

Where does life come from?



Sep 24-11:20 AM

Spontaneous Generation



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Spontaneous Generation

- For much of history, people believed that animals could come from non-living sources. They thought:
 - > Frogs developed from falling drops of rain
 - > mice arose from sweaty underwear
 - > and flies arose from decaying meat.

Or

the idea that living things come from non-living things

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All living beings come from seeds of the plants or animals themselves

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Biogenesis

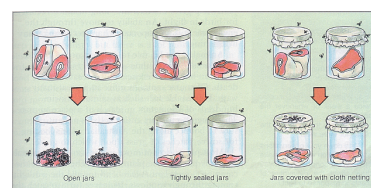
theory that living things only come from other living things

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Francesco Redi



Redi put decaying meat in jars, and covered half of them. Maggots appeared on the uncovered meat. He concluded that the maggots hatched from fly eggs and not from the meat disproving the theory of spontaneous generation.



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John Needham

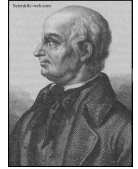


Needham heated broth in sealed flasks. When the broth became cloudy with microorganisms, he mistakenly thought they developed spontaneously from the broth.

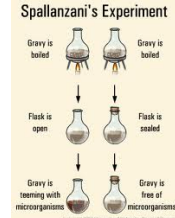


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Lazzaro Spallanzani



Spallanzani boiled broth in sealed flask for a longer time that Needham did. Only the open flasks became cloudy with microorganisms. His experiment helped to disprove the theory of spontaneous generation.



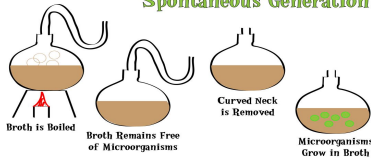
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Louis Pasteur



Pasteur boiled broth in S-necked flasks that were opened to the air. The broth became cloudy only when a flask was tilted and the broth was exposed to dust. His experiment helped to disprove the theory of spontaneous generation.

Pasteur's Test of Spontaneous Generation



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Alexander Oparin



Oparin hypothesized that life began when energy from the Sun, lightning, and Earth's heat triggered chemical reactions early in Earth's history. The newly formed molecules washed into the oceans and became a part of what is called the primordial soup.



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Stanley Miller and Harold Urey



Miller and Urey sent electric currents through a mixture of gases like those thought to be in Earth's early atmosphere. When the gases cooled, they formed an ocean-like liquid that contained amino acids that are found in present day cells.

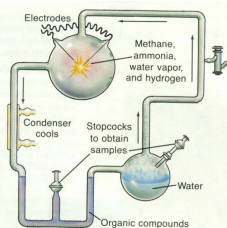


Figure 12-15 At about the same time that Miller discovered that the red gas at the bottom of his flask was rich in amino acids, it was also learned that DNA carries the code for amino acids.

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Attachments

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