

Darwinism and the origin of life

Iris Fry

**Department of Humanities and Arts
Technion – Israel Institute of
Technology**

**Darwin's impact on the
study of the origin of life was
both philosophical and
scientific**

Spontaneous generation

- **Living beings are fully formed from inorganic or organic matter**
- **Spontaneous generation occurs repeatedly**
- **Spontaneous generation was justified either materialistically or religiously**

Louis Pasteur: science

- **Microbes are not generated in fermenting organic solutions**
- **Fermentation is caused by contaminating microbes**

Louis Pasteur: religion

- **Life cannot be generated from matter, only from previous life**
- **Originally, life was created by God**

Jean Baptiste Lamarck:

Spontaneous generation and evolution

- **Simplest forms of life repeatedly generated from matter**
- **These forms evolved historically into more complex organisms**

Darwin on the origin of life

- **The issue, at present, beyond the scope of science**
- **A hypothesis: life could have emerged from chemical compounds on the ancient Earth**
- **A religiously sensitive issue to be publicly avoided**

Dead-end at the turn of the century

- **A daunting complexity of the simplest cell: despair of solution**
- **Panspermia theories: Life and matter eternal and co-existing in the universe**
- **Wandering life reached Earth from space**

The Oparin-Haldane Hypothesis

- Organic compounds built from components of **primordial atmosphere**
- Sources of **energy**: electricity, heat, UV radiation
- Organization of intermediate systems in hot, dilute “**soup**”
- **The emergence of life: an evolutionary process**

Current research: the Darwinian challenge

- **Synthesis by physico-chemical means of 'genetic' or 'metabolic' infrastructure enabling natural selection**
- **Evolution by natural selection of above structures into a primitive biological system**

On the nature of science

- **So far, no solution of origin-of-life problem**
- **Is origin-of-life study “the soft underbelly of science”?**
- **Is the natural emergence of life in doubt due to lack of empirical validation?**

- **The scientific status of origin-of-life research not in doubt**

Due to

- **The strong philosophical and empirical status of the evolutionary worldview**