Introduction

What is gastric mucous and why is it important?
- The lumen (cavity of the stomach) protects itself from being broken down by the highly acidic gastric acid by coating itself in a thick, protective layer called gastric mucous (Bee et al., 1987).
- The pH of the gastric mucous is maintained at a level that is safe for the lumen.*

How is Zollinger-Ellison syndrome treated today?
- With difficulty. Occasionally the gastrinomas can be removed by surgery, but often this is not possible and chemotherapy must be used (Gold, 2017).

Materials and Methods
- USA-organic beef chuck "for stew", cut into pieces of uniform pieces
- Periodic Videos, & University of Nottingham. (2010, March 26).
- Bell, R. P. (n.d.). Acid-base reaction. In Focus on California physical science
- Focus on California physical science
- For more on how to make fake snot, refer to the linked websites.

Discussion
- The data collected supported the original hypothesis, as the experimental group with the most basic mucous, pH 13, retained the most mass, and besides the group with no mucous, the group with a chemically neutral mucous (pH 7) retained the least.
- The original hypothesis implied the trend that a more basic mucous results in greater mass retention. All of the groups that followed this trend except for the pH 9 and pH 11 mucous groups. The average mass retention in the pH 9 group, 83.1%, was greater than the average mass retention of the pH 11 group, 79.2%. This value interrupted the surfacing pattern, preventing the emergence of a conclusive trend. So the final ranking of the groups in order of greatest mass retention to least was the following: 1) pH 13 mucous, 2) pH 9 mucous, 3) pH 11 mucous, 4) pH neutral mucous, 5) Control (no mucous).
- No pre-existing research could be referred to for comparison or refutation, as this experiment implemented an entirely new method of addressing lumen corrosion as a symptom of Zollinger-Ellison syndrome. Like the chemotherapy/irradiation solution, the method investigated in this experiment would not actually remove the gastrinomas; rather, it would help ameliorate the symptoms (Gold, 2017).
- Ideally, the experiment could be conducted in vivo, or on living tissue, that had blood flow and functional cells. Even though the results were logical and the experiment was carefully controlled, it would be a big leap to base conclusions about the human stomach on an experiment conducted in vitro.
- The results imply a fairly high degree of confidence due to the logical data trend and the careful, controlled environment in which the experiment was held. For instance, while slicing the beef for the lumen model pieces of caustic acid was taken to ensure as best one could that the pieces were uniform (similar surface area, fat content, etc.). Nevertheless, conducting more than three trials would have led to greater confidence in the results.
- The concept of chemically enhanced gastric mucous is one worth serious thought and exploration; it would allow the accreting lumen corrosion experienced by Z-E syndrome patients to be cured without surgery or chemotherapy.
- Investigations should be made to explore alternative, safer methods of raising the pH of one's gastric mucous that would be realistic and feasible in the medical world.

Works Consulted
- Freitas, C. (n.d.). Introduction to Gastric Acid and 20 Hours of Drip Drying
- The time at which the previous photograph had been taken, the lumen wall model pieces had been pressed with paper towels and then left to dry on bands of paper towels for 20 hours. The paper towel pressing flattened them a little, but I observed that the pieces in the pH 13 group retained their original shape better than the rest. On the other hand, the pieces without mucous in the control group had shriveled up and lost their original shape. I noticed that the coloring on all the pieces, especially the pieces in the pH 9 group, darkened considerably: it was unclear whether or not this development was relevant to the data collection.