

## **Abstract**

The cuticle of *Caenorhabditis elegans* plays a vital role in osmoregulation in stressed environments. While wild type *C. elegans* displays rapid deterioration in a hypertonic environment, certain mutant strains are hypothesized to elicit different responses to osmotic stress<sup>3</sup>. One such mutant is Dumpy (Dpy), which is characterized by a cuticle defect that produces short and fat worms with limited movement. The goal of this experiment was to analyze the effect of the Dpy mutation on osmoregulation by comparing the survivorship rates of N2 and Dpy strains of *C. elegans* when placed in a hypertonic environment. EMS mutagenesis was used to isolate populations of Dpy mutants, which were then exposed to .05 M, 0.1M, 0.25 M, 0.5 M, and 1.0 M NaCl for a 30 minute period. A survivorship assay was then conducted and results were compared to wild type survivorship within the different molarities. Dpy mutants were found to have consistently higher average rates of survival in higher molarity(>0.05M) solutions with a maximum difference of 4.2x in 0.5M. Further experimentation with this mutant can provide a molecular explanation of why the Dpy strain is able to resist more osmotic stress than N2 worms.