Anthony M. Fleck

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Education

Bachelor of Science in Neurobiology | December 2020 | University of Iowa

- Dean's List: Spring 2020, Fall 2020

Doctor of Philosophy in Neuroscience | August 2024-Present | University of Georgia

- Advisor: Dr. Anumantha Kanthasamy

Research Experience

Graduate Research Assistant | Anumantha Kanthasamy, PhD | January 2025-present

- Investigated the role of the heavy metals on neurological diseases

Research Assistant | Kelly Messingham, PhD | January 2021-July 2024

- Investigated the role of the skin in Ebola virus transmission by developing multicolor immunofluorescent staining protocols for human, mouse, and monkey tissues, coordinating with collaborators, performing sectioning and staining, collecting confocal images and presenting data.
- Investigated the role of therapeutic drugs on cutaneous wound healing by optimizing multi-color immunofluorescent staining protocols on human skin and comparing treated and untreated controls.
- Assisted with clinical and translational studies investigating autoimmune blistering diseases through blood and tissue processing and storage.
- Utilized various immunization protocols to generate a murine model of Bullous pemphigoid. Mice were immunized with recombinant self-antigen (mNC16A) with adjuvant and blood, skin, spleen and lymph nodes were collected over time to evaluate antigen specific responses. Evaluated in vivo autoantibody deposition using immunofluorescent staining of the skin.
- Trained undergraduate, graduate, and medical students on various techniques: tissue embedding, cryostat or paraffin sectioning, immunostaining, and confocal microscopy.

Laboratory Assistant | Shane Heiney, PhD | August 2019-January 2021

- Evaluated the neurocircuitry and behavior of the cerebellum by performing head plate survival surgeries, Pavlovian conditioning experiments in head-fixed mice, perfusions of mice, histologic and immunofluorescent staining of mouse brain sections, and visualization with light or confocal microscopy.
- Performed DNA extractions from brain tissue for PCR analysis.
- Maintained animal colony, obtained tail snips, and performed DNA extractions and PCR genotyping.
- Developed tissue-clearing methods (uDISCO) for microscopic analysis of large/thick samples.

Research Assistant (Volunteer) | John Manak, PhD | Spring 2017-Fall 2020

- Utilized *Drosophila* models to examine the role of genetics in epilepsy and Alzheimer's Disease.
- Developed skills dissecting fly brains for epifluorescent and confocal microscopy
- Quantified and gathered data for behavior experiments such as fly seizure assays

Teaching Experience

Teaching Assistant | Neurobiology Lab, supervised by Michael Dailey, PhD | Spring 2021

- Performed pre-lab prep and experimental set-up for students prior to lab session.
- Presented relevant background information and gave hands-on assistance during lab, answered questions and provided constructive feedback on written lab reports.
- Trained students in techniques: H & E, immunofluorescent, and Nissl staining, light and epifluorescent microscopy, *Drosophila* electroretinogram (ERGs) to measure light-evoked electric potential responses of photoreceptors and neurons

Publications

- Gourronc, FA, Rebagliati, MR, Kramer-Riesberg, B., **Fleck, AM**., Patten, JJ, Geohegan-Barek, K, Messingham, KN, Davey, RA, Maury, W, Klingelhutz, AJ. (2022). *Adipocytes are susceptible to ebola virus infection.* Virology, 573, 12–22. https://doi.org/10.1016/j.virol.2022.05.007
- Messingham, K. N., Richards, P. T., **Fleck, A**., Patel, R. A., Djurkovic, M., Elliff, J., Connell, S., Crowe, T. P., Gonzalez, J. P., Gourronc, F., Dillard, J. A., Davey, R. A., Klingelhutz, A., Shtanko, O., & Maury, W. (2025). *Multiple cell types support productive infection and dynamic translocation of infectious ebola virus to the surface of human skin*. Science Advances, Vol 11

Abstracts

- Maury W, **Fleck A,** Richards P, Gourronc F, Patel R, Geoghegan-Barek K, Griffiths A, Carrion R, Klingelhutz A, Messingham K, Davey R. Ebola virus tropism: targeting of skin cells at late times during infection. Presented at Filovirus Symposium, San Diego, California, September 2022.
- Richards P, Patel R, **Fleck A,** Klingelhutz A, Geoghegan-Barek K, Shtanko O, Davey R, Messingham K, Maury W. Ebola Virus Infection of Skin: determining the kinetics and identifying permissive cell populations. Presented at American Society of Virology, Madison, Wisconsin, July 2022.
- Chawla S, Fakhimi M, **Fleck AM**, Fairley JA, Messingham KN. Characteristics of patients who develop cell checkpoint inhibitor BP compared to classic onset BP. Presented at the Carver College of Medicine Research Symposium, University of Iowa. Iowa City, IA. September 2022.

- **Fleck AM**, Richards P, Patel R, Shtanko O, Klingelhutz A, Davey R, Messingham K, Maury W. Human skin keratinocytes support Ebola Virus replication. Presented at International Society of Investigative Dermatology, Tokyo, Japan. May 2023.
- Benson K, **Fleck A**, Ciocco F, Heiney S. Effects of behavioral state and sensory context during cerebellar dependent associative learning. Presented of Gordon Research Conference, Lewiston Maine, August 2023.
- Heinrich RM; **Fleck AM**; Fakhimi M; Grief T; Powers J; Messingham KN. The Impact of Immunosuppression on Cutaneous Wound Healing. Presented at the Carver College of Medicine Research Symposium, University of Iowa. Iowa City, IA. September 2023.