

# DEPARTMENT OF ORTHODONTICS - UNIVERSITY OF ILLINOIS AT CHICAGO

## Report: July 2020 to March 2021

Greetings from University of Illinois at Chicago (UIC)! We have exciting developments to share with our colleagues. First of all, I would like to start off thanking our residents, staff, and faculty for showing incredible resilience during the COVID-19 pandemic. Each and every one rose above and beyond of what was expected of them. With support from our College Administration, we made substantial changes in our clinic operations to successfully navigate the pandemic. I am thankful to our program and clinic director Dr. Budi Kusnoto for taking the lead in transforming and adapting our clinic operations to the challenges posed by the pandemic landscape. Several operational changes that we made were developed following multiple rounds of discussions with our residents and staff who played a pivotal role in successfully running our clinical enterprise and making sure that we were able to care for our patients in a safe environment. We successfully deployed remote health monitoring using artificial intelligence tools. Every stakeholder was involved in decision making and a TEAM Science approach was successfully used. I would also like to take this opportunity to thank the AAO, MSO and AAOF who have been extremely pro-active during the pandemic stage and were always willing to provide guidance and were supportive of our program. I have had several conference calls with fellow Chairs and Heads of Departments during the pandemic and they were very willing to share information on their operations and measures they have taken to mitigate COVID-19. I am grateful to every one of them.

In May 2021, an outstanding cohort of residents will graduate from our program continuing the long tradition of excellence in orthodontics. The future of our profession rests in the hands of our residents and I am very confident that our residents will excel and serve as role models in our communities. I am very proud of each and every resident that is graduating soon from orthodontic programs across the country. Below is our Class of 2021.



Dr. Galina Bulatova



Dr. Katerine Cardona Salazar



Dr. Leslie Cohen



Dr. Stephen Degenhardt



Dr. Juliana Lee



Dr. Tyler Ramir



Dr. Laurie Suarchick



Dr. Insia Virji

Our new class (Class of 2024) of residents (Evan Booth – University of Michigan; Emelia Marie Karkazis – Marquette University; Mathew Aaron Rhee – UIC; Analia Tahir – Western University; Zachary Tho Skabelund – Ohio State University; Stephen T. Treacy – University of North Carolina at Chapel Hill; Hsuan Rebecca Tsuei – University of California at Los Angeles; and Shirley Zhang – University of Pennsylvania) will be joining us on July 1<sup>st</sup>! We look forward to warmly welcoming them to Chicago.

## Welcoming New Faculty Members

This year, two outstanding faculty members joined our department.



**Dr. Maysaa Oubaidin** joined UIC Orthodontics in July 2020 as Clinical Assistant Professor. Dr. Oubaidin grew up in Aleppo, Syria. She earned her DDS degree from University of Aleppo College of Dental Medicine. Upon her graduation from her dental school she received Al-Bassel Award for Outstanding Academic Excellence and First Graduate. Dr. Oubaidin moved to United States right after her graduation to pursue her passion in orthodontics. She received her MS Oral Sciences and Orthodontic specialty certificate from the University of Illinois at Chicago College of Dentistry in 2019. She works on multiple research areas including CBCT, accelerating orthodontic tooth movement, bone biology, and microCT. She directs the ABO Written Exam Preparation course. Dr. Oubaidin has been

supported by the Research Aid Award from the AAOF in 2020.



**Dr. Min Kyeong "Irene" Lee** has joined UIC Orthodontics as the "Robert and Donna Litowitz Term Chair" earlier this year. Dr. Lee graduated Summa cum laude from Wellesley College in 2006, Cum laude in a special field from the DMD program at the Harvard School of Dental Medicine in 2010, and thereafter obtained a DMSc in Oral Biology and CAGE – residency training in Orthodontics at the Harvard School of Dental Medicine in 2014. Dr. Lee completed the Cleft Palate and Craniofacial Orthodontics Fellowship program at Children's Hospital of Los Angeles in 2015. While a resident at the Harvard School of Dental Medicine, Dr. Lee was the recipient of the Harvard University Presidential Scholarship from 2010 until 2014. This prestigious scholarship provided full tuition support for her DMSc and Orthodontics residency programs. Dr. Lee is also a

prolific big data analytics researcher with an interest in examining hospital-related outcomes using nationwide datasets such as the Nationwide Inpatient Sample and Nationwide Emergency Department datasets. She has published 41 scientific articles in peer reviewed journals, presented 79 oral/poster presentations at regional/national meetings, and was the recipient of the American Association of Orthodontists Craniofacial Anomalies and Special Care Training Award in 2016.

## Department of Orthodontics Scholarships and Awards

We are very thankful to our alumni and friends for their continued support to the UIC Department of Orthodontics. This year, we moved to a fixed compensation model to financially support our residents. Starting July 2020, our first year residents are given a compensation of \$12,000 annually. Second and third year residents receive compensations of \$15,000 and \$18,000 respectively annually. Our alumni and friends supported Endowments that are enabling us to conduct high quality research and support resident scholarships. The Dr. Allan G. Brodie Craniofacial endowment (for which I serve as the Chair) funds clinical and translational research to bring the most advanced 21<sup>st</sup> century technology, leadership and innovative science to the Brodie Institute and accelerate discovery that brings novel treatments and interventions to patients in Chicago and around the world. Our model of translational research is based on bioinformatics and to use massive repositories of clinical genetic data in order to identify patterns relevant to the delivery of clinical care. This year, we provided three scholarships (Dr. Allan G. Brodie Chair Endowed Scholarships which provides \$6,600 in additional stipend) to residents who write successful proposals to conduct research in the area of Big Data Analytics. With support of our alumni and friends, we have created endowed scholarships (Dr. Jerome and Mrs. Joy Fein Endowed Orthodontic Resident Scholarship which provides \$20,000 in tuition support to a third year resident; Dr. Eugene Blair and Mrs. Pauline Gucker Blair Scholarship which provides \$4,000 in tuition support to a third year resident; and three Department of Orthodontics Scholarships which provide \$2,200 in tuition support to third year orthodontic residents). The recipients of the scholarships are:



Dr. Stephen Degenhardt



Dr. Leslie Cohen



Dr. Katerine Cardona Salazar



Dr. Galina Bulatova



Dr. Insia Virji



Dr. Raj Desai



Dr. Jessica Begley



Dr. Sophie Moon



Dr. Ruidan Ma



Dr. Dmitry Shungin

- **Dr. Stephen Degenhardt** received the Dr. Jerome and Mrs. Joy Fein Endowed Orthodontic Resident Scholarship.
- **Dr. Leslie Cohen** received the Dr. Eugene Blair and Mrs. Pauline Gucker Blair Scholarship.

- **Drs. Galina Bulatova, Insia Virji and Katerine Cardona Salazar** received the Department of Orthodontics Scholarships.
- **Drs. Ruidan Ma, Sophie Moon and Dmitry Shungin** received the Dr. Allan G. Brodie Endowed Chair Research Scholarship award.
- **Dr. Jessica Begley** won the 2020 UIC College of Dentistry/ADA Health Literacy in Dentistry Essay Contest Award in the Post-doctoral student category. Dr. Begley's essay titled "Why Your Dentist Recommends the HPV Vaccine" was written for people with all levels of health literacy. It explains what is HPV, how HPV affect our mouth, whether HPV vaccine is safe, and summarize some common symptoms of HPV cancers in your mouth.
- **Dr. Raj Desai** received the **"Dr. Kalpesh Shah and Dr. Ami K. Shah Scholarship"** for his outstanding inter-disciplinary clinical care.

## Grants and External Funding

I am very thankful to the AAOF for supporting faculty and residents to further science and move our profession forward. We were faced with unprecedented circumstances due to COVID-19. My kudos to AAOF for their efforts to adapting to the current healthcare landscape and opening up a pathway for researchers to conduct studies to examine how our profession is dealing with COVID-19 pandemic. UIC Orthodontics obtained three AAOF awards to examine COVID-19 related outcomes this year. We are also in the forefront of research pertaining to use of Artificial Intelligence in Orthodontics clinical care. We obtained two awards from AAOF this year to examine how artificial intelligence can be effectively deployed in clinical care settings. Below is the list of AAOF awardees from UIC this year -

1. **Dr. Phimon Atsawasuwan** (Associate Professor) - Biomedical Research Award of the American Association of Orthodontists Foundation (PI: Atsawasuwan P, Co-investigators: Allareddy V, Viana G, Kadkol S, Ravindran S). Title "Evaluation of positivity rate of COVID-19 in orthodontics practices". Project Period: 2021 to 2022.
2. **Dr. Flavio Sanchez** (Assistant Professor) - Orthodontic Faculty Development Award of the American Association of Orthodontists Foundation (PI: Sanchez F; Project Mentor: Allareddy V; Co-investigators: Kusnoto B, Elnagar M, Miloro M). Title "Evaluation of Anterior Open Bite Treatment Strategies and Outcomes Using Artificial Intelligence". Project Period: 2021 to 2022.
3. **Dr. Mohamed Elnagar** (Assistant Professor) - Orthodontic Faculty Development Award of the American Association of Orthodontists Foundation (PI: Elnagar M; Project Mentor: Allareddy V; Co-investigators: Kusnoto B, Atsawasuwan P). Title "Optimizing Orthodontic Appliances Efficiency with Remote Dental Monitoring and Artificial Intelligence Algorithms". Project Period: 2021 to 2022.
4. **Dr. Karen Homsy** (Second Year Orthodontics Resident) - Research Aid Award of the American Association of Orthodontists Foundation (PI: Homsy K; Project Mentor: Elnagar M; Co-investigators: Allareddy V, Atsawasuwan P, Oubaidin M, Arroyo M). Title "Factors Perceived by Patients and Providers to Influence the Use of Teleorthodontics during the COVID-19 Pandemic and Beyond". Project Period: 2021 to 2022.
5. **Dr. Pheba Abraham** (First Year Orthodontics Resident) - Research Aid Award of the American Association of Orthodontists Foundation (PI: Abraham P; Project Mentor: Nicholas C; Co-

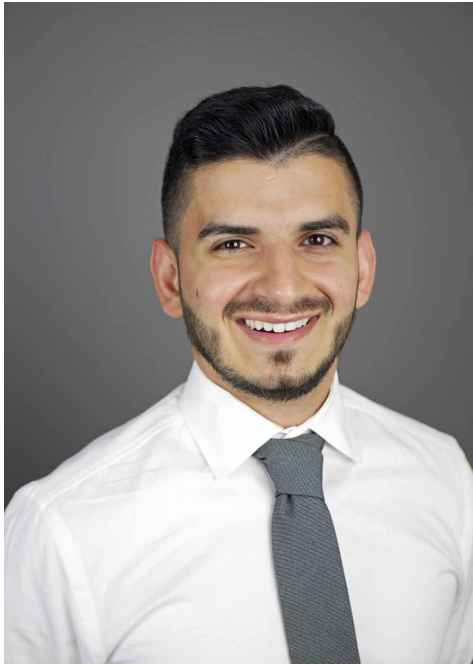
investigator: Allareddy V). Title “A longitudinal investigation of COVID-19's impact on economic security, food insecurity, and access to dental and orthodontic care”. Project Period: 2021 to 2022.



UIC is taking the lead in developing the Specialty and Unique Population (Cleft Lip/Palate) nodes of the National Dental Practice Based Research Network (funded by NIH/NIDCR). I serve as the Director of the Specialty Node of the Network. 15 studies are currently under progress. 6 of these studies are related to COVID-19. I am serving as the Node Director on two COVID-19 studies (National Dental PBRN COVID-19 Research Registry and Pragmatic Return to Effective Dental Infection Control Through Triage and Testing). More information about the Network and the studies that are currently in progress can be found at <https://www.nationaldentalpbrn.org/recruiting-ongoing-upcoming-completed/>

## **Involvement with AAOF**

Dr. Samim Taraji (Second Year Orthodontics Resident) has been selected to serve on the board of AAOF as the resident director. We are very thankful to AAOF for providing such opportunities for residents.



**Dr. Samim Taraji**

## **Publications/Presentations from UIC Orthodontics**

We have had a productive year doing high quality research. Since July 2020, our faculty members and residents published 21 articles in peer-reviewed journals. Several of our faculty members and residents will be presenting at the 2021 AAO Annual Session (Boston). Below are the details -

### **Department Peer Reviewed Publications (July 2020 to March 2021)**

1. Talaat S, Kaboudan A, Talaat W, Kusnoto B, Sanchez F, Elnagar MH, Ahmed Ghoneima A, Bourauel C. Improving the accuracy of publicly available search engines in recognizing and classifying dental visual assets using convolutional neural networks. *Int J Comput Dent.* 2020;23(3):149-160
2. Elnagar MH, Handelman CS, Lippincott JS, Kim MR, BeGole E. Alveolar cortical plate changes associated with incisor retraction and its influence on the limits of orthodontic tooth movement. *Orthod Craniofac Res.* 2021 Jan 21. doi: 10.1111/ocr.12469. Epub ahead of print. PMID: 33475228.

3. Talaat S, Kaboudan A, Elnagar MH, Talaat W, Kusnoto B, Sanchez F, , Ahmed Ghoneima A, Bourauel C. Artificial Intelligence For Detecting, Assessing Malocclusion And Treatment Needs. *Semin Orthod*.
4. Kamiya N, Atsawasuwan P, Joiner DM, Waldorff EI, Goldstein S, Yamauchi M, Mishina Y. Controversy of physiological vs. pharmacological effects of BMP signaling: Constitutive activation of BMP type IA receptor-dependent signaling in osteoblast lineage enhances bone formation and resorption, not affecting net bone mass. *Bone*. 2020 Sep;138:115513. doi: 10.1016/j.bone.2020.115513. Epub 2020 Jun 27. PMID: 32603910
5. Qian Y, Ge Q, Zuo W, Cheng X, Xing D, Yang J, Costa Viana MG, Atsawasuwan P. Maxillofacial space infection experience and risk factors: a retrospective study of 222 cases. *Ir J Med Sci*. 2020 Nov 14. doi: 10.1007/s11845-020-02431-z. Online ahead of print.
6. Wu-Wong JR, Wessale JL, Chen Y, Chen T, Oubaidin M, Atsawasuwan P. A Novel Vitamin D Receptor Agonist, VS-105, Improves Bone Mineral Density without Affecting Serum Calcium in a Postmenopausal Osteoporosis Rat Model. *J Explor Res Pharm* 2020 DOI: 10.14218/JERP.2020.00020.
7. Shaltoni, S, Ashrafi S, Narvekar A, Viana G, Nares S. Peri-implant disease education and diagnosis in the pre-doctoral curriculum. *J Dent Educ*. 2020; <https://doi.org/10.1002/jdd.12400>. (Sept. 2020).
8. Graham B., O'Donnell J., Roucka T., Sullivan T., Viana G. Validation of an instructional module to help dental students learn to avoid plagiarism. *J Dent Educ.*, (accepted for publication- Nov.2020).
9. Gordon, L. A., Miller, S. F., Caplin, J., Galang-Boquiren, M. T., Alrayyes, S., & Nicholas, C. L. (2020). Childhood obesity may accelerate timing of human facial growth. *Archives of Oral Biology*, 104964.
10. Barqué, A., Jan, K., De La Fuente, E., Nicholas, C. L., Hynes, R. O., & Naba, A. (2020). Knockout of the gene encoding the extracellular matrix protein SNED1 results in early neonatal lethality and craniofacial malformations. *Developmental Dynamics*.
11. Ting S, Attaia D, Johnson KB, Kossa SS, Friedland B, Allareddy V, Masoud MI. Can modifying shielding, field of view, and exposure settings make the effective dose of a cone-beam computed tomography comparable to traditional radiographs used for orthodontic diagnosis? *Angle Orthod*. 2020 Sep 1;90(5):655-664. doi: 10.2319/072819-496.1. PMID: 33378479.
12. Mehta S, Dresner R, Gandhi V, Chen PJ, Allareddy V, Kuo CL, Mu J, Yadav S. Effect of positional errors on the accuracy of cervical vertebrae maturation assessment using CBCT and lateral cephalograms. *J World Fed Orthod*. 2020 Nov 5:S2212-4438(20)30060-6. doi: 10.1016/j.ejwf.2020.09.006. Epub ahead of print. PMID: 33162355.
13. Frazier-Bowers SA, Allareddy V, Covell DA. Rapid Assessment of Evidence - Items of interest from readers around the world: Remote Dental Monitoring. *Am J Orthod Dentofacial Orthop*. 2020 Sep;158(3):464-465. doi: 10.1016/j.ajodo.2020.07.006. PMID: 32862939.
14. Reiss S, Chouinard MC, Frias Landa D, Nanda R, Chandhoke T, Sobue T, Allareddy V, Kuo CL, Mu J, Uribe F. Biomarkers of orthodontic tooth movement with fixed appliances and vibration appliance therapy: a pilot study. *Eur J Orthod*. 2020 Sep 11;42(4):378-386. doi: 10.1093/ejo/cjaa026. PMID: 32572439.
15. Nanda A, Chen PJ, Mehta S, Kalajzic Z, Dutra EH, Allareddy V, Nanda R, Yadav S. The effect of differential force system and minimal surgical intervention on orthodontic tooth movement and

- root resorption. *Eur J Orthod.* 2020 Dec 10:cjaa065. doi: 10.1093/ejo/cjaa065. Epub ahead of print. PMID: 33300988.
16. Todoki LS, Finkleman SA, Funkhouser E, Greenlee GM, Choi KW, Ko HC, Wang HF, Shapiro PA, Khosravi R, Baltuck C, Allareddy V, Dolce C, Kau CH, Shin K, de Jesus-Vinas J, Vermette M, Jolley C; National Dental Practice-Based Research Network Collaborative Group, Huang GJ. The National Dental Practice-Based Research Network Adult Anterior Open Bite Study: Treatment success. *Am J Orthod Dentofacial Orthop.* 2020 Dec;158(6):e137-e150. doi: 10.1016/j.ajodo.2020.07.033. PMID: 33250106.
  17. Finkleman SA, Todoki LS, Funkhouser E, Greenlee GM, Choi KW, Ko HC, Wang HF, Shapiro PA, Khosravi R, Baltuck C, Allareddy V, Dolce C, Kau CH, Shin K, de Jesus-Vinas J, Vermette M, Jolley C; National Dental Practice-Based Research Network Collaborative Group, Huang GJ. The National Dental Practice-Based Research Network Adult Anterior Open Bite Study: Patient satisfaction with treatment. *Am J Orthod Dentofacial Orthop.* 2020 Dec;158(6):e121-e136. doi: 10.1016/j.ajodo.2020.04.019. PMID: 33250105; PMCID: PMC7709738.
  18. Mehta S, Wang D, Kuo CL, Mu J, Vich ML, Allareddy V, Tadinada A, Yadav S. Long-term effects of mini-screw-assisted rapid palatal expansion on airway. *Angle Orthod.* 2020 Dec 14. doi: 10.2319/062520-586.1. Epub ahead of print. PMID: 33315060.
  19. Allareddy V, Covell DA Jr, Frazier-Bowers SA. American Association of Orthodontists Foundation Rapid Assessment of Evidence: Accelerated teeth movement. *Am J Orthod Dentofacial Orthop.* 2020 Dec 31:S0889-5406(20)30750-2. doi: 10.1016/j.ajodo.2020.11.013. Epub ahead of print. PMID: 33388199.
  20. Badheka AV, Hodge D, Ramesh S, Bloxham J, Espinoza E, Allareddy V, Karhade DS, Chegondi M, Allareddy V. Catheter related thrombosis in hospitalized infants: A neural network approach to predict risk factors. *Thromb Res.* 2021 Jan 27;200:34-40. doi: 10.1016/j.thromres.2021.01.009. Epub ahead of print. PMID: 33529871.
  21. Kau CH, Allareddy V, Stoustrup P, Pedersen T, Kinard B, Cron RQ, Stoll ML, Gilbert GH. Management of juvenile idiopathic arthritis: Preliminary qualitative findings from the National Dental Practice-Based Research Network. *J World Fed Orthod.* 2021 Mar 4:S2212-4438(21)00003-5. doi: 10.1016/j.ejwf.2021.01.003. Epub ahead of print. PMID: 33678562.

#### **Presentations from Department of Orthodontics at AAO Meeting in Boston (June 2021)**

1. Allareddy V. Use of Artificial Intelligence and Big Data Analytics to Examine Patient Centered Outcomes. Doctor's Scientific Program: Lecture Presentation.
2. Elnagar MH, Kwon Tae-Geon, Shirazi S, Miloro M, Han MD. Orthodontic correction of anterior open bite using skeletal anchorage; Systematic Review and Meta analysis. Oral Research presentation.
3. Allareddy V, Makhija S, Kau CH, Gilbert GH, National Dental PBRN Collaborative Group. Overview of the Cleft Lip and Palate Node of the National Dental Practice-Based Research Network. Oral Research Presentation.
4. Cohen L, Lee MK, Sanchez F, Oubaidin F, Allareddy V. Prevalence and Impact of Obstructive Sleep Apnea in those with Craniosynostosis Undergoing Orthognathic Surgeries. E-poster presentation.



5. Degenhardt S, Lee MK, Oubaidin M, Elnagar M, Allareddy V. Use of Neural Network Model to Predict Obstructive Sleep Apnea in those Undergoing Orthognathic Surgeries. E-poster presentation.
6. Kusnoto B, Ayas M, Sanchez F, Vianna G, Elnagar M. Assessment of HLDI Scoring Methods and Their Effect on Orthodontic Medicaid Approval/Denial Rates. E-poster presentation.
7. Cardona Salazar D, Alrayyes S, Caplin J, Nicholas C. Examining the Link between Dental Development, BMI and Diet. E-poster presentation.
8. Oubaidin M, Elnagar M, Sanchez F, Viana G, Atsawasuwan P. Three-Dimensional Evaluation of Maxilla and Cranial Base from Different Craniofacial Pattern Adults. E-poster presentation.
9. Seelig M, Kusnoto B, Elnagar MH, Alrayyes S, Viana G, Caplin J. A comparison of Outcomes between Tandem Mechanics and Guided Eruption Therapy. E-poster presentation.
10. Sanchez F, Bulatova G, Chimill C, Dashan S. A multidisciplinary treatment approach of a severe deep bite associated with generalized amelogenesis imperfecta. E-poster presentation.
11. Bulatova G, Tsay TP, Kusnoto B, Viana G, Sanchez F. Assessment of automatic cephalometric landmark identification using AI convolutional neural networks. E-poster presentation.
12. Virji, I., Susarchick L., Viana G., Allareddy V., Lukic H., Megremis S., Atsawasuwan P. Evaluation of translucency change of two retainers materials after staining and destaining. 121th Annual session-American Association of Orthodontists. E-poster presentation.
13. Susarchick L., Virji I., Viana G., Allareddy V., Lukic H., Megremis S., Atsawasuwan P. Study of destaining ability of cleaning solutions on stained retainer materials. 121th Annual session-American Association of Orthodontists. E-poster presentation.

I am very thankful to our residents, faculty, staff, alumni, and friends for fostering a culture of excellence at UIC!

Sincerely,

**Sath Allareddy**

Professor and Head of Department of Orthodontics and Brodie Craniofacial Endowed Chair

University of Illinois at Chicago College of Dentistry

On Behalf of all faculty, residents and Staff at UIC Orthodontics

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