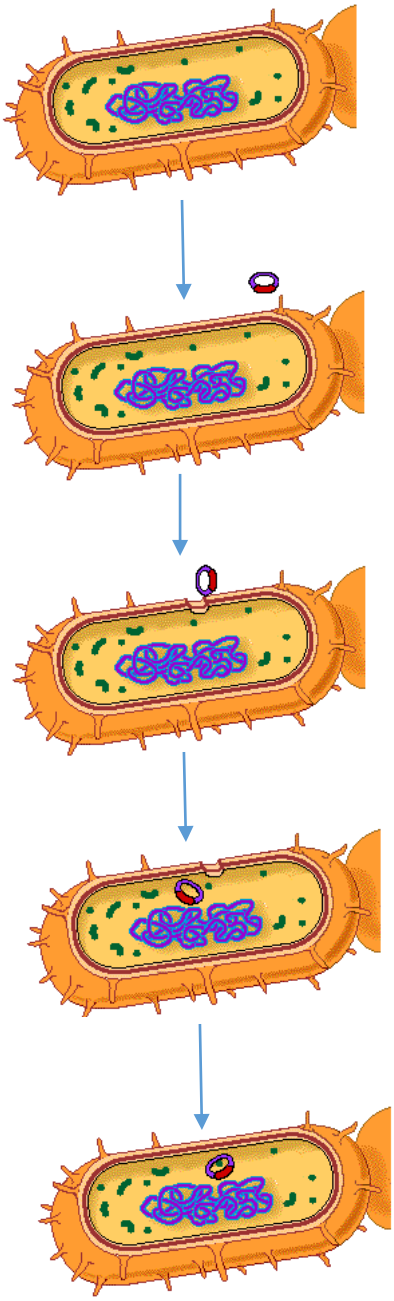
Name_____Assignment #_____

Virtual Lab 8 Bacterial Transformation

http:/ /www.phsch ool.com/science/biology_place/labbench/lab6/intro.html

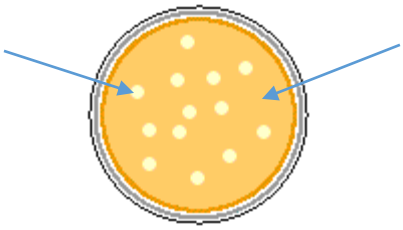
1) Define transformation

2) Explain what is happening for each of the images below. Label the bacterium, plasmid, cell membrane, and chromosome



Click Next Concept

3) Explain what each arrow is pointing to below



4) Describe what a colony consists of

Click Next Concept

5) Define plasmid

Click Next Concept

6) What does the amp^R gene do?

7) What does $+amp^R$ mean?

8) What does $-amp^R$ mean?

9) How can a $-amp^R$ bacterium be transformed into a $+amp^R$ bacterium?

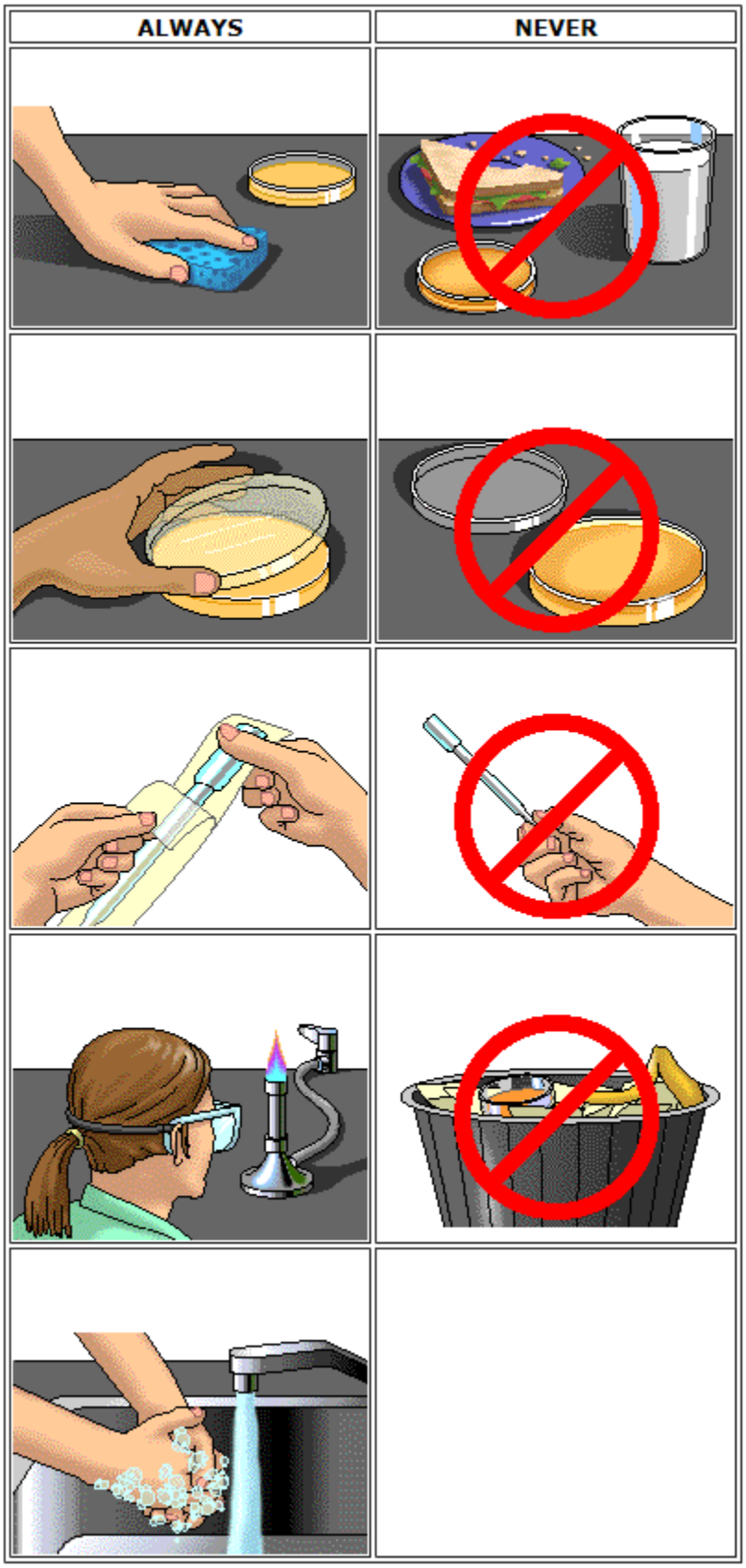
Click Next Concept

10) Define competent

11) How are bacterial cells made competent?

Click Next Concept

12) Fill in the diagram below describing sterile procedure

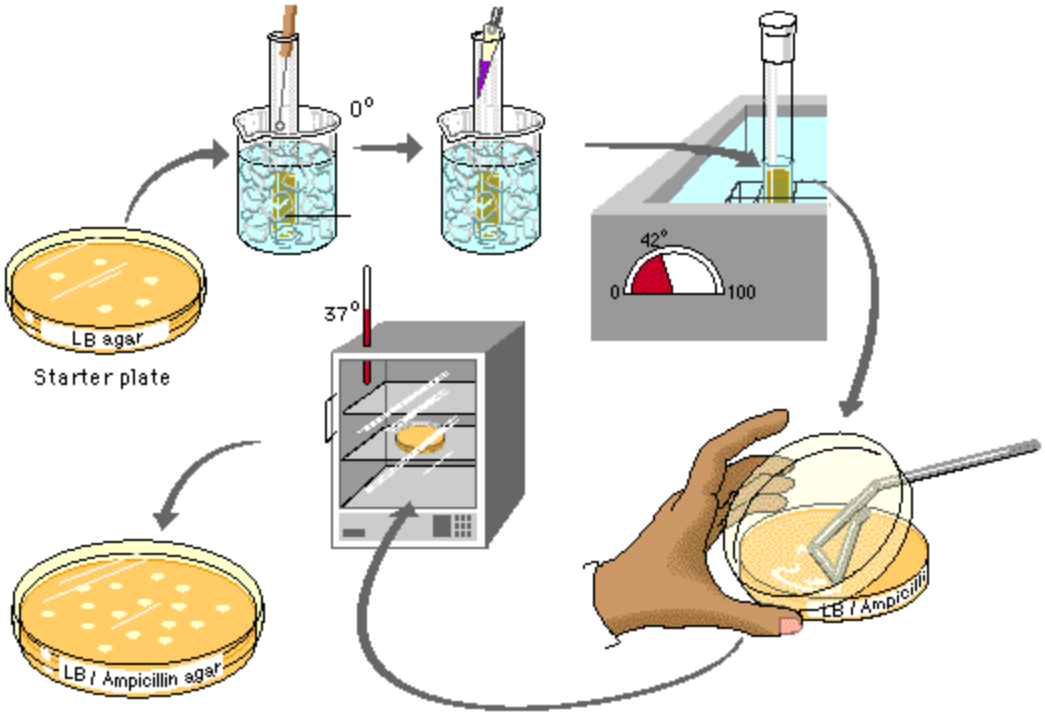


Click Next

13) What is the control group in this experiment?

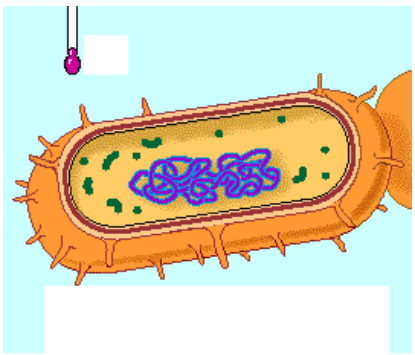
14) What is the control group designed to do?

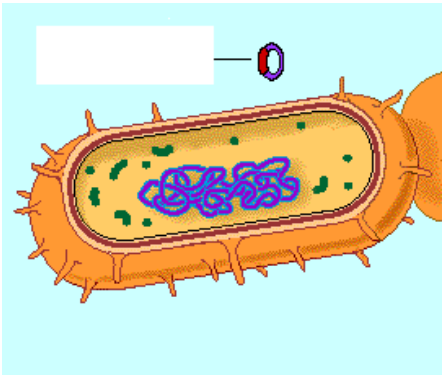
15) Fill in the diagram below

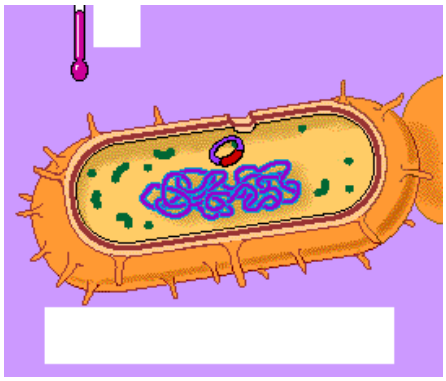


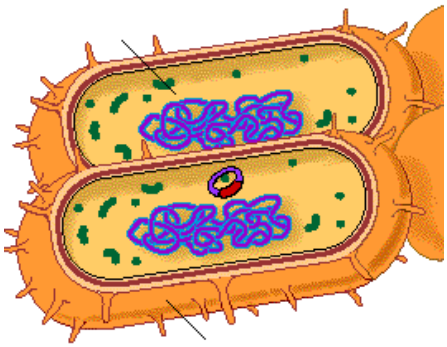
Click on Step 1.

16) Fill in the missing information in all of the illustrations below





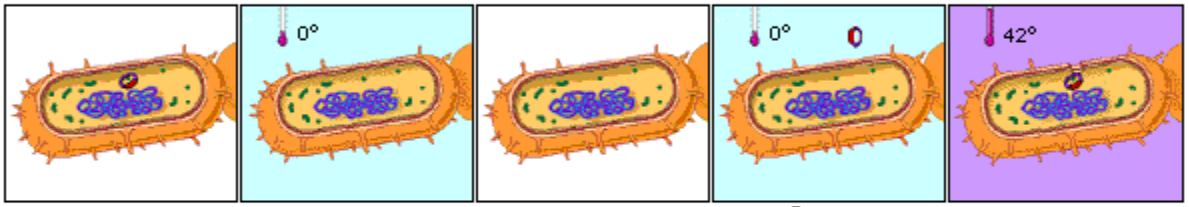




17) Answer the question below

Place the Stages of Transformation in Order

The figures below show the events that take place during transformation of an *E. coli* cell. Type in the letters to indicate the correct order in which the events occur.



A. *E. coli* with amp^R plasmid

B. $CaCl_2$ added; cells kept on ice

C. *E. coli* cells without amp^R plasmid

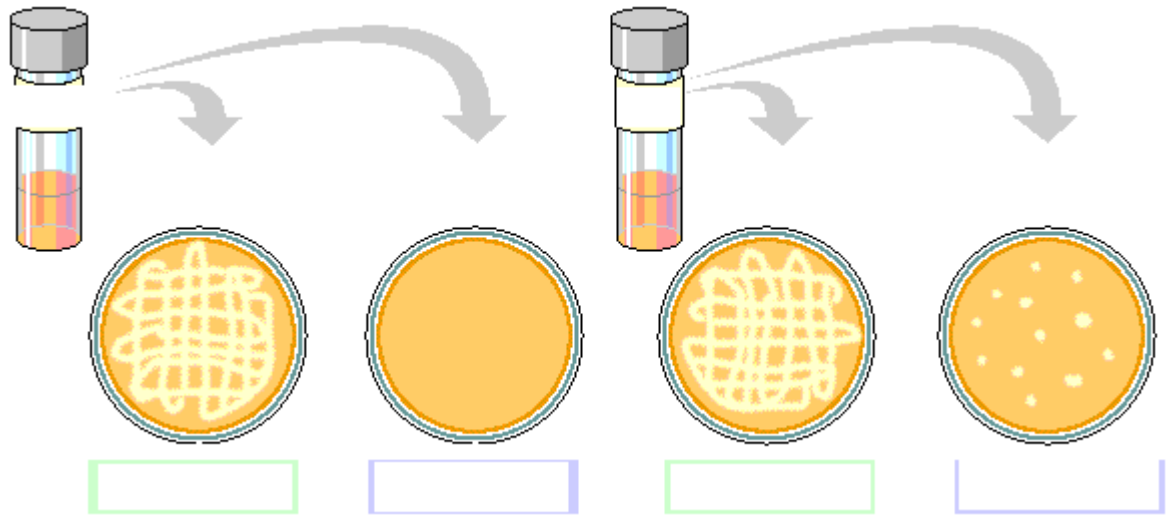
D. amp^R plasmids added to cells

E. Cells heat shocked

Check Your Answers

Click Next

18) Fill in the missing information in the diagram below



Click Next

19) Answer the questions below

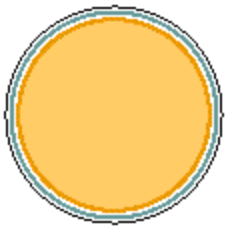


Plate I

Plate I
- a. LB agar without ampicillin, +amp^R cells
- b. LB agar without ampicillin, –amp^R cells
- c. LB agar with ampicillin, +amp^R cells
- d. LB agar with ampicillin, –amp^R cells

Check Your Answers

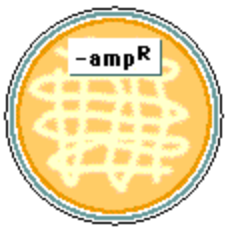


Plate II

Plate II
- a. LB agar without ampicillin, +amp^R cells
- b. LB agar without ampicillin, –amp^R cells
- c. LB agar with ampicillin, +amp^R cells
- d. LB agar with ampicillin, –amp^R cells

Check Your Answers

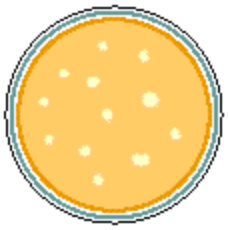


Plate III

Plate III
- a. LB agar without ampicillin, +amp^R cells
- b. LB agar without ampicillin, –amp^{R}cells
- c. LB agar with ampicillin, +amp^R cells
- d. LB agar with ampicillin, –amp^R cells

Check Your Answers

Plate IV

Plate IV
- a. LB agar without ampicillin, +amp^R cells
- b. LB agar without ampicillin, –amp^R cells
- c. LB agar with ampicillin, +amp^R cells
- d. LB agar with ampicillin, –amp^R cells

Check Your Answers

Click Self-Quiz

In a molecular biology laboratory, a student obtained competent *E. coli* cells and used a common transformation procedure to induce the uptake of plasmid DNA with a gene for resistance to the antibiotic kanamycin. The results below were obtained.

20) On which petri dish do only transformed cells grow?

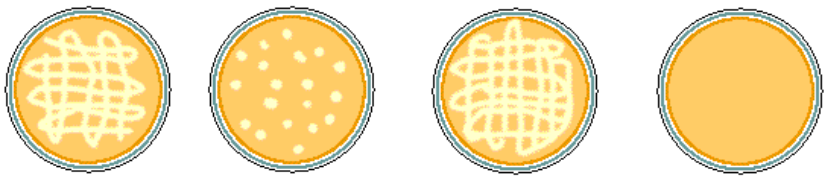


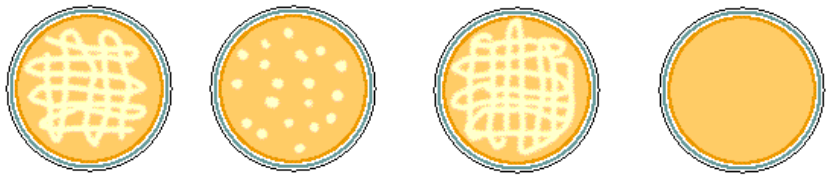
Plate I.
LB agar
+kan plasmid

Plate II.
LB agar with kanamycin
+kan plasmid

Plate III.
LB agar
no plasmid added

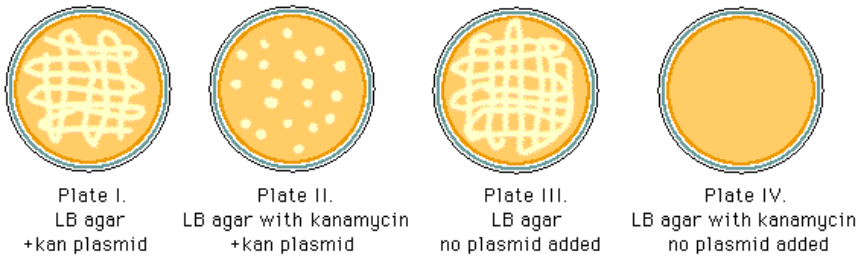
Plate IV.
LB agar with kanamycin
no plasmid added

21) Which of the plates is used as a control to show that nontransformed *E. coli* will not grow in the presence of kanamycin?



22) If a student wants to verify that transformation has occurred, which of the following procedures should she use? (write out the full correct answer)

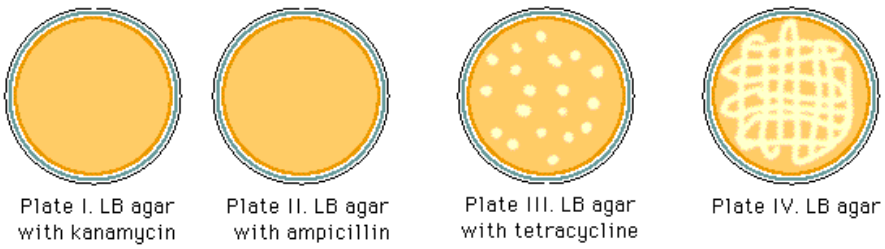
23) During the course of an *E. coli* transformation laboratory, a student forgot to mark the culture tube that received the kanamycin-resistant plasmids. The student proceeds with the laboratory because he thinks that he will be able to determine from his results which culture tube contained cells that may have undergone transformation. Which plate would be most likely to indicate transformed cells?



Write the full correct answer

24) A student has forgotten which antibiotic plasmid she used in her *E. coli* transformation. It could have been kanamycin, ampicillin, or tetracycline. She decides to make up a special set of plates to determine the type of antibiotic used. The plates below show the results of the test.

Which antibiotic plasmid has been used?



25) A student has forgotten which antibiotic plasmid she used in her *E. coli* transformation. It could have been kanamycin, ampicillin, or tetracycline. She decides to make up a special set of plates to determine the type of antibiotic used. The plates below show the results of the test.

What is the explanation for these results?

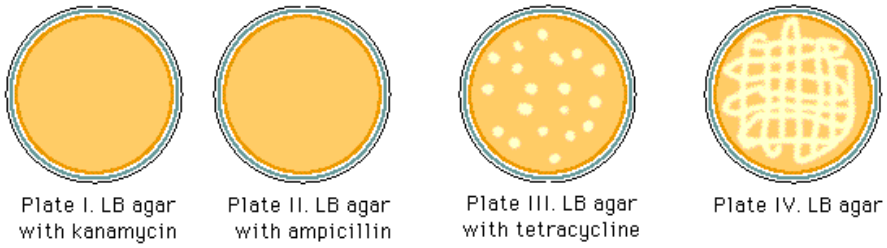


Plate I. LB agar with kanamycin

Plate II. LB agar with ampicillin

Plate III. LB agar with tetracycline

Plate IV. LB agar

Write the full correct answer