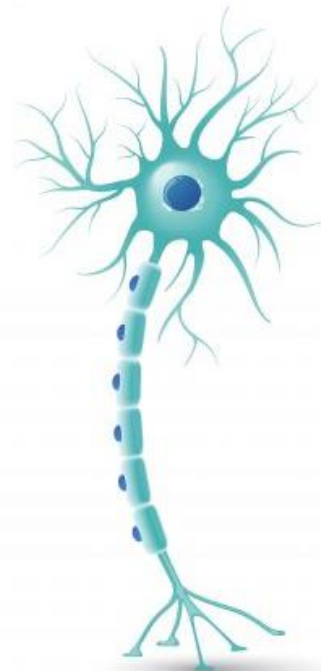
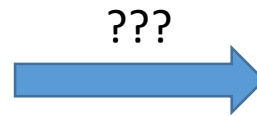
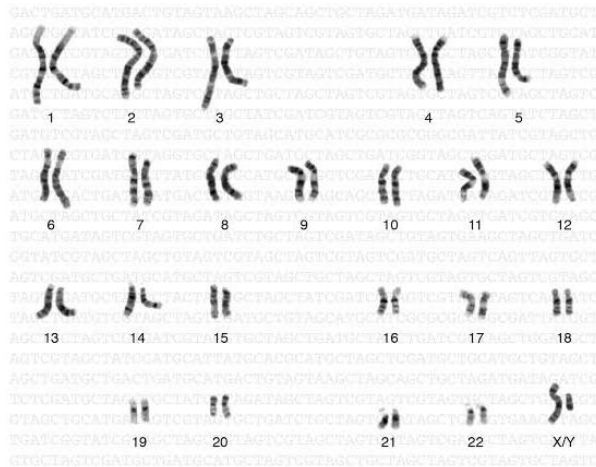
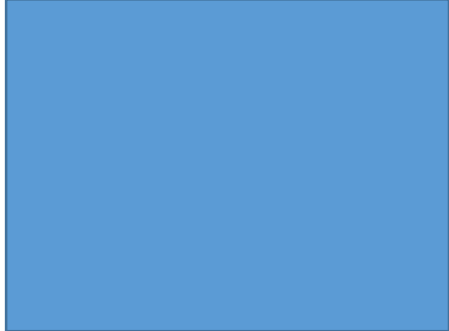
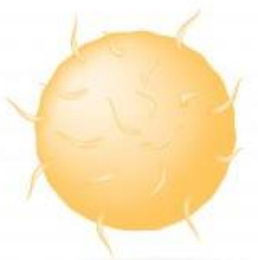


Regulação da Expressão Gênica em Eucariotos



Motor neuron

Red blood cell



White blood cell



Cells in the inner lining of the intestine



Bone cell

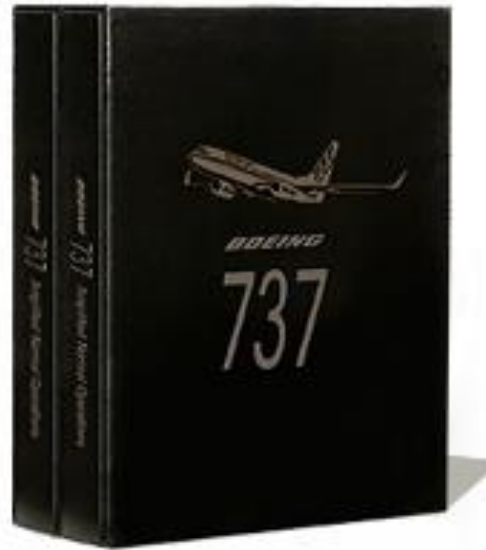
Ovum



Sperm cell

O “dogma” central da Biologia Molecular

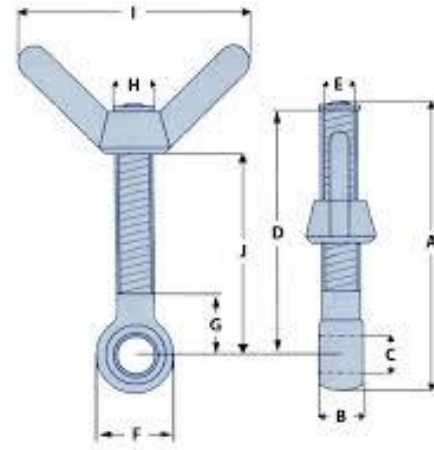
DNA



Replicação

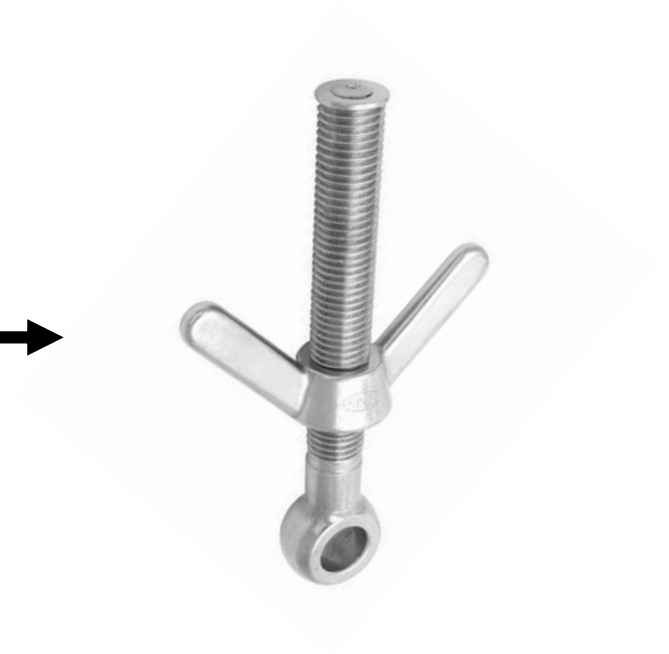
RNA

Transcrição

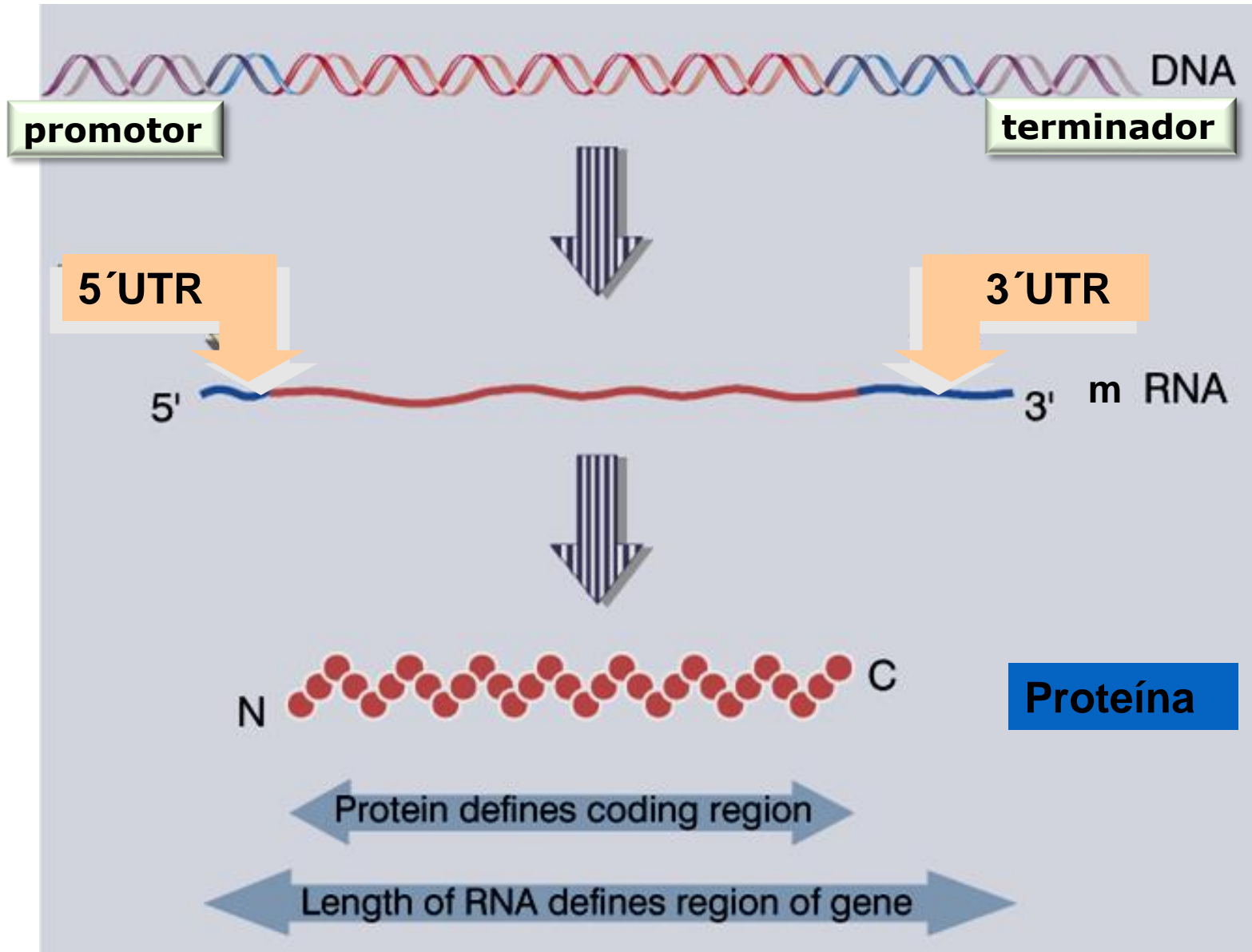
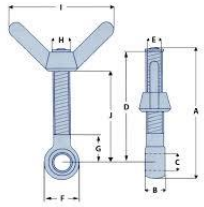
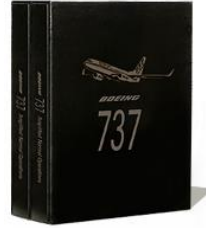


Tradução

proteína



Um gene (simplificado)



Regulação da expressão em procariotos

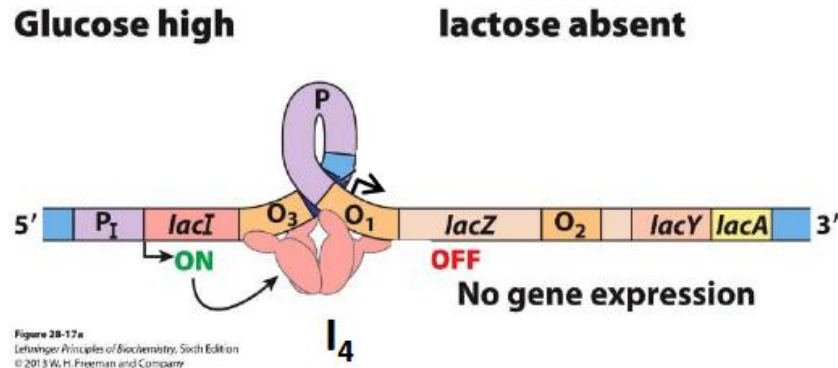


Figure 28-17a
Lehninger Principles of Biochemistry, Sixth Edition
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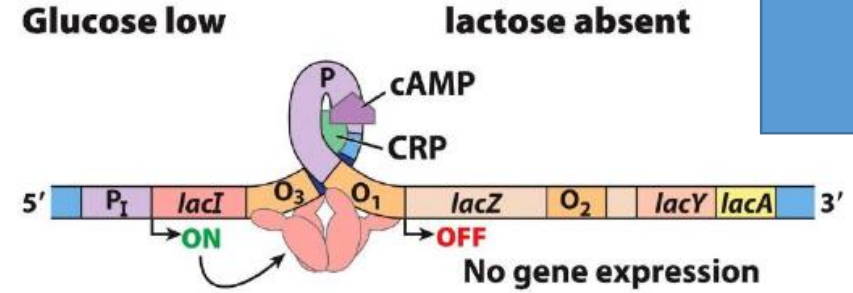


Figure 28-17b
Lehninger Principles of Biochemistry, Sixth Edition
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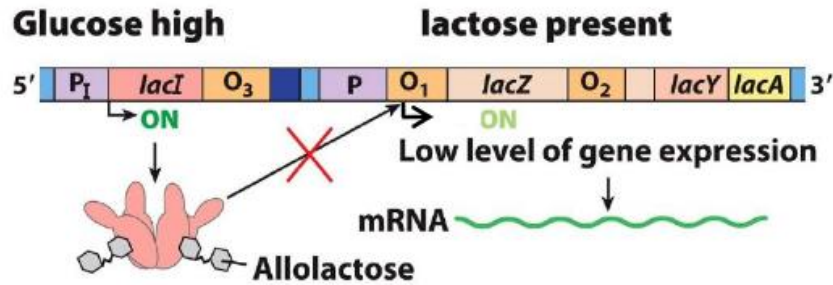


Figure 28-17c
Lehninger Principles of Biochemistry, Sixth Edition
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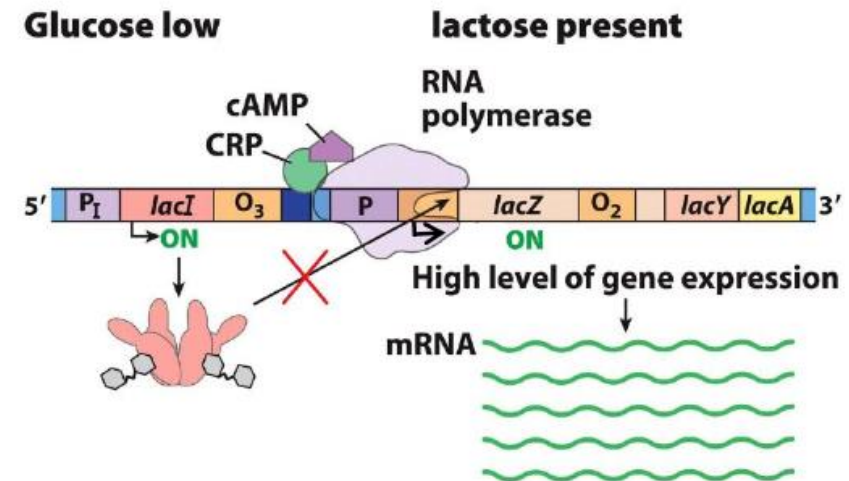
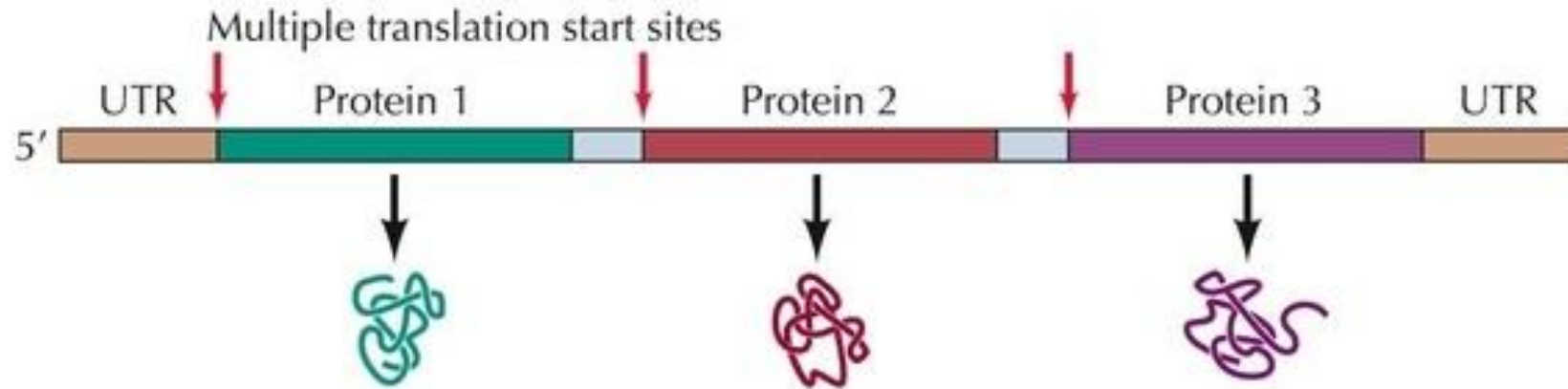


Figure 28-17d
Lehninger Principles of Biochemistry, Sixth Edition
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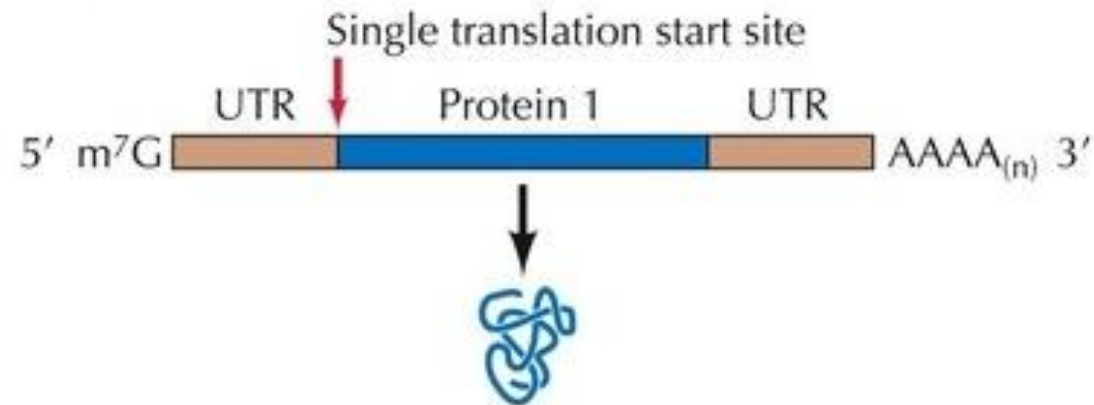
Procarotos vs eucariotos

Prokaryotic mRNA

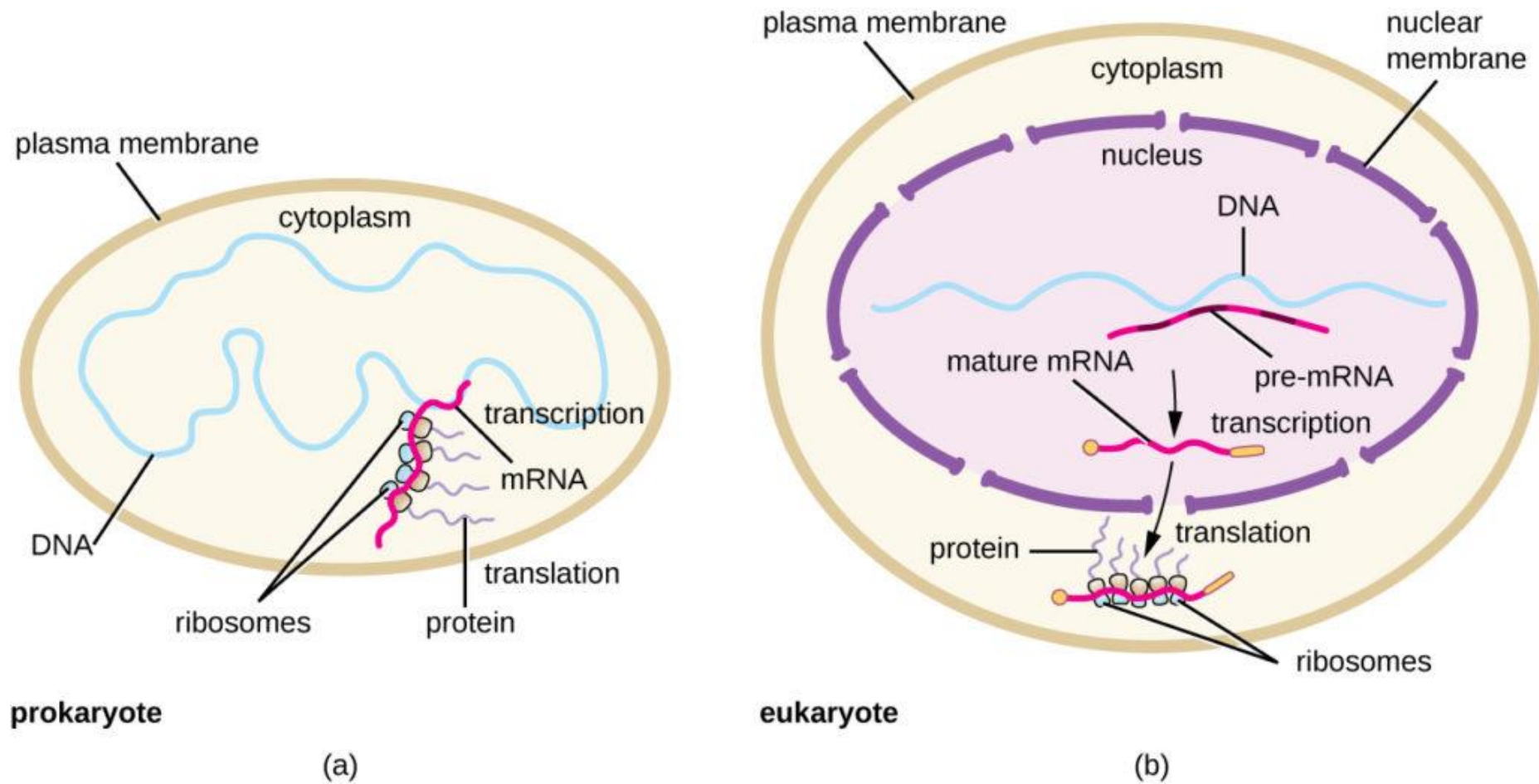


“policistrônico”

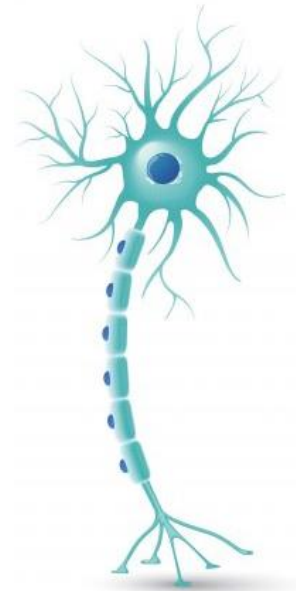
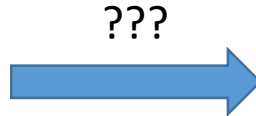
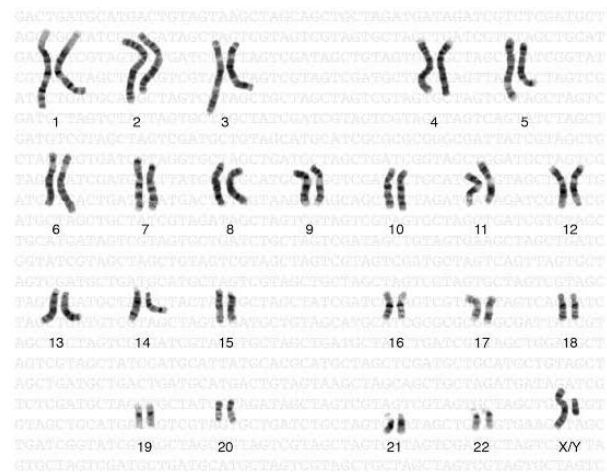
Eukaryotic mRNA



Procarotos vs eucariotos



Como pode haver diferenciação de função das células?

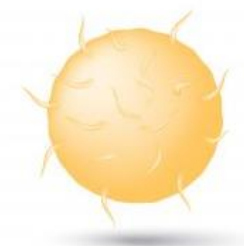


Motor neuron

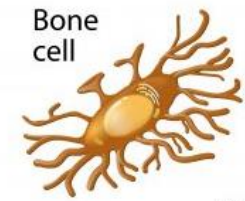
Red blood cell



White blood cell



Cells in the inner lining of the intestine



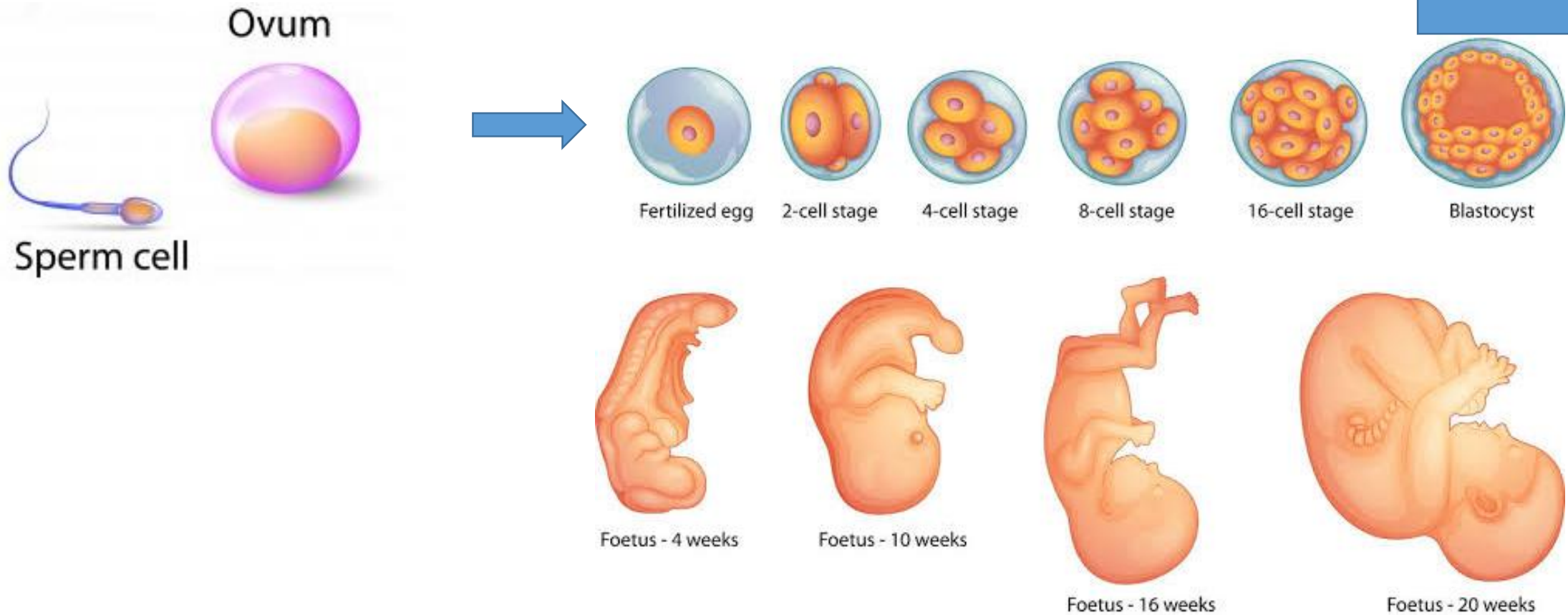
Bone cell

Ovum



Sperm cell

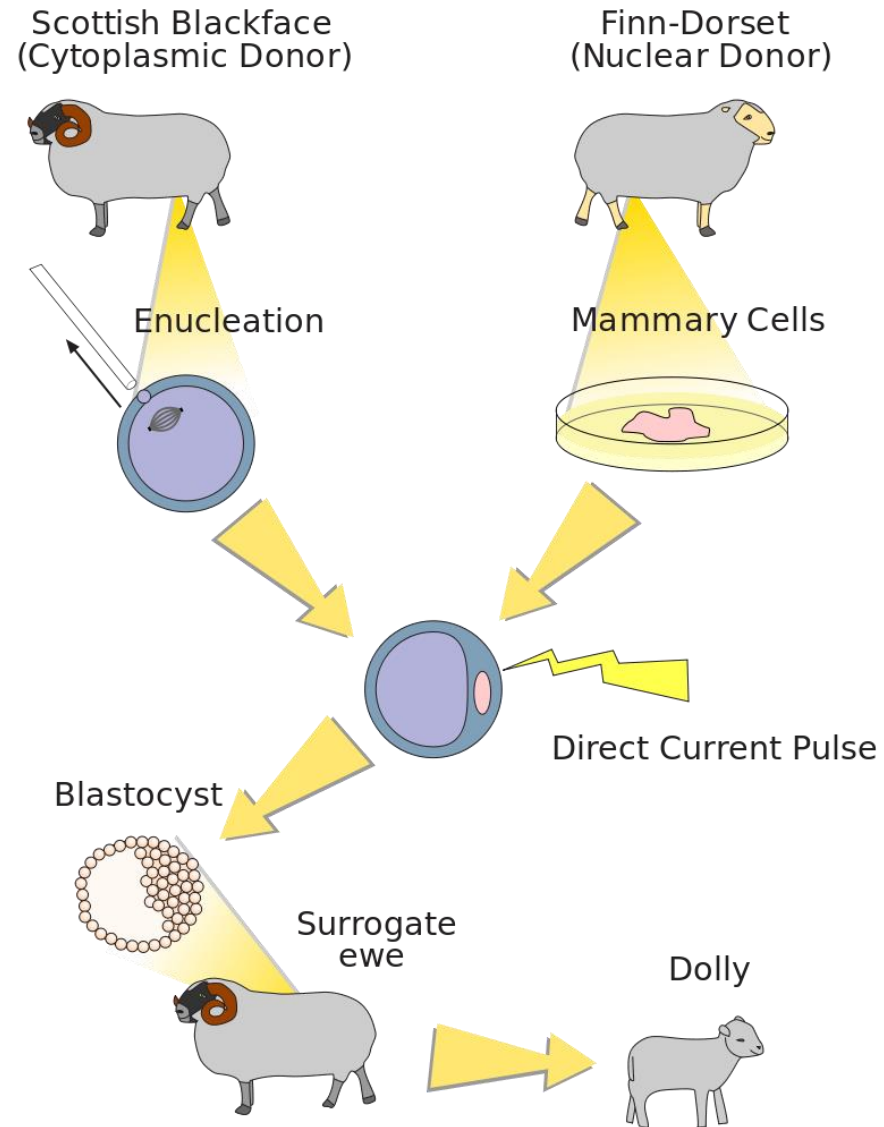
De onde vêm os diferentes tipos de células?



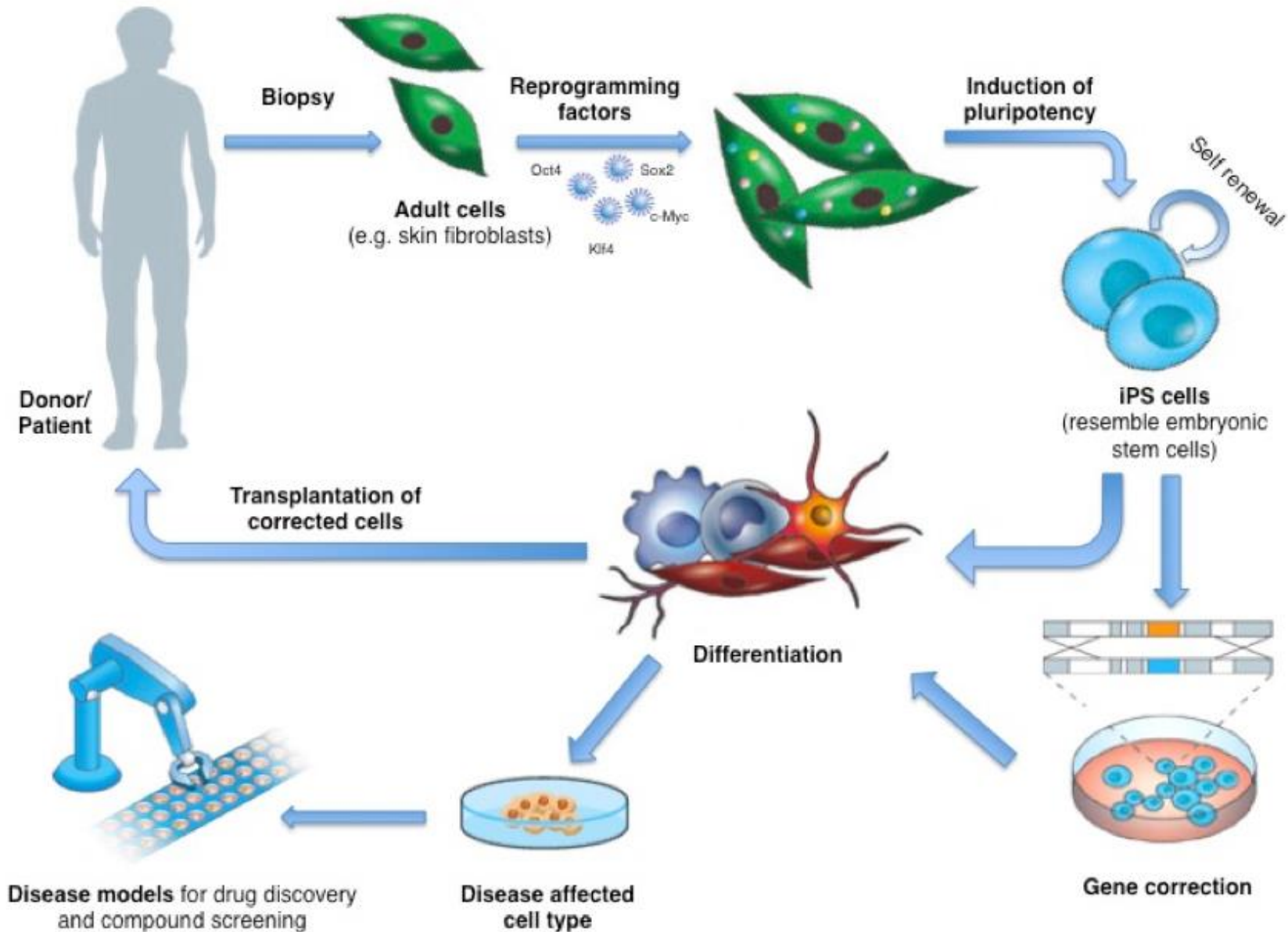
Hipótese 1: Ao se diferenciar, células mantêm apenas o DNA que codifica genes que elas precisam

Hipótese 2: Ao se diferenciar, células mantêm todo o DNA, mas apenas ativam os genes que elas precisam

A ovelha Dolly



Células tronco pluripotentes induzidas



Regulação da Expressão Gênica

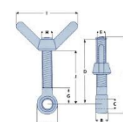
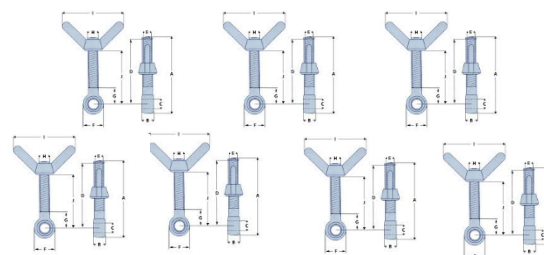
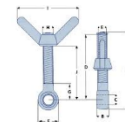
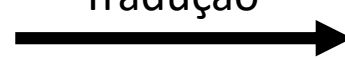
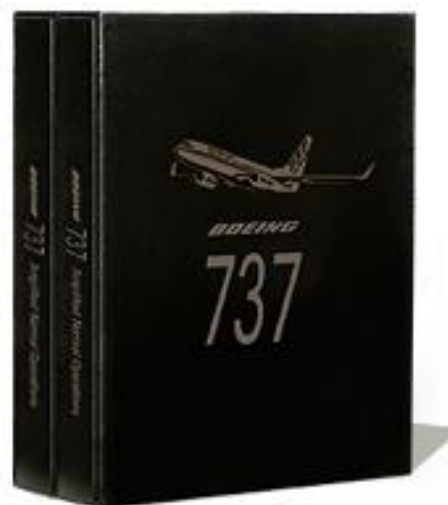
DNA

Transcrição

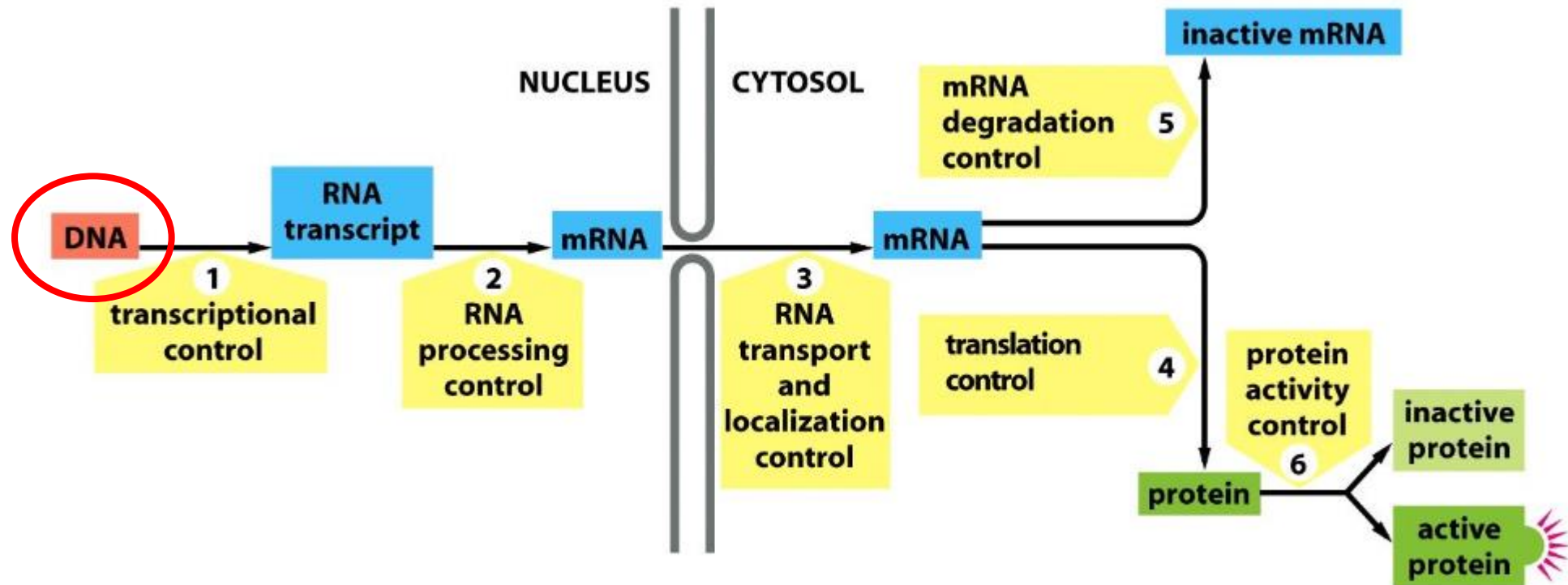
RNA

Tradução

proteína



Regulação da Expressão Gênica

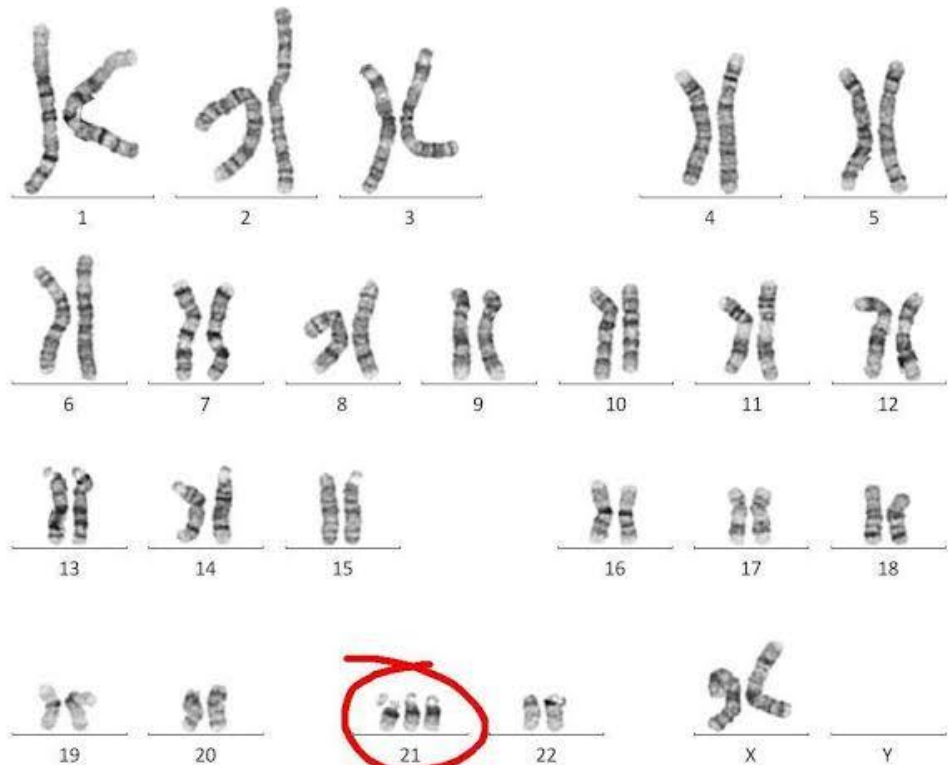


Tempo até resposta biológica

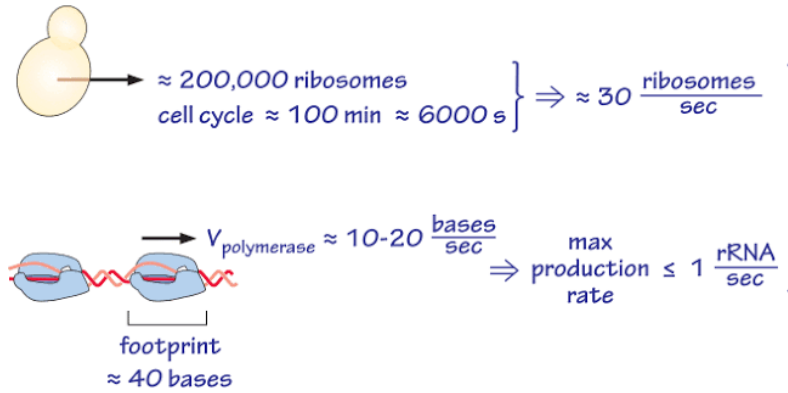
Custo energético

Alteração do número de cópias do DNA

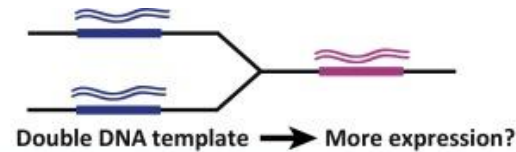
Down syndrome karyotype



how many rRNA genes are needed?

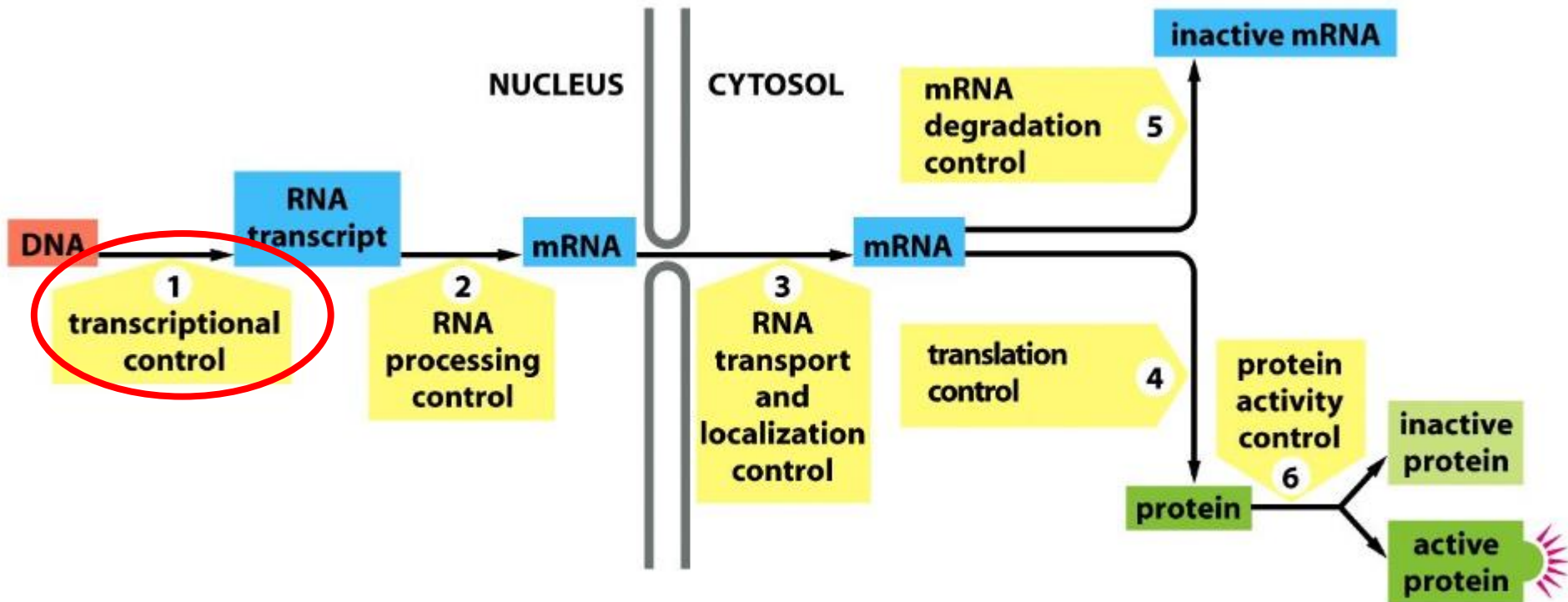


dozens of gene repeats needed

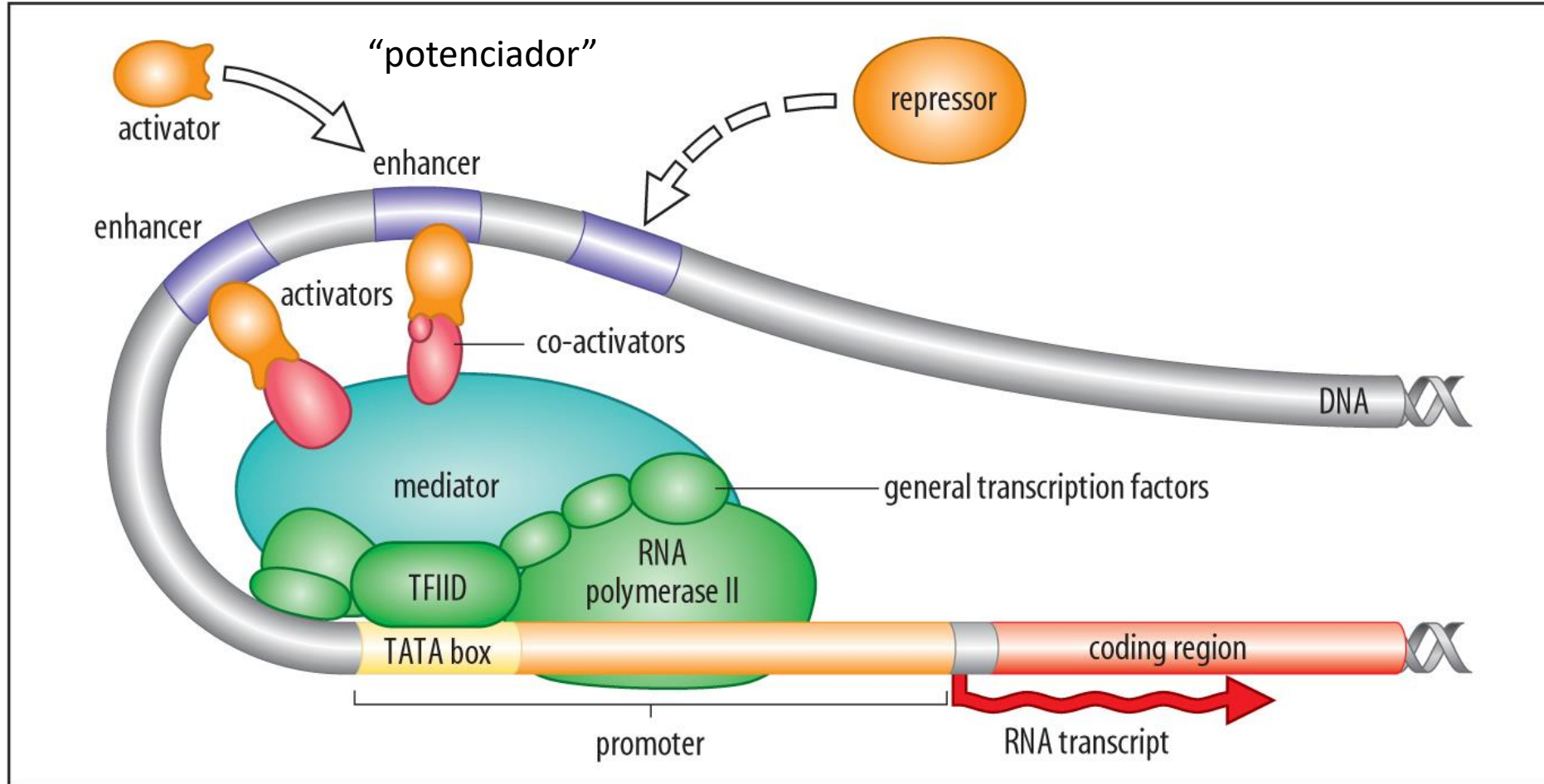


	Prokaryotes	Eukaryotes
DNA		
mRNA		
	Time	Time

Regulação da Expressão Gênica

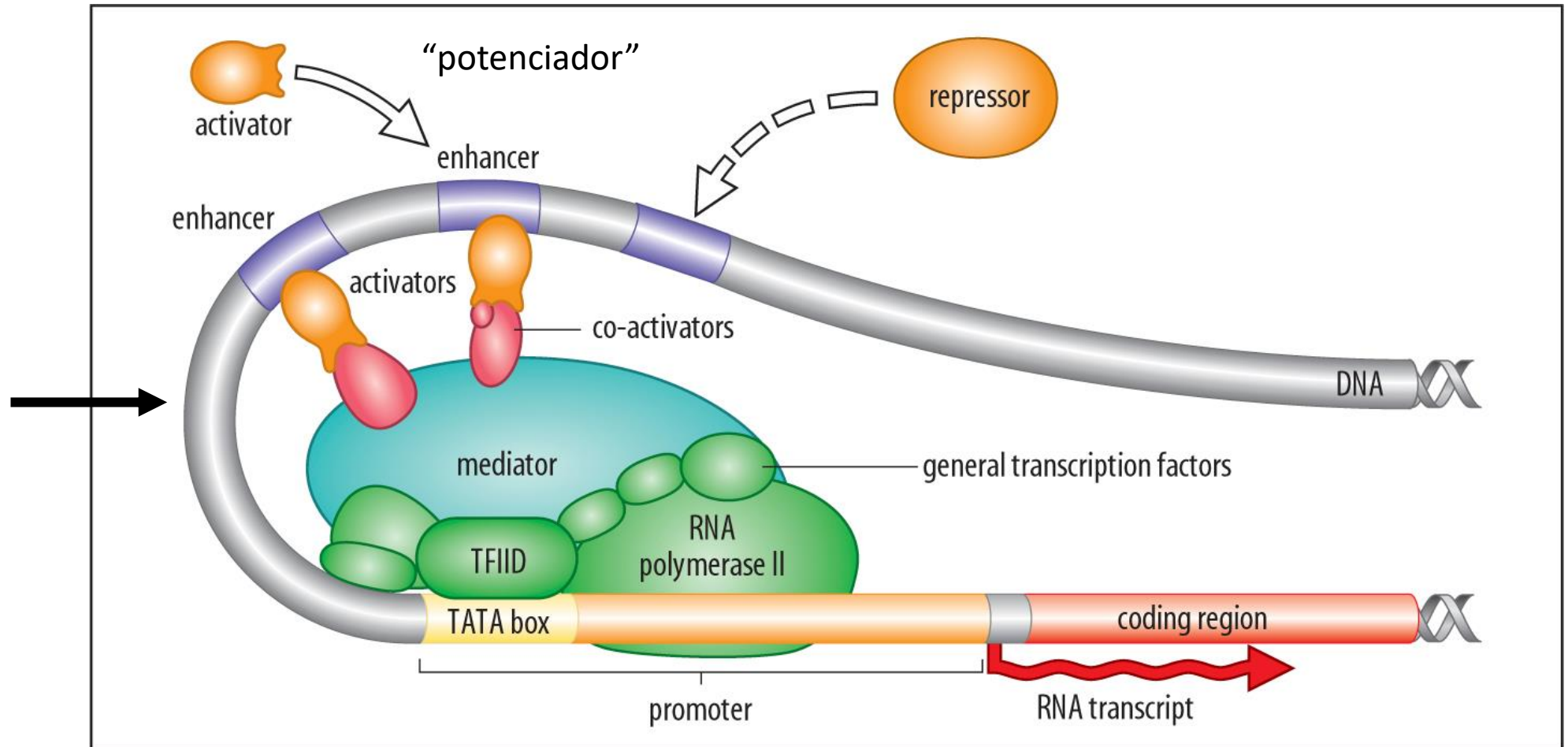


Regulação da Transcrição



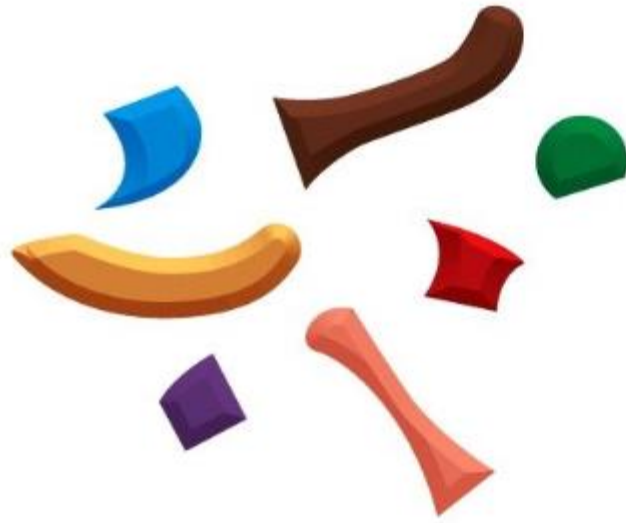
Estrutura tridimensional do DNA afeta transcrição

Esta distância pode ser de milhares de pares de base, inclusive com outros genes no meio

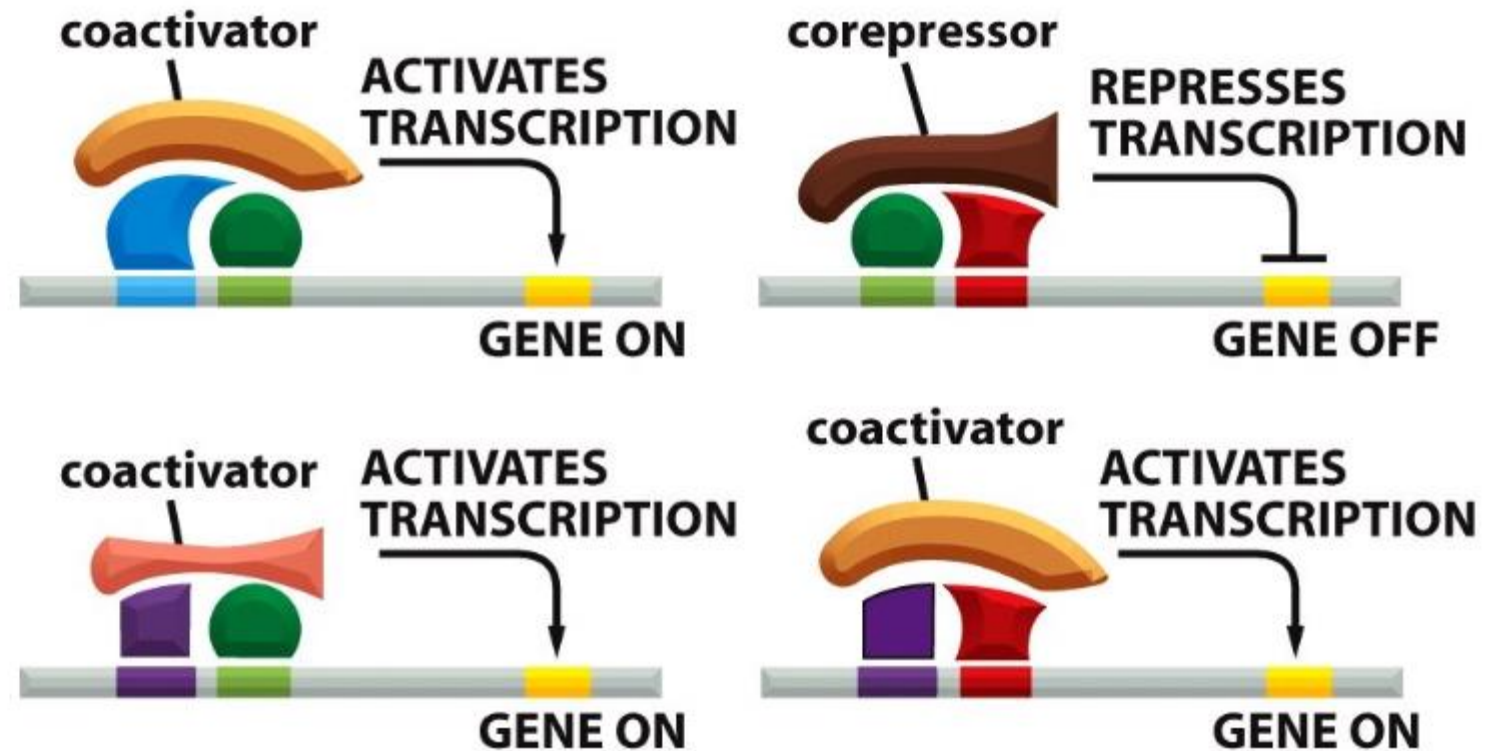


O efeito biológico é resultado da soma de vários fatores

(A) IN SOLUTION

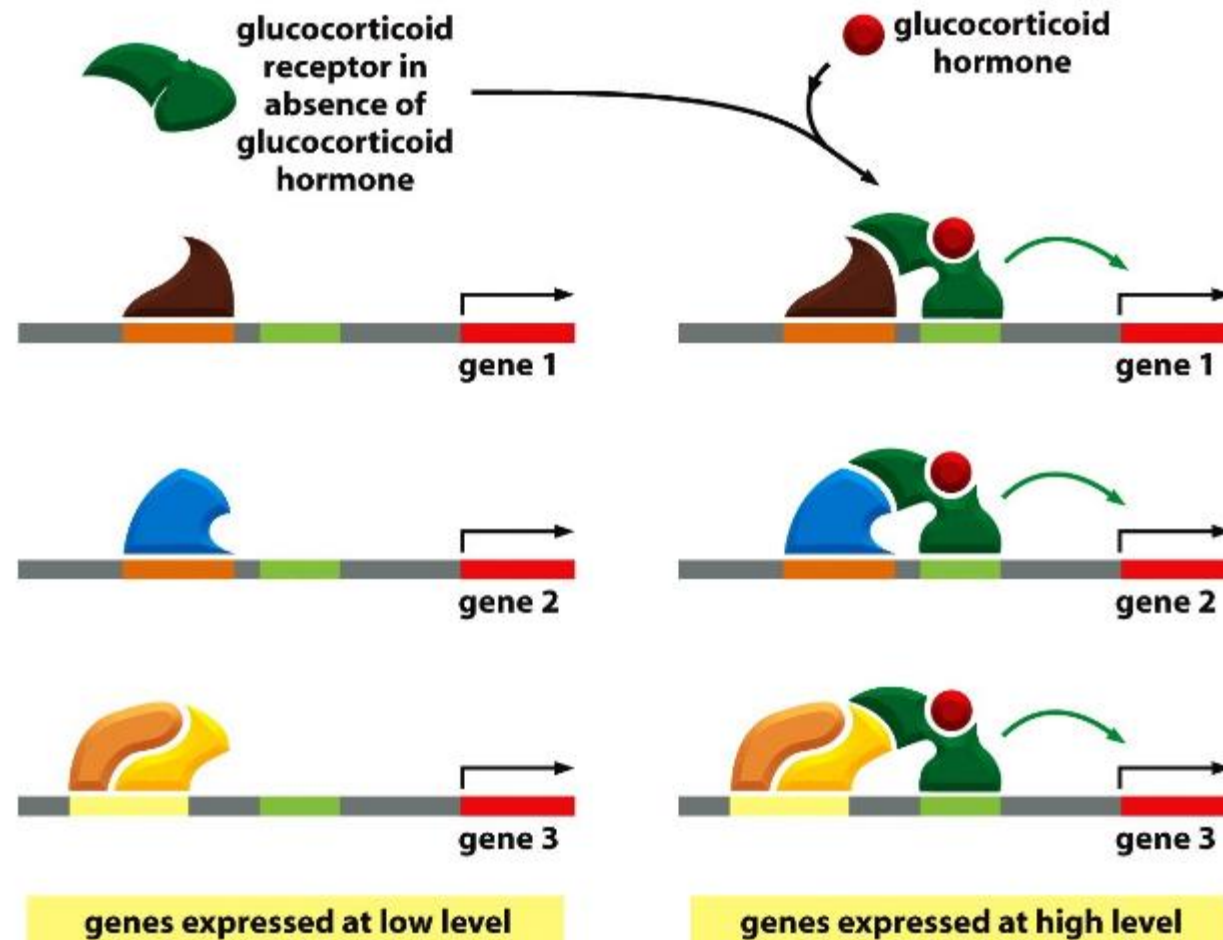


(B) ON DNA



Fatores de transcrição podem ser ativadores ou repressores, dependendo de quais outros fatores foram recrutados para a região regulatória

Regulação da transcrição responde a sinais extracelulares



Mecanismos de ativação ou repressão da transcrição

A. Recrutar fator de ativação

B. Competir com ativador por sítio de ligação ao DNA

C. Recrutar complexo da RNA polimerase

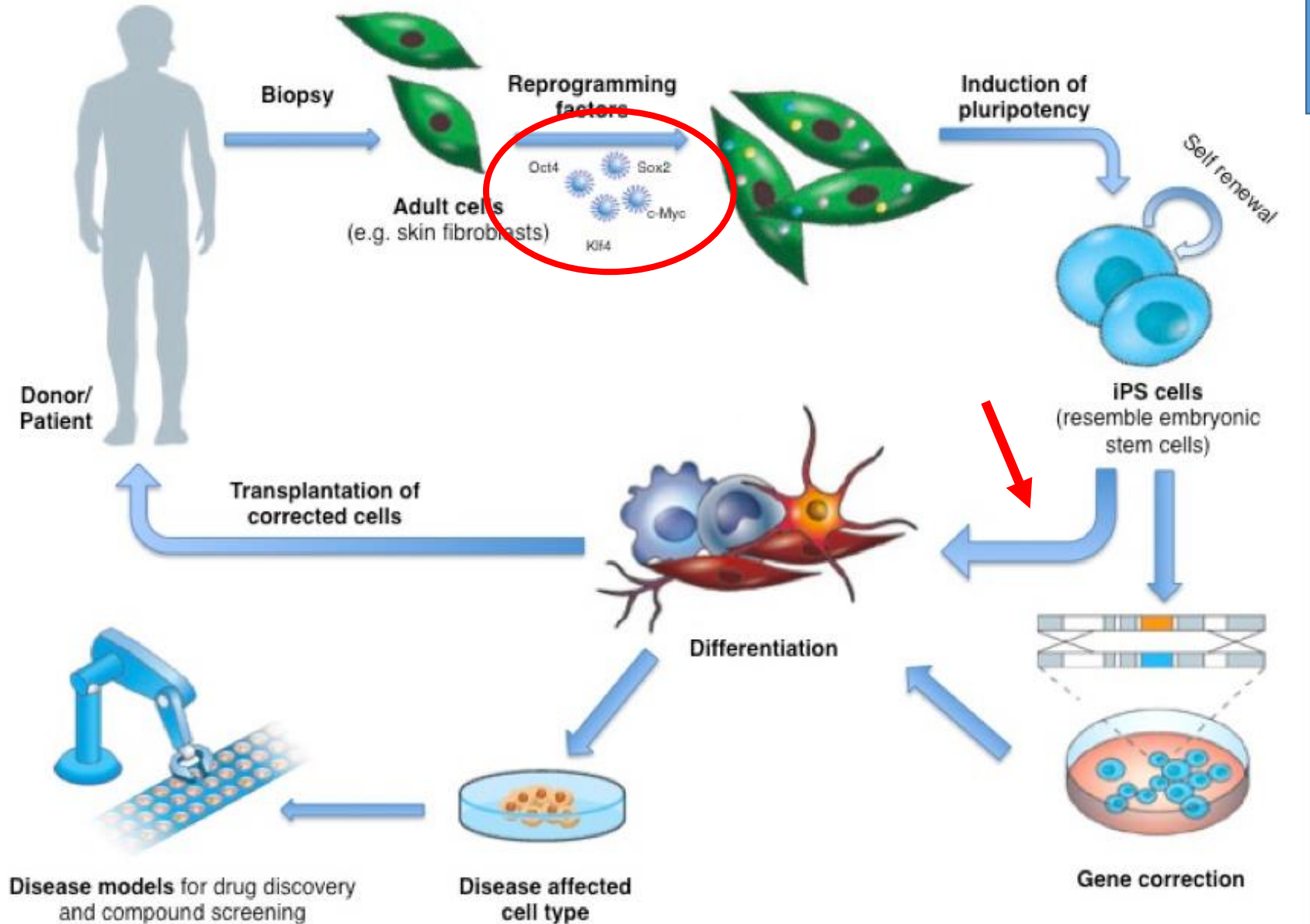
D. Inibir fatores de transcrição gerais

E. Mascaram sítio de interação de ativador com proteínas-alvo

F. Liberar RNA polimerase para iniciar transcrição

G. Liberar RNA polimerase da pausa

Células troco pluripotentes induzidas



Aula que vem

