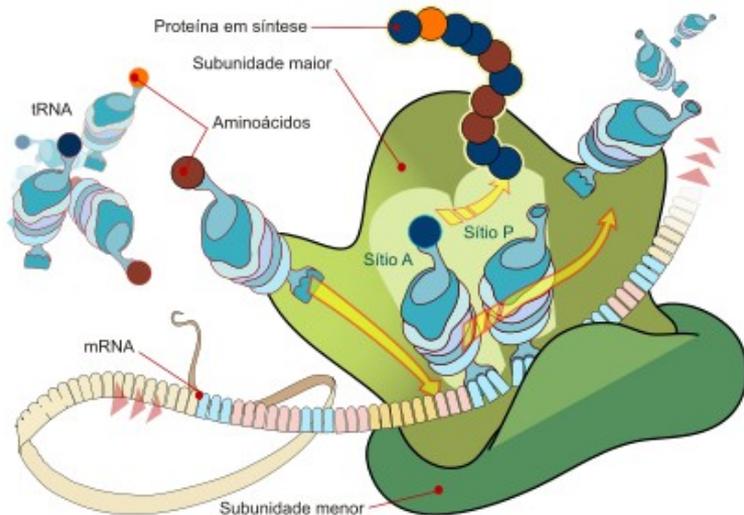


# INTERPRETANDO A INFORMAÇÃO GENÉTICA: DO DNA À PROTEÍNA

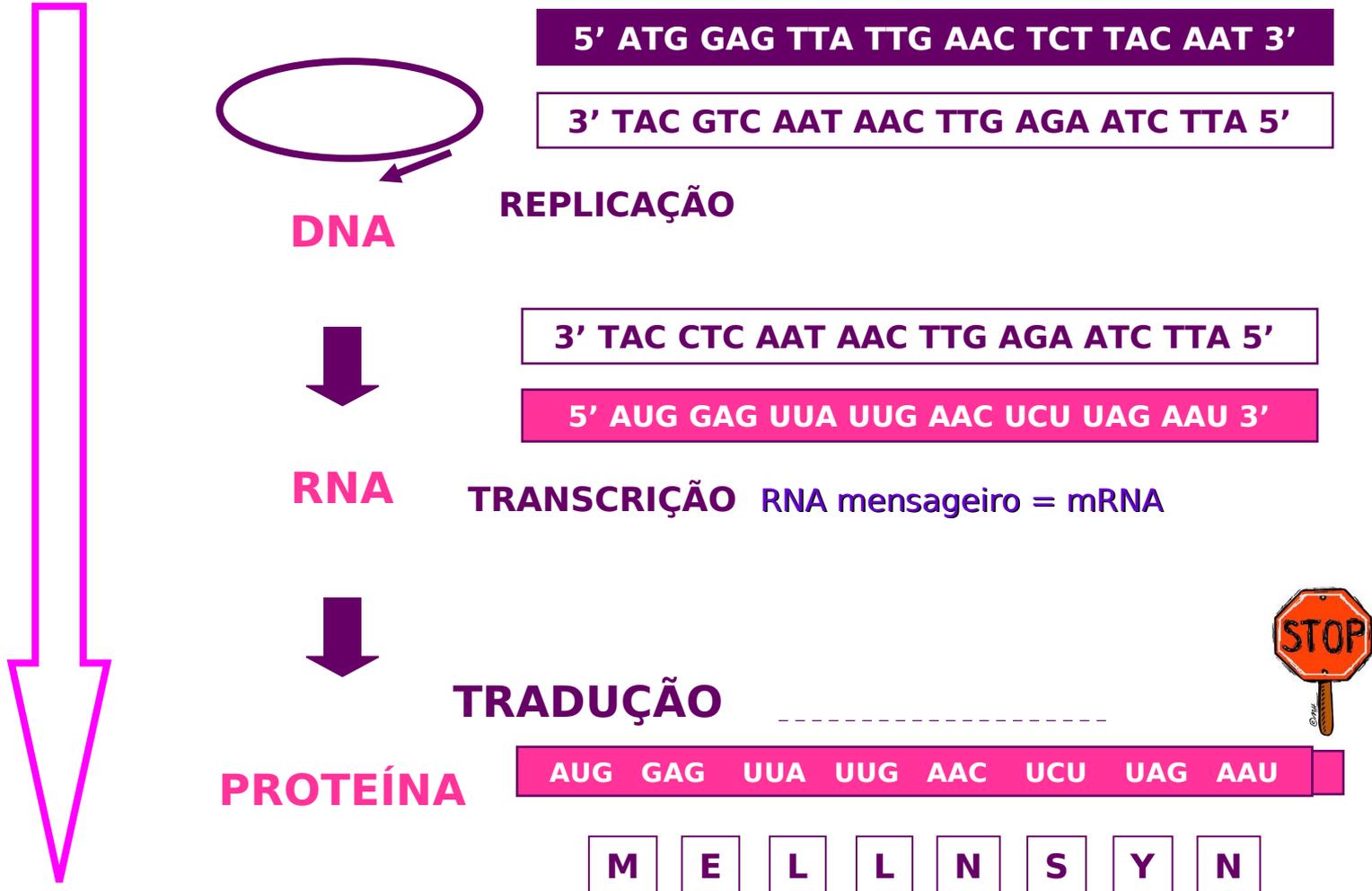
## Aula prática 6

LGN0114 - Biologia Celular



Leandro F. de Souza  
Departamento de Genética  
leandro\_fonseca@usp.br

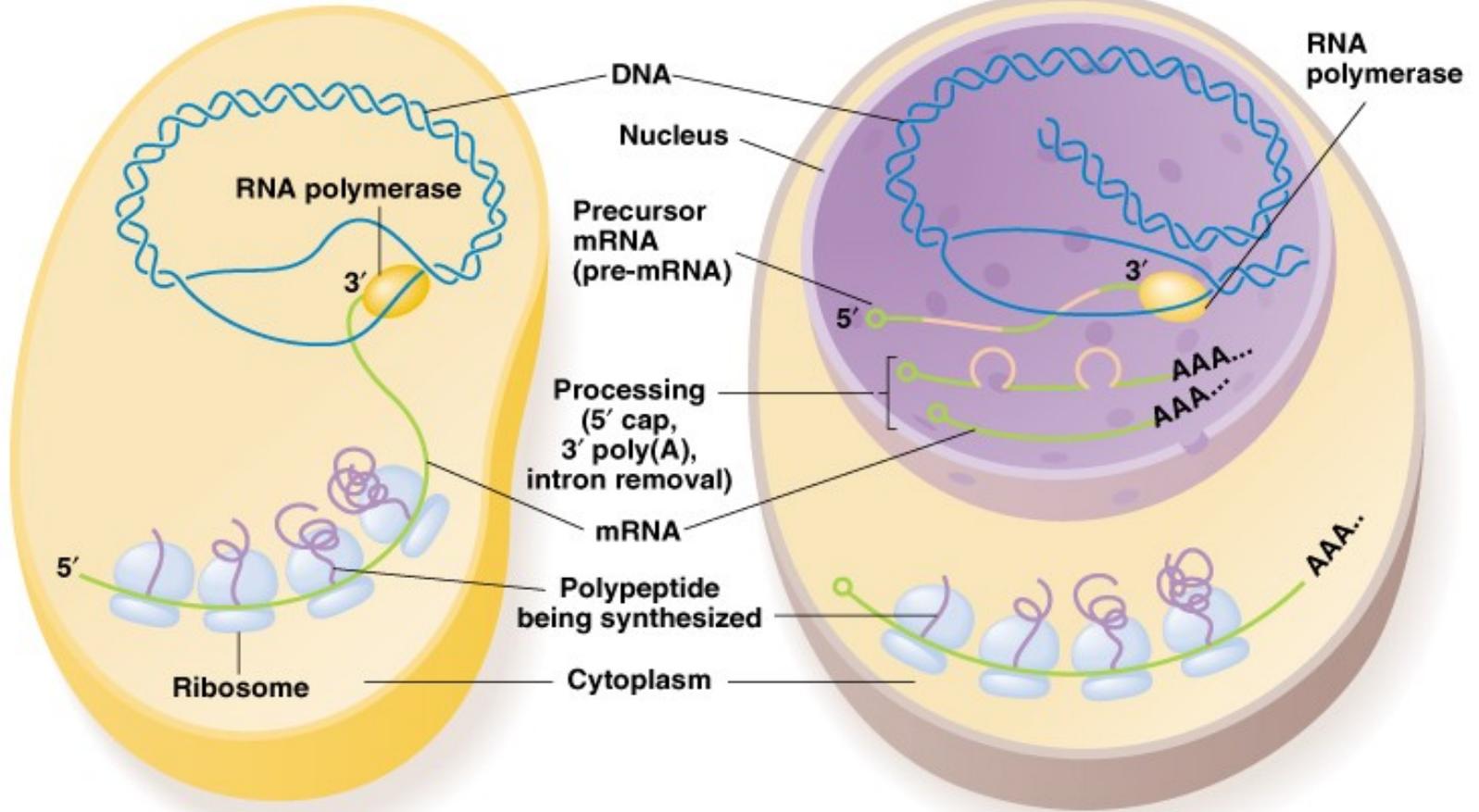
# FLUXO DA INFORMAÇÃO GENÉTICA



# DO DNA À PROTEÍNA

a) Prokaryote

b) Eukaryote



<https://www.youtube.com/watch?v=gG7uCskUOrA>

5'

3'



DNA

PROMOTOR

-35

-10

+1

START CODON

STOP CODON

TTGACA-14N-TATAATAA-9N-CACAGGAGGATTATTTATGAAATTCCCTTCTTGGTGA

mRNA

CACAGGAGGAUUAUCCAUCAAAUUCUCCUUCUUGGUGA

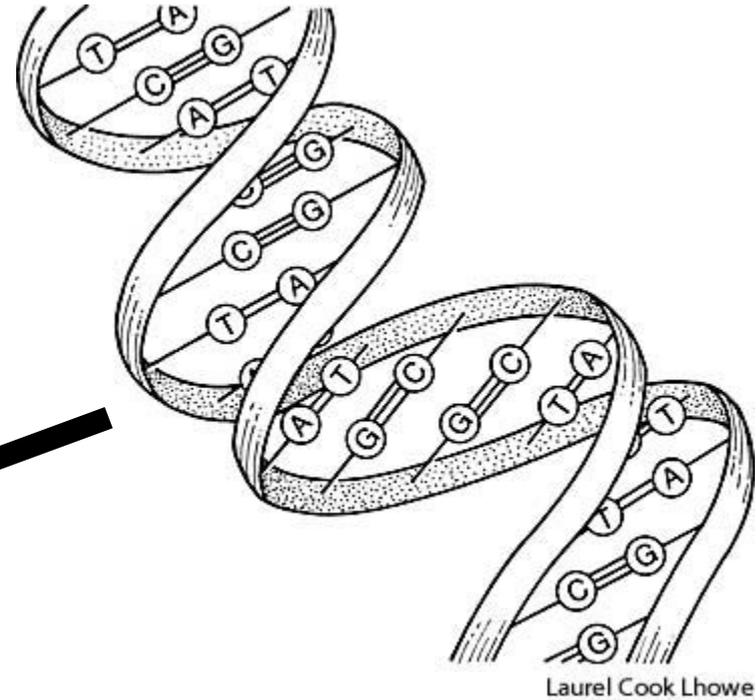
PROTEINA

MET LYS PHE PRO SER TRY



# TRADUÇÃO EM PROCARIOTOS

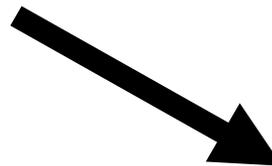
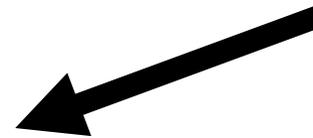
# TRADUÇÃO



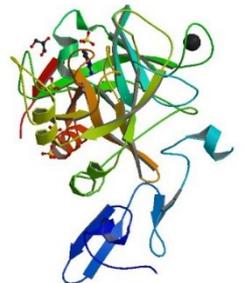
Laurel Cook Lhowe

## Interpretação

```
AAGTCCTTTTAAATAAATAATTCTAGCTATATTTGCAAC  
GTTGGAAAATTAGCTATTCTAATGTTATCGAAAGAAGAA  
CACAGTTACTTAGTTTCTCGGCAAATATATCAAAATGA  
GAAGGTGAAAGAGTGGCATAATGATAAGCAAATCTGAAA  
ATTTTTGGTATAATAATCTTGATTGAAATTTGAATGGA  
GTAGGCTTACCAAATGTTGGTAAATCAACCTTATTTAAC  
ATTATCCTTTTGC GACTATTGATCCCAATGTTGGTATGG  
GACAGAATTGATTACACCTAAAAAACAGTTCCGACAAC  
AAAGGTGCTTCTAGAGGGGAAGGTCTAGGAAATAAATTT  
TTCATGTGGTACGTGCTTTTGGATGATGAAAATGTCATGC  
TCCTATAGCAGATATTGACACTATTAATCTTGAATTAAT  
TATGCGCGTGTGAAAAAATGGCACGAACTCAAAAAGAT  
AAAAGATTAACCTGTTTTGGAAGATGGGAAATCAGCTA  
AGTTGTAAAGGTCTCTTTTTATTAACAACCTAACCTGT  
GTTGCTAATCTAGATGGTATTGATTATGTCAAACAAATT  
TAGTTGTTATCTCAGCGCGTGCAGAAGAAGAAATTTAG  
GGAAGCTATCGGTCTTACTGAATCAGGCGTTGATAAATT  
GGAACCTATTTTACAGCAGGTGAAAAAGAGGTTCTGTCT  
AAGCTGCTGGTATTATCCATTGAGATTTTAAAAGAGGTT
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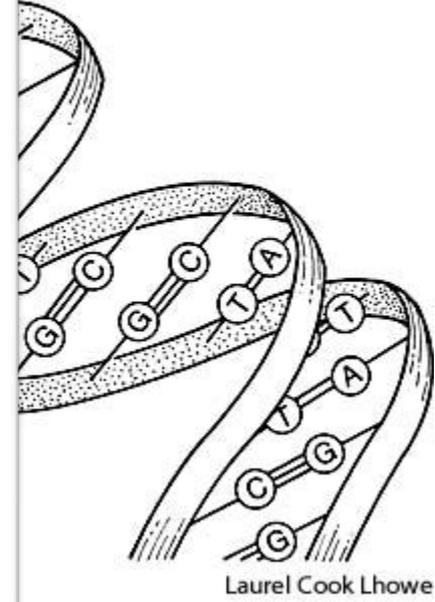
## Código genético



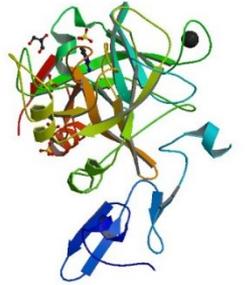
## Interpretation

AAGTCCTTTTAAATAAATAATTCT  
 GTTGGAAAATTAGCTATTCTAATG  
 CACAGTTACTTAGTTTCTCGGCAA  
 GAAGGTGAAAGAGTGGCATAATGA  
 ATTTTTGGTATAATAATCTTGAT  
 GTAGGCTTACCAAATGTTGGTAAA  
 ATTATCCTTTTGC GACTATTGATC  
 GACAGAATTGATTACACCTAAAAA  
 AAAGGTGCTTCTAGAGGGGAAGGT  
 TTCATGTGGTACGTGCTTTTGATG  
 TCCTATAGCAGATATTGACACTAT  
 TATGCGCGTGTGAAAAAATGGCA  
 AAAAGATTAACCTGTTTTGGAAG  
 AGTTGTAAAGGTCTCTTTTTATT  
 GTTGCTAATCTAGATGGTATTGAT  
 TAGTTGTTATCTCAGCGCGTGCAG  
 GGAAGCTATCGGTCTTACTGAATC  
 GGAACCTATTTTACAGCAGGTGAA  
 AAGCTGCTGGTATTATCCATTGAG

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r̄	r̄	l̄	l̄		
ए	ऐ	ओ	औ	अं	अः
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क	ख	ग	घ	ङ	
ka	kha	ga	gha	ṅa	
च	छ	ज	झ	ञ	
ca	cha	ja	jha	ña	
ट	ठ	ड	ढ	ण	
ṭa	ṭha	ḍa	ḍha	ṇa	
त	थ	द	ध	न	
ta	tha	da	dha	na	
प	फ	ब	भ	म	
pa	pha	ba	bha	ma	
य	र	ल	व		
ya	ra	la	va		
श	ष	स	ह		
ś	ṣ	s	h		



Laurel Cook Lhowe

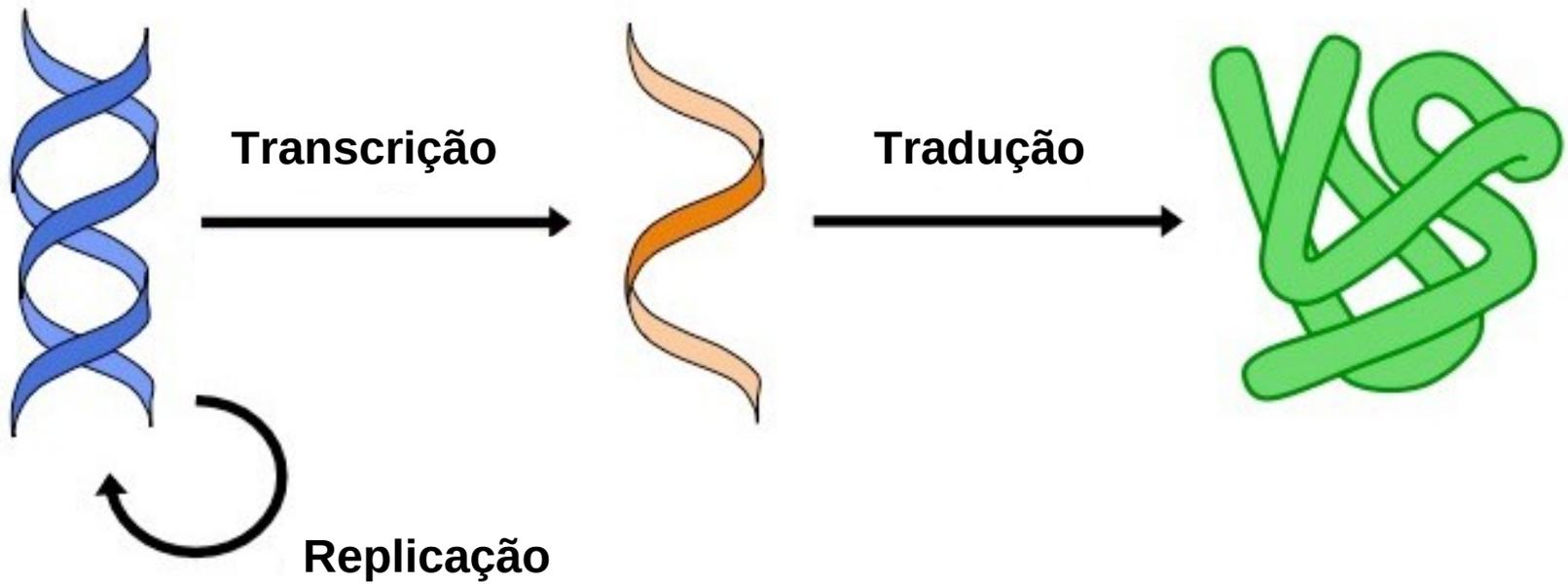


Primeira Posição Extremidade 5'	Segunda Posição				Terceira Posição Extremidade 3'
	U	C	A	G	
U	Fen Fen Leu Leu	Ser Ser Ser Ser	Tir Tir FIM FIM	Cis Cis FIM Trp	U C A G
C	Leu Leu Leu Leu	Pro Pro Pro Pro	His His Gln Gln	Arg Arg Arg Arg	U C A G
A	Ile Ile Ile Met	Trn Trn Trn Trn	Asn Asn Lis Lis	Ser Ser Arg Arg	U C A G
G	Val Val Val Val	Ala Ala Ala Ala	Asp Asp Glu Glu	Gli Gli Gli Gli	U C A G

**O CÓDIGO GENÉTICO É REDUNDANTE E DEGENERADO!**

# EXERCÍCIO 1: Do DNA à proteína

5' - XXX XXX XXX XXX- 3'



## Segunda Letra

Primera Letra

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

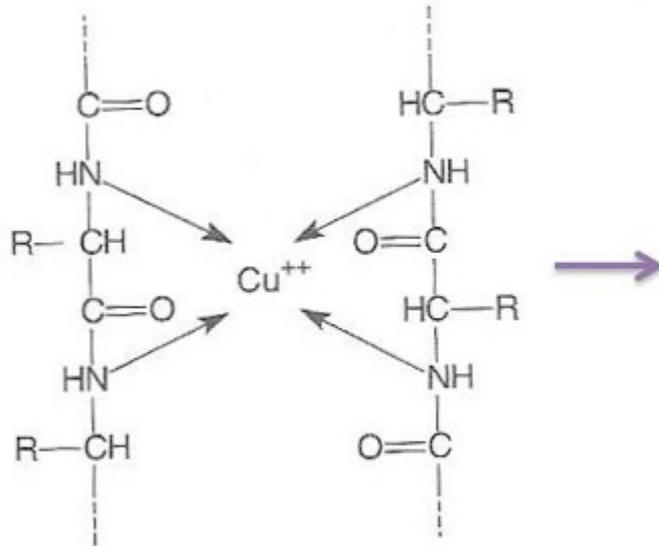
Tercera Letra

## EXERCÍCIO 2: Quantificação de proteínas em distintos alimentos



Qual desses alimentos tem mais proteína?

# Interação de Biureto



Duas moléculas de Biureto reagindo com o Cobre +2



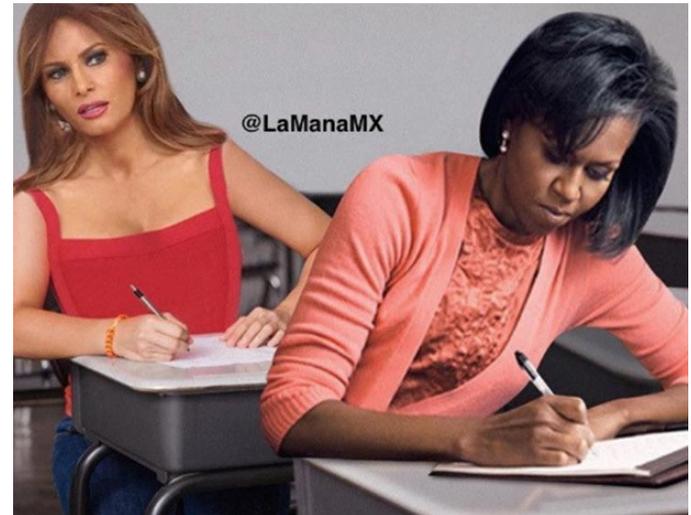
Solução do Biureto fica violeta quando reage com o Cobre +2

**Quanto mais violeta, mais proteína...**

# ESTUDO DIRIGIDO

1. Fluxo da informação genética;
2. Componentes da tradução;
3. Características gerais da tradução;
5. Forma e função da proteína

Qual das duas é o RNA?



**Capítulo 7 – Do DNA a proteína: como as células leem o genoma (páginas 246- 267)**

Alberts, B.; Bray, D.; Hopkin, K.; Johnson, A.; Lewis, J.; Raff, M.; Roberts, K.; Walter, P. 2011. ***Fundamentos da Biologia Celular***. 3ª Edição brasileira. Artmed, Porto Alegre