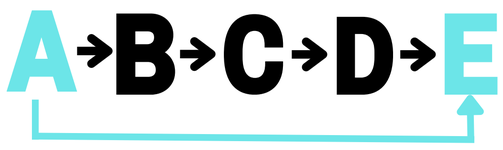
What is Synthetic Biology?

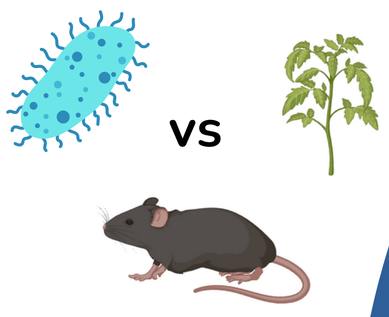
Synthetic biology is an interdisciplinary field of biology and engineering that manipulates DNA for the purpose of designing and redesigning systems such as genes, biological pathways, or organisms to solve society's major problems and understand biological principles.

Synthetic biologists apply engineering ideas like design, build, test, and learn cycle to their projects, as depicted below:

Choose a Pathway to Manipulate That Alters Function



Choose an Organism to Use

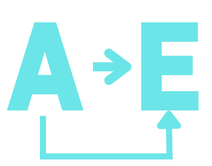


Design

Identify the desired function, organism, and pathway to engineer.

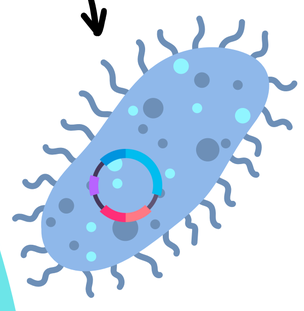
Build

Select, synthesize, and assemble the appropriate parts.



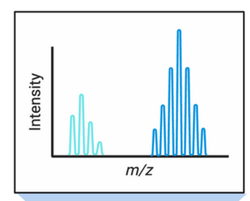
Altered Pathway

Assembled DNA

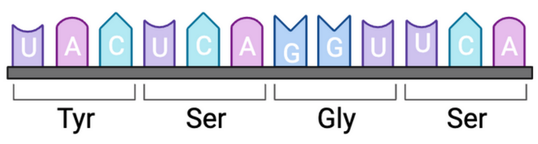


Test

Perform experiments to test the desired function is present.



Measure and Identify Molecules

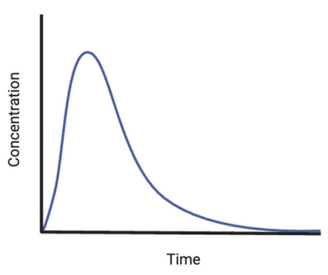


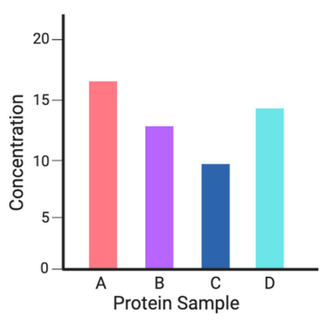
Determine and Quantify Nucleic Acid Sequence

Learn

Analyze and visualize data to assess how to improve the design.

Visualize Data





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