

**124th Annual Meeting
of the
Texas Academy of Science**



February 26th – 27th, 2021

Official Program

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phthalate (DBP) and bisphenol A (BPA) are two widely used plasticizers that are classified as endocrine-disrupting chemicals (EDC) due to their effects on developmental, endocrinological, reproductive, and metabolic function. We sought to investigate the effect of these compounds on the inflammatory response in vitro using a mouse macrophage cell line (RAW 264.7). These studies indicated that high doses of either DBP or BPA altered the total cell count with time with or without LPS exposure. When used in combination, an even greater effect was seen. We also found that 80 μ M of DBP, alone or in conjunction with BPA, had a significant effect on the measurable level of the cytokines interleukin-6 (IL-6), tumor necrosis factor alpha (TNF- α), and interleukin 1 beta (IL-1 β) after LPS-treatment. Overall, these data suggest that plasticizers can influence the inflammatory response which may have implications for human health.

11:15 004-10 G. **Siphonaptera associated with *Geomys arenarius* and its importance in public health in Samalayuca, Mexico.** *Natalia Guerra, Ana Gatica, Cuauhchuatl Vital, Universidad Autonoma De Ciudad Juarez.*

The study of life present in the desertic ecosystem offers a perspective of its general conservation status, the natural landscape is changing and the interaction between the host and parasites too. Besides, the epidemiological chain allows us to recognize which links intervene in case of detecting a pathogenic agent that affects human health. This study aimed to identify siphonaptera parasites in *Geomys arenarius* rodents settled in a walnut farm in Flora and Fauna Protection Area Medanos de Samalayuca in northern Chihuahua, Mexico. Using eight Gophinator traps during the post-humid season in 2019 and dry, humid and post-humid season in 2020 we collected 39 specimens of *G. arenarius*. Fleas specimens were collected from the hair and skin of the captured *G. arenarius*. A total of 16 fleas were submitted to a clearing and desiccation technique (Martin, 1994) to identify the morphological and biometric characteristics to determine the gender and the genus of the ectoparasite. This research contributes to the scientific world with the first report of the *Foxella* genus in the host *Geomys arenarius* in FPPA Medanos de Samalayuca in Chihuahua, Mexico. Likewise, this finding allows future studies to identify infectious agents of which siphonaptera and rodents can be carrier.

11:30 004-11 G. **Activation of apoptosis in human endothelial cells infected with Colorado Tick Fever Virus.** *Sarah Owen, Luis Grado, Michelle*

Woodson, Jeremy Bechelli, Sam Houston State University

Colorado tick fever virus (CTFV), the causative agent of Colorado tick fever, has a double-stranded segmented genome and is in the Family Reoviridae and genus Coltivirus. Symptoms of the infection are characterized by sudden biphasic fever, headache, myalgia, petechial rash, and photophobia, but severe forms of the disease can include meningoencephalitis, hemorrhagic fever, and death in children. Disease severity results in approximately 20% of patients requiring hospitalization, highlighting a need to better understand this neglected virus. However, the mechanisms underlying CTFV induced pathology and severe complications remain unknown. Because CTFV is spread by tick bite and disseminates systemically via hematogenous routes, we examined the interactions between endothelial cells (ECs) and CTFV in vitro. Our findings indicate that dermal microvascular ECs, HMEC-1, are susceptible and permissive to CTFV infection. To investigate the role of CTFV infection on endothelial barrier function, we assessed transendothelial electrical resistance by xCELLigence and observed a dose-dependent decrease in cell index indicative of increased vascular permeability. From this data, we hypothesized that CTFV induces apoptotic cell death. HMEC-1 cells infected with CTFV at 48 hours revealed significantly increased Annexin V staining and reduced viability in infected cells compared to uninfected controls suggesting CTFV induces apoptotic cell death in human ECs. Upon further investigation, we observed that HMEC-1 cells infected with CTFV at 24 and 48 hours had increased caspase-3/7 activation and that the addition of a pan-caspase inhibitor, Z-VAD(OMe)-FMK, reduces caspase-3/7 activation and cell death in the CTFV infected HMEC-1 cells. Overall, our data suggests that caspase-mediated apoptosis is a critical mechanism by which CTFV induces disease in the host. Future work includes characterizing the mechanisms of apoptosis in CTFV infected HMEC-1 cells.

11:45 004-012 G. **Reversing the neurodegenerative disorder using carbon quantum dots.** *Jyoti Ahlawat, Mahesh Narayan, University of Texas at El Paso.*

In recent years, carbon dots have become the center of interest owing to their high aqueous solubility, low cost, low toxicity, biocompatibility, and resistance to photobleaching. In our work, we have demonstrated a straightforward approach for synthesizing CQDs using the Hydrothermal method. CQDs with an average size of