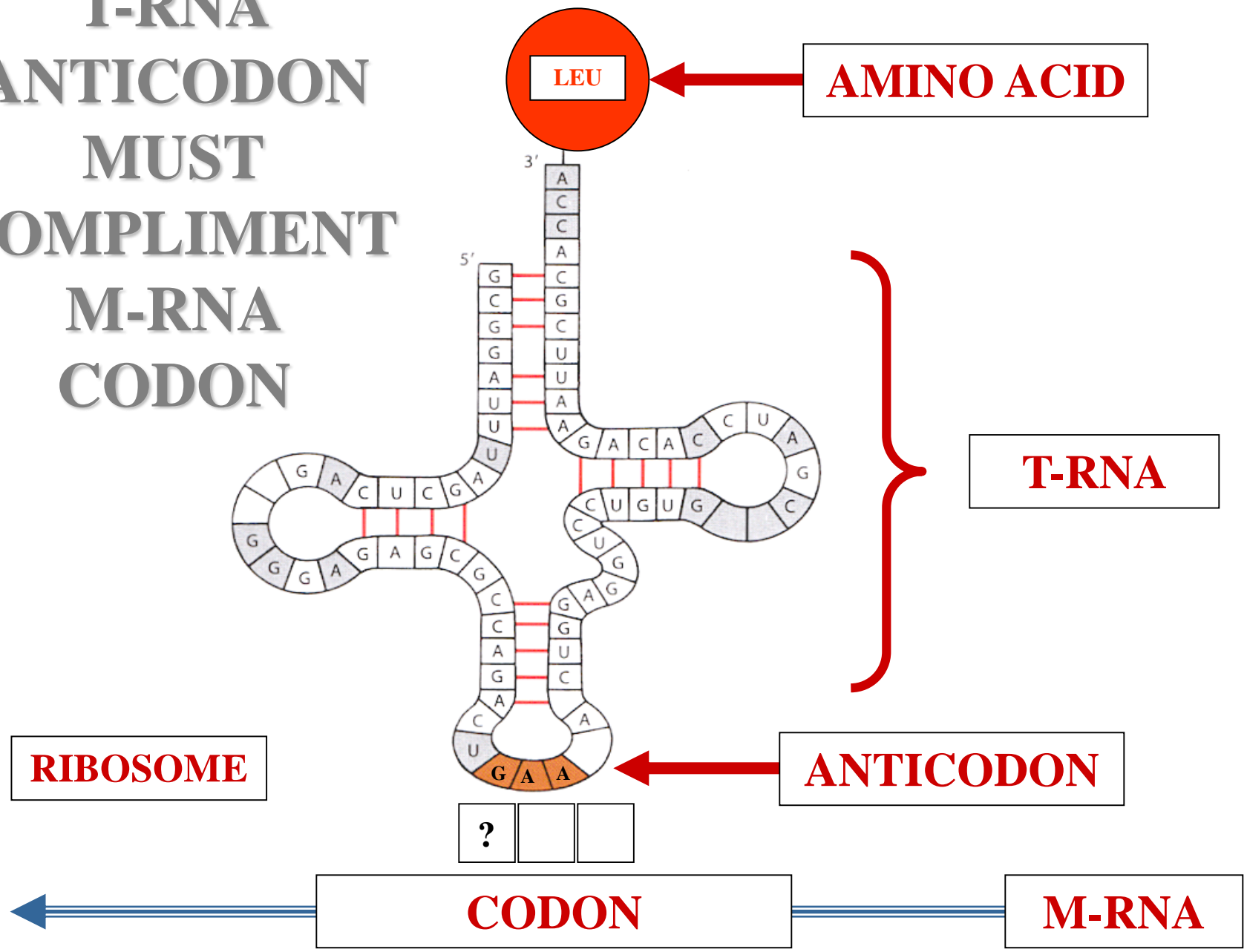
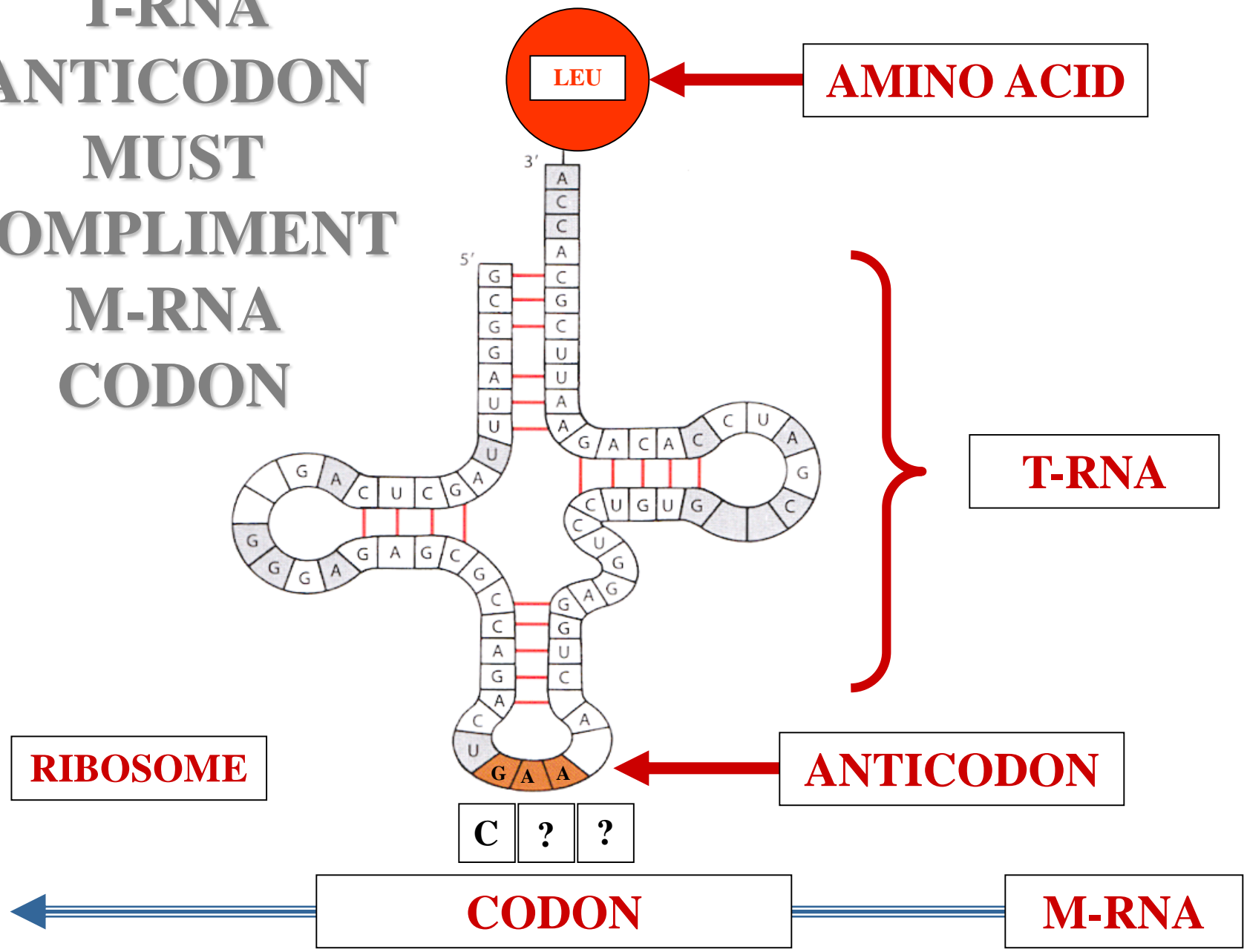


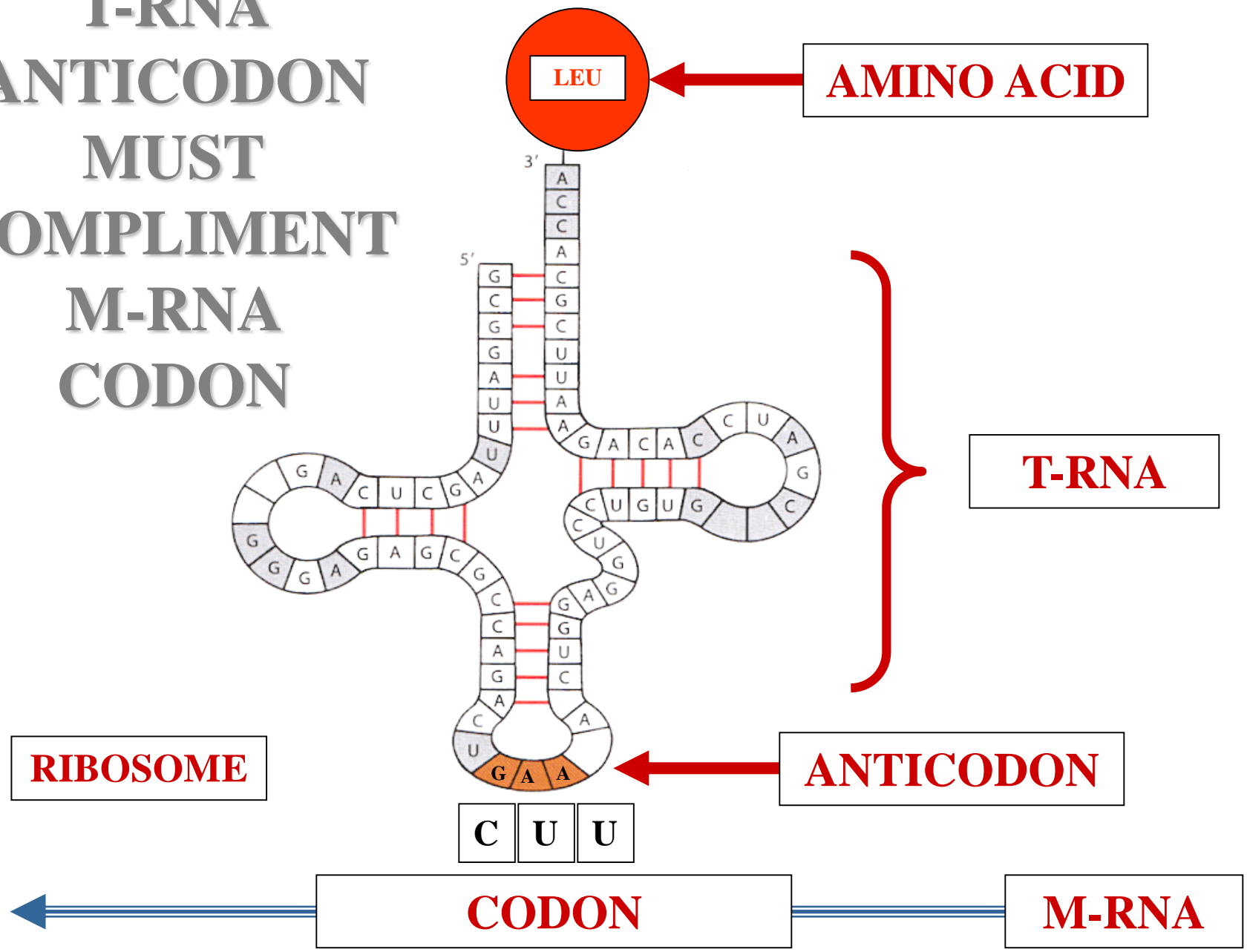
**T-RNA
ANTICODON
MUST
COMPLIMENT
M-RNA
CODON**



**T-RNA
ANTICODON
MUST
COMPLIMENT
M-RNA
CODON**



**T-RNA
ANTICODON
MUST
COMPLIMENT
M-RNA
CODON**



RIBOSOME

AMINO ACID

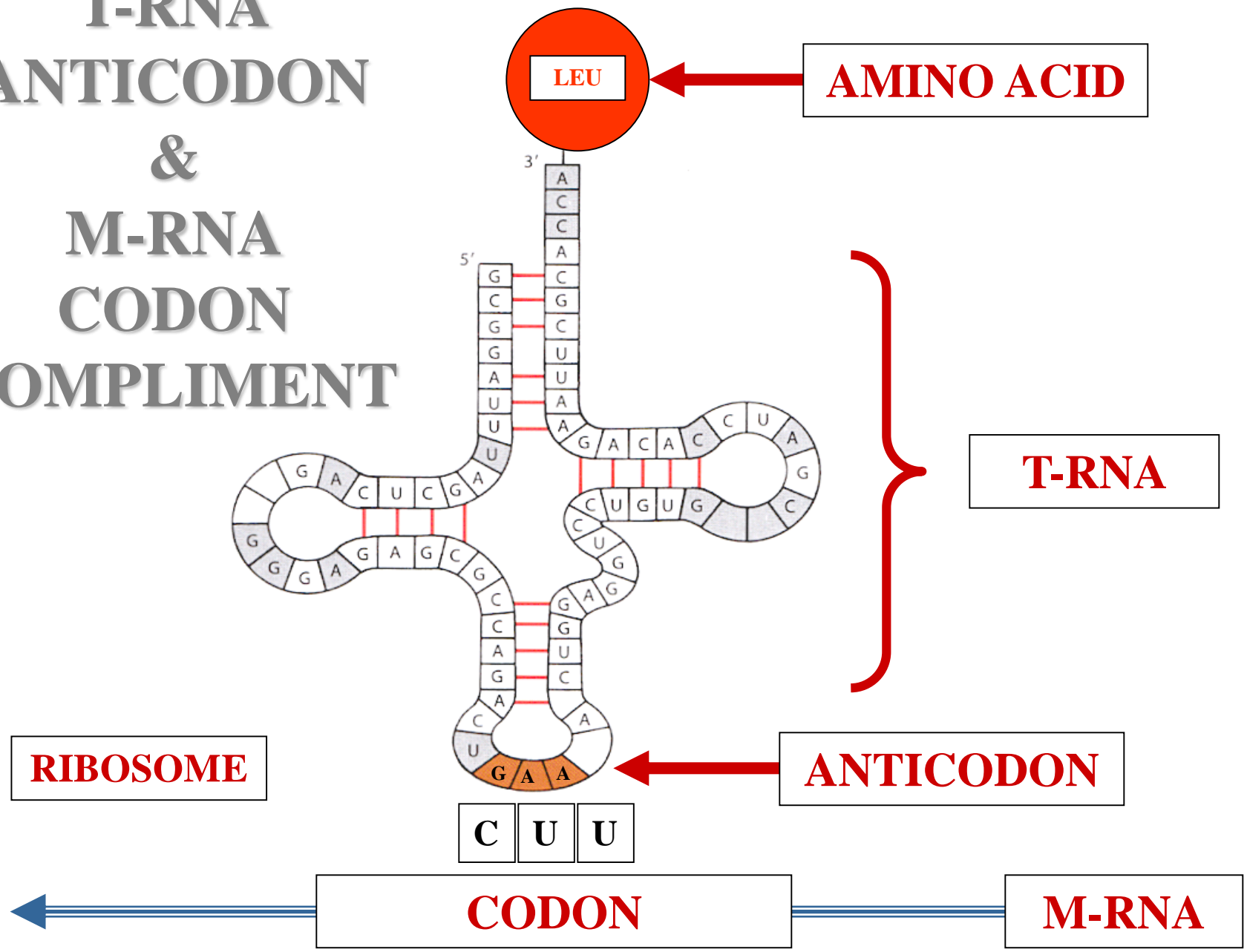
T-RNA

ANTICODON

CODON

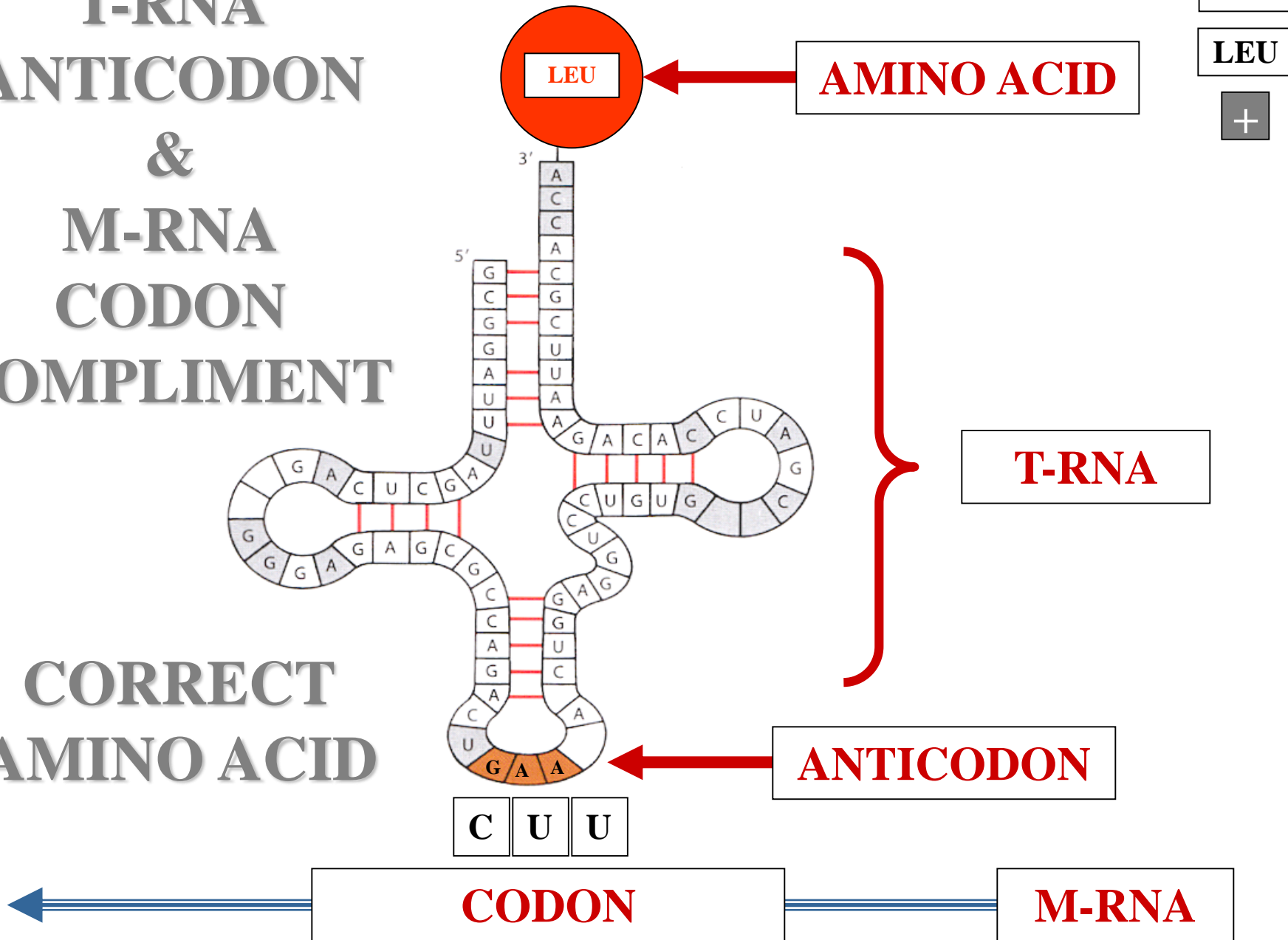
M-RNA

T-RNA ANTICODON & M-RNA CODON COMPLIMENT



T-RNA ANTICODON & M-RNA CODON COMPLIMENT

CORRECT
AMINO ACID





GENETIC CODE

M-RNA AUGCAUAACAAACUUCCCUAA

M-RNA AUG CAU AAC AAA CUU CCC UAA

CODON CODON CODON CODON CODON CODON CODON

MET * HIS * ASP * LYS * LEU

LEUCINE

* = PEPTIDE BOND / POLYPEPTIDE CHAIN = PROTEIN

GENETIC CODE



PROTIEN SYNTHESIS

DURING TRANSLATION:

TRANSLATION



PROTIEN SYNTHESIS

**T-RNA ANTICODON
COMPLIMENTS
M-RNA CODON**

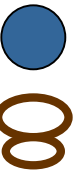
TRANSLATION



PROTIEN SYNTHESIS

CORRECT: AMINO ACID

TRANSLATION



RIBOSOME A & P SITES

CELL

PROTEIN / SYNTHESIS



CHROMOSOME



DNA/GENE

NUCLEUS

TRANSCRIPTION



NON-MODIFIED M-RNA

MODIFICATION



MODIFIED M-RNA

RIBOSOME



TRANSLATES *GENETIC CODE*



MODIFIED M-RNA

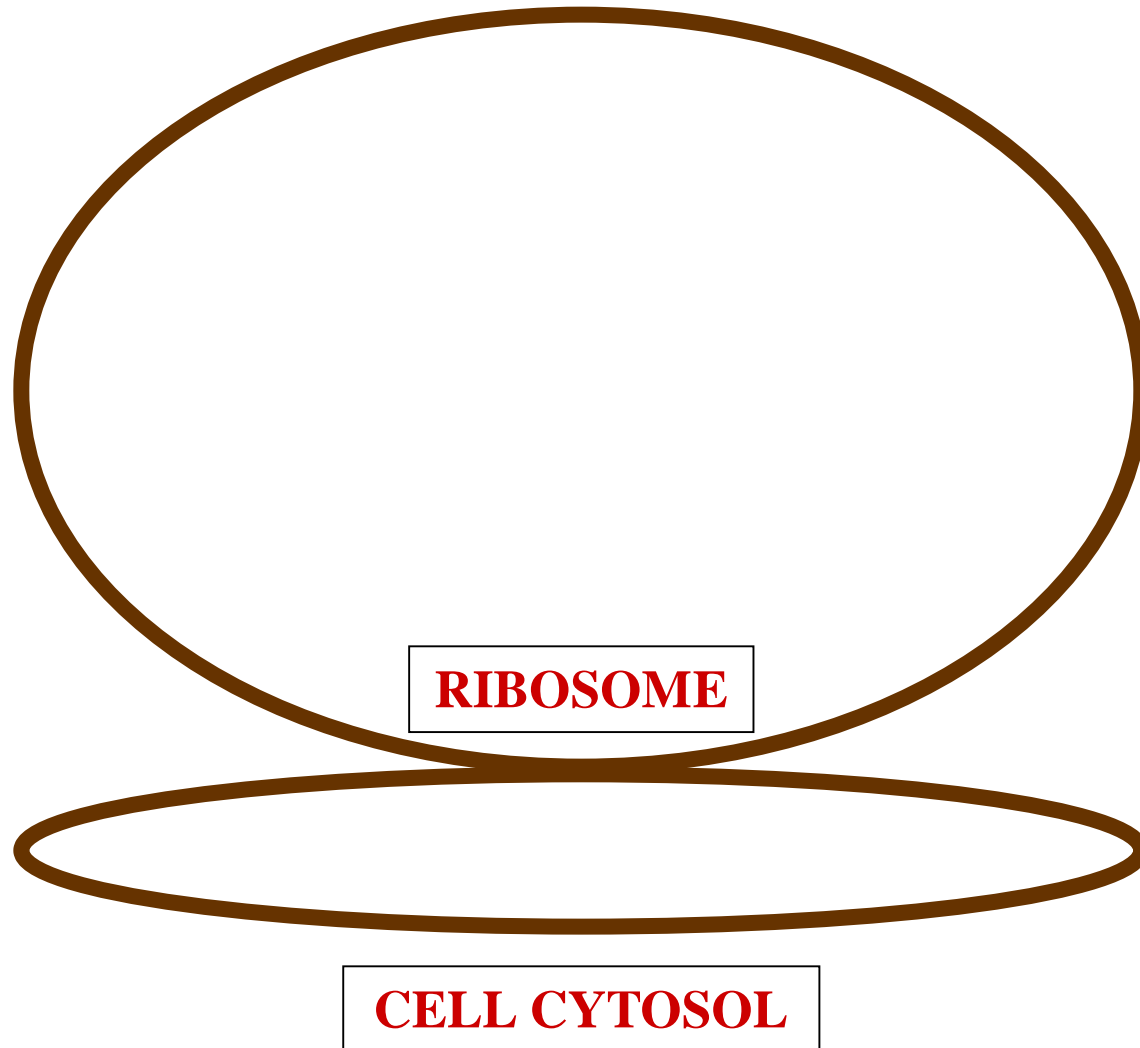
TRANSLATION

CYTOSOL

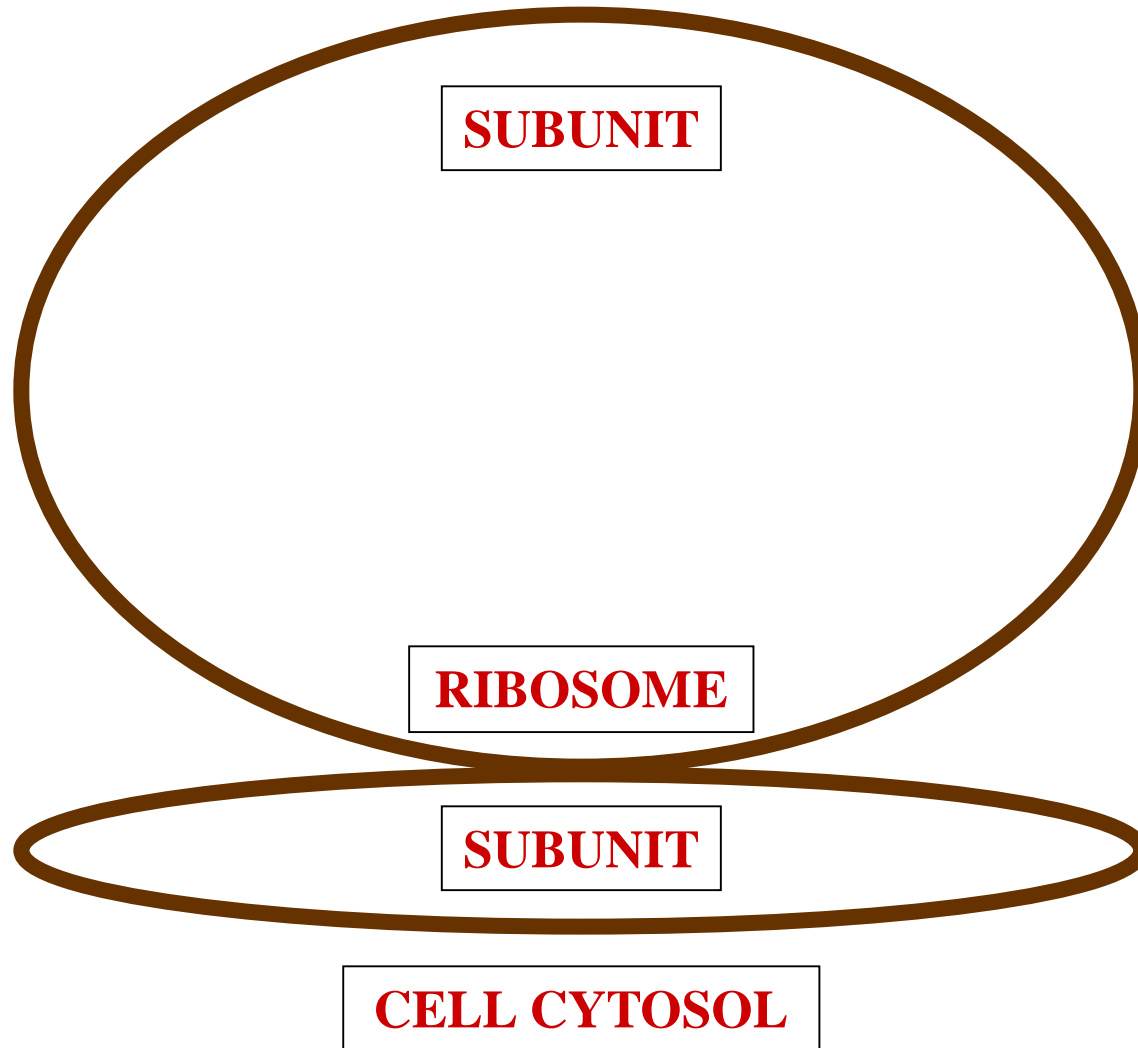
TRANSLATION

2

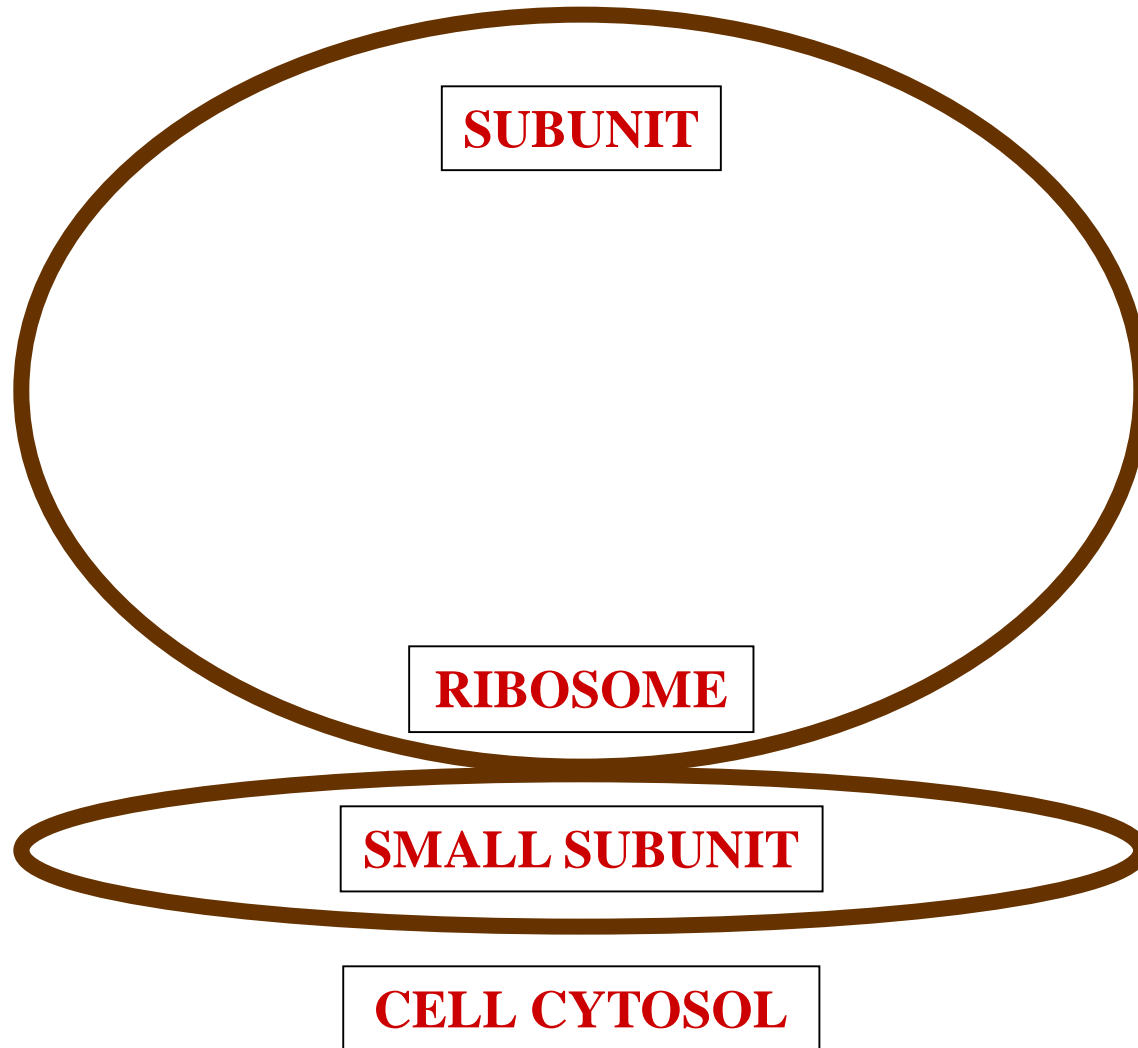
SU



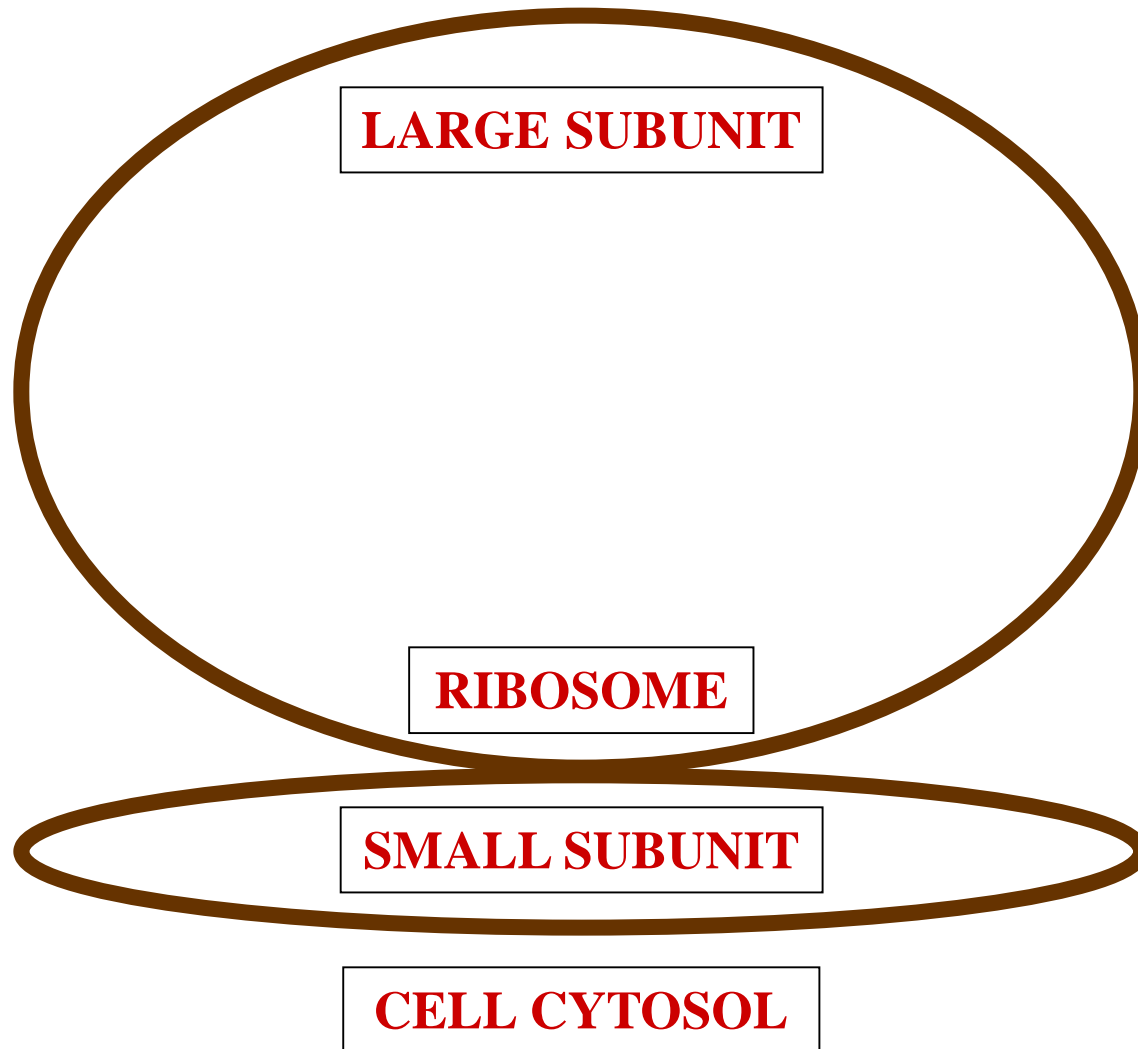
TRANSLATION



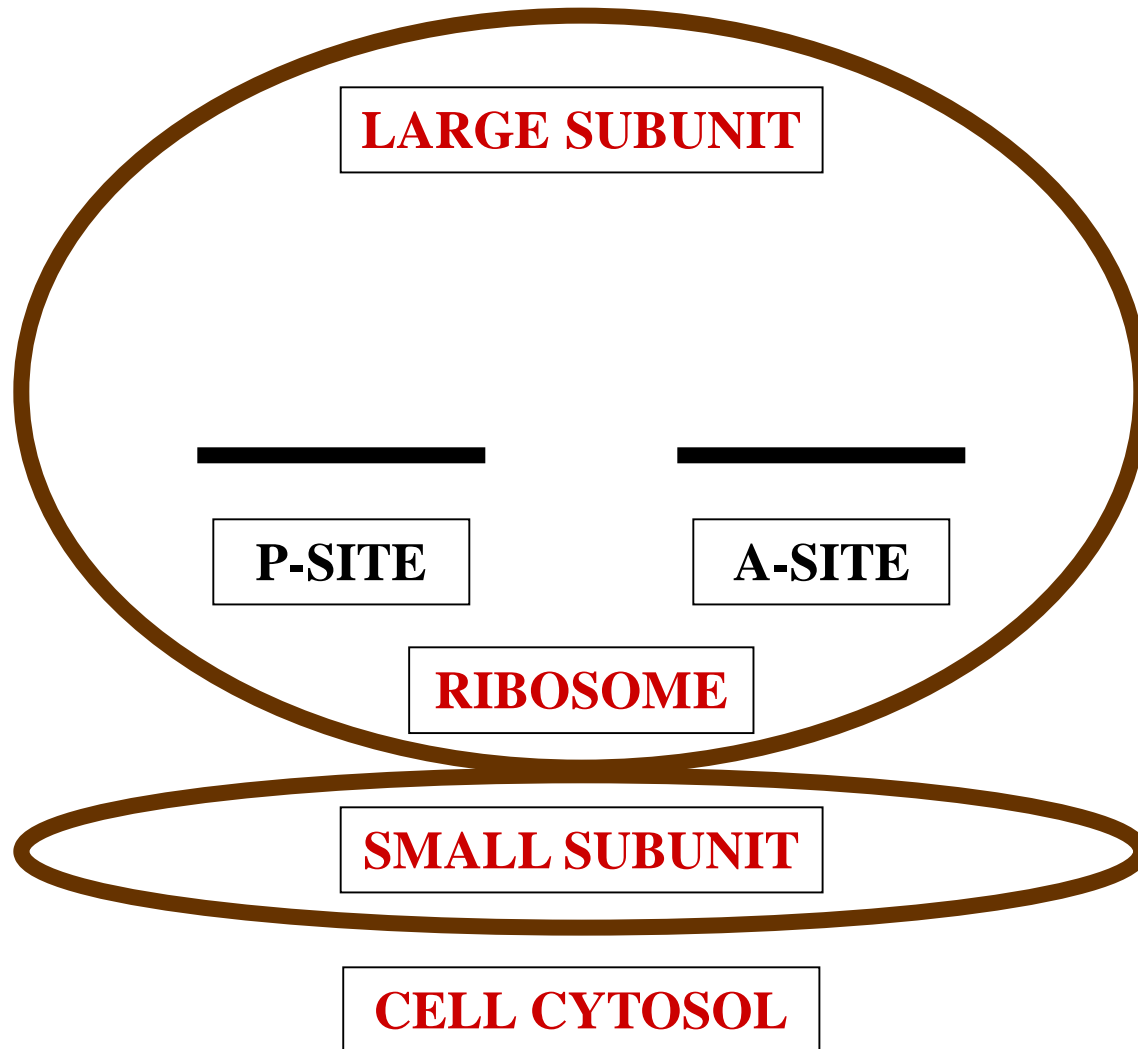
TRANSLATION



TRANSLATION



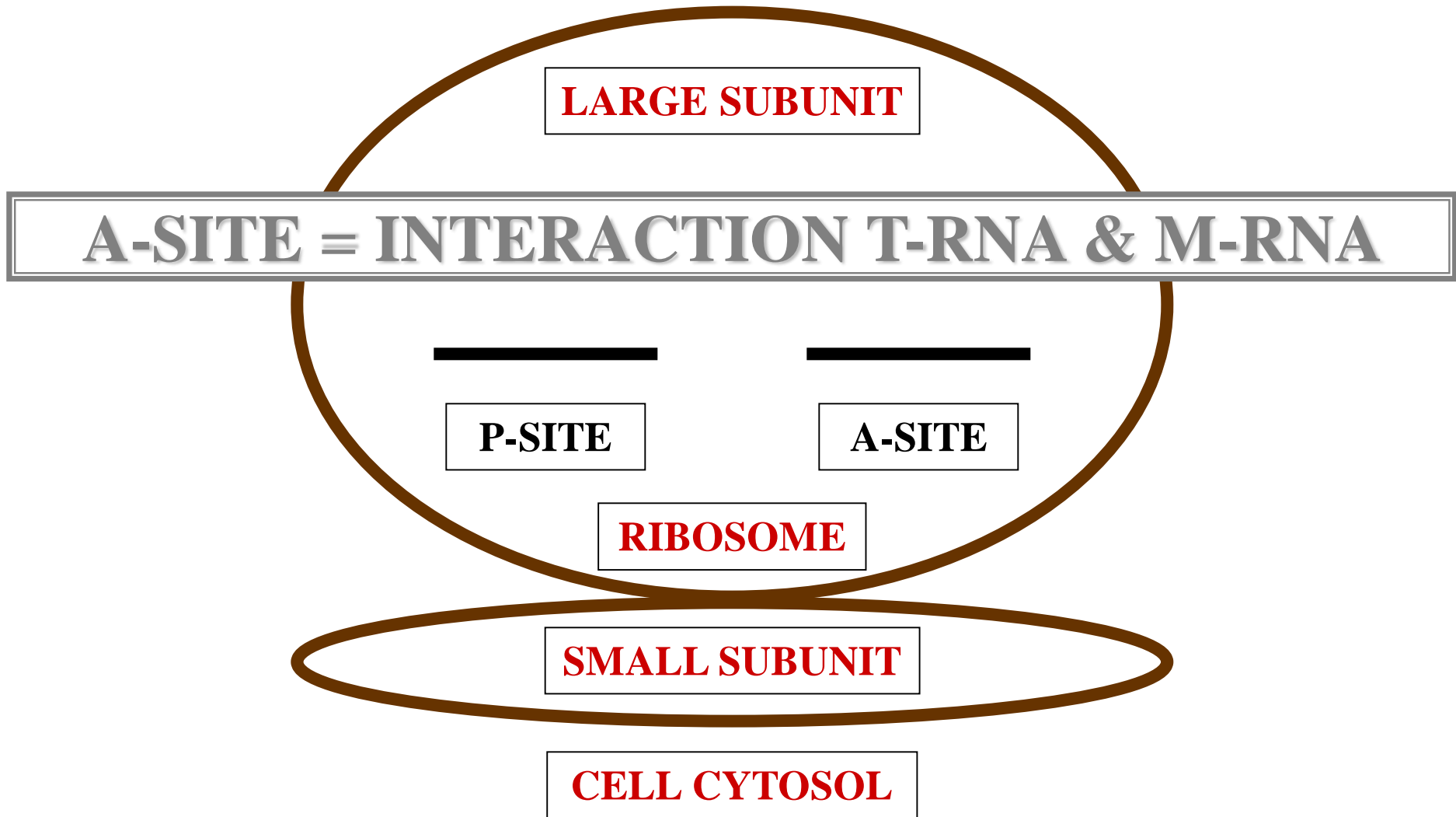
TRANSLATION



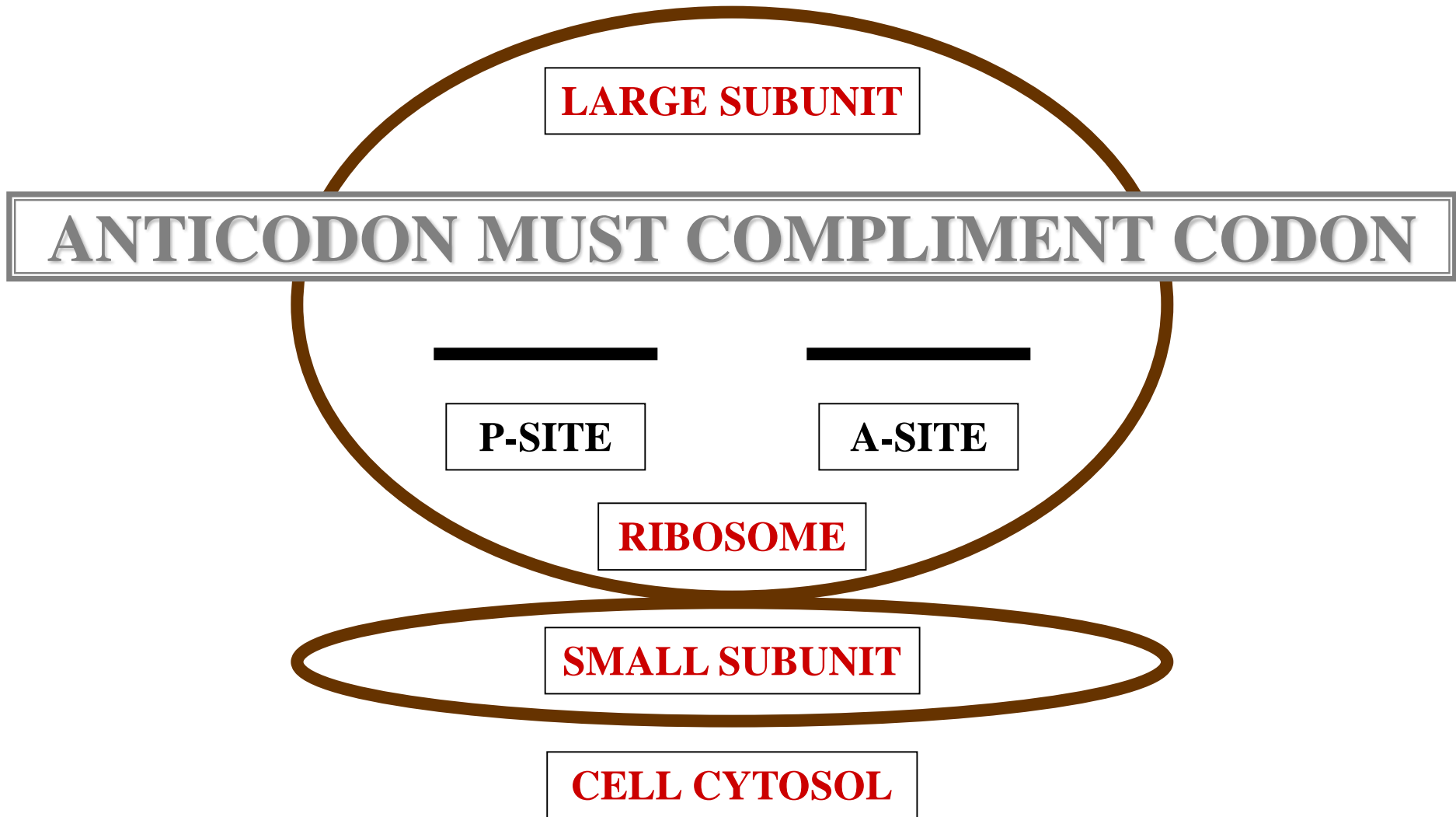
RIBOSOME

A-SITE

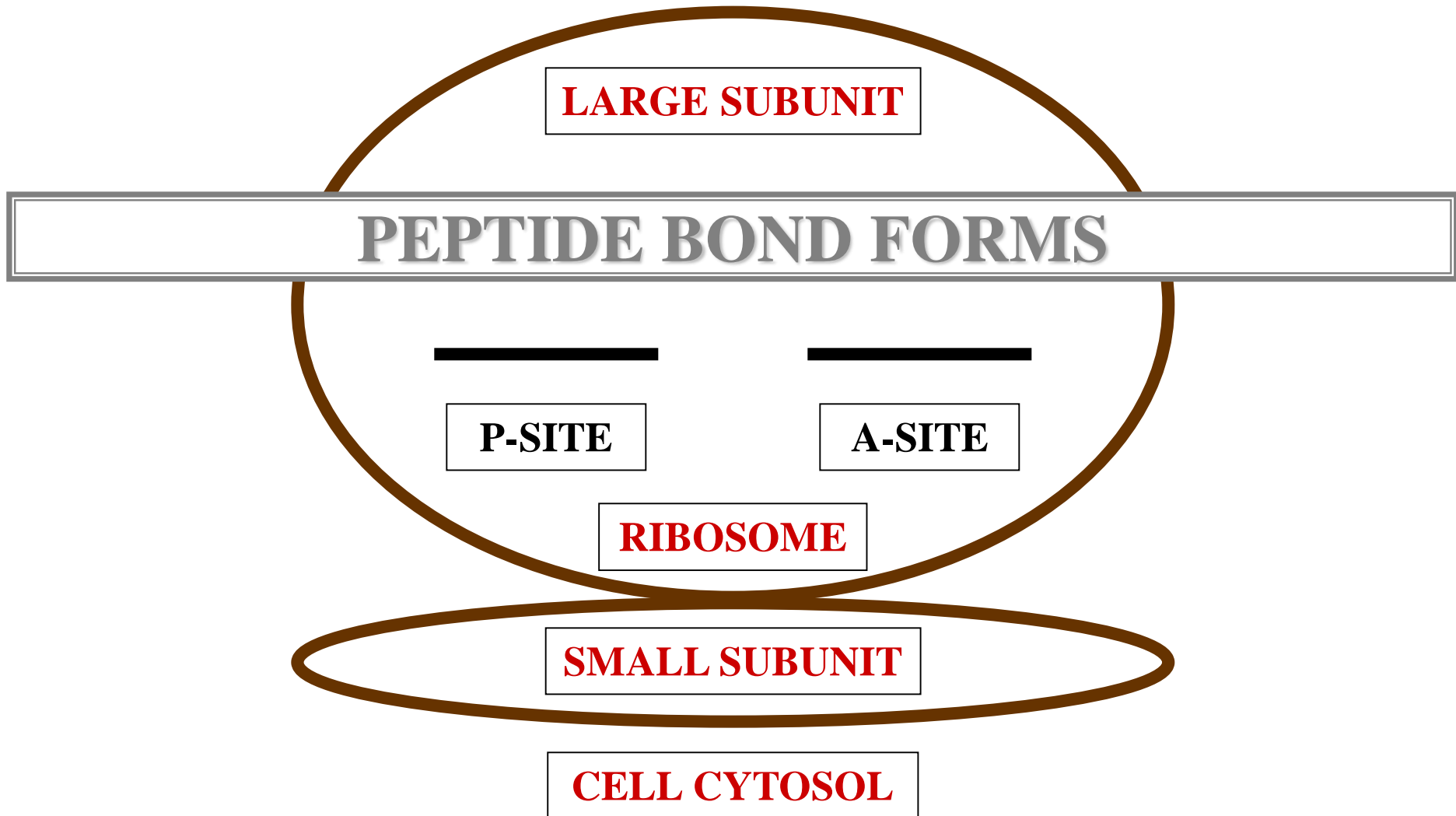
TRANSLATION



TRANSLATION



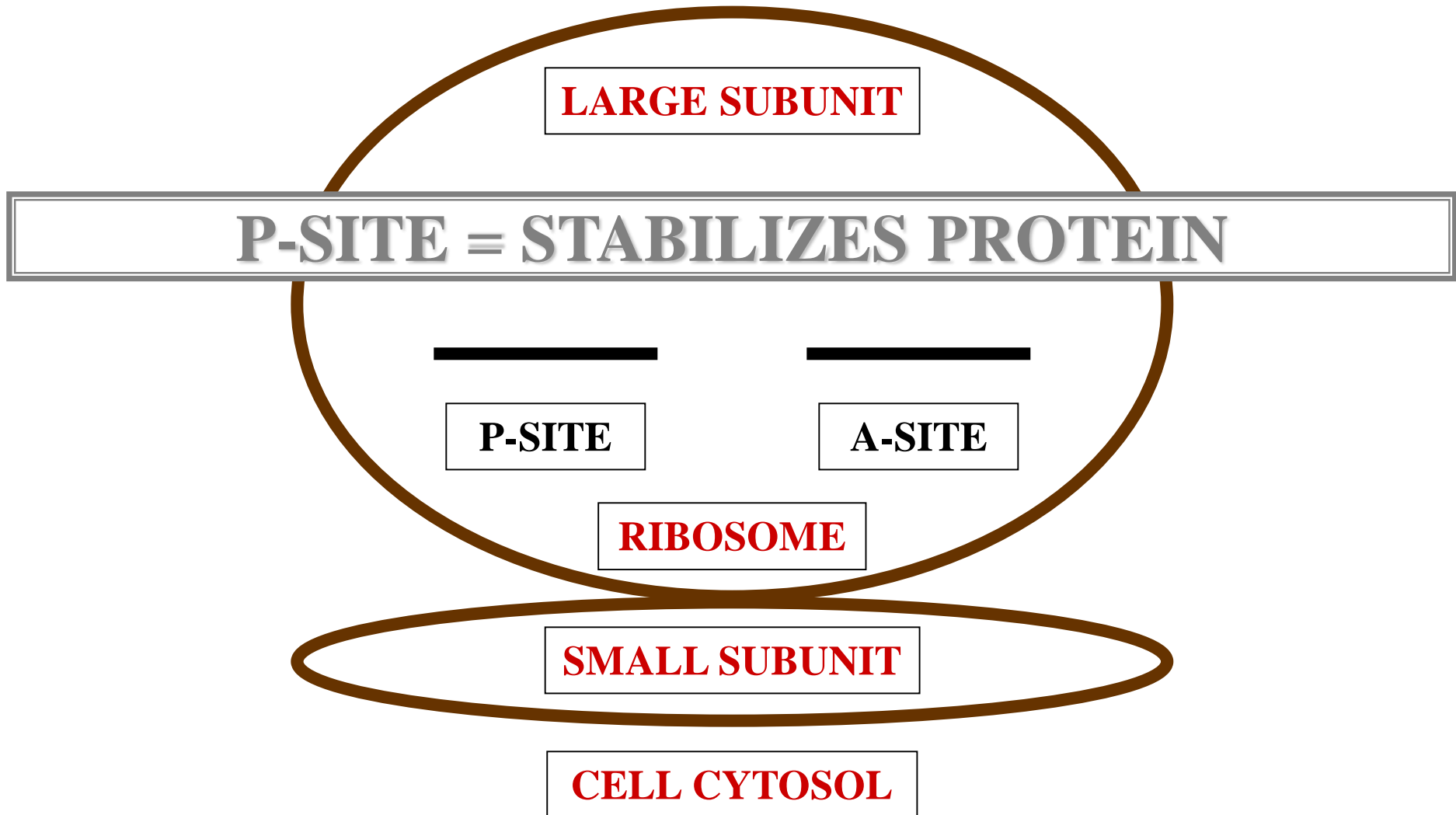
TRANSLATION



RIBOSOME

P-SITE

TRANSLATION



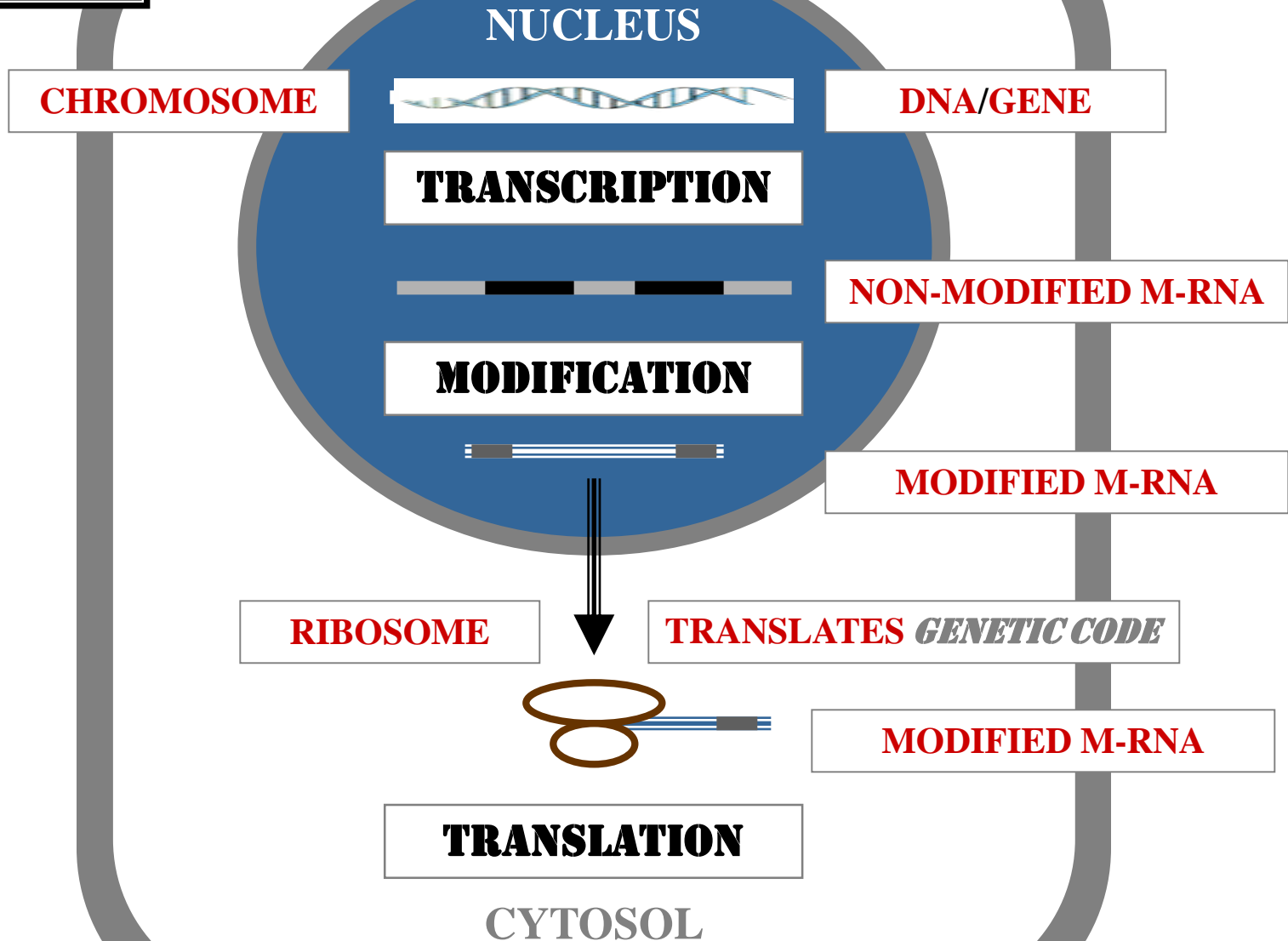


TRANSLATION EXAMPLES

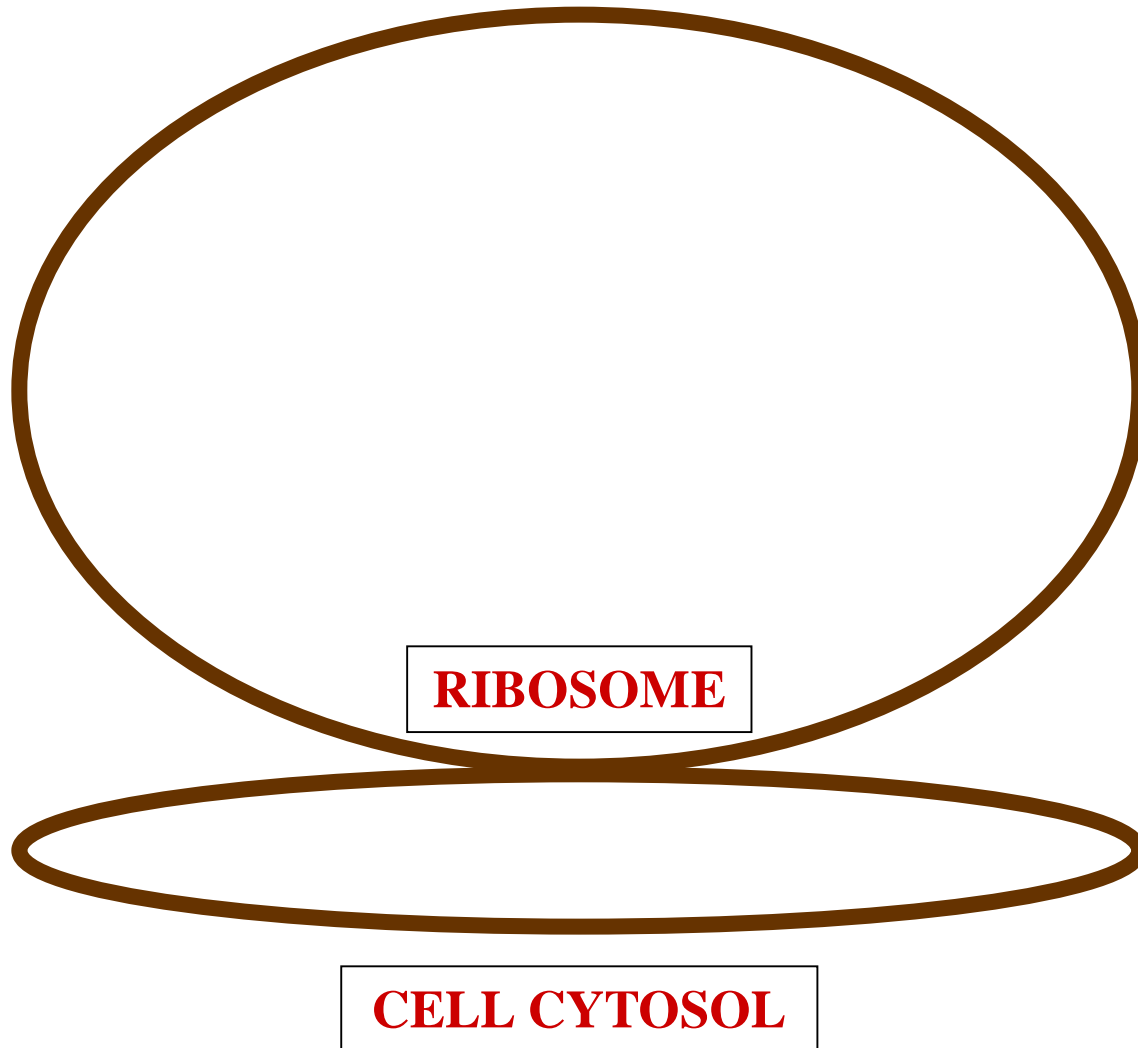
CELL

PROTEIN / SYNTHESIS

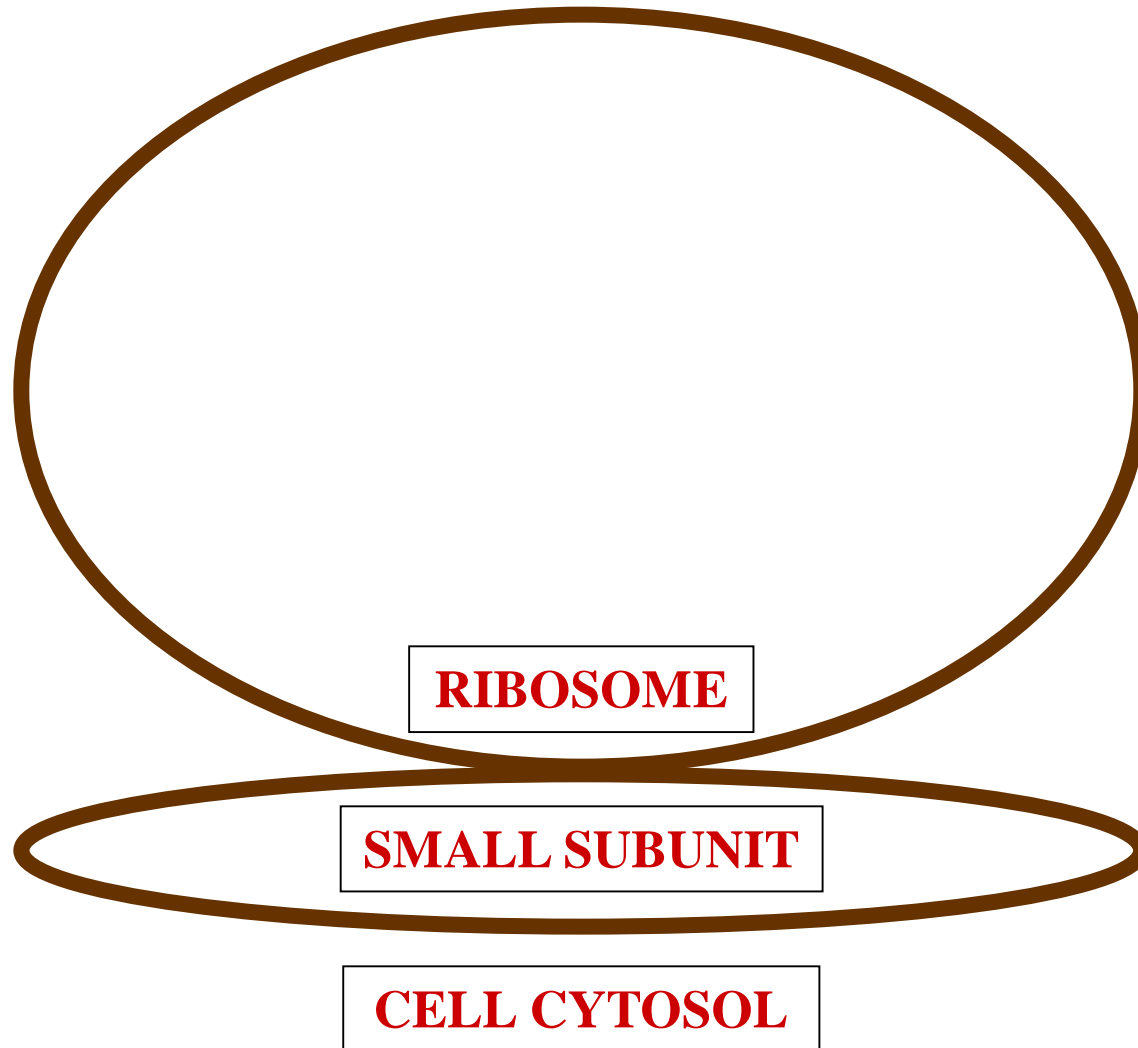
8



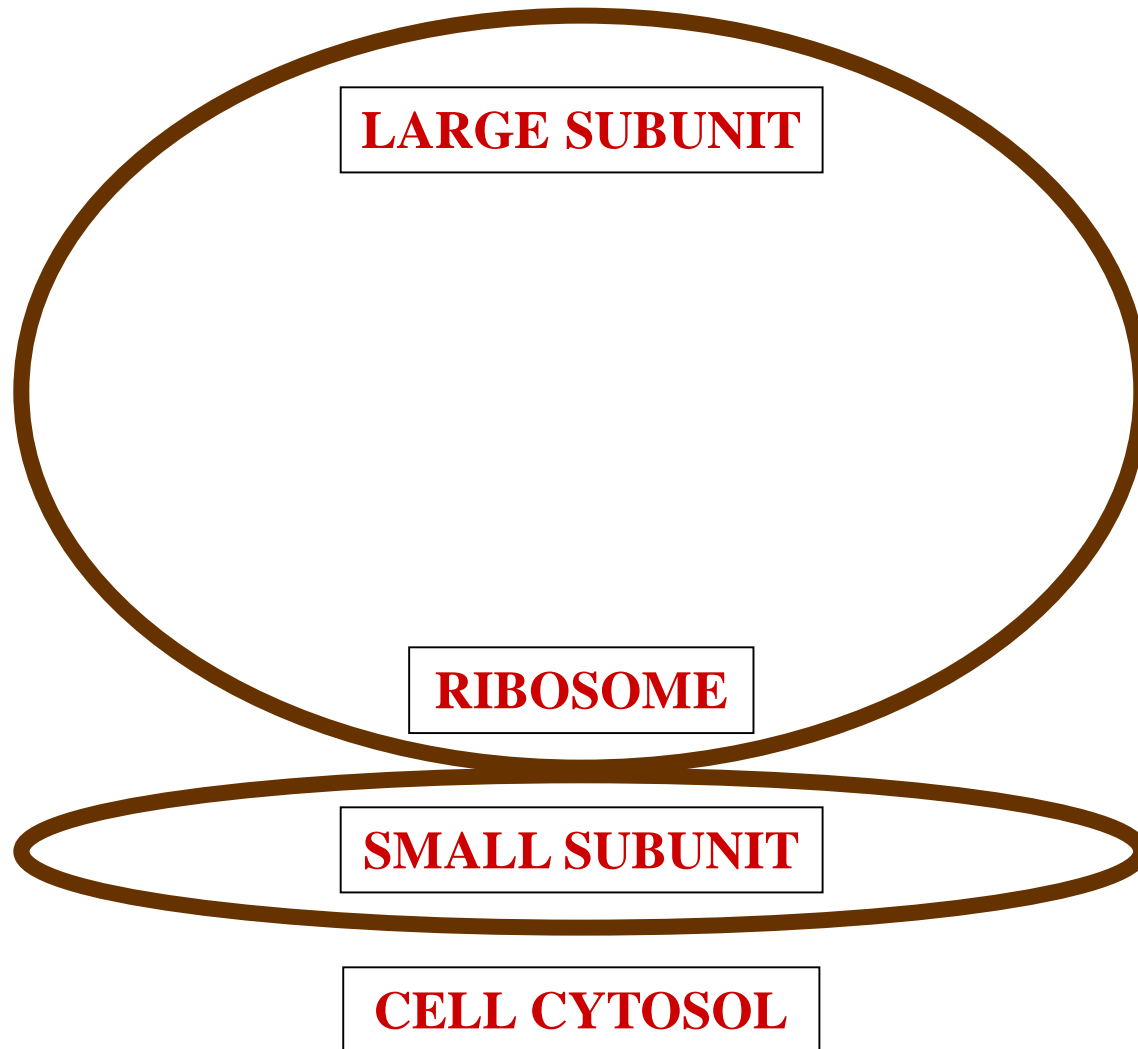
TRANSLATION



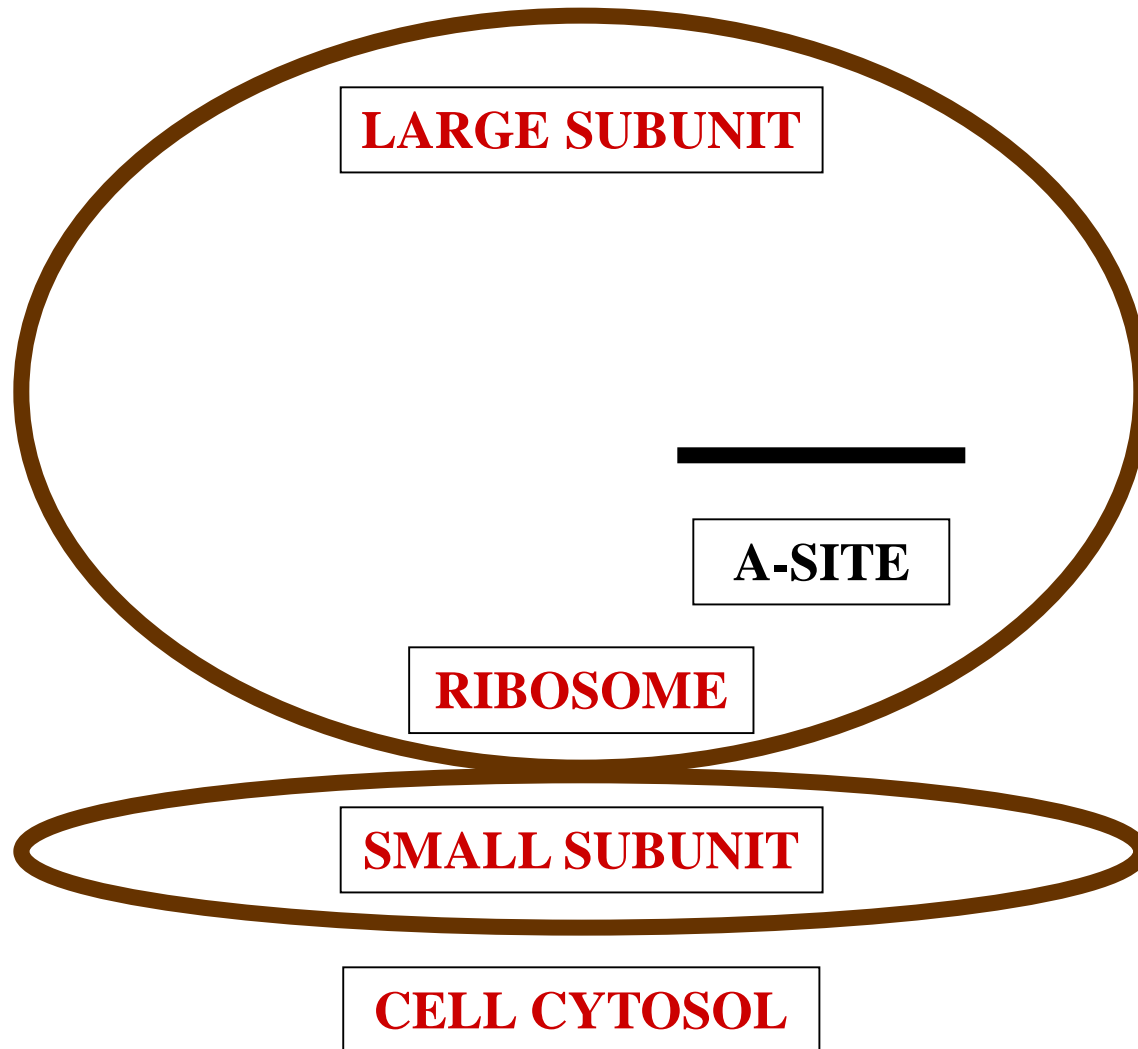
TRANSLATION



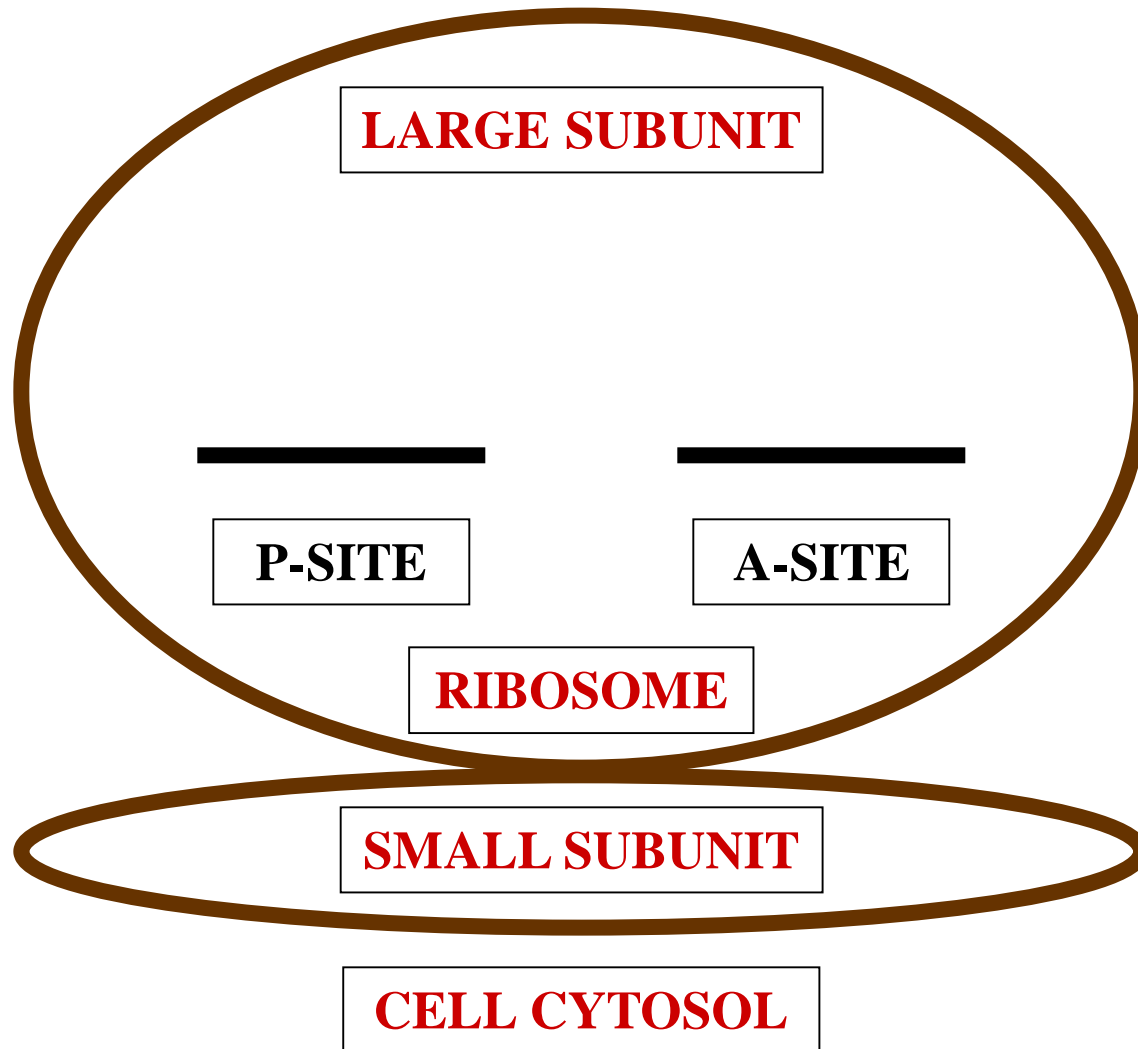
TRANSLATION



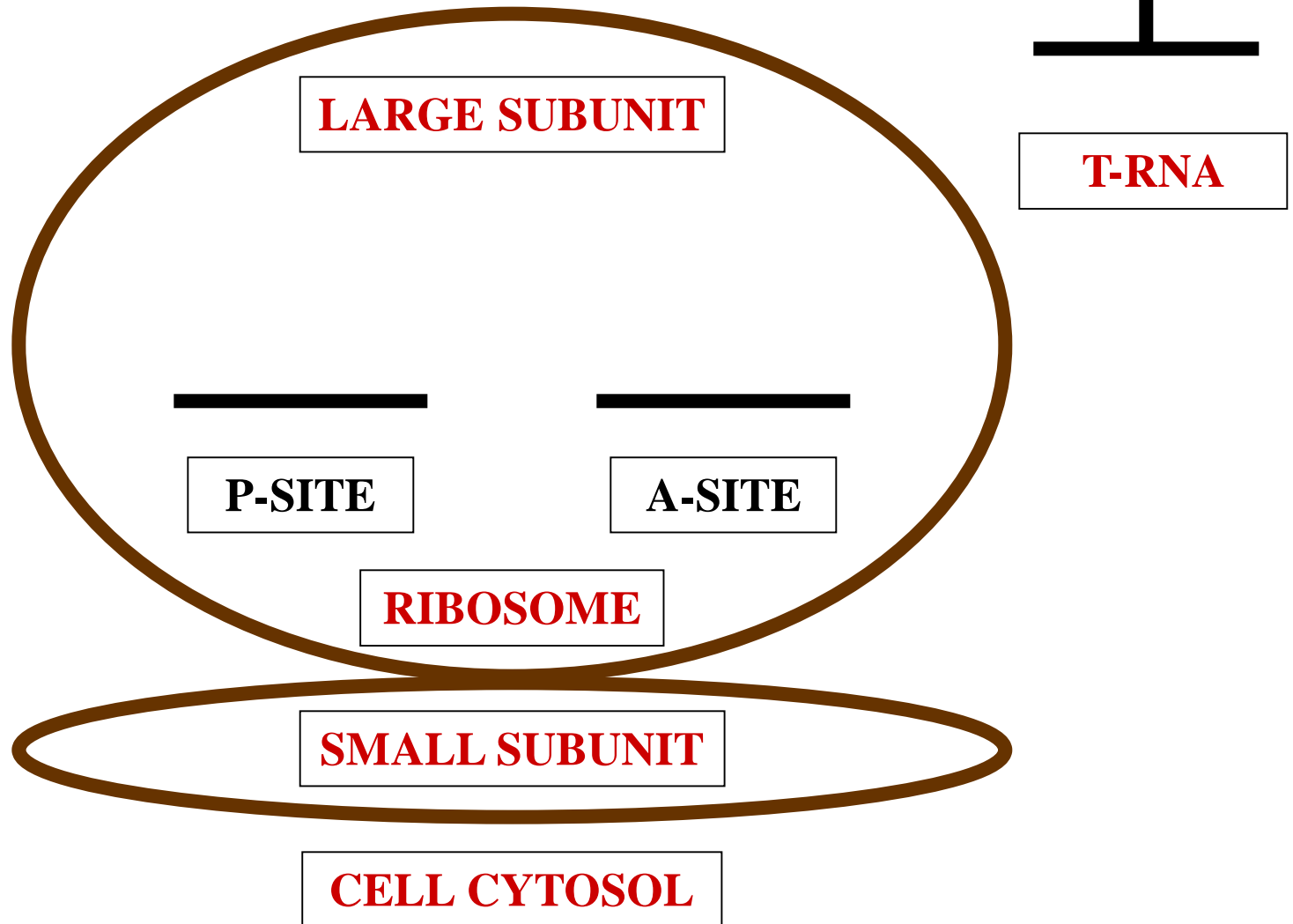
TRANSLATION



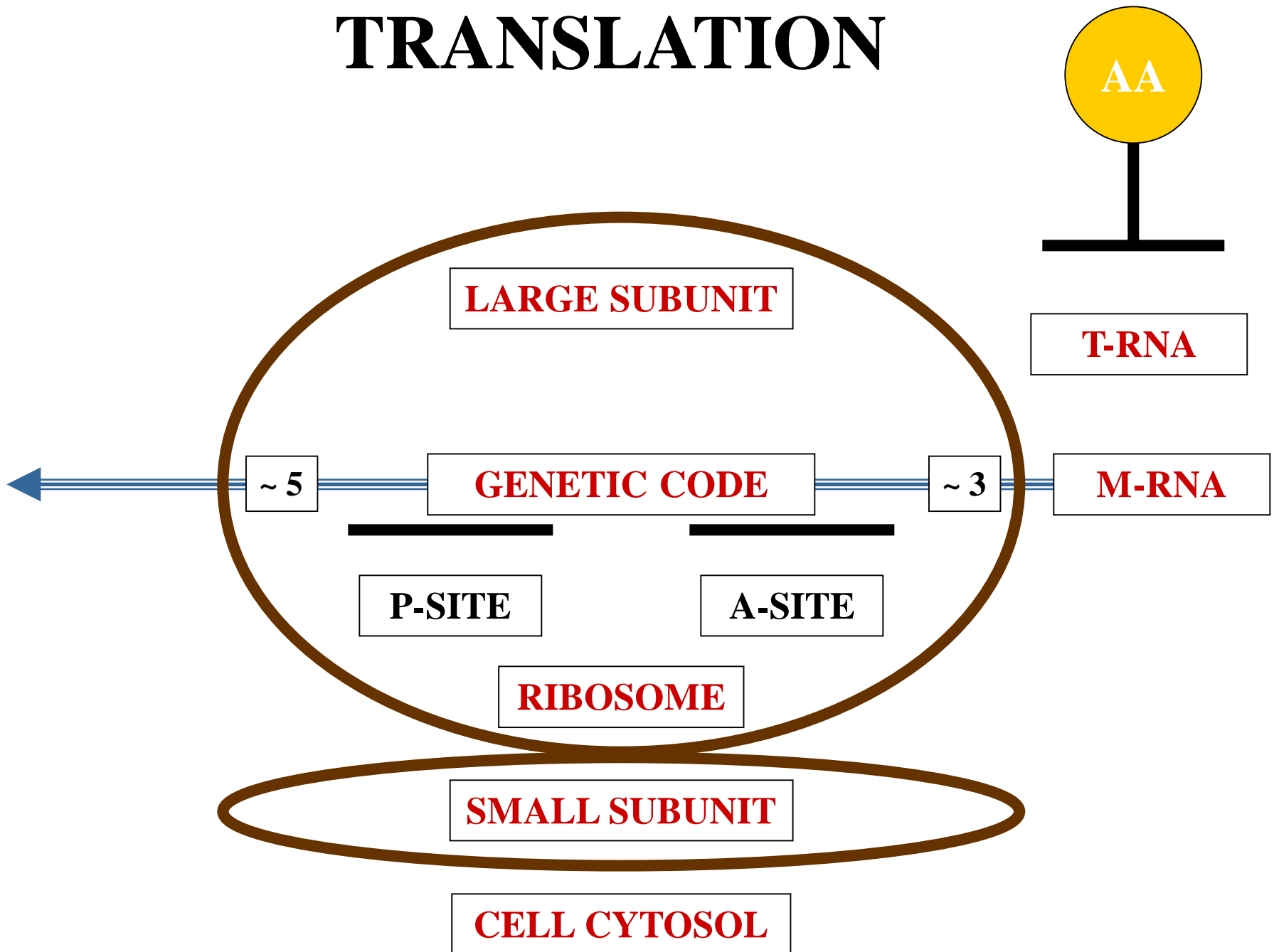
TRANSLATION



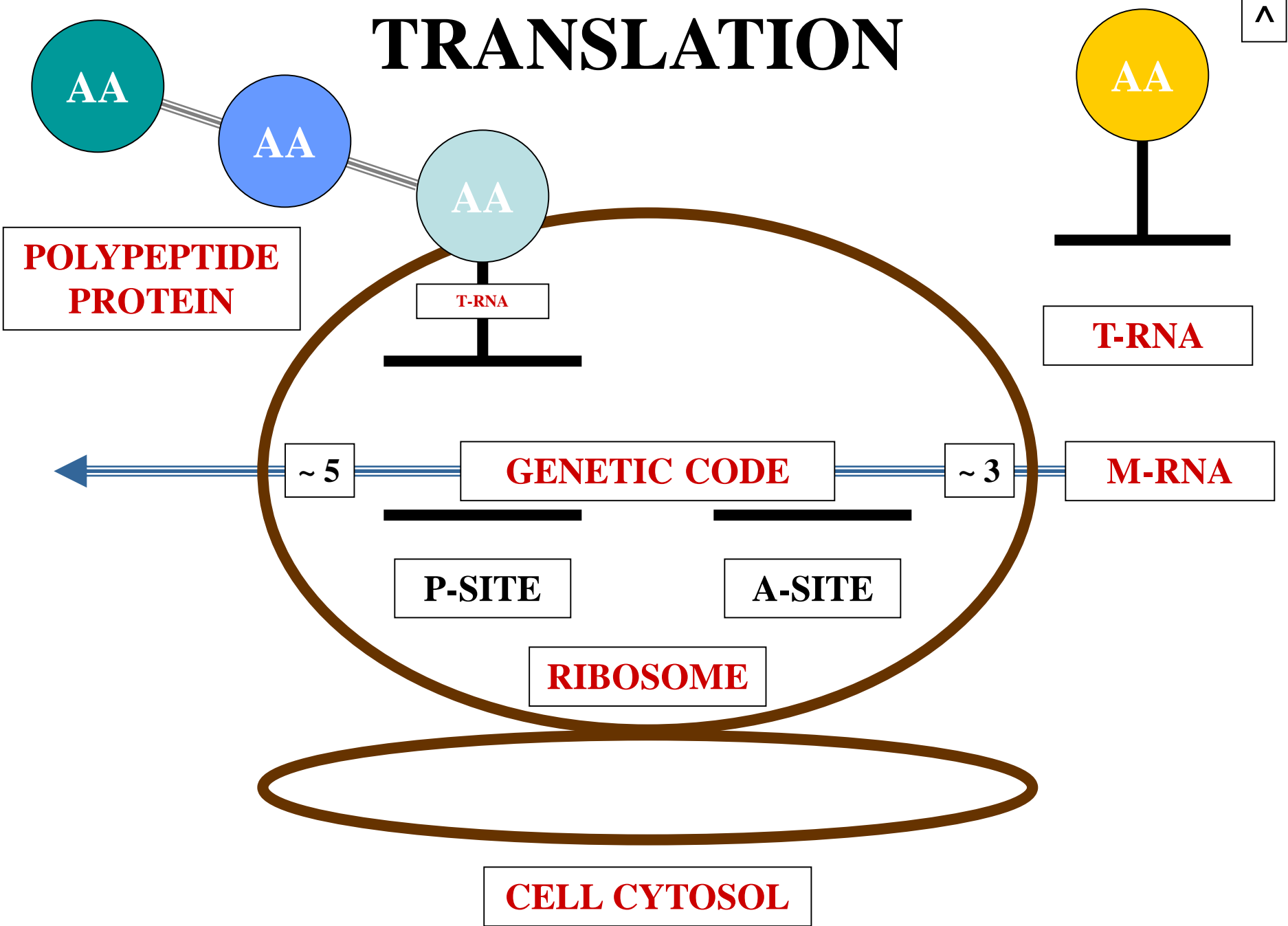
TRANSLATION



TRANSLATION



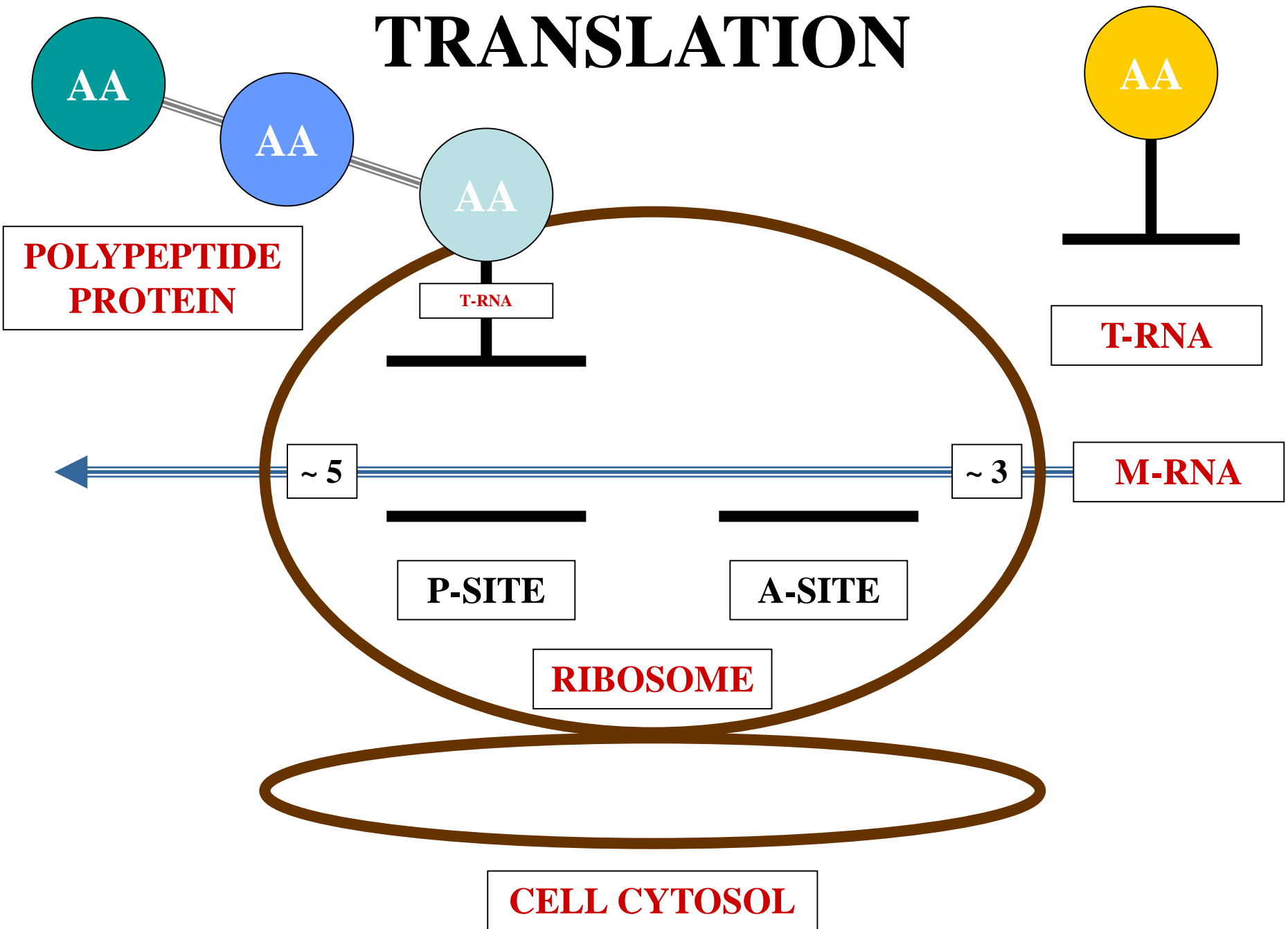
TRANSLATION



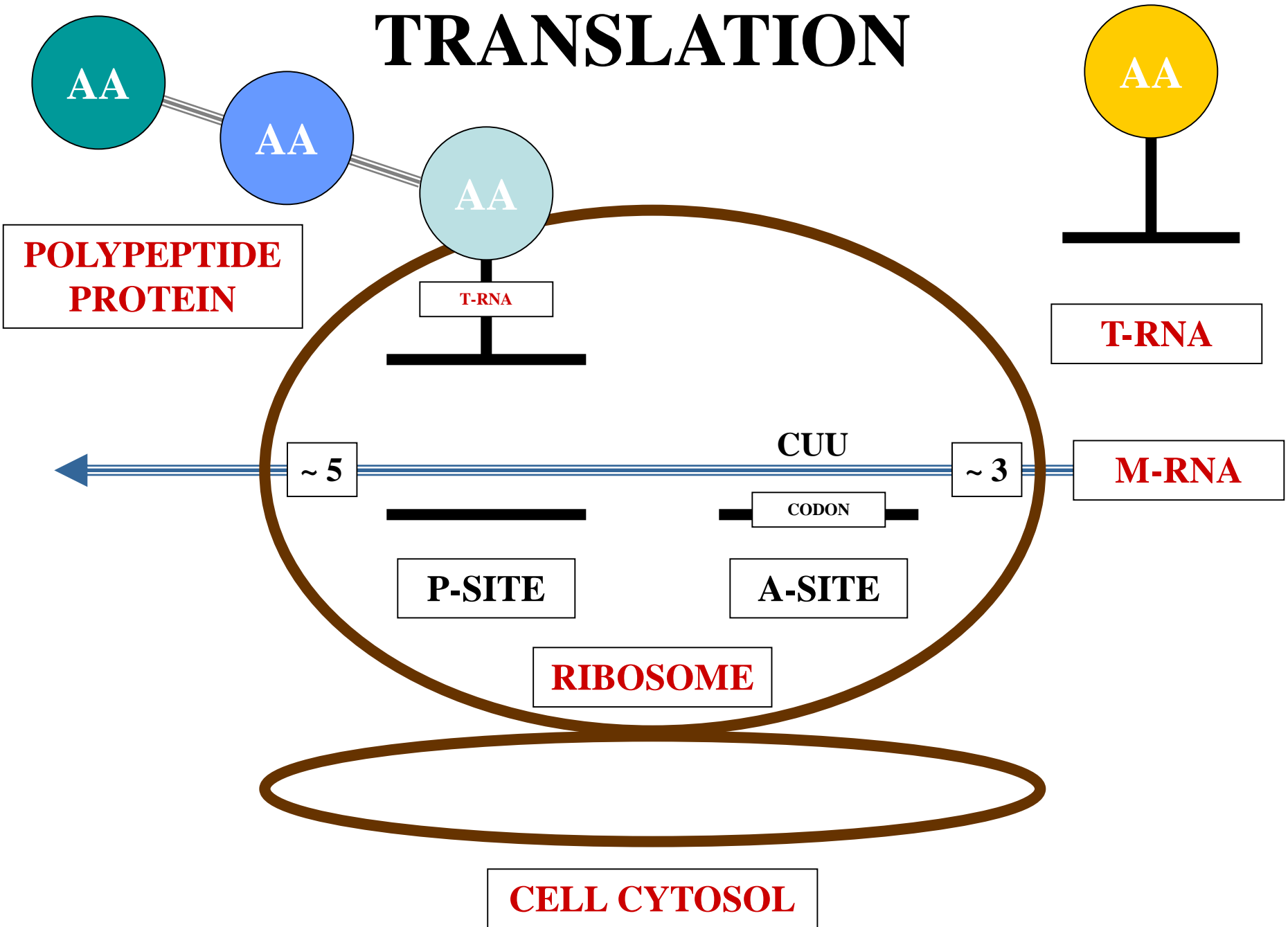
TRANSLATION

EXAMPLE #1

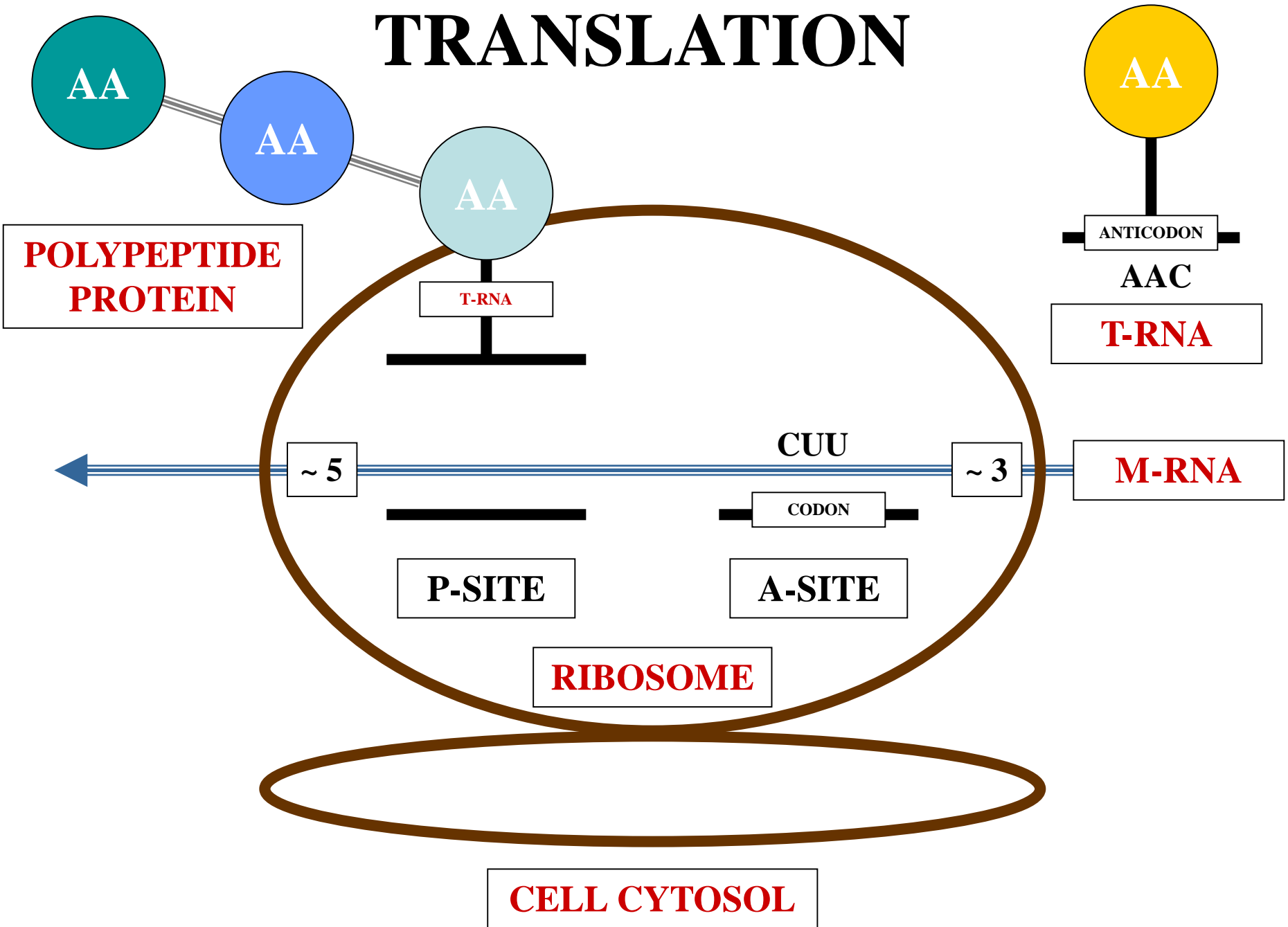
TRANSLATION



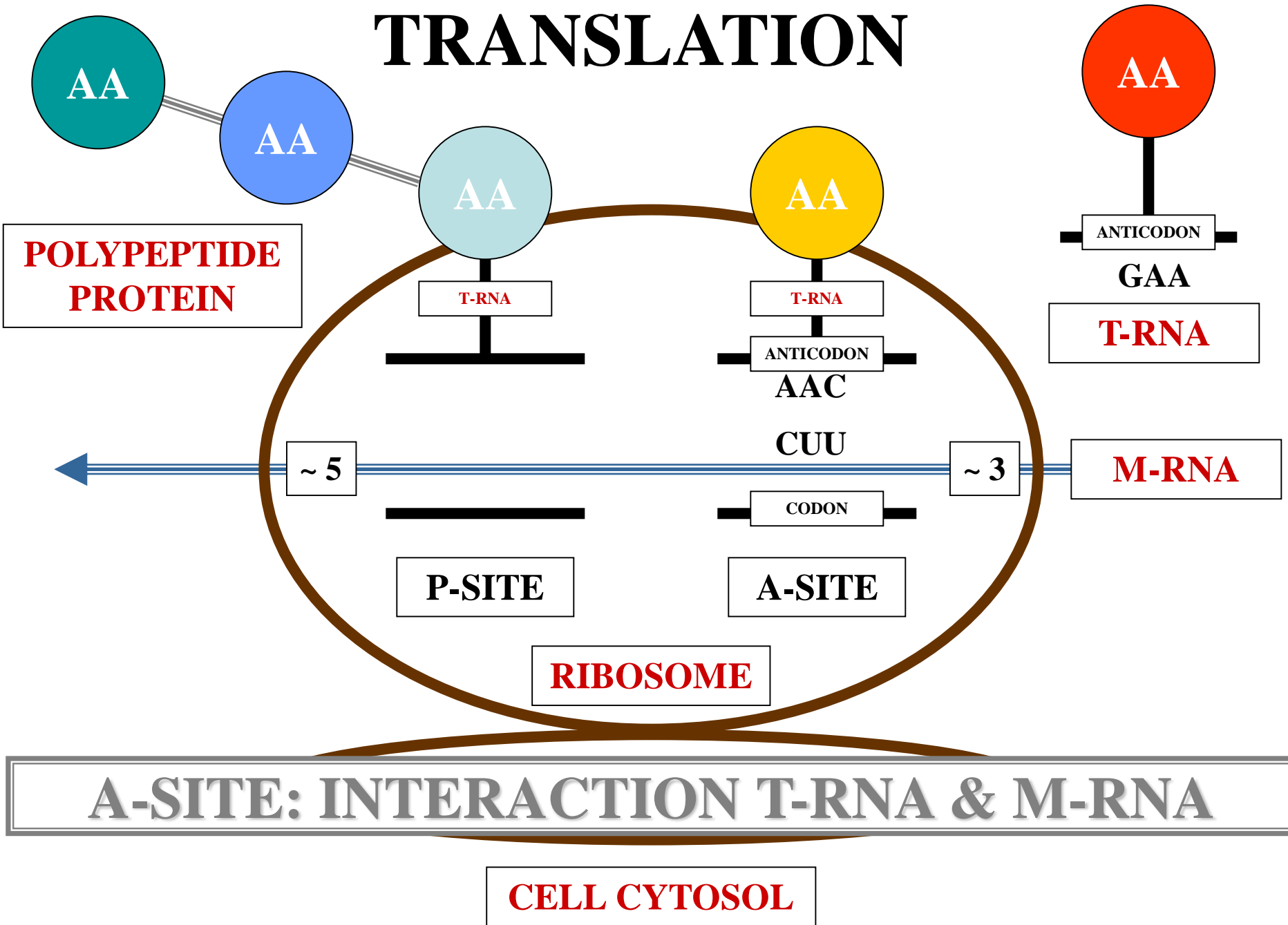
TRANSLATION



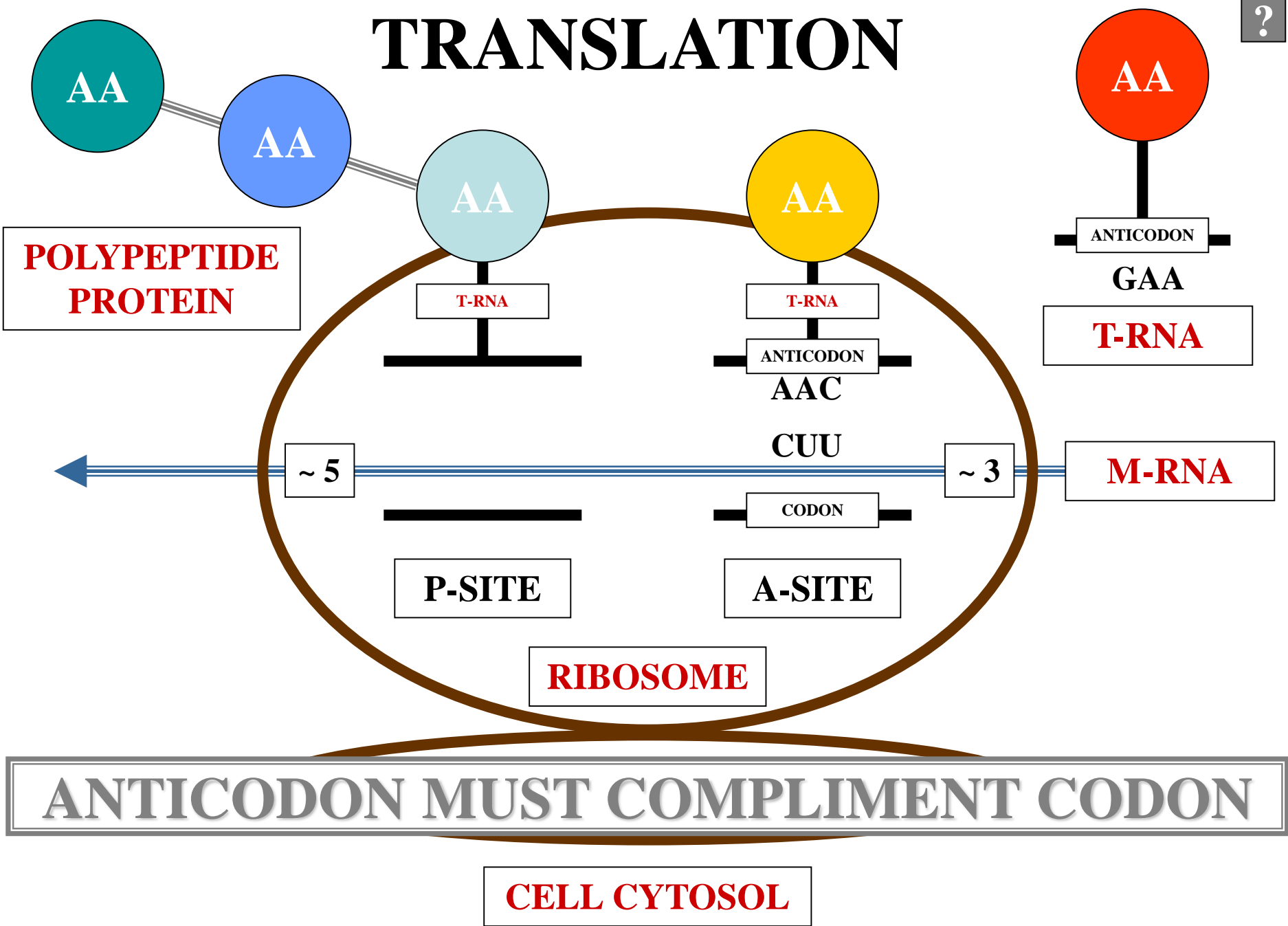
TRANSLATION



TRANSLATION



TRANSLATION



**POLYPEPTIDE
PROTEIN**

~ 5

P-SITE

RIBOSOME

A-SITE

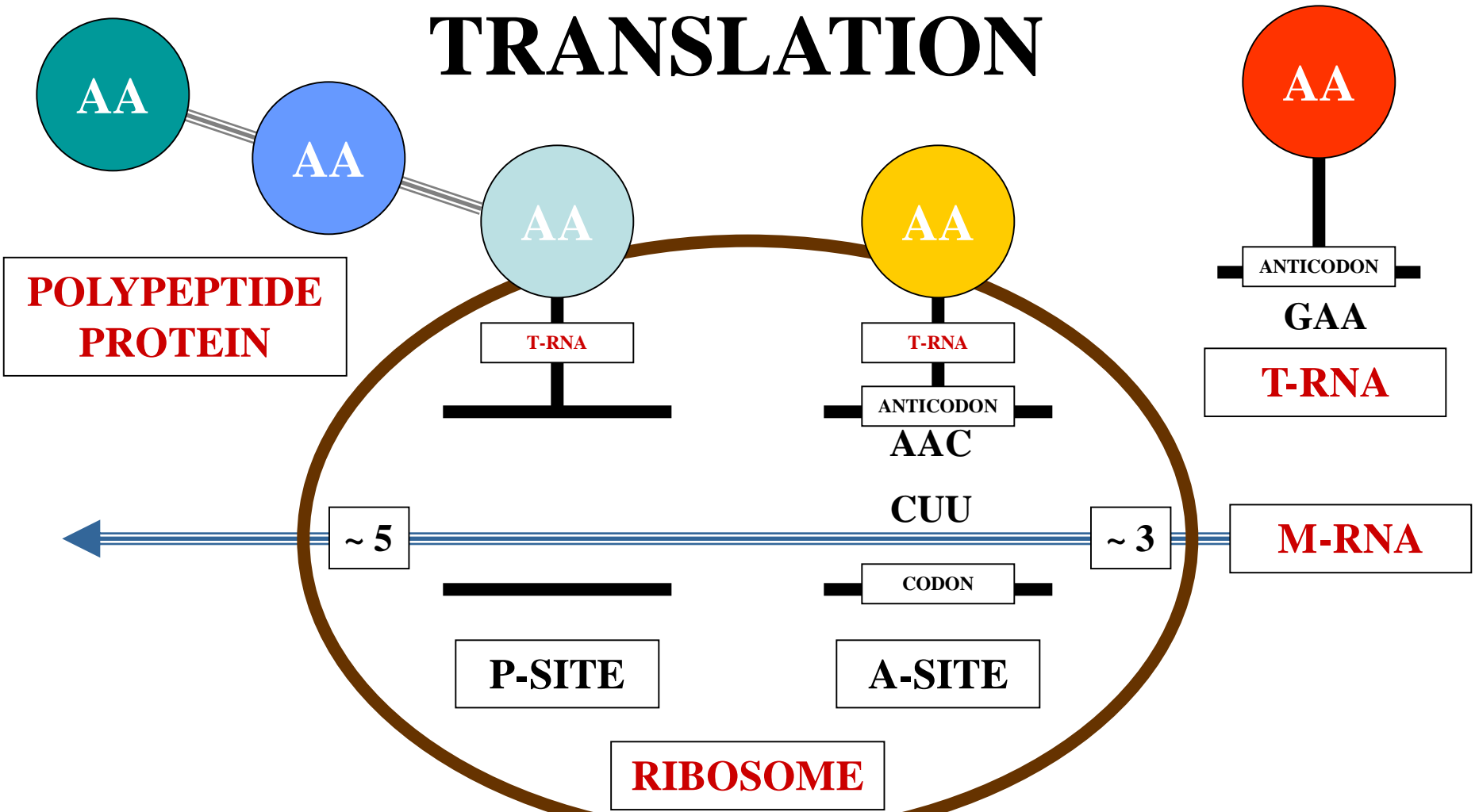
~ 3

M-RNA

ANTICODON MUST COMPLIMENT CODON

CELL CYTOSOL

TRANSLATION



**POLYPEPTIDE
PROTEIN**

ANTICODON

GAA

T-RNA

T-RNA

ANTICODON

AAC

CUU

CODON

M-RNA

~ 5

~ 3

P-SITE

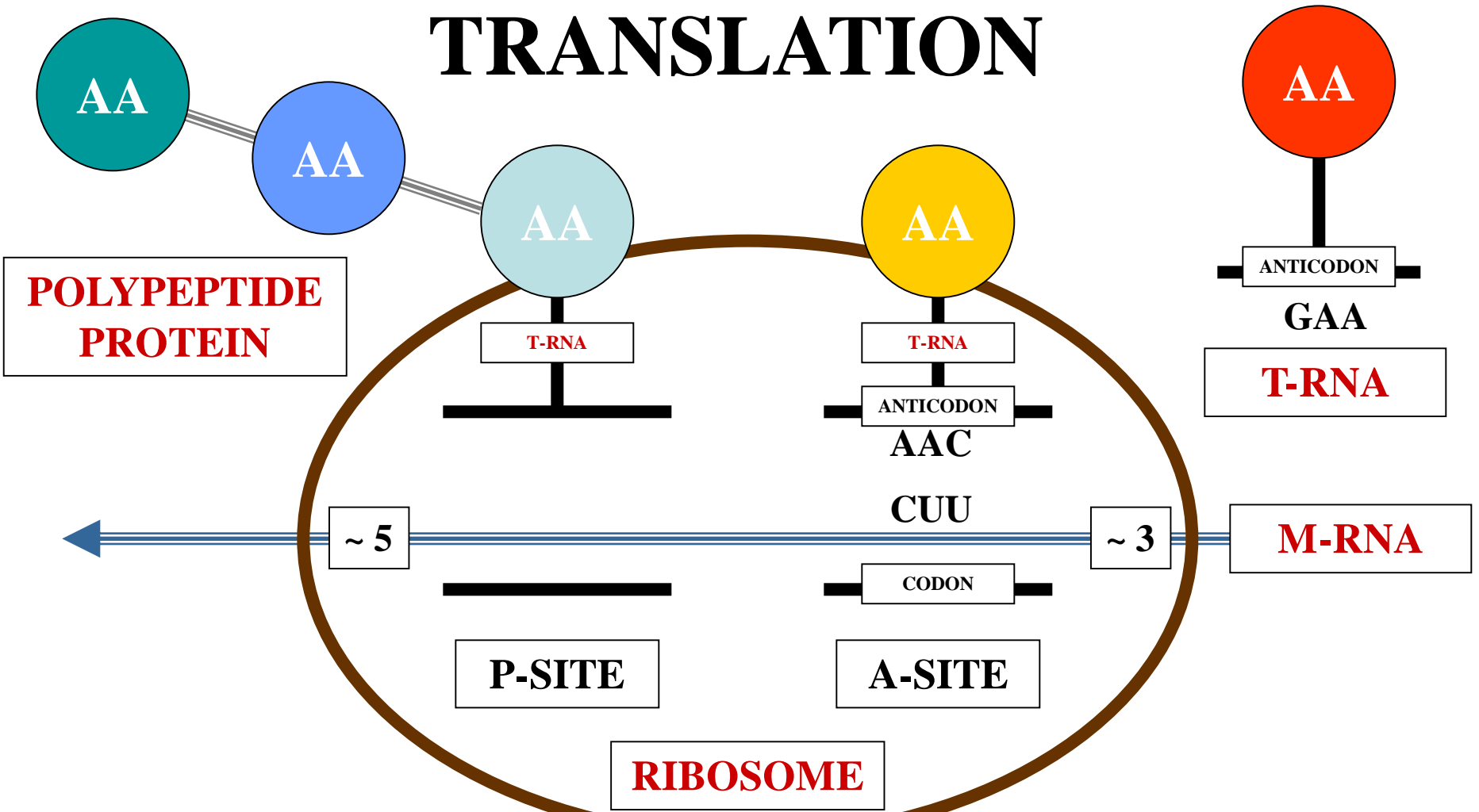
A-SITE

RIBOSOME

DOES ANTICODON COMPLIMENT CODON?

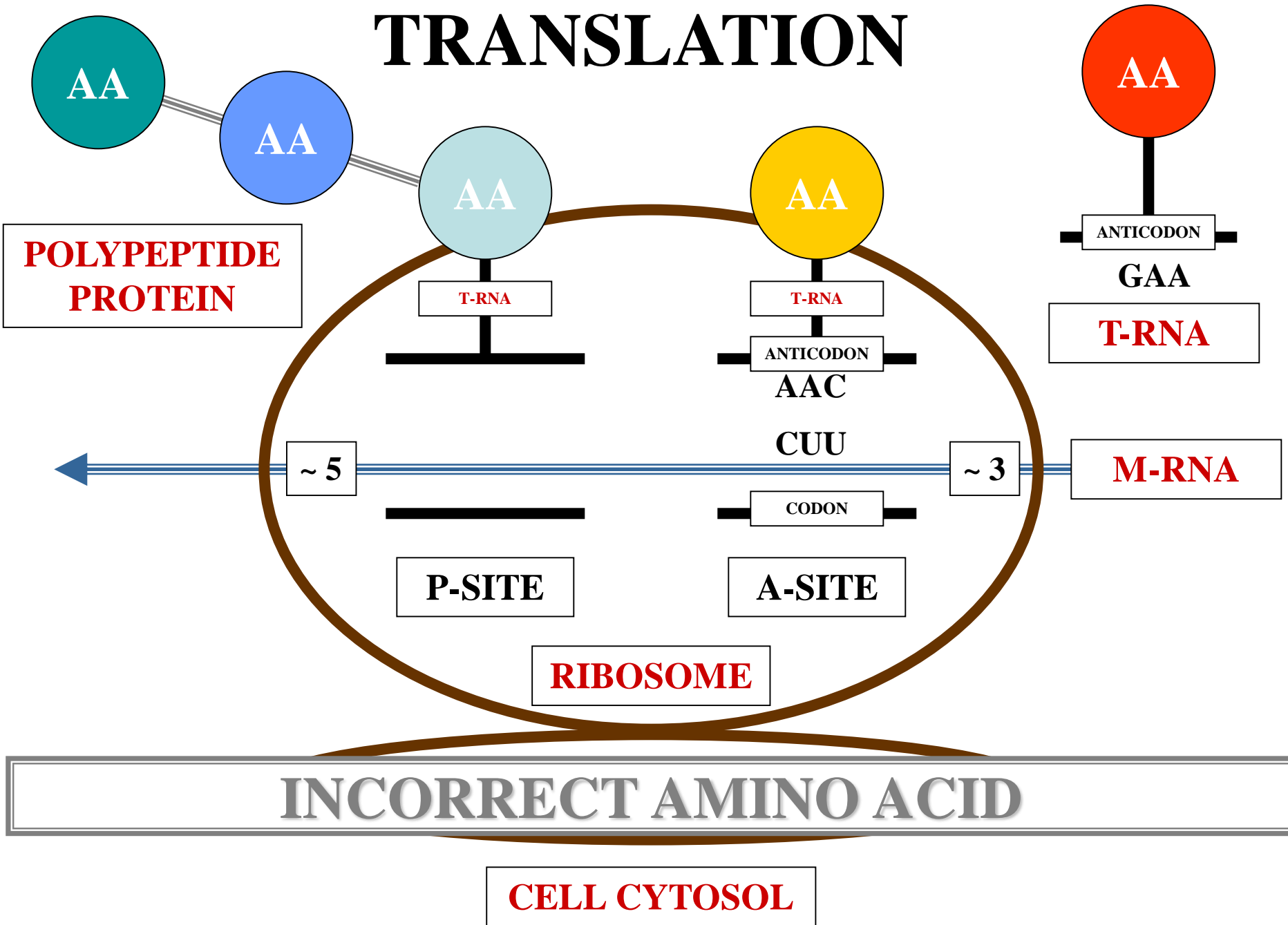
CELL CYTOSOL

TRANSLATION



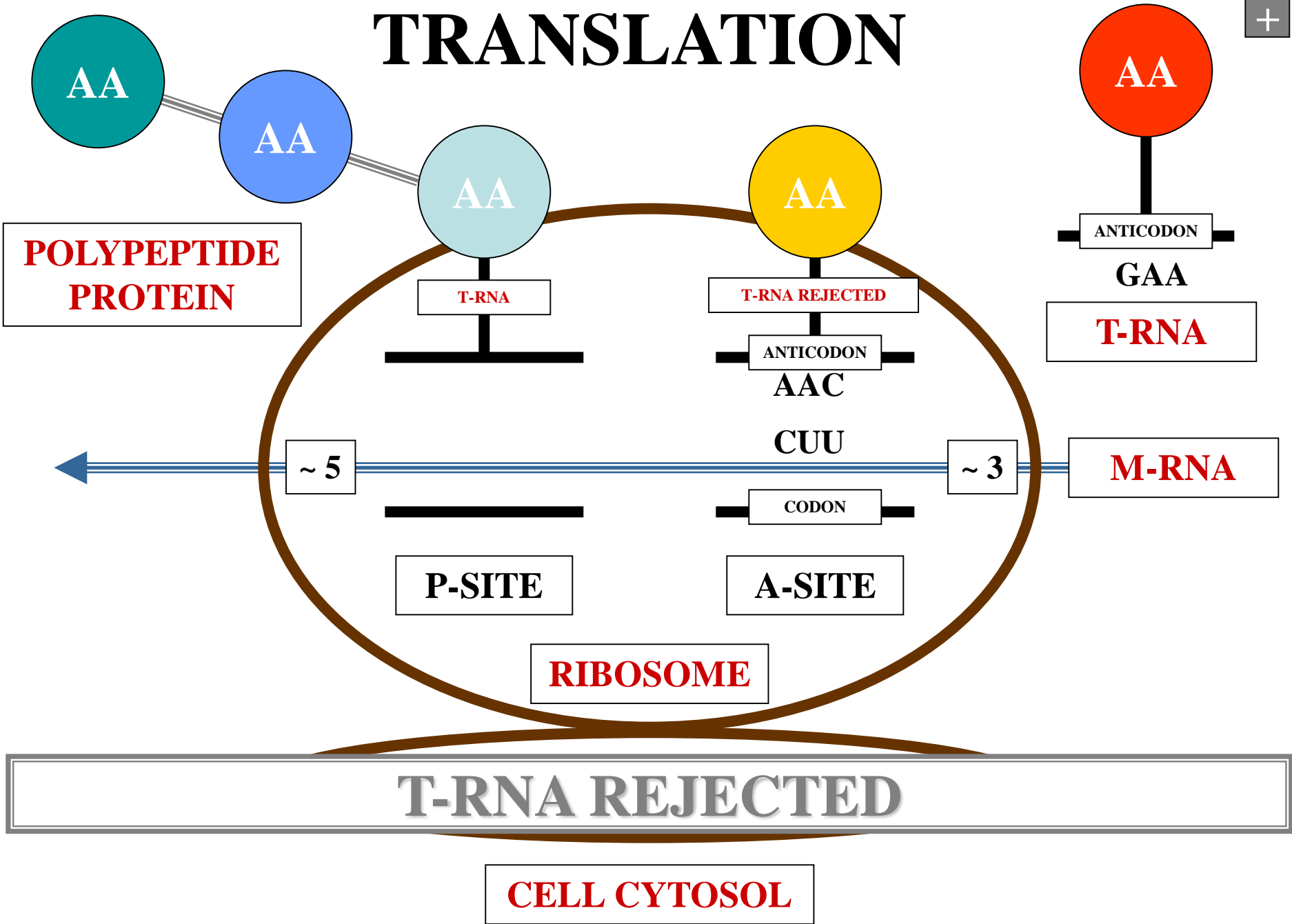
ANTICODON DOES NOT COMPLIMENT CODON

TRANSLATION

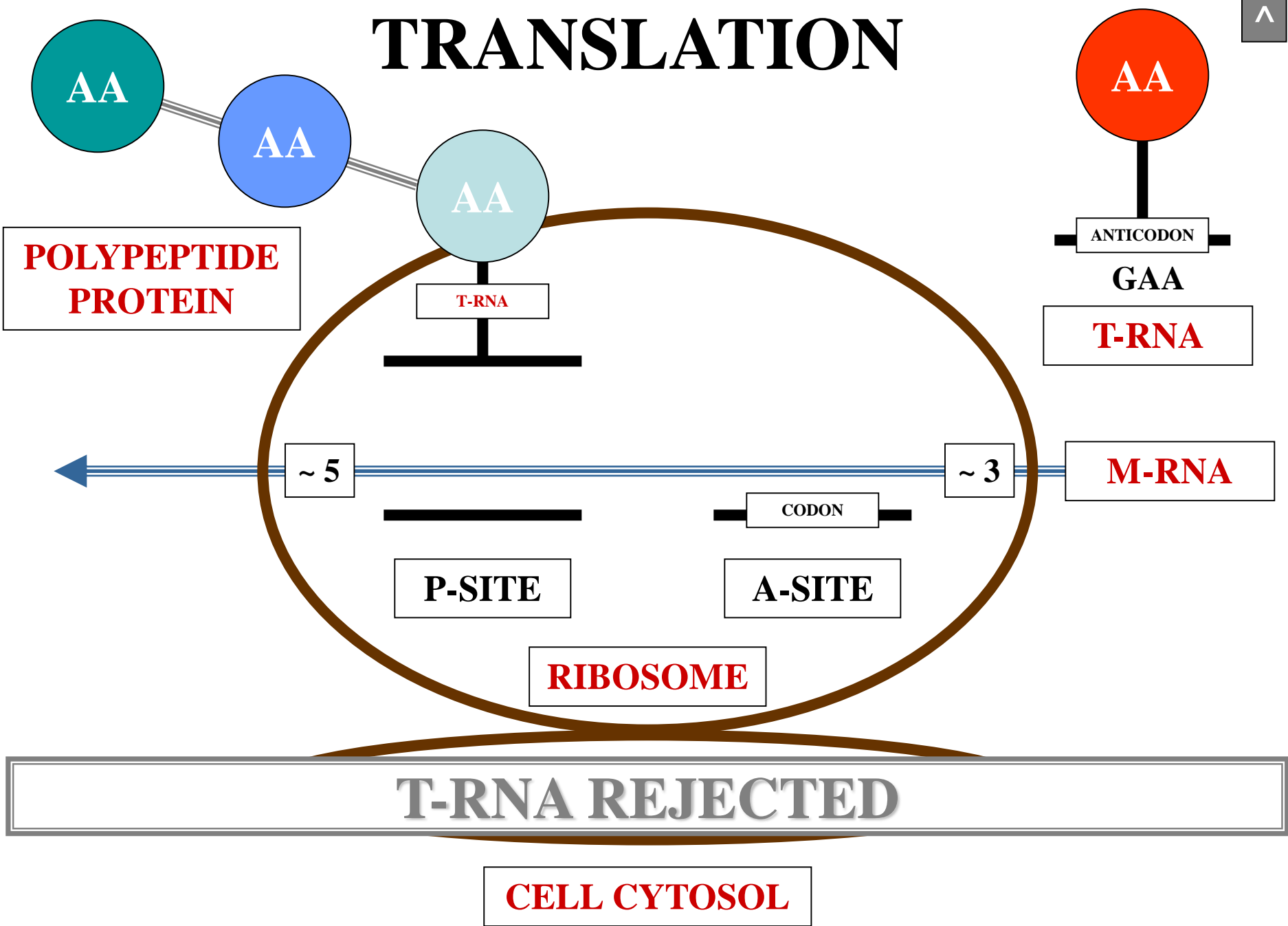


TRANSLATION

+



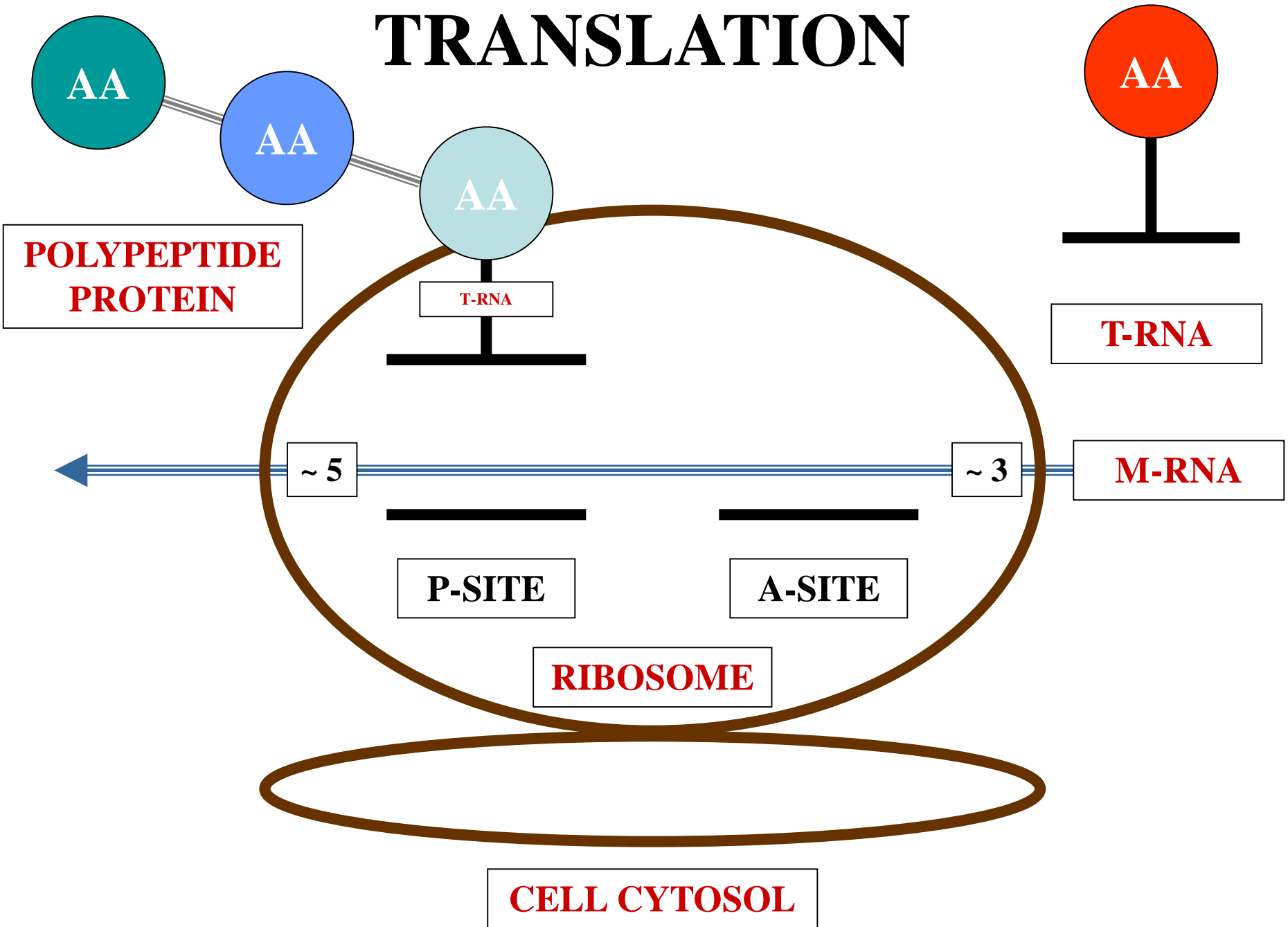
TRANSLATION



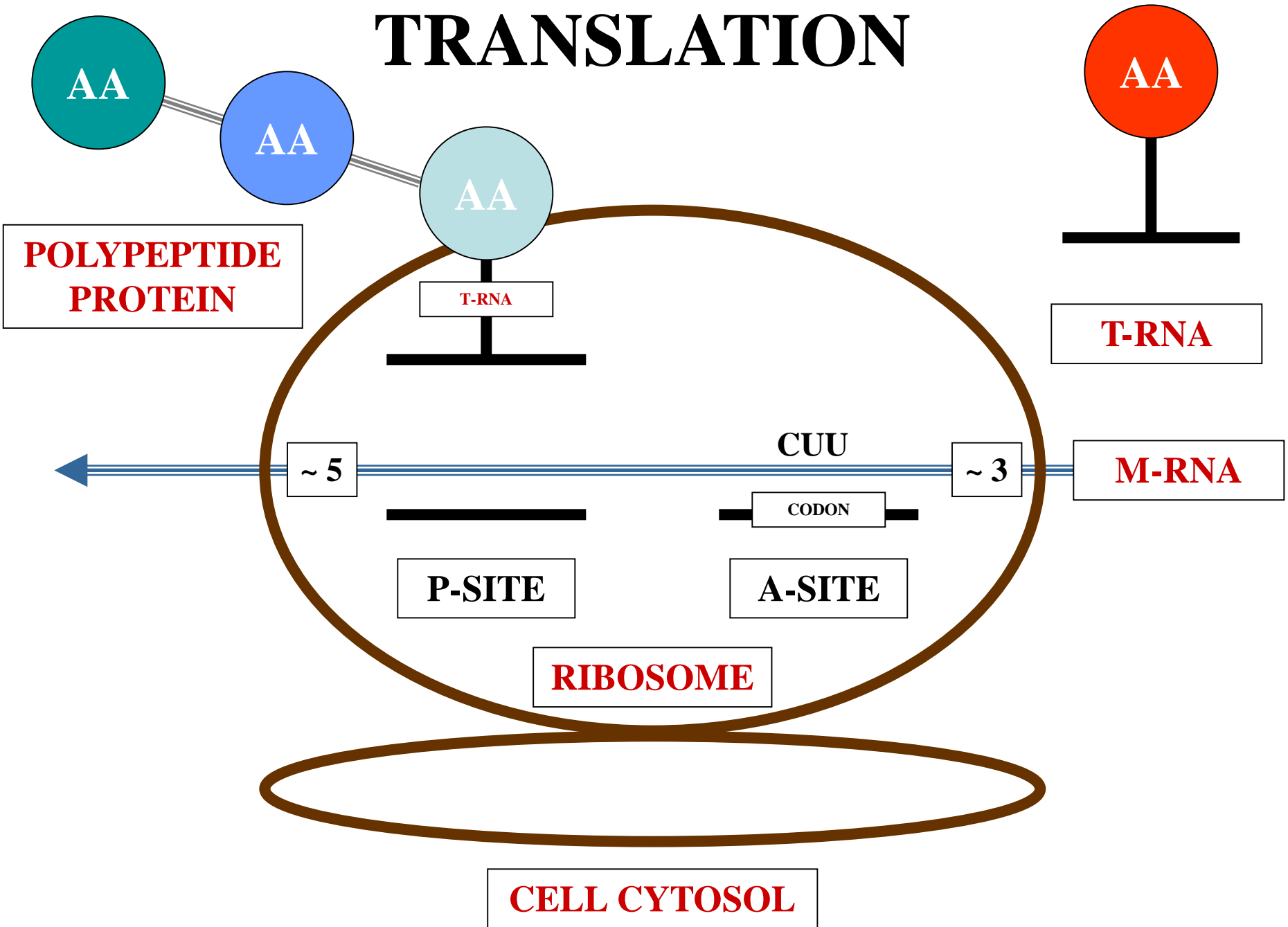
TRANSLATION

EXAMPLE #2

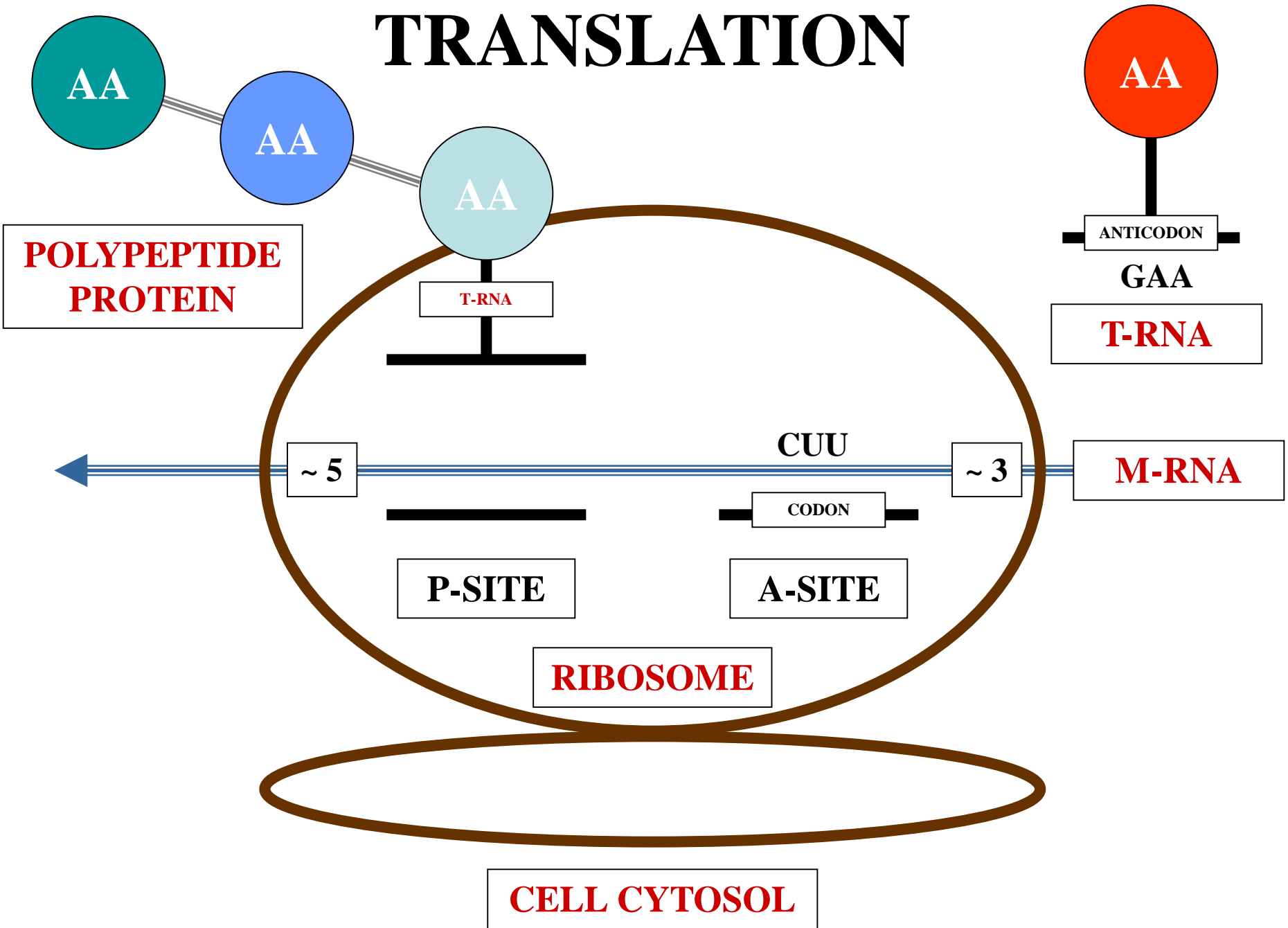
TRANSLATION



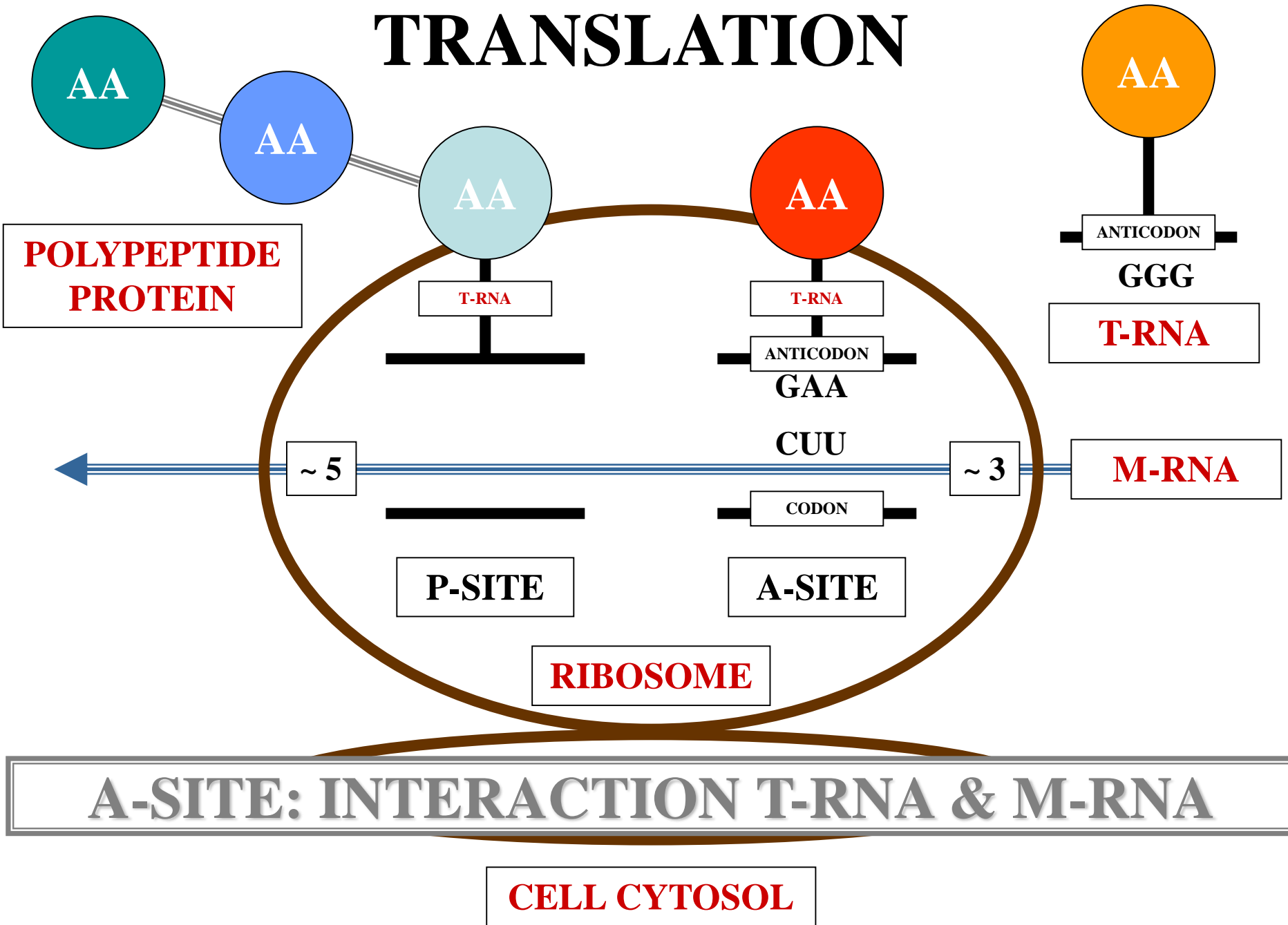
TRANSLATION



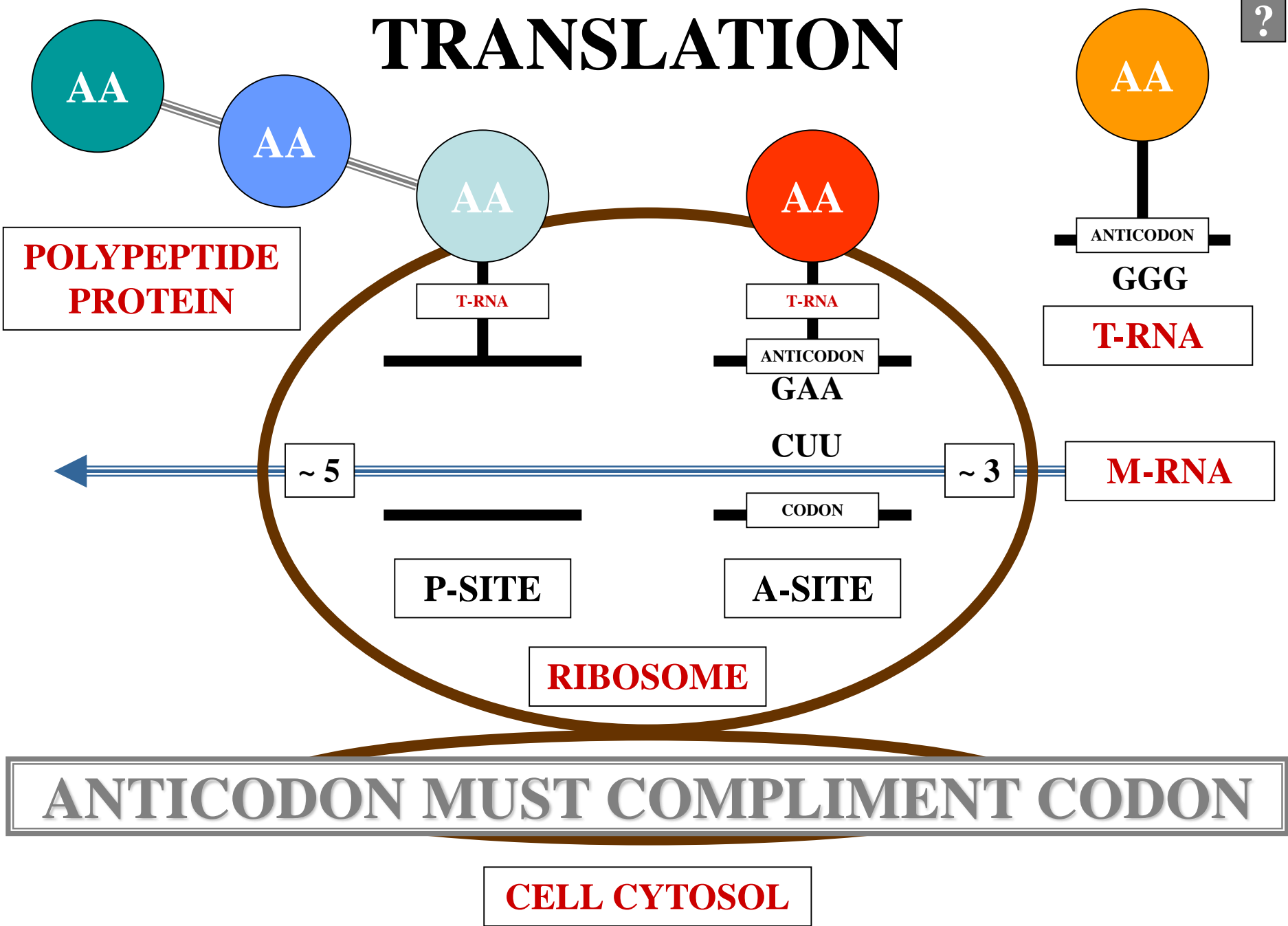
TRANSLATION



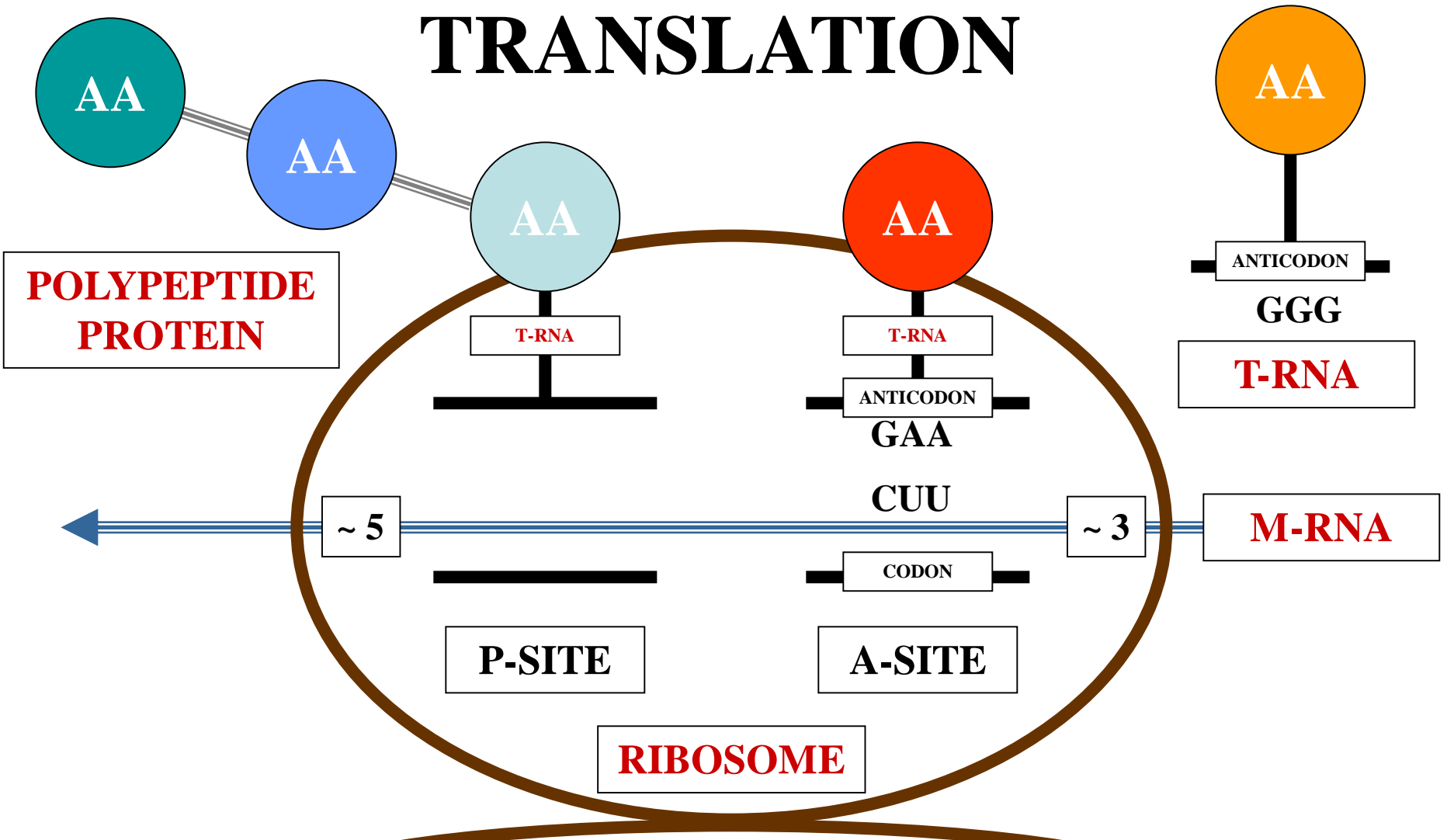
TRANSLATION



TRANSLATION



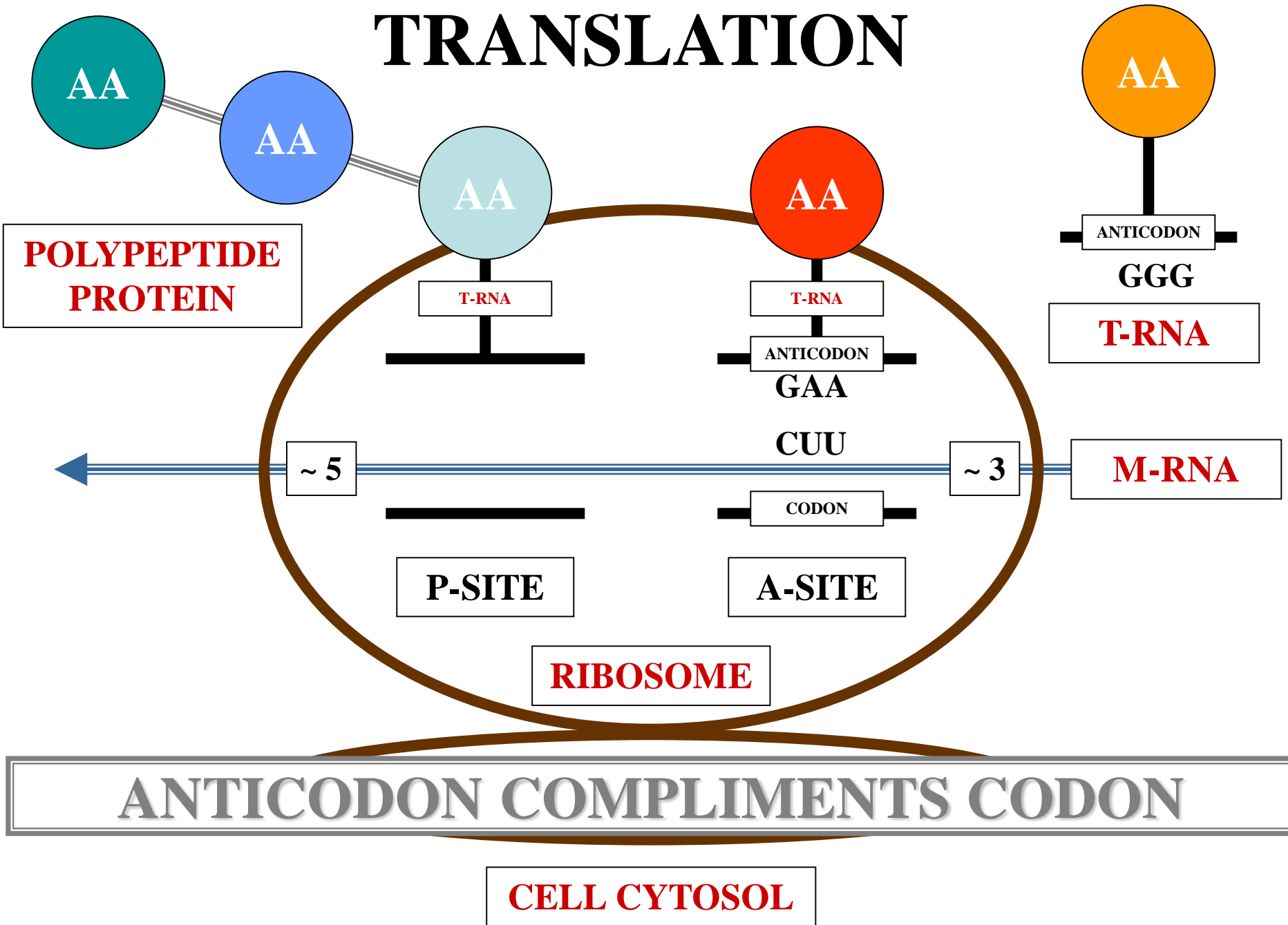
TRANSLATION



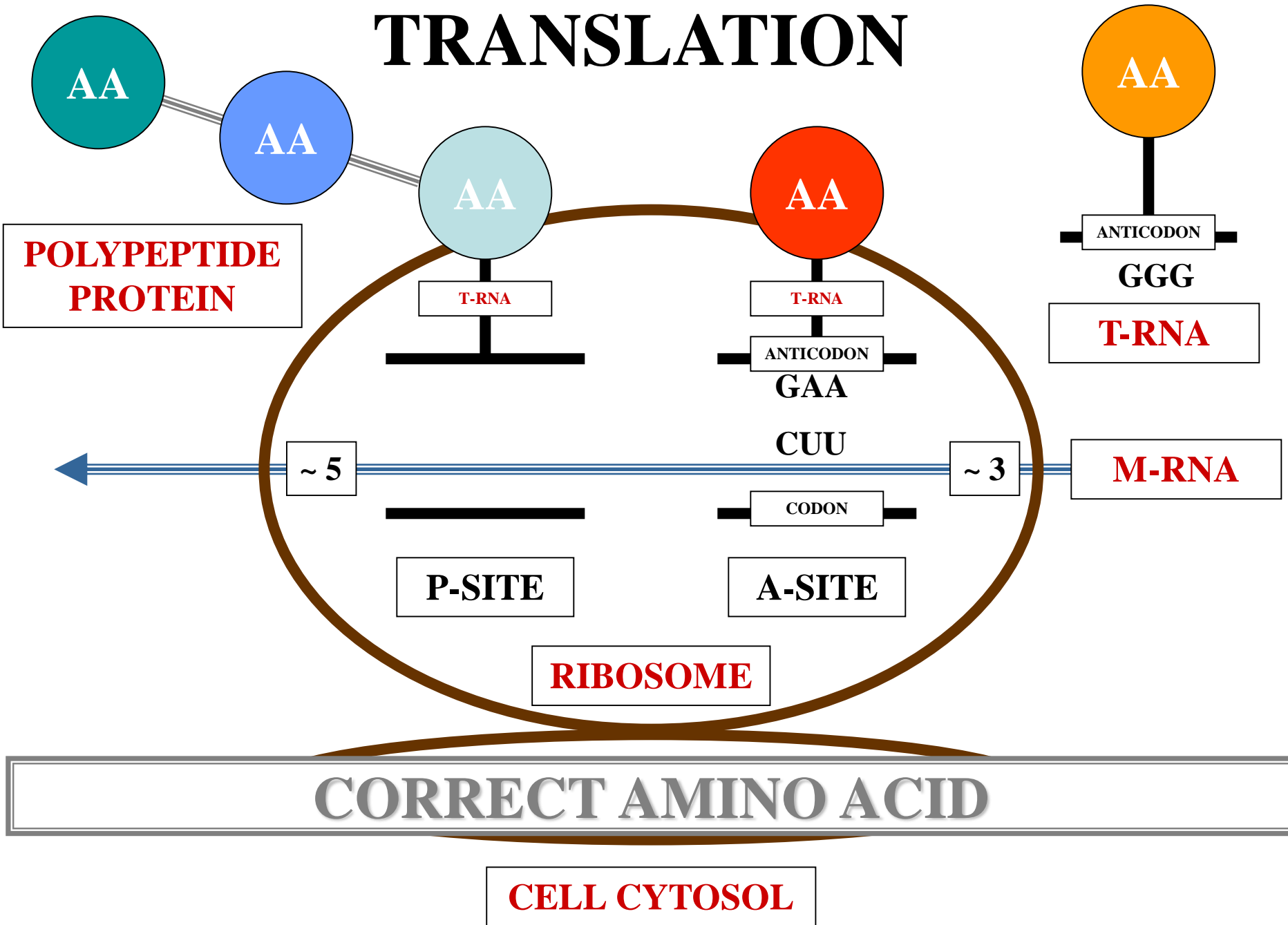
DOES ANTICODON COMPLIMENT CODON?

CELL CYTOSOL

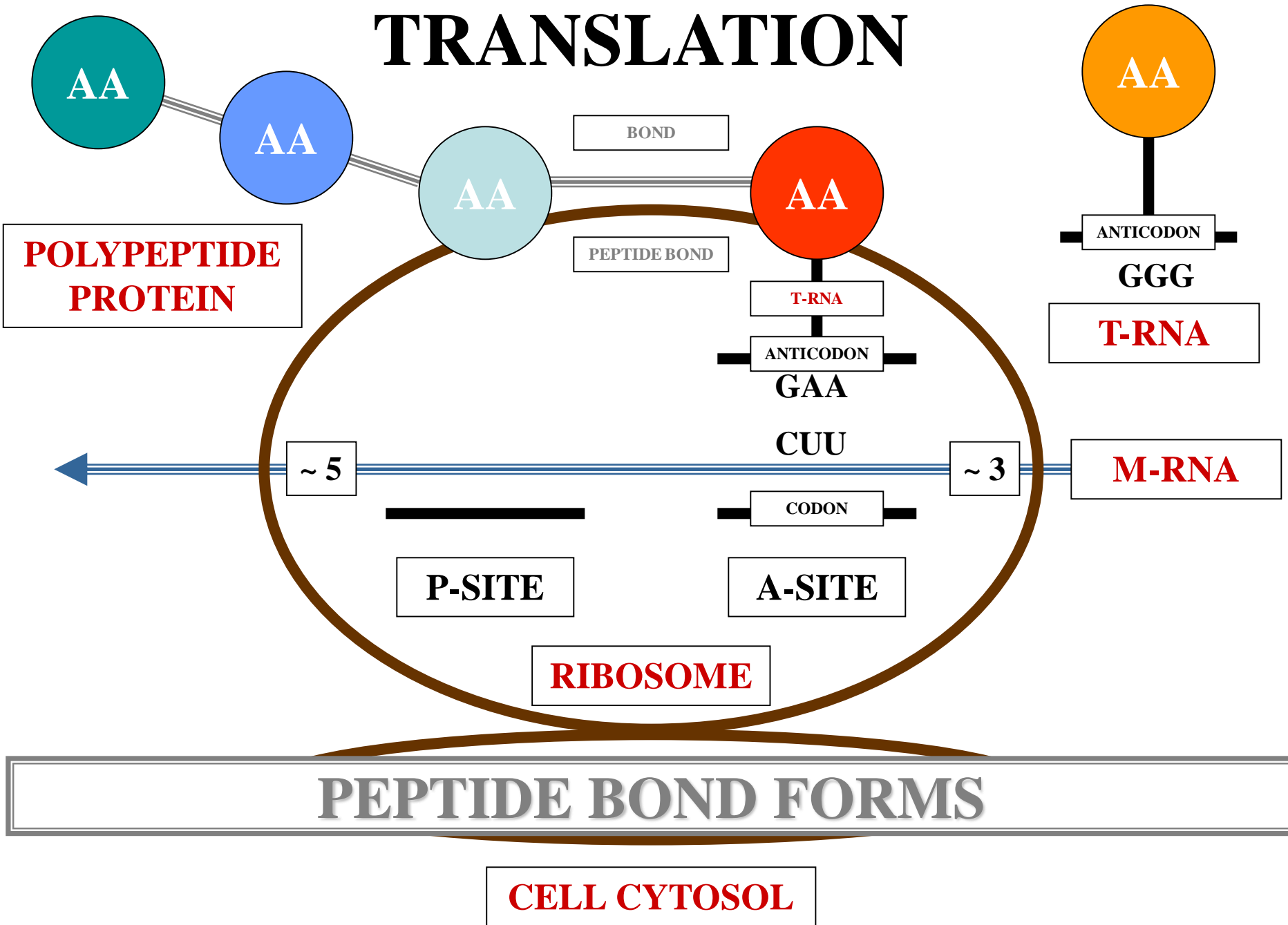
TRANSLATION



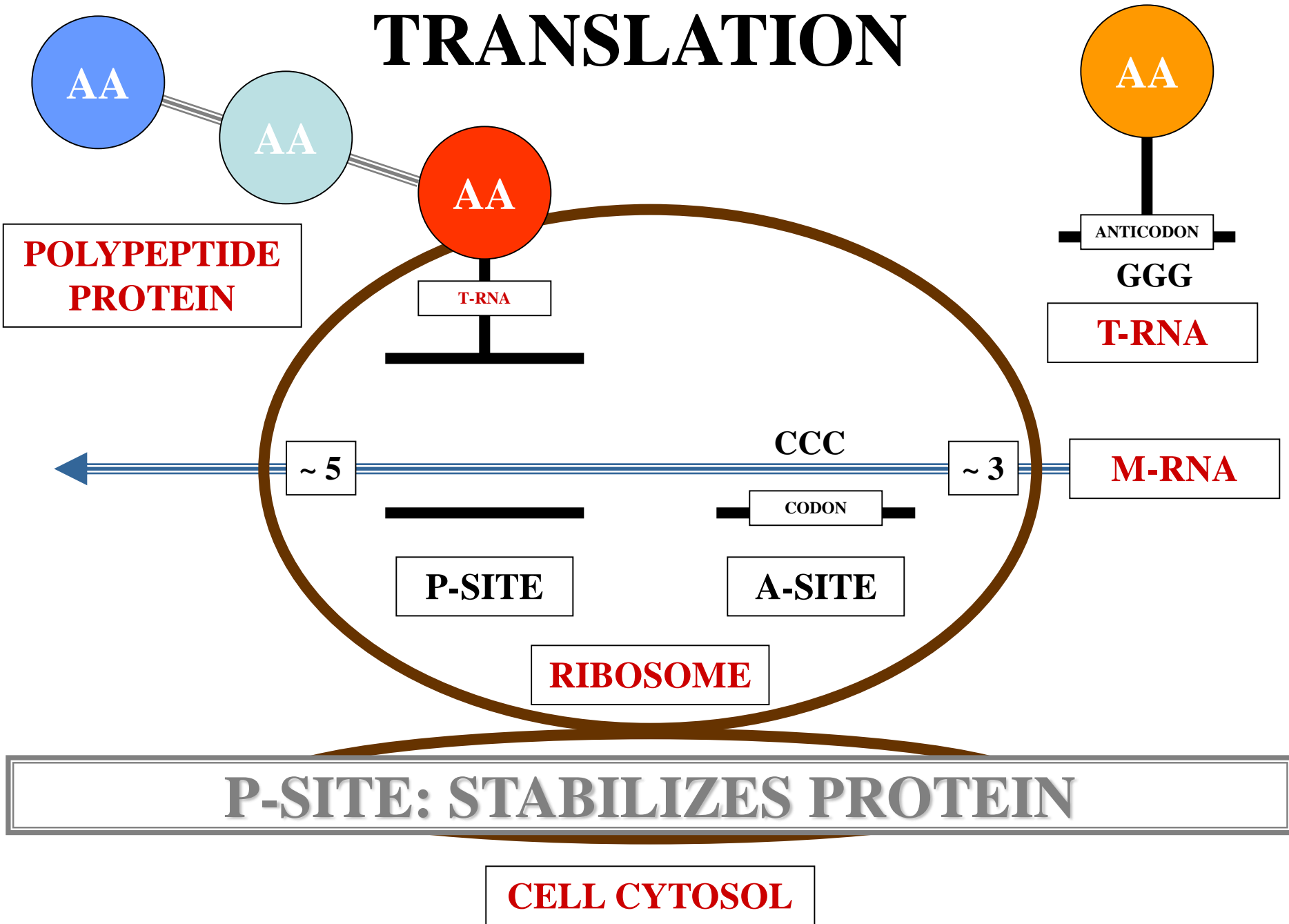
TRANSLATION



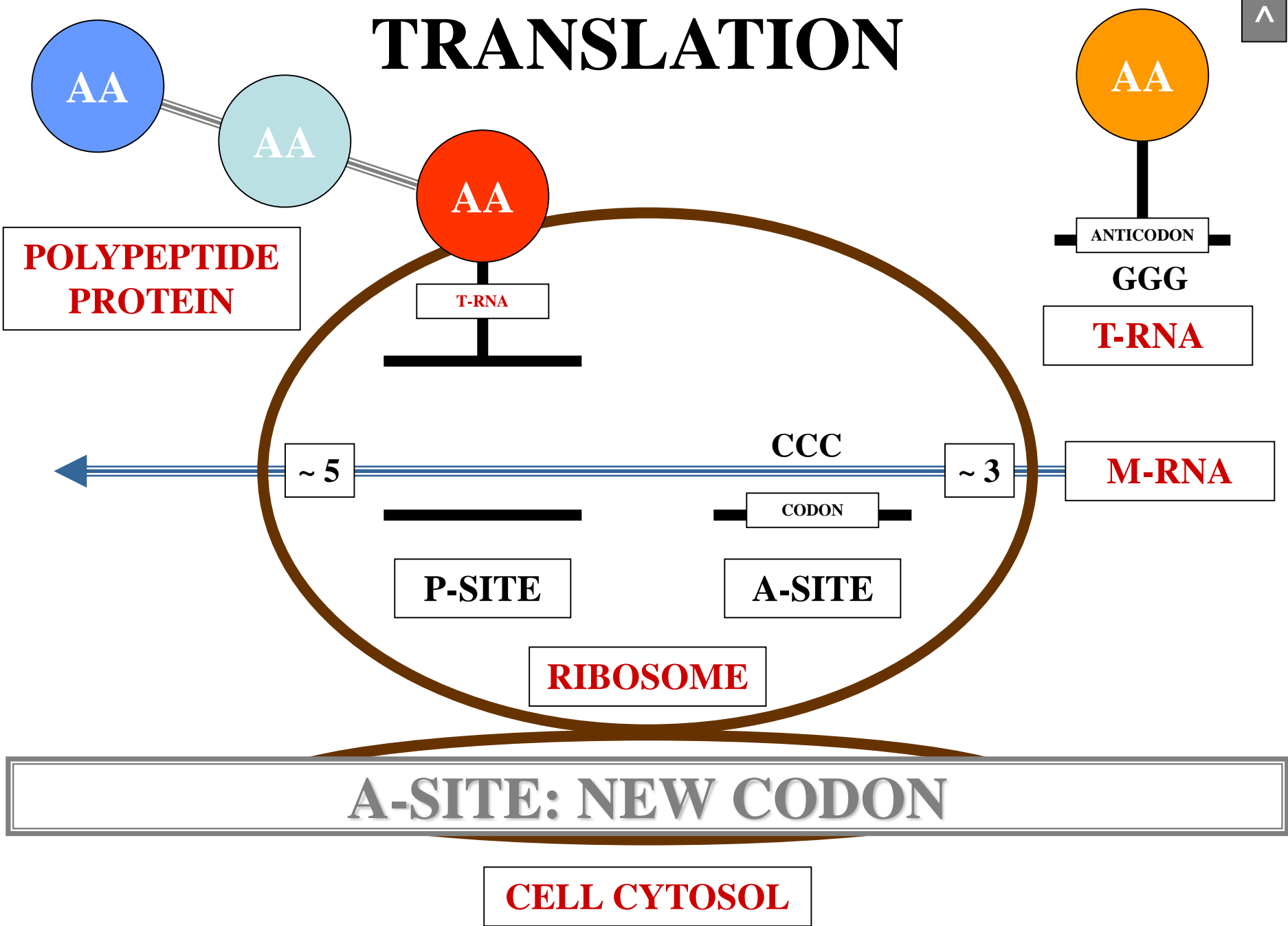
TRANSLATION



TRANSLATION



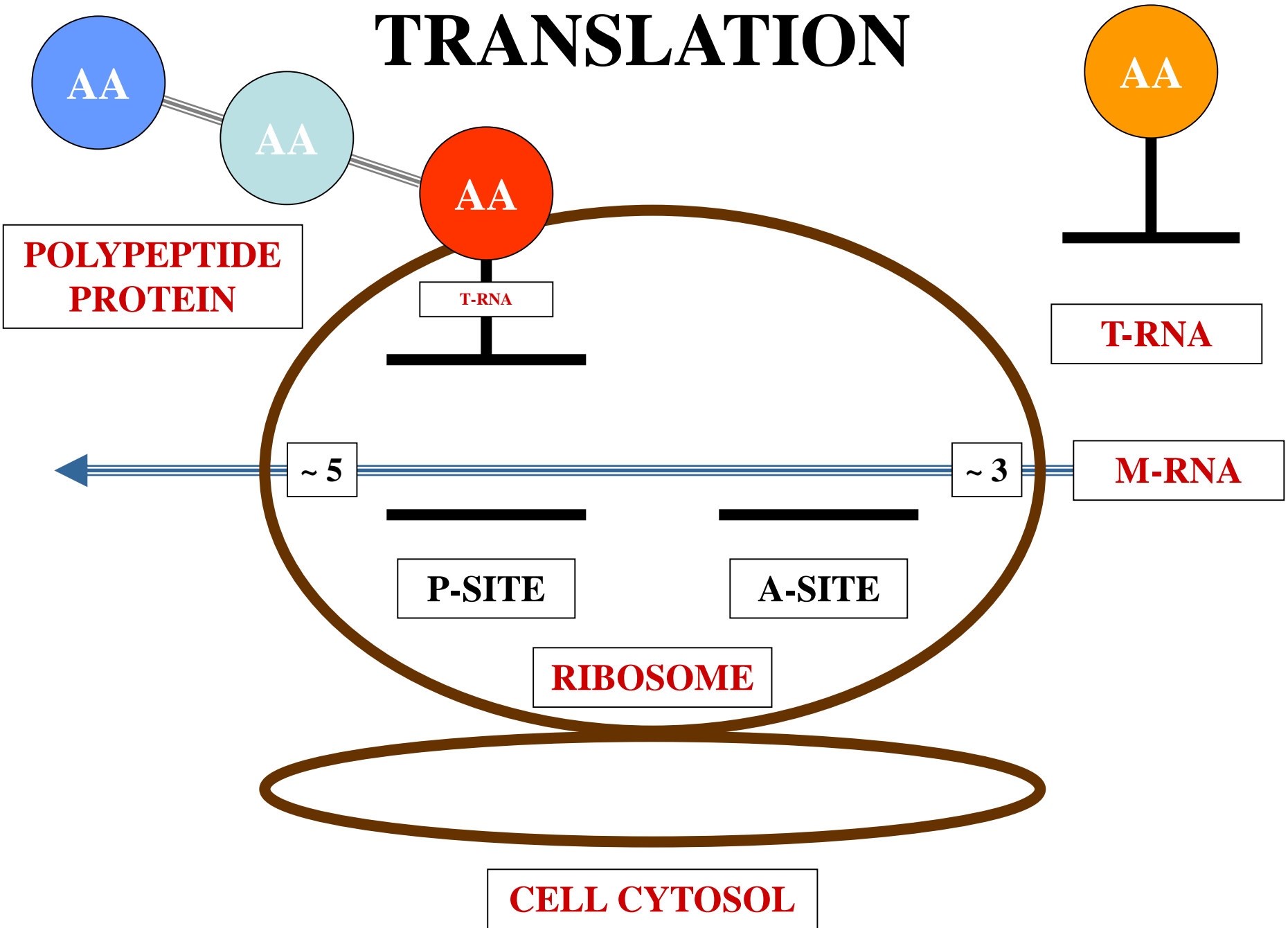
TRANSLATION



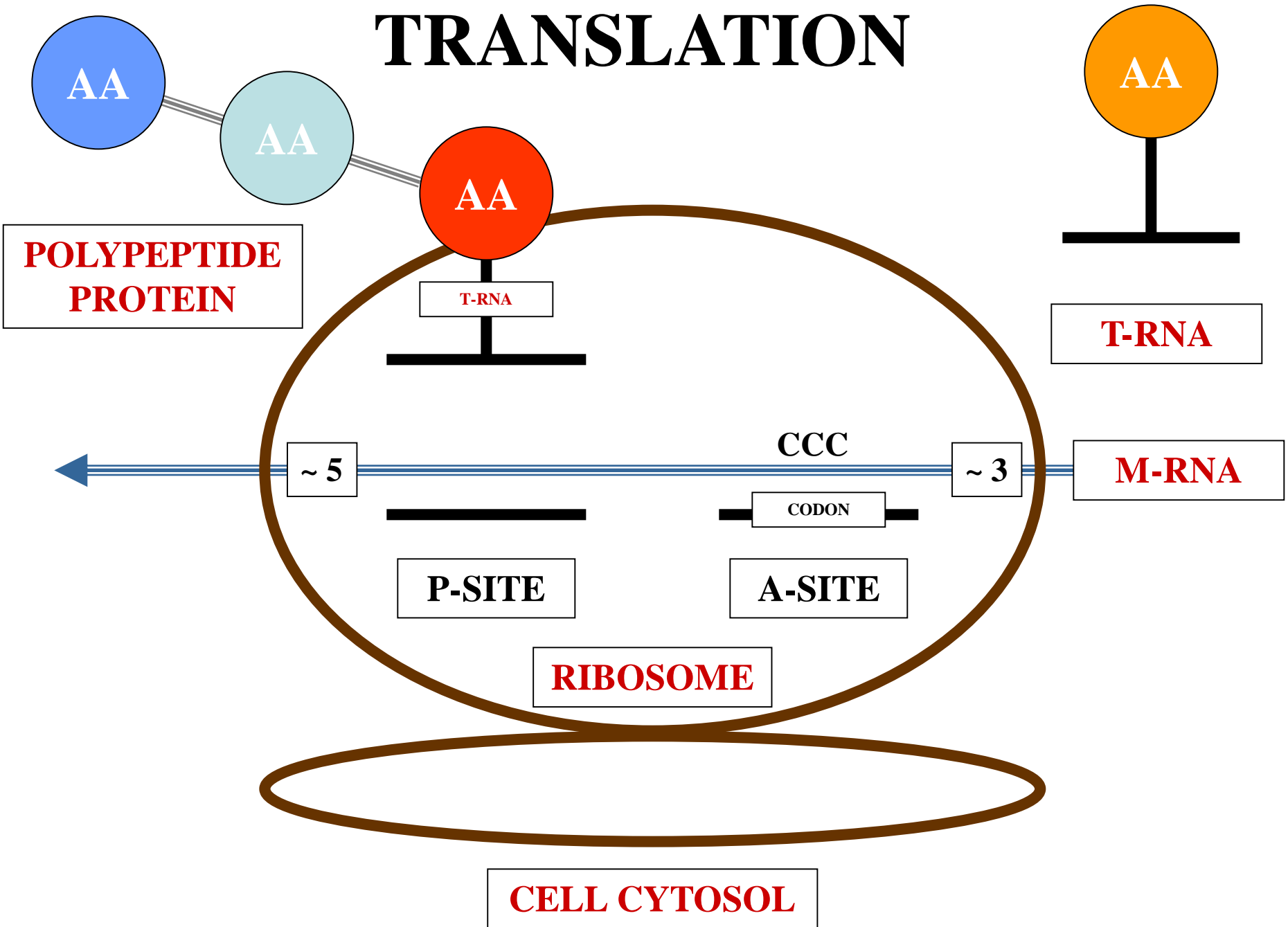
TRANSLATION

EXAMPLE #3

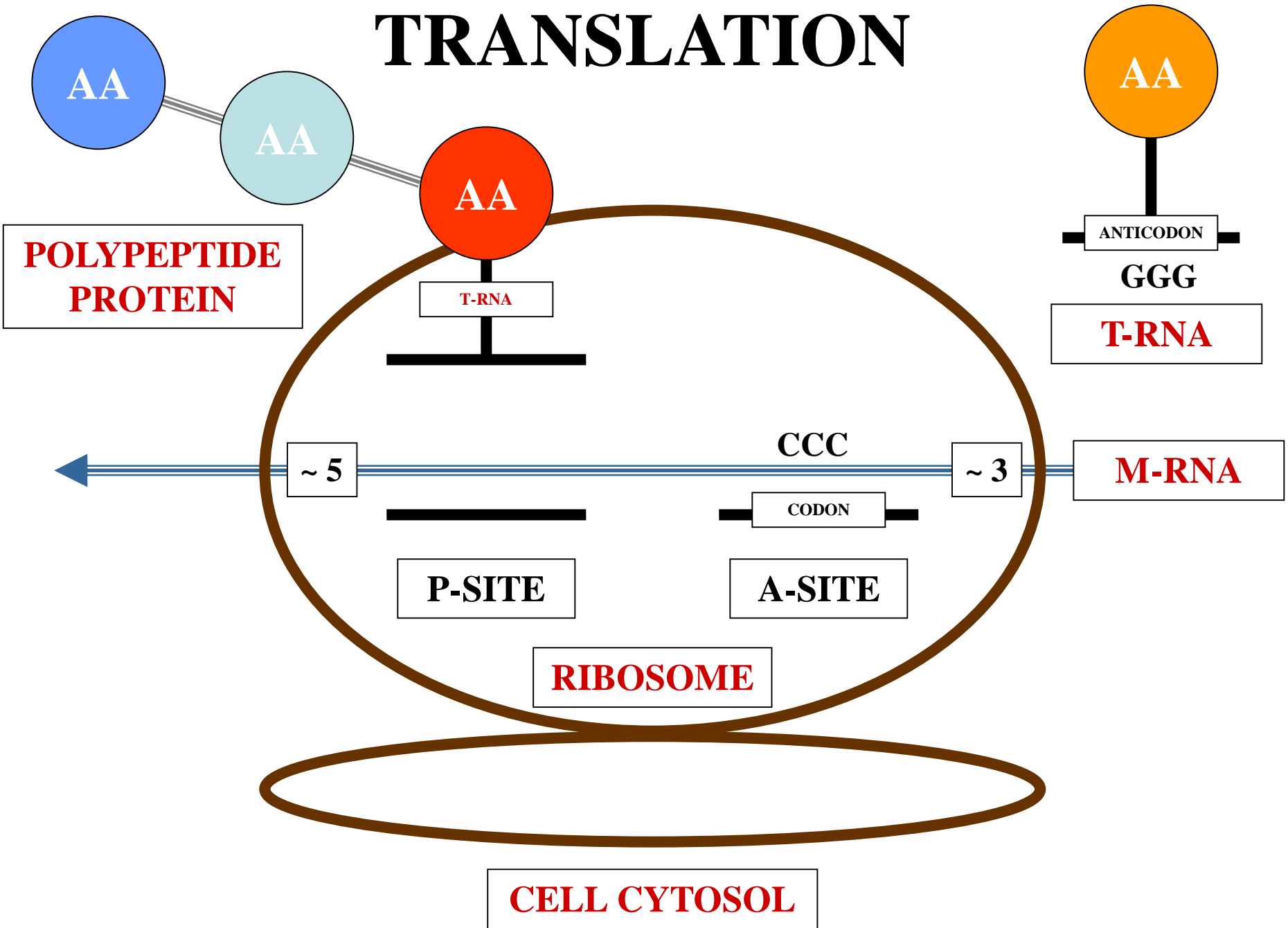
TRANSLATION



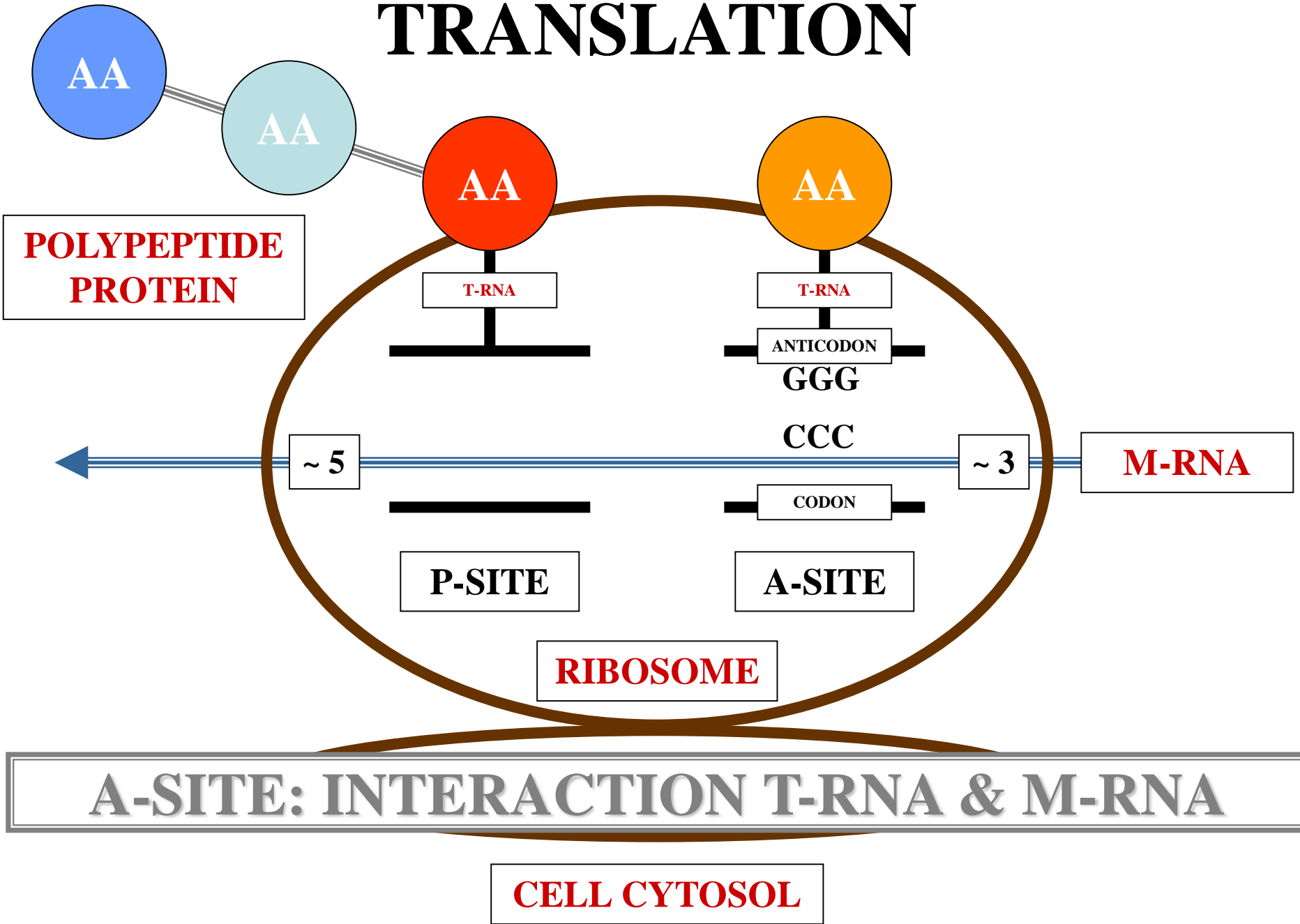
TRANSLATION



TRANSLATION

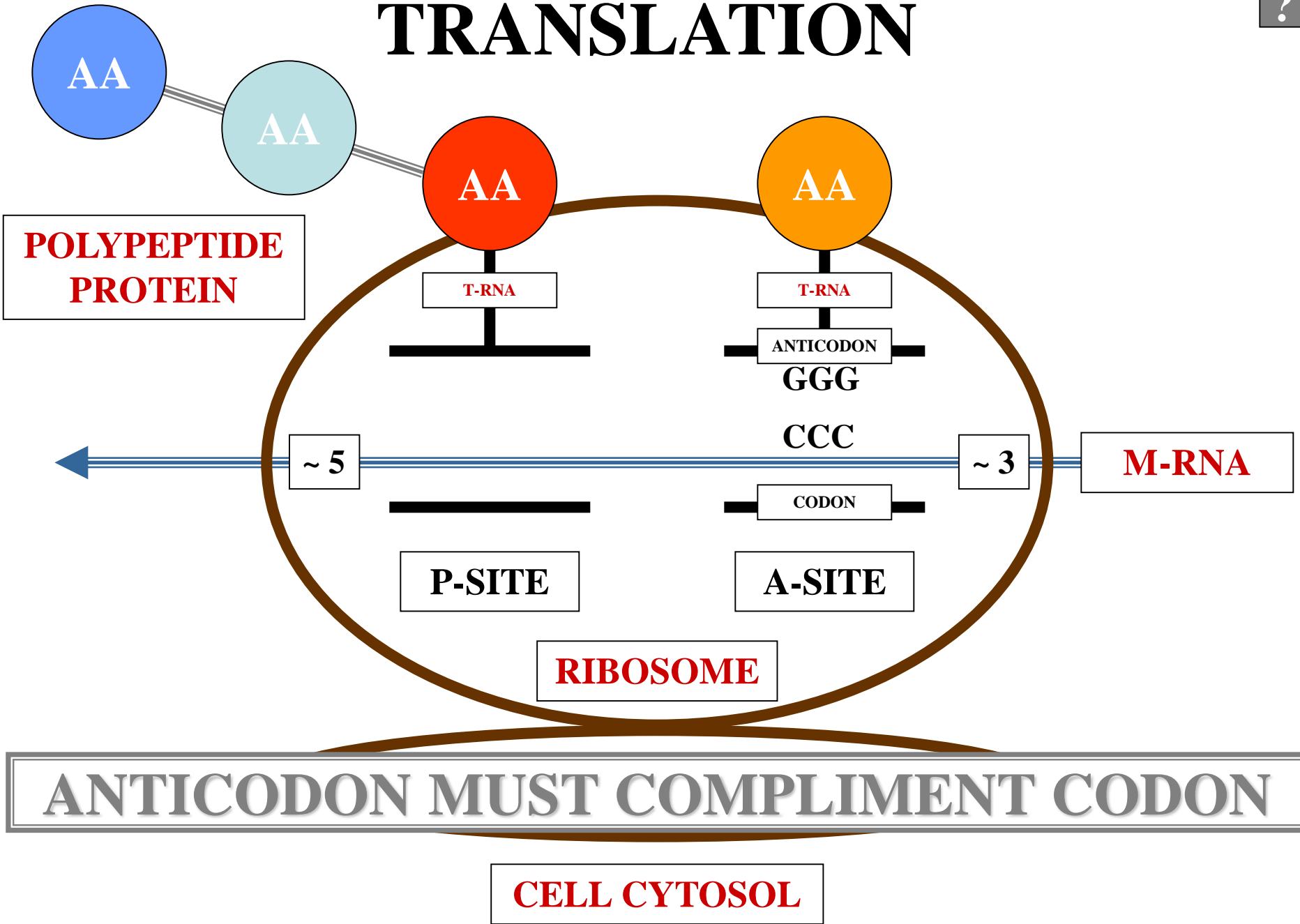


TRANSLATION





TRANSLATION



**POLYPEPTIDE
PROTEIN**

AA

AA

T-RNA

T-RNA

ANTICODON

GGG

CCC

CODON

~ 5

~ 3

M-RNA

P-SITE

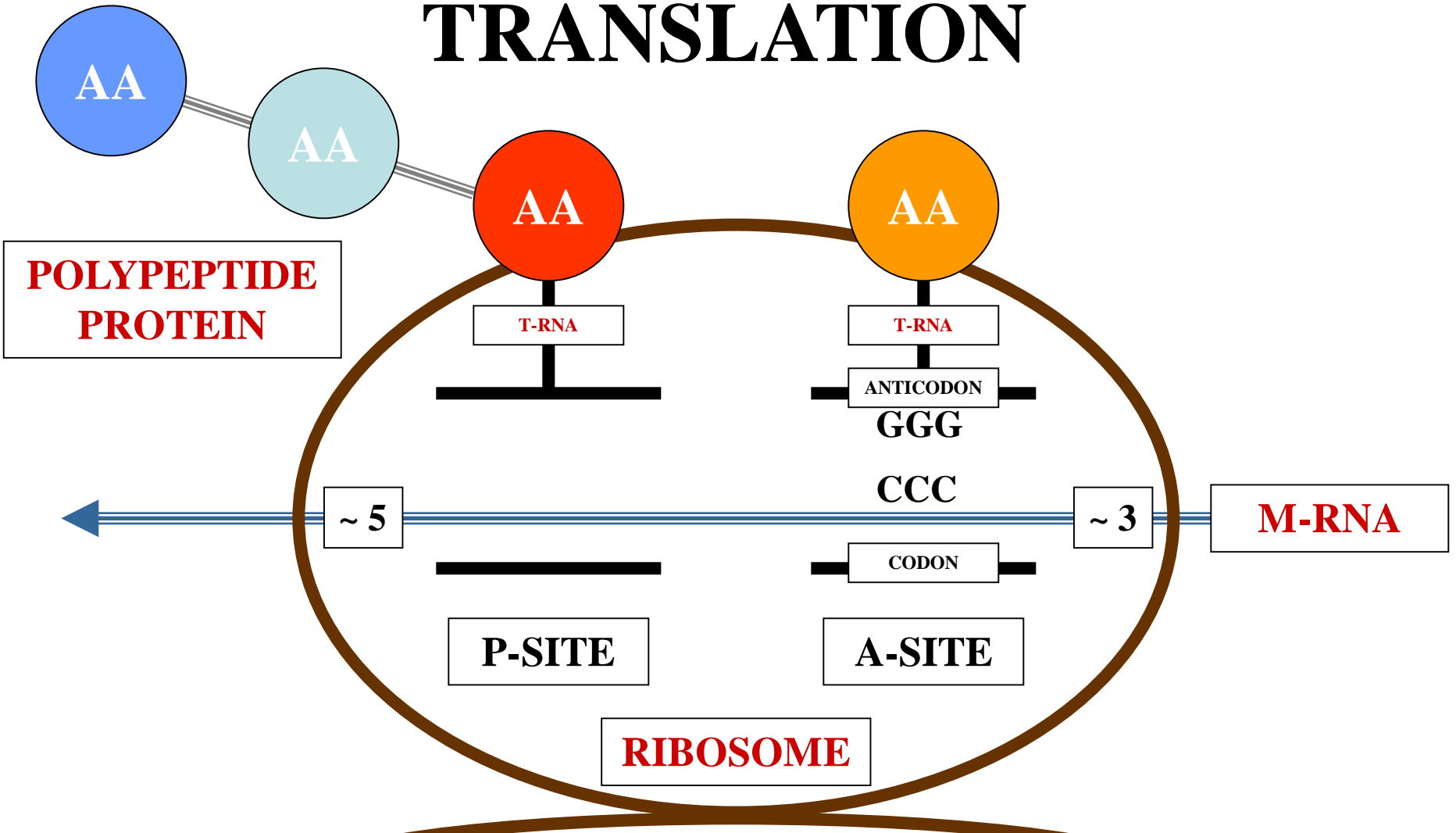
A-SITE

RIBOSOME

ANTICODON MUST COMPLIMENT CODON

CELL CYTOSOL

TRANSLATION



**POLYPEPTIDE
PROTEIN**

M-RNA

P-SITE

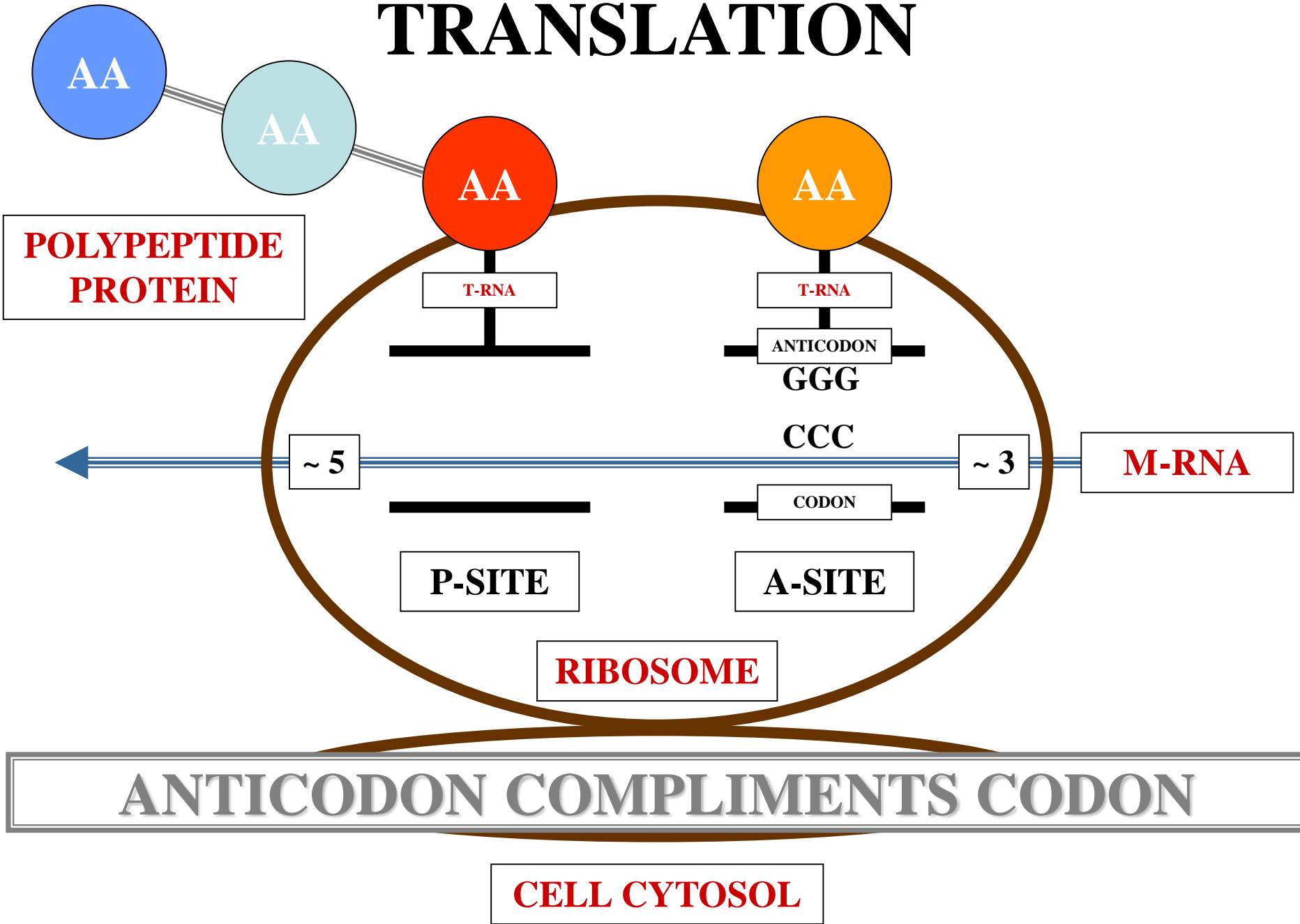
A-SITE

RIBOSOME

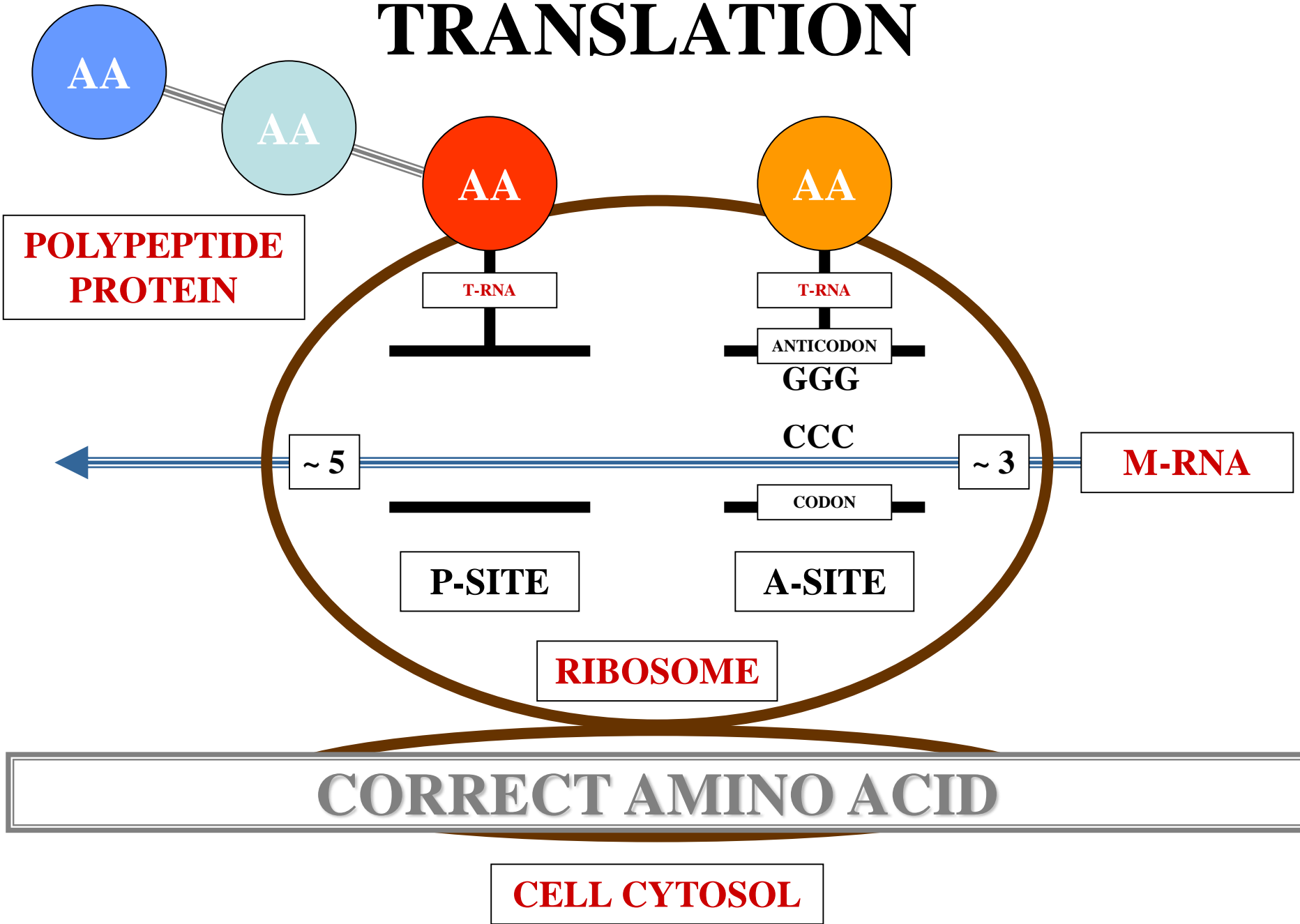
DOES ANTICODON COMPLIMENT CODON?

CELL CYTOSOL

TRANSLATION

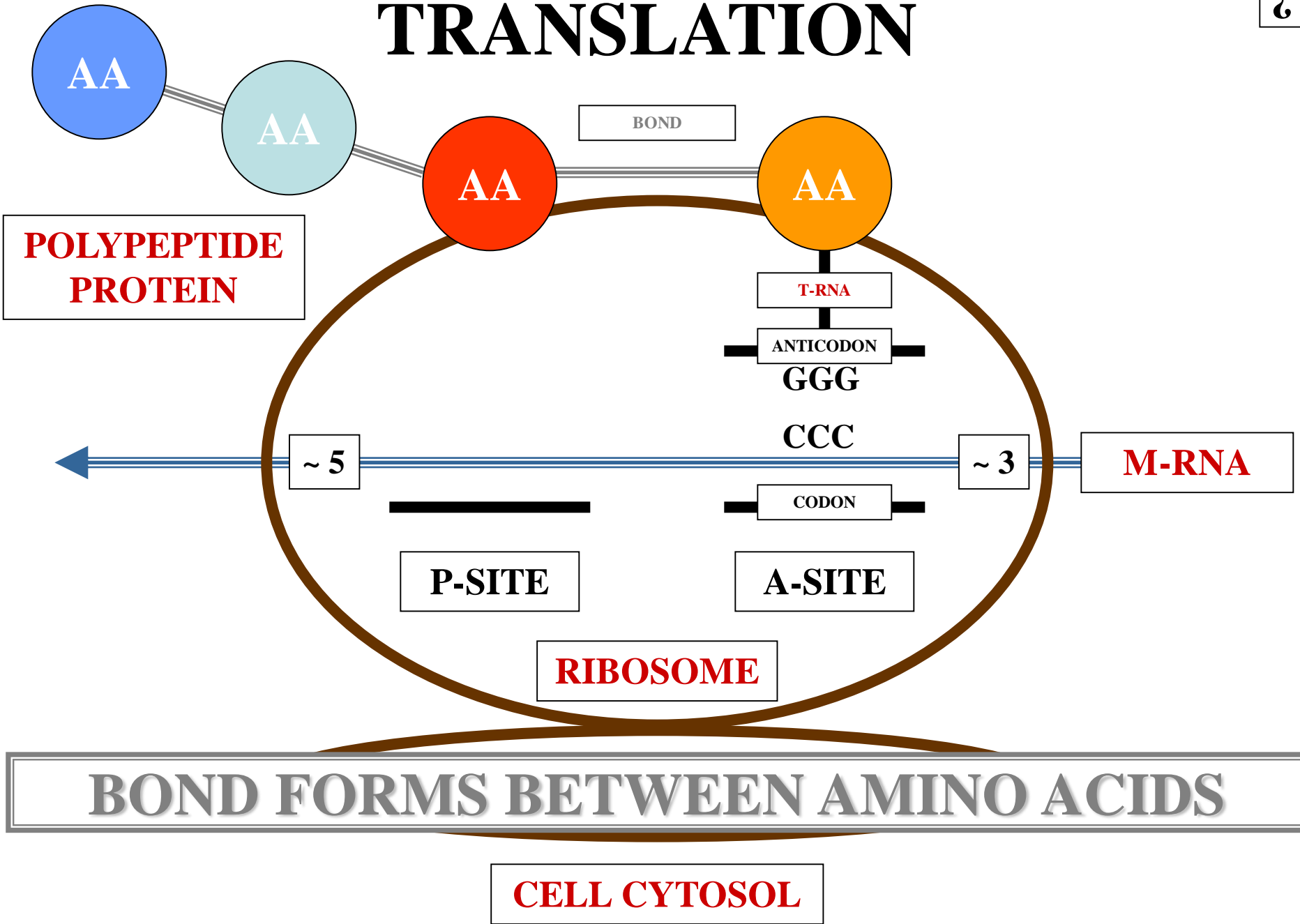


TRANSLATION





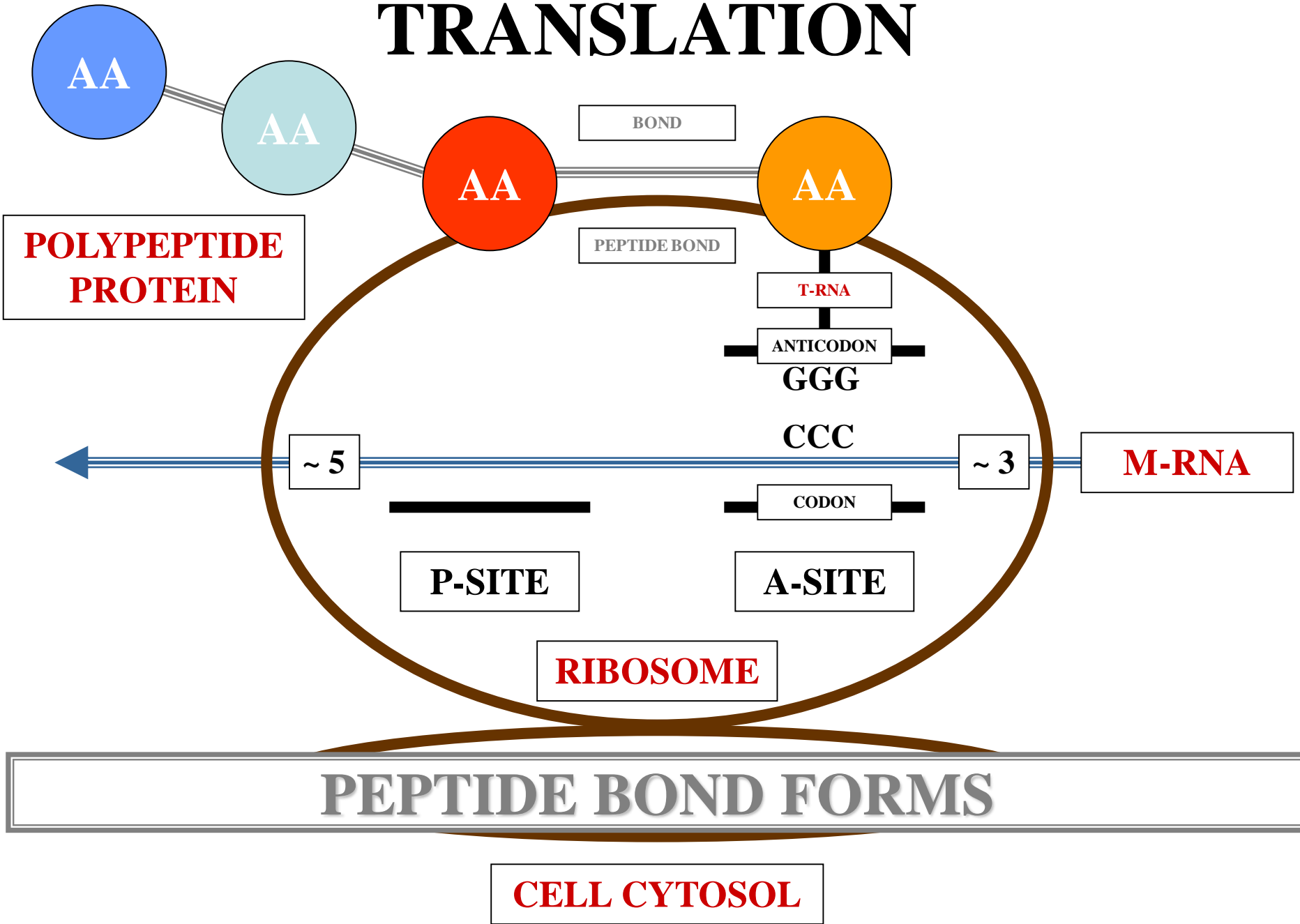
TRANSLATION



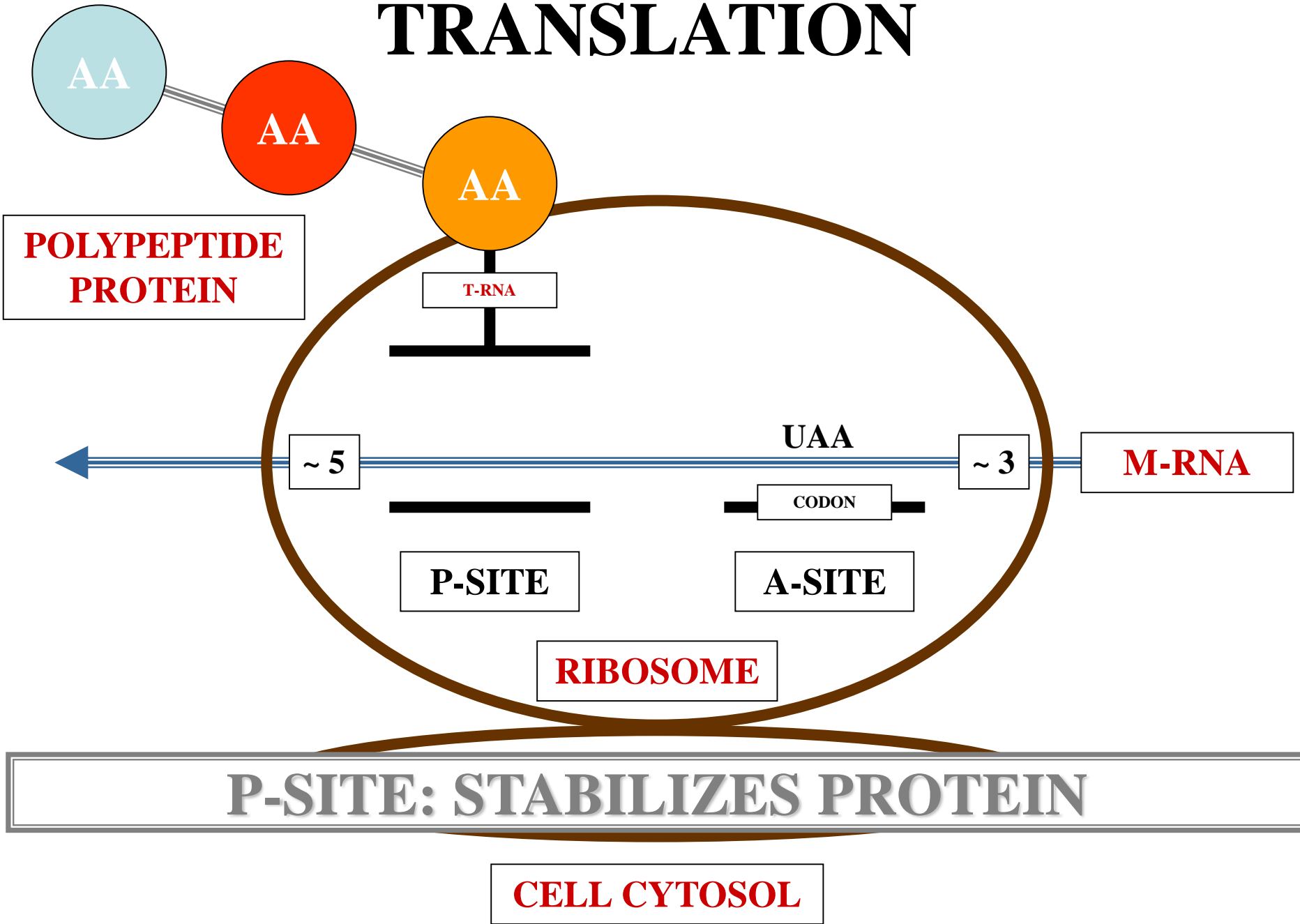
BOND FORMS BETWEEN AMINO ACIDS

CELL CYTOSOL

TRANSLATION



TRANSLATION

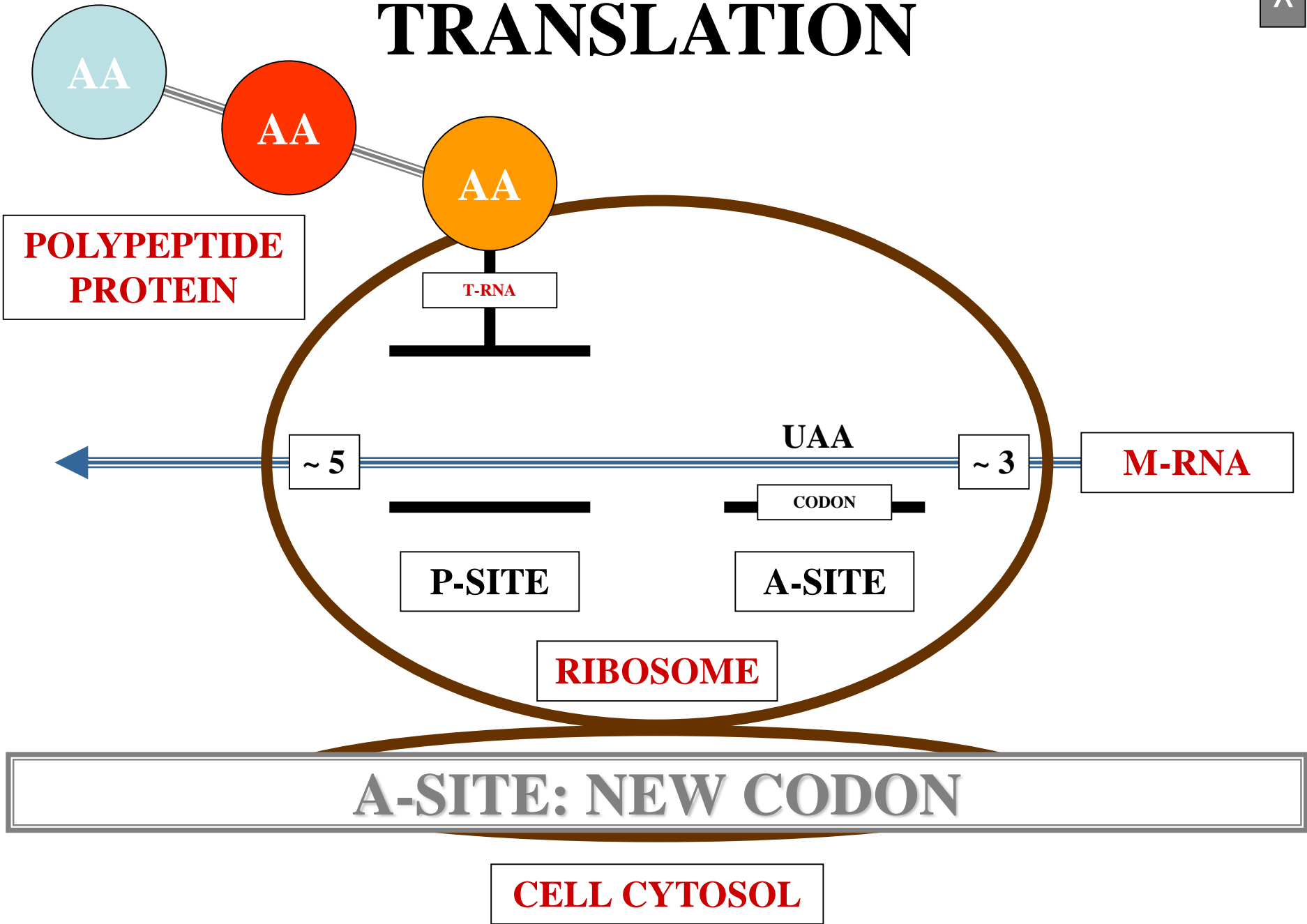


P-SITE: STABILIZES PROTEIN

CELL CYTOSOL



TRANSLATION

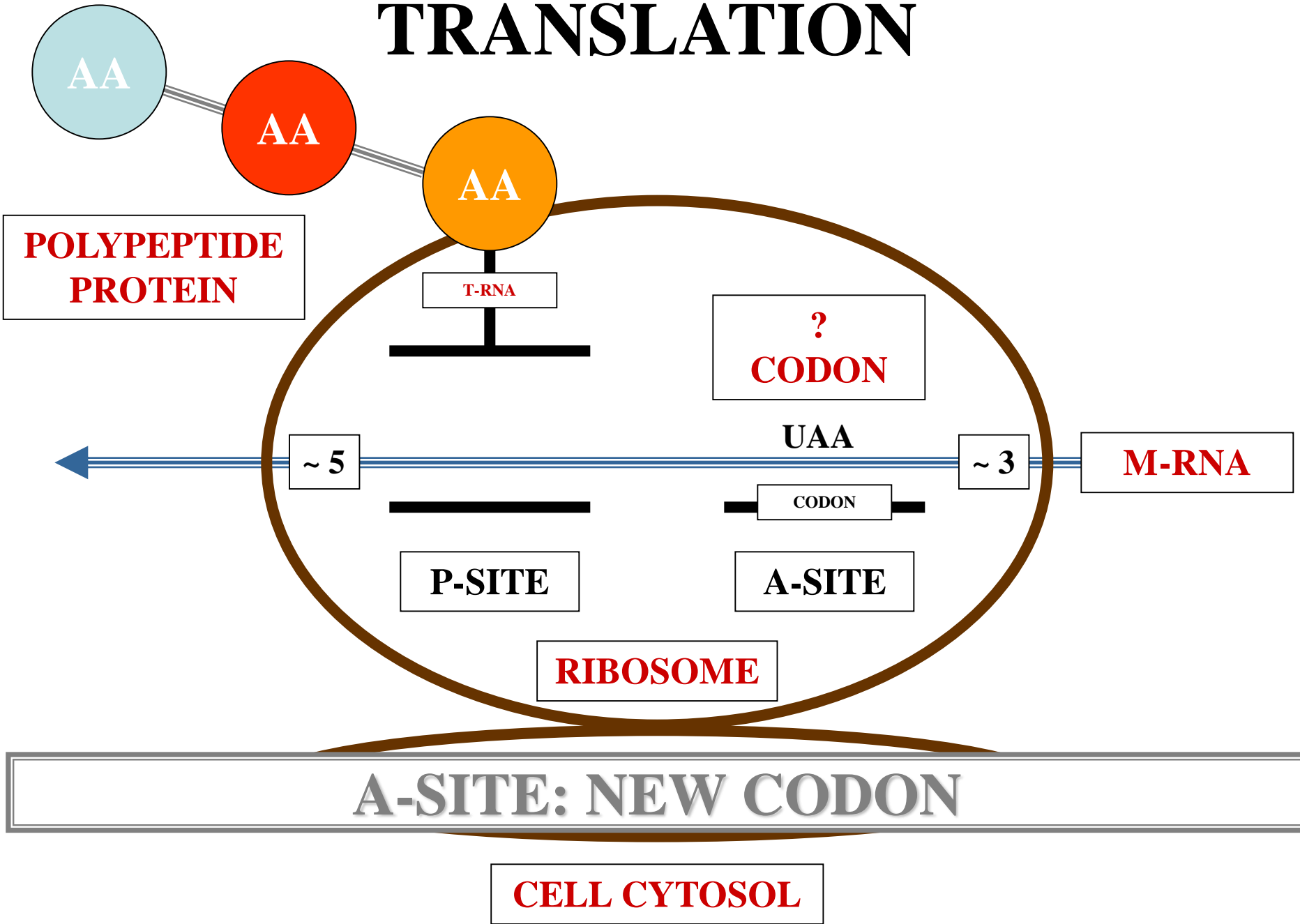




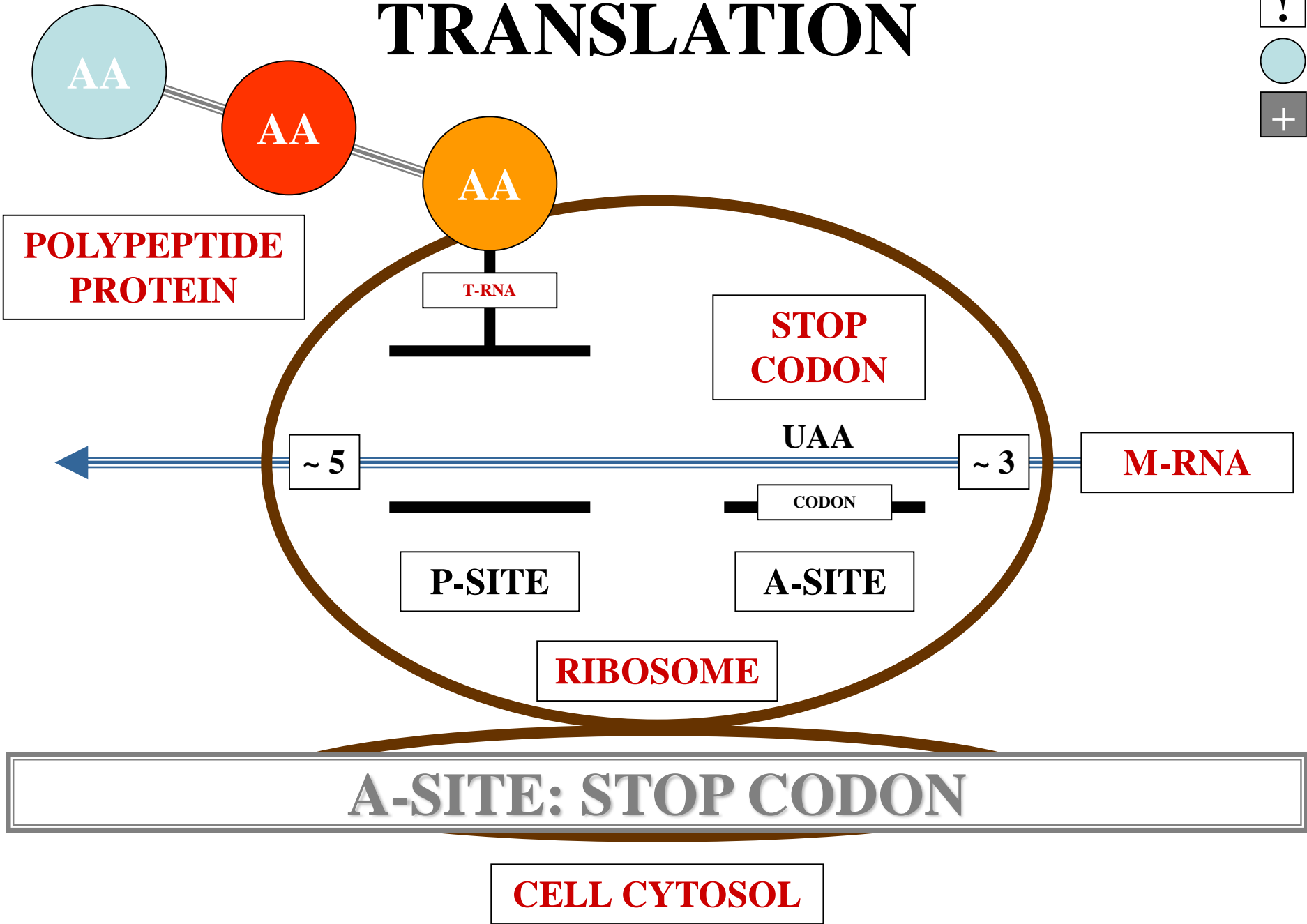
TRANSLATION

EXAMPLE #4

TRANSLATION

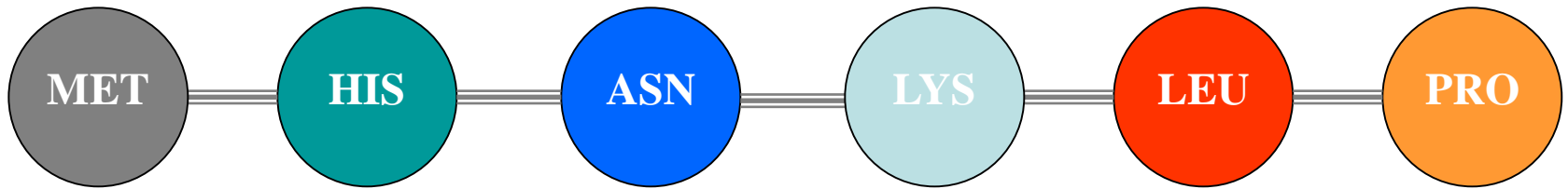


TRANSLATION



TRANSLATION

AMINO ACID SEQUENCE



AMINO ACID

AMINO ACID SEQUENCE

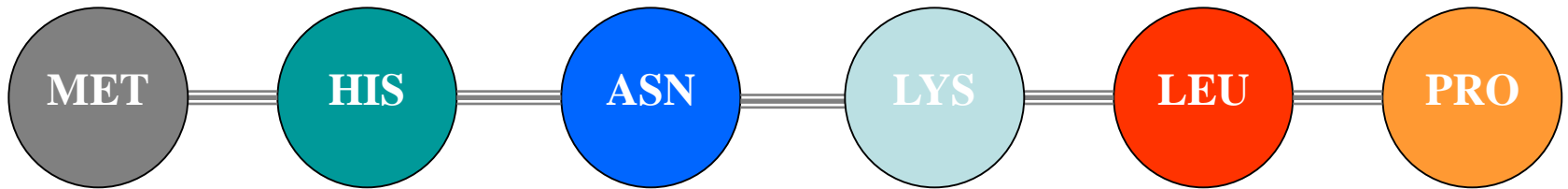


POLYPEPTIDE / PROTEIN



TRANSLATION OUTCOME

PROTEIN SYNTHESIS TRANSLATION OUTCOME

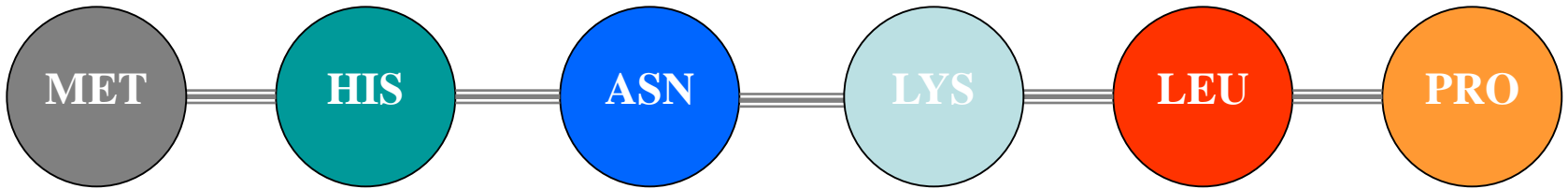


AMINO ACID



AMINO ACID SEQUENCE

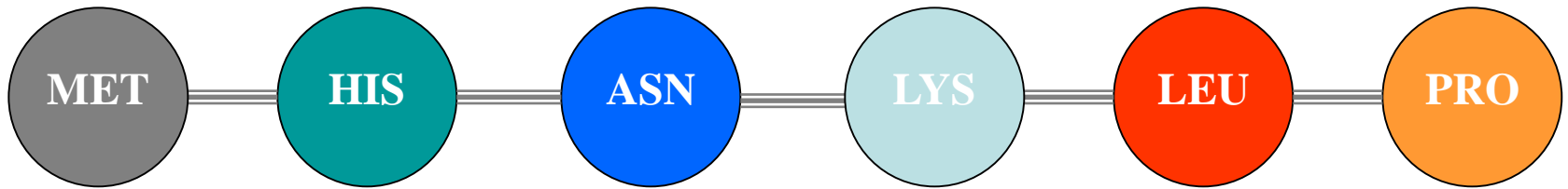
PROTEIN SYNTHESIS TRANSLATION OUTCOME



AMINO ACID == = PEPTIDE BOND

AMINO ACID SEQUENCE

PROTEIN SYNTHESIS TRANSLATION OUTCOME



AMINO ACID == = PEPTIDE BOND

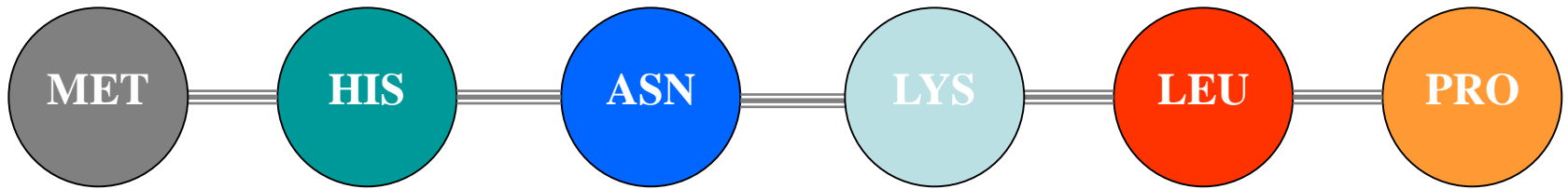
AMINO ACID SEQUENCE

POLYPEPTIDE

PROTEIN SYNTHESIS

TRANSLATION

OUTCOME

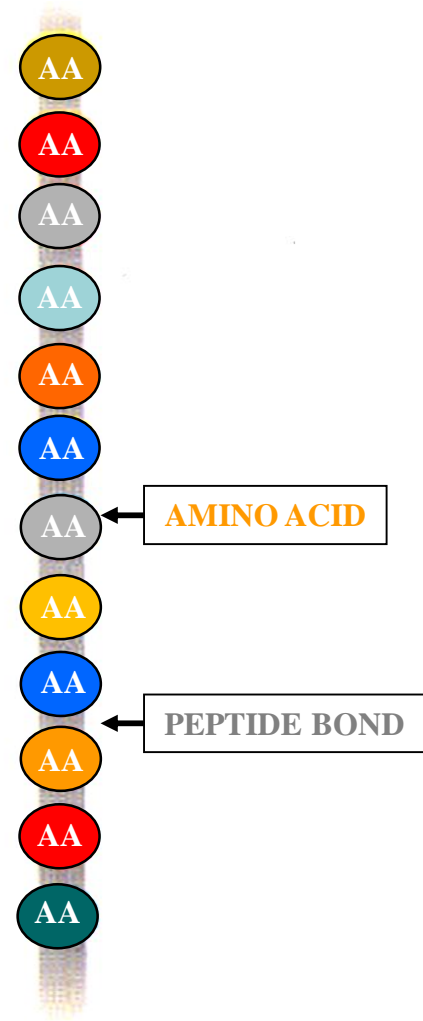


AMINO ACID \equiv = PEPTIDE BOND

LINEAR AMINO ACID SEQUENCE



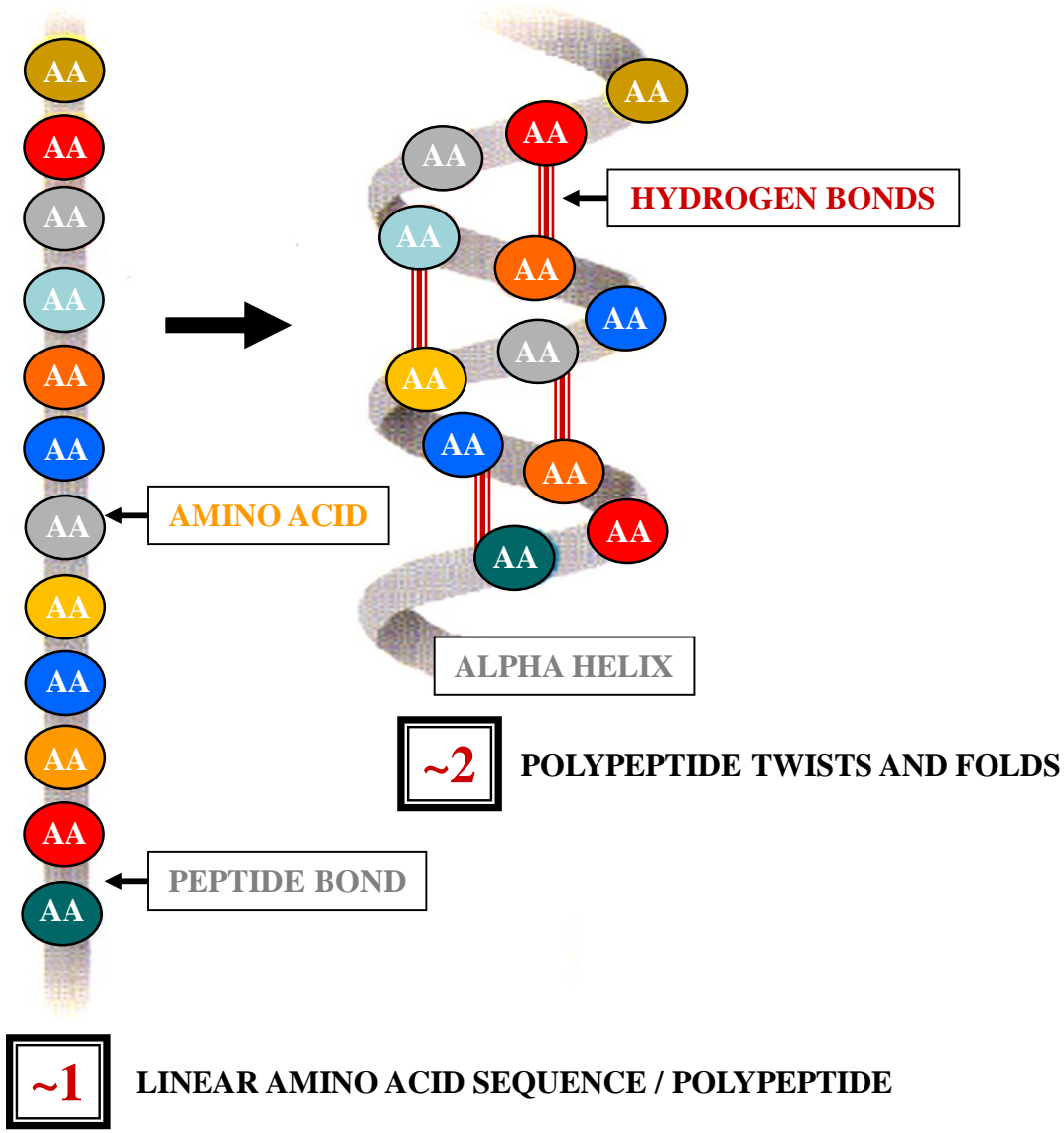
PROTEIN



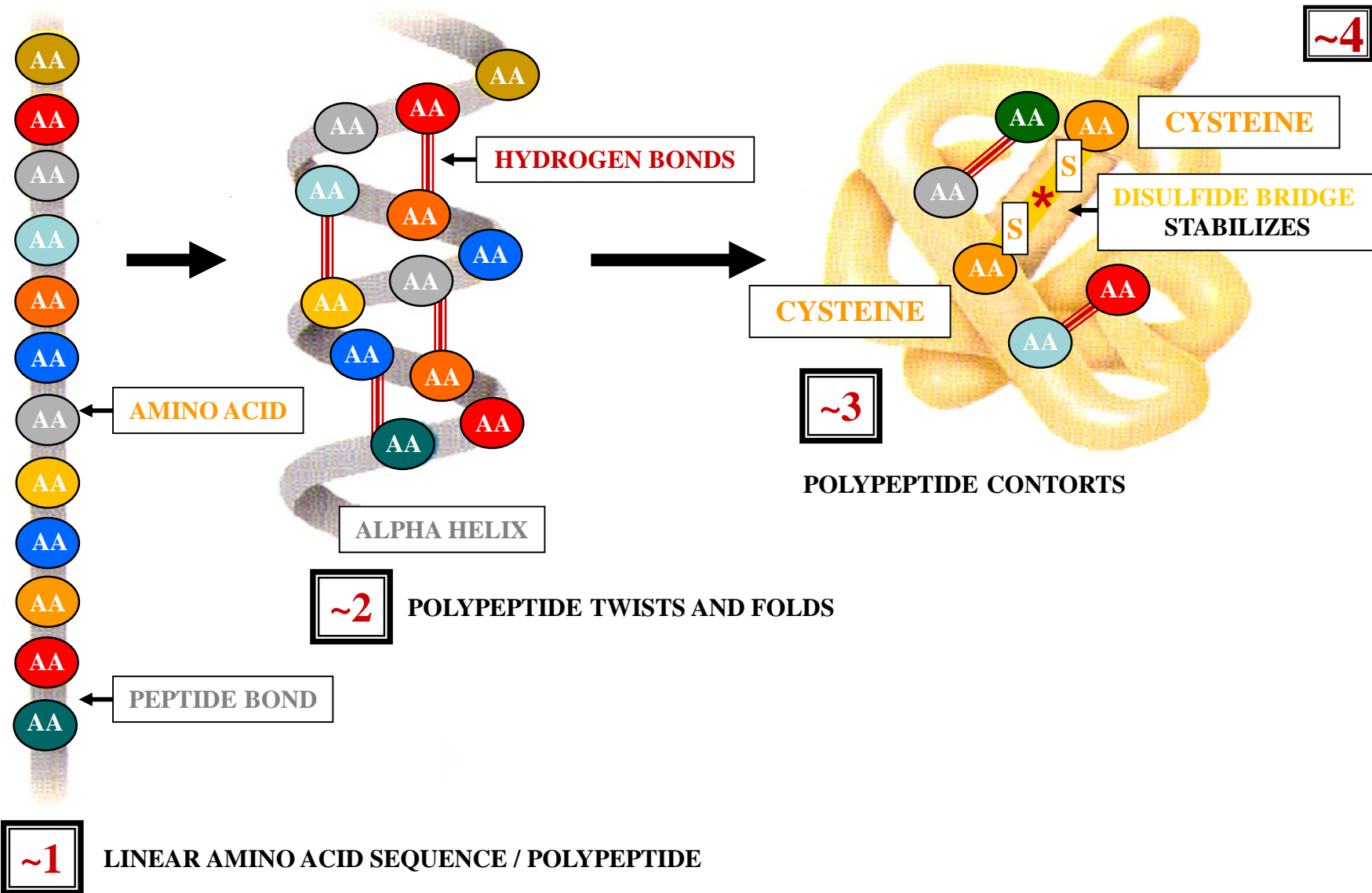
~1

LINEAR AMINO ACID SEQUENCE / POLYPEPTIDE

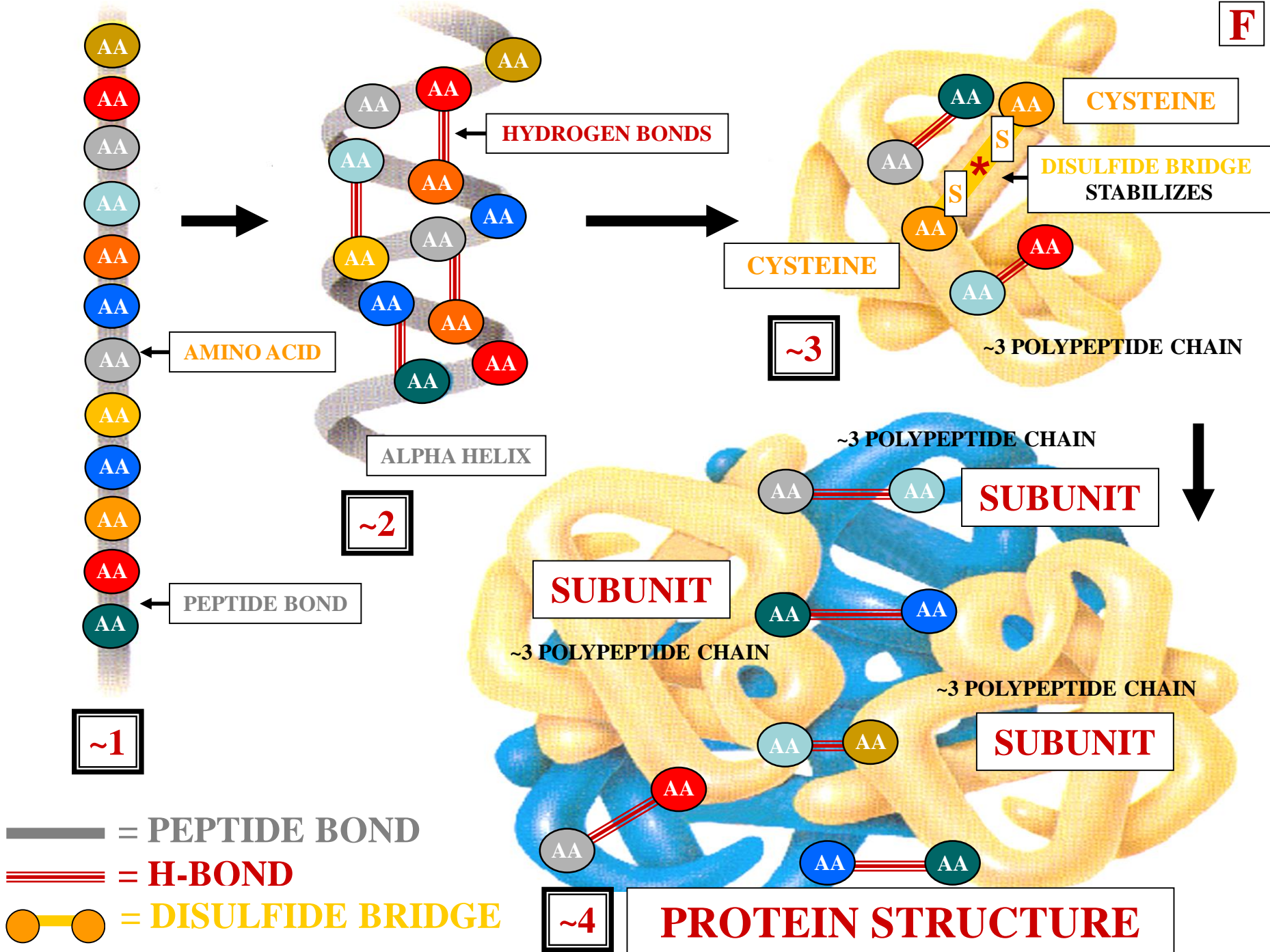
— = PEPTIDE BOND

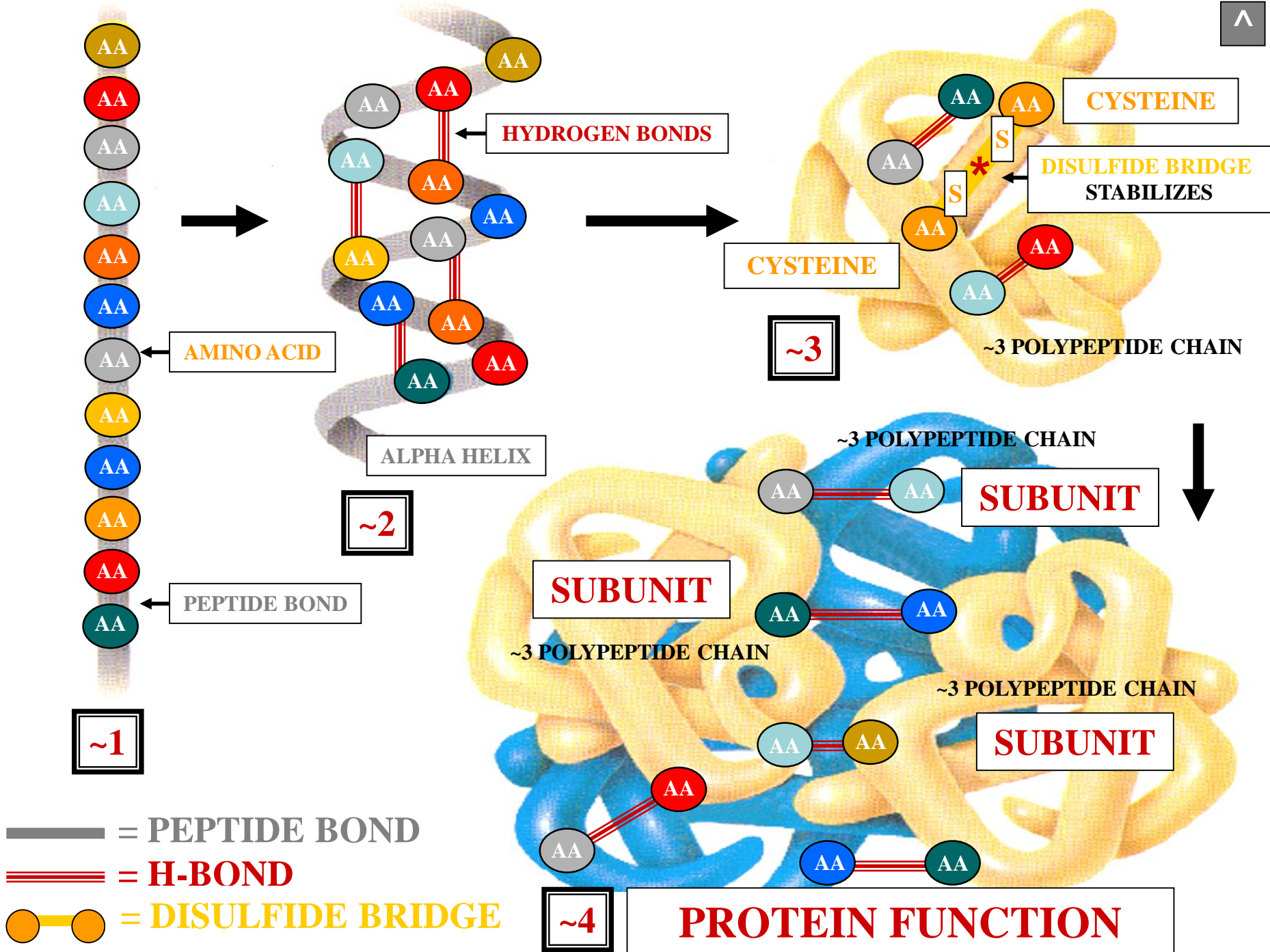


— = PEPTIDE BOND
== = H-BOND



- = PEPTIDE BOND
- == = H-BOND
- = DISULFIDE BRIDGE







PROTEIN SYNTHESIS OUTCOME



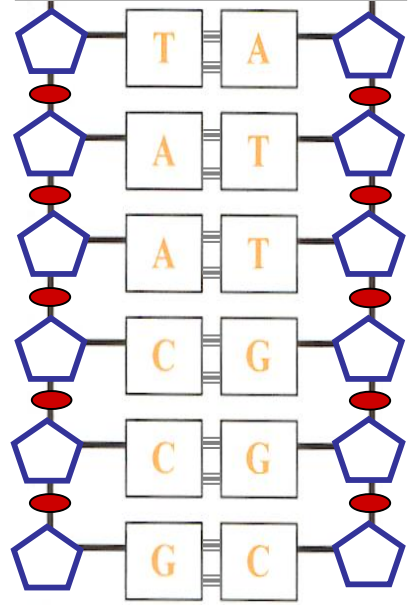
~10 MILLION SPECIES



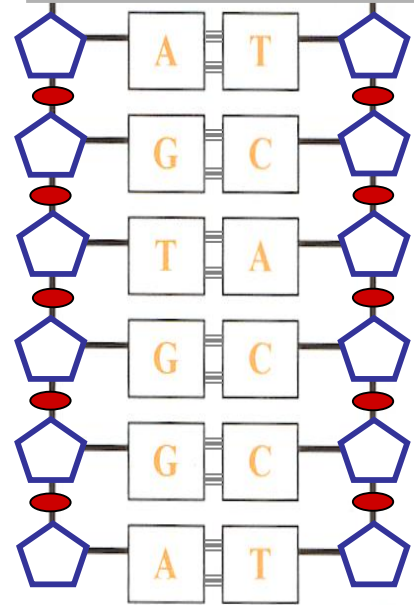
EARTH

DIFFERENT SPECIES

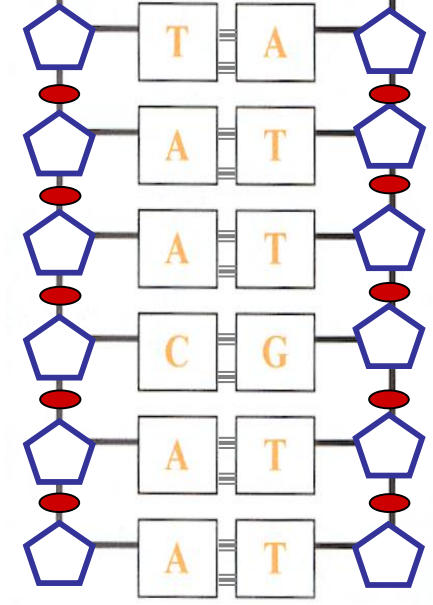
SPECIES #1



SPECIES #2



SPECIES #3



= BASE



= PHOSPHATE



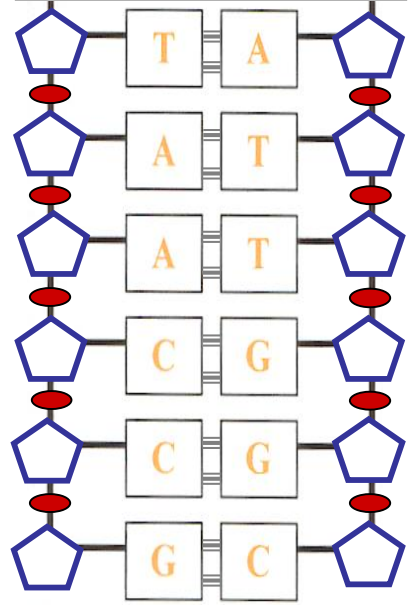
= DEOXYRIBOSE



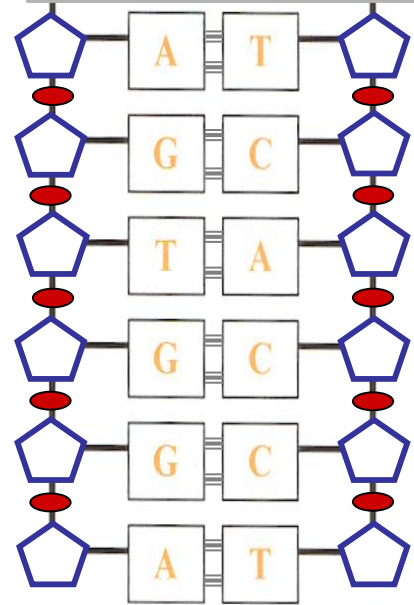
= HYDROGEN BONDS

DIFFERENT SPECIES / DIFFERENT DNA

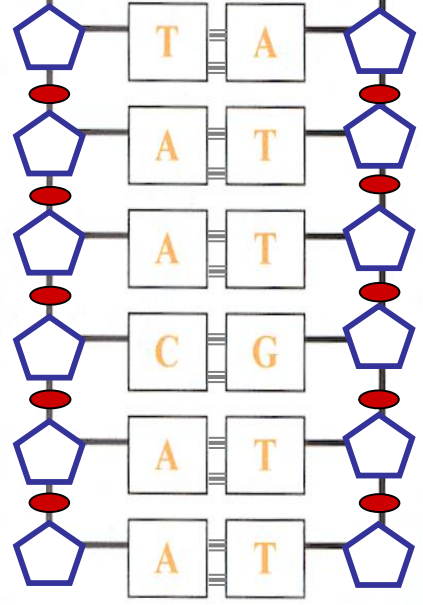
SPECIES #1



SPECIES #2



SPECIES #3



 = BASE  = PHOSPHATE  = DEOXYRIBOSE  = HYDROGEN BONDS

QUESTION

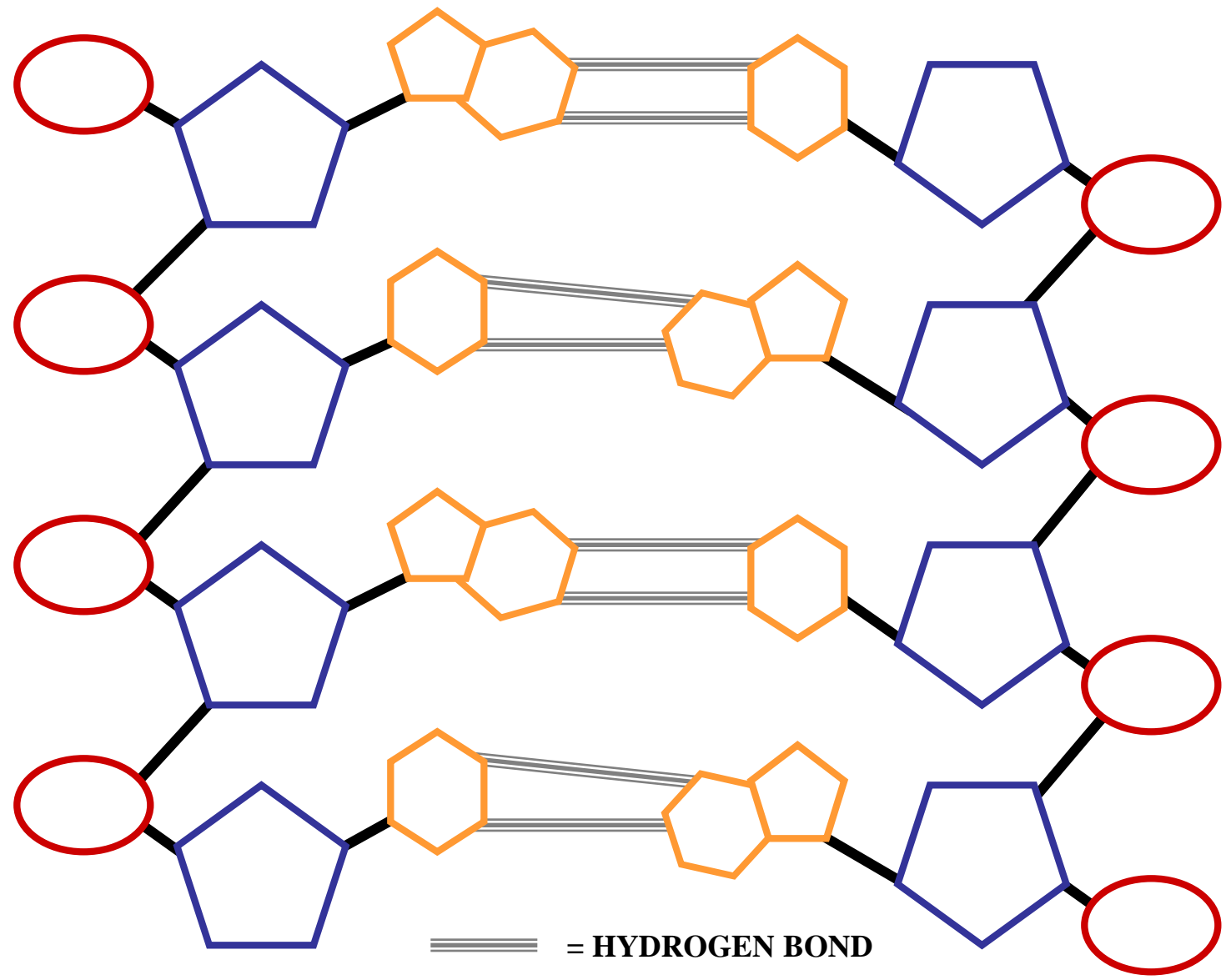


**WHAT DIFFERS
BETWEEN
SPECIES DNA?**

QUESTION

DNA DOUBLE HELIX MODEL

ANTIPARALLEL
POLYNUCLEOTIDE CHAIN

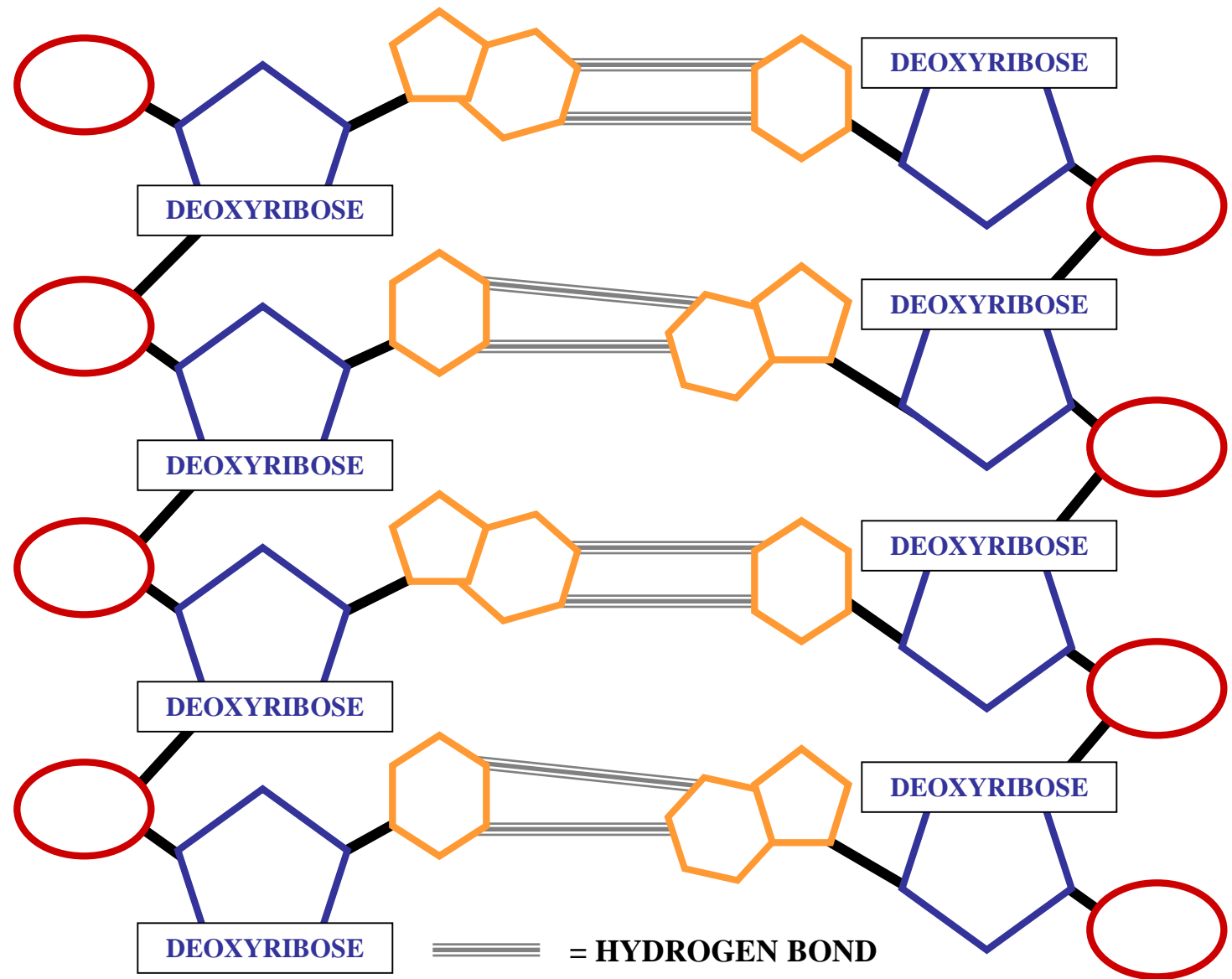


ANTIPARALLEL
POLYNUCLEOTIDE CHAIN

≡≡≡ = HYDROGEN BOND

DNA DOUBLE HELIX MODEL

ANTIPARALLEL
POLYNUCLEOTIDE CHAIN



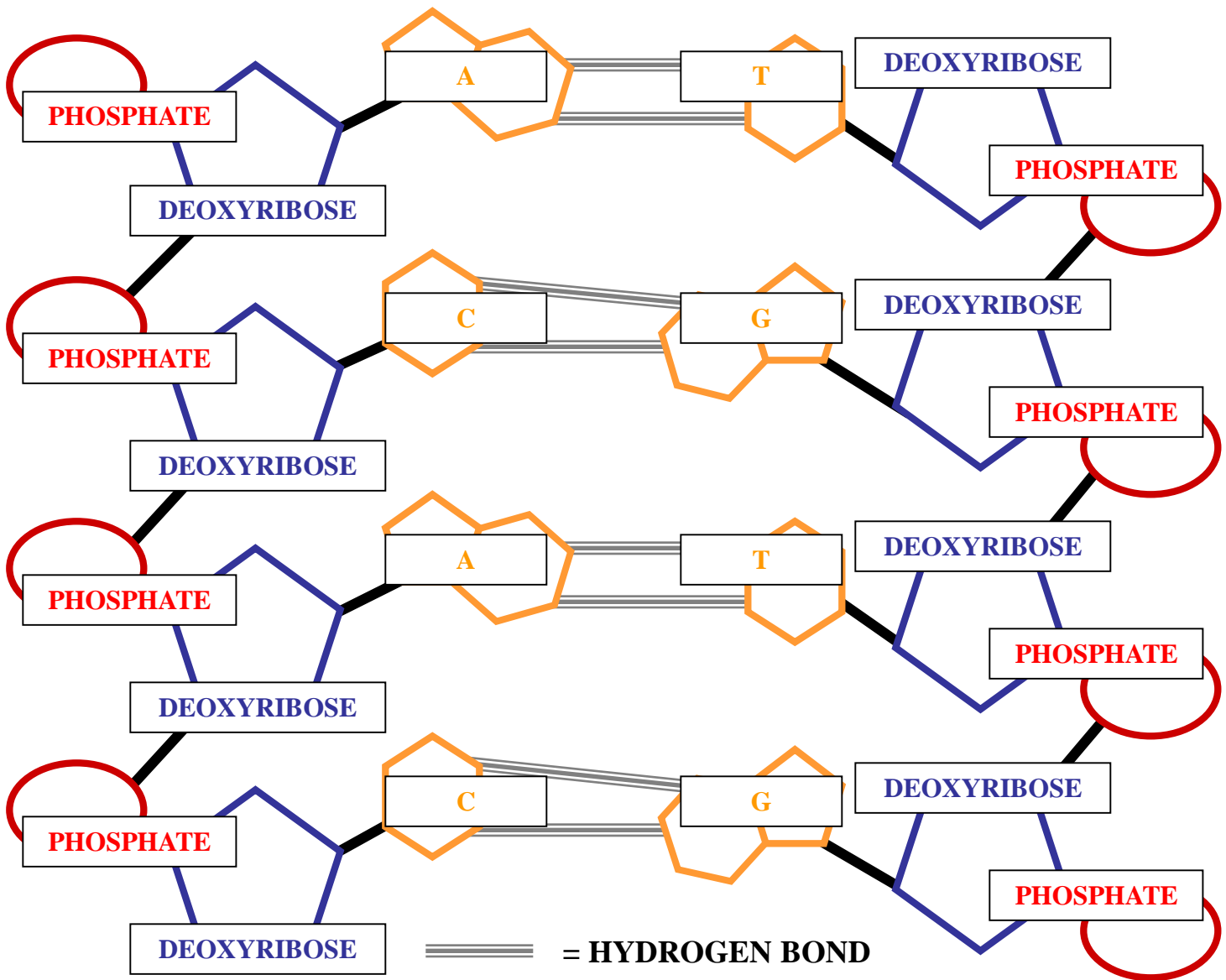
ANTIPARALLEL
POLYNUCLEOTIDE CHAIN

== = HYDROGEN BOND

DNA DOUBLE HELIX MODEL

ANTIPARALLEL
POLYNUCLEOTIDE CHAIN

ANTIPARALLEL
POLYNUCLEOTIDE CHAIN





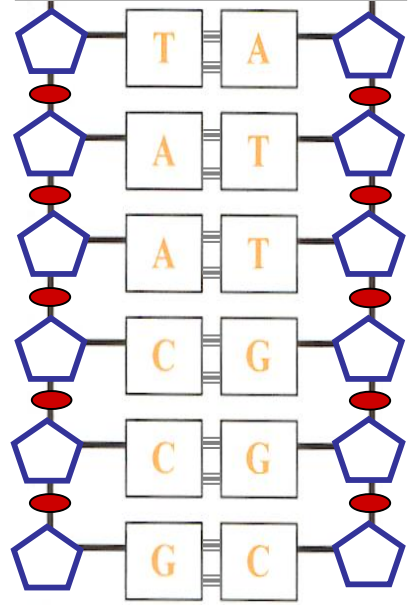
ANSWER

**SEQUENCE
NUCLEOTIDE
BASES**

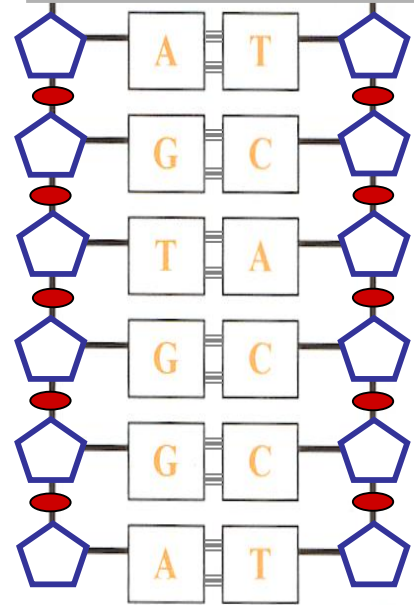
ANSWER

DIFFERENT SPECIES

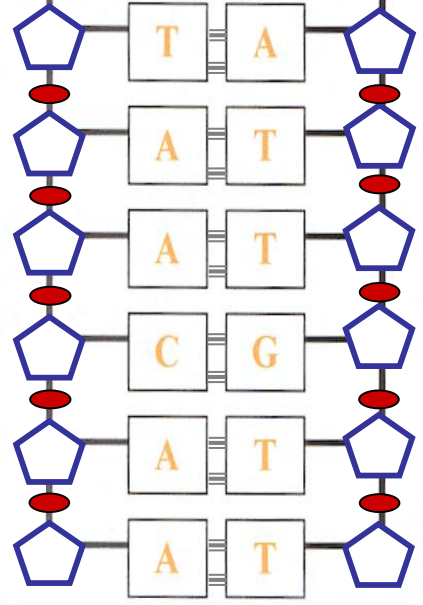
SPECIES #1



SPECIES #2



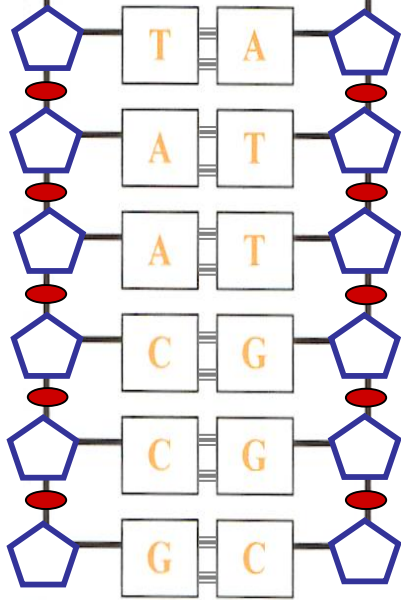
SPECIES #3



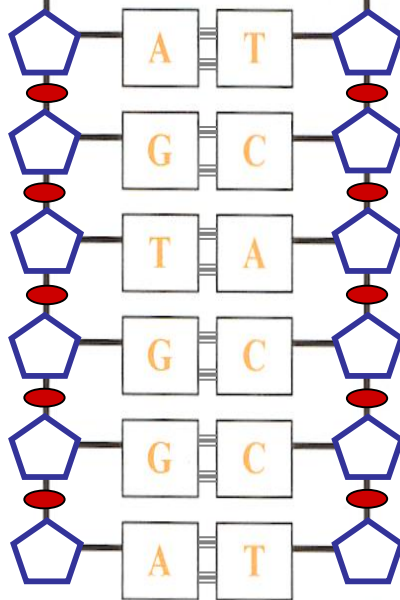
 = BASE  = PHOSPHATE  = DEOXYRIBOSE  = HYDROGEN BONDS

DIFFERENT SPECIES / DIFFERENT DNA

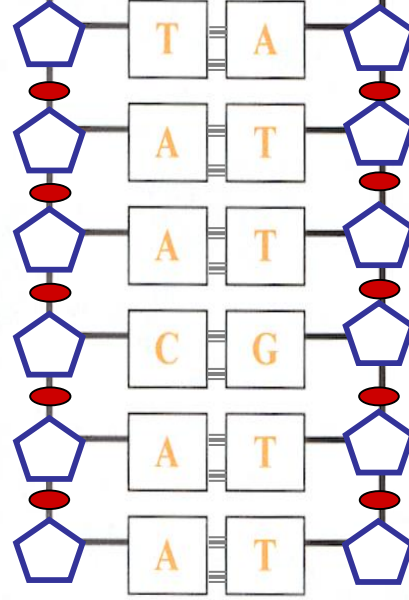
SPECIES #1



SPECIES #2



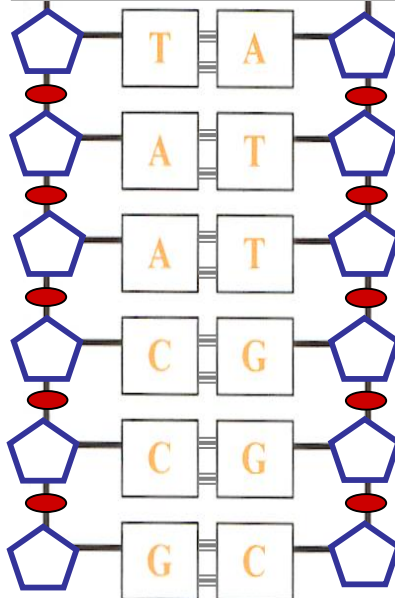
SPECIES #3



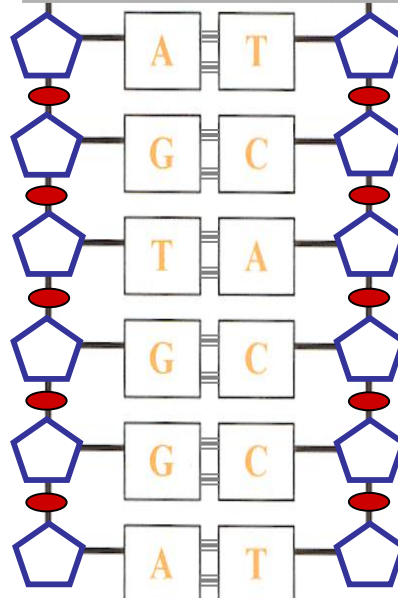
 = BASE  = PHOSPHATE  = DEOXYRIBOSE  = HYDROGEN BONDS

DIFFERENT SPECIES / DIFFERENT DNA

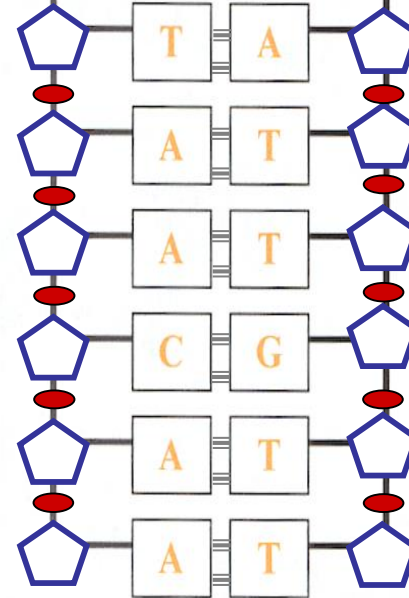
SPECIES #1



SPECIES #2



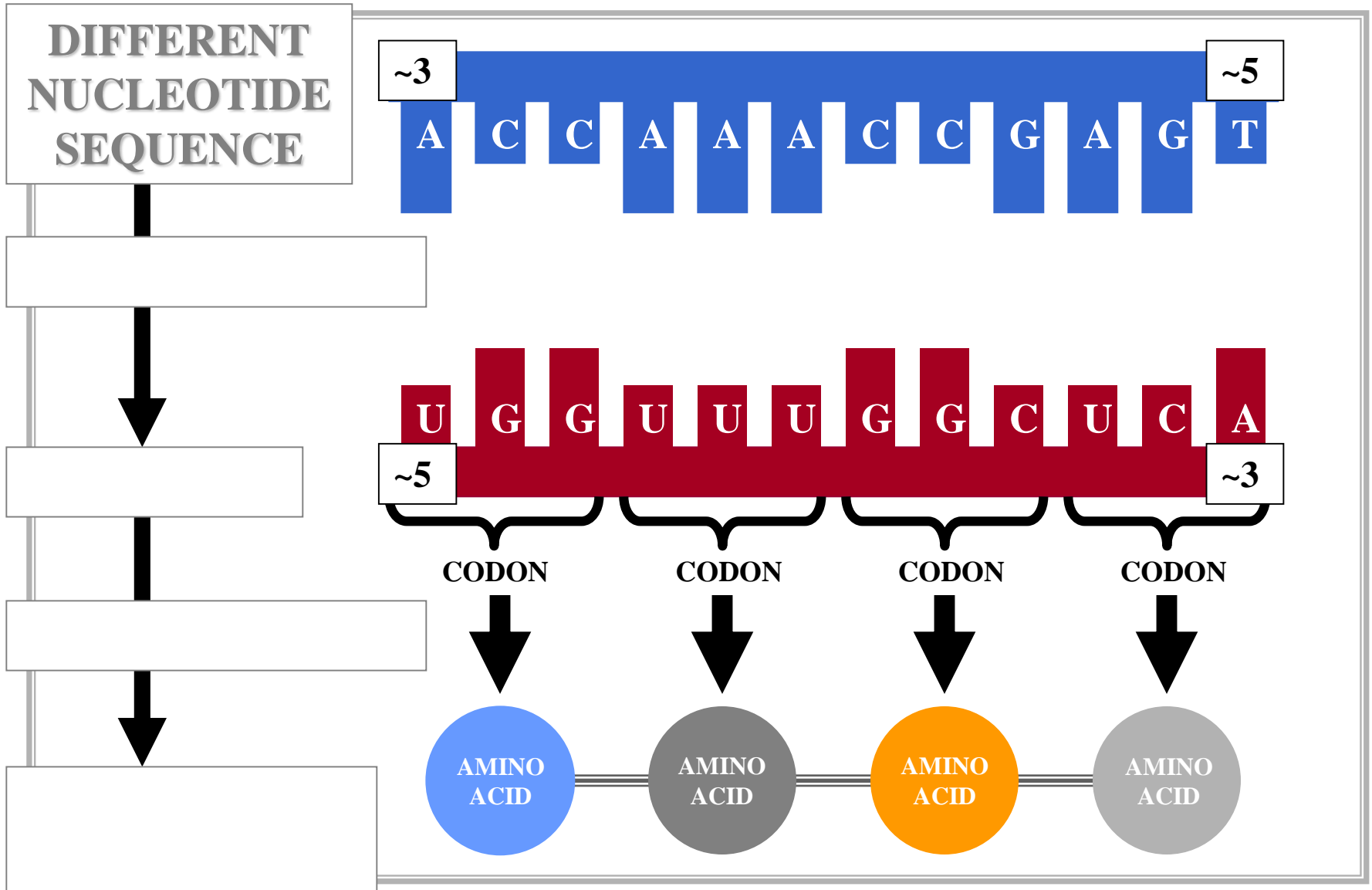
SPECIES #3



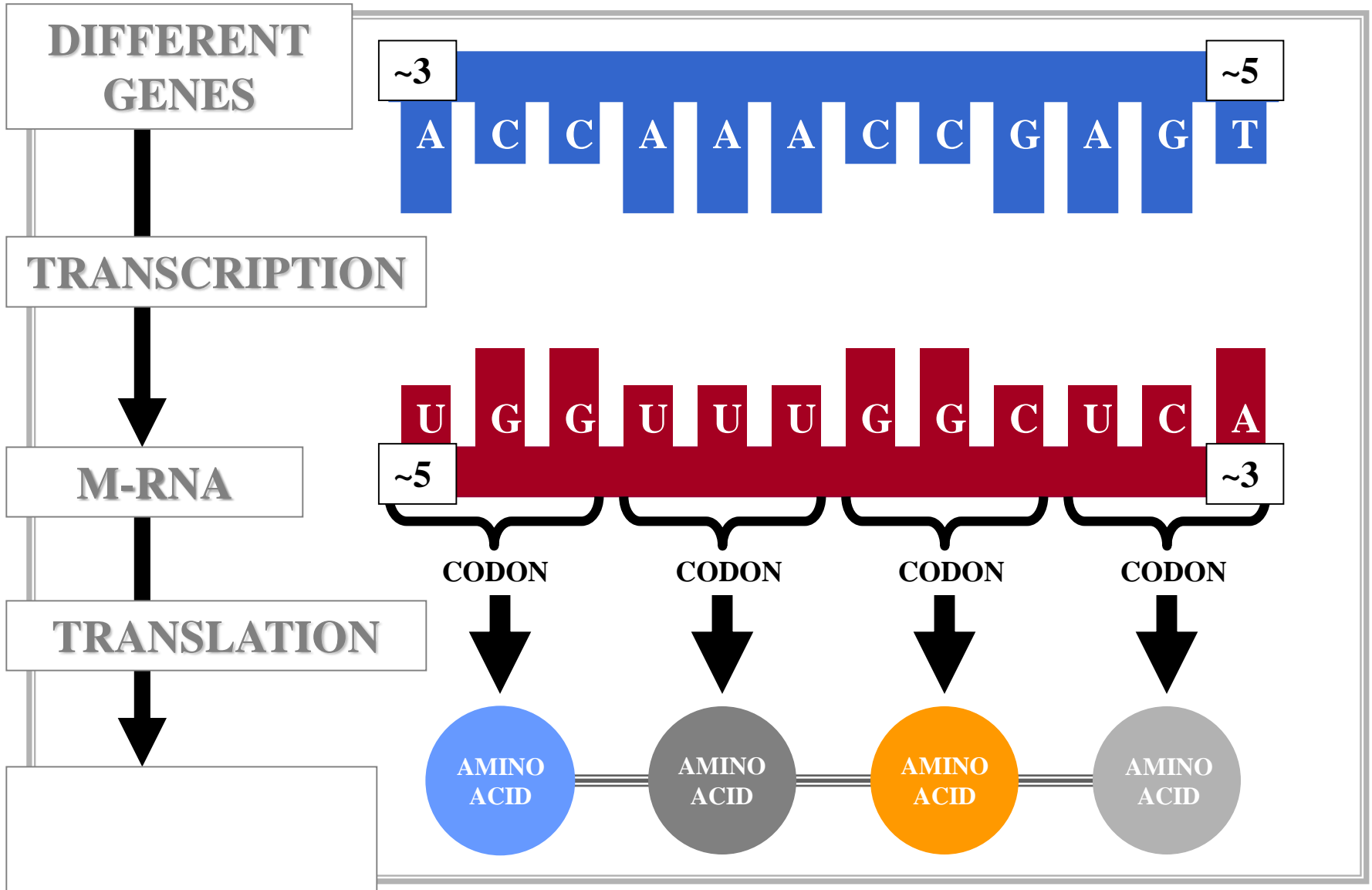
DIFFERENT DNA NUCLEOTIDE SEQUENCES



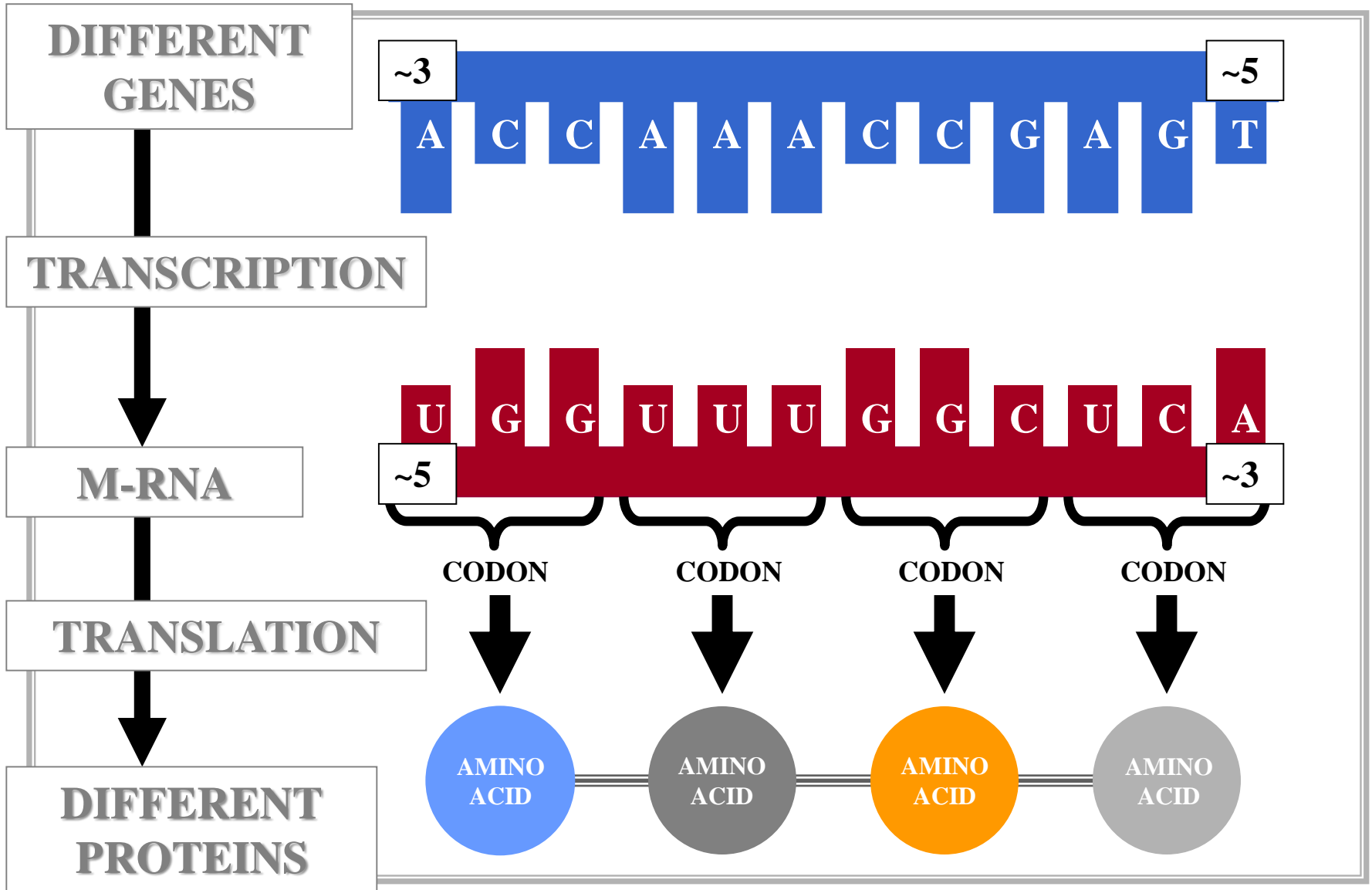
PROTEIN SYNTHESIS



PROTEIN SYNTHESIS



PROTEIN SYNTHESIS



PROTEIN SYNTHESIS

