



High School Science Virtual Learning

# College Biology

# Chapter 12 Recap Part 1

May 4, 2020



High School College Biology  
Lesson: May 4, 2020

**Objective/Learning Target:**

Students will be able to identify and describe different DNA technologies and discuss the applications associated with the different technologies.



## Let's Get Started:

1. What is biotechnology?
2. What is a genetically modified (GM) organism?



## Answers:

1. The manipulation of organisms or their parts to produce a useful product.
2. Organisms that have acquired one or more genes by artificial means.



## Lesson Activity:

1. Read over pages 1-12 of the Chapter 12 Notes. ([Linked Here](#))- Stop at DNA Profiling
2. Watch this Crash Course video on [Genetic Engineering](#).



## Practice:

1. What is a transgenic organism?
2. What is gene cloning and what makes this process possible?
3. What are some of the medical benefits that humans have received through the use of genetically modified bacteria?

## Practice Answers:

1. A transgenic organism is a GMO. This type of organism acquired its new genes from another organism, typically a different species.
2. Gene cloning is the production of multiple copies of a gene-carrying piece of DNA. This process is made possible by using bacterial plasmids.
3. Genetically modified bacteria have given use Human Growth Hormone (HGH), a protein that dissolves blood clots, vaccines and erythropoietin (EPO) which is used to treat anemia.

## More Practice:

1. Suppose you wish to create a large batch of the protein lactase using recombinant DNA. Place the following steps in the order you would have to perform them.
  - a. Find the clone with the gene for lactase
  - b. Insert the plasmids into bacteria and grow the bacteria clones.
  - c. Isolate the gene for lactase.
  - d. Create recombinant plasmids, including one that carries the gene for lactase.



## More Practice:

2. A carrier that moves DNA from one cell to another, such as a plasmid, is called a \_\_\_\_\_.
3. In making recombinant DNA, what is the benefit of using a restriction enzyme that cuts DNA in a staggered fashion?
4. A paleontologist has recovered a bit of organic material from the 400-year-old preserved skin of an extinct dodo. She would like to compare DNA from the sample with DNA from living birds. The most useful method for initially increasing the amount of dodo DNA available for testing is \_\_\_\_\_.

## More Practice Answers:

1. C, D, B, A
2. Vector
3. Such an enzyme creates DNA fragments with “sticky ends,” single-stranded regions whose unpaired bases can hydrogen-bond to the complementary sticky ends of other fragments created by the same enzyme.
4. PCR



## Review Tools:

-[Kahoot 1](#)

-Bozeman Science Video [What is CRISPR?](#)