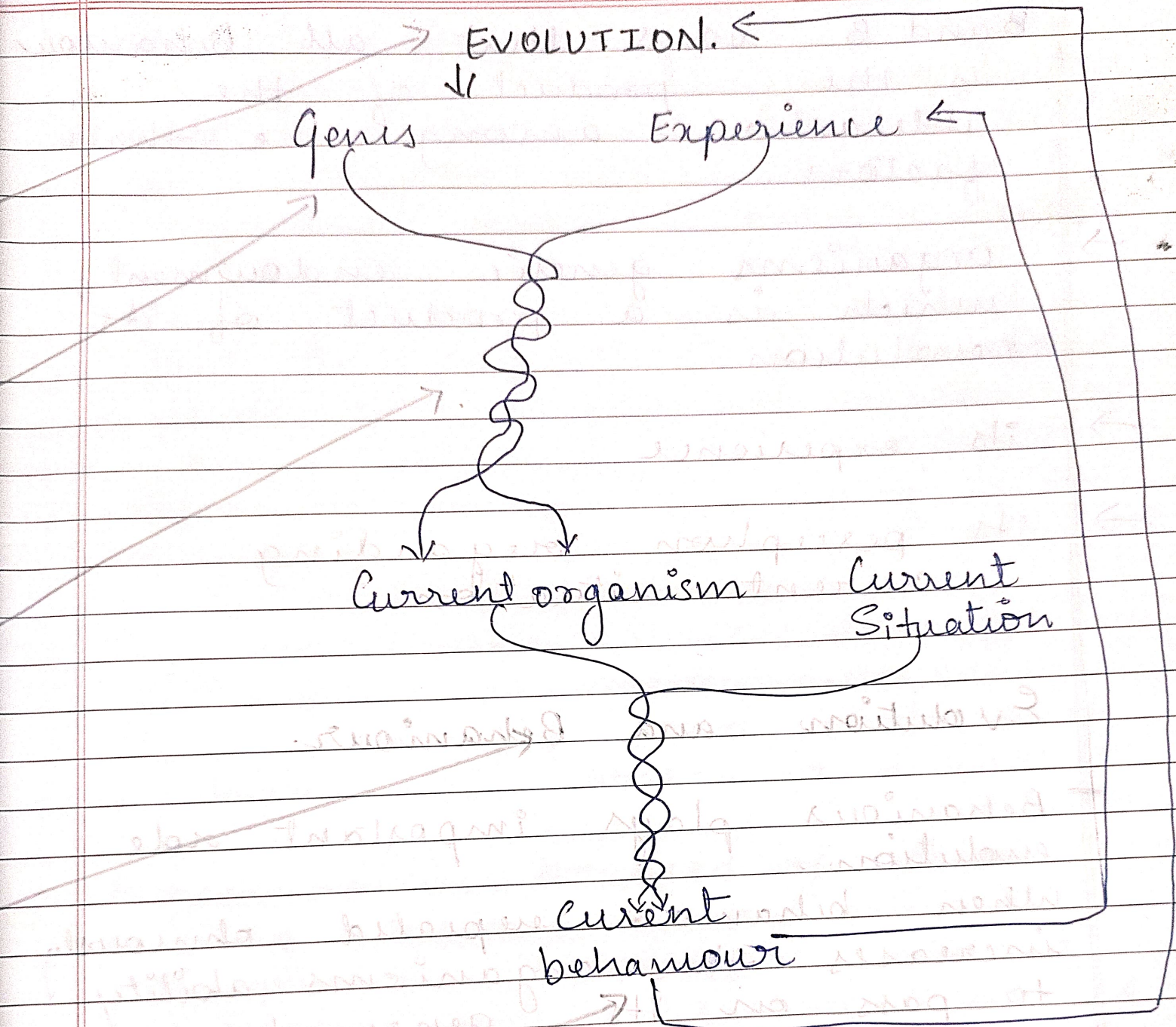


Genetic Basis of Behaviour

- Evolution influences the pool of behaviours influencing the genes available to the members of each species.
- Each individual's gene initiates a unique programme of neural development.
- The development of an individual's nervous system depends on the its interaction with its environment i.e. experience.
- Each individual's current behavioural capacities and tendencies depends upon the unique pattern of neural activities which are in form of thoughts, feeling, memories etc and the perception regarding the current situation.
- Success of each individual's behaviour influences the likelihood that its genes will be passed on to future generation.



Evolution to go undergo gradual
and orderly changes.

Band B says that all behaviour is the product of the interaction among the three factors.

→ organism's genetic endowment which is a product of its evolution

→ its experience

→ its perception regarding current situation;

Evolution and Behaviour.

- Behaviour plays important role in evolution.

When behaviour is repeated, obviously it increases the organism's ability to pass on its genes to future generation.

Examples :-

Social Dominance

Stronger females produce stronger offsprings.

Like female chimpanzees who are high ranked produce more and stronger offsprings.

Courtship display -

It promotes evolution of ^{new} species. Male approaches female and signals to interact which can be olfactory, ~~acoustic~~ auditory, visual etc.

Species is a group of organism that is reproducing isolated from other organisms. Members of one species can reproduce offspring only by mating with members of same ~~other~~ species.

The reproductive barriers can be geographic or behavioural.

Eg birds fly and mate with birds of other land.

A new species branches off from existing species when barrier discourages breeding between a subpopulation of existing species and remainder of the species.

Chemical and physical Structure of ~~the~~ Nucleic Acid.

They are made up of elementary building blocks called nucleotides. Nucleic Acid is broadly classified into 2 categories.

→ DNA : Deoxyribonucleic Acid

RNA : Ribonucleic Acid.

DNA is present in nuclei and some viruses. Information carrying genetic material and comprises the genes.

Each ~~DNA~~ dNMP (deoxyribonucleoside) contains a phosphate, 5-carbon sugar α -deoxyribose and a nitrogen containing base.

RNA is present in cytoplasm and some viruses. Information carrying material in some viruses.

Three types :-

mRNA or messenger RNA - A molecule derived from DNA by transcription that may carry information.

rRNA ^{provides} - a subcellular structure

tRNA or transfer RNA - transfers amino acids to itself and other RNA molecules.

Nucleotides contains 3 components -
- a sugar molecule
- a phosphate molecule
- a nitrogen containing molecule

Information flows from DNA to RNA to protein

↳ a macromolecule composed of one to several polypeptide. Each pp consist of chain of amino acids linked together by peptide bonds.

DNA of all the cells in human body if stretched and arranged end to end will have a length of 1010 miles this is more than distance from earth to sun.

DNA

— Deoxyribonucleic Acid

— Sugar - Deoxyribose

— Pyrimidine base

◦ Cytosine

◦ Thymine

Purine base

◦ Adenine

◦ Guanine

— Several nucleotides

combine by 3'-5' linkages to form DNA

— Double stranded with long chain of nucleotides

— Helix geometry is B-form

— Damaged by UV Rays

— No types

RNA

— Ribonucleic Acid

— Sugar - Ribose

— Pyrimidine base

◦ Cytosine

◦ Uracil

Purine base:

◦ Adenine

◦ Guanine

— Same

— Single stranded with short chains of nucleotides

— Helix geometry is A-form

— Damage Resistant to

UV Rays

— mRNA - messenger of info. carries

— tRNA - provides subcellular structure

Chromosomes
Most cells contains 46 chromosomes
existing in pairs.

When cell divides, the chromosomes
pairs split, after the cell
divided each chromosome
it replicates itself and recovers
it full number process known
as mitosis.

In contrast sperm and ova,
in male and female sex cell
contains only 23 chromosomes
there when they join to form
a fertilised ovum, from which
new human being will develop,
a full number is attained.

Chromosomal Anomalies refers
to disorders caused by due to
absence or excess or abnormal
arrangement of one or more
chromosomes.

Numerical ~~Chromosomal~~ abnormalities
absence or excess of one or
more chromosomes

Trisomy is a form of polysomy
in which 3 copies of
a particular chromosome, instead
of 2. Individual born with
three 21 chromosomes (called 21 trisomy)

It can cause intellectual disability and shortening of life.

Types of trisomy

Trisomy 21 — Down syndrome

Trisomy 18 — Edwards syndrome

Trisomy of sex chromosomes — ~~Triple~~ X trisomy

XXY and XYY

Monosomy — only one ~~pair~~ of a pair existing.

Turner Syndrome and one X chromosome instead of 2 sex chromosomes

Structure anomalies

- ① Deletion — a part is missing or deleted
- ② Duplication — a portion is duplicated resulting extra genetic material
- ③ Ring — a portion of chromosome is broken off and formed a ring or circle.