

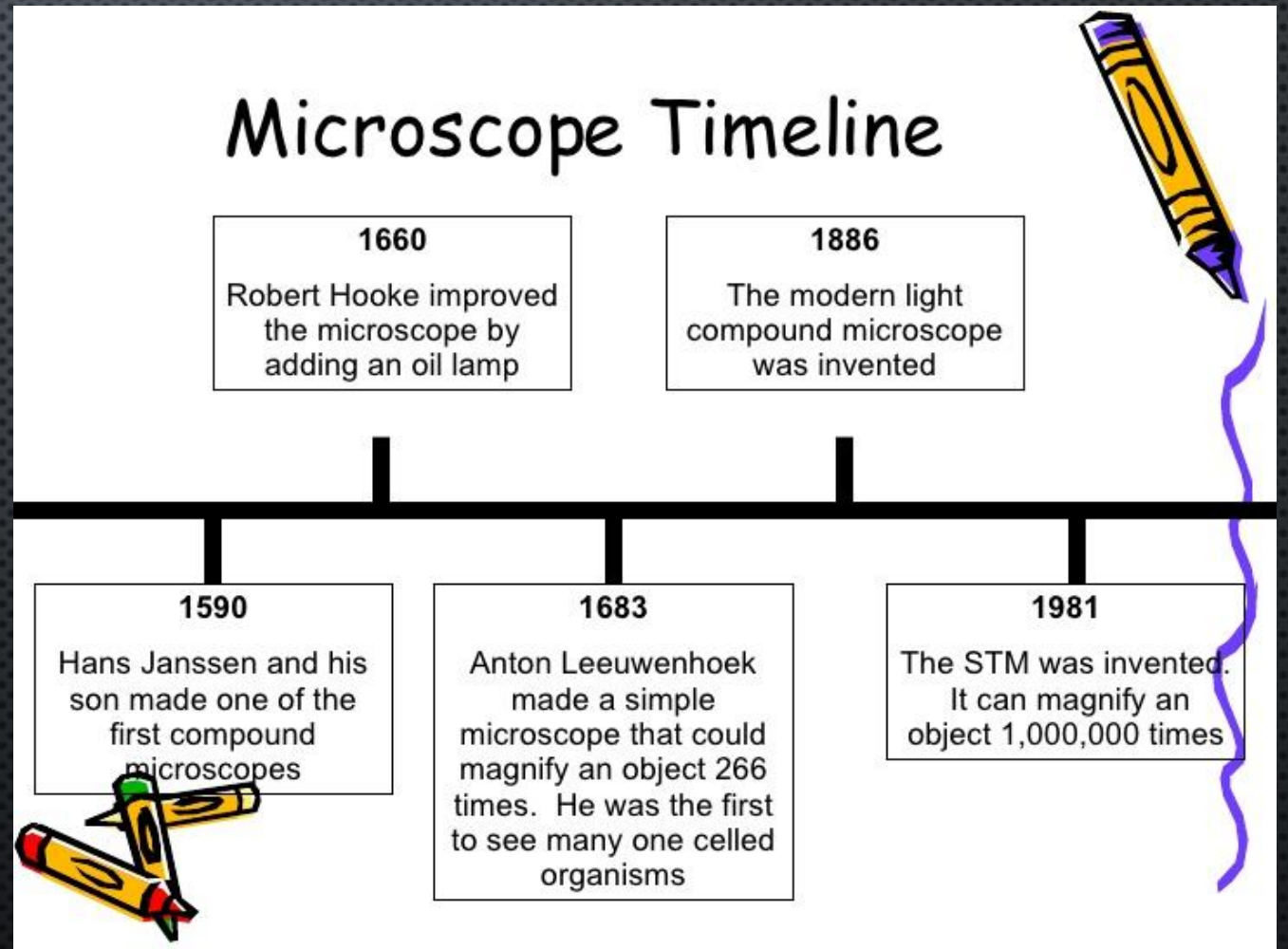
# THE CELL THEORY

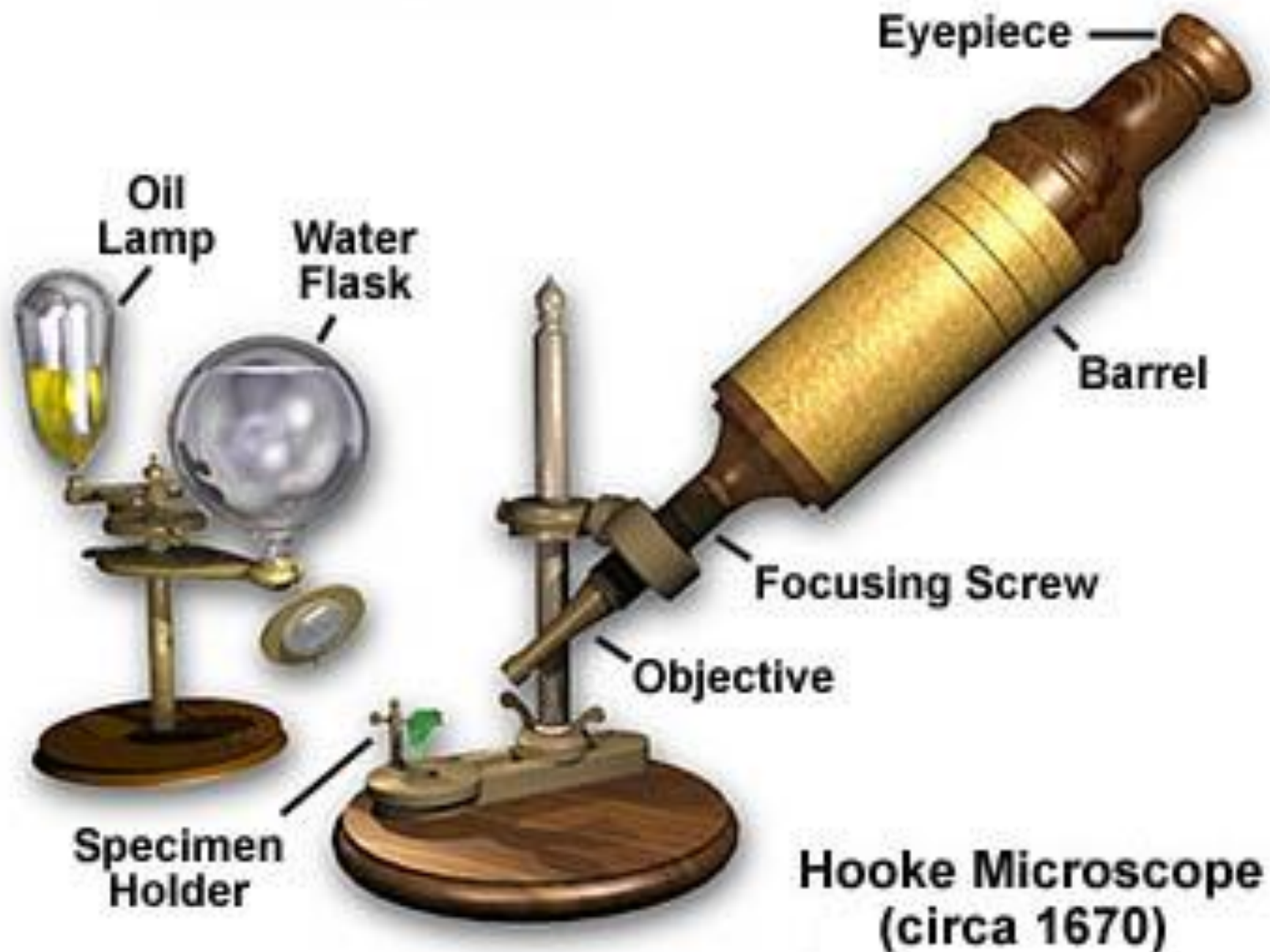
# WHAT IS A **HYPOTHESIS**, **THEORY**, AND **LAW** IN SCIENCE?

- 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

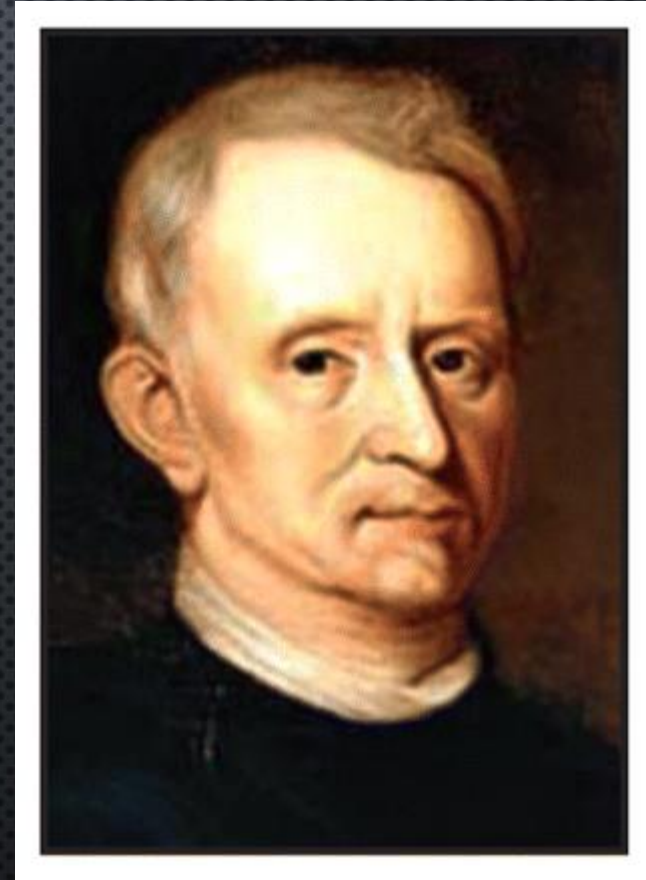
- MICROSCOPES HAD TO BE CREATED 1<sup>ST</sup>.





# ROBERT HOOKE -1665

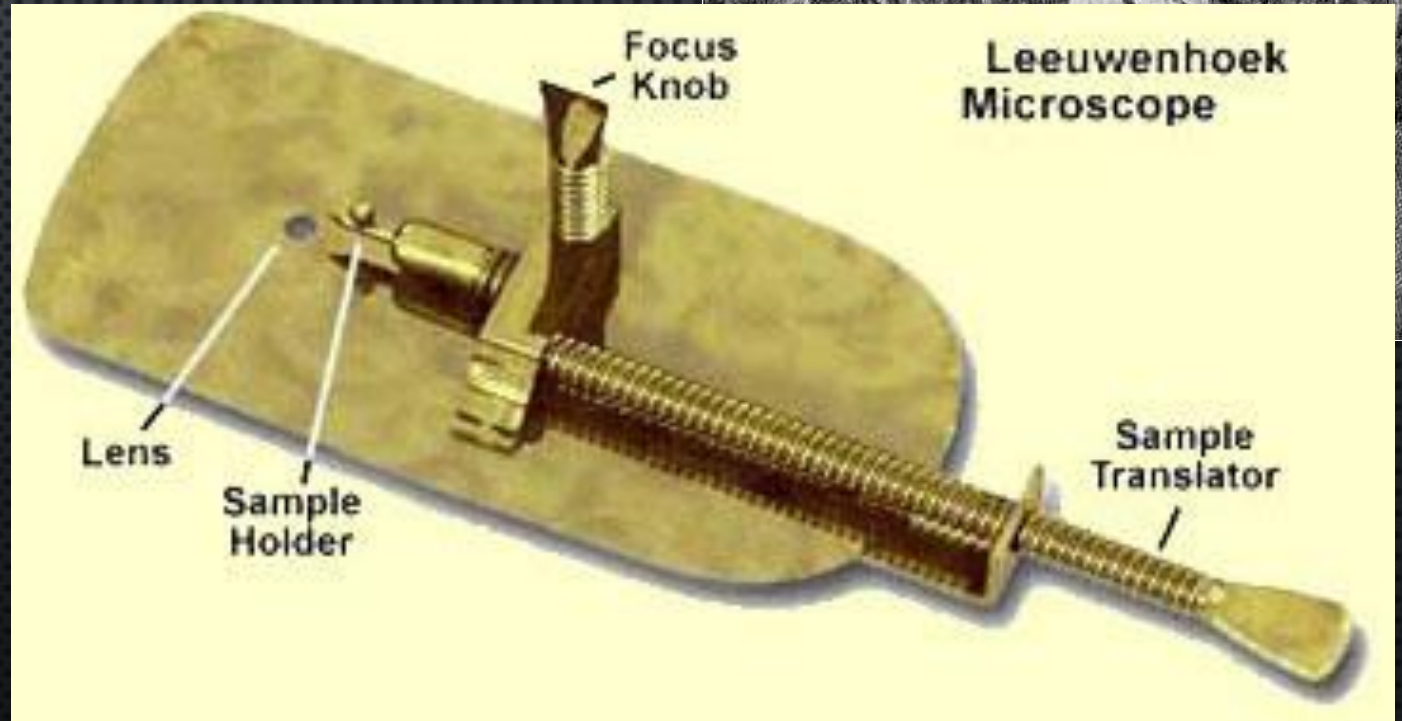
- PREPARING FOR A MEETING, HE FOUND A PIECE OF CORK WOOD, EXAMINED IT UNDER HIS HOMEMADE MICROSCOPE AND DISCOVERED CELLS = LITTLE ROOMS IN LATIN.



# ANTON VAN LEEUWENHOEK - 1673

- DUTCH BUSINESSMAN
- 1<sup>ST</sup> 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 1<sup>ST</sup> TWO PARTS OF THE CELL THEORY
- CONCLUDED THAT ALL ANIMAL TISSUES  
ARE MADE OF CELLS.

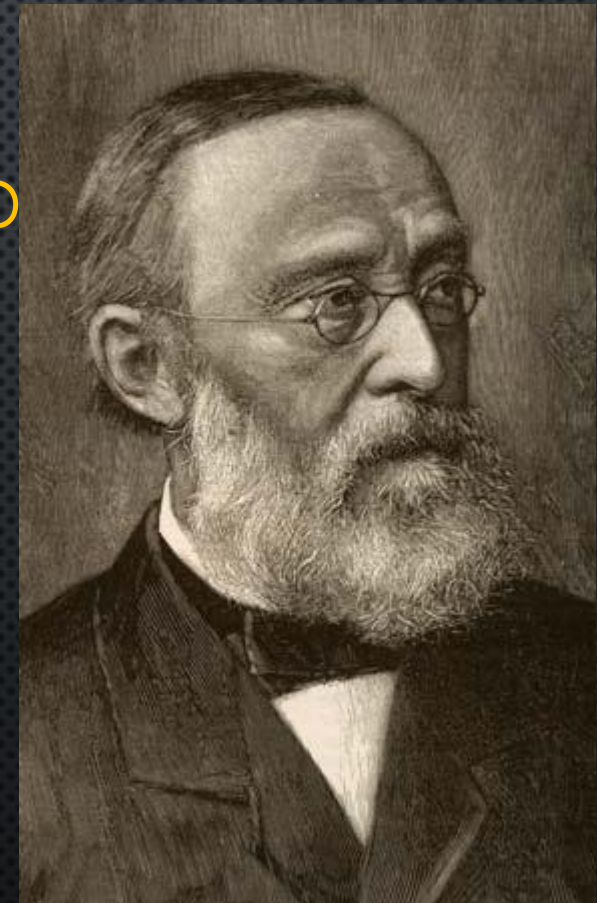


Theodor Schwann



# RUDOLF VIRCHOW - 1858

- WROTE THE 3<sup>RD</sup> 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

### Unicellular Organisms

are made up of only one cell



### Multi-cellular Organisms

are made of many cells



# ALL CELLS COME FROM EXISTING CELLS.

## PROKARYOTIC

## EUKARYOTIC

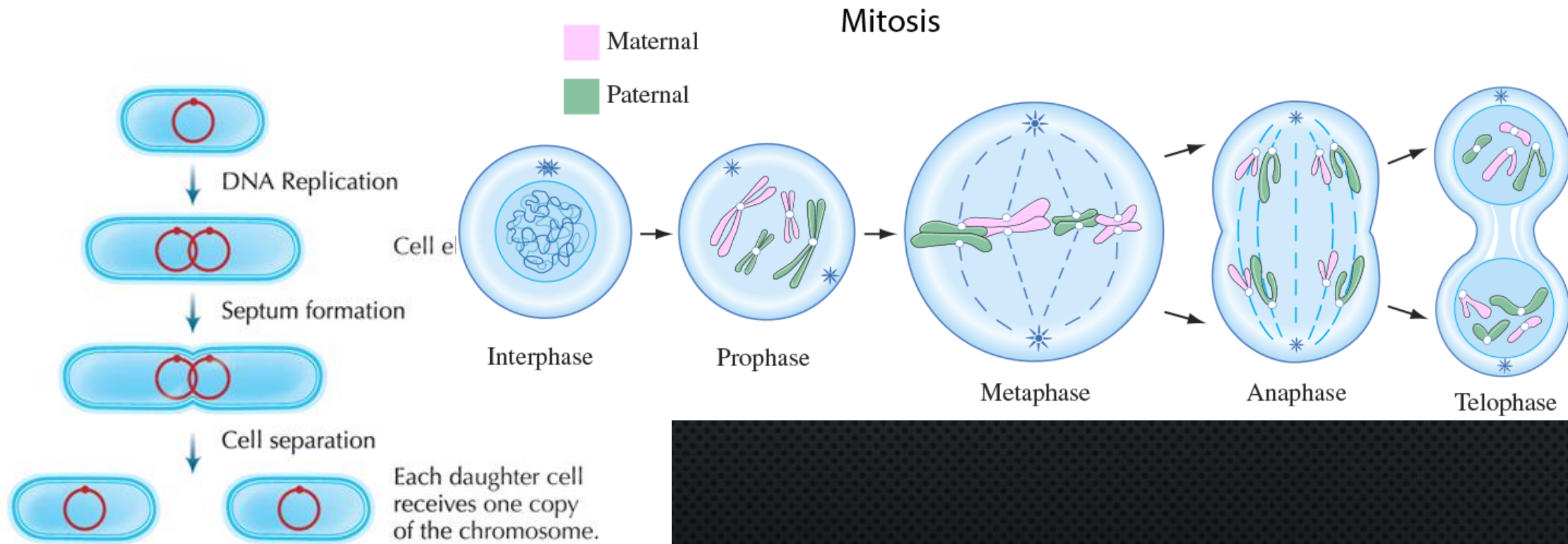


FIGURE 6.5. Binary fission in bacteria.