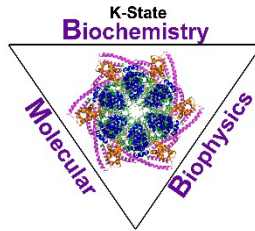


Ackert Hall, Room 120  
Wednesday, February 5, 2025  
4:00 P.M.



Coffee and Cookies  
Chalmers Hall, Room 168  
3:45 P.M.

**Biochemistry**  
&  
**Molecular**  
**Biophysics**

**Seminar**

**Leveraging the filthy biology of house flies to monitor and mitigate microbial threats to animal and human health**

**Dana Nayduch**

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At dairy and beef cattle operations, house flies develop within microbe-rich substrates like manure and decomposing organic matter. Being highly mobile, gregarious and indiscriminate feeders, adult flies create health and sanitation concerns by bridging the gap between these sources of filth and livestock, or even off site to human habitats. House flies carry a wide range of microbial pathogens, including those harboring antimicrobial resistance genes (ARGs), that pose a significant threat to public and animal health. Some pathogens persist in flies for extended periods and even replicate before being excreted, thereby increasing the potential for transmission. However, while house flies cause concern as sources and transmitters of microbes, they also serve as effective indicators of the microbial communities present in their environment, capturing a spatio-temporal "snapshot" of microbial sources in their habitat such as breeding sites and livestock. Our group utilizes both culture-based techniques and next-generation sequencing not only to highlight the role of house flies in the epidemiology of microbial diseases but also to use them as early-detection sentinels for monitoring emerging microbial threats, including specific pathogens and ARGs. Furthermore, because flies have such an apparent resilience and/or resistance to microbial diseases themselves, we also are exploring immune effectors such as antimicrobial peptides as potential alternative antimicrobial therapies. Our dual approach leverages the house fly's natural biology to either stay one step ahead of emerging microbial threats or to find innovative treatment options for microbial infections.