DEPT. OF TOXICOLOGY AND CANCER BIOLOGY NEWSLETTER

Volume 4, Issue 4

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SUPPORT THE DEPARTMENT

Gifts to the department will be directed toward emerging needs and opportunities for our students, faculty research support, and unrestricted support for the department.
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— New Grants (New grants are shared once the department receives PADR 1 stating the account has been created) —



Dr. Nathan Vanderford (PI in grant below):

NCI R25CA221765, "Appalachian Career Training in Oncology (ACTION) Program" Total funding: $387,360 for 1 year. The Appalachian Career Training in Oncology (ACTION) Program offers Appalachian Kentucky high school and undergraduate students enrolled at the University of Kentucky the opportunity to gain cancer-focused research, clinical, outreach and education experiences. The overarching goal of the program is to enhance the diversity of the cancer workforce by preparing underrepresented Appalachian Kentucky high school and undergraduate students for cancer-related careers.



Dr. Christine Brainson (PI in grant below):

NCI P30CA177558, "CCSG Pilot: Determining Mechanisms of Immunotherapy Resistance in KEAP1 and LKB1 Mutant Lung Cancers" Total funding: $76,177 for 1 year. This grant is to test the contributions of the tumor suppressors LKB1 and KEAP1 to immunotherapy responses in non-small cell lung cancer. We will use EZH2 inhibition and examine whether we can increase antigen presentation in each genotype.





Dr. Luksana Chaiswing (PI in grant below), & Dr. Daret St. Clair (Co-PI in grant below):

NCI R01CA251663, "Diversity Supplement for Kahleel Guerrier: Targeting Mitochondrial Redox Capacity to Overcome Cancer Subtype that Regrowth After Radiation" Total funding: $61,648 for 1 year. The goal of this supplementary is to determine the molecular mechanism(s) by which radiation-activated mitochondrial biogenesis promotes cell survival and metabolic adaptations of prostate cancer cells with abundant mitochondria.







Dr. Hsin-Sheng Yang (PI in grant below), & Drs. Xiaoqi Liu and Teresa Fan (Co-PIs in grant below):

NCI R01CA279455, "Pdcd4-Rictor Interaction in Suppression of Lung Tumorigenesis" Total funding: $491,149 for 1 year. Recently, we found that tumor suppressor Pdcd4 binds with Rictor, a critical component of mTORC2 complex through the Rictor binding domain (RBD) on Pdcd4. By binding with Rictor, Pdcd4 inhibits mTORC2 activity to enhance proteasome degradation of PFKFB3, an important enzyme in glycolysis. The proposed studies are to elucidate the mechanism of how Pdcd4 regulates mTOC2 activity and PFKFB3 degradation and test the efficacy of RBD peptide in suppression of lung cancer cells with Rictor elevation.

— Recently Accepted or Published Manuscripts —

Drs. Rick Higashi, Andrew Lane, and Teresa Fan:

H. Wu, B. T. Kren, **A. N. Lane** , T. A. Cassel, **R. M. Higashi**, **T. W. M. Fan**, G.S. Scaria, L. L. Shekels, M. A. Klein, J. H. Albrecht (2023) Cyclin D1 extensively reprograms metabolism to support biosynthetic pathways in hepatocytes. J. Biol. Chem. 299: 105407

Drs. Rick Higashi, Andrew Lane, Teresa Fan and Christine Brainson:

T. W-M Fan*, J. M. Islam, **R. M. Higashi**, P.Lin, **C.F. Brainson** and **A.N. Lane** (2023). Metabolic reprogramming driven by EZH2 inhibition depends on cell-matrix interactions. J. Biol. Chem. Accepted

Dr. Changhai Tian:

Ziegler JN, **Tian C#**. Engineered Extracellular Vesicles: Emerging Therapeutic Strategies for Translational Applications. International Journal of Molecular Sciences. 2023; 24 (20):15206. https://doi.org/10.3390/ijms242015206 (#Corresponding author).

Dr. Tadahide Izumi:

Izumi T, Rychahou P, Chen L, Smith MH, Valentino J. Copy Number Variation That Influences the Ionizing Radiation Sensitivity of Oral Squamous Cell Carcinoma. Cells. 2023 Oct 10;12(20):2425. doi: 10.3390/cells12202425. PMID: 37887269

Dr. Xiaoqi Liu and his lab:

Li, C., Allison, D. B., He, D., Mao, F., Wang, X., Rychahou, P., Imam, I. A., Kong, Y., Zhang, Q., Zhang, Y., Liu, J., Wang, R., Rao, X., Wu, S., Evers, B. M., Shao, Q., Wang, C., Li, Z., and **Liu, X**. (2023) Phosphorylation of AhR by PLK1 promotes metastasis of LUAD via DIO2-TH signaling. PLOS Genetics, 19(11): e1011017. https://doi.org/10.1371/journal.pgen.1011017.

— Faculty Activity —

Drs. Rick Higashi, Andrew Lane, and Teresa Fan:

Study section — **T. W-M. Fan,** NIH Innovative Molecular and Cellular Analysis Technologies for Basic and Clinical Cancer Research (R61, Clinical Trial Not Allowed). RFA-CA-23-002 December 2023.

Presentation — **T. W.-M. Fan**, C. F. Lima Goncalves, J. Yan, J. M. M. Islam, P.Lin, M. M.Y. Kaddah, **R. M. Higashi**, **A. N. Lane**, and C. Zhu. Poster presentation "Patient-derived organotypic tissue cultures for organoid isolation and probing unique metabolic features of individual breast cancer patients" at the AACR San Antonio Breast Cancer Conference, Dec 6, 2023.

Dr. Ka Wing "Will" Fong:

Study section — 10/23-24: ad hoc reviewer for NCI Cancer Genetics Study Section.

Dr. Changhai Tian:

Grant review — Dr. Tian serves as an Ad hoc reviewer of AHA Basic Cell RCB Committee (2024 Fellowship Basic Science 5), November 20, 2023.

(cont.)

— Faculty Activity (continued) —

Dr. Nathan Vanderford:

Committee — Appointment to Steering Committee for the BS program in Agricultural and Medical Biotechnology in the Martin-Gatton College of Agriculture, Food and Environment (2023 through 2024).

Chair — National Institutes of Health, Clinical Care and Health Interventions, F16 Fellowship Special Emphasis Study Section (2024/01 ZRG1 F16-H (20) L).

Dr. Luksana Chaiswing:

Grant review — The Mike Slive foundation for Prostate Cancer Research, Dec 13, 2023.

Dr. Eva Goellner:

Committee — Appointment to Steering Committee for the BS program in Agricultural and Medical Biotechnology in the Martin-Gatton College of Agriculture, Food and Environment (2023 through 2024).

Dr. Xiaoqi Liu:

Presentation — September 28, 2023, University of Iowa, Department of Biochemistry and Molecular Biology, Iowa City, Iowa. “Plk1: from biochemistry to cancer therapeutics”.

Presentation — October 21, 2023, The 30th Chinese Urological Surgery Conference, Beijing. “Plk1 phosphorylation of EZH2 drives prostate cancer progression”.

Presentation — October 24, 2023, Shanxi Datong University, College of Biological and Agricultural Sciences, Datong, China. “Plk1: from biochemistry to cancer therapeutics”.

Presentation — November 3, 2023, University of Alabama at Birmingham, Department of Genetics, Birmingham, AL. “Plk1: from basic cell biology to cancer therapeutics”.

Presentation — December 5, 2023, Tulane University, Department of Structural & Cellular Biology, New Orleans, Louisana. “Plk1: from cell biology to cancer therapeutics”.

Presentation — December 6, 2023, Augusta University, Department of Cellular Biology & Anatomy, Augusta, Georgia. “Plk1: from basic cell biology to cancer therapeutics”.

Conference — Dr. Xiaoqi Liu has organized The 1st Serican Academy of Urology Annual Meeting, Cancun, Mexico, December 26-29, 2023.

Dr. Yanquan Zhang:

Presentation — December 28, 2023 Dr. Yanquan Zhang gave an oral presentation entitled “BRD4 regulation in prostate cancer” on the 1st Serican Academy of Urology Annual Meeting, Cancun, Mexico.

Dr. Jinghui Liu:

Presentation — December 29, 2023 Dr. Jinghui Liu gave an oral presentation entitled “CK1 in enzalutamide resistance of Prostate Cancer” on the 1st Serican Academy of Urology Annual Meeting, Cancun, Mexico.

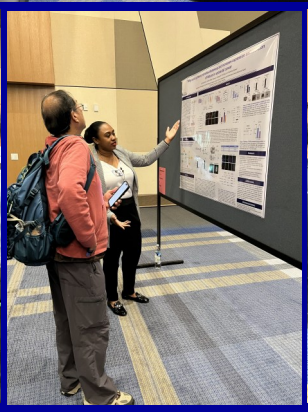
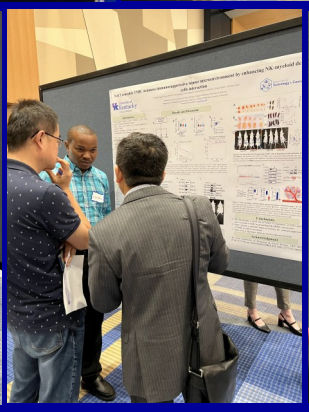
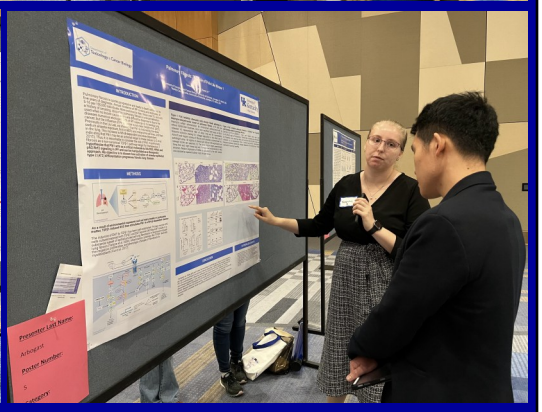
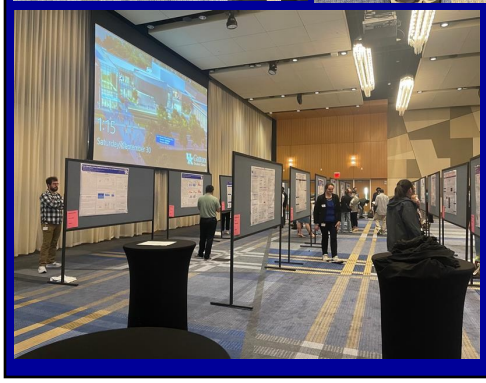
Departmental Events

The DTCB Retreat was held on Saturday, September 30th at UKY's Gatton Student Center. Thank you everyone who helped organize it!









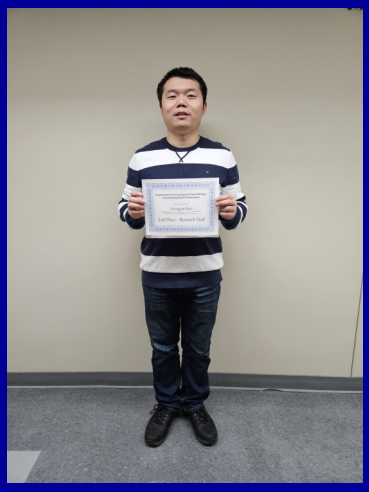
Departmental Events

2023 DTCB Retreat award winners — congratulations!



1st Place — Research Staff:

Dr. Miyeong Kim



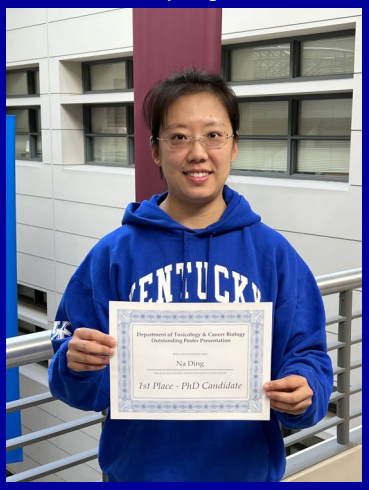
2nd Place — Research Staff:

Dr. Xiongjian Rao



3rd Place — Research Staff:

Dr. Ruixin Wang



1st Place — PhD Candidate:

Na Ding



2nd Place — PhD Candidate:

Caitlin Miller



3rd Place — PhD Candidate:

Aziza Alshahrani



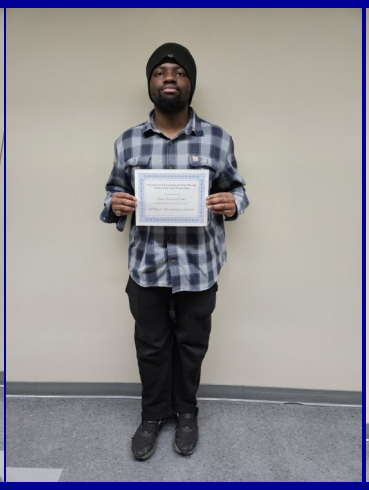
1st Place — Pre-qualifying Student:

Han Cong



2nd Place — Pre-qualifying Student:

Md Rakibul Alam



3rd Place — Pre-qualifying Student:

Dave-Preston Esoe



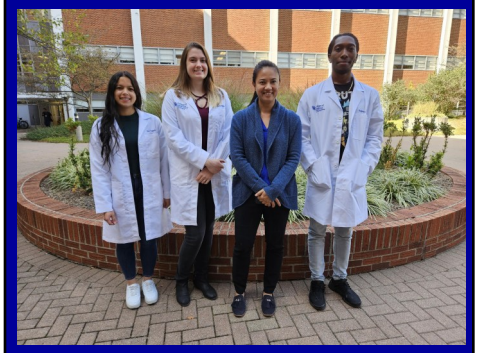
3rd Place — Pre-qualifying Student:

Kevin Fulp & Oluwafunminiyi Obaleye

Departmental Events

Personalized lab coats gifted to DTCB PhD Students at the 2023 DTCB Retreat

Dr. Luksana Chaiswing's Lab



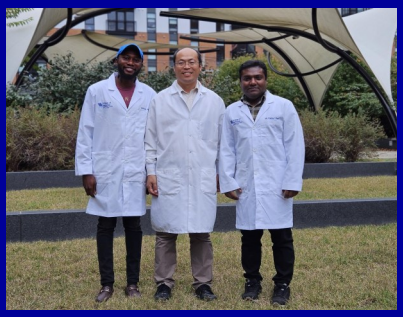
(L to R: Sara Macias Palacio, Caitlin Miller, Luksana Chaiswing, and Kahleel Guerrier)

Dr. Hsin-Sheng Yang's Lab



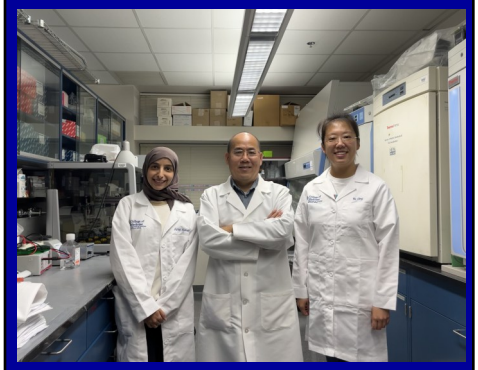
(L to R: Hsin-Sheng Yang and Elham Zokaei)

Dr. Zhiguo Li's Lab



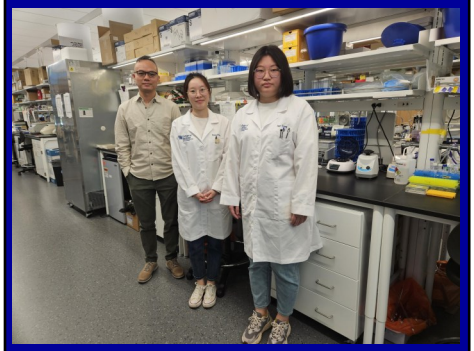
(L to R: Amos Akinyemi, Zhiguo Li, and Md Rakibul Alam)

Dr. Qiou Wei's Lab



(L to R: Aziza Alshahrani, Qiou Wei, and Na Ding)

Dr. Ka-Wing Fong's Lab



(L to R: Ka-Wing Fong, Cheng Zhang, and Han Cong)

Dr. Eva Goellner's Lab



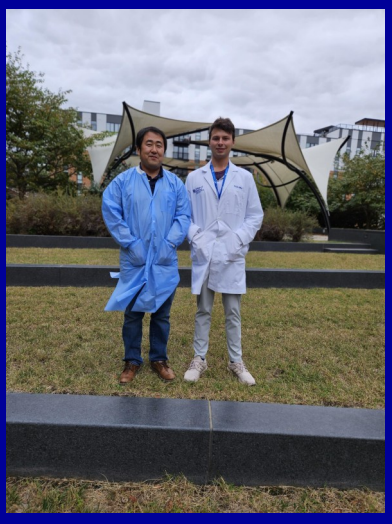
(L to R: Eva Goellner, Kristin Miller, Breanna Knicely, and Hannah Daniels)

Dr. Jin-Ming Yang's Lab



(L to R: Felix Oyelami, Jin-Ming Yang, and Chrispus Ngule)

Dr. Houfu Guo's Lab



(L to R: Houfu Guo and Tristin Miller)

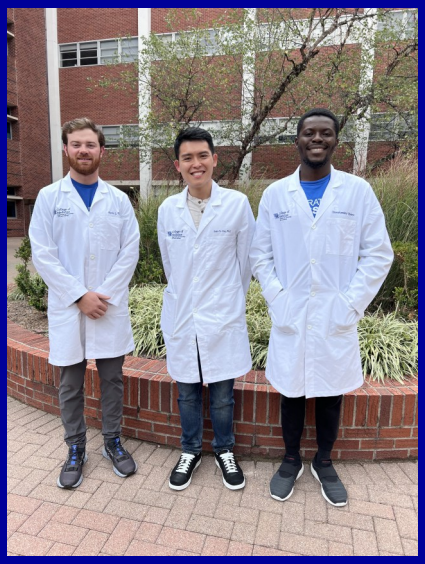
Dr. David Orren's Lab

(L to R: David Orren and Sarah Alqithami)

Departmental Events

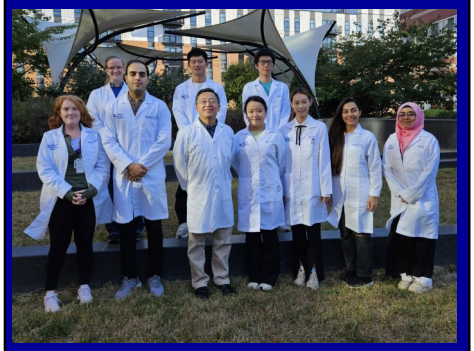
Personalized lab coats gifted to DTCB PhD Students at the 2023 DTCB Retreat (cont.)

Dr. Guan-Yu Xiao's Lab



(L to R: Kevin Fulp, Guan-Yu Xiao, and Oluwafunminiyi Obaleye)

Dr. Xiaoqi Liu's Lab

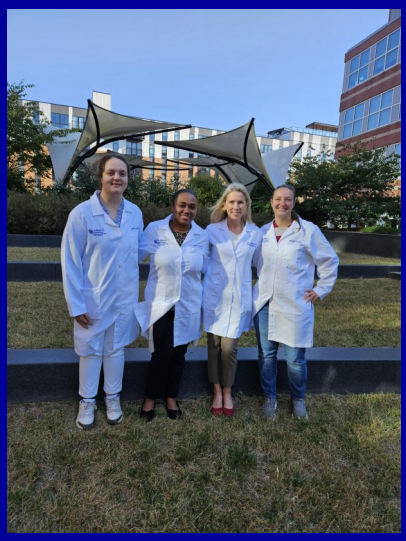


(L to R back row: Kendall Simpson, Liang Zeng [in rotation], and Sai Wu)

(L to R front row: Katelyn Jones, Mohammad Farahani, Xiaoqi Liu, Xinyi Wang, Min Zhang, Fatemah Seilani, and Maria Nur)

(Not pictured: Tempany Arbogast and Hamed Maasoumyhaghighi)

Dr. Yekaterina Zaytseva's Lab



(L to R: Jerika Durham, Courtney Kelson, Yekaterina Zaytseva, and Mariah Geisen)

Dr. Daret St. Clair's Research Symposium & Retirement Celebration



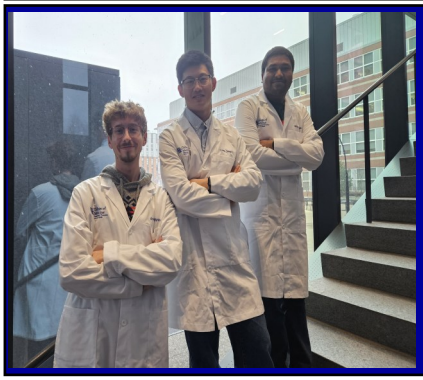
Daret St. Clair, PhD, is a distinguished researcher known for her outstanding contributions to the field of cancer research. Her career at the University of Kentucky's Markey Cancer Center has been marked by groundbreaking research and advancement of the center's basic science programs, and in 2018 she was honored with the Lifetime Achievement Award by the Society for Redox Biology and Medicine. Throughout her career, Dr. St. Clair has demonstrated exceptional dedication and leadership – serving as Associate Director for Basic Research at Markey and Co-Director of the Center for Cancer and Metabolism. Her career at UK was celebrated on Friday, December 8th, 2023 with a Research Symposium at UKY's Gatton Student Center, after 32 years of dedicated service to the University. A link for more information regarding this event can be found below:

— Markey symposium celebrates remarkable career of researcher Daret St. Clair —

Dr. Christine Brainson's Lab



(L to R: Kassandra Naughton, Christine Brainson, Dave-Preston Esoe, and Christian Gosser)
(Not pictured: Avery Childress)



Rotating students

(L to R: Andrew Shinkle, Liang Zeng, and Mithu Howlader)

Congratulations!



Dr. Na Ding successfully defended her thesis in October 2023. Congrats to her, her mentor Dr. Qiou Wei, and her other committee members Drs. Xiaoqi Liu, Vivek Rangnekar, Luksana Chaiswing, and Ren Xu!

Dr. Ding is now working as a Postdoctoral Scholar at MD Anderson Cancer Center.

(L to R: Dr. Xiaoqi Liu, Dr. Na Ding, and Dr. Qiou Wei)

Dr. Kristin Miller successfully defended her thesis in October 2023. Congrats to her, her mentor Dr. Eva Goellner, and her other committee members Drs. Drs. Isabel Mellon, Jin-Ming Yang, and Kathleen O'Connor!

Dr. Miller is now working as a Scientist at Proctor and Gamble.

(L to R: Dr. Eva Goellner and Dr. Kristin Miller)





Dr. Hannah Daniels successfully defended her thesis in November 2023. Congrats to her, her mentor Dr. Eva Goellner, and her other committee members Drs. Isabel Mellon, David Orren, and Tianyan Gao!

Dr. Daniels is now working as a Postdoctoral Researcher at Vanderbilt University.

(L to R: Dr. Eva Goellner and Dr. Hannah Daniels)

Student Forum Events

The Student Forum continues to coordinate activities for all students to participate in! Make sure you are checking your email for future activities and meetings.

The student forum took a trip to hike at Raven Run Nature Sanctuary on October 7th, pictured here.

(L to R: Kevin Fulp, Dave-Preston Esoe, Jooli Hansen, and Kassandra Naughton)



Attention: Former Graduate Students and Post-doctoral Students of Dr. Mary Vore, UK Alumni of the Toxicology Program, and Guests:

Drs. Bill Brock, Kim Brouwer, and Adrienne Takas are organizing a retirement celebration for Dr. Mary Vore, our mentor, teacher, and peer. After 38 years at UK, Dr. Vore retired in 2015 to enjoy being a grandmother and pursue several interests including travel and growing roses.

We are planning a celebration of Mary's career during the weekend of June 14-16, 2024. Please Save the Date! The event will take place in Lexington.

We will begin the day (June 15) with scientific presentations from attendees, asking each to give about a 20 min presentation on a topic of interest that shows an accomplishment in toxicology or related sciences since leaving the UK. That evening, there will be a dinner probably at the Campbell House. Spouses and significant others are certainly welcome to join for the science and for dinner. More details on the symposium, dinner and costs will follow.

We have made great strides in locating alumni of the UK Graduate Center for Toxicology (GCT) program, and trainees of Mary. However, our list is far from complete. If you know someone who graduated from the Dr. Vore lab and the UK GCT, please share this email and send the person's email address to Bill Brock (billbrock@comcast.net).

We look forward to your participation in this event as we express our gratitude and celebrate the many accomplishments of our mentor, Dr. Vore.

Sincerely

Dr. Kim Brouwer, Dr. Adrienne Takas, Dr. Bill Brock

THANK YOU!

Dr. Liyue Huang gave a donation of $1,500 to the department. Many thanks for the thoughtful gift and support!



NEWSLETTER ITEMS

Want to include something in the next newsletter? Send your stuff to ToxAndCancerBio@uky.edu



Our MS in Forensic Toxicology and Analytical Genetics second year students start their required internships next semester - check out where they are all going!

Fernando Cardenas
KY Energy & Environment Cabinet
KY Division of Water

Alexis Corriette
UKY College of Public Health with Dr. Rachel Vickers-Smith
KY Energy & Environment Cabinet

Hailey Fite
UKY Veterinary Diagnostic Lab
UKHC Special Chemistry/Toxicology Lab

Amber Fregalette
St. Louis University Forensic Toxicology Lab (Completed Summer 2023)
LGC Group

Jennifer Grasso
UKHC Clinical Molecular & Genomic Pathology Lab
Kentucky State Police Forensic Biology Lab

Hannah Harrell
UKY Gluck Equine Research Center — Genetic Testing
KY Newborn Screening Lab

Ila Iniyavan
UKY Superfund Research Center Project 1
UKHC Clinical Moleculer & Genomic Pathology Lab

Sky Lafary
UKY Veterinary Diagnostic Lab (Completed Summer 2023)
Kentucky State Police Toxicology Lab

Malone Lee
LGC Group (completed Summer 2023)
Kentucky State Police Toxicology Lab

Alexis Obman
TruDiagnostic
UKY Gluck Equine Research Center — Genetic Testing

Carlee Potter
Rood and Riddle Equine Hospital Laboratory
Microbiologics

McCall Price
UKY: Dr. Lorri Morford's Lab
Lexar Labs

Latasha Thompson
UKY: Dr. Ilhem Messaoudi-Powers' Lab
KY Division of Lab Services—Environmental Microbiological Branch (Summer 2024)

Kayla Wolf
University of Arkansas for Medical Sciences: Dept of Pharmacology & Toxicology
LGC Group

Good luck to each of you! We can't wait to hear about your experiences at the poster presentation at the end of the next semester (May 2024)!

Thank you students, faculty and staff for all of your hard work and dedication this semester! We hope everyone enjoys their winter break!

See you in January!