**Academic Bio Final 4Cs Project- Designer Organism**

Idea: You are a team of advanced bioengineers tasked with creating a new hybrid species. Your newly-minted GMO should be designed to solve some issue/problem in agriculture to benefit humans.

**Examples of things to pick:** *Making plants/livestock stronger and resistant to negative environmental conditions (you must be specific about which conditions you’re making them resistant to), Vaccines/medicines in food (again, be specific here about which vaccines/medicines), boosting nutrients in food (what specific nutrients will you try to boost?), and boosting yield of agriculture products*

Method: Using todays current technologies and a massive (aka endless!!! \*insert sinister laugh here\*) budget – your team will modify an existing organism by adding a trait from a second living organism. An example of this is the spider silk producing goat. To produce spider silk in large quantities, scientists have transplanted the genetic sequence for spider silk from a spider to the goat. Now, when the goat produces milk, the milk contains large quantities of spider silk.

The required research: existing organisms, the process of creating a transgenic organism, potential impacts of GMO species on society

Finished product: You will create a single full size poster board that has a detailed illustration of your new species. This illustration is to be the focal point of your poster and should be in the center and large in illustration. Surrounding your new genetically modified organism, you are to completely detail the following:

* A description of the agricultural problem/issue that you’re trying to solve by creating this GMO **(you can pick one of the examples I’ve given in the description)**
* A description of how/why your organism solves the problem/issue
* Why the organisms used in your project are ideal for solving the problem/issue.
* An infographic or labeled diagram of the process of transgenic modification.
* The potential positive and negative impacts of your GMO on the environment/ecosystem.
  + **Example of positive impact** less pesticide needs to be applied to GMO crops which is better for the environment
  + **Examples of negative impacts include** an increase in pesticide/herbicide resistance in pests, problems with cross-pollination and hybridization, increase of global monocultures and the issues associated with monoculture, and loss of heirloom crops.
* The potential positive and negative impacts economic impact of your GMO.
  + **Examples of positive impacts** include increased crop yield, stronger plants, and longer growing seasons of GMOS means farmers can make more money by selling more plants longer during the year.
  + **Examples of negative impacts** includes lawsuits between GMO producers and farmers over accidental germination and hybridization, as well as the high cost of GMO seeds to farmers.
* The potential positive and negative impacts of your GMO on human health.
  + **Examples of positive impacts** include increased nutrition, more vaccines given, more food in the global supply chain means more people eat well world-wide.
  + **Example of negative impact** includes an increase in the potential for food allergies by adding new proteins to food.
* A proposal for minimizing the potential negative impacts of your GMO described above