Planaria Regeneration and Patterning Lab Write-up*

Introduction to Stem Cells and Planaria Lab

Taylor Blair† Morgan LeMay‡ Connie Mangan§

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Abstract

Planaria (Genus Phylum) is a remarkable invertabrate that has the ability to regenerate within a few days of being halved. Planaria are of key interest to biologists because their signaling pathways involved in development is highly similar to humans. The process by which the Planaria are able to split and recreate vital appendages is hypothesized to be linked to calcium homeostasis. This lab exposes Planaria to PZQ (Praziquantel) to further understand the planaria's re-formation process. The authors of this lab report were interested in exploring the impact of PZQ on wheter or not the Planaria regrew in addition to the period of time it took to reform.

Contents

*The authors are grateful to Katie Reichard for being our shepard.
†Reed College, tblair@reed.edu
‡Reed College, mlemay@reed.edu
§Reed College, manganft@reed.edu

1 Analysis

The authors were interested in exploring the impact of

1.1 PZQ Impact on Regrowth

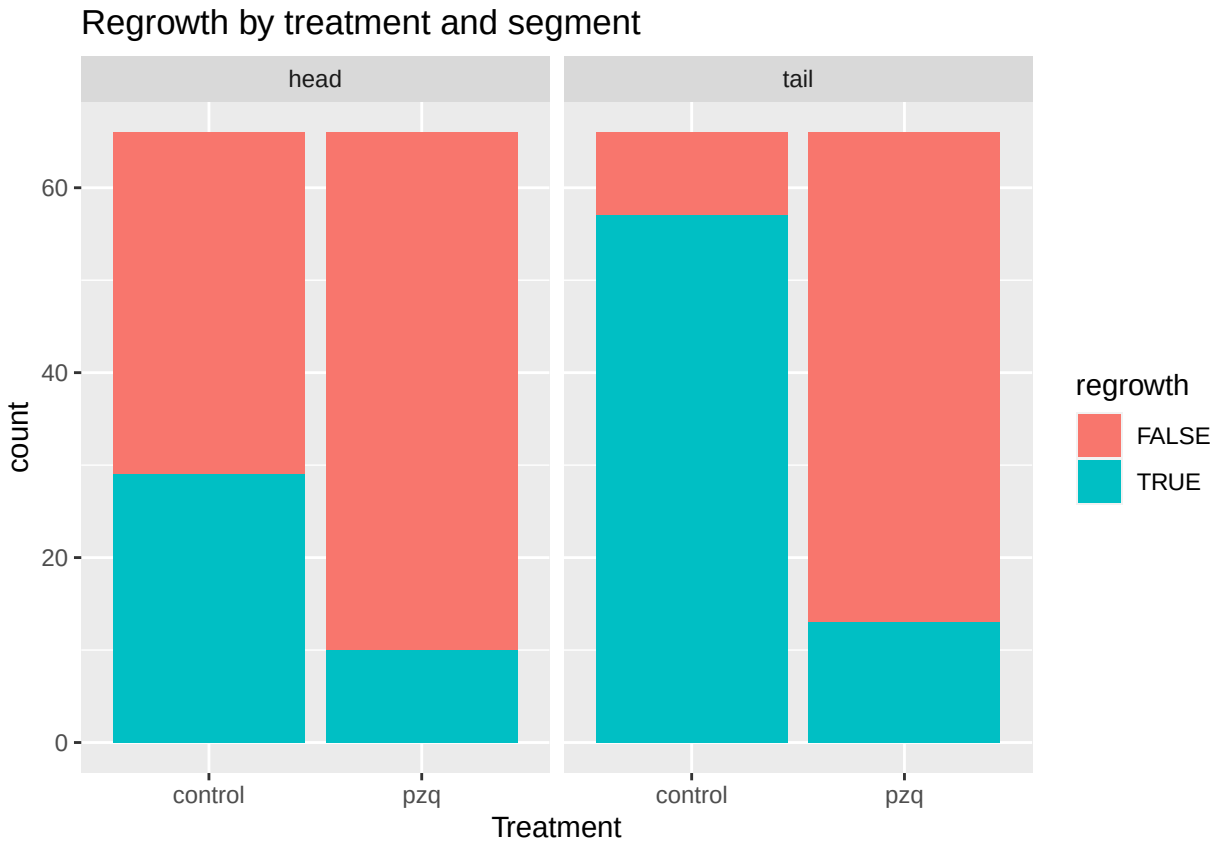
The null hypothesis for this section is the proportion of PZQ treated segments will regrow the same proportion as those in the control treatment.

```
##
##              N  Y
##   control 37 29
##   pzq     56 10
```

Head segments exposed to PZQ ($\frac{10}{66}$) are stastically significantly less likely to regrow than the control treatment ($\frac{29}{66}$) (χ^2, $X^2 = 11.7915633$, $df = 1$ $p = 5.949975 \times 10^{-4}$)

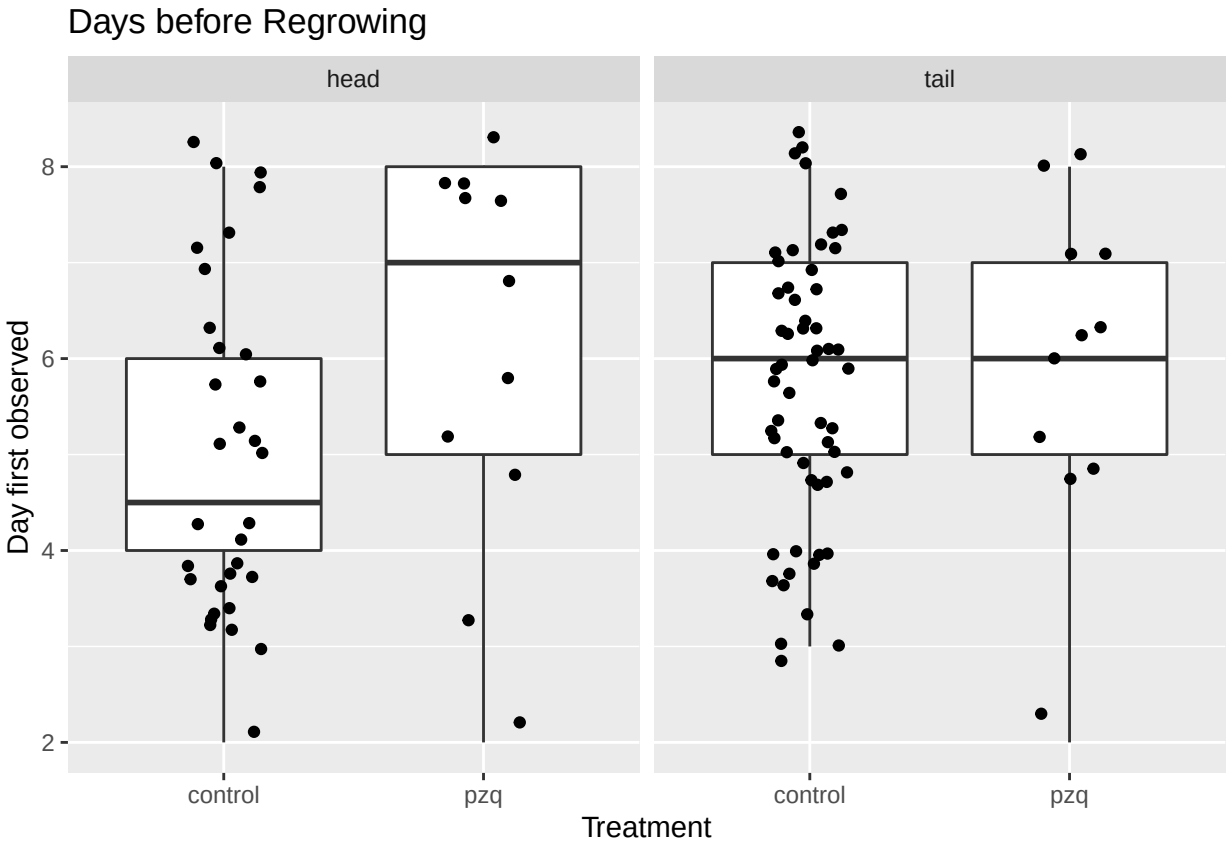
```
##
##              N  Y
##   control  9 57
##   pzq     55 11
```

Tail segments exposed to PZQ ($\frac{11}{66}$) are stastically significantly less likely to regrow than the control treatment ($\frac{57}{66}$) (χ^2, $X^2 = 61.4200368$, $df = 1$, $p = 4.6109419 \times 10^{-15}$)



1.2 ANOVA Test

The null hypothesis p_0



The mean number of days before regrowing a phayrnx/eye in the PZQ treatmant (6.0454545) is not statistically significantly longer than the control group (5.4090909). (Two-Way ANOVA, $F = 2.0684$, $df = 1$, $p = 0.1064$)

2 Figures

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3 Author Contributions

Contribution statement: See contribution statement guidelines and write who did what- Bio Binder T-10; Section U for a good example, Section V for a bad example.

All authors contributed equally to this project

The checking schedule was divided accordingly:

Table 1: Watch Schedule

Days since start	Date	Day of week	Time	Checker
0	2/3/2022	Thursday	14:52:00	All
1	2/4/2022	Friday	12:50:00	Taylor
2	2/5/2022	Saturday	14:30:00	Morgan
3	2/6/2022	Sunday	13:34:00	Connie
4	2/7/2022	Monday	12:30:00	Taylor
5	2/8/2022	Tuesday	12:30:00	Morgan
6	2/9/2022	Wednesday	17:30:00	Connie
7	2/10/2022	Thursday	13:44:00	All

4 Grading

4.1 Table

Component	**Excellent**	**Good**	**Satisfactory**	**Incomplete/Needs Work**
Report organization				
Report organization				

4.2 Other Comments