-Once a molecules(or set of molecules) can successfully replicate itself and harvest energy from its surroundings, it can break free from the shackles of the second law of thermodynamics
-Life originated from the aggregation of complex chemicals in the process of chemical evolution. These initial simple molecules allowed for the production/evolution of more complex molecules
the system becomes governed by a drive for stability of the population, rather than the individual, and more efficient replicators quickly outcompete their rivals for the available resources.
This chemical viewpoint neatly matches everything else.
Solar Nebular Hypothesis: Explains the formation of the solar system through four stages. Read More about this*
Likely early earth atmosphere
-Heavy water vapor, with volcanic eruption debris
-Nitrogen compounds, carbon dioxide, methane, est.
Question for Thought: Molecular Prerequisites for Life: Can molecules undergo natural selection?
YES!-RNA molecules with certain base sequences are more stable and replicate faster and with fewer errors than other sequences. The RNA molecules whose sequence is best suited to the surrounding environment and has the greatest ability to replicate itself will leave the most descendant of molecules. Occasionally, a copying error will result in a molecule that folds into a shape that is even more stable or more adept at self replication than the ancestral sequence. Similar selection events may have occurred on early Earth. Thus, the molecular biology of today may have been preceded by an "RNA world" in which small RNA molecules that carried genetic information were able to replicate and to store information about the vesicles that carried them.

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Page 2 of 3

Out of Class Notes:
-The sweeping changes in life on Earth as revealed by fossils illustrate **macroevolution**, the broad pattern of evolution above the species level. Examples of macroevolutionary change include the emergence of terrestrial vertebrates through a series of speciation events, the impact of mass extinctions on the diversity of life, and the origin of key adaptation such as flight in birds.
-By the force of natural selection; simple cells could have been produced through a sequence of four main stages:
1.) The abiotic synthesis of small organic molecules, such as amino acids and nitrogenous bases
2.) The joining of these small molecules into macromolecules, such as proteins and nucleic acids
3.) The packaging of these molecules into **protocells**, droplets with membranes that maintained an internal chemistry different from that of their surroundings
4.) The origin of self-replicating molecules that eventually made inheritance possible.
-During the 1920s, Russian chemist A. I. Oparin and British scientist J.B.S. Haldane independently hypothesized that Earth's early atmosphere was a reducing(electron-