



POINTS OF INTEREST

October – December, 2022

HONORS AND AWARDS

Angelo Antiguas (Graduate Student, Dunnwald Lab)

Angelo received an award for his poster presentation at the American Association for Anatomy Regional Meeting.

APPOINTMENTS & SPECIAL RECOGNITION

MCA Research Presentations

The Master of Clinical Anatomy students presented research presentations on December 2, 2022.

- Maddie Block (Dunnwald), “Anatomical Clothing”
- Taryn O’Brien (Yang), “Connecting the Dots: Early utilization of gifted bodies within Iowa’s medical anatomy studies”
- Joyce Kim (Engelhardt), “Simplified Anatomy Tutorial Videos for Younger Audiences”
- Zach Erickson (Rutkowski), “Clinically Integrative Study Resources”
- Nora Bensellam (Young), “The Little Doctor: Pluto explains skin conditions”
- Willow Schanz (Hoffmann), “Creating Educational Tools to Bridge Asynchronous Learning Gap in Embryology”

Angelo Antiguas (Dunnwald Lab), Cell and Developmental Biology Graduate Student

Angelo successfully defended his Ph.D. thesis in December

Ashley Goll (Tootle Lab), Cell and Developmental Biology Graduate Student

Ashley successfully passed her comprehensive exam in October.

Vitaly levelv (Engelhardt Lab), Cell and Developmental Biology Graduate Student

Vitaly successfully defended his thesis in November.

Dr. Kal Parekh

Dr. Parekh has been named Chair and DEO of UI Health Care's Department of Cardiothoracic Surgery, following a national search. He has served as interim chair of the department since September 2021. Dr. Parekh also holds a secondary faculty appointment in Anatomy and Cell Biology.

Drs. Tina Tootle and Martine Dunnwald

Tina Tootle and Martine Dunnwald co-organized the Regional Meeting of the American Association for Anatomy: Anatomy across scales: from molecules to organisms.

SPECIAL PRESENTATIONS

Fall Undergraduate Research Festival (FURF)

The Iowa Center for Research by Undergraduates (ICRU) held its annual Fall Undergraduate Research Festival on November 2, 2022. The following ACB undergraduates presented their work:

Liz Barroso (Yang Lab), Major: Biochemistry, "The Role of Hepatic IRE1 in Protecting the Host During Sepsis"

Lydia Guo (Engelhardt Lab), Major: Biomedical Sciences, "CRFT-F508del Ferret Model Responds to CFTR Modulator Therapy and Exhibits Mucus Phenotype"

Grace Heft (Lin Lab), Major: Biomedical Sciences, "Role of Vangl2 in Regulating Gut-Endoderm Morphogenesis"

Emily Adelizzi (Dunnwald Lab), Interdisciplinary Graduate Student (Genetics)

Emily presented a poster at the "Craniofacial Morphogenesis and Tissue Regeneration," "Deciphering the role of Arhgap29 in palatogenesis," Gordon Conference, October 2022.

Dr. Martine Dunnwald

Martine presented a poster at the “Craniofacial Morphogenesis and Tissue Regeneration,” “Deciphering the role of IRF6 in cell-cell adhesions,” Gordon Conference, October 2022.

Emily Adelizzi, Angelo Antiguas, and Lindsey Rhea (Dunnwald Lab), each presented a poster at the Regional Meeting of the American Association for Anatomy.

Dr. Masataka Kawai

Dr. Kawai chaired a session “Mechanisms of Contraction” during the 49th European Muscle Conference in Prague, Czech Republic in September 2022, organized by Jitka Zurmanova. During the session, he presented an invited talk entitled “Cross-bridge Kinetics of Single Myofibrils of Rabbit Psoas – The Effect of Phosphate.”

“Cross-bridge Mechanisms of Contraction in Skeletal and Cardiac Muscles – Methods of Approach and Significant Results,” National Institute in Neuroscience in National Center of Neurology and Psychiatry (NCNP), Tokyo, Japan, December 2022.

Dr. Amy Ryan

“Lung Regeneration: Cells, Models, and Mechanisms,” presented at the quarterly CCOM Spotlight on Current & Future Research hosted by Dr. Brooks Jackson, December 2022.

Dr. Xingshen Sun

“Rapid Health Decline in Young CFTR^{G551D} Ferrets After Discontinuation of CFTR Modulator,” presented at the North American Cystic Fibrosis Conference, Philadelphia PA, November 2022.

Dr. John Engelhardt

“Validation of Gene Therapy Approaches in Genetic Models of Cystic Fibrosis”: (Session entitled: “Preclinical assessment of novel genomic therapies”) presented at the North American Cystic Fibrosis Conference, Philadelphia, PA, November 2022.

“UI P30 Cystic Fibrosis Molecular Therapy Center” presented at FOE Diabetes Research Center Annual Retreat, University of Iowa, December 2022.

NEW GRANT AWARDS

Jianing Li (Young Lab)

Title: Deciphering the Molecular Mechanisms Controlling Cav2 Subtype Abundance and Organization in the Presynaptic Terminal
Sponsor: American Heart Association Fellowship
Role: Principal Investigator
Total Award: \$32,553 Direct and total costs 7,975,000, 1/1/2023-12/31/2024

Dr. Xingshen Sun

Title: Early Life Impact of CFTR Modulators on the Endocrine Pancreas and Diabetes in CF
Sponsor: Cystic Fibrosis Foundation CFRD
Role: Principal Investigator
Total Award: \$450,000 Direct, 2023-2025

Randy Nessler, Central Microscopy Research Facility

The Central Microscopy Research Facility was recently awarded \$390K by the Roy J. Carver Charitable Trust for equipment purchases and upgrades. In addition, there was supplemental funding from The Office of the Vice President for Research, The Carver College of Medicine, and the Holden Comprehensive Cancer Center.

Part of this award was for the acquisition of a Horiba ViewSizer 3000. This instrument will provide investigators with cutting edge and industry standard techniques for characterizing nano-sized particles and in particular exosomes. Exosomes are lipid vesicles that shuttle proteins and genetic information between both neighboring and distant cells. Exosomes have recently emerged as a powerful tool for drug and gene delivery and the use of exosomes in biomedical research. The instrument can characterize nanoparticles by analyzing their thermal-induced motion (Brownian motion) and larger, micron-sized particles by analyzing gravitational settling. By taking advantage of modern high resolution video cameras and computer graphics processing speed, the motion of each particle is tracked to determine the diffusion coefficient, and, from that, the size of each particle. Since data from each particle is obtained, the particle size distribution from a mixture is readily discerned as shown to the right. A key advancement of this system is its ability to work with the very large dynamic range of scattered light intensity produced by differently sized nanoparticles coexisting in a polydisperse sample. Contact Randy-nessler@uiowa.edu with questions

Dr. Sam Young

Title: "Development of Novel Gene Therapy Strategies for Treatment of all SCN2A Disorders"
Sponsor: Million Dollar Bike Ride
Role: PI
Total Award: \$61,068 Total, 2/1/2023-1/31/2024

SUBMITTED GRANTS

Emily Adelizzi (Graduate Student, Amendt)

Title: "Deciphering a Tissue Specific Role for Arhgap29 During Palatogenesis"
Sponsor: Ruth L. Kirschstein National Research Service Award (F31)
Role: PI

Dr. Brad Amendt

Title: "miR-200 Regulation of Heart Development and Cardiac Tissue Differentiation"
Sponsor: NIH
Role: PI
Total Award: \$3,044,834 Total, 7/1/2023-6/30/2028

Dr. Martine Dunnwald

Title: "Popliteal Pterygium Syndrome: IRF6 and the Periderm"
Sponsor: NIH – R03
Role: PI
Total Award: \$100,000, Total Directs

Dr. Adam Dupuy

Title: "A Novel Method Combining Transposon-tagging to Perform Protein Interaction Screens in Living Cells"
Sponsor: NIH
Role: PI
Total Award: \$427,547 Total, 4/1/2023-3/31/2024

Dr. Fang Lin

Title: "Dissecting Mechanisms Underlying the Wnt/PCP Signaling in Endoderm Morphogenesis"
Sponsor: NSF
Role: PI
Total Award: \$1,447,015 Total, 1/1/2024-12/31/2027

Tate Neff (Graduate Student, Yang Lab)

Title: "Role of Long Noncoding RNA-encoded Micropeptide in CF-Related Diabetes"
Sponsor: CFF Traineeship
Role: PI
Total Award: \$40,000 total

Dr. Amy Ryan

Title: "Revive & Restore Study to Help with Black Footed Ferrets"
Sponsor: Revive & Restore Study BFF iPSC
Role: PI
Total Award: \$35,042

Title: "Stem Cells, Cell Therapies, and Bioengineering in Lung Biology and Diseases Conference"
Sponsor: NIH R13 (Submitted by University of Vermont)
Role: Co-PI
Total Award: Request of donation for conference from United Therapeutics Corp

Dr. Charles Yeaman

Title: "Regulation of Epithelial Cell Polarity of Ral-Exocyst Complexes"
Sponsor: NIH
Role: PI
Total Award: \$2,394,894 Total, 7/2/2023-6/30/2028

Dr. Sam Young

Title: CACNA1A Foundation Grant
Sponsor: CACNA1A Foundation
Role: PI
Total Award: \$50,000 Total, 2/1/2023-1/31/2024

NEW PUBLICATIONS

Dr. Martine Dunnwald Lab

Awotoye W, Mossey PA, Hetmanski JB, Gowans LJJ, Eshete MA, Adeyemo WL, Alade A, Zeng E, Adamson O, James O, Fashina A, Ogunlewe MO, Naicker T, Adeleke C, Busch T, Li M, Petrin A, Oladayo A, Kayali S, Olotu J, Sule V, Hassan M, Pape J, Aladenika ET, Donkor P, Arthur FKN, Obiri-Yeboah S, Sabbah DK, Agbenorku P, Ray D, Plange-Rhule G, Acheampong Oti A, Albokhari D, Sobreira N, **Dunnwald M**, Beaty TH, Taub M, Marazita ML, Adeyemo AA, Murray JC, Butali A. Damaging mutations in *AFDN* contribute to risk of nonsyndromic cleft lip with or without cleft palate. *Cleft Palate Craniofac J* Nov 16, 2022. doi: 10.1177/10556656221135926. Online ahead of print

Dr. Adam Dupuy Lab

Li Y, Zhou W, Meng X, Murray SD, Li L, Fronk A, Lazaro-Camp VJ, Wen K-K, Wu M, **Dupuy AJ**, Leslie KK, Yang S. Utilizing an endogenous progesterone receptor reporter gene for drug screening and mechanistic study in endometrial cancer. *Cancers* 14(19), 10/1/2022, DOI: 10.3390/cancers14194883

Zhu EY, Riordan JD, Vanneste M, Henry MD, Stipp CS, **Dupuy AJ**. SRC-RAC1 signaling drives drug resistance to BRAF inhibition in de-differentiated cutaneous melanomas. *npj Precision Oncology*, 2022, 6:74 doi.org/10.3390/cancers14194883

Dr. John Engelhardt Lab

levlev V, Lynch TJ, Freischlag KW, **Gries CB, Shah A**, Pai AC, Ahlers BA, **Park SY, Engelhardt JF, Parekh KR**. Krt14 and Krt15 differentially regulate regenerative properties and differentiation potential of airway basal cells. *JCI Insight*, 2022, In press <https://doi.org/10.1172/jci.insight.162041>.

Uc A, Strandvik B, Yao J, **Liu X, Yi Y, Sun X**, Welti R, **Engelhardt JF**, Norris AW. The fatty acid imbalance of cystic fibrosis exists at birth independent of feeding in pig and ferret models. *Clin Sci (Lond)*, 2022, 136(24):1773-1791 doi.org/10.1042/CS20220450

Lynch T, Ahlers B, Swatek AM, levlev V, Pai A, **Brooks L, Yinghua T, Evans IA**, Meyerholz D, **Engelhardt JF, Parekh K**. Ferret lung transplantation models differential lymphoid aggregate morphology between restrictive and obstructive forms of chronic lung allograft dysfunction, *Transplantation*, 2022, 106(10):1974-1989, DOI: 10.1097/TP.0000000000004148

Please share news of your activities with Mary Beckler for publication in the quarterly Points of Interest Newsletter. This information is circulated throughout the Department, as well as published on the ACB Department website