

Evaluating sex-specific differences in cellular immune function in a small fish model, the fathead minnow

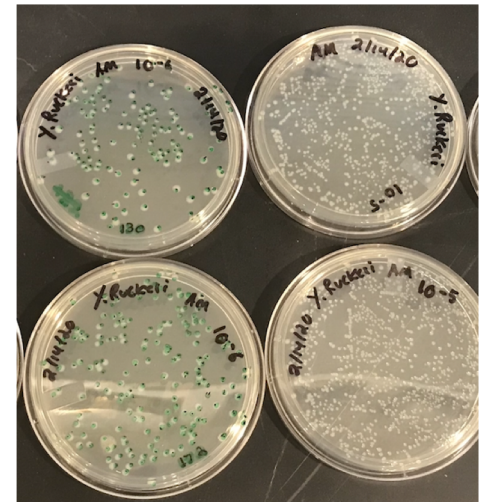
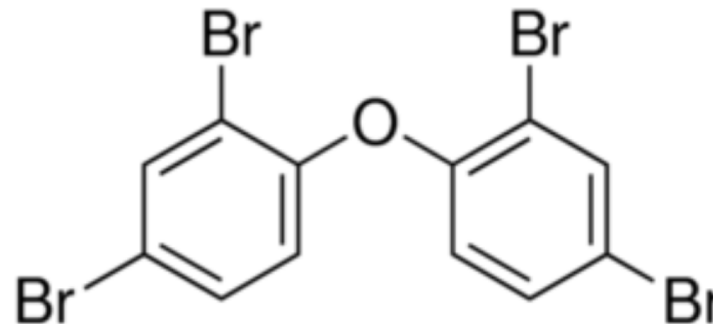
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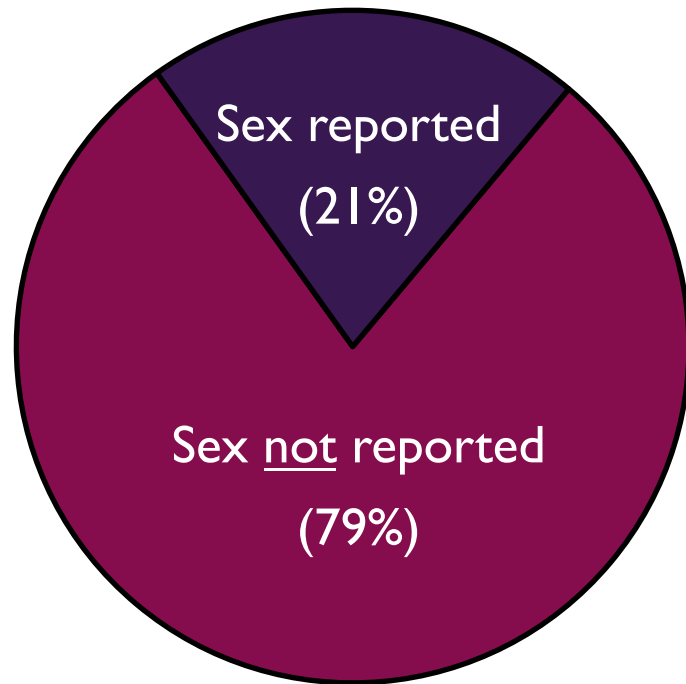
ADVISOR: DR. MARLO JEFFRIES

Background

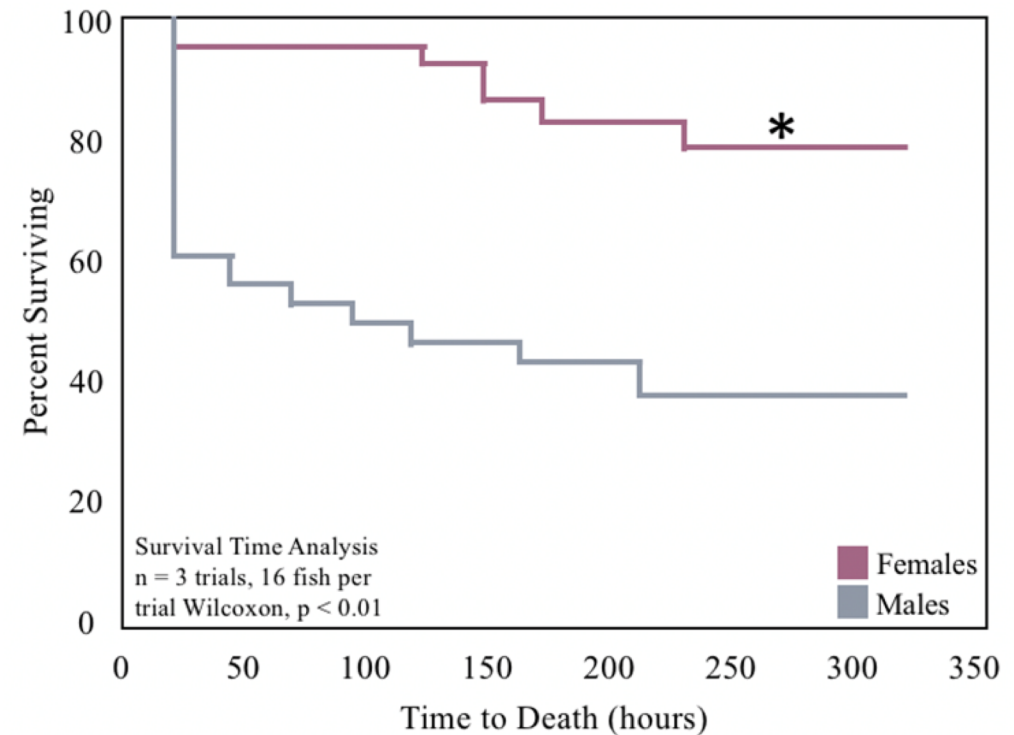
- ▶ Environmental Toxicology: field of study aimed at determining the effects of chemicals on organisms and whole ecosystems
 - ▶ Emphasis on the impact of environmental contaminants on the immune system
 - ▶ Effects on molecular, cellular, and whole-organism levels of fathead minnows



Background



(Rehberger et al. 2017, Crit Rev Toxicol 47:509-535)



(Finch et al., 2020)

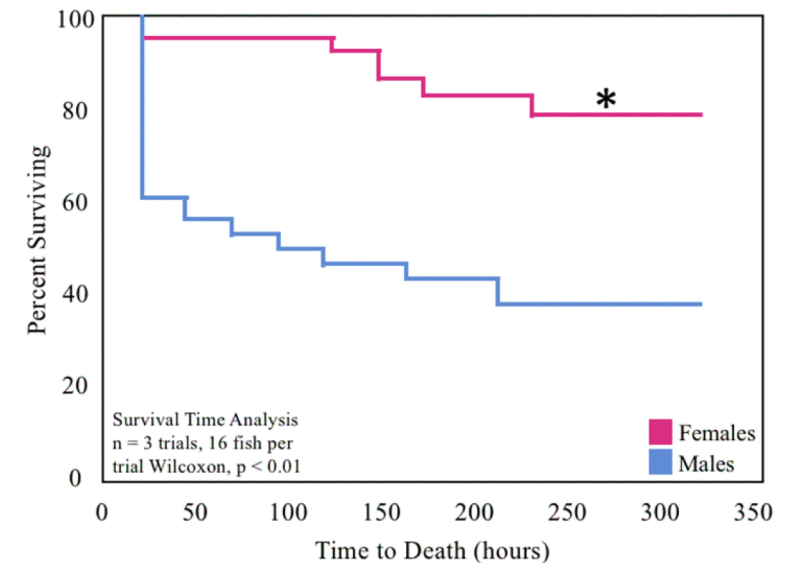
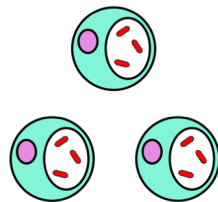
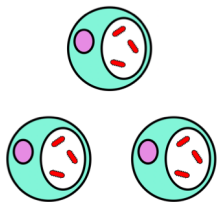
Objective

Goal: To determine sex-specific differences in immune processes that account for differences in survival following infection

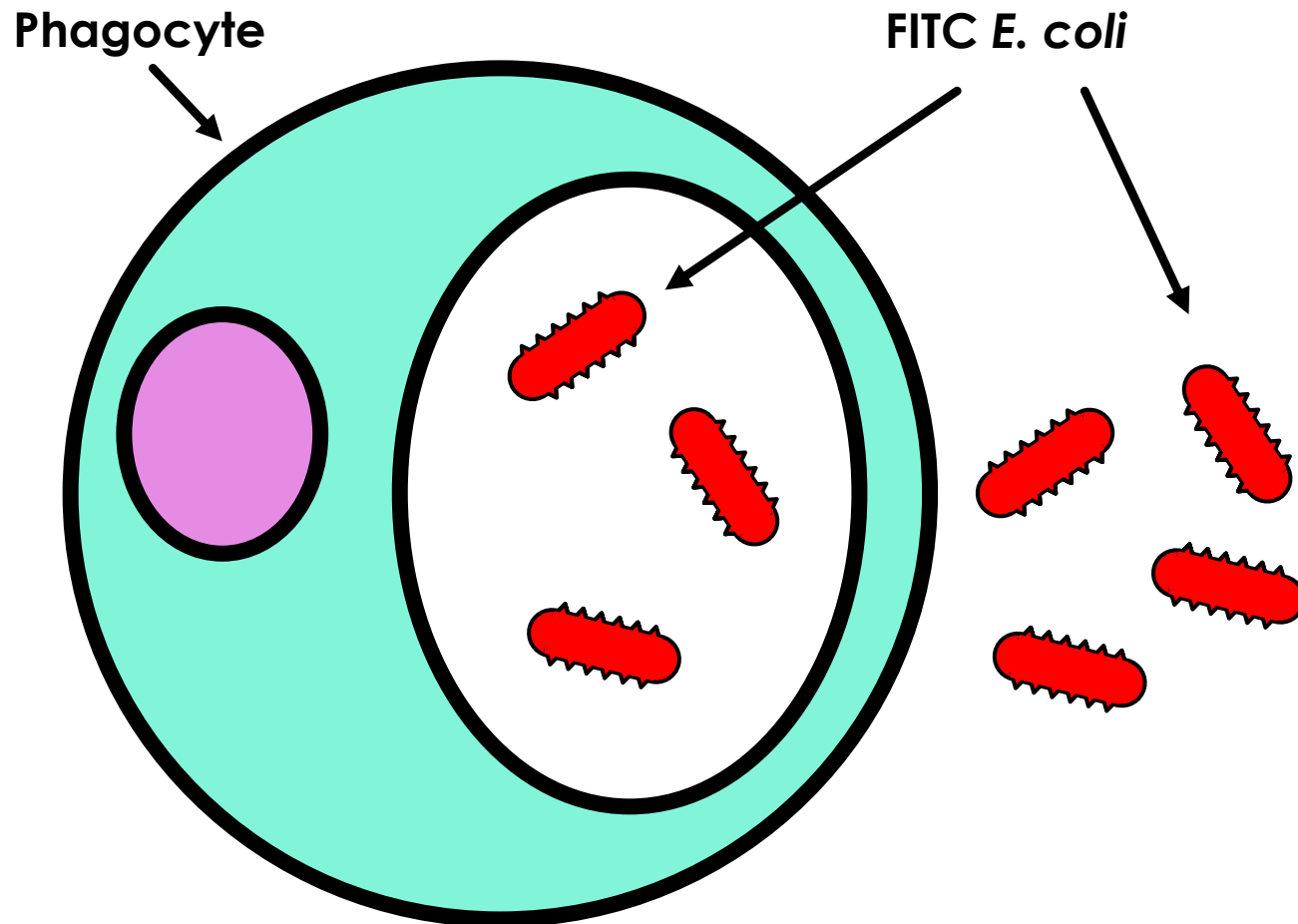
Objective: To determine whether males and females differ with regard to phagocytic cell activity



vs.

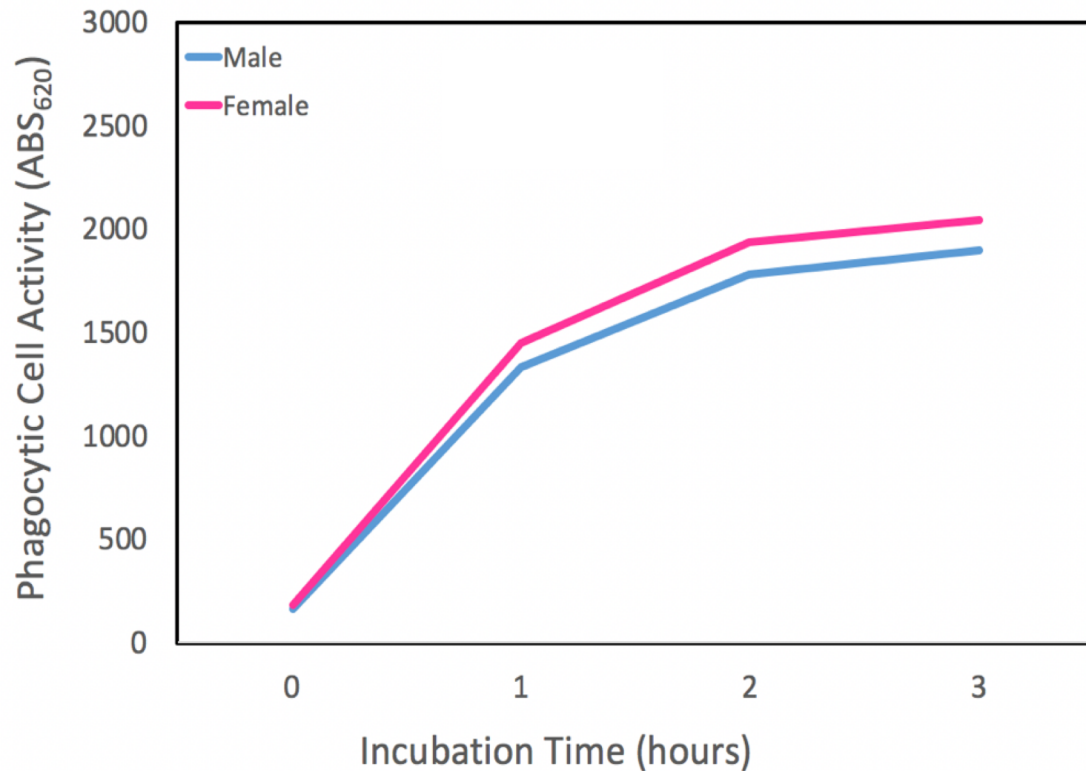


Phagocytic Cell Assay



1. Phagocytic cells incubated with *E. coli*
2. *E. coli* engulfed by phagocytes
3. Add trypan blue and measure fluorescence

Results & Conclusions



- ▶ Does not appear to be a difference between males and females at the cellular level of the immune system
- ▶ Molecular level: differences in complement protein or cytokine expression?
- ▶ Whole-organism level: differences in inflammation?

Acknowledgements

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