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## Improving trainee engagement in science: Lessons from a virtual seminar series

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### Abstract

To be a successful researcher, you are expected to have important skills beyond the bench such as being able to ask questions, talk about science with your peers, and organize scientific events. However, there is frequently little to no training or emphasis on these skills at the student and postdoc level. The virtual Aging Science Talks seminar series and Slack group have benefitted the scientific community in many ways amidst the chaos of coronavirus quarantines and lab shutdowns, but as a 2<sup>nd</sup> year PhD student, I was particularly excited about how this format was able to engage trainees. We should end the era of trainees sitting at the back of the room while PIs dominate discussions and Q&A sessions with speakers. Reflecting on the advantages of Aging Science Talks can show us how to make future scientific events more engaging and inclusive for everyone.

### Keywords

Aging science talks; Students; Trainees; Remote work

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The largest crowd I have ever spoken to was invisible to me as I introduced a speaker for the Aging Science Talks series. Apart from the number at the bottom of my screen telling me that almost 300 people were listening, all I could see was the title slide of a PowerPoint Presentation and I felt like I was just talking to myself. Despite the disorienting feeling of not seeing the other attendees, the Aging Science Talks have a strong feeling of familiarity to them. It doesn't feel that much different than sitting in a room quietly listening to a department seminar or a presentation at a conference.

In fact, what I thought about most often during this virtual seminar series was not the ways in which it was different than or inferior to a seminar in-person, but the ways in which it was better. I am so eager to sit in a room with my colleagues again, but as we move off of our couches and back into conference rooms, there are valuable lessons from the Aging Science Talks that we should carry with us. Specifically, being a second year PhD student myself, I think that these virtual talks and the associated Slack group have been incredibly valuable in

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facilitating the engagement of students and postdocs. These are just a few of the lessons that I have learned from this series that I believe can be applied to future events, whether they are in-person or online.

## 1. Lesson #1: asking questions

Whether I am at a department seminar, a local meeting, or an international conference, the Q&A portion of a presentation is generally dominated by senior PIs. Occasionally, a few brave postdocs or the rare emboldened student venture to ask a question, but most trainees remain silent. I have spoken with many trainees about this phenomenon, and I always get the same responses:

“I don’t want to use up the time with my simple question.”

“Somebody might have a better question.”

“They probably already answered it and I missed it.”

“Everybody else probably understood it.”

In Aging Science Talks, attendees post questions in Slack and use the thumbs-up emoji to up vote questions that they like. At the end, the most popular questions are asked to the speaker and answered during the webinar. Any remaining questions are answered by the speaker on Slack later. This question format was enticing to me for many reasons. I could type out my question to make sure it was worded correctly. I wasn’t worried about wasting time with my question because the voting system allowed the audience to decide which questions should be prioritized. It didn’t matter if my question was simple because even if it wasn’t one of the most popular questions, the speaker could quickly answer it online later. From my observations of the Slack channel, I was not alone; it seemed like a larger proportion of trainees felt inclined to ask questions on this virtual format.

I know that we can’t hide behind technology forever, but in an unexpected way, Aging Science Talks positively reinforced my habit of asking questions. The votes on my questions in Slack assured me that my questions were interesting to other attendees and worthy of the speaker’s time. I hope that all of the trainees that have been active in this virtual series have learned that their engagement with the speakers is not a burden, but rather that their participation is desired and valuable.

Once we return to big rooms with squeaky chairs where we listen to speakers in-person, if you realize that Q&A sessions are dominated by PIs, maybe you can apply some of the lessons from this series to jumpstart trainee engagement. Perhaps you could try out a virtual question submission, a voting system, or allot time after the seminar where only trainees are allowed to ask questions. These are not permanent solutions, but a way to shake up old routines and boost trainee participation through positive feedback.

## 2. Lesson #2: direct engagement with speakers

Have you ever been listening to an interesting talk but, for whatever reason, your attention drifts slightly, and when you refocus you realize that you just missed a critical detail? You

misheard a small result, you didn't understand how their method worked, or you couldn't remember what strain of mouse they used? Or maybe you just thought their work was really interesting and you want to chat with the speaker about the story behind the project or their next steps. Well, no big deal, you can go up to them after the talk or go mingle with them at the bar later, right? If you're a trainee, this is not always so easy. Oftentimes, talking to the speaker means busting through a herd of their old buddies from grad school all reminiscing on fun times, or a bunch of PIs talking about running a lab, big ideas, and "collaborating". Or perhaps the speaker was a trainee themselves, but they slipped away into the crowd and you have no idea how to contact them.

During Aging Science Talks, this communication barrier was lowered. The speaker, whether they were a senior PI or a fellow graduate student, was only ever one direct message on Slack away. On multiple occasions I sent a speaker a quick message to ask about a method they used because I was curious whether it would be applicable to my own work. I didn't have to hunt down an email address or worry if they would ever see it, I just had to look up their name in the Slack group. Both times, I got quick and enthusiastic responses.

It is important for trainees to talk to researchers outside of their own labs, and an excellent avenue to do so is talking to speakers about their work. We should make it easier for trainees to engage with speakers in informal environments. For example, my department often has seminar speakers eat lunch with trainees after their talk. This could easily be applied to conferences as well. We can set aside 30 minutes after a session for speakers to gather specifically with trainees and chat about science over coffee.

### 3. Lesson #3: experience hosting and organizing

My experience hosting Aging Science Talks has given me an inside look at the behind-the-scenes organization. Few graduate students get to take part in the planning or execution of a seminar series that spans the globe with a daily following of hundreds of people. The private Slack channel containing the hosts and the organizers, Will Mair and Dudley Lamming, has been full of lively discussions for months now. We have debated logistics, scrambled to fix technical issues, and strategized about how to advertise and run the series. The students and postdocs have made critical contributions to Aging Science Talks, but even when I am not contributing to the decisions, it has been incredibly informative to watch the process unfold.

I would like to applaud Will and Dudley for involving their trainees in this effort, and I would urge other PIs to do the same. Trainees, and more specifically students, are not always involved in organizing seminar series or conference panels. If you are a PI or a postdoc organizing an event or session, I would suggest you consider involving a student if you can! Give them a small task and teach them about what goes into organizing a successful talk or panel. Perhaps even get them to introduce the speaker or lead the Q&A at the end. Involving students early on in their careers in these efforts will increase their ability and confidence in leading their own initiatives in the future. Training a successful scientist in this day and age requires mentoring beyond the bench.

#### 4. Moving forward and applying lessons learned

This period of remote work and physical distancing has awoken in many of us a deeper appreciation for our social and scientific communities. Our scientific community has been forced to innovate in order to stay productive and connected. The virtual Aging Science Talks seminar series is one of the many fruitful products of that innovation. This series continues to bring a sense of routine and connectivity to researchers in all career stages throughout the entire world. Additionally, the Aging Science Talks series managed to circumvent some of the shortcomings of typical scientific events: the scarcity of trainees asking questions after talks, the lack of direct communication between trainees and presenters, and the absence of students in planning or hosting events. My experience as an attendee and as a host for Aging Science Talks has highlighted for me some of the ways in which we can improve scientific events in the future.

I encourage all attendees of Aging Science Talks, or other virtual programs during this time, to ask themselves:

“Were there any advantages to this virtual format over what we normally do?”

“Is there any way to apply some of the observed benefits in the future?”

We all stand to learn a lot from these sorts of reflections. I believe Aging Science Talks, in addition to showcasing amazing research, has revealed ways in which we can strengthen our scientific community. As we move forward, we should not look back upon this time as time wasted. Instead, we should acknowledge the new connections we have made, skills we have acquired, technologies we have mastered, and lessons we have learned. We can use the slow return to old routines as a chance to make changes and improvements to our workplaces, labs, meetings, and conferences.

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