

ATTENTION STUDENTS



BIOLOGY 363

VASCULAR PLANTS

FALL 2022

DR. MENAPACE



ATTENTION STUDENTS 



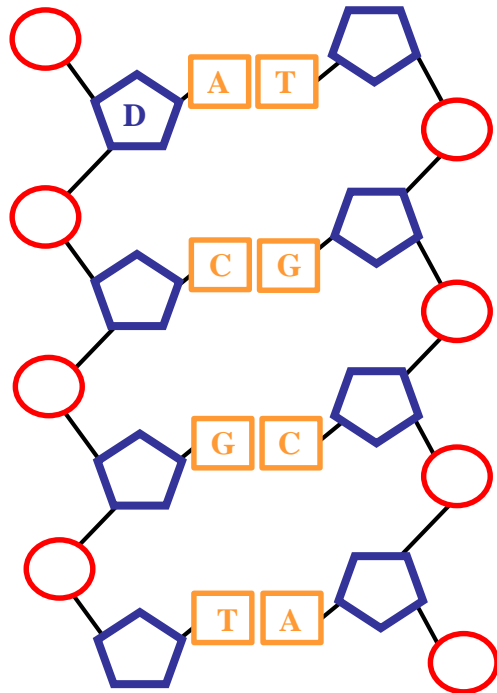
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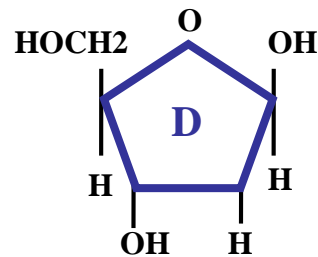
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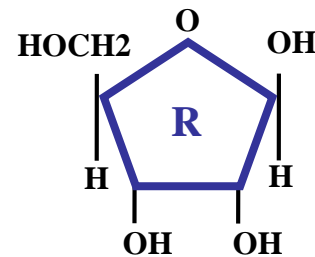
CARRIERS GENETIC INFORMATION



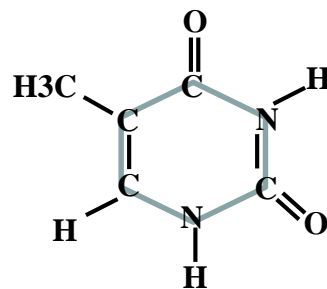
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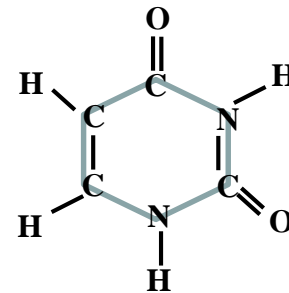
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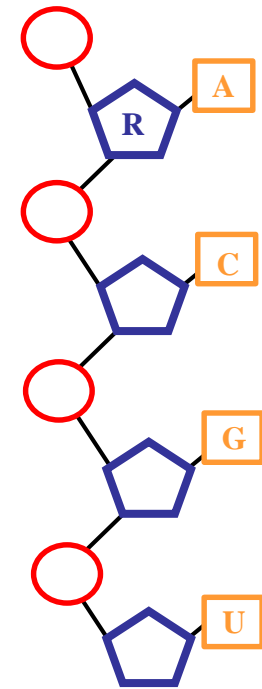
RIBOSE



THYMINE



URACIL



NUCLEIC ACID



**INTRODUCTION
BIOLOGY
&
INTRODUCTION
BOTANY**

INTRODUCTION BIOLOGY

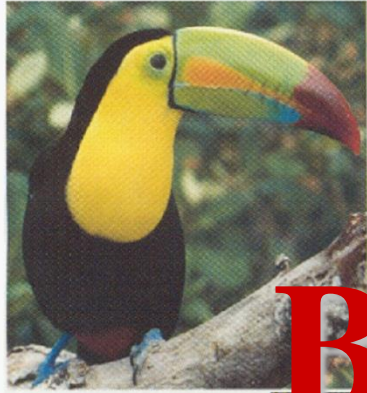
BIOLOGY

BIOLOGY



**STUDY OF LIVING
ORGANISMS**

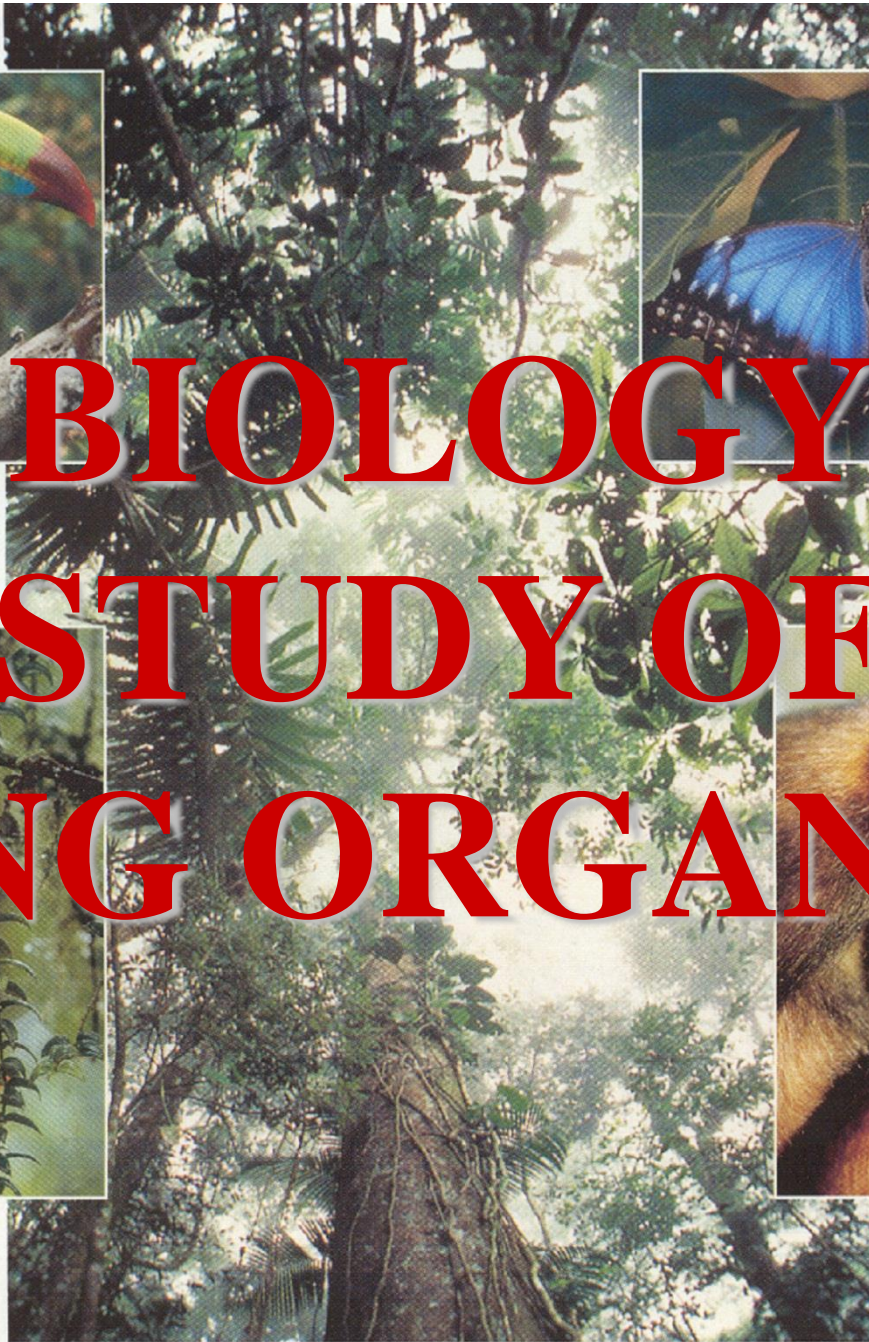
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BIOLOGY

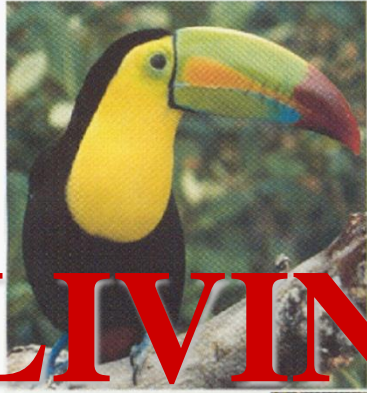
STUDY OF

LIVING ORGANISMS





LIVING ORGANISM DEFINITION



LIVING ORGANISM

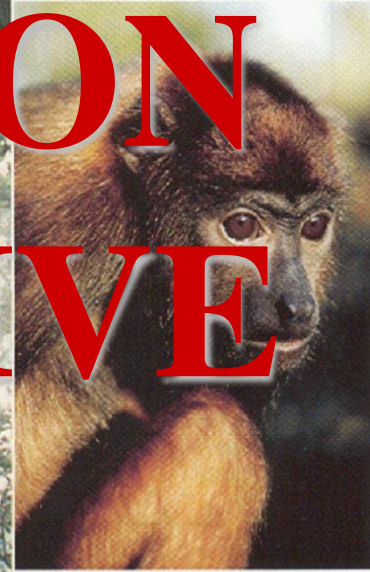
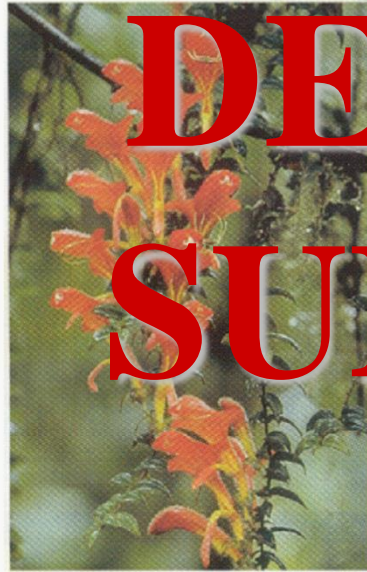
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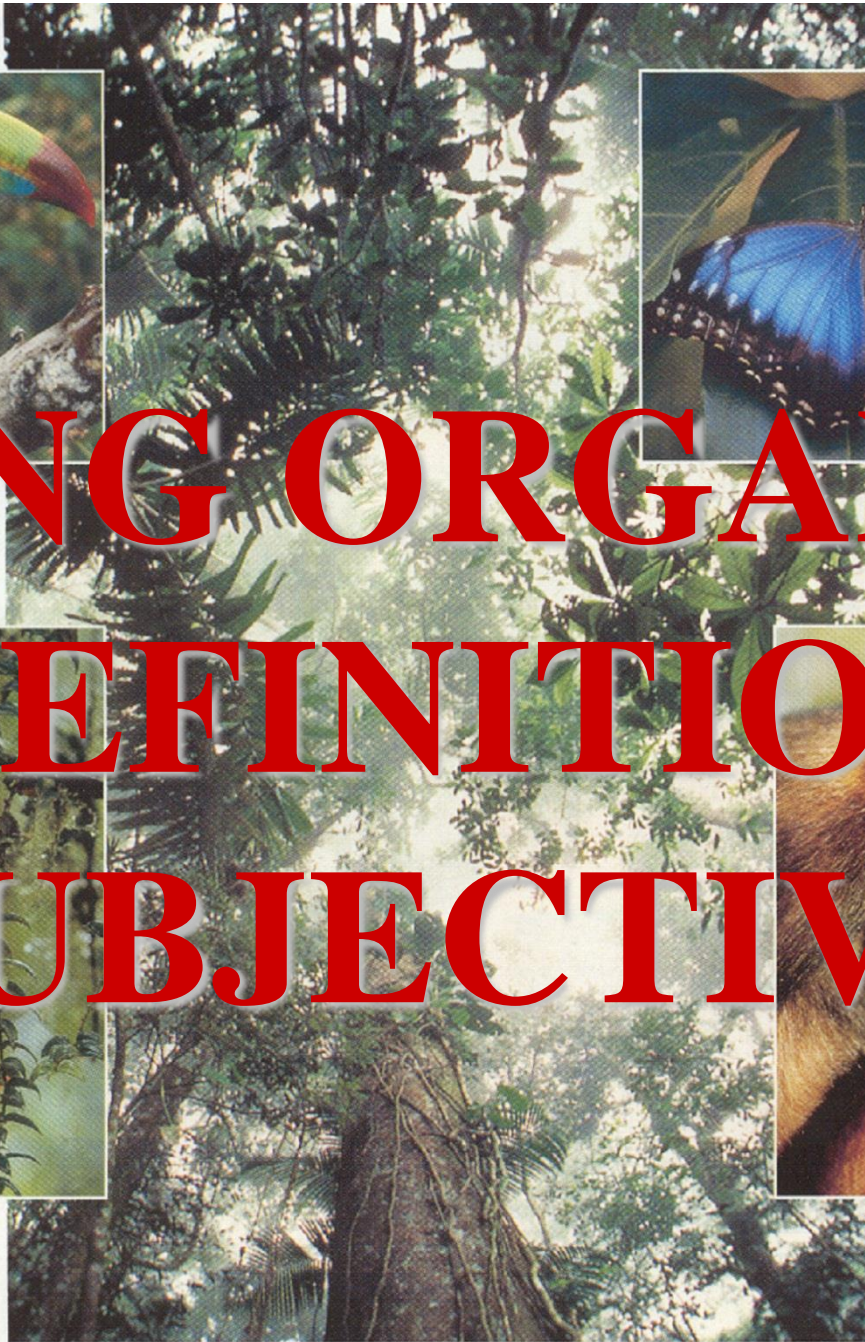
AMONGST BIOLOGISTS



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



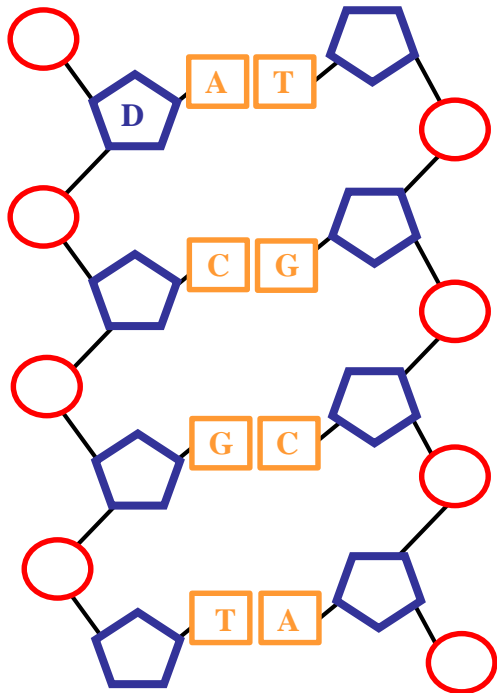
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INFORMATION

NUCLEIC ACIDS

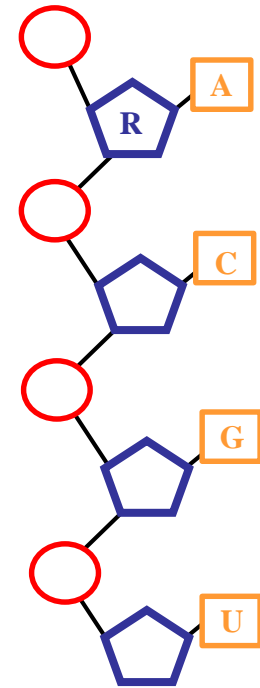
NUCLEIC ACIDS



CARRIERS GENETIC INFORMATION



NUCLEIC ACID



NUCLEIC ACID

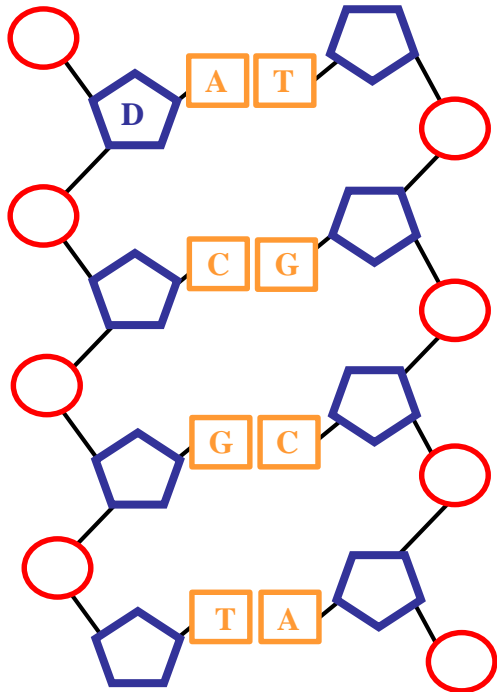


NUCLEIC ACID TYPES

NUCLEIC ACIDS

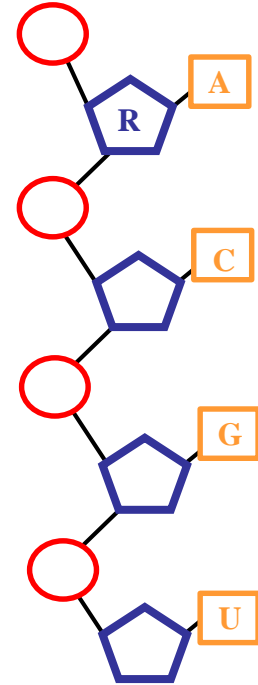
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NUCLEIC ACID

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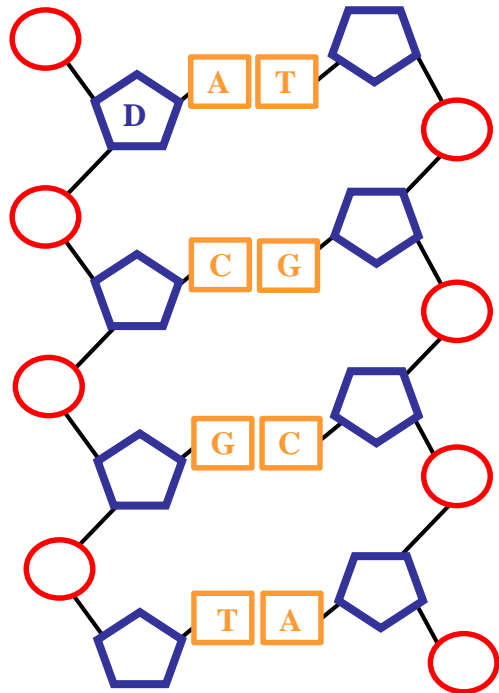


NUCLEIC ACID

NUCLEIC ACIDS

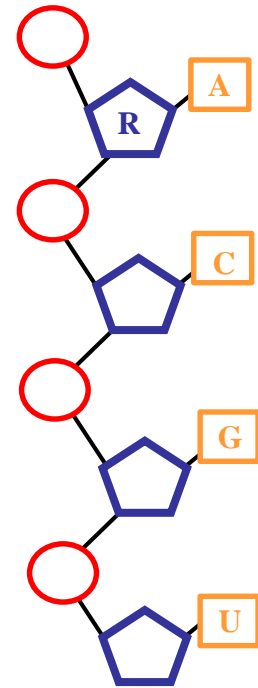
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DNA



NUCLEIC ACID

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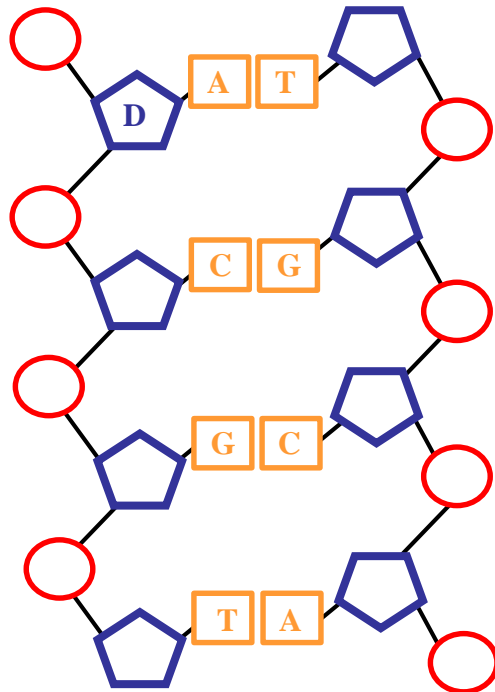


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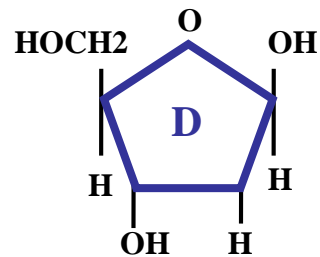
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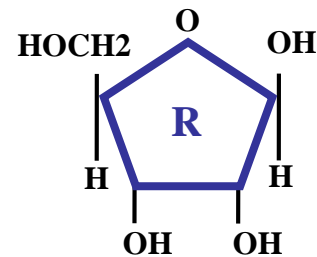
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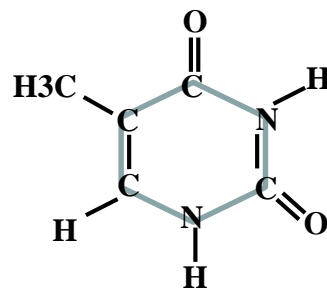
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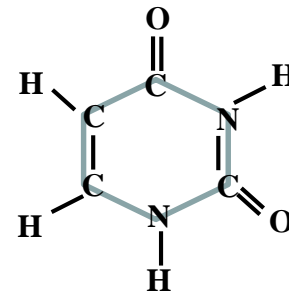
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RIBOSE

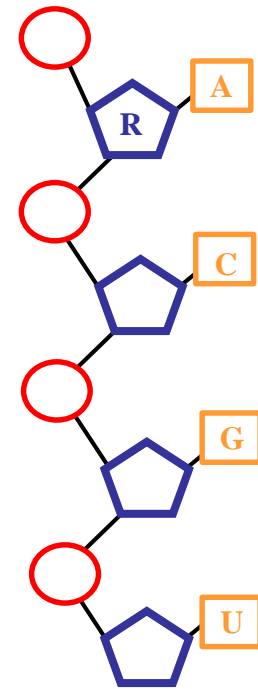


THYMINE



URACIL

RNA

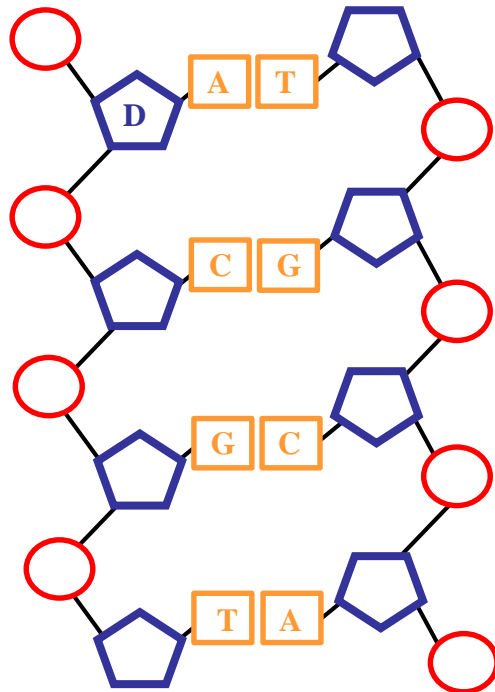


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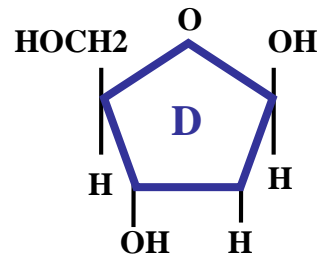
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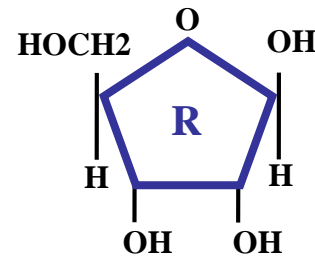
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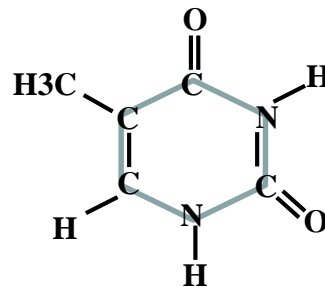
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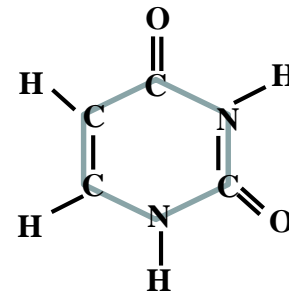
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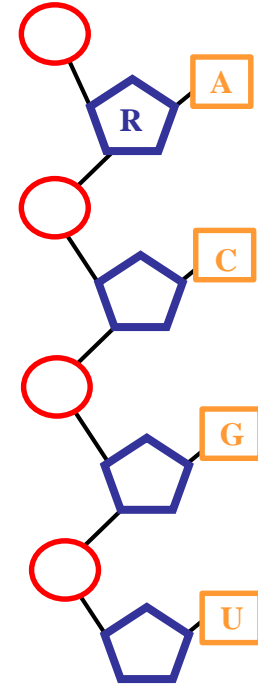


THYMINE



URACIL

RNA

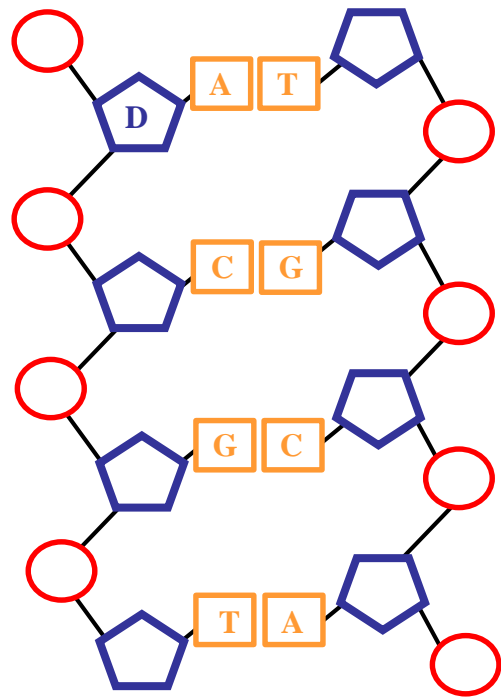


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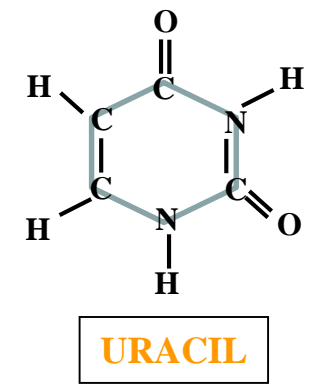
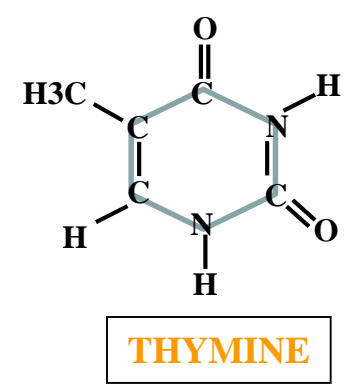
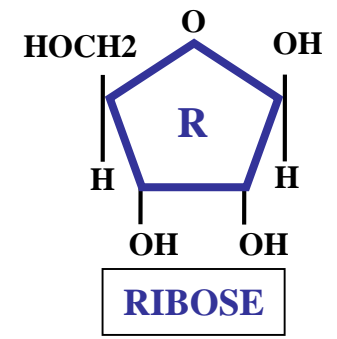
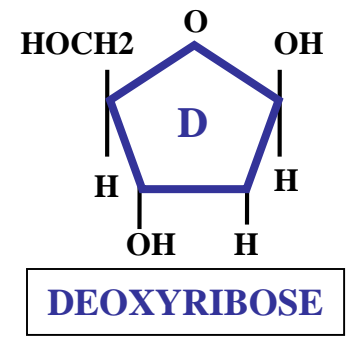
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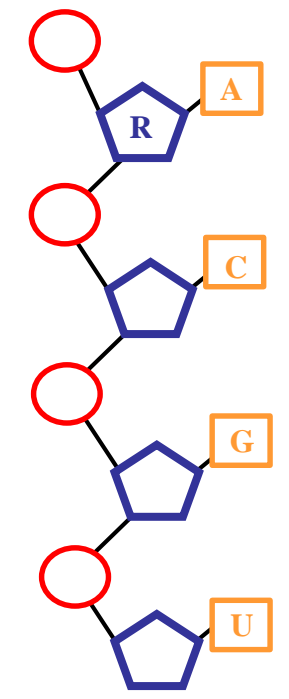
DNA



NUCLEIC ACID

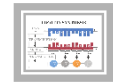


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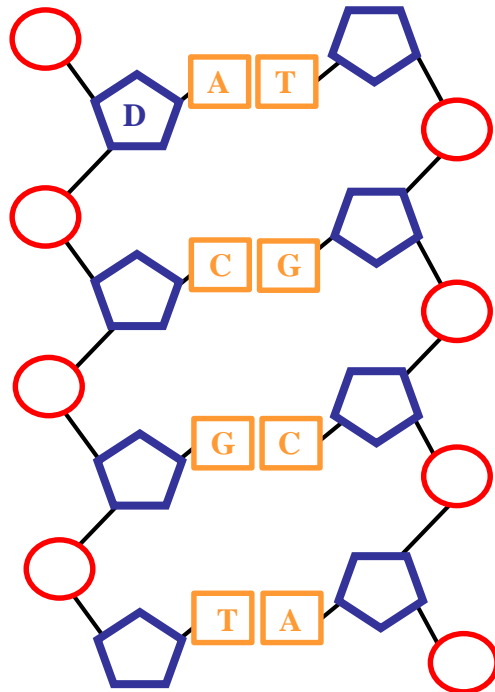
NUCLEIC ACID

NUCLEIC ACIDS

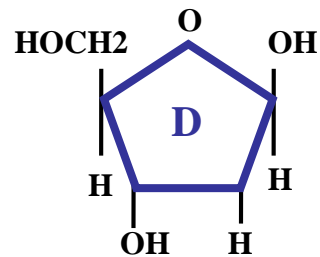


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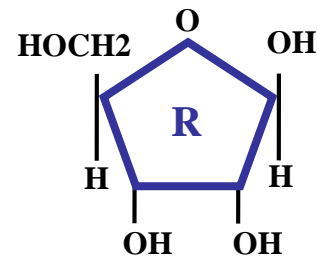
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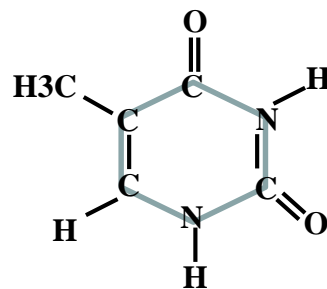
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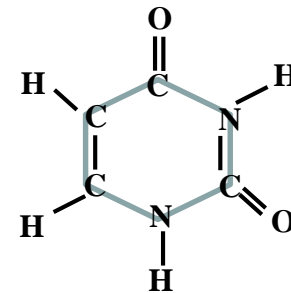
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RIBOSE

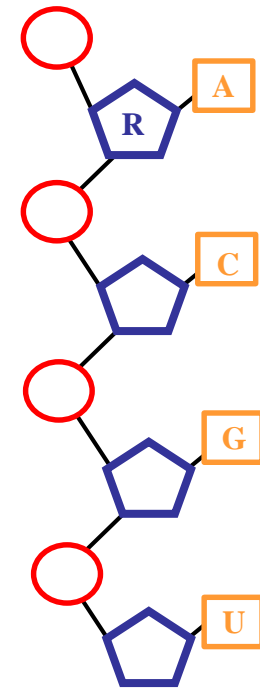


THYMINE



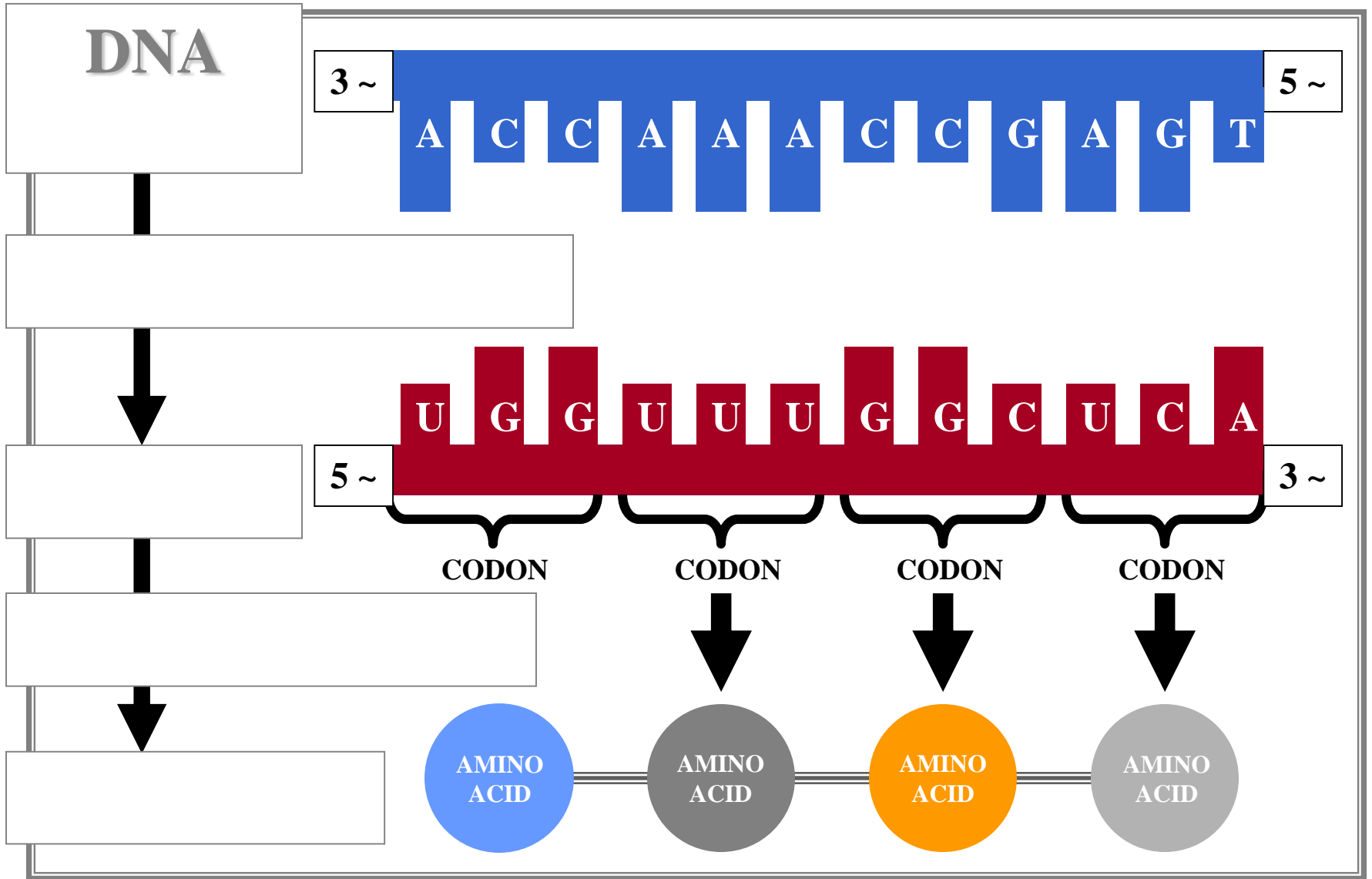
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RNA

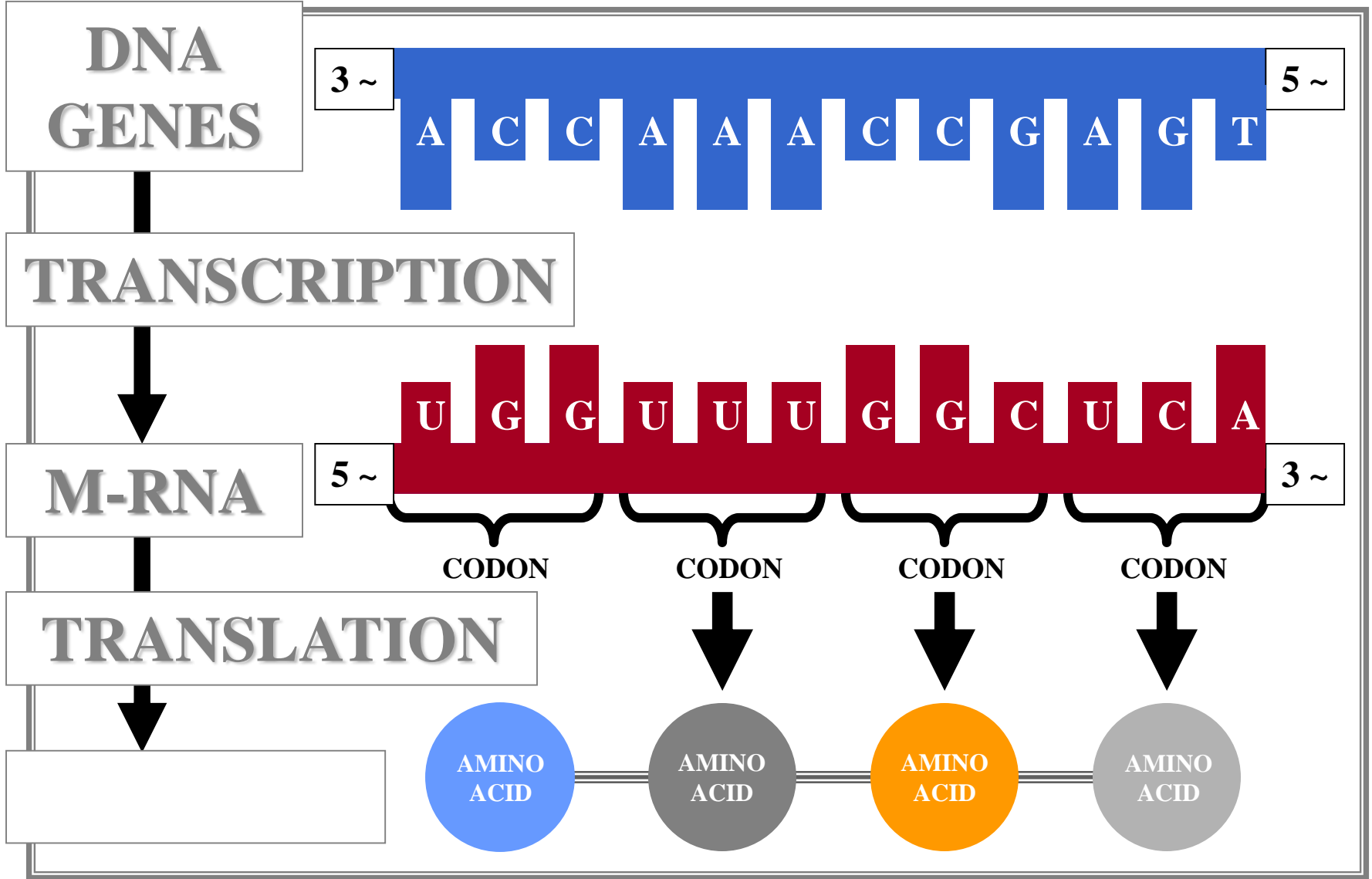


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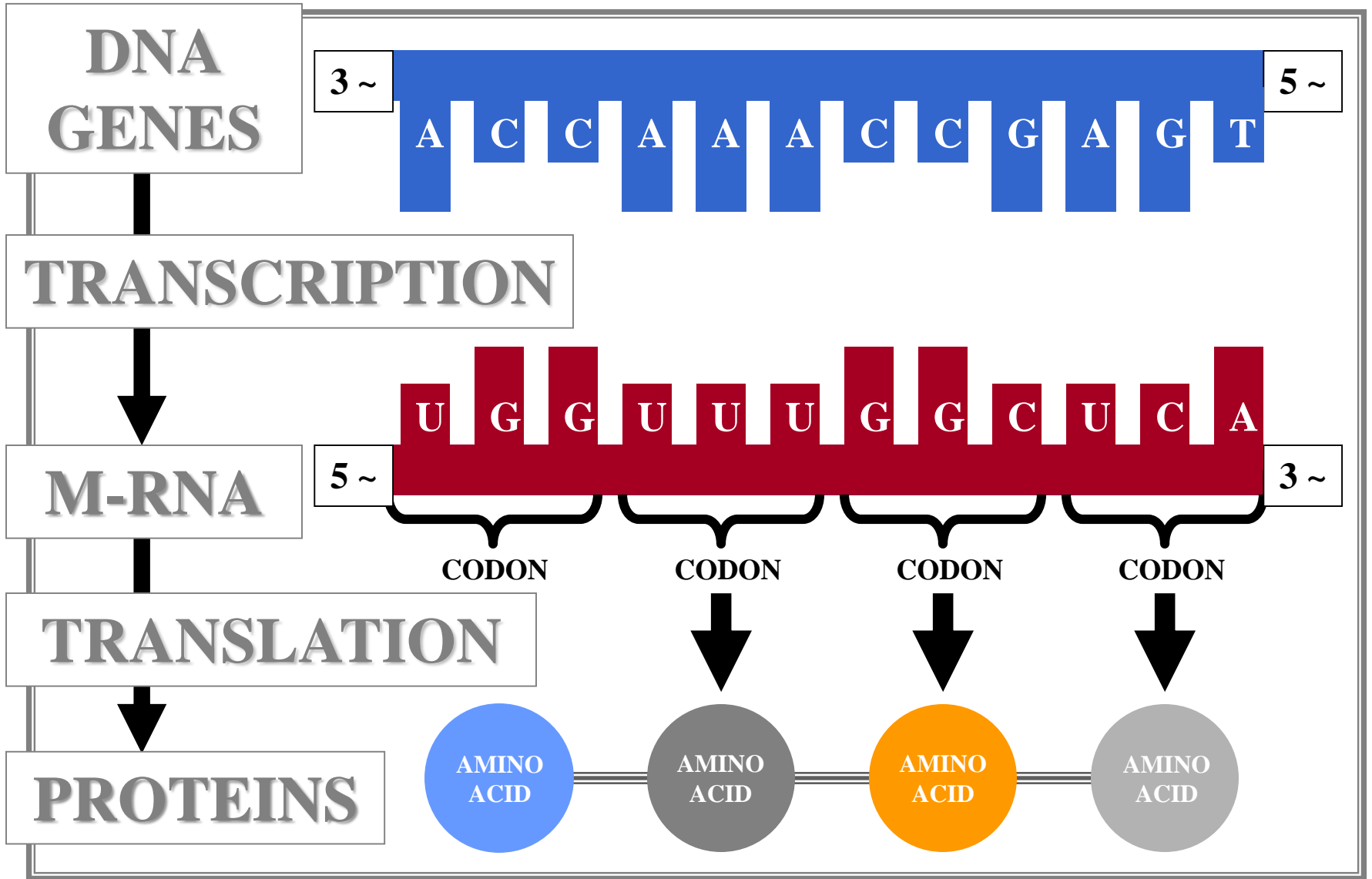
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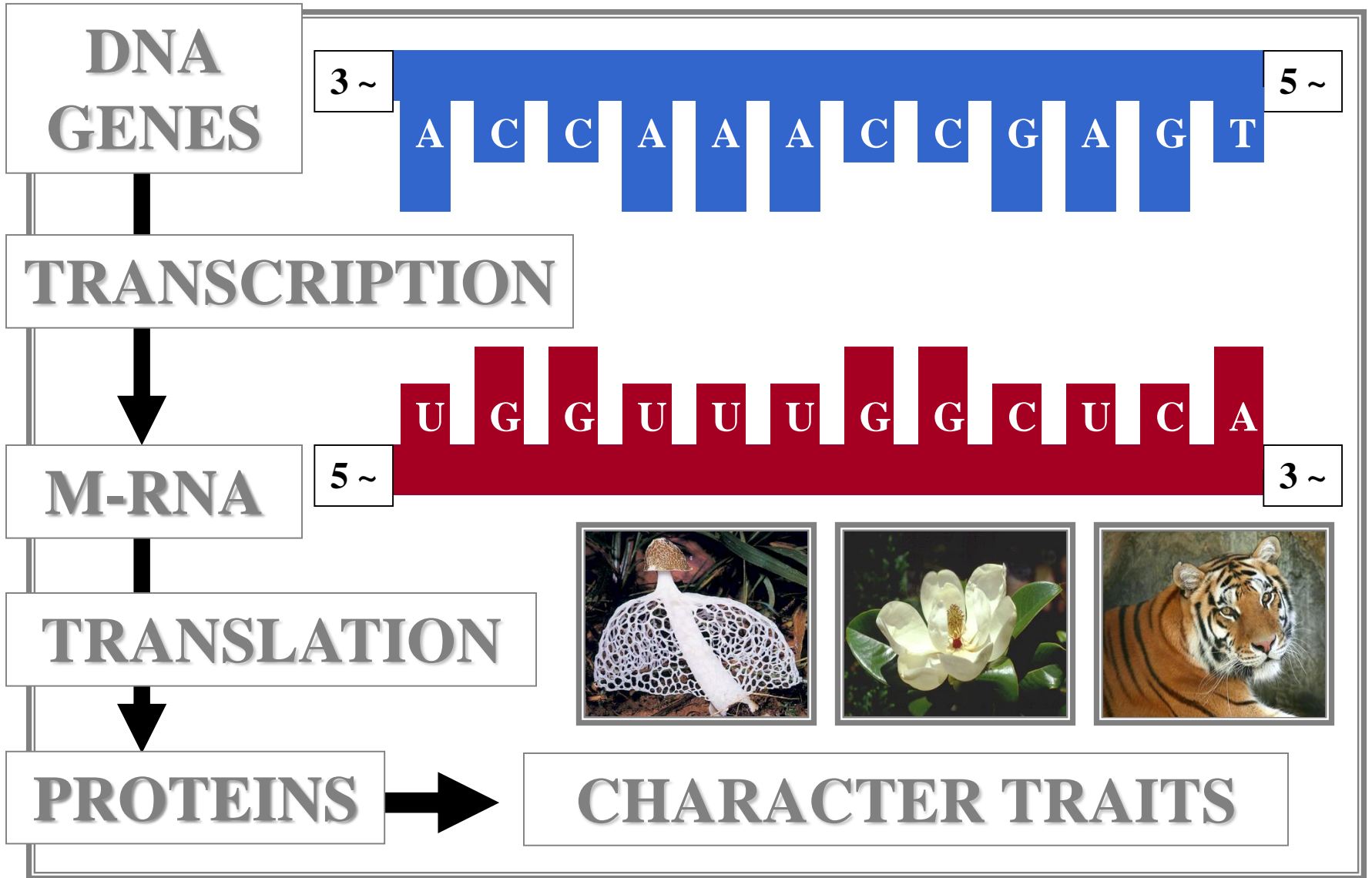
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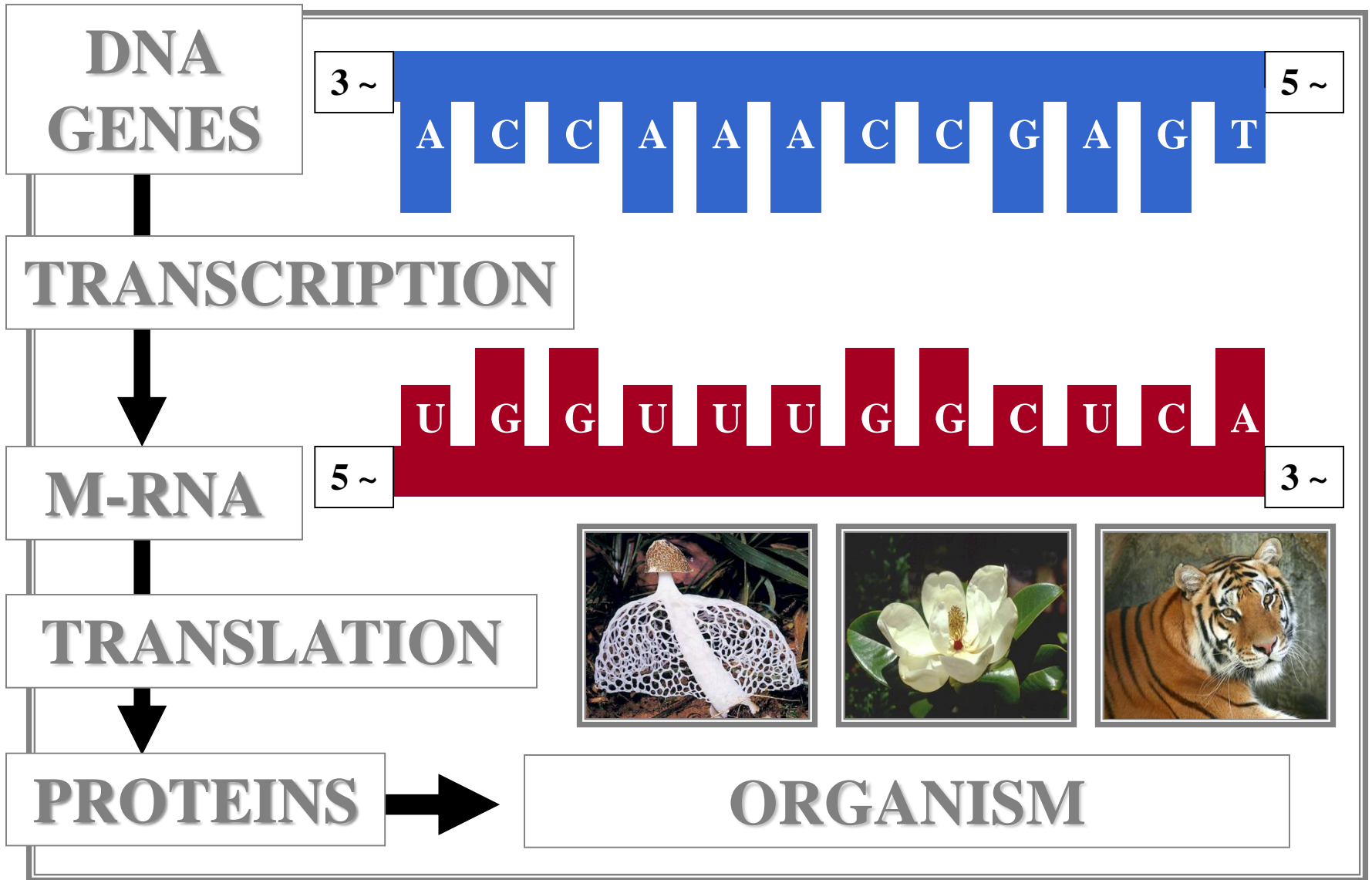
PROTEIN SYNTHESIS



PROTEIN SYNTHESIS



PROTEIN SYNTHESIS





FUNGI DIVERSITY





ANIMAL DIVERSITY





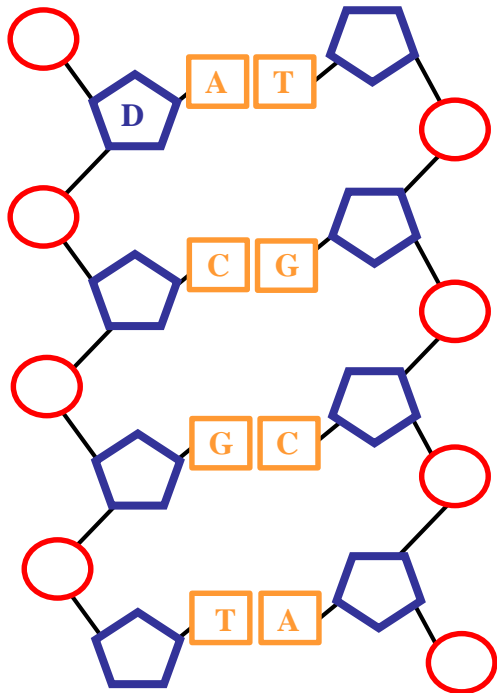
PLANT DIVERSITY



NUCLEIC ACIDS



DNA



DNA
UNDERGOES
MUTATIONAL
CHANGES

MUTATION

MUTATION

MUTATION

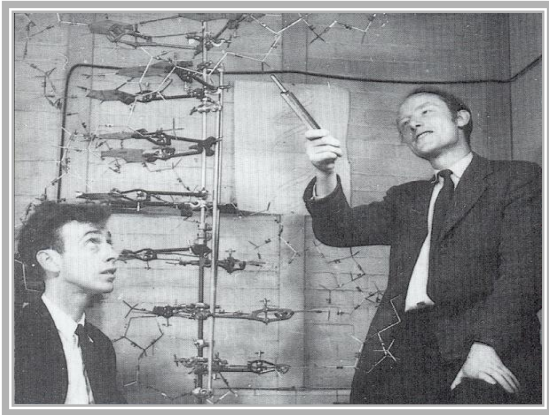


**DNA
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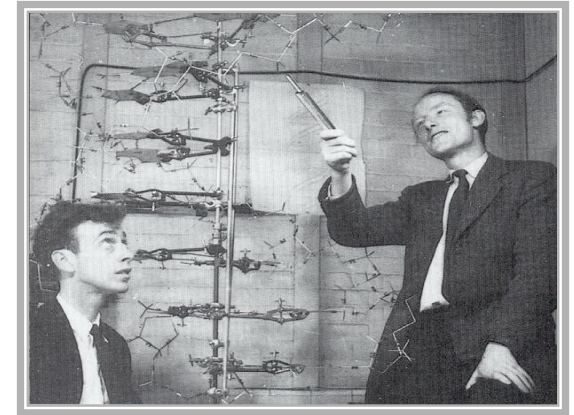
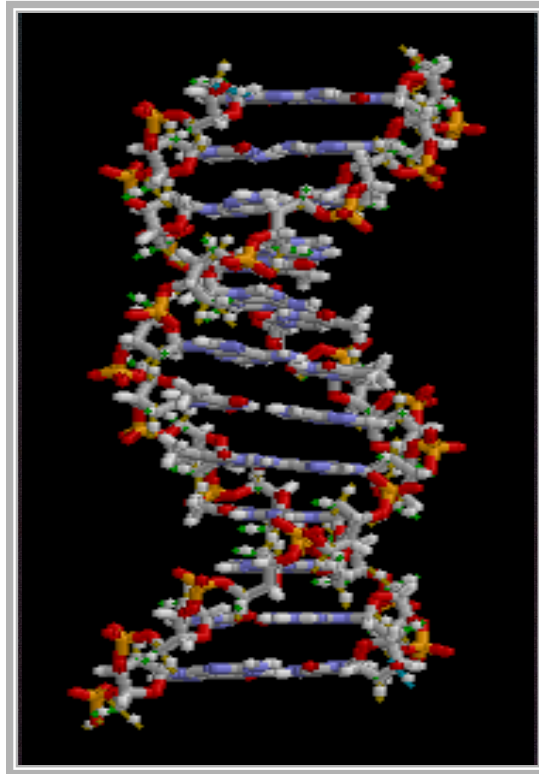
MUTATION

DNA

DEOXYRIBONUCLEIC ACID



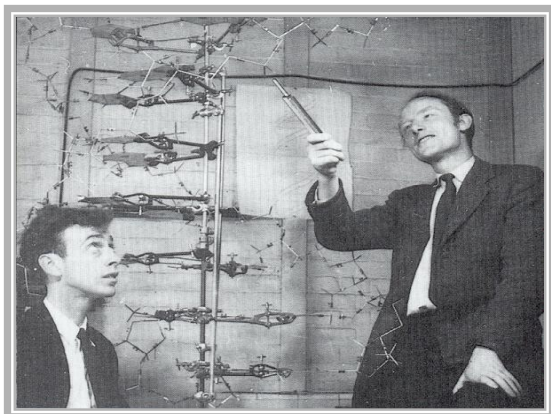
**JAMES WATSON
&
FRANCIS CRICK**



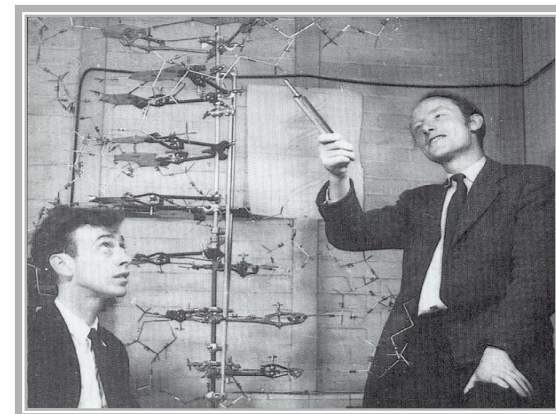
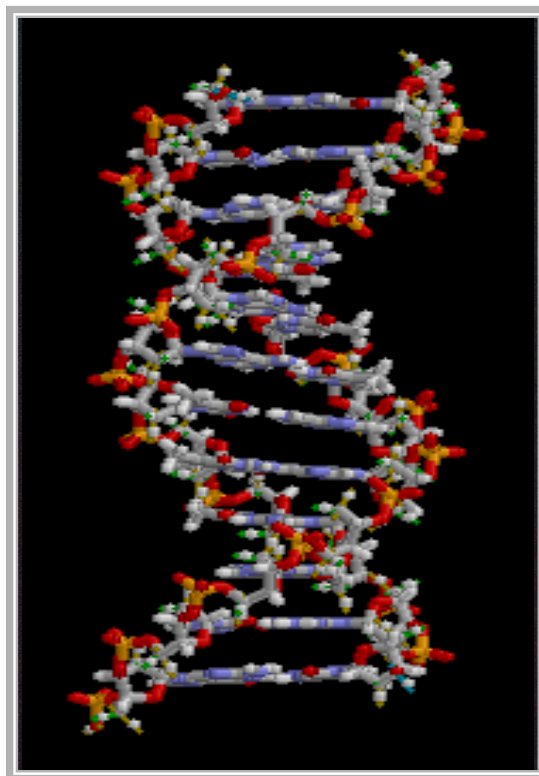
**JAMES WATSON
&
FRANCIS CRICK**

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DNA DEOXYRIBONUCLEIC ACID



JAMES WATSON
&
FRANCIS CRICK



JAMES WATSON
&
FRANCIS CRICK

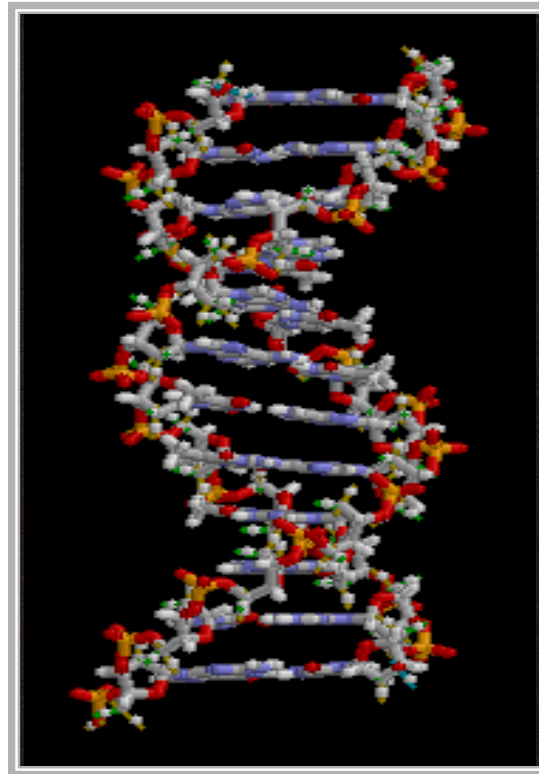
DOUBLE HELIX MODEL

DNA



DEOXYRIBONUCLEIC ACID

**DOUBLE
HELIX
MODEL**



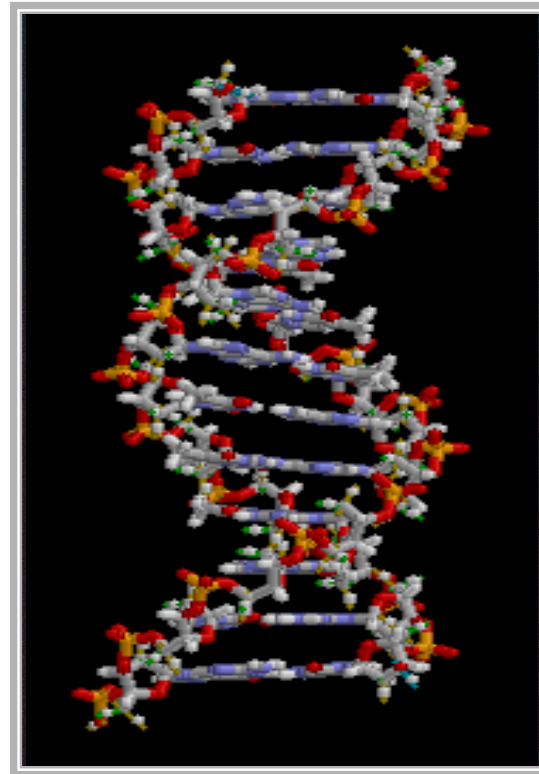
**DOUBLE
HELIX
MODEL**

POLYMER

DNA

DEOXYRIBONUCLEIC ACID

DOUBLE
HELIX
MODEL



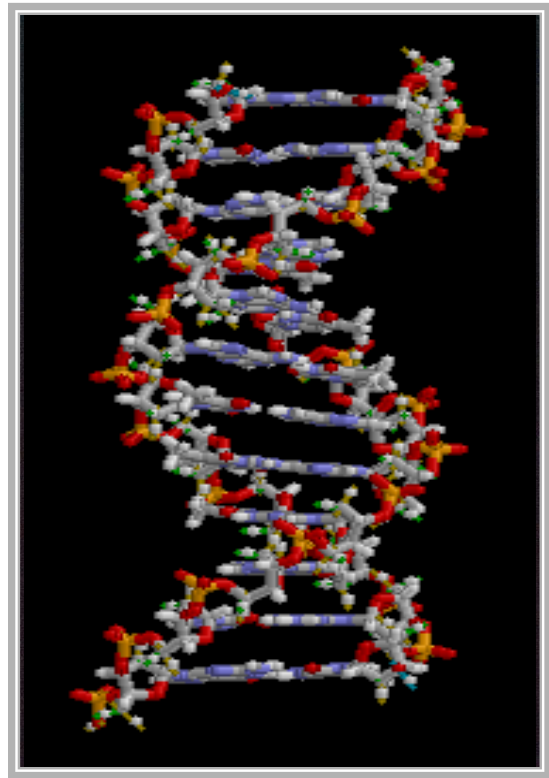
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MODEL

MONOMERS

DNA

DEOXYRIBONUCLEIC ACID

DOUBLE
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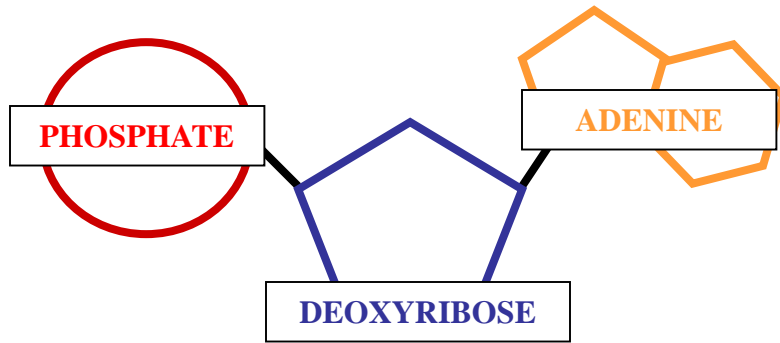


DOUBLE
HELIX
MODEL

NUCLEOTIDES

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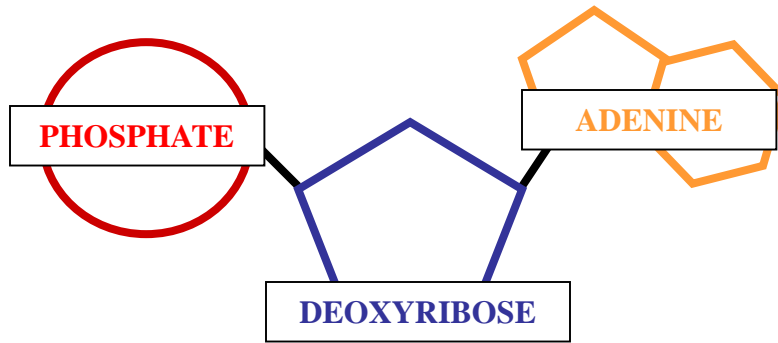
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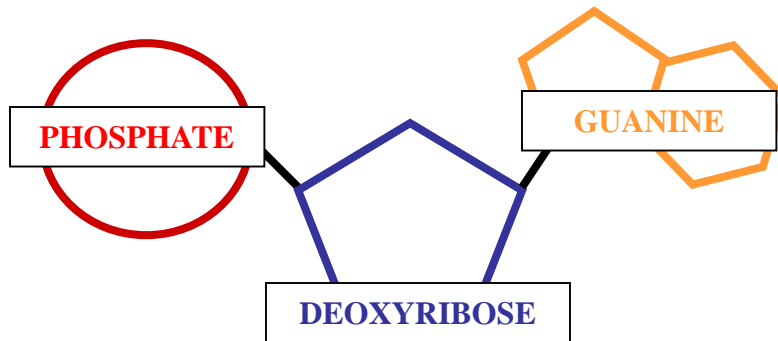
ADENINE

DNA NUCLEOTIDE MONOMERS

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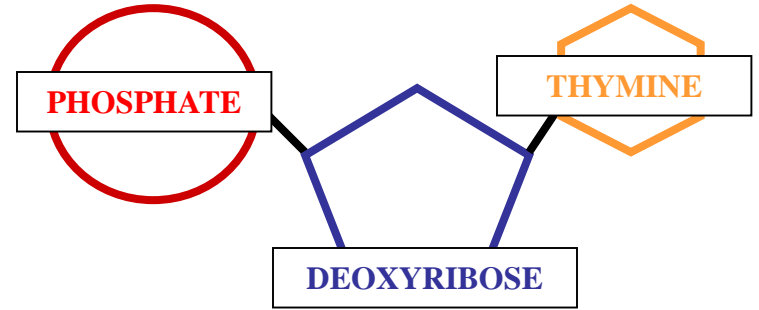
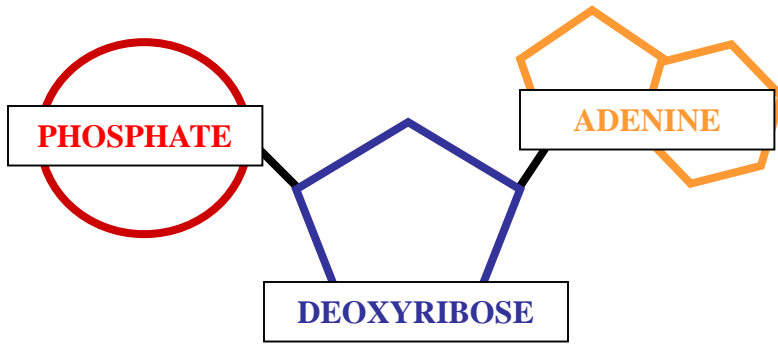
ADENINE



GUANINE

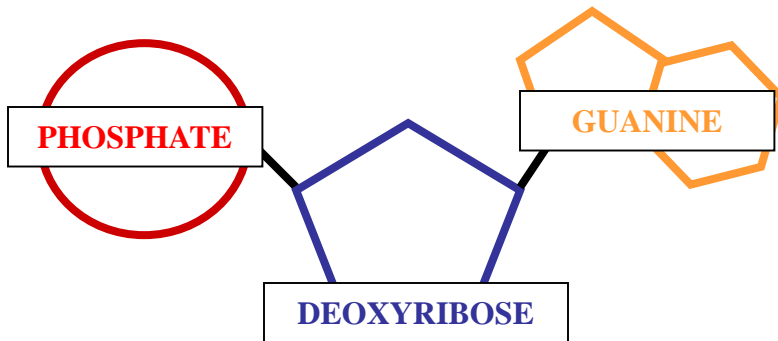
DNA NUCLEOTIDE MONOMERS

C



ADENINE

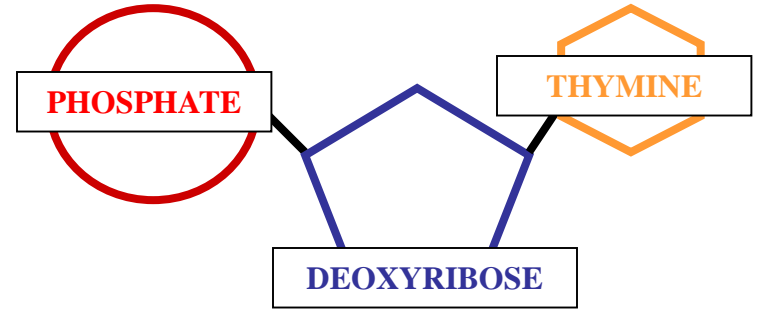
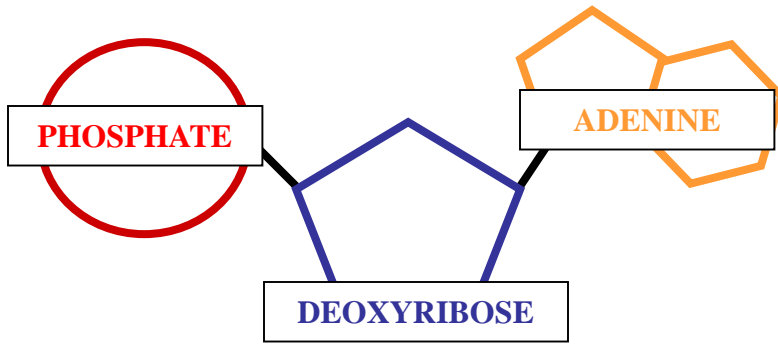
THYMINE



GUANINE

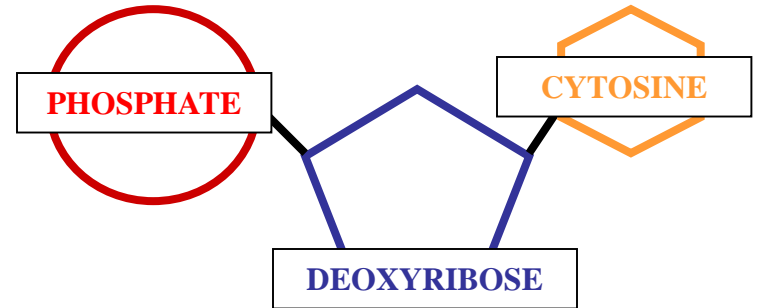
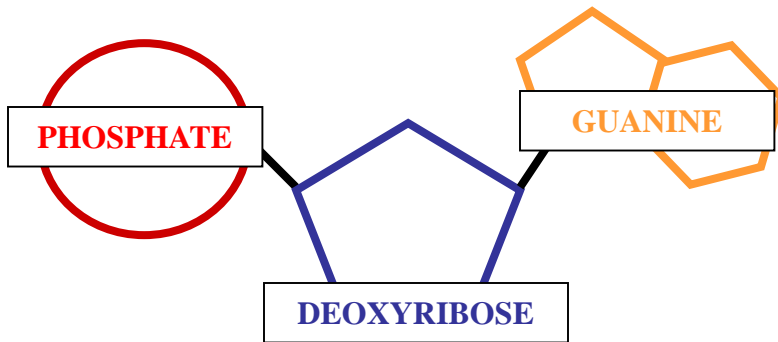
DNA NUCLEOTIDE MONOMERS

A-T



ADENINE

THYMINE



GUANINE

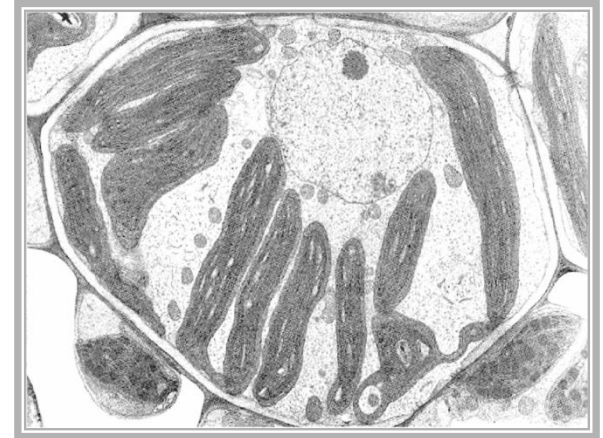
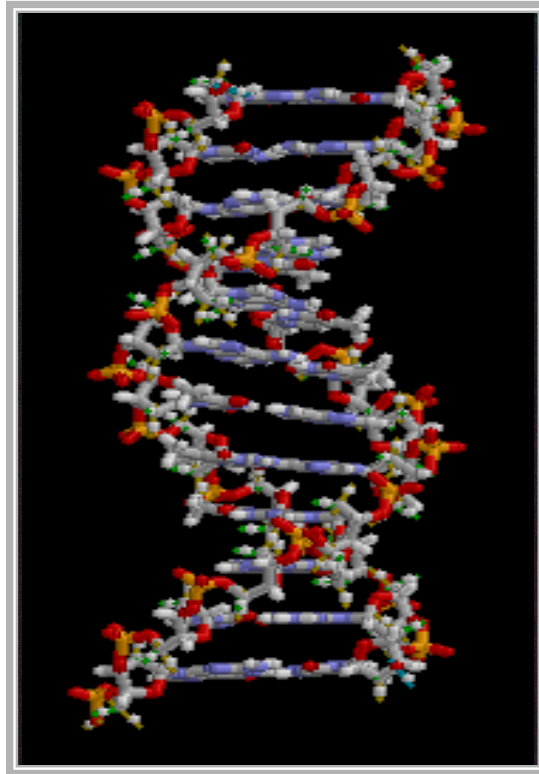
CYTOSINE

DNA

DEOXYRIBONUCLEIC ACID



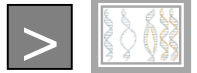
PLANT CELL



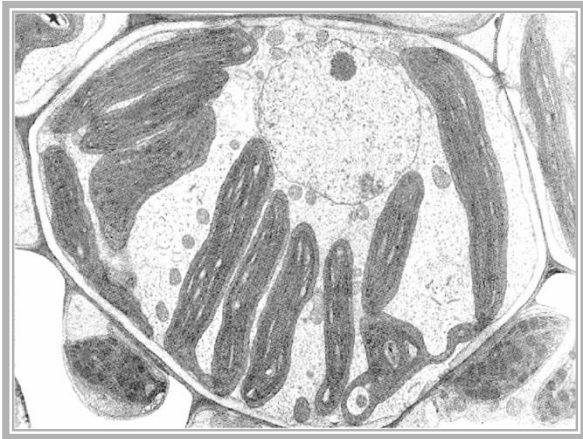
PLANT CELL

CELL CYCLE

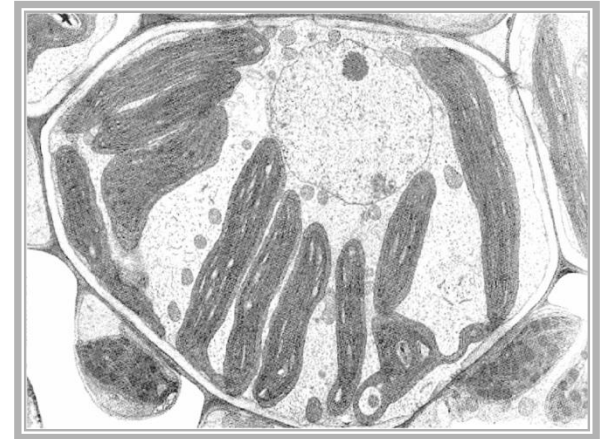
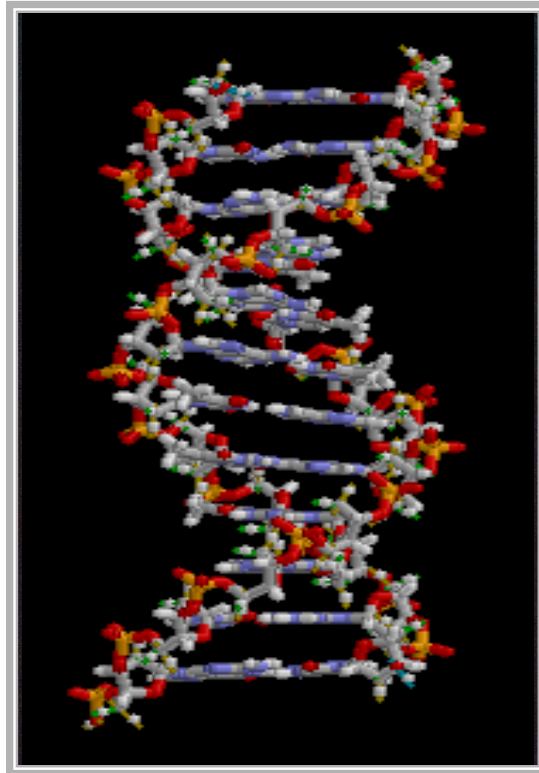
DNA



DEOXYRIBONUCLEIC ACID



PLANT CELL

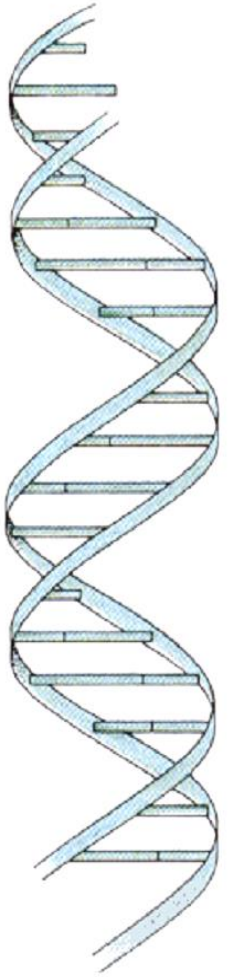
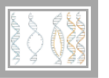


PLANT CELL

REPLICATION

DNA REPLICATION

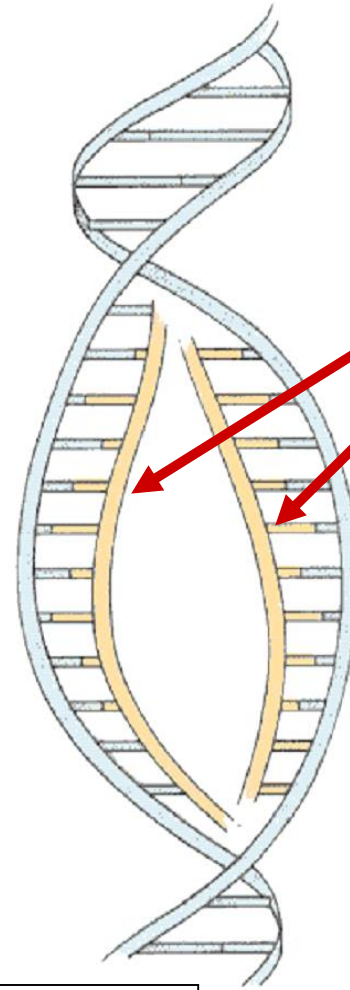
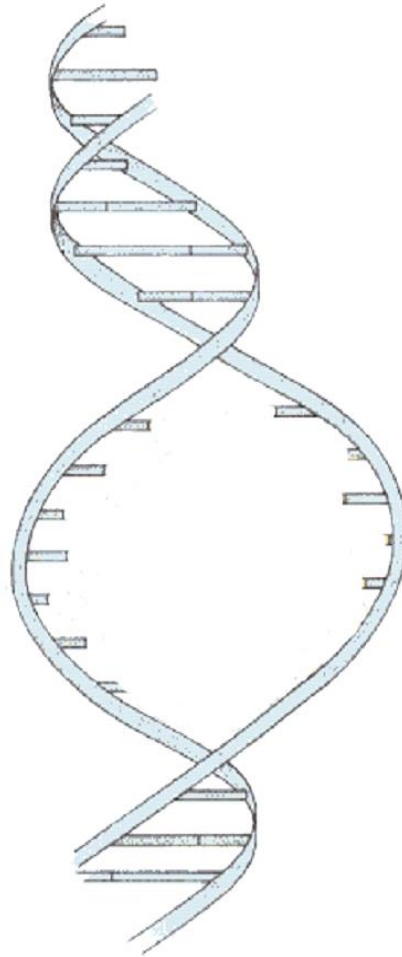
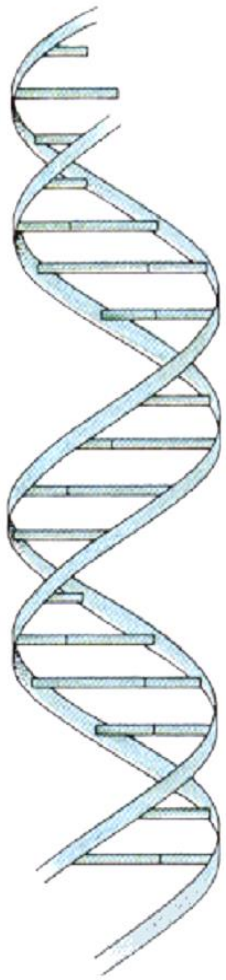
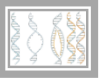
R



DNA
CHROMOSOME

DNA REPLICATION

RC



**NEWLY REPLICATED
DNA STRANDS**

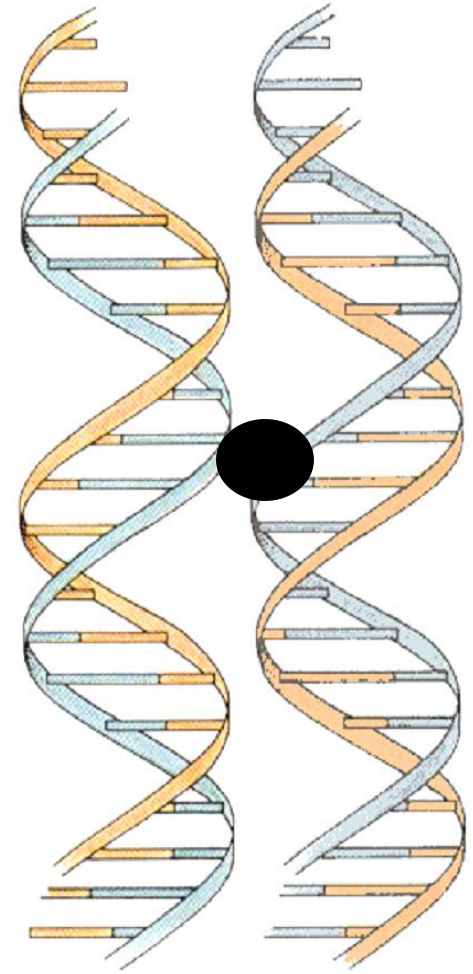
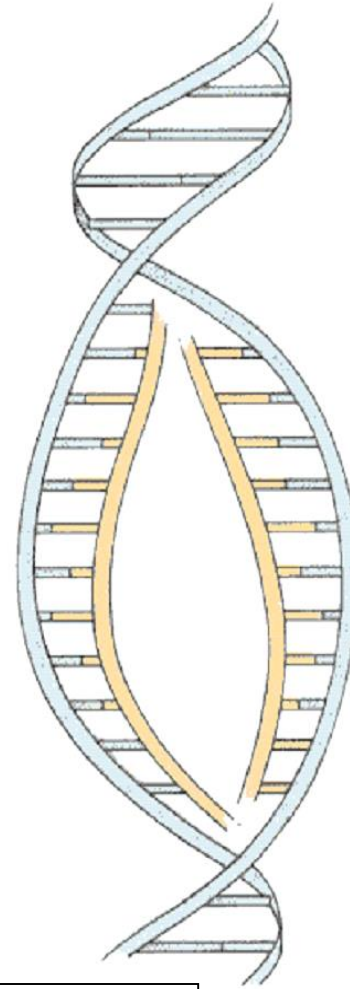
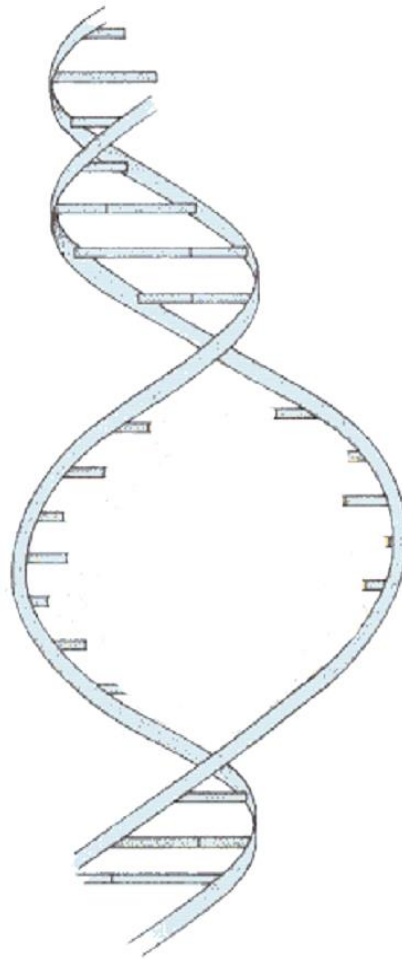
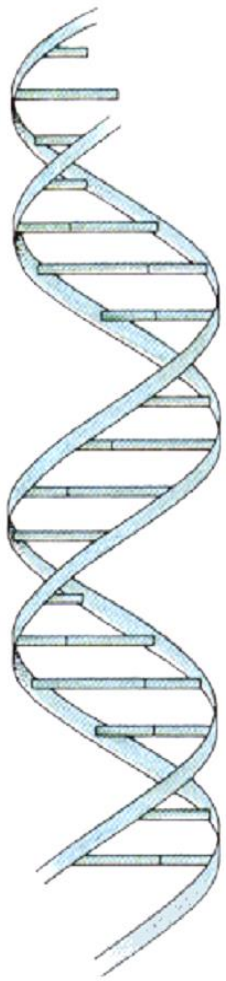
**DNA
CHROMOSOME**

REPLICATION



DNA REPLICATION

?



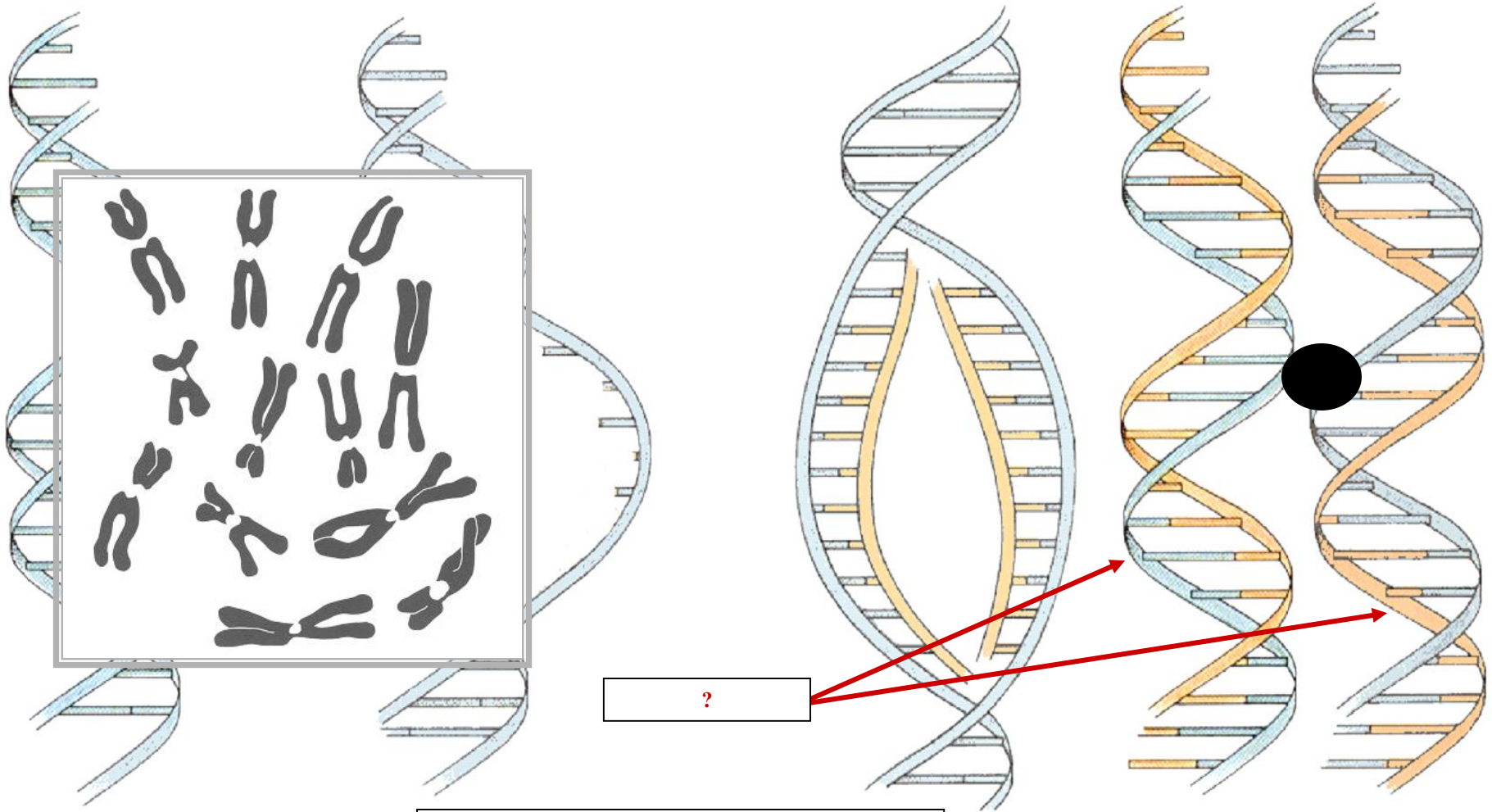
DNA
CHROMOSOME

REPLICATION

REPLICATED DNA
CHROMOSOME

DNA REPLICATION

C



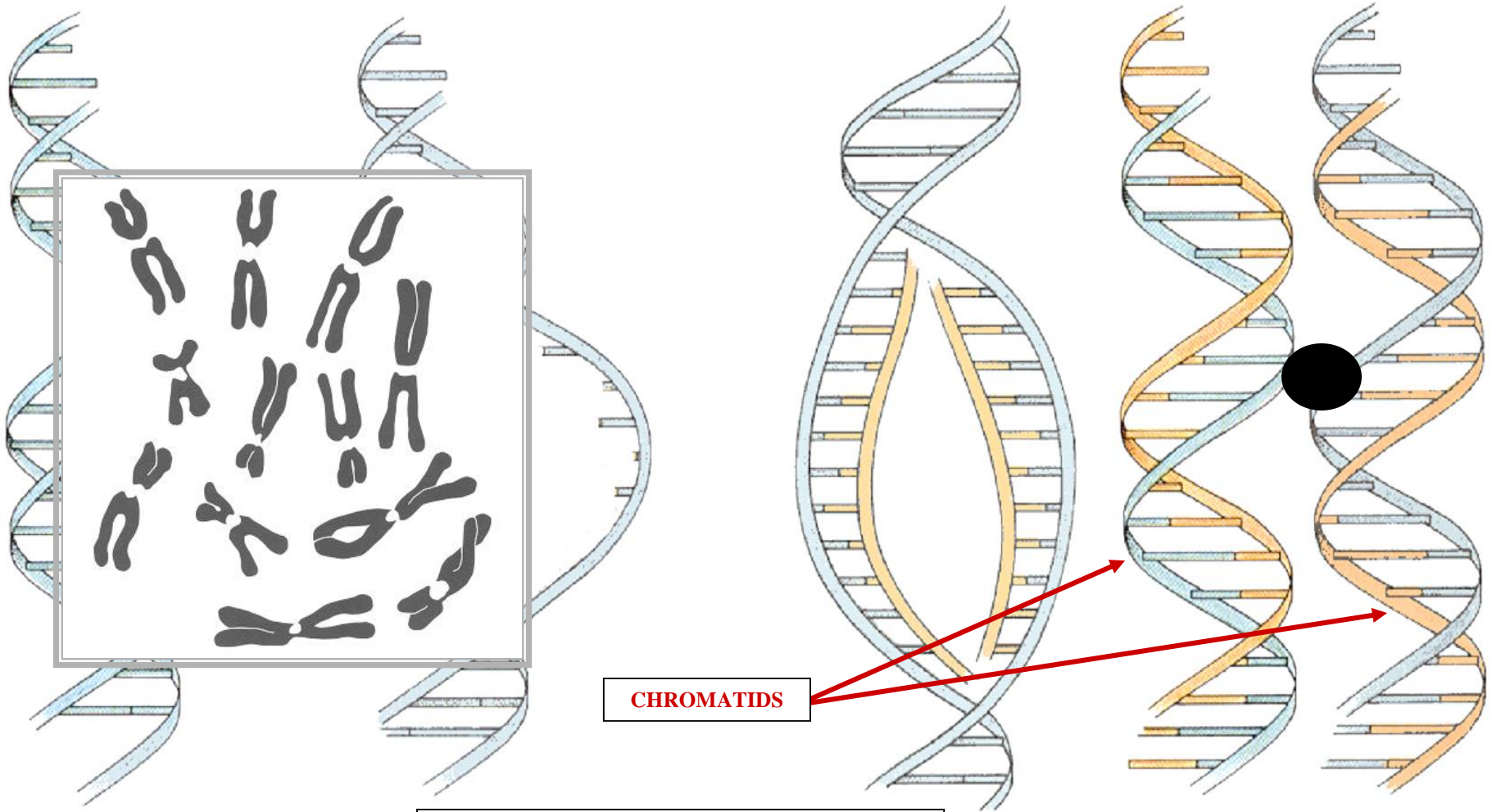
DNA
CHROMOSOME

REPLICATION

REPLICATED DNA
CHROMOSOME

DNA REPLICATION

?



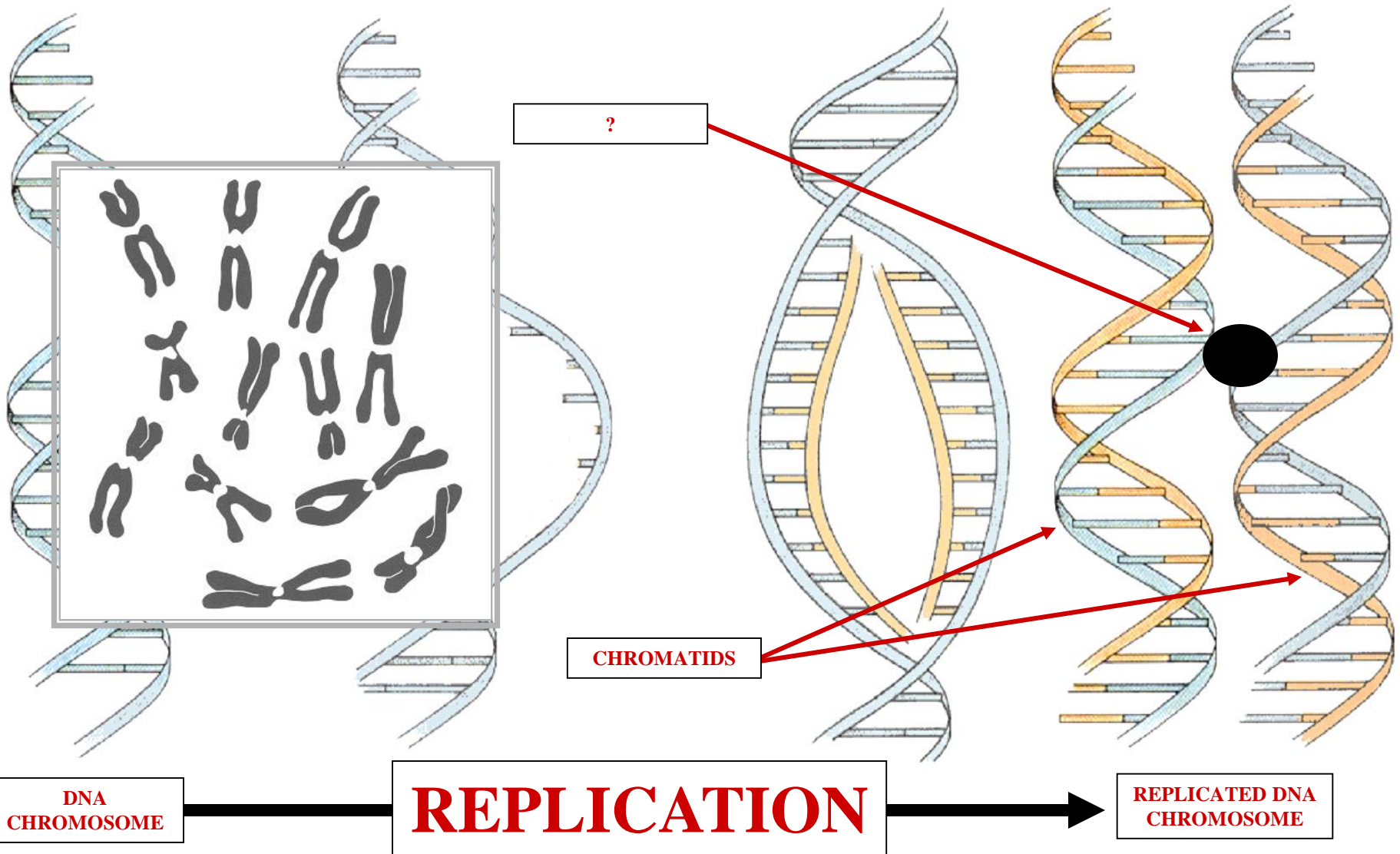
DNA
CHROMOSOME

REPLICATION

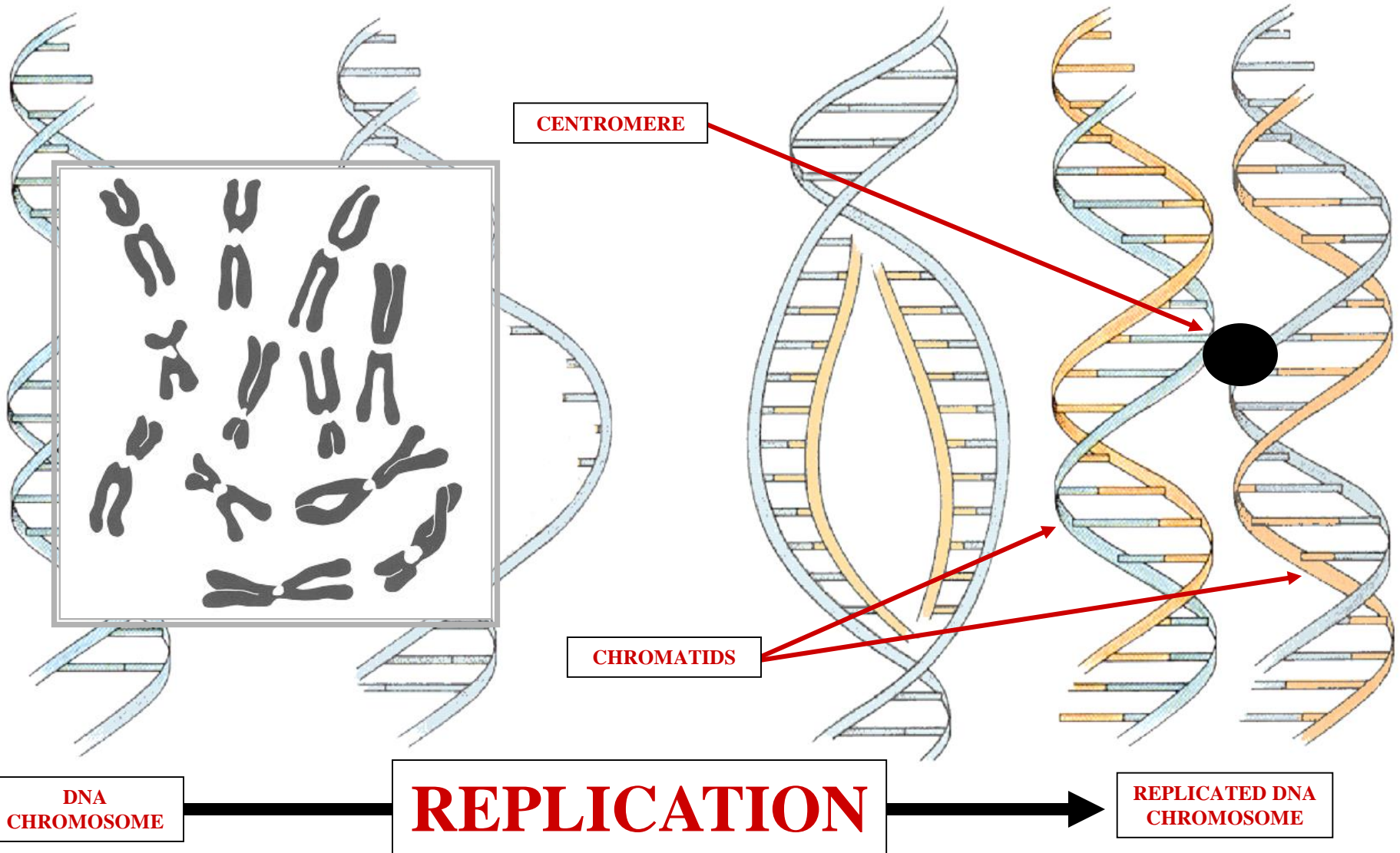
REPLICATED DNA
CHROMOSOME

DNA REPLICATION

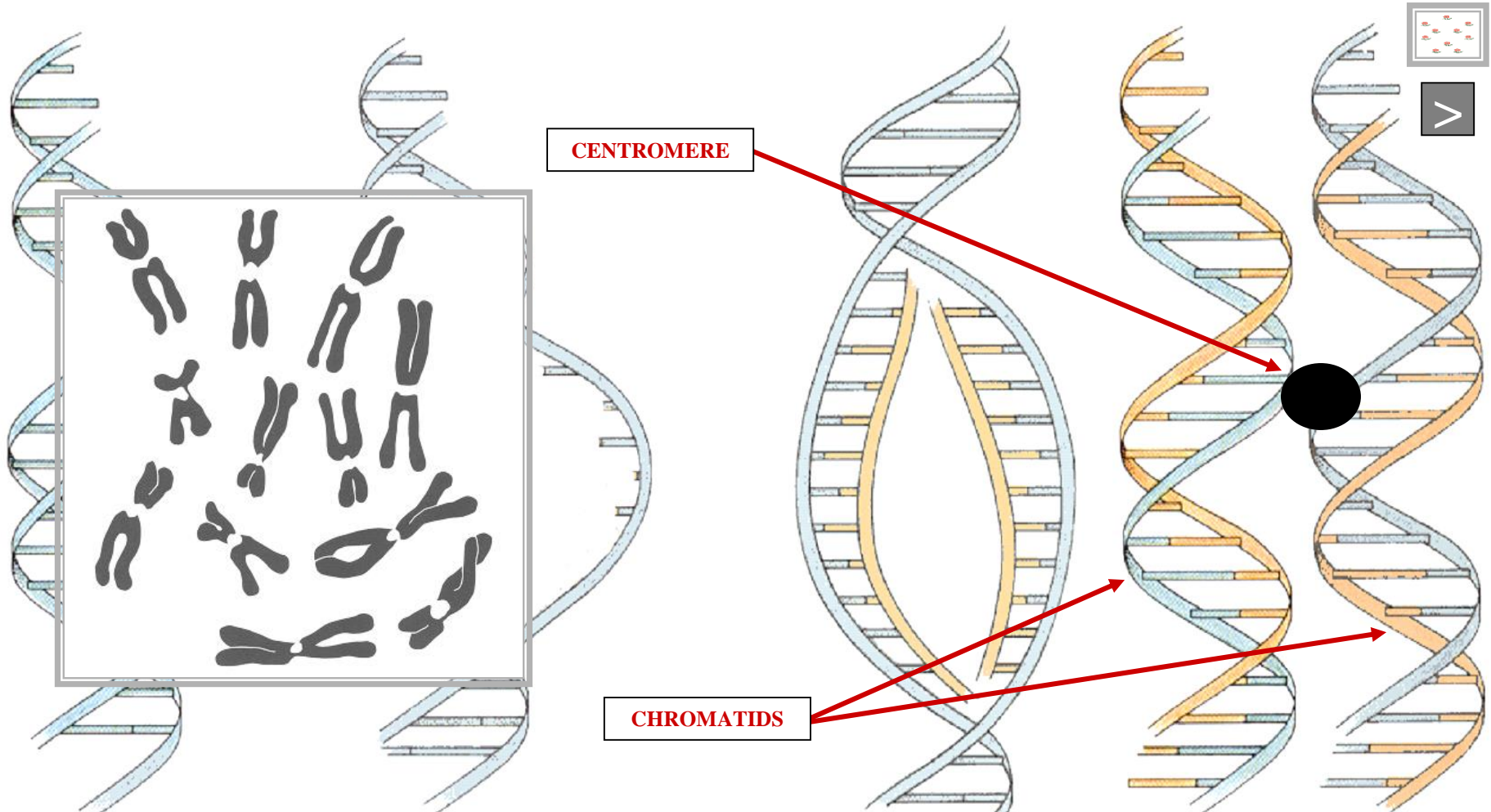
C



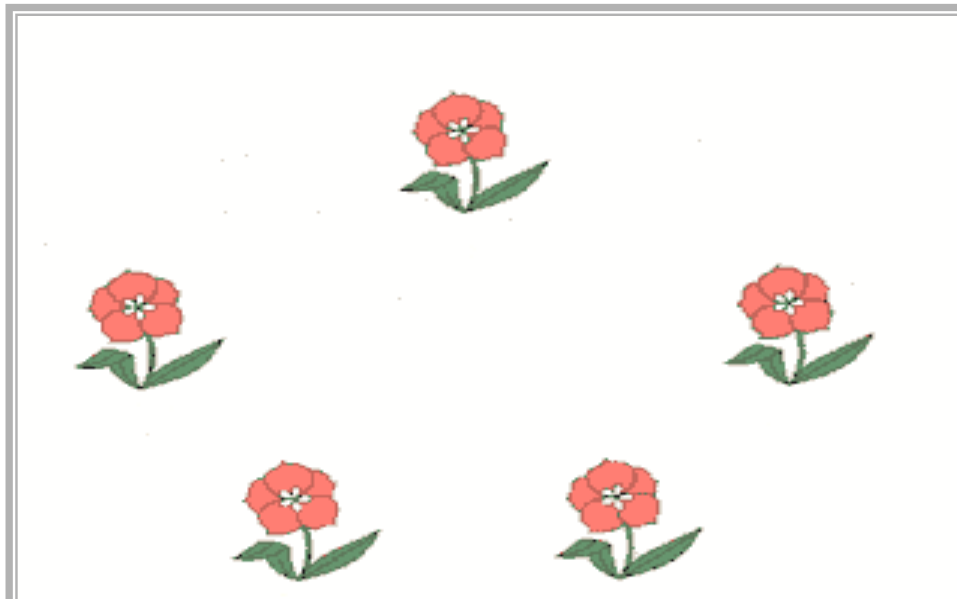
DNA REPLICATION



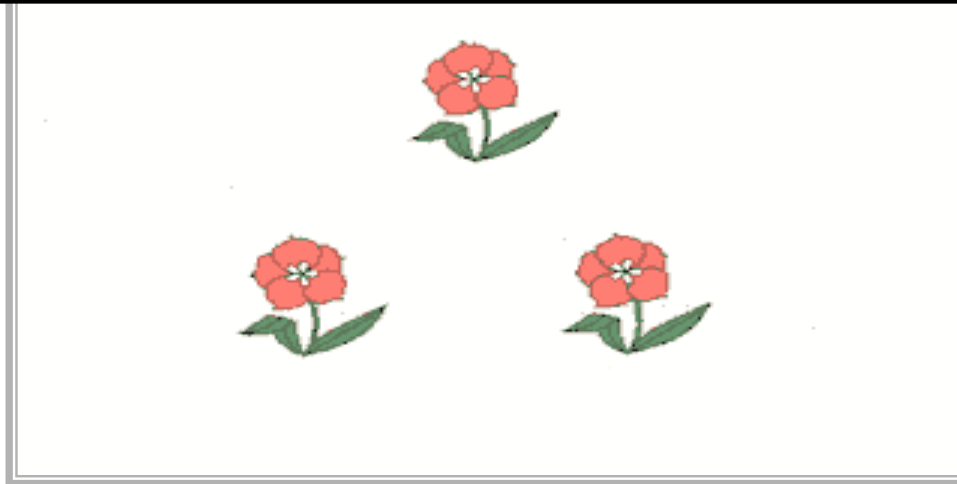
DNA UNDERGOES MUTATIONS



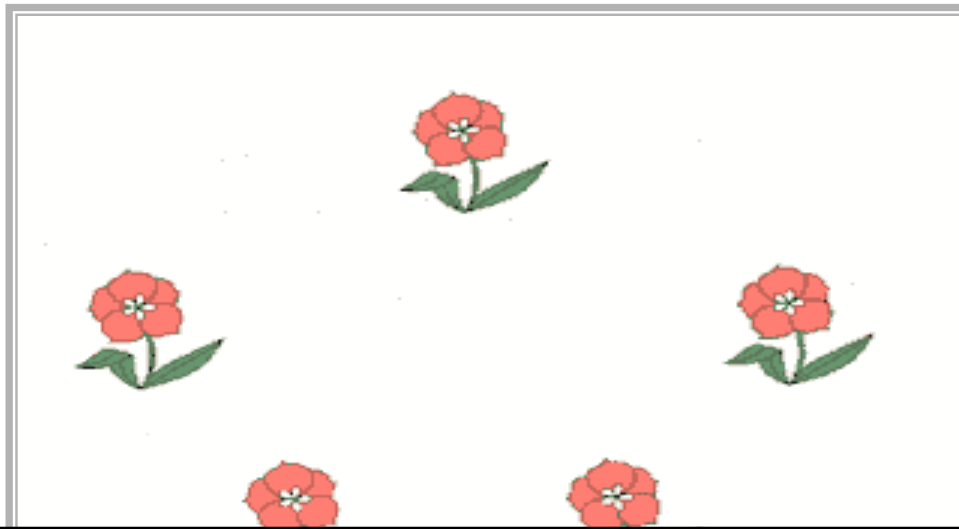
DURING REPLICATION



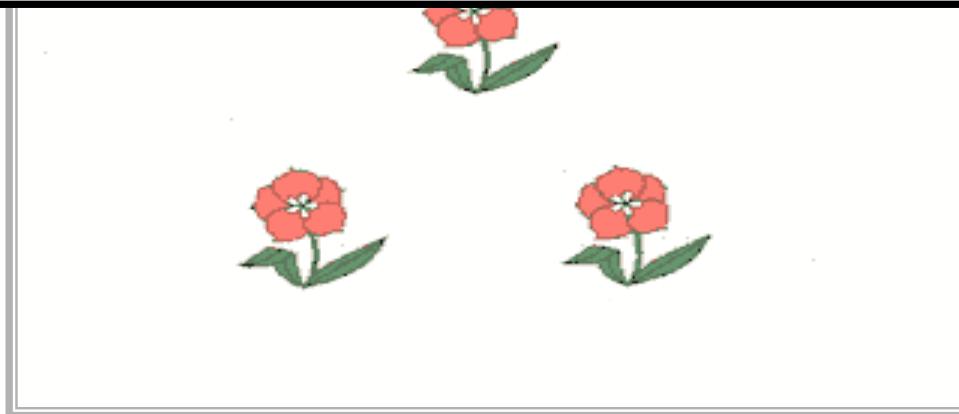
PLANT POPULATION



RED FLOWERED PLANTS



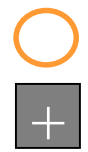
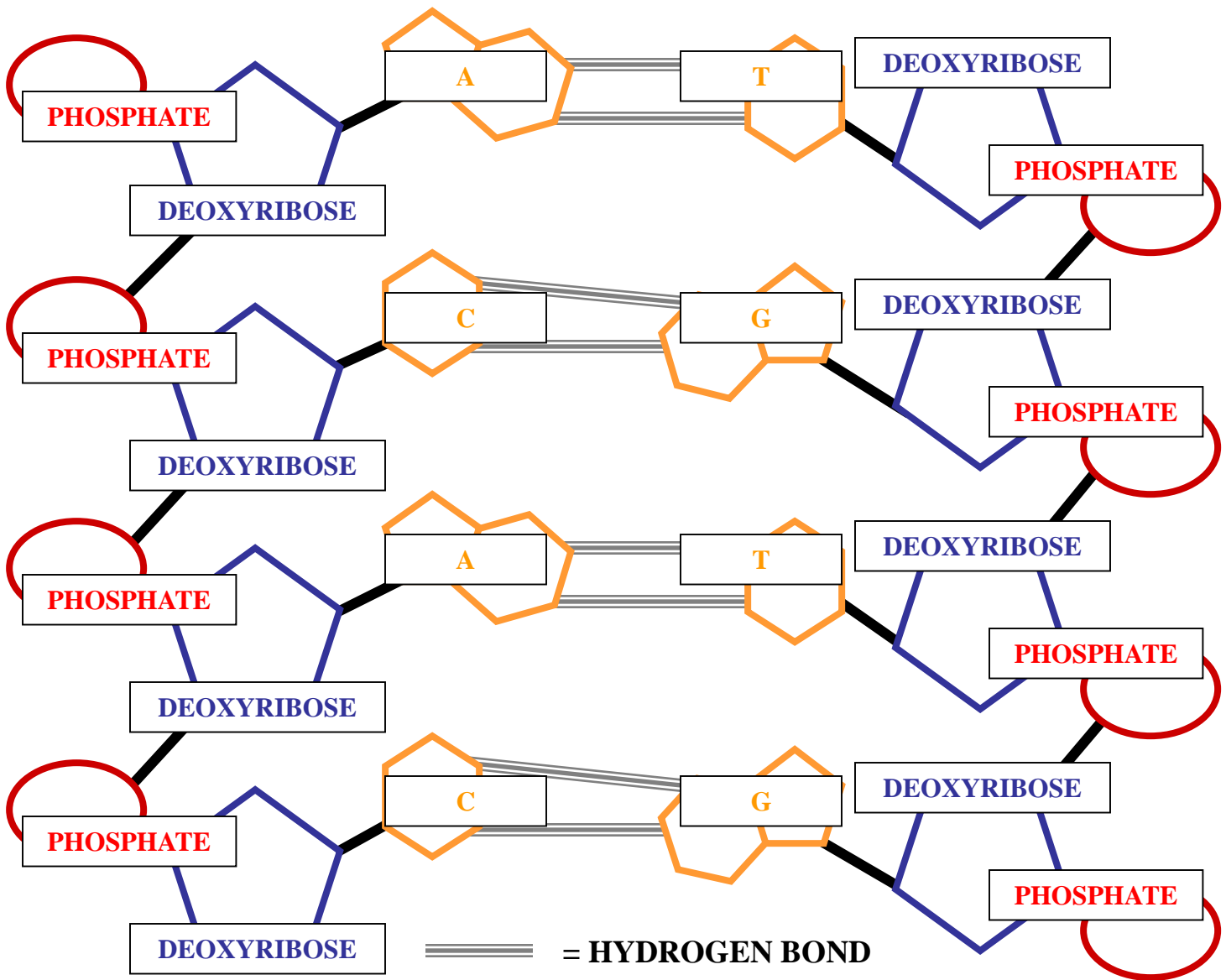
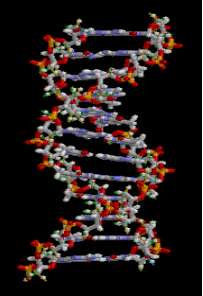
**UNDERGOES
DNA MUTATION**



RED FLOWERED PLANTS

DNA DOUBLE HELIX MODEL

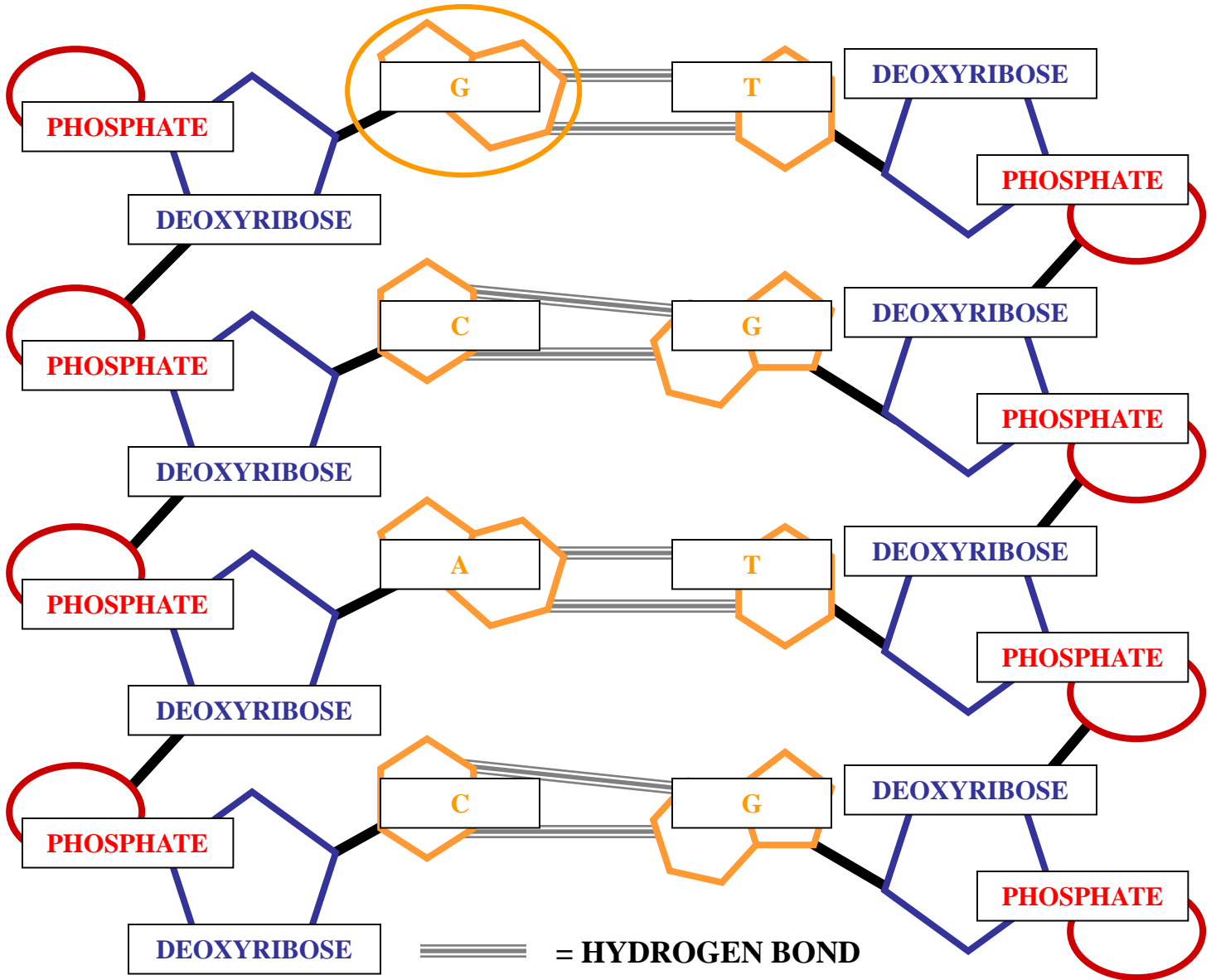
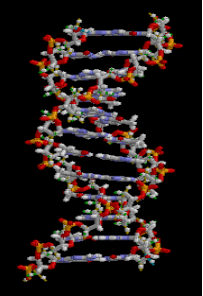
DNA REPLICATON



DNA DOUBLE HELIX MODEL

DNA REPLICATION

C

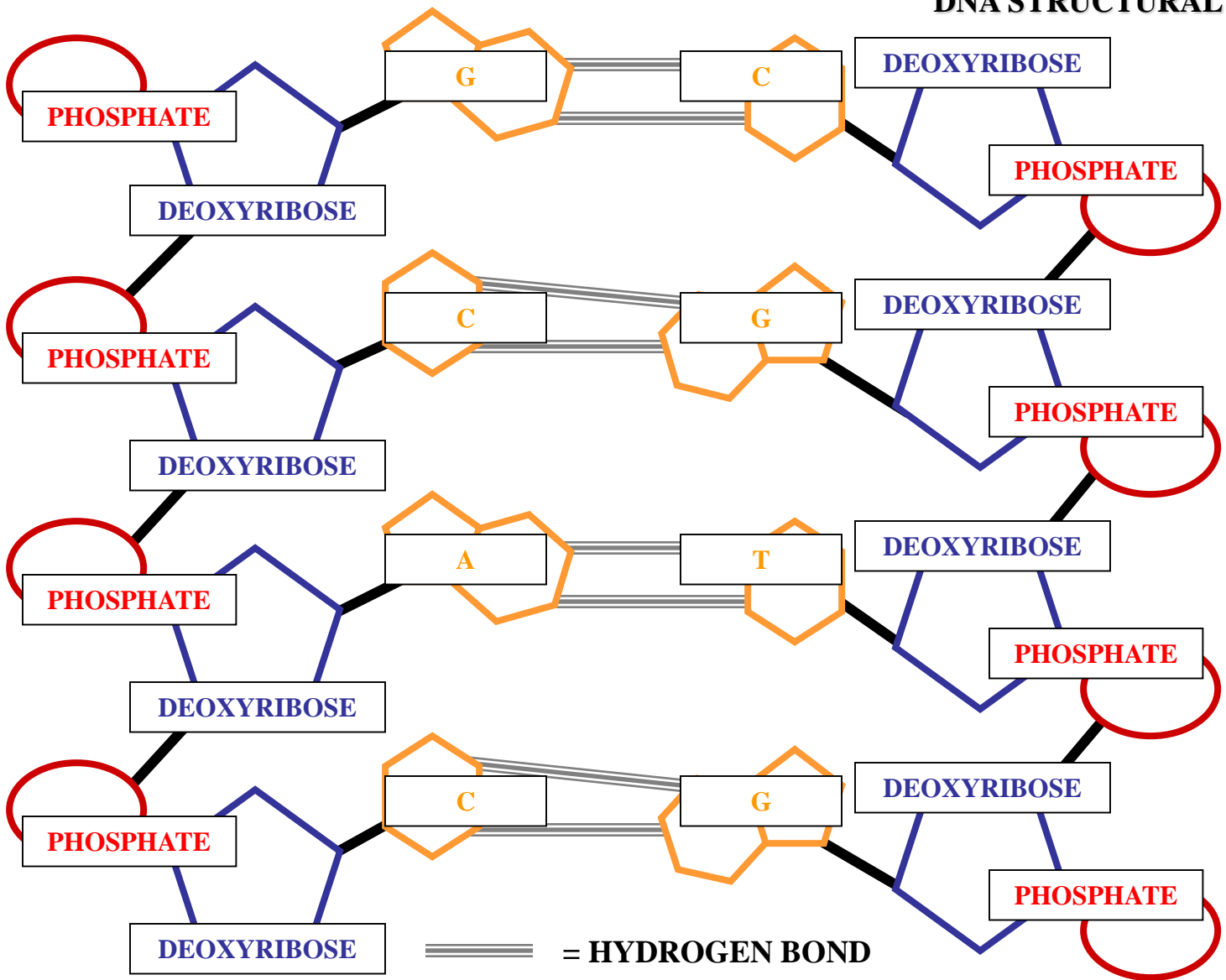


DNA DOUBLE HELIX MODEL

DNA REPLICATION DNA STRUCTURAL CHANGE



M



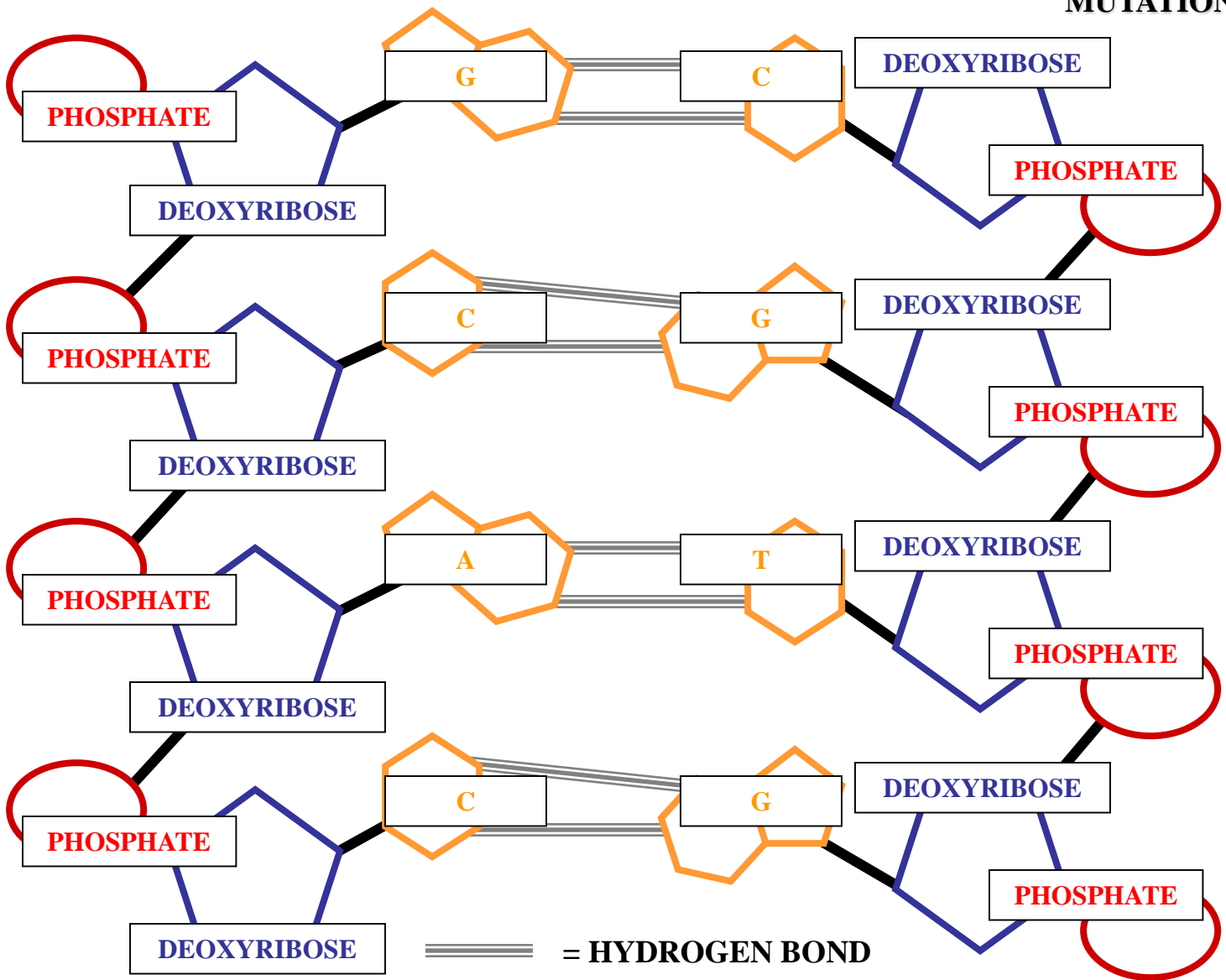
DNA DOUBLE HELIX MODEL

DNA REPLICATION

MUTATION



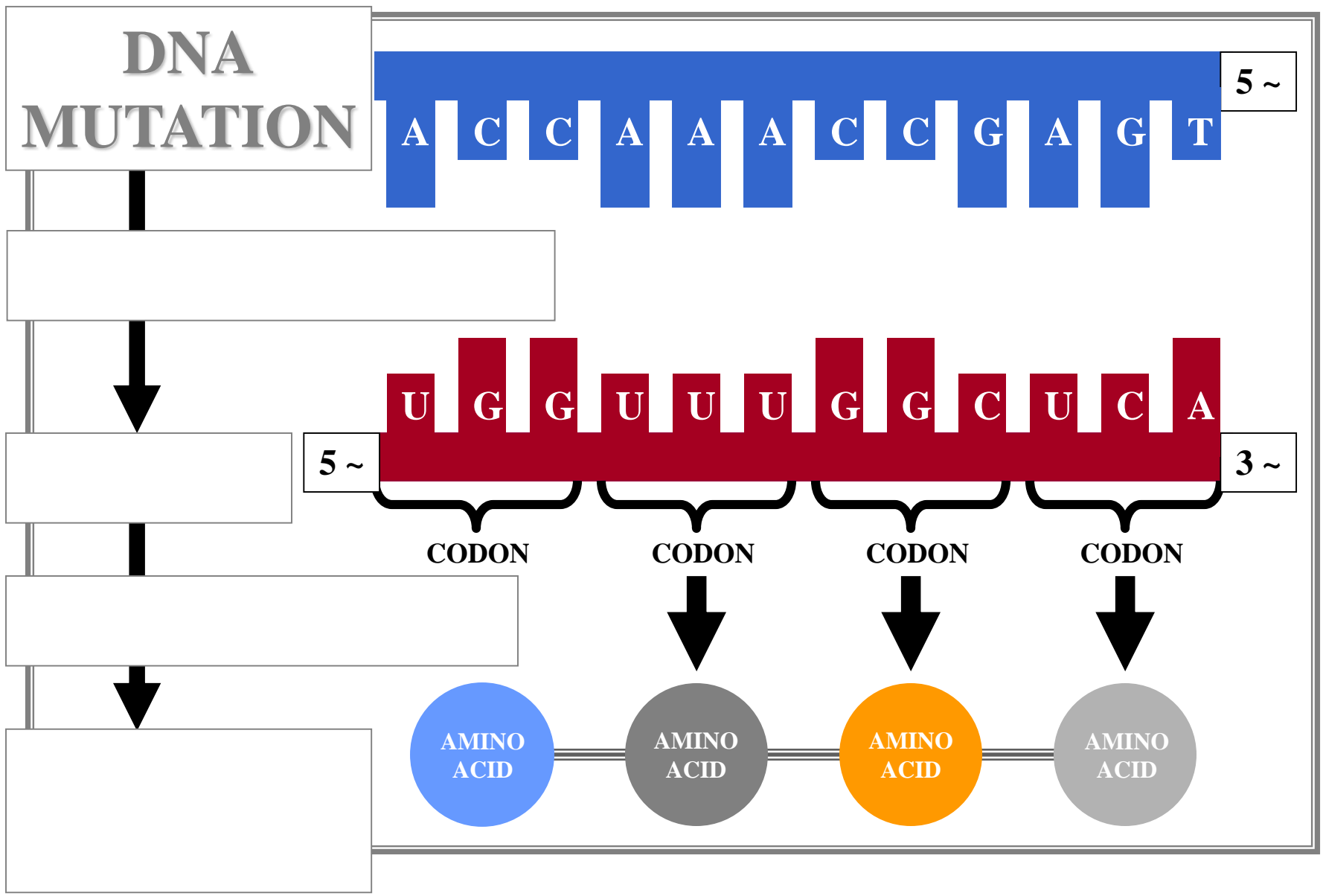
D



== = HYDROGEN BOND

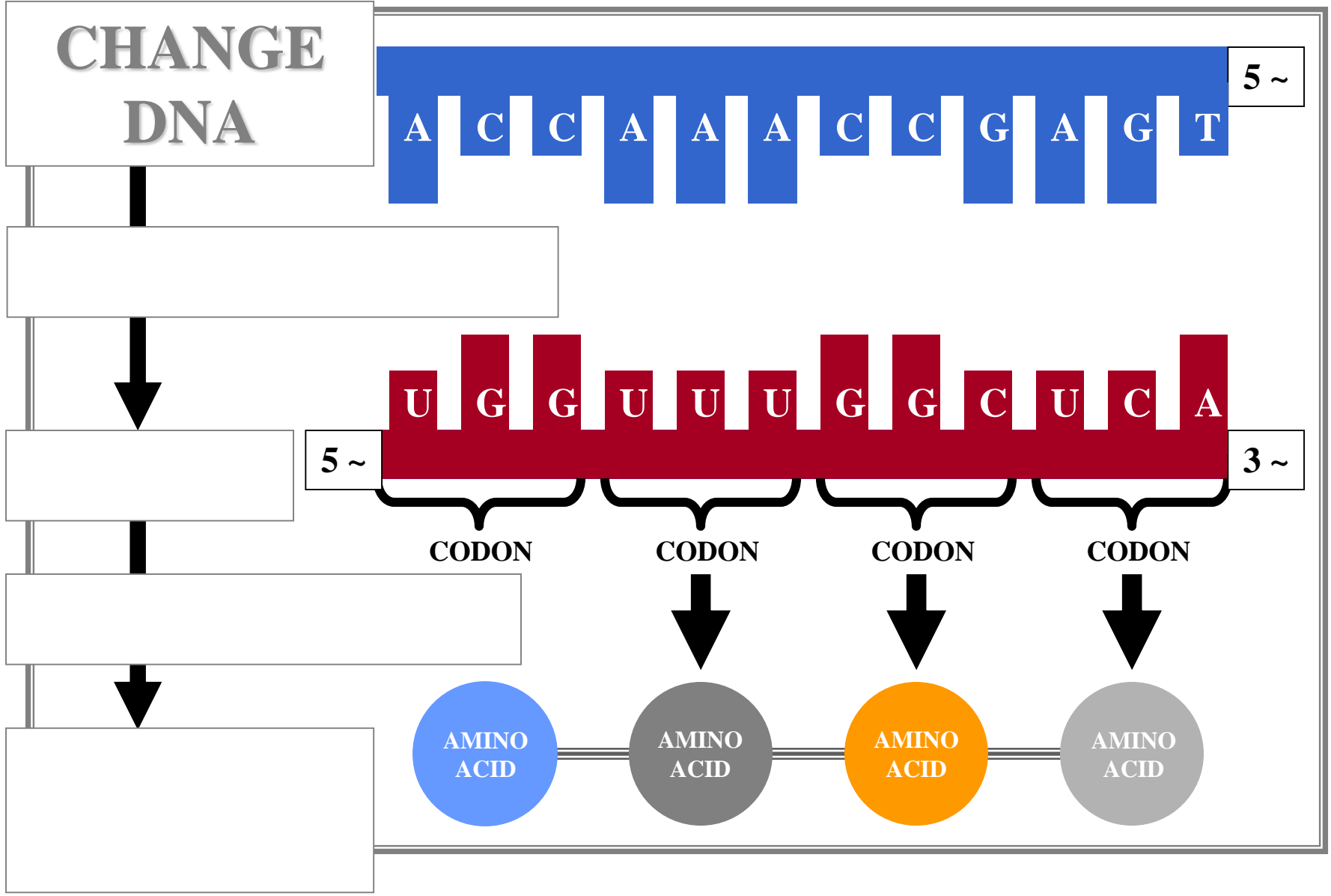


PROTEIN SYNTHESIS



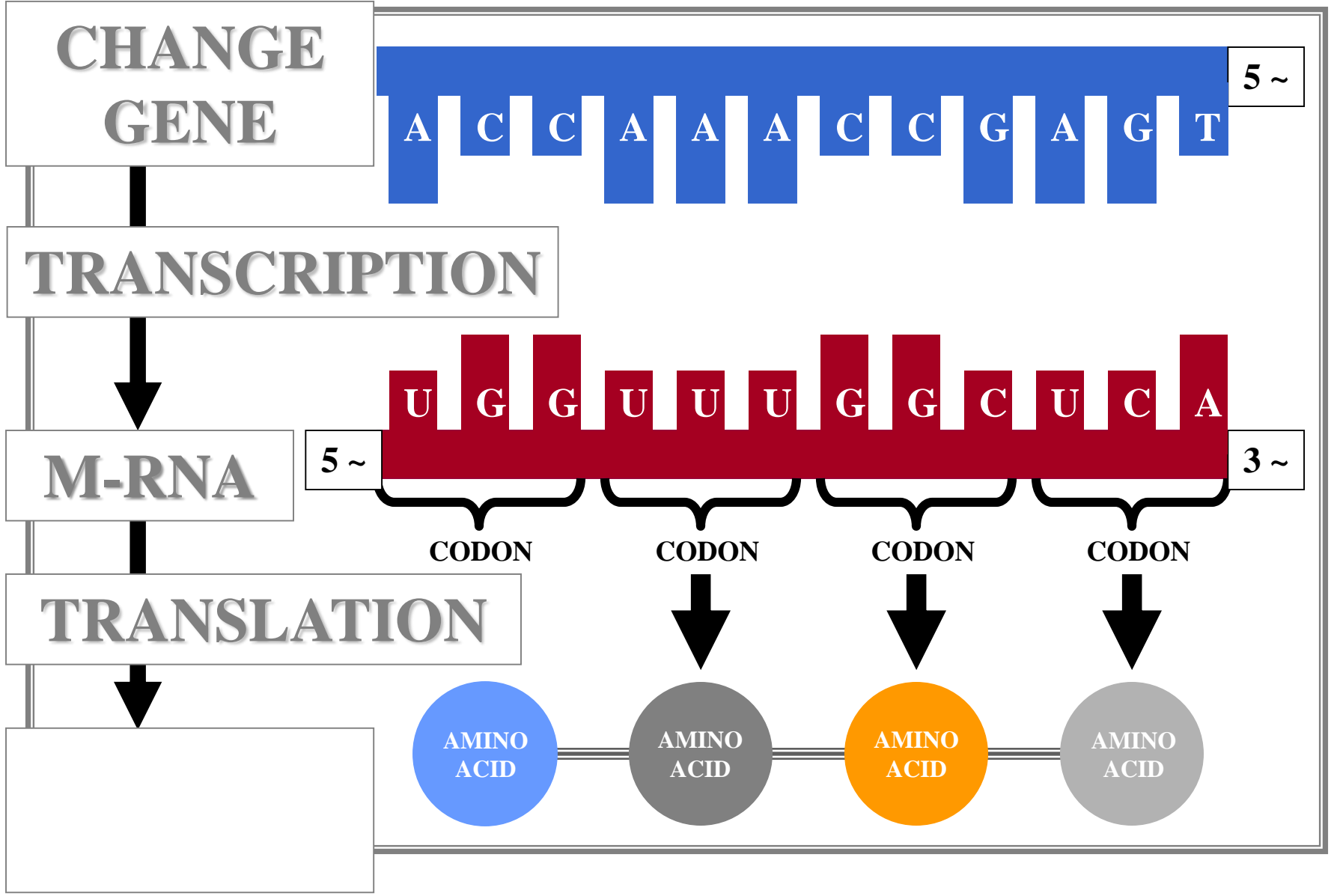


PROTEIN SYNTHESIS



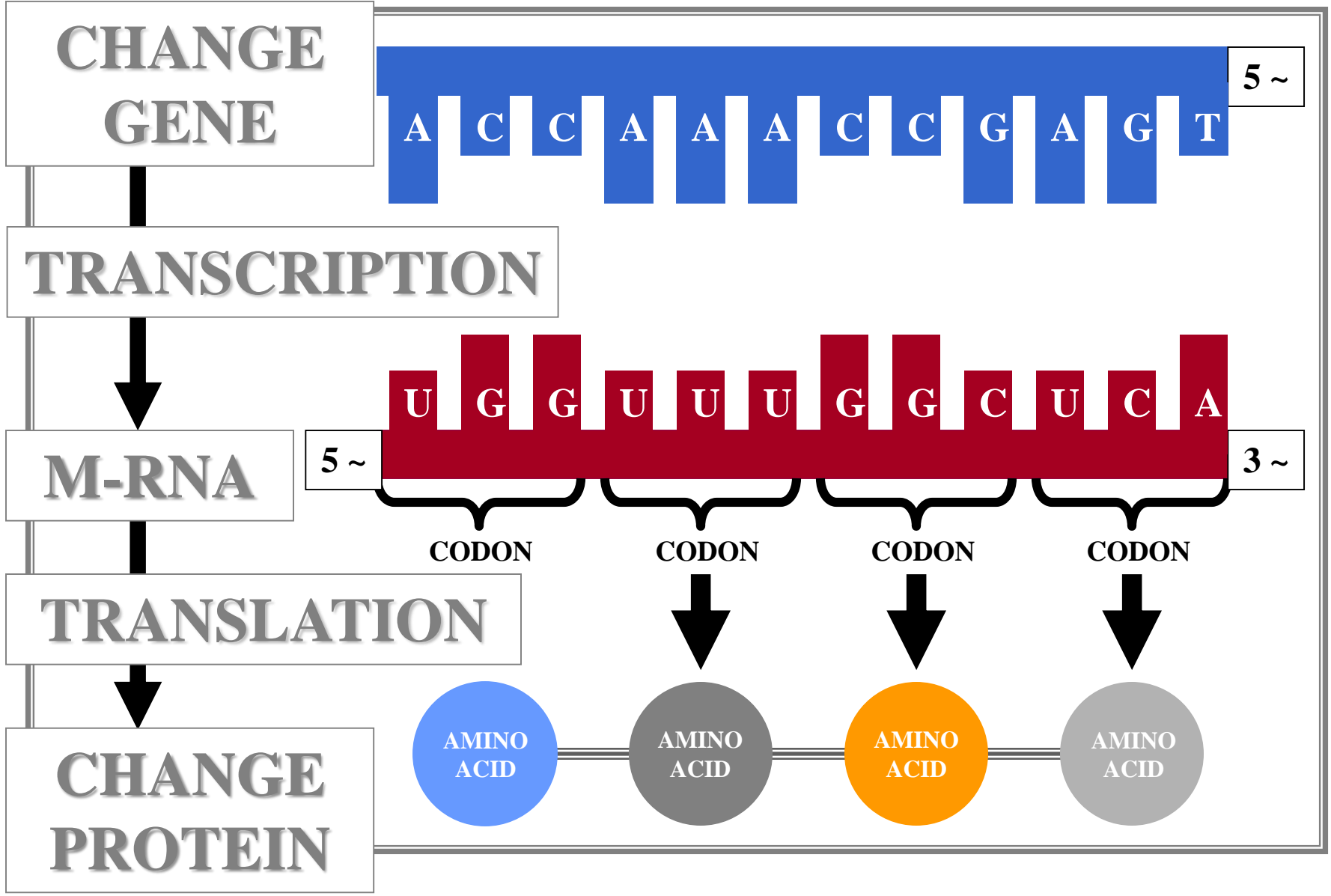


PROTEIN SYNTHESIS



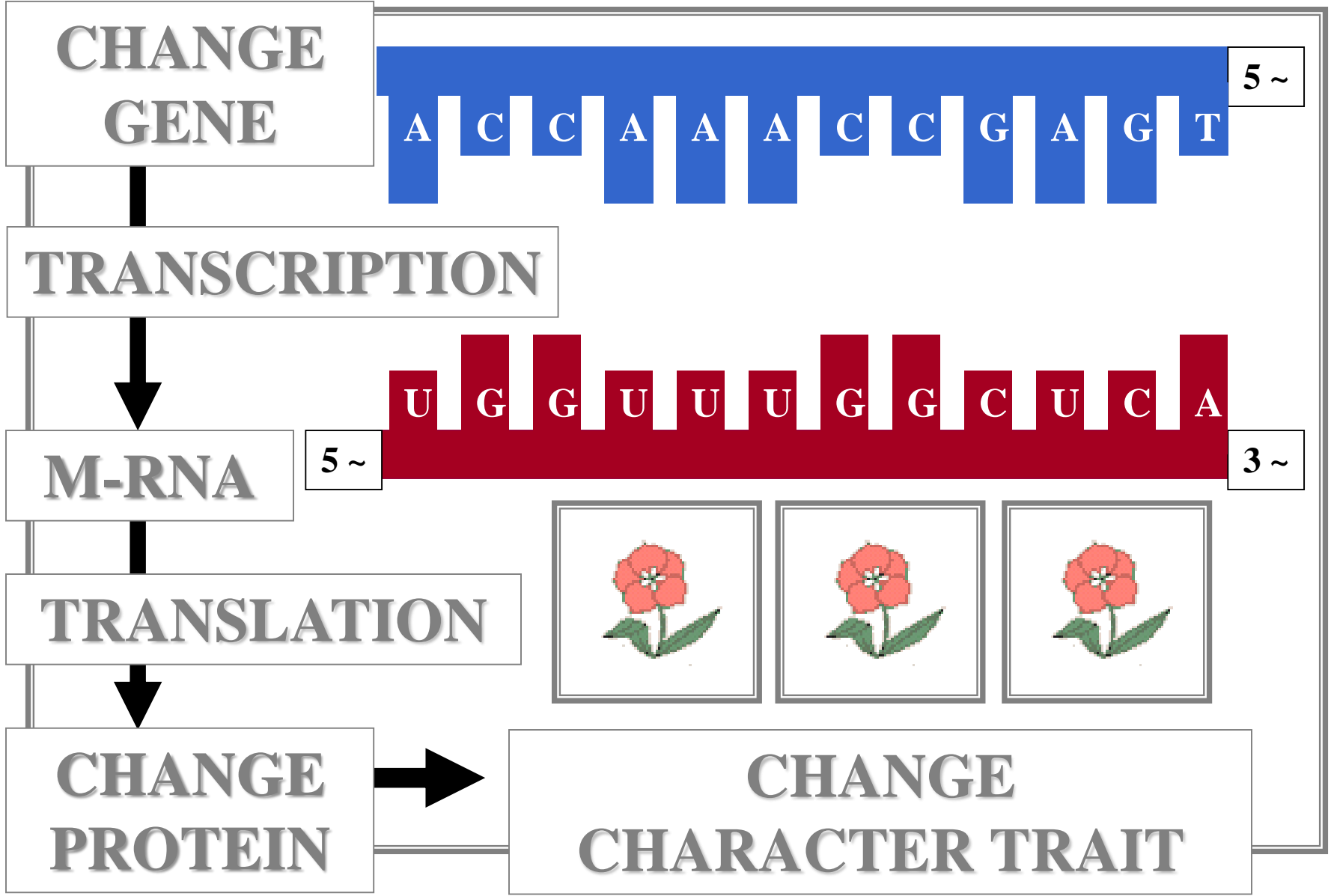


PROTEIN SYNTHESIS



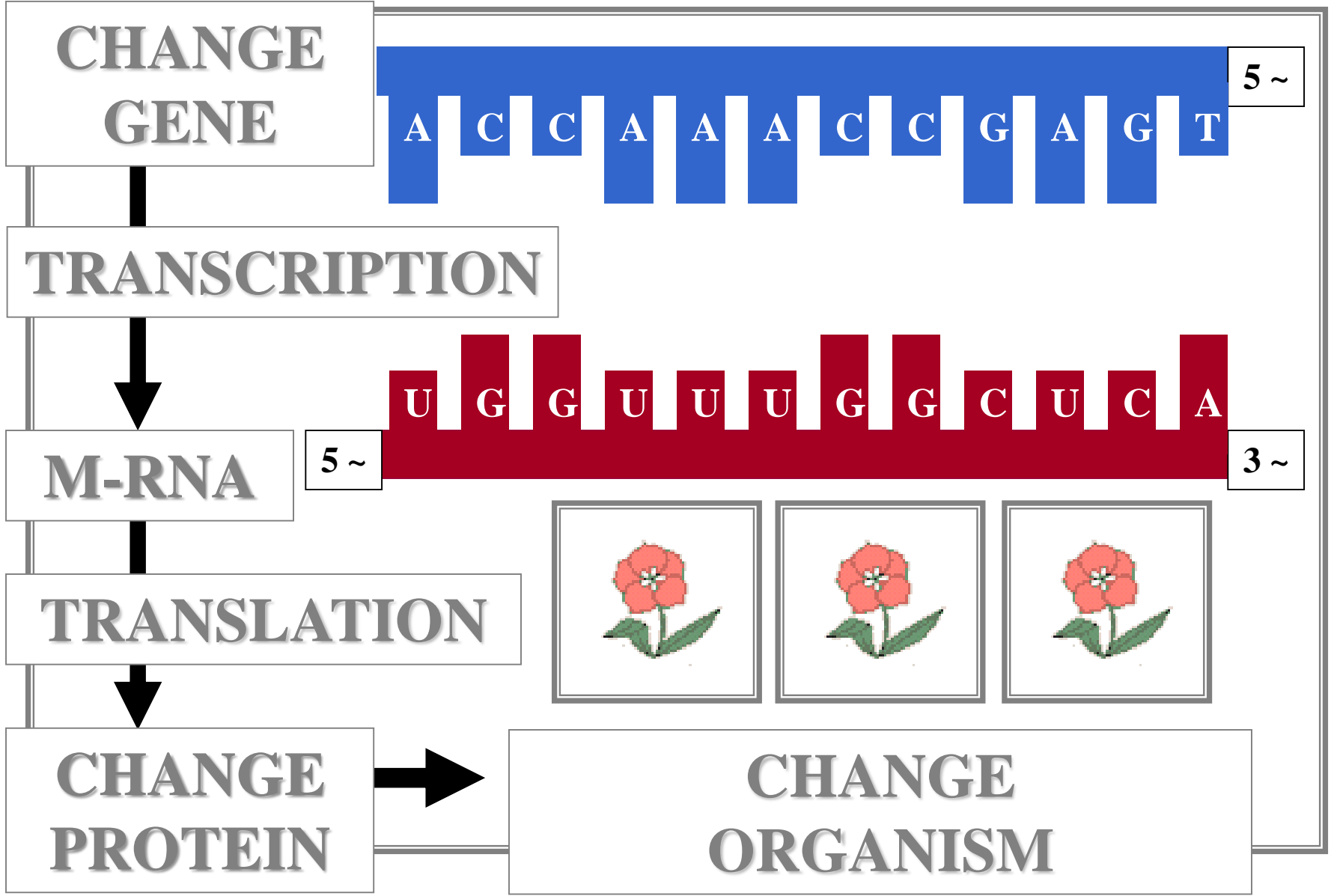


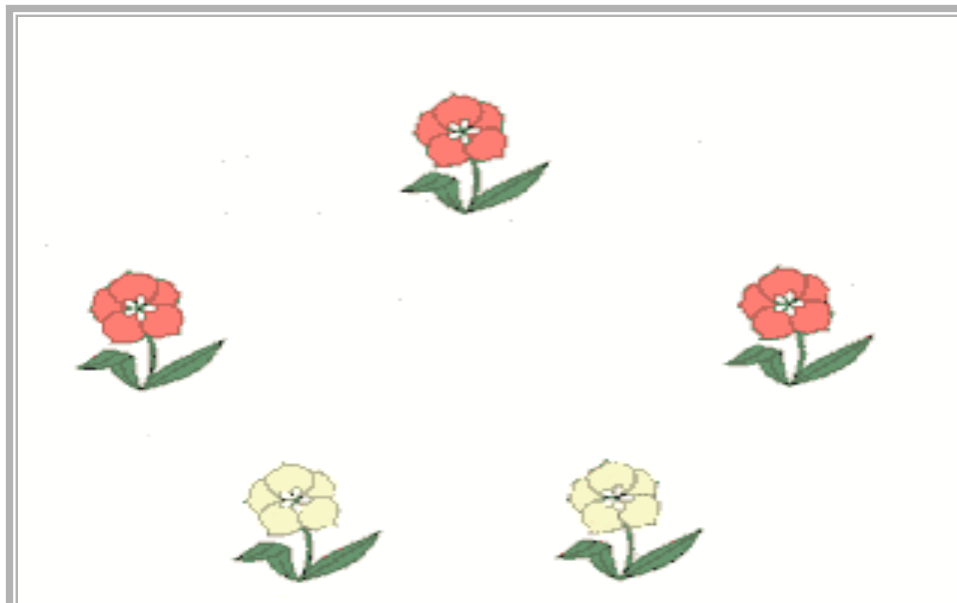
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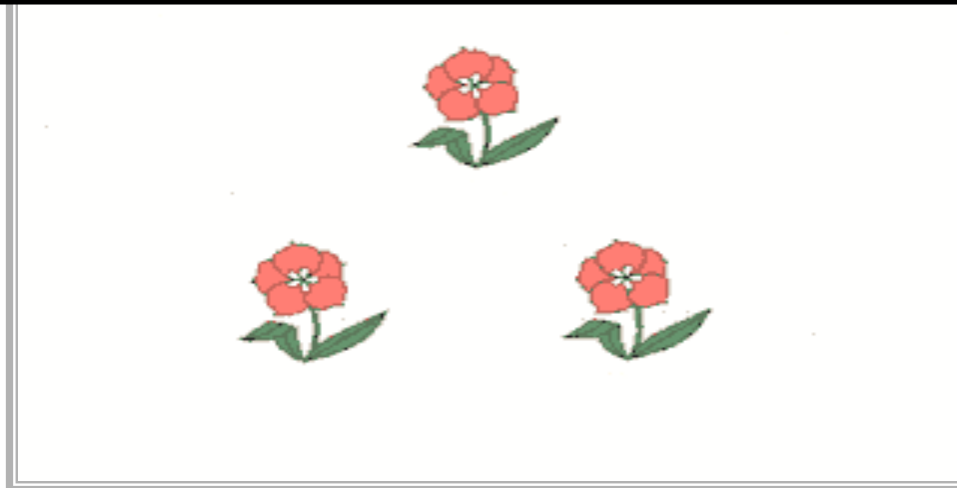


PROTEIN SYNTHESIS

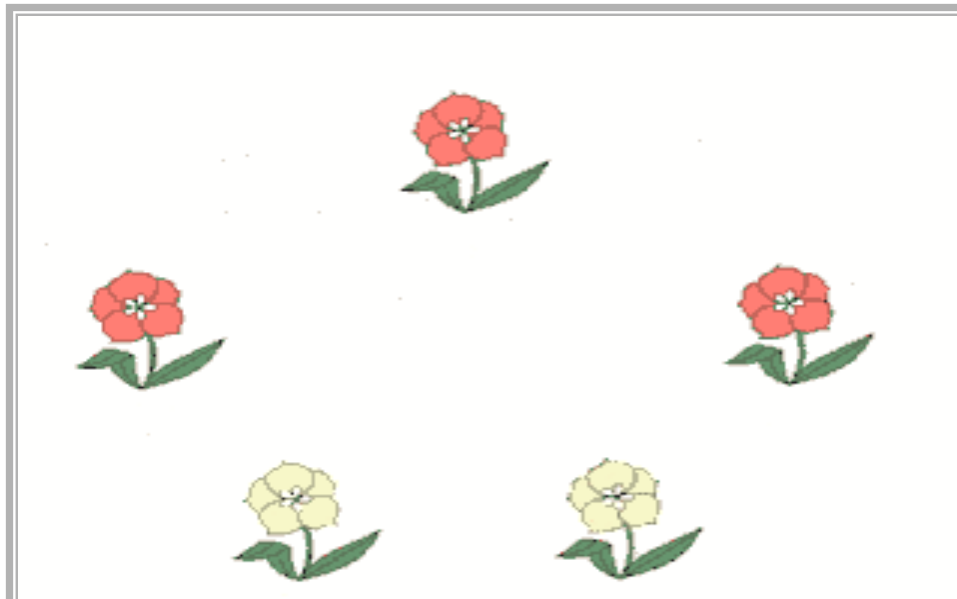




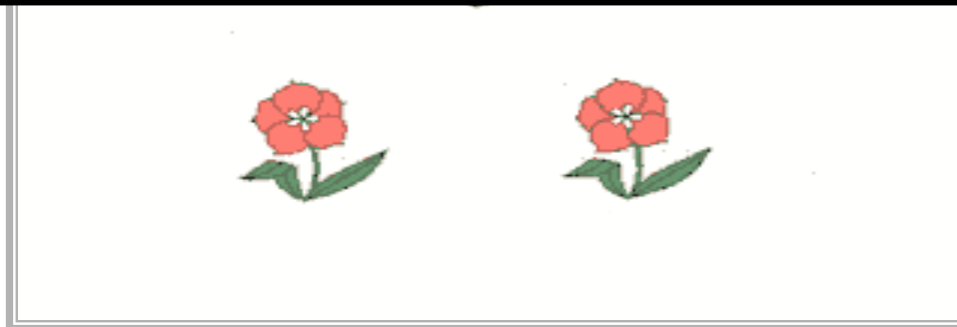
CHANGE ORGANISM



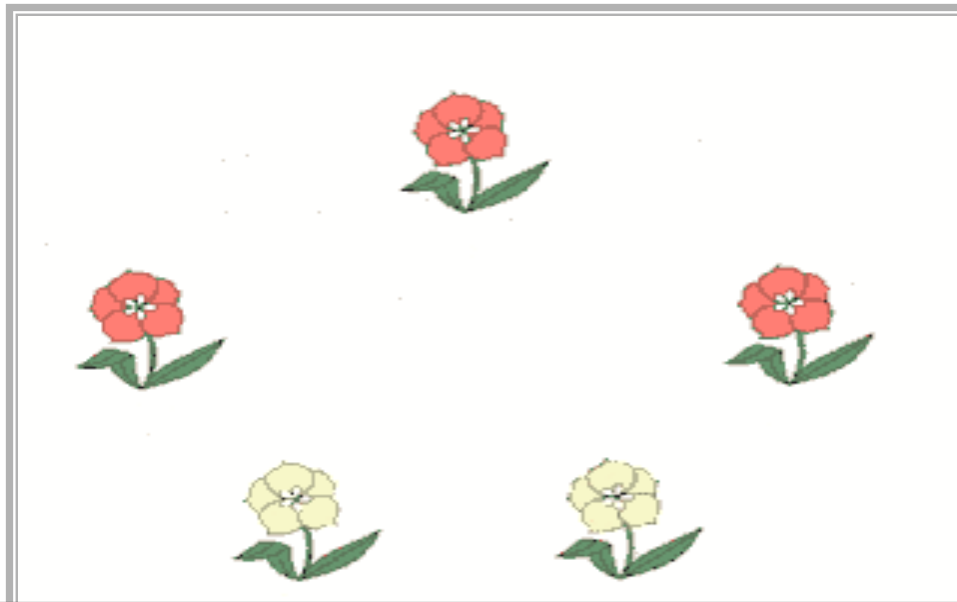
MUTATION: WHITE FLOWERED PLANTS



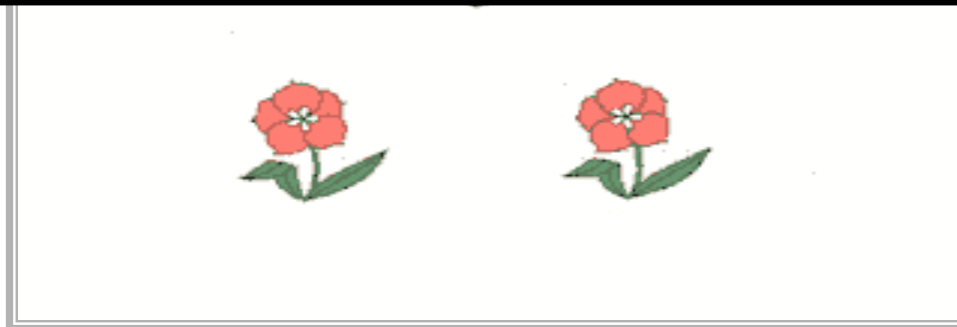
MUTATION UNDERGOES SURVIVAL TEST



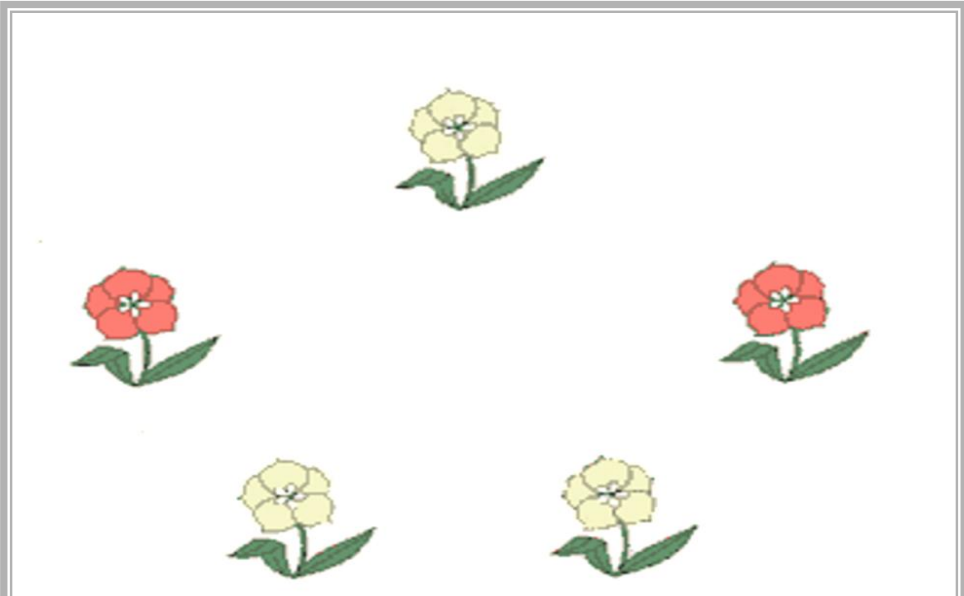
MUTATION: WHITE FLOWERED PLANTS



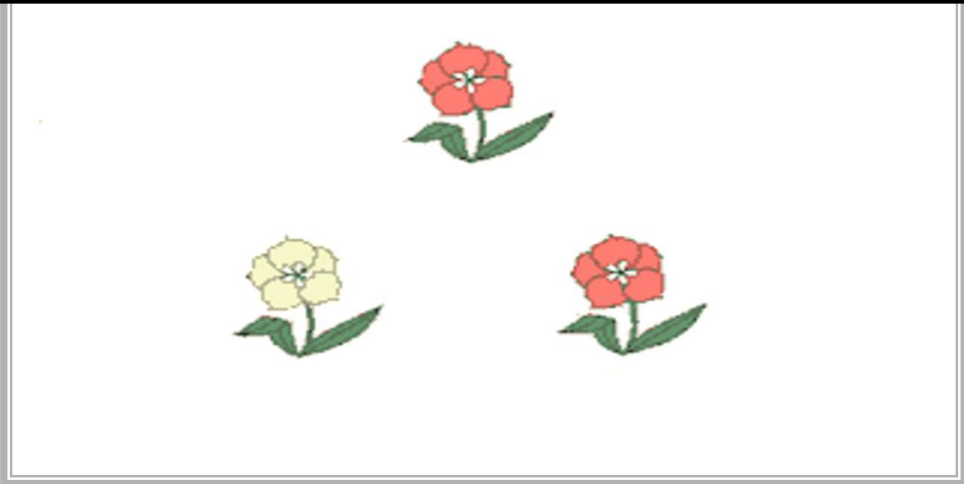
MUTATION UNDERGOES NATURAL SELECTION



MUTATION: WHITE FLOWERED PLANTS



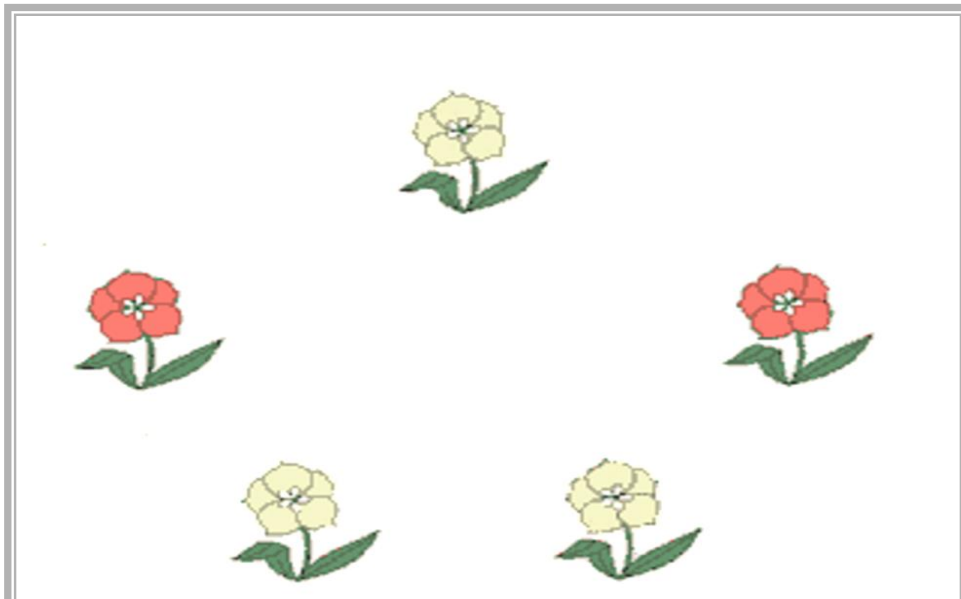
SPECIATION



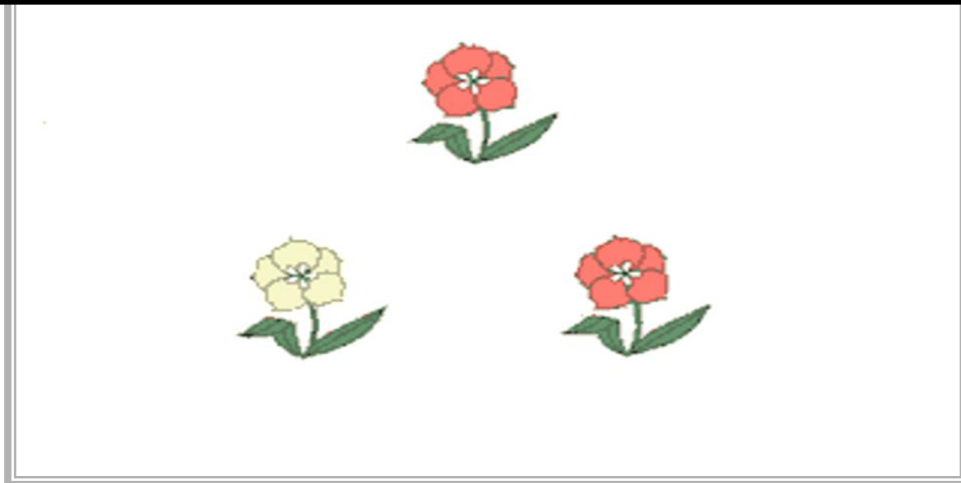
DAUGHTER SPECIES



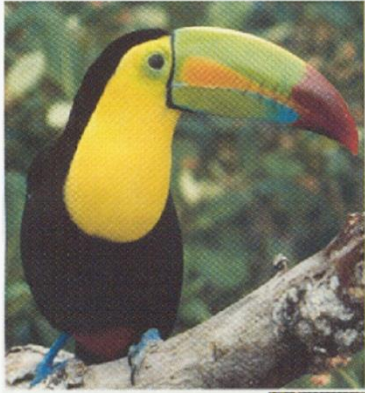
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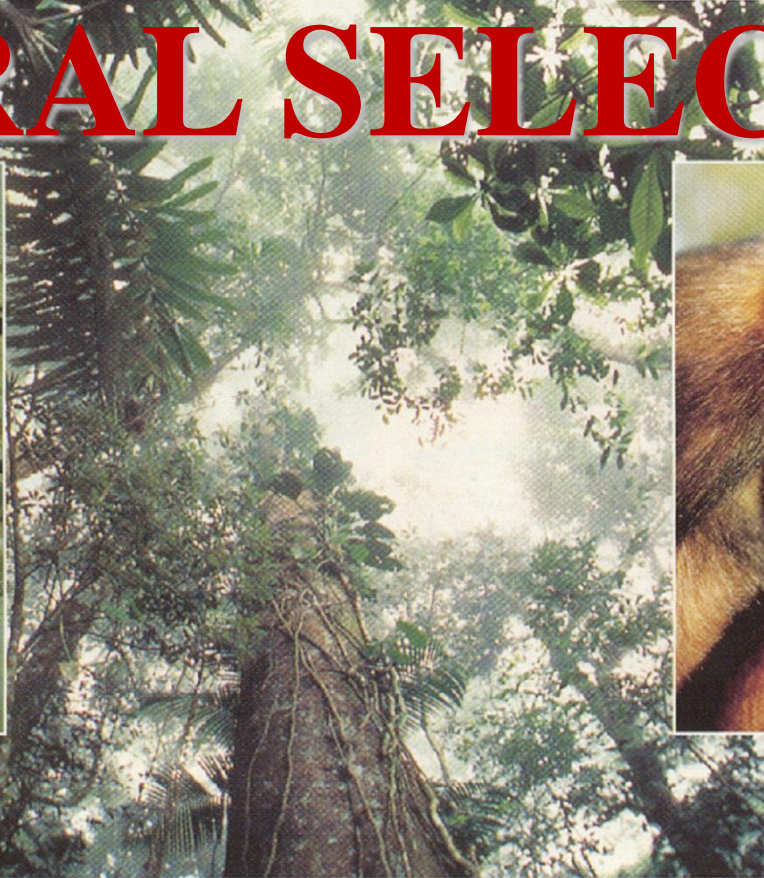
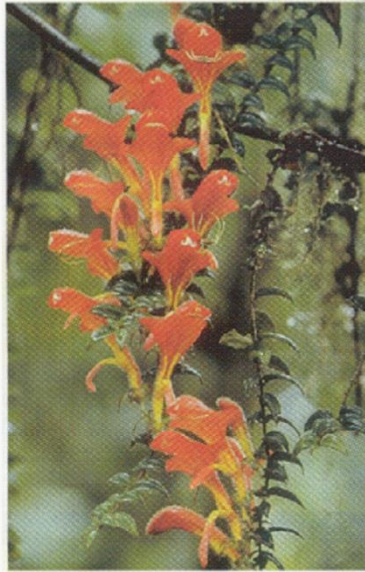
INCREASE BIO-DIVERSITY

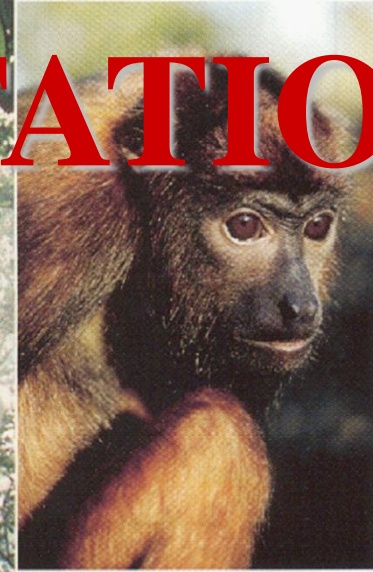
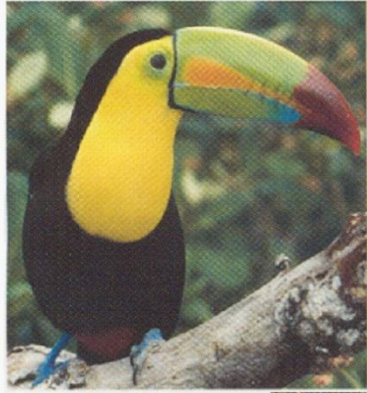


DAUGHTER SPECIES

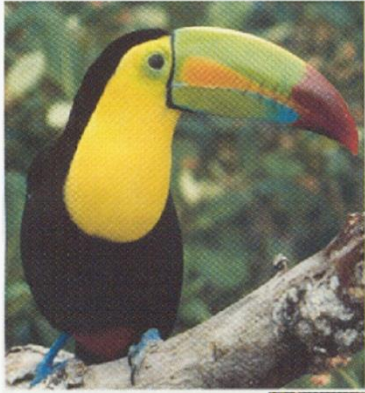


NATURAL SELECTION

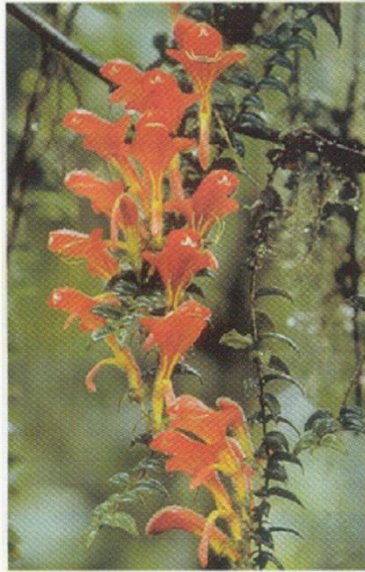


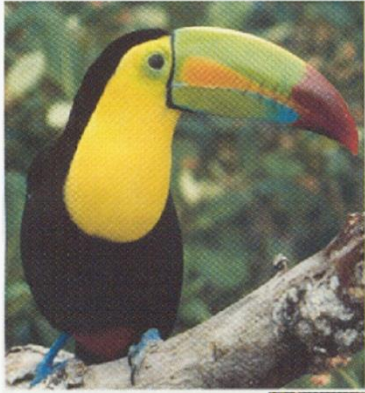


NATURAL SELECTION REQUIRES MUTATIONS



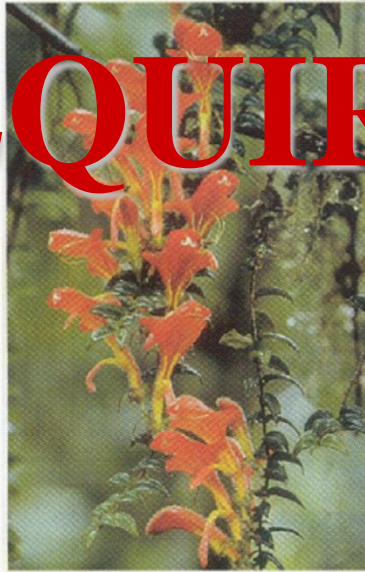
EVOLUTION

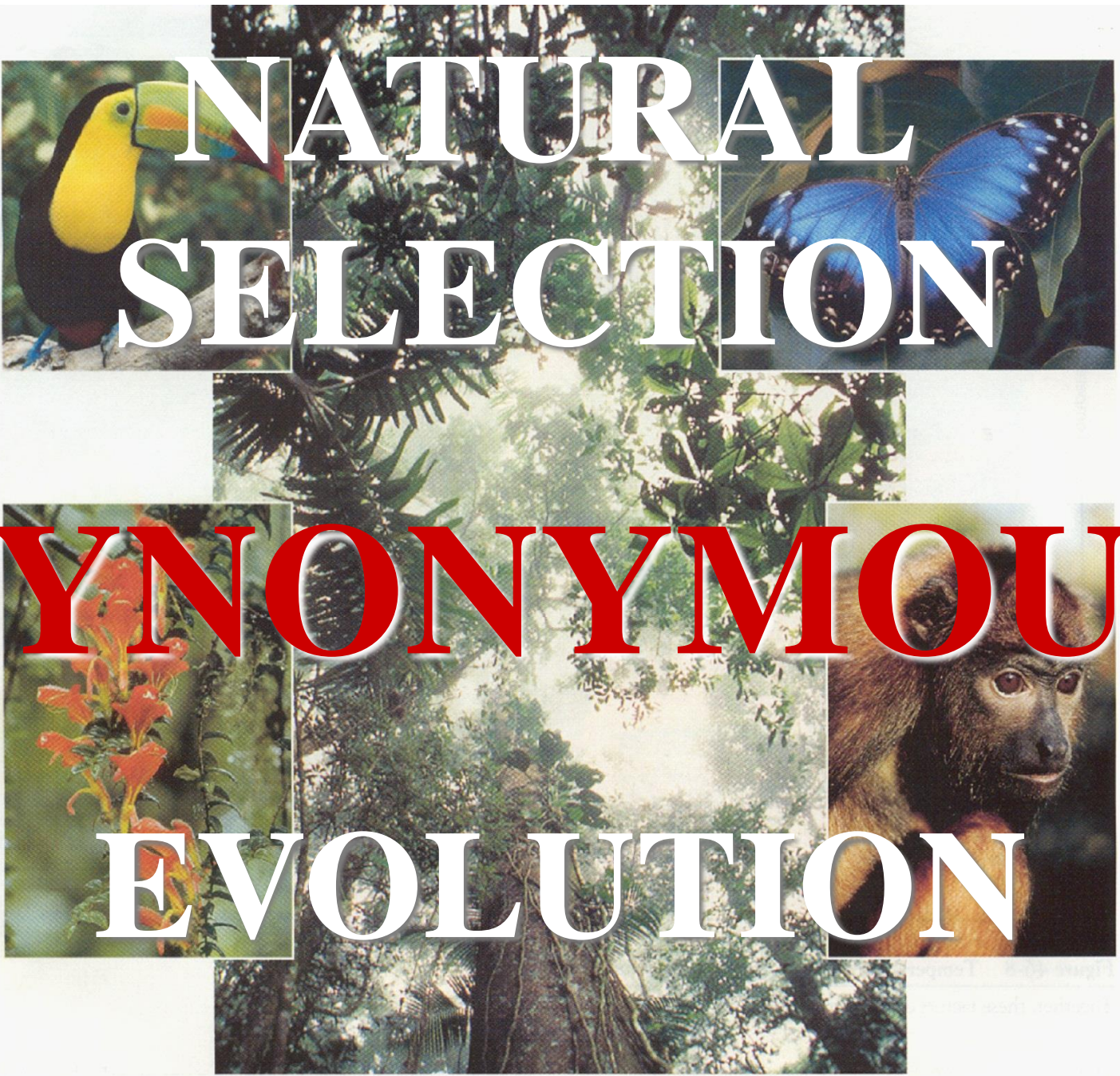




EVOLUTION

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

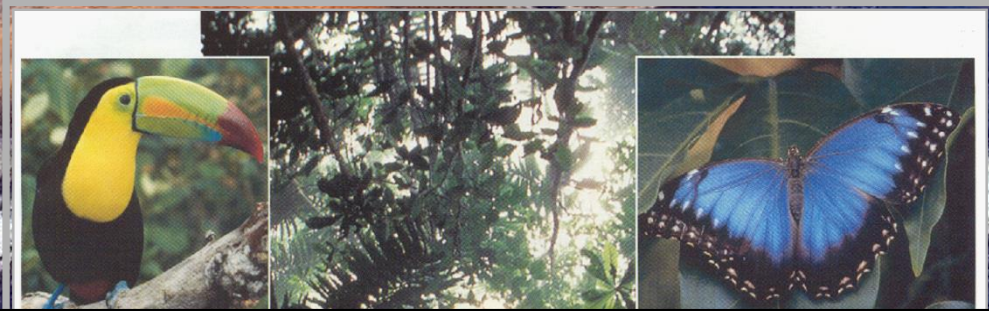


BIO-DIVERSITY

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

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MICROBIOLOGY

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ZOOLOGY

BOTANY

BIOLOGY DISCIPLINES

MICROBIOLOGY

MICROBIOLOGY



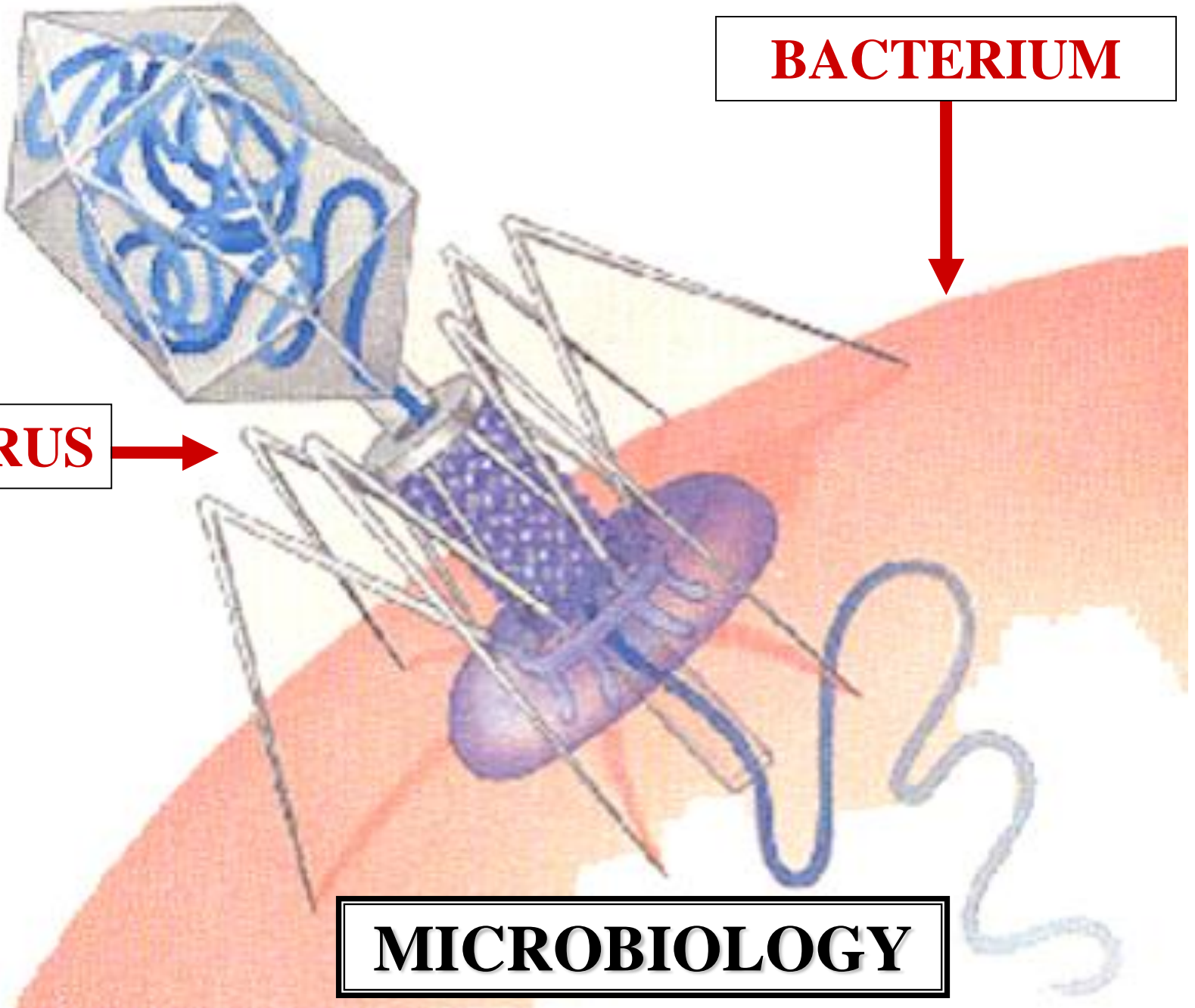
STUDY

BACTERIA & VIRUSES

MICROBIOLOGY

BACTERIUM

VIRUS



MICROBIOLOGY