Duelling Articles: Viewpoints

Article #1:

**Name:** The evolution of Plant Ecophysiological Traits: Recent Advances and Future Directions

**Date of publication:** 2000

**Reference:** <http://bioscience.oxfordjournals.org/content/50/11/979.full>

**Key Quotes**

*Eco physiological Functions*

* Plants have huge ecophysiological and functional diversity based on the climatic and environmental condition variations (regional and global)
* Plants adapt to their local circumstances
	+ Plants with CAM (Crassulacean Acid Metabolism) photosynthesis and succulent leaves or stems in severely water-limited environments depend on water conserving traits for evolution
* Natural selection may cause rapid ecophysiological evolution in just a few generations, leading to local adaptation in populations
	+ Ecophysiological traits – biochemistry (carbon, water, nutrients), metabolism, gas exchange, leaf structure, function, biomass, canopy structure, grow
* Selection for traits and their adaptive evolution are discovered by measuring suite of traits demonstrated in their fitness
* **Phenotypic variation** (gene pool of population): indicates occurrence of stabilizing election
	+ Trait values are favored based on their ability to make an organism ‘fitter’ (can survive longer)
	+ Tested: plant *Townsendia annua* placed on 2 environments with variety of nitrogen levels
		- Low nutrients – fitness was higher on those low water use efficency 🡪 differentiation & local adaption of populations
* Analysis of functional traits and their fitness measured by: life history, growth, architecture
* Determine selection favors different suits of taints in different environments: examination of water availability and number of seeds
	+ Altered the leaf inflation, biomass growth, flowring time
	+ Selection favored high leaf inflation and growth grate rate in dry environments than wet
	+ Proved the relationship between the physiology to fitness and the variable nature across multiple environments
* **Manipulation of genotypes** affected the Eco physiological characteristics of plants
	+ Introduced Rubisco enzymes into plants – photosynthetic rates, responses to light levels, biomass allocation and relative growth rates where altered
* Transformation technologies may also introduce intentional mutual in adition to those being inserted – thus the location of the insterted gene and overall genetic background is importants
* **Manipulation of phenotypes** are when humans manipulate their environment
	+ Only possible for a small subset of Eco physiological and functional traits
	+ Computer stimulations allow manipulation of multiple traits
	+ Provide critical comparisons between performances of observed phenotypes and possible alternatives eliminated by natural selection

🡪 Adaptive plasticity, genetic manipulations and computer models allows predictions that phenotypes produced in contrast to their environments will be more fit in their respective environments when compared/tested to alternatives

*Evolution*

* Genetic variations within populations must exist for evolutionary changes to occur
* Experiments in controlled variation reveal physiological differences among genotypes
* **Heritability –** variation associated with additive or overall genetic differences among individuals. It reflects prior selection that has eliminated genetic variations in a trait of adaptive importance caused by env. Fluctuation and development effects
	+ The tolerance of heave metal tolerance in contaminated soil has failed in some plants – *Agrostis capillaris* contaminated naturally by zinc has failed to evolve in relation to their adaptive responses and selective pressures
* Different genotypes are favored in different environments to maintain the genetic variation of the fit gin among the population

*Adaptive differentiation of population and species*

* Divergence among populations provides the material for speciation and differentiation among closely related specie
* Different selection of the same population indicates physiological important traits becoming adapted to their environments by the same genetic mechanisms in independently evolving lineages

Article #2:

**Name:** How did life originated?

**Date of publication:** 2000

**Reference:** <http://evolution.berkeley.edu/evolibrary/article/origsoflife_04>

**Key Quotes**

* Simple organic molecules similar to the nucleotide shown below, are the building blocks of life and must have been involved in its origin.
* Organic molecules could have been synthesized in the atmosphere of early Earth and rained down into the oceans.
* All living things reproduce, copying their genetic material and passing it on to their offspring
* This ability probably first evolved in the form of an RNA self-replicator — an RNA molecule that could copy itself.
* Once a self-replicating molecule formed, some variants of these early replicators would have done a better job of copying themselves than others, producing more "offspring." – natural selection
* Life had probably relied on RNA for most jobs
* Everything changed when some cell or group of cells evolved to use different types of molecules for different functions
* Cells incorporating these innovations would have easily out-competed "old-fashioned" cells with RNA-based metabolisms, hailing the end of the RNA world.
* Come cells stopped going their separate ways after replicating and evolved specialized functions.

**Name:** The Big Bang Theory vs. Gods name

**Date of publication:** 1990

**Reference:** <https://www.christiancourier.com/articles/133-big-bang-theory-vs-gods-word-the>

**Key Quotes**

* The Genesis narrative affirms that God created the heavens and the earth on the first day of the initial week of earth’s history.
* The Scriptures make it perfectly clear that the whole creation (inorganic and organic) came into being during this six-day period (see Exodus 20:11)
* Evolutionist Paul Davies, in a discussion of the big bang, says that this theory of origins “differs greatly in detail from the biblical version.”
* The big bang concept alleges that some twenty billion years ago (give or take ten billion), all of the matter in the known universe was tightly packed into a microscopic cosmic “egg.”
* In one of his books, Dr. Robert Jastrow asserts that in the beginning “all matter in the Universe was compressed into an infinitely dense and hot mass” that exploded.
* Dr. Jastrow is describing, of course, what is commonly known as the big bang theory, and it does not require much critical acumen to conclude that the concept is**evolutionary** to the core.
* He confesses that “probably the most serious shortcoming of the big bang is its inability to go back to the very beginning of time and space”
* Some, of course, contend that there may have been a vast “gap” between Genesis 1:1 and 1:2, thus accommodating the alleged time involved in the expansion and development of the universe following the big bang.
* However, the Bible teaches that the earth was created **first**, and the sun came later—on the fourth day of the first week (Genesis 1:1, 14-16
* God created the universe as a beautiful and orderly masterpiece, but it has been degenerating toward disorder in the intervening millennia
* Evolutionist Donald Page was correct when he wrote: “There is no mechanism known as yet that would allow the Universe to begin in an arbitrary state and then evolve to its present highly ordered state

**Questions**

**1. How did life originate, and biodiversity develop on Earth?   Justify your opinion with evidence from your selected article(s).**

Life originated through the condensation of hot mass that exploded based on the movement of particles and reaction with its surroundings. This caused simple organic molecules to be synthesis to later produce long changes of nucleotides, the RNA and DNA molecules for genetic material. Additionally, molecules began to reproduce and replicate, causing natural selection to be applied to those molecules who could replicate better and produce more offspring’s. Evolution then caused molecules to be used for other purposes serving other functions, such as metabolic reactions, RNA messages, protein building, etc. In one point, some cells did not go separate ways after replicating, causing the evolution of multicellular cells with specialized functions.

As one may argue that God had the divine powers to create the earth along with the starts, the evolution of life is all based on pure science. While we can prove that evolution occurred, and it is still occurring, we must base our speculations about God from what has been written in a book. Currently, plants, for example, undergo experiments where genes and environments are altered. Such experiments prove that, as natural selection occurred in cells, it still occurs everyday because of the adaptation of organisms to their surroundings and natural selection causing genes to be favored.

**2. Why is dialogue about evolution theory important?**

As humans, the amount of beliefs, points of views, ethical and moral judgments are limitless and vary in dependence of our culture, personality and overall human beings. Thereby, contradicting viewpoints allow the strive to prove theories, allowing knowledge to be discovered and our understanding of earth and its ways of being to be pushed to a greater extent. By proving such evolution theories, we are able to gain scientific curiosity as well as cause medicine to be advanced through the solution of biological problems. As a Christina, or any person from any other believe, may enclosure their minds and believe only on their religion, dialogue between the evolution theories allows the strive to prove life and find new ways in which our existence can be profoundly understood.