

## Senior Honors Thesis Presentations – Fall 2025

Wednesday, November 12th

4:00 pm – 5:00 pm

Location: TNSC 108

### **Olivia Pita**

“Adventure Cats Spelunking: A Video Game”

Advisors: Chris Seeman, Professor of Theology and Quentin Westcott, Game Designer

Reader: David Good, Assistant Professor of Computer Science

“Adventure Cats Spelunking” (ACS) is a platforming video game created by Walsh University Honors Student, Olivia Pita. It was made to test the author’s skills as a game developer. It is her first game to go through a complete development cycle from planning to product. She found the platforming genre generally lacking in cats and friendship mechanics, and created ACS to address both issues, the game featuring feline best friends slaying monsters to protect their kingdom. The player controls the ax-wielding queen to lead the way through battles and environmental hazards, while the computer controls the magic knight who faithfully follows and fires lightning at enemies beyond the ax’s reach. ACS is for players who simultaneously love cute cartoon cats and high fantasy combat. ACS is for those who play solo but do not want their characters to be. To create this game, the author researched character design, level design, and combat design in popular games; became familiar with the Godot development engine; and implemented feedback from playtesters.

### **Alexis Perretta**

“The Role of Oxidative Stress in the Pathophysiology of Preeclampsia in RUPP Rats”

Advisor: Jackie Novak, Dean, School of Arts, Sciences, and Education; Professor of Biology

Reader: Andrea Jones, Adjunct Instructor

Preeclampsia (PE) is a life-threatening hypertensive disorder that develops after 20 weeks of gestation and remains a leading cause of maternal and fetal morbidity and mortality worldwide. Despite its prevalence, the exact mechanisms underlying PE remain unclear, though placental ischemia and oxidative stress (OS) are believed to play central roles in its pathophysiology. The Reduced Uterine Perfusion Pressure (RUPP) rat model effectively mimics the physiological characteristics of PE, including hypertension, endothelial dysfunction, and altered angiogenic signaling. This study investigates the correlation between PE and OS using the RUPP rat model, with a focus on the antioxidant enzyme catalase as a biomarker. Placental tissues from RUPP rats, RUPP rats treated with VEGFR2 nanoparticles, SHAM rats treated with VEGFR2 nanoparticles, and untreated SHAM controls were analyzed using SDS-PAGE and Western Blotting. It is hypothesized that placentas from RUPP rats will exhibit elevated catalase expression as a marker of oxidative stress compared to controls, while VEGFR2 nanoparticle treatment will mitigate these elevations. Understanding the relationship between oxidative stress and preeclampsia through such models is important as it may provide insights into therapeutic targets and contribute to the development of potential interventions for this complex pregnancy disorder.