InterLACE Abstract Sample *(*for major narrative sections of the abstract)*

1. **Interdisciplinary/Interprofessional (150-word limit):** *Justify how this project represents an "interdisciplinary" and/or "interprofessional" approach to a research question/topic. "**Interdisciplinary**" = involving two or more academic disciplines, typically researchers from different departments or colleges. "**Interprofessional**" = involving two or more professions, learning from, about, and with each other.*

   This project has taken an interdisciplinary approach within life sciences to determine if self-cell signaling can be blocked with targeting antibodies and/or outcompeted through saturation with known ligands. The biology of human cells and immune responses were consulted while designing and performing the experiments while the morphology of cells was used to determine stage and response of cells to external stimuli, and biochemistry was addressed through fluorescent labeling and performing an enzyme linked immunosorbent assay. The interprofessional team that worked on this research project included students, lab technicians, clinicians, and research scientists/faculty from several colleges. Those from the clinical side were able to collect and isolate human cells for the research team to utilize in co-culture experimentation and manipulation. Both sides were able to meet on a regular basis to cross-train on experimental procedures to help maintain a working knowledge of the progress and develop professional skills as a team.

2. **Project Title (15-word limit):** *Descriptive title for the abstract submission.*

   Outcompeting Cancer's "Don't Eat Me" Signal to Promote Immune Clearance

3. **Background (150-word limit):** *Describe the current knowledge in the field or targeted societal problem—What existing need or gap does the project address?*

   An effective immune response is divided into two collaborative phases: the innate immune response and the adaptive immune response. Our first line of defense, the innate immune response is responsible for recognizing and attempting to eliminate a pathogen, while processing and presenting the pathogen to adaptive immune cells to produce antibodies specific to the pathogen. Innate immune cells will differentiate self-cells from non-self-cells by recognizing surface molecules on the outside of the cells. When CD47 on the surface of a self-cell interacts with SIRPα on the surface of an immune cell, no immune reaction will take place and this interaction is known as the "Don't eat me" signal; however, in the absence of an CD47-SIRPα interaction, the immune cell recognizes the interacting cell as foreign and should be eliminated. Unfortunately, cancer cells originate as self-cells and can exploit the "Don't eat me" interaction to evade immune clearance.

4. **Objectives/Research Questions (100-word limit):** *List the goals or aims of the project. Alternatively (or in addition), list the key research questions the project investigated.*

   It is important to determine if the CD47-SIRPα interaction between cancer and immune cells can be blocked and as a result aid the immune cell in mounting an effective immune response. In this study, we seek to inhibit the CD47-SIRPα interaction using anti-CD47 blocking antibodies and to outcompete the CD47-SIRPα interaction using a known CD47 ligand, thrombospondin-1.

5. **Methods (150-word limit):** *Explain the activities, intervention, procedures, participants, patients, materials, analyses, etc. that accomplished the project.*

   THP-1 monocytes were differentiated into M0 macrophage and labeled with an anti-CD14PE fluorescent antibody. MCF-7 breast cancer cells were labeled with the whole cell label, CellTracker Deep Red. THP-1 macrophage were co-incubated with MCF-7 breast cancer cells on cover slips in the presence of phosphate buffered saline (PBS; control), anti-CD47 monoclonal antibodies, and soluble thrombosphondin-1, independently. The cells were analyzed on a confocal microscope for determination of phagocytosis and the cell supernatants were analyzed by enzyme linked immunosorbent assay to determine the presence of TNFα.

6. **Preliminary/Final Results (150-word limit):** *If the study is not yet complete, describe the preliminary results and expected final outcomes that result from the Methods and respond to the Objectives and/or Research Questions. (**Note**: The project must be expected to be completed by the event date. If not, please do not submit an abstract.) If the study is completed, summarize the findings in response to the Objectives and/or Research Questions.*

   THP-1 macrophage co-incubated with MCF-7 cells in PBS showed round macrophage and inconclusive results on whether the MCF-7 cells were internalized by THP-1 macrophage. Co-incubation in the presence of anti-CD47 antibody showed a flat macrophage and the MCF-7 cells appear to be internalized by THP-1 macrophage. Co-incubation in the presence of soluble TSP-1 showed round macrophage and inconclusive results on whether the MCF-7 cells were internalized by the THP-1 macrophage. The THP-1/MCF-7 co-culture produced 1.28 pg/ml, 3.69 pg/ml, and 13.08 pg.ml of TNFα when incubated in the presence of PBS, anti-CD47, and soluble TSP-1, respectively.

7. **Conclusion (100-word limit):** *Discuss how the results advance knowledge in a given field or multiple fields and/or have the potential to have a significant impact on society.*

   Anti-CD47 antibodies appear to be an effective mechanism to block the CD47-SIRPα interaction between immune cells and cancer cells to promote immune clearance of the cancer cells. It was not clear whether the CD47-SIRPα interaction can be outcompeted with a known CD47 ligand and more optimization and inclusion of other CF47 ligands could help determine the effectiveness of outcompeting the CD47-SIRPα interaction compared to blocking CD47 with targeting antibodies.