FRST302: Forest Genetics

Lecture 1.1: Classical Genetics and its Molecular Mechanisms

Outline for Today

- Short history of genetics
- Mendel's laws
- Chromosomes

What is genetics?

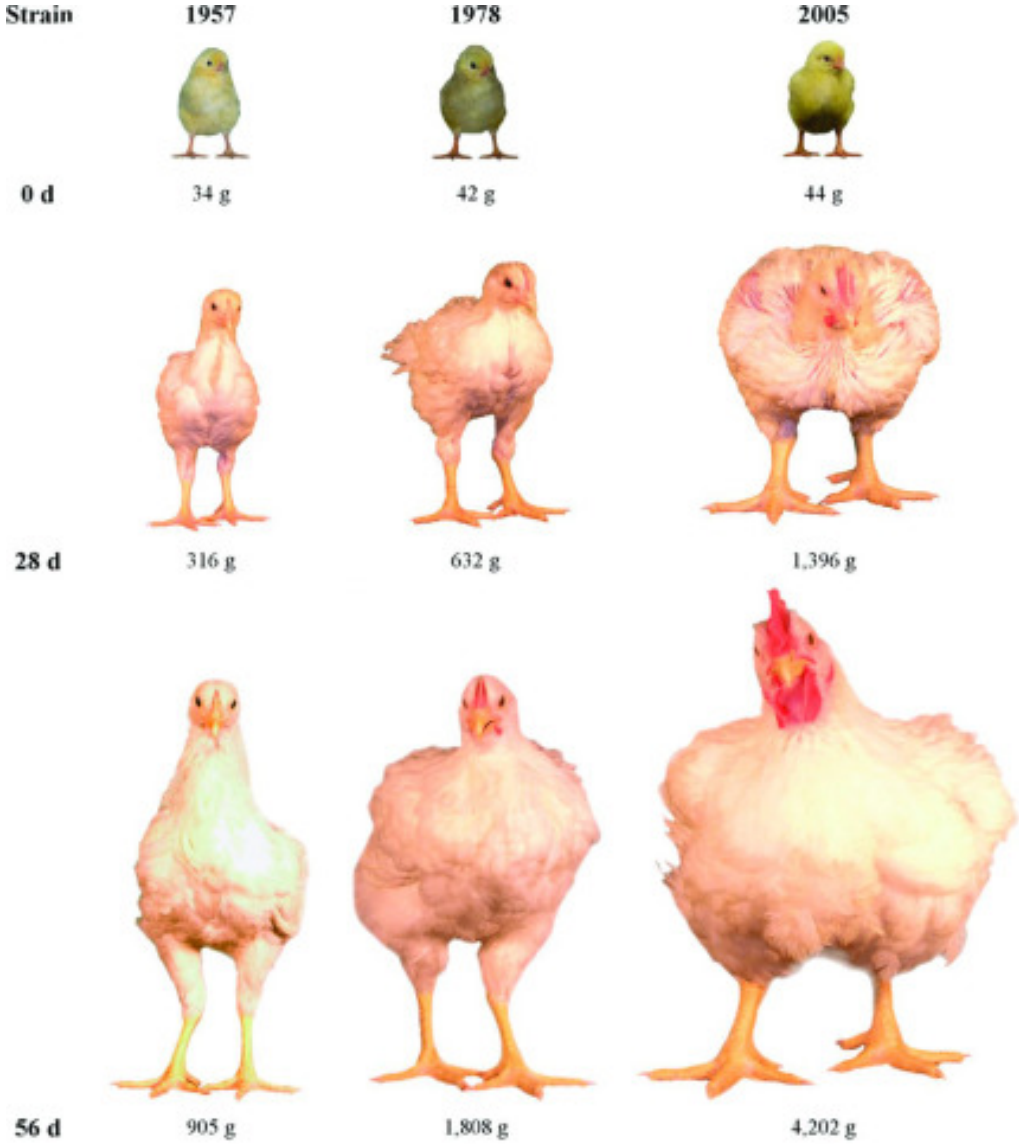
History of Genetics

What is genetics?

Genetics is the study of genes, of variation and heredity across all branches of the tree of life

What are the major questions in genetics?

How can we apply a knowledge of genetics?



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[1] Modified from Figure 1 - Zuidhof et al. 2014

History of Genetics

Humans have probably pondered inheritence for all history:

- For much of history, the mechanisms of inheritence were basically unknown
- The inheritance of acquired characteristics was widely accepted for much of history (from Hippocrates to Aristotal to Lamarck)

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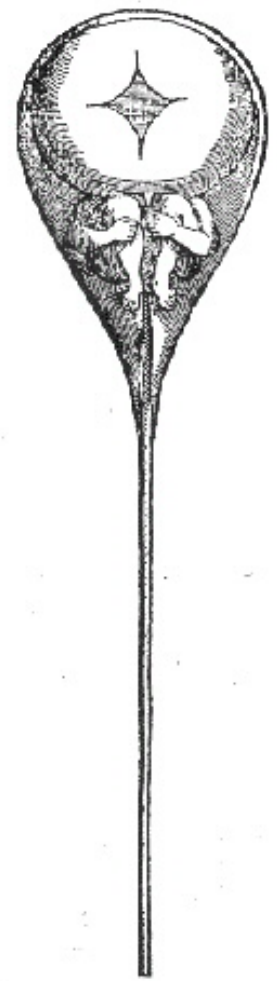
- *Early microscopists thought that they had seen small humans inhabiting sperm cells!*



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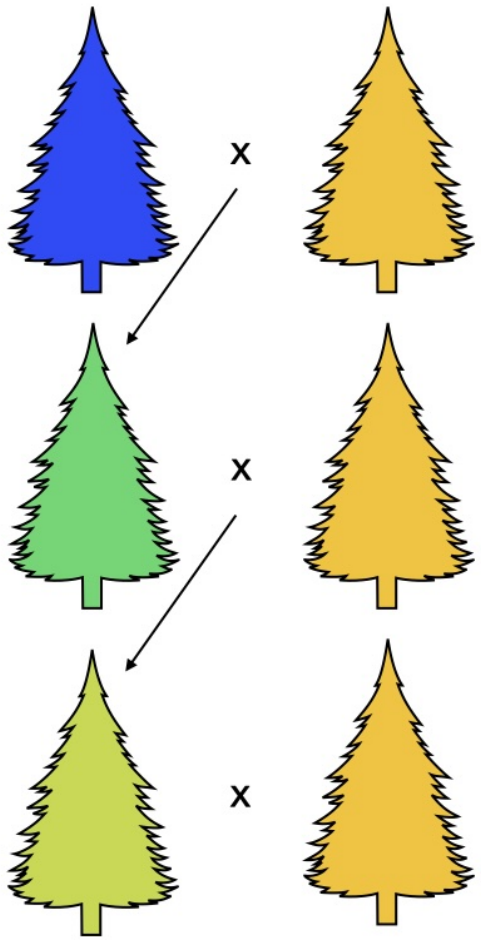
History of Genetics

By the time Darwin came around, the dominant theory was **blending inheritance**

- The notion that an offspring's traits are simply the average of the parents' traits.
- This is intuitively appealing - offspring's traits are often intermediate
- There is one big problem with blending inheritance!



The Problem with Blending

What's the big problem with blending inheritance?