Optimizing Media Conditions to Enhance *Toxoplasma gondii* Cyst Growth

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What is *Toxoplasma gondii*?

- Obligate intracellular protozoan
- More than 60 million people in the US are infected with Toxoplasmosis
Toxoplasmosis

• Flu-like symptoms:
  – Body aches
  – Swollen lymph nodes
  – Headache
  – Fever

• Severe symptoms:
  – Confusion
  – Seizures
  – Blurred vision
  – Brain lesions
Transmission

- Vertical transmission
- Blood transfusion
- Human contamination
  - Contact with cat feces
  - Contaminated water and vegetables
  - Raw or undercooked meat
- Tissue cysts
  - Cat contamination (hunting)
  - Fecal oocysts
- Oocyst spread
Chronic Infection

- Parasites can develop into bradyzoite cysts within cells to avoid an immune response.
- These cysts can persist in human tissue for years escaping both drug therapies and the immune system.
Research

- To investigate cell culture medias of varying richness on optimizing bradyzoite cyst growth
- Determine whether slow growth in minimal nutrients contributed to larger, stronger cysts
Cell Media of Varying Richness

- D10
  - 10% Serum
  - Dulbecco’s Modified Eagle Medium (DMEM)
  - M199

- D1

- DMEM1

- MEM1
  - Minimum Essential
Under a Fluorescence Microscope

D1: Day 6

DMEM1: Day 6

D10: Day 6

MEM1: Day 6
Future Directives

• To compare the number, not only size, of viable cysts between the more nutrient-rich mediums

• To extend the study with D10 media to observe how large the majority of cysts can grow without bursting
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References

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