

# Independent Article on Biological Science

**Surya Prakash Tripathi**

Student of Anthropology

Email: [iamsuryatripathi\[at\]gmail.com](mailto:iamsuryatripathi[at]gmail.com)

twitter -[at]tripathisurya97

On Theories of Organic Evolution

**Abstract:** *I was going through studying organic evolution theories and after analyzing, the ideas and thoughts came up in my mind I tried to write it down in words, I think analysis on the work of past scientists is very much necessary for the youth and young generation to discuss about because science does not improve automatically it improves when ideas, thoughts, research and studies come together, I have tried my best to make reader understood what message i am trying to convey, i am looking forward to hear from someone who is expert in biological sciences.*

**Keywords:** Biological Science, Anthropology, Life Sciences, Evolution theories

**Lamarck Vs Weismann Vs Scientific logic-**(Logically Proving why Lamarck's theory of organic evolution (1809) is much meaningful than Weismann Rat experiment (1883) proposing germ plasm theory.

## What Lamarck Stated?

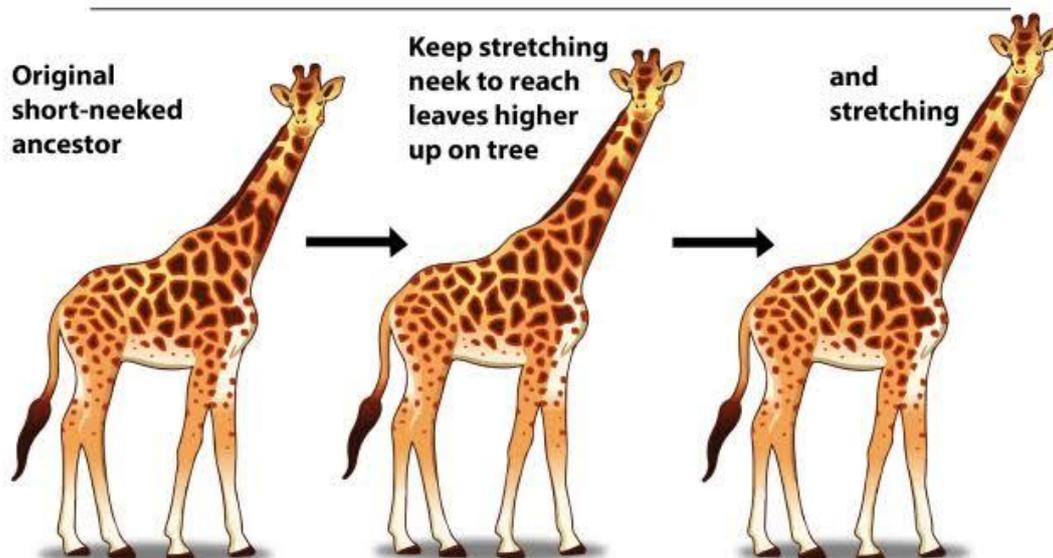
Lamarckism: The first theory of evolution, Lamarckism, was propounded by Jean Baptiste Lamarck, a French Zoologist in 1809. This theory is popularly known as "Inheritance of Acquired Characters". Lamarck emphasized in his theory on the effects producing factors that influence evolution

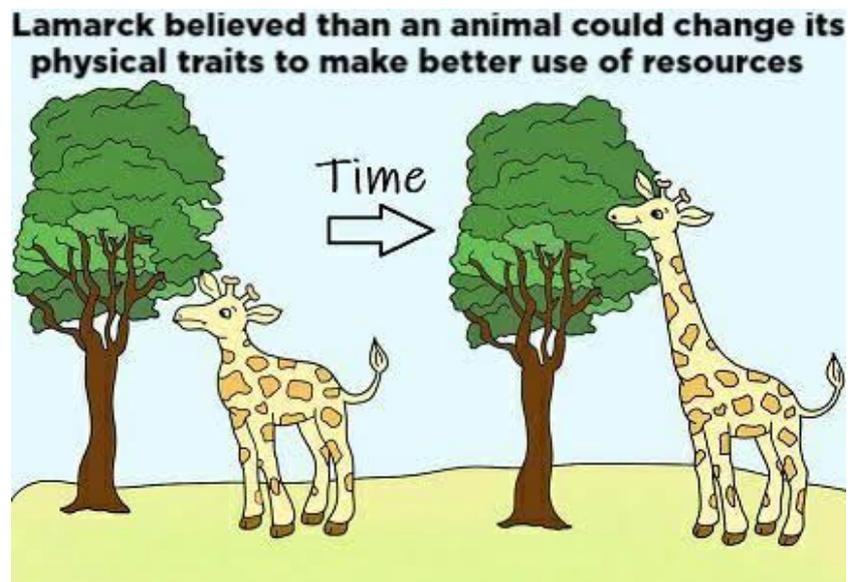
1) Effect of changing environment: Changes in environment leads to changes in needs and wants of organisms. This brings about changes in activities, thereafter leading to changes in organs of organisms for better adaptability. Lamarck believed that such changes could be inherited.

2) Effect of use and disuse of organs: According to Lamarck, changed environmental conditions leads to the conscious effort on the part of the organism to either excessively use a particular organ or totally disuse an organ. He believed that excessive use of a particular organ led to its further development and specialization, while the disuse led to its atrophy. Such changed characters could be transmitted to their offspring

As an example of the specialization and modification acquired by an organ, Lamarck suggested the case of giraffes. Lamarck was of the opinion that the giraffes had small necks and were used to feeding on short herbs. When the herbs became scanty, the ancestral forms were obliged to browse on the leaves of trees. In attempting to do this, they had to stretch their necks. After continuous stretching, the change became substantial, resulting in an extraordinary long neck

## Elongation of neck in Griaaffe according to Lamarck





### How weismann tried to drawback lamarck theory?

Lamarck's theory faced crucial drawbacks. Weismann (1883), a German zoologist proved that use or disuse of organs does not bring any modification even after being operated for several generations. He conducted his experiments on rats by cutting off their tails for successive generations, but did not see tail-less rats in any of the upcoming generations. He therefore propounded the theory of "continuity of germplasm" wherein it was maintained that germplasm was heritable but not somatoplasm and since environment affects principally the somatoplasm, these changes cannot be inherited

### My views basing logical scientific explanations on both of the scientists statements:-

#### Agree with Lamarck Theory of Evolution

The first statement of Lamarck theory is **Effect of Changing environment** and I will try to explain exactly how environment does effect the organisms in many ways and it do effects the upcoming generations as well, let's not get far and take example of Homo sapiens (Humans) are residing almost in every parts of the world where at almost every continent/country of the world where different average temperature, sunlight intensity, geographical conditions, and air pressure (decreases as you go higher altitude) exists, but humans are residing normally on all areas of land almost without having any difficulty in survival, but if you suddenly place a resident of Norway to Ghana south Africa, in summers where he will get temperature variation of around 50 degree celsius it might not kill that individual but will seriously affect his body and surely body will response to that variation in initially sun burns and immediately the individual will find himself in an extreme uncomfortable scenario, so why this things happening if atmosphere/environment not effecting organisms body, it declares we adapt the environment as in a particular area we live in, also its scientifically proven that on geographic distribution, areas that have higher amounts of UVR have darker skinned populations, generally located nearer the earth's equator so if you are considering sunlight as a part of atmosphere and the body color of sapiens is changing by the different intensity of the sunlight on the different areas of

planet it's not a myth anyone that rest of the properties are affecting in any manner, secondly people living at high altitude areas of the world their body adapted in such a way comparing those on land, they breathe in that less air much easily, so it proves by continuous residing body adapts even those adverse climates. for a one more basic relatable example whenever we move to a new place we didn't like the surroundings and we like to move to the previous one from where this vibe is coming from if environment is not affecting that body some might consider this as a psychological effect but what I consider is change in environment affects subconscious mind in a way to either get back to same or to evolve, its explains wherever the body is residing it inherit and evolve for those changes for the survival in the upcoming generations and when such organisms produce offspring they will be having those characters already which is inherited by parents to prove this one must compare with the study done on two newly born sapiens body built types from two different parts of world where climate and lifestyle is totally different (one area with soft climates with one with harsh) will find that both the newly born are fit to survive in the born environment however this is what Lamarck believed, this also leads to favoring "survival of the fittest" stated by Charles Darwin (French Naturalist), either organism evolve with the changing environment or they will be extinct from the nature.

Second Statement **Effect of use and disuse of organs** to prove this statement I would like to present the example of early ancestor of homo sapiens which were quadruped which means they were moving on the planet with using all four limbs and if you agree on mosaic evolution in which early ancestors of homo sapiens "Australopithecus" was discovered 4 million years ago in Kenya, they were initially quadruped but somehow the needs and wants of organism to explore more on land Australopithecus choose bipedal and this leads to the evolution of from quadruped primates to an upright human we see today what is noticeable in this evolution is the "**density of bones of upper limbs in much decreased**" if you look at the images of early ancestor of sapiens "Australopithecus" you will find that upper limbs bones were much denser than of homo sapiens today, this

because of evolved primates not given that amount of pressure on upper limbs as it was free in air not on land taking weight of the body the weight shifted from the upper limb to downwards which is legs and that's why today humans have much denser bones at legs comparing bones of hand, this shows the concept of use and disuse is also much realistic.

### **Disagree with Weismann's Conclusion Post Rat Experiment & Germ Plasm Theory (1883).**

**Firstly** I am not convinced how weismann compared natural environmental effect on an organism body by physically cutting the tails of mouse, both the forces are not same you are cutting off the tails by force, its not getting off by the change in environment so by forcefully cutting tail will not change Rats DNA, until if the genetic material is not changed physical body appearance/characters won't change, even if someone continue the experiment for over thousands of years it won't, until the DNA alternation occurs in response with the changing environment.

**Second major point** to disagree with of this experiment was the time period of the experiment in which experiment was operational which was only 5 generations of white mice and done on 68 mice, 5 generations is not enough to see results of evolution, evolution is a process of from thousand years to millions of years to the billions of years how can conclusion can be given by just studying a few generations and also in that where environment doesn't affecting the organism to change its physical characteristics?, Which was very less if one have to witness physical change to be printed on the DNA/genetic material.

**Third and the last** is theory of germ plasm continuity, where weismenn stated that environment affects on somatoplasm only not germplasm so environment effect won't mutate the DNA of germ cell of an organism, he stated that heritable information is transmitted only by germ cells not by somatic cells.

In the upper explanations I stated exactly how environment affecting organism to change characteristics and if you say somatic cells are building blocks of organism which are changing its characteristics in response to environment how it will not synchronized with the dna of germ cell exactly what will prevent those mutation to pass from the somatic cell to germ cell? Its scientifically proven that almost every cell of the body has same dna so if germ cell nothing but a complete image of the particular organism how it is possible that changes/mutation on somatic cells will not be reflected to germ cells at a point and will not be transferred to the offsprings??

To deny the movement of heredity information from somatic cells to germ cells weismenn introduced "weismann barrier" in which he stated that "heredity information moves only from genes to body but never in reverse" but this statement which he stated after completing Rat experiment but is still a theory and there is no scientific evidence supporting to it that exactly what will prevent heredity information to reach germ cells.

So by considering all these points Lamarck's theory of evolution is explainable by observations and scientific facts which considering for me is much reliable theory of organic evolution.

**In this article views/ explanations are personal and purely for the purpose of seeking knowledge any suggestions/facts are welcome to me-**

Sign-For Surya Prakash Tripathi  
Perusing-Bachelors of Science (Anthropology Hons)  
IGNOU Delhi