



# POINTS OF INTEREST

July-October 2023

## HONORS AND AWARDS

### **Jared Hill, Medical Student**

Jared received the Excellence in Anatomy and Cell Biology award for his poster titled “RalGPS2 Activates Ra1A for Primary Ciliogenesis in Epithelial Cells,” as part of the Medical Student Research Conference.

### **Salma Hassan (Drack Lab)**

Salma was awarded the Carver College of Medicine Trainee Scholar Award.

### **Campbell Mitvalsky (Dunnwald Lab)**

Campbell received a Summer Fellowship from the Iowa Center for Research Undergraduates to determine how Arhgap29 affects proliferation during craniofacial development.

### **Samantha Wuebker (Van Otterloo Lab)**

Samantha was appointed to the T90/R90 training program in oral health research at the College of Dentistry.

## APPOINTMENTS & SPECIAL RECOGNITION

### **Dr. Miao (Kim) Yu (Engelhardt Lab)**

Dr. Yu was appointed as a Research Assistant Professor.

### **Dr. Amy Ryan**

Dr. Ryan has been elected to the incoming Women in Physiology committee in part of the American Physiological Society.

Dr. Ryan chaired the 10<sup>th</sup> biennial Conference on Stem Cells, Cell Therapy, and Bioengineering in Lung Biology and Diseases held in Burlington, Vermont.

Dr. Ryan has been elected Chair for the Respiratory and GI Tract Gene & Cell Therapy Committee, American Society of Gene and Cell Therapy (ASGCT).

Dr. Ryan has been appointed a Stead Family Scholar. This honor comes with \$125,000 per year for three years to support her research program. Amy will present her work at the Stead Family Scholars Symposium in October.

## **ACB DEI COMMITTEE**

### **DEI Committee Fall Initiatives**

The DEI Committee kicked off the fall semester with a series of engaging events designed to foster a sense of community and inclusivity among its members. Here's a recap of what we've accomplished:

#### **Welcoming Potluck**

On September 8<sup>th</sup>, 2023, MacEwen conference room came alive with warmth and camaraderie as members from the department gathered for the “Welcoming Potluck.” This event provided ACB members to connect, share, and celebrate diversity which sharing great food and stories. The success of the welcoming potluck has inspired the committee to repeat the event next fall.

#### **ACB – This is Us**

On October 6<sup>th</sup>, the DEI committee will feature ACB faculty members Dr. Doug Bartels and Dr. Justin Sipla in MacEwen for their “This is Us” event. Additionally, the DEI committee will hold another “This is Us” event in MacEwen on December 8<sup>th</sup>, 2023.

## **SPECIAL PRESENTATIONS**

#### **Emily Adelizzi (Dunnwald Lab)**

Adelizzi, E., Singh, S., Heffner, C., Murray, S., Cornell, R. A., & Dunnwald, M. “The periderm protein Zfp750 is required for murine digit fusion but is dispensable for palatogenesis,” Society for Developmental Biology Annual Meeting, July 2023.

#### **Mia Bruno (Dunnwald Lab)**

“Does Interferon Regulatory Factor 6 impact the development of the epidermis,” Summer Undergraduate Festival, July 2023.

#### **Mia Bruno (Dunnwald Lab) and Schaler Starks (Dupuy Lab), Undergraduate Students**

Mia and Schaler participated in the Summer Undergraduate Research Conference in July 2023 as part of the BSURP program.

### **Dr. John Engelhardt**

“Submucosal Gland and Rare Cell Progenitors in the Ferret Proximal Airway” (Session entitled: “Post-COVID Return to Respiratory Health”) presented at 2023 Gordon Research Conference on Lung Development, Injury and Repair, Waterville Valley, NH, August 2023.

“Defining Cellular Targets for Gene Therapy of Cystic Fibrosis Lung Disease Using Genetic Ferret Models” presented at Pulmonary and Critical Care Grand Rounds, Corewell Health – Michigan State University College of Human Medicine, Grand Rapids, MI, September 2023.

### **Dr. Lalit Gautam (Ryan Lab)**

“Notch Inhibition Influences the Activity of Multicilin in Regulating Cilia Assembly and Function in Human Airway Epithelial Cells,” Stem Cells, Cell Therapy and Bioengineering in Lung Biology and Disease Conference, July 2023.

### **Dr. Darren Hoffmann**

“Time Management for Faculty: Why is there never enough time?” Symposium speaker at the American Association of Clinical Anatomists Annual Meeting, July 2023.

Dr. Hoffmann provided the eulogy at the 2023 Deeded Body Program Memorial Service.

### **Dr. Masataka Kawai**

“Oscillatory Work Disappears in the Absence of Pi, Indicating that During Cross-Bridge Cycle  $AM \cdot ADP \cdot Pi$  is a Force Generating State,” European Muscle Conference, September, 2023. Dr. Kawai also served as a judge to select “Marcus Schaud Young Investigator Award Winners.” There were around 400 participants, of which 150 were “young investigators.”

### **Dr. Sinem Koc-Guenel (Previous Ryan Lab Member)**

“Sorafenib Inhibits Invasion of Multicellular LAM Organoids Through Regulation of CCL21,” Stem Cells, Cell Therapy and Bioengineering in Lung Biology and Disease Conference, July 2023. Dr. Koc-Guenel also won the Oral Presentation and Outstanding Abstract Award for this presentation.

### **Shuba Murthy (Ryan Lab)**

“IGFBP3 Regulates Airway Basal Cell Stemness and Airway Regeneration,” Stem Cells, Cell Therapy and Bioengineering in Lung Biology and Disease Conference, July 2023.

### **Tim Nguyen (Van Otterloo Lab)**

“TFAP2 Transcription Factors Function in a Frontonasal Dysplasia-Related Neural Crest Gene Regulatory Network,” National Society for Developmental Biology, July 2023.

### **Nicole Recka (Van Otterloo Lab)**

“Identification of a Novel Role for The Protein PRMT5 in Oral and Skin Epithelial Development,” National Society for Developmental Biology, July 2023.

### **Dr. Amy Ryan**

Tanneberger AE, Blomberg R, **Ryan AL**, & Magin CM. “Engineering Hydrogel Biomaterials to Support Lung Progenitor Cell Differentiation,” Stem Cells, Cell Therapy and Bioengineering in Lung Biology and Disease Conference, July 2023. Poster Presentation.

Hickmott RA, Bosakhar A, Quezada S, Barresi M, Quigley A, **Ryan AL**, Walker D and Tolcos M. “Forebrain organoids derived from ferret iPSC to model the developing cortex,” International Society for Stem Cell Research Conference, June 2023. Poster Presentation.

### **Samantha Wuebker (Van Otterloo Lab)**

“Exploring the Role of MEMO1 During Amelogenesis,” National Society for Developmental Biology, July 2023.

### **Minxiao Yang (Previous Ryan Lab Member)**

“Epigenomic Involvement in Lung Basal Cell Stemness and Plasticity,” Stem Cells, Cell Therapy and Bioengineering in Lung Biology and Disease Conference, July 2023.

### **Dr. Sam Young**

“Defining the Molecular Principles of Ultrafast Computations in Auditory Information Processing,” University of Wisconsin-Madison Seminar, September 2023.

“Development of Novel Viral Vectors for Neurological Approaches,” Asklepios Biopharmaceuticals Seminar.

## **NEW GRANT AWARDS**

### **Emily Adelizzi (Dunnwald Lab)**

Title “Deciphering a tissue specific role for Arhgap29 during palatogenesis.”

Sponsor: NIH

Role: PI

Total Award: \$109,242

**Dr. Adan Dupuy**

Title: ME220036 Identification of Genetic Mechanisms Driving Transition of Benign Nevi to Malignant Melanoma  
Sponsor: CDMRP  
Role: PI  
Total Award: \$828,262 direct costs, \$459,685 indirect costs

**Dr. Martine Dunnwald**

Title: Popliteal Pterygium Syndrome, IRf6, and the Periderm  
Sponsor: NIH  
Role: PI  
Total Award: \$100,000 direct costs, \$55,500 indirect costs

**Dr. Amy Ryan**

Title: Conference: Stem Cells, Cell Therapy, and Bioengineering in Lung Biology and Diseases 2023  
Sponsor: NSF  
Role: PI  
Total Award: \$13,297 direct costs, \$534 indirect costs

Title: Stem Cells, Cell Therapy and Bioengineering in Lung Biology and Diseases Conference  
Sponsor: Pulmonary Fibrosis Foundation  
Role: PI  
Total Award: \$2,174 direct costs, \$326 indirect costs

Title: Stem Cells, Cell Therapy and Bioengineering in Lung Biology and Diseases Conference  
Sponsor: United Therapeutics Corporation  
Role: PI  
Total Award: \$6,299 direct costs, \$1,701 indirect costs

Title: Stem Cells, Cell Therapy and Bioengineering in Lung Biology and Diseases  
Sponsor: University of Vermont Medical Center  
Role: PI  
Total Award: \$5,009 direct costs

**Dr. Ziying Yan**

Title: Developing Basal Cell Tropic Human Bocavirus for Applications in Airway Gene Editing  
Sponsor: Cystic Fibrosis Foundation  
Role: PI

Total Award: \$300,000 direct costs, 22,2000 indirect costs

## **SUBMITTED GRANTS**

### **Dr. Doug Bartels (Engelhardt Lab)**

Title: Genotyping Costs - Vertex

Sponsor: Vertex Pharmaceuticals, Inc.

Role: PI

Total Award: \$20,382.30 direct costs, \$6,114.69 indirect costs

Title: mRNA Therapy Supplement 1.1

Sponsor: Recode Therapeutics Inc

Role: PI

Total Award: \$372,825 direct costs, \$212,510 indirect costs

Title: mRNA Therapy Supplement #1

Sponsor: Recode Therapeutics Inc

Role: PI

Total Award: \$372,825 direct costs, \$212,510 indirect costs

Title: Vertex Doxycycline Study Supplement 1.3

Sponsor: Vertex Pharmaceuticals, Inc.

Role: PI

Total Award: \$741,375 direct costs, \$209,034 indirect costs

### **Dr. Adam Dupuy**

Title: OC230133 - Mechanisms of Trametinib Response and Resistance in Low-Grade Serous Ovarian Cancer

Sponsor: CDMRP

Role: PI

Total Award: \$602,907 direct costs, \$334,613 indirect costs

### **Dr. John Engelhardt**

Title: Development of Cystic Fibrosis Models in the Ferret

Sponsor: Cystic Fibrosis Foundation

Role: PI

Total Award: \$7,526,906.79 direct costs, \$903,228.97 indirect costs

Title: National Ferret Resource & Research Center on Lung Disease – Federal Contract – 4<sup>th</sup> Option

Sponsor: NIH

Role: PI

Total Award: \$3,624,585.13 direct costs, \$1,975,398.87

**Dr. Meihua Hao (Yang Lab)**

Title: 1196553 Gilt Function on Heart failure

Sponsor: American Heart Association

Role: PI

Total Award: \$144,580 direct costs

Title: Postdoctoral Fellowship

Sponsor: American Diabetes Association, Iowa Affiliate

Role: PI

Total Award: \$203,772 direct costs

**Dr. Xiaoming Liu (Engelhardt Lab)**

Title: Gordon Bio Collaboration Studies Supplement 1.1

Sponsor: Gordian Biotechnology

Role: PI

Total Award: \$96,200 direct costs, \$54,834 indirect costs

**Uchechi Okorafor (Young Lab)**

Title: Predoctoral Fellowship

Sponsor: National Ataxia Foundation

Role: PI

**Dr. Tom Rutkowski**

Title: The Role of the NADPH Production in Linking Overnutrition to Endoplasmic Reticulum Homeostasis, Unfolded Protein Response Signaling, and Liver Dysfunction

Sponsor: NIH

Role: PI

Total Award: \$1,595,896 direct costs, \$870,683 indirect costs

**Dr. Amy Ryan**

Title: Stem Cell Exhaustion and Impaired Airway Regeneration

Sponsor: NIH

Role: PI

Total Award: \$1,804,697 direct costs, \$988,304 indirect costs

Title: Center for Gene Therapy Retreat

Sponsor: Integrated DNA Technologies

Role: PI

Total Award: \$500 direct costs, \$75 indirect costs

Title: 3D Multi-Cellular Biomaterial Systems for Dynamically Studying Sex-Specific Regulation of Human Pulmonary Fibrosis

Sponsor: University of Colorado Anschutz Medical Campus

Role: PI

Total Award: \$1,221,516 direct costs, \$661,586 indirect costs

Title: Organ Chips: Hardware, Chips, and Scientific Support

Sponsor: Emulate

Role: PI

Total Award: \$150,000 direct costs

Title: Development of a Model that Integrates Inflammation and Tissue Injury to Predict and Mitigate the Post-Acute Sequelae of COVID-19

Sponsor: Children's Hospital of Los Angeles

Role: PI

Total Award: \$220,371 direct costs, \$122,306 indirect costs

Title: Epigenetic Dysregulation of Airway Basal Cells by the Inflammatory Microenvironment

Sponsor: Cystic Fibrosis Foundation

Role: PI

Total Award: \$296,633 direct costs, \$35,596.08 indirect costs

Title: Stem Cells, Cell Therapy, and Bioengineering in Lung Biology and Disease

Sponsor: University of Vermont Medical Center

Role: PI

Total Award: \$5,009 direct costs, \$5,009 indirect costs

### **Dr. Ziyang Yan (Engelhardt Lab)**

Title: Therapeutic Targeting of MUC5B in a Novel Ferret Model of Idiopathic Pulmonary Fibrosis

Sponsor: University of Alabama at Birmingham

Role: PI

Total Award: \$242,478 direct costs, \$132,150 indirect costs

Title: Development of Novel Approaches for Gene Editing Therapies of Cystic Fibrosis

Sponsor: University of Kansas Medical Center

Role: PI

Total Award: \$1,150,000 direct costs, \$638,250 indirect costs

### **Dr. Ling Yang**

Title: 959706 Liver-Heart Crosstalk in Sepsis-induced Cardiac Dysfunction

Sponsor: American Heart Association



Role: PI

Total Award: \$908,612.73 direct costs, \$90,860.27 indirect costs

### **Dr. Sam Young**

Title: Development of Gene Therapy Approaches to treat Ataxia-Telangiectasia Induced Cerebellar Degeneration

Sponsor: NIH

Role: PI

Total Award: \$275,000 direct costs, \$152,625 indirect costs

Title: Development of a Novel Viral Vector Gene Therapy Approach to treat CACNA1A Cerebellar Disorders

Sponsor: Million Dollar Bike Ride

Role: PI

Total Award: \$67,029 direct costs, \$6,703 indirect costs

Title: Development of Gene Therapy Approaches to treat Ataxia-Telangiectasia Induced Cerebellar Degeneration

Sponsor: A-T Society

Role: PI

Title: Development of Gene Therapy Approaches to treat Ataxia-Telangiectasia Induced Cerebellar Degeneration

Sponsor: A-T Society (Children's)

Role: PI

### **Dr. Miao Yu (Engelhardt Lab)**

Title: Regulation of Distal Basal Cells in Terminal and Respiratory Airway Regeneration

Sponsor: University of Illinois at Chicago

Role: PI

Total Award: \$734,580 direct costs, \$407,692 indirect costs

## **NEW PUBLICATIONS**

### **Dr. Andy Frank Lab**

**Mallik, B.**, Brusich, D. J., Heyrman, G., & **Frank, C. A.** (2023). Precise mapping of one classic and three novel *GluRIIA* mutants in *Drosophila melanogaster*. *microPublication biology*, 2023, <https://doi.org/10.17912/micropub.biology.000784>

### **Salma Hassan (CDB Graduate Student, Dr. Arlene Drack Lab)**

**Hassan, S.**, Hsu, Y., Mayer, S., Thomas, J., Kothapalli, A., Helms, M., Baker, S. A., Laird, J. G., Bhattarai, S., & Drack, A.V. (2023). A Visually Guided Swim Assay for

Mouse Models of Human Retinal Disease Recapitulates the Multi-Luminance Mobility Test in Humans. *Saudi Journal of Ophthalmology*.

### Dr. John Engelhardt Lab

**Yuan F, Gasser GN**, Lemire E, Montoro DT, Jagadeesh K, **Zhang Y**, Duan Y, **Ievlev V**, Wells KL, Rotti PG, **Shahin W, Winter M, Rosen BH, Evans I, Cai Q, Yu M**, Walsh SA, Acevedo MR, Pandya DN, Akurathi V, Dick DW, Wadas TJ, Joo NS, Wine JJ, Birket S, Fernandez CM, Leung HM, Tearney GJ, Verkman AS, Haggie PM, Scott K, Bartels D, Meyerholz DK, Rowe SM, **Liu X, Yan Z**, Haber AL, **Sun X, Engelhardt JF**. Transgenic ferret models define pulmonary ionocyte diversity and function. *Nature*, 2023, Online ahead of print, Sept 20.

Hisert KB, Birket SE, Clancy JP, Downey DG, **Engelhardt JF**, Fajac I, Gray RD, Lachowicz-Scroggins ME, Mayer-Hamblett N, Thibodeau P, Tuggle KL, Wainwright CE, De Boeck K. Understanding and addressing the needs of people with cystic fibrosis in the era of CFTR modulatory therapy. *Lancet Respir Med*, 2023, Online ahead of print, September 8:S2213-2600(23)00324-7.

Wang S, Niroula S, Hoffman A, Khorrami M, Khorrami M, **Yuan F, Gasser GN, Choi S**, Liu B, Li J, Metersky ML, Vincent M, Crum CP, Boucher RC, Karmouty-Quintana H, Huang HJ, Sheshadri A, Dickey BJ, **Parekh KR, Engelhardt JF**, McKeon FD, Xian W. Inflammatory activity of epithelial stem cell variants from cystic fibrosis lung is not resolved by CFTR modulators. *Am J Respir Crit Care Med*, 2023, Online ahead of print, Sep 11

Meyerholz DK, Leidinger MR, Goeken J A, Businga TR, Vizuet S, Akers A, Evans I, **Zhang Y, Engelhardt JF**. Immunohistochemical detection of MUC5AC and MUC5B mucins in ferrets. *BMC Res Notes*, 2023, 16(1):111. PMID:10286488.

**Luo M, Ma J**, Cheng X, **Wu S, Bartels DS**, Guay D, **Engelhardt JF, Liu X**. Genome editing in ferret airway epithelia mediated by CRISPR/Nucleases delivered with amphiphilic shuttle peptides. *Hum Gene Ther*, 2023, 34(15-16):705-718. PMID:10457657.

**Cai Q, Luo M, Tang Y, Yu M, Yuan F, Gasser GN, Liu X, Engelhardt JF**. Sonic hedgehog signaling is essential for pulmonary ionocyte specification in human and ferret airway epithelia. *Am J Respir Cell Mol Biol*, 2023, 69(3):295-309. PMID:10503308.

### Dr. Tom Rutkowski Lab

Shah, A., Huck, I., Duncan, K., Gansemer, E.R., Apte, U., Stamnes, M.A., and **Rutkowski, D.T.** (2023). Interference with the HNF4-dependent gene regulatory network diminishes ER stress in hepatocytes. [in press] *Hepatology Communications*

### Dr. Amy Ryan Lab

**Quiroz EJ**, Kim S, **Gautam LK**, Borok Z, Kintner C, **Ryan AL**. RBL2 represses the transcriptional activity of Multicilin to inhibit multiciliogenesis. bioRxiv 2023.08.04.551992; doi: <https://doi.org/10.1101/2023.08.04.551992>

**Koc-Gunel, S., Gautam, L.K., Calvert, B.A., Murthy, S. Harriott, N.C.,** Nawroth, J.C., Zhou, B., Krymskaya, V.P., & **Ryan, A.L.** (2023). Sorafenib Inhibits Invasion of Multicellular Organoids that Mimic Lymphangioliomyomatosis Nodules. bioRxiv 2023.06.12.544372; doi: <https://doi.org/10.1101/2023.06.12.544372>.

**Dr. Eric Van Otterloo Lab**

Kiel, M., **Wuebker, S.**, Remy, M. T., Riemondy, K. A., Smith, F., Carey, C. M., Williams, T., & **Van Otterloo, E.** (2023). MEMO1 Is Required for Ameloblast Maturation and Functional Enamel Formation. *Journal of Dental Research*, 220345231185758. Advance online publication. <https://doi.org/10.1177/00220345231185758>

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