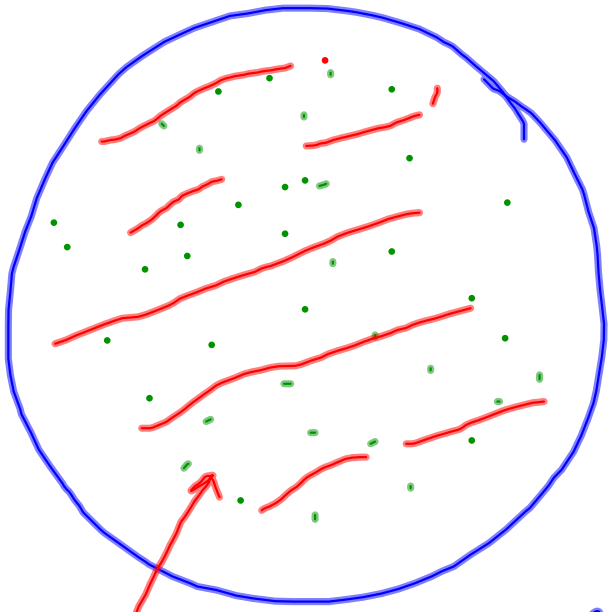
# Model of antibiotic resistance:

- Antibiotics are medicines that kill bacteria
- Some bacteria are not affected - or not as strongly affected - by antibiotics. These bacteria are described as "resistant" to the antibiotic.

# Our model:

- We'll propose that antibiotic resistance is genetic.
- There is a gene in some bacteria that make them resistant to antibiotics
- In any group of bacteria, some will have that gene and others won't



10%

100,000 bacteria in a petri dish!

10,000 have the gene that makes them antibiotic resistant

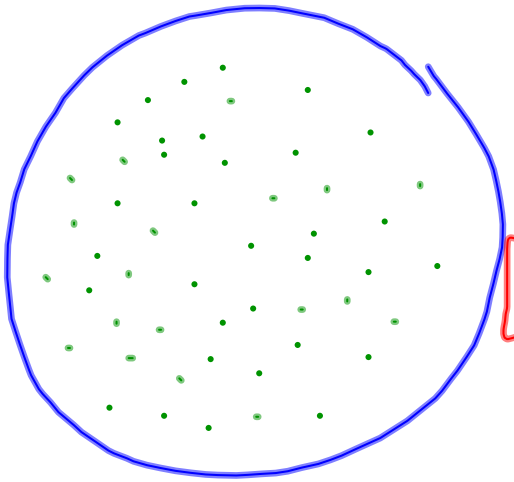
90,000 do <u>not</u> have the gene for antibiotic resistance

add antibiotic to petri dish....
Wait.... it kills

gene frequency: the % of organisms in a population that have a certain gene

5,000 of the bacteria that are antibiotic resistant

85,000 of the bacteria that are <u>not</u> antibiotic resistant



50%

Start over with:

~~5,000~~ resistant → increases to 50,000

~~5,000~~ non-resistant → increases to 50,000

total = 100,000

There has been a change in gene frequencies over time. The gene frequency of the resistance gene has increased.

GENOPLASTY : The gene frequency of a particular gene in a population changes over time.