

Metabolismo do Glicogênio

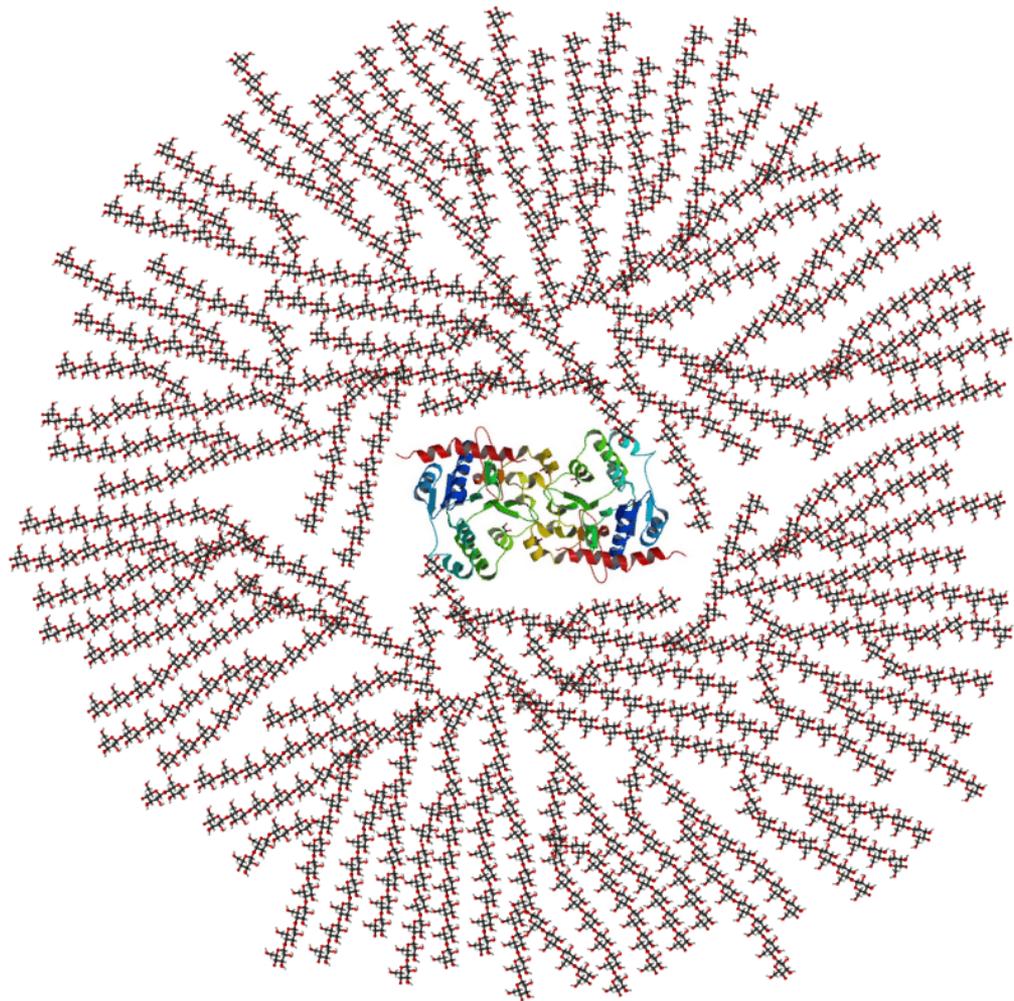
Síntese e Degradação

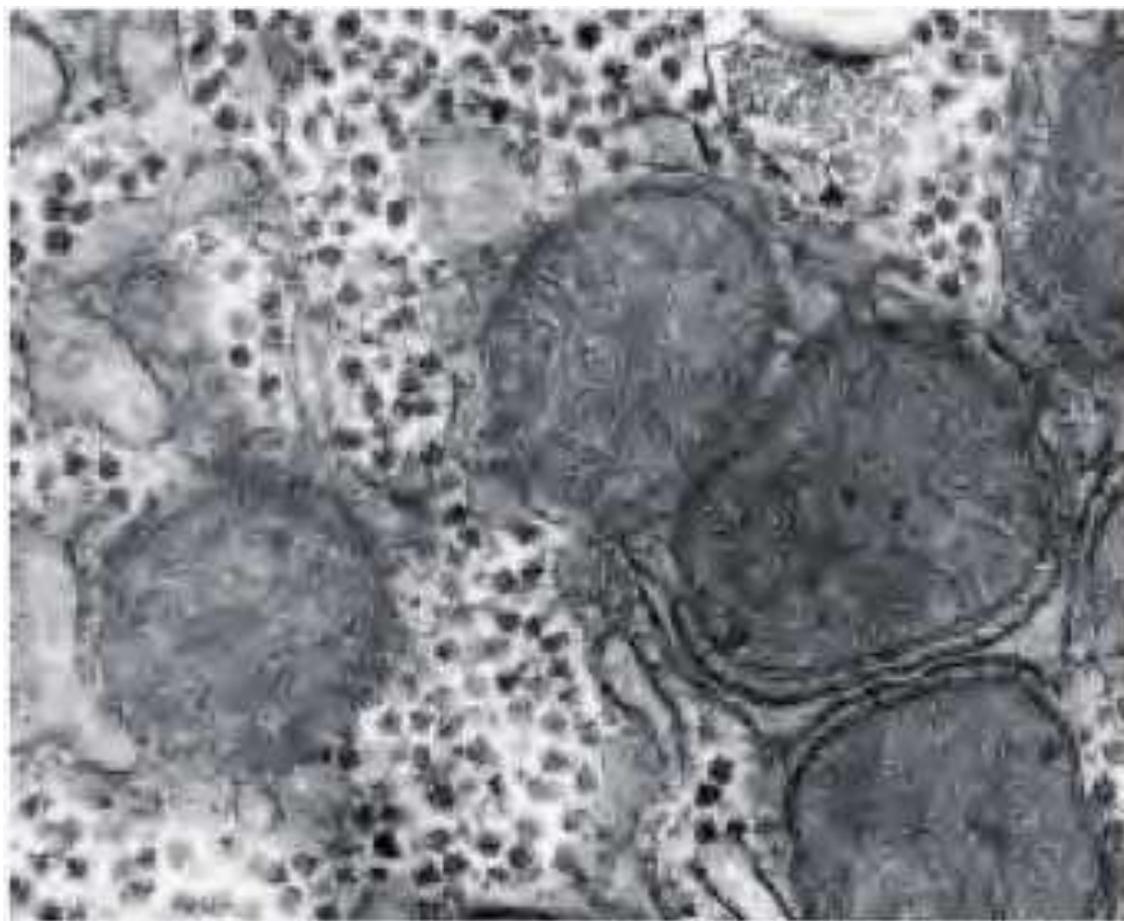


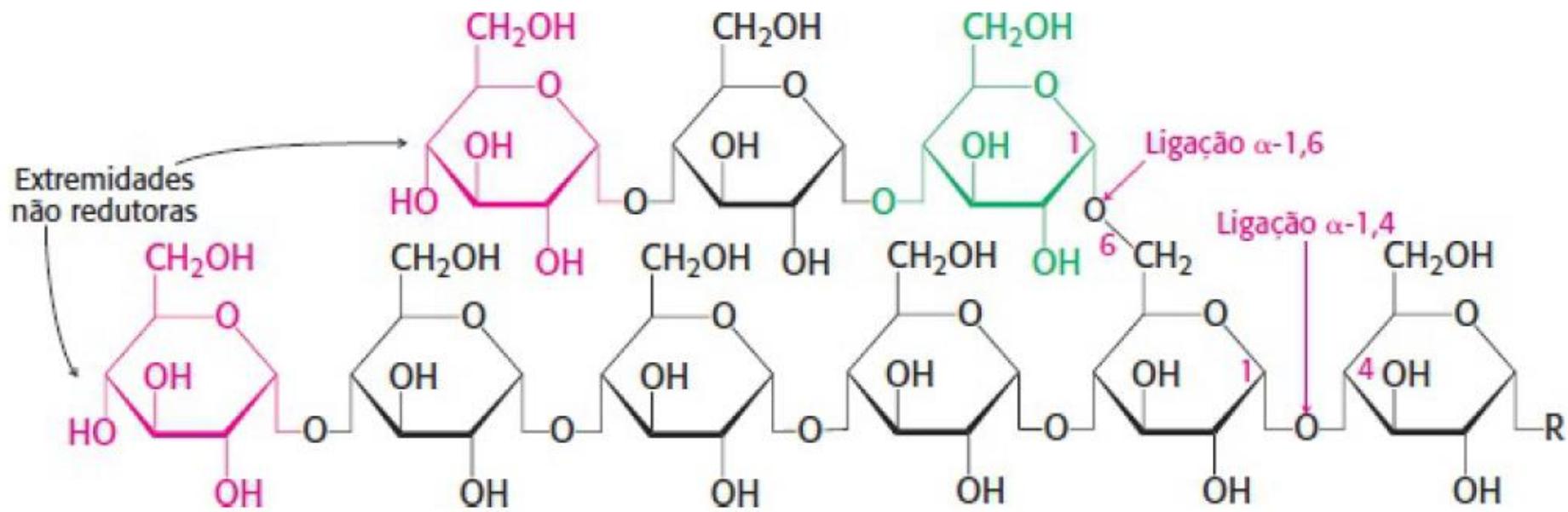
Ronaldo Bento Quaggio

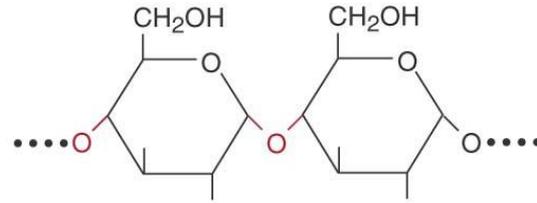
QBQ0204 - Bioquímica

Estrutura de Biomoléculas e Metabolismo



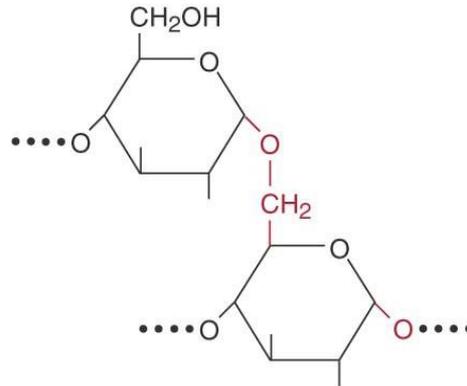






α -1,4-Glycosidic linkage

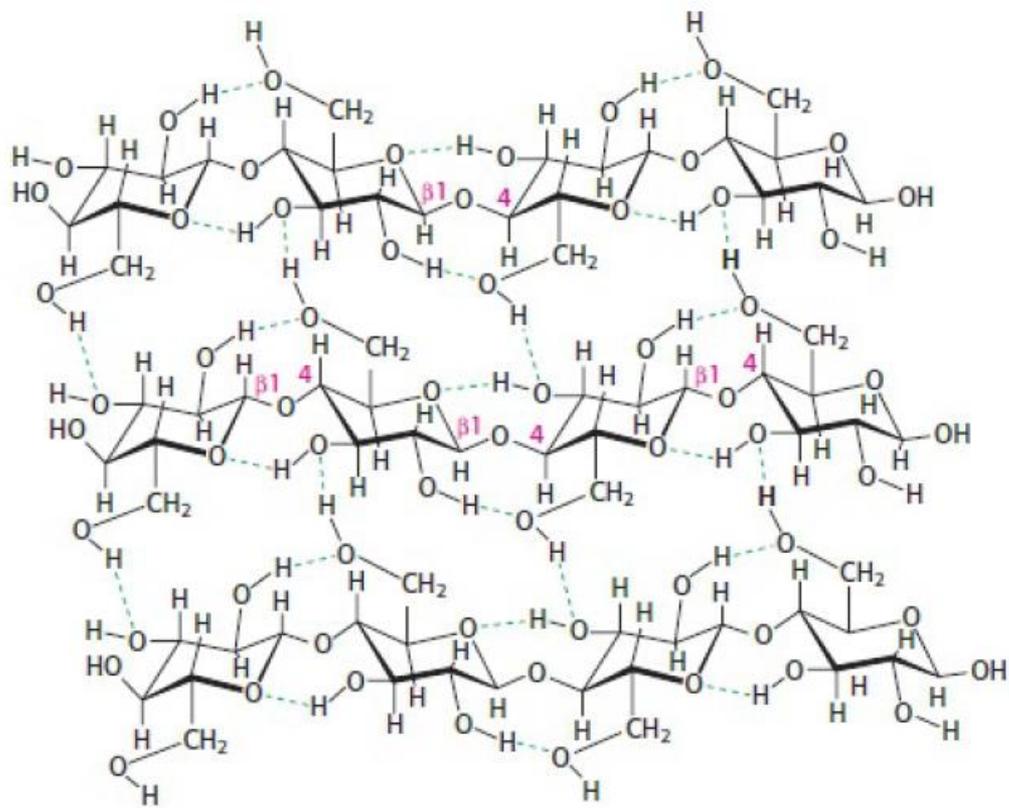
(a)



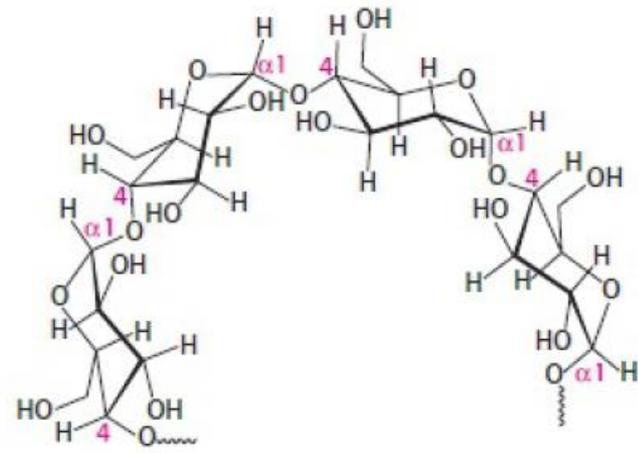
α -1,6-Glycosidic linkage

(b)

Figure 15.47. Two types of linkage between glucose molecules are present in glycogen.



Celulose
(ligações β-1,4)



Amido e glicogênio
(ligações α-1,4)

Metabolismo de Glicogênio

Principal polissacarídeo de reserva em animais

Polímero com estrutura ramificada, resíduos de glicose unidos por ligações glicosídicas α -1,4 e ramificações α -1,6.

Regula níveis glicêmicos (fígado, cerca de 12-24 horas)

Reserva de glicose para atividade muscular intensa

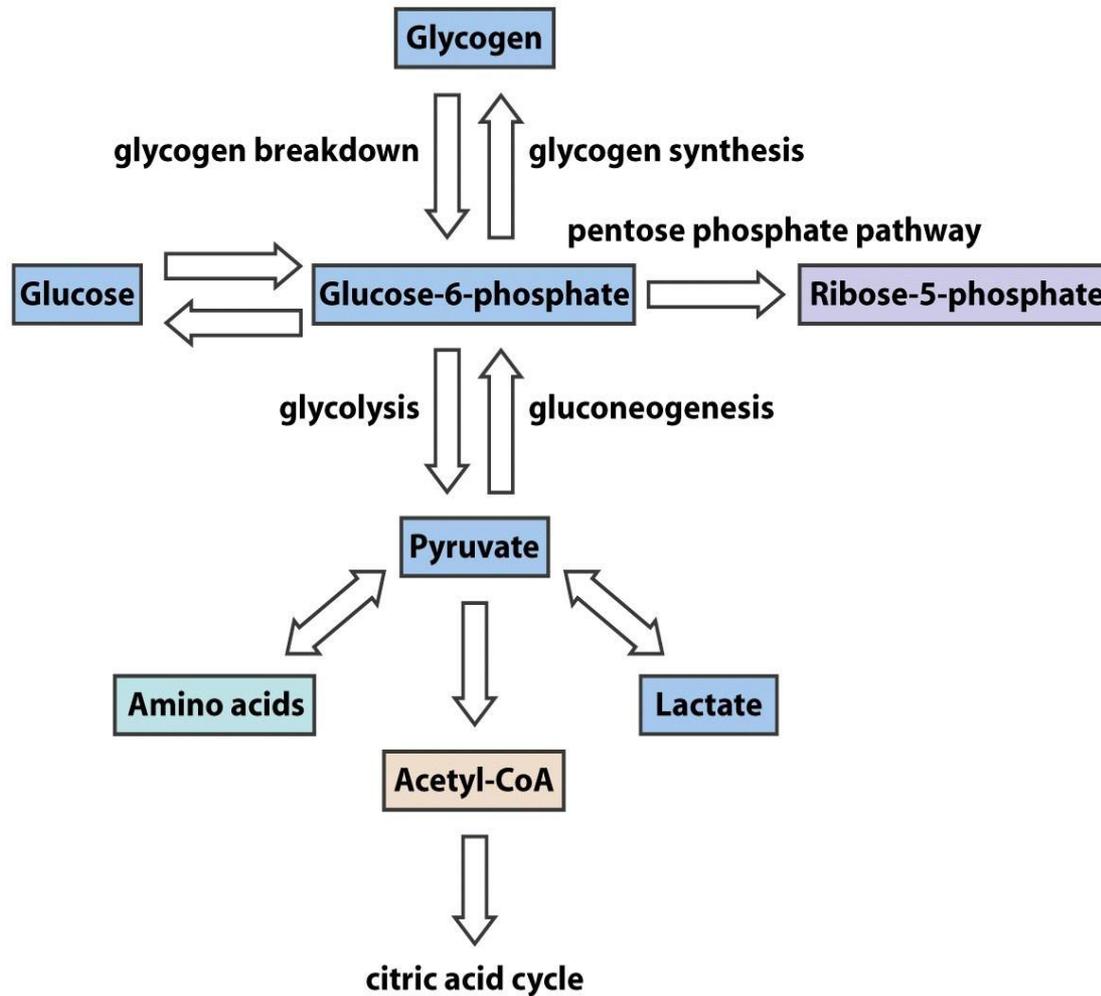


Figure 15-1 Fundamentals of Biochemistry, 2/e
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Síntese do Glicogênio

first
priming
reaction

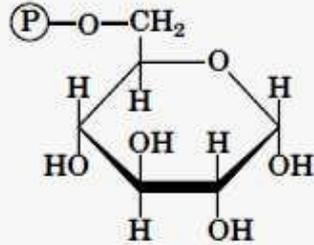
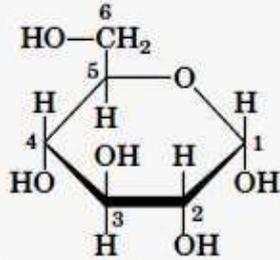
①

Glucose

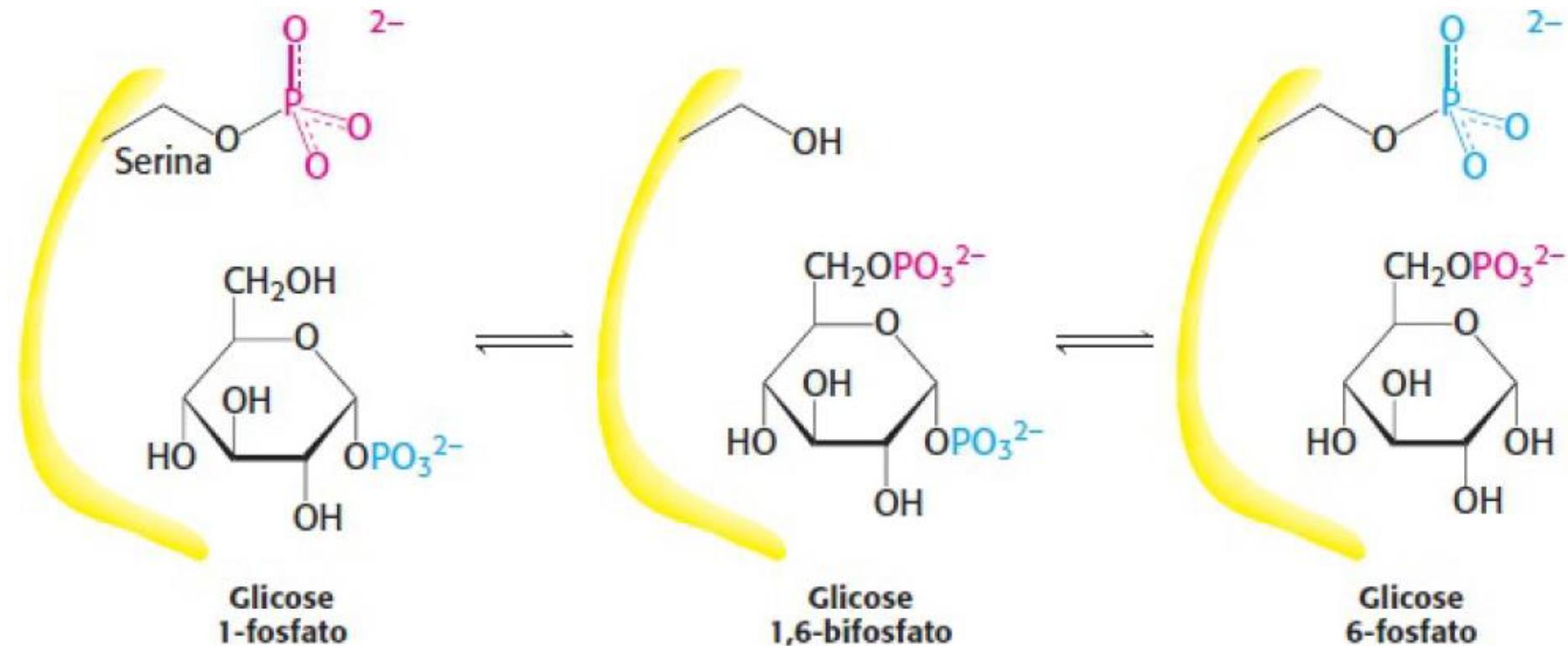
ATP

ADP

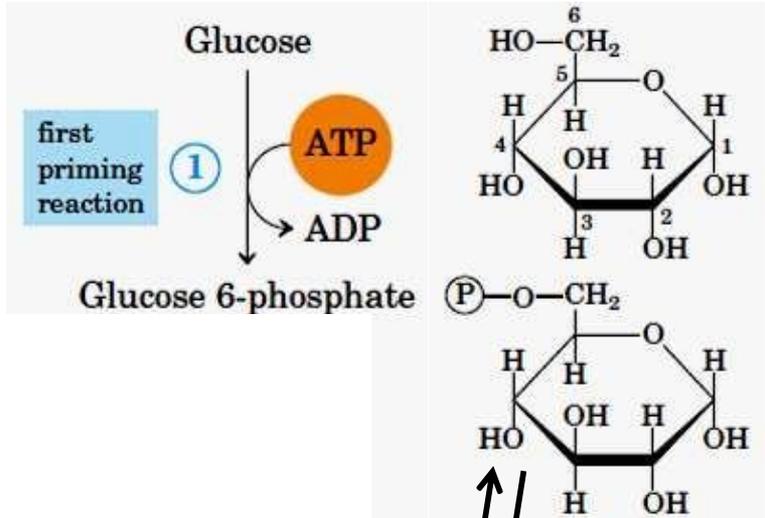
Glucose 6-phosphate



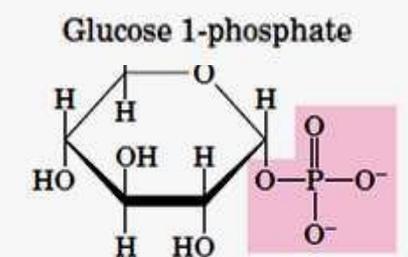
fosfoglicomutase

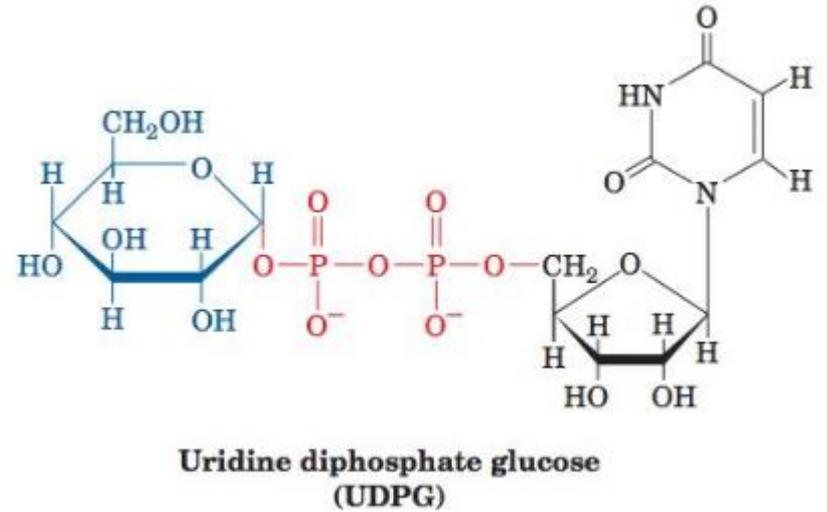
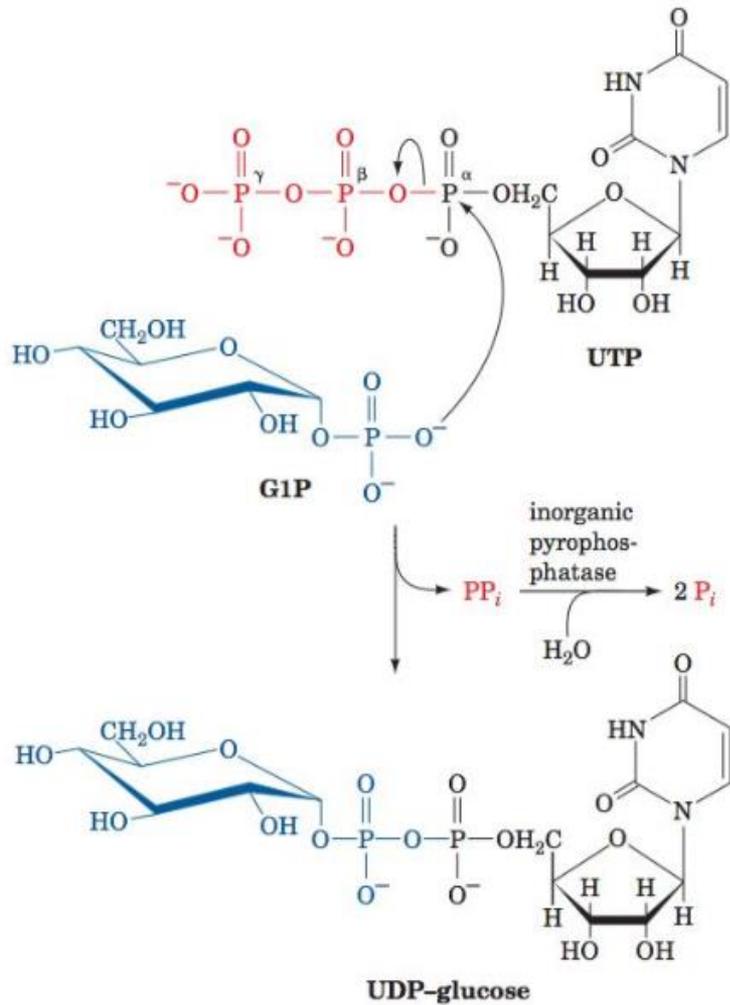


Síntese do Glicogênio



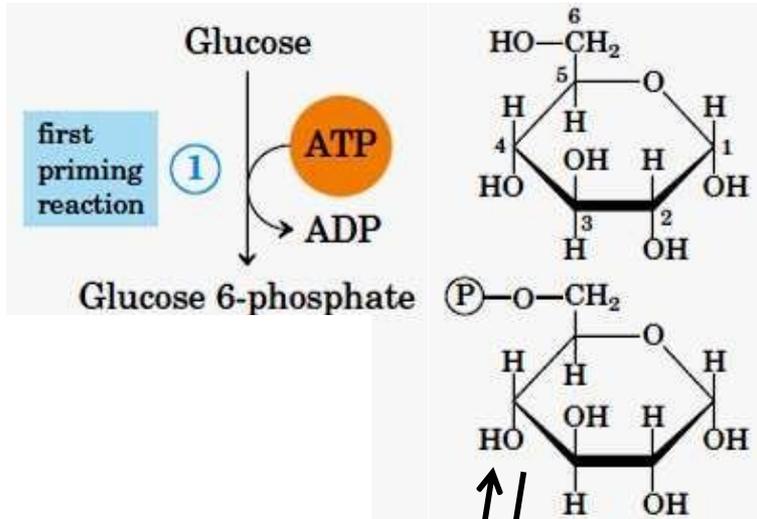
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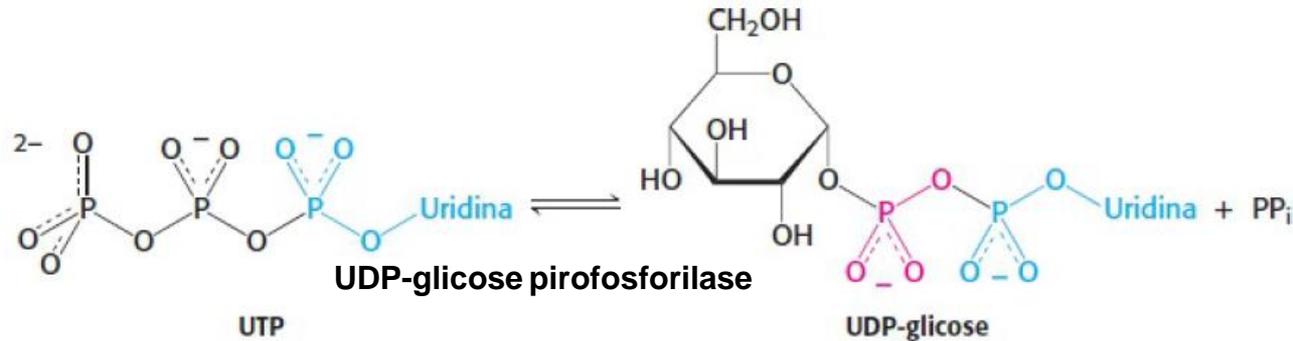
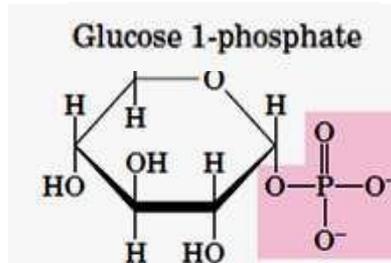


UDP-glucose pyrophosphatase

Síntese do Glicogênio

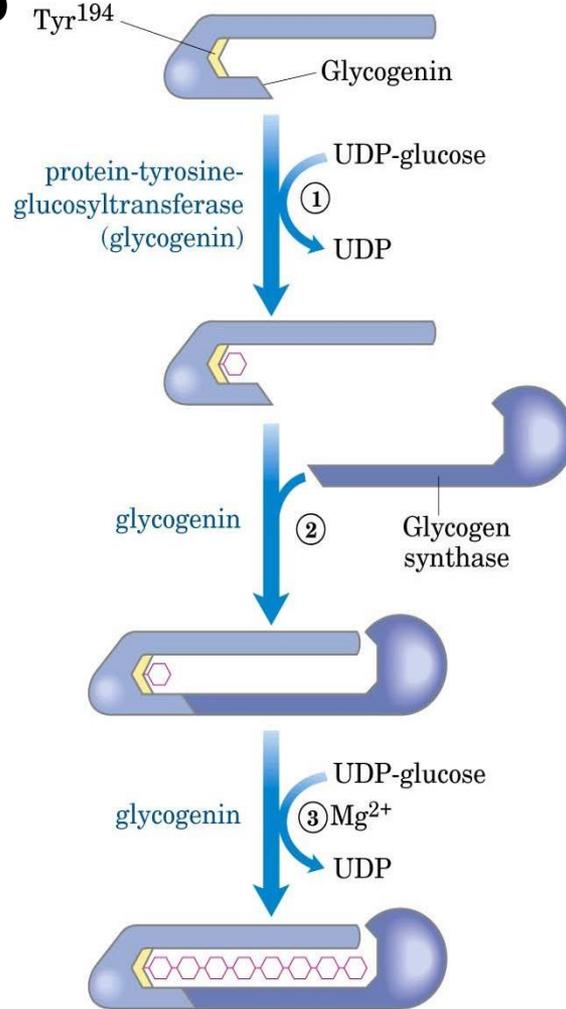
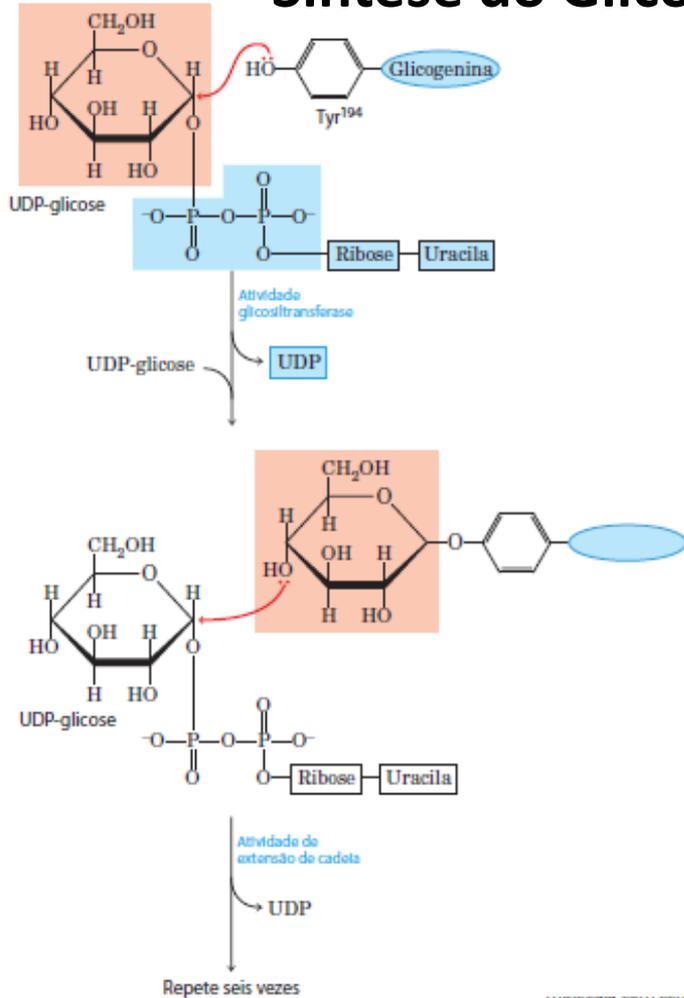


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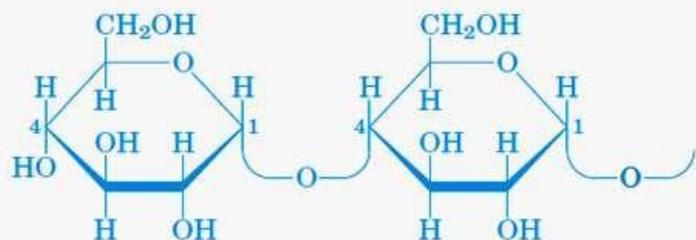
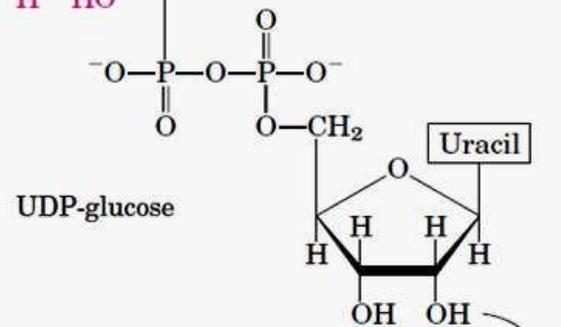
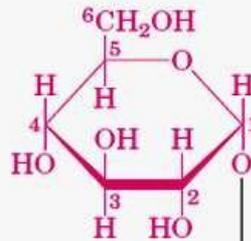


Síntese do Glicogênio

(a)



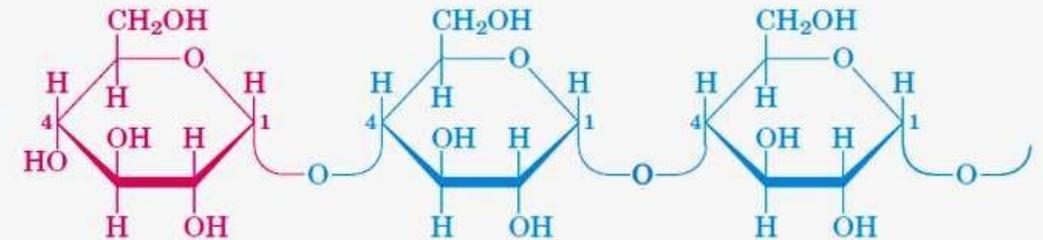
Síntese do Glicogênio



Nonreducing end of a glycogen chain with n residues ($n > 4$)

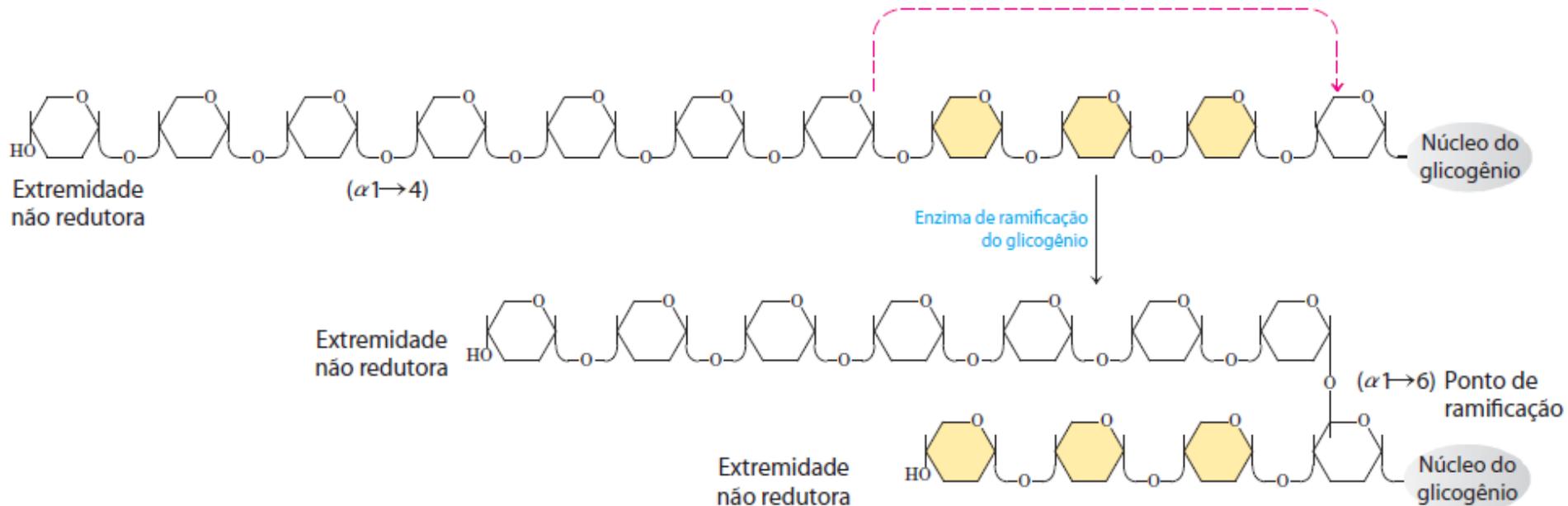
glycogen synthase → UDP

New nonreducing end



Elongated glycogen with $n + 1$ residues

Síntese do Glicogênio - Ramificação



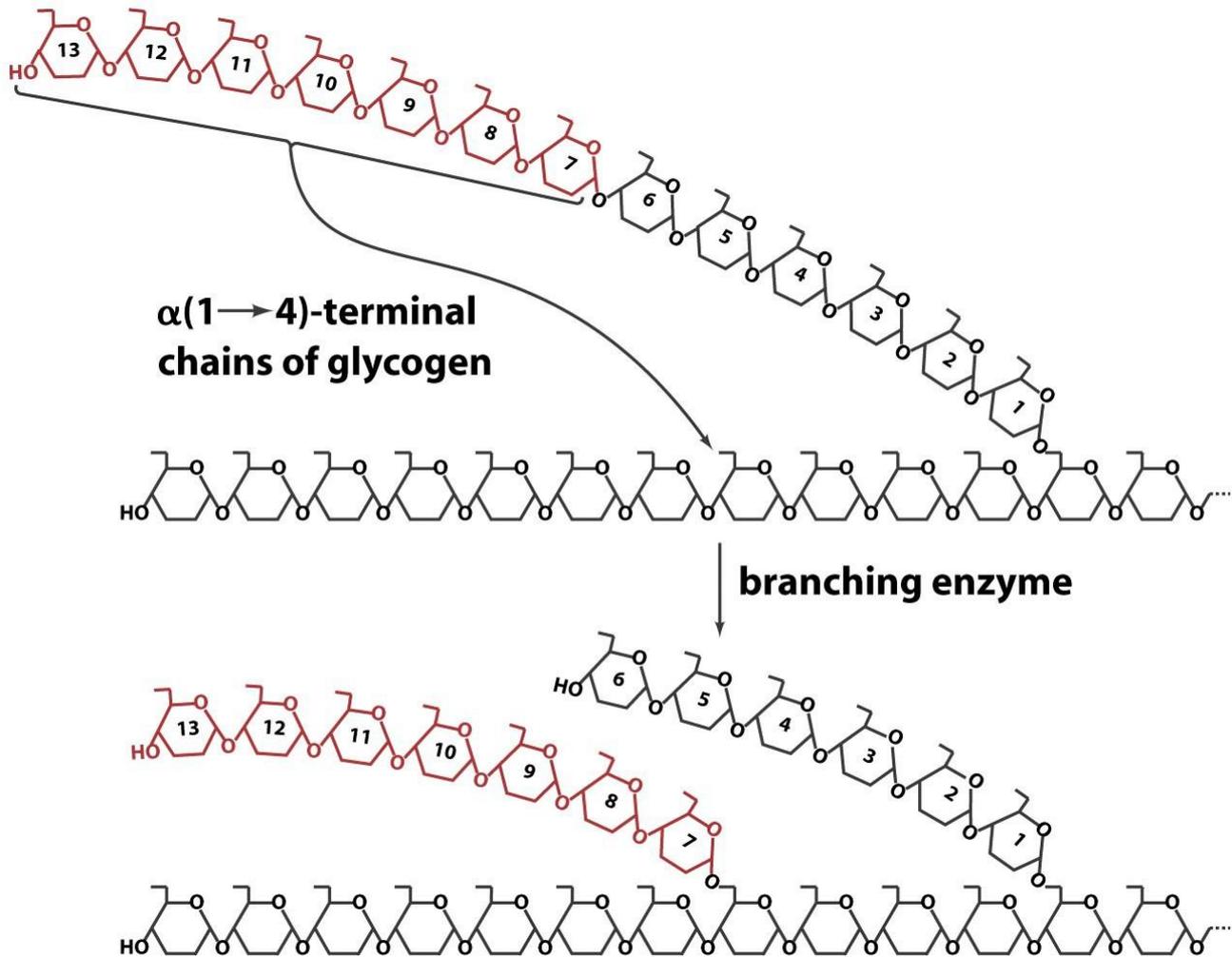
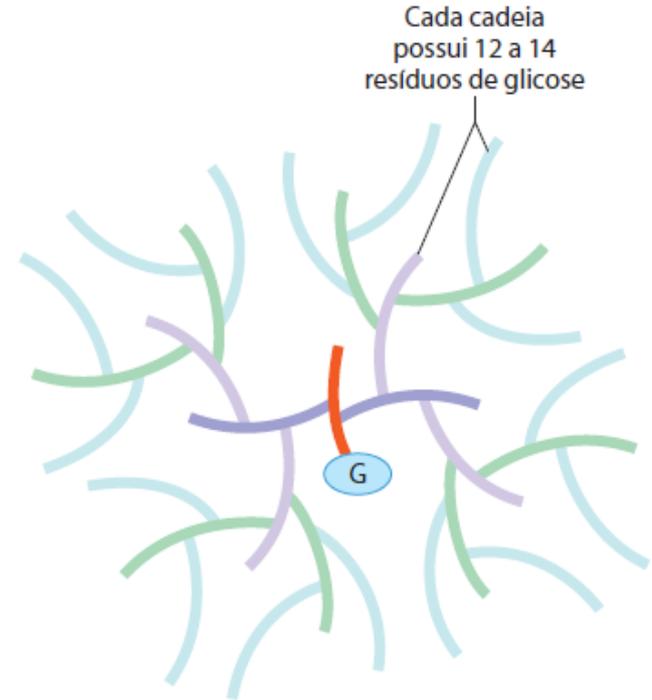
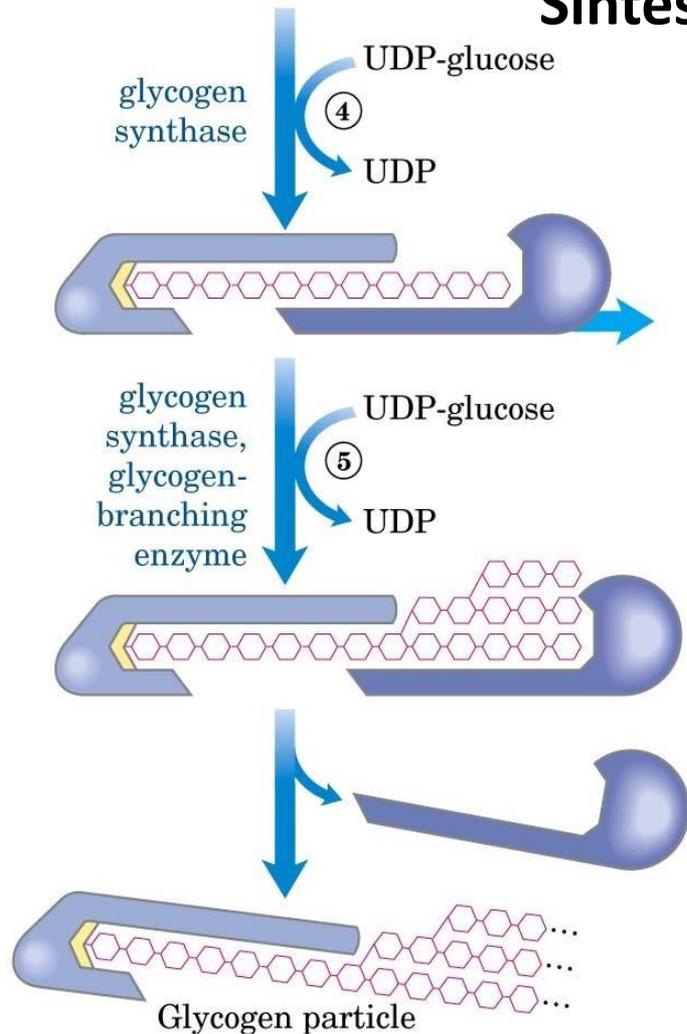
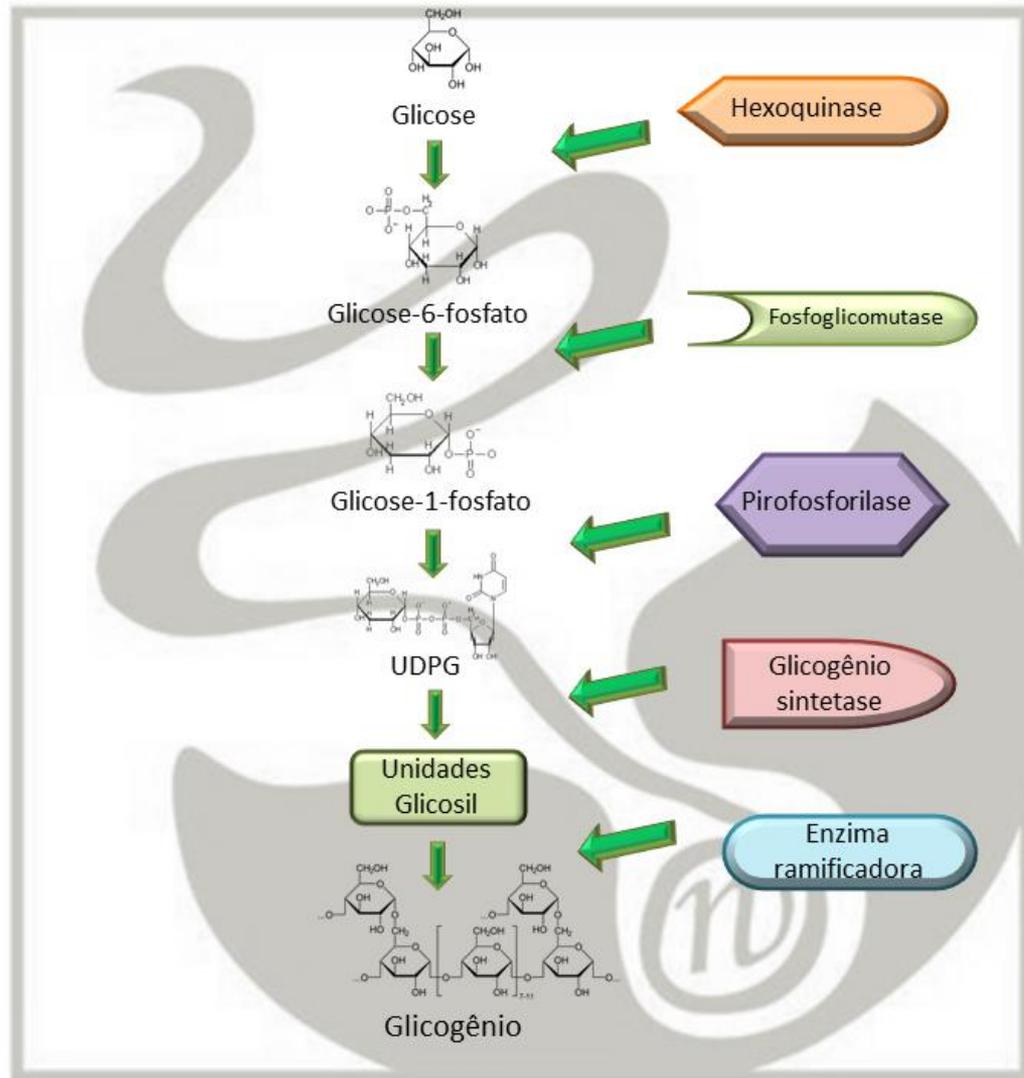
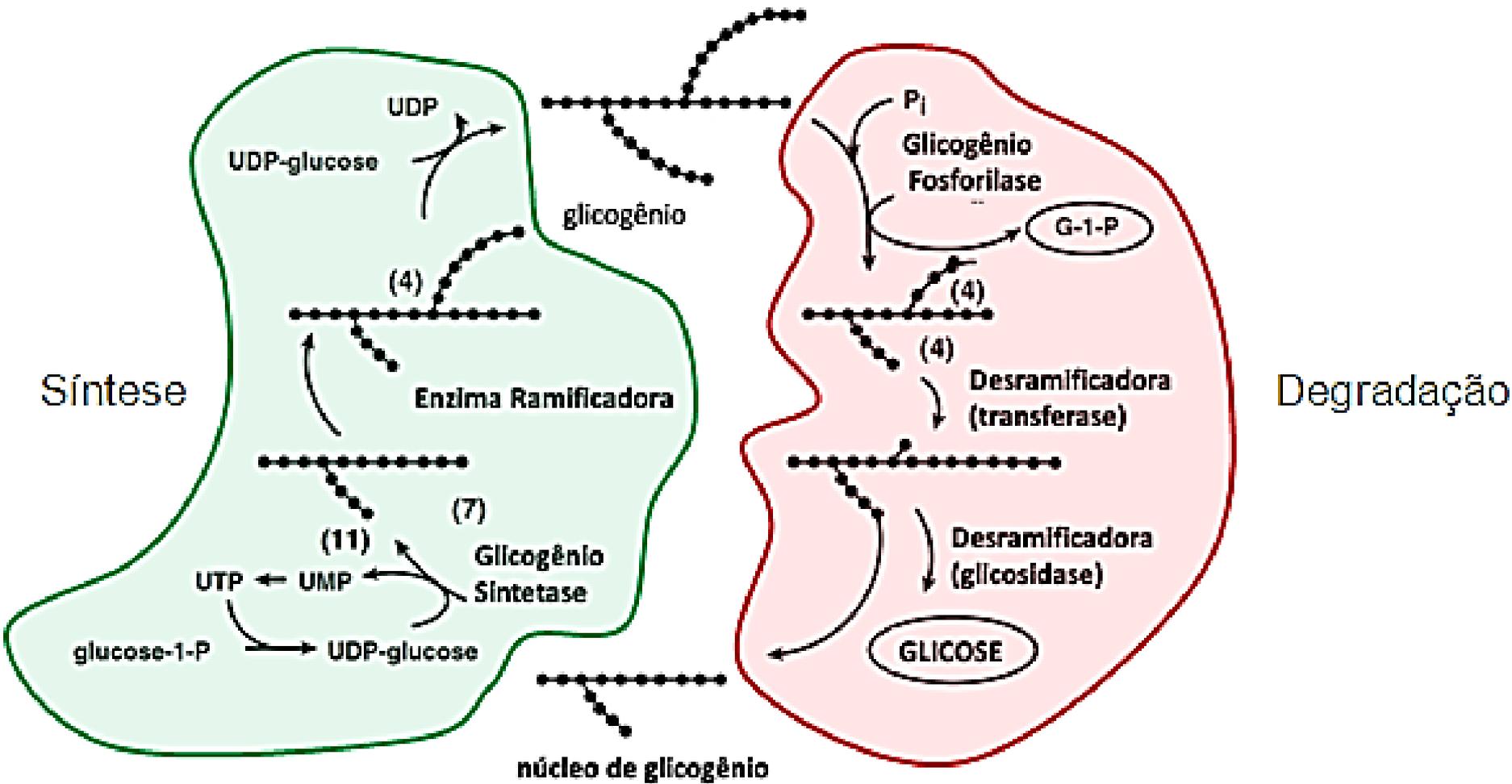


Figure 15-11 Fundamentals of Biochemistry, 2/e
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Síntese do Glicogênio - Ramificação



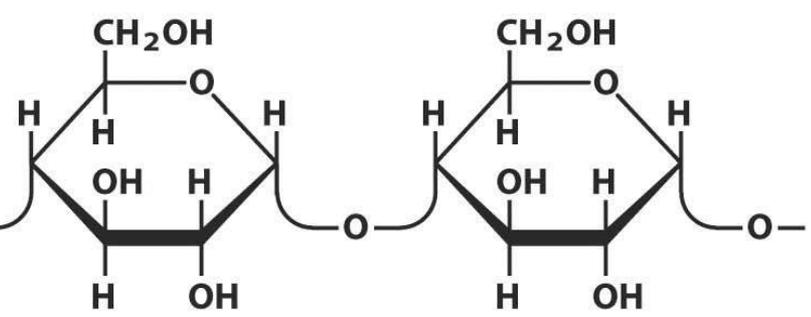
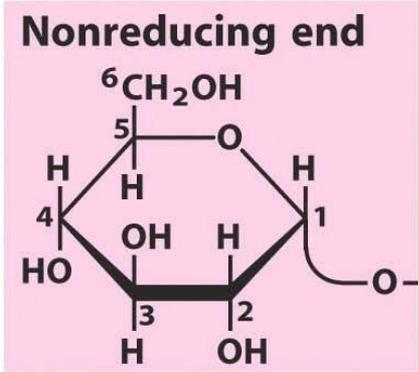




Síntese

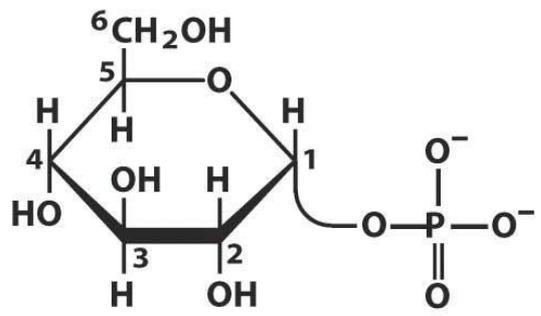
Degradação

núcleo de glicogênio

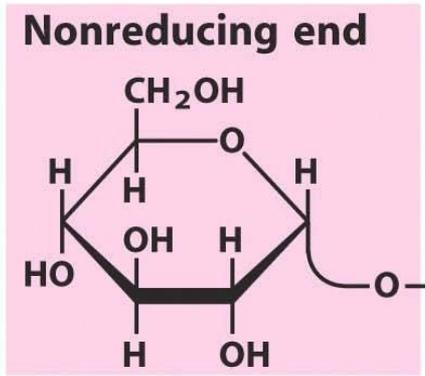


P_i **glycogen phosphorylase**

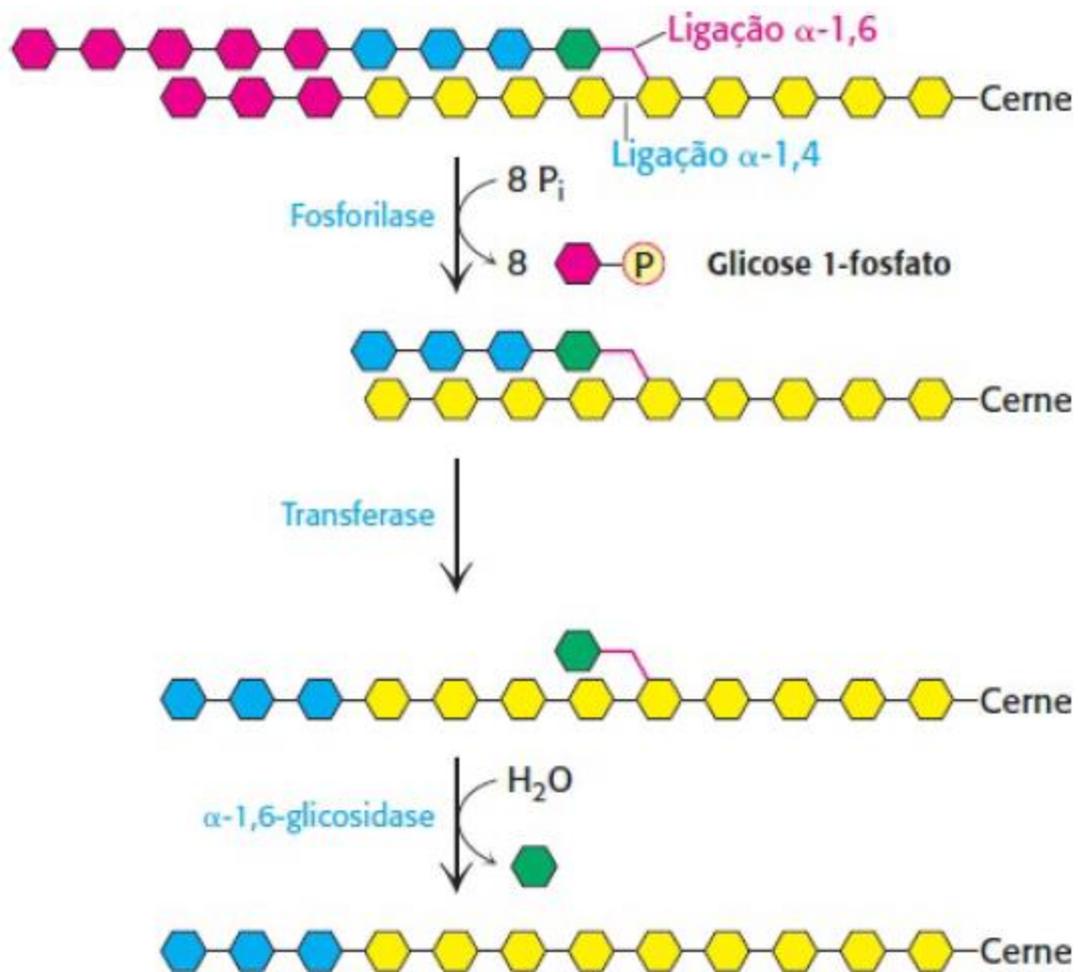
Glycogen chain
(glucose)_n

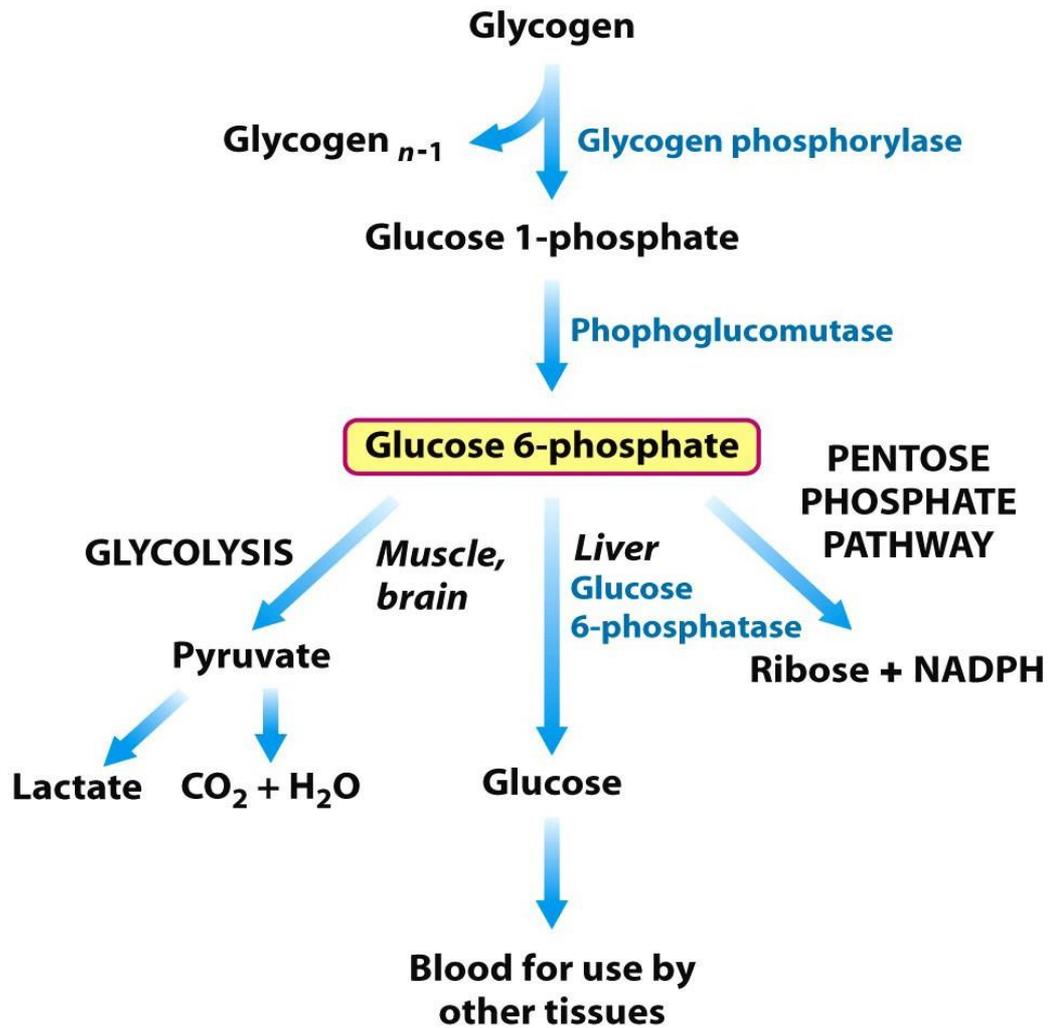


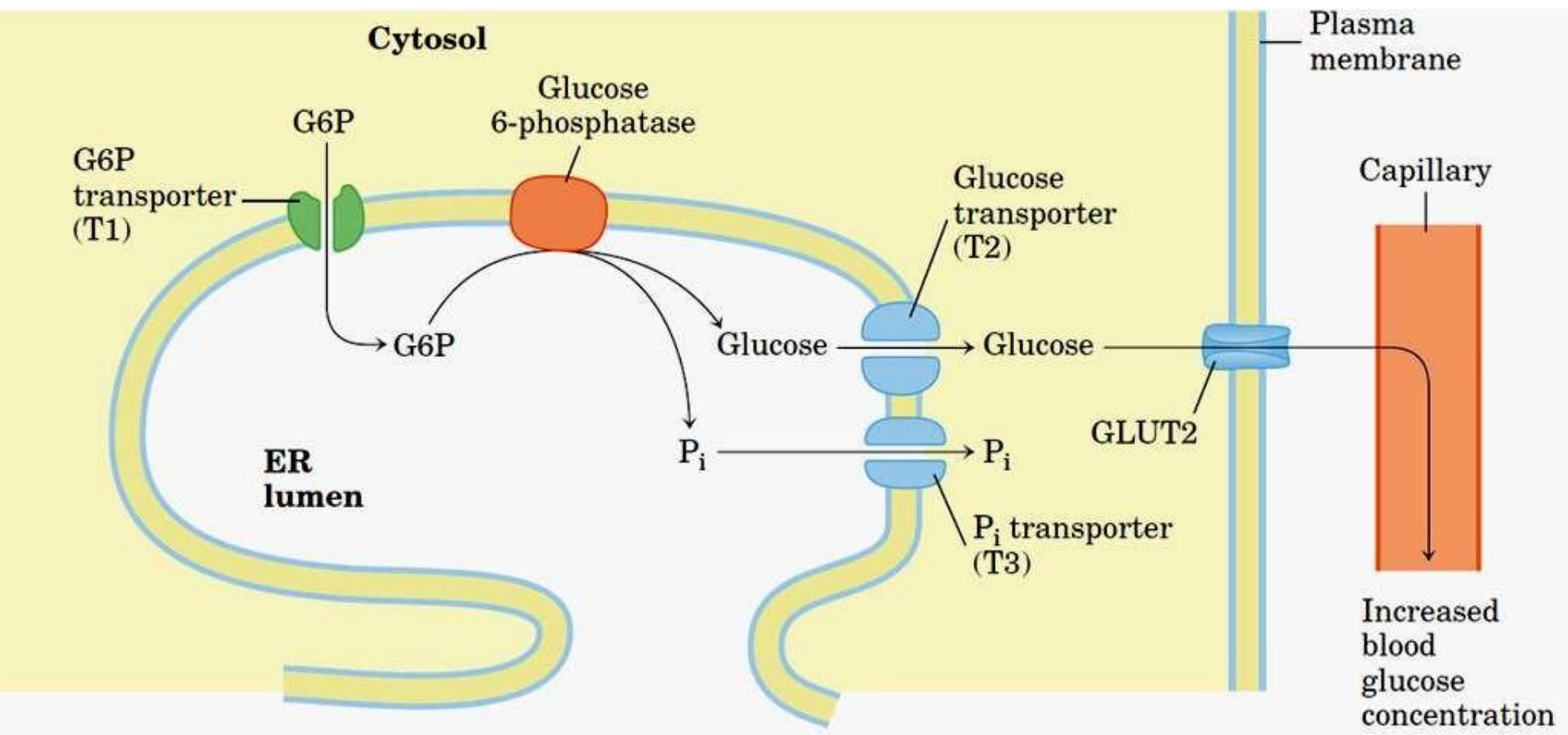
Glucose 1-phosphate

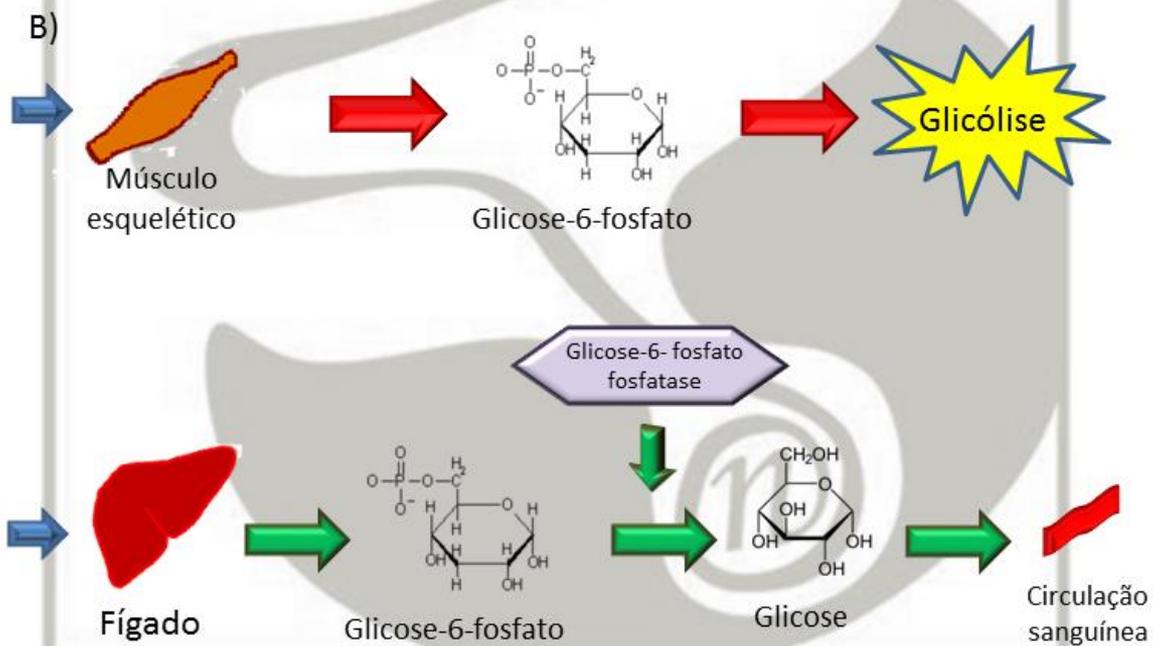
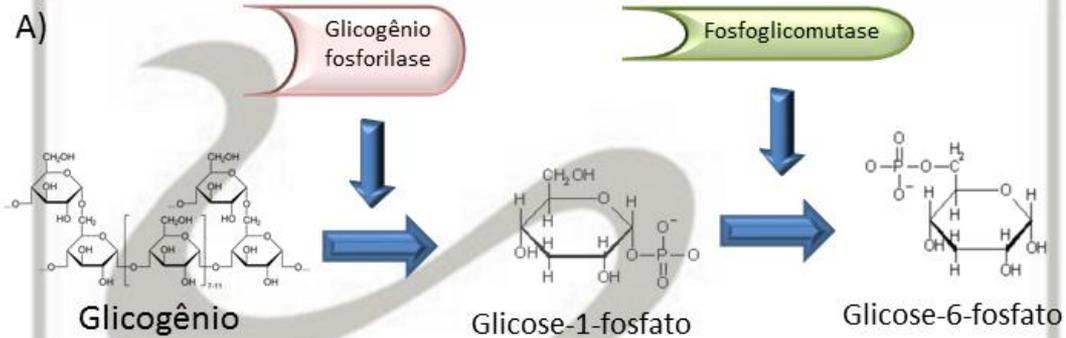


Glycogen shortened
by one residue
(glucose)_{n-1}









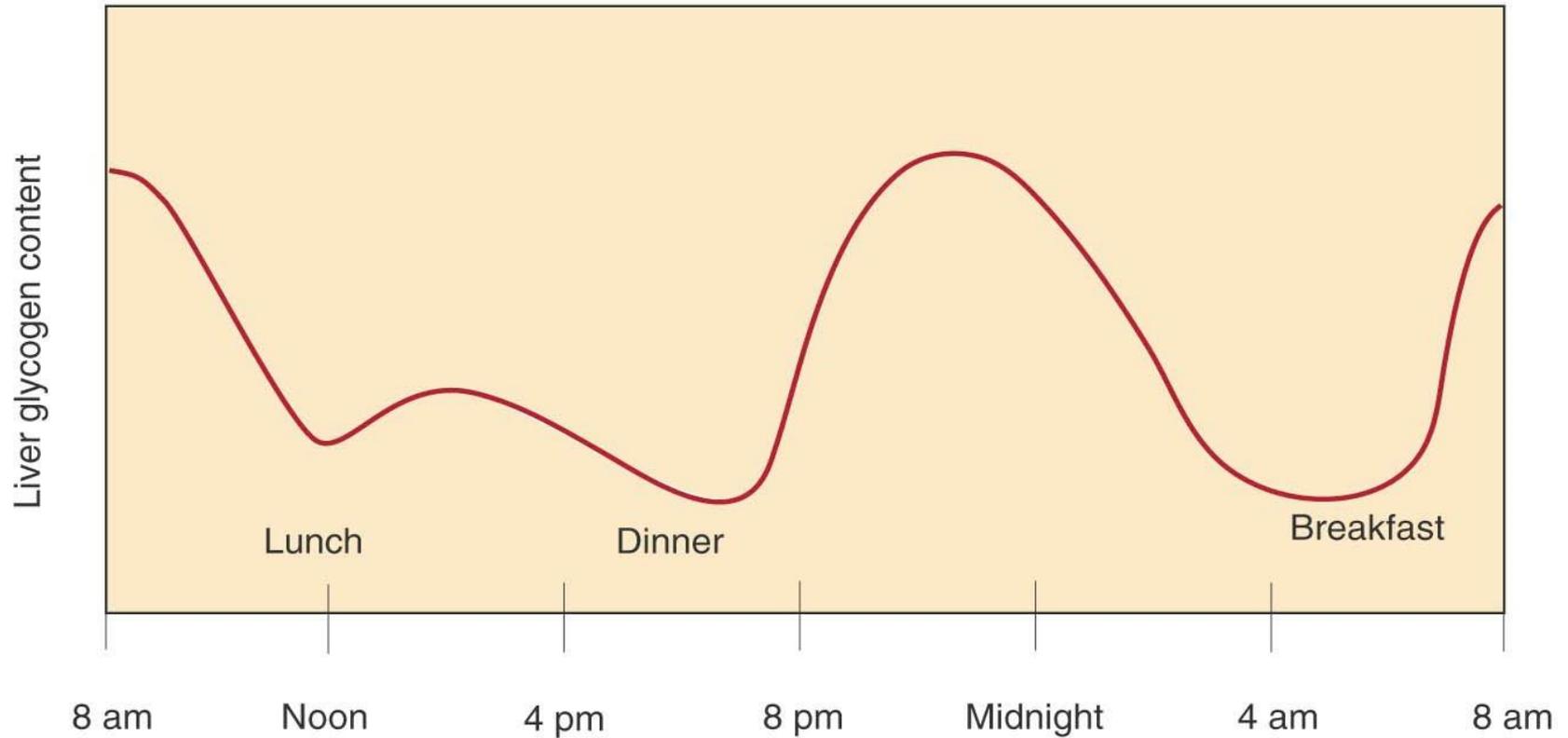


Figure 15.49. Variation of liver glycogen content between meals and during the nocturnal fast.

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