NEET CRASH COURSE

EVOLUTION



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- The Big Bang is a singular huge explosion which is unimaginable in physical term.
- The universe expanded and hence the temperature came down.
- Hydrogen and Helium formed sometime later.
- The gases condensed under gravitation. They formed the galaxies of the present day universe.

• In the solar system, earth was formed about 4.5 billion years back.

EVOLUTION OF







- Water vapor, methane, carbon dioxide and ammonia released from molten mass covered the surface.
 The UV rays from the sun broke up water into Hydrogen and oxygen. The lighter H2 escaped.
- The ozone layer was formed by O3.
- As earth cooled, the water vapor fell as rain. It fill all the depressions and form oceans.

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Origin of life: Theories

Special creation theory: According to this theory God created earth and living organism.

-Supported by father Suarez.

Theory of spontaneous generation (Abiogenesis): According to this theory iving organism are originated from decaying and rotting matter like straw, mud etc.
 Supported by Aristotle, Plato.

• Theory of biogenisis: Louis Pasteur, Redi and Spallanzani disproved theory of abiogenesis by demonstrating experiments that proves life comes only from pre-existing life.

-Louis Pasteur showed that, in pre-sterilized swan shaped flasks life did not come from killed yeast.

-The new living microorganism arose from 'killed yeast when flask open in to air.

Nontining



Louis Pasteur Swan Neck Experiment





THEORY OF CHEMICAL EVOLUTION(CHEMOGENY)

• **Oparin** and **Haldane** proposed that life could have come from pre-existing non-living organic molecule (e.g. RNA, protein etc.).

• According to them life originated from non-living matter by a gradual process of physicochemical reaction on primordial earth.

- The conditions on primitive earthwere -
- 1. High temperature.
- 2. Volcanic storms and UV rays.
- 3. Absence of oxygen. ✓
- 4. Reducing atmosphere containing CH4, NH3, H2, Water vapours (H2O) etc.

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Urey and Miller experiment (Experimental Proof of Chemogeny):

• Stanley Miller and Harold Urey conducted an experiment in self-designed spark discharging apparatus.

-Miller created similar conditions of primordial earth in a laboratory scale.

-He created electric discharge in a closed flask to raise temperature upto 800oC as it was on primitive earth.

- He Used **CH4**, **H2**, **NH3** and **water vapour** inside the flask. • He observed the formation of amino acids-Alanine, Glycine and Aspartic acid.





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Theory



• Three major theories explains the mechanism of evolution.

- 1. Theory of inheritance of acquired character by Lamarck.
- 2. Theory of natural selection by Darwin.
- 3. Mutation theory by Hugo De Vries.
- 4. Modern theory of evolution or Neo-Darwinism (HARDY-WEINBERG PRINCIPLE) -> ->

1.LAMARCKISM by Jean Baptist de Lamarck

Theory of inheritance of acquired character or Theory of use or disuse of organ.

- 1. Internal vital force \checkmark
- 2. Use or disuse of organ
- 3.) Environment 📂
- 4. Inheritance of Acquired Characters



EVOLUTION Survived of the fittet Habetspercor

opulation - Thomas Malthus

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DARWINISM by Charles Darwin

- Charles Darwin made a sea voyage in HMS Begale ship.
- Darwin on his observation and collection during voyage proposed theory of Natural selection.
- He observed that various form of life exist on earth share some similarities.
- The struggle for existence and survival fittest leads to reproductive fitness. Over a period of time it leads to formation of new species.

leads to formation of new species.	La Galapagos Island - Black bizds
Theory of natural selection by $\rightarrow Gametic$ Darwin.	Darwin's Finches
-The main concept of Darwin's theory	kien
are <u>Smya</u> population	Seeds usn't sub-stail
1. Over production.	
2. Limitation of food and space. $450/37 m$	S / eùy
3. Struggle for existence>	Grubs
/4. Variations. 🛩 Germa (🗶) Repu	
5. Survival of fittest.	Sub-sleig
6. Natural selection.	Tool-Using Finch
7. Speciation Allowing X'	
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Mutation theory by Hugo De Vries:

• According to De Vries, mutaions are the main cause of evolution and speciation. • The sudden change in gene that results in variation in phenotype is called mutation.

- According to him speciation occurs in a sudden change in a single step. (Subtim)
- Mutations are random and directionless
- The main objections of this theory are
- Mutations are negative and retrogressive.
- $\begin{array}{ccccc} c \cdot c \cdot & 165^{\circ} \alpha \end{array} & \rightarrow & \mathcal{H}_{IJ} \mu \\ \hline & \rightarrow & 145^{\circ} 160^{\circ} C_{\cdot c} & \downarrow \\ \mathcal{H}_{IJ} \mu \mu \mu \\ \end{array}$ - Rate of mutation is slow compare to evolution.

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Gene

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MODERN THEORY OF EVOLUTION or <u>NEO-DARWINISM</u>:

Hardy-Weinberg principle:

• It states that allele frequencies in a population are stable and constant from generation to generation, if a population has no selection, no mutation, no migration, no genetic drift, and are random mating.

• (p + q)2 = p2 + 2pq + q2 = 1. p+q = 1

Gene pool: All the genes in a population at a particular time.

- Factors are known to affect Hardy-Weinberg equilibrium:

- Gene migration or gene flow
- Genetic drift
- Mutation -->
- Genetic recombination →
- Natural selection _____

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GENETIC DRIFT

population

TYPES OF NATURAL SELECTION

ThankYou