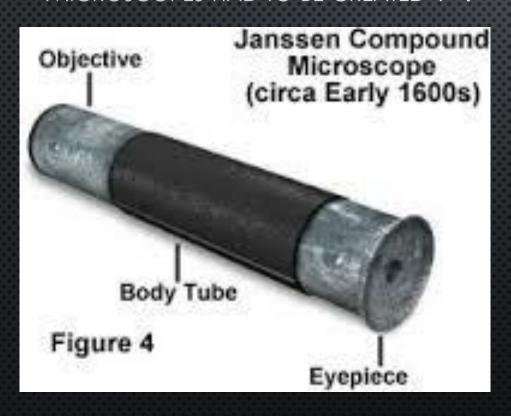
THE CELL THEORY

WHAT IS A HYPOTHESIS, THEORY, AND LAW IN SCIENCE?

- A HYPOTHESIS IS AN EDUCATED GUESS, BASED ON OBSERVATION.
- A SCIENTIFIC THEORY SUMMARIZES A HYPOTHESIS OR GROUP OF HYPOTHESES THAT HAVE BEEN SUPPORTED WITH REPEATED TESTING.
- A SCIENTIFIC LAW GENERALIZES A BODY OF OBSERVATIONS. AT THE TIME IT IS MADE, NO EXCEPTIONS HAVE BEEN FOUND TO A LAW. SCIENTIFIC LAWS EXPLAIN THINGS, BUT THEY DO NOT DESCRIBE THEM. ONE WAY TO TELL A LAW AND A THEORY APART IS TO ASK IF THE DESCRIPTION GIVES YOU A MEANS TO EXPLAIN 'WHY'. THE WORD "LAW" IS USED LESS AND LESS IN SCIENCE, AS MANY LAWS ARE ONLY TRUE UNDER LIMITED CIRCUMSTANCES.

THE CELL THEORY

• MICROSCOPES HAD TO BE CREATED 1ST.



Microscope Timeline

1660

Robert Hooke improved the microscope by adding an oil lamp

1886

The modern light compound microscope was invented

1590

Hans Janssen and his son made one of the first compound microscopes

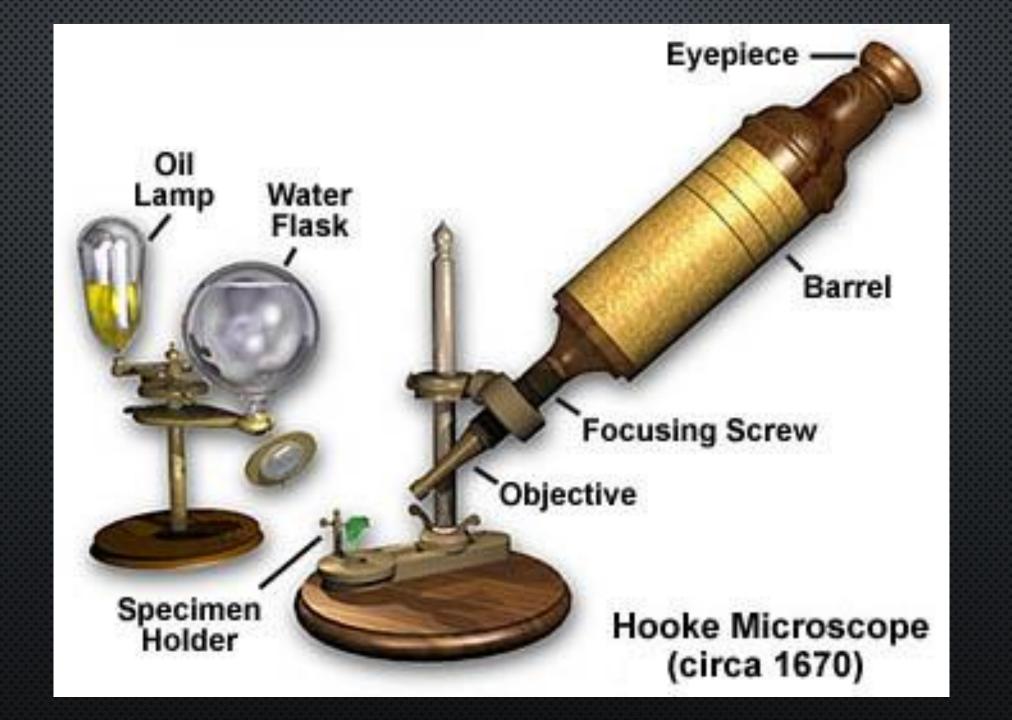


1683

Anton Leeuwenhoek
made a simple
microscope that could
magnify an object 266
times. He was the first
to see many one celled
organisms

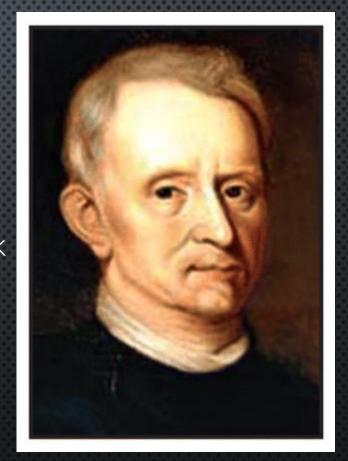
1981

It can magnify an object 1,000,000 times



ROBERT HOOKE -1665

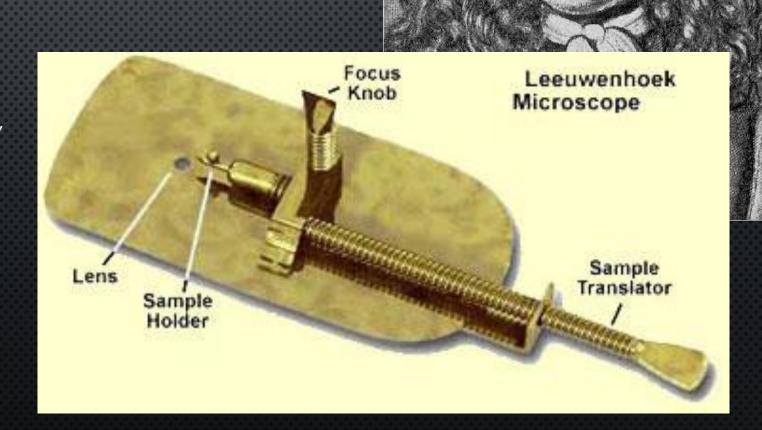
 PREPARING FOR A MEETING, HE FOUND A PIECE OF CORK WOOD, EXAMINED IT UNDER HIS HOMEMADE MICROSCOPE
 AND DISCOVERED CELLS = LITTLE ROOMS IN LATIN.



ANTON VAN LEEUWENHOEK - 1673

- DUTCH BUSINESSMAN
- 1ST TO SEE BACTERIA
- Used handmade microscope

TO SEE POND SCUM, TARTER FROM TEETH, BLOOD CELLS OF BIRDS. FROGS. FISH.



MATHIAS SCHLEIDEN - 1838

- CONCLUDED THAT ALL PLANTS ARE MADE OF CELLS.
- GERMAN SCIENTIST
- LOOKED AT MANY PLANTS TISSUES



THEODOR SCHWANN - 1839

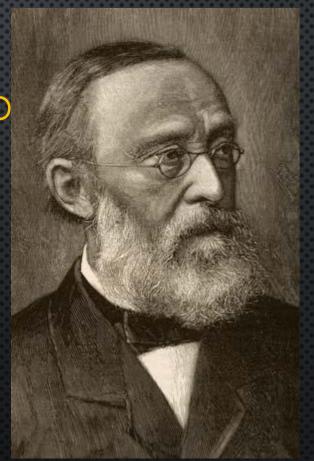
- GERMAN SCIENTIST
- WROTE THE 1ST TWO PARTS OF THE CELL THEORY
- CONCLUDED THAT ALL ANIMAL TISSUES ARE MADE OF CELLS.



Theodor Schwann

RUDOLF VIRCHOW - 1858

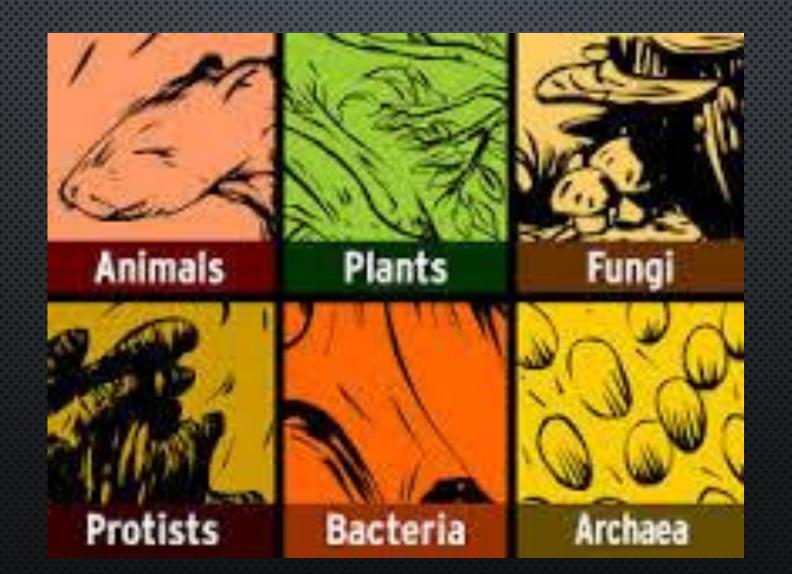
- WROTE THE 3RD PART OF THE CELL THEORY
 - ALL CELLS COME FROM OTHER CELLS OF SAME KIND



THE CUMULATIVE AND MODERN CELL THEORY

- ALL ORGANISMS ARE MADE OF ONE OR MORE CELLS.
- THE CELL IS THE BASIC UNIT OF LIFE IN ALL LIVING THINGS.
- ALL CELLS COME FROM EXISTING CELLS.

THE CELL IS THE BASIC UNIT OF LIFE IN ALL LIVING THINGS.



ALL ORGANISMS ARE MADE OF ONE OR MORE CELLS.

Unicellular –vs- Multi-cellular organisms

are made up of only one cell



Multi-cellular Organisms are made of many cells



ALL CELLS COME FROM EXISTING CELLS.

receives one copy of the chromosome.

PROKARYOTIC

EUKARYYOTIC

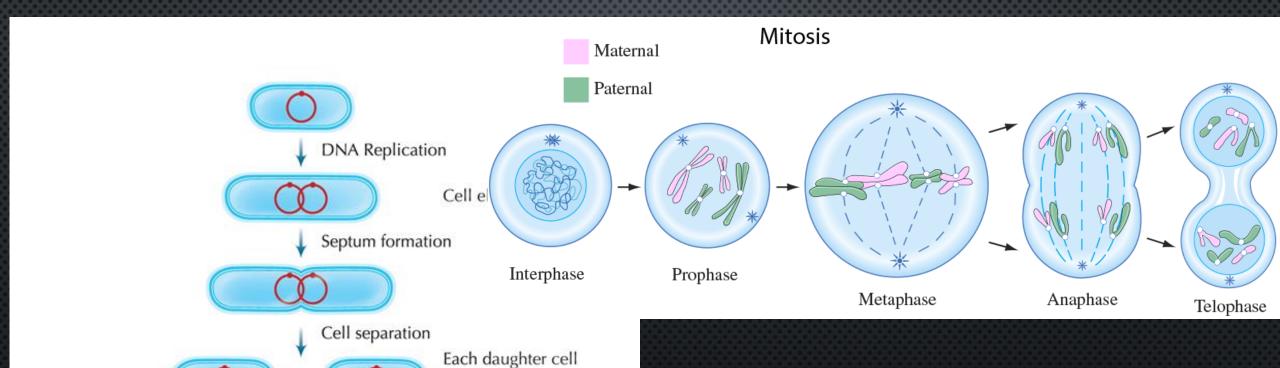


FIGURE 6.5. Binary fission in bacteria.

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