

Intro to Synthetic Biology!

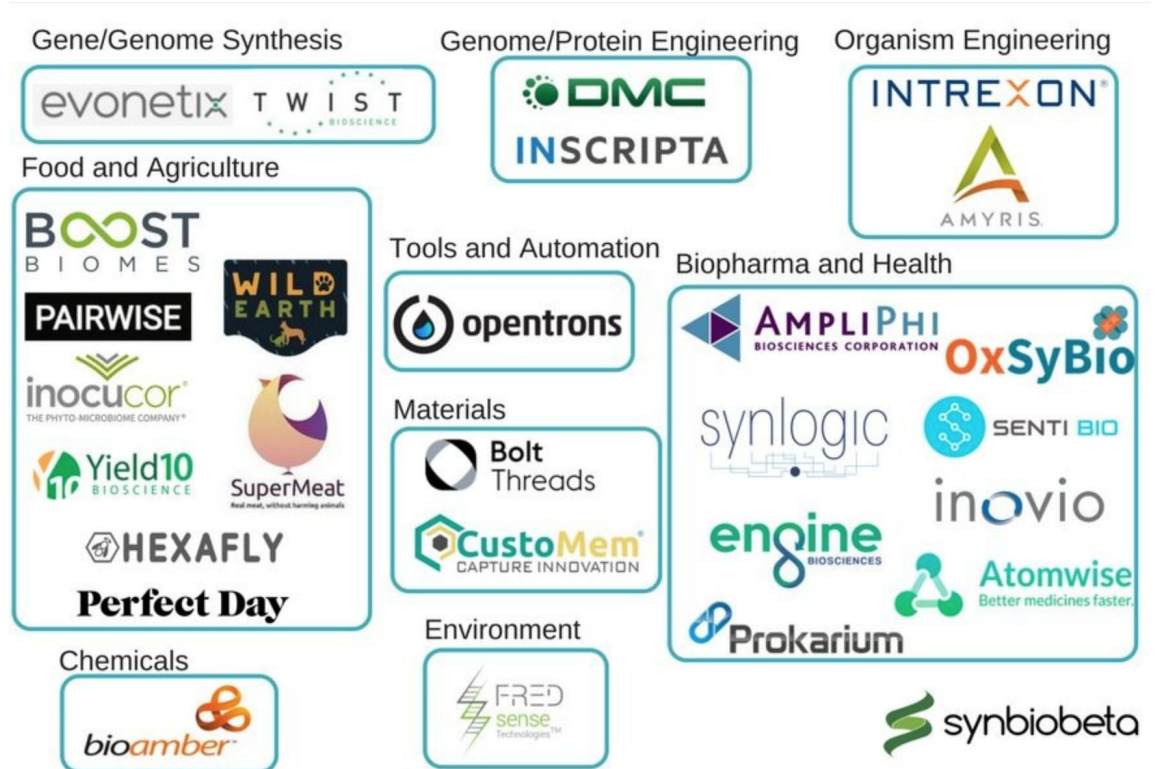
Week 1 - Introduction
July 7, 2019

Welcome!

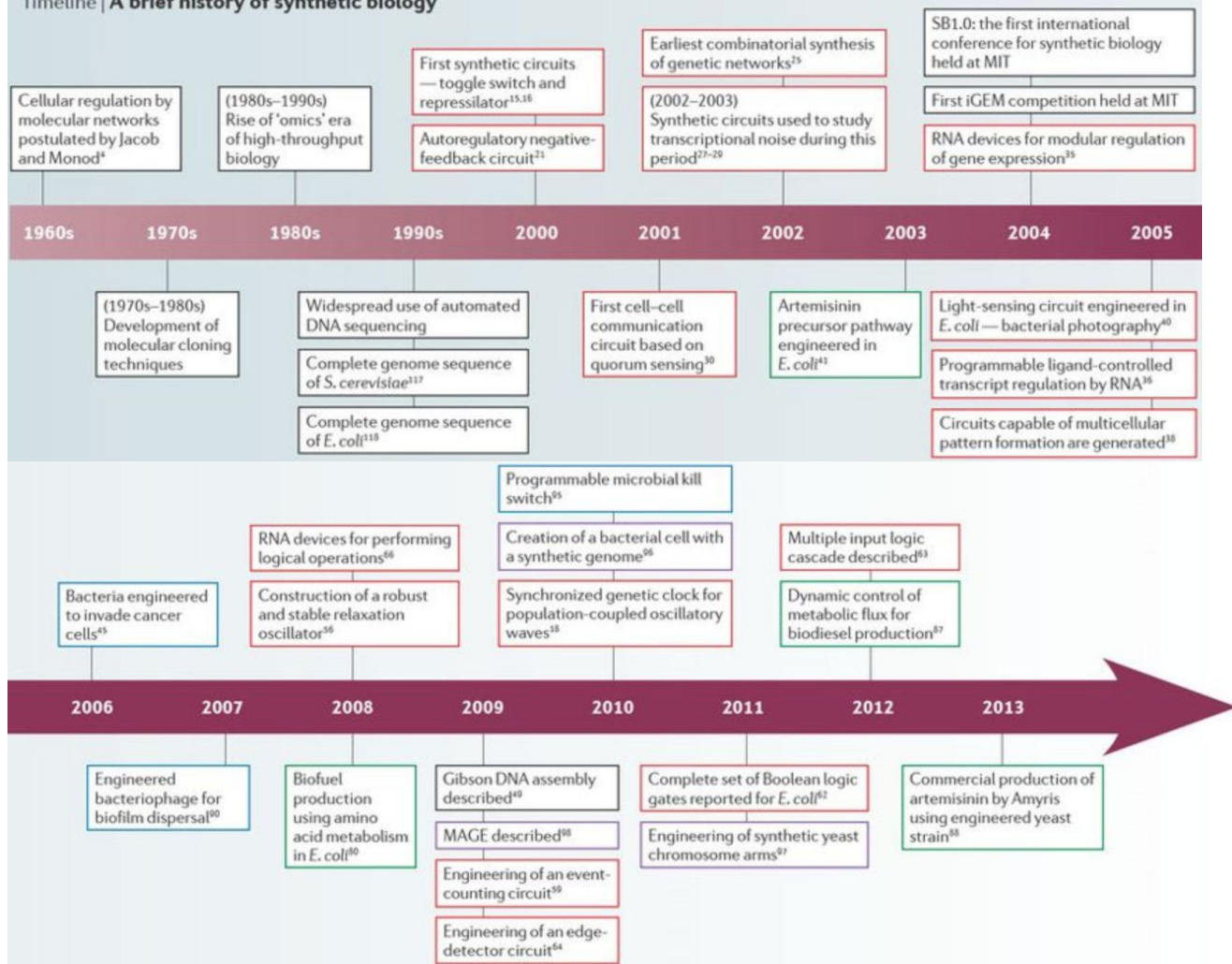
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What is synthetic biology?

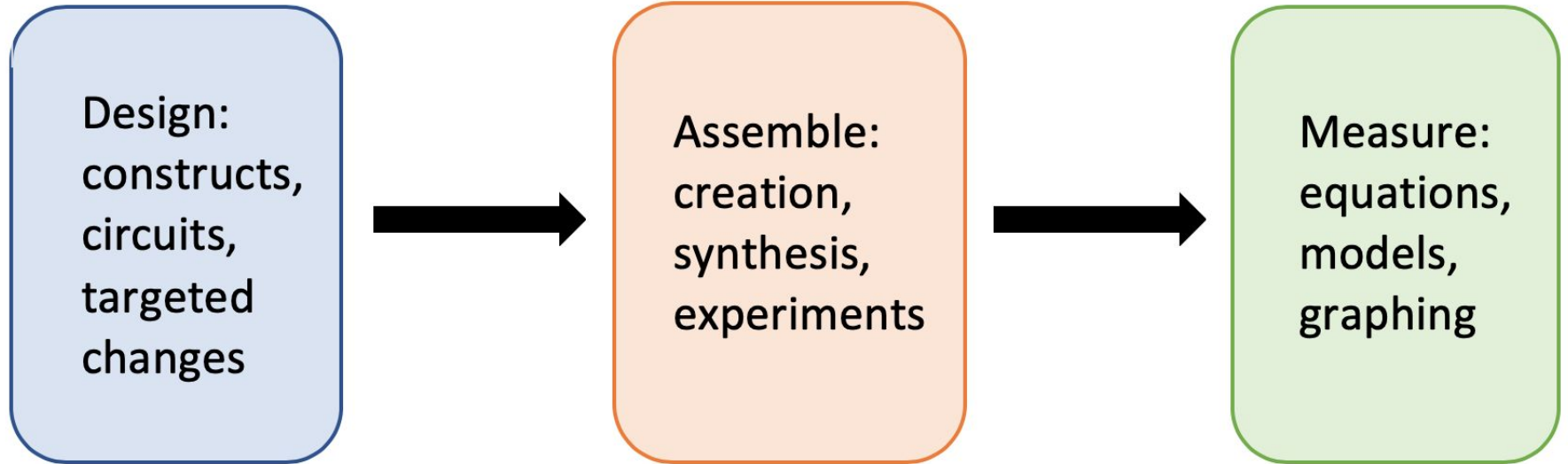
- How - Aims to make implementation of new biological functions more reliable, efficient, safe, and transparent
- Why - Has the potential to solve problems in health, environment, energy, and security

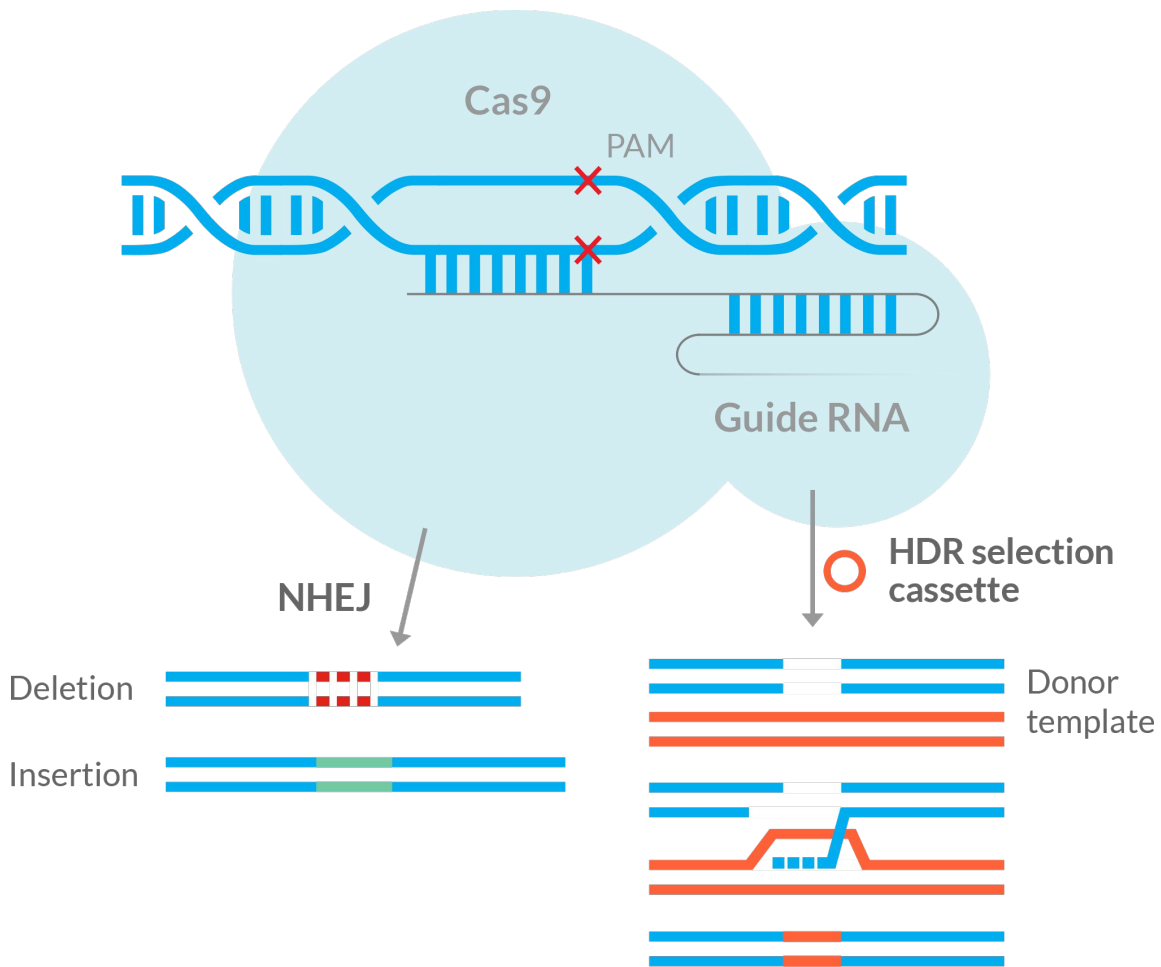
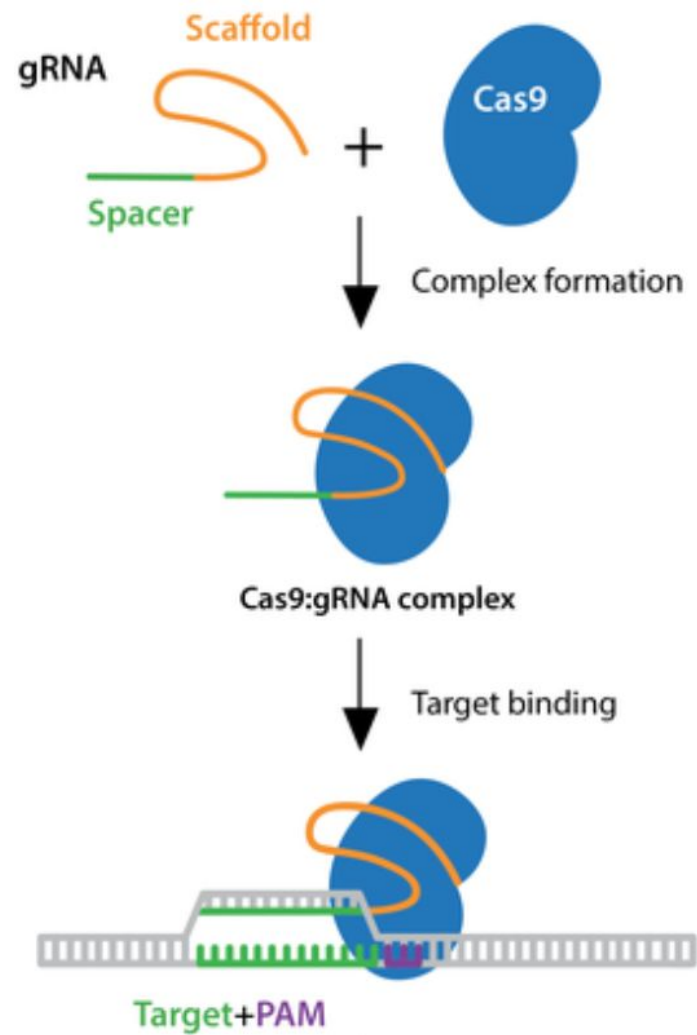


Timeline | A brief history of synthetic biology

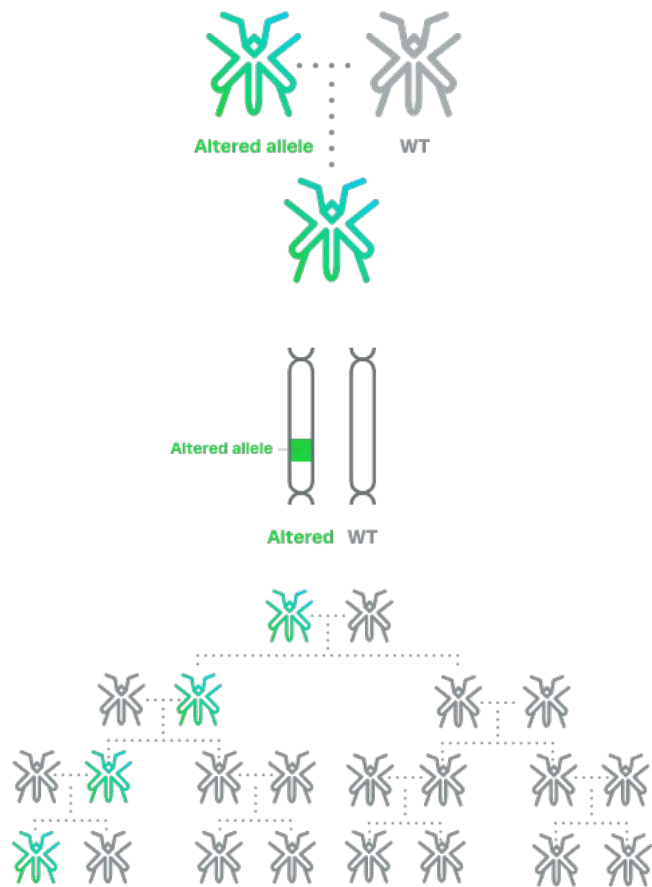


How it all works



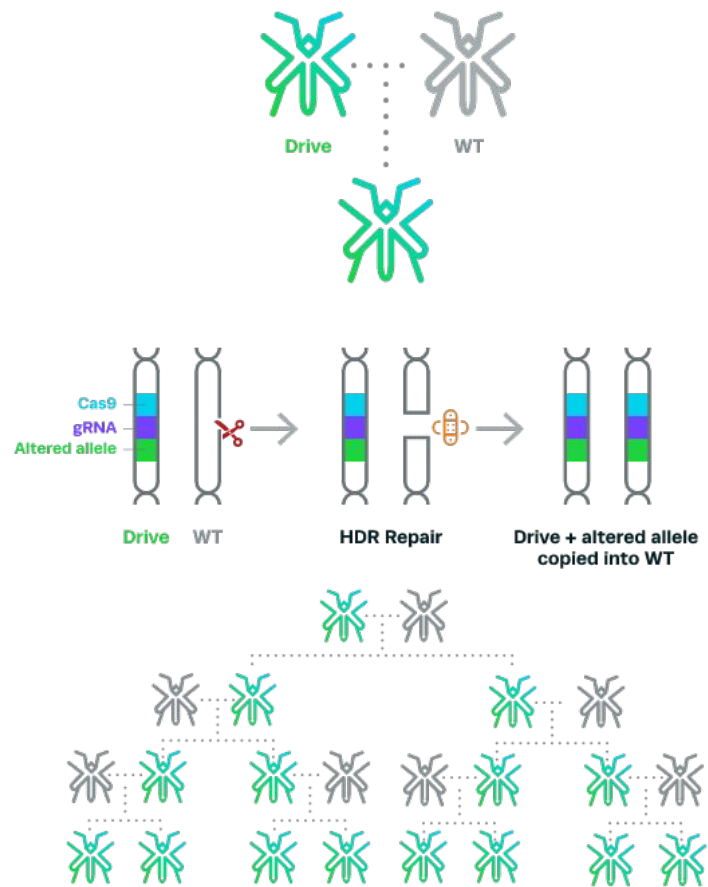


Altered gene spread by **normal inheritance**



50% chance of passing altered gene via normal inheritance

Altered gene spread by **gene drive**



>50% chance of passing altered gene via gene drive

Further reading - articles discussed in class

- Rabbit genes in plants:
 - <https://www.washington.edu/news/2018/12/19/new-houseplant-can-clean-air/>
- First genetically modified babies:
 - <https://www.npr.org/2018/11/26/670991254/chinese-scientist-says-hes-created-first-genetically-modified-babies>
- Human embryo editing - global stances:
 - <https://www.bbc.com/news/health-44849034>
 - <https://www.nature.com/articles/d41586-018-06847-7>
- Synthetic biology and industry - Ginkgo Bioworks:
 - <https://www.ginkgobioworks.com/about/>
- Gene editing and the scientific community:
 - <https://www.sciencemag.org/news/2019/03/new-call-ban-gene-edited-babies-divides-biologists>