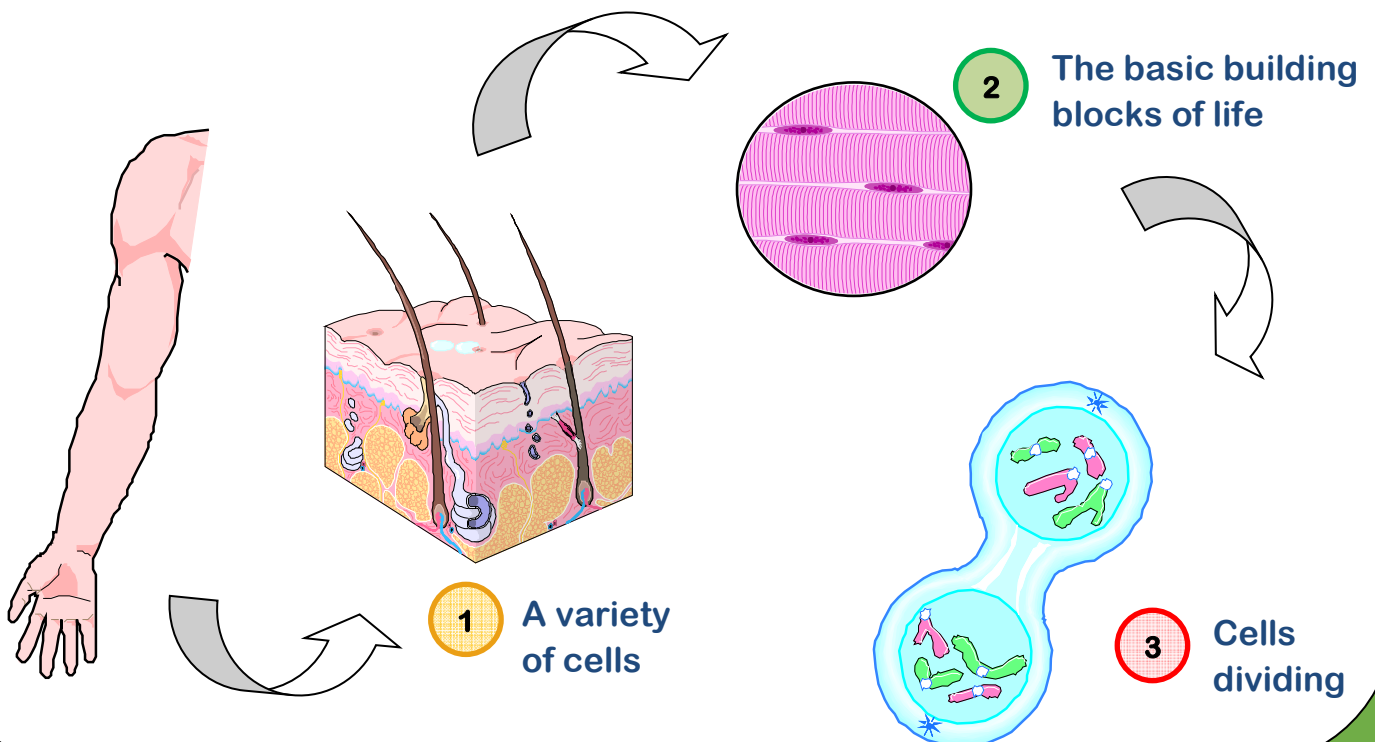


1. Historically, scientists were unsure of what living organisms 'looked' like at a very small level.
2. When lenses and microscopes were developed, scientists were able to see the basic units of living things. These were named cells.
3. After a large number of experiments had been carried out by scientists, a 'cell theory' was put forward. It was made up of three statements:

- 1 All living things are made up of one or more cells.
- 2 The cell is the basic unit of life.
- 3 All cells are made from pre-existing cells.

Living things are made up from a variety of cells



1. Bacteria reproduce using binary fission. This is a process where a parent cell copies itself and then divides into two daughter cells.
2. Binary fission occurs very fast. So fast, in fact, that one bacterium can make millions within a few hours!
3. Binary fission occurs when the correct environmental conditions (i.e. temperature and a source of food) are present.
4. When bacteria reproduce, the host organism (e.g. a human) fights against them. If the bacteria reproduce so fast that the organism cannot kill them all, then health symptoms occur and the person becomes sick.

Cell Division in Action

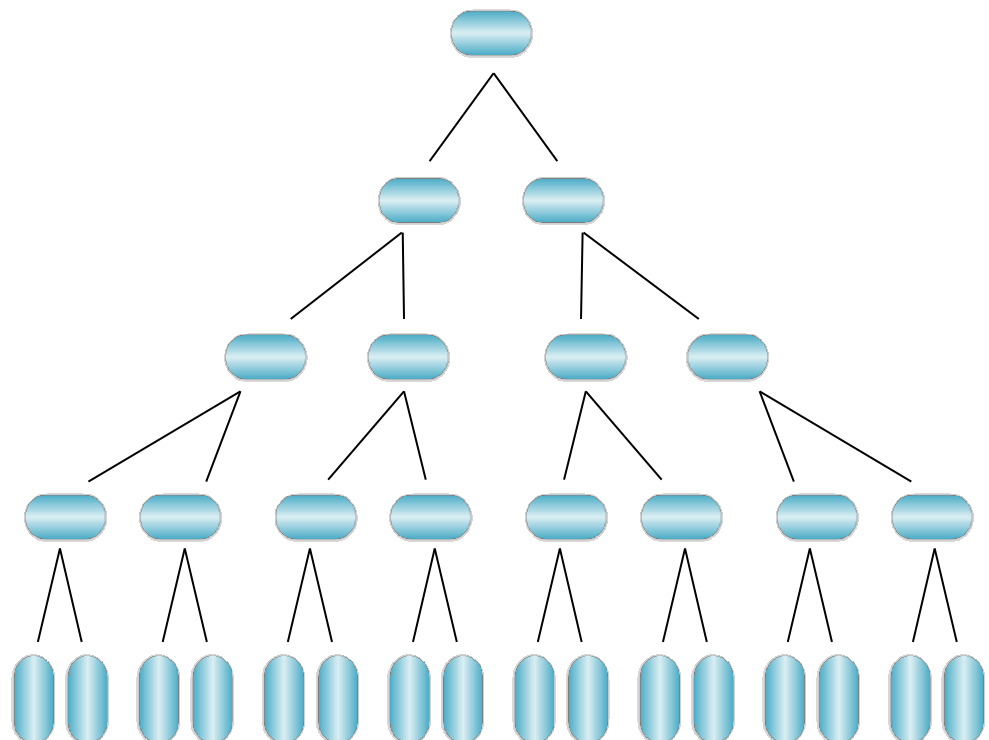
Generation 1

Generation 2
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Generation 3
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Generation 4
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Generation 5
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Bacteria: The Fast and the Furious

Unicellular Organisms



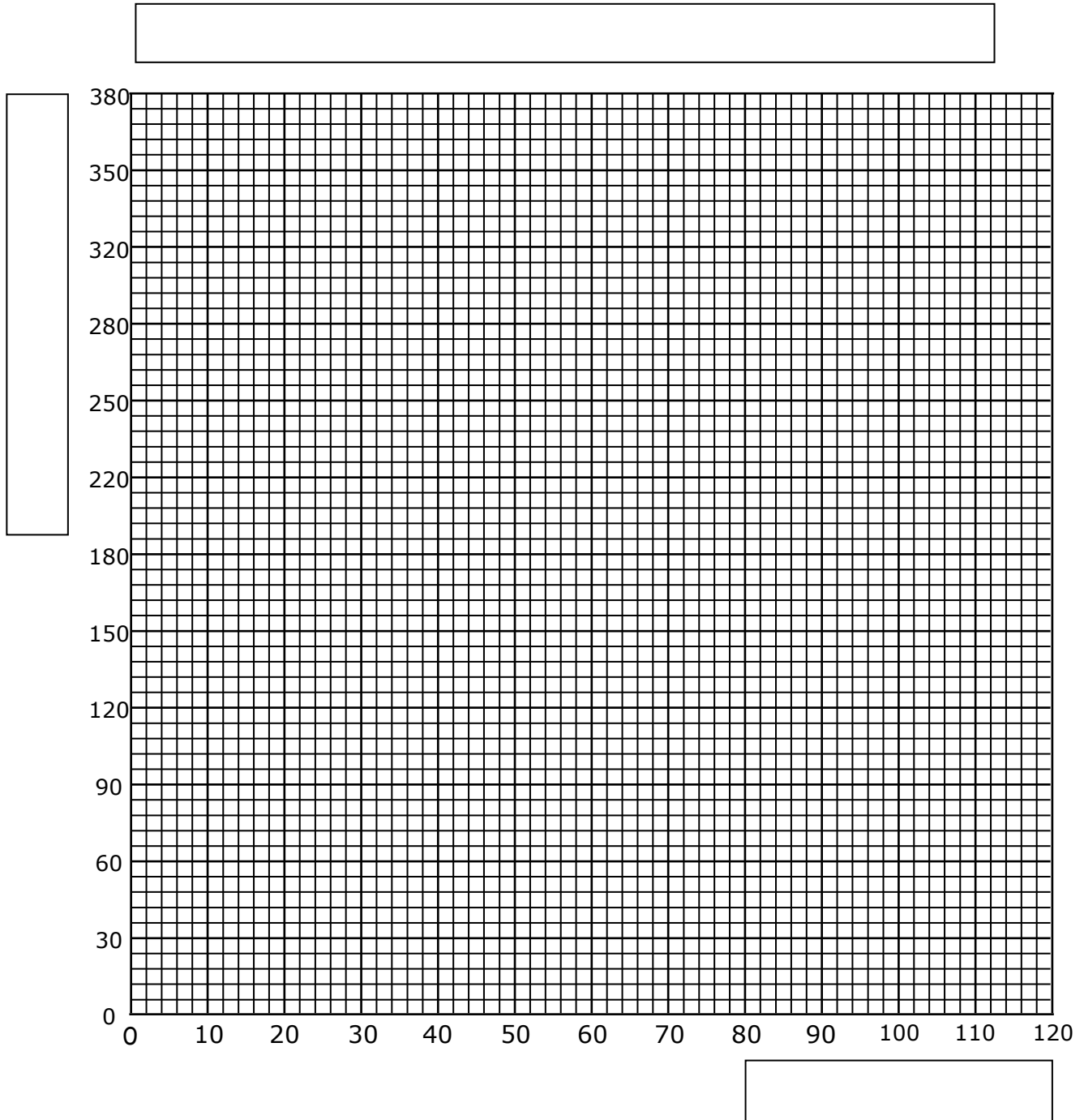
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Graphics for use in this resource only

A student was comparing how fast two bacterial cultures grew over specific temperature ranges. The results are shown below.

| Bacteria Culture A | Population size (number of colonies) | Temperature (°C) |
|--------------------|-----------------------------------------|------------------|
| | 1 | 10 |
| | 2 | 20 |
| | 4 | 30 |
| | 16 | 40 |
| | 256 | 50 |
| | 300 | 60 |
| | 300 | 70 |
| | 150 | 80 |
| | 27 | 90 |
| | 0 | 100 |
| | 0 | 110 |
| Bacteria Culture B | Population size (number of colonies) | Temperature (°C) |
| | 1 | 10 |
| | 2 | 20 |
| | 4 | 30 |
| | 16 | 40 |
| | 250 | 50 |
| | 310 | 60 |
| | 310 | 70 |
| | 145 | 80 |
| | 31 | 90 |
| | 0 | 100 |
| | 0 | 110 |

Create a 2-line graph using population size as a function of temperature.



Write a conclusion for this investigation.