

Honors Seminar 256 — cheat sheet for 9/6/2011 — Andrew Baker Chyba & McDonald (1995)

Only read pages 215–222 (“Introduction” and “Definitions of Life”). Key questions:

1. What is the significance of the distinction between “life” and “a living entity”?
2. What are the strengths and weaknesses of the “Darwinian” definition of life as the authors present it?
3. To what extent do different definitions of life depend on the particular history of life on Earth (as distinct from the possible trajectory of life on another planet, or in the laboratory)?

Key term:

- **autopoiesis** = an entity’s replication of itself

Koshland (2002)

Key question:

1. What are the strengths and weaknesses of the author’s preferred definition of life?

Key term:

- **reaction kinetics** = rates at which chemical processes occur

Cleland & Chyba (2002)

Key question:

1. What is the authors’ view on the possibility of ever formulating an adequate definition of life, and what are the reasons for it?

Key terms:

- **gas chromatograph mass spectrometer** = device used to identify the composition of an unknown substance: a gaseous mixture of is passed through a tube whose sides chemically interact with and separate the molecules in the mixture, following which a mass spectrometer ionizes the products and measures the mass-to-charge ratios of the molecules or molecular fragments
- **pyrolysis** = chemical decomposition of organic matter in the absence of oxygen

Popa (2010)

Key questions:

1. What are the strengths and weaknesses of the author’s preferred definition of life?
2. What significance does the author attach to the transition between non-living and living material?

Key term:

- **homeostasis** = property of an entity that regulates its internal conditions so that they remain stable