

OB news

The E-newsletter of the UFCD's Oral Biology Department

Spring/Summer 2021

Editor: Luis R. Martinez

A MESSAGE FROM THE EDITOR



Summer is almost here and we can celebrate that we all navigated through an academic year in which our lifestyle and productivity was significantly impacted by a global pandemic. I am sure we all have stories to tell to the future generations especially in how we were able to modify our plans throughout a situation so new to most of us and our close

monitoring of the development and approval of a novel vaccine class based on RNA technology. For this issue, I was particularly intrigued in learning the anecdotes of students about this unusual academic year and asked a few to describe the impact of the pandemic on their professional and scientific aspirations. Thus, I collected the interesting point of view of diverse students and I share them here with you. I am really appreciative of each participant's contribution and wish them great success in their future goals. This 3rd issue of OB news summarizes the past three months of many accomplishments and successes of students, research fellows, and faculty in the department. Please begin collecting your news for the Fall quarter (October 2021). If you have any suggestion in how to improve this communication email me your thoughts to LMartinez@dental.ufl.edu. Thank you very much for your support. Have a wonderful and productive Summer!

THE SCIENCE STORY OF THE QUARTER

Anecdote #1

“The COVID-19 pandemic struck in full force during the spring semester of my junior year in college. All students were sent home, and we transitioned to online learning for the

remainder of the semester. This was also the time period in which I was scheduled to take the DAT and to start applying for dental school. The pandemic brought about a lot of uncertainty throughout the process, and much unneeded stress. In addition, all but two of my dental school interviews were converted to an online format which took away from the overall experience and my ability to tour and see the schools in person. Despite this, the schools did try to make the experience as similar and enjoyable as possible but were still missing some key components that can only be afforded in person. Overall, the COVID-19 pandemic did significantly alter my junior and senior year of undergrad, and my application process, but was an experience that helped transform the way in which universities utilize technology. Many benefits have come from the pandemic, despite the difficulties that everyone endured throughout the process.”

Anecdote #2

“The pandemic had quickly impacted many aspects of my education and involvement in my studies, having classes switch online and causing many of my plans to become canceled due to social distancing. Although it may have negatively impacted me by restricting my current involvement, it allowed me the opportunity to adapt to the situation and think of new and unique ways to become involved and help my community. I had quickly joined local organizations in my community and helped with tasks such as collecting and distributing masks to individuals who needed it. Aside from this, the pandemic helped me view the health disparity around the world by viewing how threatening the virus was to less developed regions where individuals already had limited access to healthcare. Having seen this, I believe it has further pushed me towards wanting to seek a career in medicine to help my community in the future.”

Anecdote #3

“After moving to Gainesville in 2019, I expected an exciting four years of college. This was cut short by the pandemic, as mid-Spring 2020, all of my classes moved to virtual learning. Adjusting to the new learning methods turned out to be a lot harder than expected, and all of my plans were set back.

I knew from my first semester at UF that I wanted to participate in research. I wanted to adjust to my university and start in a lab in my first Spring semester to gauge my professional interests. However, once the majority of the labs at UF closed, I knew my plan would not be going accordingly. After a few labs began opening up, and my constant refreshing of the Center for Undergraduate Research page, it was not until a year later that I was able to join an incredible lab doing research I am interested in.

Professionally, the pandemic caused a bump in my timeline. I wanted to work at the hospital to gain patient care hours, however, it was not until September of 2020 that I was able to get hired. Since then, the COVID precautions have put a hindrance on my ability to connect with patients, especially those with hearing disabilities who rely on lip-reading.

Overall, as things are looking up, I am excited to see how things develop professionally and scientifically! I hope someday soon we can go back to seeing each other smile.”

Anecdote #4

“It has been a little more than a year since the pandemic began, and the lives of millions have changed in unimaginable ways. For me, the pandemic has not only changed my life, but it also inspired me to pursue a career in medicine. When the pandemic first started, I was in the midst of completing my EMT course. Due to COVID, my clinical rounds were cut shorter than I expected and was required to complete my clinical hours through online simulations. The online simulations were very informational and taught me the foundations to basic life support but did not provide me with the hands-on experience that I was expecting. At first the online meetings were frustrating for everyone participating in them, but in the end it taught me how to overcome the many uncertainties that come with working in healthcare. After completing my EMT course, I began working as a patient transporter at UF Shands. Working inside a hospital during the pandemic was insightful but came at the expense of seeing my friends and family. At times it was frustrating not having physical contact with my loved ones but being in the hospital and witnessing how COVID affected these patients made me appreciate my family more. As I watched the doctors and nurses, I was inspired by how everyone came together for the sole purpose

of improving the lives of these patients. The tact and bravery that the doctors displayed throughout the pandemic has motivated me to pursue a career in medicine. In all, the pandemic has not only impacted my future aspirations but has taught me lessons that I will carry with me for the rest of my life.”

Anecdote #5

“On a professional level the COVID-19 pandemic changed the way I intended on applying to dental school. Originally, I wanted to apply during the typical application cycle in which I would apply summer going into senior year. Fortunately, the pandemic put certain things into perspective for me, and allowed me to realize that I was not going to be confident in my application if I were to apply that cycle. I no longer wanted to rush to apply just to be on track with my peers, because this would not strengthen my chances of getting admitted. Instead, I plan on taking a gap year to strengthen my application, take more time to prepare for my Dental Admission Test, and obtain more dental related experience before applying.

When taking my scientific aspirations into consideration, the pandemic resulted in me losing a research position in the College of Agriculture and Life Sciences. The University was on a hiring freeze and closed the program I had received the position in. This did not stop me from continuing my search for a research position that would provide me with experience in a lab setting. After a few months of searching, applying, and interviewing, I was able to obtain my position in a lab. Being in the lab has provided me with so much experience to strengthen myself as a prospective dental student, while also reinforcing many scientific concepts that I have learned throughout undergrad.”

Anecdote #6

“The pandemic affected many aspects of my education and involvement in research, but rather than only imposing limitations, it offered a unique opportunity to apply my knowledge of microbiology. Since the coronavirus has the potential to cause unexpected oral symptoms, new areas of research have been rapidly evolving to understand these effects. The scientific discoveries throughout this pandemic greatly enhanced my interest in a career in dentistry because of its relevance to oral health.

Prior to the pandemic, I had been aware of the efforts to reduce disparities in dental care across the country, particularly in rural and underserved areas. However, with social-distancing and lockdown efforts, I realized that a new need for dental professionals may arise. Interestingly, I noticed that many people chose to avoid their dental appointments due to fear of contracting the virus, and many dental offices chose to only offer emergency care. This observation inspired me to continue following the data of oral disease rates.

While many individuals already suffer from reduced access to dental care, the pandemic likely augmented these limitations. However, the work of dentists in reaffirming the importance of routine appointments for the health of their patients, despite anxieties, has been influential. The possible implications of the pandemic on oral health and disease progression have also made me appreciate the research involved with understanding infectious disease in dentistry.”

Anecdote #7

“Although the pandemic put a brief hold on my academics and on my life as a whole in March of last year, it has also increased my interest of one day becoming a part of the medical field. This pandemic showed us that we still have work to do in reducing health disparities and the spread of misinformation, and I want to be a part of the solution. My involvement with cultural initiatives and organizations allowed me to see different perspectives of how people view their health and healthcare accessibility. My involvement in the lab has allowed me to think critically in a scientific aspect and enhance my knowledge of our scientific work. Finding opportunities were tough last year due to new regulations but as more places start to open up now and soon, I can see myself continuing to improve myself by these brand-new opportunities. I believe it is essential to have a holistic approach in everything that we do, especially in healthcare, and I cannot wait to one day be a healthcare professional. I am looking forward to continuing to work in the lab and learning new things along the way as well.”



Mark Fischer is a dental student in the 2021 Summer Research Program working in the Martinez lab.



Melissa Munzen is a technician in the Martinez lab.



Jordan Rodriguez is an undergraduate researcher in the Martinez lab through the NIH SF2UF: A new Bridges to the Baccalaureate program (5R25GM115298-05) at Santa Fe College, and hopes to transfer to the University of Florida.



Julia Chen is a new lab technician in the Toth lab.



Omaira Cheng is a new lab technician in the Toth lab.



Zachary Taylor is a graduate student in the Zeng lab.

NEWS FROM THE STUDENTS

Papp

We congratulate our third-year dental student researchers in the lab: Carson Smith and Naeem Motlagh. Both Carson and Naeem has received ‘High Research Honors’ awards for their continued student research efforts during dental school. They will formally receive this award during their graduation ceremony in 2022.

Gabriela Peguero (McKnight Fellow, PhD student) presented her research in an oral presentation format on the 2021 UF Diversity Week: Health and Medicine Symposium. She received 2nd place award among all the student presenters for this oral presentation.



Toth

See-Chi Lee (3rd year PhD student) was selected to receive a merit-based registration award for the 45th Annual International Herpesvirus Workshop 2021.

See-Chi Lee co-authored an article in the Journal of Virology.

Lauren Combs (4th year PhD student) gave an oral presentation on “Diversity Week: Health and Medicine Symposium”. Her talk was entitled “KSHV RTA Mediates Degradation of Host Factor ID2 During the KSHV Lytic Cycle to Promote Viral Gene Expression”

The 3rd Rotation Presentations for the Immunology and Microbiology concentration were held on March 4th, 2021.

NEWS FROM THE RESEARCH FELLOWS

Davey

Dr. Fata Moradali first authored a research article published in NPJ Biofilms and Microbiomes.

Lemos-Abranches

Dr. Jessica Kajfasz first authored a study published in the Journal of Bacteriology.
Dr. Bruna Garcia first authored a study published in Scientific Reports.

Martinez

Dr. Mohamed Hamed co-authored a study published in Scientific Reports. He also presented virtual posters in the Emerging Pathogen Institute and Southeastern Translational Cell Biology Symposia.

Progulske-Fox

Dr. Sasanka Chukkapalli accepted a position with the Institute of Biosciences and Technology at Texas A&M Health. Since joining the Progulske-Fox Lab in June 2017, Dr. Chukkapalli was described by Mr. Jacob Burks “as a creative thinker, a productive researcher and a dedicated team member. Even more so, he will forever remain a cherished and unforgettable friend.” We wish Dr. Chukkapalli very much success in his future endeavors.

Toth

Dr. Nenavath Gopal Naik published a first authored article in the Journal of Virology.

NEWS FROM THE FACULTY

Brady

Lara Vasquez P, Mishra S, Kuppuswamy SK, Crowley PJ, Brady LJ. 2021. Protein Interactomes of *Streptococcus mutans* YidC1 and YidC2 Membrane Protein Insertases Suggest SRP Pathway-Independent- and -Dependent Functions, Respectively. **mSphere**. **6(2)**: e01308-20. <https://journals.asm.org/doi/full/10.1128/mSphere.01308-20>

Chan

Lehenaff R, Tamashiro R, Nascimento MM, Lee K, Jenkins R, Whitlock J, Li EC, Sidhu G, Anderson S, Progulske-Fox A, Bubb MR, Chan EKL, Wang GP. 2021. Subgingival microbiome of deep and shallow periodontal sites in patients with rheumatoid arthritis: a pilot study. **BMC Oral Health**. **21(1)**: 248.

<https://bmcoralhealth.biomedcentral.com/articles/10.1186/s12903-021-01597-x>

Tebo AE, Schmidt RL, Kadkhoda K, Peterson LK, Chan EKL, Fritzler MJ, Wener MH. 2021. The antinuclear antibody HEp-2 indirect immunofluorescence assay: a survey of laboratory performance, pattern recognition and interpretation. **Auto Immun Highlights**. **12(1)**: 4.

Highlights. **12(1)**: 4.

<https://autoimmunhighlights.biomedcentral.com/articles/10.1186/s13317-020-00146-w>

Davey

Moradali MF, Davey ME. 2021. Metabolic plasticity enables lifestyle transitions of *Porphyromonas gingivalis*. **NPJ Biofilms Microbiomes**. **7(1)**: 46.

<https://www.nature.com/articles/s41522-021-00217-4>

Lemos-Abranches

Garcia BA, Acosta NC, Tomar SL, Roesch LFW, Lemos JA, Mugayar LRF, Abranches J. 2021. Association of *Candida albicans* and Cbp⁺ *Streptococcus mutans* with early

childhood caries recurrence. **Sci Rep.** **11(1)**: 10802.

<https://www.nature.com/articles/s41598-021-90198-3>

Yang H, Kundra S, Chojnacki M, Liu K, Fuse MA, Abouelhassan Y, Kallifidas D, Zhang P, Huang G, Jin S, Ding Y, Luesch H, Rohde KH, Dunman PM, Lemos JA, Huigens RW 3rd. 2021. A Modular Synthetic Route Involving N-Aryl-2-nitrosoaniline Intermediates Leads to a New Series of 3-Substituted Halogenated Phenazine Antibacterial Agents. **J Med Chem. In Press.** <https://pubs.acs.org/doi/10.1021/acs.jmedchem.1c00168>

Ganguly T, Peterson AM, Kajfasz JK, Abranches J, Lemos JA. 2021. Zinc import mediated by AdcABC is critical for colonization of the dental biofilm by *Streptococcus mutans* in an animal model. **Mol Oral Microbiol.** **36(3)**: 214-224.

<https://onlinelibrary.wiley.com/doi/10.1111/omi.12337>

Kajfasz JK, Zuber P, Ganguly T, Abranches J, Lemos JA. 2021. Increased Oxidative Stress Tolerance of a Spontaneously Occurring perR Gene Mutation in *Streptococcus mutans* UA159. **J Bacteriol.** **203(8)**: e00535-20.

https://journals.asm.org/doi/10.1128/JB.00535-20?url_ver=Z39.88-2003&rfr_id=ori:rid:crossref.org&rfr_dat=cr_pub%20%20pubmed

Lima AR, Ganguly T, Walker AR, Acosta N, Francisco PA, Pileggi R, Lemos JA, Gomes BPFA, Abranches J. 2021. Phenotypic and Genotypic Characterization of *Streptococcus mutans* Strains Isolated from Endodontic Infections. **J Endod.** **46(12)**: 1876-1883.

<https://www.sciencedirect.com/science/article/pii/S0099239920306828?via%3Dihub>

Martinez

Dr. Martinez was named Chair of the American Society for Microbiology Sub-committee on Microbiological Issues Impacting Minorities.

Dr. Martinez was appointed to the editorial board of mBio.

Hernandez-Santini AC, Mitha AN, Chow D, Hamed MF, Gucwa AL, Vaval V, Martinez LR. 2021. Methamphetamine facilitates pulmonary and splenic tissue injury and reduces T cell infiltration in C57BL/6 mice after antigenic challenge. **Sci Rep. 11(1): 8207.**

<https://www.nature.com/articles/s41598-021-87728-4>

Papp

Dr. Papp has been nominated and now serves as the Faculty Advisor for our UFCD Student Research Group.

Atyeo N, Rodriguez MD, Papp B, Toth Z. 2021. Clinical Manifestations and Epigenetic Regulation of Oral Herpesvirus Infections. **Viruses. 13(4): 681.**

<https://www.mdpi.com/1999-4915/13/4/681>

Progulske-Fox

Lehenaff R, Tamashiro R, Nascimento MM, Lee K, Jenkins R, Whitlock J, Li EC, Sidhu G, Anderson S, Progulske-Fox A, Bubb MR, Chan EKL, Wang GP. 2021. Subgingival microbiome of deep and shallow periodontal sites in patients with rheumatoid arthritis: a pilot study. **BMC Oral Health. 21(1): 248**

Dr. Progulske-Fox co-authored a research article published in collaboration with Dr. Chan's lab in the Journal of Oral Microbiology.

Toth

Naik NG, Lee SC, Alonso JD, Toth Z. 2021. KDM2B Overexpression Facilitates Lytic De Novo KSHV Infection by Inducing AP-1 Activity Through Interaction with the SCF E3 Ubiquitin Ligase Complex. **J Virol. In Press.**

https://journals.asm.org/doi/10.1128/JVI.00331-21?url_ver=Z39.88-2003&rfr_id=ori:rid:crossref.org&rfr_dat=cr_pub%20%20pubmed