to continue working on the project while she was on maternity leave was put forward. Mandating regulations and guidelines for supervisors to follow may also help to alleviate the pressures of maternity leave on researchers. Additionally, discussions surrounding the ability of women at the Post-Doctoral level to get a Post-Doctoral position after taking time off to have children, or to obtain a Faculty position after maternity leave was exceedingly difficult. Increased sensitivity of hiring committees or internship programs for PhD and Post-Doctoral trainees to partner with industry, may provide a pathway for women with children to work their way back into academia.

Childcare

One of the most frequently discussed topics to take place at the Win4Science Forum was regarding childcare. It has been shown that women with children tend to take longer to complete degrees (14), and there is a negative implication of productivity surrounding these researchers. Additionally, women with children feel as though they are perceived negatively for spending less time at work or in the lab when compared to their peers. The traditional thought being that the longer you are at work, the more productive you are. However, published data have shown that this line of reasoning is not true, and that the longer you spend at work, the less productive you are (15). Attendees stated that researcher dedication to work should be based on productivity and outcomes instead of physical time at work.

Forum attendees discussed the limited access to daycare provided by McGill University. The spots are limited, with waitlists of up to 2-3 years. Spots for children with disabilities were cited to be even more limited. The daycare that is available is from 9am-4pm, with no after-hours or short-notice care available. Forum attendees noted that the prospects of childcare at an institution would impact their decision when making an important academic career decision, such as relocating for a Post-Doctoral position or a Professorship. Thus, inadequate daycare resources may limit the ability of an institution to attract and retain top researchers with children.

Finally, childcare support at conferences, as well as funding for women with children to travel to conferences was a barrier for women in science with children. There is currently no known funding available for mothers in science to travel with their children to conferences, or to support childcare at home when the mother is away. It was acknowledged that some of the larger international conferences are now providing childcare options, however, this was noted to not be a common practice as of yet.

Monetary support for researchers should be a top priority for all STEM fields to address the day-to-day additional stress and responsibilities of both men and women. Money for hiring a stand-in research assistant to help with research responsibilities, babysitting/short-notice care, and increasing awareness for pre-existing supports and resources is necessary to bring equity to science.

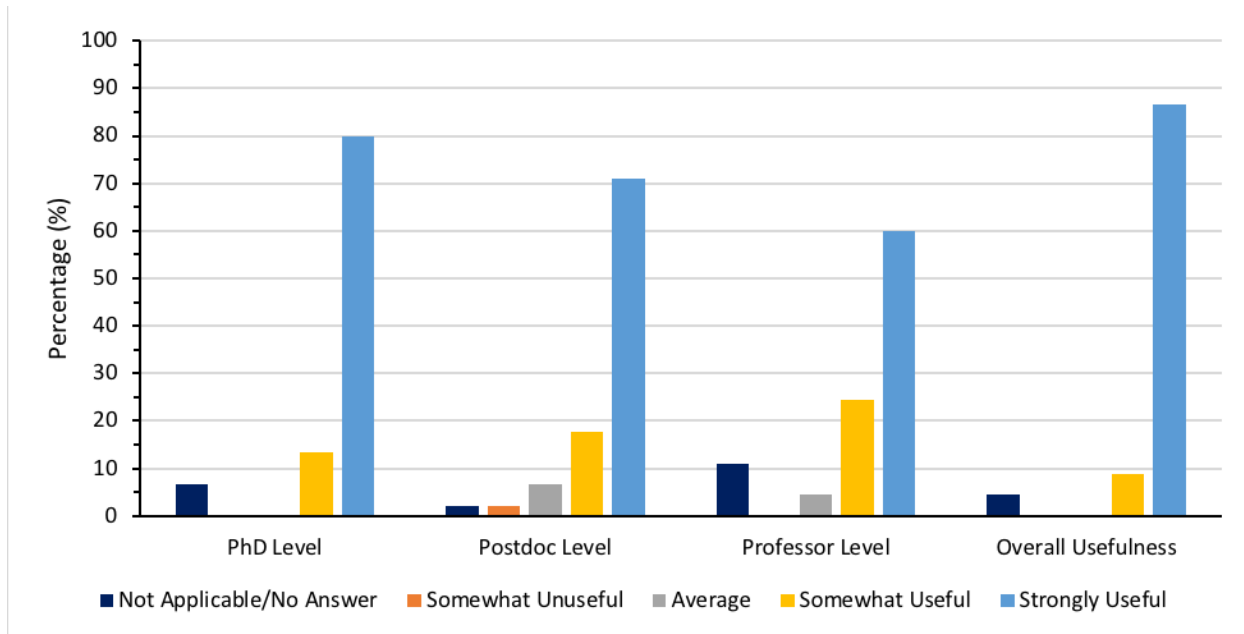
Actionable items:

1. *Clear, transparent, and accessible mandates regarding the regulations of maternity leave for trainees should be developed and disseminated.*
2. *Increased funding for:*
 - a. *McGill daycare resources, to increase spots and decrease waitlist time;*
 - b. *Awards/Fellowships designated for researchers with children;*
 - c. *Increase awareness of available support networks and resources for researchers with children;*
 - d. *Research assistants to assist on scientific work during maternity leave;*
 - e. *Travel to conferences with children and childcare while at the conference.*

Feedback and Reported Usefulness of Win4Science Forum

All 70 attendees at the Win4Science Forum were given a survey to complete to report the perceived usefulness and to receive feedback regarding the Forum. 45 participants completed the survey. There was overwhelming support from attendees stating that they found the Forum to be strongly useful at all academic levels: PhD, Post-Doctoral, Professor and Overall (Figure 1).

Figure 1: Perceived Usefulness of the Win4Science Forum



Attendees then reported that the event significantly enhanced their knowledge on issues surrounding women in the Life Sciences, and that more can be done to improve the situation for women in Life Sciences at McGill University. The provided feedback shows a strong belief that monetary support will help women with young families, and that **Win4Science must continue its activities, including the seminars, Forum, and mentorship**. These results are presented in Table 1 below.

Table 1: Reported Educational Value of the Win4Science Forum and Perceived Importance of Monetary Support in the Development of New Initiatives for Women

	This activity enhanced my knowledge	Can we do more to improve the situations for women in Life Sciences at McGill?	Do you believe monetary support will help women with young families?	Would you agree that Win4Science must continue its activities such as the seminars, forum, and mentorship?
Strongly Agree	86.7	95.6	97.8	97.8
Neutral	13.3	4.4	2.2	2.2
Strongly Disagree	0.0	0.0	0.0	0.0

Written Feedback from Forum Attendees:

The feedback from attendees of the Win4Science Forum was inordinately positive and emphasized the need for initiatives, like Win4Science, that focus on women in Life Sciences. Some examples of feedback and the desire of attendees for Win4Science to continue are:

- “I love this so much – please continue to organize events like this. I feel infinitely less isolated and I’ve learned a lot.”
- “I think Win4Science is a very useful initiative that has the potential to bring change and initiate important movements for bridging the gender gap/bias.”
- “This was an amazing seminar! I learned so much and it was a great opportunity to connect and network with other graduate students and faculty. Please continue to hold these seminars in the future!”
- “Time for action!”
- “Excellent meeting, very focused, concrete questions and fruitful discussions. Thank you!”
- “Thanks for addressing these important topics.”

Appendix A:

Each session was dedicated to an individual level of academia: PhD, Post-Doctoral, and Professor. Each table was then introduced and assigned to one of the following discussion questions. Instructions given to the Win4Forum Attendees suggested that the provided questions be discussed first and foremost, with other open discussion encouraged after this dedicated discussion.

Below are the discussion questions provided, per level:

PhD Level

- 1) Why are there fewer women than men in science at the level of professors?
- 2) How do you feel about a male supervisor/mentor going for drinks or dinner or traveling to a conference, alone with a female supervisee/mentee?
- 3) Do you have or foresee any challenges in having a family and pursuing an academic career?
- 4) If there was monetary support for women in science with young families, how do you think this support would be most effective?
- 5) In what ways have you experienced gender bias/discrimination, interpersonal or systemic? If not, what is your level of awareness in terms of others' experiences?

Postdoc Level

- 1) Why are there fewer women than men in science at the level of professors?
- 2) Do you notice a difference in how PhDs are supervised/mentored or how Postdocs are supervised/mentored, in relation to their status and/or their gender? How? What are the perceived barriers in the context of mentorship?
- 3) What may prevent you from applying for faculty positions/getting positions? In what ways do you think women and men approach their choice of a postdoc position differently?
- 4) What kind of skills training do you think would be useful for PhD, Postdoc, and Assistant Professor? (grant writing skills, lab management, confidence building, negotiation skills, conflict management)
- 5) Do you think that women who choose to have a family and an academic career will have to manage their career differently from men? If so, how? Academic careers go along with cross-country mobility – does this impact decisions of female researchers?

Professor Level

- 1) Are there unique needs for mentorship of female professors?
- 2) What are the problems with the current merit metrics for female professors? How can merit evaluations become more inclusive?
- 3) What are your perceived restrictions in taking on leadership positions? Would a change of profile of leadership positions make them more appealing for you? As a postdoc/PhD student, did you prepare yourself to become a leader?
- 4) How can we build alternate and inclusive methods/networks in the professor body to strengthen work-life integration? (Alternative networks?)

- 5) In what ways do you have to adapt your life to manage an academic career as a woman?
- 6) Is McGill a strong institution to support women in Life Science? What could McGill do to be a stronger supporter?

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