

The Dr. Dominic D. Dziewiatkowski Award Recipients

The annual \$1000 award was established in 1989 in memory of Dr. Dominic Donald Dziewiatkowski who chaired the Department of Oral Biology and directed the Dental Research Institute from 1967-1972. Dr. Dziewiatkowski is fondly remembered for his dedication to students. This award will be given annually in his memory to honor an outstanding student researcher.

1989 Award Recipient - Michael A. Smith

Dr. Walter Loesche presented the first annual Dziewiatkowski Award to D-3 student, Michael Smith, during a presentation in Kellogg Auditorium. The award was given to Mike in recognition for his work on the effect of insulin on herpes labialis, which originated when he was a first-year student and had to treat his mother's cold sores. He went to Dr. Charles Shipman (Biologic and Materials Sciences), who was conducting research in the area, to ask if it was a safe and valid treatment. Ultimately, Mike became involved in carrying forward the research efforts, and it has become an ongoing project for him.

1990 Award Recipient - James P. Lee

Dr. John Drach, chair of the Department of Biologic and Materials Sciences, presented the Dziewiatkowski Award to fourth-year dental student James Lee at during the second annual student-faculty luncheon in the Vandenberg Room of the Michigan League. James has been working on a study entitled "Effects of All-trans Retinyl Acetate on Craniofacial Skeletal Development of Fetal Rats," which focuses on the relationship between vitamin A and craniofacial growth. All-trans retinyl acetate is like other vitamin A derivatives (collectively known as retinoids). These agents are used to treat acne, psoriasis, and skin wrinkles (as are Retin-A and tretinate). The research shows a causal relationship between intake of all-trans retinyl acetate and a host of gross, skeletal, and microscopic birth defects in rats. The study reflects similar findings in the human population, including spontaneous abortions. Working with Dr. Jim Avery, (Biologic and Materials Sciences), James has developed a new method to evaluate and measure craniofacial changes.

1991 Award Recipient - William C. Robson

Dr. John Drach, chair of the Department of Biologic and Materials Sciences, presented the Dziewiatkowski Award to third-year dental student William C. Robson. Faculty advisor for his research is Dr. James K. Avery from the Department of Biologic and Materials Sciences. Bill was recognized for his work entitled "Biocompatibility of Osteogenin and Glass Ionomer Cement in Axillary Implants." Osteogenin is a protein component of teeth and bone that induces new bone formation when placed under the skin of rats. Glass ionomer cement is being used as a restorative material in Robson's experiments using osteogenin on the exposed pulps of rat teeth. Demineralized dentin and bone particles ground to a powder were mixed with osteogenin extracts derived from rat long bones. Thirty milligrams of the mixed bone or dentin was added to 10 milligrams of glass ionomer cement particles that were also ground to a powder and implanted under the skin. Controls consisted of 30 milligrams of mixed bone or dentin. Results indicated that glass ionomer cement does not destroy the effects of osteogenin in these implants.

1992 Award Recipient - John C. Wataha

Dr. John C. Wataha was the first graduate student recipient of the Dziwiatkowski award. John received his undergraduate training in chemistry at Stanford University and his dental degree from Oregon Health Sciences University. After several years in private dental practice, John decided to pursue a Ph.D. degree in biomaterials. He came to the University of Michigan and combined his work in biomaterials with work in oral biology and thus was the first student to receive a joint Ph.D. in biomaterials and oral biology. John was selected on the basis of his outstanding Ph.D. dissertation and his excellent academic record. He also has a great attitude toward his work and toward other people.

1993 Award Recipient - Yan An Su

The Dominic D. Dziwiatkowski Award was presented to Dr. Yan An Su, who completed his Ph.D. in oral biology at the end of 1992. Dr. Su's studies involved the characterization of genes on the conjugative transposon Tn916. This interesting mobile genetic element encodes resistance to tetracycline and can transfer this resistance by cell-to-cell contact between a wide variety of Gram positive bacteria including *Streptococcus mutans*, *Streptococcus gordonii*, and *Enterococcus faecalis*. Dr. Su's mentor for his dissertation research was Dr. Don B. Clewell, professor in the Department of Biological and Materials Sciences and professor of microbiology in the U-M Medical School.

1995 Award Recipient - Kathryn W. Feng

This year's Dominic D. Dziwiatkowski Award was presented to D2 student Kathryn W. Feng at a May 31 virology research laboratory meeting. Making the presentation was Dr. John Drach, chair of the department of Biologic and Materials Sciences. Ms. Feng's award-winning research involved studies to determine if natural nucleosides antagonize the antiviral activity of benzimidazole nucleosides. In selecting the 1995 recipient, a faculty committee reviewed and rated student abstracts from the 1994 Student Research Program.

1996 Award Recipient - Sandeep Sood

Sandeep Sood has been working in Dr. Lopatin's laboratory for three years studying mechanisms that enterococci use to adhere and colonize human neutrophils and other tissues such as cardiac and renal. In collaboration with Dr. Clewell, he has been examining the role of a specific protein (aggregation substance) in this adherence mechanism. This work has significant implications in understanding and preventing certain types of bacterial endocarditis that have been associated with dental procedures

1997 Award Recipient - Kenwal Chawla

Kenwal Chawla has worked in Dr. Franceschi's laboratory for nearly three years. He carried out experimental work studying the biochemical mechanism of mineral formation in bone. Specifically, he showed that the levels of a specific bone protein known as bone sialoprotein (BSP) correlate with the amount of mineral formed by cultured osteoblasts (the cells that form bone). Kenwal showed considerable initiative and creativity in his execution of this project. During the course of this project, he acquired expertise in molecular biology techniques, mammalian cell culture, nucleic acid hybridization, gel electrophoresis, and Western blotting.

1998 Award Recipient - Jacques Nör

Jacques Eduardo Nör worked in Dr. Polverini's laboratory studying how vascular endothelial growth factor (VEGF) induces overexpression of Bcl-2 in endothelial cells. This work studied the development of new capillary blood vessels and how a particular factor (Bcl-2) is associated with increased cell survival. The study pointed to an angiogenic effect of VEGF in the regulation of this factor. The work was presented at the Experimental Biology 1998 Meeting of the American Society for Investigative Pathology.

1999 Award Recipient - Hongjiao Ouyang

Hongjiao Ouyang worked in Dr. Martha Somerman's laboratory identifying factors/cells regulating regeneration of the periodontal tissues that are lost as a consequence of periodontal diseases. Hongjiao's specific interest is to define the properties of cementum and identify the biological principles involved in regulating the activities of this tissue. Her thesis work focuses on establishing and characterizing cementoblasts, the cells thought to produce cementum.

2000 Award Recipient - Erika DeBoever

Erika Deboever worked in Dr. Donald Clewell's laboratory researching antibiotic resistance. This is a growing problem in which enterococci play an important role. Her project concerned the study of a particular conjugative plasmid thought to carry drug-resistant genes. This work potentially has serious public health implications because of the increase in hospital-acquired infections that are resistant to most antimicrobials.

2001 Award Recipients - Solaiman Al-Hadlaq and Catherine Kuo

Solaiman Al-Hadlaq - His research is attempting to determine how certain molecules in the tongue, pharynx, cheek, and teeth function to maintain nerves so that, in the future, we might be able to regenerate nerves in these parts of the body following disease or injury. Al-Hadlaq won first place in doctoral and postdoctoral research category at the School's annual Research Table Clinic Day in 1999 and tied for second place earlier this year. He is focusing on the mechanisms triggering nerves to grow so that they find the appropriate target organs during the development of the tongue and taste buds. Working with Dr. Charlotte Mistretta, professor of dentistry in the Department of Biologic and Materials Sciences and director of Oral Health Sciences PhD program, Al-Hadlaq says a particular group of molecules, called neurotrophins, play an important role. Neurotrophins, which are proteins that neurons need to survive, guide nerves to make "correct" developmental choices. Understanding how these molecules function during development and the interactions between sensory nerves and taste buds in their embryonic stages, may also shed light on ways to regenerate nerves in these areas after injury or disease.

Catherine Kuo – Catherine’s research focuses on tissue engineering, an interdisciplinary endeavor that involves creating new living tissues that replace the need for organ transplants. Tissue engineering involves incorporating cells into material scaffolds that are made in specific shapes and sizes. Over time, the cells multiply and begin to develop into tissues. As this occurs, the scaffolds disintegrate allowing the newly formed tissues to take their place. In an ideal situation, new living tissue in the same shape and size of the synthetic scaffold is all that remains. In her research project, cells are grown in hydrogels that form cartilage and bone. The hydrogels provide both mechanical to the developing tissue and the final dimensions of the tissue. The hydrogels are composed of alginate, a natural material found in seaweed and commonly used in dentistry as impression material. As the bone or cartilage develops, the hydrogel breaks down into very small components that can safely leave the body. They chose alginate because it is very biocompatible and the method to make it into a hydrogel does not have any harmful effects on the cells. The material can also be injected into the body before the hydrogel sets. This process is especially advantageous for repairing craniofacial defects, which can have irregular dimensions that are difficult to shape or might be in areas of the cranium that are difficult to reach. Her faculty mentor is Dr. Peter Ma, in the Dept of Biologic and Mat Sci.

2002 Award Recipient - Domenica Sweier

A student in the School of Dentistry’s Oral Health Sciences PhD program was named the winner of the Dziwiatkowski Award. Dr. Domenica (Nikki) Sweier was the recipient of the annual \$500 award. She presented a seminar “Epitope Mapping the Immune Response to *Porphyromonas gingivalis* HtpG” on Thursday, April 11, 2002. She earned her bachelor’s degree in chemistry, cellular, and molecule biology in 1986, and, four years later, a dental degree from U-M School of Dentistry. Sweier’s research focuses on host-microbial interactions in the oral cavity. Specifically, she is trying to understand how the host response to the oral flora contributes to the virulence and pathogenesis of microorganisms in periodontal disease. In addition to her research, Sweier had further clinical training in hospital dentistry at Ohio State University’s College of Dentistry, has taught at pre-and post-doctoral levels, and has coordinated geriatric dental services with local long-term care facilities.

2003 Award Recipient - Abraham Schneider

Abraham Schneider is the recipient for the 2003 Dr. Dominic D. Dziwiatkowski Award from the department of Biologic and Materials Sciences. In addition to the monetary award, Dr. Schneider presented a seminar on Thursday, April 17, entitled “Novel Animal Models Provides Insight into the Pathophysiology of Skeletal Metastasis.” Following that presentation, Dr. Schneider joined several BMS faculty for lunch with Dr. Dziwiatkowski’s daughter, Jane Damren.

2004 Award Recipient – Andrew Fribley

Andrew Fribley is the recipient for the 2004 Dr. Dominic D. Dziwiatkowski Award. Andrew is a Ph.D. candidate in the Oral Health Sciences program at the University Of Michigan School Of Dentistry. His mentor is Dr. Cun-Yu Wang and his research involves investigating the ability of a new class of cancer chemotherapy drugs called proteasome inhibitors to kill oral tumor cells. On April 19, 2004, Andrew presented a seminar entitled, “Conquering Oral Cancer: From Gene Therapy to Novel Chemotherapy.”

2005 Award Recipient – Bradley S. Henson

Bradley Henson is the recipient of the 2005 Dr. Dominic D. Dziewiatkowski Award. Brad is a PhD candidate in the Oral Health Sciences program at the University Of Michigan School Of Dentistry. Under the mentorship of Dr. Nisha D'Silva, his research is to identify the molecular events that predict the biologic behavior of individual head and neck squamous cell carcinomas. On March 23, 2005, Brad presented a seminar entitled, "Galanin receptor expression and signaling pathways: Novel findings in oral cancer."

2006 Award Recipient – Elisabeta Karl

Elisabeta Karl is the recipient of the 2006 Dr. Dominic D. Dziewiatkowski Award. Elisabeta is a researcher in the School's Oral Health Sciences PhD program at the University of Michigan. Elisabeta's mentor is Dr. Jacques Nör, an associate professor of dentistry, who won the Dziewiatkowski Award in 1998. Dr. Nör and her research seeks to determine what role, if any, two proteins play in angiogenesis, the formation and growth of new blood vessels from existing ones.

2007 Award Recipient's – Yong-Hee Chun and Joseph Wallace

Yong- Hee Chun is a co-recipient of the 2007 Dr. Dominic D. Dziewiatkowski Award. Chun earned a master's degree in periodontics from U-M in 2003 and has been studying enamel formation under the mentorship of Drs. Jan Hu and James Simmer. Chun's research focuses on ameloblastin, one of the three enamel matrix major proteins (the two others are amelogenin and enamelin) that are secreted by ameloblasts during dental enamel formation. Chun, a clinical instructor in one of the School's comprehensive care clinics from 2001 to 2003 and from 2005 to the present, hopes her research will lead to a better understanding by patients about the etiology of conditions with enamel formation.

Joseph Wallace is a co-recipient of the 2007 Dr. Dominic D. Dziewiatkowski Award. For the last five years, Wallace has been researching the influences of genetic and mechanical factors on the composition and structure of mineralized tissues under the mentorship of Dr. David Kohn in the School's biomimetic and biomechanics laboratory. Wallace said that his investigations have led to a discovery that exercise of moderate intensity and 4duration can lead to changes in pre-existing tissue without adding new bone.

2008 Award Recipient's - Wei-Wen Hu and Sharon Segvich

Wei-Wen Hu is a co-recipient of the 2008 Dr. Dominic D. Dziewiatkowski Award. Hu plans to build a career around putting science and technology to use. He received his undergraduate degrees in Zoology and Chemical Engineering from the National Taiwan University. He also received a Master of Science in Materials Science Engineering in 2005 at the University of Michigan. These studies have provided him with a strong background to expand his vision for future research. He has been a PhD candidate since 2006, and he is pursuing his doctoral degree in Biomedical Engineering. Wei-Wen's research focuses on how to spatially control virus delivery in scaffolds for engineering tissue regeneration under the mentorship of Dr. Paul Krebsbach.

Sharon Segvich is a co-recipient of the 2008 Dr. Dominic D. Dziwiatkowski Award. Sharon is currently a sixth year Ph.D. candidate in Biomedical Engineering, on target to finish her Ph.D. training in August 2008. Sharon's work strives to bridge research between different disciplines to innovate materials that enhance bone regeneration. Specifically, her thesis work has developed apatite-specific biomolecules, in the form of peptides that can enhance or improve cellular behavior with the overall goal of advancing bone tissue development.

2009 Award Recipient- Kathleen Neiva

Kathleen Neiva, a PhD student in the School of Dentistry's Oral Health Sciences Program, received the Dziwiatkowski Award this year for her novel research focusing on the interaction between endothelial cells and head and neck cancer cells. Neiva received her dental degree in Brazil and moved to the U.S. in 2001 and began working with Dr. Jacques Nör, her mentor.

2010 Award Recipients – Shelley E. Brown and Linh N. Luong

Shelley E. Brown, is a Ph.D. candidate in the Biomedical Engineering department, under the advising of Dr. Paul Krebsbach. Shelley received her B.S. in Chemical Engineering from Stanford University in 2004, before coming to the University of Michigan where she received her M.S. in Biomedical Engineering in 2006. In the spirit of Dr. Dziwiatkowski and his dedication to the field of bone and cartilage metabolism and bone calcification, Shelley would like to dedicate her work toward the advancement of human embryonic stem cell research in the context of bone and craniofacial bone regeneration. She hopes to help bridge the gap between biomedical research and the field of regenerative medicine through working at the intersection of stem cell biology and tissue engineering.

Linh N. Luong is a Ph.D. candidate in Biomedical. She received her B.S.E in Chemical Engineering and M.S. in Biomedical Engineering at the University of Michigan. She would like to apply the skills and knowledge that she has obtained through her graduate school training to a career involving applied or translational research, thereby making a more immediate impact to the medical field. Specifically, she envisions a career in the area of gene therapy or tissue engineering. Under the mentorship of Dr. David Kohn, Linh's dissertation research focuses on the utilization of biomineralization in the development of spatially controlled organic/inorganic biomaterials that deliver genes or growth factors to enhance cellular response.

2011 Award Recipient – Erica L. Scheller

Erica Scheller is currently a DDS/PhD candidate in the Oral Health Sciences PhD program. She received her B.S. in Biochemistry from Michigan State University in 2004 before starting dual-degree training at the University of Michigan. She anticipates defending her dissertation in summer of this year and will then pursue post-doctoral training with Dr. Ormond MacDougald and a MS specialty degree in Oral and Maxillofacial Pathology. Though her final research focus is still being decided, Erica intends to use her work with oral disease to inform her efforts in the fields of bone metabolism and endocrinology. She hopes to someday find a faculty position in which to both conduct relevant research as well as contribute actively to student growth and development. Under the mentorship of Dr. Paul Krebsbach, Erica's dissertation research focuses on the ability of adipocytokines such as leptin to regulate peripheral bone metabolism through interactions with osteoblasts, macrophages, and mesenchymal stem cells.

2012 Award Recipient – Shih-Kai Wang

Shih-Kai Wang did his dental training in National Taiwan University, School of Dentistry. At that time, he was very interested in Oral Embryology and Pathology and found craniofacial development and congenital anomalies fascinating. With two-year dental residency training at National Taiwan University Hospital, Shih-Kai realized that improvements in clinical management of patients with birth defects can only be supported by evidence and inventions of basic science research, knowing the limitations of clinicians and the inadequacy of available treatment options for craniofacial defects. After being admitted to Oral Health Sciences program at the University of Michigan, he had the opportunity to work with Drs. Yuji Mishina, Vesa Kaartinen, James Simmer, and Jan Hu who encouraged and guided him to explore above and beyond his primary interest in human craniofacial development and disorders. Currently, he is committed to concentrating his efforts in investigation of tooth development, especially enamel formation, at Drs. Simmer and Hu lab. In the long run, Shih-Kai hopes to keep working on craniofacial research and provide the fundamental basis for clinical application in the future.

2013 Award Recipient – Zhanpeng Zhang

Zhanpeng Zhang received his BS degree in Polymer Science and Engineering from Tsinghua University in Beijing, China in 2008. Currently he is pursuing a PhD degree in the Department of Biomedical Engineering, University of Michigan, under the mentorship of Dr. Peter Ma. His research interest includes biomaterial synthesis and novel scaffold design for both fundamental studies and clinical improvements on dental tissue engineering. In one project, a novel star-shaped poly(L-lactic acid)-based copolymer is being synthesized and processed into injectable scaffolds. These novel scaffolds integrate extracellular matrix-mimicking nanofibrous structure and offer functional surfaces to conjugate and deliver bioactive agents, which can be used to fill tissue defects or irregular shapes, showing great potential in regenerative endodontic procedures. He is also interested in mechanistic studies of how a single stem cell responds to the surrounding three-dimensional architecture, and has developed nanofibrous scaffolds with precisely-controlled three-dimensional microstructures. These unique scaffolds serve as an advanced platform to quantitatively study the effects of microenvironment dimensionality on stem cell commitment, which can offer the fundamental understanding of stem cell fates in scaffolds during regenerative processes and provide practical scaffold design criteria.

2014 Award Recipient – Chris Donnelly

I began my academic career as an undergraduate student at Oakland University in Rochester, Michigan in 2007. While pursuing my bachelor's degree in Biochemistry, I had several opportunities to become involved in research and scholarly activities. Through these experiences, I gained a strong appreciation for teaching and conducting research, and I decided that a career in academia at a biomedical research-intensive university was the best fit for me. Additionally, due to a long-standing interest in dentistry and oral surgery, I decided to pursue my Ph.D. in concert with my D.D.S., and found that the D.D.S./Oral Health Sciences Ph.D. program at the University of Michigan was the best opportunity available. Since coming to the UM in May of 2011, I have worked in the laboratory of Dr. Brian Pierchala, Assistant Professor in the Department of

Biologic and Materials Sciences and an expert in the field of Neurobiology. I chose to work with Dr. Pierchala due to a long-standing interest in neuroscience, and more specifically, pain – an area of immense clinical significance to the field of dentistry. My long term research goal is to facilitate in the development of therapeutic approaches that combat pathological conditions involving neuropathic pain and facilitate sensory nerve regeneration. My current thesis research in Dr. Pierchala's laboratory is multi-faceted, but broadly, seeks to understand how sensory neural circuits in the orofacial area develop, and how these developmental mechanisms can be altered to encourage regeneration or prevent pathological conditions of neurodegeneration or neuropathic pain. More specifically, my research is focused on a particular family of neural growth factors (neurotrophic factors), the glial cell line-derived neurotrophic factor (GDNF) family of ligands (GFLs). The GFLs exert their functions through the receptor tyrosine kinase, Ret. My research in the Pierchala lab has led to the discovery of novel functions of the GFLs in promoting the development of orofacial neural circuits underlying pain and taste, and also, a surprising role for Ret in mediating the choice between neuronal survival and death. These results have been presented at national and international meetings and two of these studies are in the process of being reviewed by two peer-reviewed scientific journals.

2015 Award Recipient – Janani Ramaswamy

Janani Ramaswamy received her undergraduate degree in Biotechnology from the Vellore Institute of Technology, India in 2007. She also received her M.S. in Biomedical Engineering from the University of Michigan in 2009. She is currently pursuing her Ph.D. in Biomedical Engineering under the mentorship of Dr. David Kohn and expects to complete her training later this year. Janani's research interests are focused on the prevention and treatment of conditions involving pathological mineral deposition in soft tissues. Specifically for her dissertation work, Janani is studying the use of a novel mineral-inhibiting phosphorylated protein for the treatment of craniosynostosis, a disorder that affects ~ 1 in 2500 live births and disrupts the normal development of fibrous cranial sutures in the skull. Using a combination of engineering and biology techniques, Janani's research aims to improve the current standard of treatment for craniosynostosis (i.e. cranial surgery) by developing new peptide-based therapeutics, understanding their mechanisms of action and testing their efficacy using animal models of craniosynostosis. This work has the potential to guide future applications of the peptide in the management of other areas of pathological calcification, seen in cardiovascular tissues, dental plaque, kidney stones and osteoarthritic joints.

2016 Award Recipient – Jae Min Shin

Jae Shin received his undergraduate degree in Biology and Chemistry from Wayne State University, Detroit, MI in 2009. He began his studies at the University of Michigan School of Dentistry as a dental student in 2009, but soon transitioned into the dual degree DDS/PhD Oral Health Sciences Program in 2011. Jae is currently pursuing his PhD studies under the mentorship of Dr. Yvonne L. Kapila. In addition, Jae has two key co-mentors and collaborators, Dr. Alexander H. Rickard and Dr. J. Christopher Fenno. Jae's research interests are focused on studying the oral microbiome and novel agents that can prevent and treat oral-biofilm associated diseases, such as caries, periodontal disease and oral cancer. Jae has been investigating the role

of two novel anti-biofilm agents: nisin and L-arginine in these disease processes. He has also been working on characterizing the physical, molecular and mechanistic properties of oral biofilms and their host interactions to better understand the implications for improving oral health. Given the significant public health burden associated with biofilms, Jae's research investigations will have broad implications for improving systemic and oral health.

2017 Award Recipient – Joe Nguyen

Joe Nguyen graduated from the University of California, Davis with a degree in Psychology in 2011. Before joining the DDS/PhD program at Michigan, his research projects were primarily in the field of molecular and cell biology. Since joining the DDS/PhD program, he has completed three rotations. The first rotation was with the Nör lab to understand the role of self-renewal mechanisms in dental pulp stem cells. The second rotation was with the Kohn Lab to determine the extent to which gap junction proteins could be utilized for regenerative medicine. In the final rotation, Joe decided to pursue his dissertation research in the lab of Dr. Paul Krebsbach, who was the former chair of the BMS department and is now Dean and Professor at the UCLA School of Dentistry. Joe Nguyen's dissertation project is focused on understanding the novel role of a gene that plays a crucial role in cell metabolism. This gene was first identified in *C. elegans* as a regulator of longevity and a stress response, known as dauer formation. The Krebsbach Lab has named this gene the mammalian EAK-7 gene, or the mEAK-7 gene. The mEAK-7 gene is predominantly found in human cancer cells. It functions to activate the mTOR pathway through an unconventional route in human cancer cells. Given the important role of mTOR in the progression of several human diseases, such as cancer and diabetes, and the limited expression profile of mEAK-7, we believe that understanding the mechanistic role of mEAK-7 will fundamentally impact the development of novel medicines.

2019 Award Recipient – Ke'ale Louie

Ke'ale Louie graduated from the University of Washington with a degree in Aquatic and Fisheries Sciences in 2011. Prior to joining the DDS/PhD program in 2013, he did research in the fields of fish bioenergetics, population dynamics, and aquatic toxicology. Summers spent spawning salmon sparked an interest in craniofacial biology that has grown and remained a common theme throughout his time in the Oral Health Sciences program. Over three rotations, Ke'ale has followed a trajectory that aims him towards his goal of uncovering the mechanism of functional craniofacial tissue regeneration using animal models. As part of the Gerstner lab, he investigated the relationship between craniofacial morphology and chewing patterns in mothers and daughters. He then helped establish a zebrafish model for craniofacial muscle regeneration as a member of the Kahana lab before delving further into the transcriptional regulation of tissue regeneration. In the Mishina lab, he characterized the dentoskeletal phenotype of the lab's mouse model for human Ellis-van Creveld syndrome. Ke'ale's dissertation work in the lab of Dr. Yuji Mishina incorporates his breadth of training and focuses on the relationship between chewing pattern adaptation and genetically-determined craniofacial architecture. Structure-based reduction in chewing performance is associated with metabolic disorders such as diabetes and obesity and successful rehabilitative therapy requires investigating if and how individuals can

adapt to a “normal” habitual chewing pattern. We believe that understanding this relationship between chewing adaptation and craniofacial form will improve the management of conditions with congenital, traumatic, degenerative, or neoplastic etiologies.