



# Biología Molecular

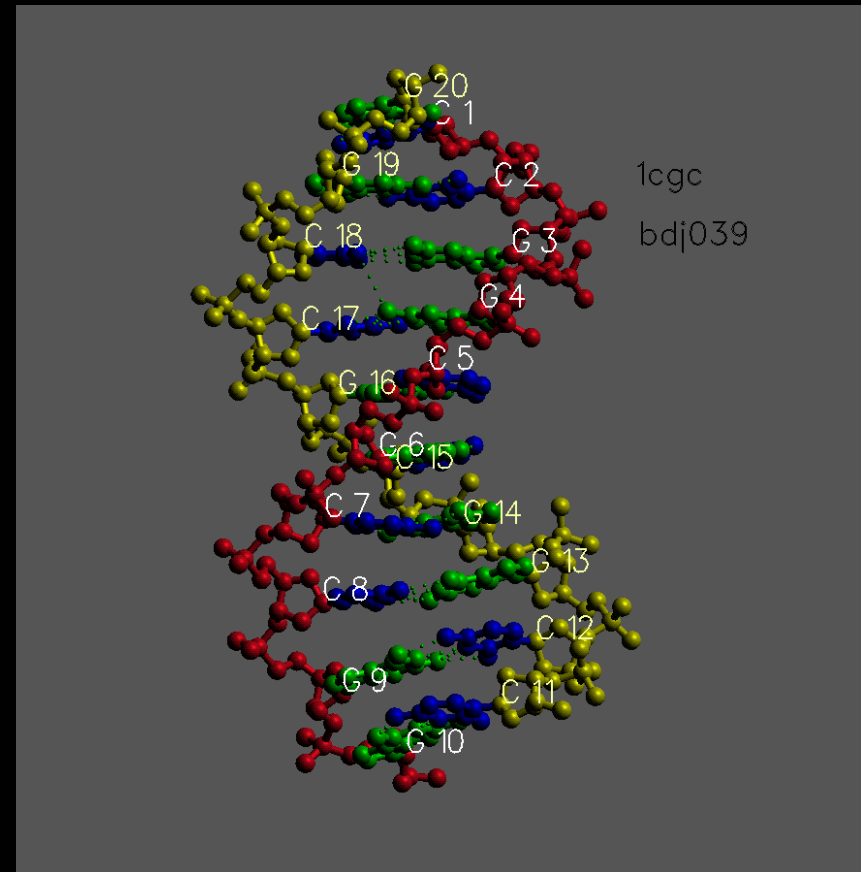
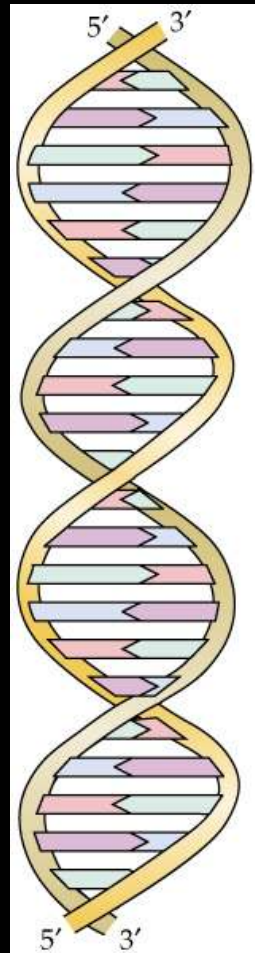
La Biología Moderna

Por Alejandro Ochoa García

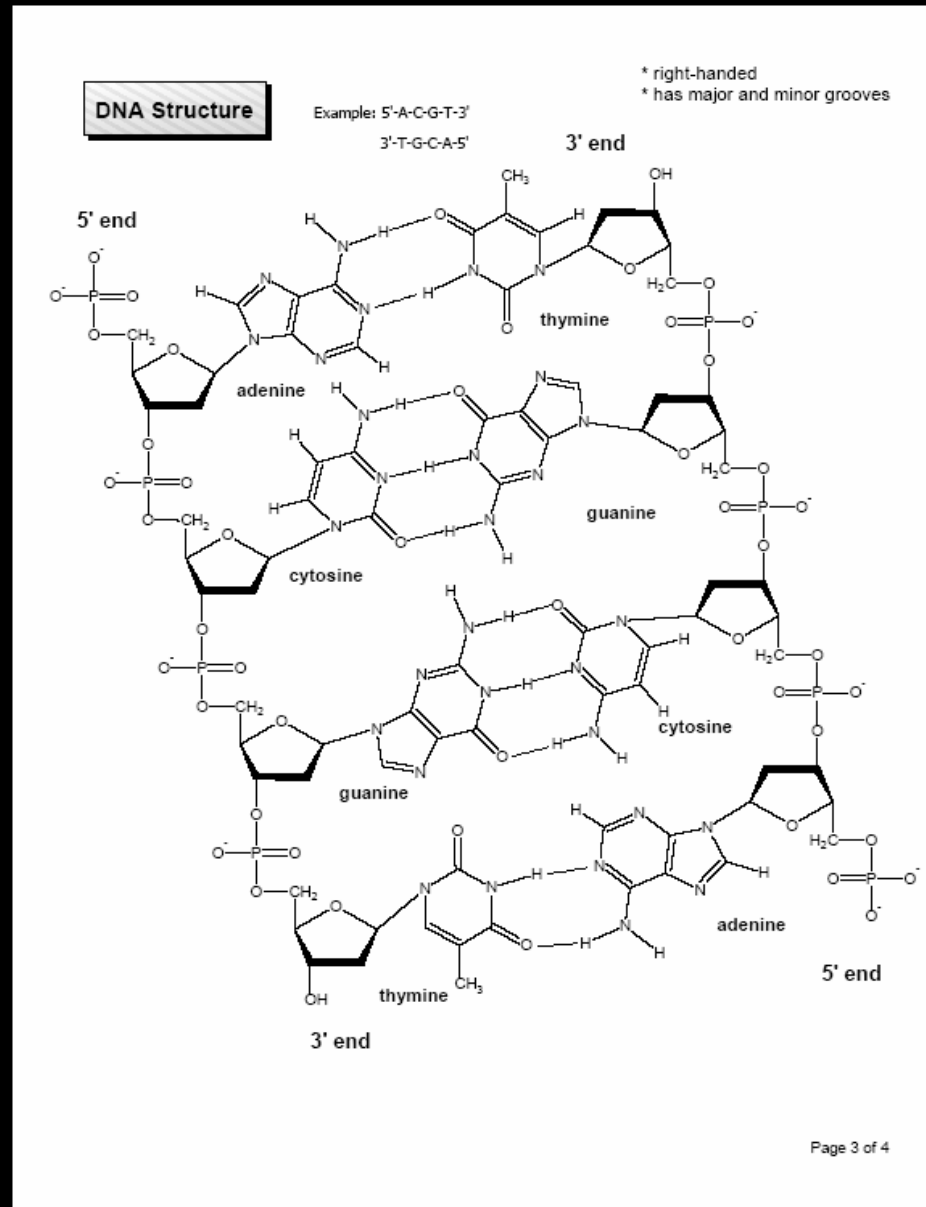
# ¿Qué se sabe o no se sabe?

- ADN, Genética y la Biología del Desarrollo
- Proteínas
  - Priones: la enfermedad de la vaca loca
  - Cómo curar el SIDA
- Imágenes de MIT: Laboratorios, Dormitorio, Amigos...

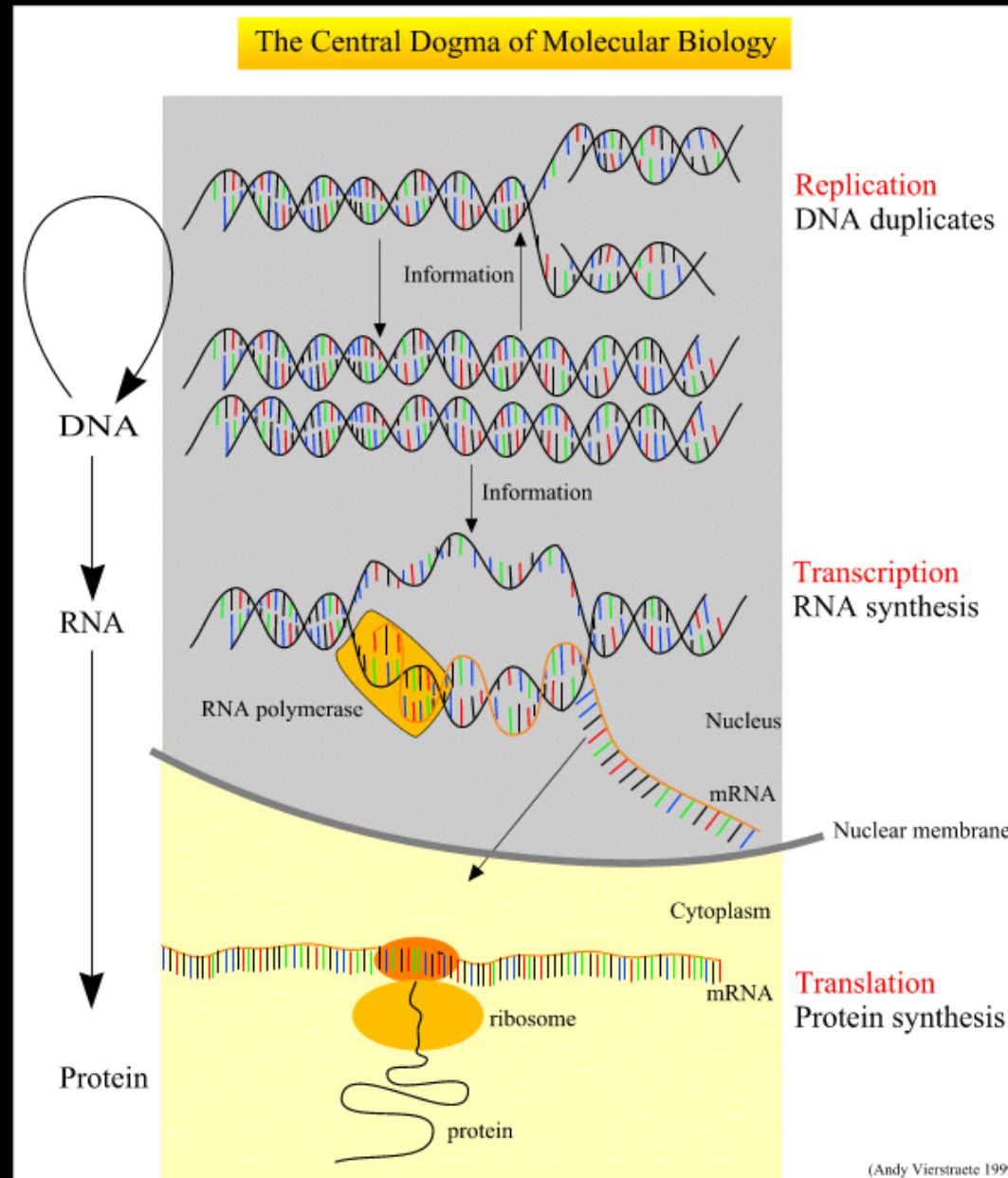
# ADN (ácido desoxiribonucleico)



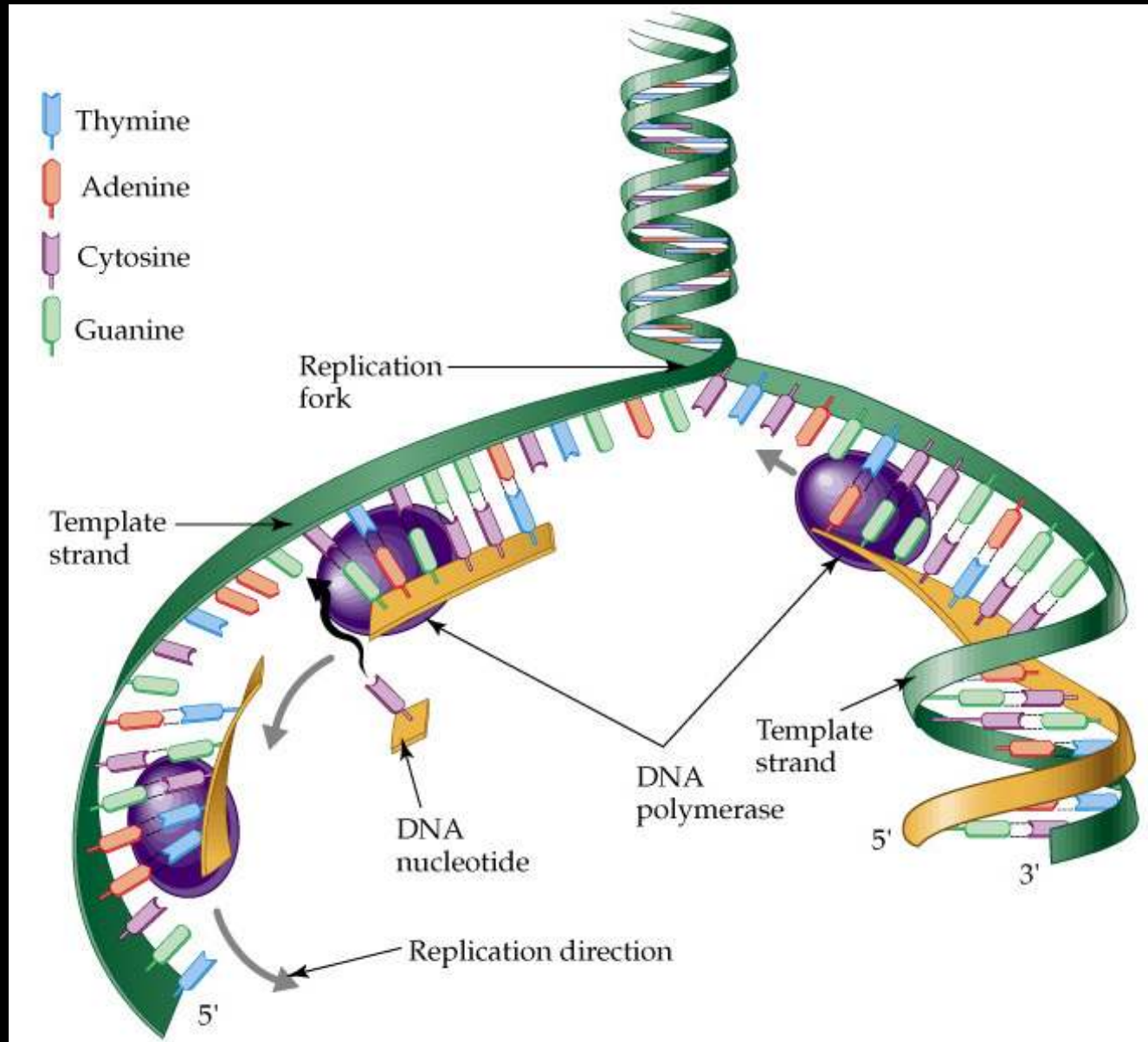
# Estructura del ADN, ARN - Lineal



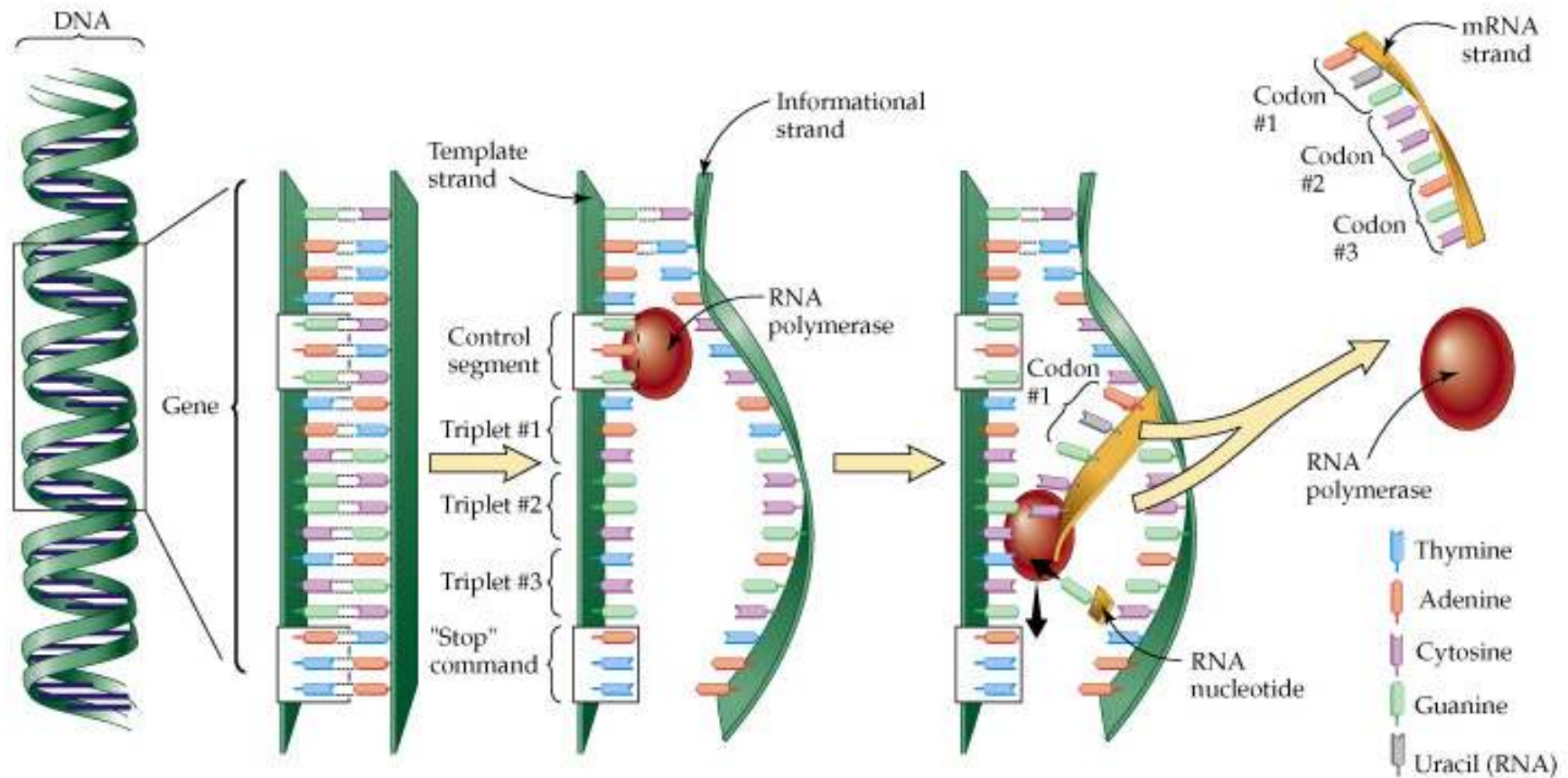
# ADN → ARN → Proteína



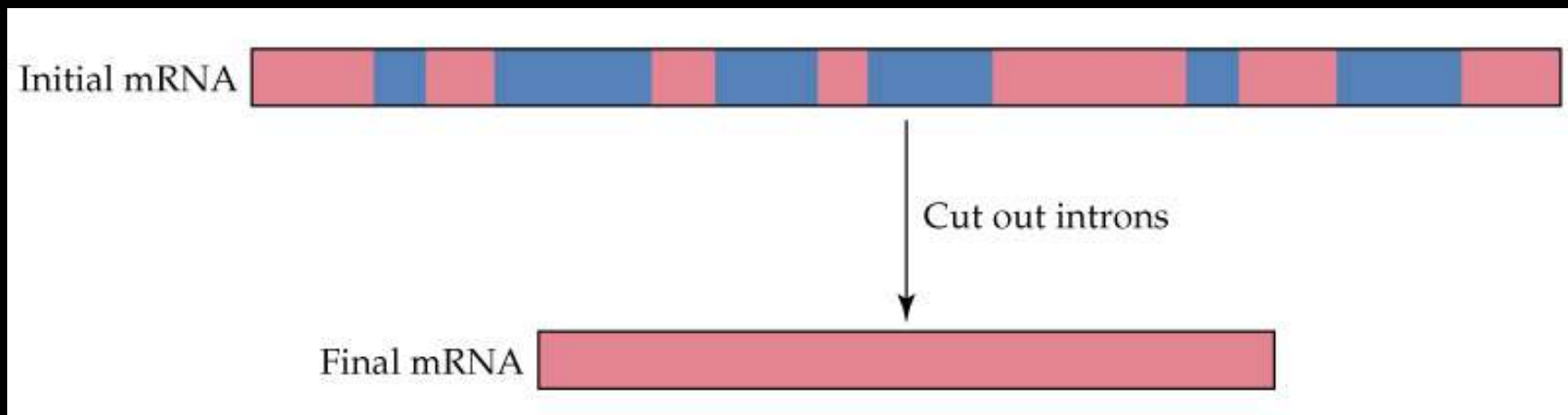
# ADN se copia (replicación)



# ADN → ARN

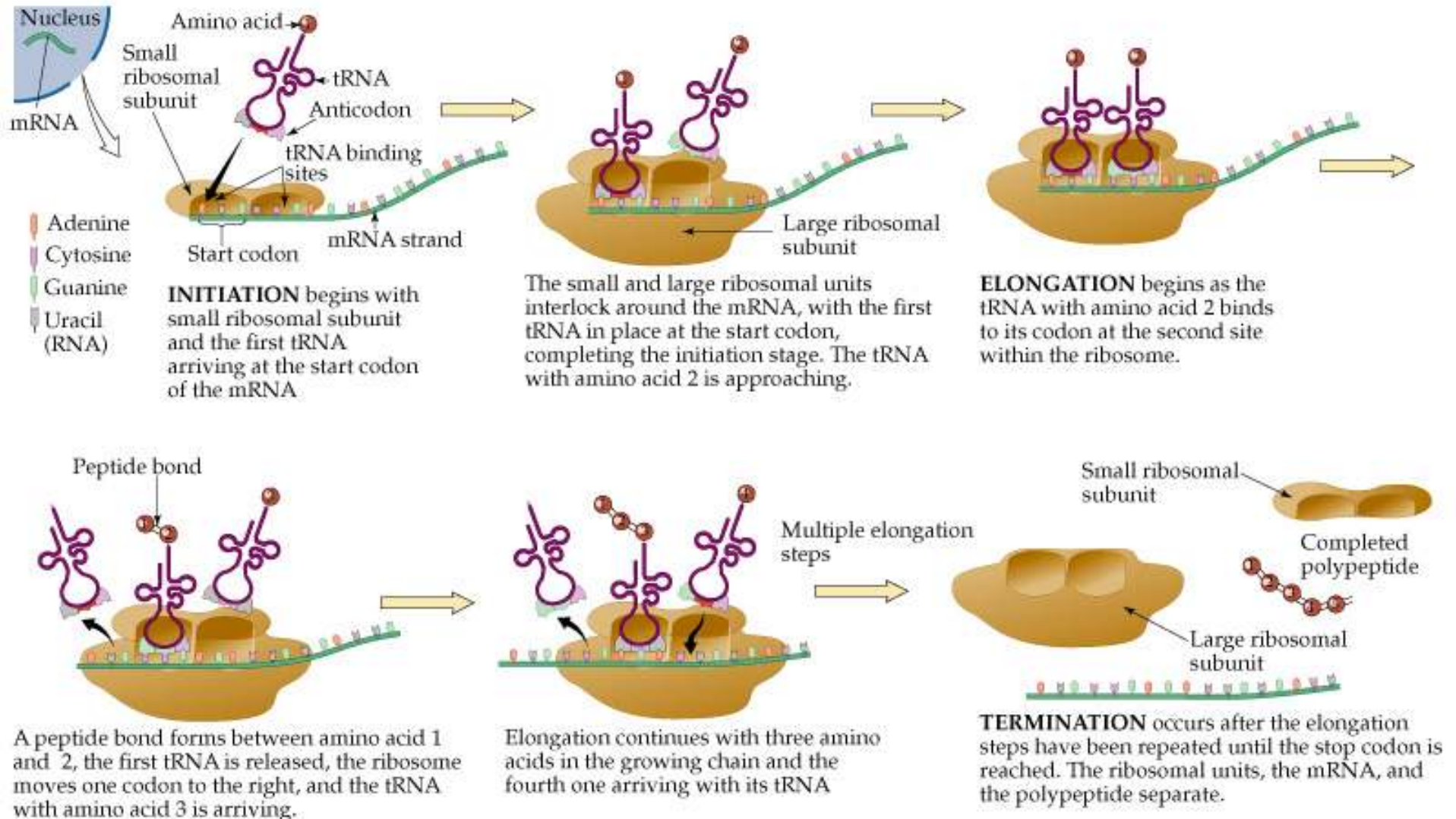


# ARN elimina sus intrones (splicing)





# ARN → Proteína



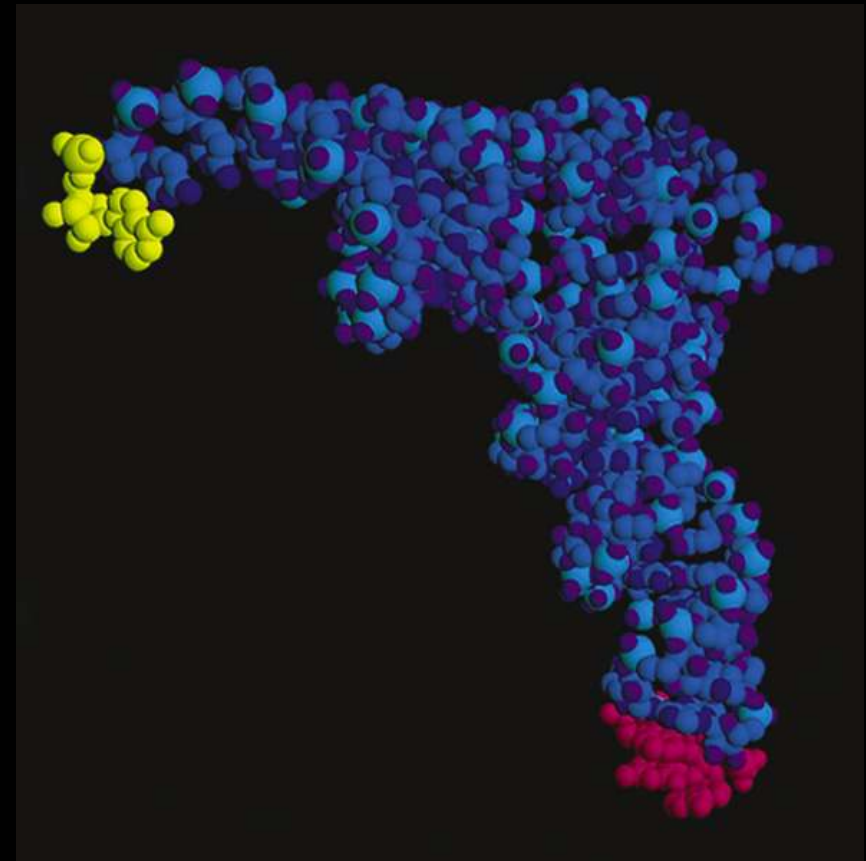
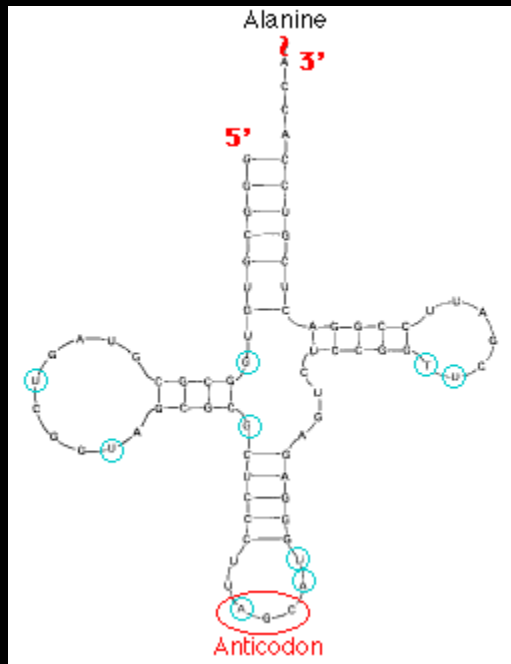
# El Código Genético (ARN → Proteína)

The RNA Codons

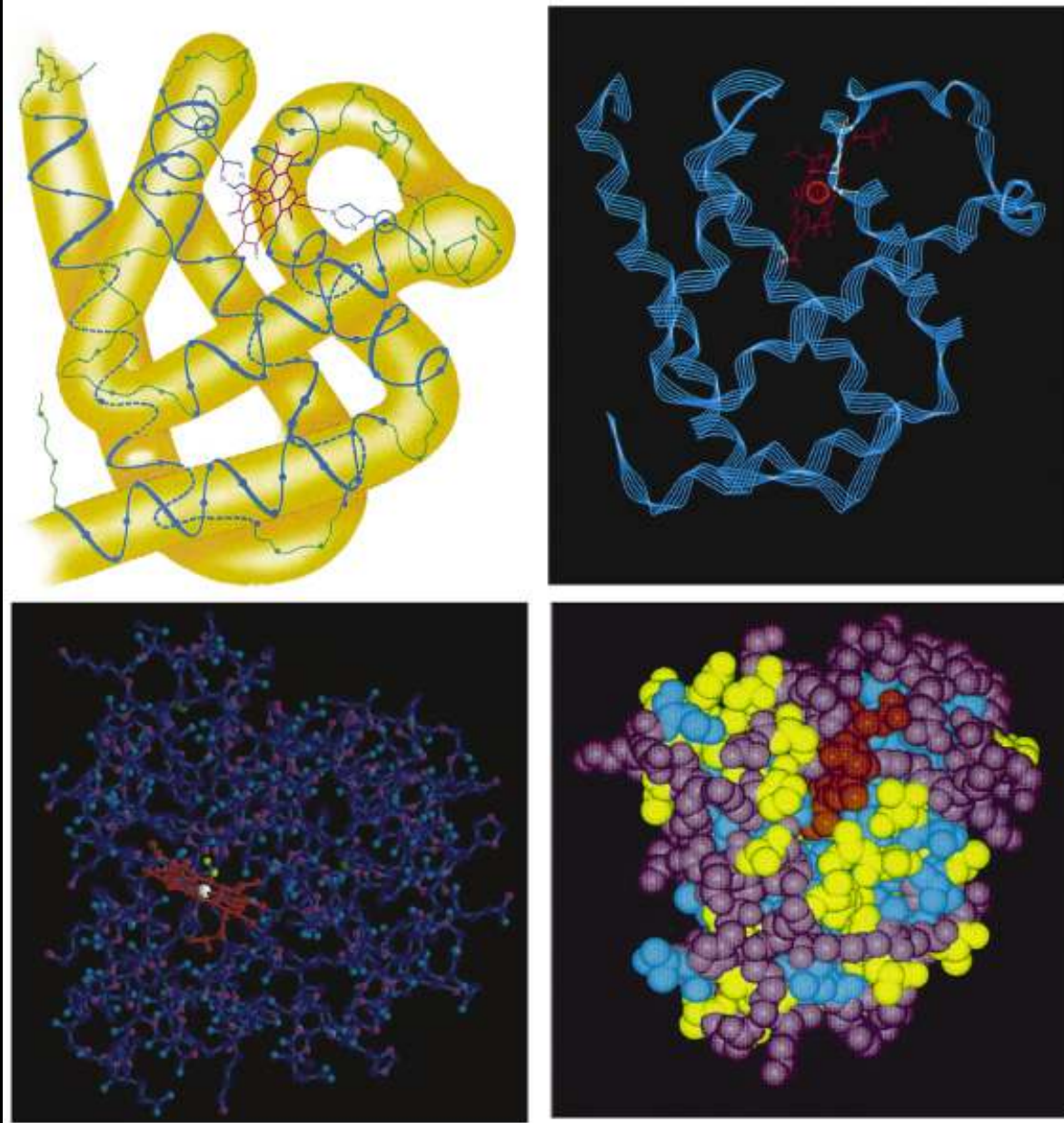
Second nucleotide

	U	C	A	G	
U	UUU <b>Phenylalanine</b> (Phe)	UCU <b>Serine</b> (Ser)	UAU <b>Tyrosine</b> (Tyr)	UGU <b>Cysteine</b> (Cys)	U
	UUC Phe	UCC Ser	UAC Tyr	UGC Cys	C
	UUA <b>Leucine</b> (Leu)	UCA Ser	UAA <b>STOP</b>	UGA <b>STOP</b>	A
	UUG Leu	UCG Ser	UAG <b>STOP</b>	UGG <b>Tryptophan</b> (Trp)	G
C	CUU <b>Leucine</b> (Leu)	CCU <b>Proline</b> (Pro)	CAU <b>Histidine</b> (His)	CGU <b>Arginine</b> (Arg)	U
	CUC Leu	CCC Pro	CAC His	CGC Arg	C
	CUA Leu	CCA Pro	CAA <b>Glutamine</b> (Gln)	CGA Arg	A
	CUG Leu	CCG Pro	CAG Gln	CGG Arg	G
A	AUU <b>Isoleucine</b> (Ile)	ACU <b>Threonine</b> (Thr)	AAU <b>Asparagine</b> (Asn)	AGU <b>Serine</b> (Ser)	U
	AUC Ile	ACC Thr	AAC Asn	AGC Ser	C
	AUA Ile	ACA Thr	AAA <b>Lysine</b> (Lys)	AGA <b>Arginine</b> (Arg)	A
	AUG <b>Methionine</b> (Met) or <b>START</b>	ACG Thr	AAG Lys	AGG Arg	G
G	GUU <b>Valine</b> Val	GCU <b>Alanine</b> (Ala)	GAU <b>Aspartic acid</b> (Asp)	GGU <b>Glycine</b> (Gly)	U
	GUC (Val)	GCC Ala	GAC Asp	GGC Gly	C
	GUA Val	GCA Ala	GAA <b>Glutamic acid</b> (Glu)	GGA Gly	A
	GUG Val	GCG Ala	GAG Glu	GGG Gly	G

# Estructura del tARN: Una cuasi-proteína

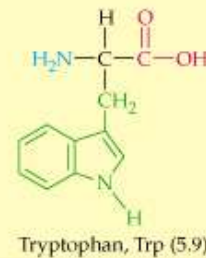
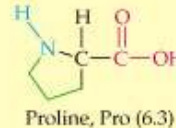
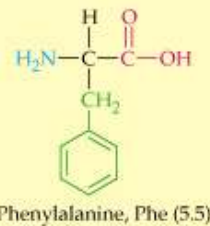
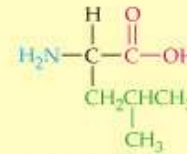
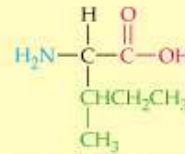
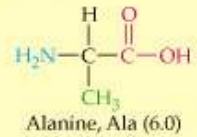


# Proteínas: Mioglobina

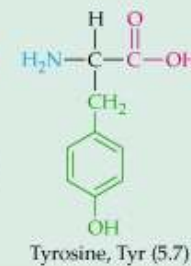
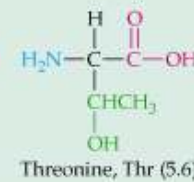
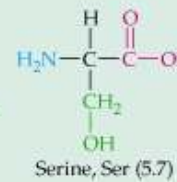
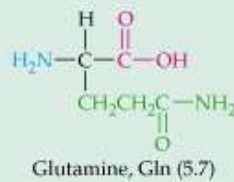


# 20 Aminoácidos Son los Ladrillos de las Proteínas

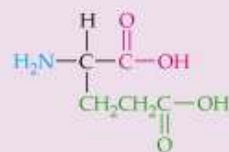
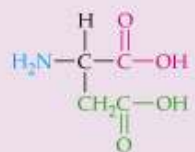
## Nonpolar Side Chains



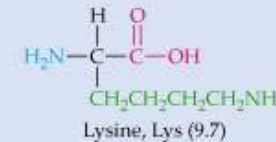
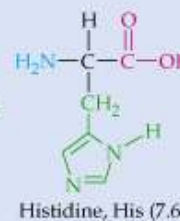
## Polar, Neutral Side Chains



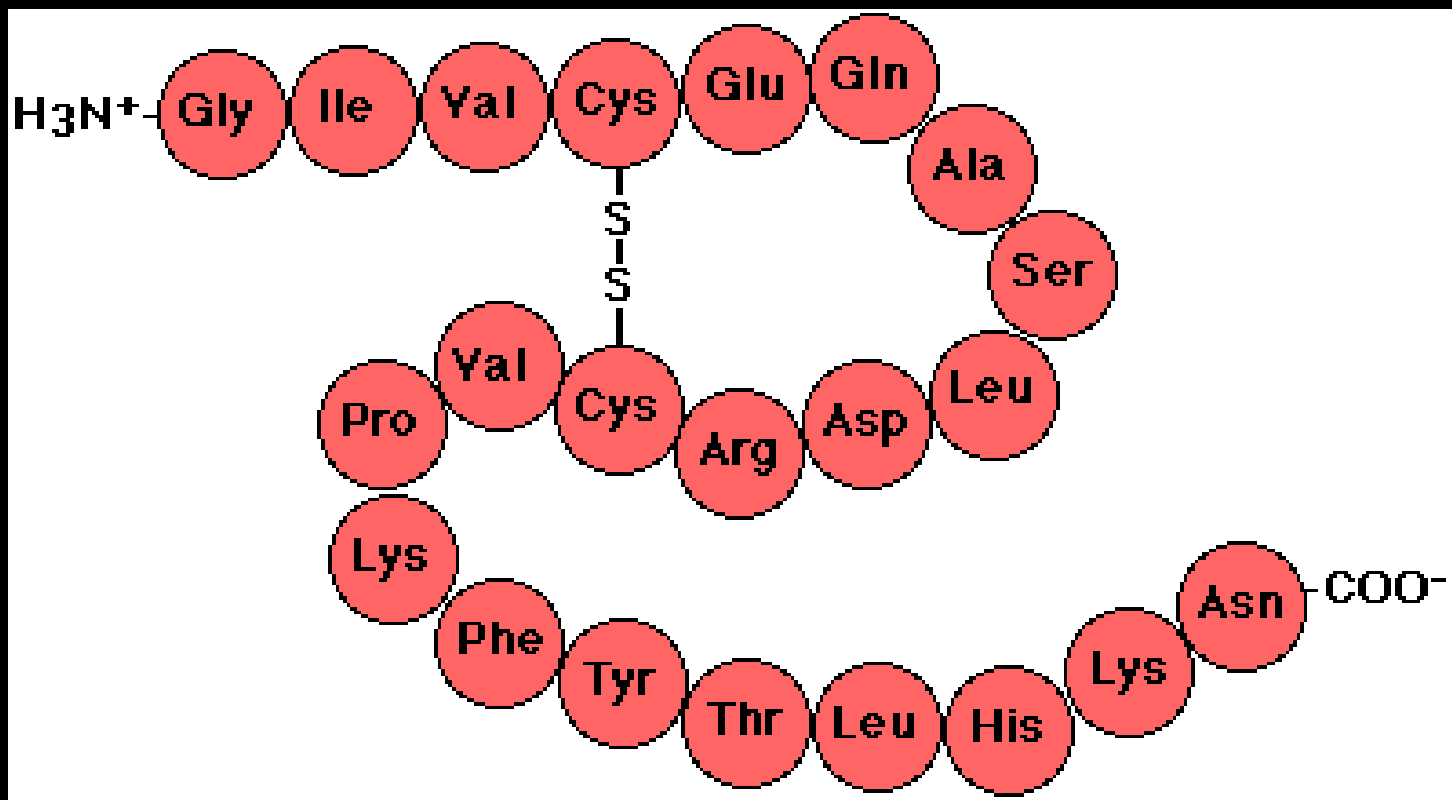
## Acidic Side Chains



## Basic Side Chains



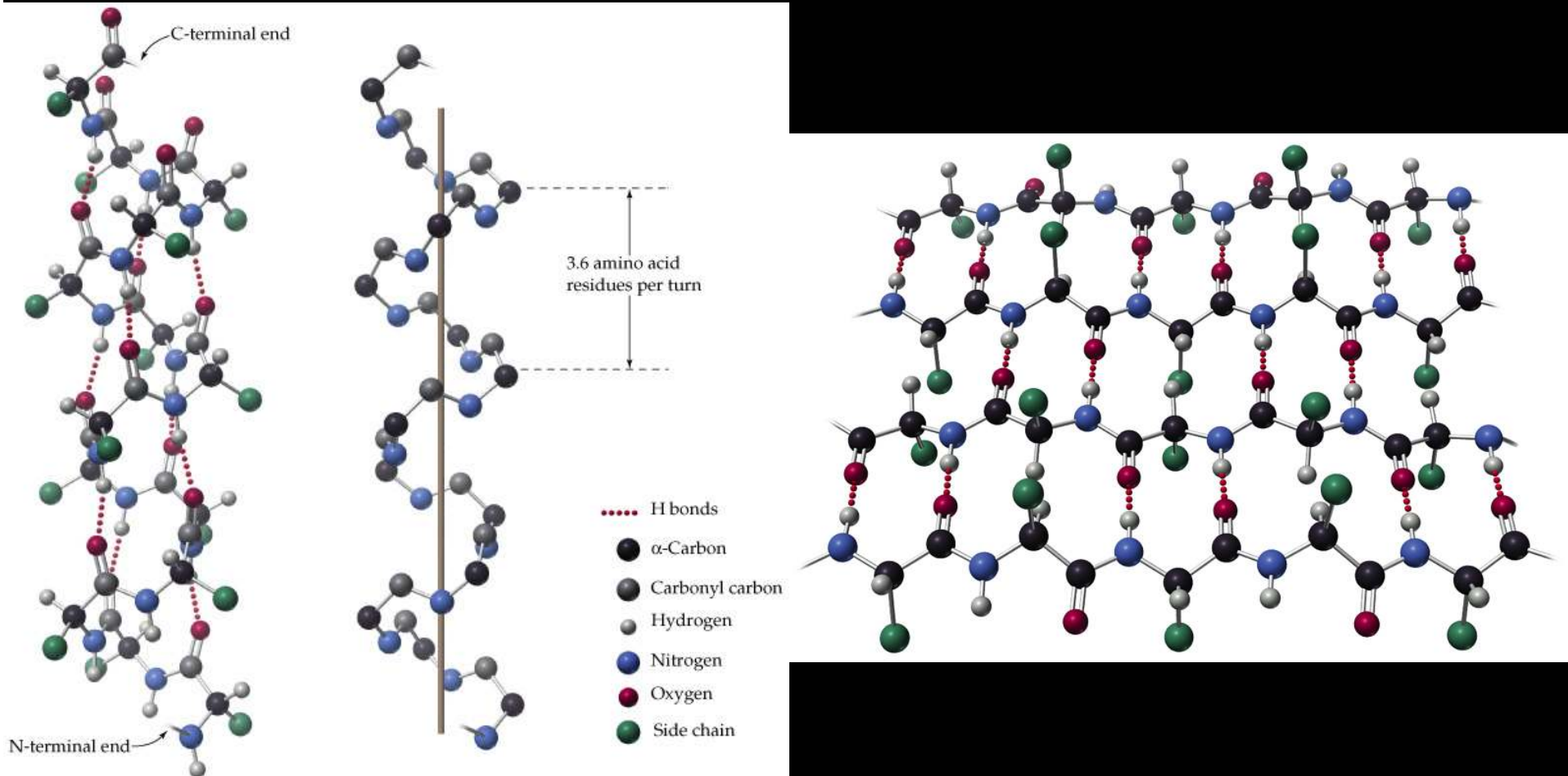
# Proteínas: Aminoácidos se combinan linealmente



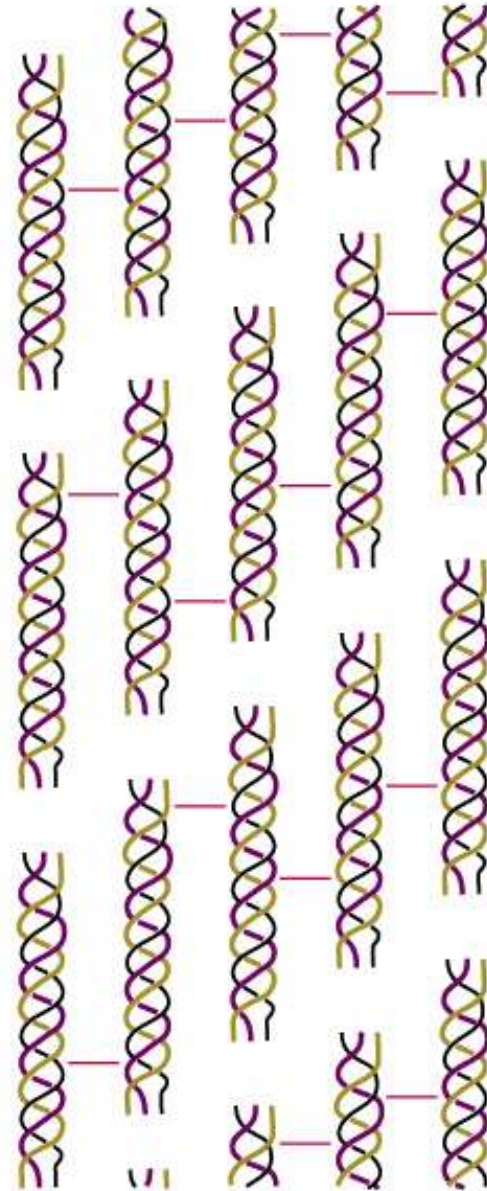
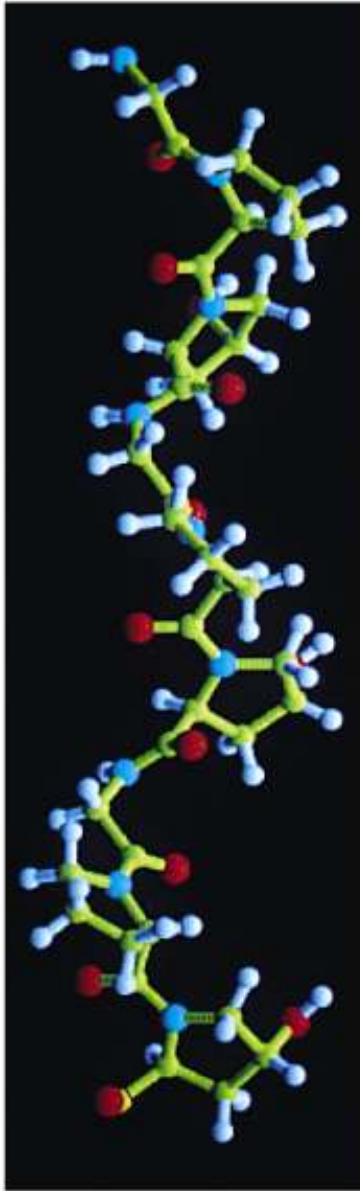
# Proteínas: Estructuras Secundarias

- Hélices A

- Mantas B

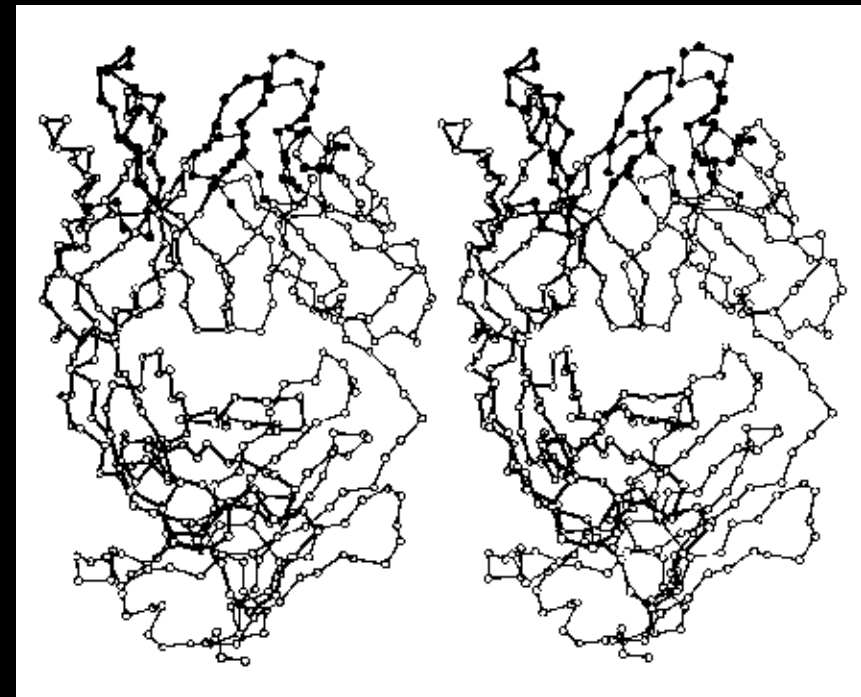
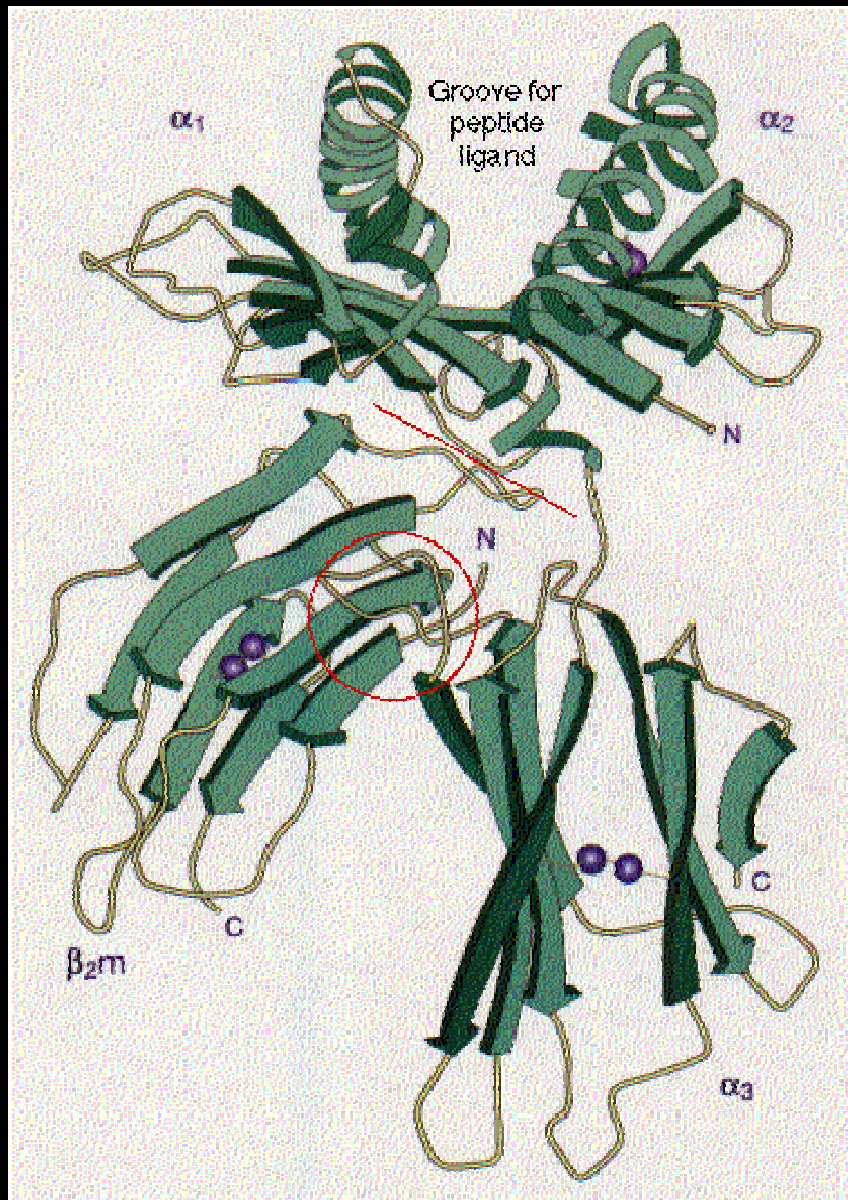


# Proteínas: Estructura del Colágeno

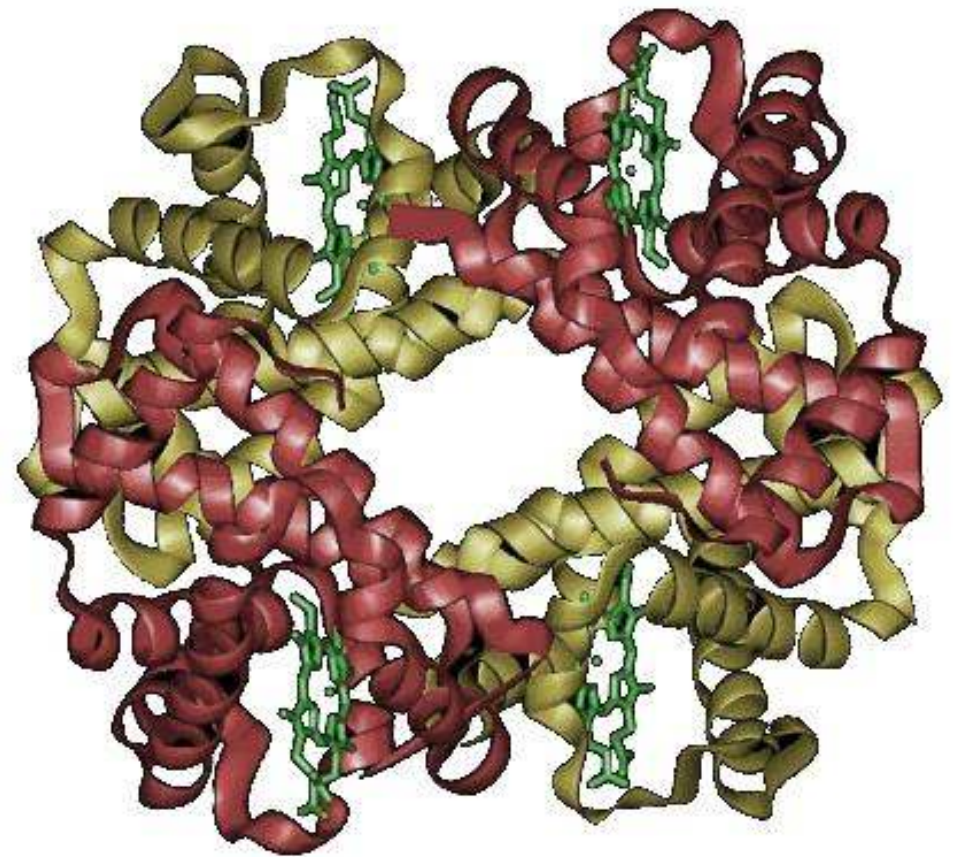
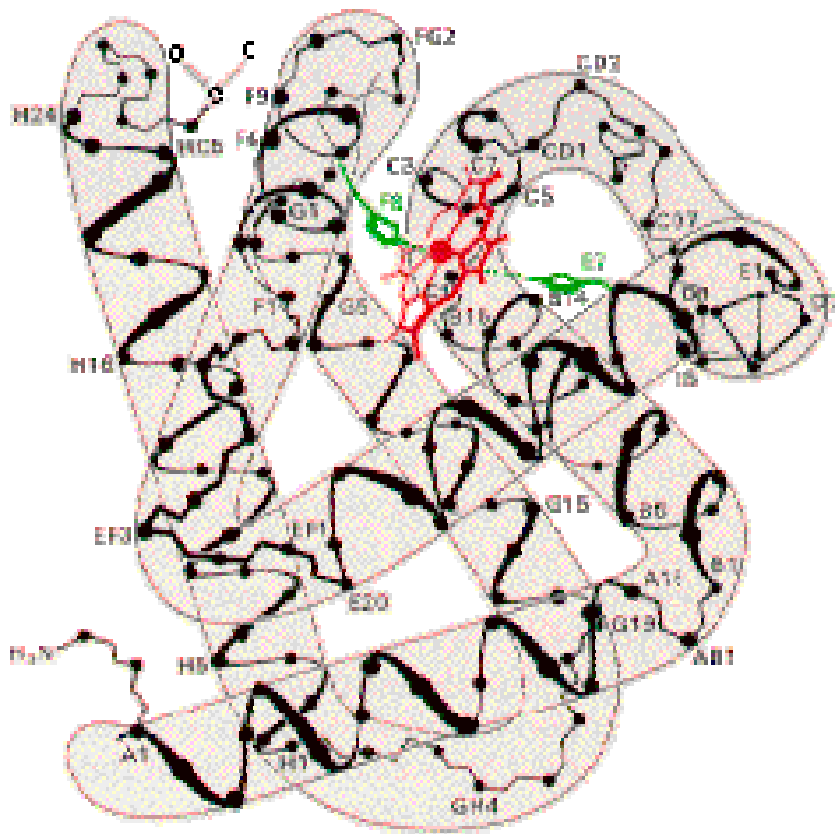




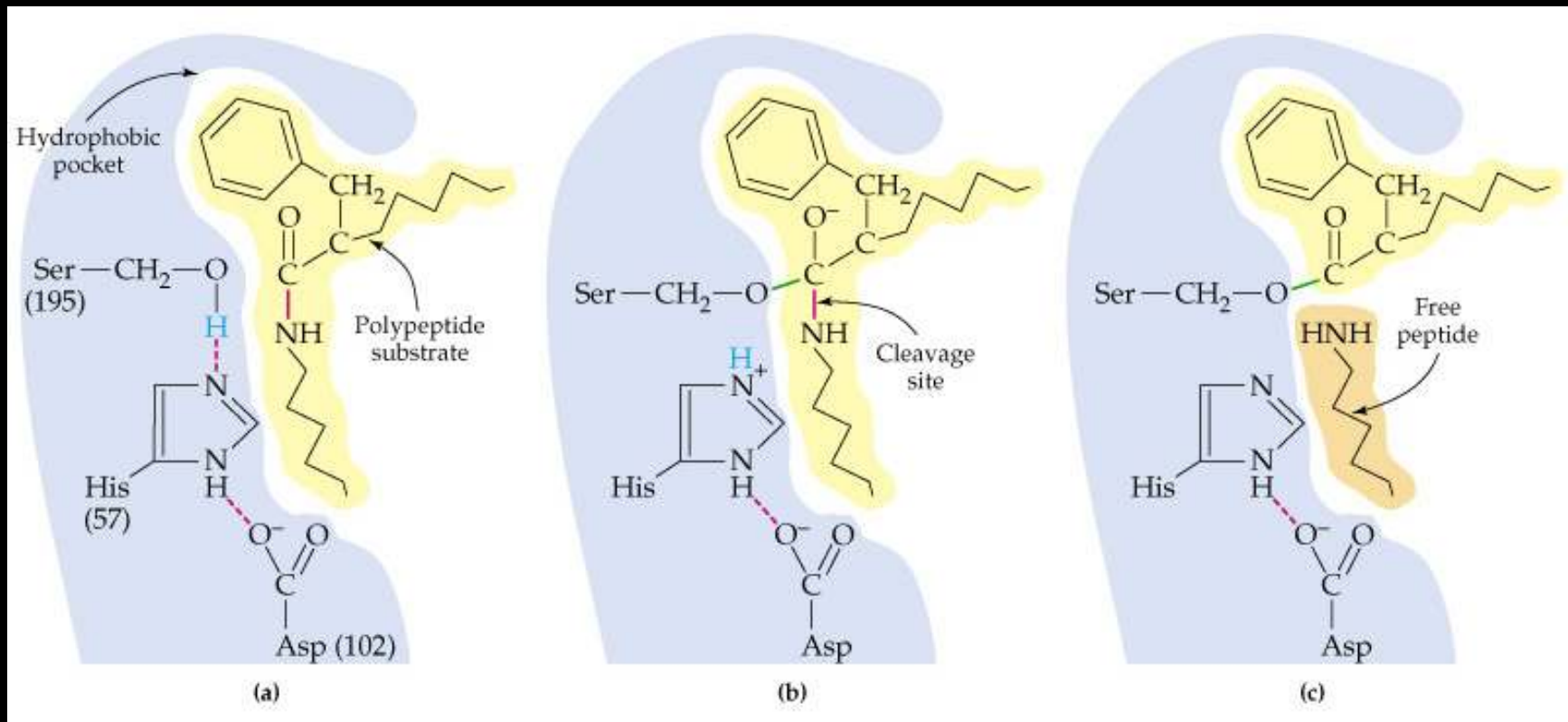
# Proteínas: Estructura de HLA (Anticuerpo)



# Proteínas: Estructura de la Hemoglobina



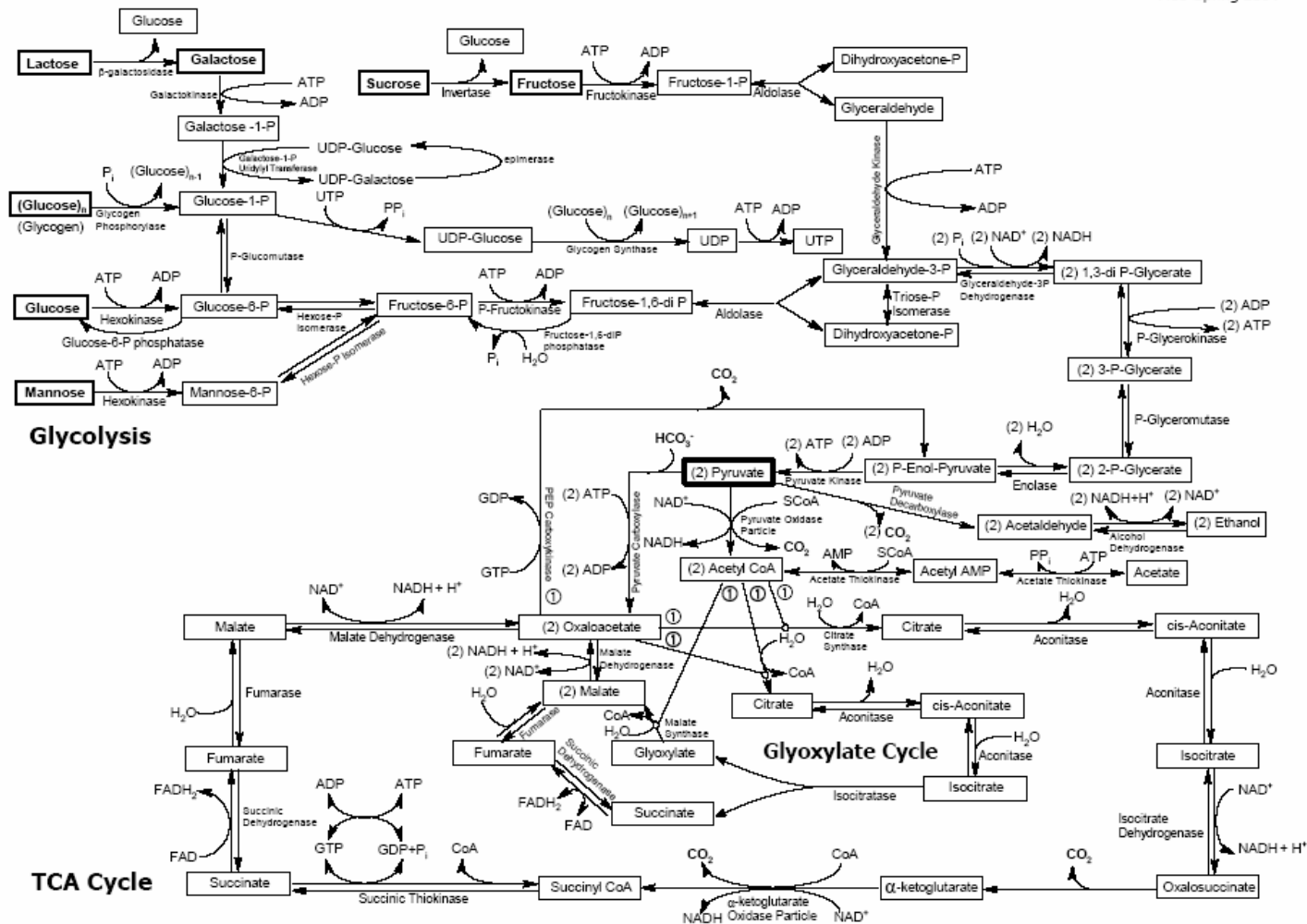
# Las Proteínas Interactúan Químicamente con Otras Substancias



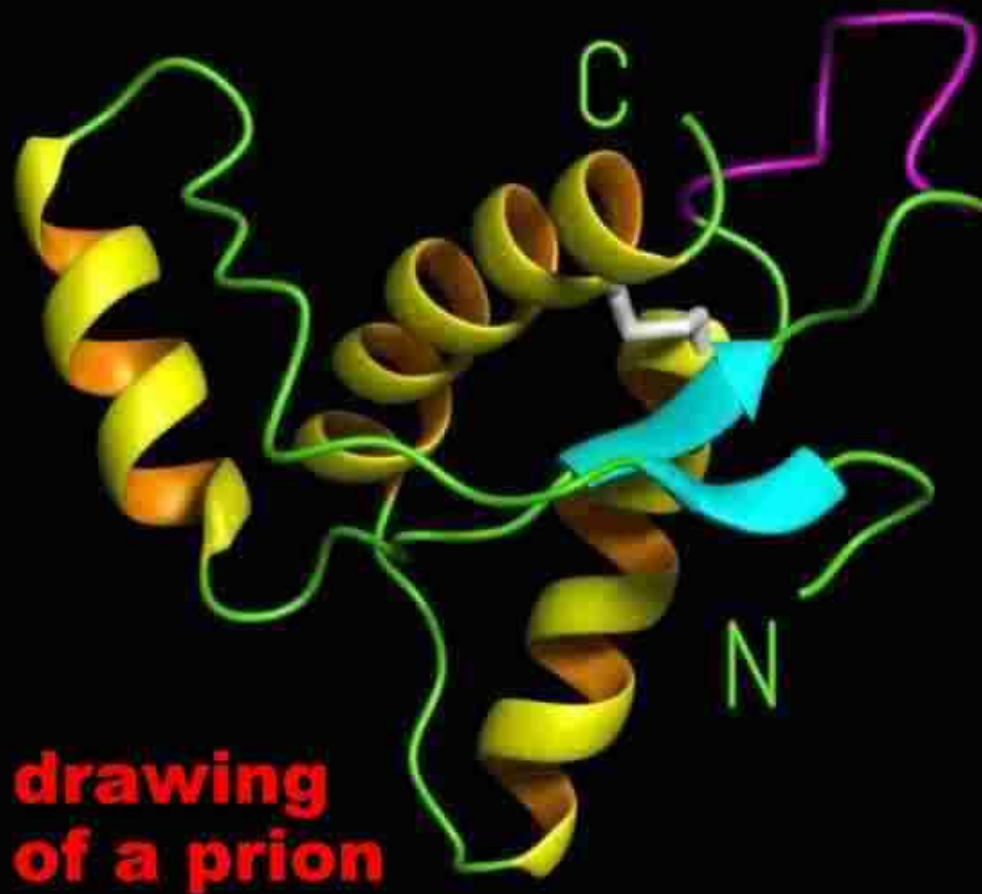
# Las Proteínas Controlan Todos los Procesos Biológicos

## Carbohydrate Metabolism

Victor Sai  
7.05 Spring 2004



# Priones: Proteínas Mal Dobladas Causan la Vaca Loca

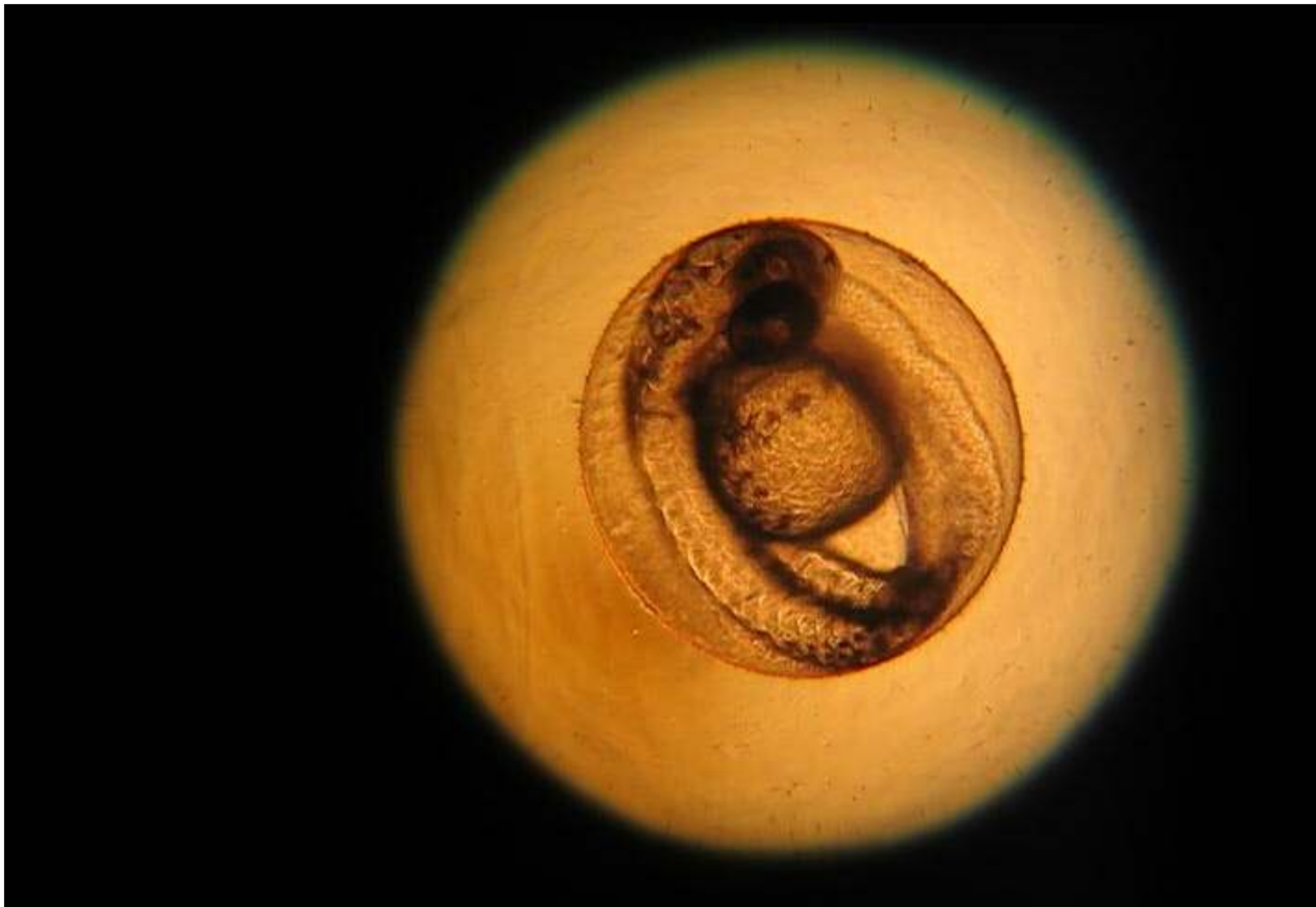


# Cómo Curar el SIDA: Nuevas Proteínas que Bloquean Receptores



# Laboratorios de Biología en MIT: Desarrollo de un Embrión de Brachydanio Rerio (Zebrafish)





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Laboratorios  
de Biología  
en MIT:  
Desarrollo  
de un  
Embrión de  
Brachydanio  
Rerio  
(Zebrafish)





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**¡Gracias!**  
Hay mas fotos...

