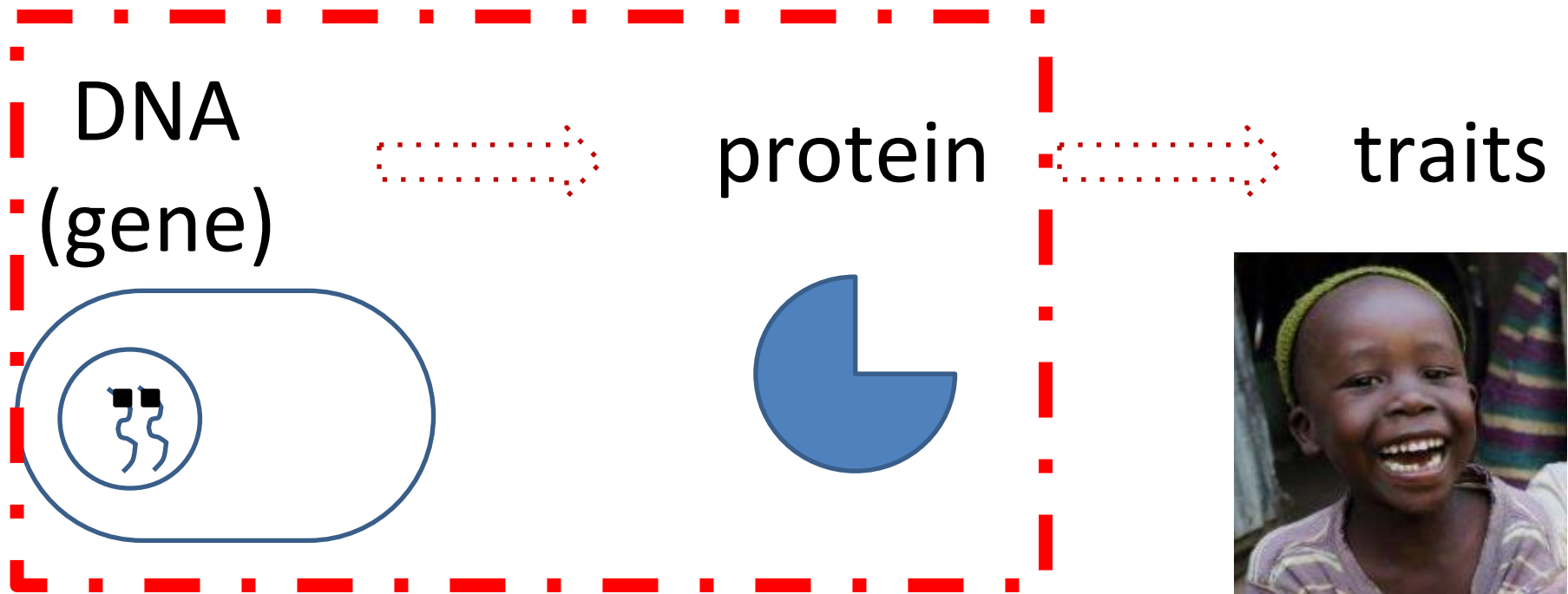



Today's Goals

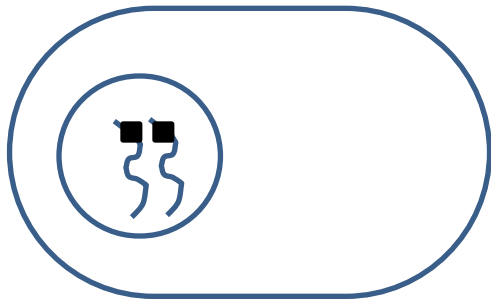
- Decode DNA to make proteins.
- Describe a process by which the instructions in DNA can be used to make proteins.

How does DNA change the shape of a protein?

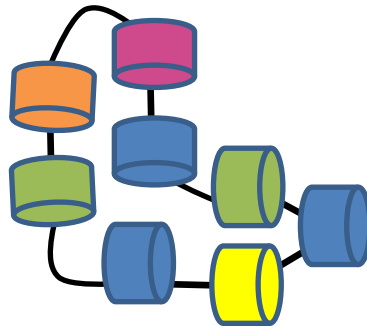


How does DNA change the shape of a protein?

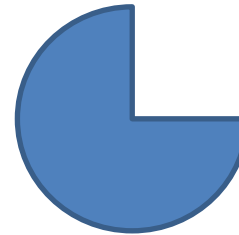
DNA
(gene) 



Amino
Acids 



protein  traits



How does DNA code for proteins?

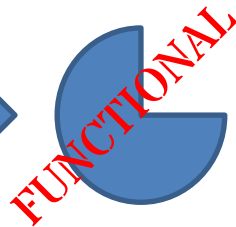
What determines the shape of proteins?

Amino Acid Order



ACGGCTATAGTGCTCATGAT
ATCTTGAGCACTA TAGCCG

Version 1 of
the Gene



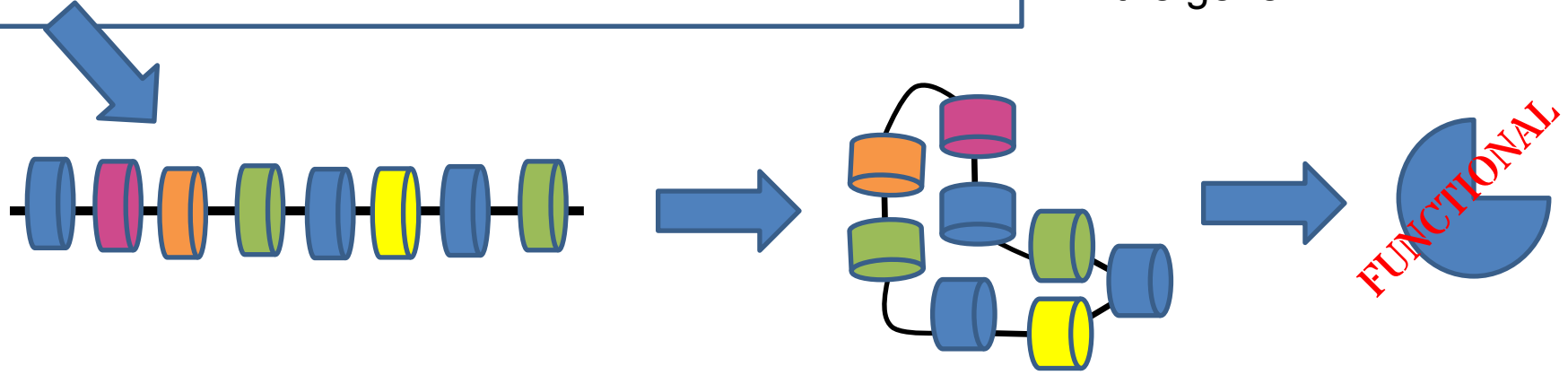
ACGGCTATAGT**T**CTCATGAT
ATCTTGAG**A**CTA TAGCCG

Version 2 of
the gene



ACGGCTATAGTGCTCATGAT
ATCTTGAGCACTAAGCCGT

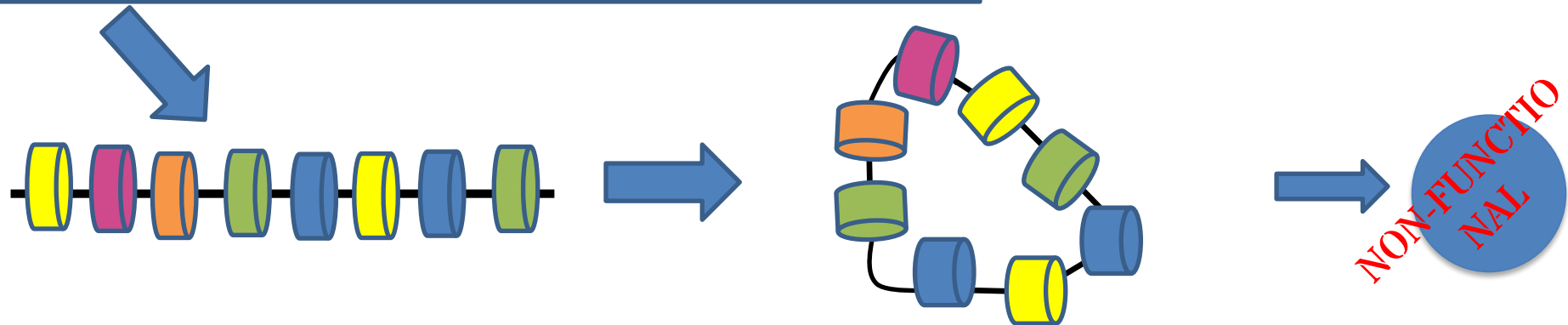
Version 1 of the gene



How does DNA code for amino acids?

ACGGCTATAGT**T**CTCATGAT
ATCTTGAGCA**A**CTAAGCCGT

Version 2 of the gene

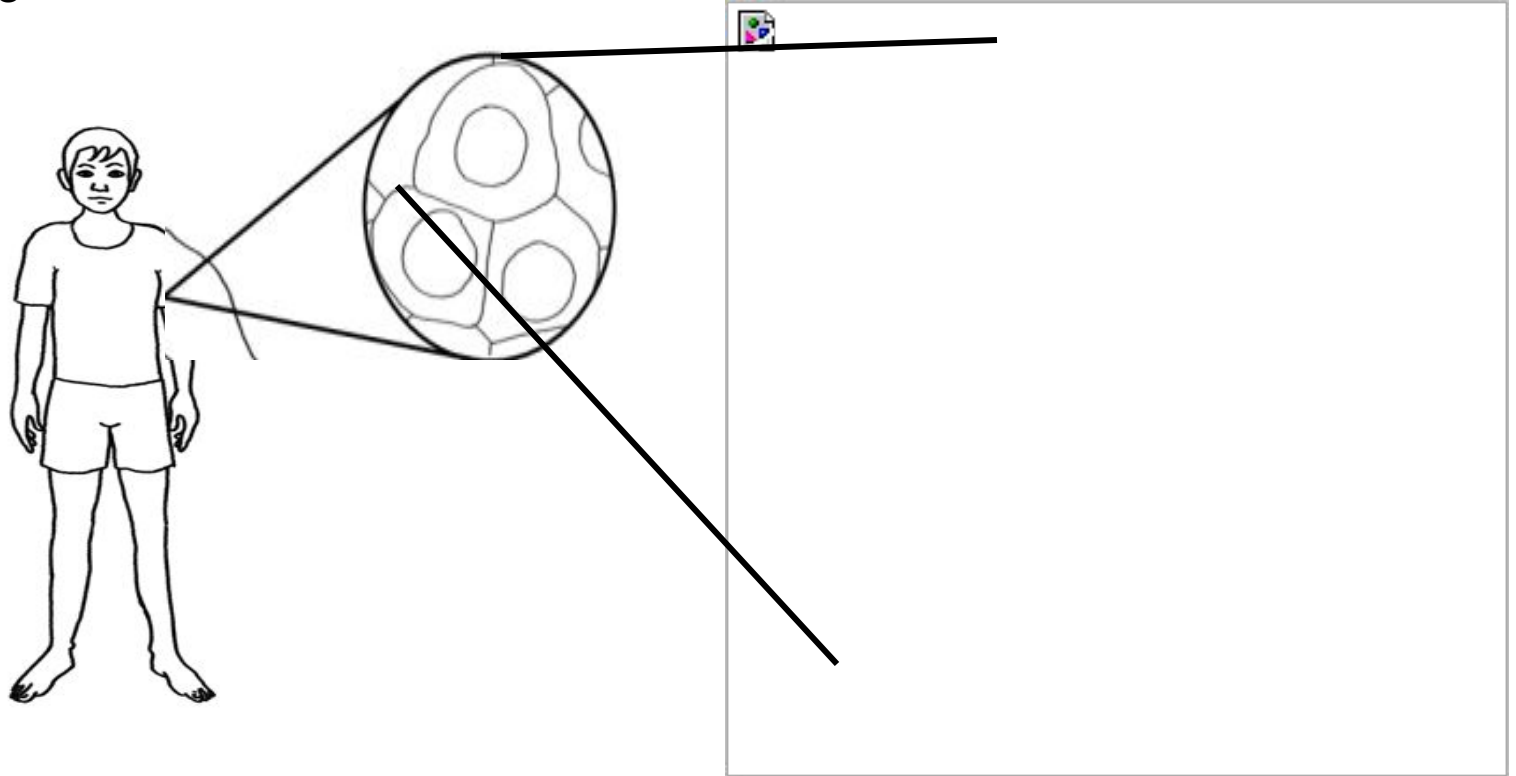


Zooming in to the molecular level

Organisms

Cells

Molecules

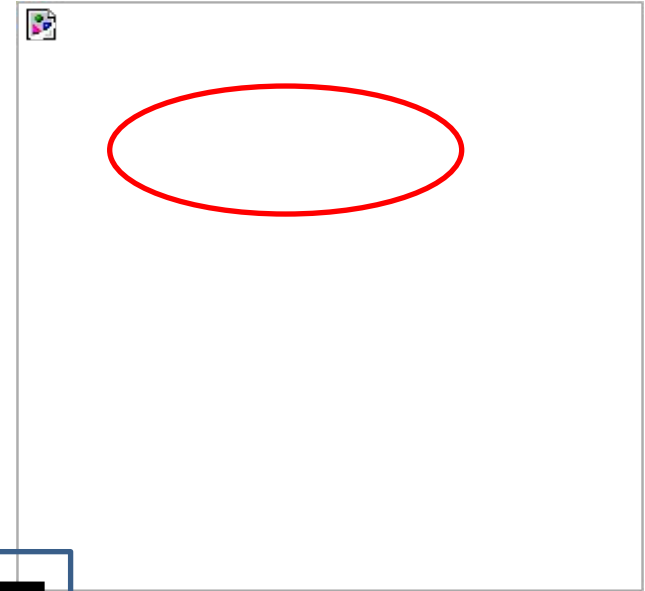


[Nova RNAi Video](#) – Watch 1:52-3:20

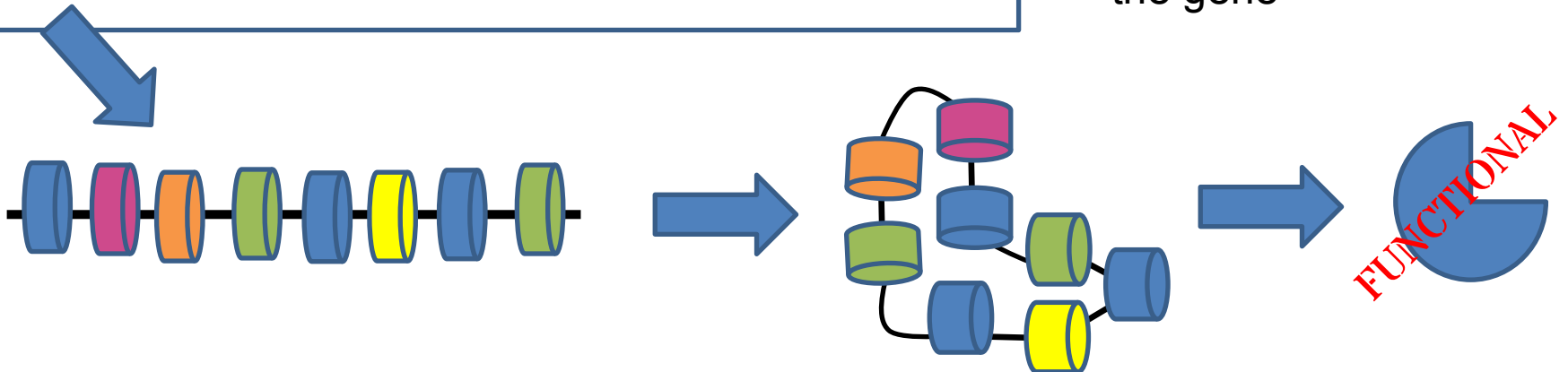
What is this code?

DNA

```
ACGGCTATAGTGCTCATGAT
ATCTTGAGCACTAATAGCGT
```

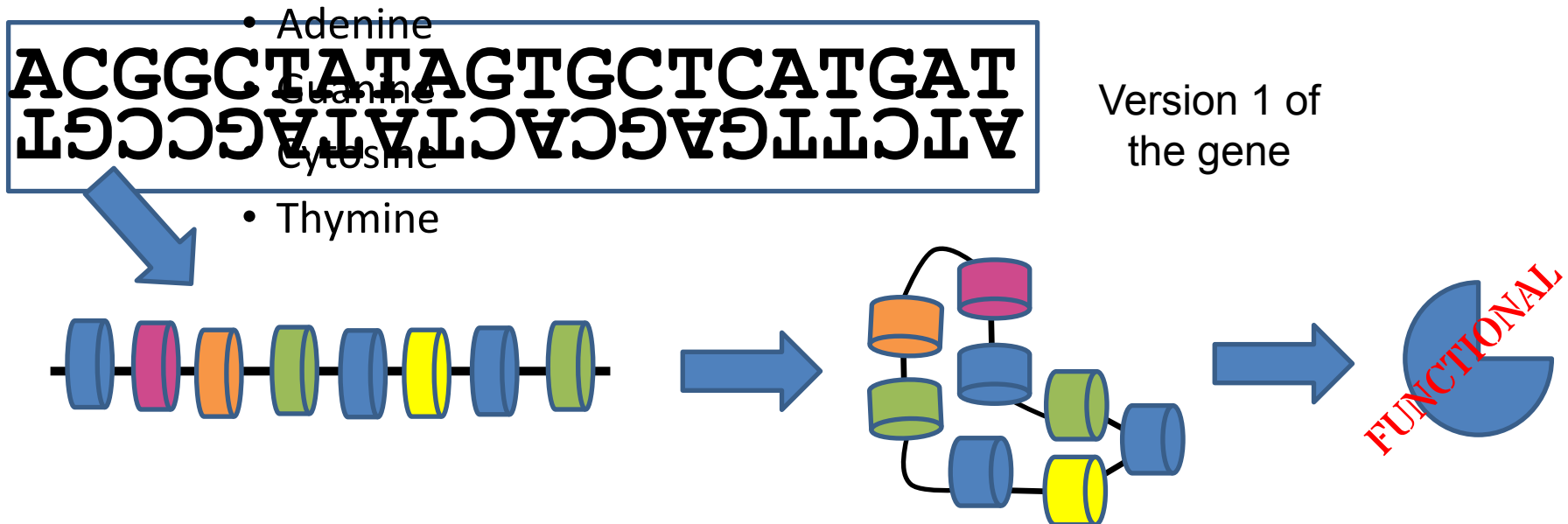


Version 1 of
the gene



How is the structure of DNA related to its function?

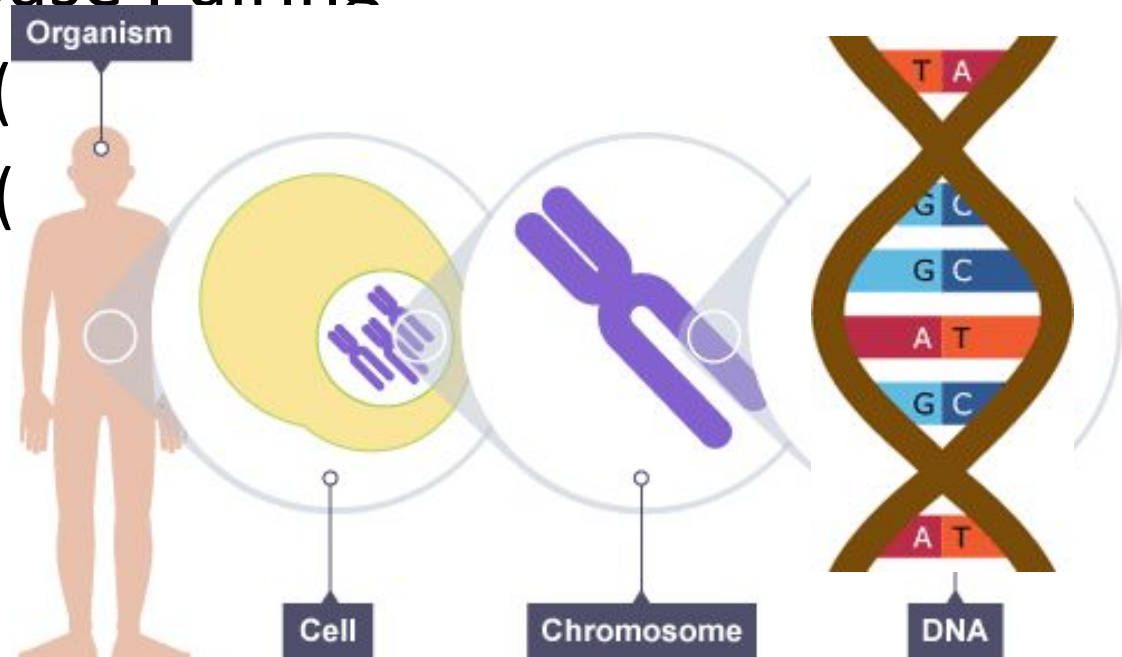
- Function of DNA –
 - Genetic code for the order of amino acids
- Structure of DNA –
 - Genetic code is built from 4 nitrogen bases




How is the structure of DNA related to its function?

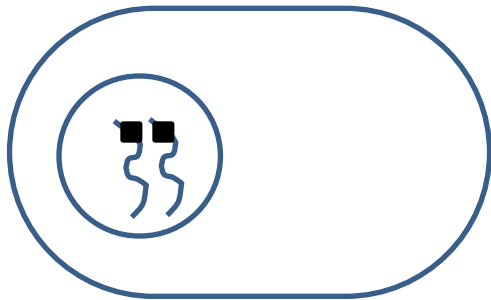
- Genetic code is the same for all organisms
- DNA has 2 strands with Nitrogen Base Pairs
- Nitrogen Base Pairing

- Adenine (
- Guanine (

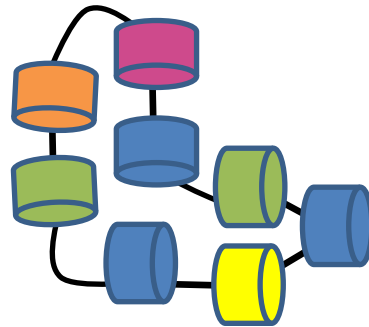


How does DNA code for Amino Acids if it never leaves the nucleus?

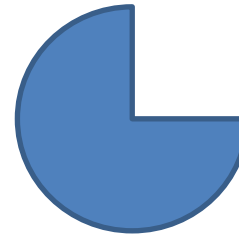
DNA
(gene) 



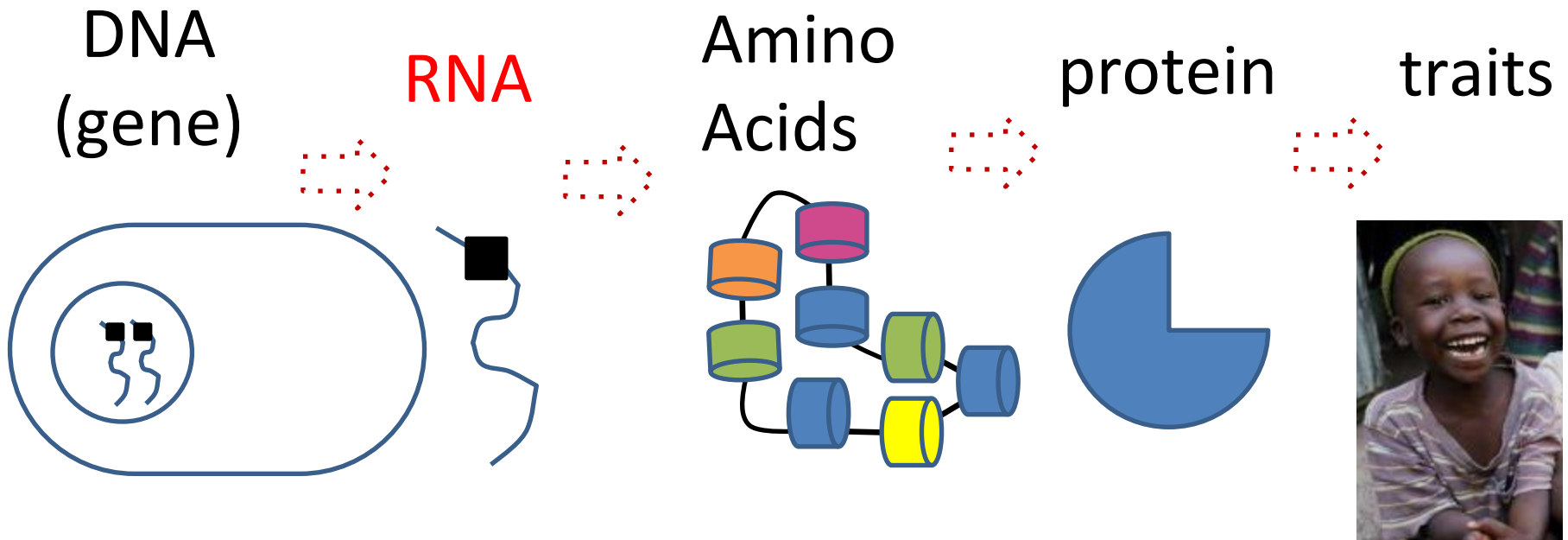
Amino
Acids 



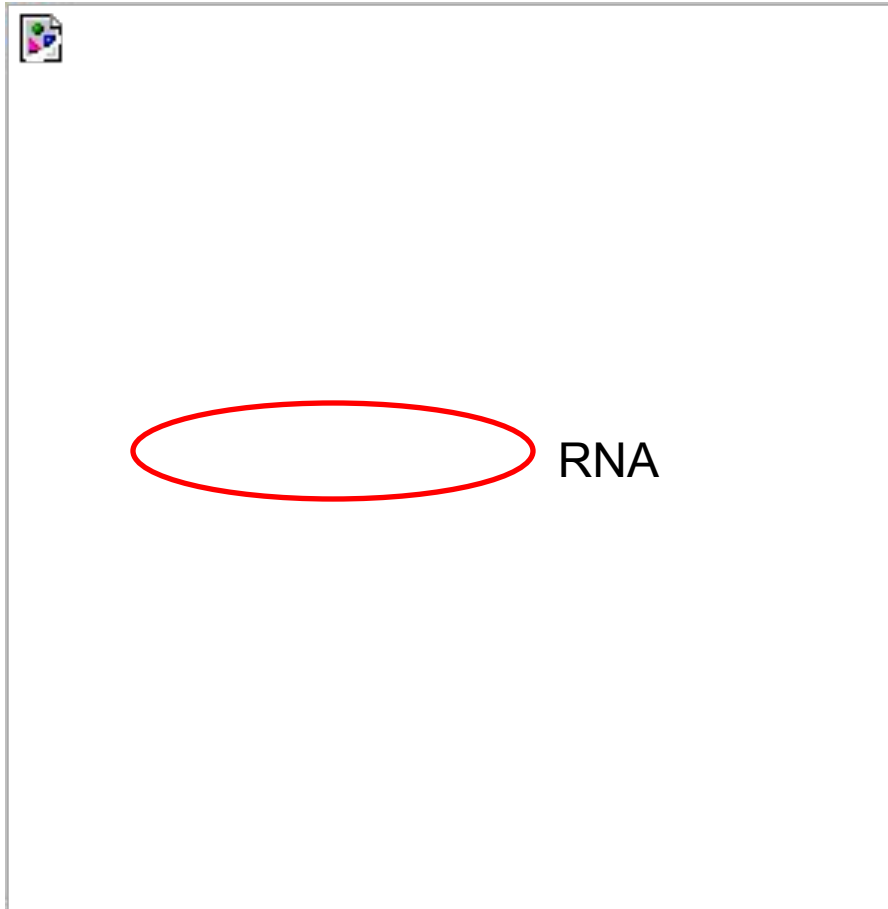
protein  traits



How does DNA code for Amino Acids if it never leaves the nucleus?

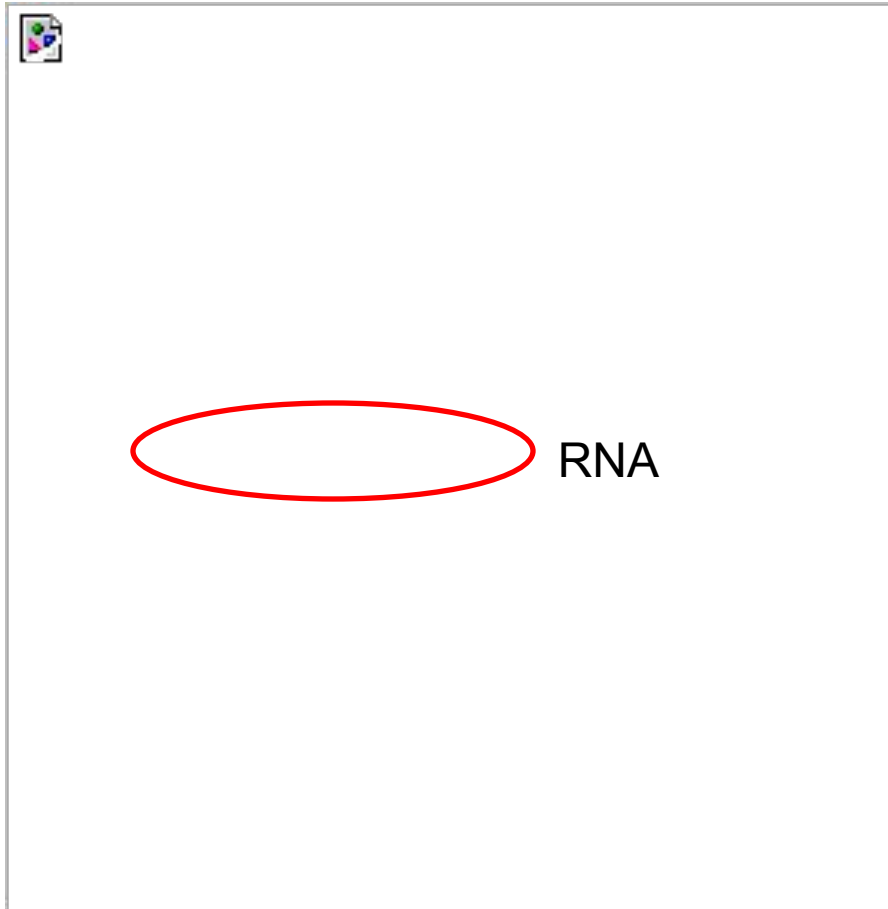


How does DNA code for Amino Acids if it never leaves the nucleus?



- RNA can leave
- RNA code is built from DNA Code

How is the structure of RNA different from DNA?



- Single Stranded
- Uracil (U)
Replaces
Thymine(T)

Practice ...


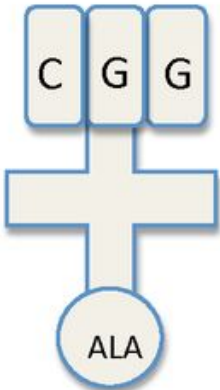
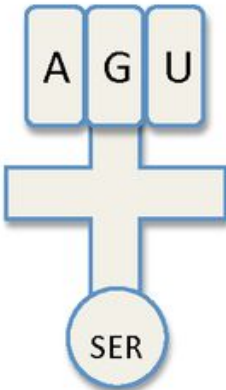
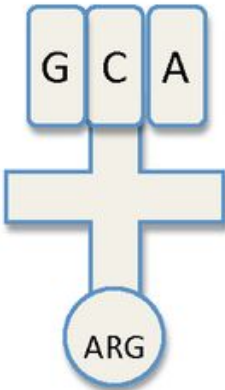
DNA T A C	DNA C G G	DNA A G T	DNA G C A
mRNA	mRNA	mRNA	mRNA

DNA T A C	DNA C G G	DNA A G T	DNA G C A
mRNA A U G	mRNA G C C	mRNA U C A	mRNA C G U

How does RNA code for Amino Acids?

		Second Position				
		U	C	A	G	
First Position [5' end]	U	UUU } Phe UUC } UUA } Leu UUG }	UCU } UCC } Ser UCA } UCG }	UAU } Tyr UAC } UAA } Stop UAG } Stop	UGU } Cys UGC } UGA } Stop UGG } Trp	U C A G
	C	CUU } CUC } Leu CUA } CUG }	CCU } CCC } Pro CCA } CCG }	CAU } His CAC } CAA } Gln CAG }	CGU } CGC } Arg CGA } CGG }	U C A G
	A	AUU } AUC } Ile AUA } AUG } Met	ACU } ACC } Thr ACA } ACG }	AAU } Asn AAC } AAA } Lys AAG }	AGU } Ser AGC } AGA } Arg AGG }	U C A G
	G	GUU } GUC } Val GUA } GUG }	GCU } GCC } Ala GCA } GCG }	GAU } Asp GAC } GAA } Glu GAG }	GGU } GGC } Gly GGA } GGG }	U C A G

Third Position [3' end]

DNA T A C	DNA C G G	DNA A G T	DNA G C A
mRNA A U G	mRNA G C C	mRNA U C A	mRNA C G U
tRNA 	tRNA 	tRNA 	tRNA 
Amino Acid Methionine (Start)	Amino Acid Alanine	Amino Acid Serine	Amino Acid Arginine

Exit Ticket

- Revisit your Human Albinism Explanation
- 1.7 Human Albinism at the Molecular Level
- What questions do we still have?