

## Master thesis project – Image processing to detect worms

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### **Background**

Images of biological samples are no longer just overview pictures; they are measurements. To turn images into manageable data the computer has to be able to make sense of them. The purpose of this project is to detect *C.elegans* worms (larva) in liquid media. The project can be extended to allow tracking (using microscope XY stage) of worms moving on plates if time allows.

### **Approach**

- Read literature on past attempts
- Test algorithms. The following are likely good candidates:
  1. Thresholding
  2. Distance transform, morphology
  3. Shape-fitting, energy formulation
- Comparison with expert annotated images

### **Time allocation**

4 weeks: Test thresholding methods

4 weeks: Test distance transform to find candidate worms

8 weeks: Test shape-fitting. Compare with expert annotation



The rest of the time is backup. It can be used to track worms on plates or for other methods