

INTRODUCTION

- *Caenorhabditis elegans* (*C. elegans*) is a small roundworm approximately 1 mm in length that is commonly found in soil.
- A model organism due to its short life cycle, small size, genetic tractability, and transparent body.
- Survive for 2-3 weeks under standard laboratory conditions.

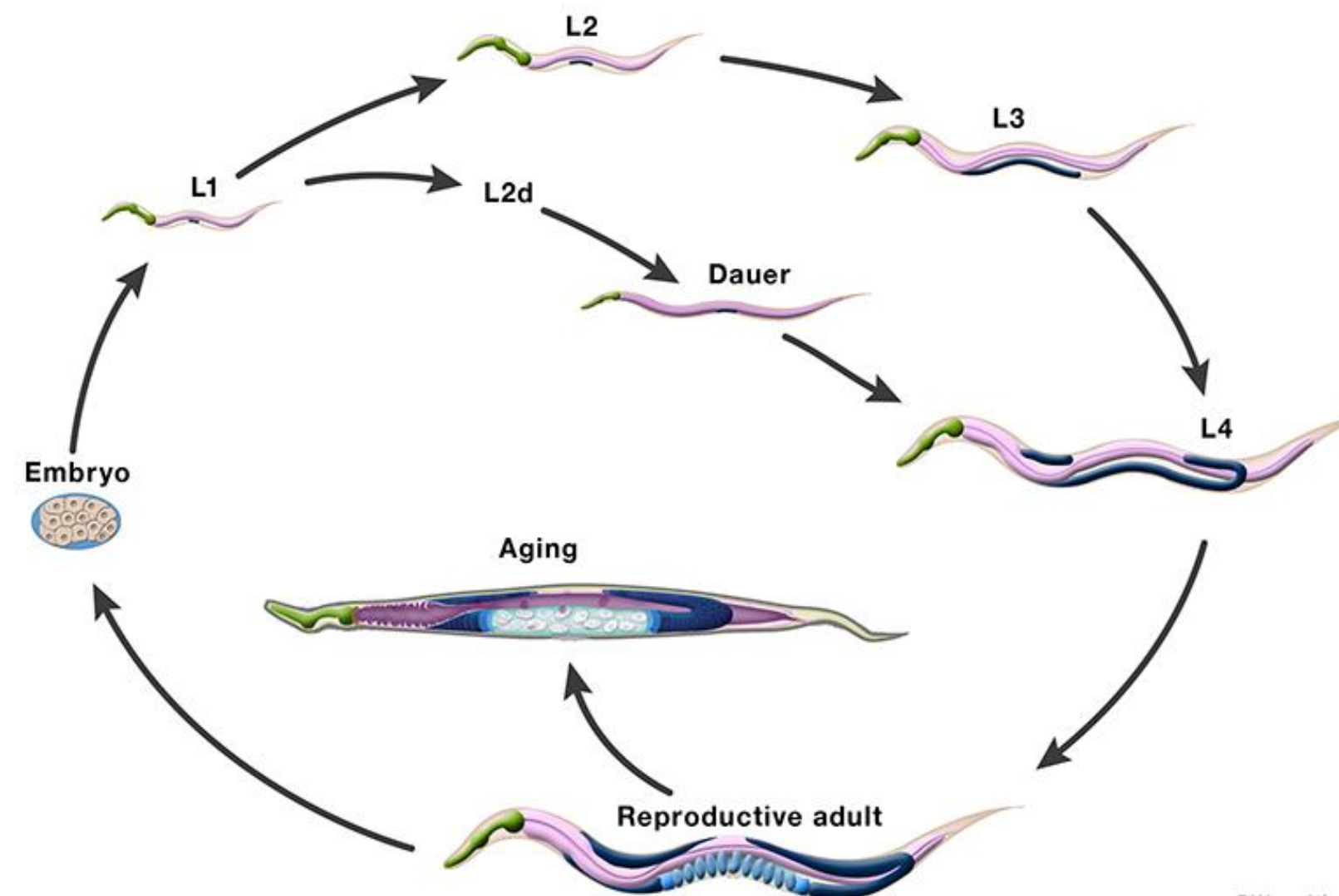


Fig 1: Life Cycle of *C. elegans*.

GOAL

The effects of high altitude on the survivability of the L1 (Juvenile) and adult stage of *C. elegans*.

PREDICTION

Juvenile *C. elegans* are more likely to survive in harsh conditions like high-altitude compared to adult *C. elegans*.

RESEARCH

- Constructed an atmospheric payload
- Two stages of *C. elegans* were put in the payload
- Roughly 70 worms per group.
- Launched it into the upper atmosphere via a weather balloon.
- Data collected via Arduino software.



Fig 2: Payload layout with data collection system (right) and worm storage area (left).

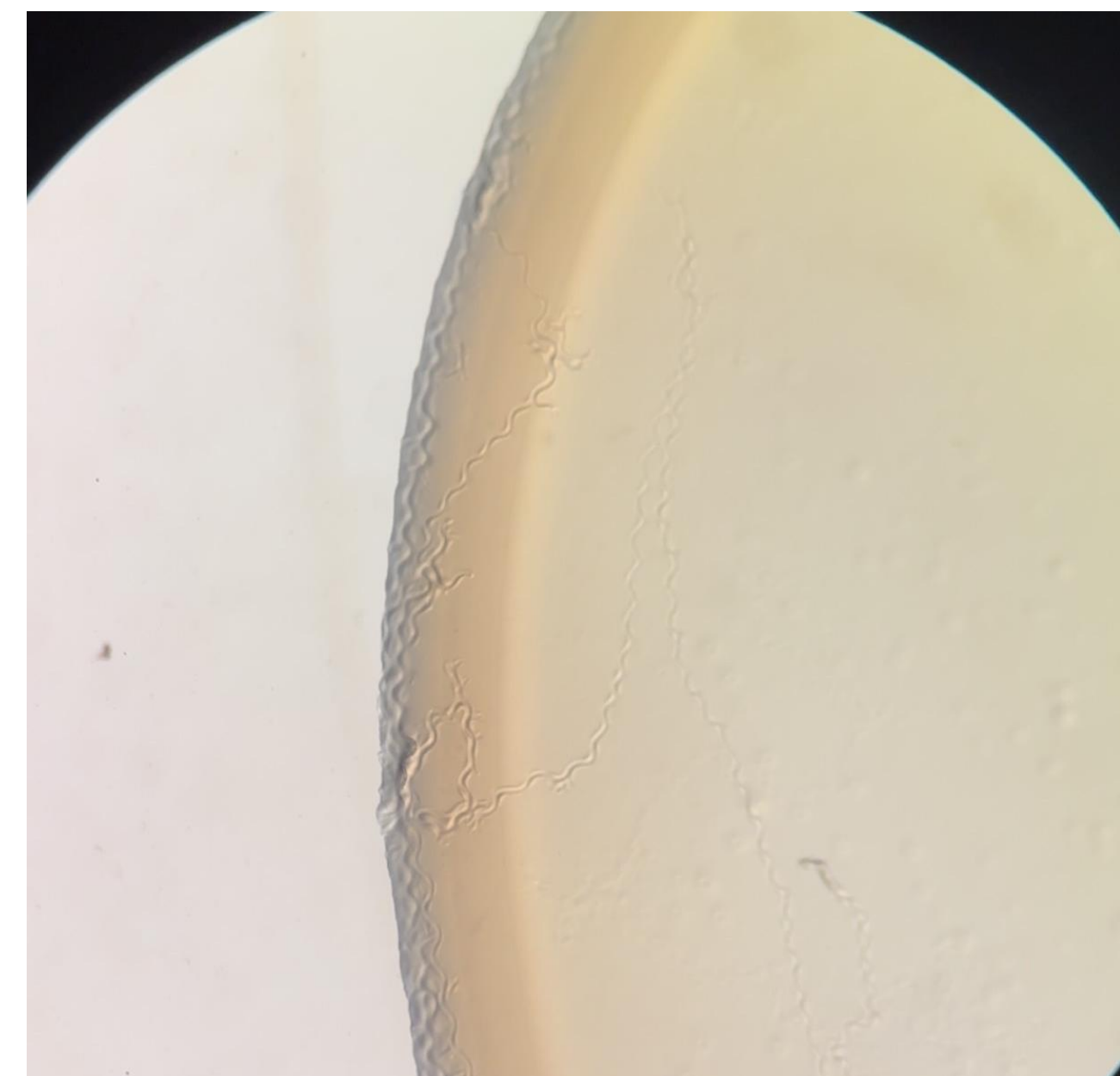


Fig 3: Depiction of L1 flight group population *C. elegans*. Overall, four worms survive.

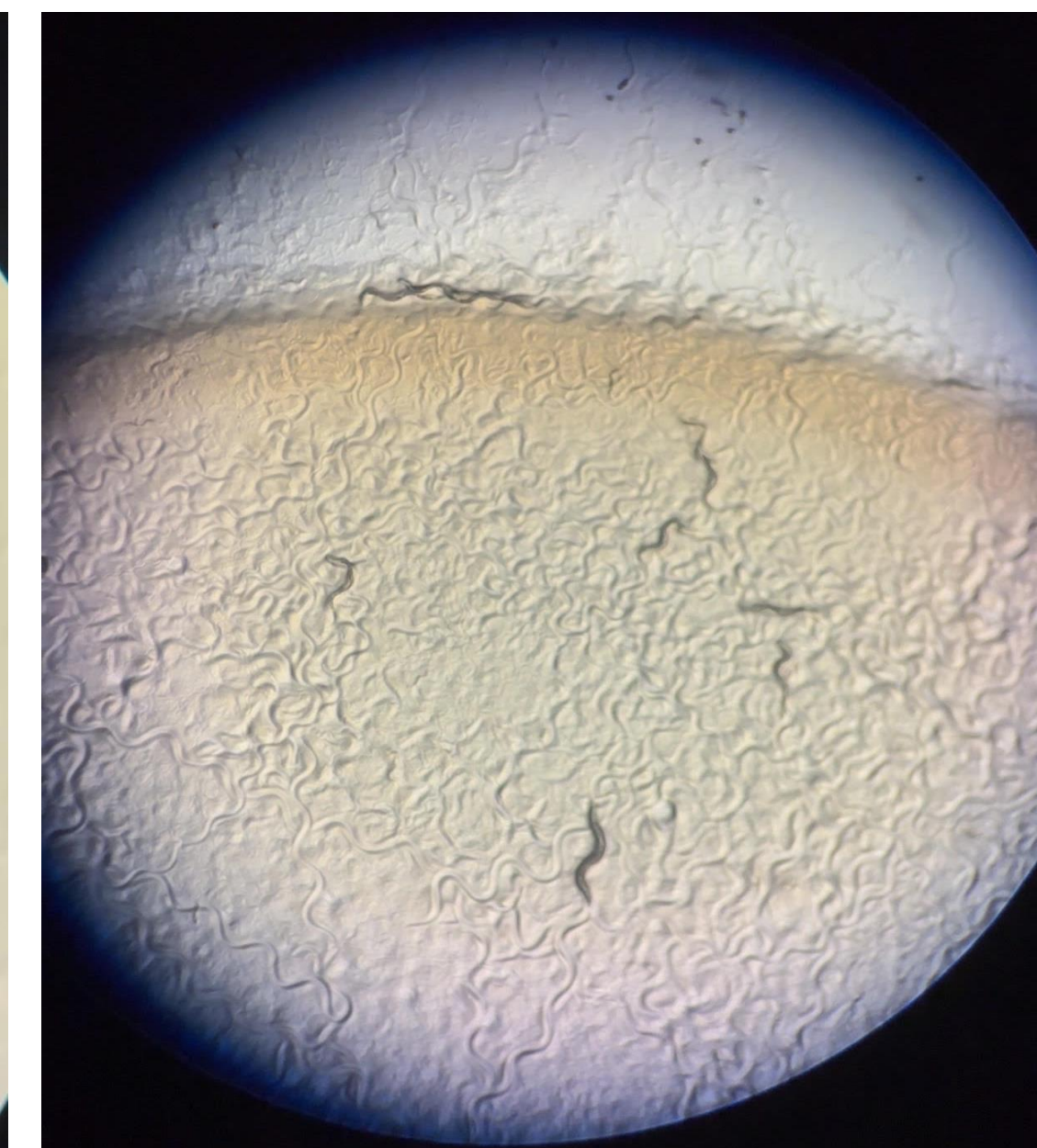


Fig 4: Depiction of L1 control population *C. elegans*

DISCUSSION

- Max altitude: 97,663 ft at -43.42 F and 0.0092 atm.
- Four worms survived from the juvenile population of *C. elegans* after the flight.
- Seven worms survived in control group.
- No adult worms survived in either the control group or the flight group.
- The onboard data collection system experienced a critical failure in the data storage system, resulting in unusable data.

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