

HYPOTHETICO-DEDUCTIVE SCIENTIFIC METHOD

Preview from Notesale.co.uk
Page 10 of 21

Biogenesis

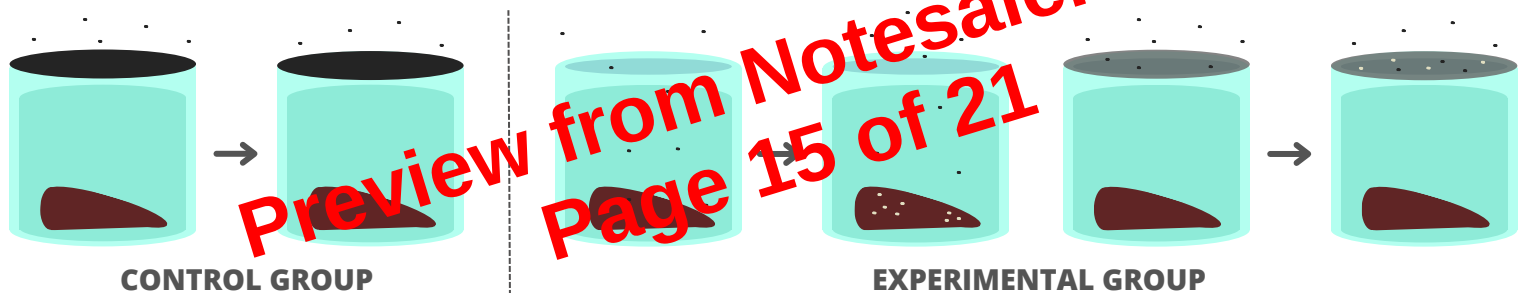
Biogenesis: Bio = Life + Genesis = Origin

Francesco Redi (1626 - 1697)

Before Needham attempted to confirm the spontaneous generation, a physician, Redi, demonstrated that **organic matter didn't create a living being** through an experimental group and a control group.

To prove that **life exclusively come from pre-existing life**, he used rotting meat, a non-living factor commonly known by abiogenesis defenders as the origin of maggots.

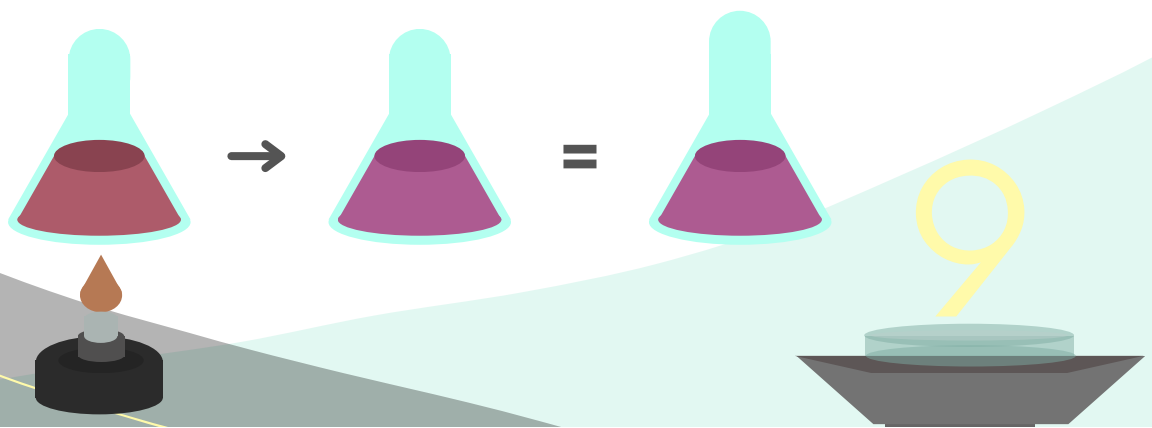
- **Control group:** flask covered with meat inside, flies couldn't land on - larvae **didn't appear**.
- **Experiment group:**
 1. **Open container** - with meat inside, insects could land on - **grub appeared**.
 2. **Jar covered with gauze** - (an air-only passage, to not prevent airflow inside the flask) flies were attracted by the smell but couldn't land on the meat inside the container, so laid eggs on the gauze, **maggots didn't survive** without nutrition.



Lazzaro Spallanzani (1729 - 1799)

Spallanzani contested Needham's work, stating that just boiling and closing the flask wasn't enough to consider it sterilized. The passage should be hermetically sealed, with **no passage for air**, seeing that microorganisms enter the container carried by air and **contaminate** the broth - only proved later by Pasteur.

So the boiled liquid in the **hermetically sealed** jar didn't result in bacteria. Needham opposed saying that this way, the process **killed the active principle**.



Theories on the Origin of Life in General

Before introducing the origin of life on primitive Earth, it's pertinent to briefly mention the life creation theories that aren't Biogenesis and Abiogenesis.

Creationism or Special Creation

Based on Biblical literalism, specifically in Genesis book, this theory considers the **religious aspect** where a supernatural **Creator** is responsible for all forms of life and where it manifests.

Fixism

Assumes that every living being is **immutable** in terms of its **characteristics**, like this, it's **not taken into consideration** how much **time** goes by or the **environmental conditions**. The creatures stay the same way as they have ever been. The existence of vestiges, known as **fossils**, refuted this theory by evidence of Evolutionism.

Panspermia

Having the knowledge that non-living matter can't create life, scientists began to theorize that it might have come from **extraterrestrial life** precursor substances or living beings that arrived from other parts of the Universe in **meteors**, that crashed on Earth billions of years ago and colonized our planet.

Evolutionism

One of the most accepted theories. Confirm the **successive process of modifications of species over time** by the evidence of past - fossils. Proposed by **Charles Darwin**, **Natural Selection** it's relevant, but at the time laws of genetics weren't discovered yet.