

Chromosome :-

Chromosomes are thread-like structures located inside the nucleus of animal and plant cells.

Each chromosome is made of protein and a single molecule of deoxyribonucleic acid (DNA)

↳ Contains many gene
[DEPTH OF BIOLOGY]

↓
a section of DNA that holds the instruction for a protein.

↳ Human have 23 pairs.

DNA is spiraling chain like molecule
↓ [DEPTH OF BIOLOGY]

made up of 4 different type of Nucleotide.

A T G C

[DEPTH OF BIOLOGY]

and this genes codes for protein.

▶ Chromosome is made up of thread
↓ (Chromatin fibre)

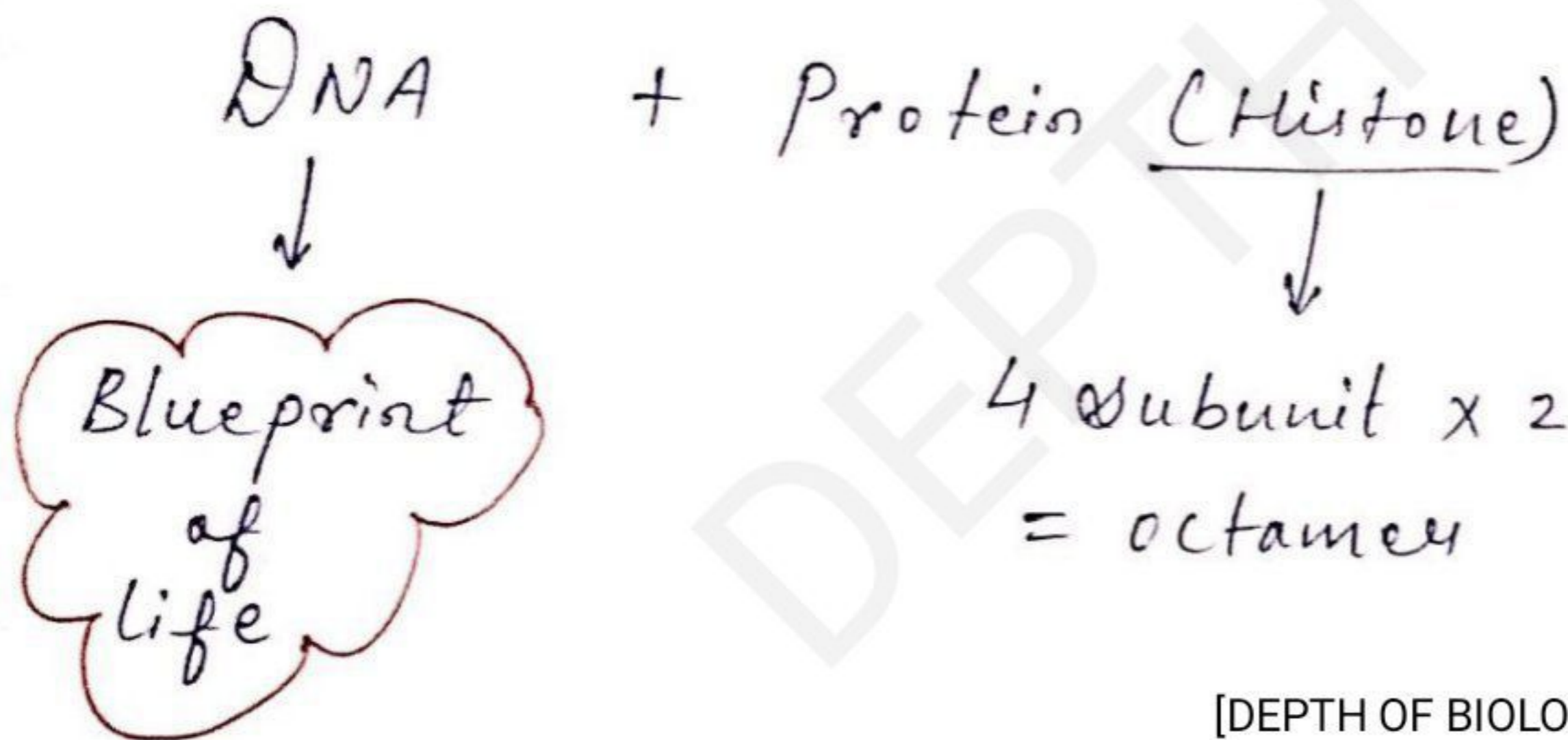
↓ [DEPTH OF BIOLOGY]
Zoom again
↓

As a collection of protein
called Histones

↓
which are wrapped with a string like
structure.

[DEPTH OF BIOLOGY]

Chromatin :-



[DEPTH OF BIOLOGY]

↳ Nucleosome → Beads on string.

↳ Further condense form of chromatin
known as chromosome.

[DEPTH OF BIOLOGY]

↓
Only see during cell division
(we see in the prophase)

Nucleosome = 8 Histone

Gene :- Fragment of DNA which control our character.

↳ During gene expression, the DNA is first copied into RNA.

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DNA :-

↳ Structure discovered by Watson & Crick.

↳ Double Stranded.

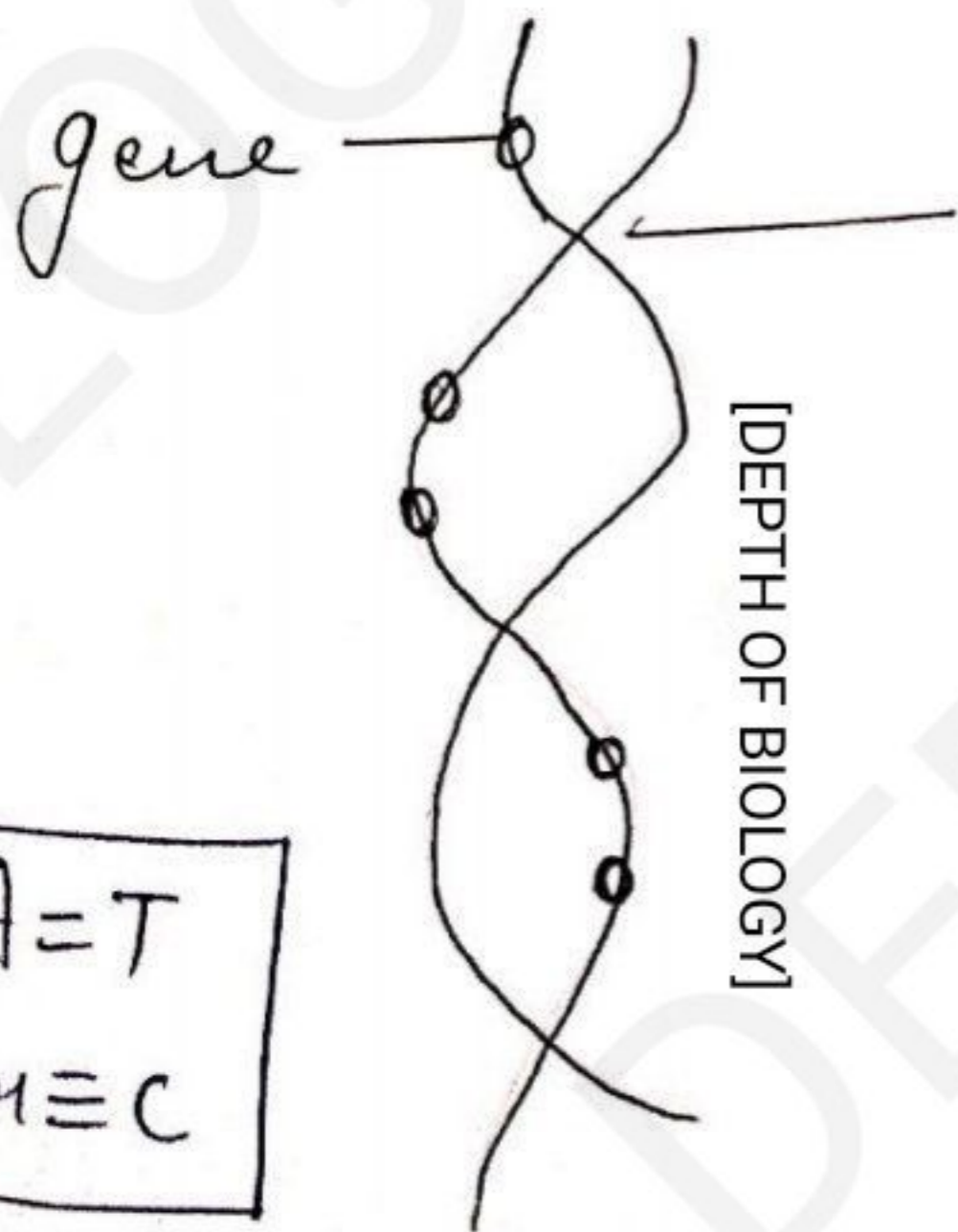
↳ 500 million base pairs.

↳ Deoxyribonucleic acid → DNA fingerprinting

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↳ Antiparallel Strand.

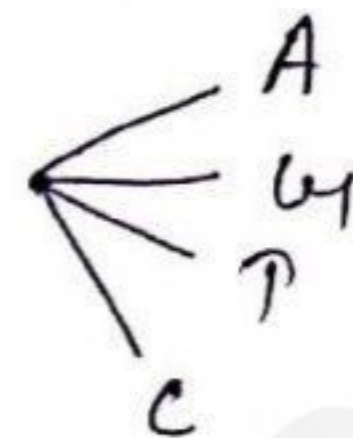
↳ 2-8 cm.

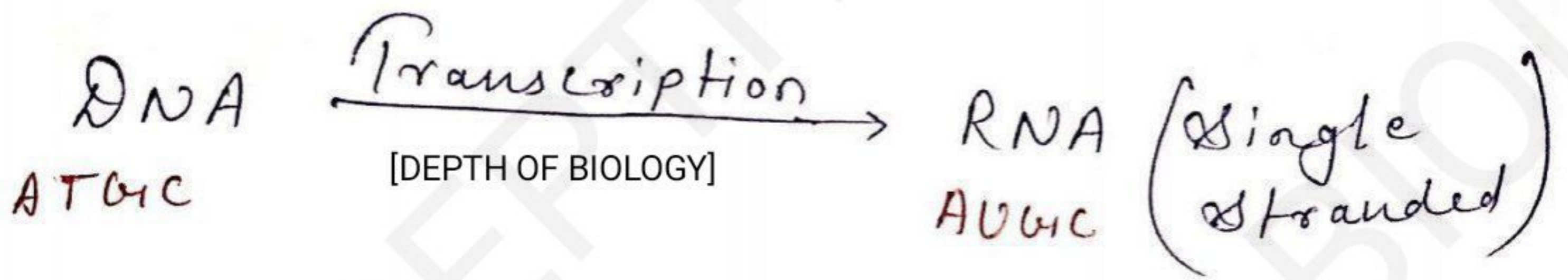


Composed of
↓
Deoxyribose group
+

Nitrogen bases
+

Phosphate group





Protein Synthesis :-

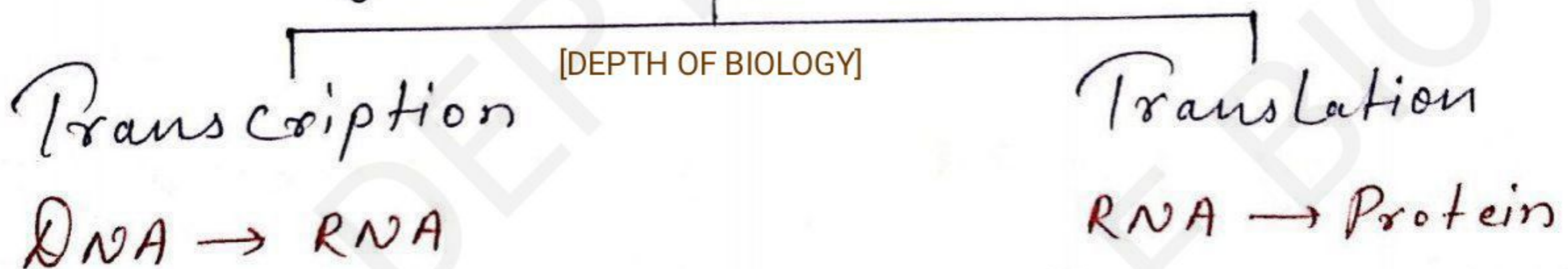
Protein synthesis is the process in which cells make proteins.

It occurs in two stages: transcription and translation. Transcription is the transfer of genetic instructions in DNA to mRNA in the nucleus. [DEPTH OF BIOLOGY]

It includes three steps: initiation, elongation, and termination.

↳ RNA plays role in protein synthesis.

Protein synthesis has two main steps -



▶ In the process of transcription (RNA Polymerase) required.

It connects Complementary RNA Base to DNA.

- This RNA base are bonded together to form a single stranded mRNA.

[DEPTH OF BIOLOGY]

This mRNA go out of the nucleus into cytoplasm.

And attach to a Ribosome.

[DEPTH OF BIOLOGY]

↳ Made up of rRNA.

↳ It makes protein.

Now,

Ribosome undergo next translation.

⇒ In cytoplasm tRNA molecule available

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They carry amino acid on them.

monomer for protein



[DEPTH OF BIOLOGY]

So, we need this amino acid.

↳ All tRNA looking for complementary bases



When they find complementary bases on the mRNA



They transfer their amino acid.

[DEPTH OF BIOLOGY]



⊕ tRNA now read the codon.



with UAC Anticodon → Pair with

Complementary AUG Codon.



Start Codon

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and it transfer its amino acid

↳ called methionine

⊕ tRNA leave




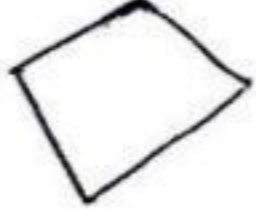
This amino acid hold together by peptide bond. and protein synthesis occur.

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Pedigree Analysis :-

 → Male

 → Female

 → Sex unspecified

   → Affected individual

 → Mating

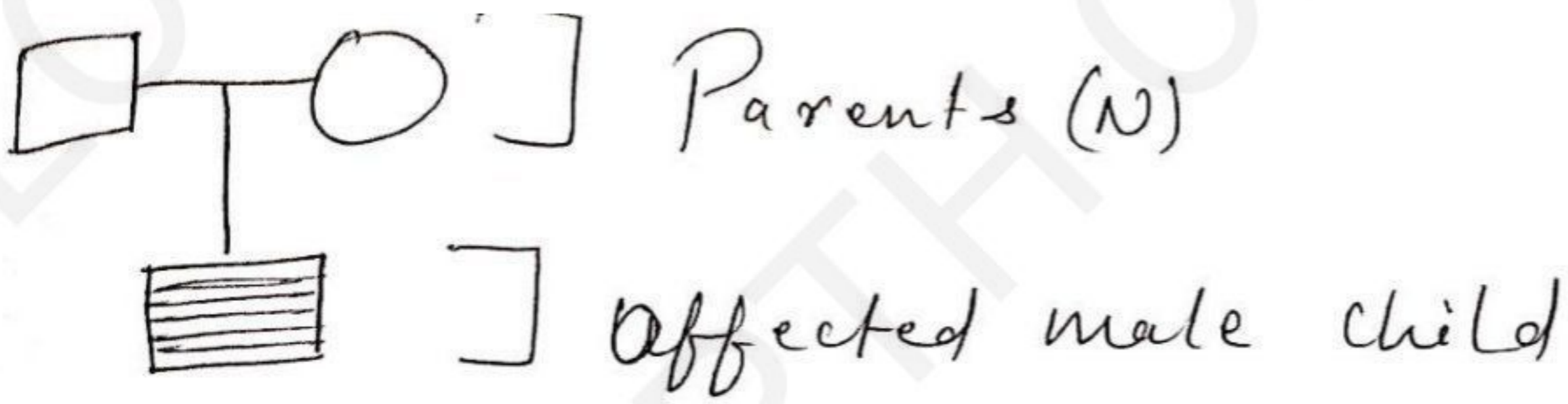
 → Mating betⁿ relatives

 → 5 unaffected offspring

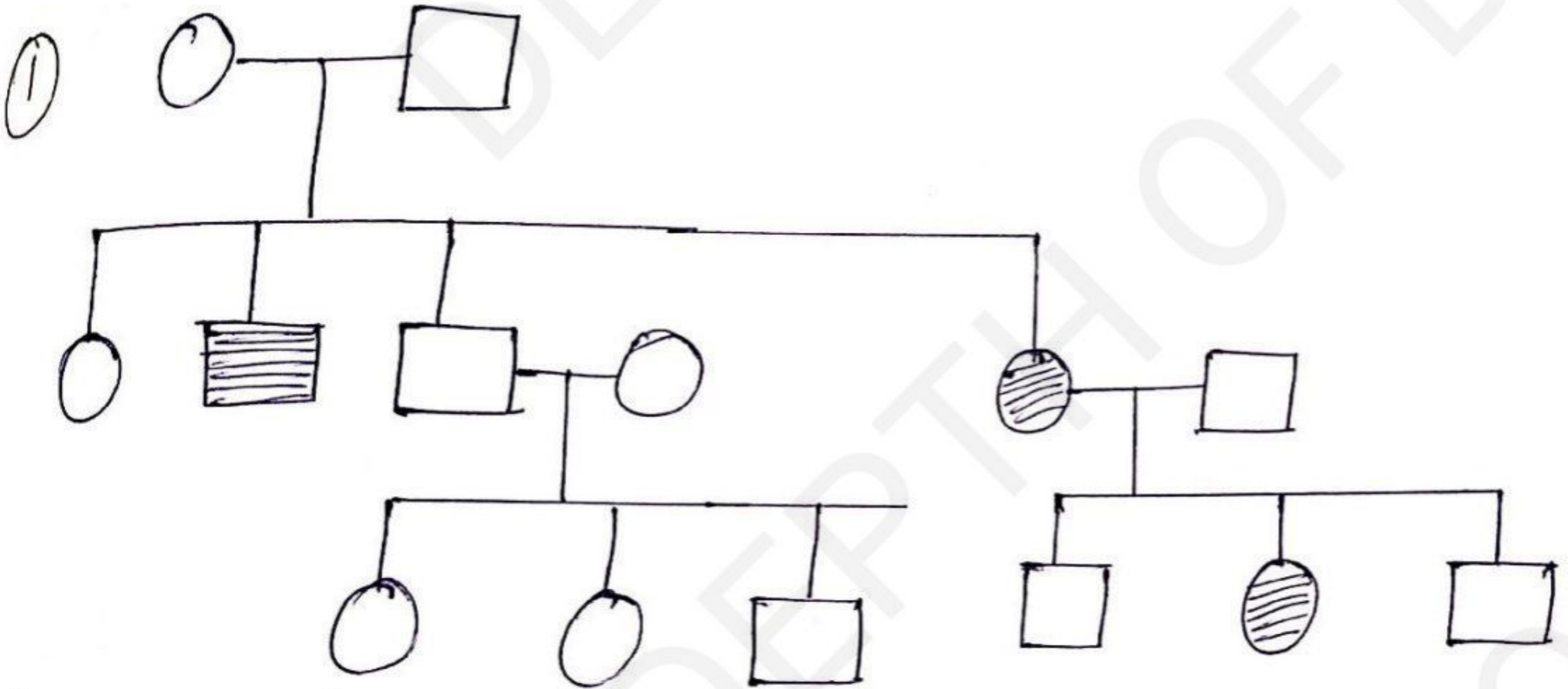
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 Parents (N)

 Children (N)

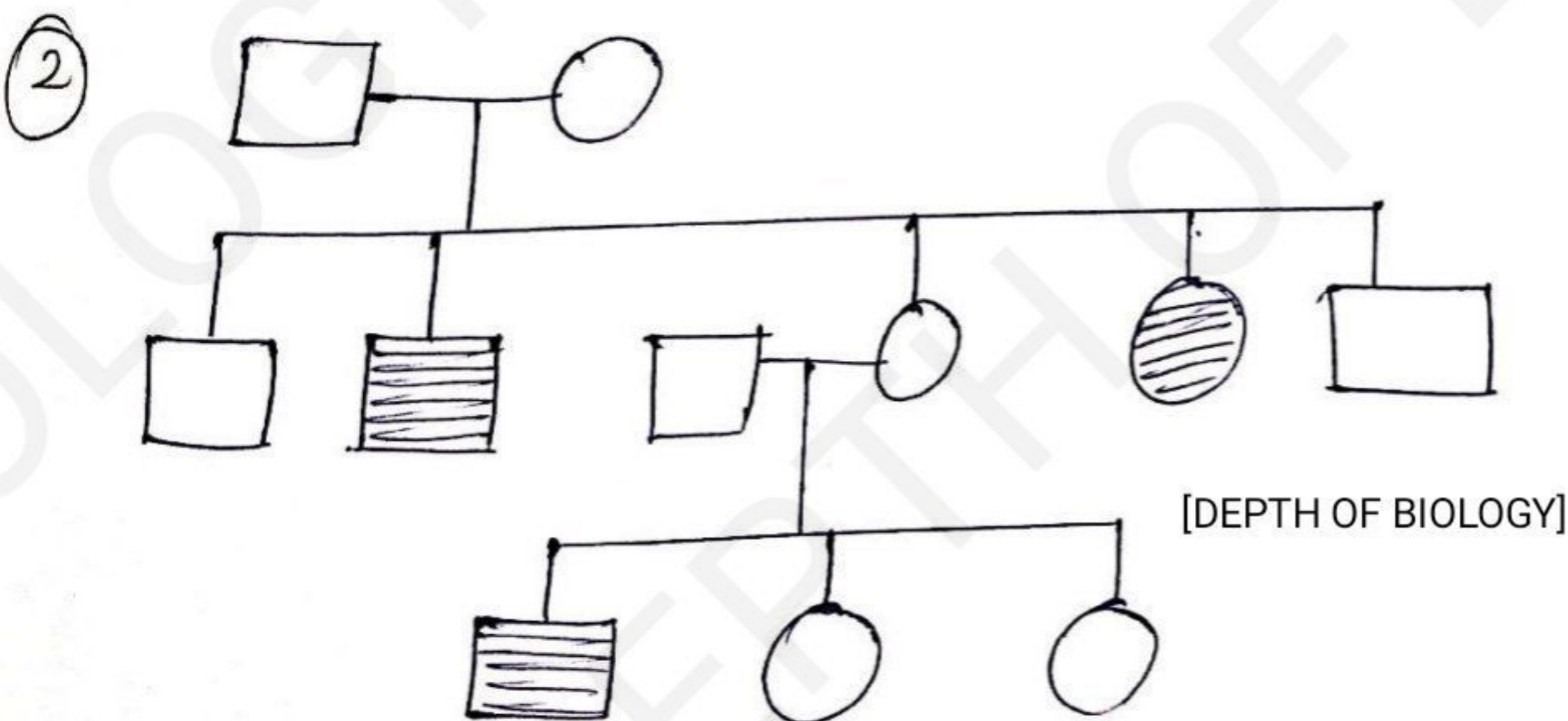


[DEPTH OF BIOLOGY]



[DEPTH OF BIOLOGY]

(Myotonic dystrophy)
(Autosomal dominant)



[DEPTH OF BIOLOGY]

(Sickle cell Anaemia)
(Autosomal recessive)

Autosomal recessive :-

Parents \rightarrow (N)

Child \rightarrow Diseased

Autosomal dominant :-

Parents \rightarrow Diseased

Son \rightarrow (N) (Some)

X-linked dominant :-

Father diseased \rightarrow All female child diseased

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Mother diseased \rightarrow Son (N) (Some)

[DEPTH OF BIOLOGY]