

EXPLORATIONS

JOHN C. GREENE SOCIETY NEWSLETTER
SUMMER ISSUE 2020



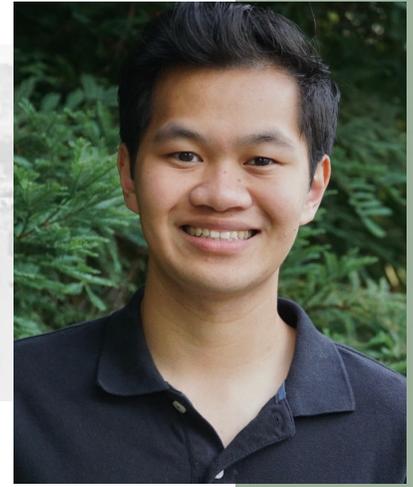
PHOTO CREDIT SHUTDOWNSTEM.COM

Researchers across the globe participated in #ShutdownSTEM, an initiative organized by STEM professionals and academics to take action for Black lives. Turn to **page 4** for JGS's diversity and inclusion statement, and **page 5** for an exclusive interview with Dr. Eni Obadan-Udoh on her role as a woman of color in the world of academia and research.

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LETTER FROM THE PRESIDENT



Dear Members of the UCSF Dental Community:

I am honored to write this letter as the new president of the John C. Greene Society (JGS). This coming school year will be full of excitements and challenges, and I am genuinely eager to navigate this new chapter with all of you.

The past several months have been difficult to say the least, and I hope everyone is staying safe and well. This edition of Explorations delves into the relevant topics of Covid-19 research and diversity and inclusion, in addition to celebrating the steadfastness of our summer fellows and research faculty. I hope this edition challenges us all to reflect, take responsibility for elevating the voices of the persecuted, and make moves towards dismantling oppressive hegemony within and beyond the scientific community.

Truly, no entity remains exempt from the far-reaching effects of Covid-19 – even UCSF is no exception. Yet in the midst of the pandemic, our staff at the School of Dentistry have demonstrated exceptional resilience and adaptability- modifying schedules, program formats, schedules, and even lifestyles to support communities both within and outside the school.

I must thank Roger Mraz, Dr. Lisa Berens, and Dr. Stuart Gansky for always working so tirelessly to support the endeavors of both students and faculty. This year's summer research program fellows and their faculty mentors have tenaciously adapted their projects to surmount obstacles engendered by Covid-19. Being able to witness the swift mobilization of students, faculty, and program sponsors to keep the summer program moving forward has been truly exceptional.

Although the current crisis is not perhaps the ideal season for doing anything, let alone performing research, UCSF and the School of Dentistry have evinced an incredible dedication to its students, faculty, and research as a whole. In the summer research program, we are also extremely grateful to have received full funding from our donors and sponsors this year, whose generous investments offer financial support for our summer fellows.

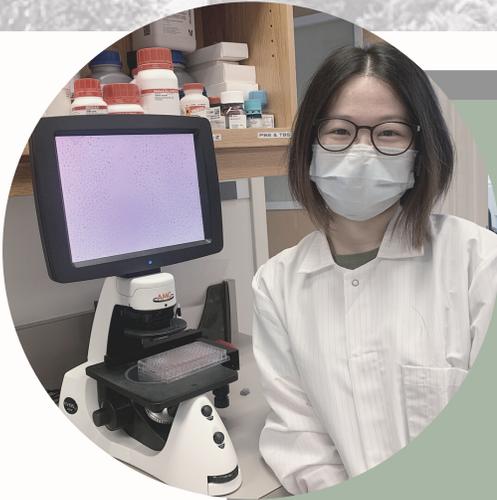
Though the future remains unknown, I am confident that the collective efforts of students, faculty, and administration will make the coming academic year meaningful and constructive. Please join our Facebook Page (The John C. Greene Society) for the latest developments within our club. If you have any questions, don't hesitate to contact me or any of the other board members. I hope you'll join me in fostering an inclusive and edifying space for curiosity and achievement: JGS is open to everyone with interest and drive. I look forward to serving you all as president.

Sincerely,

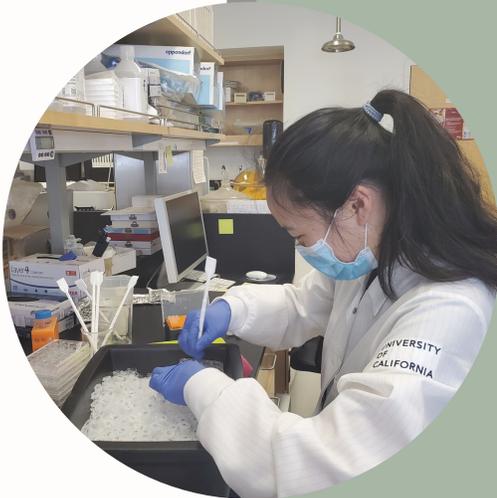
A handwritten signature in black ink that reads "Wesley Kim".

Wesley

THE JOHN C. GREENE SOCIETY



The John C. Greene Society was founded in 2002 under the mentorship of Dr. John S. Greenspan and Dr. John C. Greene, whose leadership was instrumental to the dental school's rise to prominence as a premier research institution. A major goal was to encourage active student participation in meaningful research, bringing student research into alignment with the quality investigations being conducted by the UCSF dental faculty.



Since that time, the John C. Greene Society has grown into one of the most recognized and respected student groups on campus. Student research participation at UCSF is at an all-time high, with dozens of students conducting fellowships each year, and many more traveling to present their findings at conferences across California, the country, and the world.



2020 Summer Research fellows conducting their respective research: Joy Geng '23 (Top) at the Kapila lab, Tiffany Huang '23 (Middle) at the Schneider lab, Alexander Le '23 (Bottom) doing remote research with the Lazar lab.

DIVERSITY AND INCLUSION

The past few months have reignited a conversation on the roles that systematic racism, unequal distributions of power and opportunity, and privilege and whiteness play in society and in our everyday lives. JGS has a mission to represent the student interest. And just as the nation is going through a reckoning of sorts, so to do we, as students, have to examine ourselves and the institutions and communities we belong in. We at JGS are committed to anti-racism and challenging the unconscious biases and practices that perpetuate oppression.

For us, this means taking a look at diversity and inclusion, or lack thereof, in the institutions of science and academia. In this issue and in future issues, we would like to continue the conversation and pose the questions to you--what is diversity and inclusion? Why is it important in science and research? And perhaps, what can we do to be better?

In the following interview, Dr. Obadan-Udoh, Assistant professor of Preventative and Restorative dental sciences, shares her perspective on diversity in science, and her experiences as a black woman in academia.

If you have any ideas for future issues or have any feedback, please email us at jgs@ucsf.edu.

--Tiff and Steph





Meet Dr. Eni Obadan-Udoh, DDS, MPH...

Could you tell us a bit about your background and what you study?

I am a board-certified dental public health specialist. I am originally from Nigeria but immigrated to the United States (Boston) in 2010. I schooled at Harvard University, where I obtained a Master of Public Health (MPH) degree in 2011, and a Doctor of Medical Science (DMSc) degree in 2016. My primary responsibilities at UCSF are teaching, administration, and research. I am the course director for four dental public health courses and also serve as the program director for the postgraduate program in dental public health. My research primarily focuses on quality improvement and patient safety in dentistry. I am particularly interested in the patient's perspective about dental care quality and how we can utilize health IT to improve the quality of dental care.

If you are comfortable sharing, what has your experience been like as a woman of color in the field of science and research?

Hmmmm... my experience as a black female in dentistry has been a mixed bag. Early in my career, when I practiced clinical dentistry in Nigeria, for the most part, my negative experiences were limited to sexism, i.e, unwanted sexual advances and inappropriate comments from senior male colleagues. On the other hand, I had very strong black, female role models and senior colleagues in positions of leadership who inspired and motivated me. After I moved to the United States, that experience shifted significantly. There were very few (if any) black females in leadership at my institution while my male colleagues were surprisingly respectful and polite in their interactions, with only very few exceptions. I quickly realized that I needed to actively seek out female role models and ...(See Page 6)

I quickly realized that I needed to actively seek out female role models and **pretty much gave up on finding people who looked like me, let alone, had similar life experiences.**

(Page 5 continued)... pretty much gave up on finding people who looked like me, let alone, had similar life experiences. For the first time in my professional career, I was classified as an “under-represented minority” and it came with a new type of social isolation. Although, there was a sense of camaraderie among other female colleagues, I also quickly learned that I needed to constantly prove that I was intelligent and deserved to be in whatever position I occupied.

People were often “surprised”, albeit pleasantly, to learn that I schooled at Harvard or that I possessed a doctoral degree, which always caught me off guard initially, but have now come to expect. I also learned there was a phrase for it... “the soft bigotry of low expectations”. Now that I can mentor students and younger females, I am acutely aware of what my position represents to them. I do not take it for granted that I can be that beacon of light to the young dental student trying to define their pathway in the profession, especially students from minority backgrounds.

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What does diversity and inclusion mean to you, and in what ways do you think it is important to the field of dentistry and research?

To me, diversity and inclusion is the creation of a system where entry, professional growth, and remuneration are not determined by racial background, gender identity, or sexual orientation. It implies a level of self-awareness, where everyone is aware of their own privilege, and deploys it to create opportunities for those who do not possess similar privileges. It means giving a voice to the least amongst us, especially when they do not possess the same physical characteristics, life experiences, or hold similar beliefs. Everyone’s experience is valuable and deserves to be respected. It should not be considered a necessary inconvenience or a fad; we are all better because of it. When there are diverse voices in a room, the conversations are richer, our collective experiences are improved, and our achievements are bigger. While dentistry has made some progress in attracting more females into the profession, we can definitely do better regarding expanding the pipeline for students from minority backgrounds.

Do you think that UCSF is fostering a space of inclusion?

I think we are making progress... the leadership seems committed to the process and we are beginning to have the right conversations. When I got here, it didn't take too long to notice that I was one of a handful of black faculty in my department. That being said, the other faculty members in my division (Oral Epidemiology and Dental Public Health) were very welcoming, I was never made to feel out of place or "less than". So, I would say, within my division, there is a deliberate effort to foster inclusion, which has been refreshing and largely successful, but as a school...we can probably do better. Across the campus, I would also like to commend the efforts to provide training on diversity and inclusion to all faculty members, staff, and students, as well as research funding for minority faculty.

What would you like to see done differently in the future?

Like I said, we are beginning to have the right conversations, so, I would really like to see some implementation of all the recommendations that have emerged. For example, more effort needs to be put into attracting minority faculty members and ensuring that they are treated equitably, in terms of remunerations, promotions, and other perks. Similarly, we need to invest more in building a

pipeline for minority students into the dental profession by developing mentoring programs for high school students in low-income neighborhoods, creating opportunities for them to volunteer at the dental center, and offering need-based scholarships to those who do not have the family support to take on huge student loans, or pay their way through dental school.

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UCSF RESEARCHERS IDENTIFY ANTIVIRAL DRUG TARGETS FOR COVID-19

The race to develop antiviral drugs to treat and mitigate the effects of the virus, as well as to discover a vaccine to immunize people from COVID-19, is ongoing and extensive. Meet Dr. Stephen Floor, PhD., who is lending his hand into looking for potential antiviral drug targets that could help treat COVID-19.



Dr. Stephen Floor (above) investigates how SARS-CoV-2 changes host translation. Image courtesy NIH common fund

Dr. Stephen Floor, PhD (above) is a researcher in the Department of Cell and Tissue Biology at UCSF. The Floor lab studies how gene expression is controlled in cells, and in particular, how regulatory sequences in mRNA affects protein synthesis. When viruses infect host cells they disrupt endogenous host mRNA translation and promote translation of their own messages.

With the onset of the pandemic, as well as with this specialized knowledge, the Floor lab started investigating the mechanism by which SARS-CoV-2 changes host translation while evading the body's innate immune sensors as well as the cellular stress response.

The Floor Lab worked in a huge collaborative effort spearheaded by the Krogan lab alongside numerous researchers and the Gladstone institute to better identify host proteins that interact with viral proteins.



Their paper, "A SARS-CoV-2 protein interaction map reveals targets for drug repurposing," was published in Nature on April 30, 2020.

Dr. Stephen Floor and his lab members posing for a group photo in the Floor Lab at UCSF.

Their approach was simple: clone, tag, and express 26 of the 29 SARS-CoV-2 proteins in human cells and identified the human proteins physically associated with each using affinity-purification mass spectrometry, with the hopes of identifying drug targets that could be used to develop antiviral drugs, or that are already targets of FDA-approved drugs. In doing so, the Floor Lab and researchers identified 66 druggable human

proteins or host factors that are preexisting drug targets for a number of FDA approved drugs, drugs in clinical trials, as well as preclinical compounds. The study also identified two classes of pharmacological agents that display antiviral activity.

With the large and pressing need to find treatments as fast and as accurately as possible, Dr. Floor predicts that scaling up is the next biggest challenge. However, Dr. Floor is looking forward to the next part of this project. "We're fundamentally a basic science lab, so for us, this was an illustration of when you spend time trying to understand a fundamental system, you can then start seeing that system everywhere."

While these results are very promising in the hunt for COVID-19 therapies, much remains to be done. Experiments were done on tissue cultures that lack immune systems, so turning to human trials will ***become necessary.***



This project has spawned a spinoff project looking at similarities and differences in how viruses impact protein synthesis in the cell. By looking at 10 different RNA viruses, the Floor lab hopes to understand unique viral impacts on host protein synthesis. These results would allow future scientists and clinicians to generalize treatments to work in different contexts.

FROM DENTAL STUDENTS TO FRONT-LINE WORKERS

Anne Marie Jeng and James Lin (right) are now graduates of the School of Dentistry. In April, they were recruited alongside other students in the School of Dentistry, Medicine, Nursing, and Pharmacy, to help conduct Covid-19 research with Unidos in Salud in the Mission District of San Francisco. Here they give us their insight on their experience.



Anne Marie Jeng and James Lin '20 posing in front of tents used for testing patients for COVID-19.

Tell us a little bit about the Unidos En Salud research project and what your roles were.

Anne Marie- The project was spearheaded by second year medical students who recruited volunteer healthcare professionals and students to help run Covid-19 research in the San Francisco Mission District. The Mission District is where a large portion of the San Francisco Hispanic/Latino population live and was considered to be of greater risk for contracting Covid-19. The study's purpose was to determine how many people within the Mission district have contracted the virus, to confirm if the trend of Hispanics contracting it in San Francisco was high, and to test whether any patients had previous exposure and developed immunity through antibody testing.

James- Although we were dental students in a largely medically based research study, we actually played a way larger role than expected. Because of our didactic training and our clinical knowledge of working with patients, we were able to do pretty much everything our medical and nursing school counterparts were doing. We screened and triaged high-risk patients, collected nasopharyngeal swabs from patients, and pricked and "milked" patients' fingers for antibody collection-- things we thought would have been reserved for medical or nursing students. The medical staff and researchers truly entrusted us with many responsibilities, which was so cool, and we were just as much a part of the team as anyone else.



James taking a "selfie" in front of research site.

What inspired you both to join this research initiatives?

James- Shelter in place started in March and, after a few weeks, we began feeling restless just sitting by the sidelines. We wanted to do something that would contribute to finding a solution and help our community. When the Unidos En Salud group sent out an email recruiting all UCSF health professional students, we immediately decided to

join in on this once-in-a-lifetime opportunity. Other than oral surgery, dentistry is removed for the most part from the general medical field. We saw this as an exciting opportunity to be out on the field and support our medical counterparts. And it was GREAT! It was really encouraging to work alongside incredible medical professionals, and it's comforting to know that patients are going to be in good hands based on the future physicians and nurses I met.

Anne Marie- I agree with James. It was humbling to realize we were both in a position to take part in helping our community on such large scale. As dental students, we learn a lot about human anatomy, immunology and infection control- to have a chance to be recruited and to take part in something truly interdisciplinary was such a huge privilege. Right now, we are living through a very significant moment in world history. Twenty to thirty years from now, we wanted to look back and confidently say we did our part and did what we could to help fight this virus. Another factor of motivation is that we were just a few months away from graduating and entering the workforce. Covid-19 will forever change how dentists practice in the field, so we wanted to participate in this study and understand this virus now as best as we could for the future.



Anne Marie posed in front of COVID-19 tents.

What did the research study reveal? Where do you see these results being applied in future policy making?

Anne Marie - While the majority of patients were Hispanic, there was also a mix of other ethnicities. The study showed very few patients tested positive for Covid-19, but a majority of those who did test positive were Hispanic; although the incidence was so small, it's hard to link any correlation between ethnicity and virus susceptibility. In summary, the study confirmed that San Francisco, and specifically the Mission District, has been doing a really good job at social distancing.

Is there anything else you'd like to add?

Anne Marie- I want to encourage dental students to realize they are very much leaders within their community and their training has the potential to be applied in a much larger scale once they leave school. Nothing they are learning now is in vain. It's a lot of hard work, but their training is an invaluable investment to the many good they can bring to their patients and community in the future.

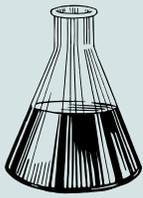
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As a dental student or dentist, it is very easy to feel like you exclusively see patients for dental reasons or are exclusively trained to treat the oral cavity. And in many aspects of a dentist's job, that is true. But this experience showed us we are indeed **community leaders**, and we do have the potential to help our community beyond **just their oral health.**

-Anne Marie

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James- I agree with Anne Marie- the education we are learning in school teaches us how to solve dental problems on a single patient- we do one filling at a time, one patient at a time. But this study shows us that this isn't the reality of real world diseases. Treating patients on a community level, with a prevention mindset, is key. It is so much more efficient, more effective, and more tangible to think on a COMMUNITY level. For example, when public health systems introduced fluoride into the water, caries rate decreased tremendously. So I'm hoping this study will give us more insight into the fact that prevention on a wide scale should always be the goal for permanent dental solutions.



2020 SUMMER DENTAL STUDENT RESEARCH FELLOWSHIP PROGRAM

Although Covid-19 has upended the world's regularly scheduled programming, one thing remains constant. The summer dental student fellowship program continues to be one of the most enduring and enriching educational experiences at UCSF for dental students, with 25 participants this year.



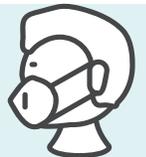
This year, the summer dental student fellowship program, normally scheduled for a 10-week period from end of June to mid September, has an extended end date of March 2021 to account for the uncertainty of lab reopening and asynchronous return to research activities. Lab research, which had initially ground to a halt in March, has since slowly reopened, with lab capacity slowly increasing from 25% to 50%. To account for new social distancing protocols and limited lab capacities, a few Summer Research Fellows have had to adjust their proposals to conform to the new Covid restrictions.

"There's still accountability and rigor, but now, also flexibility in how things get delivered. The work will still get done. It's important to treat each other with kindness, and forgiveness."

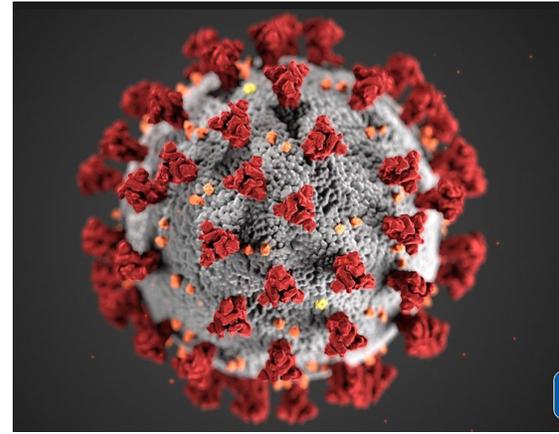
- Program Administrator Roger Mraz

The Summer Research Fellowship culminates in Research and Clinical Excellence day which has been rescheduled to March 2021. R&C day is a day-long event celebrating scholarly work where the school's faculty and student researchers showcase their work.

"It will have a different format that will still engage people and celebrate all the research that has been done," says program administrator Roger. Despite the modifications to the end date, much of the essential support, from the school, the deans, and the donors, remained constant. "One thing for sure is that this program has what it needs to continue from leadership and financial sponsors. We're so lucky and thankful for that, and it's a testament that the school makes this program a priority." says program chair Dr. Lisa Berens.



SUMMER RESEARCH FELLOW RECIPIENTS ADAPT TO NEW COVID-19 REGULATIONS



Students in transition from D1 to D2 year have an opportunity to engage in the Summer Research Fellowship. With the outbreak of Covid-19, new regulations and restrictions caused many students's projects to change drastically. Here, two fellows, Erin Welter and Allison Liu, discuss how their projects adapted.



Erin Welter '23 conducts summer research project in the Chaffee lab.

Erin Welter

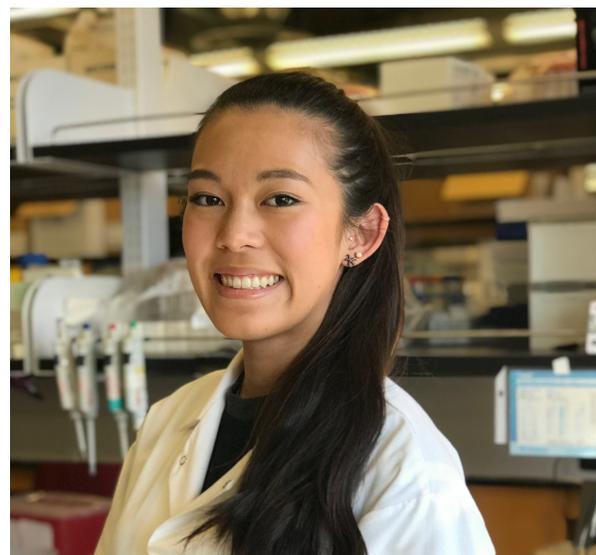
This project is different from the original proposal Dr. Chaffee and I planned before the COVID-19 pandemic. The original project, High School Personnel's Level of Engagement and Associated Predictors for Tobacco Education and Cessation, was going to investigate high school personnel's level of engagement in tobacco education and cessation and examine possible engagement predictors. The COVID-19 pandemic caused on-going changes to school access, making it difficult to execute the survey in a way where we could collect sufficient data in a timely manner

without adding additional burden to school and personnel. Therefore, Dr. Chaffee and I decided to use a secondary dataset which could be analyzed remotely, as well as contribute to enhancing equitable social access to dental health through suggested legislative changes. Although the project changed, Dr. Chaffee and I are extremely excited about the possibility to identify significant drivers and questions to understand better sealant utilization for socioeconomically vulnerable children in California so as to inform future public policy.

My project, Dental Sealants Utilization Among CA Medicaid-eligible Children by Age, Race/Ethnicity, and County, will assess sealant utilization among CA Medicaid-eligible children using the California Open Data Portal. Additionally, this project will compare sealant utilization and disparities in utilization at the county level with other potential geographic predictors, including overlap with dental health professional shortage areas. Understanding the status of sealant utilization could improve and inform public health care policy, target resource allocation, educational outreach, and dental programs to increase utilization of preventive dental services among California children.

Allison Liu

My initial project was looking at how pH of cancer cells change with and potentially control differentiation. The project would have been a continuation of data presented by the Barber Lab showing that there is a trend in intracellular pH change with different states of cancer stem cell differentiation. With the pandemic, I discussed with Dr. Barber regarding how my research opportunity would change, since my project was quite intricate and would have required much more training such as growing and imaging spheroids as well as the



Allison Liu '23 conducts research in the Barber lab

FACS sorting process. We considered other options that would be more suitable for a training process following social distancing guidelines in the lab and that would still also encapsulate my original project. We decided I would be looking at lysosome pH dynamics in embryonic stem cells to show changes in lysosome pH and discover a trend from the ESC naïve to the differentiated state. I was interested in this topic not only because it is very similar to what I originally planned to work on, but also because it is in a realm that is relatively unexplored. The kind of work involved in my new project includes stem cell culture, fluorescent microscopy, and image analysis. I have started training in the lab with Dr. Barber and a few of her PhD students, but the time for training is limited, as I need to work around their already tight schedules for lab time. The amount of time I will be in the lab per week when I am on my own will also be limited due to the restrictions on the lab capacity, so we are hoping this new project direction will give me an opportunity to have a more complete Summer research experience, and it is likely that it will continue on during the school year as well.



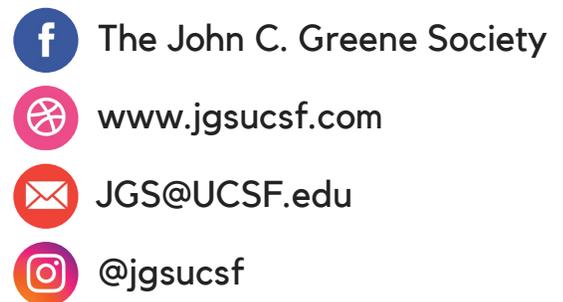
Top: Wesley Kao, Muuduu Otgonbold, An Nguyen, Erin Malone

Middle: Haeyoon Jung, Allison Liu, Jay Park, Vinh Hoang

Bottom: Helena Viets, Tiffany Huang, Stephanie Ellman

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Special thanks to...

Lisa Berens, DDS, MPH
 Roger Mraz



Newsletter Editor Notes

The NASA Mars Rover that launched on July 30, 2020 is named Perseverance. In these extraordinary times, it seems fitting that the name pays tribute to one of the defining features of the human condition. The world may have been struck by a global pandemic, but if there's one thing that this issue shows, it's that humans continue onwards-- to learn, to discover, to work towards a greater good. There are a few things that we wanted to highlight in this issue--the critical importance of diversity in science and Covid's impact on the UCSF community. We hope that you can be just as inspired as we were by the stories featured in this newsletter. To the incoming D1's, welcome to UCSF!

Sincerely,
 JGS 2020-21 Newsletter Editors in Chiefs
Tiffany Huang (Tiffany.Huang@ucsf.edu)
Stephanie Ellman (Stephanie.Ellman@ucsf.edu)