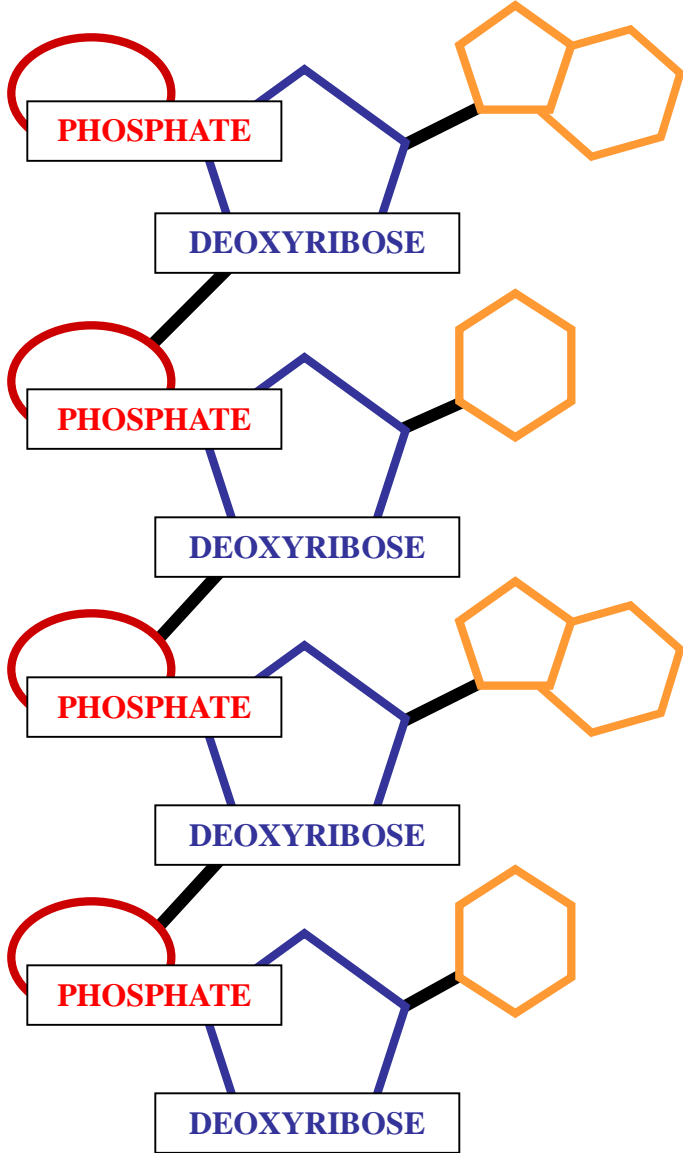
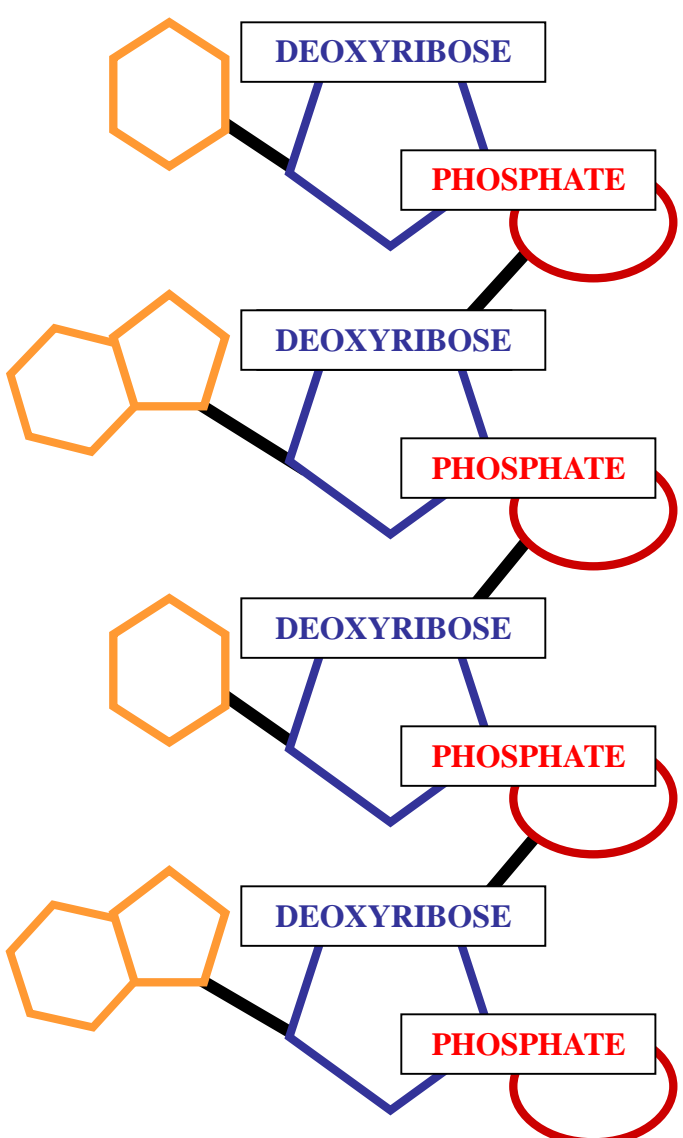


DNA DOUBLE HELIX MODEL

PARALLEL POLYNUCLEOTIDE CHAIN



FIRST
POLYNUCLEOTIDE
CHAIN

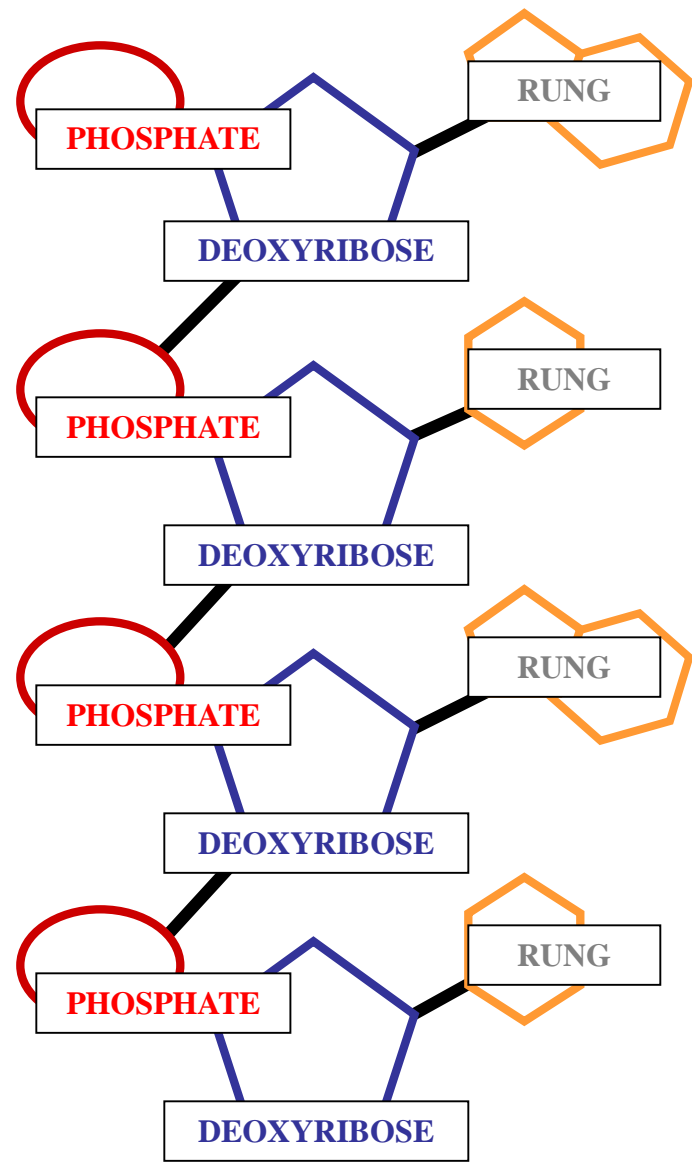


SECOND
POLYNUCLEOTIDE
CHAIN

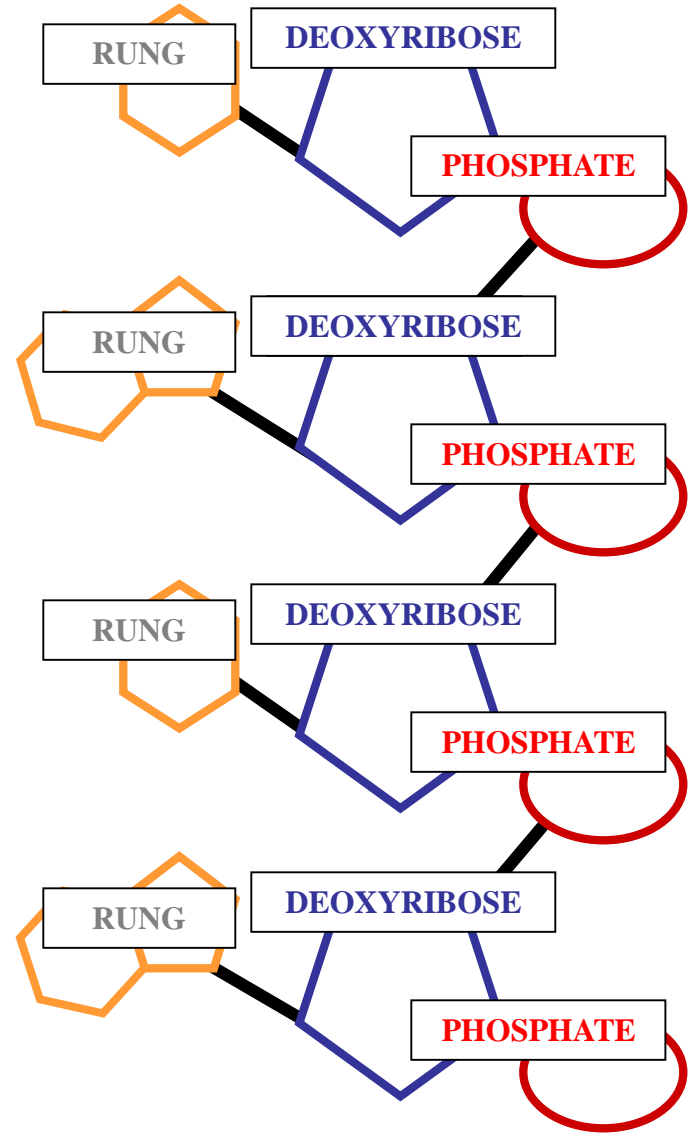
PARALLEL POLYNUCLEOTIDE CHAIN

DNA DOUBLE HELIX MODEL

PARALLEL POLYNUCLEOTIDE CHAIN



FIRST
POLYNUCLEOTIDE
CHAIN

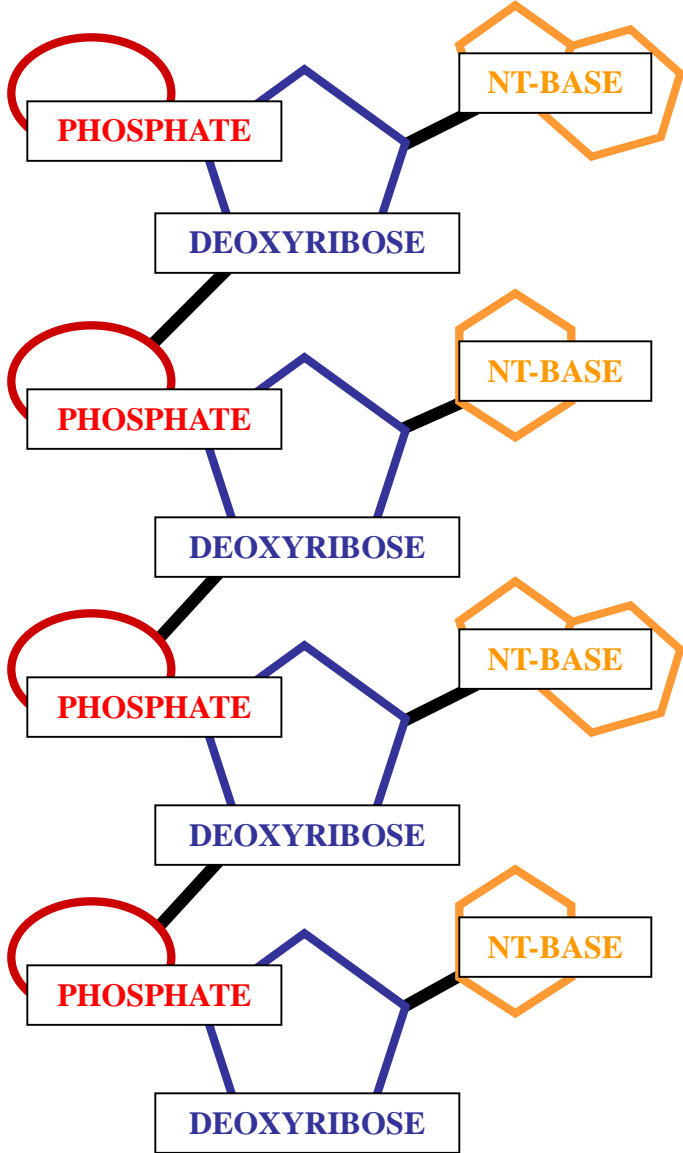


SECOND
POLYNUCLEOTIDE
CHAIN

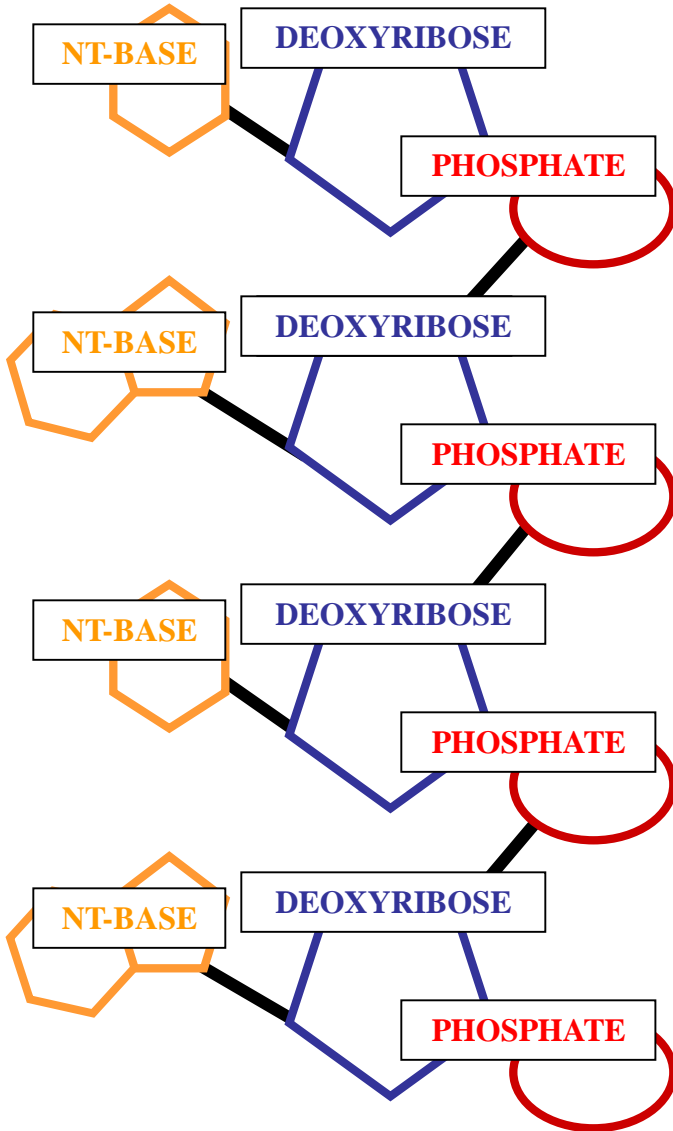
PARALLEL POLYNUCLEOTIDE CHAIN

DNA DOUBLE HELIX MODEL

PARALLEL POLYNUCLEOTIDE CHAIN



FIRST
POLYNUCLEOTIDE
CHAIN

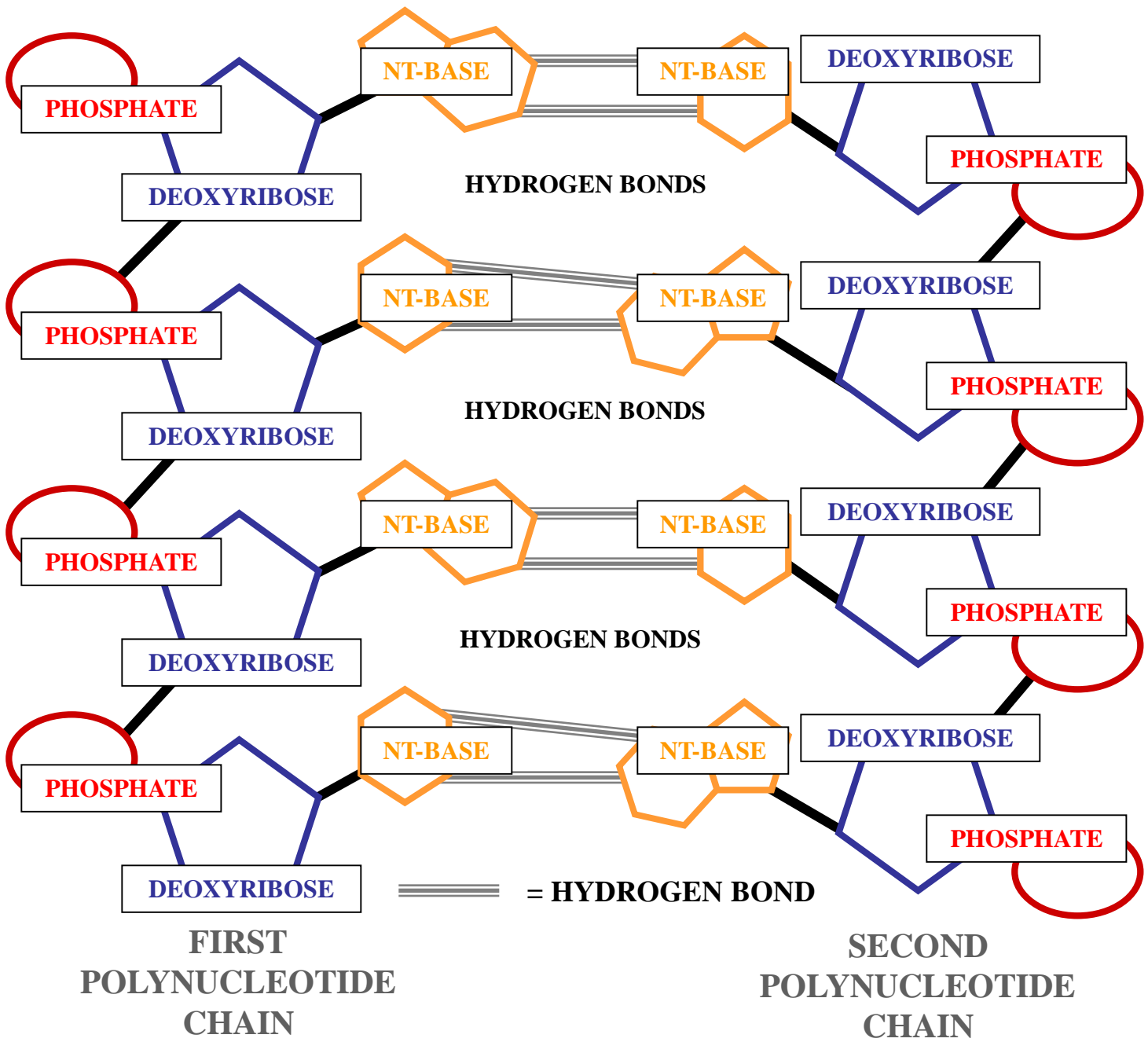


SECOND
POLYNUCLEOTIDE
CHAIN

PARALLEL POLYNUCLEOTIDE CHAIN

DNA DOUBLE HELIX MODEL

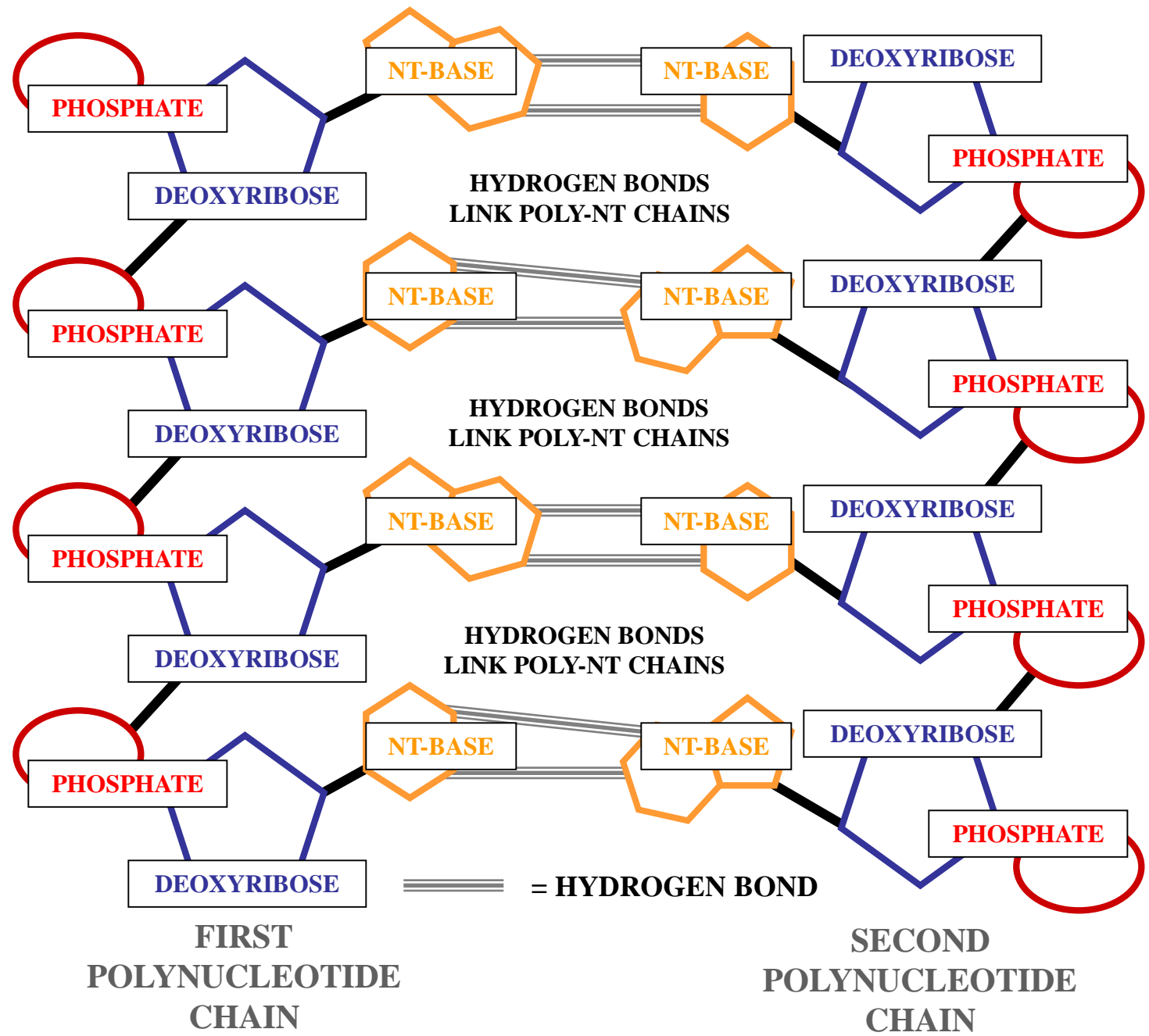
H-BONDS FORM BETWEEN NT-BASES
PARALLEL POLYNUCLEOTIDE CHAIN



H-BONDS FORM BETWEEN NT-BASES
PARALLEL POLYNUCLEOTIDE CHAIN

DNA DOUBLE HELIX MODEL

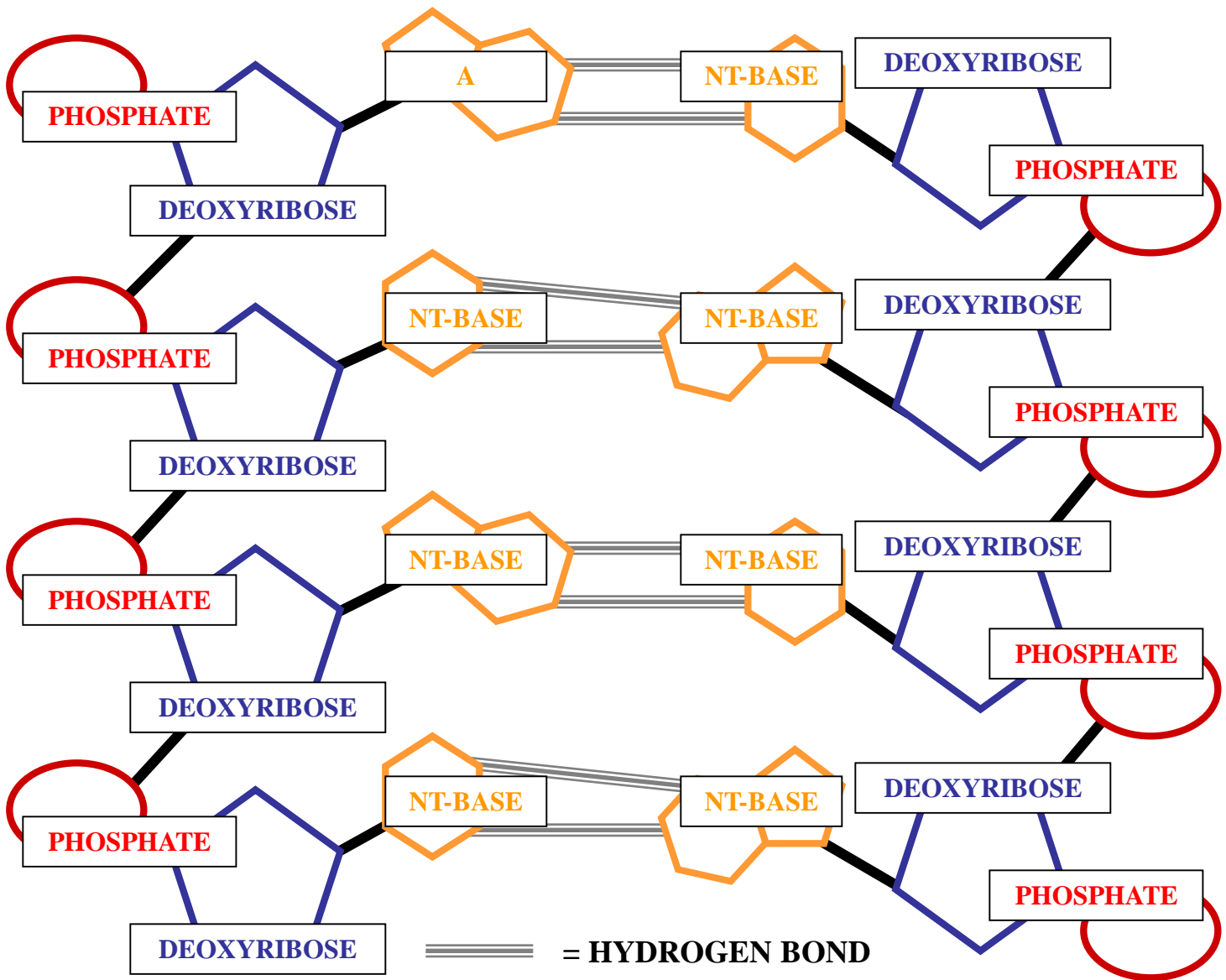
H-BONDS LINK POLY-NT CHAINS
PARALLEL POLYNUCLEOTIDE CHAIN



H-BONDS LINK POLY-NT CHAINS
PARALLEL POLYNUCLEOTIDE CHAIN

DNA DOUBLE HELIX MODEL

NUCLEOTIDE BASE PAIRS
PARALLEL POLYNUCLEOTIDE CHAIN



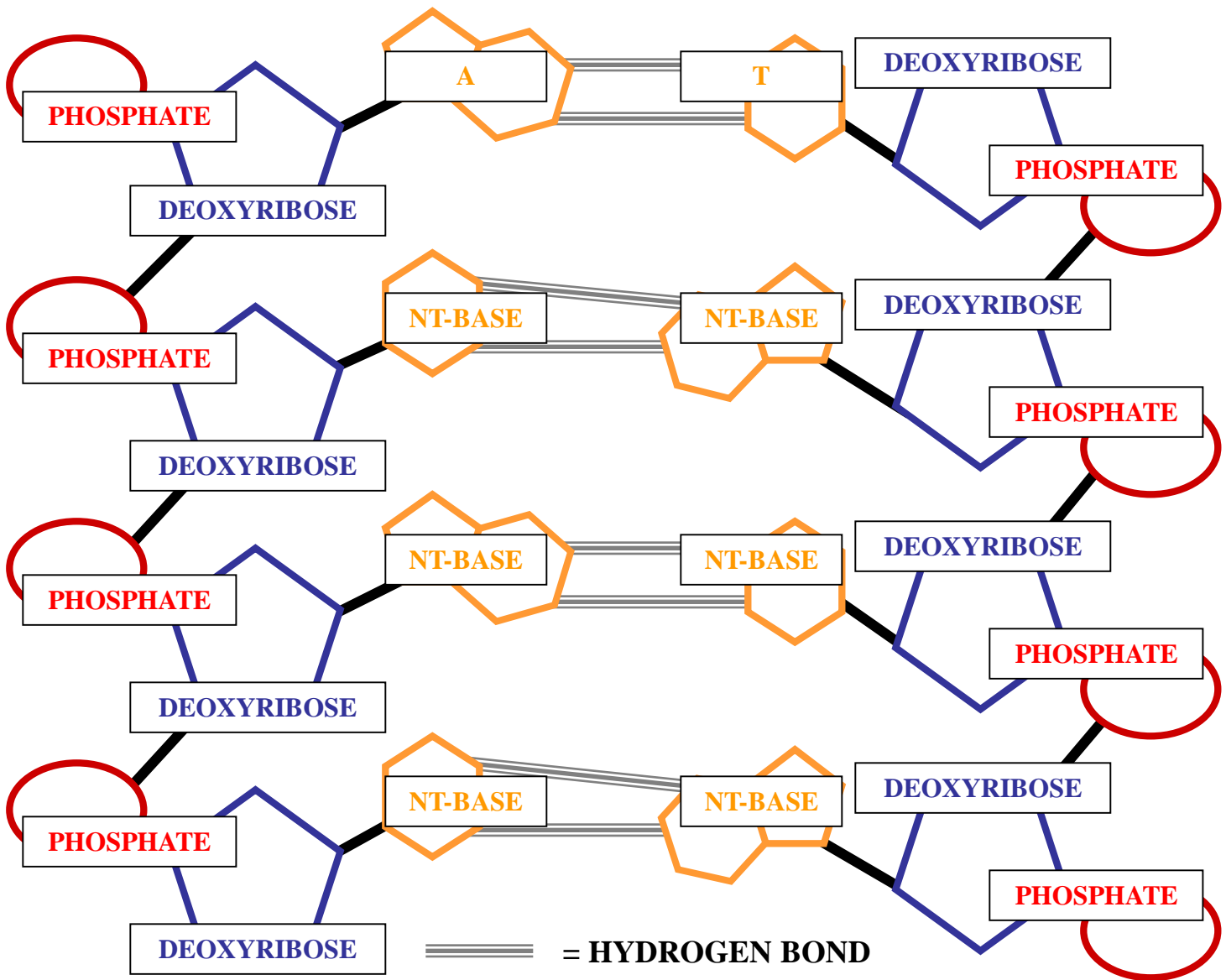
FIRST
POLYNUCLEOTIDE
CHAIN

SECOND
POLYNUCLEOTIDE
CHAIN

NUCLEOTIDE BASE PAIRS
PARALLEL POLYNUCLEOTIDE CHAIN

DNA DOUBLE HELIX MODEL

NUCLEOTIDE BASE PAIRS
PARALLEL POLYNUCLEOTIDE CHAIN



FIRST
POLYNUCLEOTIDE
CHAIN

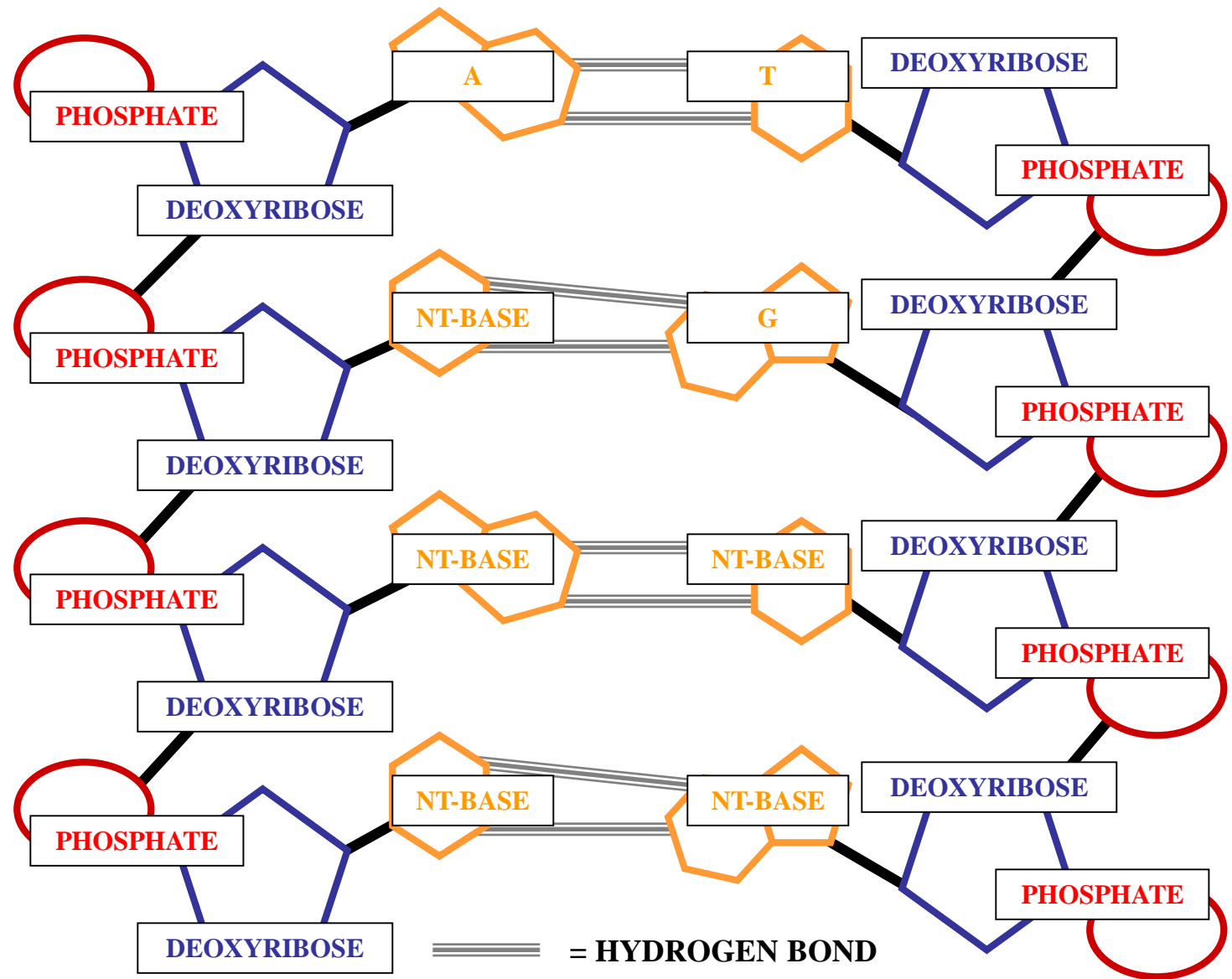
SECOND
POLYNUCLEOTIDE
CHAIN

== = HYDROGEN BOND

NUCLEOTIDE BASE PAIRS
PARALLEL POLYNUCLEOTIDE CHAIN

DNA DOUBLE HELIX MODEL

NUCLEOTIDE BASE PAIRS
PARALLEL POLYNUCLEOTIDE CHAIN



FIRST
POLYNUCLEOTIDE
CHAIN

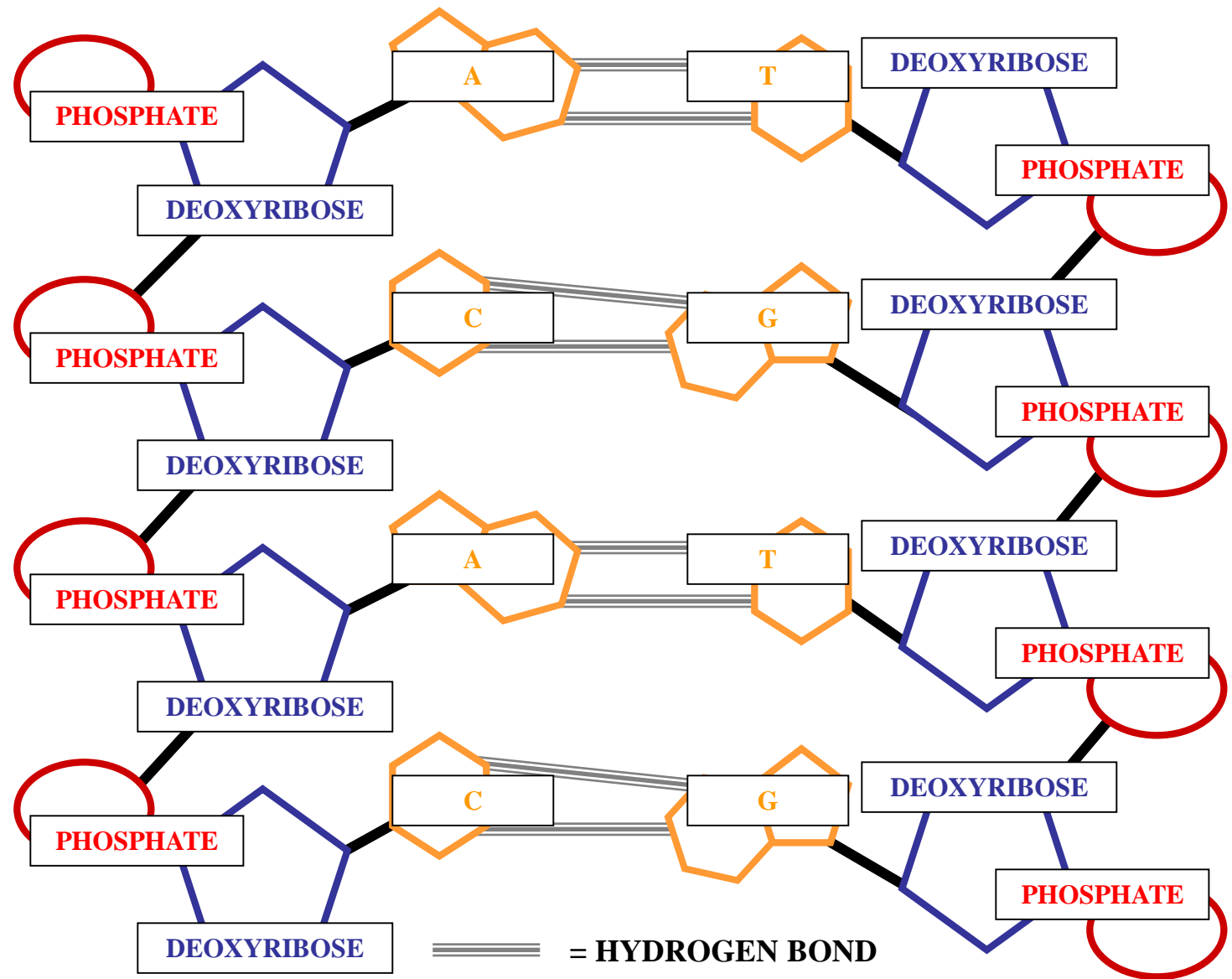
SECOND
POLYNUCLEOTIDE
CHAIN

NUCLEOTIDE BASE PAIRS
PARALLEL POLYNUCLEOTIDE CHAIN

== = HYDROGEN BOND

DNA DOUBLE HELIX MODEL

NUCLEOTIDE BASE PAIRS
PARALLEL POLYNUCLEOTIDE CHAIN



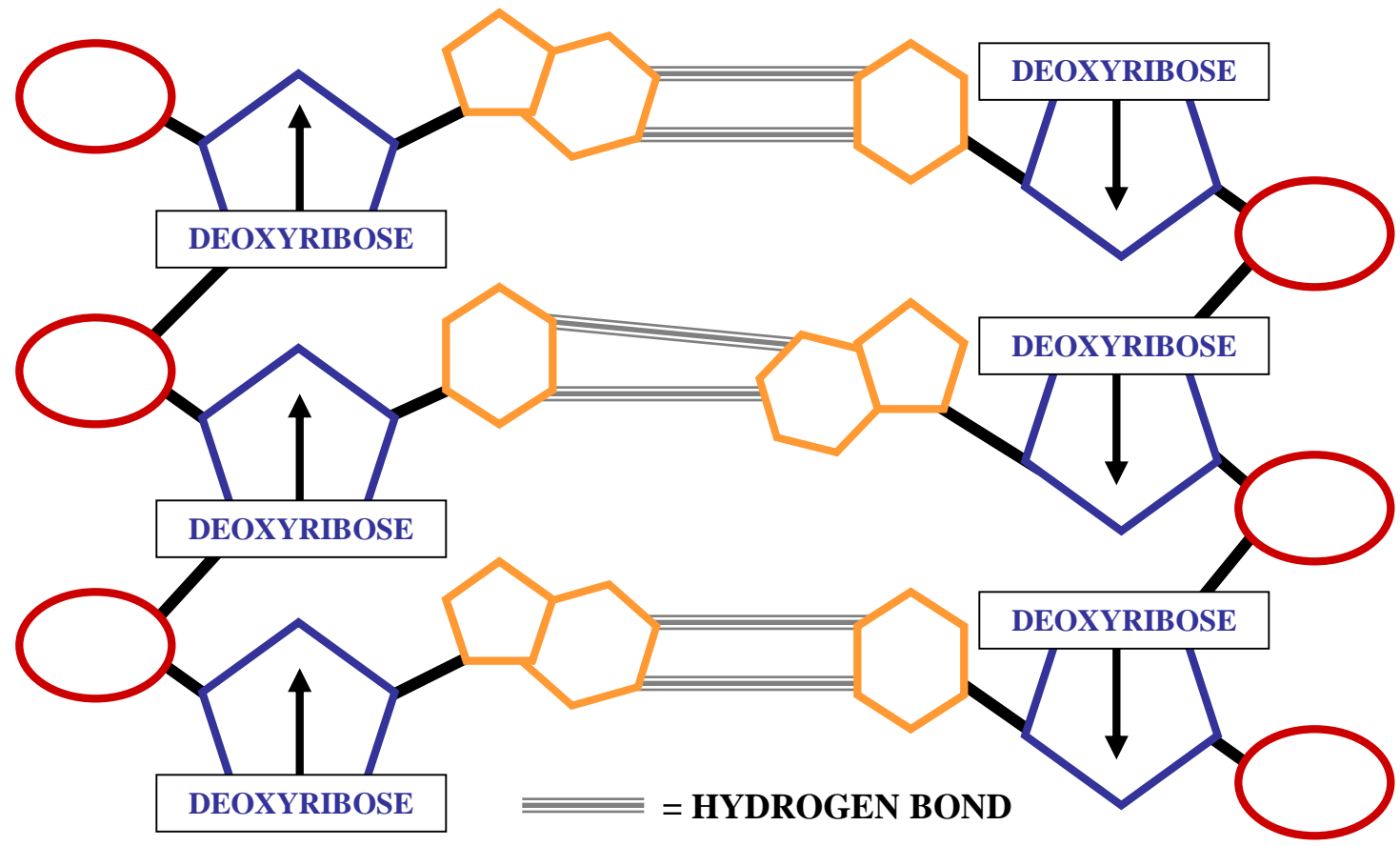
FIRST
POLYNUCLEOTIDE
CHAIN

SECOND
POLYNUCLEOTIDE
CHAIN

NUCLEOTIDE BASE PAIRS
PARALLEL POLYNUCLEOTIDE CHAIN



DNA DOUBLE HELIX MODEL

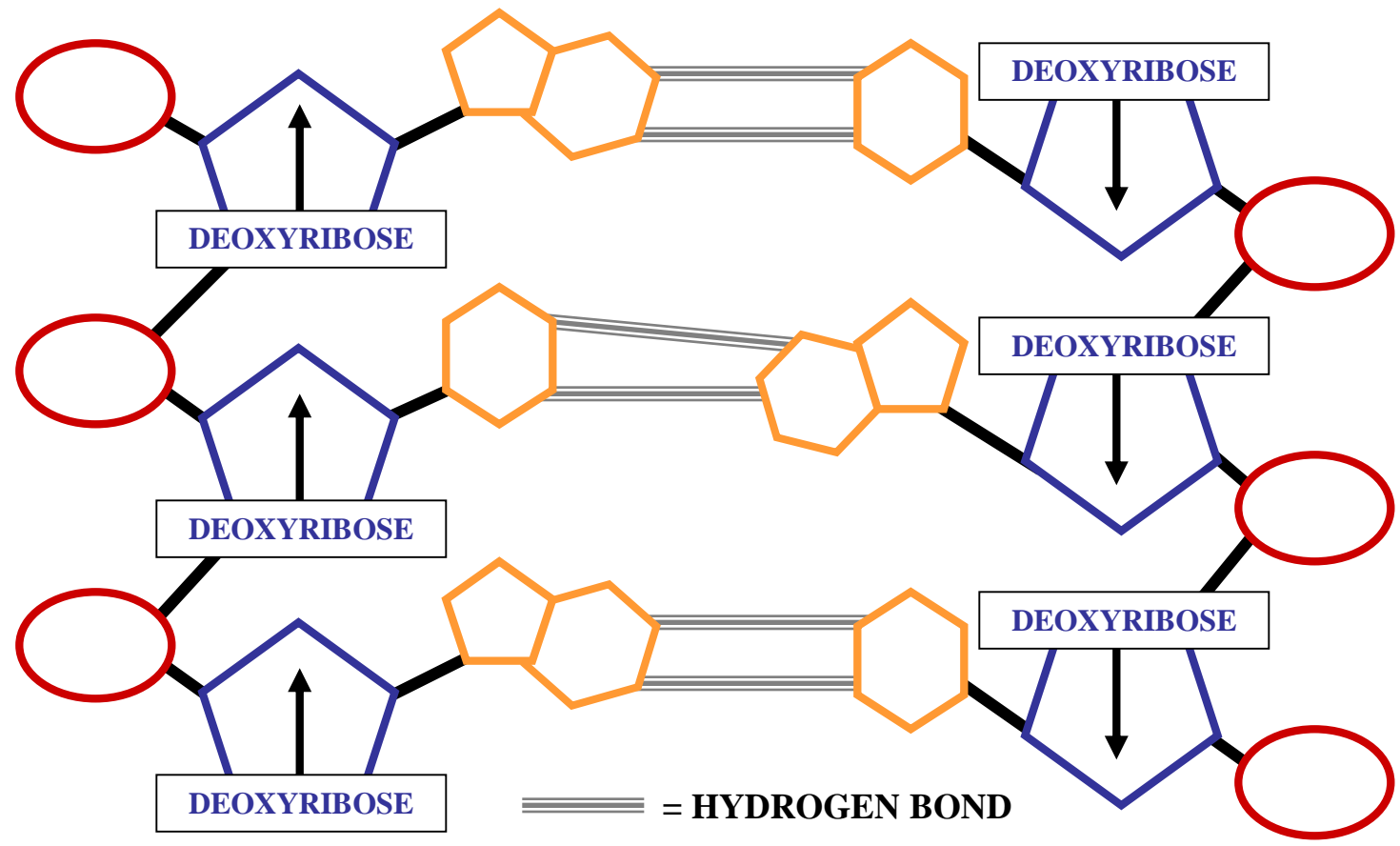


**THE DEOXYRIBOSE SUGARS
ARE POINTED
OPPOSITE ALIGNMENTS**

DNA DOUBLE HELIX MODEL



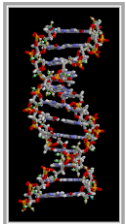
ANTIPARALLEL
POLYNUCLEOTIDE CHAIN



ANTIPARALLEL
POLYNUCLEOTIDE CHAIN

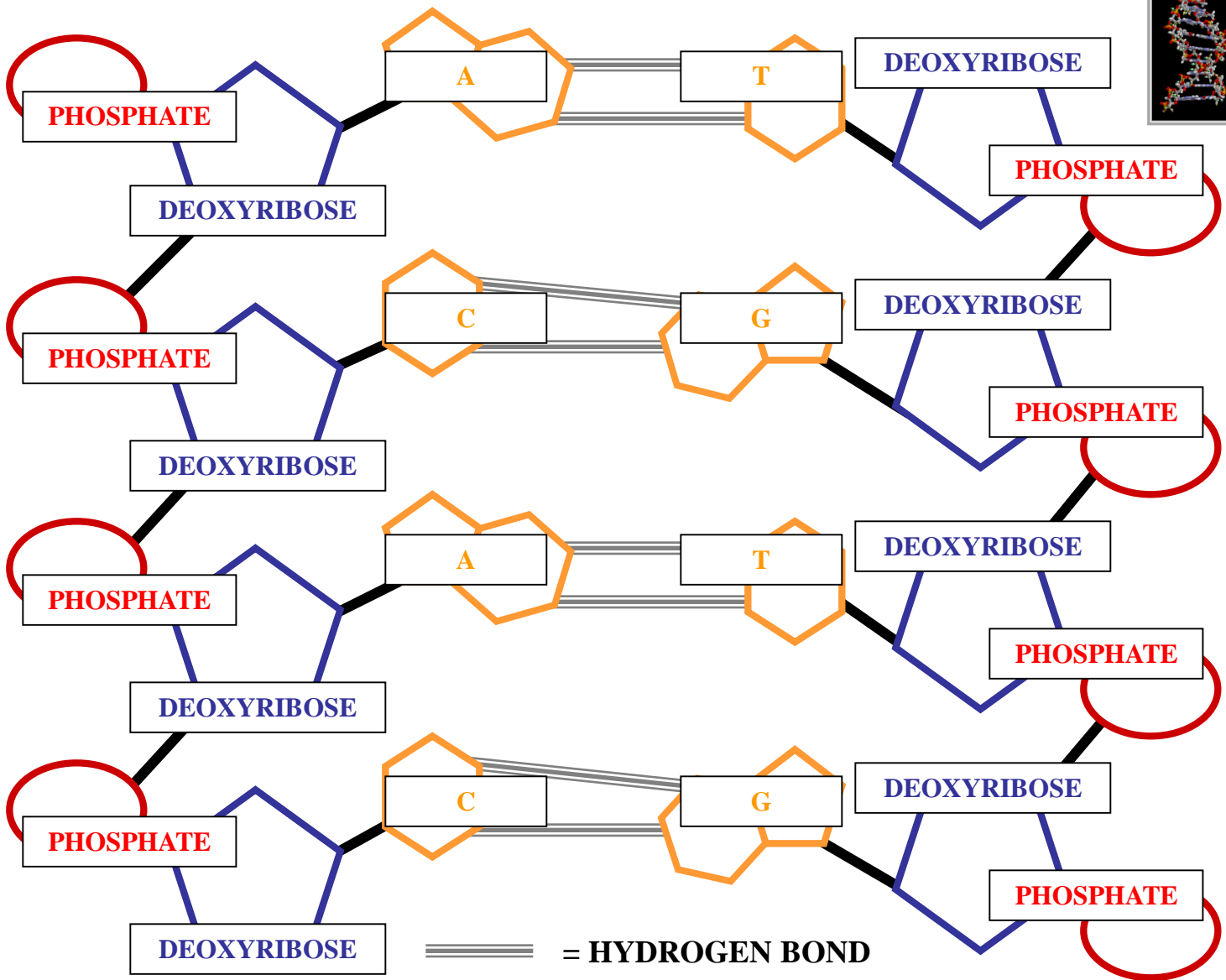
**POLYNUCLEOTIDE CHAINS
ANTIPARALLEL**

DNA DOUBLE HELIX MODEL



ANTIPARALLEL
POLYNUCLEOTIDE CHAIN

ANTIPARALLEL
POLYNUCLEOTIDE CHAIN



FIRST
POLYNUCLEOTIDE
CHAIN

SECOND
POLYNUCLEOTIDE
CHAIN

== = HYDROGEN BOND



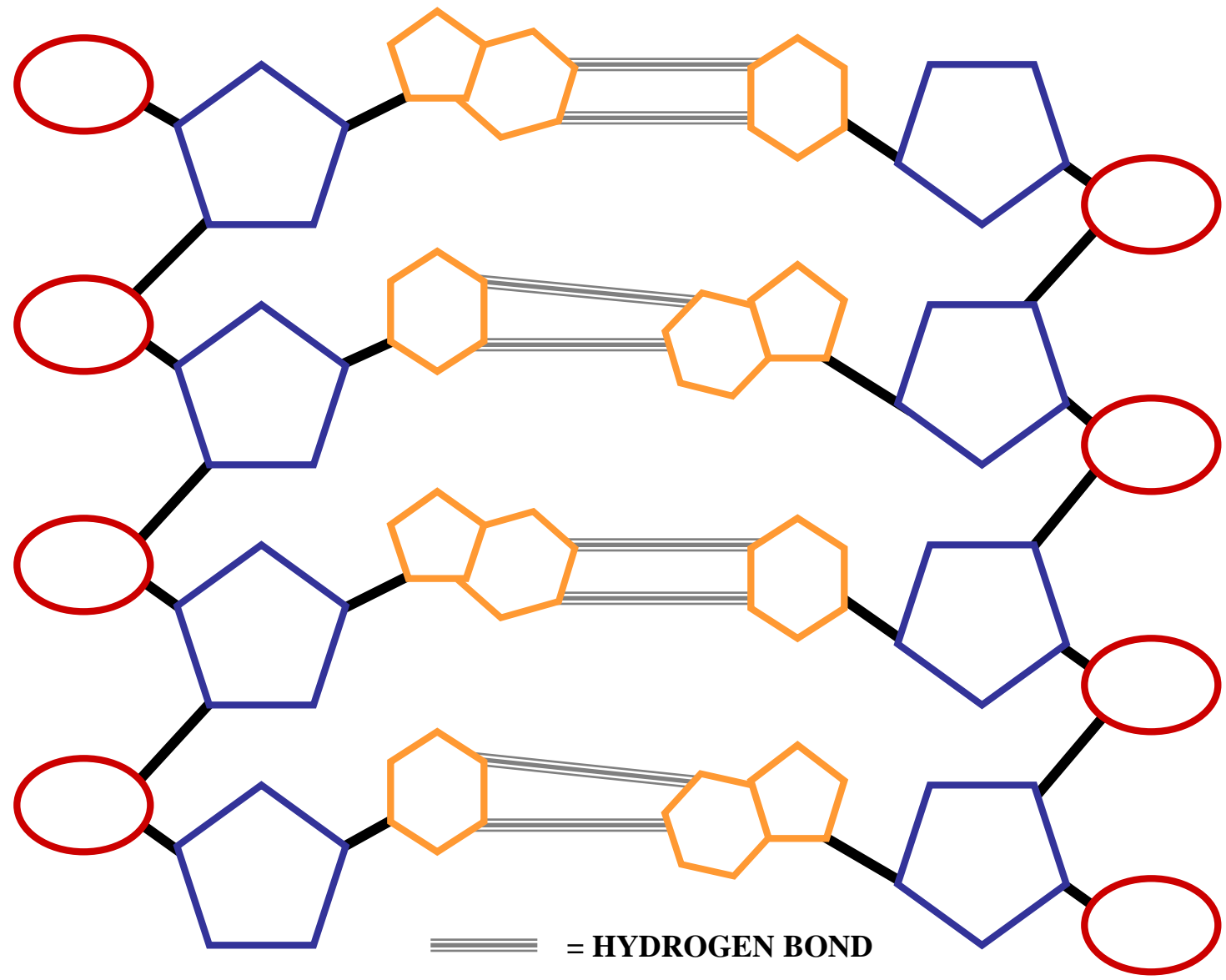
QUESTION

**WHAT DIFFERS
BETWEEN
SPECIES DNA?**

QUESTION

DNA DOUBLE HELIX MODEL

ANTIPARALLEL
POLYNUCLEOTIDE CHAIN



ANTIPARALLEL
POLYNUCLEOTIDE CHAIN

FIRST
POLYNUCLEOTIDE
CHAIN

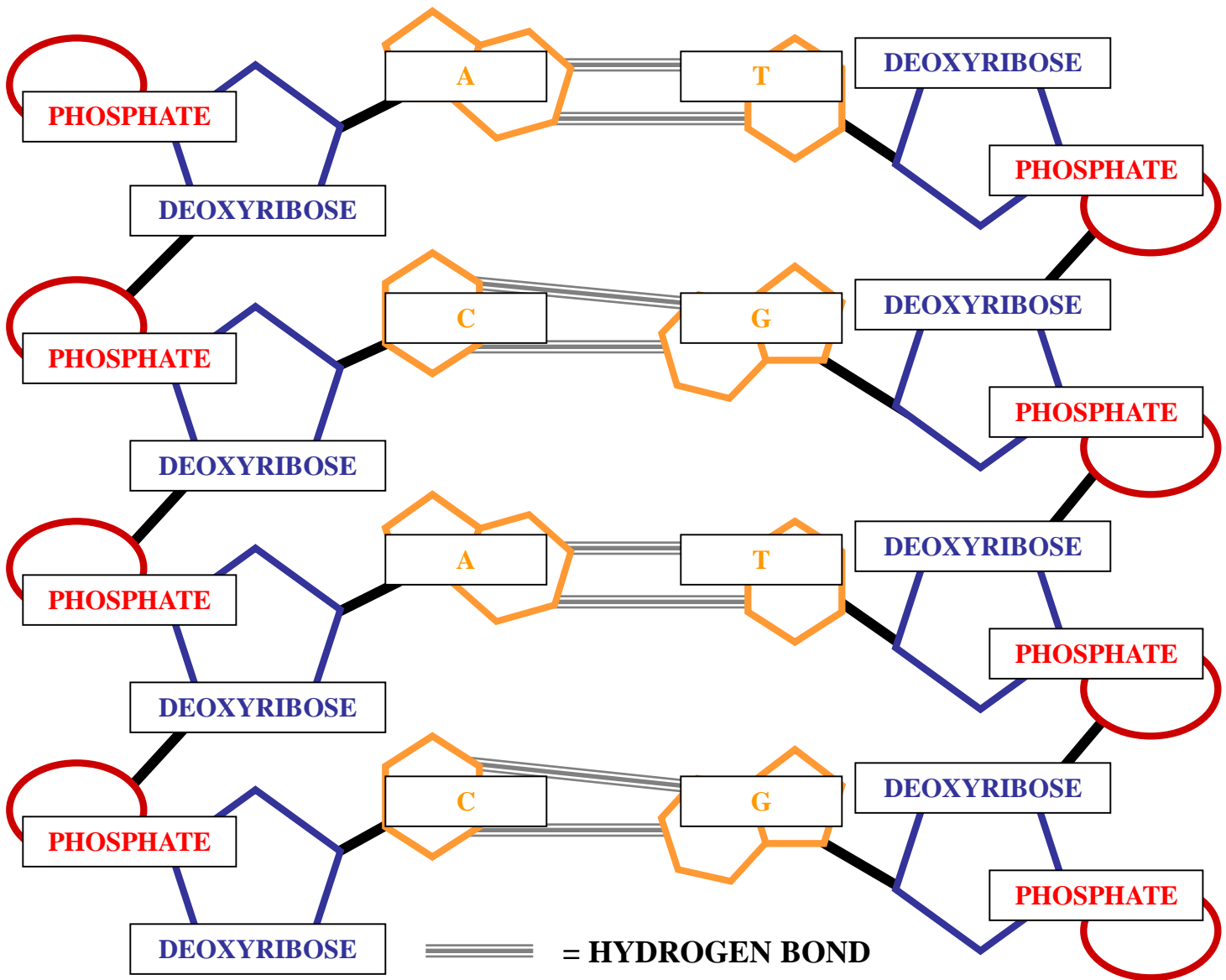
SECOND
POLYNUCLEOTIDE
CHAIN

≡≡≡ = HYDROGEN BOND

DNA DOUBLE HELIX MODEL

ANTIPARALLEL
POLYNUCLEOTIDE CHAIN

ANTIPARALLEL
POLYNUCLEOTIDE CHAIN



FIRST
POLYNUCLEOTIDE
CHAIN

SECOND
POLYNUCLEOTIDE
CHAIN

== = HYDROGEN BOND



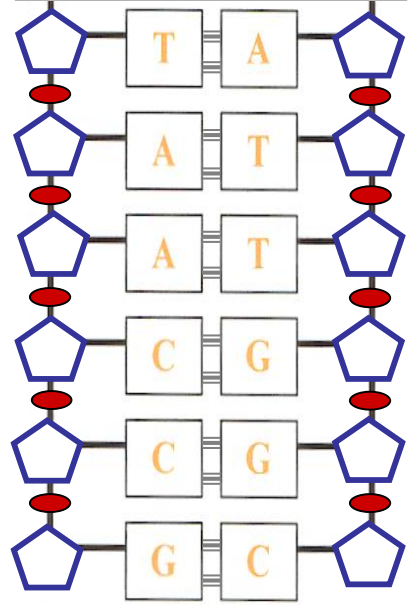
ANSWER

**SEQUENCE
NUCLEOTIDE
BASES**

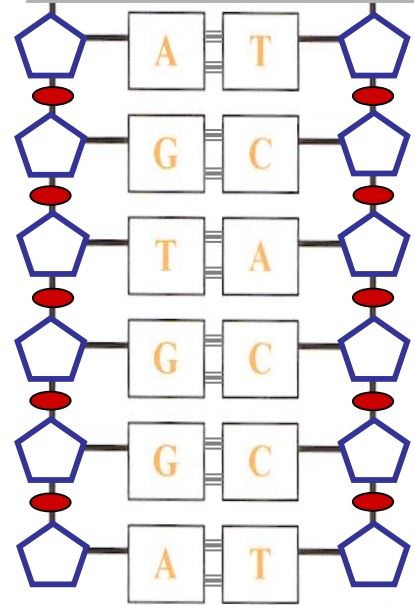
ANSWER

DIFFERENT SPECIES

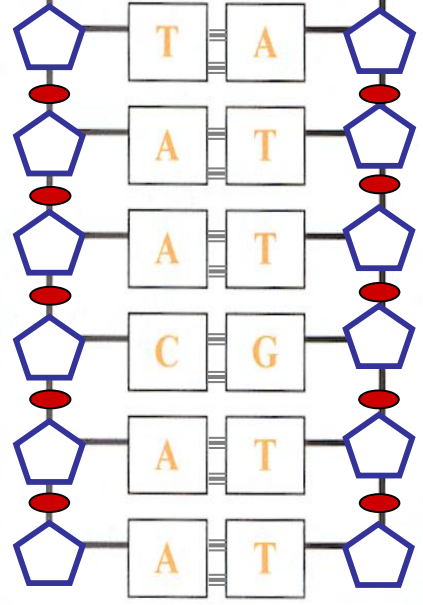
SPECIES #1



SPECIES #2



SPECIES #3



= BASE



= PHOSPHATE



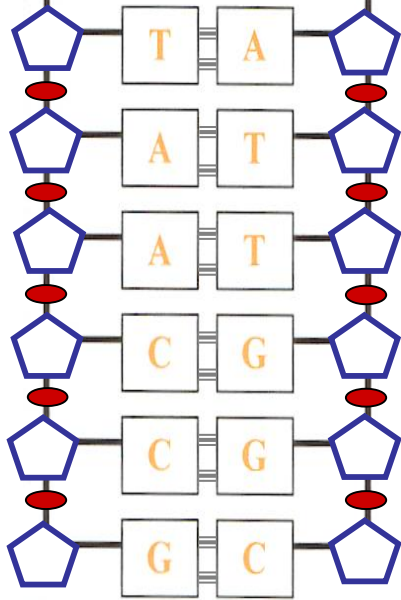
= DEOXYRIBOSE



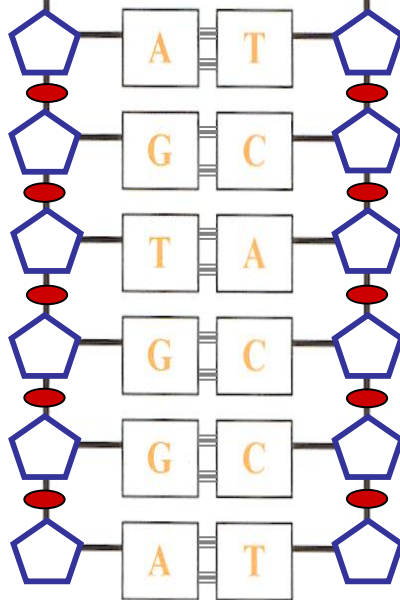
= HYDROGEN BONDS

DIFFERENT SPECIES / DIFFERENT DNA

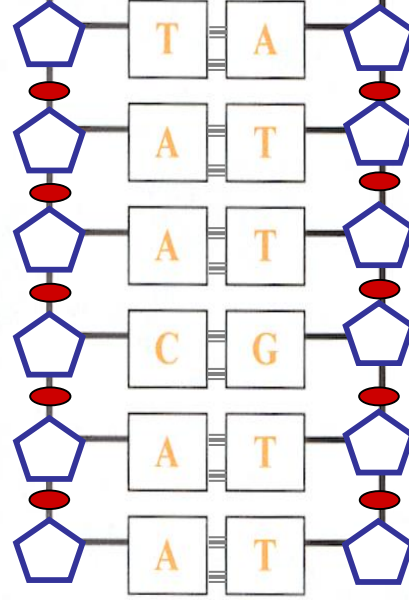
SPECIES #1



SPECIES #2



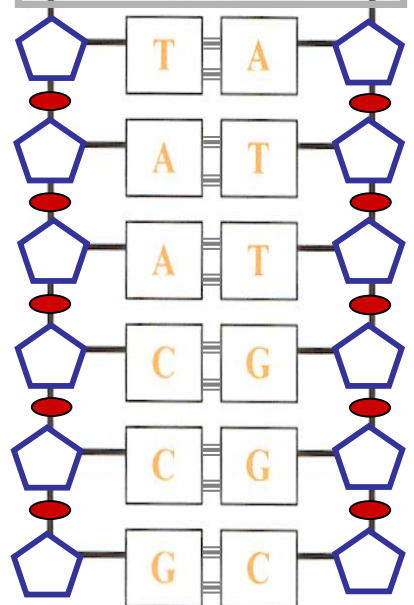
SPECIES #3



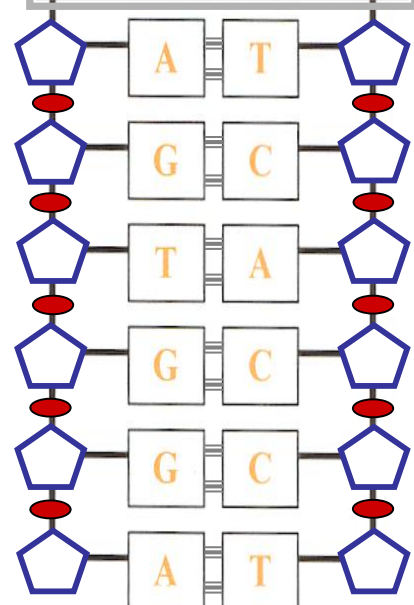
 = BASE  = PHOSPHATE  = DEOXYRIBOSE  = HYDROGEN BONDS

DIFFERENT SPECIES / DIFFERENT DNA

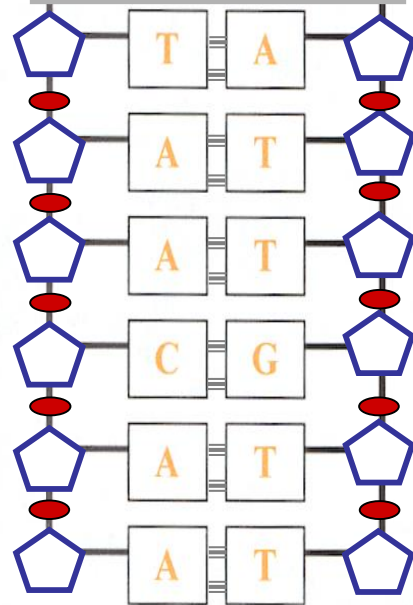
SPECIES #1



SPECIES #2

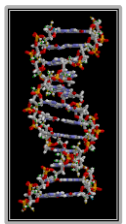


SPECIES #3

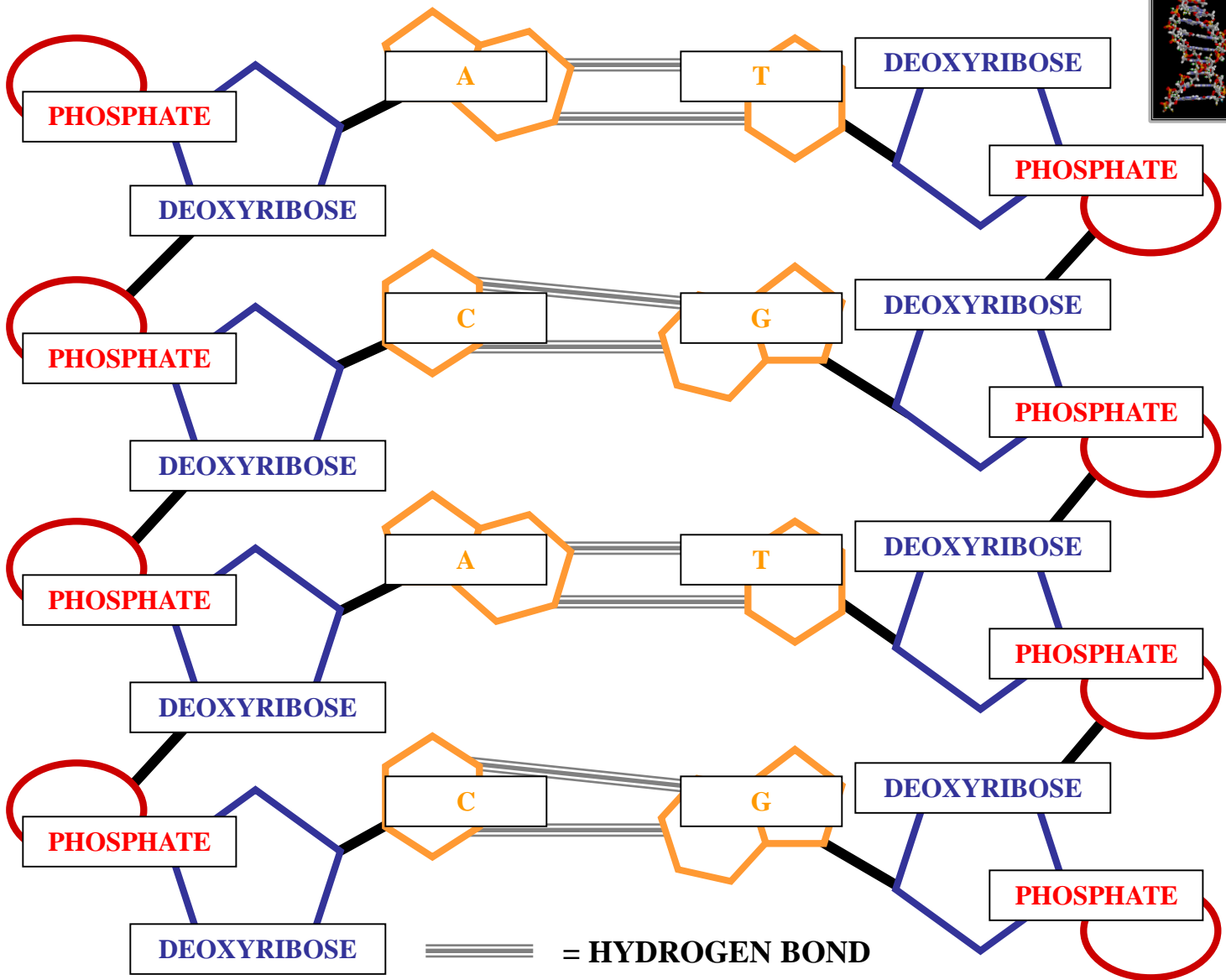


DIFFERENT DNA NUCLEOTIDE SEQUENCES

DNA DOUBLE HELIX MODEL



ANTIPARALLEL
POLYNUCLEOTIDE CHAIN



FIRST
POLYNUCLEOTIDE
CHAIN

SECOND
POLYNUCLEOTIDE
CHAIN

ANTIPARALLEL
POLYNUCLEOTIDE CHAIN



DNA REPLICATION

DNA

REPLICATION

SYNONYMOUS

DNA

DUPLICATION

DNA REPLICATION



DNA REPLICATION

**DNA
COPIES ITSELF**

DNA REPLICATION



**DNA
REPLICATION
OVERVIEW**

**DNA
REPLICATION
ACRONYMS**

**DNA
REPLICATION
ACRONYMS**

CPL-STRANDS = COMPLEMENTARY DNA STRANDS

**DNA
REPLICATION
ACRONYMS**

DNA REPLICATION ACRONYMS

CPL-STRANDS = COMPLEMENTARY DNA STRANDS
PAR-STRANDS = PARENTAL DNA STRANDS

DNA REPLICATION ACRONYMS



DNA REPLICATION ACRONYMS

CPL-STRANDS = COMPLEMENTARY DNA STRANDS

PAR-STRANDS = PARENTAL DNA STRANDS

COM-STRANDS = COMPANION DNA STRANDS

DNA REPLICATION ACRONYMS

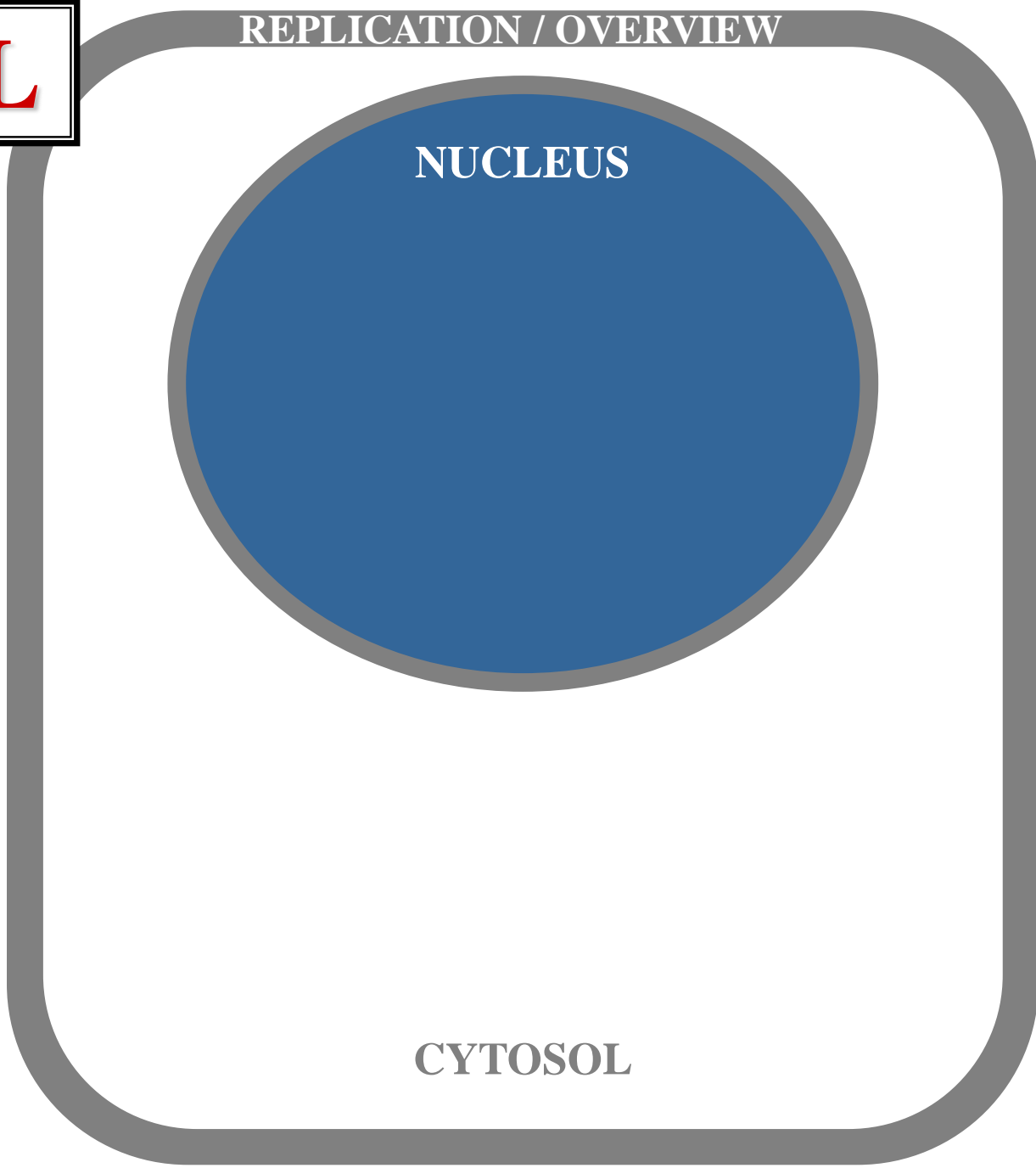


**DNA
REPLICATION
OVERVIEW
START**

CELL

NUCLEUS

CYTOSOL



CELL

REPLICATION / OVERVIEW

I

NUCLEUS

CELL CYCLE

CYTOSOL

CELL

NUCLEUS

INTERPHASE

CYTOSOL

CELL

REPLICATION / OVERVIEW

R

NUCLEUS

INTERPHASE

LOCATION

CYTOSOL

CELL

NUCLEUS

INTERPHASE

REPLICATION

CYTOSOL

CELL

REPLICATION / OVERVIEW

D

NUCLEUS

CHROMOSOME



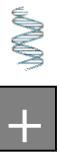
INTERPHASE

REPLICATION

CYTOSOL

CELL

REPLICATION / OVERVIEW



NUCLEUS

CHROMOSOME



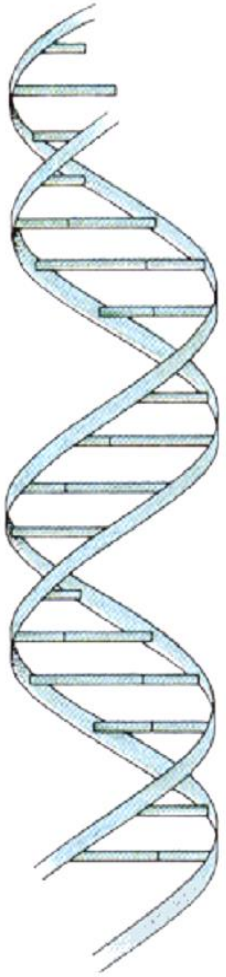
DNA

INTERPHASE

REPLICATION

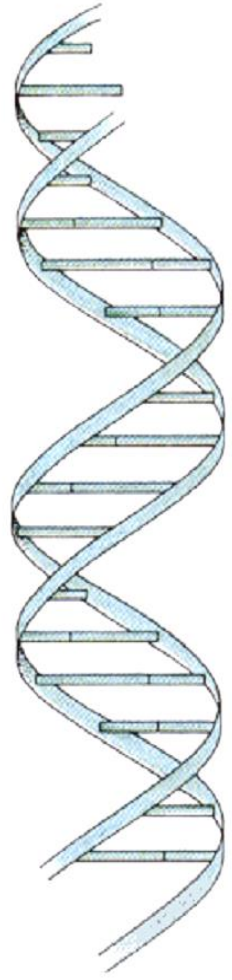
CYTOSOL

REPLICATION - OVERVIEW



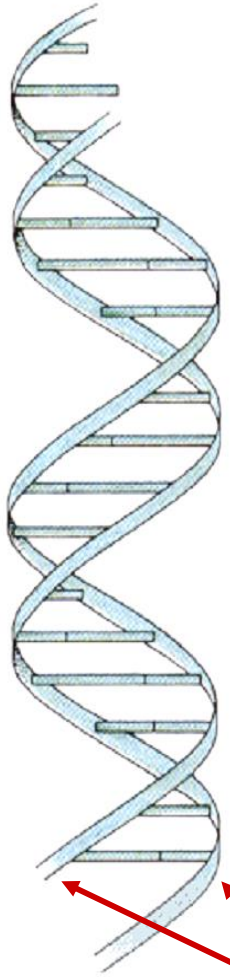
CHROMOSOME

REPLICATION - OVERVIEW



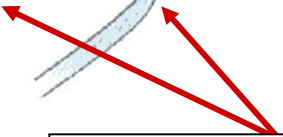
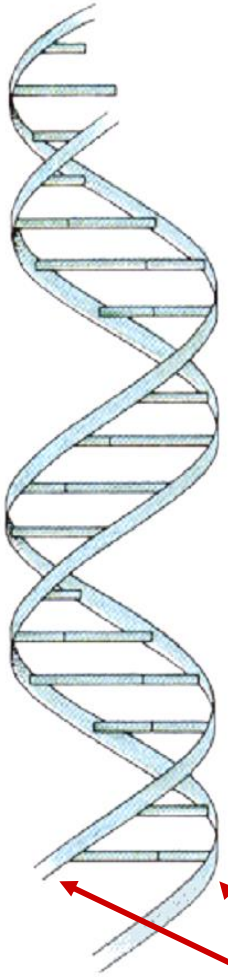
DNA

REPLICATION - OVERVIEW



2 POLYNUCLEOTIDE CHAINS

REPLICATION - OVERVIEW



2 POLYNUCLEOTIDE CHAINS

=

COMPLIMENTARY STRANDS



COMPLIMENTARY STRANDS (CPL-STRANDS)



COMPLIMENTARY STRANDS

NT-PURINES
PAIR WITH
NT-PYRIMIDINES

COMPLIMENTARY STRANDS

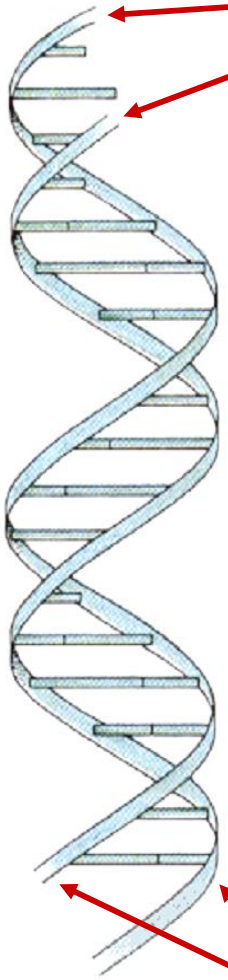
REPLICATION - OVERVIEW



COMPLIMENTARY STRANDS

CPL-STRANDS
NT-PURINES
PAIR WITH
NT-PYRIMIDINES

COMPLIMENTARY STRANDS

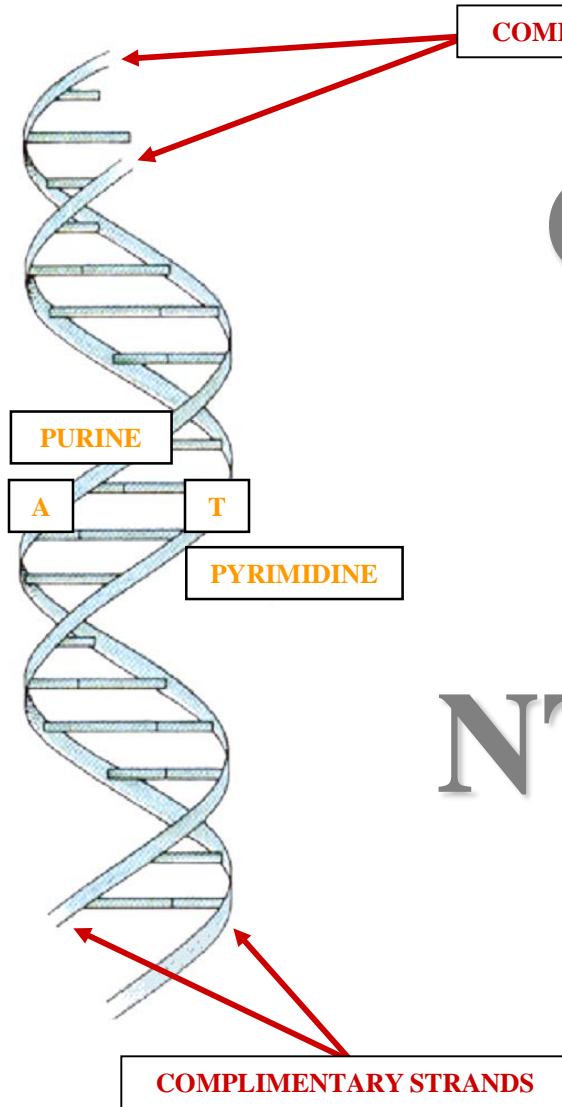


REPLICATION - OVERVIEW



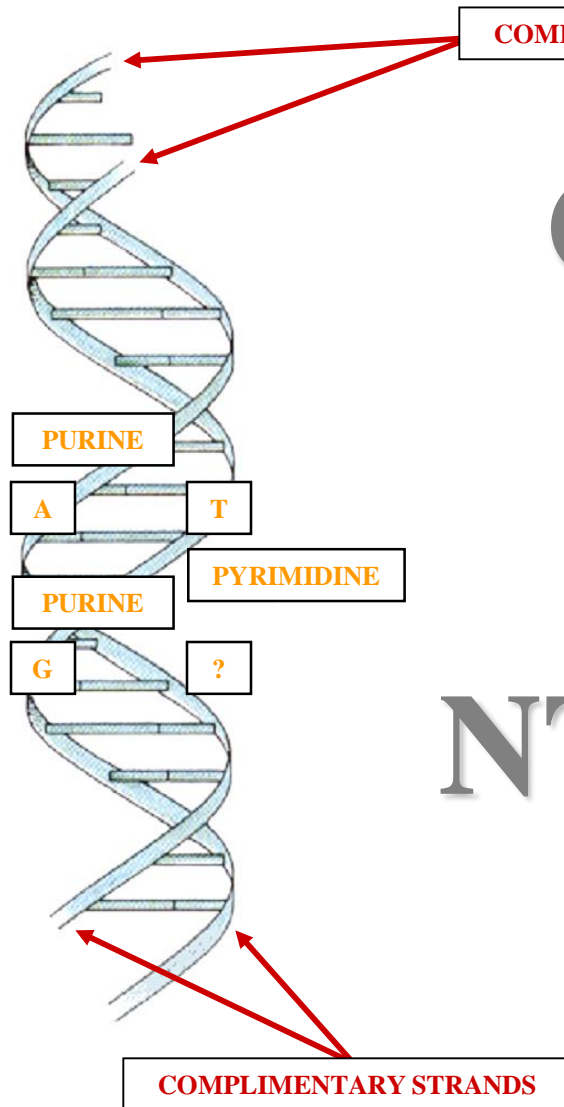
CPL-STRANDS
NT-PURINES
PAIR WITH
NT-PYRIMIDINES

REPLICATION - OVERVIEW



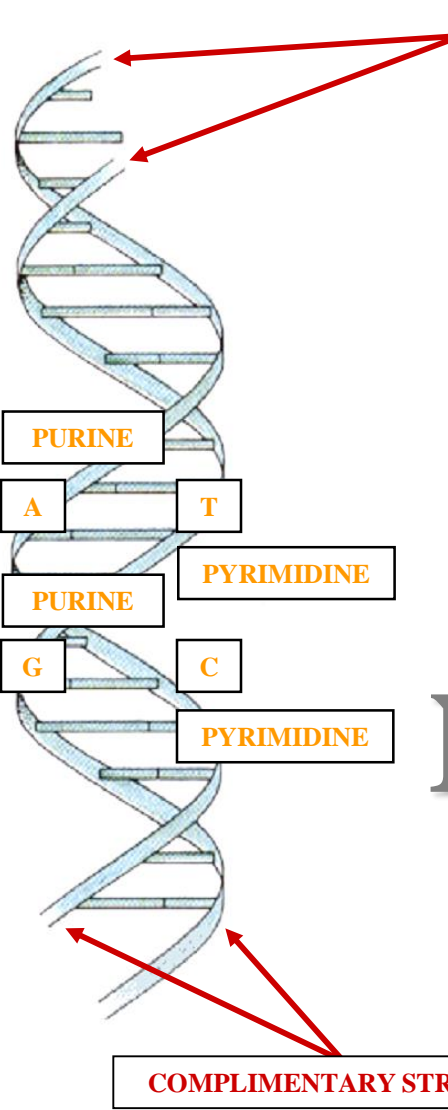
CPL-STRANDS
NT-PURINES
PAIR WITH
NT-PYRIMIDINES

REPLICATION - OVERVIEW



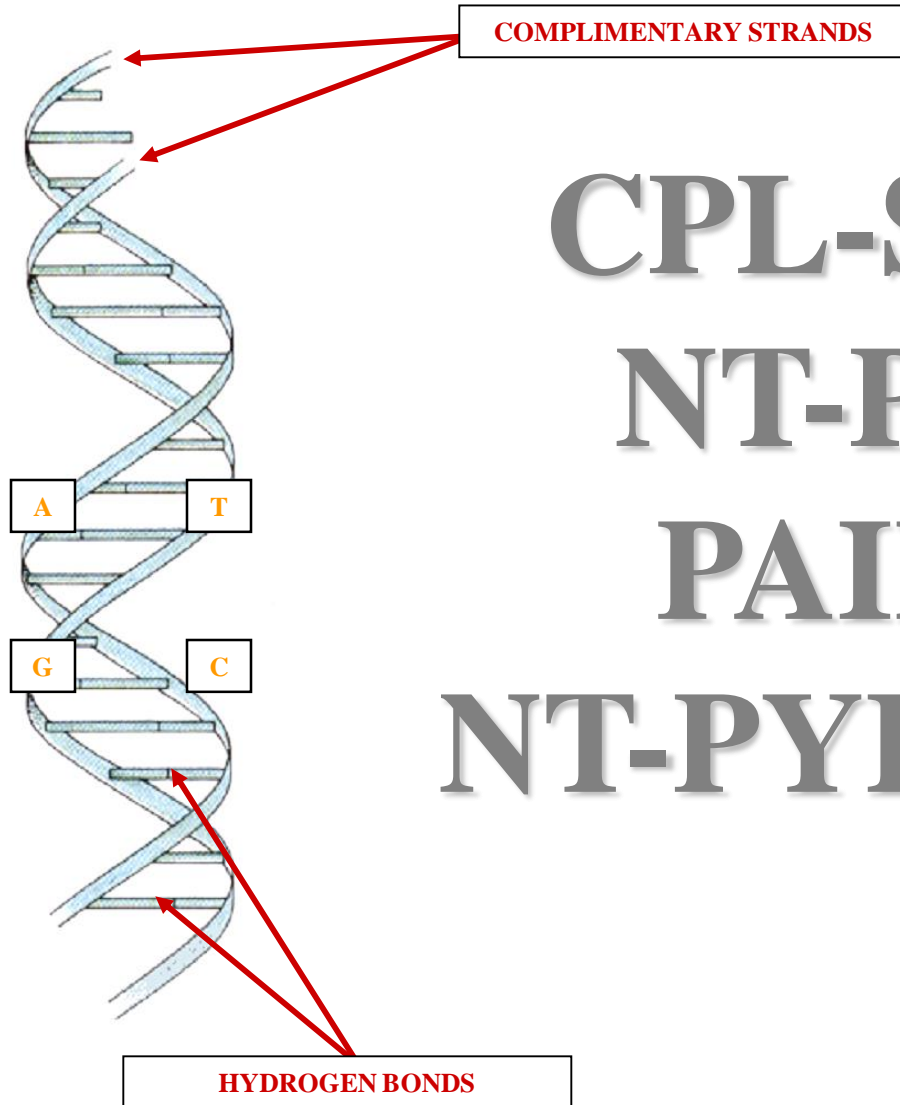
CPL-STRANDS
NT-PURINES
PAIR WITH
NT-PYRIMIDINES

REPLICATION - OVERVIEW



CPL-STRANDS
NT-PURINES
PAIR WITH
NT-PYRIMIDINES

REPLICATION - OVERVIEW



CPL-STRANDS
NT-PURINES
PAIR WITH
NT-PYRIMIDINES

REPLICATION - OVERVIEW



COMPLIMENTARY STRANDS

The diagram shows a blue DNA double helix. Two red arrows point from a box labeled 'COMPLIMENTARY STRANDS' to the two strands of the helix. Another two red arrows point from a box labeled 'H-BONDS WEAK & EASILY BROKEN' to the base pairs of the helix. The base pairs are labeled with their respective nucleotides: Adenine (A) and Thymine (T) at the top, and Guanine (G) and Cytosine (C) below. The text 'CPL-STRANDS', 'NT-PURINES', 'PAIR WITH', and 'NT-PYRIMIDINES' is displayed in large, grey, semi-transparent letters to the right of the helix.

CPL-STRANDS

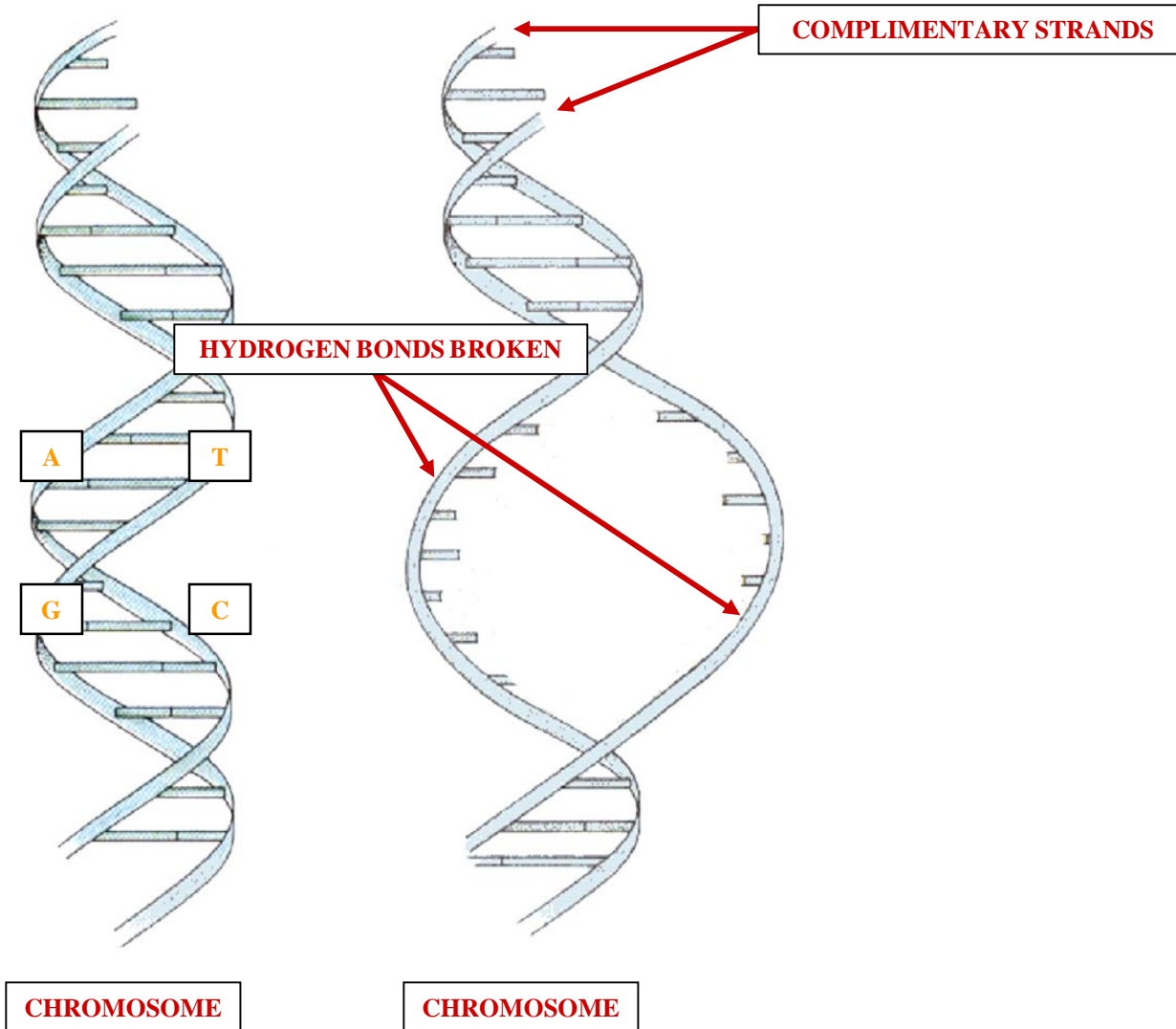
NT-PURINES

PAIR WITH

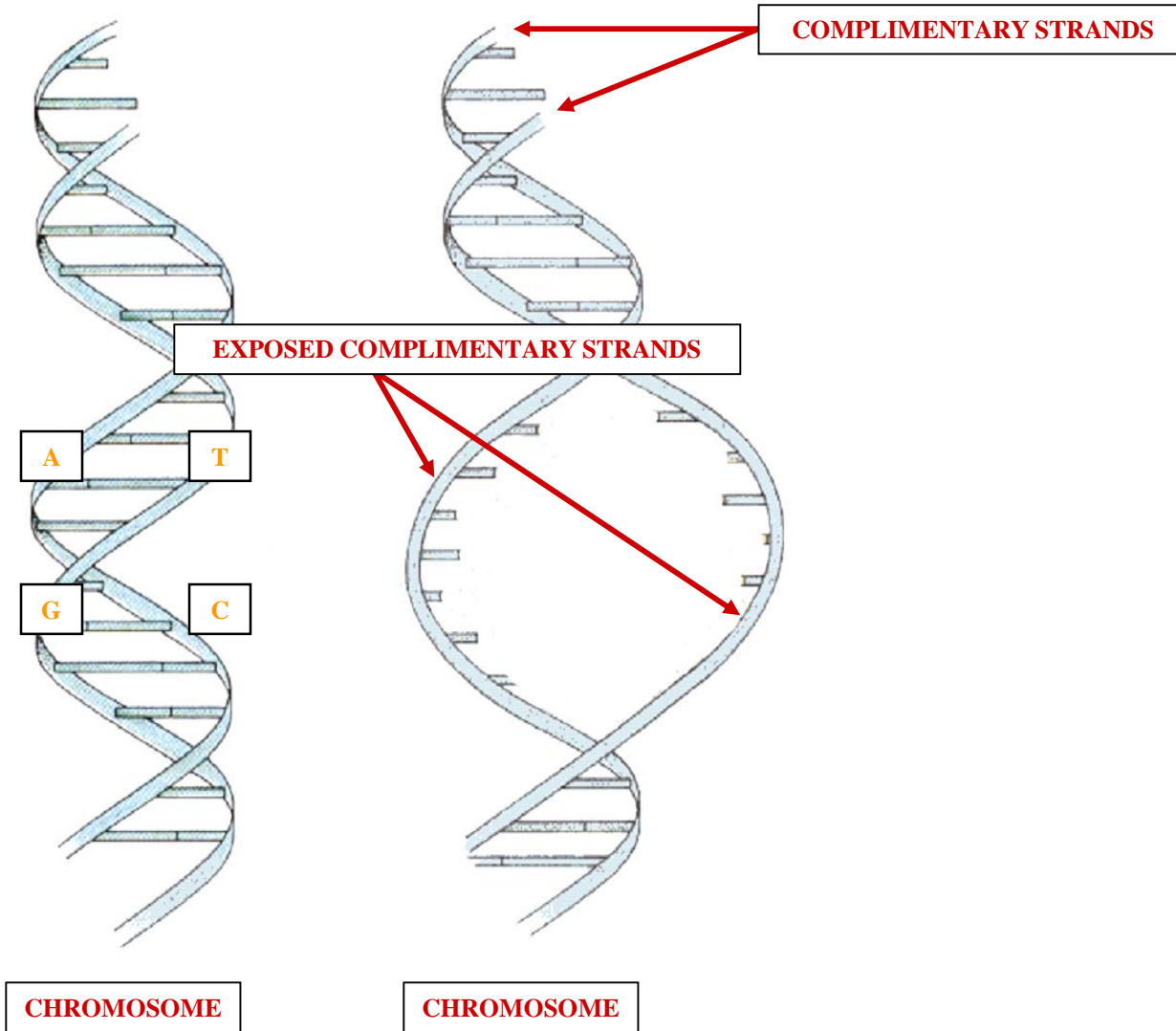
NT-PYRIMIDINES

H-BONDS WEAK & EASILY BROKEN

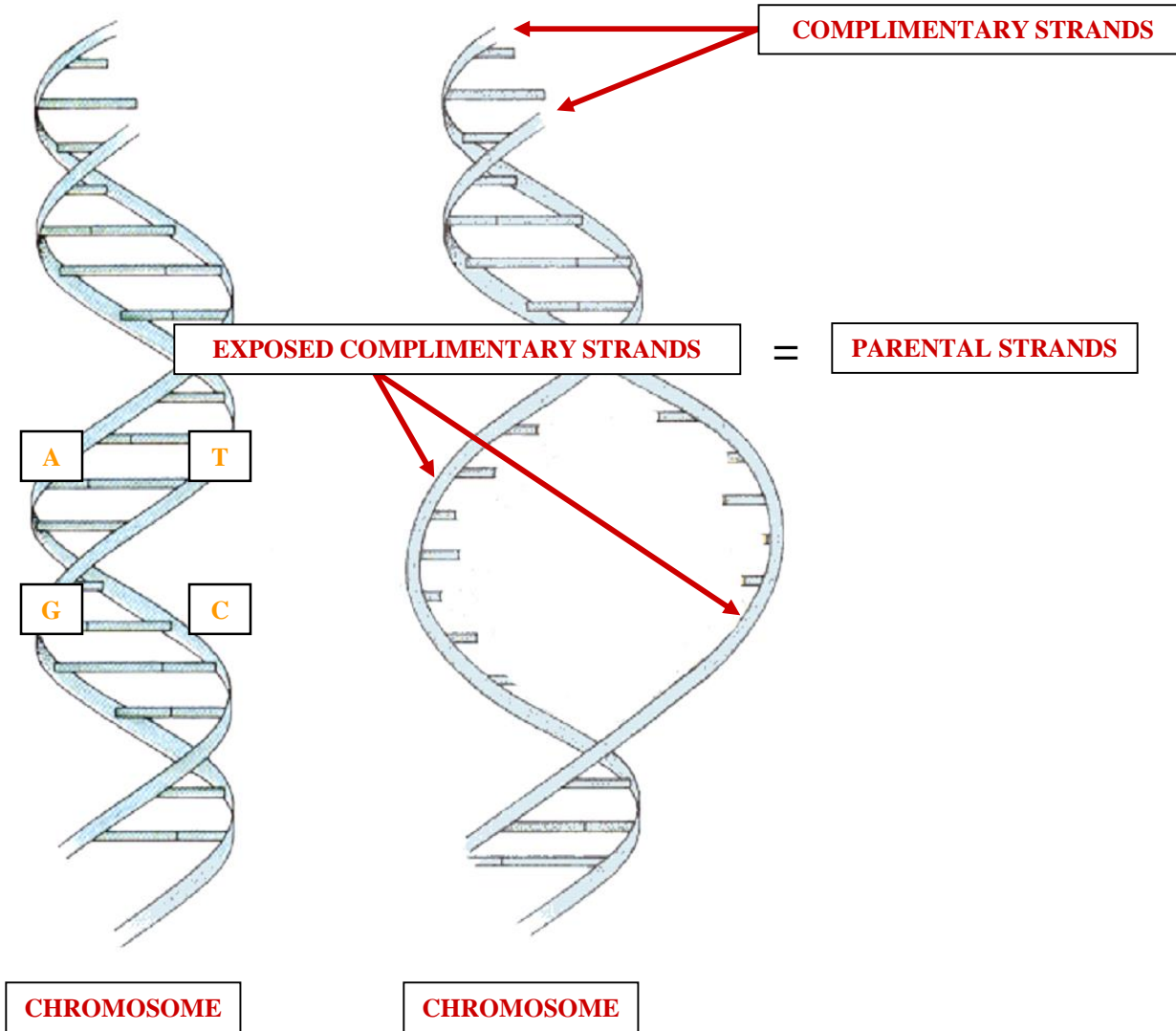
REPLICATION - OVERVIEW



REPLICATION - OVERVIEW



REPLICATION - OVERVIEW





**PARENTAL
STRANDS
(PAR-STRANDS)**

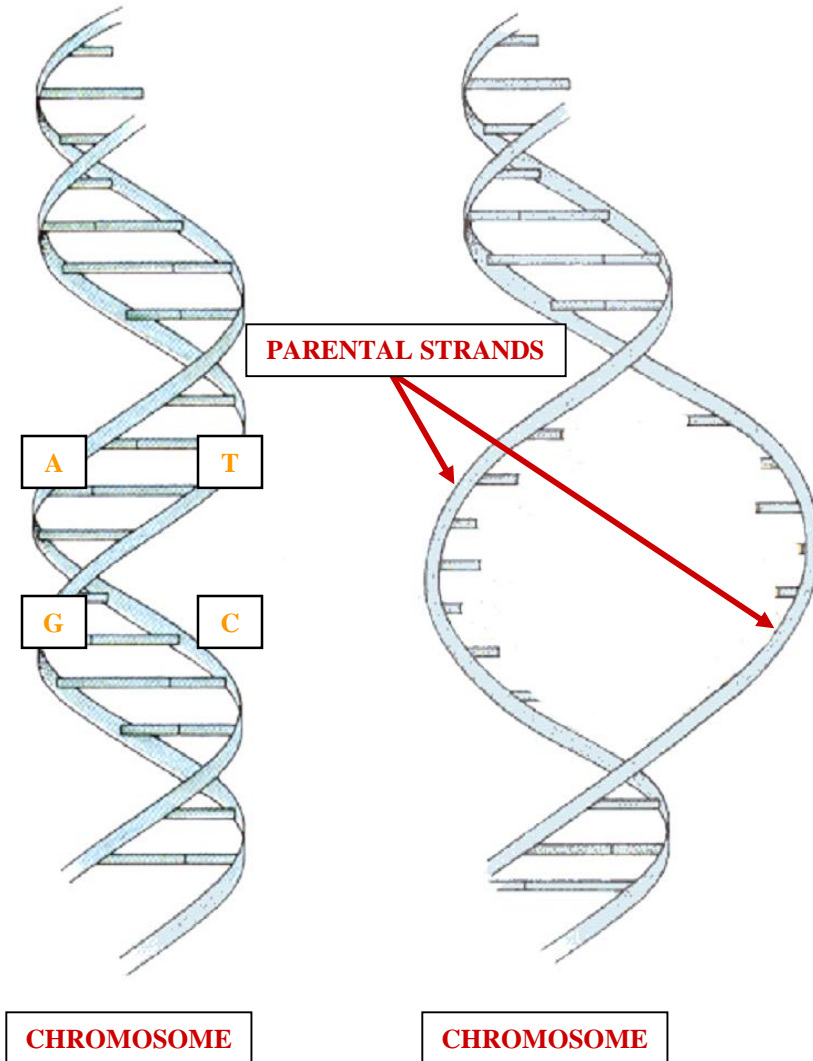


PARENTAL STRANDS

**ACT AS REPLICATION
NUCLEOTIDE BASE
GUIDES**

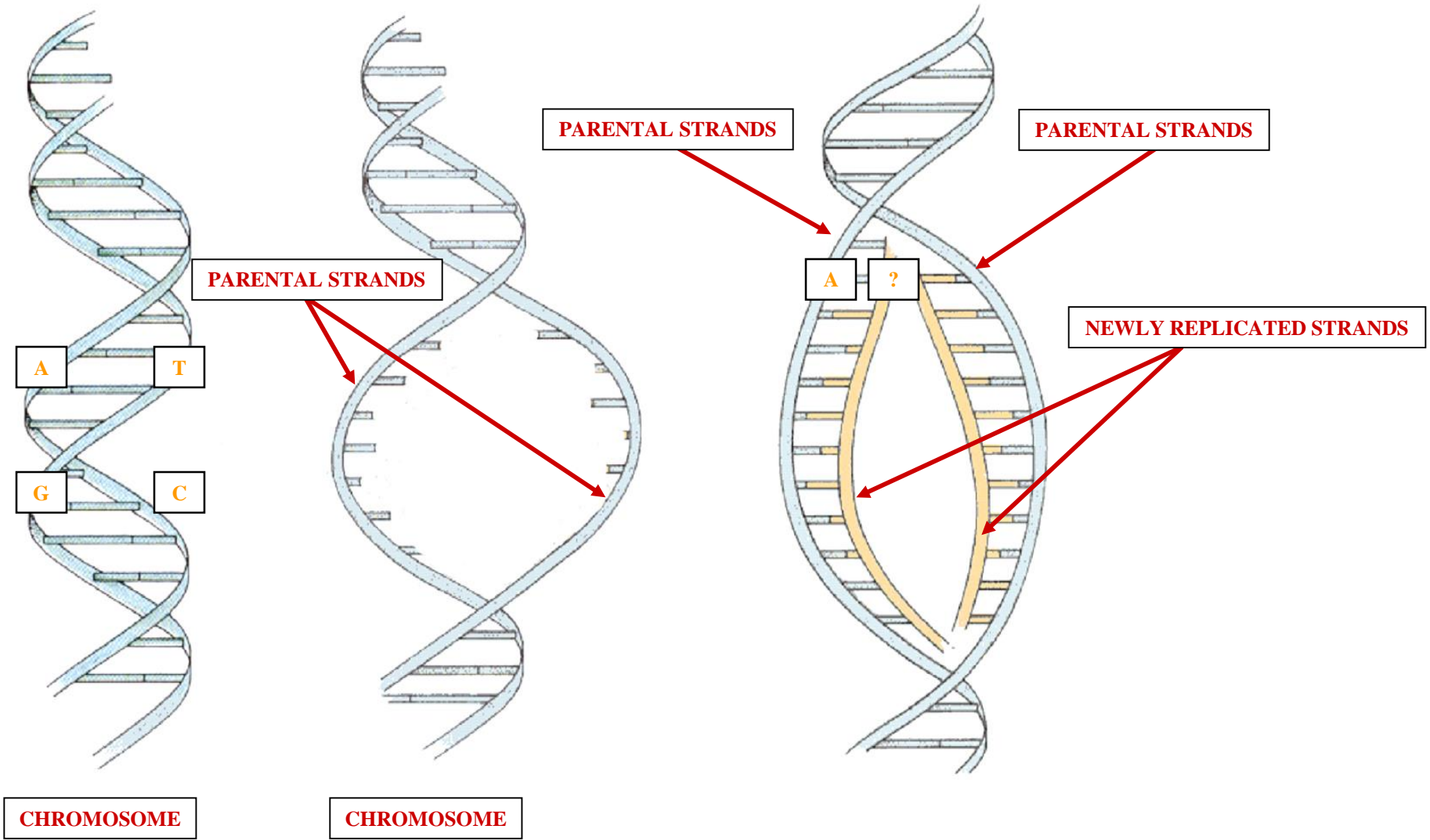
PARENTAL STRANDS

REPLICATION - OVERVIEW

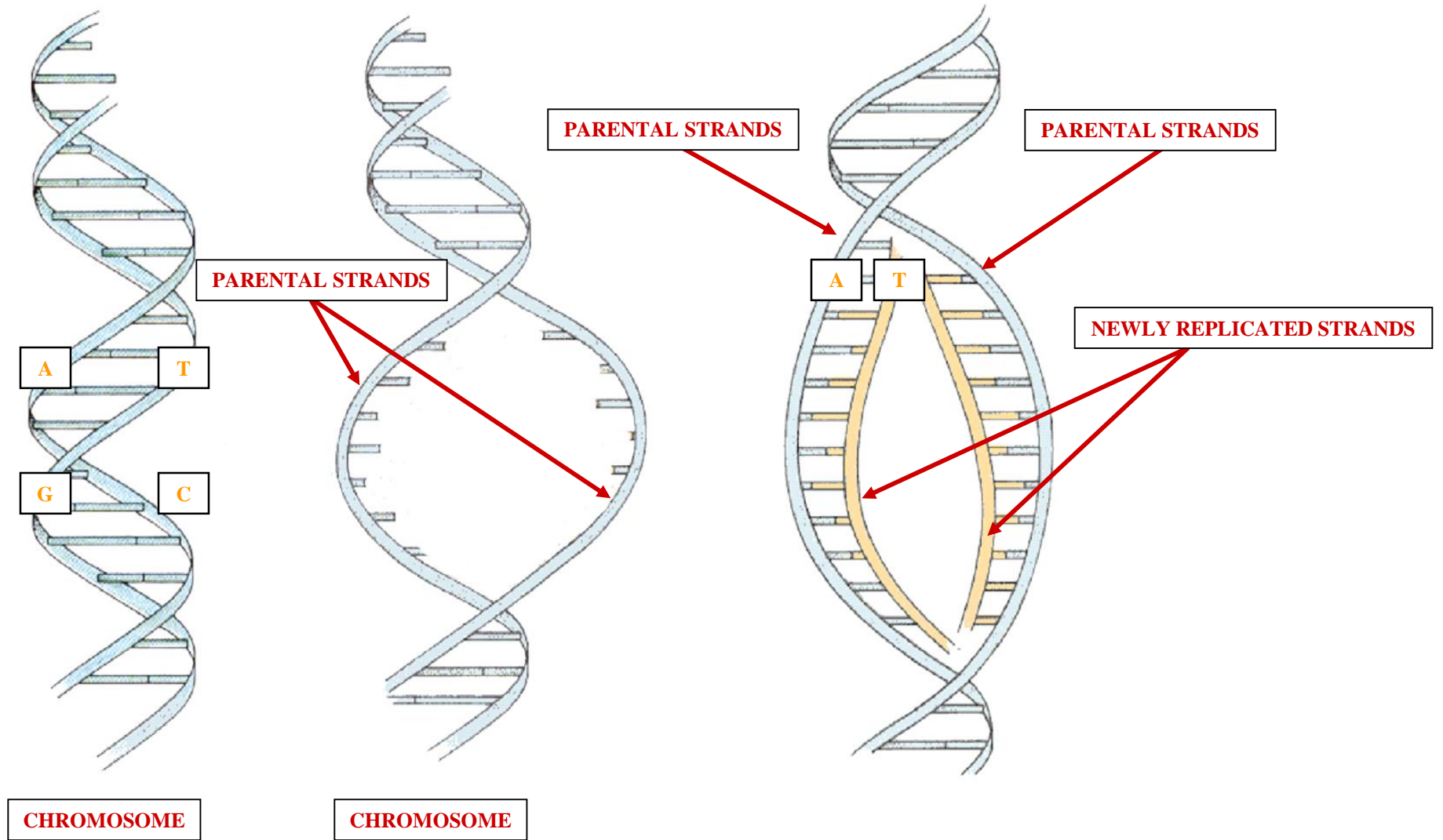


**PAR-STRANDS
ACT AS REPLICATION
NUCLEOTIDE BASE
GUIDES**

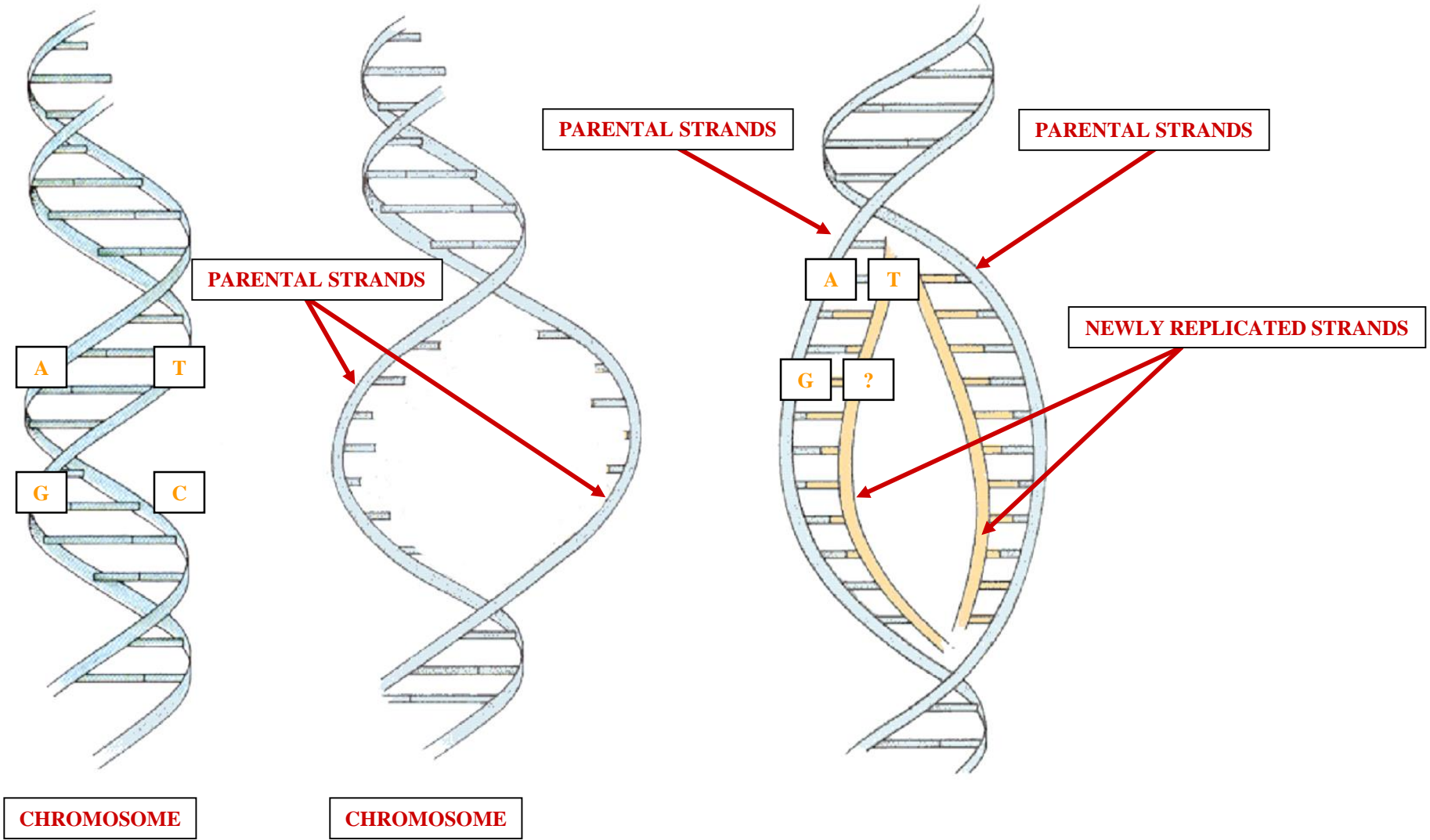
REPLICATION - OVERVIEW



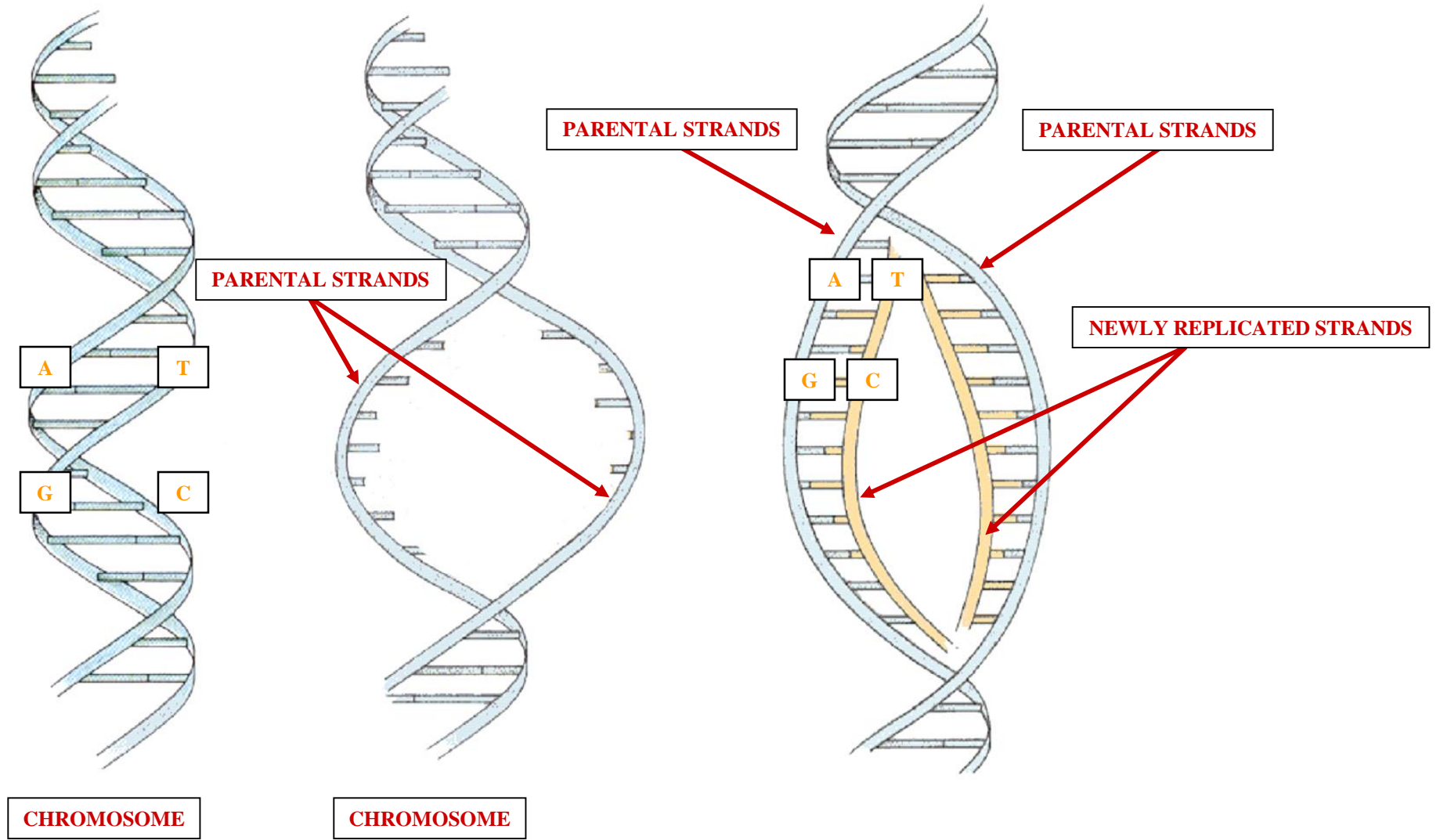
REPLICATION - OVERVIEW



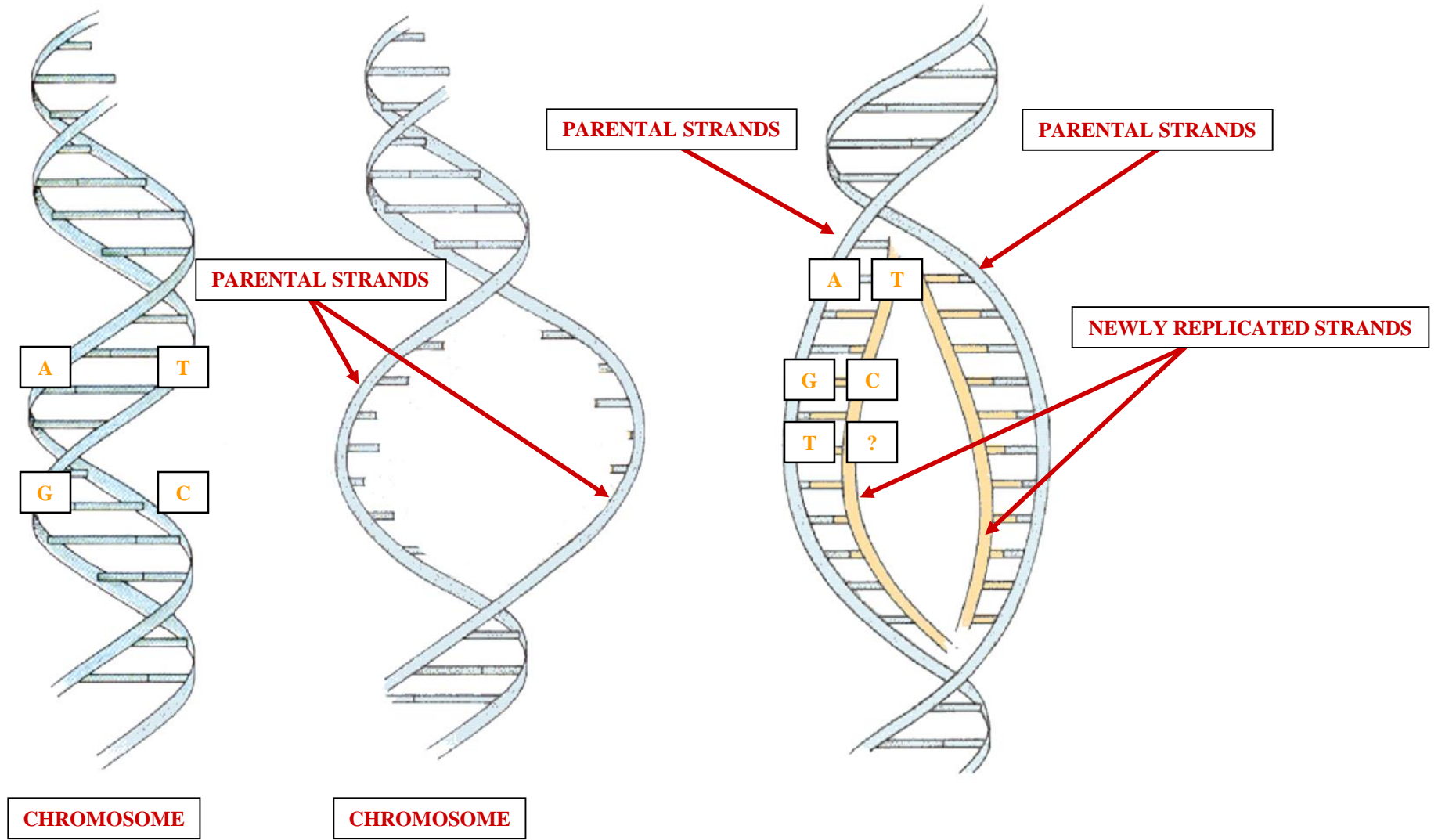
REPLICATION - OVERVIEW



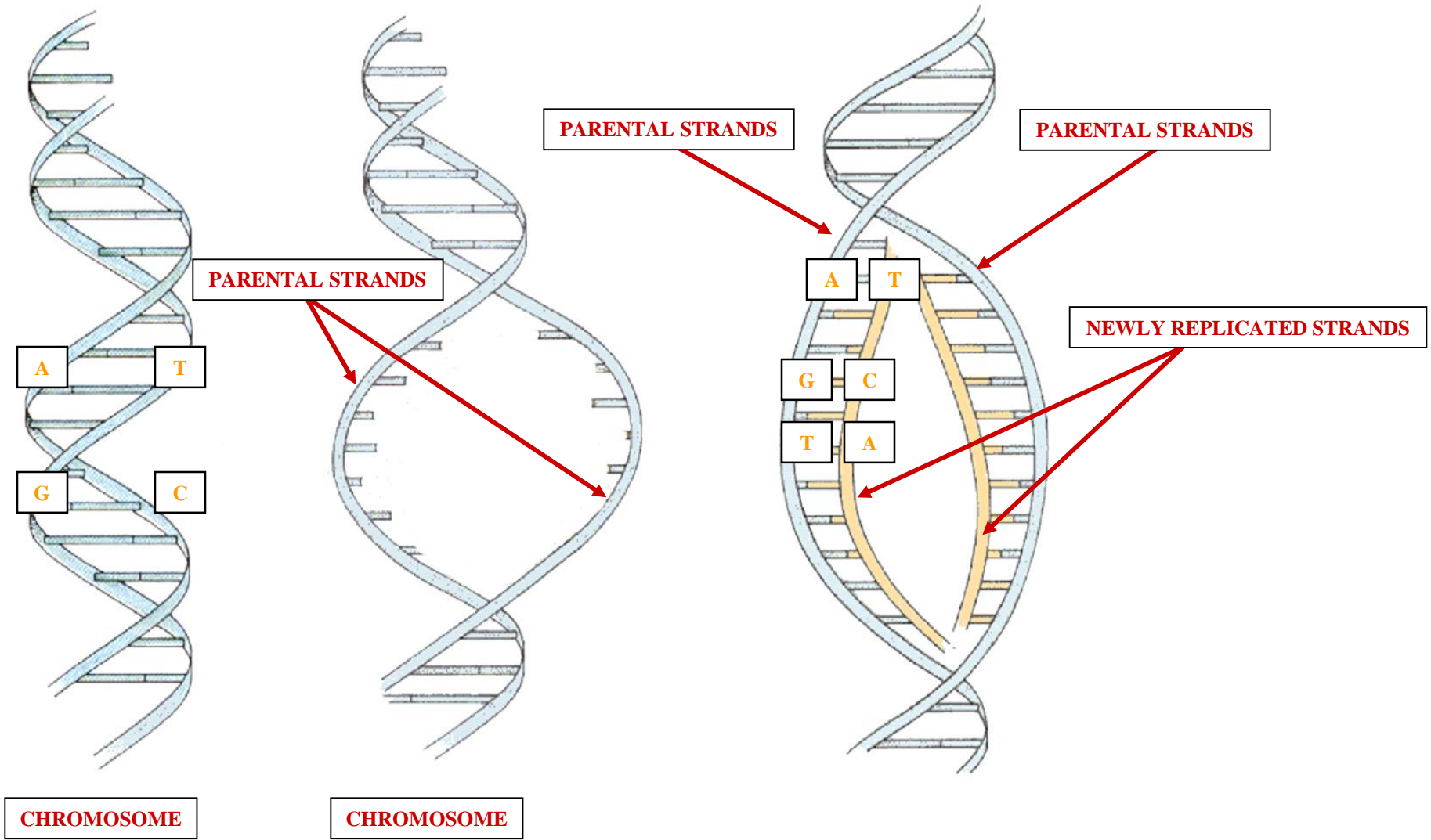
REPLICATION - OVERVIEW



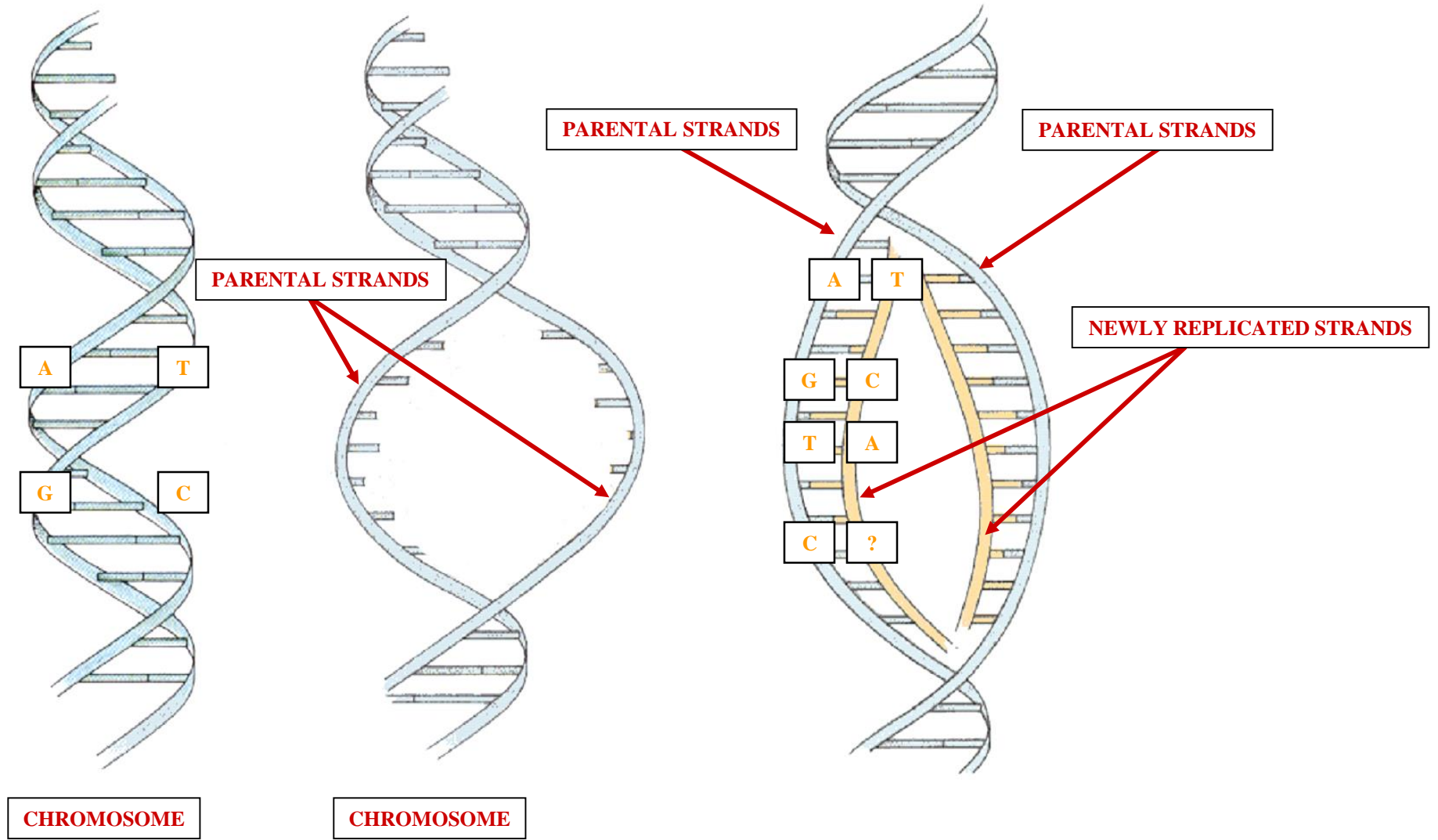
REPLICATION - OVERVIEW



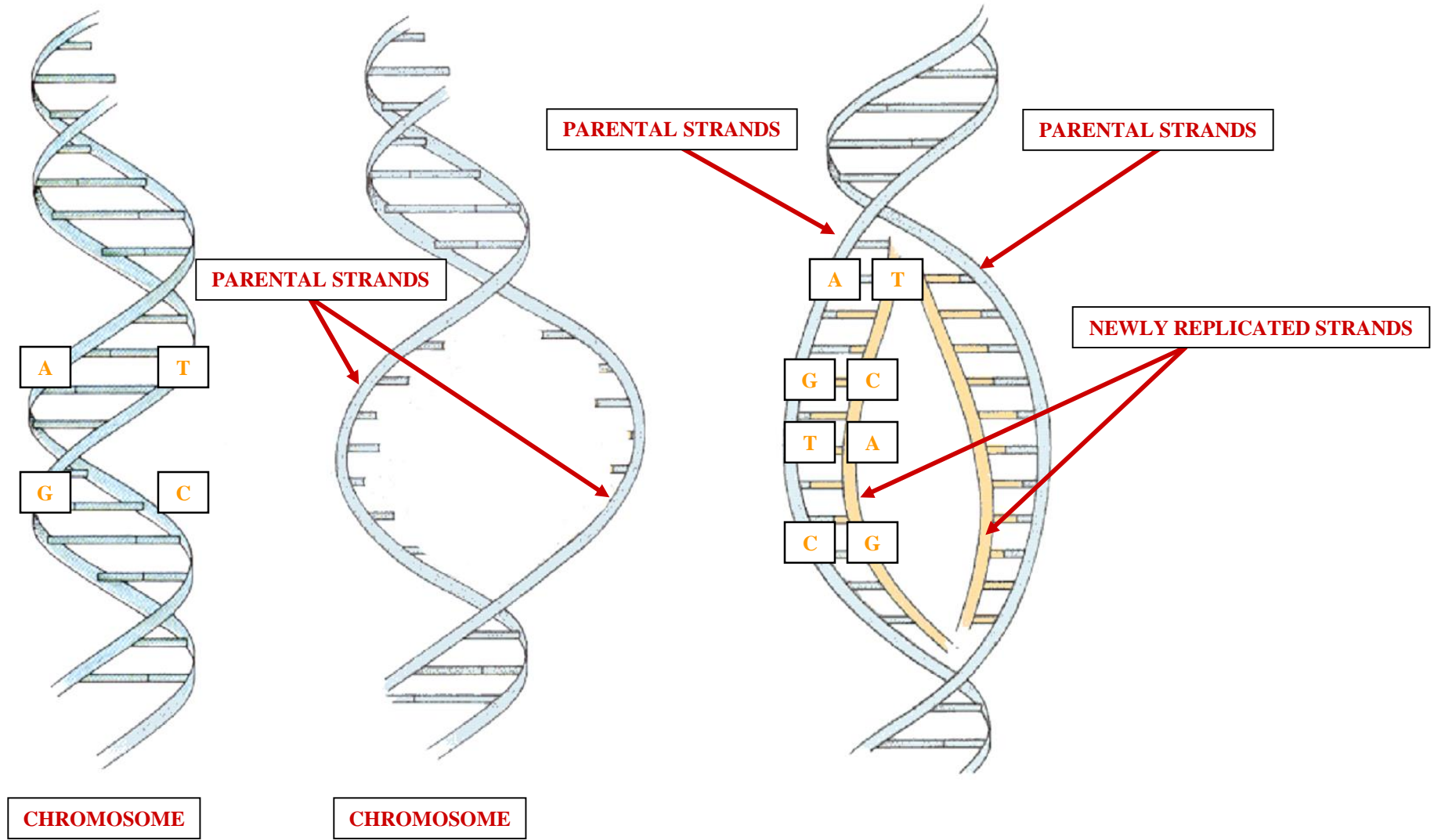
REPLICATION - OVERVIEW



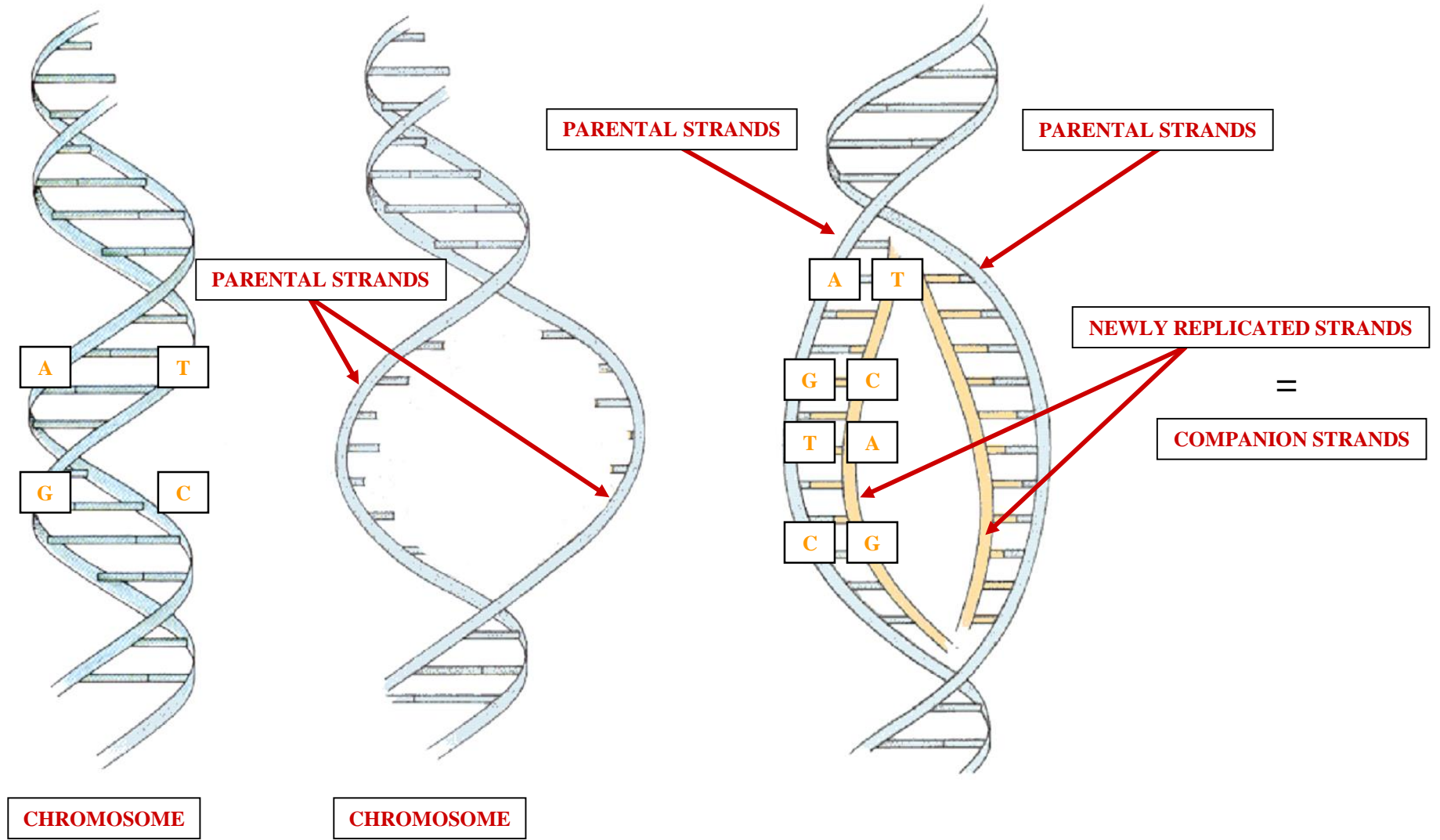
REPLICATION - OVERVIEW



REPLICATION - OVERVIEW



REPLICATION - OVERVIEW





**COMPANION
STRANDS
(COM-STRANDS)**

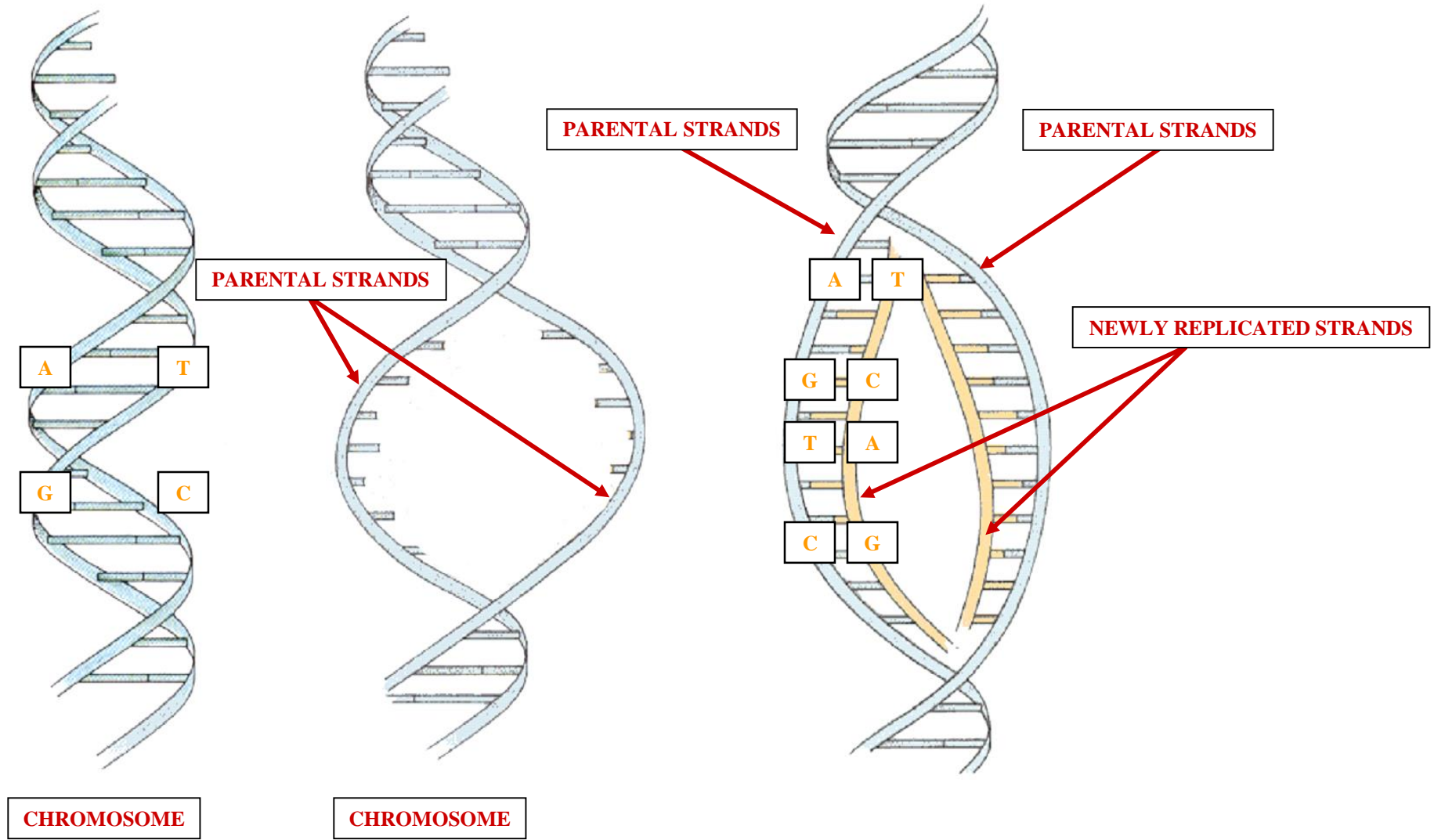
COMPANION STRANDS



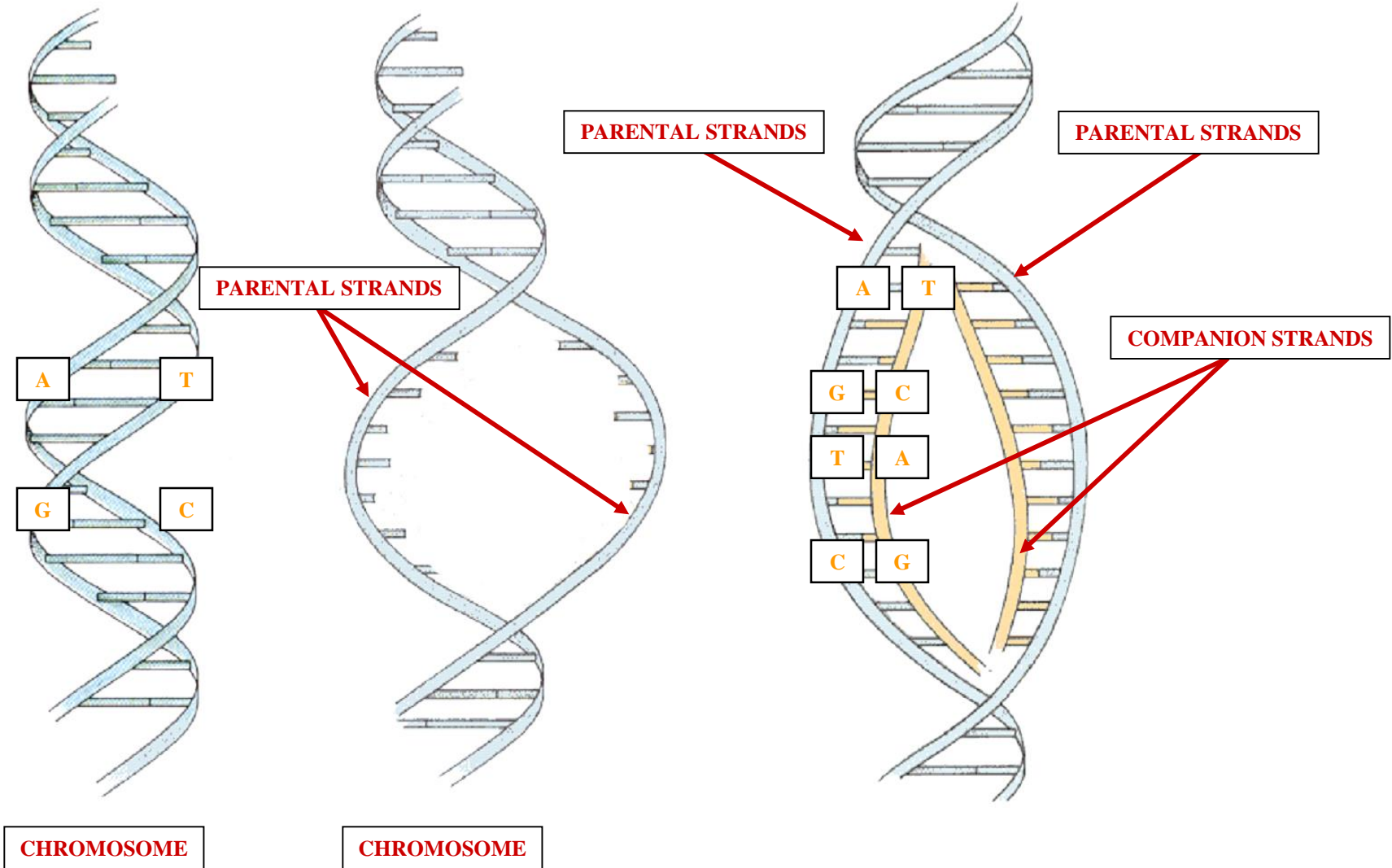
**NEWLY REPLICATED
DNA STRANDS**

COMPANION STRANDS

REPLICATION - OVERVIEW



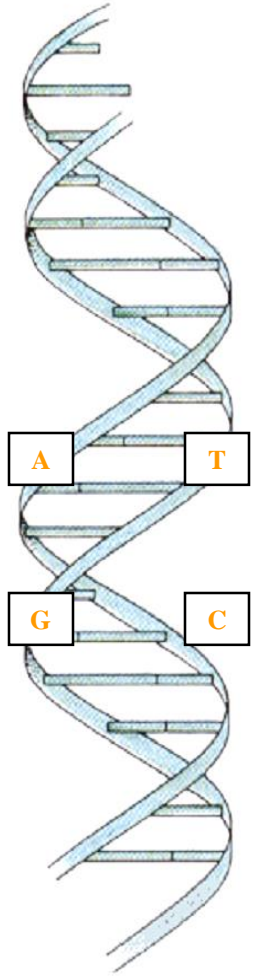
REPLICATION - OVERVIEW





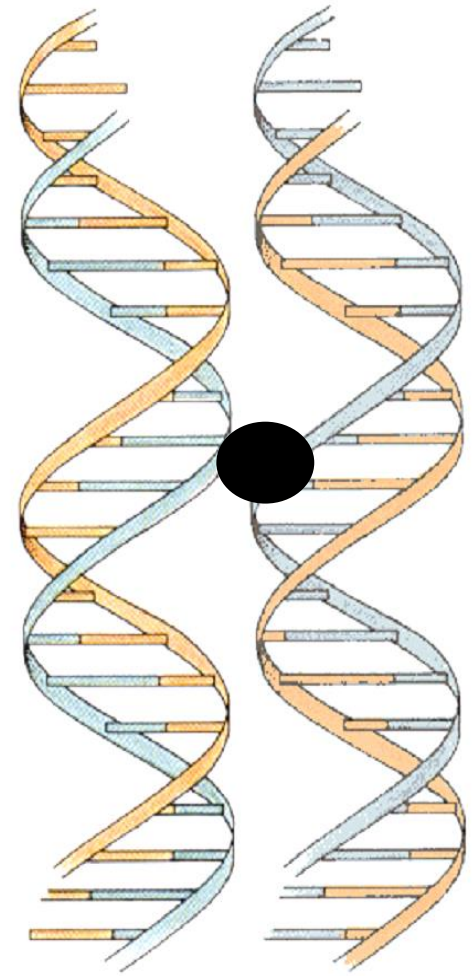
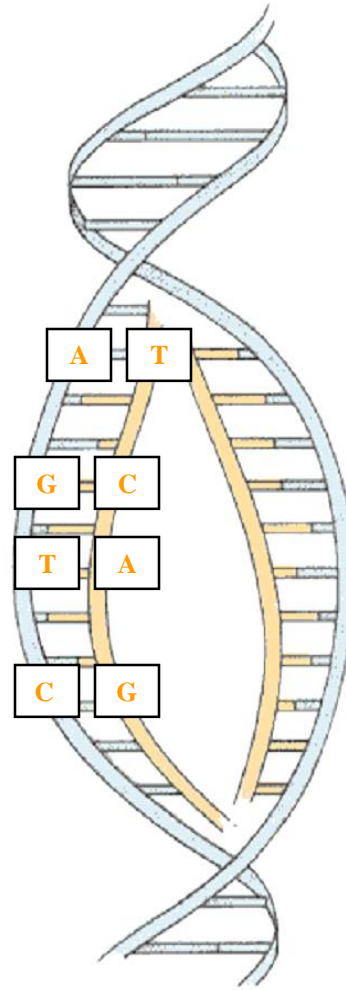
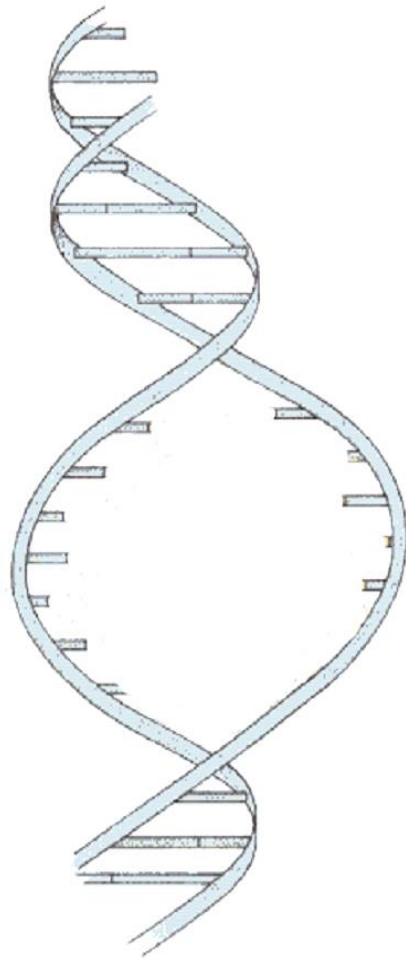
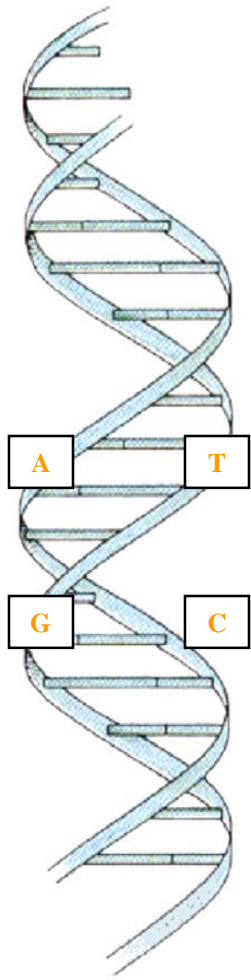
DNA
REPLICATION
OVERVIEW
OUTCOME

REPLICATION - OUTCOME



CHROMOSOME

REPLICATION - OUTCOME

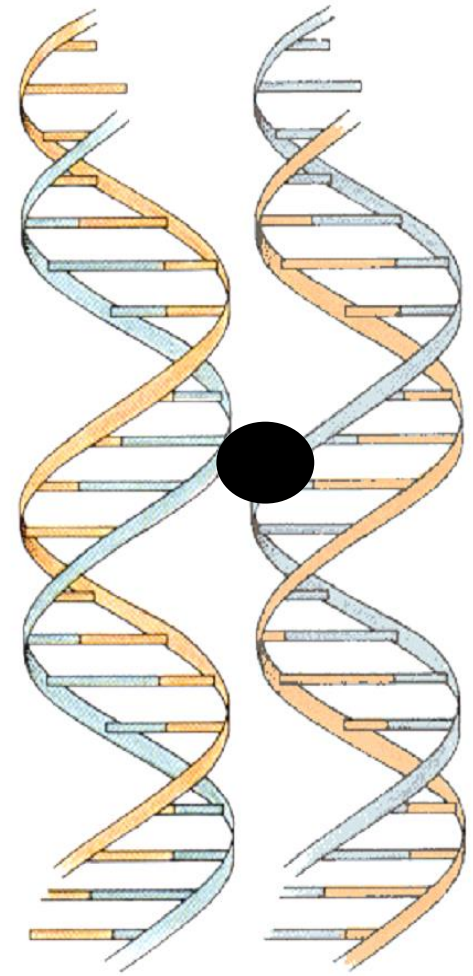
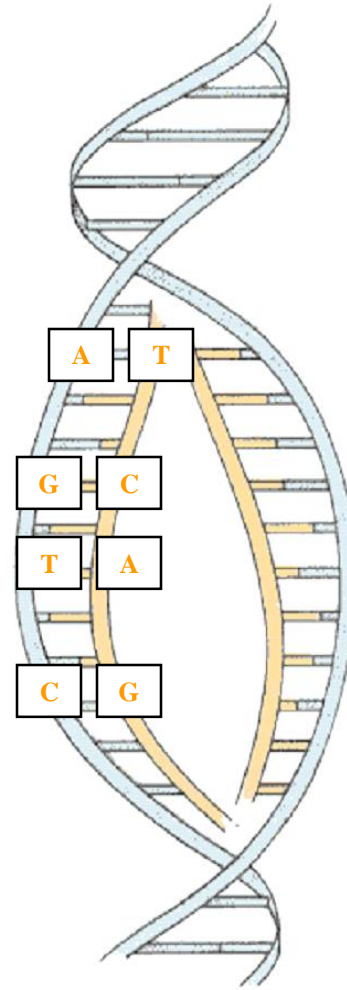
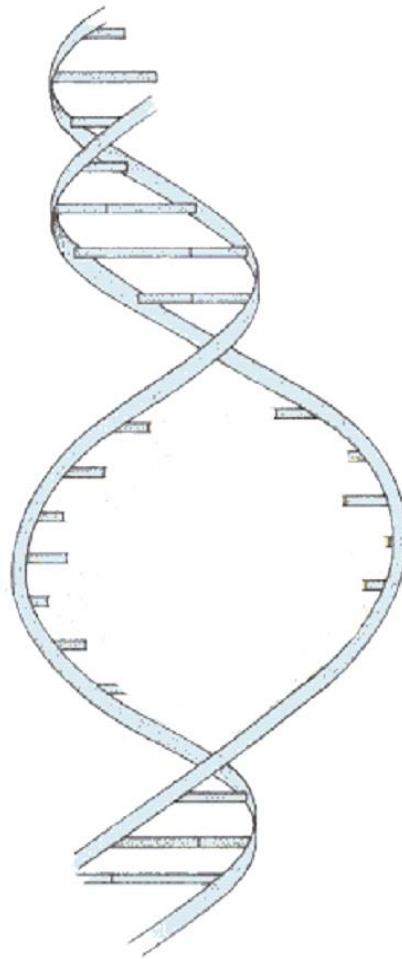
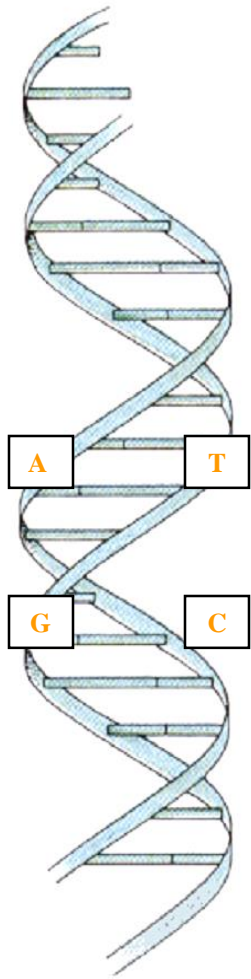


CHROMOSOME

REPLICATION

? CHROMOSOME

REPLICATION - OUTCOME

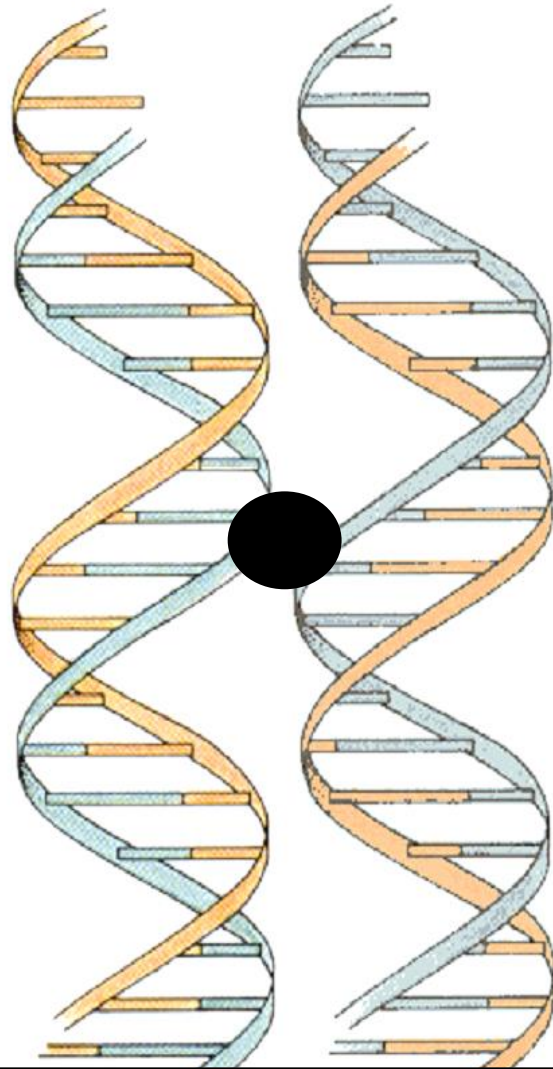


CHROMOSOME

REPLICATION

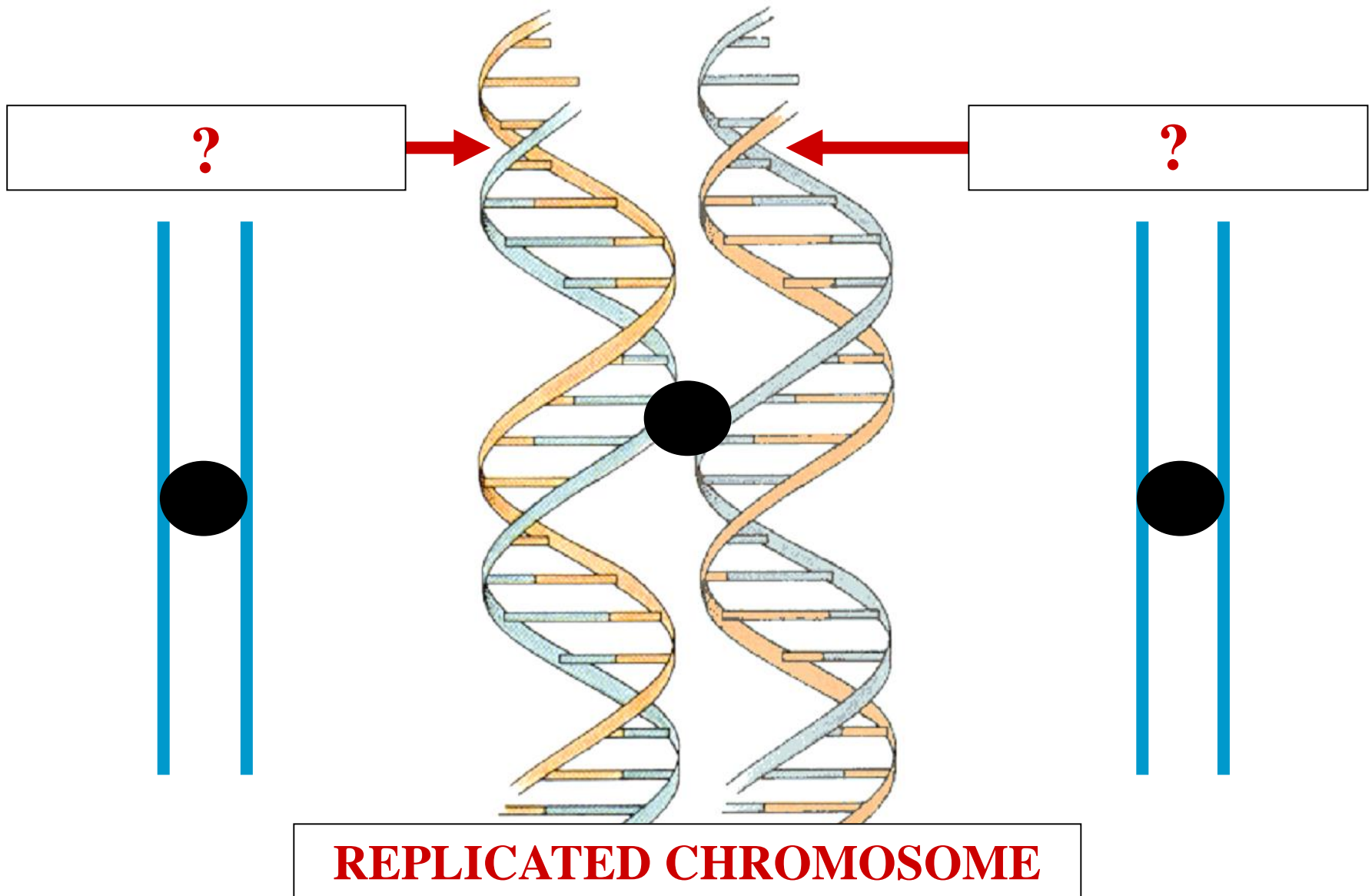
REPLICATED CHROMOSOME

REPLICATION - OUTCOME

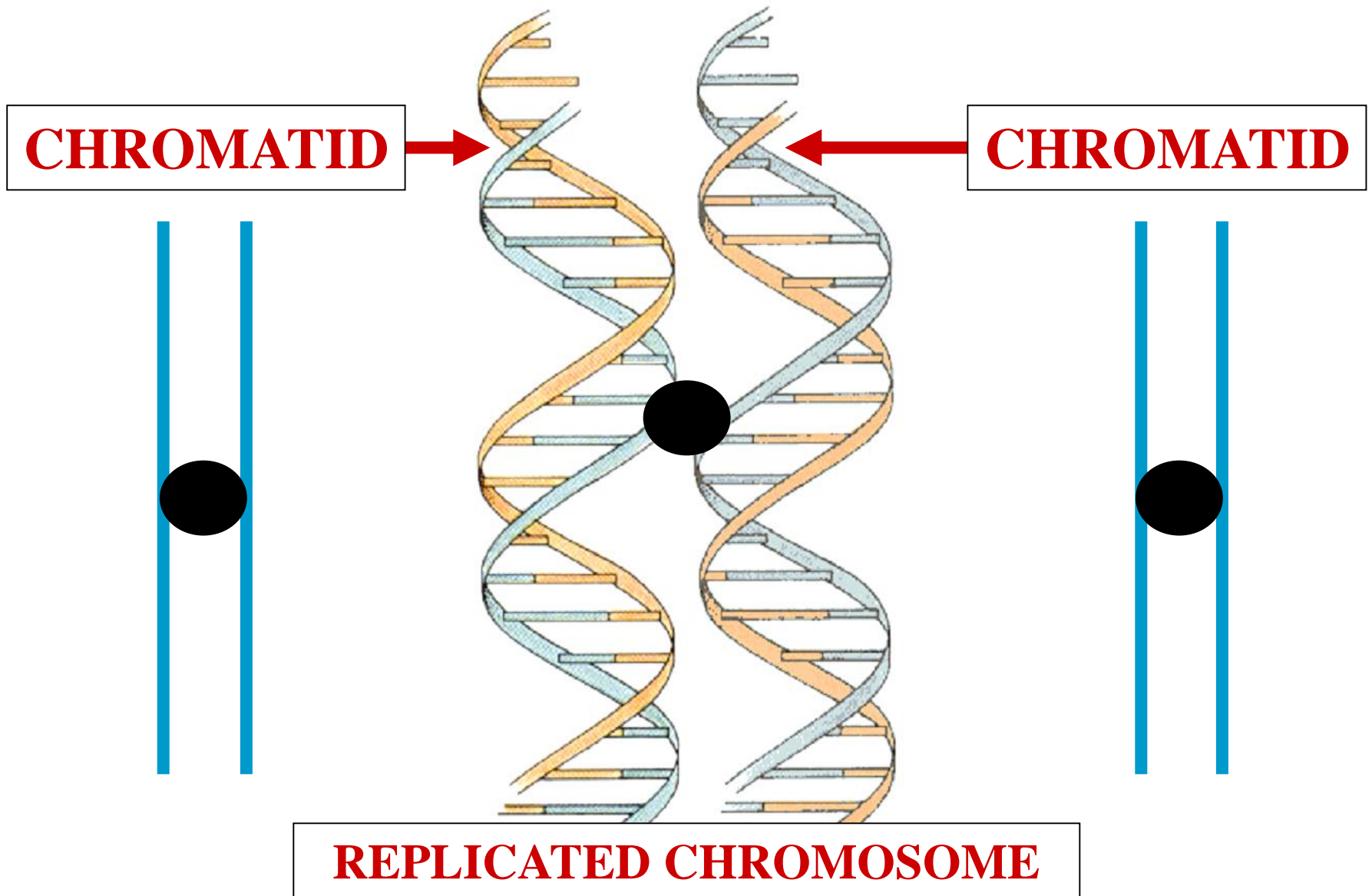
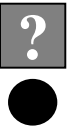


REPLICATED CHROMOSOME

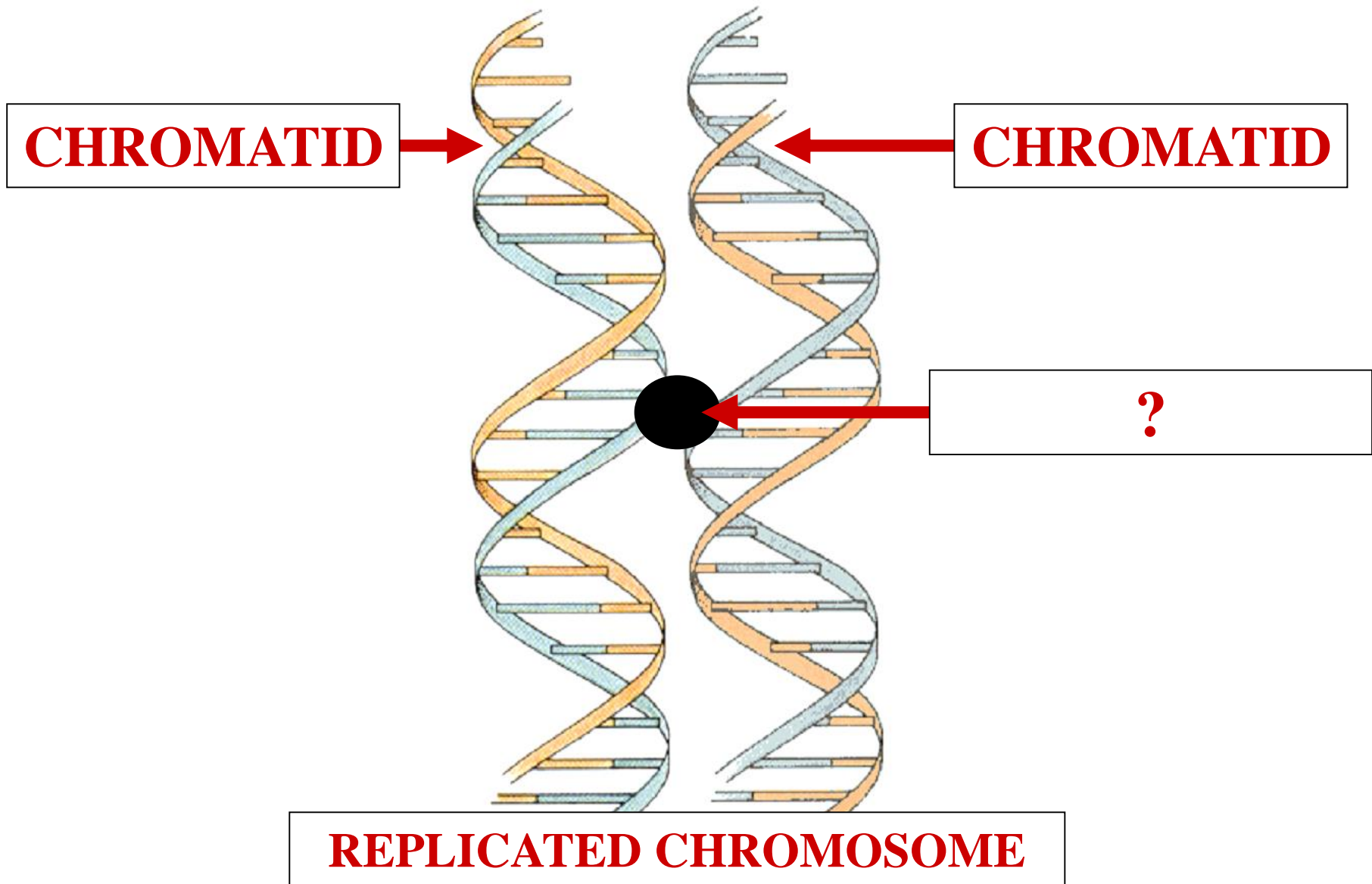
REPLICATION - OUTCOME



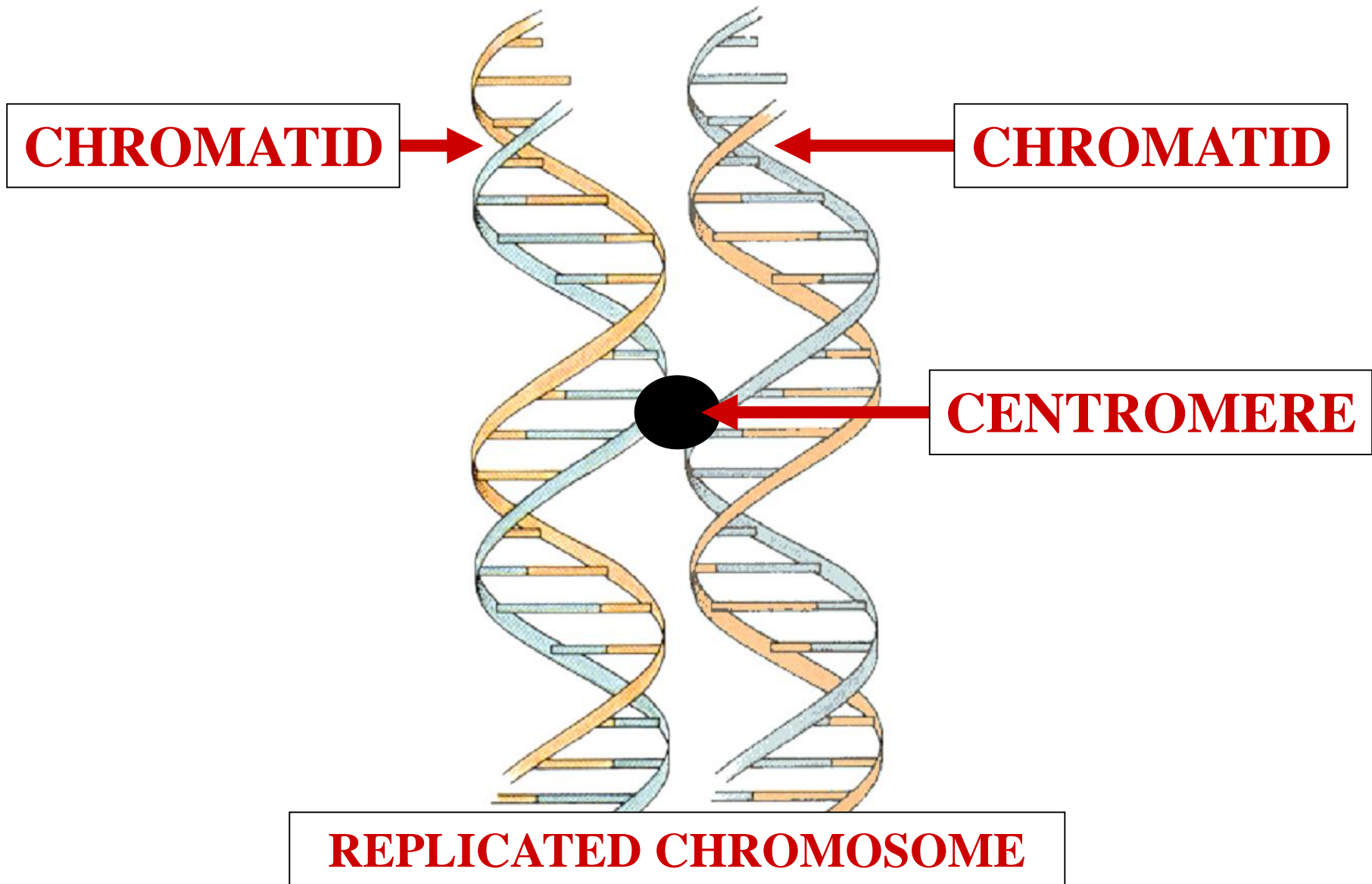
REPLICATION - OUTCOME



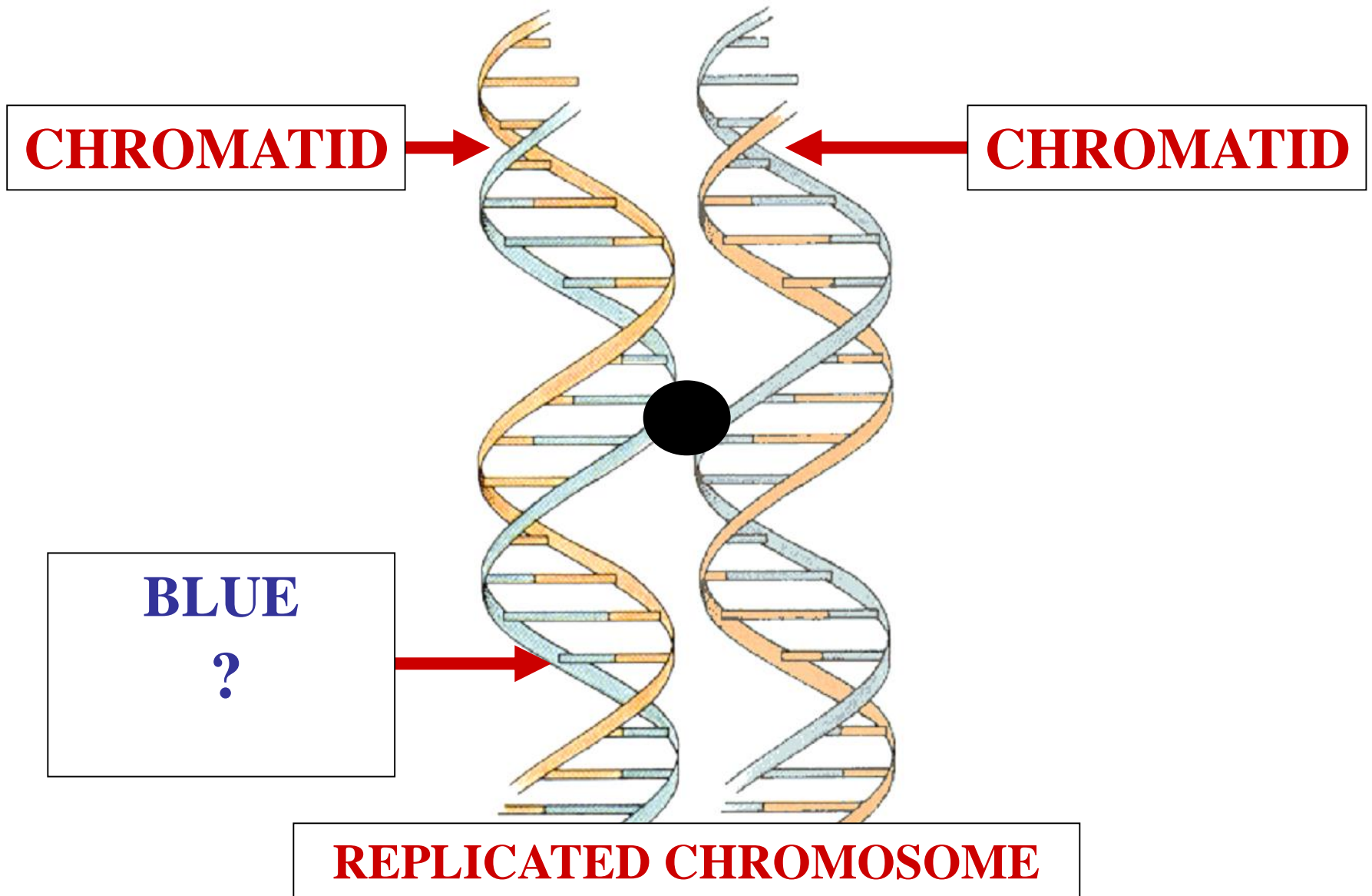
REPLICATION - OUTCOME



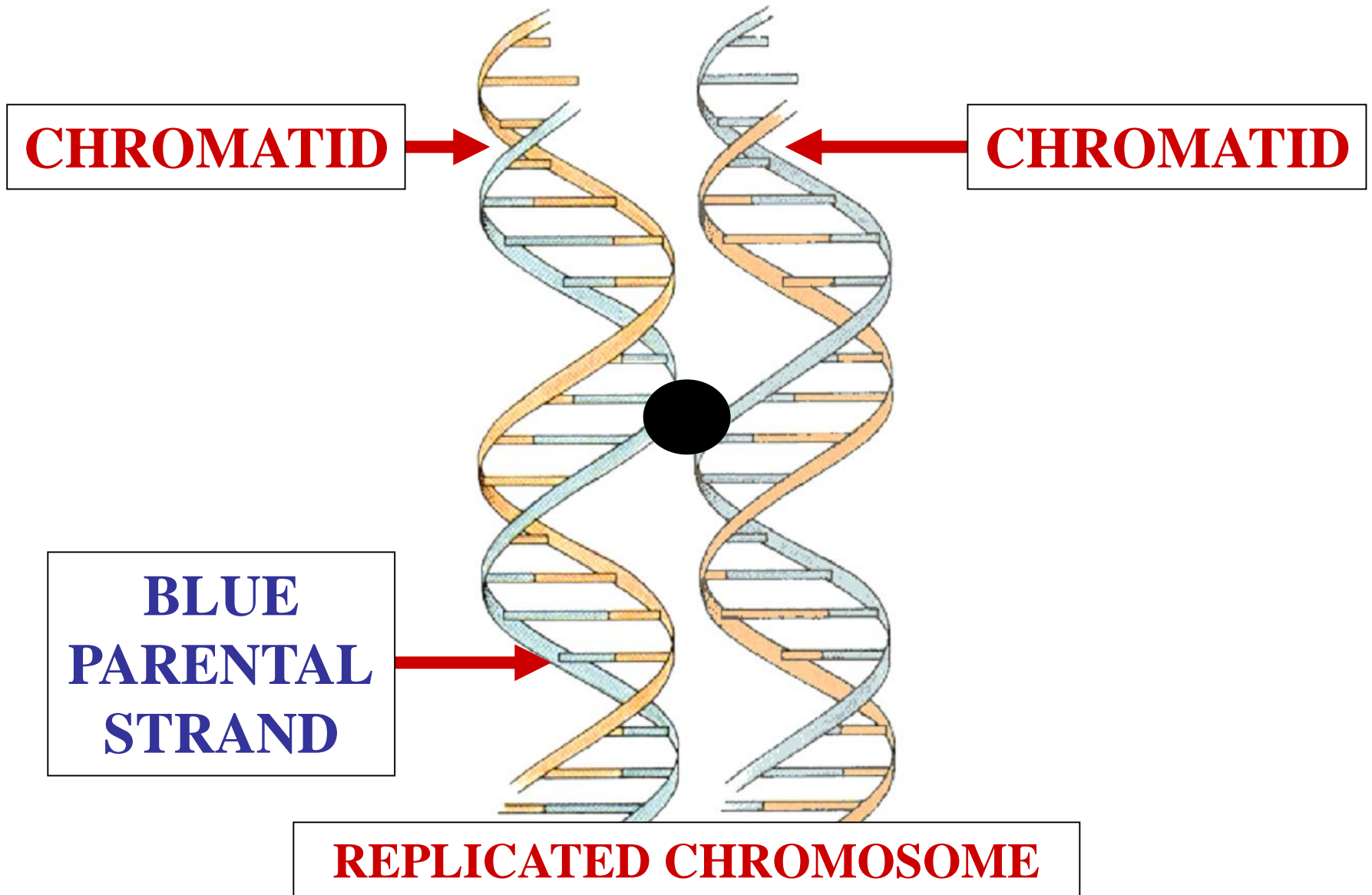
REPLICATION - OUTCOME



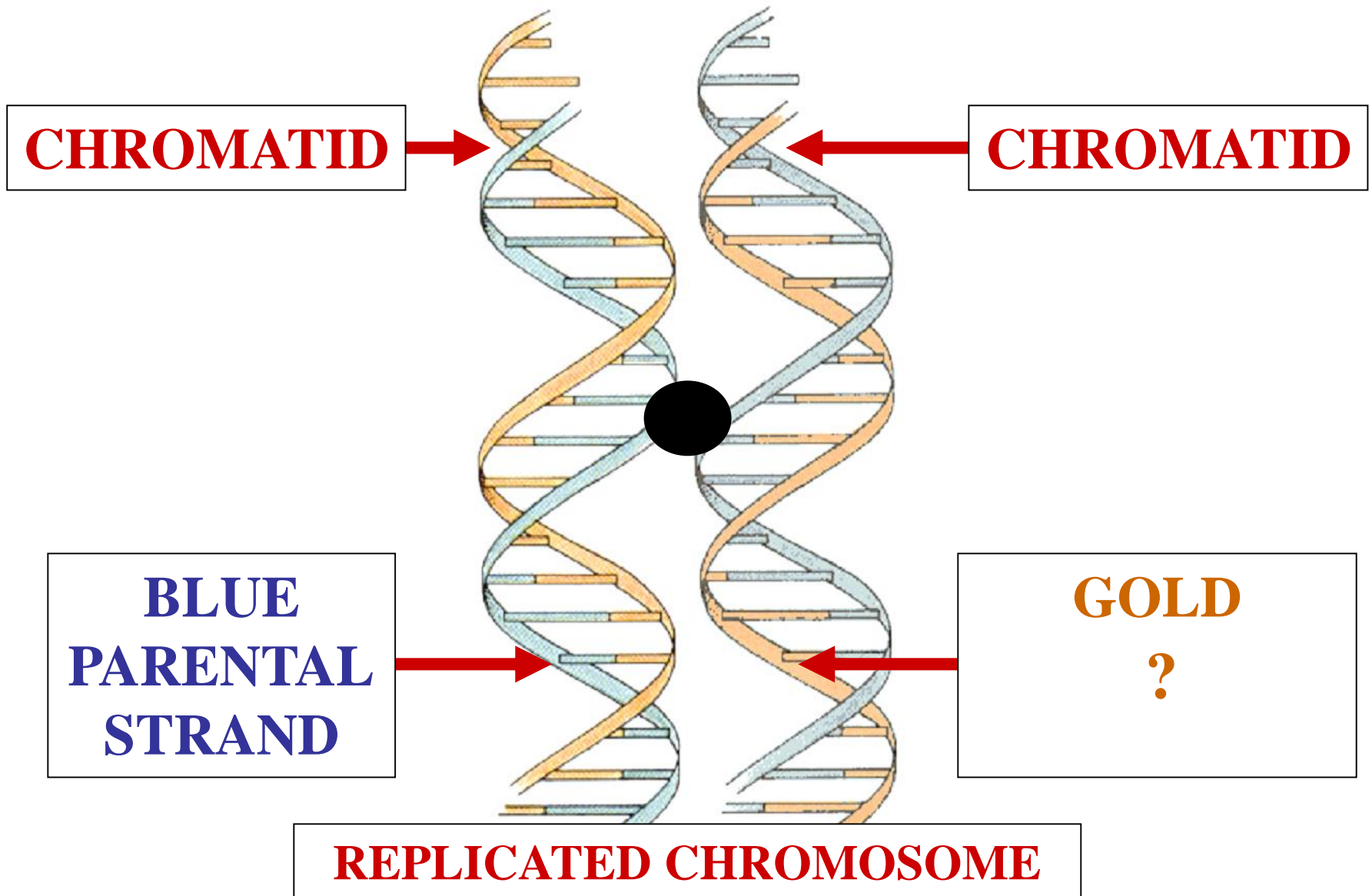
REPLICATION - OUTCOME



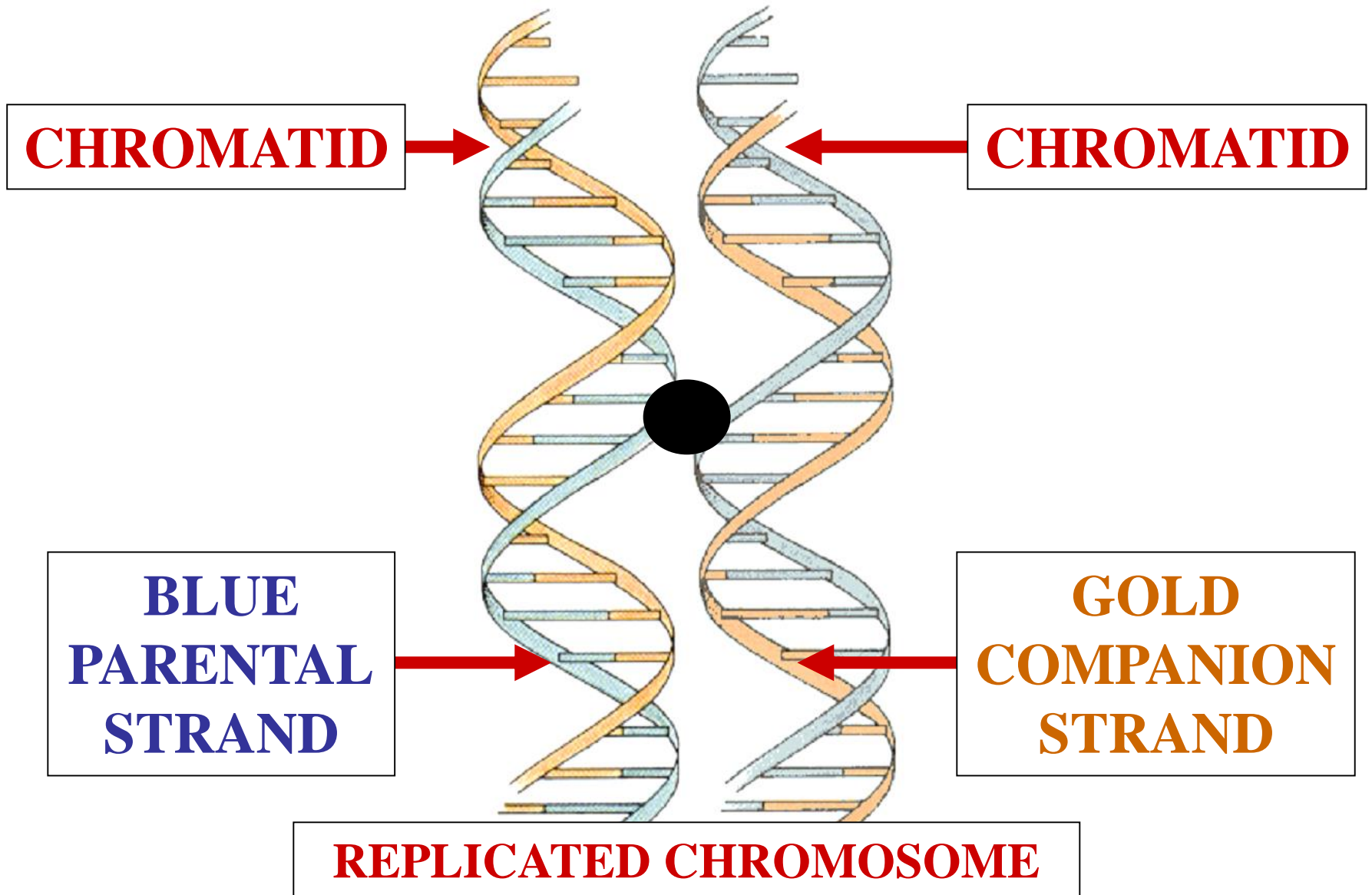
REPLICATION - OUTCOME



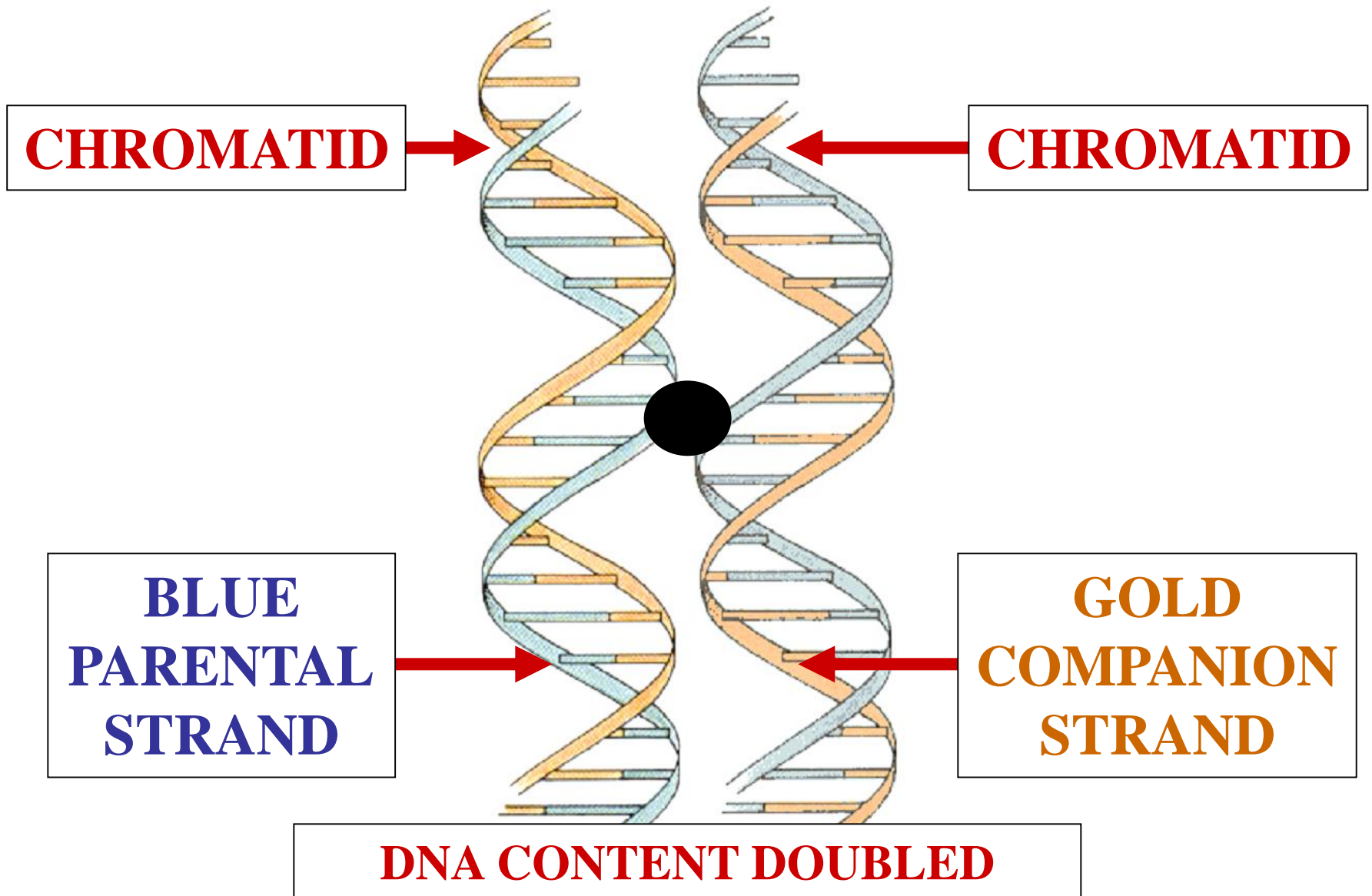
REPLICATION - OUTCOME



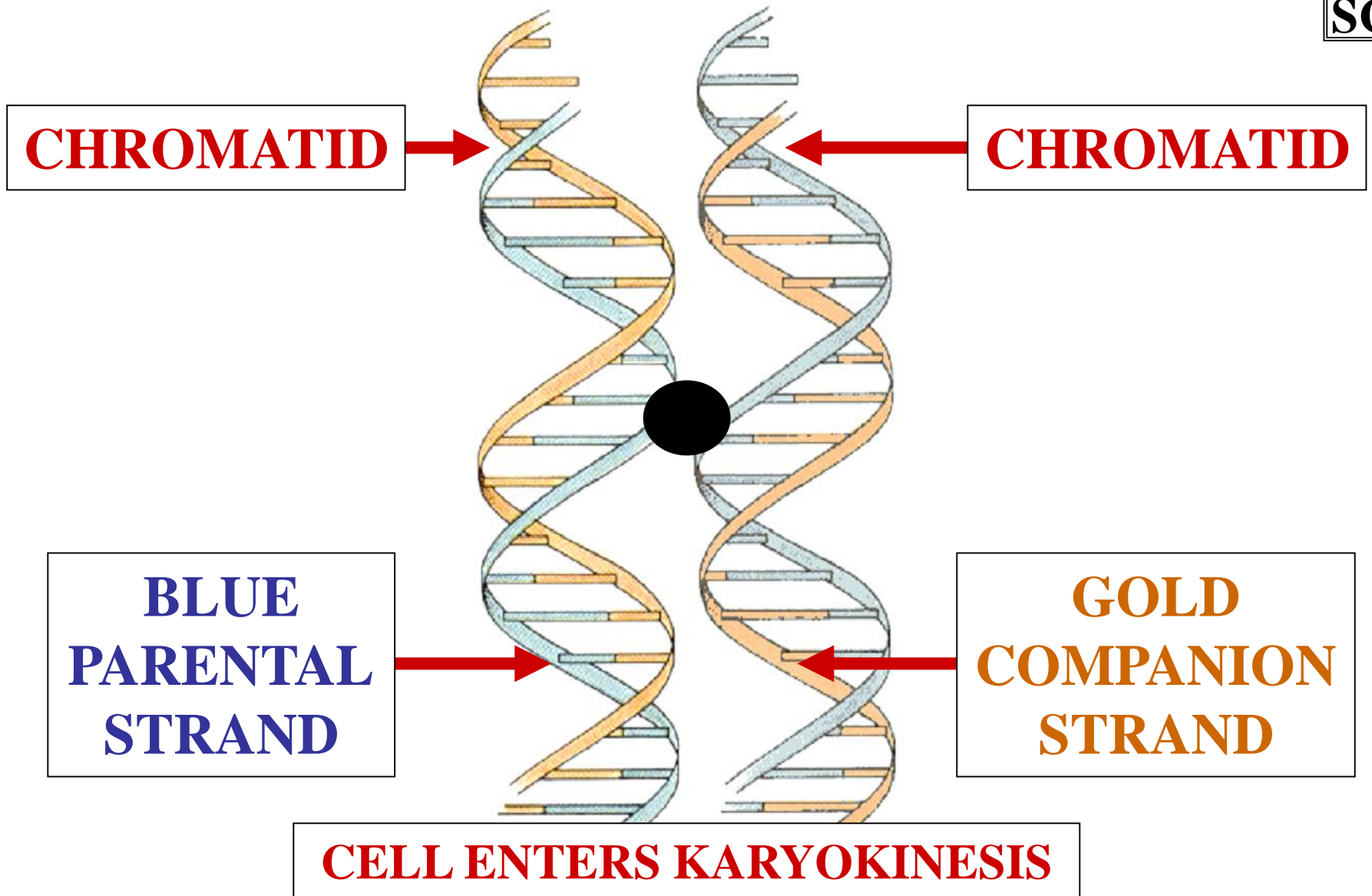
REPLICATION - OUTCOME



REPLICATION - OUTCOME



REPLICATION - OUTCOME





NUCLEUS
46
CHROMOSOMES

**SOMATIC
CELL**

KARYOKINESIS



NUCLEUS
46
CHROMOSOMES

**SOMATIC
CELL**

MITOSIS

NUCLEUS
46
CHROMOSOMES

**SOMATIC
CELL**

NUCLEUS
46
CHROMOSOMES

**SOMATIC
CELL**

GC

^

+



NUCLEUS
46
CHROMOSOMES

KARYOKINESIS

GERM
CELL



NUCLEUS
46
CHROMOSOMES

GERM CELL

MEIOSIS

NUCLEUS
23
CHROMOSOMES

GAMETE

NUCLEUS
23
CHROMOSOMES

GAMETE

NUCLEUS
23
CHROMOSOMES

GAMETE

NUCLEUS
23
CHROMOSOMES

GAMETE





DNA REPLICATION SPECIFICS

**DNA
REPLICATION
SPECIFICS
ENZYMES**

**DNA
REPLICATION
ENZYMES**

TOPOISOMERASE

**DNA
REPLICATION
ENZYMES**

**DNA
REPLICATION
ENZYMES**

**TOPOISOMERASE
HELICASE**

**DNA
REPLICATION
ENZYMES**

**DNA
REPLICATION
ENZYMES**

**TOPOISOMERASE
HELICASE
BINDING PROTEINS**

**DNA
REPLICATION
ENZYMES**

**DNA
REPLICATION
ENZYMES**

TOPOISOMERASE

HELICASE

BINDING PROTEINS

PRIMASE

**DNA
REPLICATION
ENZYMES**

**DNA
REPLICATION
ENZYMES**

TOPOISOMERASE

HELICASE

BINDING PROTEINS

PRIMASE

DNA POLYMERASES

**DNA
REPLICATION
ENZYMES**



**DNA
REPLICATION
ENZYMES**

TOPOISOMERASE

HELICASE

BINDING PROTEINS

PRIMASE

DNA POLYMERASES

LIGASE

**DNA
REPLICATION
ENZYMES**