

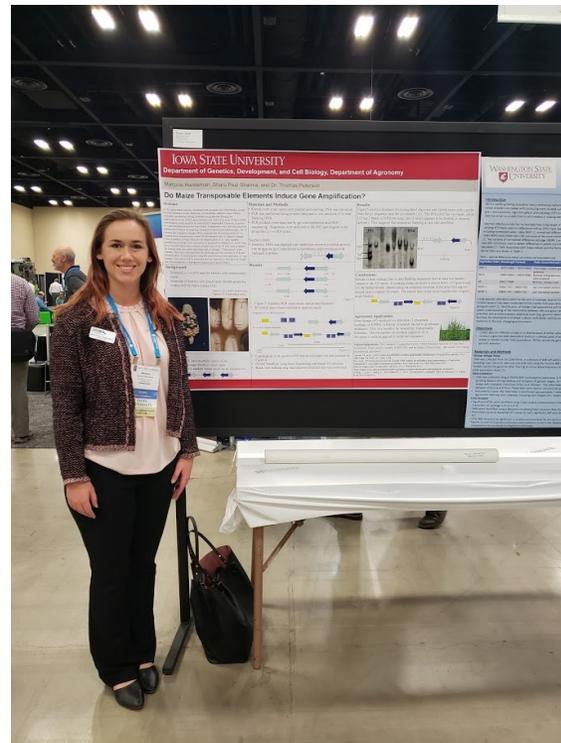
# Dr. Walter Suza, Adjunct Associate Professor Department of Agronomy, Iowa State University



- Humanitarian work in central and southern Africa
- At ISU since 2011:
  - International Engagement – **Crop Improvement Education in Africa**
  - Research – Physiology of corn sterols
  - Teaching – **Genetics and Crop Physiology**

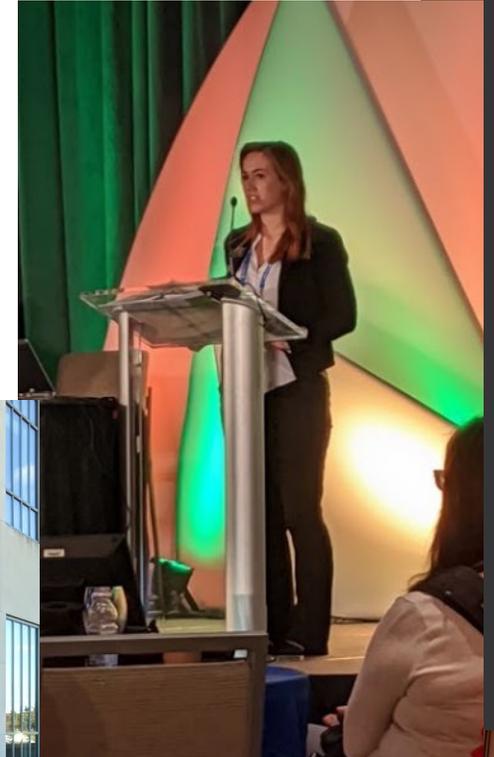
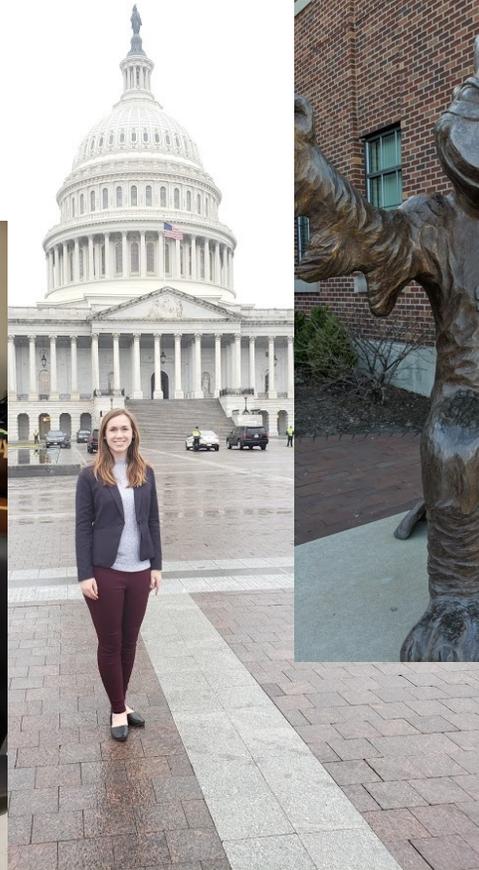
# Why Iowa State?

- Scholarships
- Community
- Opportunity



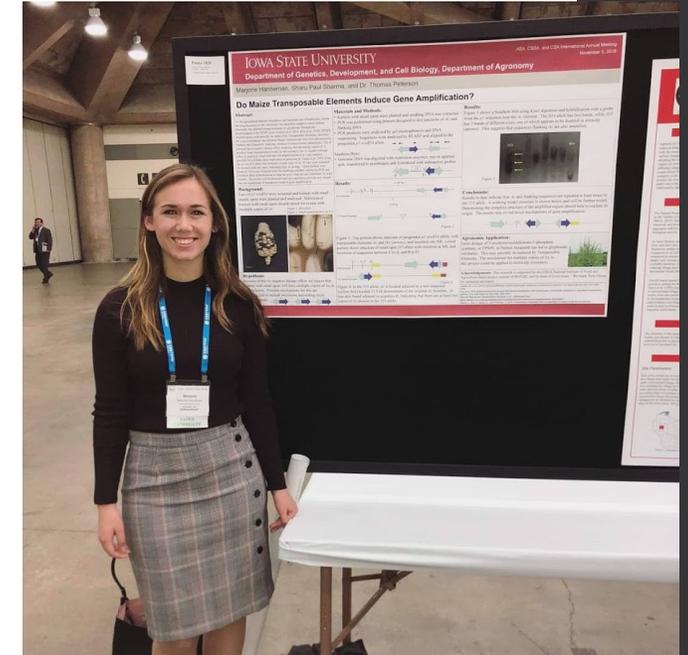
# My Undergraduate Experience

- Education
- Research
- Internships
- Teaching
- Study Abroad
- Advocacy
- Leadership



# Future Outlooks

- Graduate school
  - Molecular plant breeding and genetics
- International work
- Crop improvement
- Run my own research lab
- Mentorship and teaching



# Why plant science is important

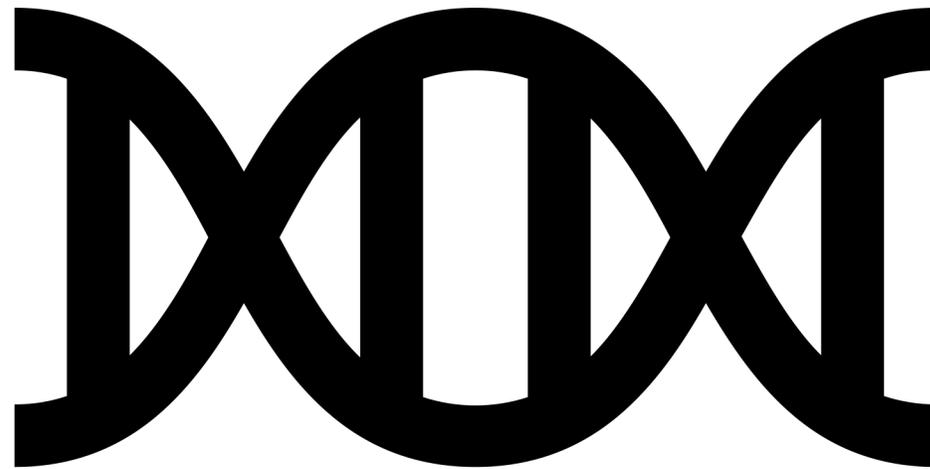
- 821,600,000 people are food insecure in the world
- 1/7 children in Iowa are hungry
- Food is the basis for all human activity
- Borlaug's wheat, golden rice, Iowa corn
- Rising population and changing climate

# DNA Extraction Lesson

Marjorie Hanneman and Dr. Walter Suza

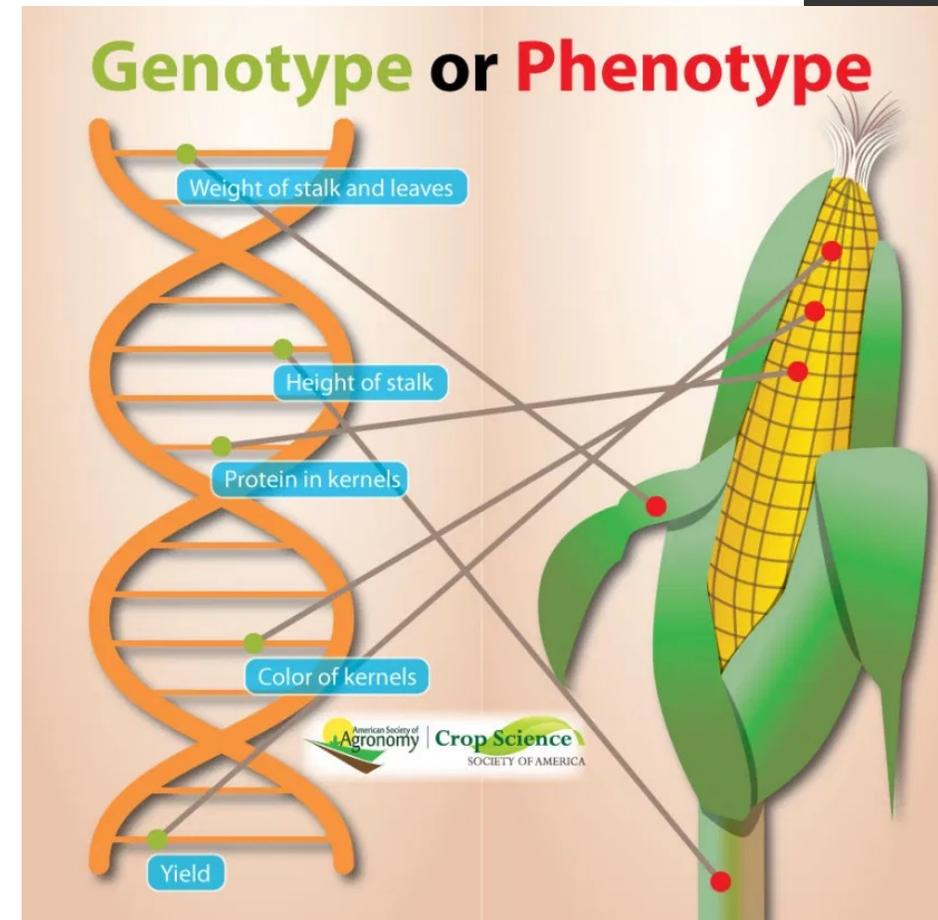
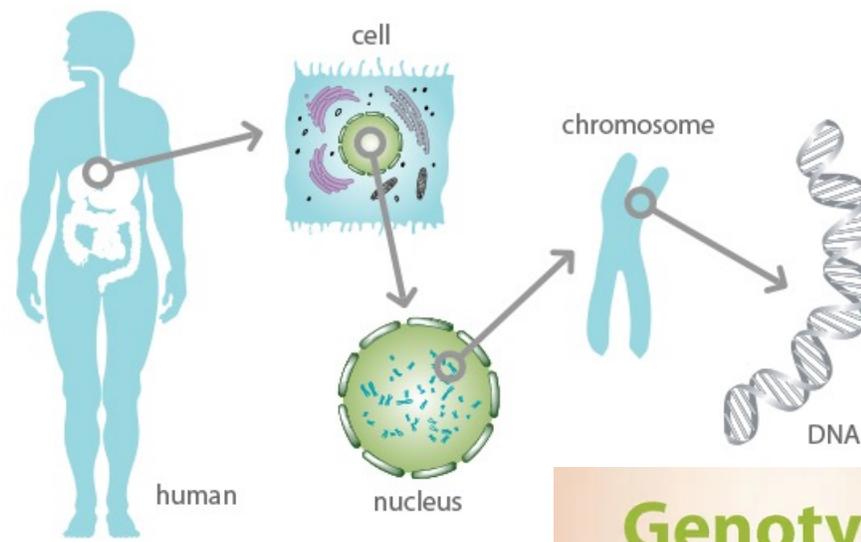
# Learning Objectives

- Students will be able to define a gene and DNA at a basic level.
- Students will connect DNA to physical traits of the food they eat.
- Students will break down cells and comprehend that cells can be manipulated in a lab setting.



# Background

- DNA
  - Deoxyribonucleic Acid
  - All living cells have DNA
  - Building blocks of life
  - Genes are made of DNA
  - Recipe/instructions for proteins
  - Proteins make traits
- Chromosomes
  - Made of tightly packed DNA
  - Organizes DNA in the cell



# Background

- What are traits?
  - Eye color, height, and nose shape
  - Characteristics of plants are determined by genes



Flower	Pod	
Color	Form	Color
		
White	Full	Yellow
		
Violet	Constricted	Green
3	4	5



# Procedure

- Combine shampoo, salt and water in a cup
- Add small pieces of fruit to the cup and mash it with a spoon
  - This breaks open the cell!
- Place a filter in a second cup and pour the fruit mixture into the cup and let drain
  - DNA can pass through the filter but other cell parts are too big
- Pipette filtered fruit solution and add it to alcohol
- Wait and watch the DNA precipitate and collect it
  - It will be white and stringy



# Reflection Questions

- What did you see at the end of the experiment?
- What is DNA?
- Where can you find DNA?
- What are some traits that you have?
- If we did the experiment with different fruit, would you get similar results?