EVENTS RECAP

This was another exciting semester for the William Jarvie Research Society. The Spring semester programming focused on preparing students for research fellowship applications and the Birnberg research program. This year Jarvie hosted our First Annual Research Poster Design and Presentation meeting session with Dr. Kunzel and Kelli Johnson. The feedback from this event was extremely positive and we hope to continue to host this information session in the future.

We are proud to announce that this year we were able to raise the funds necessary to support four students - Adam Ellenthal, Kelly Granger, Sangmee Kim, and Michelle Roh - to attend the AADR's Advocacy Day in Washington, DC. Our representatives advocated on behalf of the AADR for increased NIH and NIDCR research funding. In March, student researchers traveled to the AADR conference in San Francisco. Our members represented Columbia remarkably well. Mallory Morse ‘19 won first place in the prestigious AADR Hatton competition. Richard Clough ‘19 and Shawn Gutman ‘19 placed 2nd and 3rd, respectively, in the highly regarded AADR NSRG Dentsply Sirona Restorative competition. Mallory Morse ‘19 was also elected to serve as Member-at-Large for the National Student Research Group of the AADR.

As part of the data science initiative at CDM, Birnberg Research Day hosted a faculty and student reception with a panel discussion.
CDM’s own internal research symposium, Birnb erg Day, took place this April. We were honored to host Dr. George Hripcsak, Chair of the Department of Biomedical Informatics at the Columbia College of Physicians and Surgeons, as our keynote speaker this year. Dr. Hripcsak enlightened us all with a presentation on big data and data science analytics, which was followed by a Q&A session hosted by Dean Stohler and a panel of experts on the data science initiatives here at CDM. This May, the Office of Research Administration hosted the Research Accomplishments and Honors Ceremony to acknowledge the accomplishments of the CDM faculty and students. The event was an opportunity to recognize and celebrate the excellent research at our school and was a lovely way to cap off the academic year. Congratulations to Dr. Mildred C. Embree, who was awarded this year’s Jarvie Mentor of the Year Award for her dedication to student research development and success.

Lastly, I would like to sincerely thank the executive board for their tireless dedication and work this past year. I could not have asked for a better team and I am extremely proud of what we have accomplished together.

- Marilia Bianco de Moraes Figueiredo
  Jarvie President 2016-2017

AADR Annual Meeting

by Jeffrey Luchetti

This year the American Association for Dental Research (AADR) held its 46th Annual Meeting in San Francisco, California. The meeting is an excellent opportunity for dental researchers, particularly dental student researchers, to network, collaborate, and learn about their colleagues’ research. This year, Columbia had thirteen students represent the College of Dental Medicine in various roles including poster presentations, oral presentations, and National Student Research Group (NSRG) representatives.

The Annual Meeting is not all work. Every night a different school hosts socials for its students and representatives, giving everyone a chance to catch up with old colleagues or meet new potential collaborators.

Several students representing Columbia left the conference with various recognitions and awards. Jarvie President Mallory Morse won first place in the AADR Hatton competition, and Richard Clough and Shawn Gutman placed 2nd and 3rd in the AADR NSRG Dentsply Sirona Restorative competition respectively. Last year, the William Jarvie Research Society as a whole won Chapter of the Year, and thus had to sit out of the competition for this year. Next year’s event will be held in Fort Lauderdale, Florida, where CDM and Jarvie representatives hope to compete yet again.
For the second year in a row, student representatives from the Columbia University College of Dental Medicine joined fellow students, researchers, dental school deans, dentists, and other professionals on February 28, 2017 to participate in the American Association for Dental Research (AADR) and Friends of the National Institute of Dental and Craniofacial Research (NIDCR) Advocacy Day on Capitol Hill. The annual event hosts participants from all across the nation to learn about key issues in dental, oral, and craniofacial research and organizes hill visits to meet with congressional representatives to advocate for increased funding for oral health programs and research.

To continue the success of the William Jarvie Research Society at CDM in getting involved in the Advocacy Day for the first time last year, four students, Adam Ellenthal ('19), Kelly Granger ('20), Michelle Roh ('20), and I, Sangmee Kim ('19), were sent as student advocates this year.

The day began early in the Russell Senate Office Building, where attendees gathered for the morning briefing session. The executive director of AADR Dr. Christopher Fox, DMD, DMSc, and Representatives Mike Simpson, DMD (R-ID) and Paul Gosar, DDS (R-AZ) delivered welcoming remarks. A presentation by Dr. Martha Somerman, DDS, PhD, the director of NIDCR, was held to provide updates on initiatives and goals of the NIDCR, which tied into current funding for the National Institutes of Health (NIH) and NIDCR. With the first significant increases in funding for the NIH and NIDCR in fiscal year 2016, the NIDCR was able to support more research endeavors, for example, targeted at overcoming oral health disparities. Participants learned that by persuading Congress to increase funding for NIH and NIDCR in fiscal years 2017 and 2018, the NIDCR would be able to expand their work not only on oral health disparities, but also precision health care, autotherapies (e.g. immunotherapies for head and neck cancer), oral biodevices, workforce diversity, point of care diagnostics (e.g. salivary tests for HIV, HPV, Zika virus, etc.), effects of e-cigarettes on oral health, cleft lip and palate, and more. The NIDCR is also looking to increase training opportunities for upcoming dental scientists and researchers, which combined with the aforementioned research undertakings, will drastically change the field of dentistry for current professionals and dental students.

After learning about why increased funding is crucial to the growth of the NIDCR and betterment of oral health in the population, attendees were provided with talking points and tips to conducting successful meetings with congressional members and staffers, then divided into their respective states of representation. Adam Ellenthal was joined by five other advocates for Florida, and met with staffers of Sen. Marco Rubio, Rep. Ted Yoho, Rep. Debbie Wasserman Schultz, and Sen. Bill Nelson. Kelly Granger, Michelle Roh, and one other attendee represented New York, and met with staffers of Sen. Chuck Schumer, Sen. Kirsten Gillibrand, Rep. Tom Suozzi, and Rep. Adriano Espaillat. I represented the state of New Jersey and met with staffers of Sen. Cory Booker and Sen. Bob Menendez, and also joined the representatives for California to meet with a staffer of Rep. Nancy Pelosi.
By speaking with the staffers of congressional members, continued funding for the NIH and NIDCR was first acknowledged, and staffers were encouraged to urge their Congress member to support an investment of $34.1 billion for NIH and $430.5 million for NIDCR in fiscal year 2017, and at least a $2 billion increase for NIH over the fiscal year 2017 final level and $452 million for NIDCR in fiscal year 2018. In all the meetings, advocates explained the importance of expanding dental, oral, and craniofacial research, and how a better science-based knowledge of oral health can also lead to the promotion of overall health in the population. Students and researchers spoke about their own experiences in research, and dental students were especially influential in discussing how increases in funding directly affected their education and furthermore their careers. On top of advocating for increased funding, Representatives were asked to join the House Congressional Oral Health Caucus, led in part by Rep. Simpson, DMD (R-ID), inviting them to join a forum for discussion and exchange ideas on oral health care and research.

As members of the William Jarvie Research Society, the four of us were able to gain valuable insight into the behind-the-scenes work of oral and craniofacial research, and all of us now hold a newfound appreciation for advocacy in the field of dentistry. We realize that it took extensive collaboration, planning, education, and outreach to organize Advocacy Day, and for that we are grateful to the AADR and Friends of NIDCR for allowing us to partake in this event as dental students. It is our hope to promote and increase student involvement in future AADR Advocacy Day events to gain further exposure to the world of advocacy and the efforts of NIH and NIDCR.

**AADR Hatton Award**

by Alia Khan

This year’s 45th Meeting & Exhibition of the AADR in San Francisco recognized many of the most scientifically talented minds from across the country. The Unilever Hatton competition is among the most prestigious of those held during the annual weeklong research conference. The competition is designed for junior investigators who exhibit potential for a productive career in dental research. Out of the many applicants who applied, 27 finalists with the most well-planned and meticulously executed research abstracts, were chosen by the Edward H. Hatton Committee. Jarvie’s own Mallory Morse was among those selected to submit an extended abstract and to prepare an oral presentation to be given at the March session. Morse worked closely alongside her mentor Mildred C. Embree, DMD, PhD, an assistant professor of dental medicine. Prior to Hatton, Morse had been a regular student member in Dr. Embree’s lab of TMJ Biology and Regenerative Medicine. Her innovative research project focused on therapeutically targeting fibrocartilage stem cells for cartilage and TMJ development and repair.

Not only did Morse carry the honor of being one of the finalists – she placed first in her category. Winning a first place prize in this highly regarded competition is no easy feat. The AADR Hatton Awards Committee rigorously judges the entries by the quality and depth of their extended abstracts, verbal presentation, and a 5 minute question and answer period. In addition to the prestigious recognition, Morse walked away with a $1000 prize. Congrats on the amazing accomplishment Mallory!
The 22nd Hinman Student Research Symposium was hosted by the University of Tennessee College of Dentistry and co-sponsored by the Hinman Dental Society. This event, held on October 28-30, 2016 at the Peabody Hotel in Memphis, Tennessee, was also supported in part by grants from the National Institute for Dental and Craniofacial Research (NIDCR), among other organizations. This national meeting features oral and poster presentations of research conducted by dental students and graduate trainees from dental schools across North America. At this year’s Symposium, 90 students represented an all-time high of 53 dental schools in 30 states, the District of Columbia, and 5 Canadian provinces.

The program was started with a welcoming banquet, where speeches were given by the Senior Executive Associate Dean for Research, the founder of the Symposium, and the President and CEO of the American Dental Education Association. The speakers were quite inspiring, especially the last of whom discussed his own experience in a short-term research project; this experience ultimately led him to a career in academic dentistry and research and later into public health policy.

The scientific sessions were followed by opportunities to get acquainted and tour the host city, as well as to network with other students. Most notably, the hosts of the Symposium sponsored a tour of Graceland, the home of Elvis Presley.

This year, fourth-year student Shaun Darrah and third-year student Apoorva Shah were selected to present their research posters in Memphis due to their awards at Columbia’s Birnberg Research Symposium in the category of Basic Science. Shaun presented his project titled “Porphyromonas gingivalis Lipopolysaccharide Dose-Dependently Activates Neutrophil Gelatinase-Associated Lipocalin Expression in Oral Keratinocytes,” while Apoorva presented his project titled “Investigating Tooth Induction Signaling using Mouse and Human Derived Neural Crest Stem Cells.” Eight awards were given for the most outstanding student presentations, four in clinical research and four in basic science research, in addition to an award from the National Students Research Group (NSRG) of the AADR.

This year, one of the awards was won by Apoorva Shah (right). His project focused on the requirements to induce differentiation of stem cells to form neural crest cells, with the ultimate aim of inducing tooth buds for regenerative medicine. RNA sequencing of mouse embryonic tooth germs at the state of tooth induction revealed genes and signaling pathways that may be necessary for tooth induction or development. The project was directed by Dr. Jeremy Mao, Director of the Center for Craniofacial Regeneration.

“Hinman was an incredible experience. All of the students were excited and engaged throughout the Symposium, and I learned a great deal about the research and experiences of dental students around the country,” said Apoorva Shah.
Mentor Spotlight: Dr. Mildred Embree DMD, PhD
by Mallory Morse

Dr. Mildred Embree was chosen as the 2016-2017 William Jarvie Research Society Mentor of the Year due to her excellence not only in scientific discovery, but also in her role as an inspirational mentor, teacher, and researcher.

Dr. Mildred Embree is a dentist scientist and her research specializes in temporomandibular joint and musculoskeletal biology and diseases, stem cells, and regenerative medicine. She received her DMD and PhD in Cell Biology from the Dental Medicine Scientist Training Program at the Medical University of South Carolina. For her PhD training, Dr. Embree was awarded a fellowship through the NIH Graduate Partnership Program. She completed her PhD graduate work at the NIDCR in Bethesda, Maryland focusing on extracellular matrix and osteoarthritis. Her current research focuses on TMJ fibrocartilage stem cells; including discovering, characterizing, and investigating these cells and how they may be able to be used for regenerative, minimally invasive therapies for temporomandibular disorders. Dr. Embree's passion for her research is evident in every conversation she has about her work, and any scientist should aspire to care as much about discovery as she does.

Beyond excellence in science, Dr. Embree was chosen as this year’s mentor of the year because of her excellence and commitment to mentoring. A true mentor is one who views the success of their mentee's as paramount to their own success, and Dr. Embree embodies this ideal. She sacrifices her own time and her own projects in order to further the work of her mentee's. Many of her students have received travel grants and awards, including 1st Place in Birnberg Research Day and Hatton Award Finalist and 1st place. She demonstrates an utmost dedication to fostering scientific development through the mentorship of dental students.

Her students speak to her passion for science and mentoring frequently. For example, Mallory Morse (DDS ’19) says “I have had many mentors in my personal and professional life thus far, but no mentor has ever embodied what it is to be a mentor like Dr. Embree. She is a person that I will clearly model myself after in multiple domains of my life.”
The 60th Birnberg Research Program
by Mallory Morse

Annually, Columbia University College of Dental Medicine holds the Birnberg Research Program. Birnberg represents an opportunity for CDM students to share their research achievements and an opportunity for the school to come together to discuss and critically engage in research inquiry. The most important step of the scientific method is the final one: communicating scientific results to colleagues and peers to further knowledge in your field, and each year Columbia students present amazing work.

Additionally, a Birnberg Research Awardee is designated each year for excellence in scientific inquiry and is chosen to deliver a keynote address. This year, our speaker and Birnberg Research Awardee was Dr. George Hripcsak, Chair of the Department of Biomedical Informatics of P&S. Dr. Hripcsak is recognized as an international leader, an outstanding speaker, and is actively involved in research programs focused on the clinical information stored in electronic health records and on the development of next-generation health record systems. At Birnberg, Dr. Hripcsak spoke about one of his many leadership positions; he leads the Observational Health Data Sciences and Informatics Coordinating Center (OHDSI), an international network with 160 researchers and 600 million patient records. OHDSI pools an amount of data that was previously unheard of in order to investigate fundamental medical questions: what are true drug side effects, what medications lead to the best outcomes in disease, and truly provides the capability of answering any questions that researchers can think to ask.

Dr. Hripcsak’s keynote address was truly inspiring and made it clear that the possibilities of big data are endless. This keynote speech transitioned to a panel discussion for CDM faculty, students, administrators concerning CDM’s Data Science Initiative: its implications for clinical practice, school infrastructure, and faculty and student research. The focus of the Data Science Initiative will be the new clinic on VC-5 that promises to track every moment of a patient-provider interaction in order to more effectively learn not only how to teach students to be better providers, but track patient outcomes to more securely know what the best treatment for any scenario will be. Dr. Joseph Finkelstein, the Director for the Center for Bioinformatics and Data Analytics, who was recently recruited to the dental school, presented and discussed not only how the new clinic will further the delivery of personalized dental medicine, but also how students will be an integral part of this research effort. The combination of the Birnberg keynote address and the Birnberg open panel demonstrated how CDM is taking tangible steps to be a leader in clinical research.
The next part of the Birnberg Research Program was the presentation of student research. Predoctoral and postdoctoral students presented more than 40 posters concerning a variety of topics ranging from TMJ regeneration, the oral microbiome, public health interventions, global health, clinical techniques, the genetics of cleft palates, to many other clinical topics. More than 30 faculty members volunteered their valuable time to judge and evaluate the student posters and abstracts. Following the closed judging session was the open poster session where all students and faculty were invited to view and hear about the research our students conducted.

Overall, it was inspiring to see the efforts of so many students come to fruition. The remarkable attendance at the keynote speech, the engaging panel discussion, the varied and numerous posters, and the interest of the entire student body made it clear that Columbia students will be leading the next generation of dentist-scientists.

We would like to congratulate and acknowledge all Birnberg participants, as well as the honorees:

**Pre-Doctoral Basic & Translational Science**
*First Place:* Mallory Morse (Dr. Mildred Embree)
*Second Place:* Kun Joon (Dr. Jeremy Mao)
*Second Place:* Richard Clough (Dr. Chang Lee)

**Pre-Doctoral Clinical Science/Public Health, Basic, & Translational Science**
*First Place (Basic & Translational Science):* Vikas Gupta* (Dr. Sunil Wadhwa)
*First Place (Public Health/Education):* Sobia Rafiuddin** (Dr. Burton Edelstein)
*Second Place (Public Health/Education):* Alan Kuo** (Dr. Carol Kunzel)
*Second Place (Public Health/Education):* Jonathan Chodroff** (Dr. Roseanna Graham)
* *AADR Dentsply Sirona Student Research Program
**Oral/Public Health National Oral Health Conference (NOHC)

**Post-Doctoral Basic & Translational Science**
*First Place:* Joseph Wang (Dr. Panos Papapanou)
*First Place:* Yu Wang (Dr. Yiping Han)
*Second Place:* Jaffer Shariff (Dr. Panos Papapanou)

**Post-Doctoral Social/Behavioral, Education, Health Services, Global Oral Health**
*First Place:* Katherine Fleming (Dr. Richard Yoon)
*First Place:* Divya Khera (Dr. Burton Edelstein)
*Second Place:* Abisola Jegede (Dr. Kavita Ahluwalia)
Looking Forward

by Christina Nuñez

Below are some highlights of the variety of projects CDM students plan to work on this upcoming year.

“I’ll be continuing my research studying TMJ Stem Cells and Regeneration. I hope to improve upon my previous findings and continue the research that I presented this year at IADR and Birnberg. To do so, I will be conducting a lineage tracing experiment in mice in the context of delivering an inflammatory arthritis injury to the TMJ. We hope this experiment will show us...”

A SCADA Story | Dentsply Award

by Vikas Gupta

Research has shaped my overall experience here at CDM. I started out easy by helping out in Dr. Wadhwa’s lab for a couple hours a week during my 2nd semester. I then completed the summer fellowship in the same lab, working primarily on a study investigating the role of estrogen receptor alpha in the pathogenesis of osteoarthritis in mice. Under the leadership of Dr. Wadhwa and Post-Doc Jenny Robinson we had a productive summer with lots of slide staining, imaging, and analyzing. Shout out to my lab mates, Stacy and Liz, for helping make the experience truly rewarding. I continued to work in the lab periodically up until we presented our research on Birnberg Day. It was gratifying to see our summer’s hard work displayed for our colleagues. The award recipients for the Birnberg were announced recently at a research accomplishments reception hosted by Dr. Kunzel. Here I was fortunate to be chosen for the AADR Dentsply Sirona Research Program where I will represent Columbia at the 2018 AADR Conference in Fort Lauderdale, Florida. This program, also known as the Student Clinician Research Program of the ADA or SCADA, was established in 1959 at the centennial session of the ADA in New York City as a joint venture between the international dental supplies company, Dentsply, and the ADA. The program has over time grown to include 39 countries with over 7,000 student participants. There is a SCADA program at each annual AADR meeting where students are selected to compete and present their research. I am truly grateful for this honor and believe this happened because of all the amazing support I got from my colleagues and mentors here at CDM. I am excited for this opportunity and hope to make Columbia proud.
how TMJ fibrocartilage stem cells react to injury and how they localize, proliferate, and differentiate. Our ultimate goal is to develop a minimally invasive therapy for inflammatory arthritis in humans by exploring resident TMJ stem cells.” – Mallory Morse, CDM ’19, with Dr. Mildred Embree, CDM TMJ Biology and Regenerative Medicine Lab

“I am continuing research with Dr. Wadhwa looking at the role of estrogen via estrogen receptor alpha in the pathogenesis of osteoarthritis of the TMJ in female mice. We previously found that estrogen receptor alpha is important in mediating growth in male mice. As osteoarthritis of the TMJ is more prevalent in women, we except estrogen to have a larger impact in the female subset.” – Vikas Gupta, CDM ’19, with Dr. Sunil Wadhwa, CDM Orthodontics Department

“I am currently working on an oral health and nutrition project at Harlem United community health center with Francine and Grace Zhou. We want to know more about the attitudes, beliefs, and knowledge surrounding the connections between oral health, nutrition, and tooth loss in this population. Additionally, Cheryn Amo-Adjei and I will be writing an article on adolescent oral health.” – Megan Cloidt, DDS-MPH candidate CDM 2019, with Dr. Burton Edelstein and Dr. Christie Custodio-Lumsden, CDM Section of Population Oral Health

“Despite different cancer progressions and heterogeneous cellular makeups, head and neck cancers often display a clinicopathologic characteristic of perineural invasion, a known poor prognostic indicator and a challenge in management. My project investigates perineural invasion as a potential regulator of tumorigenesis of Head and Neck Squamous Cell Carcinoma and Adenoid Cystic Carcinoma. The findings will have therapeutic implications and serve as the preliminary step in defining the contribution of innervation to ACC and HNSCC.” - Susan Park, CDM ’20, AADR Fellow, Dr. Ha, UCSF

“Through the Margaret E. Mahoney Fellowship with the New York Academy of Medicine, I plan to conduct research at the Harlem United Community AIDS Center (HU). HU provides a safe and nurturing environment for its clients to access HIV prevention, housing and care services. Through qualitative key informant interviews with HU staff members, dental patients, and faculty members at the Mailman School of Public Health, I will be exploring how dental patient age correlates to oral health literacy and dental anxiety at HU and how policy change can be used to combat age-related disparities in oral health outcomes.” - Ngobitak Ndiwane, CDM ’20, Margaret E. Mahoney Fellow, with Dr. Carol Kunzel, CDM Section of Population Oral Health

Named after the College of Dental Medicine’s founder, the William Jarvie Research Society (WJRS) is a student organization dedicated to the promotion of research. Although our members are in the dental profession, we encourage collaboration throughout the medical center and beyond. We hold several events throughout the year that engage members in the research process and ultimately foster relationships among students and faculty. Participation in all events is highly encouraged in order to receive the benefits of membership, and a list of members is published annually in the Jarvie Journal.
# Jarvie E-Board

### 2016-2017

**Editor in Chief:** Apoorva Shah  
**Assistant Editors:** Vikas Gupta, Alia Khan, Avy Ariyev  
**President:** Marilia Figueiredo  
**Vice-President:** Jonathan Ang  
**Secretary:** Mallory Morse  
**Treasurer:** Bobby Chacon  
**Communications Coordinator:** Adam Ellenthal  
**Advocacy Representative:** Sangmee Kim  
**First-year Representative:** Paula Muñoz  
**Faculty Mentor:** Dr. Carol Kunzel  
**Advisor:** Ms. Kelli Johnson

### 2017-2018

**Editor in Chief:** Vikas Gupta  
**Assistant Editors:** Felix Hong, Jeff Luchetti, Christina Nunez  
**President:** Mallory Morse  
**Vice-President:** Bobby Chacon  
**Secretary:** Paula Muñoz  
**Treasurer:** Anna Szentirmai  
**Communications Coordinator:** Ashleigh Alex  
**Advocacy Representative:** Sangmee Kim  
**Columbia Research Committee:**  
D3: Adam Ellenthal  
D2: Susan Park  
**Faculty Mentor:** Dr. Carol Kunzel  
**Advisor:** Ms. Kelli Johnson