

## **EXPLORATIONS**

JOHN C. GREENE SOCIETY NEWSLETTER
WINTER ISSUE 2018-2019



Dr. Sophia Saeed (*pictured above*) was one of the many speakers on Research and Clinical Excellence Day. Go to page 5 for a recap of the awards given that day, and go to page 9 for an indepth interview with Dr. Joel White and his mentee this year, Junjie Lin, about their thoughts on mentorship and being an excellent clinician.

#### Inside This Issue

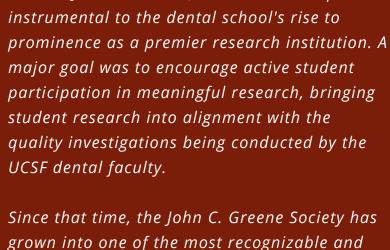
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### THE JOHN C. GREENE SOCIETY

The John C. Greene Society was founded in 2002

and Dr. John C. Greene, whose leadership was







grown into one of the most recognizable 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.



top: Leticia Chavez (D2) points to a chart on her research poster middle: The audience listening to presentations at RCED bottom: Daphne Chung (D2) explains her research to Dr. David Graham

# LETTER FROM THE PRESIDENT



Dear Members of the UCSF Dental Community:

With the new year just around the corner, The John C. Greene Society is planning several exciting events to kickstart the upcoming year. Firstly, a weekly journal club titled *Evidence-based Dentistry Journal Club* (IDS186) will be held throughout this quarter as part of the JGS elective series. We, as future dentists, are flooded with information, and some inevitably conflict with each other. Take xylitol for example. You can find studies supporting and questioning the effect of xylitol. If you want to decide which information to accept through discussing with faculty members and colleagues, this course would be the perfect opportunity. Please be sure to sign up early as this course has limited capacity.

We are also thrilled to introduce a brand new workshop titled How to Read a Research Paper, through which we hope to share our tips on reading scientific literature. In addition, we are co-hosting a clinical case study workshop with Perio Club. Two periodontal residents will present their clinical cases for discussion. This will be a unique opportunity to observe how the gap between research and clinic is bridged. We hope you are as excited as we are for the upcoming events!

Sincerely,

Rebecca Kim | John C. Greene Society

Relieur Kin









### **Presentation Award Recipients**

#### **Predoctoral Category**

1st: Merissa Ferrar (Marshall Stoller, MD; and Sunita Ho, MS, PhD) 2nd: Catherine Tran (Daniel Bikle, MD; and Sunita Ho, MS, PhD) 3rd: Rebecca Lerman and Karisa Yamamoto (Sophia Saeed, DMD; and George Taylor, DMD, MPH, DrPH) Every year, the community at the UCSF Schools of Dentistry Participates in the annual Research and Clinical Excellence Day. Here, UCSF students and research trainees present their innovative works of research to peers, faculty, and judges.

#### **Graduate Category**

1st: An Nguyen (Rich Schneider, PhD) 2nd: Abby Kindberg (Jeffrey Bush, PhD) 3rd: Ivy Zellmer, RDH, MS (Elizabeth Couch, RDH, MS) and Christian Santa Maria (Wenhan Chang, Phd)

#### Postdoctoral/Research Specialist/Visiting Scholar Category

1st: Jeffrey Van Haren, PhD (Torsten Wittmann, PhD) 2nd: Pachiyappan Kamarajan, PhD (Yvonne Kapila, DDS, PhD) 3rd: Minjing Wu, PhD (Ling Zhan, DDS, PhD)

#### **Research Associate Category**

1st (tie): Margot Bacino (Stephan Habelitz, PhD) and Barry Chan (Yan Zhang, MD, PhD)



56 abstracts were
submitted for this year's
event: 37 in the
predoctoral category, 11
graduate, 6
postdoctoral/research
specialist/visiting
scholars, and 2 research
associates

top of previous page: Ifunanya Okeke (D2) explain her research on the sugar industry's influence in dentistry

top left: Dr. Benjamin Chaffee asks a question to a presenter

**top right:** Goutam Kirsh (D2) presents his research on developmental jaw growth to Suk Li (D3)

**above:** Christina Shih (D2) smiles as she shows off her research poster **left:** Navtinder Dhillon (D2) presents his research on near-infrared image guided laser on root lesions.

## **Building Bridges in**



Merissa explains her poster as a listener wears a VR headset

## How was your experience doing research last summer?

**MF:** After my first year of dental school, the Summer Dental Research Fellowship was a nice change of pace. I consider myself more of a worker than a studier, and it was pleasant to have (most) weekends off. My favorite memory from this summer was our lab's field trip to Moaning Cavern and Black Chasm Cavern which is 3 hours out in Gold Country. Since I worked in a lab that focuses on biomineralization we went to see calcium carbonate formations in caves. I don't think Alison or Kate will ever forget playing Cardi-B songs for Dr. Stoller in the car or dancing to the soundtrack of Crazy Rich Asians! Our lab also participated in 12K together and by the end of the summer we felt like a family, with the whole crew showing up and sending support to us on RCED!

We catch up with Merissa Ferrar (D2), Predoctoral Category first place and Ernest Newburn Award winner, about her summer research experience.

#### What is your research about?

Merissa Ferrar: My project's goal is to bridge the gap between patient care-XCT, dental CBCT and lab bench micro-XCT. An issue clinicians are currently trying to solve is the early detection of biomineral formations (pathologic and physiologic) within the human body. Current methods using patient X-ray machines, such as XCT and CBCT, and lab-bench micro-XCT system are good but have their respective limitations. My research imaged known standards and specimens from humans to create calibration curves to convert grey scale intensity maps to corresponding mineral density (mg/cc) values, which will provide insights into bone quality for implant survival, subsequent periodontal surgeries, and early detection of bone quality for oral and maxillofacial pathologies. By bridging the gap across Xray technologies, the pathophysiologic processes resulting in ectopic calcification can be understood and new potential therapeutic targets can be developed.

## How would you say your research relates to your future career?

**MF**: I hope that this research can be applied to CBCT machines to measure bone quality such as mineral density. I plan to specialize as a maxillofacial prosthodontist and work with head and neck cancer patients who suffer from major resections of tissue and bone as well as radiation therapy. The more diagnostic information we obtain from radiographs, the better value we offer patients from associated radiation exposure.



Merissa allowing Dr. George Taylor to learn about her research using VRr

## Where did the idea of using Virtual Reality (VR) for your presentation come from?

MF: Presenting using a VR Headset came to fruition when I tried translating a project centered on three-dimensional imaging technology to a flat two-dimensional poster. I have an obsession with glitter, and I remember thinking, "Will I get disqualified for adding glitter to my research poster?" The answer was "yes", so I had to make my project sparkle and shine in a different way!

My background is in art and sculpture, so it was important for me to relate my summer research experience visually. I spent countless hours post-processing CT scans and got lost in the voxels and slices that made these complex images. The VR headset allowed me to take viewers on a journey inside and around the bone and teeth of a CT scanned human mandible specimen. While this wasn't the end goal of my project, it helped me make the point of why my research is important and where it is going.

#### How did it feel to come in first place among all the predoctoral presenters at Research and Clinical Excellence Day?

**MF:** I am constantly inspired by and in awe of the abilities of students at UCSF School of Dentistry. I think it is safe to say most of us have some level of impostor syndrome D1 year and beyond because there is so much talent, dedication, and passion amongst our colleagues. So for a first-time researcher, winning first place among this amazing group of young professionals felt like I was officially a scientist! To receive this recognition from the judges was another incredible honor. Many of them were my professors last year, so for the tables to turn and student become teacher for the day was a delightful and fun experience! I was also very proud to represent my research lab and everyone who contributed to this project because this was truly a team success!

# Articulations on ADVOCACY

Hoorshad Fathi-Kelly (D3), the Advocacy Chair on the JGS Board, writes passionately about the importance of advocacy and her role.

Advocacy is an essential component of promoting research to maintain or expand funding where it is needed and to help solve our community's challenges. I had the privilege to attend the AADR/NIDCR Advocacy Day at Capital Hill in February 2016 and again in 2017. My experiences on Capitol Hill were invigorating and encouraged me to explore local Advocacy options. Specifically, I wanted to explore whether it would be possible to invite congressional staff to learn about what our school is working towards accomplishing and this has been my primary goal as the Advocacy Chair of the John Greene Society. I was encouraged by the interest they expressed and the questions they asked when I visited their offices. What better way to answer these questions than to showcase our work for them?

I believe advocating is an important and necessary part of research. The majority of funds that go towards solving important problems are publicly funded. However, politicians are not familiar with every need and there is the potential for them to overlook the importance of a particular issue without someone advocating for that issue.



Hoorshad outside of Senator Kamala D. Harris's office

Voicing needs to create awareness for a community is just one of many forms of leadership. I am interested in research and feel like it is my duty to promote it as well. Research ultimately needs funding, but funds will go elsewhere if the importance is not clear to those who allocate those funds. I think research benefits from communication between those who perform research and those who are funding research.



## Words of Wisdom with Dr. White

(and Junjie Lin)

I'm thoroughly honored in being recognized. Dr. Greene was actually my first dean. When I started as a faculty member, he knew who I was and wanted to make sure I was successful. He and his wife told my wife and I to always have a work-life balance.

Sage advice!

-Dr White

We ask Dr. Joel White, winner of both the Outstanding Clinician and Mentor of the Year Award, and his mentee, Jun-jie (JJ) Lin (D2), about what it means doing good research, being an outstanding clinician, and forming great mentor-mentee relationships.

Tell me a bit about yourself and your research.

Joel White: I'm a full time faculty. I practice, teach, research and do administration. My research is part of a multi-disciplinary multiple institution team that works to support a treatment philosophy that is diagnostic central, highly preventative, minimally invasive, and with standardized care through the Electronic Health Records (EHR). We do all this while following practice guidelines using best evidence and have outcomes of care with emphasis on quality measures and patient safety.



Dr White giving a presentation about it means to be a great clinician for RCED

### How would you personally define an outstanding clinician?

JW: In general an outstanding provider is someone who can communicate effectively; listens to the patients wants, needs, and desires; has critical thinking skills; and capable of properly diagnosing and treatment planning a patient. They also need deliver high quality care (have excellent fine and gross motor skills) in a reasonable time at a good value to the patient. My personal philosophy is that a clinician also needs to stress prevention; understand and manage patients' fears, needs and anxieties; work well in a team, and understand the financial and business side of dentistry. A good clinician really needs to be a well-rounded person who can juggle everything.

Your research is very involved in minimally invasive dentistry. Why do you think it's important and what future changes are you trying to implement in the future?

JW: Is important because of the cycle of disease and repair process. When you focus on doing as many procedures as possible, you end up with tooth loss or more destructive, expensive, and invasive procedures. I hope to see changes in the profession drive towards MID where providers are paid for outcomes not for expensive, costly procedures.

#### During your talk on Research and Clinical Excellence day, I noticed you talked a lot about working as a team. Why is that?

JW: Dentistry is a team sport. It takes a team to manage all aspects of patient care from the time a patient picks up the phone to the time you transfer their care to a new provider. Our educational program teaches students all of the pieces in between so that when our students graduate, they will understand all the moving components and even lead that team. Being a dental professional, you really need to understand what each aspect of the team can and can't do.

## What motivates you to be so dedicated to your students?

JW: It's really a lot of fun. Working with students allows me to teach them things they will use for the rest of their life and that is gratifying. There's a lot of enjoyment seeing students flourish and become successful. Working with students also makes me a better dentist and researcher, so there's a lot of need for it in an institution like ours.

## How do these mentor-mentee relationships last beyond the scope of the summer research program or even dental school?

JW: These are a lifelong relationships that will continue to grow as long as both people invest in these relationships. They might wax and wane but my door is always open for my previous mentors and mentees. Even after the fellowship ends, when grades come out or there's a student status meaning, I want to make sure everyone I was mentoring is progressing.

## What is your experience with being a mentee and how does it influence you as current mentor?

JW: I've had excellent mentor over the years. Starting from the moment the faculty received my charts as a dental student, these are the people who guided me in research topics and supported my research. They are the people who gave me guidance on how to be a good administrator and leader. From this experience, I have become a big believer in the one minute mentor. I constantly check in, communicate, guide, and support whenever, wherever, as much, or as little as needed.

#### Last question, how was working with JJ?

JW: I've worked with the JJ the summer before he started dental school and the during summer research fellowship. In that time frame, JJ has become a part of the whole group of students, post docs, and research team. He's a joy to work with and there's a dynamic between all of us that kept us moving forward. So I really loved all of it. It's actually an interesting story in how I met JJ, that's something you should ask him.

## So, JJ, Dr. White told me to ask you how you two met.

Jun-jie Lin: It's quite interesting. The first time we met was on my way to Admit day. I was walking up 3rd Ave and Dr. White was on his way back to a retreat. He thought I had an interview with the school of medicine and we just started talking. After an hour or so, he realized I was a dental student and gave me an opportunity to work for his team over summer. He basically recruited me of the street. To me, he's really personable especially since he was so willing to give me opportunities just after meeting him once. It was something I looked forward to and was one of the reasons why I chose UCSF.

#### What is your research about?

JL: My research sees how two Caries Risk Indicators correlate. That's very important because dentistry is shifting from a drill and fill mindset towards a more preventative mentality. Last summer, I was seeing how computerized software help guide clinicians to make decisions and how to improve the reliability of them. In retrospect, the insurance companies can incentivize clinicians to use these software to keep their patients healthy and focus on prevention and stop the cycle of disease and invasive treatments.

### What have you learned from Dr. White non research related?

JL: It really comes down to how I perceive him as a clinician and why his patients love him. He really does things for his patients' interest. He has a very busy clinic schedule but he still won't turn patients away. He always says you have to think about the patient's trip, time, money, and best interest. He always puts his patients as his first priority and that kind of attitude and discipline is the foundation to providing good quality care. It's a personal characteristic I tried and am still trying to learn from him.







## What characteristic do you think makes Dr. White a good mentor?

JL: He loves to teach. He really genuinely cares about students, but he also likes to challenge people. If he sees your capability, he won't just settle and encourages you to grow. More importantly, he is also extremely open to feedback and always willing to work with you. There's no imbalance in dynamic, it's really about forming a colleague relationship and how we can both improve on a daily basis.

## How would you personally define an outstanding clinician?

JL: In Dr. White words, "do what's best in the patient's interest". Although it's very simple, it takes a lot of effort, experience, discipline, and dedication to achieve that. You have to constantly do what's best for your patients, not just do good work. You also need to have the dedication to improve yourself whether it's communication, hand skills, or patient management.

## What is some advice you can have for someone who wants to develop a mentorship relationship?

JL: Two important points are clear communication and being receptive to feedback. Communication is important because if there are things you are confused about, you want to be on the same page as your mentor. Talk to them and have active communication! I think that's a key factor to having a good relationship. It's important that is mentor is also receptive to feedback because most mentors want to see you grow and want to push you. However, it's hard because some people get nervous when they're pushed too hard while others are always up to the challenge. It's important to understand your mentor's style and adapt properly. For me and Dr. White, he's extremely open to both giving and receiving feedback. I have things I don't do well and need to improve on and Dr. White is very straightforward in telling me. When there are things I think Dr. White is unclear in explaining, I always tell him and ask for clarification.

> Dr. White's a *chill dude*. He's critical, but chill. It makes a **great dynamic**.

> > -JJ Lin (D2)

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JJ gives an explanation about his research to Daniel Lee (D1)

## How does your experience with being a mentee influence you in terms of mentorship?

I will definitely consider being a mentor now. In my academic career, I had a lot mentors who have been so generous in giving me the opportunities to learn and observe. This is something deep in my heart that all I want to do it pay it forward. If someone ever reached out to me, I will easily give them the opportunity to learn whether it be hand skills, academic knowledge, or developing personal characteristics.

## How do these mentor mentee relationships last beyond the scope of the summer research program or even dental school?

JL: Whenever I have questions about clinical judgement or see difficult cases, I know I can ask him and he can help guide me. Hopefully this relationship will continue to grow. I do see myself eventually taking a role becoming a mentor because of him. My mentor gave me a lot of opportunities and the experience inspires me. I was lucky to grow a lot under a great mentor and I just want to pay it forward. I see myself continuing this legacy in being a good mentor to my colleagues and the younger generation.

## **Blowing Past Smoke and Mirrors**

#### Fighting the New Battle Against Big Tobacco

May 1994. UCSF professor Dr. Stanton Glantz received a box in front of his office door from the sender "Mr. Butts." Within this anonymous delivery were 4,000 pages of secret reports from Brown & Williamson, the nation's third-largest tobacco company. The papers detailed its internal research on the addictiveness, carcinogenic nature, and dangers of tobacco. These anonymous whistleblower's documents became the kindling for a long battle against the tobacco industry [4].

Dr. Glantz deposited these documents into the UCSF Library Archives' special collections for safekeeping [3]. Years later, in 2009, President Obama signed the Tobacco Control Act to allow FDA regulation of tobacco industries -- prohibiting Big Tobacco companies from marketing to minors, regulating the distribution of tobacco products, and enforcing transparency in product labels to protect public health. The passage of this act also led to a partnership between the FDA and NIH, which in turn sponsored Tobacco Centers of Regulatory Science (TCORS) in 2013. TCORS chose UCSF as one of fourteen sites to perform research on the impacts of Big Tobacco's grasp on our nation's well-being and "informs the FDA's regulation of tobacco products."



Mr. Butts holding the secret reports.



President Obama signing the Tobacco Control Act in 2009

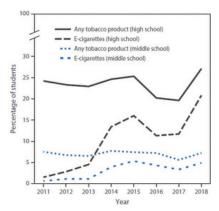


By combining cutting-edge economic research with modern behavior studies and studies of the immediate effects of smoke exposure on the cardiovascular and pulmonary systems, we hope to help the FDA develop more realistic cost-benefit models that will better support sensible regulation.

-Dr. Stanton Glantz



According to FDA Commissioner Dr. Margaret A. Hamburg, the investigation done by TCORS 1.0 (2013-2018) at UCSF marked "the first time ... the federal government [was] able to bring science-based regulations to the manufacturing, marketing, and distribution of tobacco products" [2]. Thanks to these efforts, in part, tobacco sales across the nation saw a nosedive. However, tobacco companies soon switched its consumer target to a vulnerable market; marketing e-cigarettes to a new generation of users. E-cig usage amongst high school students rose from 1.5% in 2011 to a staggering 20.8% in 2018 [1].



**Student Tobacco Trends** 

This year, the FDA and NIH began its TCORS 2.0 initiative, awarding \$151 million over a 5-year period to continue studying the effects of tobacco on public health. UCSF was selected as one of nine institutions to spearhead the country's new battle against tobacco. Five research teams across UCSF are tasked with the challenge of studying the impact of new and emerging tobacco products.

Dr. Benjamin Chaffee, leading one of these teams at UCSF, is interested in learning about the factors that drive tobacco use in adolescents. He is conducting a prospective study on 9th and 10th graders from rural California, collecting information on the behaviors of these students, experiences with conventional/new tobacco products, and the attitude of these students towards emerging tobacco products.

Dr. Chaffee hopes to "impact regulation and use of tobacco in youth" though his research. With his knowledge and expertise to the research community, Dr. Chaffee work in a transdisciplinary research model to benefit those in society.

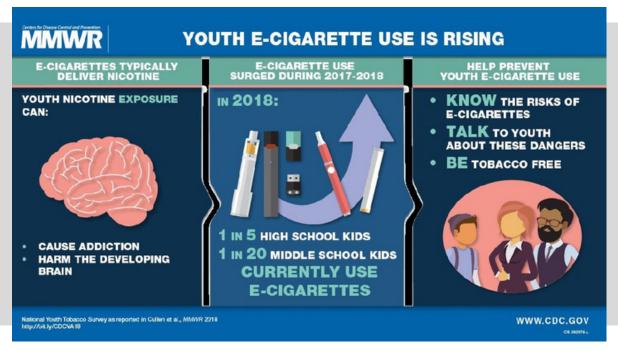


Dr. Benjamin Chaffee

You get to be a part of a community, which is the **cool** part of research. This project is something I can do to make a real difference.

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TCORS 1.0 helped researchers across the nation influence health policy and led to regulation of tobacco companies. However, with new emerging products from tobacco companies come a new set of challenges. Heavy marketing by companies to promote these products has been successful, leading to unfortunate increased e-cigarette usage among youth.



**CDC E-Cigarette Infograph** 

The extent of social and health impacts of e-cigarettes are not yet fully understood. That is why UCSF TCORS 2.0 scientists will play an critical role in the shaping the next step of tobacco regulation - to influence policy through an evidence-based manner. Ultimately, these next five years will be critical in shaping the role tobacco plays in the life of future generations.

### The Invisible Epidemic

Avigael Rebecca Lerman (D3) and Karisa Yamamato (D3) talk about studying depressive symptoms in CA Dental Students, one of the hardest diseases to recognize.

"Damn I'm really not cut out for this" you think as you press your face against your copy of Grant's Dissector. "It's been a long night - heck, it's been a long week! But I don't feel ready for tomorrow's practical at all." A few weeks later you receive your score and, for the first time in your life, you have failed an exam. You question if you really belong in dental school.

Each year, hundreds of thousands of students across the globe dedicate their time to becoming healthcare providers. These students attempt to balance a rigorous predoctoral curriculum with pressures to excel in their careers. They toil through long nights, reviewing material for fear of falling behind their peers. Many published studies show that the stress that that these professional students face is reflected by a higher prevalence of depression compared to the general population [10, 9, 1]. However, they also the least likely to seek help. As a result, the difficulties that these students face are often left unnoticed and untreated.

Depression is a common, but serious, mood disorder affecting 8.1% of adults over 20 years old and 7.7% of adults aged 20-39 [2]. Since this disease manifests itself in a wide variety of symptoms, it may be difficult to notice at first glance. The immediate symptoms include weight loss, withdrawal from family, and increased sensitivity to physical pain [4].

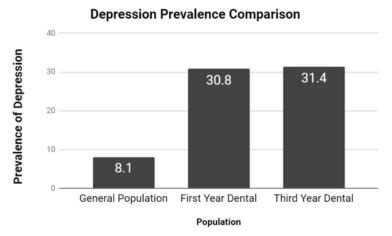


Longer periods of depression leaves patients at a greater risk of developing chronic diseases such as stroke, diabetes, and heart disease [3]; this disease also has a strong association with suicide [6]. Even though the burden of treating this disease falls upon healthcare providers, they are, ironically, the ones who suffer from it the most.

In a meta-analysis studying depressive symptoms and suicidal ideation among medical students, it was found that 27.2% of them screened positively for depression and 11.1% exhibited suicidal ideation [10]. Even more alarmingly, of those who screened positively, only 15.7% sought treatment. A high prevalence of depressive symptoms was also found in medical residents, with a prevalence of 28.8% [7].

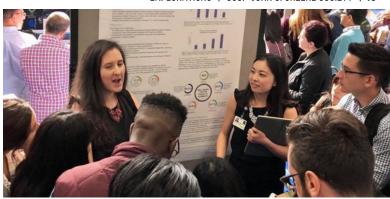
When compared to residents who were not depressed, those who suffered from this illness were 6.2 times more likely to make a medication error [5]. Clearly, depression in healthcare affects not only the providers, but also their patients' quality of care. Even though depression rates among medical students have been studied, there have not been any multi-institutional research studies done on the prevalence of depressive symptoms in US dental students until now.

Avigael Rebecca Lerman and Karisa Yamamoto, 3rd year dental students at UCSF, conducted a project with Dr. Sophia Saeed and Dr. George W. Taylor to investigate the prevalence of depression amongst California dental students. They began this project because "we were motivated by the lack of literature on dental student mental health, as well as surprised [by] the lack of attention and focus on wellness in the curricula as we are a high risk population." Their study found that the prevalence of depression was significantly higher in dental students when compared to the national average. From their research, we know that the epidemic of depression is just as pervasive not only in medical schools, but dental schools as well.



#### **Dental Student Depression Prevalence**

Rebecca and Karisa looked at lifestyle variables of interest to determine which were associated with depression and used PHQ-9 as a measure of depressive symptoms. Their findings showed that students in their D1 and D3 years are the most likely to be depressed, recapitulating the idea that these are the most stressful years in dental school.



Avigael Rebecca Lerman (left) and Karisa Yamamoto (right) presenting their research during RCED

A novel lifestyle variable Rebecca and Karisa measured was students' perception of a school's support for mental health issues. Schools without perceived adequate mental health support had significantly higher levels of depression. These findings suggest that schools should not only constantly reiterate the resources available, but also actively destigmatize mental health issues and encourage students to seek professional treatment.

Current literature suggests that restructuring of the school curriculum away from a tiered-grading scheme [9,1], increasing student collaboration, and utilizing flipped-classrooms [1] have all been found to foster a more positive learning environment and reduce stress. At the same time, current treatment can prevent 22% to 38% of major depressive episodes [8]; therefore, professional assistance is recommended to prevent the onset of depression. While more research is being done to pinpoint the factors causing depression in dental students, those who suffer from untreated mental health issues should seek help from a medical professional.

UCSF Student Health & Counseling offers short-term counseling for all registered students

Schedule an Appointment

(415) 476-1281 www.StudentHealth.ucsf.edu Walk-in and urgent-care appointments available

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#### THE INVISIBLE EPIDEMIC

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**top:** Nick Hwang, Jonathan Han, Eric Lee, Sean Pairawan

*middle:* David Nguyen, Susan Keefe, Katie DiLeo, Trang Duong, Katherine Le

bottom: Jessica Ho, Daphne Chung, Rebecca Kim, Sarah Anne Wong

#### 2018-2019 UCSF JGS Board Members

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#### Special thanks to...

Thomas Lang, PhD Benjamin Chaffee, DDS, MPH, PhD Lisa Chung, DDS, MPH Roger Mraz



Nick Hwang (D1)



Eric Lee (D1)

**f** The John C. Greene Society







#### **Newsletter Editor Notes**

The UCSF JGS Newsletter Team welcomes Nick Hwang (D1) and Eric Lee (D1). With a passion for writing, design, and research, Nick and Eric were a crucial part to the improvement of this newsletter and we are ecstatic to have them on the team.

The goal of this issue was to highlight Research and Clinical Excellence Day and to display UCSF's passion for dental research. We hope to continue to share the great opportunities and accomplishments going on at UCSF. If you have any questions or are interested, please email JGS@ucsf.edu

Sincerely,

JGS 2018-19 Newsletter Editors in Chief Jonathan Han (Jonathan.Han@ucsf.edu) Goutam Krish (Goutam.Krish@ucsf.edu)