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Sci-a-thon is a collaborative event for graduate students and postdoctoral scholars designed to harness diverse scientific backgrounds toward solving global issues in chemistry. The last 2 years have yielded surprisingly different versions of this annual competition.

Across the chemistry departments of the University of North Carolina at Chapel Hill (UNC), Duke University, and North Carolina State University (NC State), we just completed our second annual Sci-a-thon competition in May. Close to 40 graduate students and postdoctoral participants competed virtually for coveted prizes: gift cards—and the satisfaction that comes from a winning idea.

The Vision
Collaboration and interdisciplinary research pursuits are promoted by various funding agencies through centers, hubs, and other collaborative grant opportunities. A unique example is Scialog—operated by the Research Corporation for Science Advancement—which brings together early-career faculty from across scientific disciplines into teams that compete for seed funding with proposals within a theme identified to be of high scientific importance. These funding opportunities motivate cross-disciplinary collaboration between principle investigators; however, analogous opportunities are rare for trainees. Inspired by the adrenaline-fueled Scialog competition, I sought to design a complementary competition for graduate students and postdoctoral researchers.

The first Sci-a-thon competition was brought to life with the help of UNC Chemistry Profs. Matthew Locket and Frank Leibfarth. However, graduate students and postdoctoral researchers would likely be less motivated by research funding—a glaring difference between the target audiences of the Scialog and Sci-a-thon competitions. Thus, our first proposal to the UNC Chemistry Department requested funding for gift cards as prizes and a continuous supply of baked goods and pizza to fuel the competition. Proposed themes were designed to have the breadth required to integrate any subdiscipline of chemistry, such as “food and water security” and “sustaining a post-industrial world.” We proposed to develop teams of graduate students and postdoctoral researchers within the UNC Chemistry community that maximized the diversity of subdisciplines and experience levels and to give those teams exactly 24 hours to develop a 10-minute presentation pitching the next big idea.

Year 1: Pizza Fueled
We reserved one of our large lecture halls for the kickoff of our first Sci-a-thon in May 2019. Thirteen participants sat in the audience as I introduced the task at hand, and five professors presented their perspectives on how their respective fields were contributing to the first theme: food and water security (Figure 1). Topics from nanoparticle sensors to biopolymer food coatings to optical spectroscopy for pollutant quantification were described to spark ideas among the participants. The composition of the four teams was revealed right before the pizza was delivered, and the competition began among the whiteboard partitions of the UNC Kenan Science Library.

The logistics of proposal development were left to the teams. When we checked in with the teams the following morning, I was excited to find diverse and innovative ideas were crystalizing. By the afternoon, unsolicited acronyms (a hallmark of any strong proposal) had been developed for proposed technologies and enthusiasm and confidence had visibly risen since the teams had first met. Each of the team members was required to participate in the final 10-minute presentation, and any of the participants or faculty judges could ask questions in a 10-minute Q&A that followed. Everyone provided feedback on the innovation, presentation quality, feasibility, and integration of disciplines via an online poll on the presentations. The ideas varied from hydrogel immobilized catalysts for wastewater purification to harnessing food waste for material synthesis, with the winning team describing water table purification through biomimicry. All the proposals were celebrated with wings at a local establishment—a seemingly impossible celebration only a year later.

Overwhelmingly the response to the first Sci-a-thon iteration was positive—over 75% of participants felt they were (1) likely to approach scientific problems differently in the future, (2) more likely to reach out to people of different backgrounds toward solving global issues in chemistry. The last 2 years have yielded surprisingly different versions of this annual competition.
disciplines to solve scientific challenges, and (3) likely to participate again. Despite all the participants being from one department, one of the most noted highlights was “meeting new people,” inspiring us to increase the size of our target audience.

**Year 2: Competing Virtually**
The winning team from the first Sci-athon containing three graduate students—Jonathan Eicher, Andrew Camp, and Irene Manning—joined the organizing team for the second generation of Sci-athon. At the outset, we hoped to implement a few changes. First, we wanted to include chemistry departments at neighboring institutions: NC State and Duke. An additional goal was to include a professional development component related to entrepreneurship, and finally we wanted to create a new role: team leaders, previous winners or postdoctoral researchers, who could guide students in proposal development. Just as we were starting to investigate parking options in March, it became apparent that an in-person competition would not be feasible with COVID-19 cases increasing.

A month before the second Sci-athon, we decided to transition to a virtual competition. The communications staff at UNC Chemistry helped generate a website and flyers to distribute information before the competition, and a Slack (an instant messaging app) workspace and Zoom video conferencing were selected for the competition itself. The time frame was extended from 24 to 48 hours with only a few scheduled Zoom events to accommodate any additional time commitments and responsibilities participants might have during the pandemic. The challenge of facilitating strong communication among teams of students that had never previously met became immediately apparent. Logo design challenges—first a team logo followed by an overall Sci-athon logo—were included to provide team-building opportunities over the course of the 48 hours with smaller motivational prizes. A bright spot of this virtual event was the ease of inviting Dr. Peter Robinson, an entrepreneur who founded a company based on his graduate school research, to discuss transitioning technology from an academic lab to a startup company: Enable Biosciences.

On May 13, seven teams composed of 31 student participants and 7 team leaders all dressed in t-shirts displaying their school colors joined the kickoff held on a screen instead of an oversized auditorium. Faculty members from each institution shared their perspective on this year’s theme: sustaining a post-industrial world. The teams were revealed, and the virtual competition began. Breakout rooms—smaller video conferences—were used to facilitate team conversations during larger events, and Slack was available for communication with the organizers and within the teams. Team leaders facilitated icebreakers and guided conversations, and polls including “Which emoji best represents how you feel about Sci-athon right now?” and “What will you be wearing to the final competition?” were used to keep participants connected virtually. The enthusiasm and creativity of the final presentations mirrored the first year, with this year’s winners describing a tel- ehealth approach to regenerative phototherapy.

The highlights of this year’s virtual competition remained meeting new people and the sense of accomplishment in generating an idea in a short time frame. The winning image of the Sci-athon logo competition—created...
by Dr. Meredith Barbee (UNC), Hanne Henriksen (UNC), Brittany Huffman (UNC), and Anuran Gayen (NC State)—will be a permanent emblem for future competitions (Figure 2).

Reflections
When I first pitched this idea to a couple graduate students, I can best describe their response as skeptical enthusiasm—something along the lines of “well, it’s not another journal club.” Despite the peer-reviewed\textsuperscript{4} and anecdotal evidence that teamwork and communication skills are critical for post-graduate careers and typically underdeveloped in traditional training, soliciting student engagement was one of the more challenging tasks of implementing the last 2 years of Sci-athon. During the first year, the idea of spending 24 hours outside of the laboratory was unimaginable to many students. This past year was similarly met with concern about Zoom exhaustion and prioritized research tasks—the allure of gift cards, new friends, and competition was not enough to get many students out of their comfort zones. Reflecting on the balancing act and pressures of graduate school, creativity in recruitment will be a focus for our next iteration of the Sci-athon competition.

My most significant takeaway was the reaffirmed value of a team, even one containing members you do not know well at the start. Although Sci-athon was designed to provide trainees with the opportunity to build skills in teamwork, somehow I remained surprised by the ideas and initiatives of the three graduate students who were integral in the success of the event this year. The logo competitions, Twitter account, and a virtual social hour celebration complete with trivia, suggested cocktail recipes, and a trendy invitation were all driven by the creativity and initiative of these students. As this competition evolves, whether in person or virtually, a team of students and faculty will continue to build an event that uniquely merges professional development with adrenaline and pizza—whether delivered in person or through emojis.

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