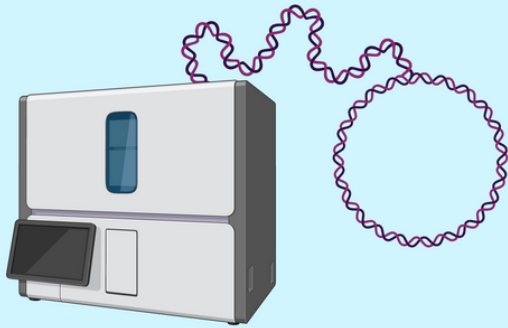


What is Genetic Engineering?

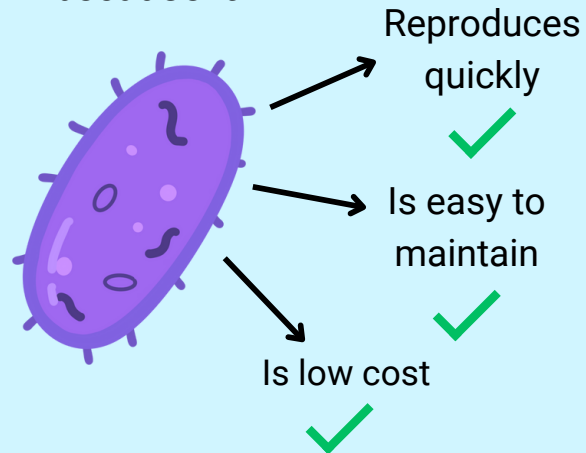
Genetic engineering refers to scientific techniques that alter the DNA of an organism. Scientists might remove entire segments of DNA, insert additional genes from other organisms, or change one base pair. Genetic engineering can enhance, modify, or take away specific abilities of an organism to do different things. For example, scientists have engineered E. coli bacteria to mass-produce insulin, providing a vital treatment for people with diabetes.

1 Order a plasmid (circular bacterial DNA) containing a gene that corresponds to proinsulin from a biofoundry company

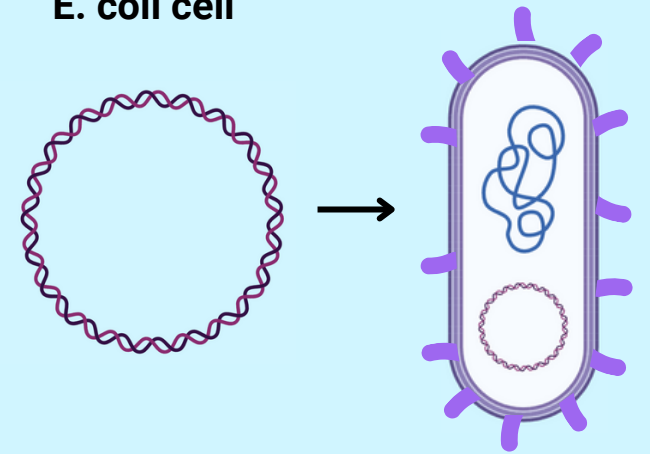


Proinsulin is the precursor to insulin.

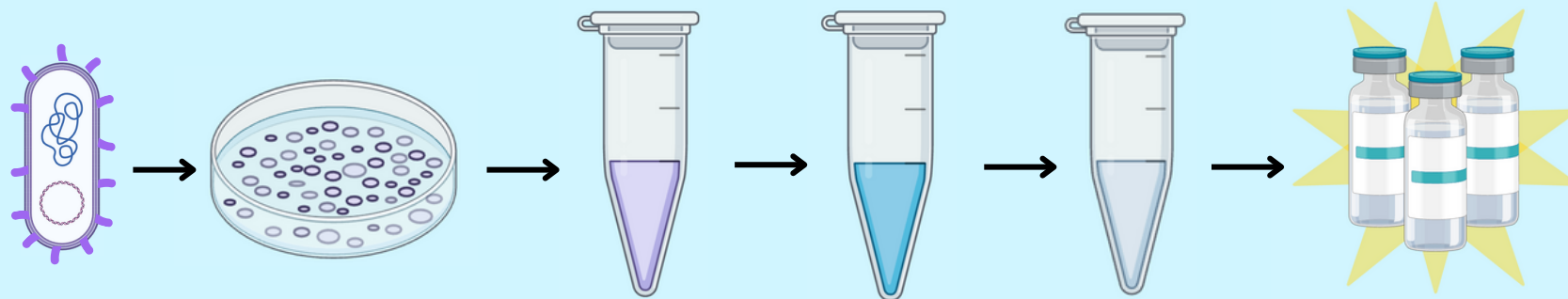
2 E. coli is chosen to be genetically engineered to make insulin because it ...



3 The genetically engineered plasmid is introduced into a new E. coli cell



4 E. coli cells divide and make proinsulin, which is further processed into insulin



Only bacteria with the plasmid will live.

Collect the bacteria.

Purify and isolate the proinsulin from the bacteria.

Convert proinsulin to bioactive insulin with enzymes.

The insulin is collected, processed, and given to patients!

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