Cruise

We would like to continue this study by investigating shorter or longer time

Conclusions

For future studies, we would like to investigate what mechanisms

Injury Controller II set to apply a pulse of air pressure

Results

Of specific proteins, we chose TDP-43 as a model protein, as its ubiquitin-mediated targeted
degradation is affected consequently, non-degraded TDP-43 is accumulated in inclusion

Figure 1. TBI induces ISGylation. HEK293 cells were injured three times over one hour with a Cell

Figure 2. ISGylation of cellular proteins is increased in SCLs. Lumbar spinal cords from male

Figure 3. TBI has no effect on ISGylation induction in SCLs. Lumbar spinal cords from female

Figure 4. TBI induced TDP-43 ISGylation in 12-week male rats, yet alcohol reduced it. TBI did not

Figure 5. ISGylation of TDP-43 in TBI exposed female rats. ISGylation is increased in male rats

Timeline

Experimental Design

Conclusions and Future Studies

➢ ISGylation is elevated post-TBI.

➢ 12-weeks post-TBI females are at increased risk for pathological TDP-43 accumulation, particularly with alcohol use.

➢ For future studies, we would like to investigate what mechanisms responsible for making females more vulnerable to TBI.

➢ We would like to continue this study by investigating shorter or longer time points after TBI in the lumbar spinal cords of both male and female rats.

➢ Lastly, we are interested in exploring markers of neuroinflammation, such as GFAP.

This work is supported by:

R01 AA025792-01S1, MOLINA, GILFEN (PI), Desai SD (Co-I)

This research project was supported by Award Number: DBI-2051440 through the National Science Foundation (NSF), Research Experiences for Undergraduates (REU) Program