
EDUCATION

PhD in Pharmaceutical Sciences, August 2021

Major: Pharmacology
The Ohio State University

Master of Science, May 2024

Major: Bioinformatics
Johns Hopkins University

Master of Science, May 2015

Major: Biological Science
St. John's University

Bachelor of Engineering, May 2013

Major: Biological Engineering
Nanjing Forestry University

PUBLICATIONS

Full list: [Yang Yu - Google Scholar](#)

First Author Publications

Yu, Y., Wang, C., Ye, S., Qin, H., Alonzo, M., Onorato, A., Argall, A., Texter, K., Ma, Q., Garg, V., & Zhao, M. T. (2025). Common and divergent cellular aetiologies underlying hypoplastic left heart syndrome and hypoplastic right heart syndrome. *European Heart Journal*, 46(20), 1946–1949. <https://doi.org/10.1093/eurheartj/ehaf121>

Yu, Y., Wang, C., Ye, S., Xu, Z., Lin, H., Texter, K., Shukla, V., Ghadiali, S., Ma, Q., Garg, V., & Zhao, M. T. (2024). Abnormal Progenitor Cell Differentiation and Cardiomyocyte Proliferation in Hypoplastic Right Heart Syndrome. *Circulation*, 149(11), 888–891. <https://doi.org/10.1161/CIRCULATIONAHA.123.064213>

Yu, Y., Alonzo, M., Ye, S., Fang, A., Manickam, K., Garg, V., & Zhao, M. T. (2023). Generation of an induced pluripotent stem cell line (NCHi010-A) from a 6-year-old female with Down syndrome and without congenital heart disease. *Stem Cell Research*, 71, 103155. <https://doi.org/10.1016/j.scr.2023.103155>

Yu, Y., Deschenes, I., & Zhao, M. T. (2023). Precision medicine for long QT syndrome: patient-specific iPSCs take the lead. *Expert Reviews in Molecular Medicine*, 25, e5. <https://doi.org/10.1017/erm.2022.43>

Yu, Y., He, H., Kang, C., & Hu, K. (2021). TASK-1 regulates mitochondrial function under hypoxia. *Biochemical Biophysical Research Communications*, 2021 Nov 12;578:163-169. doi: 10.1016/j.bbrc.2021.09.032.

Contributing Author Publications (Selected)

Wang, C., Xue, Y., Markovic, T., Li, H., Wang, S., Zhong, Y., Du, S., Zhang, Y., Hou, X., **Yu, Y.**, Liu, Z., Tian, M., Kang, D. D., Wang, L., Guo, K., Cao, D., Yan, J., Deng, B., McComb, D. W., Parsons, R. E., ... Dong, Y. (2025). Blood-brain-barrier-crossing lipid nanoparticles for mRNA delivery to the central nervous system. *Nature Materials*, 10.1038/s41563-024-02114-5. <https://doi.org/10.1038/s41563-024-02114-5>

Wang, C., Wang, S., Xue, Y., Zhong, Y., Li, H., Hou, X., Kang, D. D., Liu, Z., Tian, M., Wang, L., Cao, D., **Yu, Y.**, Liu, J., Cheng, X., Markovic, T., Hashemi, A., Kopell, B. H., Charney, A. W., Nestler, E. J., & Dong, Y. (2024). Intravenous administration of blood-brain barrier-crossing conjugates facilitate biomacromolecule transport into central nervous system. *Nature Biotechnology*, 10.1038/s41587-024-02487-7. <https://doi.org/10.1038/s41587-024-02487-7>

Alonzo, M., Xu, Z., **Yu, Y.**, Ye, S., Wang, C., Wang, J., McNutt, M., Bering, J., Ma, Q., Texter, K., Garg, V., & Zhao, M. T. (2024). Cell-Free RNA Signatures in Maternal Blood with Fetal Congenital Heart Disease. *Circulation Research*, 135(10), 1021–1024. <https://doi.org/10.1161/CIRCRESAHA.124.325024>

Ye, S., Wang, C., Xu, Z., Lin, H., Wan, X., **Yu, Y.**, Adhichary, S., Zhang, J. Z., Zhou, Y., Liu, C., Alonzo, M., Bi, J., Ramirez-Navarro, A., Deschenes, I., Ma, Q., Garg, V., Wu, J. C., & Zhao, M. T. (2023). Impaired Human Cardiac Cell Development due to NOTCH1 Deficiency. *Circulation Research*, 132(2), 187–204. <https://doi.org/10.1161/CIRCRESAHA.122.321398>

Kanagasabai, R., Karmahapatra, S., Kientz, C. A., **Yu, Y.**, Hernandez, V. A., Kania, E. E., Yalowich, J. C., & Elton, T. S. (2018). The Novel C-terminal Truncated 90-kDa Isoform of Topoisomerase II α (TOP2 α /90) Is a Determinant of Etoposide Resistance in K562 Leukemia Cells via Heterodimerization with the TOP2 α /170 Isoform. *Molecular Pharmacology*, 93(5), 515–525. <https://doi.org/10.1124/mol.117.111567>

Salehi-Najafabadi, Z., Li, B., Valentino, V., Ng, C., Martin, H., Yu, Y., Wang, Z., Kashyap, P., & Yu, Y. (2017). Extracellular Loops Are Essential for the Assembly and Function of Polycystin Receptor-Ion Channel Complexes. *The Journal of Biological Chemistry*, 292(10), 4210–4221. <https://doi.org/10.1074/jbc.M116.767897>

RESEARCH

Post-doctoral Scientist, 2021 – Present

Nationwide Children's Hospital, Columbus, OH

I am a post-doctoral scientist in the nationwide children's hospital and work in a lab specializing in deciphering the mechanisms involved in congenital heart disease. Our lab is dedicated to utilizing cutting-edge genomic knowledge to unravel the mechanisms in congenital heart disease. To study pulmonary atresia with the intact ventricular septum (PA-IVS), I derived

the induced pluripotent stem cells from the PA-IVS patient and differentiated iPSCs into cardiomyocytes. Furthermore, we exploited the single-cell RNA seq analysis to show the defects associated with each developmental stage in the cardiomyocyte's maturation process.

Graduate Teaching Assistant, 2016 – 2021

The Ohio State University, Columbus, OH

I have mainly focused on learning the modulation of ion channels and their correlative signaling messengers in the cardiovascular system. I explored the protective role of KCNK3, a potassium ion channel, in cells under hypoxia-reoxygenation stress. Using a variety of cell models, including HEK293T and H9c2 cells, I demonstrated that KCNK3 expression enhances cell survival by maintaining mitochondrial membrane potential, crucial for energy production. This discovery, stemming from an interdisciplinary blend of cellular biology and practical medical application, opens new avenues for developing treatments for conditions like heart attacks, where safeguarding cells from oxygen-related damage is vital.

I also explored the unique isoform of DNA topoisomerase II α , TOP2 α /90, in leukemia cells, revealing its significant role in chemoresistance. Unlike the full-length TOP2 α /170, TOP2 α /90 lacks essential components for DNA strand breaking and is produced from a variant mRNA. I found that TOP2 α /90 not only heterodimerizes with the full-length isoform but also impacts the cell's response to the anticancer drug etoposide. Specifically, overexpression of TOP2 α /90 in leukemia cells reduced etoposide-induced DNA damage, while its suppression increased such damage, highlighting its potential as a key player in the development of drug resistance. This discovery sheds light on the complex mechanisms of chemoresistance and opens up new avenues for targeted cancer therapies.

Graduate Teaching Assistant, 2013 – 2015

St. John's University, New York, NY

In my research, I delved into the complex world of TRPP-PKD polycystin complexes, key in translating extracellular stimuli to intracellular calcium signals. Focusing on the TRPP2-PKD1 complex, crucial in kidney function, I discovered that the extracellular loops between specific transmembrane segments of these proteins are vital for both their assembly and function. Using advanced techniques like immunoprecipitation and immunofluorescence, I found that these loops not only facilitate the movement of the complexes within the cell but also significantly influence their activity. Intriguingly, a mutation in TRPP2 linked to polycystic kidney disease affects the formation of homomeric complexes but not heteromeric interactions with PKD1, offering new insights into the molecular mechanisms of this disease.

PRESENTATIONS

Basic Cardiovascular Sciences Meeting, 2025

American Heart Association, Baltimore, MD

Poster presentation on "Impaired Myocardial Proliferation in Cardioids Derived from Patients with Hypoplastic Left Heart Syndrome."

Single Ventricle Investigator Meeting, 2024

Additional Ventures, Denver, CO

Poster presentation on "Common and Divergent Cellular Etiologies underlying Hypoplastic Left Heart Syndrome and Hypoplastic Right Heart Syndrome."

Basic Cardiovascular Sciences Meeting, 2024

American Heart Association, Chicago, IL

Poster presentation on "Common and Divergent Cellular Etiologies underlying Hypoplastic Left Heart Syndrome and Hypoplastic Right Heart Syndrome."

Davis Heart & Lung Research Institute Research Day, 2024

The Ohio State University, Columbus, OH

Poster presentation on "Common and Divergent Cellular Etiologies underlying Hypoplastic Left Heart Syndrome and Hypoplastic Right Heart Syndrome."

Weinstein Cardiovascular Development and Regeneration Conference, 2023

Weinstein Cardiovascular Development Conference, San Diego, CA

Oral Presentation on "Abnormal Progenitor Cell Differentiation and Cardiomyocyte Proliferation in Hypoplastic Right Heart Syndrome."

Davis Heart & Lung Research Institute Research Day, 2023

The Ohio State University, Columbus, OH

Poster presentation on "Modeling Ventricular Hypoplasia in Pulmonary Atresia with Intact Ventricular Septum Defects Using Patient-Specific iPSCs."

Heart Center Research Retreat, 2023

Nationwide Children's Hospital, Columbus, OH

Poster presentation on "Modeling Hypoplastic Left Heart Syndrome Using Patient-Specific Cardiac Organoids."

NCH Annual Research Retreat, 2023

Nationwide Children's Hospital, Columbus, OH

Poster Presentation on "Abnormal Progenitor Cell Differentiation and Cardiomyocyte Proliferation in Hypoplastic Right Heart Syndrome."

Basic Cardiovascular Sciences Meeting, 2022

American Heart Association, Chicago, IL

Poster presentation on "Modeling Ventricular Hypoplasia in Pulmonary Atresia with Intact Ventricular Septum Defects Using Patient-Specific iPSCs."

Experimental Biology Meeting, 2019

The EB meeting committee, Orlando, FL

Poster presentation on: "A novel role of TASK-1 in hypoxia".

**TEACHING
EXPERIENCE**

Instructor of Research Undergraduates, 2021-2023

I mentored AHA summer internship students and OSU enrolled undergraduate students in Dr. Mingtao Zhao's lab on the project "generation and characterization of hypoplastic left heart syndrome patient specific iPSC derived cardiac organoids".

Instructor of Pharmaceutical Science Laboratory, 2016-2021

In my role as an instructor, I led lab exercises designed to impart both the theory and practice of fundamental techniques in the realms of pharmaceuticals, medicinal chemistry, and pharmacology. The curriculum was carefully crafted to encompass a broad spectrum of essential methodologies, including spectroscopy, hydrolysis, drug synthesis, pKa determination, IC50 determination, enzyme kinetics, and the mechanisms of drug action. My teaching approach was structured to ensure that students not only gained hands-on experience with these critical techniques but also developed a deep theoretical understanding of their applications in pharmaceutical sciences.

Instructor of Microbiology and Basic Anatomy Laboratory, 2014-2015

In my role as an instructor for the introductory microbiology course, I focused on presenting a comprehensive overview of the fascinating world of microbes, encompassing their diversity, physiology, morphology, genetics, and pathogenicity. I guided students through hands-on experiences in handling microorganisms and performing basic microbiological techniques. This included mastering microscopy and staining techniques, bacterial culture methods, control of microbial growth, and identification of microbes based on metabolic and morphologic characteristics. The lab sessions were designed not only to reinforce theoretical knowledge gained in the lectures but also to develop practical skills essential for a career in microbiology. In my capacity as an instructor for anatomy course, I aimed to establish a foundational understanding among students regarding the intricate structure and function of basic cell biology, tissue organization, and the major body systems. This included not just learning the anatomical details but also being able to connect these anatomical structures to their respective functions.

LABORATORY SKILLS

Laboratory Expertise – Stem Cell Biology, Bioinformatics

Induced Pluripotent Stem Cell (iPSC) Culture and Differentiation • Cardiac Organoid • Metabolic profiling • Bulk RNA sequencing • Single-cell RNA sequencing • qPCR • R studios bioinformatics programming (Seurat) • Cryosectioning • Fluorescence Confocal Microscopy • Immunoblotting • Molecular Cloning • DNA Electrophoresis • Plasmid/RNAi transfection

AWARDS & ACHIEVEMENTS

American Heart Association BCVS Meeting Abstract and Poster Competition Top Winner, 2025
Drop the Microscope Research Excellence Award in Cardiovascular Research Center at Nationwide Children's Hospital, 2025
DHLRI Research Day Poster Presentation- First place, 2024
American Heart Association Postdoctoral Fellowship, 2024-2025
Travel Award at The Ohio State University, 2019
First Prize of 10th Jiangsu Provincial Advanced Mathematics Competition, 2017
Merit Student Scholarship of Nanjing Forestry University, 2010-2013