

# The Effect of Hyperthermia on Liver Cell Viability

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# Variables

- ▶ What is hyperthermia?
  - ▶ A treatment for Liver Cancer where the tumor is exposed to higher amounts of heat than normal body temp.
- ▶ The Liver
  - ▶ An organ that detoxifies chemicals in the body



# The Question

- ▶ How is hyperthermia treatment affecting the noncancerous cells in the Liver?
  - ▶ The noncancerous cells have to be exposed to heat too
- ▶ Liver Damage can cause:
  - ▶ Bleeding Easily
  - ▶ Swollen Abdomen
  - ▶ Jaundice
    - ▶ Yellow eyes and skin

# Research Design

## The Effect of Hyperthermia on Liver Cell Viability

Hypothesis: If hyperthermia kills the cancerous cells then there will be negative long-term effects on the noncancerous cells surrounding the tumor.

Null hypothesis: There will be no effect on the noncancerous cells.

### IV: The amount of time the organisms were exposed to heat

Concentration	Control	30 minutes	1 hour	2 hours
Kidney Cells	4 wells	4 wells	4 wells	4 wells
Zebrafish	No specific trials were conducted due to limits on the number of zebrafish			

DV: Cell health and number of dead cells/ Zebrafish

Constants: Growth conditions of the cells/Zebrafish, Temperature the organisms are exposed to.



# Procedures: Cells

The cells were plated



The cells incubated



The cells were heated



The cells incubated



MTT Assay/ Cell Count

# Procedure: Zebrafish

The zebrafish were transferred to petri dishes



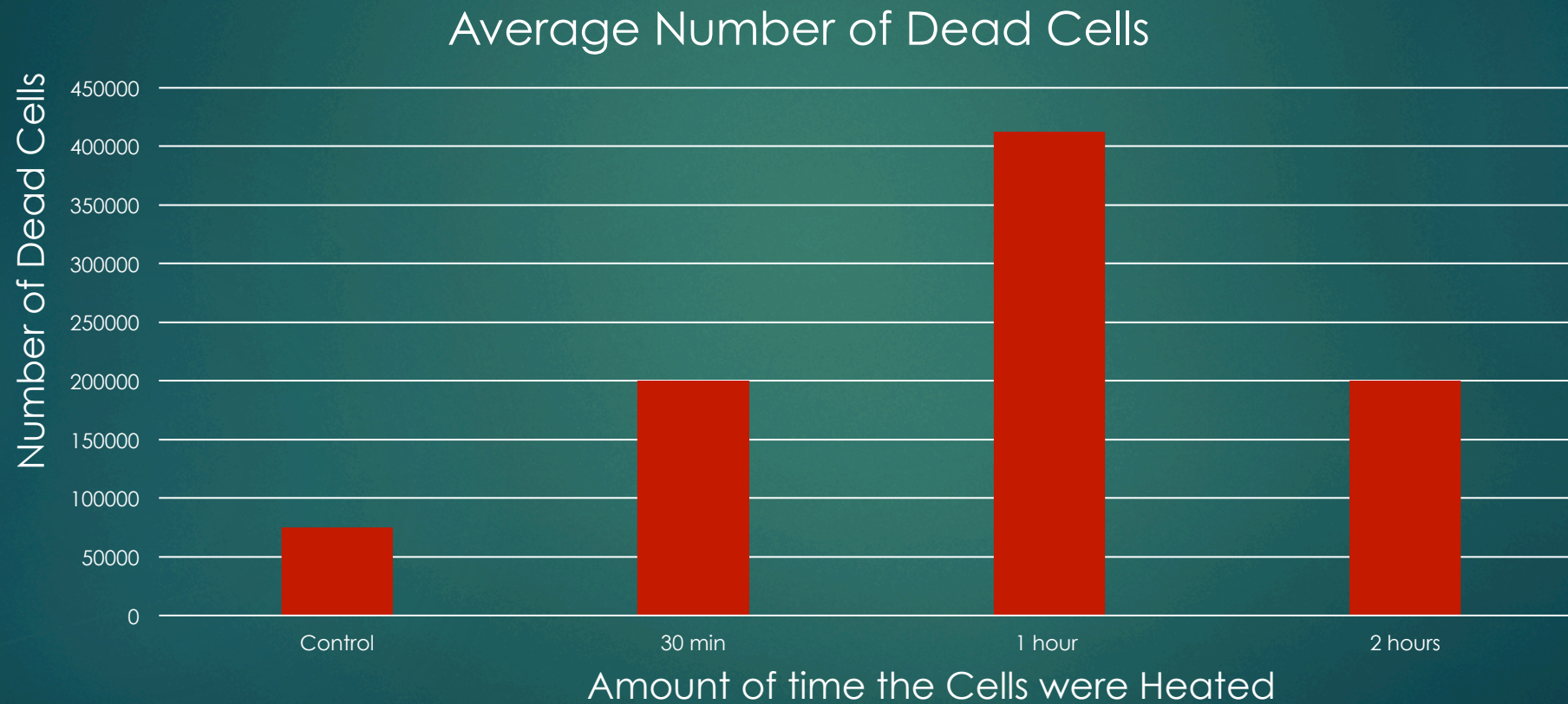
The zebrafish were heated for 30 minutes and 1 hour



The zebrafish were examined to determine if they survived experimentation

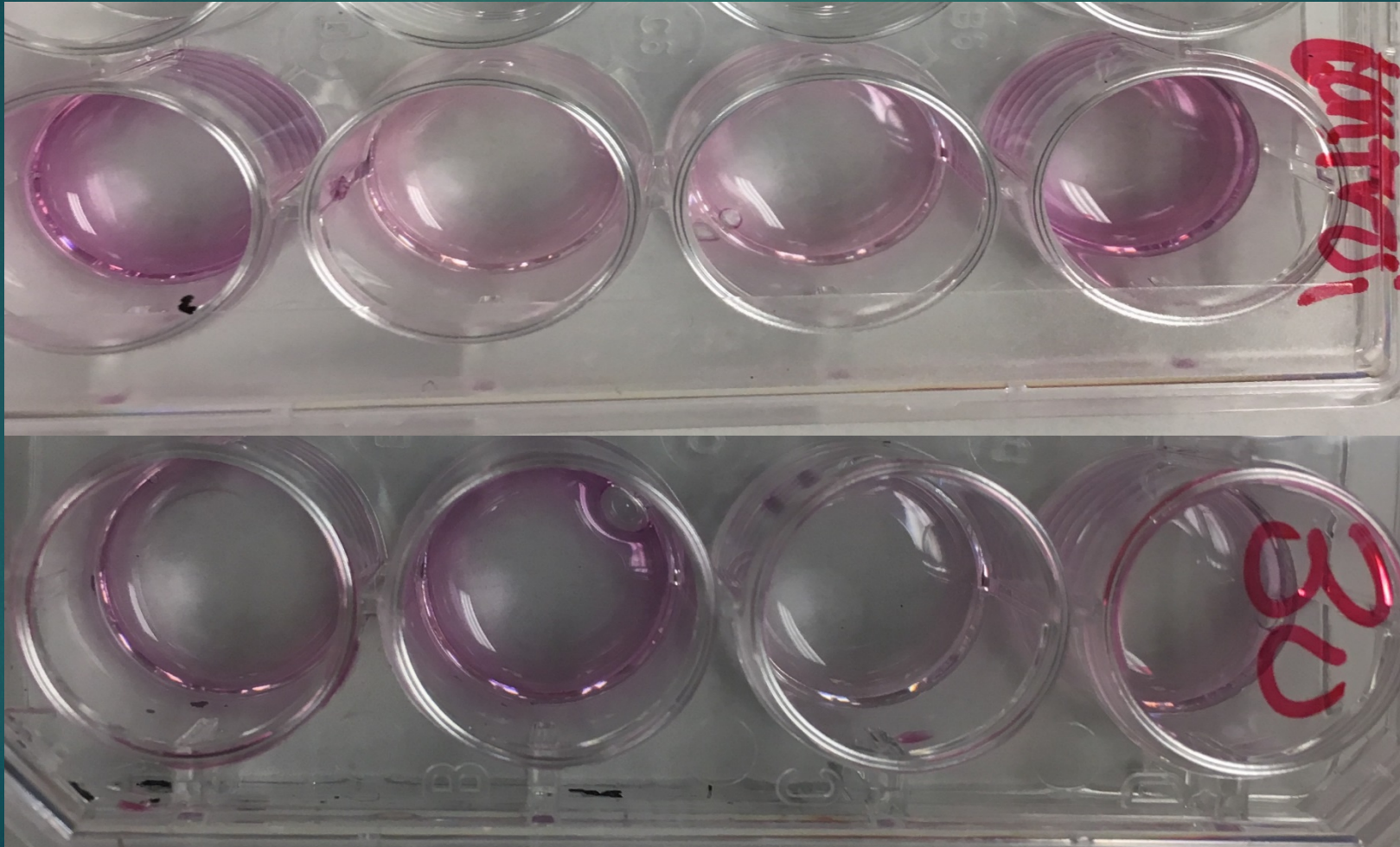


# Results: Cell Count





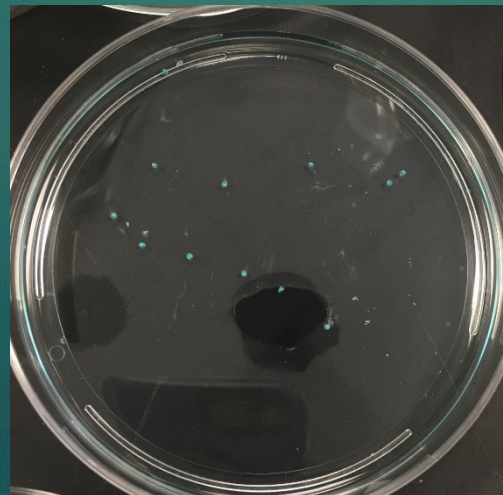
# Results: MTT Assay





# Results: Zebrafish

Treatment	Control	30 min	1 hour
Dead/Alive	Alive	Dead	Dead
How Many	All	12 Dead/1 Alive	All Dead



# Discussion/Conclusion

- ▶ Zebrafish:
  - ▶ Hyperthermia has negative effects on the noncancerous cells
- ▶ Cells:
  - ▶ Very few cells were killed
  - ▶ All of the cells were healthy
- ▶ Overall:
  - ▶ Hyperthermia is not damaging to noncancerous cells





**Any Questions about the Hyperthermia on  
Liver Cells Viability?**