DEPT. OF TOXICOLOGY AND CANCER BIOLOGY NEWSLETTER

Volume 4, Issue 3

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SUPPORT THE DEPARTMENT

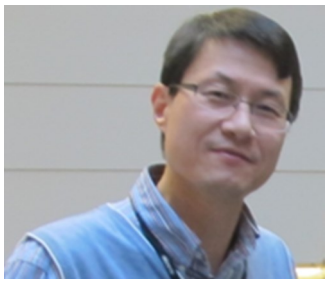
Gifts to the department will be directed toward emerging needs and opportunities for our students, faculty research support, and unrestricted support for the department.

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Thank you for your support!

New Grants (New grants are shared once the department receives PADR 1 stating the account has been created):





Dr. Xiaoqi Liu and Dr. Hsin-Sheng Yang (MPI in grant below):

NCI R01CA272483, "Targeting the Plk1/Pdcd4/mTORC2 signaling to treat castration-resistant prostate cancer " Total funding: $3,155,058 for 5 years. The Liu and Yang labs have worked together to generate preliminary data for the application and the two lab will continue to work closely to dissect how Plk1-associated phosphorylation of Pdcd4 results in activation of mTORC2 activation, acquisition of resistance to enzalutamide, a major drug for prostate cancer treatment.

Dr. Binhua Zhou (PI in grant below), Dr. Daret St. Clair and Dr. Andrew Lane (co-PIs in grant below):

DoD HT94252311009, "Targeting NNMT to inhibit obesity-associated breast cancer development and progression " Total funding: $1,215,057 for 3 years. Nicotinamide N-methyltransferase (NNMT) is a key enzyme in the NAD+ salvage pathway, and essential for the elevation of NAD(P)+ levels and maintenance of lipid homeostasis in both TNBC cells and adipocytes. Targeting this enzyme may suppress both TNBC progression and obesity development simultaneously, which is the focus of the grant lead by Dr. B Zhou and supported by Drs. St. Clair and Lane.



Dr. Ka Wing "Will" Fong (PI in grant below):

V Foundation V2023-014, "Targeting RSK-TRIM28-E2F1 axis Overcomes CDK4/6 Inhibitor Resistance in Lethal RB1 Deficient Prostate Cancer" Total funding: $600,000 for 3 years. Castration-resistance prostate cancer (CRPC) is a lethal disease. ~15% of CRPC patients harboring biallelic deletion of the tumor suppressor RB1 gene will develop resistance to CDK4/6 inhibitor. The proposed study seeks to address these clinical challenge, which will demonstrate pS473-TRIM28 to be targeted by pharmacologic inhibition of RSK, resulting in innovative approaches to overcome CDK4/6 inhibitor resistance in RB1-loss CPRC and to develop new biomarkers to follow disease progression.



Dr. Christine Brainson (PI in grants below):

American Lung Association IA -1046815, "Targeting Lung Fibrosis with Epigenetic Therapy" Total funding: $229,500 for 2 years. The focus is on testing if EZH2 inhibition will ameliorate several aspects of pulmonary fibrosis.

National Cancer Institute, "University of Kentucky Markey Cancer Center—Cancer Center Support Grant Pilot: Determining mechanisms of immunotherapy resistance in KEAP1 and LKB1 mutant lung cancers" Total funding: $76,177 for 1 year. Through the Cancer Center Support Grant, Dr. Brainson's lab received pilot funding to explore the roles of STK11 and KEAP1 mutations in lung cancer lineage fate and immunotherapy responses.

New Grants (cont.) (New grants are shared once the department receives PADR 1 stating the account has been created)**:**

Dr. Christine Brainson (PI in grants below) (cont.):

Markey Cancer Center Foundation, "Overcoming Therapeutic Resistance in Lung Cancer Using Novel Combination Therapies" Total funding: $50,000 for 1 year. This Markey Women Strong Scholars Award will be used to study the use of EZH2 inhibition to overcome therapeutic resistance in lung cancer.

NCI R01CA237643-S1 "Diversity Supplement for Christian Gosser: Targeting Epigenetic Heterogeneity to Improve Lung Cancer Immunotherapy Response" Total funding: $77,275 for 1 year.

NCI R01CA237643-S2, "Diversity Supplement for Dave-Preston Esoe: Targeting Epigenetic Heterogeneity to Improve Lung Cancer Immunotherapy Response" Total funding: $77,275 for 1 year.

**Mr. Christian Gosser and Mr. Dave-Preston Esoe were selected for funding through the NIH CURE Diversity Supplements. They are focused on learning how EGFR-mutations, and diverse cell types, including endothelial cells, influence immunotherapy responses in lung cancer.



Dr. Xia Liu (PI in grant below):

National Cancer Institute, "University of Kentucky Markey Cancer Center—Cancer Center Support Grant Pilot: Improving Anti-PD1 Therapy in Triple-Negative Breast Cancer" Total funding: $76,500 for 1 year. In this CCSG pilot project, we aim to identify the neutrophil subpopulation that is associated with anti-PD1 resistance, and develop strategies to specially target these "harmful" neutrophils to improve anti-PD1 efficacy in triple-negative breast cancer.



Dr. Nathan Vanderford (PI in grant below):

American Cancer Society, "Summer Health Experience (SHE) in Oncology Program" Total funding: $10,500. The Summer Healthcare Experience (SHE) in Oncology Program aims to empower Kentucky high school student leaders who identify as female with experiences, activities and discussions that introduce them to the incredible breadth of career and leadership opportunities in the field of oncology. SHE in Oncology Program participants work with other students from 5 different collaborating institutions that are running their own SHE Programs. The other institutions include the University of Texas at Austin, the University of Chicago, the University of Michigan and the University of Pennsylvania.

Recently Accepted or Published Manuscripts:

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

1. JN Rashida Gnanaprakasam, B. Kushwaha, L. Liu, X. Chen, S. Kang, T.Wang, T.A. Cassel, C. M. Adams, **R.M. Higashi**, D. A. Scott, G. Xin, Z.Li, **A. N. Lane**, **T.W.-M. Fan**, J. Zhang, and R. Wang (2023). Asparagine restriction enhances CD8+ T cell metabolic fitness and antitumoral functionality through an NRF2-dependent stress response Nat. Metab. 5: 1423–1439.
2. J. Yan, C. F. Lima Goncalves, M. O. Korfhage, MD Z. Hasan, **T.W-M. Fan**, X. Wang, & C. Zhu * (2023) Portable optical spectroscopic assay for nondestructive measurement of key metabolic parameters on in vitro cancer cells and organotypic fresh tumor slices. Biomedical Optics Express 14: 4065-4079.

Recently Accepted or Published Manuscripts (cont.):

Drs. Xiaoqi Liu and Will Fong:

Zhang, Z., Wang, X., Kim, M., He, D., Wang, C., **Fong, K. W**. and **Liu, X**. (2023) Downregulation of EZH2 inhibits epithelial-mesenchymal transition in enzalutamide-resistant prostate cancer. The Prostate. 83, 1458-1469.

Dr. Qiou Wei:

1. Mishra M, Jiang H, **Wei Q**. New insights on the differential interaction of sulfiredoxin with members of the peroxiredoxin family revealed by protein-protein docking and experimental studies. Eur J Pharmacol. 2023 Sep 5;954:175873. doi: 10.1016/j.ejphar.2023.175873. Epub 2023 Jun 21. PMID:37353187; PMCID: PMC10426277.

2. Thapa P, Jiang H, Ding N, Hao Y, Alshahrani A, Lee EY, Fujii J, **Wei Q**. Loss of Peroxiredoxin IV Protects Mice from Azoxymethane/Dextran Sulfate Sodium-Induced Colorectal Cancer Development. Antioxidants (Basel). 2023 Mar 9;12(3):677. doi: 10.3390/antiox12030677. PMID: 36978925; PMCID: PMC10045277.

3. Hao Y, Jiang H, Thapa P, Ding N, Alshahrani A, Fujii J, Toledano MB, **Wei Q**. Critical Role of the Sulfiredoxin-Peroxiredoxin IV Axis in Urethane-Induced Non-Small Cell Lung Cancer. Antioxidants (Basel). 2023 Feb 3;12(2):367. doi: 10.3390/antiox12020367. PMID: 36829926; PMCID: PMC9951953.

Dr. Tadahide Izumi:

Izumi T. Analysis of Copy Number Variation of DNA Repair/Damage Response Genes in Tumor Tissues. Methods Mol Biol. 2023;2701:231-242. PMID: 37574486.

Dr. Ka Wing "Will" Fong:

Gritsina G, **Fong KW**, Lu X, Lin Z, Xie W, Agarwal S, Lin D, Schiltz GE, Beltran H, Corey E, Morrissey C, Wang Y, Zhao JC, Hussain M, Yu J. Chemokine receptor CXCR7 activates AURKA and promotes neuroendocrine prostate cancer growth. J Clin Invest. 2023 Aug 1;133(15):e166248.

Dr. Changhai Tian:

Tian C#, Ziegler JN. and Zucker IH. Extracellular vesicle microRNAs in heart failure: Pathophysiological mediators and therapeutic targets. Cells. 2023, 12(17), 2145; https://doi.org/10.3390/cells12172145 (#Corresponding author).

Faculty Awards and Recognitions:

Dr. Nathan Vanderford:

1. University of Kentucky, College of Medicine, Academy of Medical Educators Excellence in Medical Education Award in the area of Mentoring, Aug. 2023.
2. Journal of Research Administration Rod Rose Award (Best Publication of the Year Award), Aug. 2023.

Dr. Christine Brainson:

Dr. Brainson has been promoted to Associate Professor with Tenure.



Faculty Activity:

Dr. Teresa Fan:
COBRE CCM Symposium UKy "Interrogating cancer metabolism in-patient and patient-derived models" July 18, 2023.

Dr. Jin-Ming Yang:
NCI study section: ZCA1 SRB-F (J1), Integrating Health Disparities into Immuno-Oncology (HDIO) Sept. 27, 2023.

Dr. Tadahide Izumi:
Oral presentation at the 54th annual meeting of EMGS (Environmental Mutagens and Genomics Society; https://www.emgs-us.org/). Chicago, IL, September 9-13, 2023. In the session "Radiation in cancer development and treatment" 9:45am - 11:45 9/11. "Effect of copy number variation on acquired resistance to ionizing radiation of oral squamous cell carcinoma"

Dr. Nathan Vanderford:
Chair, National Institutes of Health, Clinical Care and Health Interventions F16 Fellowship Special Emphasis Study Section (2023/10 ZRG1 F16-H (20) L), July 2023.

Dr. Christine Brainson:
Dr. Brainson is currently serving grant review panels for the Department of Defense Lung Cancer Research Program and for the NIH Translational Immuno-Oncology study section.

Dr. Luksana Chaiswing:
Oral Presentation: "Mitochondrial redox heterogeneity confers tumor susceptibility to fractionated radiation treatment" at The 17th International Congress for Radiation Research combined with the 69th Annual Meeting of the Radiation, the Société du Palais des congrès de Montréal in Montréal, Canada. Session S04 Cancer Metabolism and Radiation. Aug. 27, 2023 10:15 am—12:15 pm.

Dr. Changhai Tian:
1. Oral Presentation: "Extracellular Vesicles and Heart-Brain Communication in Heart Injuries and Neurological Disorder". 2023 Fall IBS-DTCB Student Orientation, University of Kentucky, Aug. 17, 2023.
2. Conference proposal entitled "Novel mechanisms of peripheral organ-brain communication and neurological dysfunction" submitted to 2024 APS Summit was accepted (American Physiology Summit, April 4-7, 2024 in Long Beach, California).

New Faculty Member:



Dr. Guan-Yu Xiao: Dr. Guan-Yu Xiao has arrived as a tenure-track Assistant Professor. Welcome to the department!

Research Interest: Defects in membrane trafficking can be disastrous for the cell and for the organism. Diseases as diverse as neurodegeneration, metabolic syndrome, and cancers are known to have at least some causal components related to membrane trafficking. We are particularly interested in studying dysregulated membrane trafficking in cancers. We use biochemical assays, microscopy-based imaging analysis, molecular biology, multiomics, tumor mouse models, and clinical data to measure membrane trafficking events and assess how the trafficking machinery drives cancer progression. We work collaboratively and aim to translate our discoveries to address clinical needs.

Fall 2023 Semester: DTCB Monday Seminars

12:00-1:00 PM

MN 463

August 21: Student Seminar: Hannah Daniels (Dr. Goellner)

August 28: Dr. Zhi-Ren Liu, Georgia State University (Dr. Jin-Ming Yang)

September 11: Student Seminar: Caitlin Miller (Dr. Chaiswing)

September 18: Dr. Rumela Chakrabarti, University of Miami (Dr. Xia Liu)

September 25: Dr. Runa Liu, University of Alabama at Birmingham (Dr. Li)

October 2: Dr. Vladimir S. Spiegelman, Penn State University (Dr. Zaytseva)

October 9: Dr. Ji Bihl, Marshall University (Dr. Tian)

October 16: Dr. Mautin Barry-Hundeyin, University of Kentucky (Dr. Zaytseva)

October 30: Dr. Allan Butterfield, University of Kentucky

November 6: Dr. Alison Taylor, Columbia University (Dr. Brainson)

November 13: Dr. Changmeng Cai, UMass Boston (Dr. Xiaoqi Liu)

November 20: Dr. Andrew Wojtovich, University of Rochester (Dr. Chaiswing)

November 27: Dr. Eric Rellinger, University of Kentucky (Dr. Zaytseva)

December 4: Student Seminar: Kassie Naughton (Dr. Brainson)

Fall 2023 Semester: DTCB Faculty Grant Talk Series

12:00-1:00 PM

HKRB 410

Sept 1: Dr. Xiaoqi Liu

Sept 15: Dr. Jinming Yang

Sept 29: Dr. Zhiguo Li

Oct 6: Dr. Qiou Wei

Oct 20: Dr. Changhai Tian

Oct 27: Dr. Christine Brainson

Fall 2023 Semester: DTCB Trainee Talk Series

12:00-1:00 PM

MN 463

September 8: Dr. James Rao (Dr. Xiaoqi Liu) and Dr. Ricky Wang (Dr. Xiaoqi Liu)

September 22: Dr. Josiane Tessmann (Dr. Zaytseva) and Dr. Dong Li (Dr. Xia Liu)

October 13: Dr. Lei Wang (Dr. Xiaoqi Liu) and Dr. Jia Peng (Dr. Xiaoqi Liu)

November 3: Dr. Qing Wang (Dr. HS Yang) and Dr. Yanquan Zhang (Dr. Xiaoqi Liu)

November 17: Charles Bailey (Dr. Kim) and Breanna Knicely (Dr. Goellner)

December 1: Jerika Durham (Dr. Zaytseva) and Tempany Arbogast (Dr. Xiaoqi Liu) *in MN 263



Dr. Qiongsi "Alston" Zhang successfully defended his thesis in July 2023. Congrats to him and his mentor Dr. Xiaoqi Liu, and other committee members Drs. Binhua Zhou, Qiou Wei, and Christine Brainson!

Dr. Zhang is now working in a biotech company in Houston, TX (Sino Biological US)



(L to R): Dr. Alston Zhang, Dr. Xiaoqi Liu

Congratulations to the PhD student who recently passed their qualifying exams!



(L to R): Maria Nur, Jerika Durham, Breanna Knicely, Kevin Fulp, Niyi Obaleye, and Avery Childress. Vivian Ayarick not pictured.



Welcome to our new students!

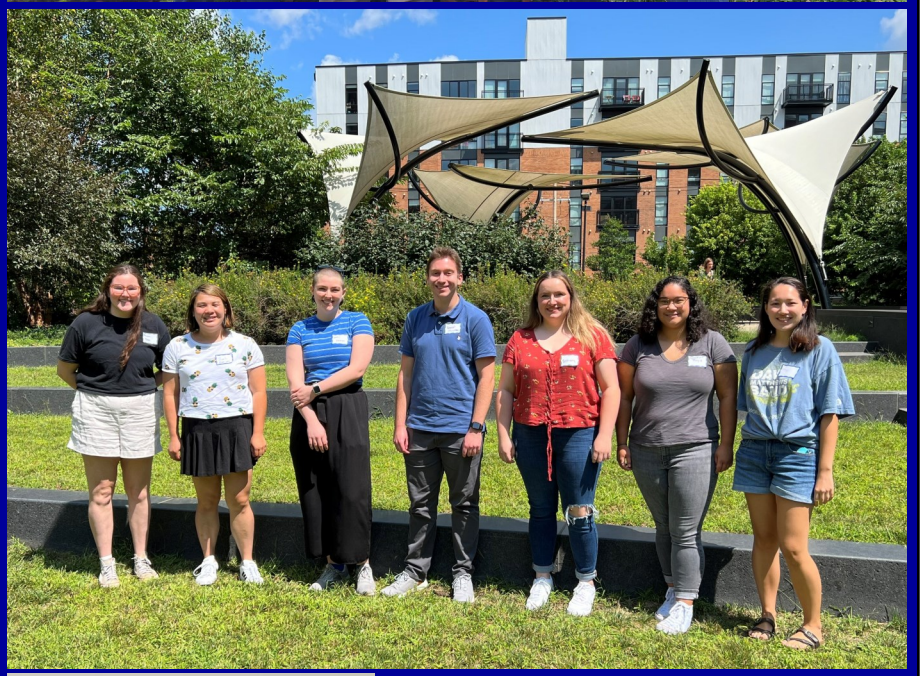
New PhD Students:

(L to R): Mithu Howlader, Liang Zeng, Andrew Shinkle, and Sara Macias Palacio.



New Forensics Students:

(L to R): Blair Aislin, Jooli Hansen, Kelli Harpe, Konner Schieman, Bethany Flannery, Gabrielle Boyd, and Megan Hayden.



New TOX MS Student:

Caroline Wright



Departmental Events:

Department of Toxicology and Cancer Biology Inclusion Pot-Luck Picnic organized by Dr. Christine Brainson on Sunday, August 20th was a delightful event and a great success! (photos contributed by Ms. Lixiang Gu)

















REMINDER:

DEPARTMENT OF TOXICOLOGY & CANCER BIOLOGY'S DEPARTMENT RETREAT WILL BE HELD ON

SATURDAY, SEPTEMBER 30, 2023

GATTON STUDENT CENTER 212 ABC

8:00 AM– 5:00 PM

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.



July 9, 2023: Kayaking and paddle boating at Jacobson Park

July 13 and July 20, 2023: Two volunteer events serving dinner at the Jacobs Hope Cafeteria

July 29, 2023: Main Event

August 20, 2023: Inclusion Picnic with DEI Committee

September 5, 2023: Student Body Meeting

September 8, 2023: Welcome Pizza Party and Game Night

September 14, 2023: Trivia and Pivot Brewing

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

Baby Watch 2023

Dr. Jinghui Liu, Assistant Professor for Toxicology & Cancer Biology, and his wife, Na, welcomed their first child on September 9, 2023. A healthy baby girl – Ino Liu. Congratulations to the Liu family!



NEWSLETTER ITEMS

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

