CAMB Student Newsletter

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In this issue

Letter from the Editors

Dear CAMB students, faculty, and alumni,

Spring is here and with it, renewed hope for a post-COVID-19 world! In this issue of the CAMB Student Newsletter, we hear Dr. Dan Kessler's and Dr. Craig Bassing's thoughts on the results of our BGS-wide survey assessing student interest in an independent HR department. We learn more about their roles as advisors, mentors, and advocates for CAMB students and brainstorm new ideas to address student needs. We chat with Drs. Colin Conine, Mustafa Mir, and Ziyue Gao on the challenges of starting a lab during a global pandemic. We also highlight SARS-CoV-2 vaccination progress in our area and the challenges surrounding equitable vaccine distribution. Finally, we discuss the pros and cons of using social media to communicate about and promote science.

For additional articles, past publications, and to learn more about the CAMB Student Newsletter team, visit our blog at cambnewsletter.wix.com/blog. Current students interested in contributing to the CAMB Student Newsletter can contact us at camb.studentnews@gmail.com. We hope you enjoy the May 2021 issue!

Sincerely,
Hannah Kolev and Sylvia Stankov
Editors-in-Chief

Rendezvous with CAMB Leadership

Dr. Dan Kessler and Dr. Craig Bassing

A follow up to our February article: "BGS Department of Human Resources – The missing piece?"

Kanika Jain

In our February 2021 issue, the CAMB Student Newsletter published a special interest article assessing the need for an independently-run Human Resources (HR) department for BGS graduate students. We conducted a BGS-wide anonymous survey asking students their thoughts. Sixty-five doctoral students spanning the seven BGS graduate groups participated in the survey to share their views with us. 78.5% of respondents agreed that graduate students could benefit from an independent HR department. 64.6% admitted that they had faced problems (personal, health, or work-related) at least once, and kept them private because they didn't feel they had somewhere to turn. 72.3% of students mentioned that they find it fairly difficult to communicate about sensitive topics entailing interpersonal relations, training, and career opportunities with their PI and program leadership. Unfortunately, these statistics indicate a gap in communication between students and their mentors in academia, with many students feeling as if they lack the resources needed to address certain issues. You can access the entire article on our blog https://cambnewsletter.wixsite.com/blog

In response to these results, Dan Kessler, CAMB Program Chair, and Craig Bassing, CAMB Vice Chair, contacted the CAMB Student Newsletter team to learn more about the survey results and begin a conversation on student resources and unmet needs. Through our conversations with Dan and Craig, we learned more about their roles as advisors, mentors, and advocates for CAMB students. We heard their thoughts on our survey results, learned how they can help mediate the myriad of challenges faced by graduate students, and reviewed the many resources currently available for CAMB students. Eager to work together to generate solutions, Dan and Craig helped brainstorm ideas for new programming and events to begin addressing the concerns raised in our survey. We share below interview responses from Dan and Craig summarizing their thoughts on these topics. Interview responses have been edited for space and clarity. For the full interview transcript, visit our blog here!

Can you outline your role as graduate group chair?

Dan Kessler (DK): I have many roles and responsibilities as graduate group chair, but foremost among those is as advocate for and supporter of the success and well-being of CAMB students. Working closely with

the program chairs, the administrators, and the CAMB Executive Committee, I am responsible for all academic requirements, policies and standards for coursework, laboratory rotations, thesis research, student advising and recruitment, as well as other duties listed here.

Craig Bassing (CB): While I have administrative roles in helping Dan oversee all aspects of CAMB, my most important and rewarding role is serving as a mentor and advocate for students to help them grow their scientific and professional skills and identify and pursue their career objectives.

How can you assist students who may be having issues? What does that process look like?

DK: I strive to build a sense of trust and connection with the students, making myself readily available so that a student in need will feel safe reaching out to discuss the issue they're facing. Some students use my regularly scheduled office hours (every other Wednesday 2-4p), and I frequently meet with students outside of office hours, typically within a day of the initial contact. In nearly all cases I can maintain confidentiality, and do not share details with other faculty or administrators without the permission of the student. Once a student or faculty mentor has identified an issue or concern, the CAMB team (graduate group chair, vice chair, CAMB administrators, faculty mentor, thesis committee chair) works together to support the student and identify solutions. Sometimes this is simply a conversation with the student to provide feedback, suggestions and support, validating the student experience, and identifying productive steps a student might take on their own, or together with faculty, to resolve the issue. When necessary, I will recommend external support available through BGS and the University…In nearly all cases, the plans and solutions are developed in collaboration with the student, and actions or intervention rarely occurs without the consent of the student.

"My most important and rewarding role is serving as a mentor and advocate for students to help them grow their scientific and professional skills and identify and pursue their career objectives."
- Craig Bassing

CB: I can and frequently listen to students explain their issue(s), provide them with my perspective, and advise and/or direct them to the appropriate on-campus resources. This can be through email, in-person (or virtual) meetings, or phone conversations where I try my best to create a safe and understanding environment. I always keep these conversations confidential unless the student gives me permission to speak with others (i.e. their mentor).

What kind of issues can students bring to you?

DK: I am available to discuss any issue or concern that impacts the progress, success, and well-being of the student. These include academic and research issues, concerns about mentoring and relations with the PI and others in the lab, struggles with physical or mental health, family and partner problems, financial challenges, questions or concerns about career path, and any incident of bias, harassment or disrespect. In these circumstances and others I am prepared to provide support and guidance, seek out needed resources, work together with the students and mentors to define solutions, and in all cases advocate for student success and wellness.

CB: Anything. Issues have included: an illness of themself, a family member, or a partner that is impacting their well-being and performance in graduate school; questions about choosing lab rotations, a thesis mentor, or committee; problems with their thesis mentor or others in their thesis lab that they need advice on how to raise or do not feel comfortable raising on their own; how to gain exposure to and skills for the many diverse career opportunities; how and when to go about considering and applying for a position after graduate school; how to ask their mentor and/or committee for permission to write and defend; and disagreements about the content, timing, or process for finishing a study, writing it into a manuscript, and the journals to consider.

What are your thoughts on the survey results/article?

DK: I'm very much concerned when any student feels that they do not have the support and resources needed for their success and well-being, and the article makes clear that this is the case for some CAMB students... I view your efforts in doing the survey and reporting the outcome as an effective form of student

advocacy. The article offers an opportunity for us to learn from the students and to further our efforts to provide needed support, whether from within CAMB or through the establishment of new resources at the BGS or University level, such as the suggested BGS Department of Human Resources.

Regarding the specific idea proposed, a BGS Department of Human Resources, I do agree that having trained staff that are dedicated to student support would be ideal. I am, however, cautious about instituting a formal human resources department for graduate students. From my experience as an employee, faculty member, and graduate group leader, I am sensitive to the differences between student and employee status, and the unique flexibility students need as they navigate their educational and research paths. An HR Department for students would need a system of expectations, requirements, and resources that were designed for the particular needs of graduate students doing discovery-focused thesis research, an educational and work experience fundamentally different from that of faculty and staff. To be clear, I am fully committed to the goal of developing a support system that includes trained dedicated support staff that focus exclusively on the needs and experiences of graduate students.

CB: I was sad to learn that CAMB leadership needs to better and more frequently communicate to our students that there are helpful, experienced, and confidential resources available within CAMB, BGS, and/or Penn. [We need to help identify] these [resources], [in order to better] assist our students with any issue that they may encounter.

What existing resources would you suggest to students who may be struggling with the topics mentioned in our survey?

DK: I would strongly recommend that students work actively to build a support network of trusted CAMB faculty, including mentors and graduate group leadership, and the CAMB administrators, who are deeply experienced with navigating the challenges that students face. In many cases these individuals have received training in handling student crises, and are knowledgeable of the many institutional resources available to students. Such resources include Counseling and Psychological Services (CAPS)... Student Health Services (SHS), Weingarten Learning Resources Center...Graduate Student Center, International

Student and Scholar Services (ISSS), [among others]... In addition, CAMB has supported the establishment of the Peer Support Network, which is currently active, and the Minority Support Network which is now under development. These are critical new resources that provide support from trained faculty and peers, and will provide valuable additional sources of support.

CB: The existing resources are diverse to reflect the different types of issues that typically arise and are listed on the CAMB and BGS websites. However, I would emphasize that CAMB leadership and the CAMB office are excellent first points of contact to help direct students to the appropriate resources.

What kind of measures or changes do you envision CAMB making to help support students and create a safe space?

DK: It is critical that we provide greater transparency in the support offered and the response processes once a student asks for help. As an important first step, we are planning regular Town Hall meetings with students to address their concerns and to offer a better understanding of how the faculty leaders and administrators of CAMB work as a team to engage resources in supporting students. We will start with meetings focusing on the specific needs of students as they progress through the stages of graduate school. For the first year students in May, we will meet to discuss balancing research and classes, optimizing summer research efforts, aligning expectations with your rotation advisor, and conflict resolution in the lab. In June for the second year stu-

dents, we will meet to discuss aligning expectations with your thesis advisor, conflict resolution in the thesis lab, preparation for the prelim exam, and career and professional development activities. Additional sessions will be planned to address the needs of students at later stages, as well as sessions focused on specific topics of relevance to students at all stages, including gender and racial equity, workplace bias and harassment, medical and family leave, and others. For each session we will emphasize the role of faculty, administrators and peers in accessing needed support, the graduate group processes employed in supporting students, and the function of BGS and University resources in student support. The goal is to demystify the "who, what, and how" of student support in CAMB. It is my hope that these conversations will provide a greater sense of comfort and understanding, allowing students to reach out more easily when in need, and to do so with confidence in the people and processes of the support systems.

CB: [To help support students, we're] launching open discussion forums on general topics [chosen by] students, as many [will] encounter [similar issues] and can learn from each others' experiences. [We'd like to better] communicate typical issues our students encounter and the resources available to help them through these.

"My goal for the students of CAMB is for you to grow as scientists, professionals and individuals, and to have a positive experience that deepens the love of science that brought you to CAMB in the first place."
– Dan Kessler

Is there any last message you'd like to share with the students?

DK: As a graduate student you are engaged in creative, original work that is exciting and rewarding, but also inherently uncertain and risky in its nature. Doing such work involves productive failure that can provoke anxiety and doubt. The relationships with faculty, peers and others in the lab can be intense and challenging at times, and difficulties in your personal and family life can create barriers to success. Building a supportive network of faculty, peers and friends is essential for your success and well-being, and asking for help when in need is essential. In my role as graduate group chair, I welcome the opportunity to hear the experience of each student, and to work with students individually and as groups to develop plans and solutions that will create opportunity, and support success and well-being. Working together with the students and faculty, I commit to further developing the resources and support that you, the students of CAMB, identify as necessary. My goal for the students of CAMB is for you to grow as scientists, professionals and individuals, and to have a positive experience that deepens the love of science that brought you to CAMB in the first place.

CB: Please do not hesitate to contact me or others in CAMB leadership or the CAMB office with any issues or questions that you might have no matter how trivial or serious you think they may be. We are here to help you, and we want to do so.

As discussed above, Dan and Craig are planning Town Hall discussions to facilitate open communication with graduate students. These discussions will address some of the various issues identified by our survey results, including but not limited to conflict management, career development, and reporting workplace harassment. We encourage our readers to share feedback about these Town Hall discussions! Interested in a specific topic that you would like to see discussed? Have an idea for how to structure the Town Halls? Looking to help CAMB administration with organizing a Town Hall? Please write to us at cambstudentnewsletter@gmail.com to let us know!

Finally, we strongly encourage any student facing an issue or looking for advice to meet with Dan and/or Craig at their regularly scheduled office hours (every Wednesday, 2:00 - 4:00PM). Students can also email Dan and Craig directly to set up meetings outside of these assigned office hours.

We thank Dan and Craig for sharing their perspectives with us and for their continued support of CAMB students. As CAMB students, we strive to work together with Dan, Craig, and CAMB administration to help initiate positive change and improve our graduate school experience. We hope that our endeavours will pave the way to a more transparent, fulfilling, and memorable graduate school experience.

Faculty Spotlight
Pioneering Pandemic PIs

Sylvia Stankov

Starting a lab is difficult under ideal conditions. With the challenges brought about by COVID-19, starting a new lab seems almost impossible. We spoke with new CAMB faculty members **Dr. Colin Conine, Dr. Mustafa Mir**, and **Dr. Ziyue Gao** about their experiences starting up their labs in the middle of a global pandemic.

Dr. Colin Conine

Dr. Conine, Assistant Professor in the Departments of Genetics and Pediatrics, brought the multiple model systems that he worked with during his training to his lab here at Penn. He completed his graduate work and postdoc at the University of Massachusetts Medical School in Worcester, MA and started his lab at Penn in January of 2020. When asked to describe his work, Conine notes "My lab uses mice (which I worked on during my postdoc in Ollie Rando's lab) and C. elegans (worms, which I worked on during my Ph.D in Craig Mello's lab) to study how RNAs can function as carriers of heritable information from one generation to the next." His work now centers on "RNAs in sperm (in both systems) and how they are able to regulate embryonic gene expression/development and influence offspring phenotype. [We use] reproductive technologies in mice and worm genetics to manipulate how RNAs are transmitted from one generation to the next, but we also rely heavily on sequencing as a readout of gene expression and phenotypes induced by the RNAs."

Dr. Mustafa Mir

Dr. Mir, Assistant Professor in the Department of Cell and Developmental Biology, joins CAMB with a unique background in engineering. "I received my PhD in Electrical Engineering from the University of Illinois at Urbana-Champaign... During my graduate work, I developed new optical microscopes which allow for quantitative imaging of sub-cellular scale dynamics without using any exogenous labels (e.g. fluorescent probes or dyes)… I [then] shifted my focus away from pure technology development to studying transcription regulation in embryos and joined the joint lab of Professors Xavier Darzacq and Robert Tjian at UC Berkeley." Dr. Mir started his lab at Penn in January of 2021. "The goal… is to both develop and apply advanced light microscopy technologies to study how gene expression is regulated during early embryonic development. The microscope we are currently working on allows [one] to probe the vast range of spatial and temporal scales that are relevant to developmental biology, ranging from molecular scale dynamics over milliseconds to the emergence of patterns in an embryo over millimeters and hours and days."

Dr. Gao, Assistant Professor in the Department of Genetics, began her graduate studies in population genetics at the University of Chicago. "In retrospect, I feel I was very lucky to have gone there for graduate school, as this was one of the key decisions that shaped my life and career. Before graduate school, I knew nothing about … "population genetics". After taking a couple of lessons taught by Dr. Dick Hudson (who is kind of famous in the field, but I had no idea at that time), I was eager to learn more in this area and immediately contacted a population genetics lab for [my] rotation." After completing her thesis work in Dr. Molly Przeworski's lab and her postdoc with Dr. Jonathan Pritchard at Stanford University, Dr. Gao started her lab at Penn in May of 2020. "The main theme of my research is to better understand how mutation, demographic history and natural selection shape genetic variation within and between populations and to use this knowledge to learn about human biology, history and evolution… [we take] a computational approach by developing new theory and applying novel analyses to genomic data from human populations and other species."

Dr. Ziyue Gao

As with many, the COVID-19 pandemic has certainly changed how these PIs began their careers here at Penn. Prior to the shutdown in March 2020, Dr. Conine's lab wasn't yet operational. "I guess my lab has grown up with these things that most labs consider 'new', like virtual meetings and distancing ... I naively thought [we] would be up-and-running and pumping out data within a couple months, but I've now realized that even without a pandemic it would have taken much longer, and with one, it has taken nearly an entire year. But luckily, we are there now." Dr. Mir adds "my interview for this position was held a week after we went into lockdown in California and I was recruited completely virtually. [My family and I] had never been to Philadelphia, so it felt very strange moving across the country to a completely new place, but we are extremely happy with our decision… It is a unique challenge to build a team when face-to-face communication is limited but I am very happy with the cohesion within the group that has already begun to form." For Dr. Gao, the "new normal" is all work-from-home, as she juggles virtual meetings between feeding and entertaining a young baby. "This is absolutely different from what I envisioned originally. I was looking forward to working in my brand-new lab space, interacting with new colleagues and students, and going to talks and events on campus; and my parents were going to help us out with the baby."

In addition to moving their lab activities online and to work-from-home formats, other obstacles including lab stocking and recruiting have presented their own challenges. For Dr. Conine, "trying to order all the equipment necessary… and stock a lab from scratch with consumables has been extremely challenging. Not having face-to-face meetings with the people I have hired (ever!) has been tough. Also, not being in person and able to meet my new colleagues at Penn has been a bit isolating." Dr. Mir agrees, citing that "a big challenge… out of my control has been equipping the lab. There have been some predictable delays for things like pipettes and gloves but there are some unexpected shortages for things like some electronics components and power supplies." He also agrees that it's difficult to recruit people and build new professional relationships without in-person meetings. Dr. Gao's biggest challenge is recruiting.

"There are definitely fewer opportunities to interact with students, especially in casual circumstances… It is also harder to attract postdoc candidates and get to know them well. In addition, because of the visa restrictions and travel bans, it has been very hard to recruit international trainees."

While circumstances have shaped what the "new normal" looks like for these faculty members, they highlight some silver linings to starting a lab during a pandemic. For all three PIs, time at home with family has been a blessing. Dr. Conine has 22- and 3-month-old boys at home. "It's been very fun to spend extra time with them and see them progress both developmentally and socially." Dr. Mir capitalized on time off between the end of his postdoc and the start of his faculty position to be at home with his 3-year-old daughter. "I [also] got to enjoy a lot of the beautiful northern California outdoors which I had neglected during the rest of my postdoc." Dr. Gao finds balance with her husband by alternating working and taking care of their baby daughter.

Another common theme is the ease of attending virtual seminars. Dr. Mir notes that "it's much easier to attend and give a lot of seminars which has been great both to learn more about my new colleagues' work and also spread the word about mine… I hope this [virtual formatting for seminars persists]." Dr. Gao highlights that "these virtual events enable me to listen to talks given by great scientists worldwide and have real-time discussions with them without the trouble of traveling."

In the meantime, Dr. Conine, Dr. Mir, and Dr. Gao have been looking forward to enjoying more of the fun Philadelphia lifestyle. Dr. Conine is "really looking forward to checking out everything that Philly has to offer like restaurants, breweries, sports, and outdoor events." Dr. Mir has really enjoyed the Schuylkill River bike trail and the outdoor space at Fairmount park. He adds, "we have also enjoyed spending time in the Italian Market and surrounding neighborhoods, grocery shopping in a mostly outdoor marketplace is not just fun but also pretty ideal for a pandemic, not to mention the excellent choice and great prices!". Finally, Dr. Gao is a fan of visual arts and is looking forward to visiting the Philadelphia Museum of Art. "The farewell gift that my postdoc lab gave me was a family membership there, but we haven't had a chance to visit despite living within walking distance. I hope to pay a long overdue visit there after getting the vaccine. I also look forward to enjoying outdoor activities in [the] Philly area and welcome recommendations for hiking places!"

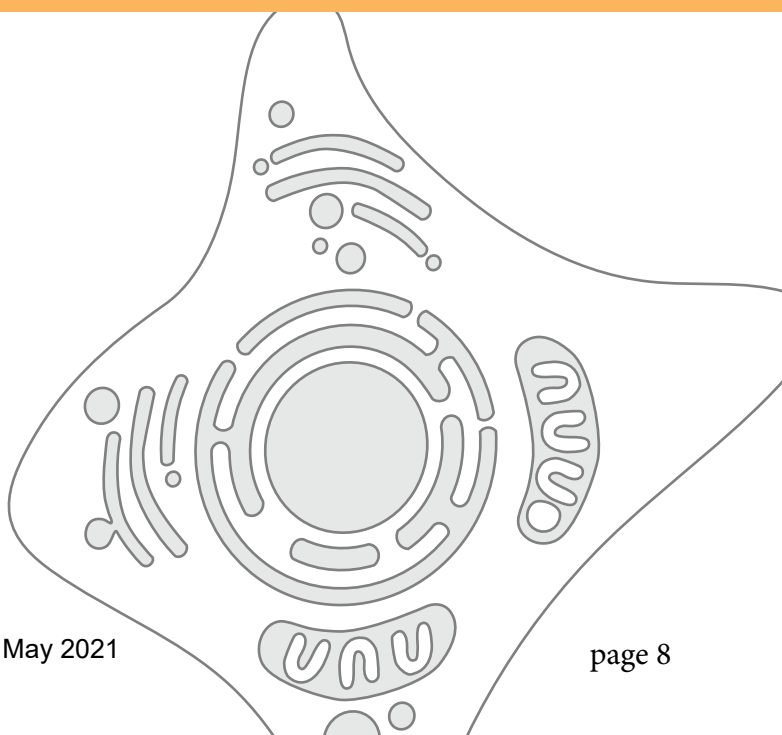
All three of our faculty highlights are looking for rotation students. Any trainees interested in learning more about their work can reach out directly using the contact information provided below.

Dr. Colin Conine
conine@upenn.edu, www.conine lab.com

Dr. Mustafa Mir
mirm@chop.edu, www.mir-lab.com

Dr. Ziyue Gao
ziyuegao@pennmedicine.upenn.edu,
https://sites.google.com/view/gaolab

If you'd like to hear Dr. Conine, Dr. Mir, and Dr. Gao's tips on virtual presentations, head to our blog at https://cambnewsletter.wixsite.com/blog for additional content!



Special Interest

A Look at COVID-19 Vaccination Progress

James Gesualdi

The statistics in this article are current as of May 3, 2021

As we move further into the second year of the COVID-19 pandemic and the international push for immunization, there is finally some hope that the spread of the virus will be contained in the near future. So far, SARS-CoV-2 has infected over 150 million people worldwide and caused over 3 million deaths. Domestically, we have sustained over 32 million infections and over 575,000 deaths. Despite these harrowing statistics, the last days of 2020 saw the approval of the first vaccines designed to confer immunity to COVID-19. Thanks to the historic efforts of tens of thousands of researchers across multiple disciplines and an army of clinical trial volunteers, there are now 14 different vaccines approved for use around the world and dozens more in development.

Daniel Schludi, Unsplash

The efficiency with which these vaccines have been developed and tested cannot be overstated. The complete genome of SARS-CoV-2 was published on January 10, 2020. Less than a year later, on December 11, Pfizer's mRNA-based vaccine was approved for emergency use by the FDA. This is undoubtedly one of the most significant accomplishments of the biomedical research community in recent memory, as well as a timely intervention given the unprecedented scale of loss throughout the country during the winter wave of the pandemic.

The effort to develop the vaccines has involved partnerships between public and private institutions, academic and industrial researchers, and taxpayer and philanthropist funding. For example, Penn's own Drs. Drew Weissman and Norbert Pardi contributed fundamental groundwork to the field of mRNA vaccines. As the US builds up its supply of inoculations, there is a growing sense of optimism that a majority of the public – or at least those individuals that are most susceptible to severe COVID – will be immunized in the near future. In particular, expansion of vaccine eligibility to all adults in the country is a welcome sign that we are beginning to turn a corner.

Distribution of the newly approved vaccines presents a whole new set of challenges locally and internationally. Nationwide, over 96 million people or just under 30% of the population have been fully vaccinated. Despite a brief reduction in average vaccination rates after a peak in early April, over 2 million people are receiving shots most days. This has led to an expectation that the majority of people in the US will be inoculated against SARS-CoV-2 within the year. With this timeline in mind, Penn and many other institutions are hoping to return to in-person activities next fall.

While the federal government has handled the purchasing of vaccines, individual states are in charge

of distributing shots to their citizens. This has thus far led to a mosaic of immunization rates throughout the country, with some states delivering vaccines to as much as 35% of their population, whereas others lag behind with 15 to 20% coverage. Pennsylvania sits in the middle of the pack, with roughly 31% of residents fully vaccinated and a campaign proceeding at a rate just slightly above the nationwide average. Unfortunately, vaccination within Philadelphia county is proceeding at a slower rate than that of the state as a whole, and, at the neighborhood level, inequalities in access to the vaccine are readily apparent. Despite having suffered the most from the pandemic, zip codes in northeast, west, and southwest Philadelphia have received fewer vaccinations than more affluent areas of Center City or the suburbs. A recent study by WHYY found that several suburbs are receiving vaccines from the city at rates as much as four times faster than several city neighborhoods. The zip codes that are lagging behind tend to be made up mainly of black or latinx residents, whereas those enjoying higher rates of vaccination are predominately white. In a stark demonstration of this reality, the Inquirer recently reported that Rite Aids throughout the city are giving doses to 21 white residents for every black resident served. These shortcomings are particularly egregious in the context of the increased mortality suffered by Black and Indigenous Americans throughout the pandemic thus far.

Stratification of access to vaccines along racial and class boundaries is not unique to the US. While the US and EU have successfully procured enough jabs for most or all of their citizens, the vast majority of countries are not so lucky. In fact, one model suggests that many developing nations will have to wait until 2023 to access the life-saving inoculations. Considering the rapid spread of more transmissible variants as well as the growing consensus among researchers that SARS-CoV-2 will become an endemic virus and continue to circulate in areas with high susceptibility for years to come, it is likely that areas with low vaccination rates will continue to suffer at disproportionate rates.

In an effort to address this dangerous inequity various groups have organized initiatives to broaden access to the vaccines. In Philadelphia, the Black Doctor's Covid Consortium began testing residents in underserved areas of the city and has since transitioned to hosting walk up vaccine clinics open only to residents from neighborhoods that have had reduced access thus far. Penn Medicine has also formed a partnership with Mercy Catholic Medical Center and various community organizations and administered several successful vaccinations clinics throughout West and Southwest Philadelphia. At the international level, dozens of low- and middle-income countries as well as WHO Director-General Tedros Adhanom Ghebreyesus have asked the World Trade Organization to temporarily waive intellectual property rights on approved vaccines to facilitate increased production and distribution around the world. Talks have stalled thus far but this will certainly remain a polarizing geopolitical issue.

The race to bring COVID vaccines to clinic involved an incredible degree of collaboration between different institutions and countries. A similar degree of cooperation will be necessary if we hope to bring the pandemic under control in an equitable fashion. With cases currently on the rise all over the world, including catastrophic levels of infection in India, there is a risk that some of the benefits of the vaccine rollout may be squandered. In order to truly capitalize on the incredible work done to produce these vaccines, we need to prioritize accessibility to the greatest extent possible.

Key resources for keeping up with COVID-19 vaccination progress

1. **Case Numbers:** https://coronavirus.jhu.edu/
2. **Vaccination Progress in the US and Worldwide:** https://coronavirus.jhu.edu/vaccines/us-states
3. **For information about doses per day:** https://www.npr.org/sections/health-shots/2021/01/28/960901166/how-is-the-covid-19-vaccination-campaign-going-in-your-state

Merakist, Unsplash

Special Interest

Scientists and the Social Media Experiment

Aishwarya Pawar

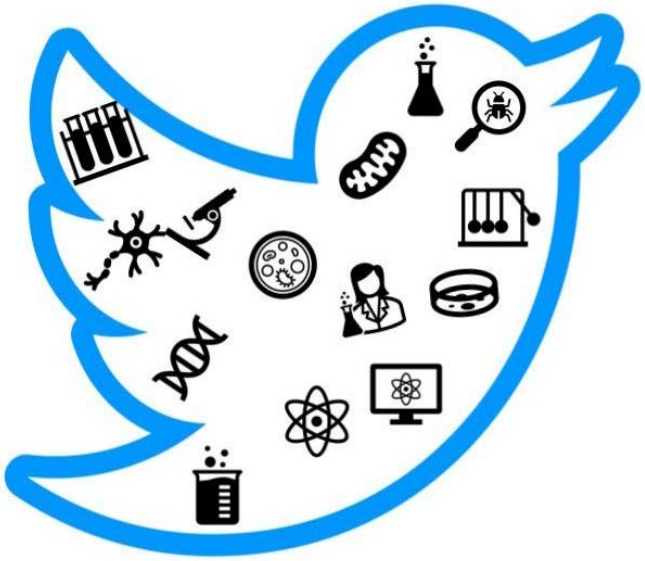
Scientific research can never exist in a bubble. Effective communication of your research to other scientists (inreach) and non-scientists (outreach) is as important as the findings themselves. While scientific publications and talks remain the primary methods of scientific inreach, they have been less successful for scientific outreach. In an attempt to bridge this communication gap, some scientists have stepped out of their labs and into the world of social media armed with facts and figures, engaging dialogue, and of course, science memes. For some, this has been a step out of their comfort zones, while for others this new protocol has been fairly easy to master.

For the most part, social media has delivered on its promise as a quick and easy way to build and connect with a global community of like-minded researchers. What has been equally satisfying are the unending science puns and a sense of community. However, there is something more to be gained from social media platforms like Twitter and Facebook, that goes beyond just scientific connectivity and inside jokes. Unlike scientific networking platforms such as ResearchGate and Academia.edu, social media allows researchers to reach out beyond their peers to a broader and more diverse audience of non-scientists.

There are numerous public dialogues on social media that scientists can positively contribute to with their experience and expertise. Most recently, there have been booming conversations on the internet around the COVID-19 vaccine hesitancy. Given the historical precedent of scientific misconduct towards racial and ethnic minorities (read the Tuskegee Study and the case of Henrietta Lacks), government distrust, and the growing anti-vax movements, the public is eager to engage in transparent conversations around vaccines with politicians, companies, and the scientists themselves. The distrust is partially eliminated when ethnically and racially diverse experts talk about vaccine awareness, and promote health and safety guidelines. While the burden of effective

science communication shouldn't lie entirely on the shoulders of minority group scientists, their voices are a powerful tool in building public confidence in scientific research. To this end, social media is an exceptional tool since platforms like Twitter, Facebook, and even TikTok are free and easily accessible to everyone.

Despite easy access, there are certain limitations to scientists using social media to engage with non-science folks. Good, accurate science is complex, and it's difficult to distill years of research, intricate correlations, and competing hypotheses in character-limited tweets without using scientific jargon. Additionally, once the bite-size pieces of research (a figure or a study conclusion) are out in the world of social media, how they are interpreted and used by the audience can be out of scientists' hands. There have been innumerable cases where figures and statistics have been misinterpreted, scientific half-truths have been propagated, and study conclusions twisted to fit one's preconceived notions. Moreover, non-scientists may not be able to grasp the concept of cutting-edge scientific research, where old scientific claims are often revised or set aside to make way for newer conclusions supported by more robust evidence.



Alternatively, social media can also forfeit accountability for the scientist as well, since Tweets and Facebook posts are not peer-reviewed and rarely subject to scientific scrutiny. In some situations, professional ethics have been breached through posts publicly criticizing colleagues, or more gravely, by those sharing private patient information. There have also been situations where researchers have suffered professional ramifications for sharing unpopular political opinions via social media. Social media, at its essence, is personal. It can be difficult for scientists to balance its use for sharing personal, private, or political views and as an extension of their professional careers.

So, how can we, scientists and scientists-in-training, optimally use social media to our professional and personal advantage? For starters, utilize it for its wide and immeasurable connectivity to reach an audience you otherwise may not have access to. While it is an excellent opportunity to expand your scientific network, be mindful that it can turn into a scientific echo chamber. You run the risk of reinforcing your research biases when you continually engage with like-minded scientists with similar research interests. Instead, be open to connecting with a variety of audiences from different institutions, or ethnic, social, and political backgrounds. Sexual, gender, racial, and ethnic minorities have invaluable and irreplaceable perspectives to bring to the scientific conversation and research, so be a good listener and amplifier for these voices. Also, remember that what goes on the internet stays on the internet forever so, be careful about what you are posting and sharing online. Keep proprietary data, patient information, and unvalidated results out of your posts. Lastly, keep those science puns coming!

Follow the CAMB Student Newsletter on Twitter @CambNewsletter to find out more about our authors, upcoming articles and issues, and our blog.

Check out our list on the next page to figure out what type of social media scientist you are!

Types of Social Media Scientists: Which One Are You?

1. **The No-Nonsense Networker:** You will only tweet results you have validated thrice. Jokes and memes are beneath you. Jargon exists for a reason (so does Google). Trolls and armchair scientists beware! It is your mission to obliterate their scientific falsehoods in the comments section of any and all CNN news reports. Thank you for keeping us all in check!

2. **The Niche Humorist:** You have a folder of memes and puns ready to deploy at a moment's notice. You scour threads, waiting to chime in with well-timed one-liners. Your wit is razor-sharp, but only really appreciated by ten other people (at best). You had a meme go viral once but yeah, it's no big deal. Thank you for giving us a laugh!

3. **The Humblebragger:** You'd like to start your post by thanking your PI, labmates, that one postdoc, fellow grad students, and maybe a tech (but no one ever really thanks the techs). A couple of run-on sentences later, you've convinced us all about how YOU could not be the best in your field of work if not for the support of those around YOU. YOUR most recent NATURE publication, YOUR newest grant, YOUR fancy award! It is probably all true, and we're all honestly just a little jealous. Thank you for inspiring us!

4. **The Perpetual Complainer:** You remember the internet exists only when things aren't going your way. Your feed will convince the most bright-eyed optimists that science is governed by Murphy's law. You and your followers see science for what it is - a ceaseless trudge of unsuccessful experiments, negative results, inconsiderate labmates, long-overdue grants and submissions, unpolished presentations, mycoplasma contamination, delayed orders, failed cloning, non-specific antibodies... Thank you for keeping it real!

5. **The Lost Cause:** You joined Twitter in 2010 and are the proud owner of two Twitter accounts. And no, they aren't separate personal and professional feeds. That new account was meant for all that grad school memeing but you never followed through. Your last retweet was in reference to a 2013 CRISPR paper (yeah, that one). It's ok. Twitter isn't for everyone. Thank you for increasing our follower count anyways!

The CAMB Student Newsletter is an unfortunate case of a wannabe Niche Humorist ending up as a Lost Cause!

Thank you for reading.

For any questions, comments, concerns, or if you're interested in joining our team, please feel free to contact us at:
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