Picking your classmates' brain: Experimental design and optical illusions.

After completing our introduction to vision, you are ready to investigate one aspect further. You will choose one of the four topics below, and working in a group of two or three, design a carefully controlled experiment, create the images to test, and perform the experiment on your group. An outline of your project, answering the questions below will be due to turnitin before you collect data. After reflection on your preliminary data, you will refine your experiment and test a group of students. (Maybe we could do it in your advisory groups or partner with the AP Psych classes.) A final report and poster analyzing your data will be due in January.

Topics: You can read more about each [project here.](#)

**Research Project 1: The Distribution of Rods & Cones in the Retina**

**Research Project 2: Edge Detection by On-Center-Off-Surround Cells**

**Research Project 3: Simple Cells of the Primary Visual Cortex**

**Research Project 4: Complex Cells of the Visual Cortex**

A few web sites that have graphics that may be helpful in your experimental design: [here](#) and [here](#).

Your group must complete the following summary of your project by December 3. Submit it to Turnitin. You are encouraged to show me drafts and ask questions to refine your plan.

- type of cell investigated
- optical illusion to use
- specific question to investigate and hypothesis
- detailed description of materials required
- description of controls
- description of experimental condition(s) (dependent and independent variables)
- number and description of subjects
- how the data will be collected
- how to ensure that the data are reproducible
- statistical analysis expected to be used (chi-square, t-test, ANOVA)
- what sort of tables and graphics they anticipate incorporating in their paper
- what data they expect and how this relates to the property of the visual cells under investigation
You will work in groups of 2-3 and design an experiment to learn more about vision and processing visual images. Read this paper, and choose one of the topics to pursue. Your topic must be approved by Dr. Domanico. An outline of your project is due December 3.

We will share the findings from your vision labs by defending your work in a poster session. This is designed after the common way that grad students and post-docs share their research findings at meetings. Please consult this sample, and create your Mini-poster in a similar way. I will provide file folders that you can cut to create a tri-fold mini-poster. You will create your poster in word and/or excel and paste your information on to the mini-poster. I will invite some other "experts" to view your posters.

Here is the rubric we will use to assess your grade. Be sure to read it carefully and address all points! Here's the rubric again, some folks couldn't see it.