

Gaia hypothesis

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In news— Recently, James Lovelock, the creator of the Gaia hypothesis, has died on his 103rd birthday.

What is Gaia hypothesis?

- **The Gaia hypothesis, also known as the Gaia theory, Gaia paradigm, or the Gaia principle, proposes that living organisms interact with their inorganic surroundings on Earth** to form a synergistic and self-regulating, complex system that helps to maintain and perpetuate the conditions for life on the planet.
- **The hypothesis was formulated by the chemist James Lovelock** and co-developed by the microbiologist **Lynn Margulis in the 1970s.**
- Gaian hypotheses suggest that **organisms co-evolve with their environment: that is, they influence their abiotic environment, and that environment in turn influences the biota by Darwinian process.**
- **The Greek word Gaia, or Gaea, meaning “Mother Earth,” is Lovelock’s name for Earth,** which is envisioned as a “superorganism” engaged in planetary bio geophysiology in **Greek mythology.**
- The goal of this superorganism is to produce a homeostatic, or balanced, Earth system.
- **Topics related to the hypothesis include how the biosphere and the evolution of organisms affect the stability of global temperature,** salinity of seawater, atmospheric oxygen levels, the maintenance of a hydrosphere of liquid water and other environmental variables that affect the habitability of Earth.
- In 2006, the Geological Society of London awarded Lovelock the Wollaston Medal in part for his work on the Gaia hypothesis.
- The Gaia hypothesis was initially criticized for being

teleological and against the principles of natural selection, but later refinements aligned the Gaia hypothesis with ideas from fields such as Earth system science, biogeochemistry and systems ecology.

- Even so, the Gaia hypothesis continues to attract criticism, and today many scientists consider it to be only weakly supported by, or at odds with, the available evidence.

James Lovelock-

- James Ephraim Lovelock(26 July 1919 – 26 July 2022) was an English independent scientist, environmentalist and futurist.
- He is best known for proposing the Gaia hypothesis, which postulates that the Earth functions as a self-regulating system.
- With a PhD in medicine, Lovelock began his career performing cryopreservation experiments on rodents, including successfully thawing frozen specimens.
- His methods were influential in the theories of cryonics (the cryopreservation of humans).
- He invented the electron capture detector, and using it, became the first to detect the widespread presence of chlorofluorocarbons in the atmosphere. While designing scientific instruments for NASA, he developed the Gaia hypothesis.
- In the 2000s, he proposed a method of climate engineering to restore carbon dioxide-consuming algae.