Genetically Modified Everything
An Introduction to DNA and Genetic Engineering

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Session: Early Spring 2019  
Dates: Fridays, March 15th – April 26th (no class April 19th)  
Time: 1:30 p.m. – 3:30 p.m.  
Location: Room 124, Leeds House Bldg.

Summary
The term “genetically modified” can mean many different things. From genetically engineered crops and livestock, to industrial microorganisms, to the development of bioterrorism agents, GMOs affect our lives in many ways. We now have the ability to alter the genome of a wide variety of organisms with relative ease. This lecture series will offer a general simplified explanation of modern genetic engineering and discuss uses and potential future applications of the technology. We will also address the potential to modify human DNA to cure disease or produce desirable traits in our offspring. No previous scientific knowledge is needed to enjoy this series.

Schedule of Events

**Week 1**  
**Introduction to DNA:** We will take at what DNA is, how it was discovered, and how DNA functions as the blueprint of life. This seminar will provide fundamental information that will be helpful for enjoying the rest of this seminar series.

**Week 2**  
**DNA Through Generations:** We will explore how genetic information is passed from parent to offspring and how new characteristics arrive. Also, we will look at what happens when your DNA gets damaged and how body is constantly repairing your DNA to ensure the genetic information is protected.

**Week 3**  
**Genetic Manipulation:** How do researchers change the sequence of DNA. We will look several different methods for altering DNA in the lab.

**Week 4**  
**Genetically Modified Plants:** The majority of plants used for agriculture have been genetically engineered to some degree. We will look at how genetically modified plants affect our food chain, safety aspects of GMO plants, and some important research occurring here in Canada to breed crops that can better tolerate the harsh Canadian climate.
Week 5  **Genetic Engineering of Animals and Bacteria:** Can we breed cows and chickens to taste better, grow faster, be resistant to disease? Is genetically modified livestock safe to consume? We will also look at potential applications of genetically modified bacteria and yeast such as improving beer and wine production, uses in food production, and using GMO bacteria to produce medicines.

Week 6  **Genetically Modified Humans:** “Designer Babies”, children that have been engineered to possess desired characteristics can now be made but is it wrong play with human DNA? There are many possible benefits of altering the human genome, particularly for the treatment of genetic disease but this comes with many ethical concerns. We will look at several potential applications of this technology and discuss the associated ethical considerations.