

Planarian regeneration: the impact of inhibiting b-catenin and sfrp

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Our lab observed the impact of inhibiting B-catenin and sFRP in planaria because we wanted to observe the regeneration of anterior structures in wounded posterior regions after inhibiting B-catenin and the regeneration of posterior structures in wounded anterior regions after inhibiting sFRP. We understood the expected results of inhibiting both proteins based on previous observations in the literature, but wanted to see if we could replicate the same results. The purpose of this project is to utilize the results to further our understanding regarding stem cells. When wounded, planaria develop a blastema, a mass of unpigmented pluripotent stem cells that develop at the site of the wound in planaria and is responsible for sensing the anterior-posterior positional information in the planarian body. Over time, the stem cells regenerate the appropriate structure based on whether the wound is anterior or posterior. By observing this process in both a control group where there is no inhibitory substance within the solution and treatment group where B-catenin and sFRP are inhibited, we can develop a better understanding of how stem cells contribute to regeneration. Our results showed that two planaria subject to B-catenin inhibition regenerated double heads and four regenerated tails, and three planaria subject to sFRP inhibition regenerated double tails and five regenerated heads and tails.