

JUNE 2020 DEPARTMENT NEWS

CONGRATULATIONS TO..

Dr. Jim Forney on receiving the Basic Science Teaching Award-Outstanding West Lafayette Faculty from the Indiana University School of Medicine, West Lafayette Center. He was chosen by the IU School of Medicine class of 2020.

MAY GRADUATES

The Department of Biochemistry recently said good-bye to 38 undergraduate students and one graduate student. To learn more about our graduating students and where they are headed following graduation, click this link: [May 2020 graduates.pdf](#)

2020 Bird Stair Graduate Fellowship Awardees

The Bird Stair Graduate Fellowship were established in 1978 through an endowment established by Mrs. Grace R. Stair in memory of her husband Bird Stair.

It is my pleasure to share with you the names of our graduate students who were awarded a Bird Stair Graduate Fellowship based upon their research proposals. We had a record number of applicants this year, over 20, which is almost double of what we have received in the past. Although we were unable to fund all of the proposals, we were able to fund 18 proposals and 20 students totaling \$100,000. Two of the projects this year were collaborations. Below is a table of the students who received the fellowships, their project titles and their major professors.

Congratulations to all of these excellent graduate students!

Andy Mesecar

2020 Bird Stair Graduate Fellowship Awardees and their Major Professors

Graduate Student(s) Awardee(s)	Title of Project	Major Professor(s)
Robert Auber & Gilbert Kayanja	<i>Defining the transcriptome responses of <i>Phaeodactylum tricornutum</i> to light and redox – collaborative project</i>	Jennifer Wisecaver & Sujith Puthiyaveetil
Andrew DeMarco & Peipei Zhu	<i>Profiling substrate specificity of protein phosphatase using phosphoproteomics – collaborative project</i>	Mark Hall & Andy Tao
Kortany Baker	<i>The Study of Set 1 Mediated Biofilm Formation and Persistence in <i>Candida glabrata</i></i>	Scott Briggs
Trevor Boram	<i>Examining the Conformational Changes upon product binding of propionyl-CoA carboxylase</i>	Jeremy Lohman
Mackenzie Chapman	<i>Structure-based drug design for Human Coronavirus papain-like proteases</i>	Andy Mesecar
Srishti Charavorty	<i>The role of LMP2A in regulating immune checkpoints in EBV⁺ Stomach adenocarcinoma</i>	Majid Kazemian
Gary Gan	<i>In vitro selection of a T-box riboswitch for binding of pyrrolysine tRNA</i>	Barb Golden

Adam Hamdani	<i>Structure-Function Relationship of Human Ubiquitin Specific Protease 20 (USP20)</i>	Andy Mesecar
Youssef Hegazy	<i>R-loop mapping in yeast cells using Dnase H</i>	Beth Tran
Emma Lendy	<i>Enzymatic and Biophysical Characterization of the BACE protein family for improved drug design</i>	Andy Mesecar
Jiaxin Long	<i>The role of PKL in DNA replication as a chromatin assembly factor</i>	Joe Ogas
Sarah McGovern	<i>Optimization of Transition State Covalent Crosslinking DNA Immunoprecipitation (TSCC-DIP) to identify genome-wide targets of DNA methyltransferase 3a</i>	Humaira Gowher
Isaiah Mensah	<i>Generation of Cardiomyocytes from Embryonic Stem Cells</i>	Humaira Gowher
Kedric Milholland	<i>Exploring Cdc14 as an anti-fungal target for plant fungal pathogens</i>	Mark Hall
Matt Russon	<i>Characterization of the DEAD-Box Helicase DDX5 in Small Cell Lung Cancer</i>	Beth Tran
Debasmita Saha	<i>Zinc cluster transcription factors alter azole efficacy in the opportunistic fungal pathogen Candida glabrata</i>	Scott Briggs
Shannon Stirling	<i>KAI2 Acts as a Receptor for Germacrene D and is Essential for Stigma Development</i>	Natalia Dudareva
Bingyu Yan	<i>Investigating the function of Kras distal enhancer using a knock-out mouse model</i>	Majid Kazemian

GRANTS

Correction to a grant that was listed in the May Molecular Matters, Hana Hall should have been listed as a Co-PI: **Dr. Vikki Weake** (PI) and **Hana Hall** (Co-PI) received \$376,148 over two-year grant period from the NIH for their proposal “R-Loops as a Novel Driver of Photoreceptor Aging” **Drs. Jennifer Wisecaver** (PI) and **Gregory Gavelis** (co-PI) received \$50,000 Center for Plant Biology Seed grant for their proposal titled “Enhancing the kleptoplastid of photosynthetic sea slugs as a model system for understanding plastid endosymbiosis and developing synthetic organelles”

Drs. Joe Ogas and **Beth Tran** were awarded an internal AgSEED grant 3/1/20 - 2/28/21 totaling \$50,000 for their proposal titled “Functional analysis of role of the CHD5 tumor suppressor in transcript processing during neurogenesis”

Dr. Sujith Puthiyaveetil received year one of three from a \$500,000 grant from U.S. Department of Energy for his proposal “Core phosphorylation as a modulator of photosystem II functional and biogenetic assembly”

Dr. Sujith Puthiyaveetil received \$50,000 from the Center for Plant Biology Seed grant award for his proposal “An iron-sulfur cluster-based redox switch in CSK protein conformation and kinase activity”

Dr. Clint Chapple received funding through the 2020 Agriculture - Engineering Collaborative Projects Competition for his proposal “Probing Phenylpropanoid Metabolism with Fluorescent Nanoparticles”

Dr. Andy Mesecar (Co-PI) received year one of five from a \$3,404,025 grant for the NIH Project at Indiana University titled “U54 Alzheimer Centers for Discovery of New Medicines”

Dr. Natalia Duderava (PI) received \$500,000 over a three year grant period from USDA-NIFA for her proposal “Deciphering regulatory restrictions on flux towards shikimate pathway-derived high value natural products”

BIOCHEMISTRY IN THE NEWS

Dr. Andy Mesecar recently had news articles in the Chicago Tribune ([click here](#)) and Nature Science ([click here](#)) regarding his research of the Corona virus and a vaccine for it.

Sujith Puthiyaveetil recently had a news article in the College of Agriculture News and Stories about his grant in Photosynthesis repair research. [click here](#).

RECENT PUBLICATIONS

Hivert G, R. Davidovich-Rikanati, E. Bar, Y. Sitrit, A. Schaffer, **N. Dudareva**, E. Lewinsohn. 2020. "Prenyltransferases catalyzing geranyldiphosphate formation in tomato fruit". *Plant Science*, 296: 110504.

Lichman BR, GT. Godden, JP. Hamilton, L. Palmer, MO. Kamileen, D. Zhao, B. Vaillancourt, J. Wood, M. Sun, TJ. Kinser, LK. Henry, CR. Lopez, **N. Dudareva**, DE. Soltis, PS. Soltis, CR. Buell, SE. O'Connor. 2020. "The evolutionary origins of the cat attractant nepetalactone in catnip". *Science Advances*, 6: eaba0721.

Lynch JH and **N. Dudareva** 2020. "Aromatic amino acids: A complex network ripe for future exploration". *Trends in Plant Sci.*, 25: 670-681.

Lynch JH, E. Pichersky, **N. Dudareva** 2020. "Floral scent metabolic pathways and their regulation" In E. Pichersky, **N. Dudareva** (eds), *Biology of Plant Volatiles*, CRC Press, Taylor and Francis Group, Chapter 8, pp. 147-164.

Maoz I, P. Sun, MA. Haring, RC. Schuurink, **N. Dudareva** 2020. "Emission and perception of plant volatiles." In E. Pichersky, **N. Dudareva** (eds), *Biology of Plant Volatiles*, CRC Press, Taylor and Francis Group, Chapter 14, pp. 251-267.

Plasmeier M, P. Liao, MA. Haring, **N. Dudareva**, RC. Schuurink. 2020. "Molecular engineering of plant volatiles:" floral scent, flavors, defense. In E. Pichersky, **N. Dudareva** (eds), *Biology of Plant Volatiles*, CRC Press, Taylor and Francis Group, Chapter 20, pp. 379-403.

Norvill, AB, L. Alabdi, Y. Bigang, Y.H. Tu, N. Forstoffer, A.R. Michie, T. Cheng, **H. Gowher**. 2020. "The acute myeloid leukemia variant DNMT3A Arg882His is a DNMT3B-like enzyme." *Nucleic Acids research*, 48 (7) 3761-3775.

Alabdi, L., D. Saha, M. He, M.S. Dar, S.M. Utturkar, P.A. Sudyanti, S. McCune, B.H. Spears, J.A. Breedlove, N.A. Lanman, **H. Gowher**. 2020. Oct4-Mediated Inhibition of Lsd1 Activity Promotes the Active and Primed State of Pluripotency Enhancers. *Cell Reports*, 30(5) 1478-1490.

Ghosh AK, Brindisi M, Shahabi D, Chapman ME, **Mesecar AD**. Drug Development and Medicinal Chemistry Efforts toward SARS-Coronavirus and Covid-19 Therapeutics. *ChemMedChem*. 2020;15(11):907-932.

Deng X, Chen Y, Mielech AM, et al. Structure-Guided Mutagenesis Alters Deubiquitinating Activity and Attenuates Pathogenesis of a Murine Coronavirus. *J Virol*. 2020;94(11):e01734-19. Published 2020 May 18.

ALUMNI NEWS

Larry DeVault (graduate 1961) has written an autobiography "Biochemist Running Outside the Box". Click [here](#) to view his book.

IMPORTANT DATES

Virtual Summer Commencement- August 8, 2020

In-person classes resume- August 24, 2020