



ATTENTION STUDENTS



BIOLOGY 463

PLANT TAXONOMY

DR. MENAPACE

SPRING 2023



ATTENTION STUDENTS



BIOLOGY 463

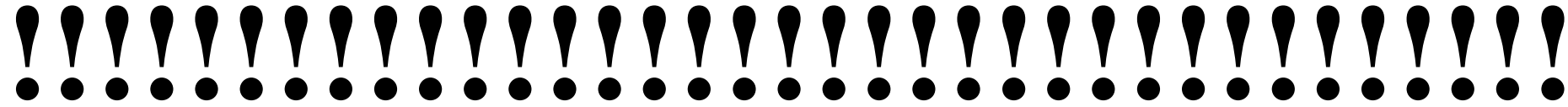
PLANT TAXONOMY

DR. MENAPACE

SPRING 2023



ATTENTION STUDENTS 



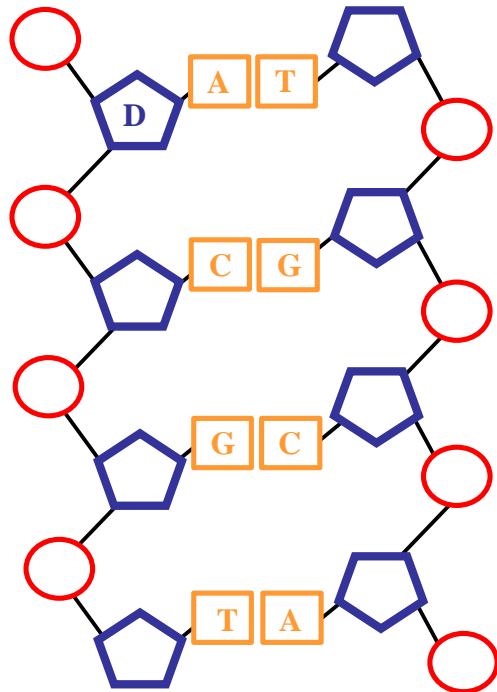
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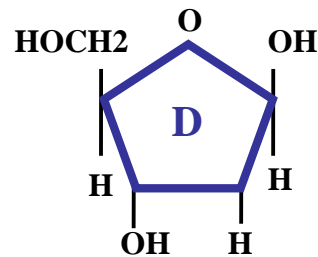
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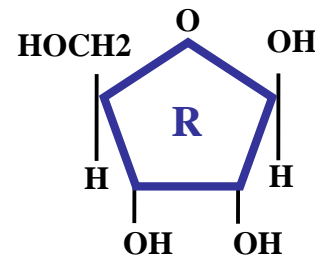
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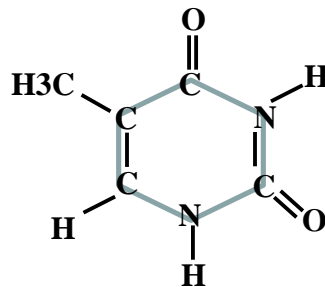
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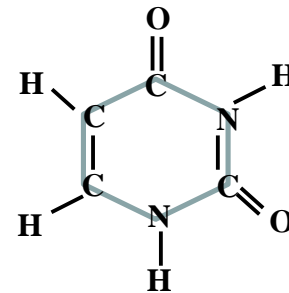
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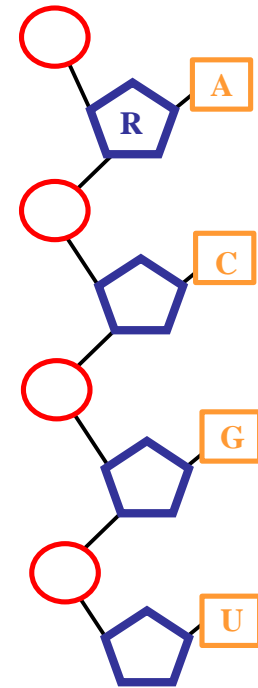
RIBOSE



THYMINE



URACIL



NUCLEIC ACID

**INTRODUCTION
BIOLOGY
&
INTRODUCTION
BOTANY**

INTRODUCTION BIOLOGY

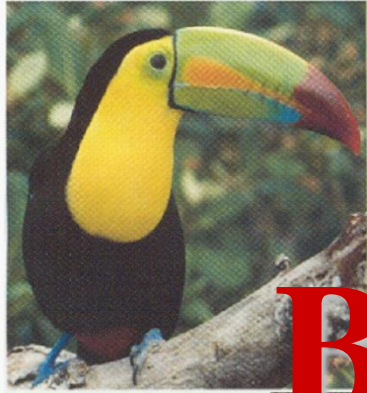
BIOLOGY



BIOLOGY

**STUDY OF LIVING
ORGANISMS**

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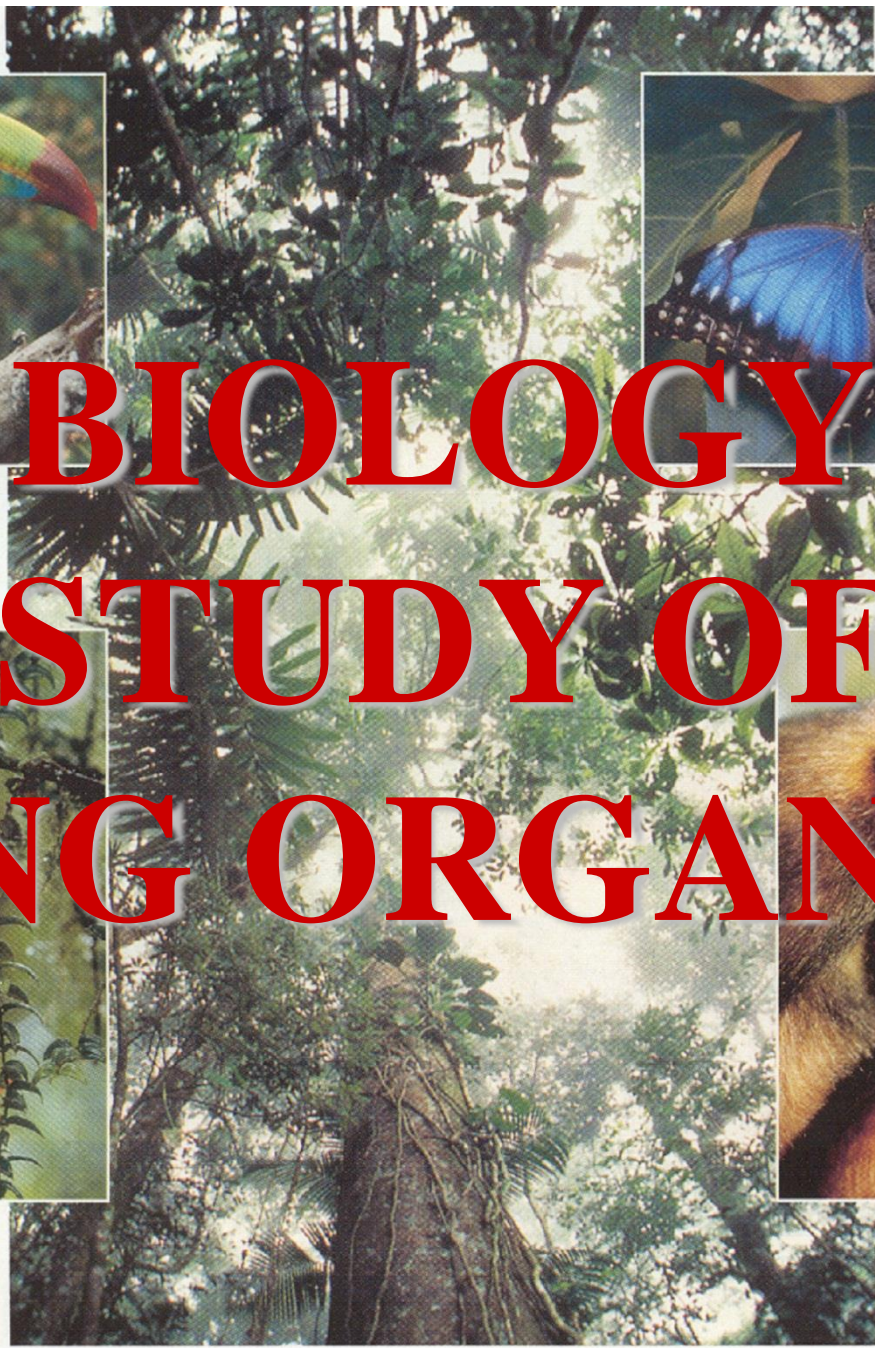


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STUDY OF

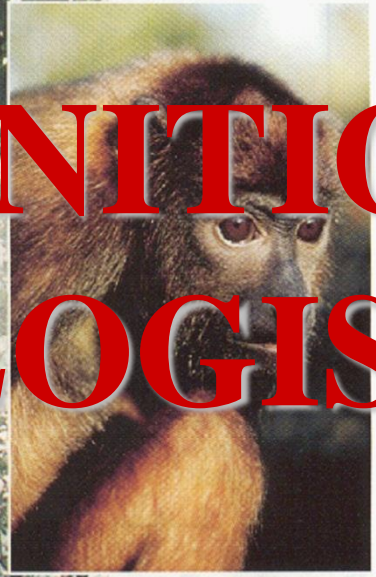
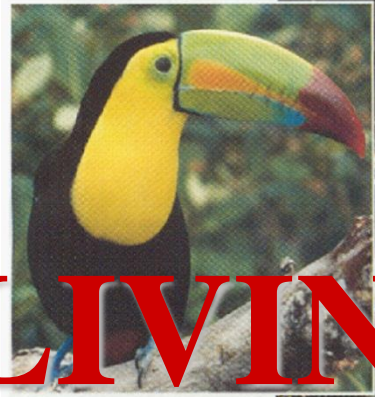


LIVING ORGANISMS

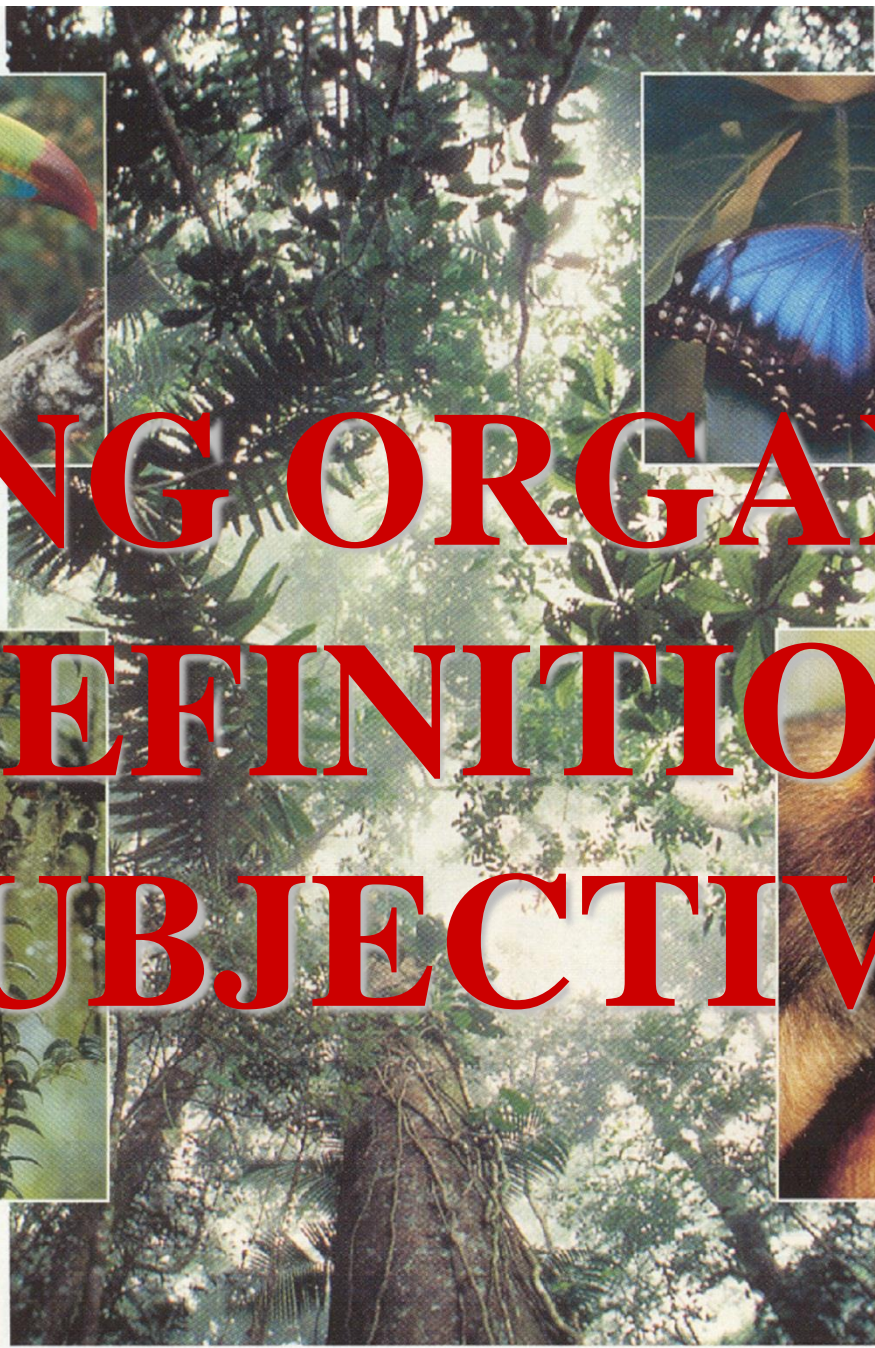
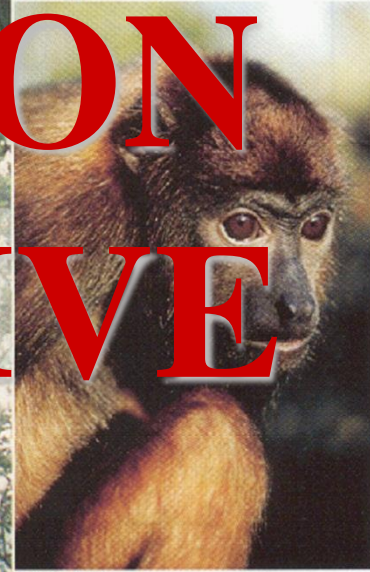
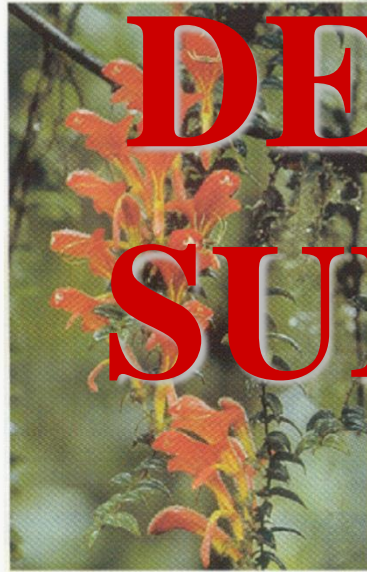




LIVING ORGANISM DEFINITION



**LIVING ORGANISM
NO
COMMON DEFINITION
AMONGST BIOLOGISTS**



LIVING ORGANISM

DEFINITION

SUBJECTIVE

LIVING ORGANISM CLASS DEFINITION

LIVING ORGANISM

LIVING ORGANISM

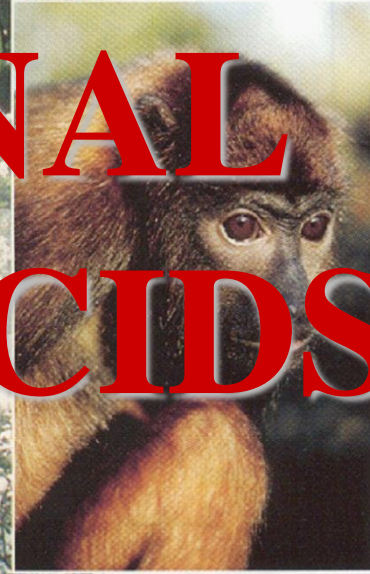


**ENTITY WITH
FUNCTIONAL
NUCLEIC ACIDS**

LIVING ORGANISM



**LIVING ORGANISM
ENTITY WITH
FUNCTIONAL
NUCLEIC ACIDS**



FUNCTIONAL NUCLEIC ACIDS

NUCLEIC ACIDS

NUCLEIC ACIDS



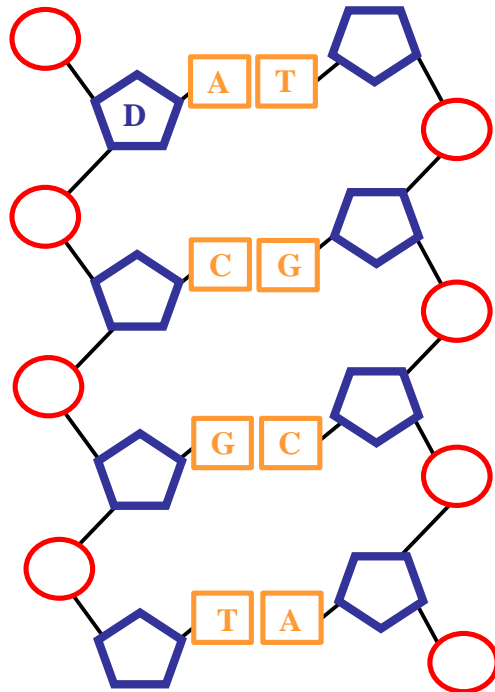
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NUCLEIC ACIDS

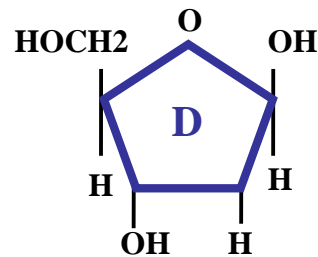
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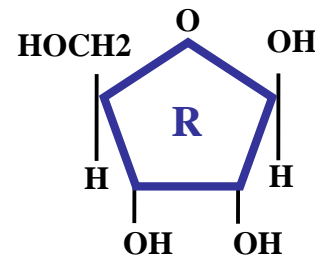
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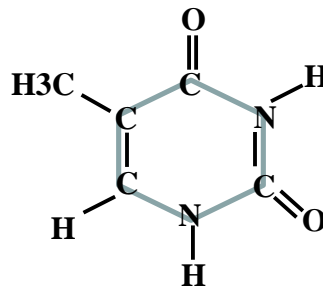
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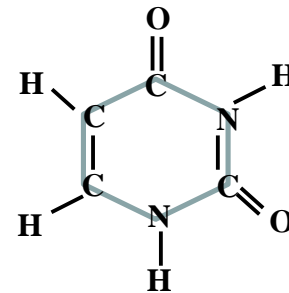
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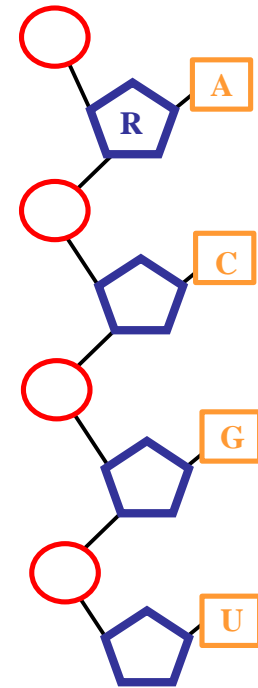
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THYMINE



URACIL



NUCLEIC ACID



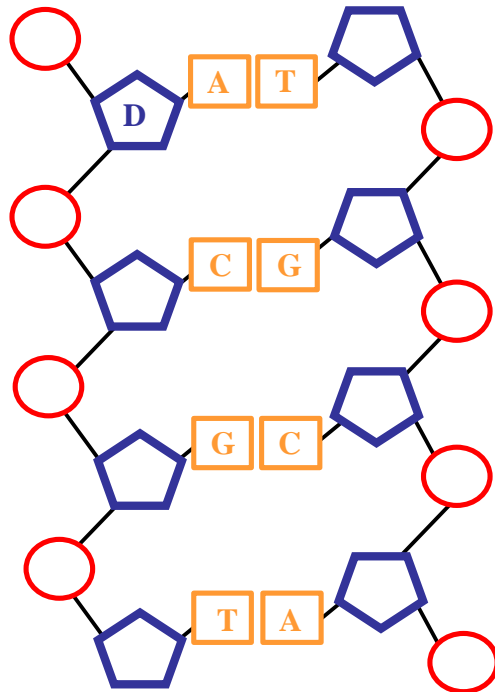
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NUCLEIC ACIDS

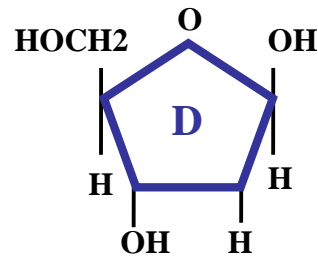
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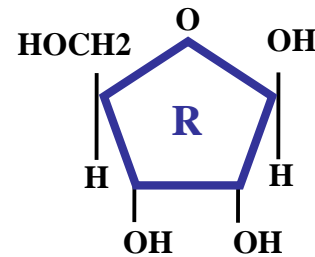
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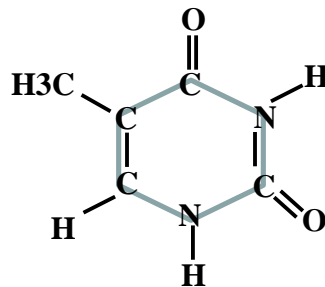
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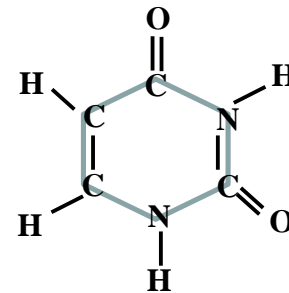
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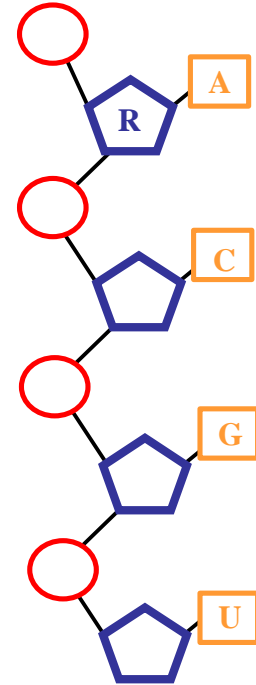
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THYMINE



URACIL



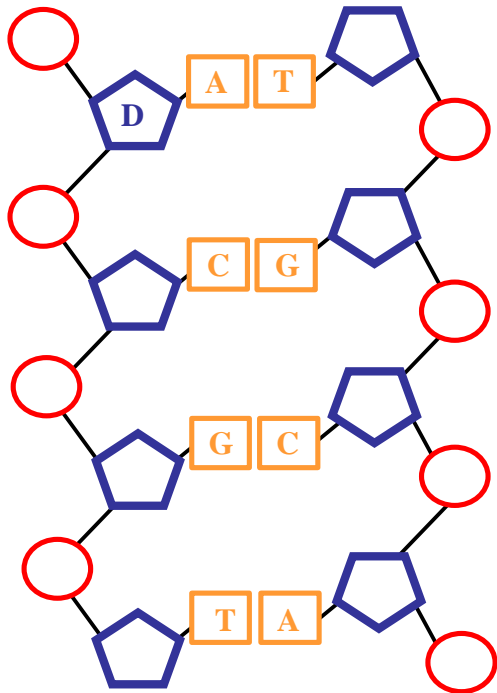
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NUCLEIC ACIDS

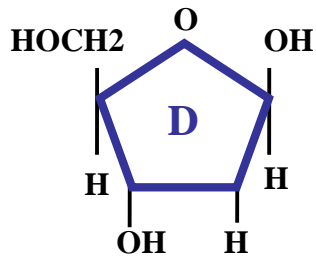
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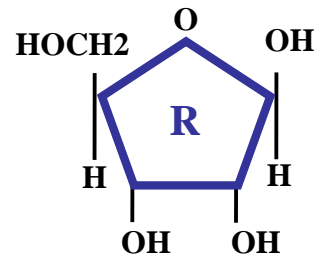
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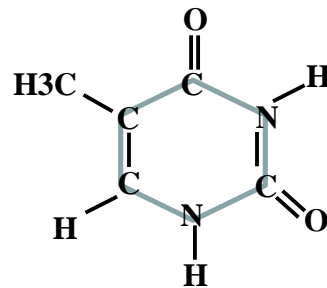
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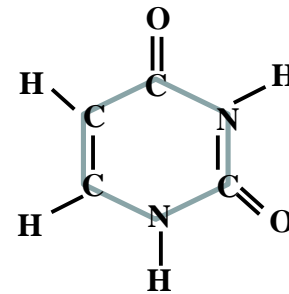
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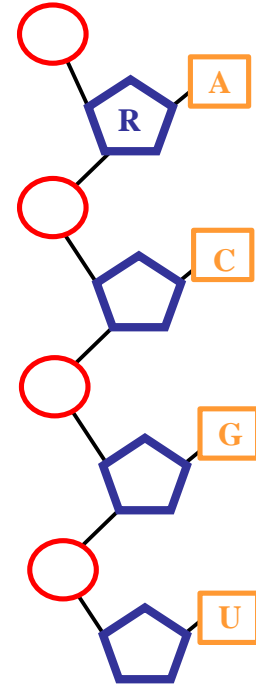
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THYMINE



URACIL

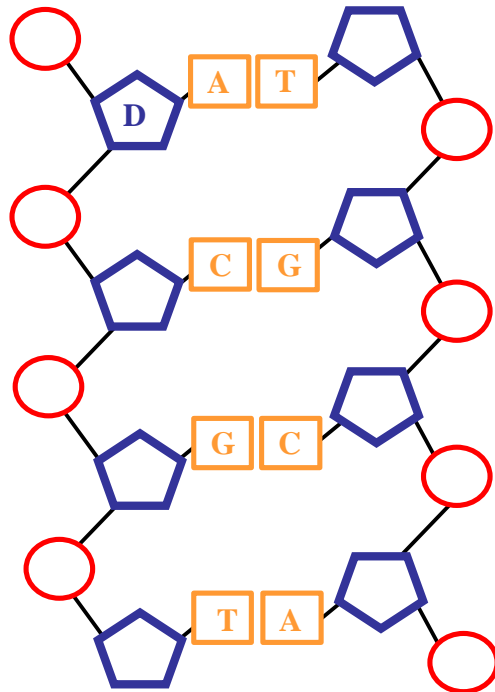


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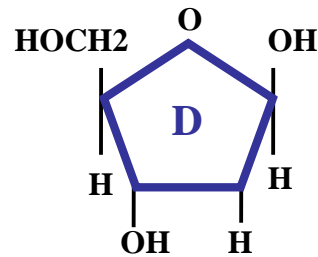
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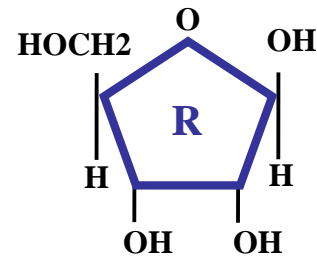
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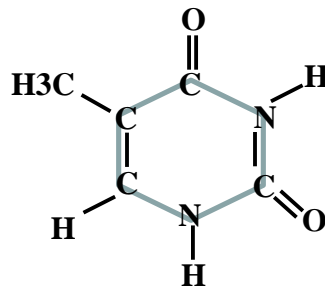
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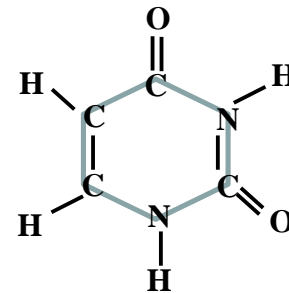
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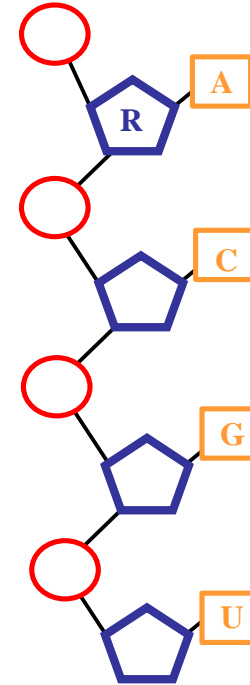


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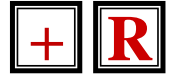
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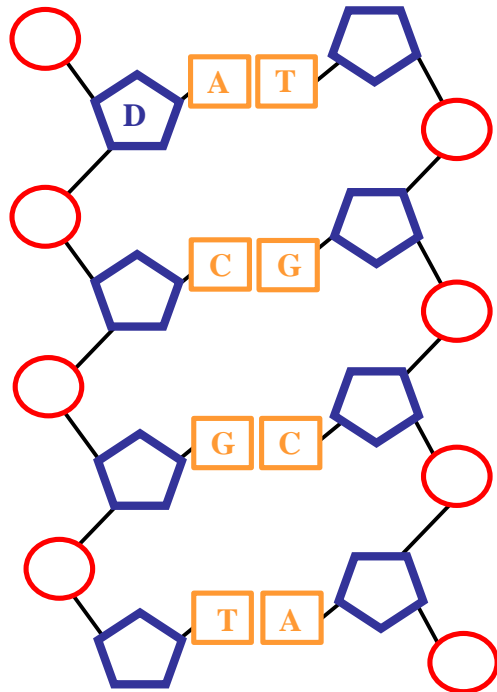


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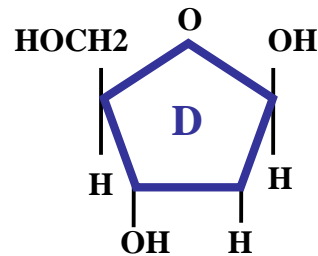
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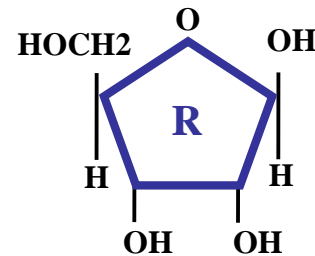
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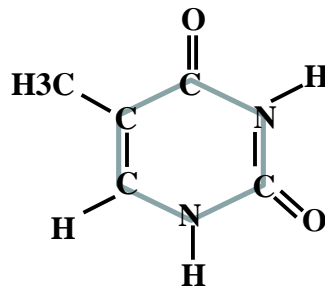
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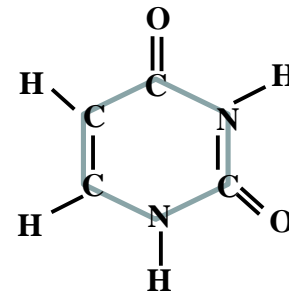
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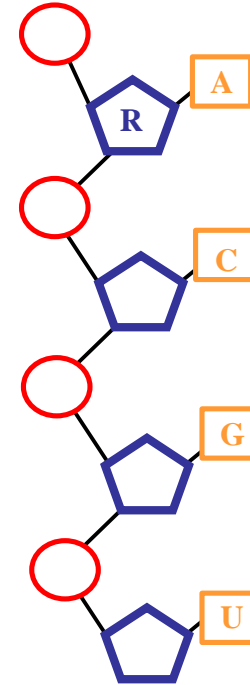


THYMINE



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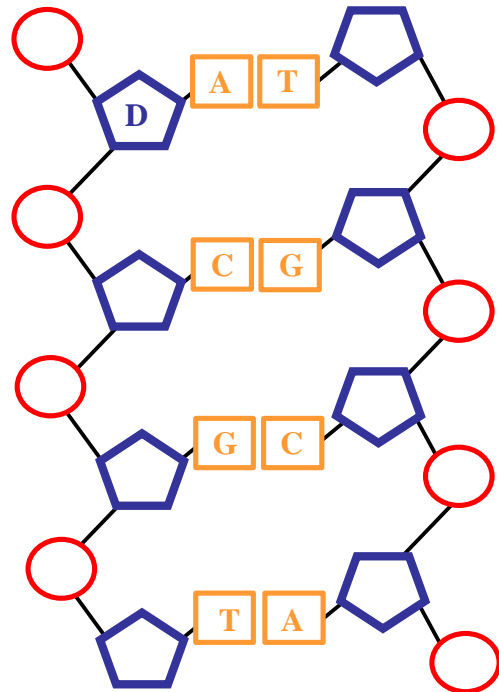


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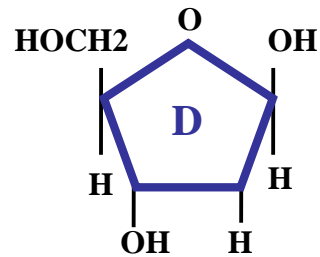
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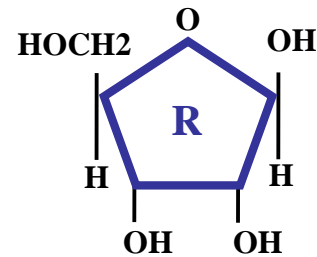
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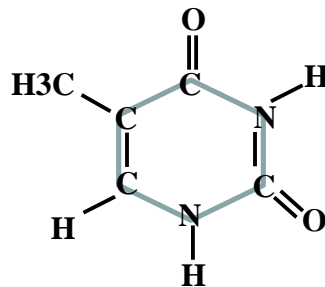
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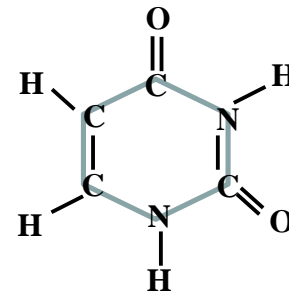
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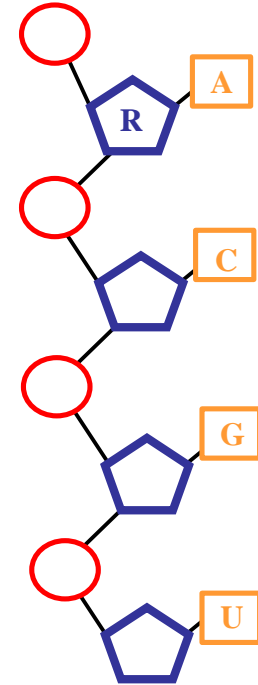


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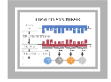
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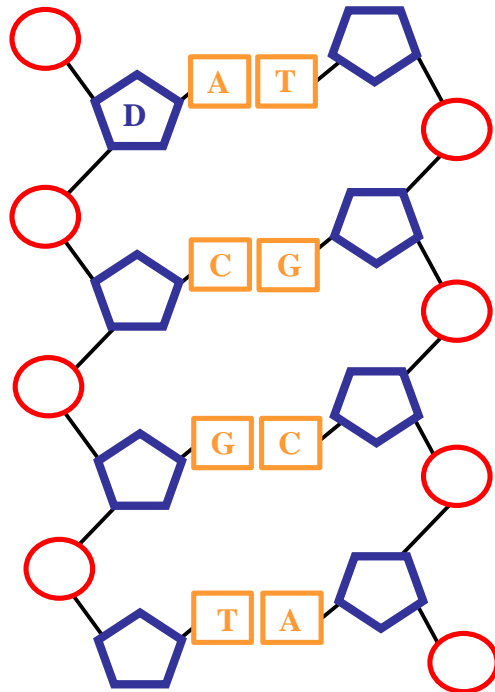
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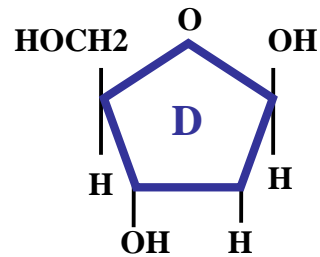


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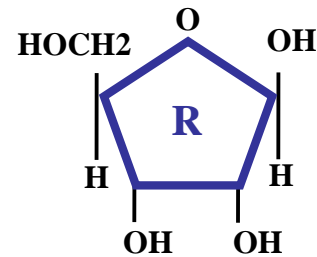
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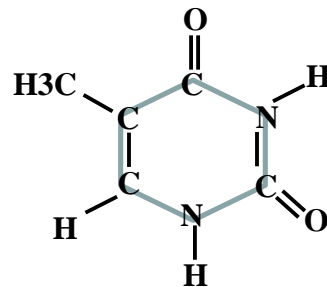
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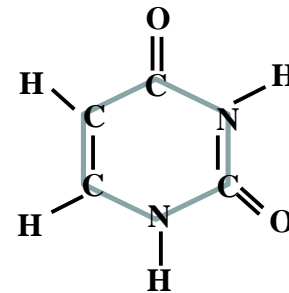
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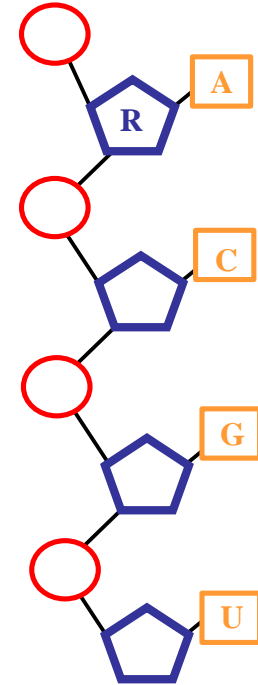


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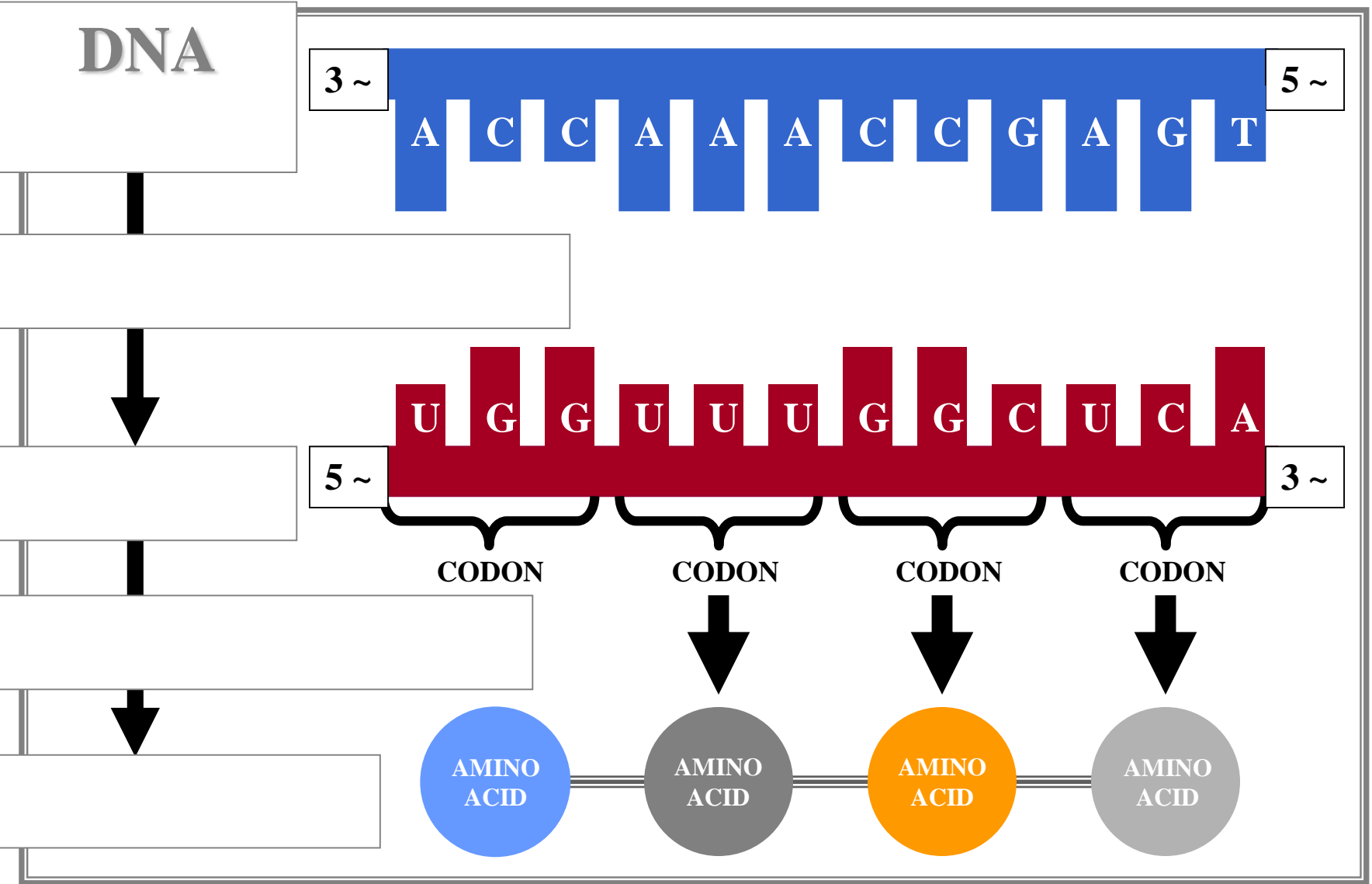
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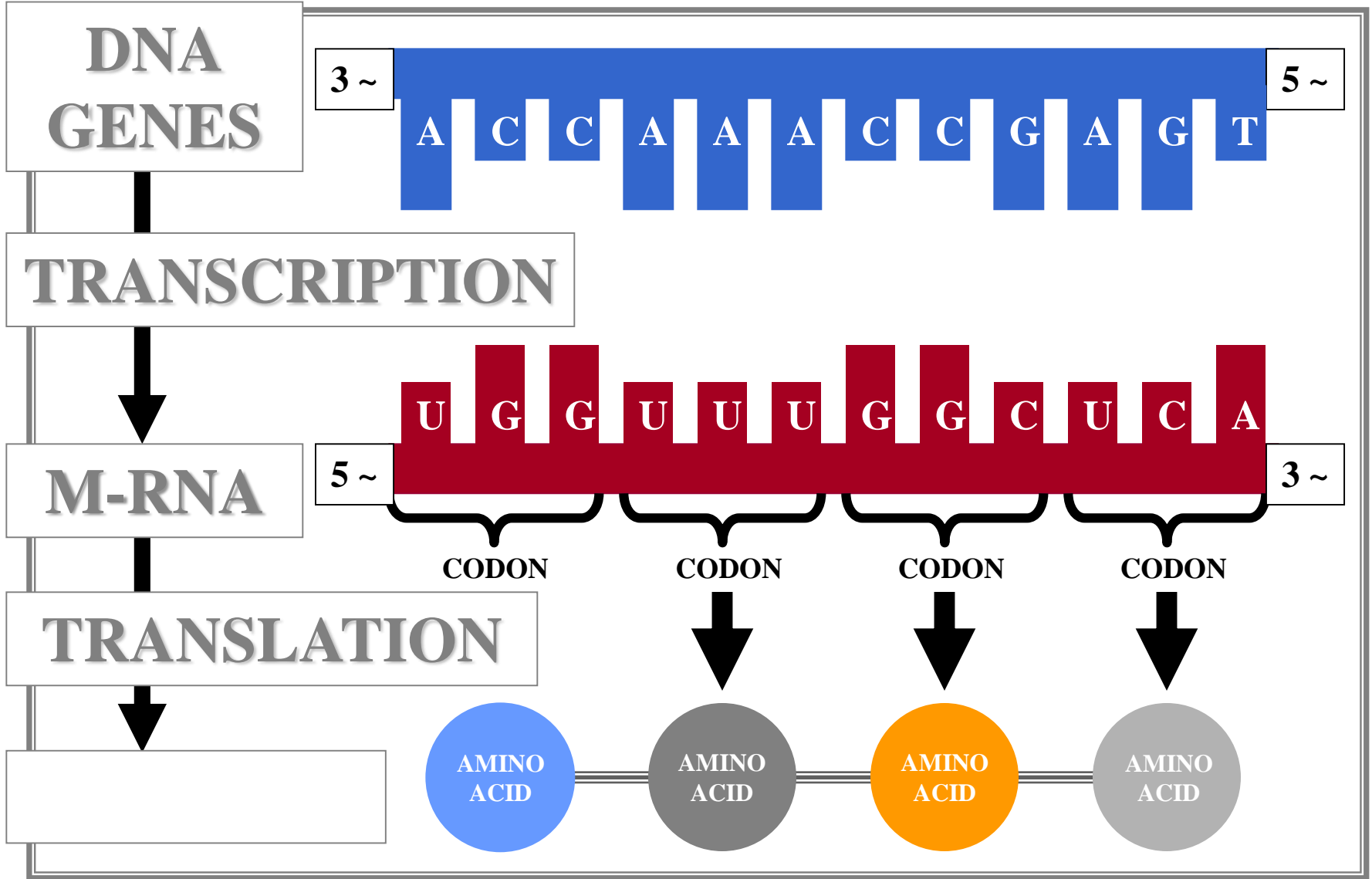


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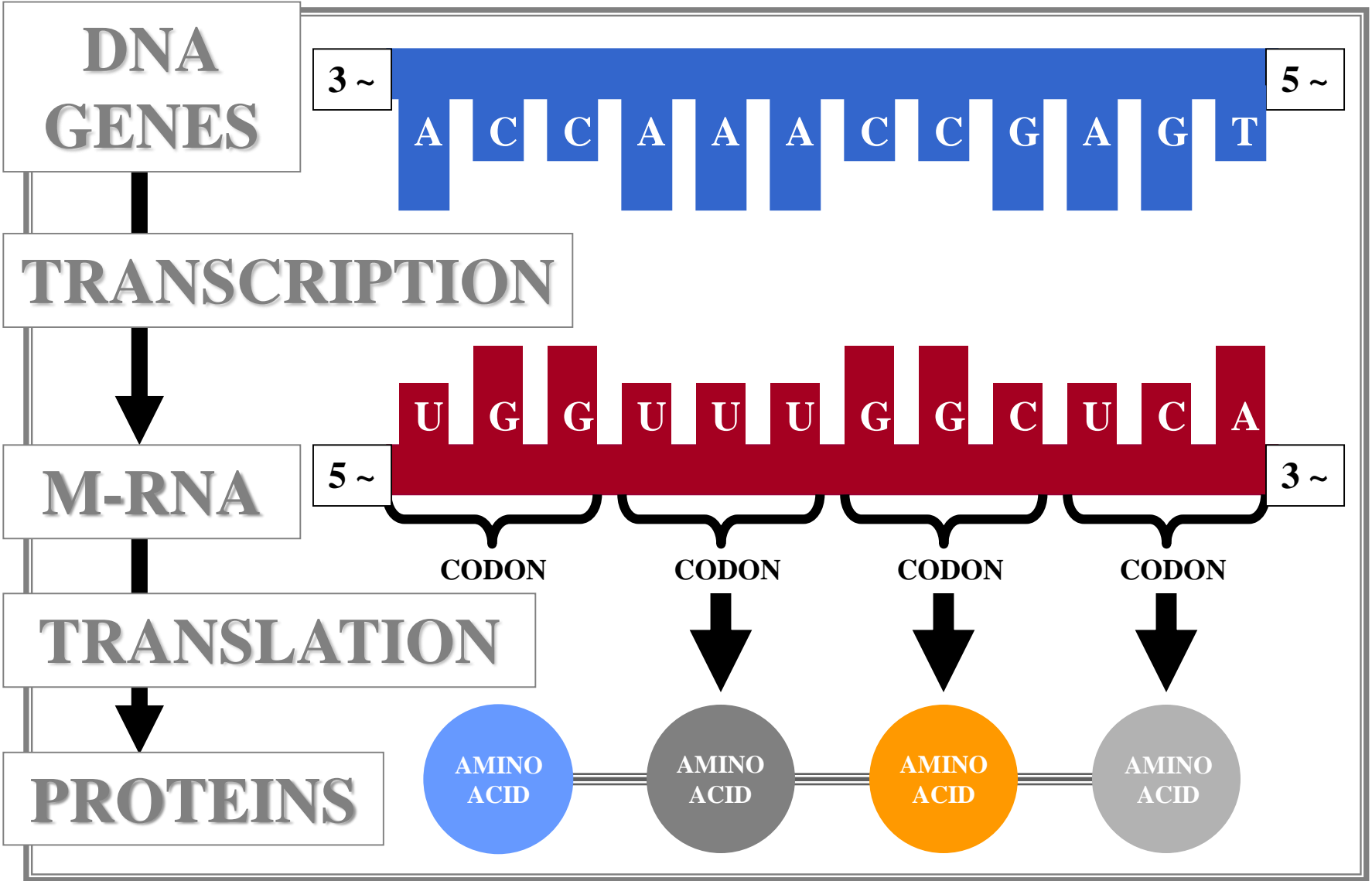
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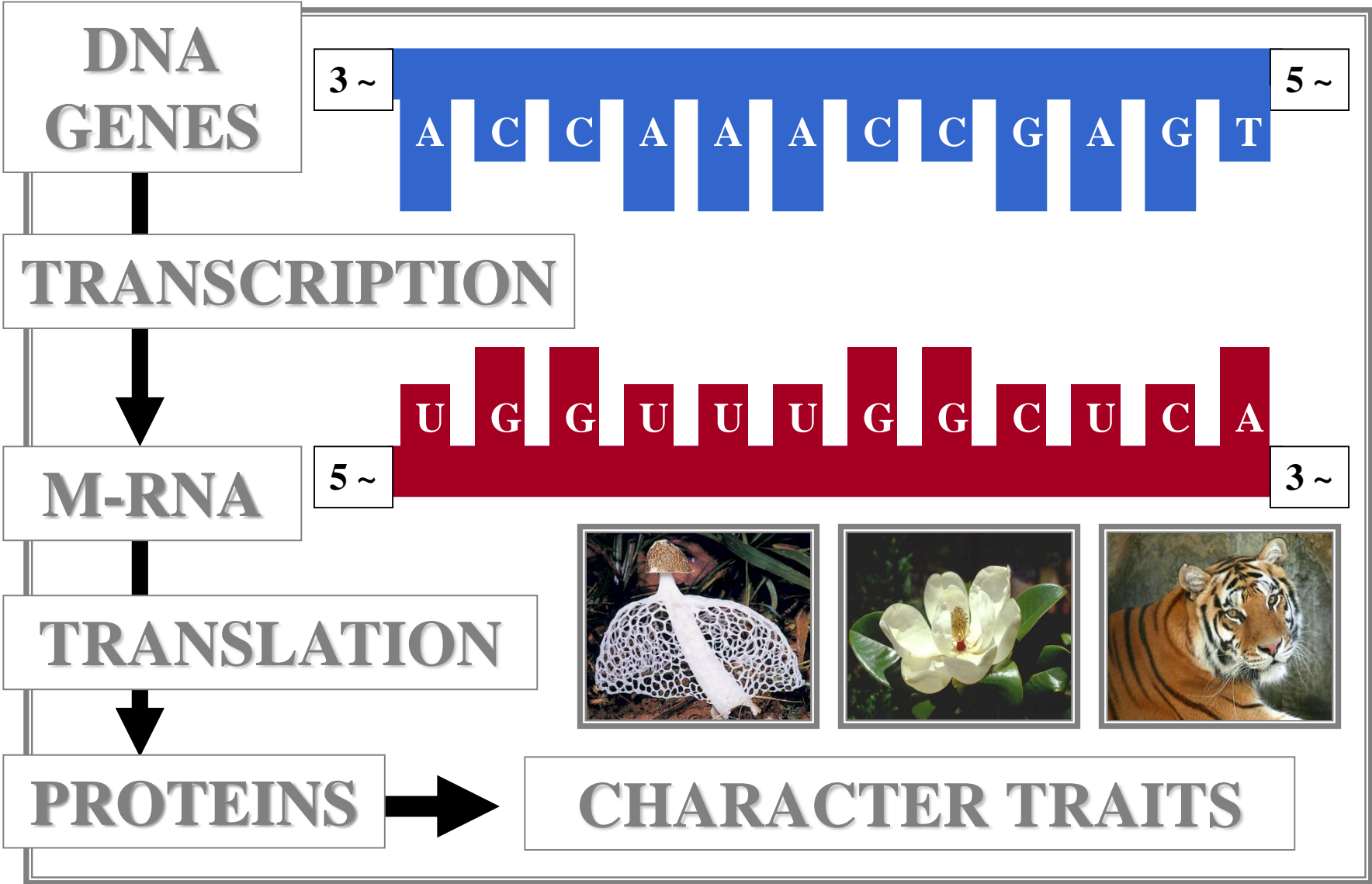
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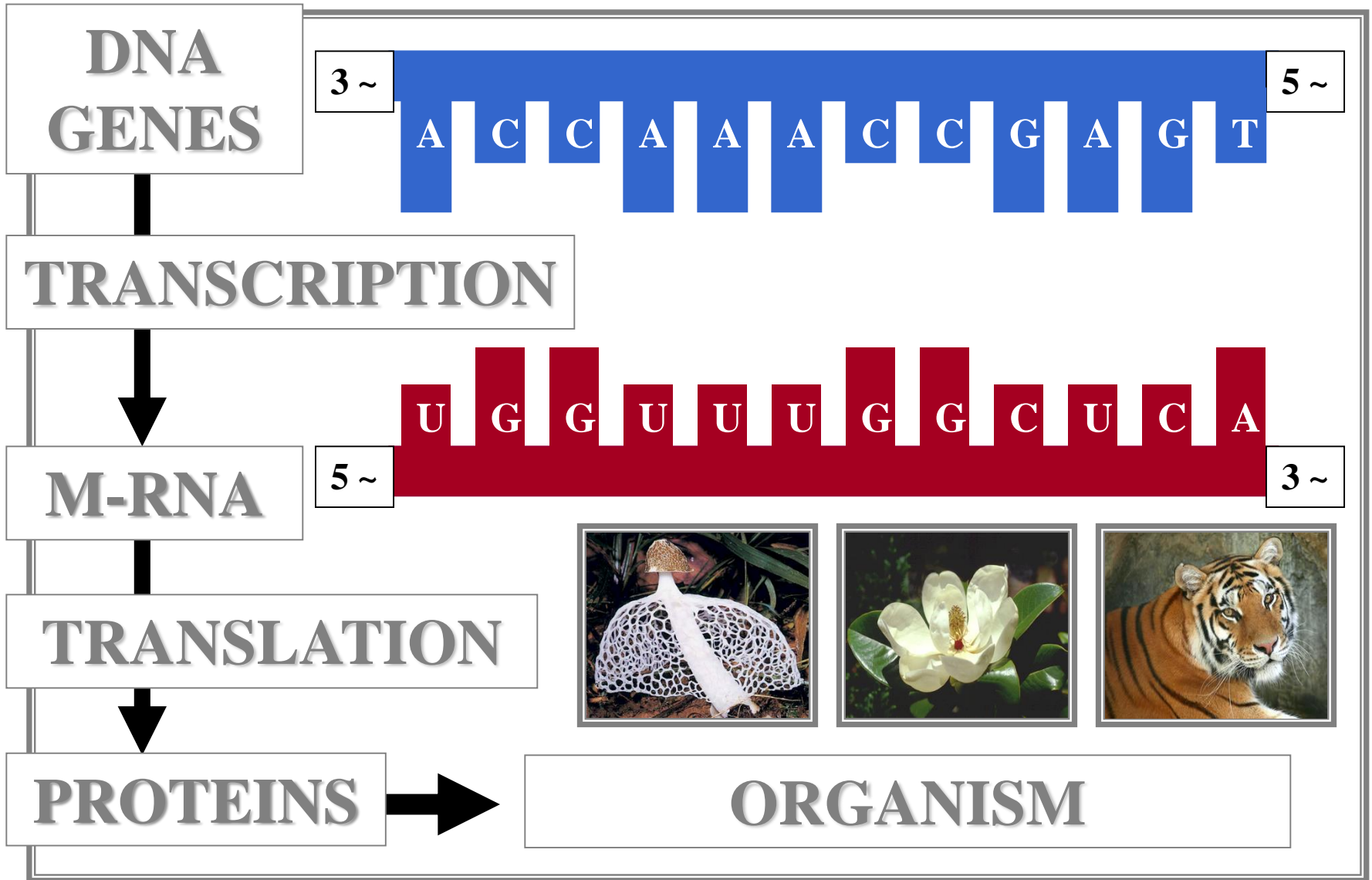
PROTEIN SYNTHESIS



PROTEIN SYNTHESIS



PROTEIN SYNTHESIS





FUNGI DIVERSITY





ANIMAL DIVERSITY





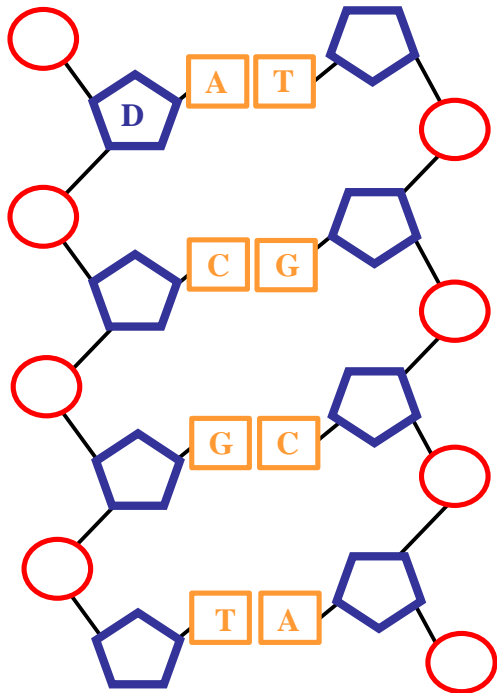
PLANT DIVERSITY



NUCLEIC ACIDS



DNA



DNA
UNDERGOES
MUTATIONAL
CHANGES

MUTATION

MUTATION

MUTATION

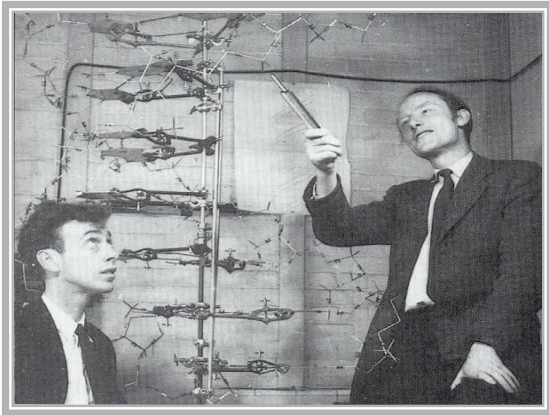


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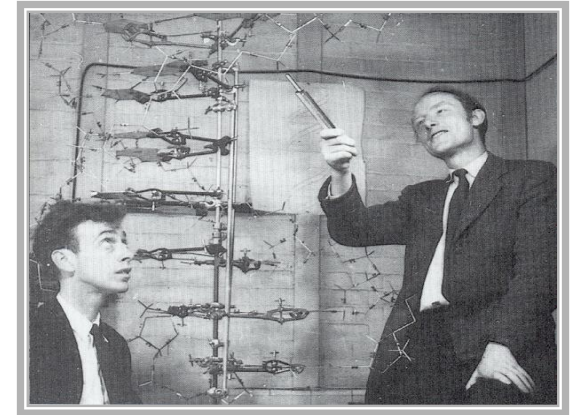
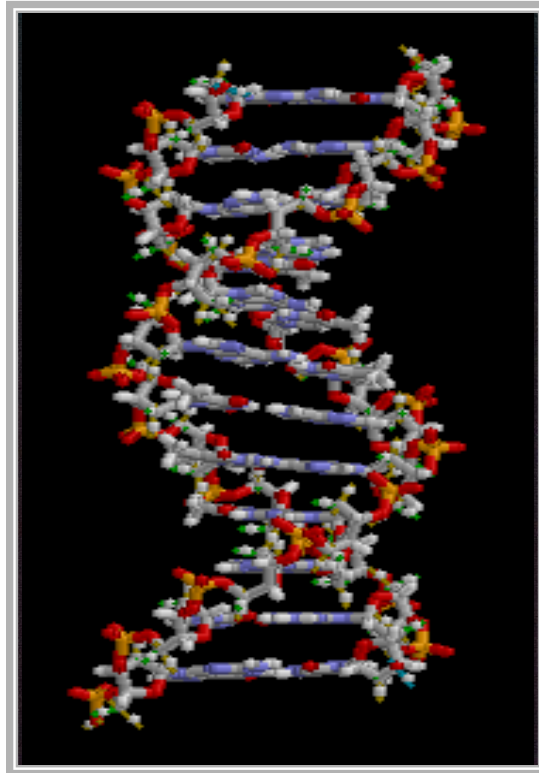
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DNA

DEOXYRIBONUCLEIC ACID



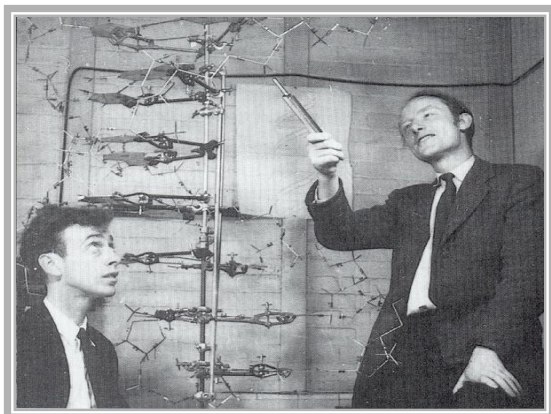
JAMES WATSON
&
FRANCIS CRICK



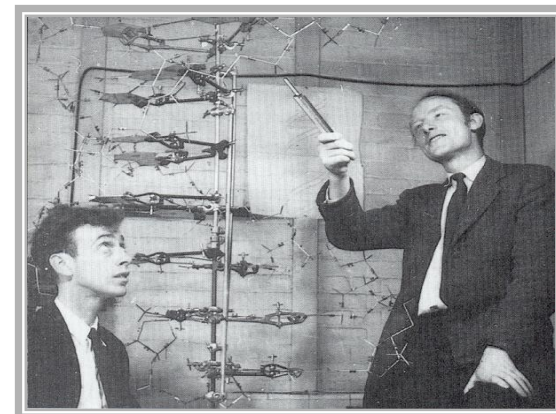
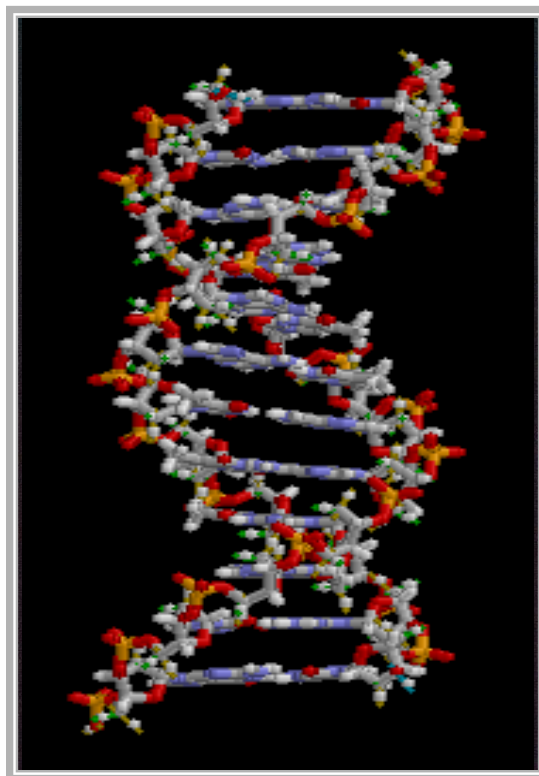
JAMES WATSON
&
FRANCIS CRICK

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DNA DEOXYRIBONUCLEIC ACID



JAMES WATSON
&
FRANCIS CRICK



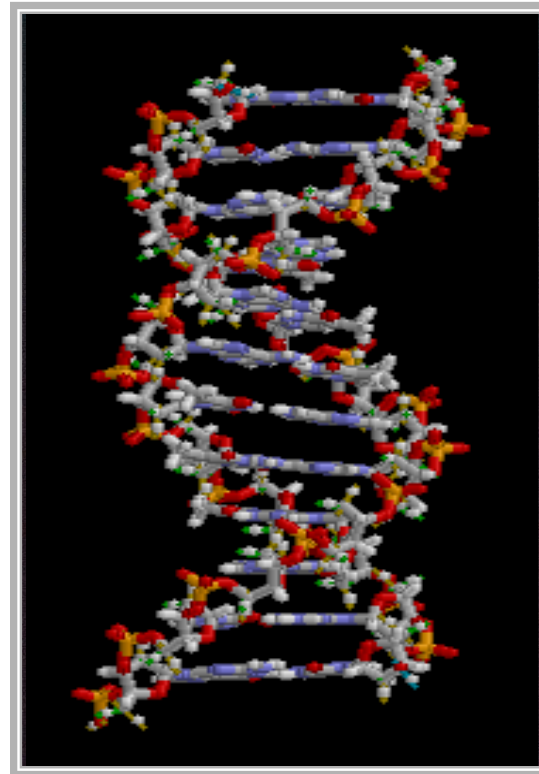
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&
FRANCIS CRICK

DOUBLE HELIX MODEL

DNA

DEOXYRIBONUCLEIC ACID

**DOUBLE
HELIX
MODEL**



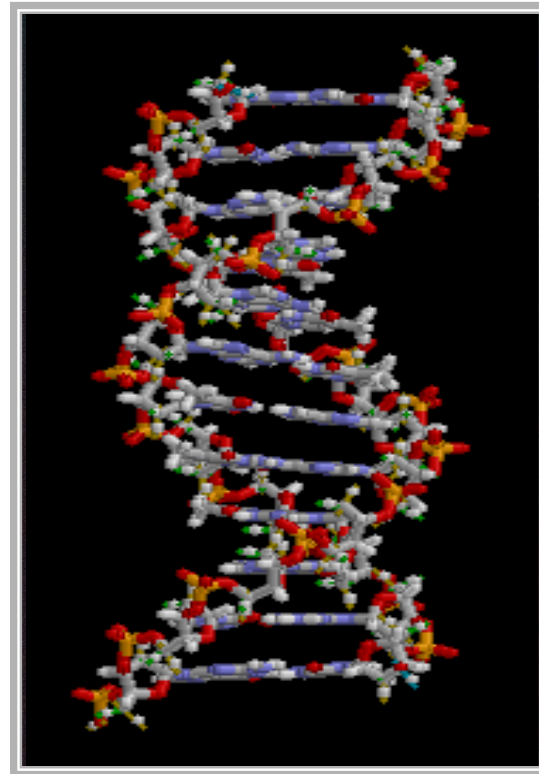
**DOUBLE
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MODEL**

POLYMER

DNA

DEOXYRIBONUCLEIC ACID

DOUBLE
HELIX
MODEL



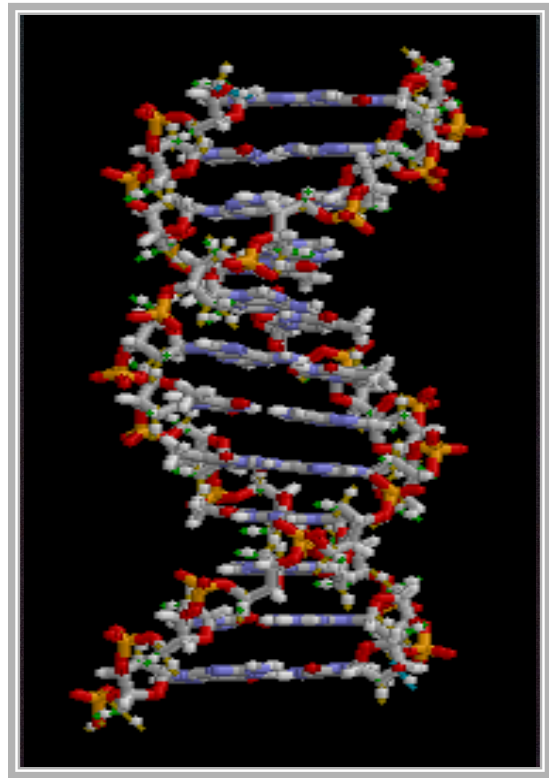
DOUBLE
HELIX
MODEL

MONOMERS

DNA

DEOXYRIBONUCLEIC ACID

DOUBLE
HELIX
MODEL

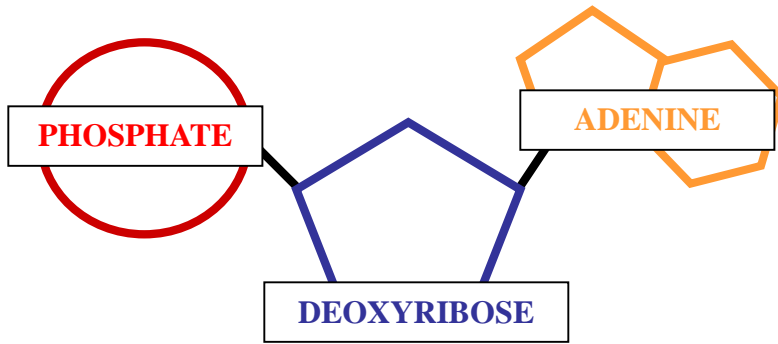


DOUBLE
HELIX
MODEL

NUCLEOTIDES

DNA NUCLEOTIDE MONOMERS

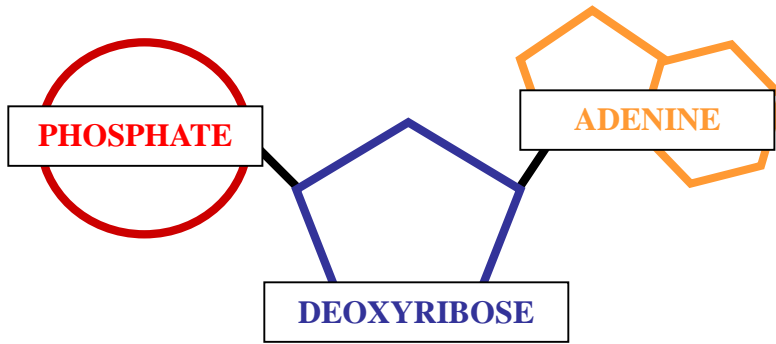
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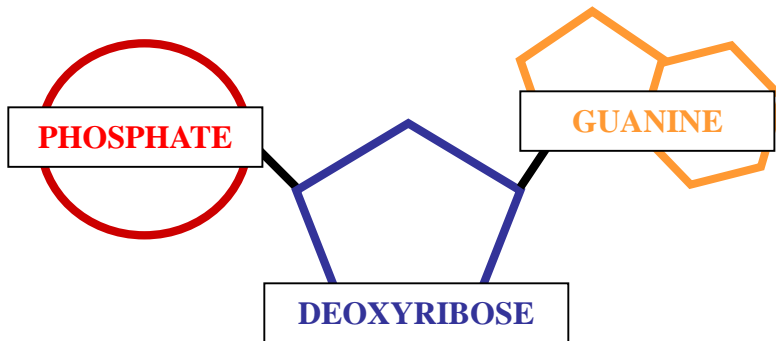
ADENINE

DNA NUCLEOTIDE MONOMERS

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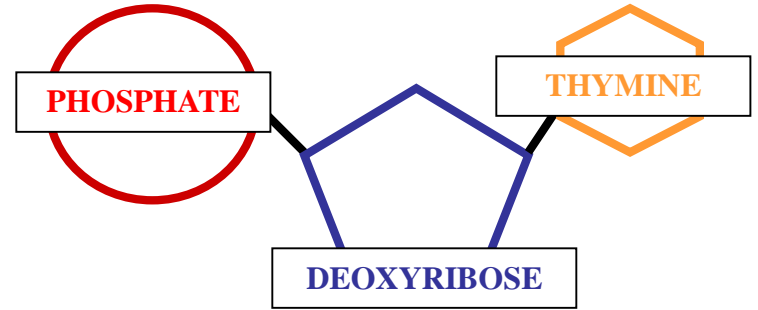
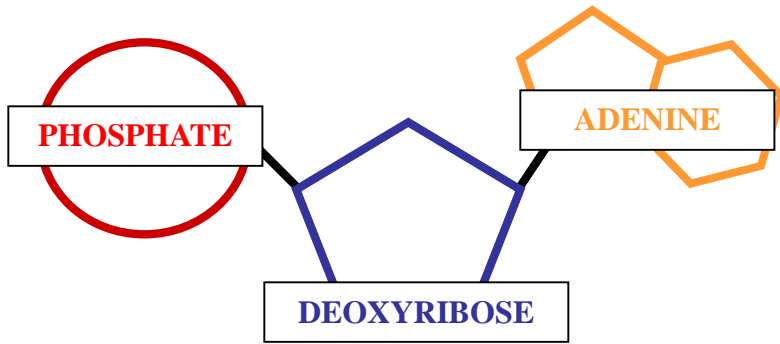
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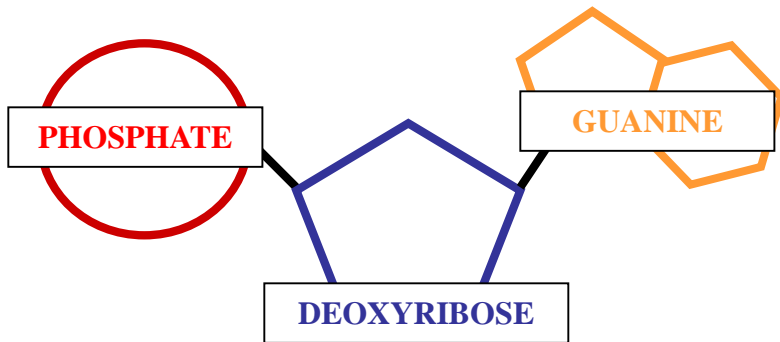
DNA NUCLEOTIDE MONOMERS

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ADENINE

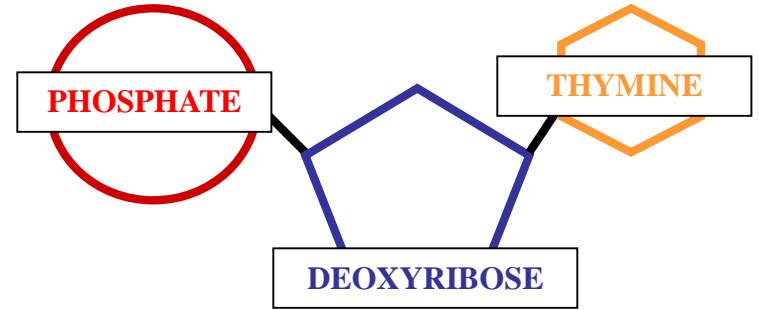
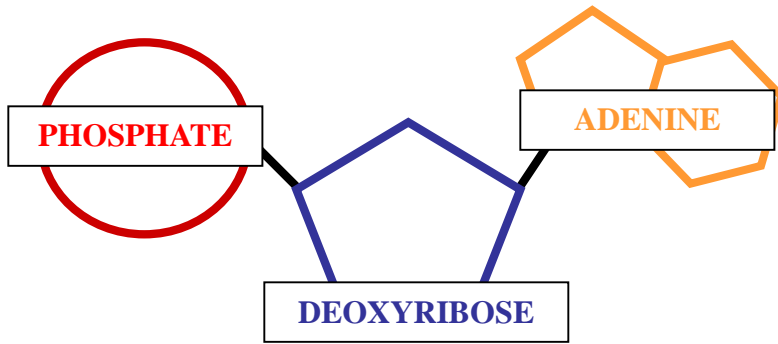
THYMINE



GUANINE

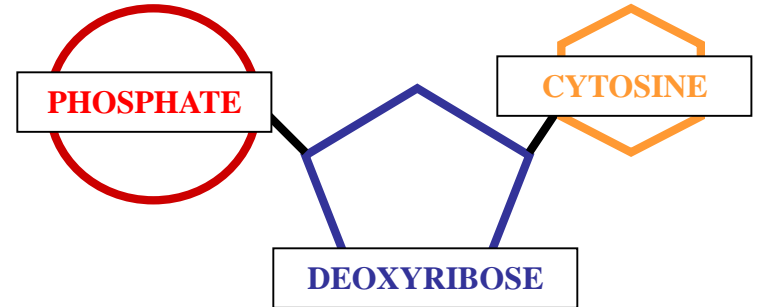
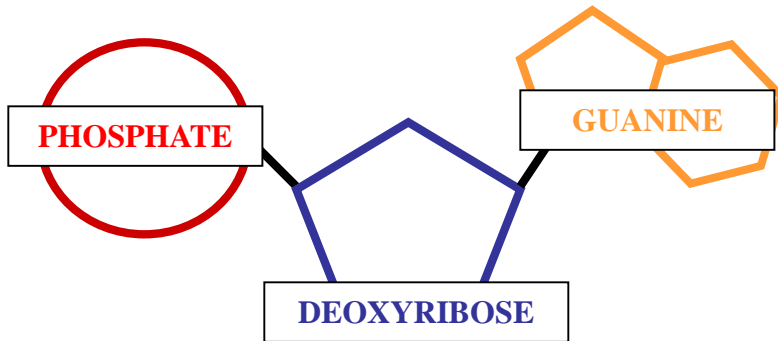
DNA NUCLEOTIDE MONOMERS

A-T



ADENINE

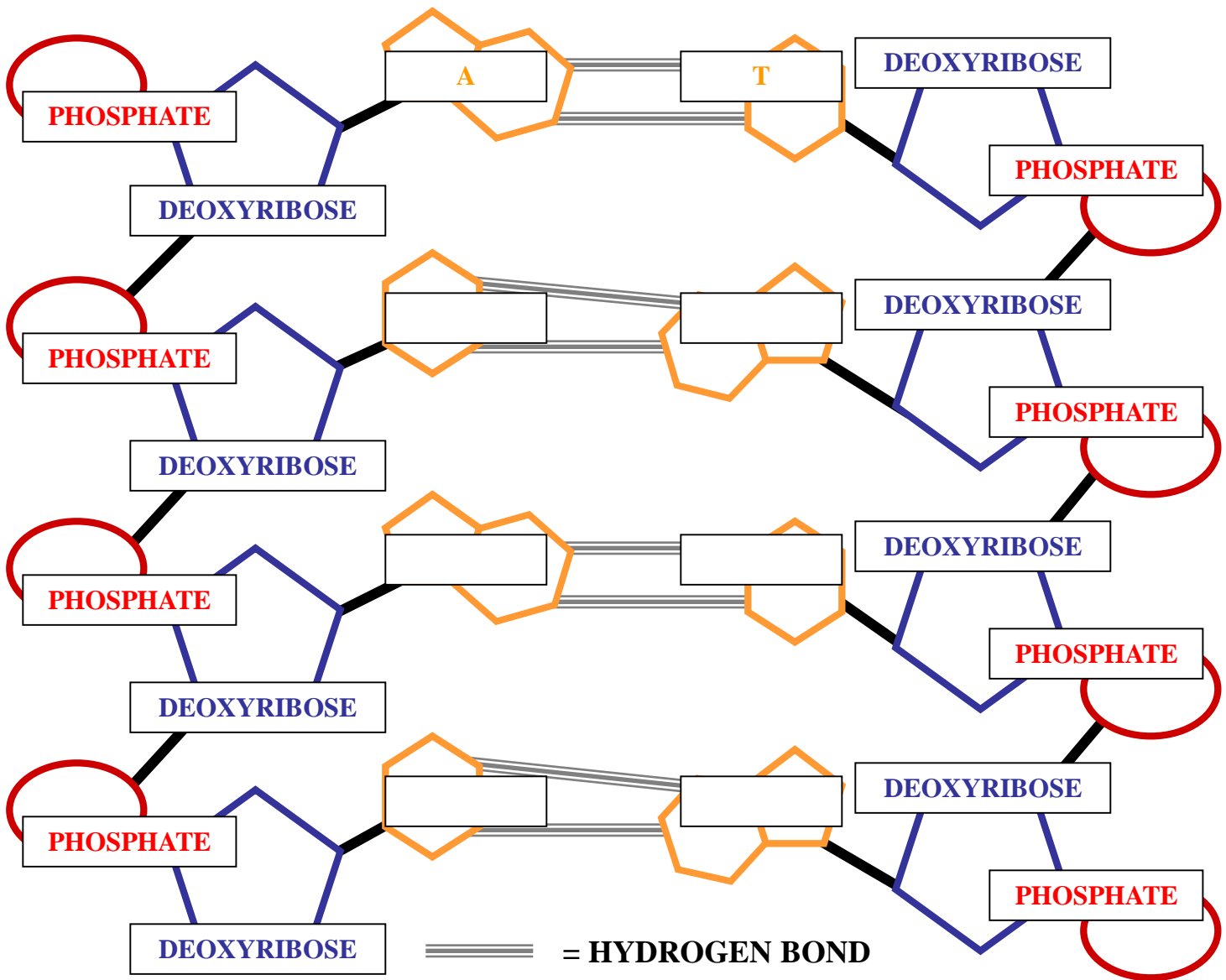
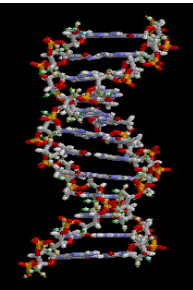
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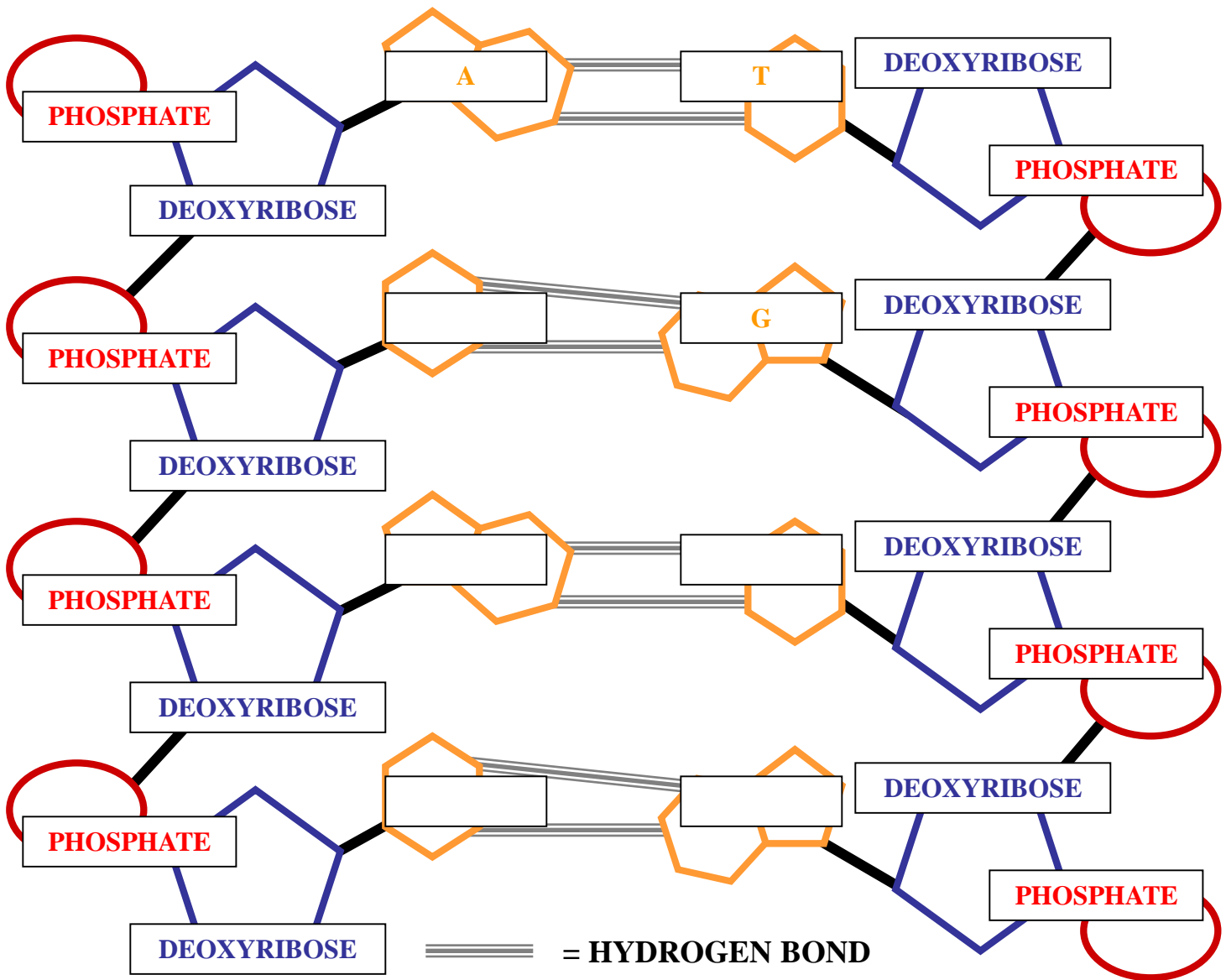
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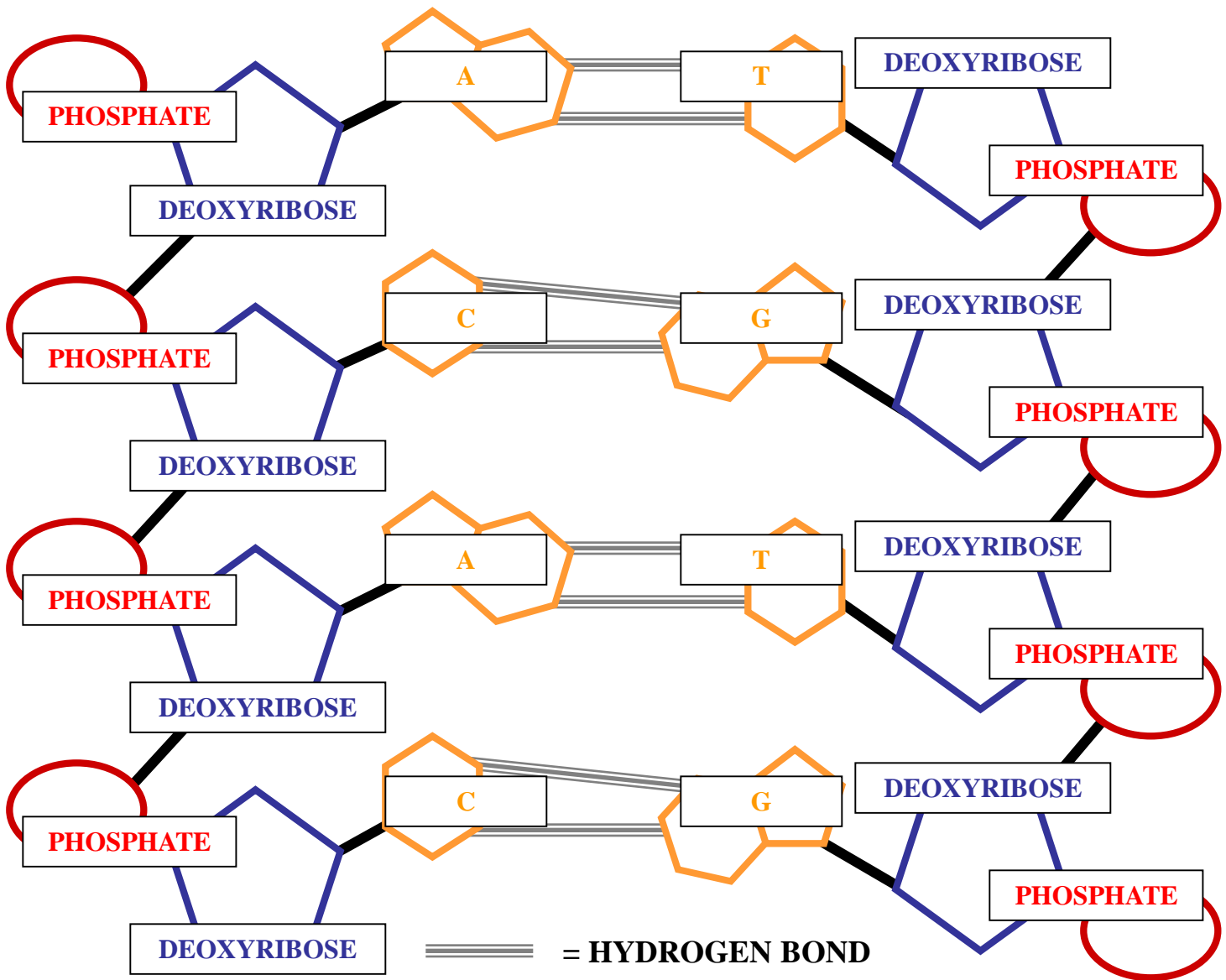
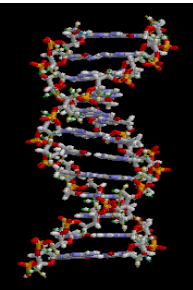
DNA DOUBLE HELIX MODEL / NUCLEOTIDE BASE PAIRS



DNA DOUBLE HELIX MODEL / NUCLEOTIDE BASE PAIRS

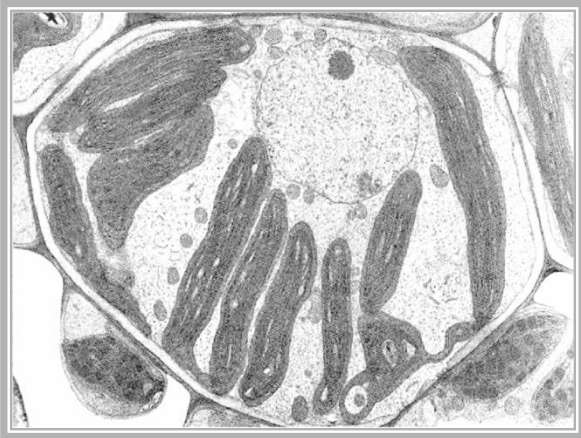


DNA DOUBLE HELIX MODEL / NUCLEOTIDE BASE PAIRS

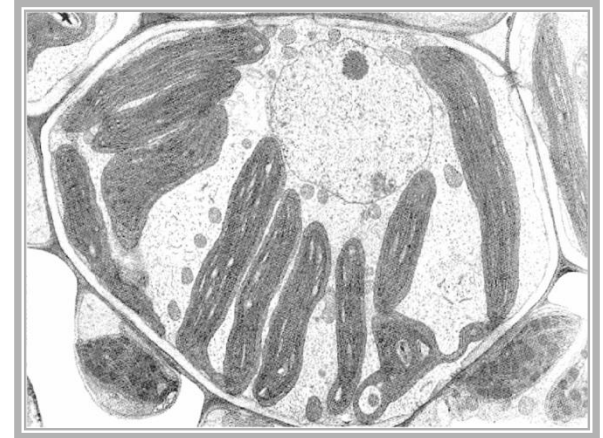
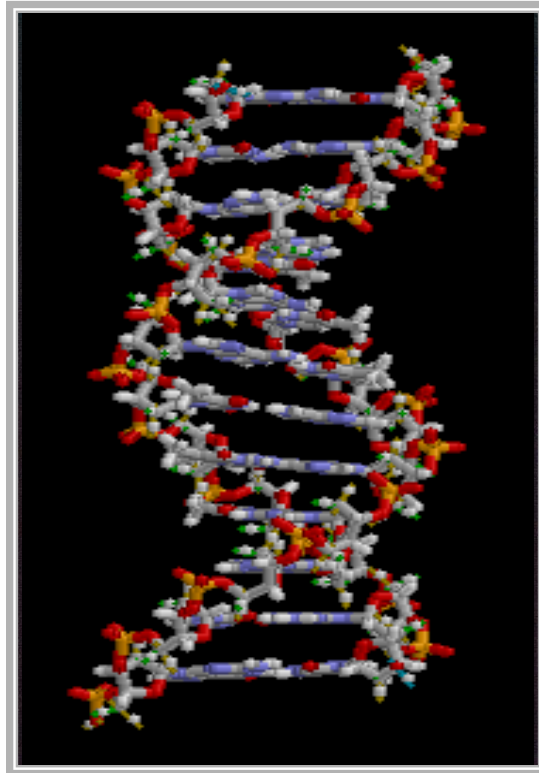


DNA

DEOXYRIBONUCLEIC ACID



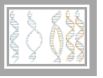
PLANT CELL



PLANT CELL

CELL CYCLE

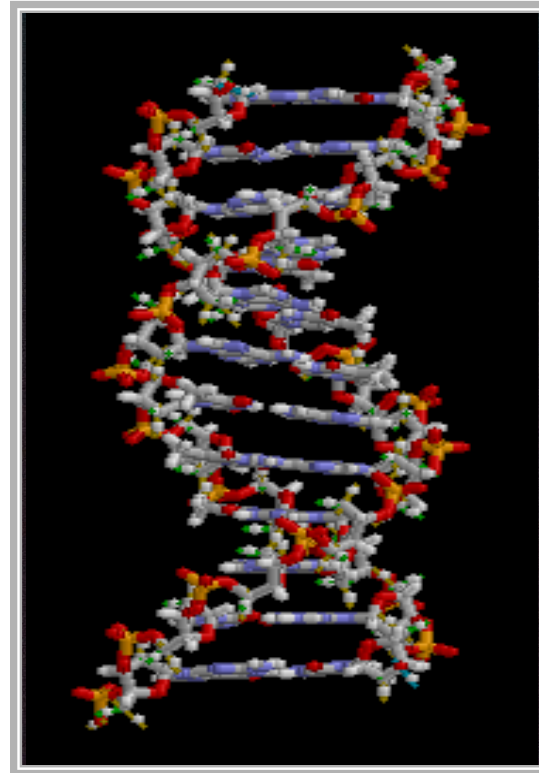
DNA



DEOXYRIBONUCLEIC ACID



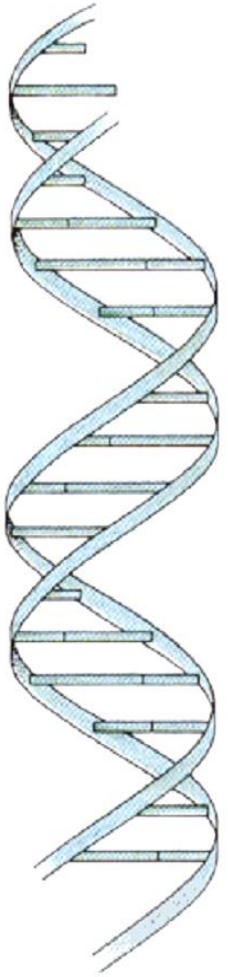
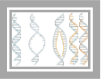
PLANT CELL



PLANT CELL

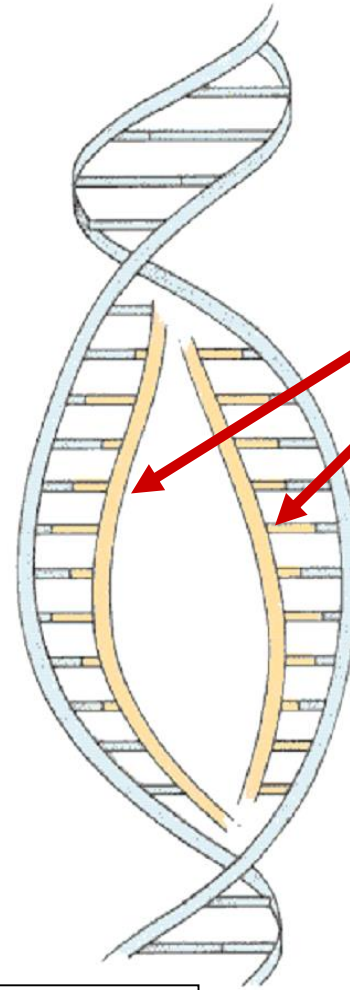
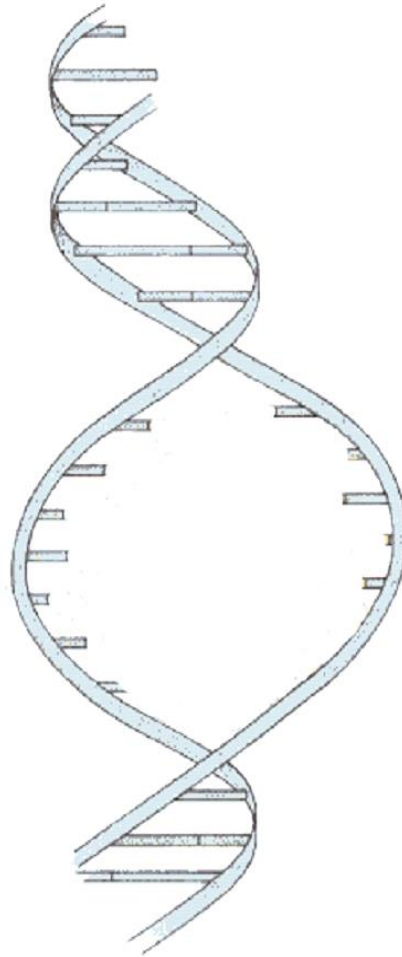
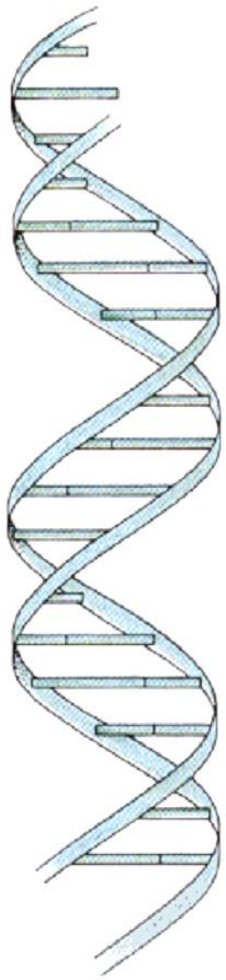
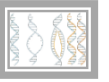
REPLICATION

DNA REPLICATION



**DNA
CHROMOSOME**

DNA REPLICATION



**NEWLY REPLICATED
DNA STRANDS**

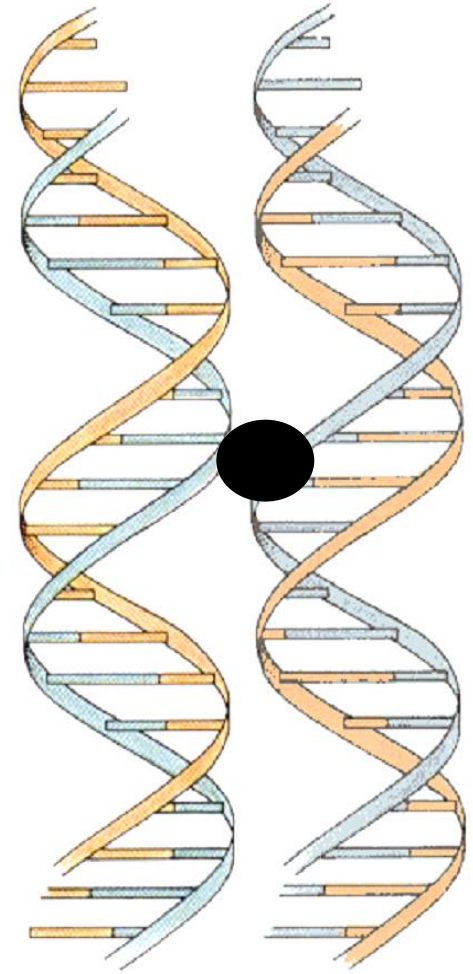
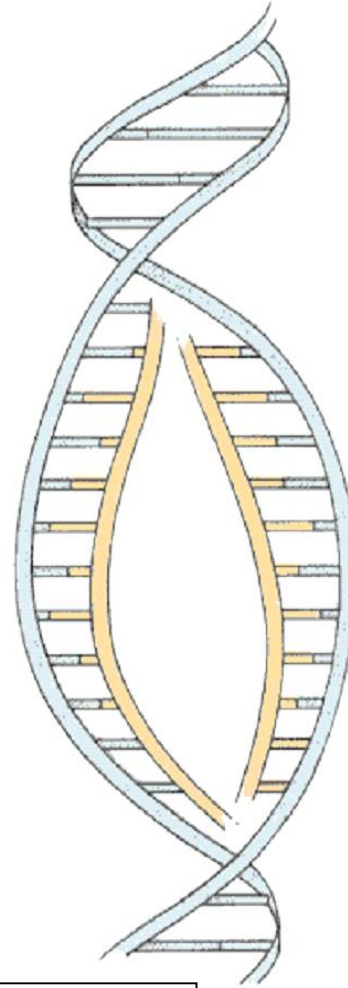
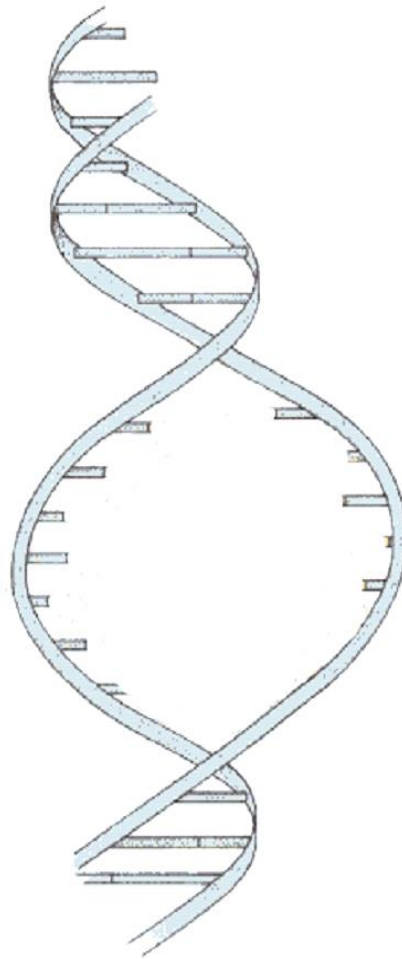
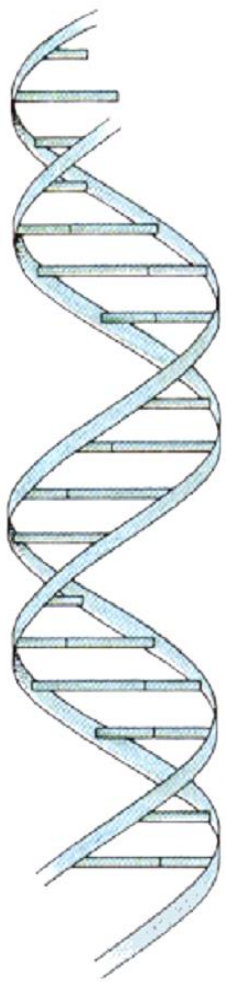
**DNA
CHROMOSOME**

REPLICATION



DNA REPLICATION

?



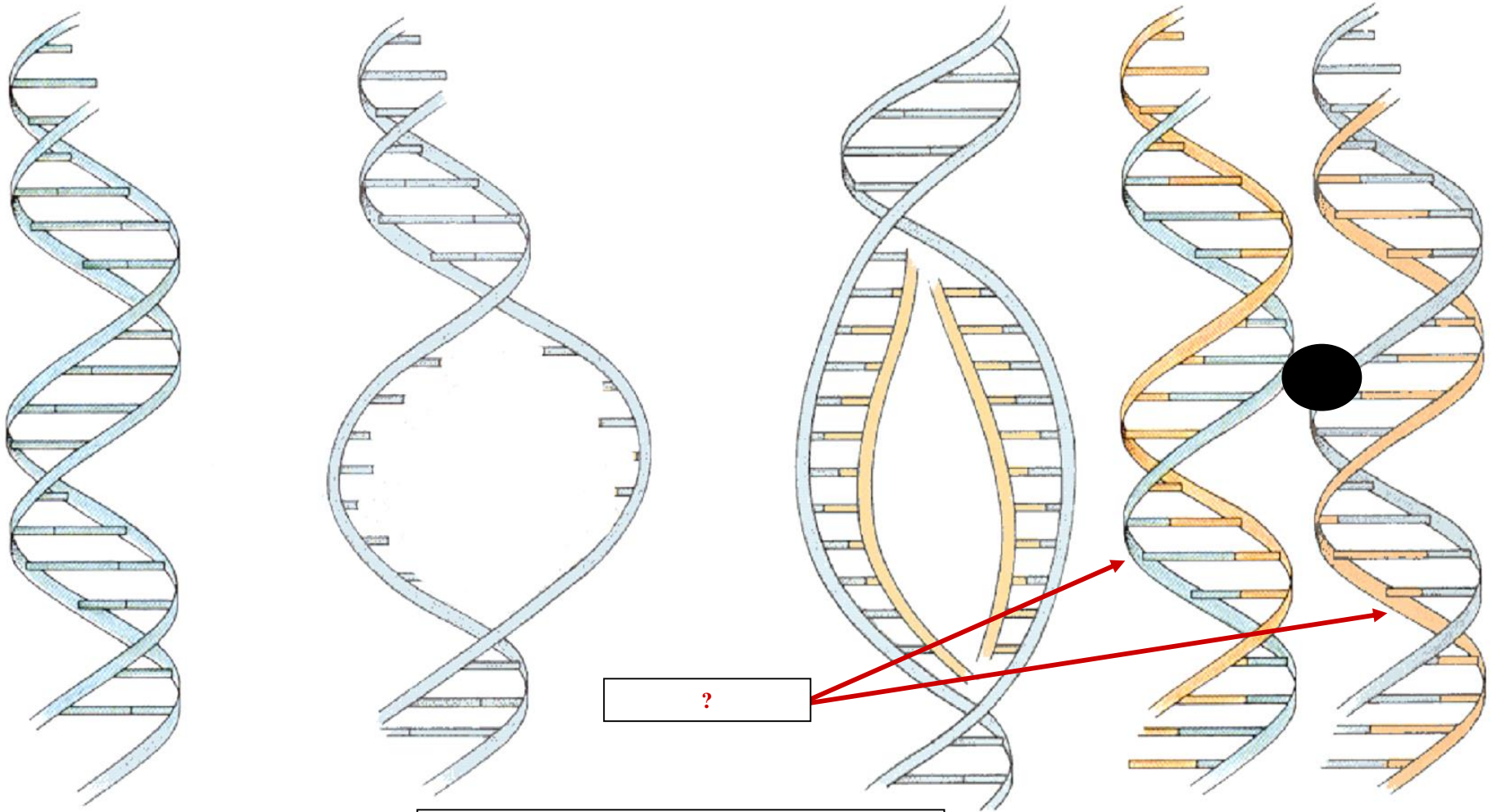
DNA
CHROMOSOME

REPLICATION

REPLICATED DNA
CHROMOSOME

DNA REPLICATION

C



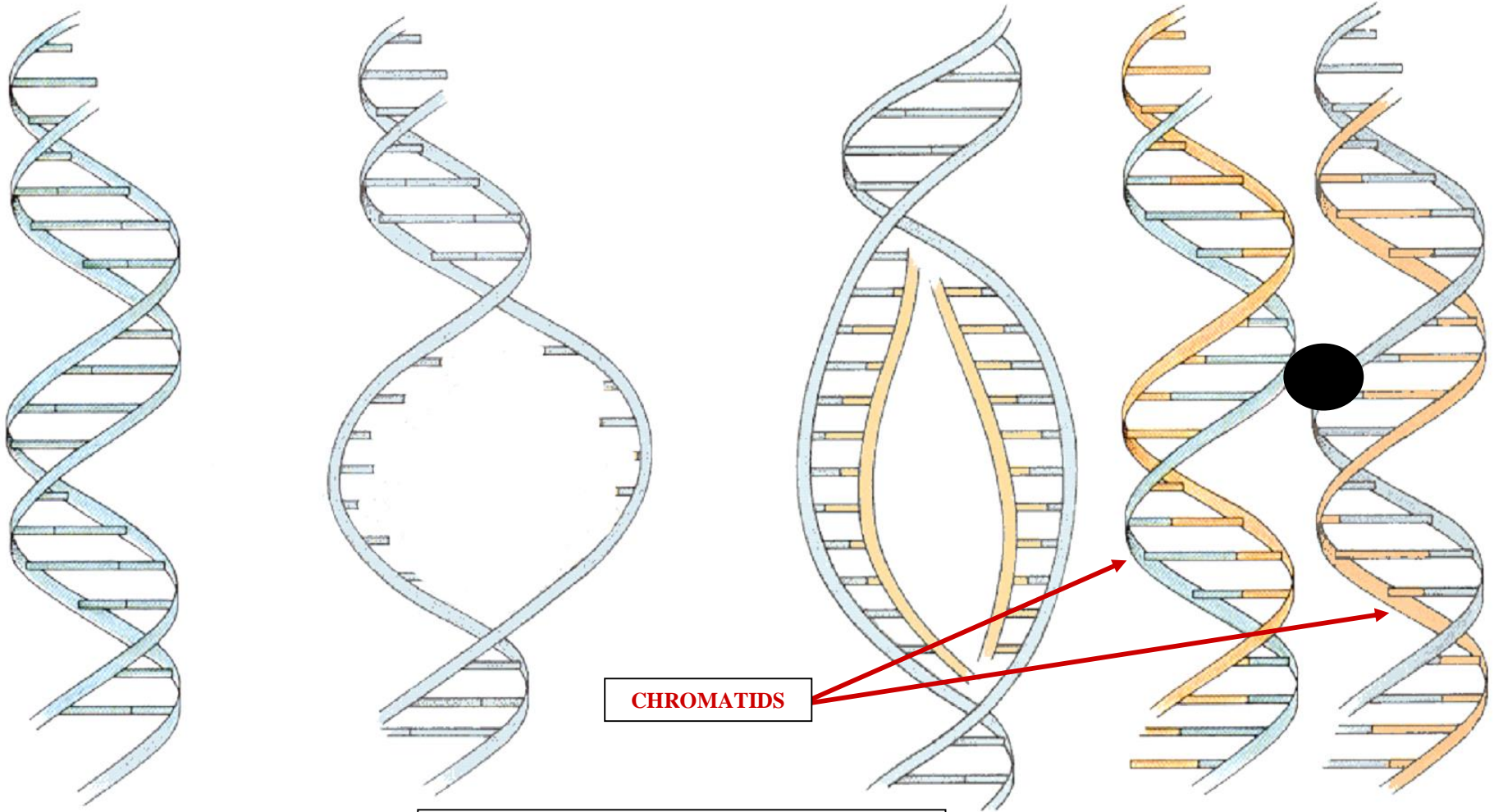
DNA
CHROMOSOME

REPLICATION

REPLICATED DNA
CHROMOSOME

DNA REPLICATION

?



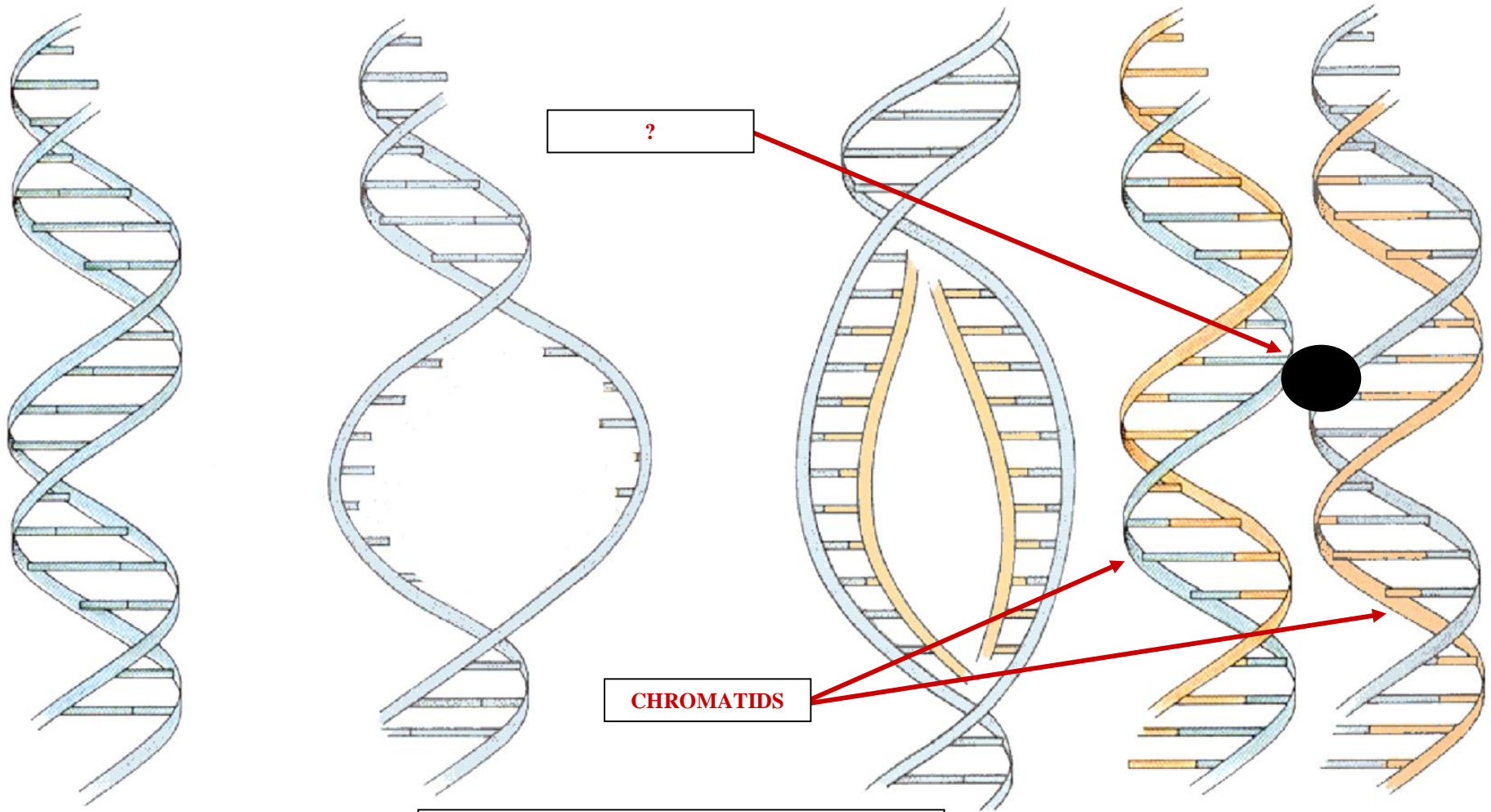
DNA
CHROMOSOME

REPLICATION

REPLICATED DNA
CHROMOSOME

DNA REPLICATION

C

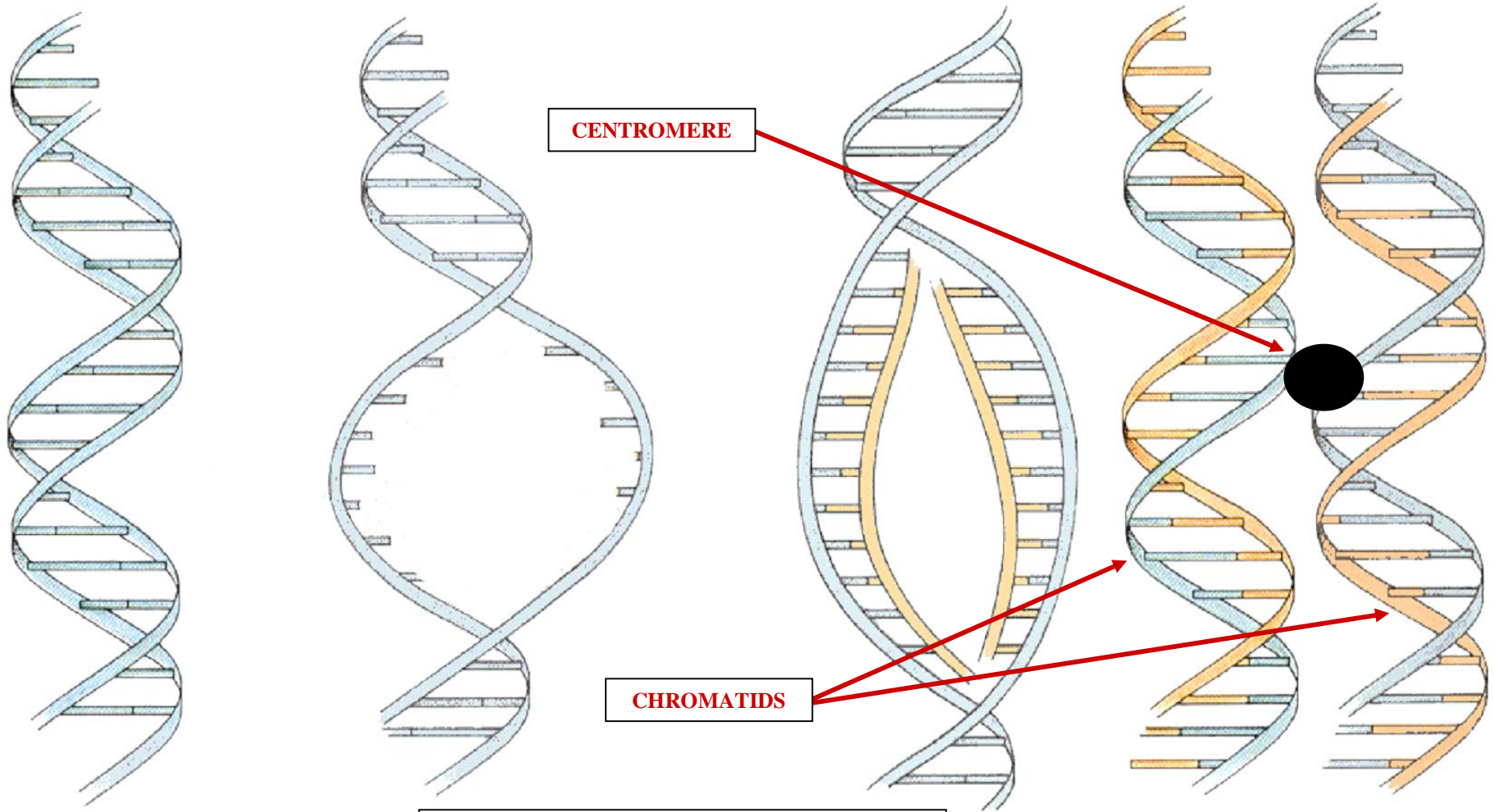


DNA
CHROMOSOME

REPLICATION

REPLICATED DNA
CHROMOSOME

DNA REPLICATION



CENTROMERE

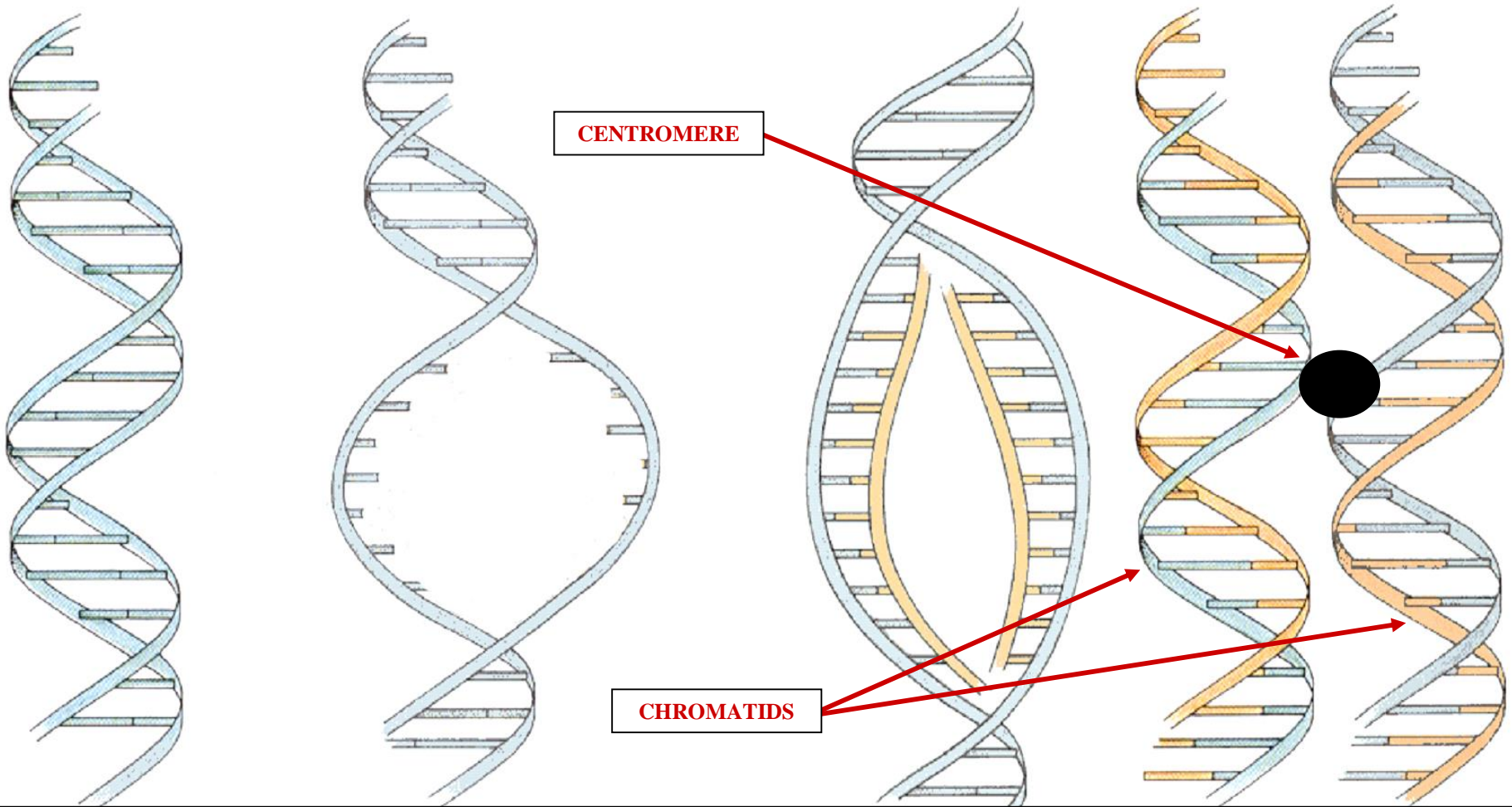
CHROMATIDS

DNA
CHROMOSOME

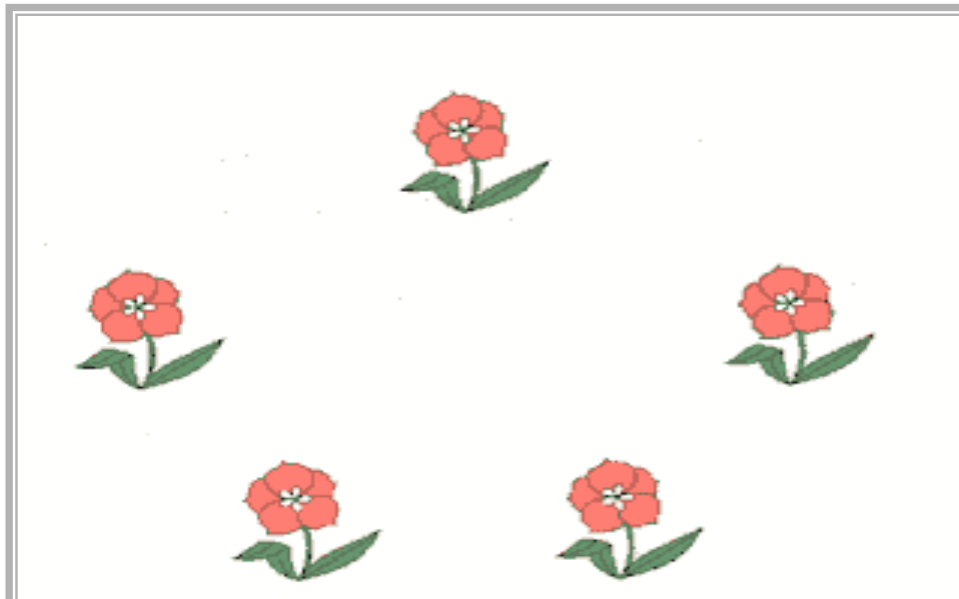
REPLICATION

REPLICATED DNA
CHROMOSOME

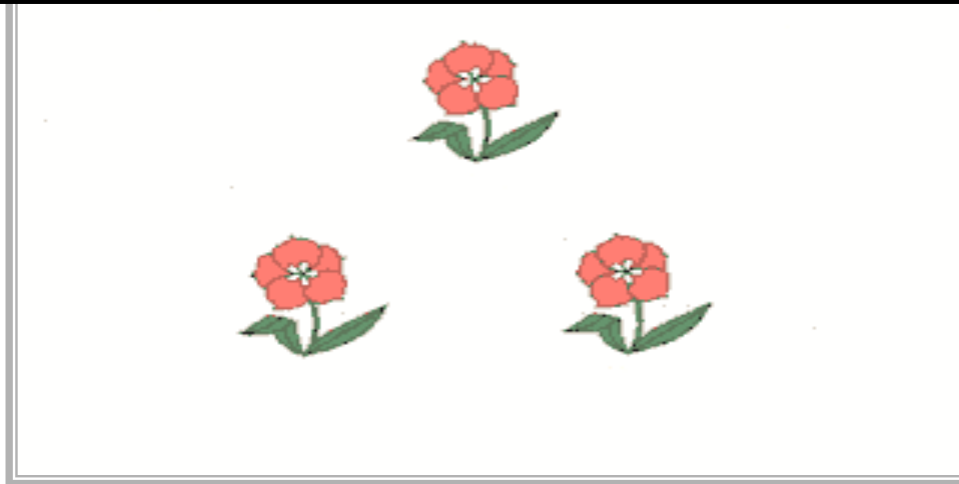
DURING REPLICATION



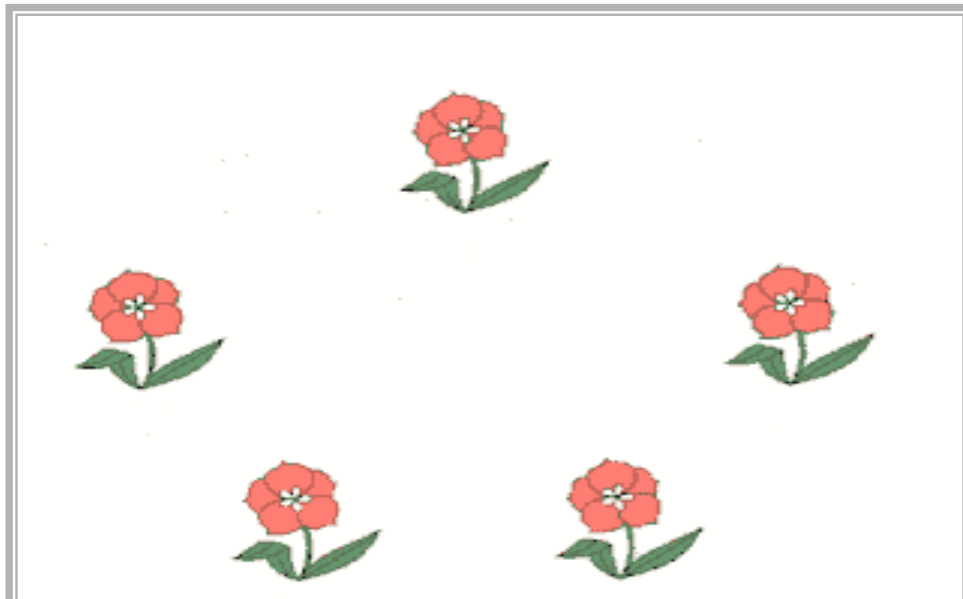
DNA UNDERGOES MUTATIONS



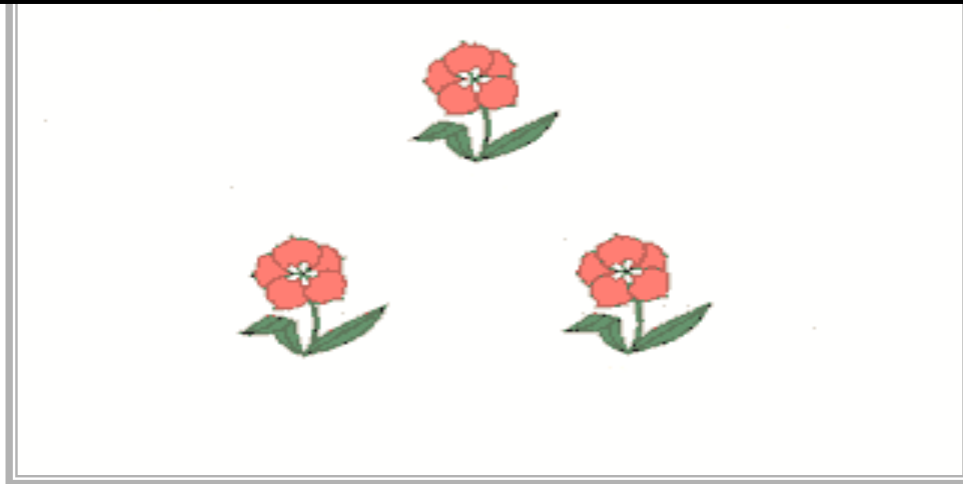
PLANT POPULATION



RED FLOWERED PLANTS



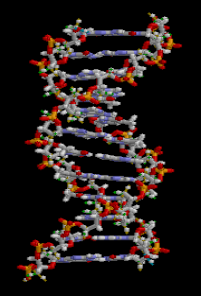
UNDERGOES MUTATION



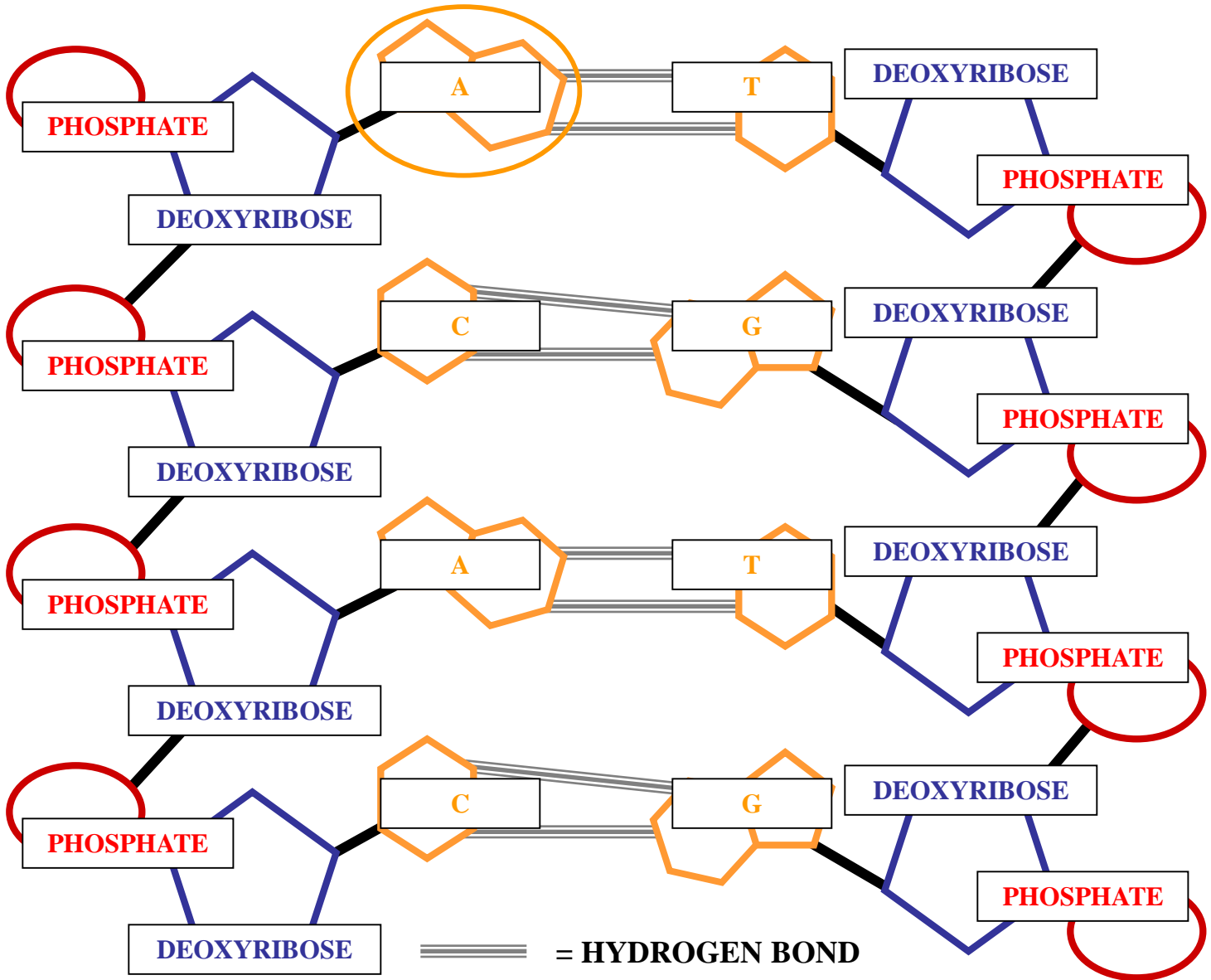
RED FLOWERED PLANTS

DNA DOUBLE HELIX MODEL

DNA REPLICATION



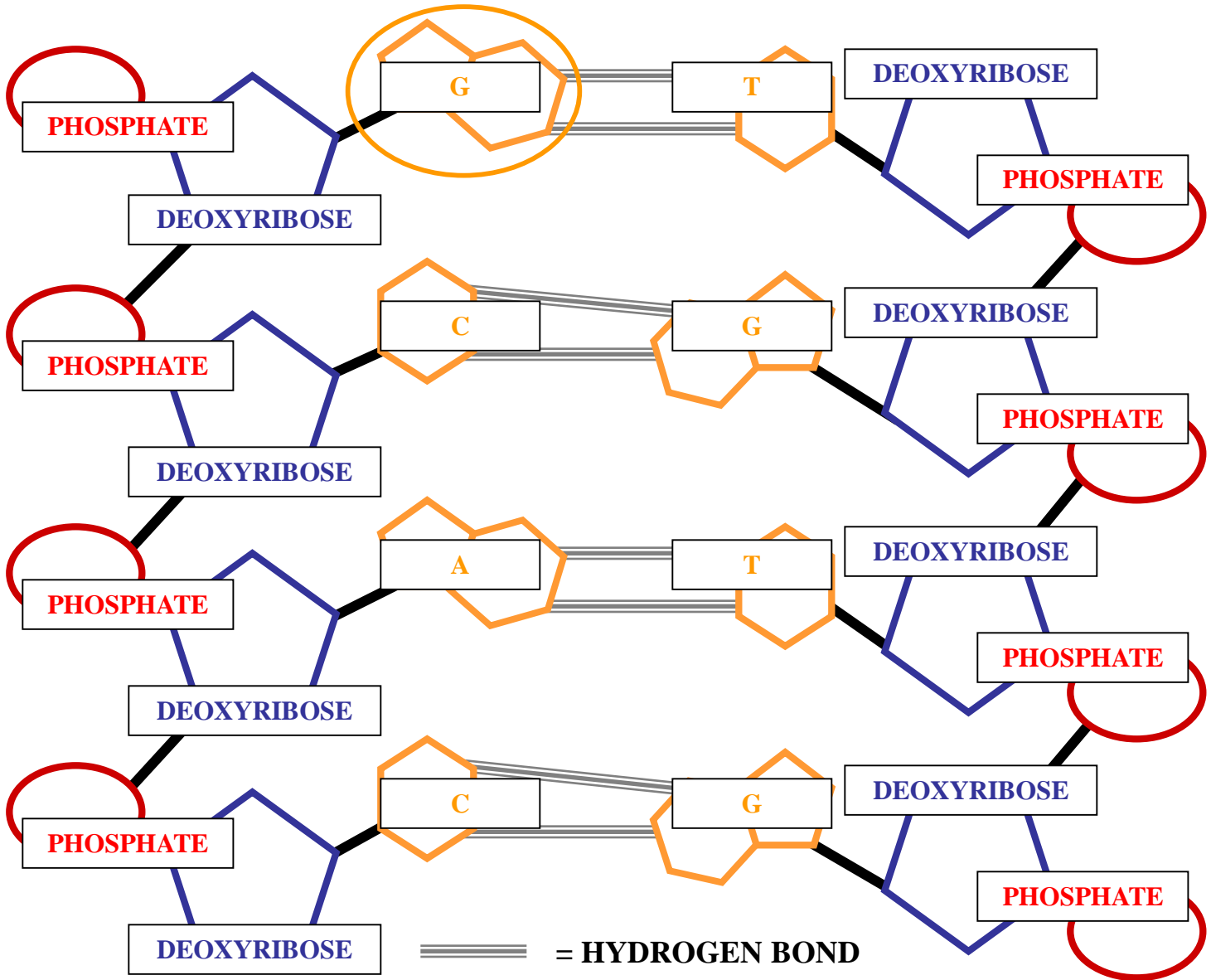
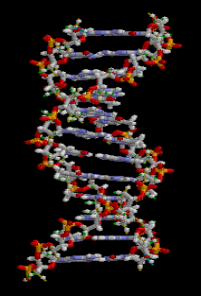
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DNA DOUBLE HELIX MODEL

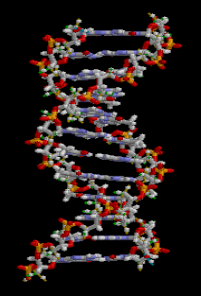
DNA REPLICATION

C

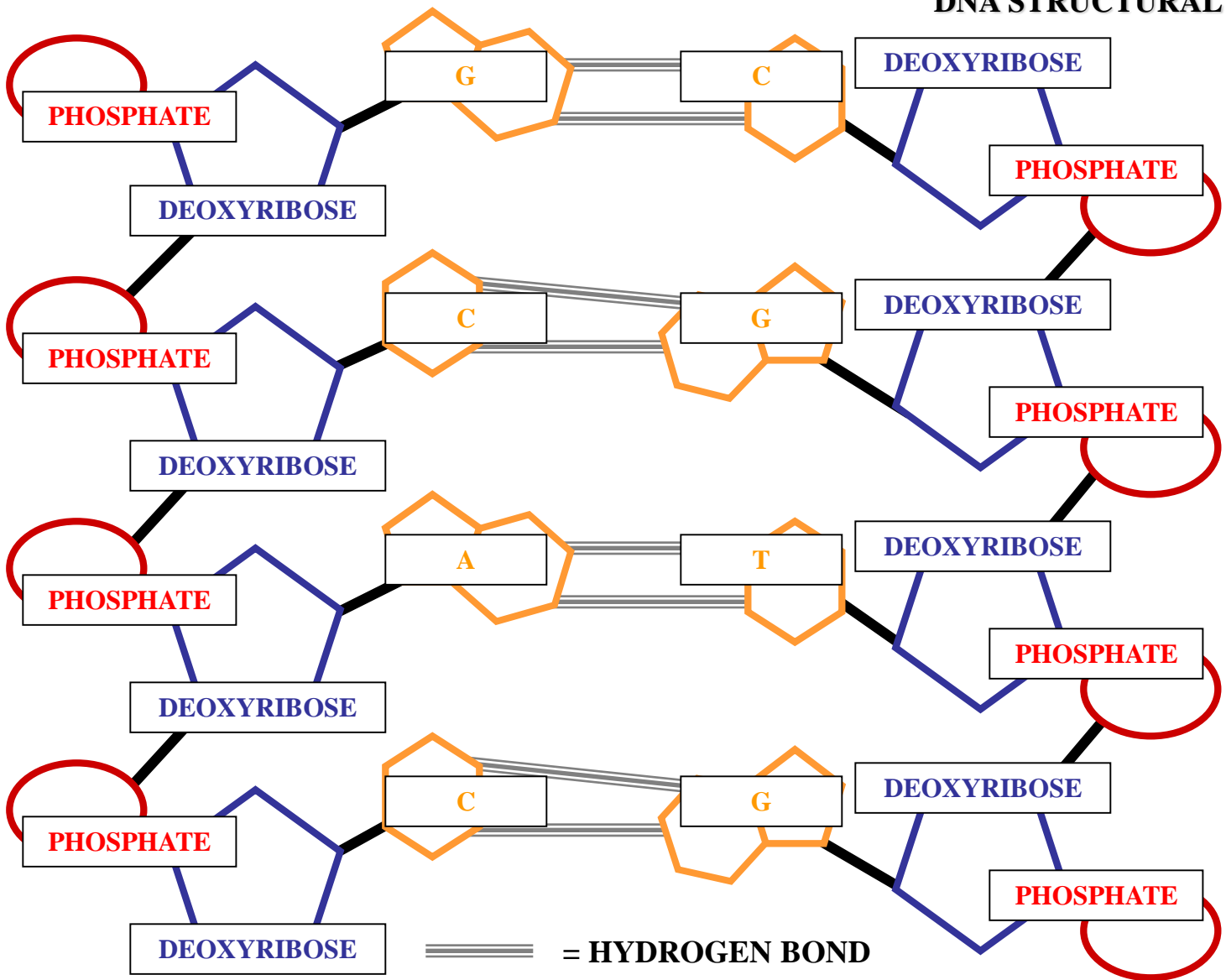


DNA DOUBLE HELIX MODEL

DNA REPLICATION DNA STRUCTURAL CHANGE

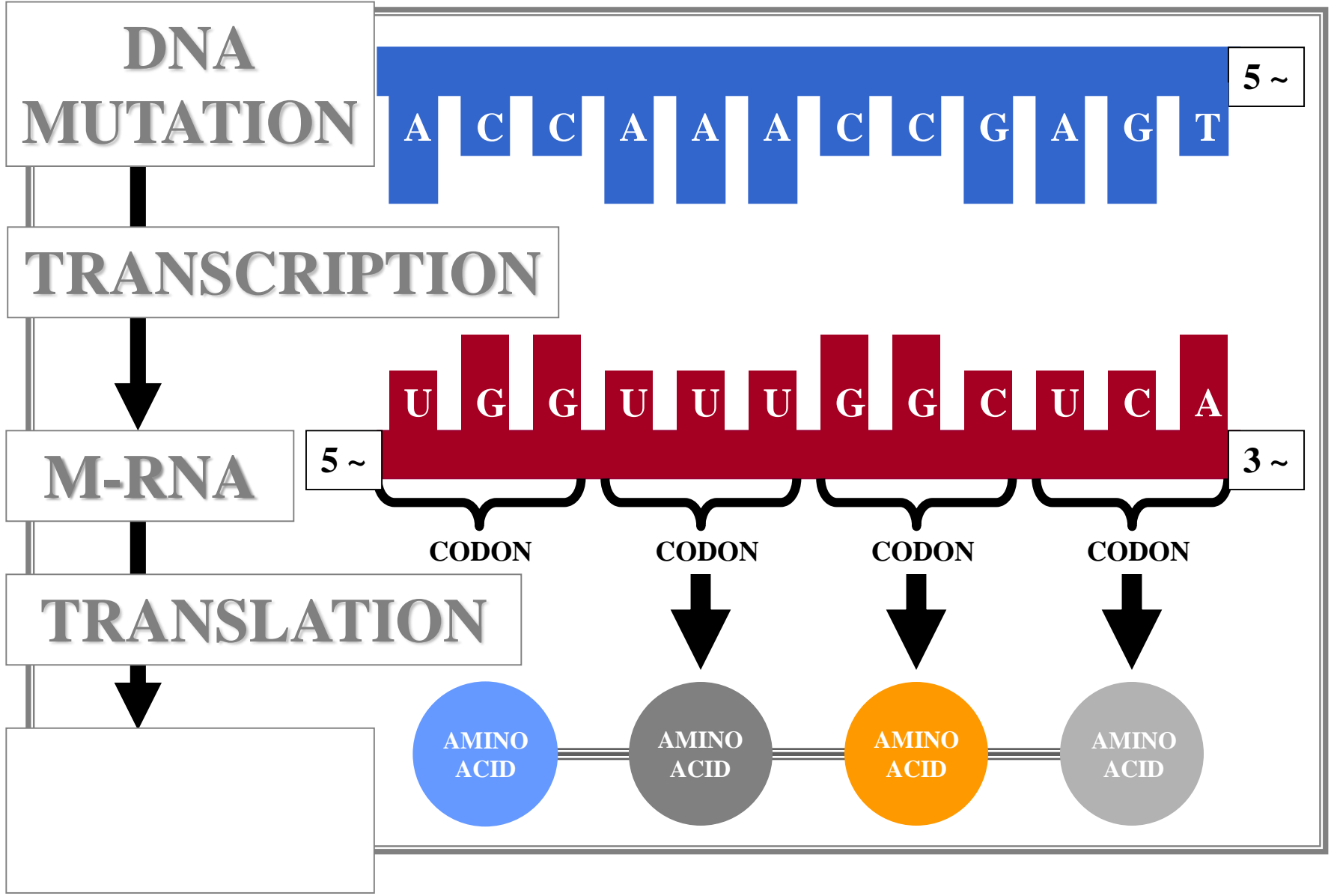


M



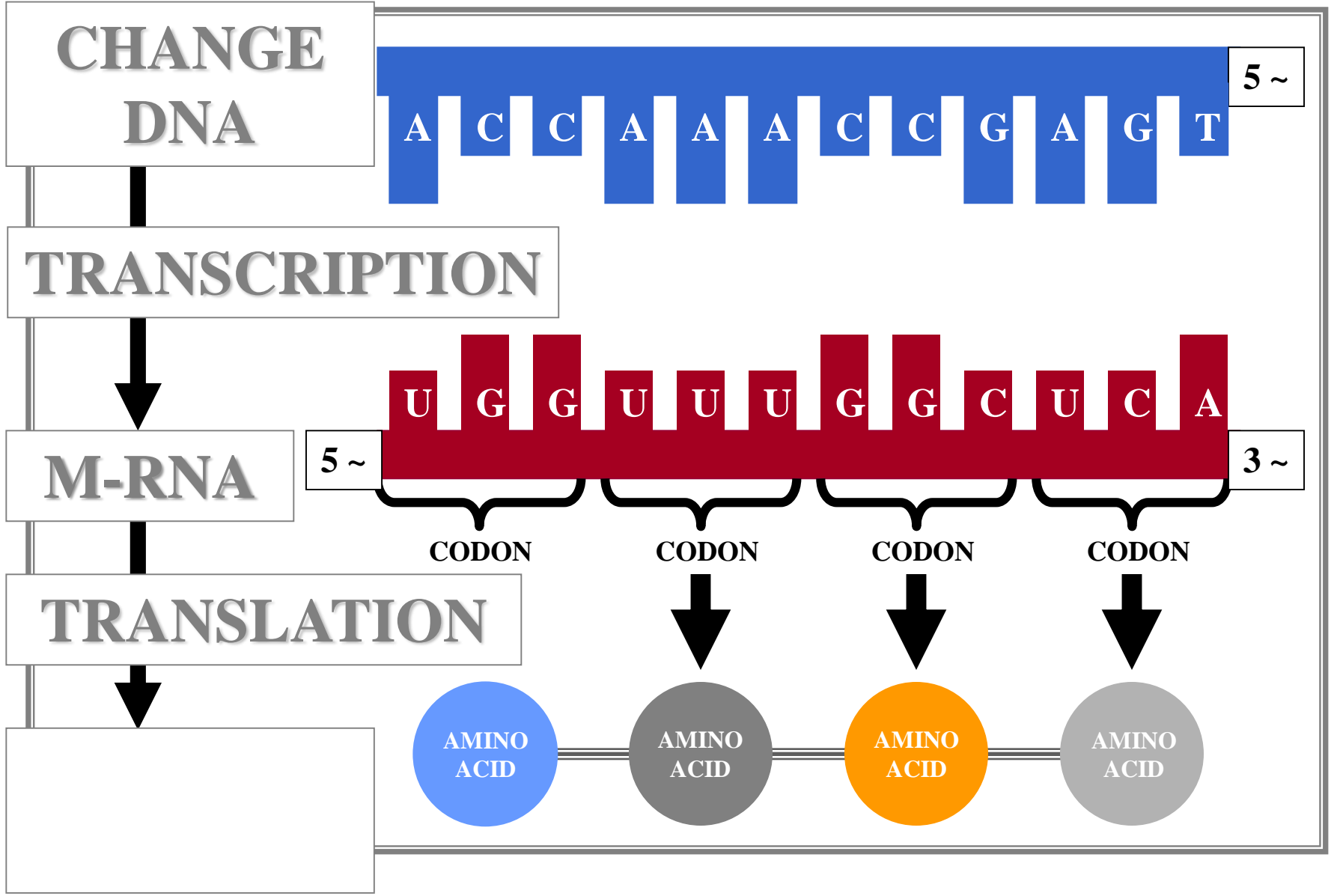


PROTEIN SYNTHESIS



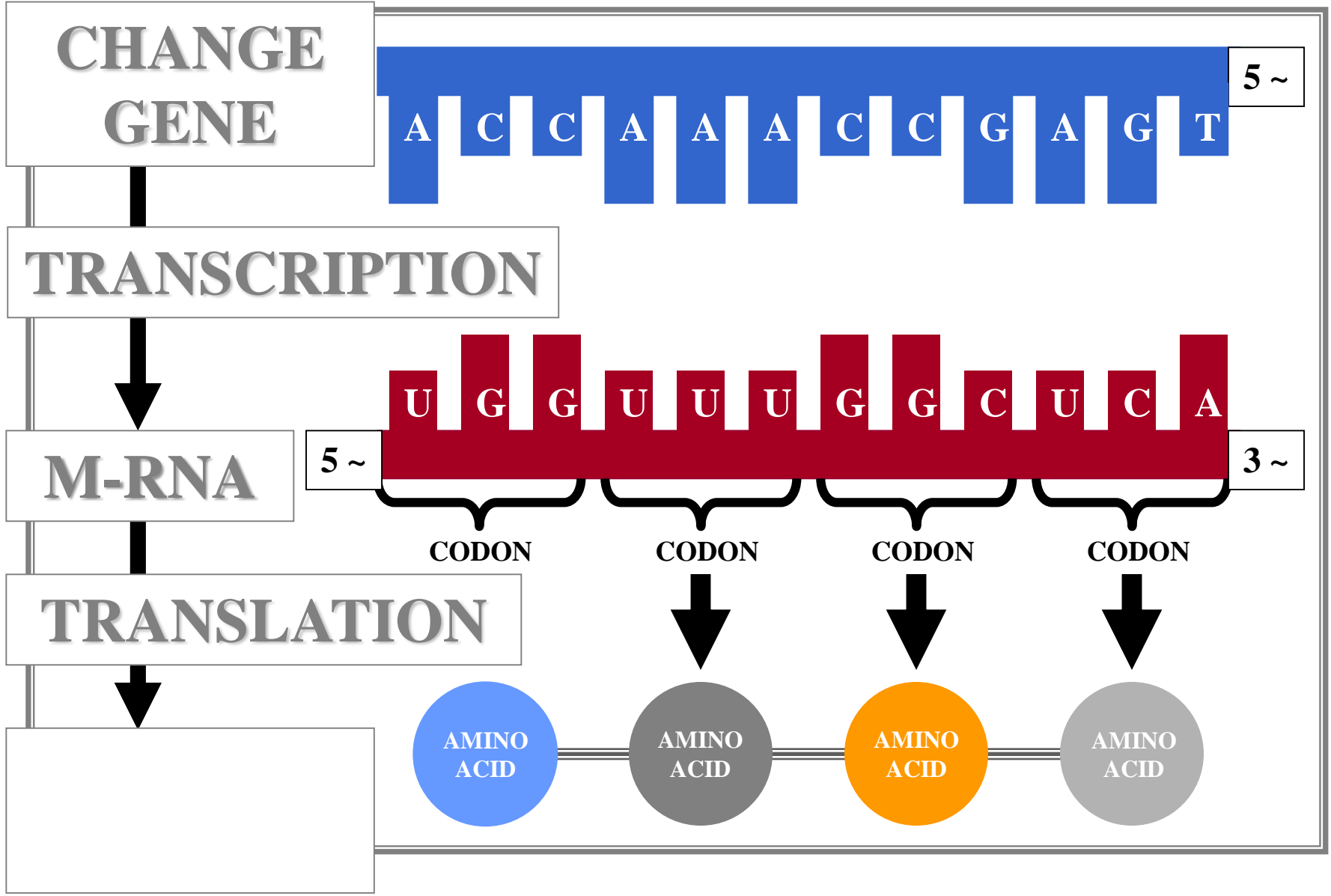


PROTEIN SYNTHESIS



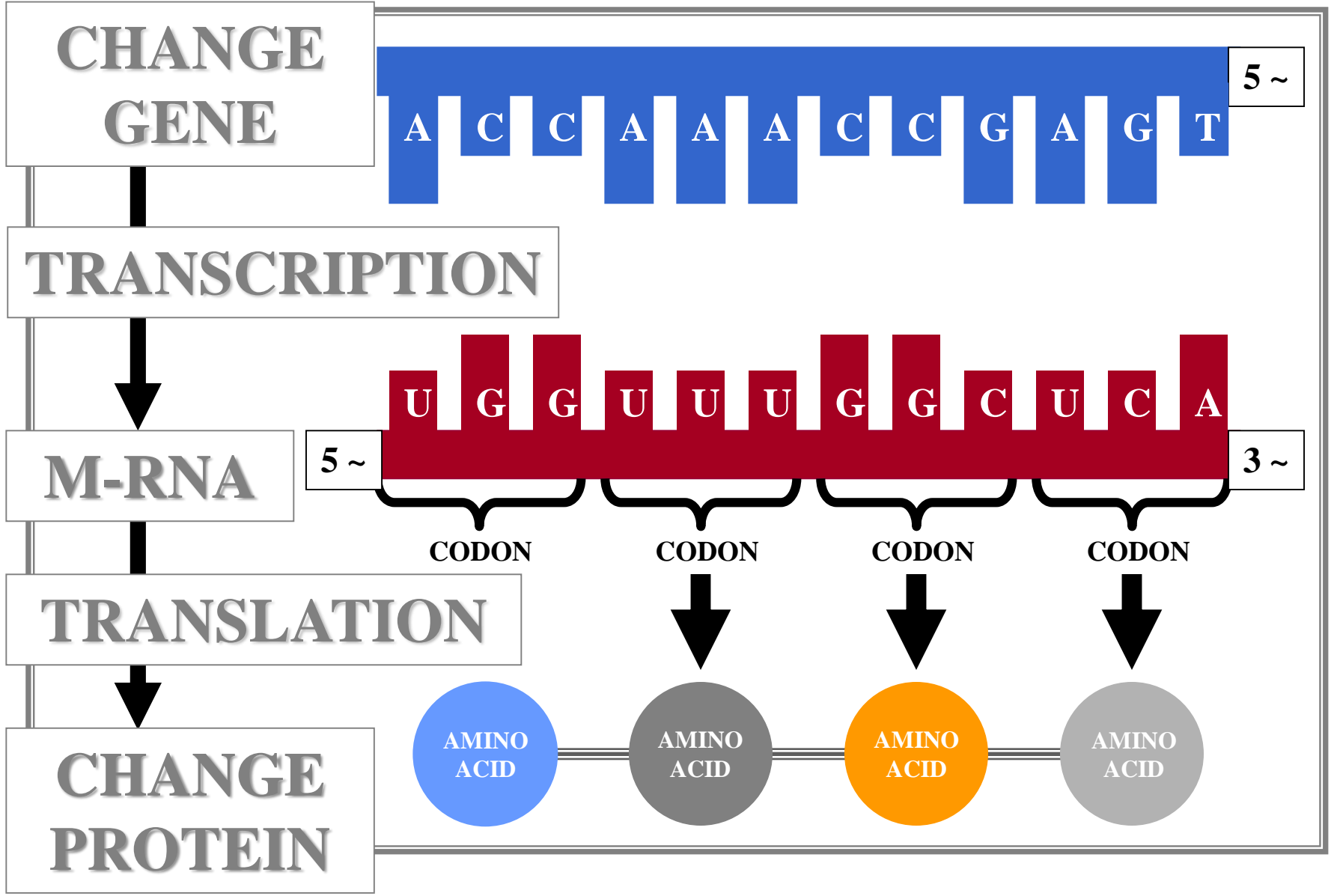


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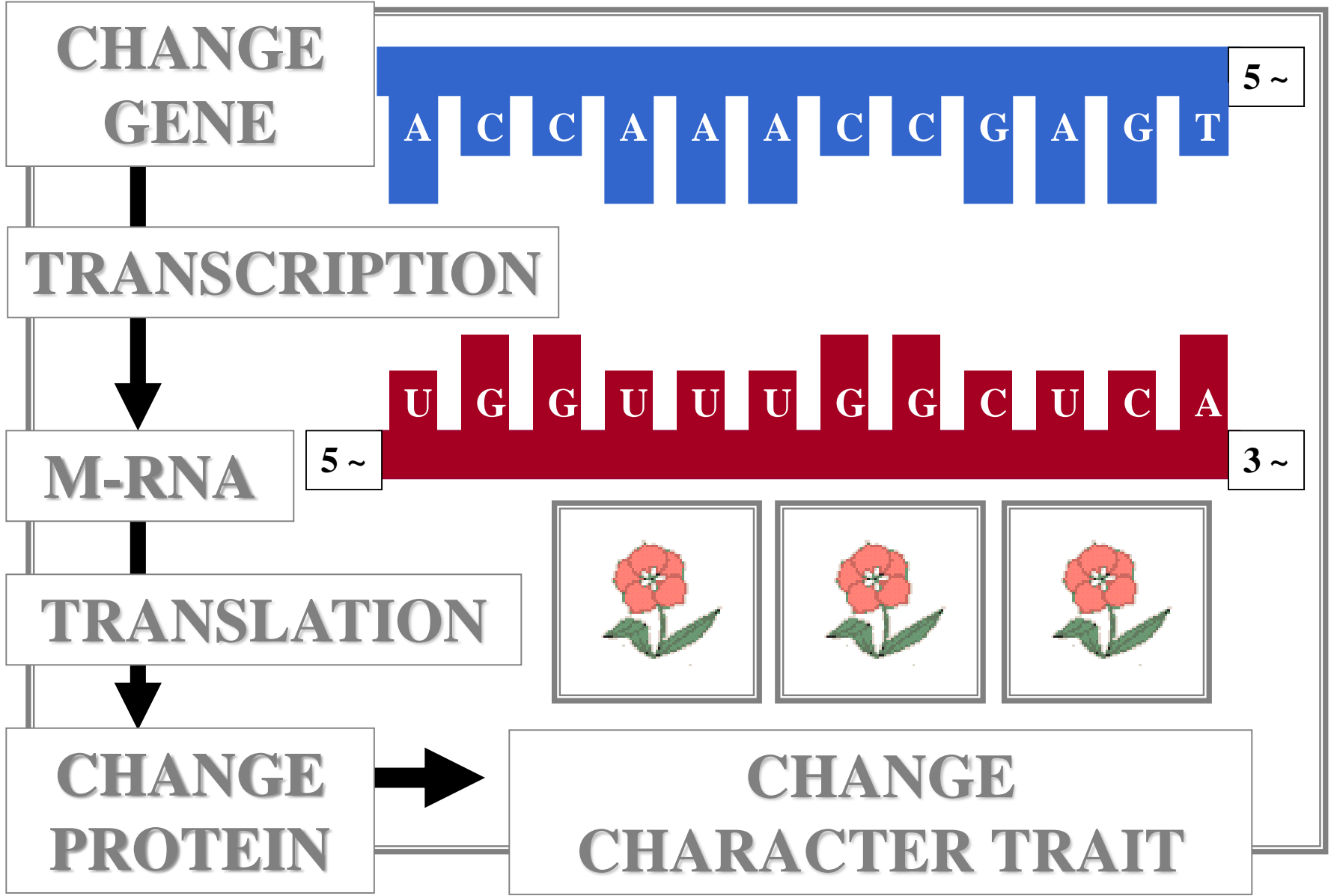


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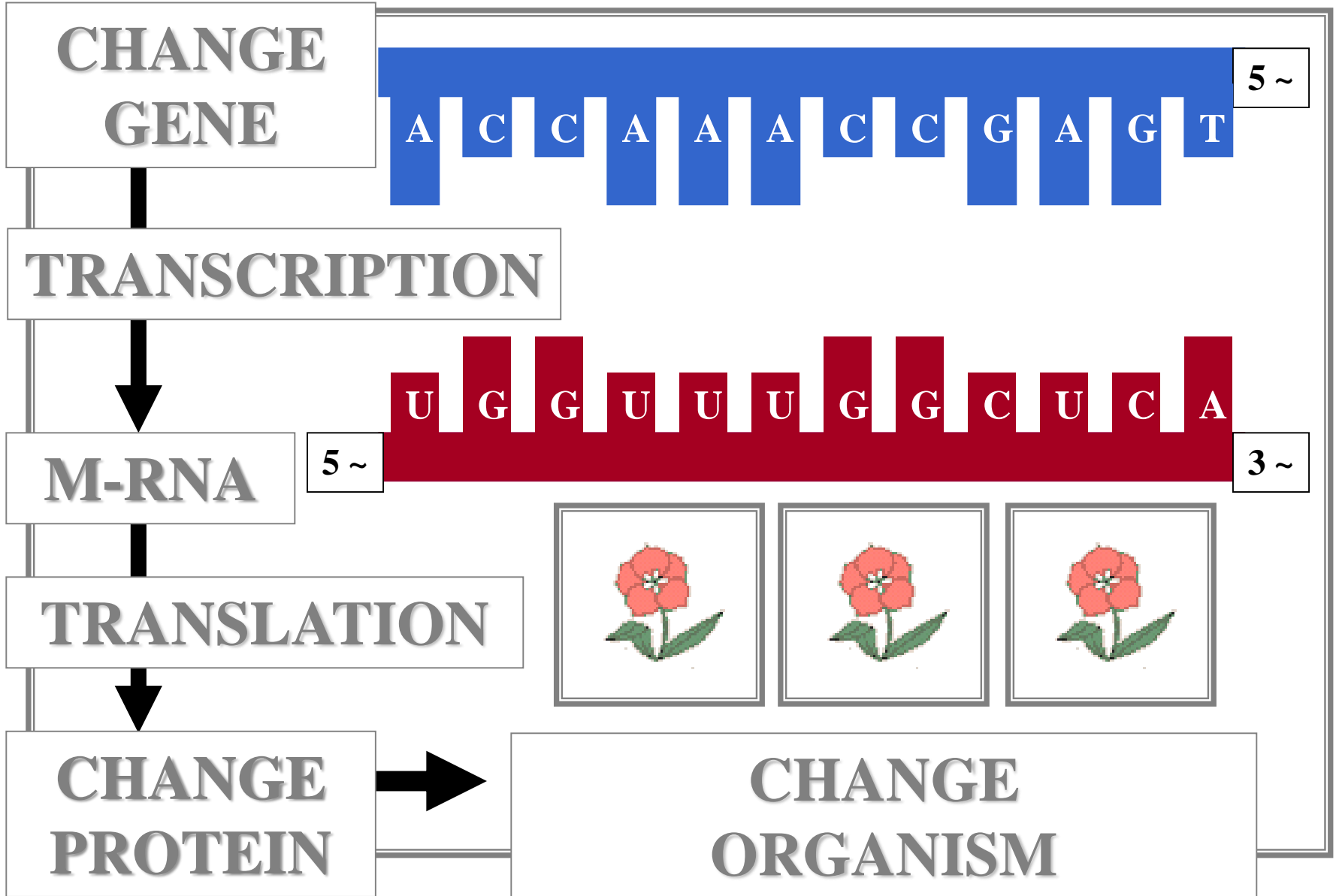


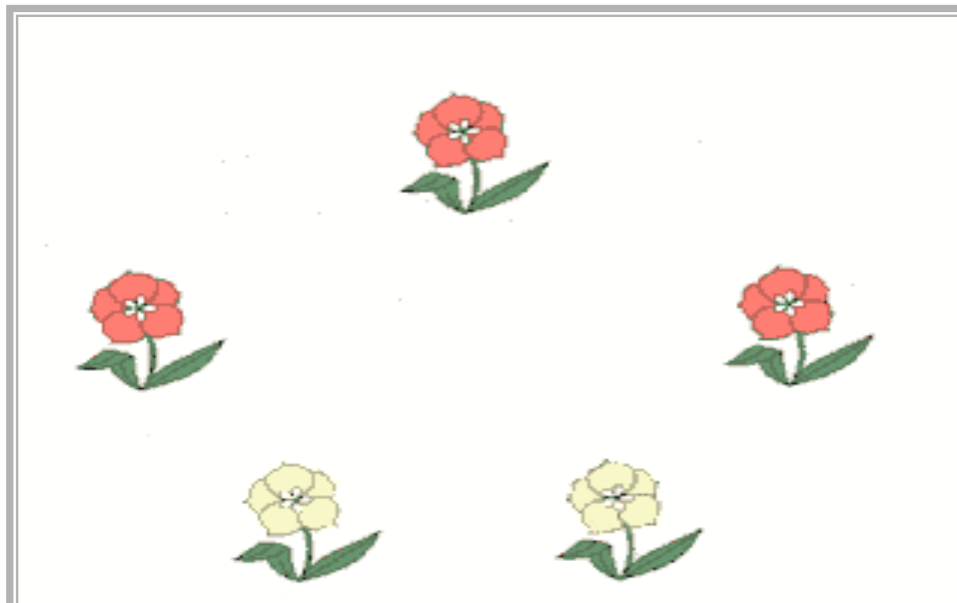
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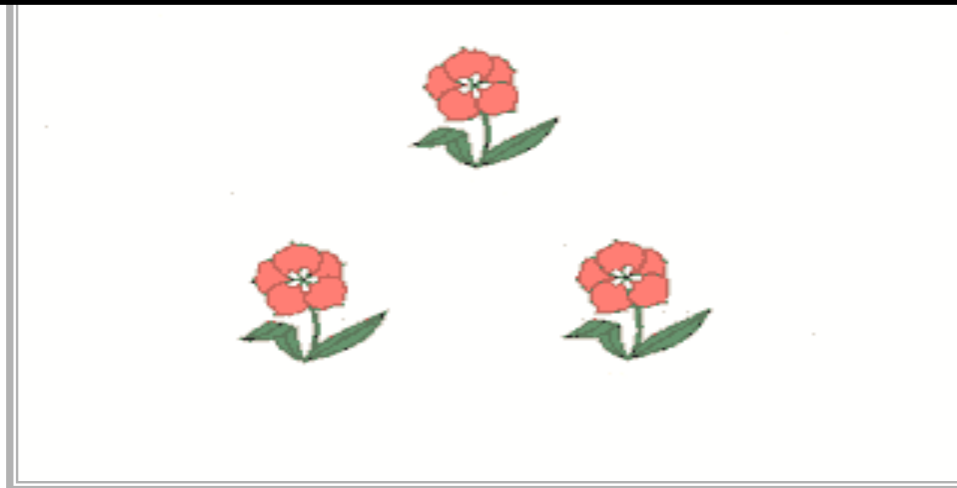


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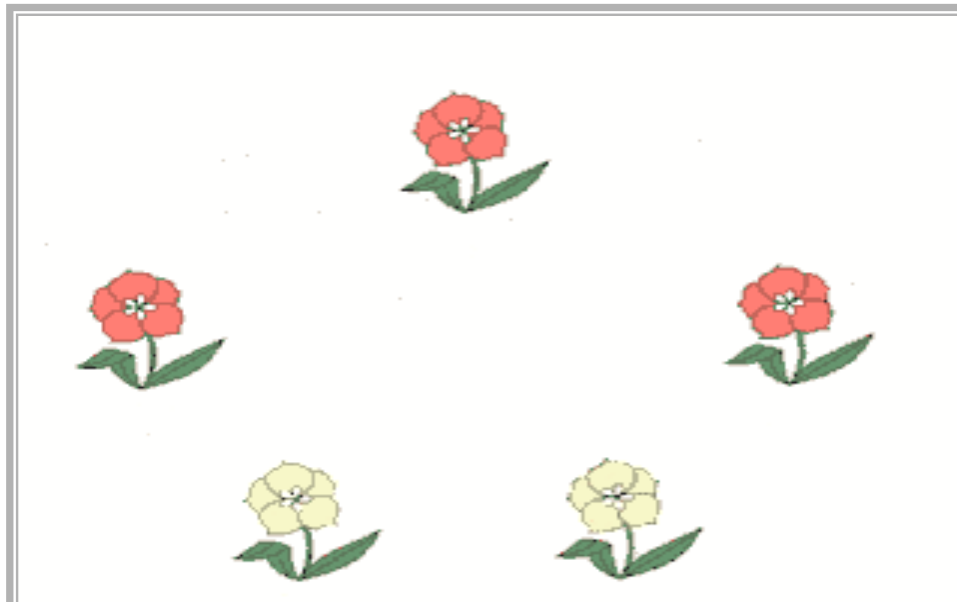




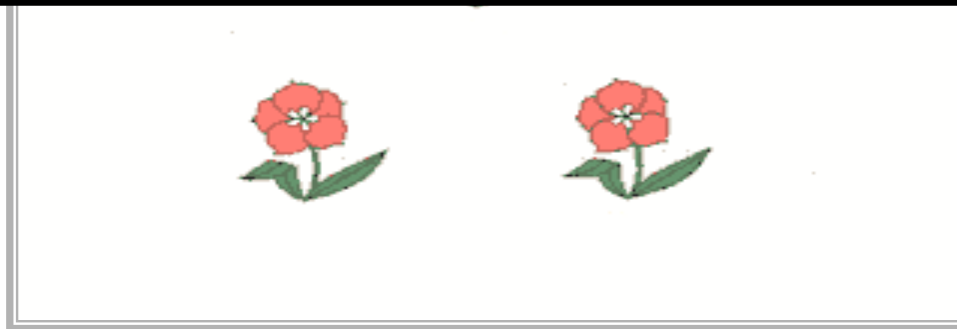
CHANGE ORGANISM



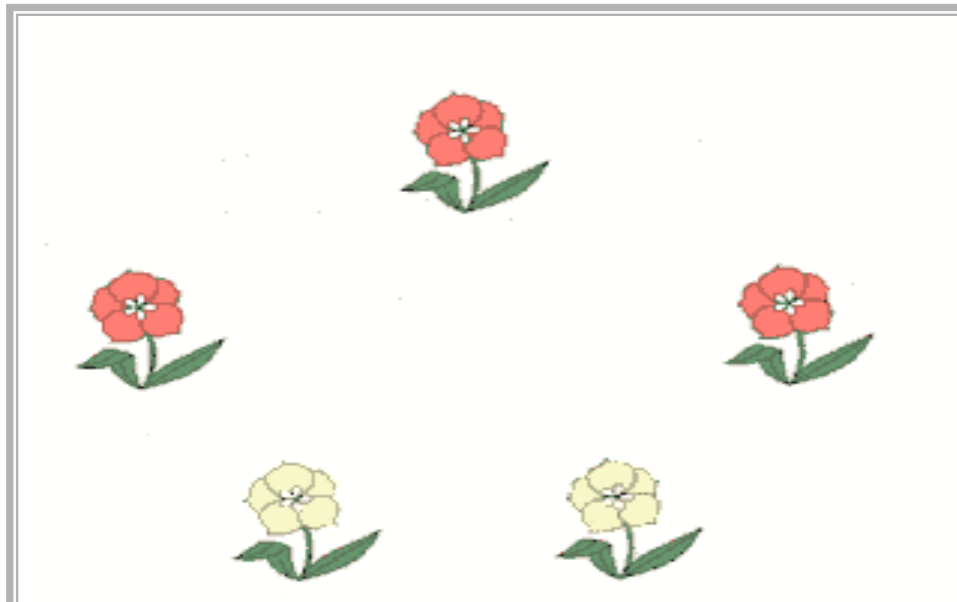
MUTATION: WHITE FLOWERED PLANTS



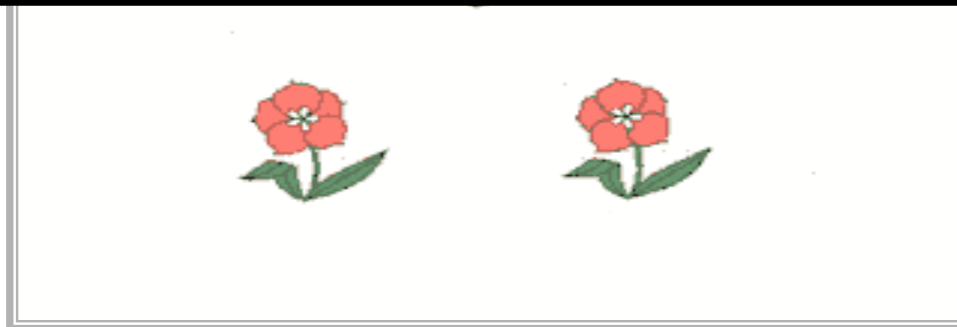
MUTATION UNDERGOES SURVIVAL TEST



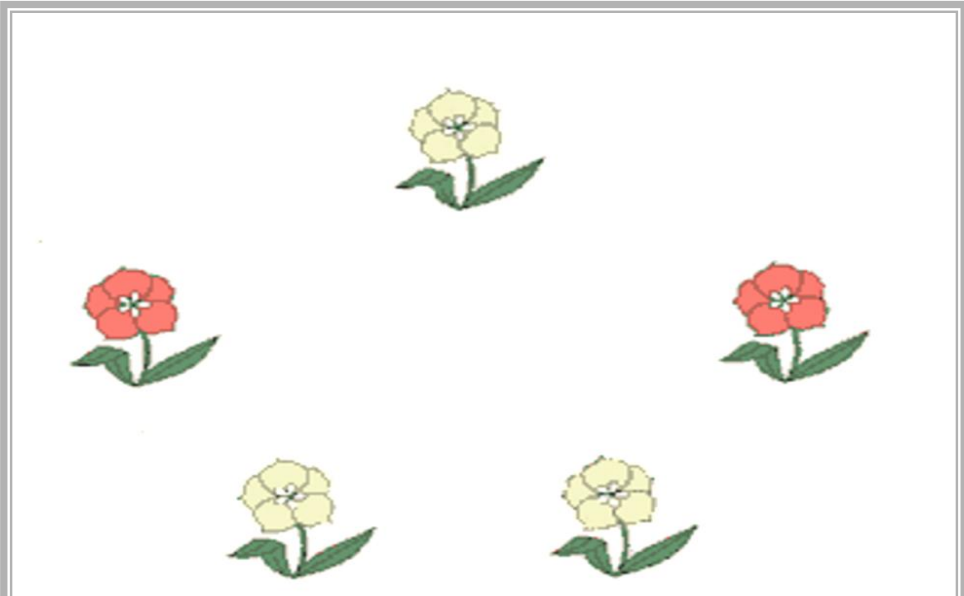
MUTATION: WHITE FLOWERED PLANTS



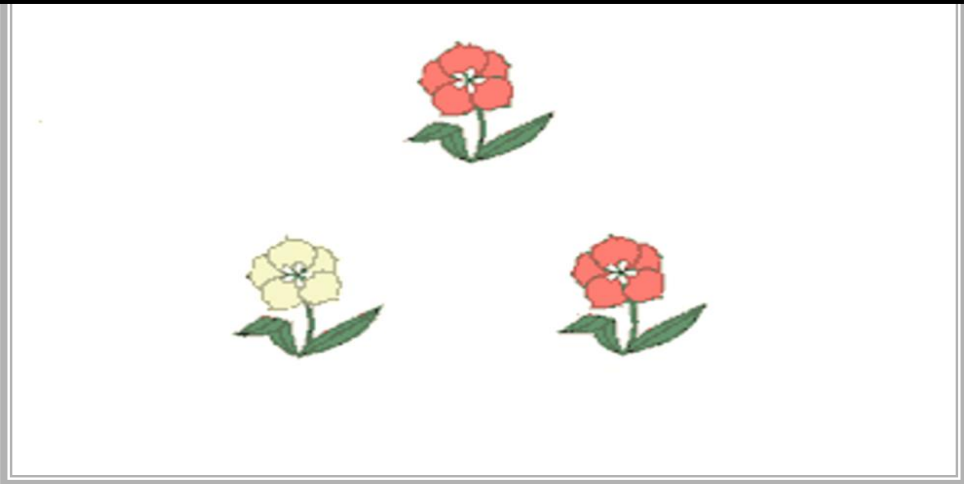
MUTATION UNDERGOES NATURAL SELECTION



MUTATION: WHITE FLOWERED PLANTS



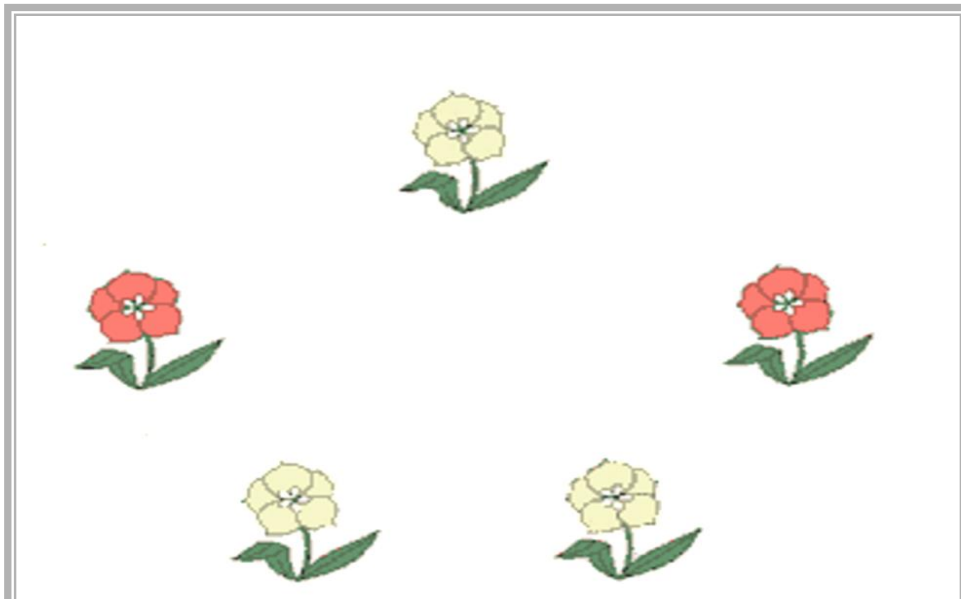
SPECIATION



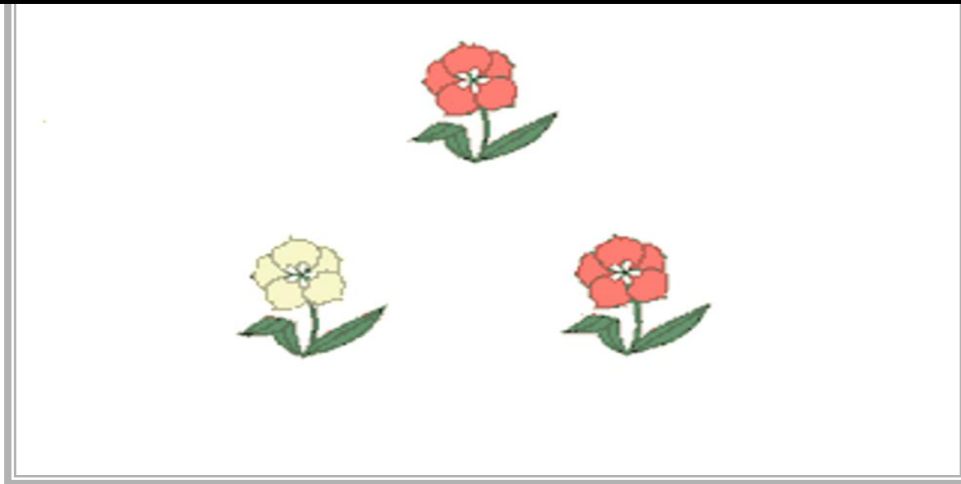
DAUGHTER SPECIES



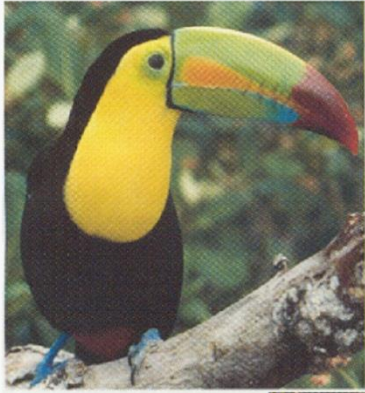
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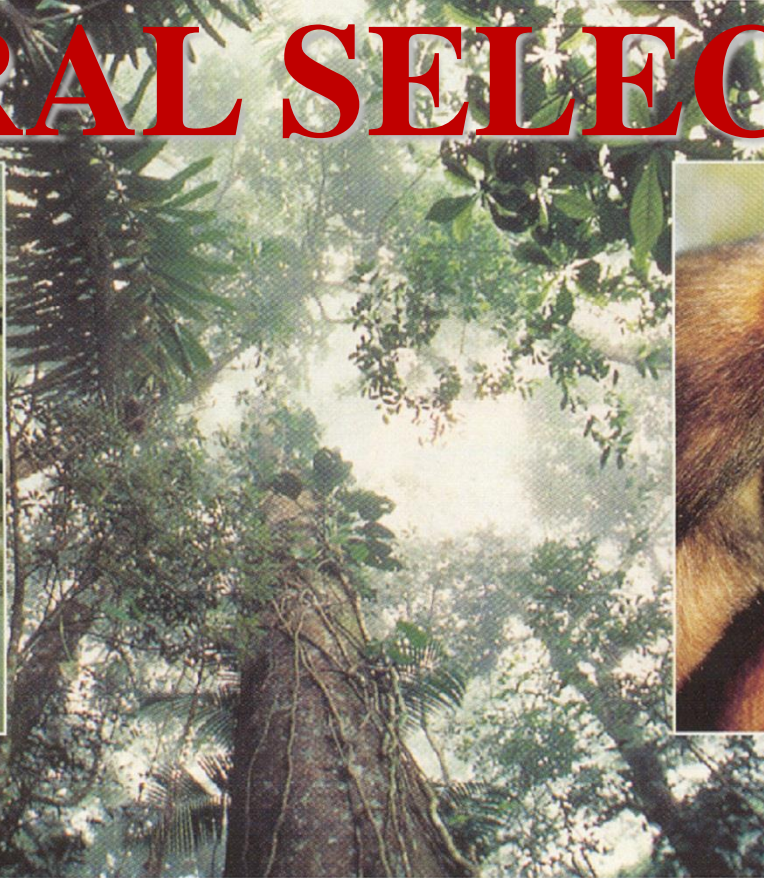
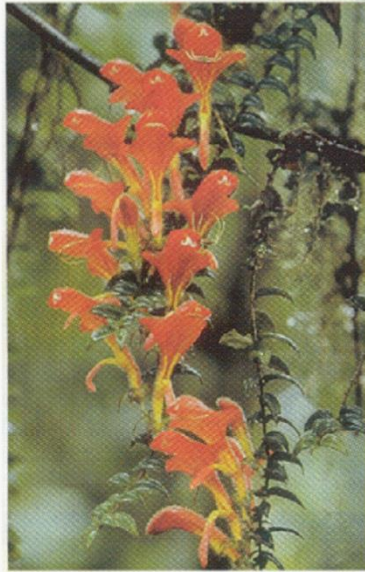
INCREASE BIO-DIVERSITY

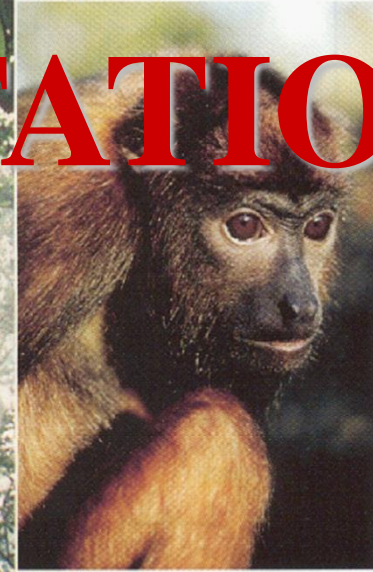
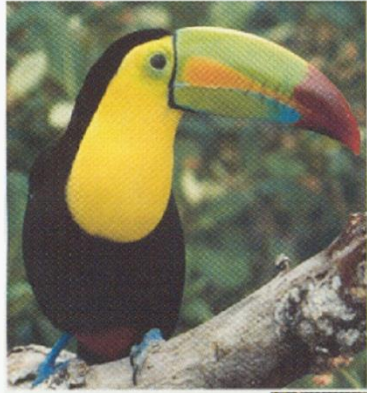


DAUGHTER SPECIES

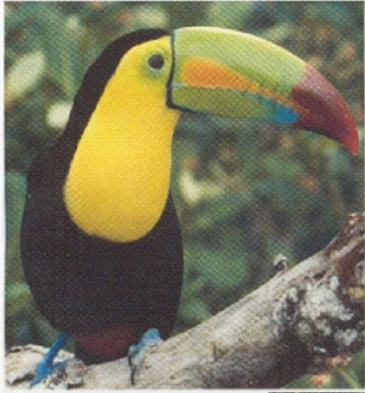


NATURAL SELECTION

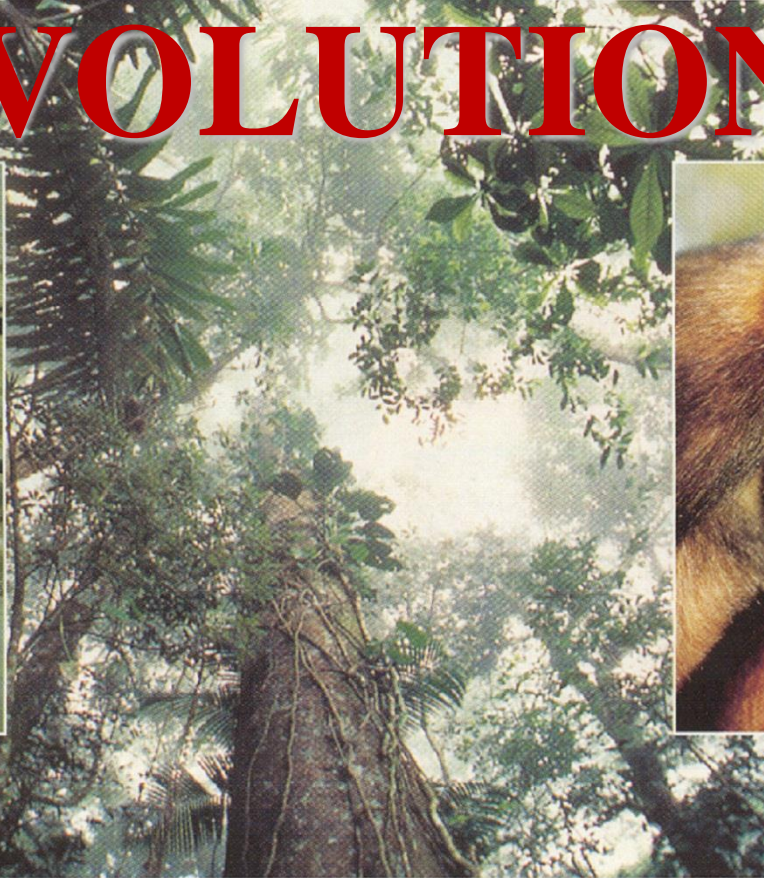
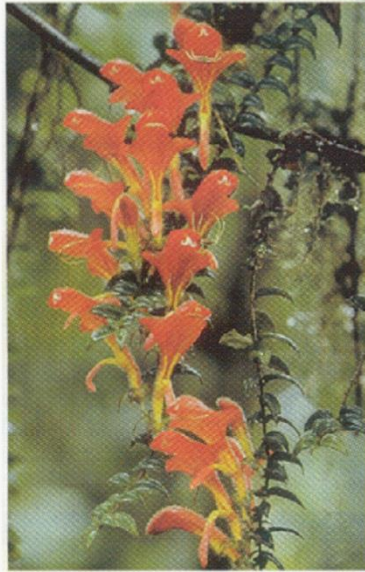


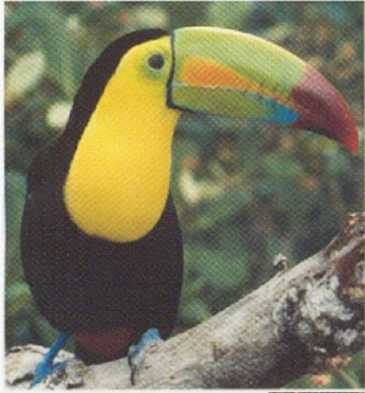


NATURAL SELECTION REQUIRES MUTATIONS



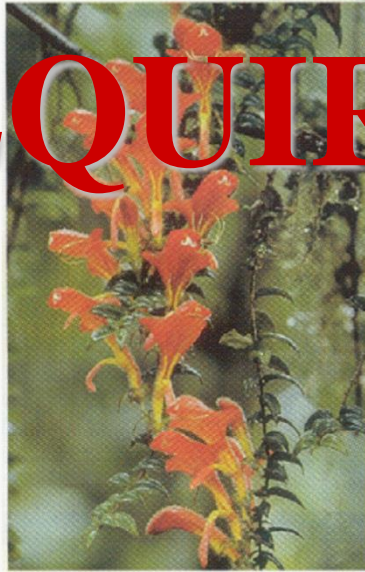
EVOLUTION





EVOLUTION

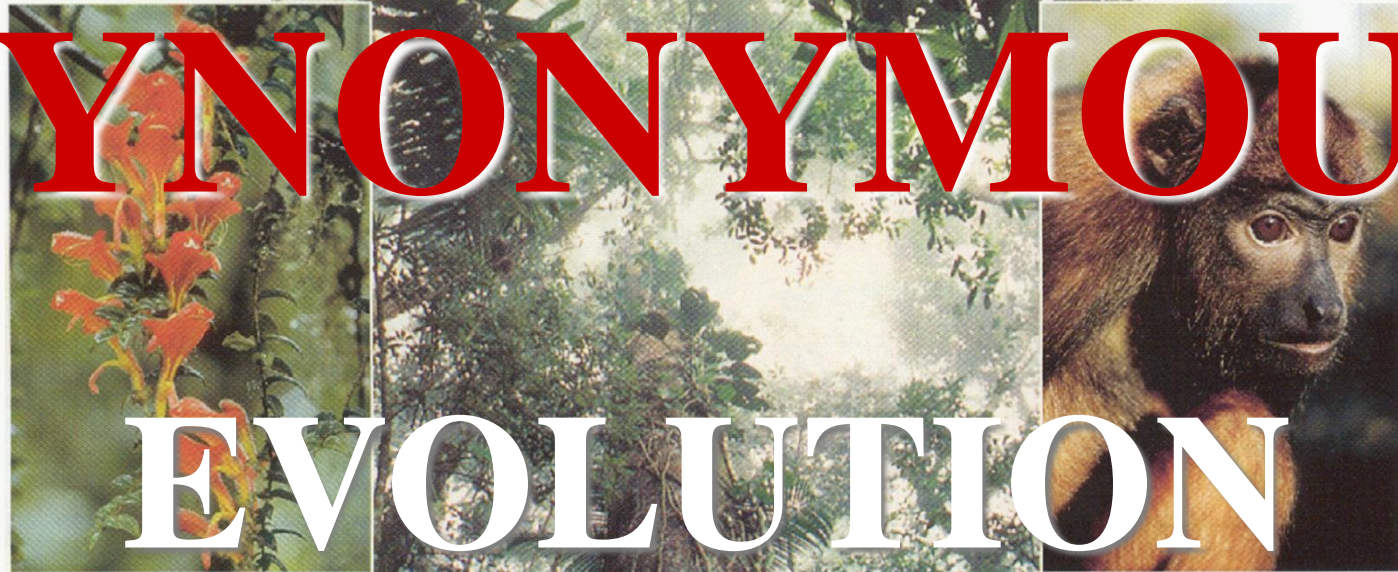
REQUIRES MUTATIONS





NATURAL SELECTION

SYNONYMOUS



EVOLUTION

SUMMARY



EARTH

SUMMARY



EVOLUTION

EARTH

SUMMARY



EVOLUTION

MUTATIONS

EARTH

SUMMARY



EVOLUTION

NATURAL SELECTION

EARTH

SUMMARY

B

EVOLUTION

SPECIATION

EARTH

SUMMARY



EVOLUTION

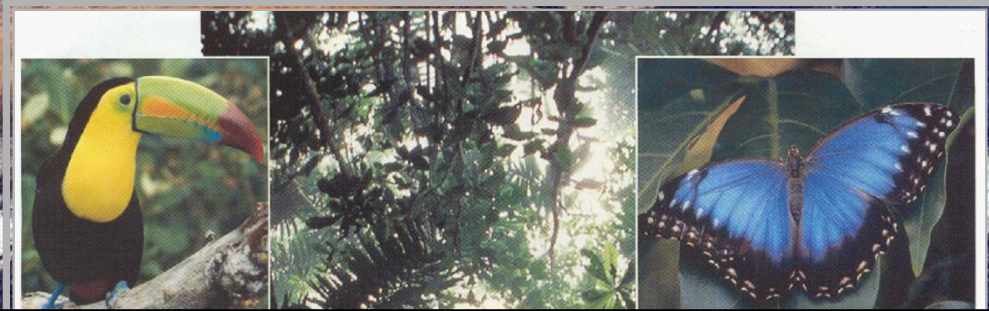


BIO-DIVERSITY

EARTH



BIO-DIVERSITY



~10 MILLION SPECIES



EARTH

BIOLOGY DISCIPLINES

BIOLOGY DISCIPLINES

MICROBIOLOGY

BIOLOGY DISCIPLINES

BIOLOGY DISCIPLINES

MICROBIOLOGY

MYCOLOGY

BIOLOGY DISCIPLINES

BIOLOGY DISCIPLINES

MICROBIOLOGY

MYCOLOGY

ZOOLOGY

BIOLOGY DISCIPLINES

BIOLOGY DISCIPLINES

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MYCOLOGY

ZOOLOGY

BOTANY

BIOLOGY DISCIPLINES

MICROBIOLOGY

MICROBIOLOGY



STUDY

BACTERIA AND VIRUSES

MICROBIOLOGY