

# CELL AND MOLECULAR BIOLOGY STUDENT NEWSLETTER

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## LETTER FROM THE EDITORS

Dear CAMB students, faculty, and alumni,

In this issue of the CAMB Student Newsletter, we highlight the IF/THEN initiative encouraging girls to pursue careers in science, and dive into the growing practice of preprint. We also share a synopsis of the coronavirus pandemic along with a detailed timeline about the global and local Penn responses to this crisis.

For additional articles, past publications, and to learn more about the CAMB Student Newsletter team, visit our blog at [cambnewsletter.wix.com/blog](http://cambnewsletter.wix.com/blog). Current students interested in contributing to the CAMB Student Newsletter can contact us at [camb.studentnews@gmail.com](mailto:camb.studentnews@gmail.com). We hope you enjoy the May 2020 Issue!

Sincerely,  
Somdutta Mukherjee and Sylvia Stankov  
Editors-in-Chief

## SPECIAL INTEREST

# The IF/THEN Initiative: inspiring and empowering the next generation of women in STEM

*Hannah Kolev*

Over the past three decades, female representation in the biological sciences has greatly improved. The percentage of women comprising the workforce in biological, environmental, and life sciences more than doubled between 1993 and 2010 to 48% (source: NSF). Despite these advances, women in science, technology, engineering, and mathematics (STEM) remain underrepresented in media and entertainment. The Geena Davis Institute on Gender in Media, in collaboration with the Lyda Hill Foundation, completed the most comprehensive analysis of STEM character portrayals in Hollywood. By analyzing more than 1,000 leading roles taken from popular television shows and movies, they found that men outnumber women nearly two-to-one in STEM roles. Even more shocking, this statistic hasn't improved in the past ten years. This under representation is especially devastating, given the report's finding that girls are more likely to pursue STEM if they personally know someone in the field, receive encouragement, or have a STEM role model. Thus, if girls and women don't see themselves represented as STEM professionals

on screen, they will be less likely to pursue those career paths.

In light of the detrimental effects that under representation of women in STEM can have, the **IF/THEN Initiative** was established with the goal of encouraging girls to consider careers in science. Aptly named, this initiative upholds the mantra: IF we support a woman in STEM, THEN she can change the world. The IF/THEN Initiative is funded by the Lyda Hill Foundation, a philanthropic organization whose mission is to support transformational advances in science and nature, and by kick-starting the IF/THEN Initiative, aims to inspire the next generation of female scientists. The IF/THEN Initiative pursues its mission through three key objectives: (1) **connect** middle school girls to positive role models in STEM, (2) **highlight** the importance of STEM in society, and (3) **improve** the media's representation of women in STEM. Through steadfast implementation of these goals, the IF/THEN initiative strives to empower young girls to become pioneers in STEM and hopes to inspire a cultural shift in the collective perception of women in science.

First and foremost, the IF/THEN Initiative seeks to provide young girls with positive role models in STEM. In partnership with the American Association for the Advancement of Science (AAAS), the IF/THEN Initiative selected a group of talented women in STEM to act as IF/THEN Ambassadors. These Ambassadors work in a wide range of scientific careers, from paleontology and oceanography to conservation photography and sports science, and were chosen to share their passion for science with students inside and outside the classroom. **Dr. Jessica Taaffe**, CAMB alumna and associate scholar with Penn's Center for Global Health, was recently chosen as an AAAS IF/THEN Ambassador. As a global health scientist working in Washington, D.C., Dr. Taaffe has worked with institutions like the NIH, World Bank, and United Nations on a variety of projects tackling global health problems by employing diverse types of science. Dr. Taaffe finds the intersection of global health and science incredibly exciting and hopes to "share that excitement with young girls, to explain the complexity of global health problems and stress that there are many ways to tackle global health."

As an Ambassador, Dr. Taaffe engages her community through social media, having created both a professional Facebook page and new content for her Instagram account (@signora\_da\_vinci), in addition to her active Twitter profile (@JessicaTaaffe). In the future, she plans to connect with girls interested in STEM by participating in virtual and direct engagement opportunities made available by the IF/THEN Initiative. For example, many Ambassadors have participated in public engagements through Skype sessions with students and through conference panels or workshops targeted to young girls. Through these outreach activities, Dr. Taaffe and the IF/THEN Ambassadors provide critical mentorship to girls, opening their eyes to the types of STEM careers that they too can achieve.

Another central goal of the IF/THEN Initiative is to illustrate that STEM is everywhere and important for a variety of occupational fields. To that end, the IF/THEN Initiative partnered with over 30 coalition members that are committed to actively promoting women in STEM. These diverse coalition members, such as the World Wildlife Foundation and National Geographic Society, are instituting new practices to both elevate women in STEM and attract girls to STEM professions. For example, in partnership with the IF/THEN Initiative, the national U.S. Soccer organization has committed to hiring more women into new full-time positions, such as sports medicine and sports science. Another major partner, Girl Scouts of America, is working together with the IF/THEN Initiative to create a new STEM Career Exploration badge for Girl Scouts. By demonstrating that STEM plays a central role in a wide array of jobs – jobs that can even overlap with one's hobbies – girls can begin to envision a future in STEM.

The final component of the IF/THEN Initiative is to engage media

partners to help shift the perception of women in STEM. The Initiative hopes to bring greater visibility to women in science by promoting positive portrayals of female scientists in entertainment and media. Recently, the IF/THEN Initiative partnered with GoldieBlox, a children's media company, to produce a YouTube series encouraging mentorship between women working in STEM and middle school girls. *Mission Unstoppable*, a new CBS television program, showcases women on the cutting-edge of science, including zoologists, astronauts, and code breakers. Finally, the Initiative is assembling an IF/THEN Collection comprising a digital library of accurate and powerful images of real girls and women in STEM. Disseminating

this collection of images to science museums, zoos, and schools will be a quick and powerful tactic to further promote the visibility of women in STEM. Together, these advances will reach young girls where they're often active – YouTube, TV, and other media platforms – to encourage their interests in STEM.

Young girls today see a world in which women in STEM remain outnumbered two-to-one in television, movies, and media. Without role models, whether on screen or in real life, young girls are discouraged from even considering careers in science. The ambitious IF/THEN Initiative is tackling this serious societal issue by providing girls with positive role models, illustrating the importance of science in diverse professions, and enhancing the visibility of women in STEM. When asked why she thought the IF/THEN Initiative is important, Dr. Taaffe described her own experience interacting with the AAAS Ambassadors at the IF/THEN Summit. Dr. Taaffe explains that it was the first time she felt "seen, and even more, celebrated." She explains that she saw "women [she] could identify with. The Ambassadors are inspiring and successful...They represent different backgrounds, fields of discipline, career paths, and career levels. They are multi-talented...They are amazing." The diversity showcased by the IF/THEN Ambassadors provides greater opportunity for girls to see themselves in the women, and as Dr. Taaffe notes, "girls need to have role models they can identify with...because 'if you can't see it, you can't be it.'"

Additional information about the IF/THEN Initiative can be found at <https://www.ifthenshecan.org/>.

To learn more about Dr. Taaffe and her work as a Global Health Scientist, check out her website at <http://www.jessicataaffe.com/>.

Dr. Taaffe's full interview transcript is available on the CAMB Student Newsletter blog at <https://cambnewsletter.wixsite.com/blog>.



*Dr. Jessica Taaffe, a CAMB alumna, was selected as an AAAS IF/THEN Ambassador. Together, these Ambassadors serve as role models for the next generation of women in STEM.*

# Pandemics, preprint, and peer review

Sylvia Stankov

The current COVID-19 crisis is the most extreme example of the need for quick dissemination of science. The pandemic has brought two seemingly opposed ideas to a head: how does the need for speed intersect with the process of peer review? These past few months have pointed towards an already rapidly growing platform as an answer: bioRxiv.

bioRxiv is a preprint distribution service operated by Cold Spring Harbor Laboratory. This free online archive allows authors to upload their work and make their findings available instantly. Since its founding in late 2013, bioRxiv has accepted over 75,000 papers. A search for “COVID-19” shows that while 0 results are returned for January 2020, 18 papers were made available by the end of February and by May 1st, that number grew to 540. Clearly, bioRxiv is the platform for the latest ideas.

Dr. Christopher (Casey) Brown is an associate professor in the Department of Genetics, and an enthusiastic supporter of bioRxiv. He has preprinted all of his papers since coming to Penn. One of the benefits of bioRxiv is the ability for readers to post comments. Brown has had overwhelmingly positive experiences with the discussions and believes they have improved his papers. He also shares that he has been invited to talks

and been contacted by editors of traditional journals due to the exposure provided by preprints.

For those unfamiliar with preprint, it may be nerve-racking to upload your work to a platform like bioRxiv. Maybe you're worried about being scooped? Brown assures that it's rare and indeed, an increasingly common attitude is that an earlier preprint takes precedent over a later peer reviewed publication. Additionally, a majority of traditional journals have no problem with preprint and even directly encourage upload to bioRxiv when a paper is submitted. Worried about uploading something imperfect? Any paper will contain some number of things that will be improved during the peer review process. bioRxiv provides a community of interested people to comment and discuss your work before publication.

Preprint can be especially beneficial to trainees. Papers that are preprinted have been shown to accumulate citations faster than

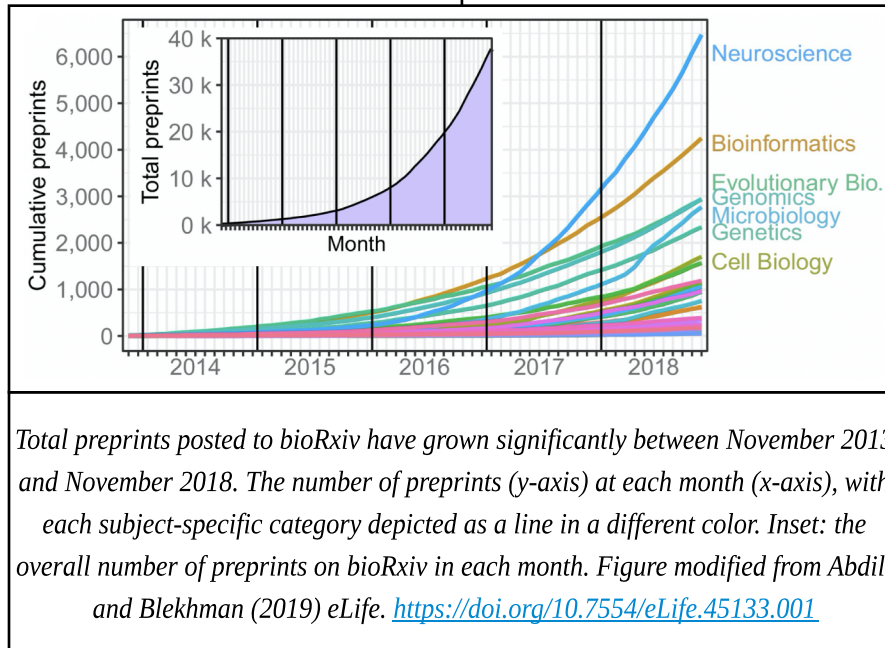
papers that were not preprinted (Feldman, Lo, and Ammar (2018) [arXiv:1805.05238](https://arxiv.org/abs/1805.05238)). People can also become aware of your work more quickly, which may be particularly useful when interviewing for a job. While a preprint is not as good as a paper, it's a clear demonstration that you've worked towards a product for the public.

While Brown applauds what bioRxiv has accomplished as a free and open preprint platform, he does not believe that it replaces traditional peer review. If you want to browse preprints, he suggests beginning with papers in your field; you can better evaluate the science, the methods and the statistics for yourself. When stepping outside of your comfort zone, you may want to rely on the reassurance provided by expert peer review. The platform can especially prove tricky for topics that capture the public imagination. In response to the surge of

COVID-19 related papers and searches, bioRxiv published a banner with the reminder that “these are preliminary reports that have not been peer-reviewed. They should not be regarded as conclusive, guide clinical practice/health-related behavior, or be reported in news media as established information.” The banner highlights the need to read preprint papers with a certain level of skepticism and to treat preprint as a supplement to traditional publications.

bioRxiv provides a unique

mechanism for the spread of scientific information. Preprint allows rapid dissemination of ideas which is especially useful in extreme scenarios like the COVID-19 pandemic. Preprint also turns the tables on traditional scientific publishing by handing power back to the authors. The utility of bioRxiv is undeniable, and we're likely to continue to see a rise in the popularity of preprint platforms.



**bioRxiv**  
THE PREPRINT SERVER FOR BIOLOGY



# COVID-19: the pandemic

Aishwarya Pawar

On January 28th, as the death toll due to novel coronavirus infections soared above 100, WHO officials met with Chinese leaders in Beijing to discuss the outbreak. Following this meeting, on January 30th, WHO declared the disease to be a **Public Health Emergency of International Concern** (PHEIC). According to international health regulations, a PHEIC is an event that poses public health risks through the international spread of disease, and requires a coordinated international response to combat it. The declaration came with temporary recommendations for China and the international community to take precautions to prevent and reduce the international spread of the disease with minimal interference to international traffic. This declaration served as a warning to all nations of the high potential of the disease to cross international borders and was a call for health organizations to take preventive measures like reduce travel and update emergency preparedness.

While WHO continued to draft and publish international guidelines to prevent and control the spread of disease, March 7th marked 100,000 COVID-19 cases worldwide. As the infections gained a foothold in multiple countries around the world, it was evident that measures taken to contain its spread across borders were unsuccessful. On March 11th, the WHO declared COVID-19 a pandemic. A pandemic is officially marked by a failure to contain the international spread of an infection after the temporary recommendations (issued during a PHEIC) are not enough to contain the spread of the disease.

While the definition of a pandemic is debatable, the consensus is that a pandemic is an infectious disease that spreads over a wide area, crossing international borders and affecting a large number of people. What distinguishes the COVID-19 pandemic from a seasonal flu epidemic, which may or may not cross international borders, is the

out-of-season transmission taking place simultaneously on a worldwide scale. As COVID-19 cases started showing up all over the world in early March, it was evident that community transmission in many countries was happening simultaneously, and out of the seasonal cycle that the influenza virus follows.

In a statement declaring the pandemic, the WHO Director-General, Dr. Tedros Adhanom recognized that the use of the word pandemic may spark fear and panic in the international community and hence should never be used without cause. However, he assured the public that the declaration doesn't change the WHO's assessment of, or response to, the situation. While this is the first pandemic caused by a coronavirus, he optimistically stated that it is also the first pandemic that we could control.

Recently, WHO's promptness in responding to the early spread of the disease and alerting countries of its gravity has been brought into question. However, even under the intense international scrutiny, the WHO under Dr Adhanom's leadership continues to monitor the spread of the pandemic, raise awareness about the infections, and how to prevent them.

## References:

1. [Coronavirus \(COVID-19\) events as they happen \(WHO\)](#)
2. Timeline: How the new Coronavirus Spread  
<https://www.aljazeera.com/news/2020/01/timeline-china-coronavirus-spread-200126061554884.html>
3. Coronavirus (COVID-19) Information and Resources  
<https://coronavirus.upenn.edu/>
4. Penn Medicine COVID-19 website  
<https://www.pennmedicine.org/coronavirus>
5. Office of the CEO- COVID-19, emails from Penn Medicine

# COVID-19: Penn's leadership and response

Aishwarya Pawar

As the world grapples with the spread of the COVID-19 pandemic, shining examples of leadership have emerged in many places. A prime example, the University of Pennsylvania was one of the first universities to depopulate its campus as the concerns about the spread of the virus grew.

On March 11th, as the World Health Organization (WHO) declared COVID-19 to be a global pandemic, Penn was midway through Spring Break. Several students were traveling to domestic and international destinations, and the undergraduate dormitories and study spaces were mostly empty. It was obvious that once all the students came back from their travels and congregated in groups on

and off campus, the chances of the virus spreading rapidly through the Penn community were very high.

University President Dr. Amy Gutmann sent out a University-wide email on the same day, detailing the University's action plan for preventing and minimizing the spread of SARS-CoV-2 infections on campus. For all programs not associated with the graduate school, Spring Break was extended by a week and spring breakers were advised not to come back on campus once the break was over. Plans were set into action to take all classes online, and all in-person meetings and seminars were promptly canceled or moved to online platforms. Graduate schools were asked to make decisions

concerning their students, pre-dissertation rotations, and laboratory work. A website for the information and instructions concerning the issue was set up immediately.

As the University began to depopulate the campus immediately, Penn Medicine took special measures to protect all of its personnel and maintain a fully-functional healthcare system. On March 13th, recommendations were sent out to all departments to start working in shifts or working from home whenever possible. These guidelines quickly evolved into a mandate by March 17th. All laboratories assigned essential personnel, who would be responsible for essential lab activities (like maintaining mouse colonies and refilling liquid nitrogen tanks) over the next few months. PennCard access for all non-essential personnel was also temporarily deactivated beginning March 17th. Access to core facilities was also limited to researchers working on SARS-CoV-2 and related topics.

Overall, the University was successfully able to depopulate its campus within a week of the declaration of the pandemic. Classes commenced on online platforms like BlueJeans and Zoom, and plans are now in place to hold final examinations, thesis defenses, preliminary examinations, seminars, and commencements online too.

To help the Philadelphia community through the public health crisis,

Penn Medicine is ramping up operations. Currently, there are two drive-thru testing sites run by Penn Medicine in Philadelphia. A blood donation program has also been organized to meet the growing demand for blood at HUP and CHOP.

Currently, a committee at Penn Medicine, in consultation with epidemiologists, research scientists, and medical professionals is drafting an action plan for restarting laboratory and research operations. It is unequivocally agreed upon that reopening workspaces will be done in tiers, with extensive contact tracing and testing, when the rate of infections goes down.

#### References:

1. [Coronavirus \(COVID-19\) events as they happen](#)(WHO)
2. Timeline: How the new Coronavirus Spread  
<https://www.aljazeera.com/news/2020/01/timeline-china-coronavirus-spread-200126061554884.html>
3. Coronavirus (COVID-19) Information and Resources  
<https://coronavirus.upenn.edu/>
4. Penn Medicine COVID-19 website  
<https://www.pennmedicine.org/coronavirus>
5. Office of the CEO- COVID-19, emails from Penn Medicine

## Detailed timeline of COVID-19-related events

Aishwarya Pawar

International events	Date	Penn events
1st confirmed case of novel infection (later confirmed COVID-19, not confirmed patient 0) in Hubei, China.	11/17/2019	
<b>Pneumonia of unknown origin reported to China WHO office.</b>	<b>12/31/2019</b>	
WHO reports on pneumonia of unknown cause in China.	1/5/2020	
WHO issues first guidance on the novel coronavirus.	1/10/2020	
<b>China announces first death from novel coronavirus.</b>	<b>1/11/2020</b>	
China publishes genome sequence of novel coronavirus.	1/12/2020	
<b>Thailand reports 1st case of novel coronavirus outside of China.</b>	<b>1/13/2020</b>	
	1/15/2020	Return from winter break.
First case of novel coronavirus infection in South Korea.	1/20/2020	
<b>Wuhan, Hubei placed under effective quarantine.</b>	<b>1/23/2020</b>	
WHO and Chinese leaders meet in Beijing to discuss outbreak.	1/28/2020	
<b>WHO declares Public Health Emergency of International Concern.</b>	<b>1/30/2020</b>	
1st cases of novel coronavirus reported in Russia, Spain, Sweden and the UK.	1/31/2020	
1st case reported in Australia, Canada, Germany, Japan, Singapore, the US, the UAE, and Vietnam.	2/1/2020	
First death outside of China in the Philippines.	2/2/2020	
First US citizen dies in Wuhan due to novel coronavirus.	2/8/2020	

International events	Date	Penn events
Novel coronavirus disease named COVID-19. Death toll surpasses 1000 in China.	2/11/2020	
UN activates WHO-led crisis management team.	2/12/2020	
Daily infection drops below 2000 in China.	2/18/2020	
	3/5/2020	International Students and Scholar Services advises international students to register travel plans.
	3/6/2020	PSOM advises community to limit travel and plan to work remotely.
<b>100,000 COVID-19 cases worldwide.</b>	<b>3/7/2020</b>	<b>Spring break begins.</b>
	3/10/2020	University-related travel prohibited, large University events curtailed.
<b>WHO declares COVID-19 a pandemic.</b>	<b>3/11/2020</b>	<b>University-wide email from Penn President Amy Gutmann.</b>
<b>Europe declared as epicenter of the pandemic.</b>	<b>3/13/2020</b>	
	3/15/2020	No visitation policy set up at Penn Medicine. Research ramp-down begins.
	<b>3/16/2020</b>	<b>Penn Medicine opens 2 drive-thru testing facilities.</b>
	<b>3/17/2020</b>	<b>University spaces and on-campus housing depopulated.</b>
<b>200,000 COVID-19 cases worldwide.</b>	<b>3/18/2020</b>	Penn Medicine COVID-19 hotline activated.
<b>10,000 COVID-19 deaths worldwide.</b>	<b>3/20/2020</b>	
300,000 COVID-19 cases worldwide.	3/21/2020	
	3/23/2020	Blood Donation Drive at Penn Med, online classes commence.
India issues global lockdown of its 1.3 billion citizens.	3/25/2020	
<b>US reports highest number yet of COVID-19 cases exceeding 124,000, with more than 2,400 deaths.</b>	<b>3/29/2020</b>	
<b>US extends social distancing guidelines to April 30th.</b>	<b>3/30/2020</b>	
<b>1,000,000 COVID-19 cases and 50,000 deaths worldwide.</b>	<b>4/2/2020</b>	

## ***CAMB Student Newsletter Staff May 2020***

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