

# Translation

## Genetic Code:

Genetic codes are not overlapping  
 → nonoverlapping

George Gamow → Genetic code/codon  
 ↳ Triplet.

1 → A T G C  
 ↓ ↓ ↓ ↓  
 aa aa aa aa      16 aa

AA AT  
 TT AG  
 GG AC  
 CC

2 →  $4^2 = 16$  different code

3 →  $4^3 = 64$  → 3-stop codon

5' AUG ATC GAVU ...

## Stop Codon

↳ UAA }  
 UGA }  
 UAG }

61

↳ 20 amino acid

AUG

↳ Methionine

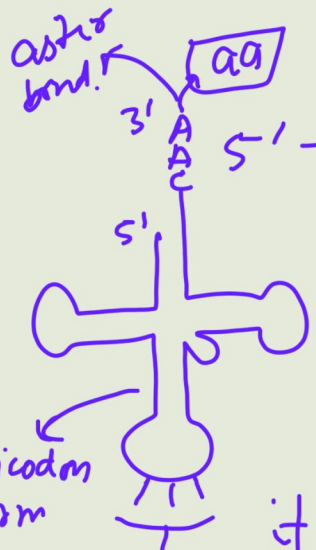
4 aa

degenerate code

Leu, Ser, Arg

↳ 6  
 Gly, Pro, Ala, Val, Thr

↳ 4  
 Ile → 3



5' — AUG AAC UAG T — 3'

x  
A  
A U A  
U A C  
A A A

\* Codon bias

\* Wobble hypothesis

if codes are overlapping

→ Then one mutation in genetic code will create three different amino acid mutations.

anticodon →  

UUU	CUA
UUG	CUA
CUU	CUA
CUC	CUA

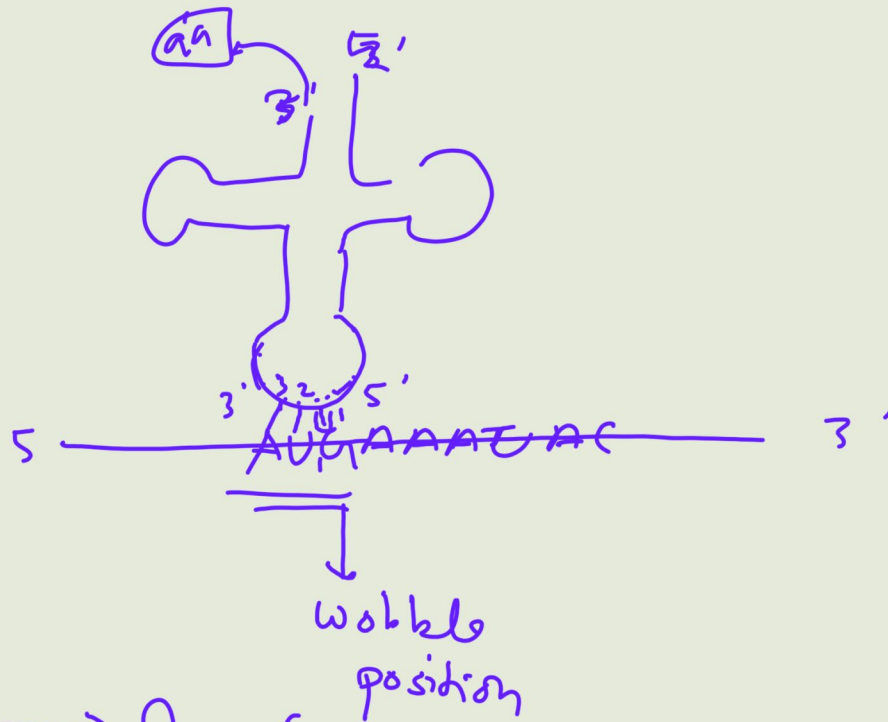
non overlapping

→ one mutation in aa.

\* Universal

Mycoplasma, mitochondria

UAG → Trp (tryptophan)  
CUA → Thr



U → A or G.

G → U and C

I → U, C, A