

Section 12.1

Directions: Read pages 287-294 and fill in the missing information as you read.

In the middle of the 1900's scientists were asking questions about genes.

What is a gene made of? How do genes work? How do genes determine characteristics of organisms?

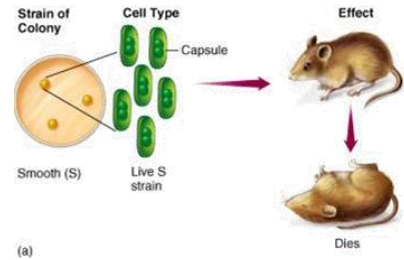
GRIFFITH AND TRANSFORMATION

1928– British scientist _____ isolated two different types of _____.

- One strain grew into smooth colonies on culture plate.

This type was a _____ causing strain.

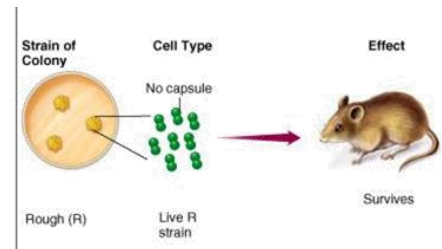
- The other strain grew into rough edged colonies and is a _____ strain (meaning it does not cause the disease pneumonia).



A. When Griffith injected the mice with the disease-causing strain of bacteria,

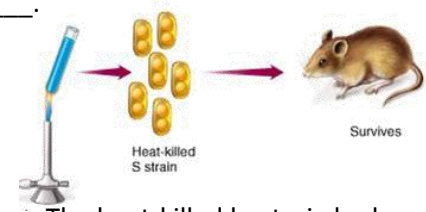
the mice developed _____ and died. The

mice that were injected with the _____ strain, didn't get pneumonia.



B. Griffith then took a culture of the disease-causing strain of bacteria and heated it to _____ the bacteria.

He injected his heat-killed bacteria into the mice and the mice _____. This suggested that the pneumonia was not caused by a poison being released by the disease-causing bacteria.



C. Next he mixed the heat-killed LETHAL bacteria with live harmless bacteria and

injected it into the mice, the mice developed _____. The heat-killed bacteria had passed their _____ causing ability to the harmless strain.

D. This is called _____ because one strain of bacteria (the _____ strain) had been permanently altered by the other _____ strain.

AVERY AND DNA

1944- A group of scientists led by _____ repeated Griffith's experiments looking for the transforming molecule.

A. After heat killing the LETHAL pneumonia bacteria, they treated them with digestive enzymes that destroy specific kinds of molecules. The team destroyed _____, _____, _____ and transformation still occurred.

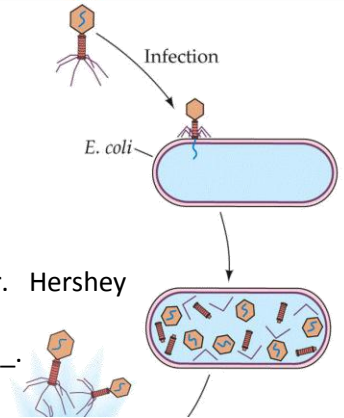
B. Avery and team repeated the experiment. This time they treated the heat-killed LETHAL bacteria with _____ to destroy the DNA. When they destroyed the DNA

_____ did not occur.
C. Avery and his team of scientists discovered that _____
_____.

HERSHEY-CHASE EXPERIMENT

1952- Two American scientists _____ and _____
experimented with _____ that infect living organisms.

A. _____ are a type of virus that infect bacteria. Bacteriophages are made up of a
_____ and _____ core and _____. When a
bacteriophage enters a bacterium, the virus attaches to the surface of the cell and
_____. The viral genes of the bacteriophage trick the bacteria into
reproducing new _____ and this destroys the bacterium.



B. Hershey and Chase wanted to find out if the protein coat or the DNA core entered the
infected cell. They used _____ markers to learn the answer. Hershey
and Chase concluded that only _____ entered the cell not _____.

THE COMPONENTS AND STRUCTURE OF DNA

To understand the DNA molecule better scientists were trying to make a model to understand how it works and what it does.

1940's- Another American biochemist named _____ noticed that the amount of
guanine was almost equal to the amount of _____ and the amount of adenine was almost
equal to the amount of _____. Thus you could say: A=T, and G=C. This discovery is known
as _____.

Early 1950's (Around 1952)- _____ began a study of DNA. She used a technique called
_____. She was able to see a pattern that showed the DNA consists of
_____ strands that are twisted around each other. This shape is known as a _____.

1953- Two scientists, _____ and _____, were trying to
put together a model of DNA. When they saw Franklin's picture of the X-ray they had enough information to make
an accurate model. They created a model that has not been changed much since then. Their models
showed a _____ with little rungs connecting the two strands. It
looks like a twister _____ or a spiral _____.

They also discovered that a _____ bond could be formed between the two nitrogen pairs of
bases.

Directions: Complete the following timeline to show the important events made by scientists in the discovery of DNA.

