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Maintaining a scientific community while social distancing

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ABSTRACT

The "Aging Science Talks: Science for the Community" daily online seminar series was established in reaction to the cancellation of a myriad of regional, national, and international meetings focused on the biology of aging due to the COVID-19 pandemic. The inability to attend scientific meetings has far-reaching implications for our field, as we lose the ability to 1) disseminate both published and non-published data through talks and posters; 2) network and establish new collaborations to produce innovative science in the aging field; and 3) continue the career development of early career researchers (ECRs). Through these virtual seminars, we hope to offset the negative effects of these canceled meetings. We established the program rapidly using a "lean" approach, making use of existing technologies broadly available at academic institutions. Here, we provide an initial description of how this program was developed and implemented. We discuss advantages and limitations of this approach, including "real-time" participation and the creation of an on/off-line community of inquiry (CoI). In the future, we hope to formally evaluate the success of this program in building engagement, creating a community, and enhancing the development of ECRs, and to capture metrics associated with the continued progress of science. Our approach to building a CoI may be applied across multiple scientific disciplines during this time of uncertainty, and may offer a valuable example of how to continue to advance science during pandemics or similar events.

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1. Introduction

The "Aging Science Talks: Science for the Community" daily online seminar series was established by Dr. Dudley Lamming at the University of Wisconsin-Madison, Department of Medicine, and Dr. William Mair, Harvard T.H. Chan School of Public Health, Department of Molecular Metabolism, in reaction to the many cancelled or postponed meetings focused on the basic biology of aging due to the onset of the COVID-19 pandemic. National and international meeting that were cancelled include the American Geriatrics Society Meeting in Long Beach California, and the C. elegans Metabolism Aging Pathogenesis Stress and Small RNAs meeting in Madison, Wisconsin. Postponed meetings include the Annual Meeting of the American Association of Aging in Madison, Wisconsin, and the Undoing Aging conference in Berlin. Regional meetings cancelled or postponed include the 2020 La Jolla Aging Meeting, and the University of Alabama at Birmingham (UAB) Nathan Shock Center Annual Symposium in Birmingham Alabama. Numerous other meetings at which aging biologists have planned to present, including meetings on diabetes and metabolism at UW-Madison, the annual Experimental Biology conference, and the FASEB Summer Research Conferences have likewise been cancelled or postponed.

The inability to attend scientific conferences and meetings has far reaching implications for our field. Specifically, we lose the ability 1) to disseminate both published and non-published data through talks and posters; 2) to establish new collaborations that will produce cutting edge science in the aging field; 3) to continue the career development of early career researchers (ECRs; students, postdocs, and junior faculty), who lose out on the opportunity for exposure and critical feedback, as well as the opportunity to identify and engage with senior mentors. Indeed, these

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opportunities may be exceptionally important for ECRs in these uncertain times in order to remain confident that they will be able to maintain their careers.

The aged are particularly vulnerable to the COVID-19 virus, making it crucial that aging researchers also keep moving forward to understanding the unique needs of the elderly and to keep fostering this important area of research. Indeed, the National Institute on Aging, in coordination with other institutes of the National Institutes of Health, is creating funding opportunities to promote rapid research on how to preserve the life and health of older adults. Thus, we, as an aging research community do not want to be hindered by this pandemic, but will endeavor to maintain our ability to make scientific progress towards this goal.

By engaging researchers in our field through virtual seminars, we hypothesized that we would be able to offset the negative effects of cancelled meetings and symposiums, even when we must follow social distancing guidelines. We established the program “Aging Science Talks: Science for the Community” rapidly using a “lean” approach, making use of existing Web 2.0 technologies that are broadly available to researchers at academic institutions to engage investigators interested in the basic biology of aging. Thus, the purpose of this short report is to provide an initial description of how this program was developed online using widely available Web 2.0 tools with freely available client software and that is supported by local institutions, allowing for rapid deployment and maximal participation in presentation and viewing across our academic field. Many researchers may be unaware of how these methodologies can be effectively utilized to establish a community of inquiry (CoI) [4,5] for sharing information. However, employing these readily available technologies allowed this program to grow exponentially over the last month. We also discuss limitations of this approach including “real time” participation “vs” creating an off-line CoI, as well as how isolating with families with children impact how much time we are able to spend in scientific endeavor both in real time and offline.

Our future hope is to evaluate how the program works to build engagement in Geroscience [1–3] using a scientific pedagogical approach to online learning known as a “community of inquiry” (CoI) [4,5]. We also hope to measure our success at enhancing the career development of ECRs, and to capture metrics including the comfort of participants in using these online tools, number of attendees, and to quantify how useful people found the community based upon methodology, resultant publications, grant applications and successful funding. Finally, this program is foundational in its approach, and may be applied across all scientific disciplines during times of uncertain to foster collaborative scientific pursuit and career development.

2. Program description and implementation

As discussed above, many meetings centered around the biology of aging were cancelled in a very short time window following the outbreak of COVID-19 in Europe and the United States. Like many scientists, Dr. Lamming immediately began to contemplate how this influenced not only his own plans for travel, but far more importantly the career development opportunities for his trainees. Specifically, 1) the La Jolla aging meeting was a space where his first graduate student, Nicole Richardson, was to interview with faculty members at the Salk for postdocs and present a poster; 2) UW Diabetes Day, a conference focused on this disease of aging, represented an opportunity for four lab members to present; and 3) the American Aging Association Annual Scientific Meeting was scheduled for June in Madison, and his entire lab was planning to attend, with Dr. Lamming as a speaker and four lab members planning to submit abstracts.

Dr. Lamming is active on Twitter, and while thinking and reading the discussions of many PIs about how COVID-19 was affecting their own labs, he was inspired by Dr. Philip White at Duke, who was starting to organize an online seminar series entitled “Metabolic Physiology in Isolation.” A number of other seminar series have subsequently also started, covering a wide range of fields.

Dr. Lamming started developing the online seminar series during the first week of social distancing in Madison, Wisconsin on March 14 (see Fig. 1 for a summary of web 2.0 tools [6] used). He decided that a seminar held roughly during “lunch-time” for the eastern and central time zones would be optimal, as this would permit engagement by researchers in Europe as well as most of the Western hemisphere. He initially solicited presenters via Twitter, as well as reaching out via email to a number of aging research colleagues. From the beginning, Dr. Lamming solicited engagement and participation from ECRs, and reaching out through Twitter helped. During this first day, Dr. Mair at Harvard reached out to offer help in organizing the program on day one, and he helped advertise through his Twitter contacts. Finally, Dr. Lamming set up a shared editable Google Sheet, and people who expressed interest in presenting in the series on Twitter or via email were sent a link to the Google sheet and asked to sign up for a talk slot and provide a title for and first talk. When Dr. Christy Carter became aware of this program, she encouraged Dr. Lamming to write up a report of this program and offered to help based upon her expertise and knowledge of online education within the gerontology community.

Dr. Lamming initially decided to use a WebEx platform hosted by the University of Wisconsin-Madison. Reasons included the fact that the expected number of participants was likely too high for alternative cost-free options available to Dr. Lamming and Dr. Mair, as well as the availability of administrative assistance in administering the WebEx that Dr. Lamming had access to through the University of Wisconsin-Madison Department of Medicine. We hosted the program website at Dr. Lamming’s personal Lab Website, which provides a simple interface with links to the WebEx meeting, a Google Calendar of talks, and an “Aging Science Talks” FAQ written by Dr. Mair. The FAQ provides a friendly introduction, basic information for sign up to the various web tools (Google listserv, Calendar and Excel sign up worksheet, WebEx). The Website also provides a link to the Slack, an integral part of the program and described below.

Dr. Lamming selected several methodologies for organizing the program. GoogleDocs was used to organize an Excel file so that potential presenters could sign themselves up for talks without the need for an intermediary. Dr. Mair created a shared Google Calendar which provides a reminder for people to participate and allows them to seamlessly integrate these reminders into their daily schedule. The whole processes was organic in nature, as presenters could choose for themselves from multiple dates that suited their schedule. Currently, anyone is allowed to sign up and give a presentation. Although some individuals asked to record the talks so that they could be viewed later, the program directors decided against this initially for technical simplicity as well as the potential reluctance of speakers to share cutting-edge research not ready for prime time. The first speaker sign up was advertised via the methods described above on March 14th, 2020. Dr. Lamming gave the first talk on March 18th, 2020.

An integral part of the seminar was the creation of a Slack community for online discussion, the brainchild of Dr. Mair. Slack is a workplace collaboration tool where people can talk with one another and foster collaboration. Using Slack, participants may also upload Microsoft Word documents, graphics, and more. The Slack community went online March 15th, 2020, covering the topics described in Fig. 2, and has now grown to over 1200 members. As managing virtual talks with “live” questions is very difficult, the
Slack plays an essential role in the question and answer session following each seminar. During and after the seminar, questions can be asked on the Slack in a dedicated channel, and members can “up-vote” selected questions using the thumbs-up emoji. One of the organizers or a member of the Dr. Lamming and Dr. Mair labs typically reads some of the top-rated questions; after 5–10 min, the online seminar wraps up, but the presenters can continue to answer questions in the Slack as long as they are able and interested.

3. Initial outcomes

As of the writing of this paper, approximately 59 speakers have signed up to give talks for 16 weeks. Supplementary Table 1 provides a complete list of speakers, their affiliations and titles/dates of their presentations. We cut and pasted the titles of all the talks into https://www.wordclouds.com/; and as shown in Fig. 2A, the range of subjects was expansive. Fig. 2B demonstrates, that of the 59 presentations given or proposed, 41 (69%) represented ECRs. Speakers represent a total of 44 different institutions, 15 states in the US and 9 countries internationally (Brazil, Denmark, Finland, France, Germany, Netherlands, Switzerland, UK, USA).

Fig. 3 shows the progression in the numbers of attendees over time. Over the first 26 talks, which were presented using the Webex platform, the total number of attendees ranged from 257 to 695, for a mean and median number of participants per talk equaling 295 and 277, respectively. Thus the introduction to the series, hosted by Dr. Lamming and trainees from UW-Madison and Harvard, has captured the attention of nearly 700 individuals, demonstrating the need and interest for creating this online community. In addition, the number of attendees are holding steady, meaning that individuals doing research in the field of Geroscience are maintaining their interest. Finally, there is little difference in attendance between talks given by ECRs and those given by more senior career-level presenters, ensuring continued outreach to a large and diverse community. Unofficial feedback of participants in the Slack and on Twitter has been overwhelmingly positive, with praise for the speakers, the organizers, and for the existence of the community feeling that this endeavor has inspired. The number of users on Slack has grown to a total of 1229 as of the beginning of May.

4. Discussion and future directions

Despite the ostensible connectedness of today’s world, we are all currently living in a time of literal isolation as we maintain social distancing to #bendthecurve on COVID-19. The ability to maintain a sense of community and the tremendous benefits of sharing of our latest research has been seriously hampered by the cancellation of virtually all face-to-face conferences and other meetings. The application of online technology to link the isolated biology of aging community provides a methodology to foster the dissemination of knowledge and keep us all connected and sharing our science. In particular, ECRs need to be able to stay connected with the community in order to keep developing their own research programs, generating new ideas, and identifying collaborators and mentors.

Using a “lean” approach, Dr. Lamming, with the assistance of Dr. Mair and trainees in the Lamming and Mair laboratories, has developed a successful methodology for creating an online community to substitute for some of the lost opportunities that face-to-face meetings normally provide. The methods are generally free or low-cost, in that most Universities support these Web 2.0 tools, or the tools are readily available to those with internet access. However, a variety of other options also exist at a higher cost; as an example, Dr. Lamming and Dr. Mair recently received support from...
the Glenn Foundation for Medical Research to move this seminar series to a Zoom platform, enabling improved moderation as well as recording of seminars for those who are unable to join in real-time.

In the near term, we plan to continue these talks as long as we as a scientific community are asked to socially isolate, and to continue to innovate and expand using this new methodology to better serve the global aging community and our newly established Col. As one recent example, Dr. Mair recently organized a Global Aging Science Talks event on May 5th, which involved talks by five leading aging researchers in the United States, Germany, Singapore, and Australia over an approximately 24 h period. Using the same hosting platform we have established, Dr. Mair and Dr. Lamming recruited...
collaborators in the UK and Australia to launch local versions of “Aging Science Talks” to better recruit trainees and ECRs in the European Union and the Asia/Pacific region, respectively. Additional future innovations may include mini-symposiums focused on specific topics, or themed seminars in support of career development and mentorship for ECRs.

A longer-term goal is to formally evaluate the success of our program. On the traditional level, we hope to assess metrics such as 1) ECRs attending and presenting; 2) collaborations established; 3) grants or papers submitted/funded/published based on collaborations established; 4) postdoc positions obtained. This could be easily achieved through linking a RedCap survey to our website and also soliciting participants.

Less traditional (for our field at least) is using established educational pedagogical tools to assess our ability, through the seminar, to create a scientific “Community of Inquiry” or Col [2]. A Col is defined as a group of individuals who collaboratively engage in purposeful critical discourse and reflection to construct personal meaning and confirm mutual understanding [1,7,8]. This framework represents an approach to creating a deep and meaningful (collaborative-constructivist) learning experience through the development of social, cognitive and teaching presences and for which there are established rubrics to evaluate our ability to create this Col [9].

For example, we created a social presence by establishing trust for our online community by providing rules on the site’s webpage to ensure that individuals felt safe sharing cutting-edge data and communicating in a respectful fashion. We allowed individuals to project their individual personalities by allowing nearly anyone, including ECRs, to give presentations thereby keeping our community open to many voices, albeit centered on Geroscience. We established a teaching presence [10] through our ability to efficiently make use of online tools such as WebEx/Zoom/Google Docs which allowed individuals to “show up” through video and ask question in real time while observing presentations. We established a cognitive presence, which enables learners to construct and confirm meaning through sustained reflection and discourse [11], using tools such as Slack to provide both real-time and off-line resources to allow individuals to create constructive discussion outside of the actual presentations and to continue conversation around the topic and build community for themselves. While this is a cursory discussion of a theoretical framework for online education, we look forward to using established tools for evaluating Col to also create science around this online educational experience.

Finally, while so far we focused on data presentations; other features of regular in-person scientific meetings could also be virtualized. These include happy hour discussions [12], online film festivals to curate and discuss relevant media for the Geroscience community [13], advice on parenting and work-life balance [14], and virtual fun runs [15]. Furthermore, through this creation of community we may be able to improve our ability to reach out and support those of our colleagues who are caring for older individuals suffering from COVID-19.

In summary, the “Aging Science Talks: Science for the Community” online seminar series, offered daily weekdays, has grown into one of the largest aging meetings, with average attendance rivaling those at many national meetings. This paper provides a roadmap for our field, and for other fields, to generate these communities in a relatively facile manner. While future analysis and time will allow us to fully assess if our community has succeeded in successfully substituting for an in-person meeting, and establishing a Col focused on Geroscience, the self-offered impressions of the organizers, speakers, and attendees is that this series has been very valuable in helping to ameliorate the social and scientific impact of COVID-19.

Declaration of competing interest

The authors state that they have no conflicts of interest to report.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.tma.2020.05.002.

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