

**University of North Carolina at Chapel Hill**  
**Department of Pharmacology Research Retreat**  
September 16<sup>th</sup>, 2022 – William and Ida Friday Center

- 8:30–9:00 am Continental Breakfast (Atrium)  
9:00–9:10 am State of the Department Address (Dogwood) – **Henrik Dohlman, PhD, Distinguished Professor and Chair**  
9:10–9:25 am Student Survey – **Michael Emanuele, PhD, Associate Professor**  
9:25–9:40 am Pharmacology Diversity, Equity, & Inclusion Update – **Maria Aleman, PhD, Assistant Professor**

**Morning Session – all talks include 5 minutes of Q&A**

**Moderators: Ryan Sheehy, Graduate Student in the Song Lab & Juan Song, PhD, Associate Professor**

- 9:40–9:55 am **Meghan Flanigan, Postdoctoral Fellow, Kash Lab**, *“Sex-specific regulation of binge drinking, social, and arousal behaviors by subcortical serotonin 5HT2c receptor-containing neurons.”*  
9:55–10:15 am **Adam Palmer, PhD, Assistant Professor**, *“Accurate prediction of the clinical efficacy of combinations of cancer therapies.”*  
10:15–10:25 am **Break**  
10:25–10:40 am **Jeff DiBerto, Graduate Student, Roth Lab**, *“Further Considerations of G Protein Bias in Developing Safer Mu-Opioid Receptor Agonists.”*  
10:40–11:00 am **Elizabeth Brunk, PhD, Assistant Professor**, *“Understanding biological ripple effects through multi-faceted omics data.”*  
11:00–11:15 am **Tanya Bodrug, Graduate Student, Brown Lab**, *“Neural Network based reconstruction of ubiquitination by the Anaphase-Promoting Complex using time-resolved cryo-EM.”*  
11:15 am–12:15 pm **Poster Session 1** (presenters 1-25, Atrium)  
12:15–1:15 pm **Lunch** (Trillium Room)

**Afternoon Session – all talks include 5 minutes of Q&A**

- 1:15–2:15 pm **Poster Session 2** (presenters 26-50, Atrium)  
2:15–2:35 pm **John Morris, PhD, Assistant Professor**, *“The Morris Lab versus p53, the master of the nucleus.”*  
2:35–2:50 pm **Amy Pomeroy, PhD, Postdoctoral Fellow, Palmer Lab**, *“A simulation of curative combination therapy explains and predicts clinical trial results in Diffuse Large B-Cell Lymphoma.”*  
2:50–3:10 pm **Jessica Walsh, PhD, Assistant Professor**, *“Neural circuit mechanisms underlying social behavior.”*  
3:10–3:25 pm **Yadong Li, Postdoctoral Fellow, Song Lab**, *“Hypothalamic modulation of adult hippocampal neurogenesis in mice confers activity-dependent regulation of memory and anxiety-like behavior.”*  
3:25–3:35 pm **Break**  
3:35–3:55 pm **Maria Aleman, PhD, Assistant Professor**, *“PCBPs: Regulators of RNA & Iron.”*  
3:55–4:10 pm **Emily Fennell, Graduate Student, Graves Lab**, *“Characterization of TR-107, a Novel Chemical Activator of the Human Mitochondrial Protease ClpP.”*  
4:10–4:25 pm **Tim Daugird, Graduate Student, Legant Lab**, *“Bridging nano- and mesoscale nuclear organization with single molecule microscopy.”*  
4:25–4:40 pm **Marguerite (Bree) Little, Graduate Student, Duncan Lab**, *“Determination of Cross-Reactive Antigens in 4CMenB Against Neisseria gonorrhoeae.”*  
4:40–4:55 pm **Gavin Schmitz, Graduate Student, Herman/Roth Labs**, *“Effects of Psilocin on 5-HT2A+ L5P neurons.”*

**Reception & Award Ceremony**

- 5:00–6:00 pm Social Mixer and Award Presentations (Magnolia Lounge)

POSTER SESSION 1  
(1-25)

1. **Alicea Pauneto, Coral del Mar**  
(Gershon/Thaxton Labs)  
*Myeloid-directed treatment using the TLR7/8 agonist resiquimod improves the survival of mice with medulloblastoma and enhances efficacy of radiotherapy.*
2. **Aponte, Amy**  
(Emanuele Lab)  
*Regulation of the retinoblastoma (Rb) tumor suppressor by the ubiquitin-proteasome system.*
3. **Bedard, Madigan**  
(McElligott lab)  
*The effect of morphine withdrawal on sleep behaviors in mice.*
4. **Bellinger, Tania**  
(Reissner Lab)  
*Inhibition of Microglial Phagocytosis Reduces Cocaine-seeking in Male Rats Following a Protracted 30-day Abstinence Period.*
5. **Bivins, Marissa**  
(Nicholas Lab)  
*Elucidating the balance between transpeptidase activity and antibiotic resistance in mutant forms of Penicillin-Binding Protein 2 from *N. gonorrhoeae*.*
6. **Cao, Can**  
(Roth Lab)  
*Structure, Function and Pharmacology of Human Itch GPCRs.*
7. **Cartaya, Ana**  
(Bahnsen Lab)  
*Selective delivery of nano-encapsulated Nrf2 activator for atherosclerosis treatment.*
8. **Chiu, Yi-Ting**  
(Roth Lab)  
*Characterization of mouse 5-HT<sub>2A</sub> receptor and humanized mouse 5-HT<sub>2A</sub>R-A242S transgenic mice.*
9. **Choi, Mingyu**  
(Hahn Lab)  
*Probing mechanotransduction pathways through visualization and control of vinculin conformation.*
10. **DeLiberty, Jonathan**  
(Bryant Lab)  
*PIKfyve inhibition is a fyve-out-of-fyve strategy for targeting autophagy in pancreatic ductal adenocarcinoma.*
11. **Drizyte-Miller, Kristina**  
(Der Lab)  
*Targeting Mitochondrial Activity Using Small Molecule Activators of Mitochondrial Protease ClpP for Pancreatic Cancer Treatment.*

- 12. Edgar, Elise**  
(Song Lab)  
*Low level mossy cell activation in dorsal dentate gyrus leads to radial neural stem cell quiescence in multiple dentate gyrus regions.*
- 13. Effinger, Devin**  
(Herman Lab)  
*Sex-Dependent Effects of Psychedelic Drug Exposure on Central Amygdala Reactivity.*
- 14. Gates, Claire**  
(Bryant Lab)  
*Evaluating the Efficacy of Combined ERK and Autophagy Inhibition in RAS-Mutant Cancers.*
- 15. Gentile, Gabi**  
(Nicholas Lab)  
*Impact of the L421P mutation in the ponA gene, encoding Penicillin-Binding Protein 1, on fitness and antibiotic resistance in Neisseria gonorrhoeae.*
- 16. Gereau, Gray**  
(McElligott Lab)  
*Investigating central amygdala neurotensin neurons in the context of ethanol and affective behaviors.*
- 17. Goriounova, Alexandra**  
(Tarran Lab)  
*Super resolution microscopy reveals pro-inflammatory Orai1 activity is elevated in CF and asthma patients.*
- 18. Graboski, Amanda**  
(Redinbo Lab)  
*Gut Microbial Tryptophanases and the Uremic Toxins of Chronic Kidney Disease.*
- 19. Graves, Adam**  
(Baldwin Lab)  
*Roles for the Kinases IKK $\epsilon$  and TBK1 in KRAS-Driven Pancreatic Cancer.*
- 20. Gumpper, Ryan**  
(Roth Lab)  
*Structures of Hallucinogenic and Non-Hallucinogenic Analogues of the 5-HT<sub>2A</sub> Receptor Reveals Molecular Insights into Signaling Bias.*
- 21. Guzman, Bryan**  
(Dominguez Lab)  
*Protein Disorder and RNA Binding.*
- 22. Hibshman, Priya**  
(Der Lab)  
*MYC is a Major Driver of KRAS-Dependent Metabolic Abnormalities in Pancreatic Cancer.*
- 23. Jenner, Maddy**  
(Yeh Lab)  
*Targeting the tumor-stroma in pancreatic cancer.*

**24. Kapolka, Nick**

*(Roth Lab)*

*Illuminating the pharmacology and structure of the orphan neuropeptide B/W receptors.*

**25. Knight, Kevin**

*(Dohlman Lab)*

*A universal allosteric mechanism for G protein activation.*

POSTER SESSION 2  
(26-50)

**26. Kothari, Aditi**

*(Yarbrough/Isaeva Labs)*

*Interaction between NF- $\kappa$ B and NRF2 signaling pathways leads to better survival in HPV-associated head and neck cancer*

**27. Landry, Taylor**

*(Song Lab)*

*Short-term High Fat Diet Impairs Hippocampal Function and Responsiveness to Feeding Status.*

**28. Lee, David**

*(Scherrer Lab)*

*Uncovering non-opioid GPCR-mediated analgesic approaches through novel pharmacological targets and tools.*

**29. Lee, Ye**

*(Der/Cox Labs)*

*Targeting Valosin-Containing Protein (VCP), a Regulator of the DNA Damage Response, for Pancreatic Cancer Treatment.*

**30. Li, Yongyi**

*(Song Lab)*

*G9a inhibition regulates neuroinflammation and T cell invasion in Alzheimer's disease.*

**31. Liu, Yongfeng**

*(Roth Lab)*

*Activation and allosteric regulation of the Human MRGPRX1 receptor.*

**32. Maldonado Vazquez, Natalia**

*(Dominguez Lab)*

*Characterization of Zinc finger Domain in ZC4H2.*

**33. Martin, Cole**

*(Morris Lab)*

*Investigating the Role of Taz and Yap in p53-mediated Tumor Suppression.*

**34. Mihalkovic, Abby**

*(Walsh Lab)*

*Mapping the neuronal activity patterns of the prosocial effects of MDMA.*

**35. Pantazis, Jacob**

*(Palmer Lab)*

*In Vitro Identification of Molecular Features Defining Drug Resistance in Peripheral T Cell Lymphoma.*

**36. Patterson, Sarah**

*(Palmer Lab)*

*Ultrasensitive response explains the benefit of combination chemotherapy despite antagonism.*

- 37. Pickett, Julie**  
(Roth Lab)  
*From a selective RARalpha agonist to a first probe for orphan adhesion GPCR ADGRG3/GPR97.*
- 38. Robb, Ryan**  
(Bryant Lab)  
*Interplay and compensation between autophagy and macropinocytosis in ERK MAPK inhibited pancreatic cancer.*
- 39. Sandroni, Peyton**  
(Jensen Lab)  
*The Alpha-1A Adrenergic Receptor Regulates Fatty Acid-Dependent Oxidative Phosphorylation in the Mouse Heart.*
- 40. Schaefer, Antje**  
(Der Lab)  
*The cancer-associated RHOA57V mutant acts as an oncogene and drives diffuse gastric cancer development through activation of IGF1R-PAK1-YAP signaling.*
- 41. Sheehy, Ryan**  
(Bryant Lab)  
*A brain-penetrant inhibitor of G9a ameliorates cognitive deficits in Alzheimer's Disease.*
- 42. Stewart, Mariah**  
(Schisler Lab)  
*Opposing Roles of Co-chaperones in Cancer.*
- 43. Sturdivant, Michael**  
(Kim Lab)  
*The Mutagenic Effects of APOBEC3A and APOBEC3B in Urothelial Carcinoma.*
- 44. Wang, Yue**  
(Brunk Lab)  
*Integration of multi-omics data with saturation mutagenesis data to assess biological impact on a systems level.*
- 45. Welsh, Kaeli**  
(Brown Lab)  
*Functional conservation and divergence of the helix-turn-helix motif of E2 ubiquitin-conjugating enzymes.*
- 46. Yao, Zhiyuan (Zoey)**  
(Kuhlman Lab)  
*Engineering "two-in-one" antibody of CD19 and CD20 to mitigate tumor antigen escape in CAR-T therapy.*
- 47. Zewdie, Eden**  
(Earp Lab)  
*TAM Receptor Metabolic Reprogramming of Dendritic Cells.*
- 48. Zhang, Shu**  
(Dohlman Lab)  
*Decoding signal coordination via crosstalk of MAPK pathways in *Saccharomyces cerevisiae*.*

**49. Zhang, Shicheng**

*(Roth Lab)*

*Inactive and active state structures template selective tools for the human 5-HT5A receptor.*

**50. Overview of the UNC Proteomics Core Facility – Laura Herring**

*Highlighting current projects and recent publications*