

INTERVIEW SPOTLIGHT



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BENCH TO BABY BELLY

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DR. DEBORAH SLOBODA IS AN ASSOCIATE PROFESSOR IN THE DEPARTMENT OF BIOCHEMISTRY AND BIOMEDICAL SCIENCES AT MCMASTER UNIVERSITY. DEDICATED TO IMPROVING MATERNAL AND CHILD HEALTH, SHE EXPLORES THE RELATIONSHIP BETWEEN PRENATAL RISK FACTORS, SUCH AS POOR MATERNAL NUTRITION, AND LONG-TERM DISEASE RISK IN HOPES OF TRANSLATING HER BASIC SCIENCE RESEARCH INTO TANGIBLE IMPROVEMENTS FOR WOMEN'S HEALTH SERVICES IN HAMILTON.

■ CAN YOU TELL US ABOUT HOW YOU BEGAN CONDUCTING RESEARCH ON THE DEVELOPMENTAL ORIGINS OF HEALTH AND DISEASE?

In my undergrad, I was always really interested in developmental embryology. I did my Masters of Kinesiology,

looking at how exercise changes maternal metabolism. During that time, I took a course that I found extremely interesting. I was going in to dispute a mark on the course's exam, and I started asking my professor a lot of questions. His answer was, "Well, we don't know the answer to any of that, but you could do a PhD and find out!" Afterwards, he offered ... me to do a PhD to find out the answers to those questions. I was fascinated by the topic as I had so many questions, and I decided to pursue the opportunity — I really liked it.

■ WHY IS IT IMPORTANT FOR US TO UNDERSTAND DEVELOPMENTAL BIOLOGY? WHAT DRIVES YOU TO DO THIS RESEARCH?

The biggest thing is the modifiable developmental window. Most of our research on non-communicable diseases targets areas that are not necessarily correctable. We try to find treatments. Prevention, however, can actually save lots of money for governments and also save individuals [from] stress, improve quality of life, and decrease inequity. I am really quite focused on how a preventative approach can improve the lives of kids growing up. We also know that there are trans-generational effects; improving the life of one fetus can have massive effects for many generations down the road. There is

a cycle of inequity, and if you can break it, you'll allow those individuals to have a more positive outcome. It is really the long term ideology that fascinates me the most. I think that prevention can do a lot for how we live as a community.

■ BEYOND BASIC BIOMEDICAL RESEARCH, YOU ARE HEAVILY ENGAGED IN COMMUNITY TRANSLATIONAL STUDIES LIKE YOUR MOTHERS2BABIES INITIATIVE. COULD YOU SPEAK MORE ABOUT THE LINK BETWEEN BIOMEDICAL AND TRANSLATIONAL RESEARCH?

As much as I love investigating signalling pathways and understanding the minutia [within] developmental biology, I am not interested in studying pregnancy in mice or sheep — I want a bigger role to play. The majority of what I'm invested in doing is centred on the belief that we have significant disparities in the community. I think that if we can shed some light on these disparities through the use of science, we can improve community relationships. Many people, for example, blame obese individuals for their eating habits, but they fail to understand that obesity is really a disease embedded in early life. I am hoping that through biomedical research, we can try and change people's views on how to treat this postnatally. We're also looking at non-communicable diseases from the standpoint that it is all of our jobs to make sure that families, mothers, and babies grow up healthy, since they are our future.

Part of the Mothers2Babies study is based on the fact that Hamilton has a lot of disparity in a very small area. There are very "desperate" neighbourhoods in downtown Hamilton located very close to neighbourhoods with a much higher quality of life. Life expectancy is 85 in some areas and 70 in other areas just a few kilometres away. Mothers2Babies is a community-based knowledge translation study that aims to better understand the impact of these disparities on the barriers and enablers of pregnant women in Hamilton. We have an accessible online survey that is concerned with [barriers] preventing women from being healthy. The answers [are very] different based on where they live, their age, and other factors. We're also engaged in focus group interviews with pregnant women, their partners, as well as community healthcare workers. What we want to do is gather all this information and work together with Hamilton Public Health to try to modify or extend the current pregnant programs in the city, so they are accessible to everybody.

Ultimately, the qualitative data in Hamilton will tell us about the needs of those women on the community level. The basic science [component] lets me translate what the women know into science. For example, we found that a lot of women know that they must eat healthy during pregnancy. But, what they may not know, which we found in the lab, is that [their diet] during pregnancy will even affect their grandchildren. If [the women] understand that the program in which they are participating is fueled by hardcore science, the ideas conveyed through the program will be better accepted.

■ AS A STRONG ADVOCATE FOR GENDER EQUITY IN SCIENCE, WHAT DO YOU THINK IS THE MAIN REASON WHY WOMEN AREN'T SEEN AT HIGHER LEVELS IN SCIENCE? WHY ARE YOU SO PASSIONATE ABOUT THIS ISSUE?

I think it's an important issue. I think the disparity in the scientific community is in part due to the fact that women's health and preventative measures in women's health are low on the priority list. That's all wrapped up in promoting women in science. Now, more than ever, there are just as many, if not more, women engaged in scientific activities at the elementary or undergraduate level as compared to men. However, something is stopping them from going on. There are few women at higher level positions.

This, I think, is largely a historical issue. Historically, white men were employed at the higher levels in many institutions and we, in general, are more comfortable hiring people like ourselves. Sometimes it's conscious [and] sometimes it's unconscious. We're all human and implicit bias is a part of us. I think it's important that we call it out wherever we see it. "Hang on, if all qualifications are comparable, perhaps we should give equal consideration to this lady from southeast Asia instead of the white male who grew up in Toronto." Whether it be business or science, we know that having a diverse range of voices at the table leads to improved outcomes. I feel obligated to make sure that the [women's health] equity I advocate through the scientific research I do is translated into real life.

■ DO YOU THINK ACHIEVING GENDER EQUITY IN THE SCIENTIFIC COMMUNITY DEPENDS MORE ON MACROSCOPIC CHANGE OR INDIVIDUAL ACTION?

I think it's a combination of both. [Gender equity in science] is like littering. The government can say that it's illegal to litter, but it doesn't necessarily cause everyone to stop littering. In the same way, universities can mandate that there shouldn't be racism or sexism, but each one of us still has to acknowledge our own participation. Me chucking something on the ground may have little impact, but I have to acknowledge that my piece, plus your piece, plus your piece, really changes what the playground looks like. So I think it's both. The policy-related changes must be in place, but we can't just sit back and assume we have no role to play. Nowadays, we would be appalled to see somebody chuck something on the street, right? [Littering] is no longer acceptable in this society because we've called each other out by saying, "Excuse me, I think you dropped this piece of garbage." All of us need to continually work on [the gender bias] by saying, "Actually, I'm not okay with this panel being entirely male. You're going to have to change this or I'm not going to participate." The policy changes don't negate our personal responsibility of pointing it out to people who haven't noticed.

■ GIVEN YOUR ACHIEVEMENT IN THE SCIENTIFIC COMMUNITY, WHAT DOES IT TAKE TO BE A GREAT SCIENTIST? IS IT ABOUT PUBLISHING THE MOST PAPERS OR IS THERE SOMETHING ELSE THAT ALLOWS YOU TO PRODUCE AMAZING WORK?

As much as we like to write down numbers — how many papers have you published? What’s the impact factor, h-index and citation index? — I think what makes a great scientist is the passion you have for what you’re doing. If you lose the passion, then you’re done. How am I going to drag myself into the office and dedicate my life to reading papers about something I hate? I can’t [even] imagine it.

The Mothers2Babies study is so important to me because I am dedicated to those [underprivileged] women and to making their lives as good as mine, since I’ve been incredibly privileged. That’s what drives me. I’m sure every scientist would say that [about passion]. My ideal holiday would be sitting on the beach with a research paper. Who wants to do that? Often, my brother asks, “Are you working? Why are you working?” And I say, “Oh, I’m not working. It’s not work to me!” I’m as interested in reading a research paper as I am a fiction novel because I think it’s cool and I want to learn more about it. I think that’s the number one thing that makes a great scientist. Once you lose the passion, I can’t see how you could possibly dedicate the time or the effort to do what we do.

[You must also be willing] to take risks, calculated risks. I think art and science are very similar in the fact that you have to be creative, and sometimes “just go with it” — see where it takes you. You don’t always have to be committed to exactly what you think should be happening. That becomes dangerous because you start making your data fit something predetermined. You [have to] be flexible, open, and willing to listen to the things happening around you. I just had this conversation with my PhD student. He wants to do something that I disagree with, but I said, “If you can convince me with some data, we’ll do it.” When it comes to taking risks with new things, you have to be open and listening.

■ HOW HAVE YOU OVERCOME THE CHALLENGES YOU’VE ENCOUNTERED ON THE ROAD TO BECOMING A SCIENTIST?

I had a strong support network and amazing mentors. That was the most important thing — having people around me that

supported what [I was] doing. Both my husband and my PhD supervisor have supported me every step of the way. There’s a lot to battle for women scientists, but it’s a hard road regardless of who you are. I tell my graduate students that graduate work is half scientific growth, half emotional battle. There’s [often] a lot of disappointment and a lot of happiness all at the same time. Sometimes, there’s a lot of disappointment and no happiness. Experiments [might not] work or your hypotheses [are] totally wrong. How are you going to overcome that? I often thought to myself, “Why does it always take me twice as long to get to where I think others are already at? Twice as many experiments, twice as many post-docs...” So, having people around you that you can talk to [is so critical]. Overcoming failure is a big thing that you have to master.

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