How Genetics Influence Retinal Development

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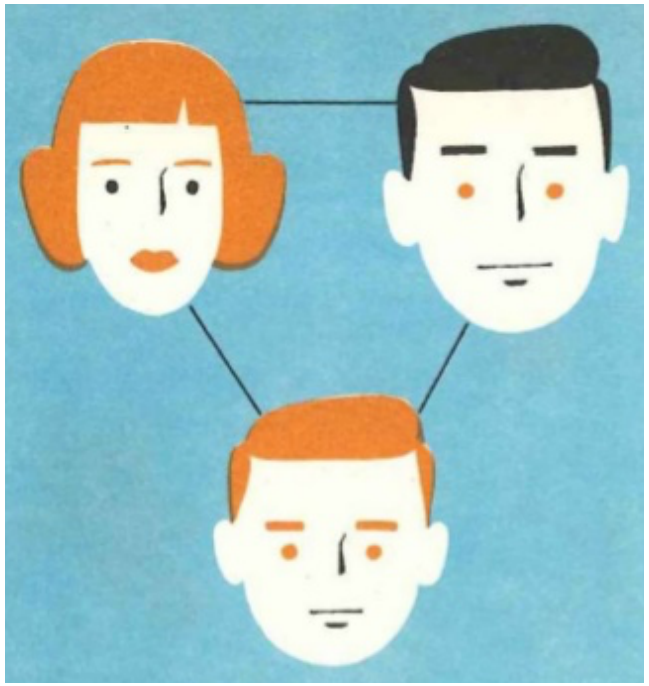
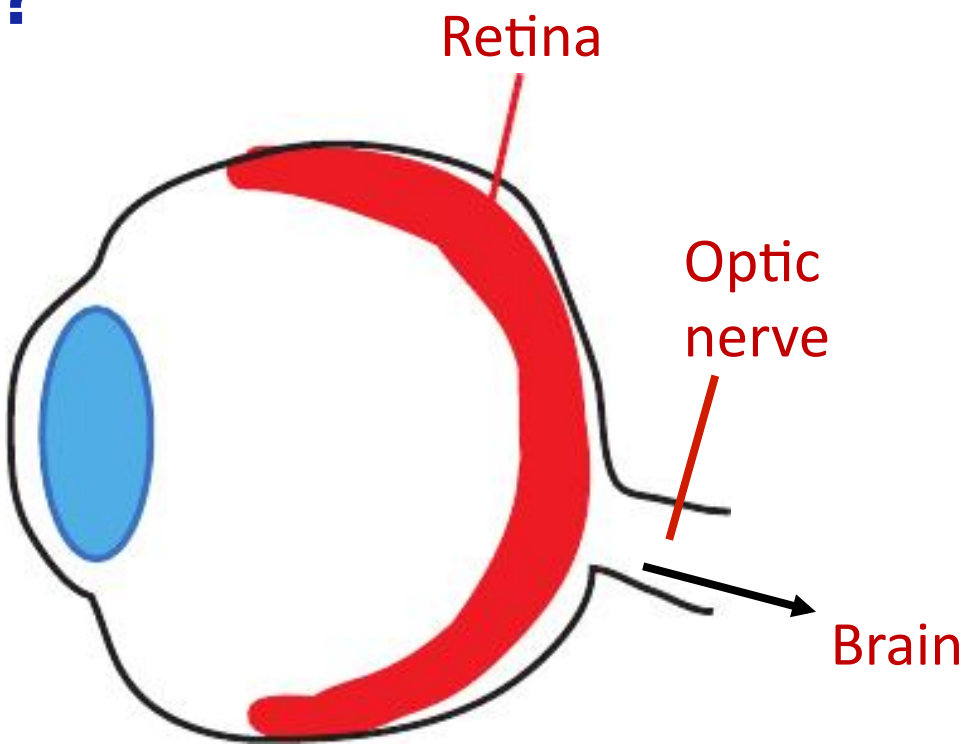
Why is the study of genetics important?

- Passing of physical/mental characteristics from parents
- Find cures to genetic diseases
- Identify the genes responsible for the development of the retina because it helps us find cures to retinal diseases



What is the retina?

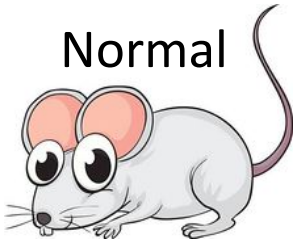
- Tissue that sits in back of the eye
- Part of our central nervous system
- Converts light rays into impulses
- After traveling to the brain it's interpreted as images



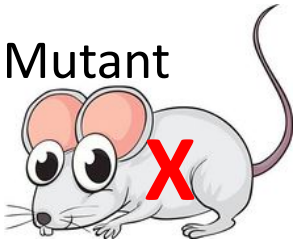
Project goal

Understand how specific genes influence retinal development, so that we can find the answer to blindness and/or other diseases.

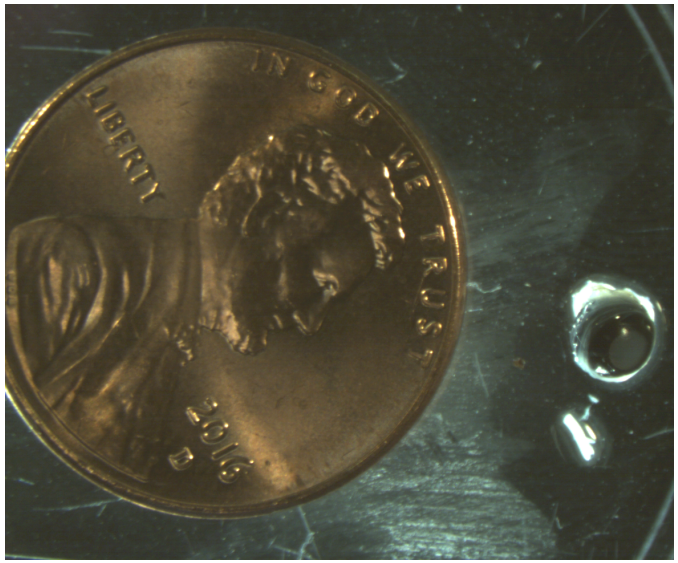
Normal



Mutant



- Missing 1 gene



Mouse Eye

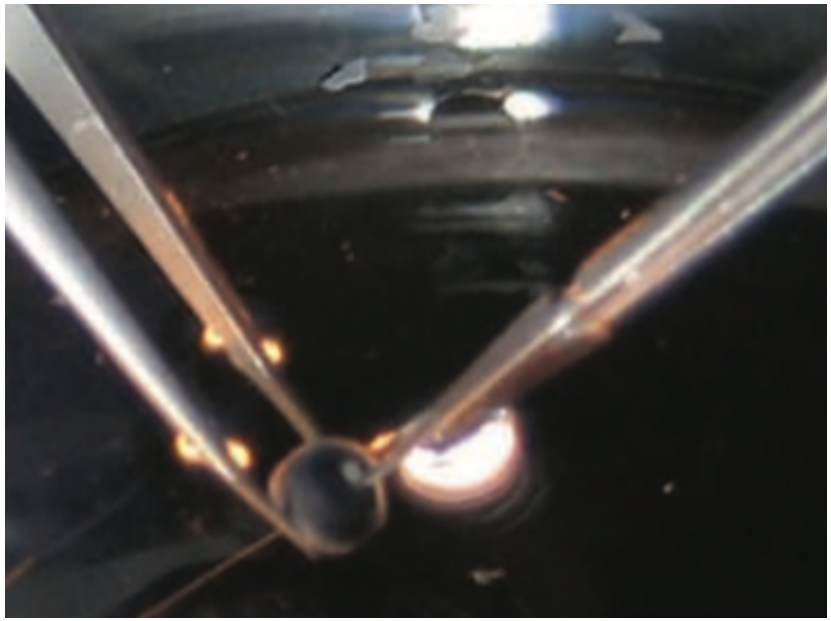
Big Picture Question

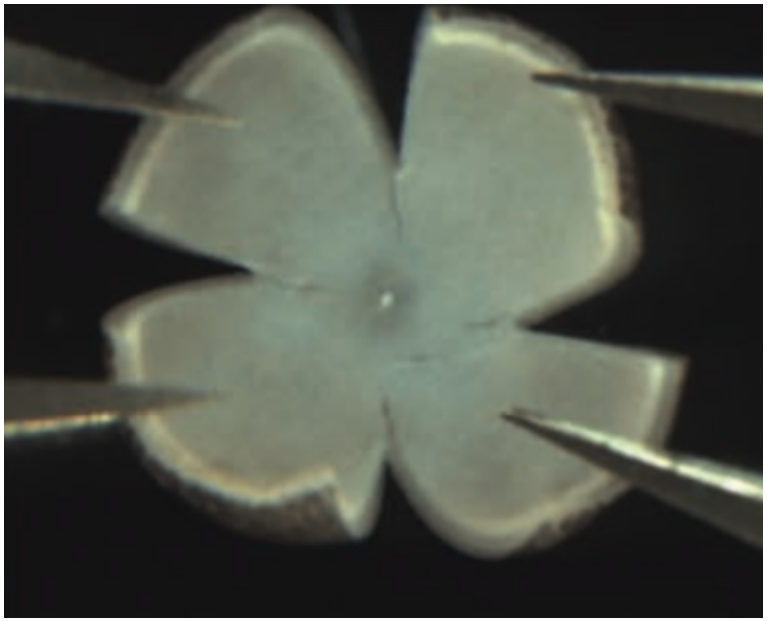
Does this missing gene influence the number of cells in the mutant retina compared to a normal retina?

Overview

1. Retinal Dissection
2. Cutting Retinal Cross Sections
3. Antibody Staining
4. Quantification

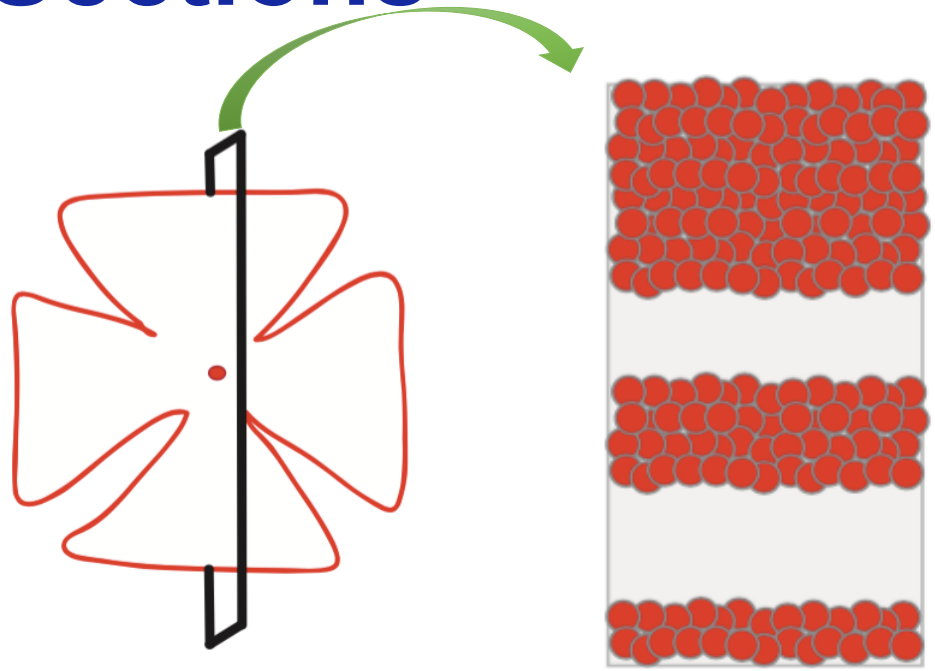
Step 1: Retinal Dissection





Step 2: Cutting Retinal Cross Sections

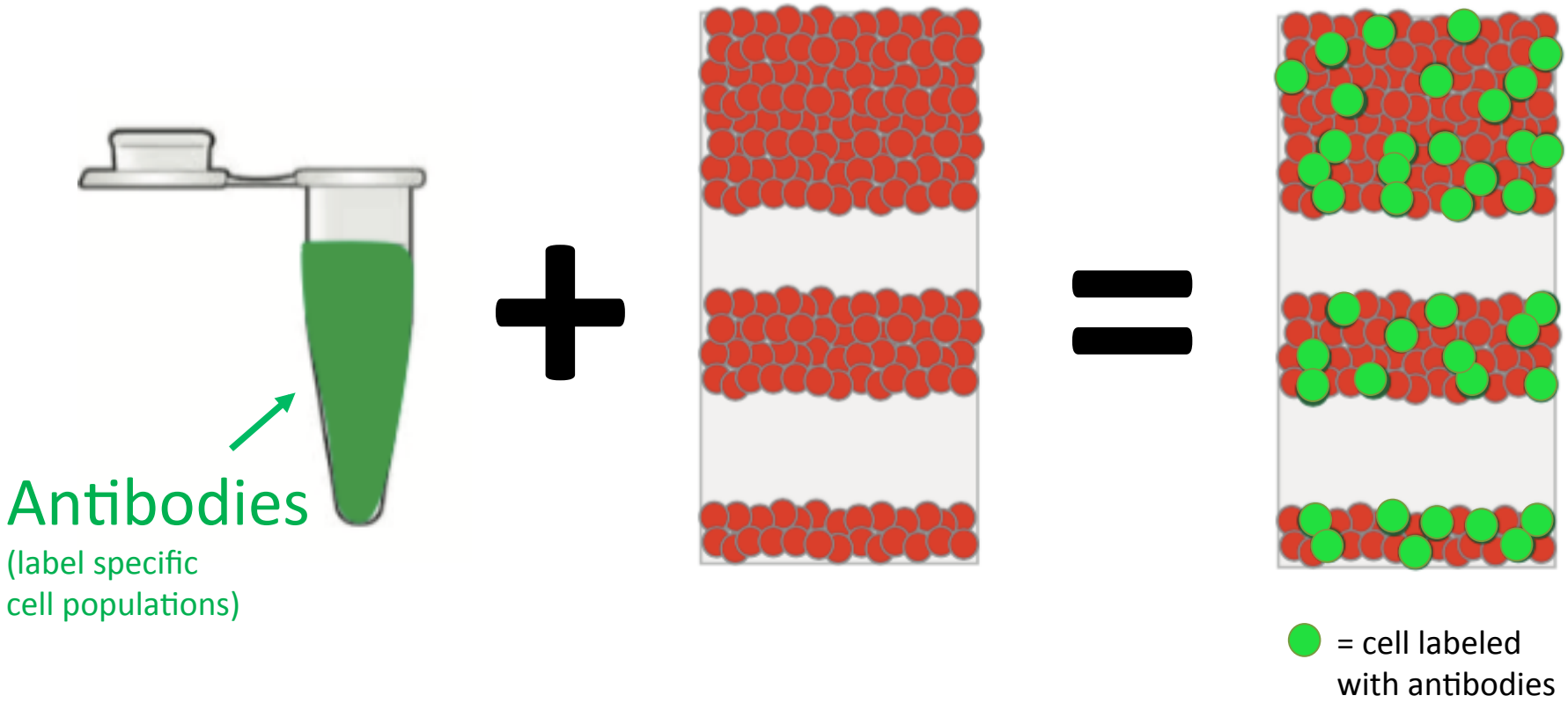
Vibratome



Cross section

= cell

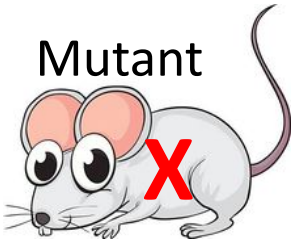
Step 3: Antibody Staining

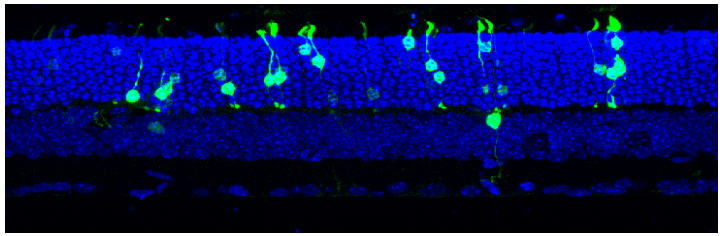


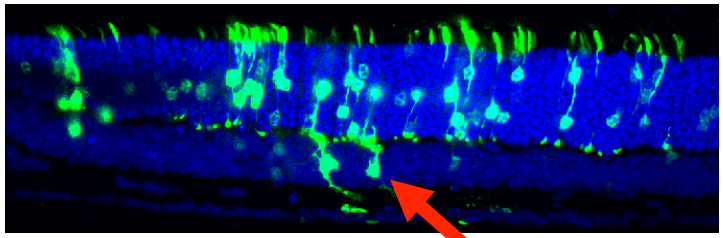
Quantification

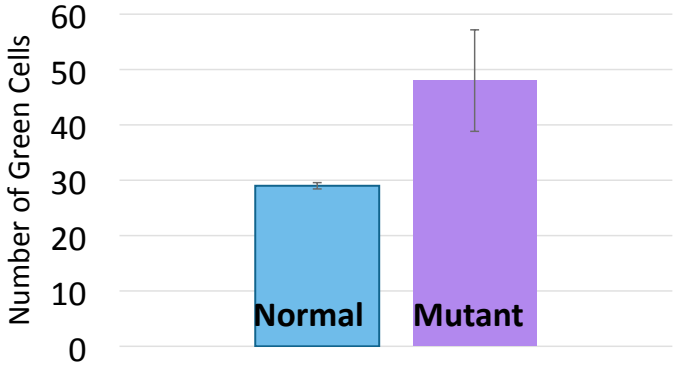
Normal

Mutant









Real cells labeled with antibodies

Conclusions

- Through this study we were able to understand how retinal development can be altered through genetic manipulations

- This can help us understand how our central nervous system forms and it gives us insight into how we can cure retinal diseases

Acknowledgements

Condor

Ellie Sciaky

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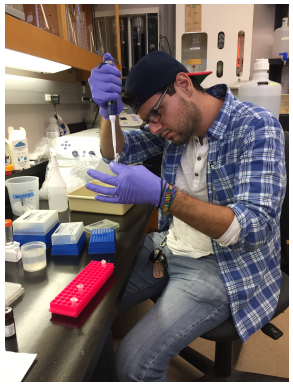
Jens-Uwe Kuhn



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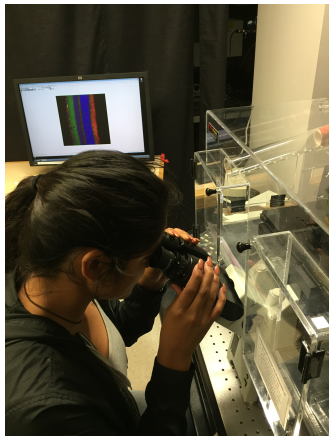

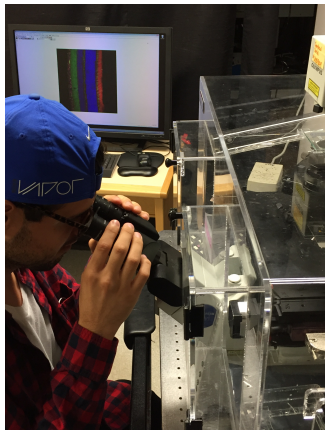

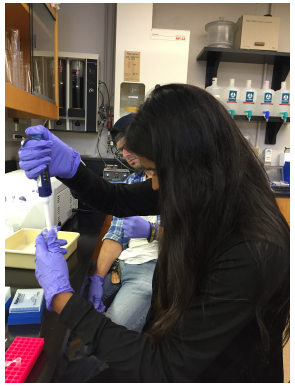


eye
Ballens