**Role of Proteins Within The Organism Biology Grade**: 9-10 **Standard** B.5.5

**Title of investigation:** Understanding How Manipulating Proteins Changes Characteristics In An Organism

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**Science Standard:**

B.5.5 Understand that proteins are responsible for the observable traits of an organism and for most of the functions within an organism.

**Leading Question /Engagement:** In what way does controlling the proteins in an organism control the organism’s characteristics?

**Summary of the investigation:**

Show students the images on the National Geographic Site of “glowing animals”. Ask students to explain “How were scientists able to produce this change?”

**Equipment used:**

Projector

Computers with Internet access

Whiteboard and markers

**Description of Procedures, notes (teacher manual):**

National Geographic has images of various animals that have been genetically manipulated to glow. <http://news.nationalgeographic.com/news/2009/05/photogalleries/glowing-animal-pictures/>

 Show the students at least one of these amazing images and ask them how scientists were able to do this.

**Follow-up Science Questions:**

In order for the proteins to be altered, what also must have been altered?

Can a human be altered to glow in the dark?

Why is genetic manipulation usually done using bacteria?

What are some beneficial products of doing genetic manipulation with bacteria?