

M U N I
S C I

C5730 Biochemie - seminář

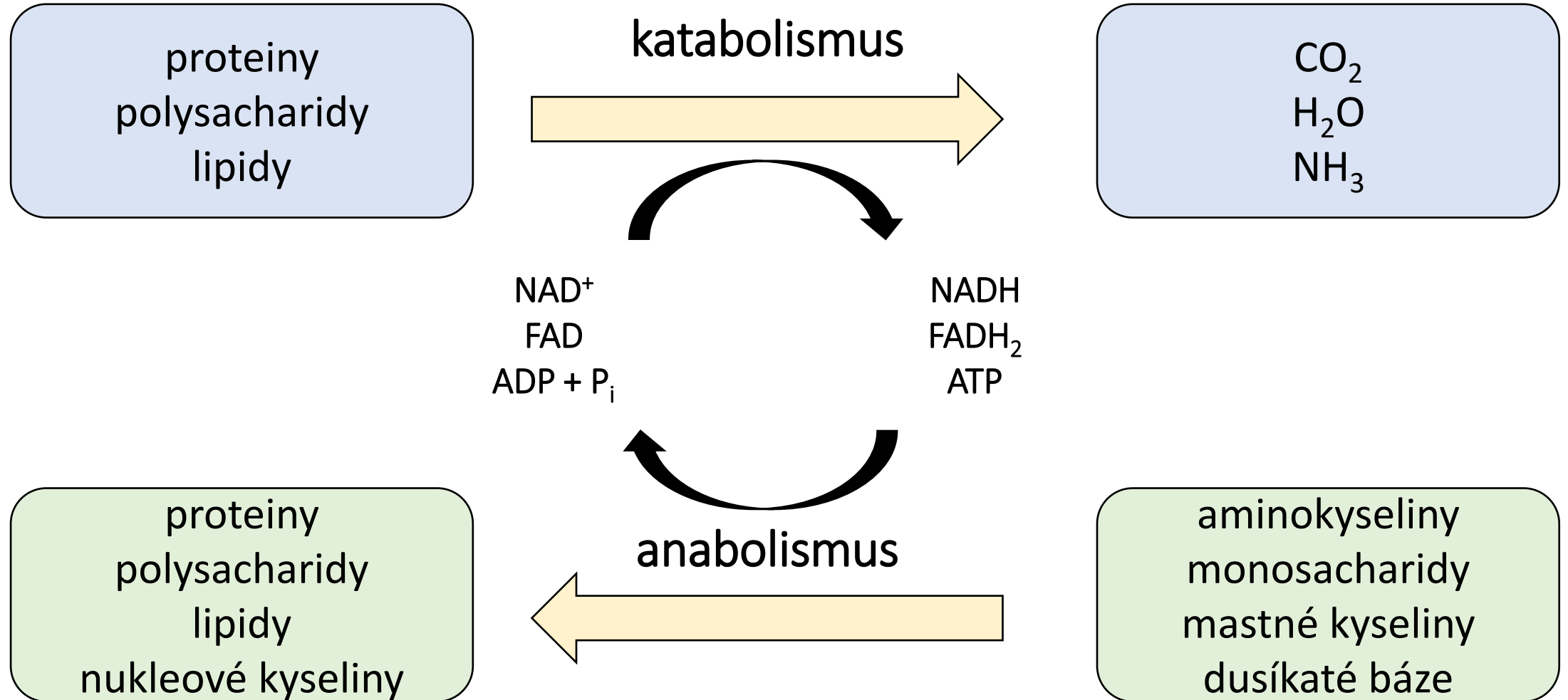
Mgr. Lukáš Faltinek

podzim 2024

M U N I
S C I

Glykolýza

METABOLISMUS



METABOLIC PATHWAYS

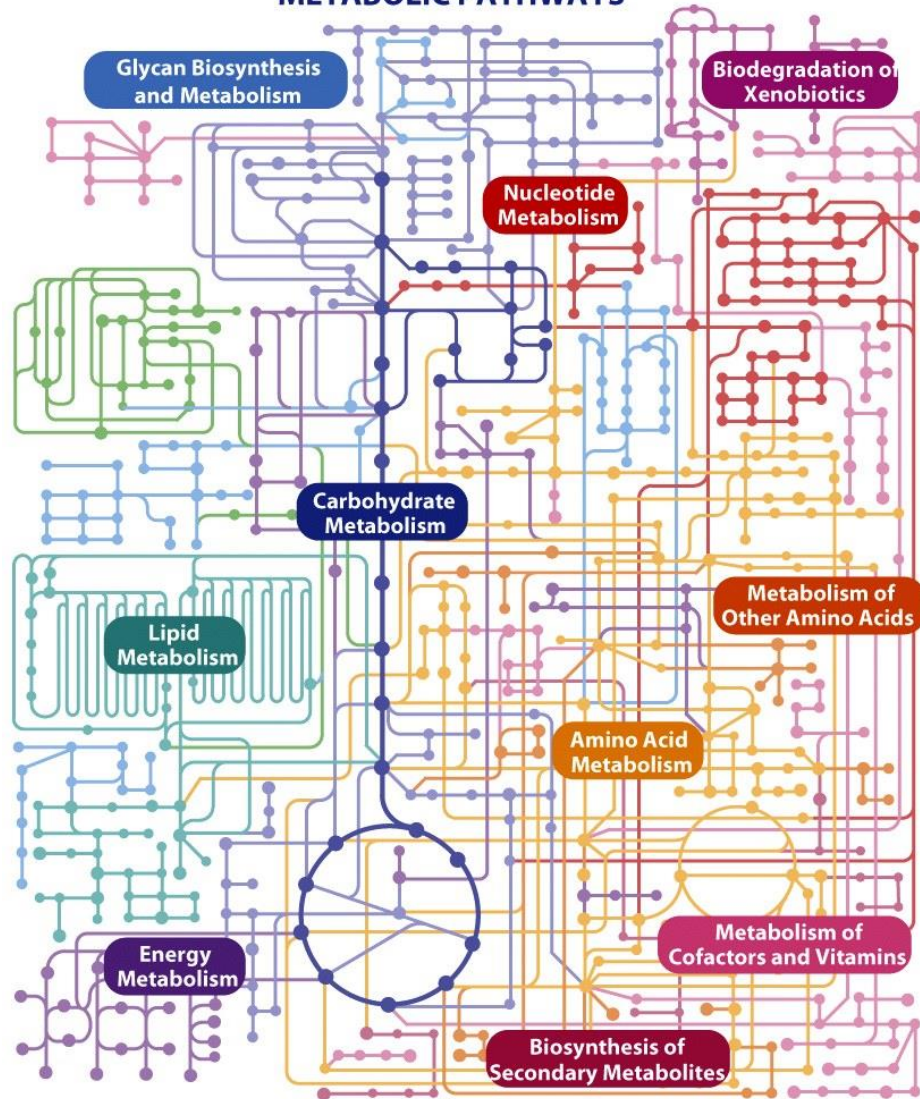
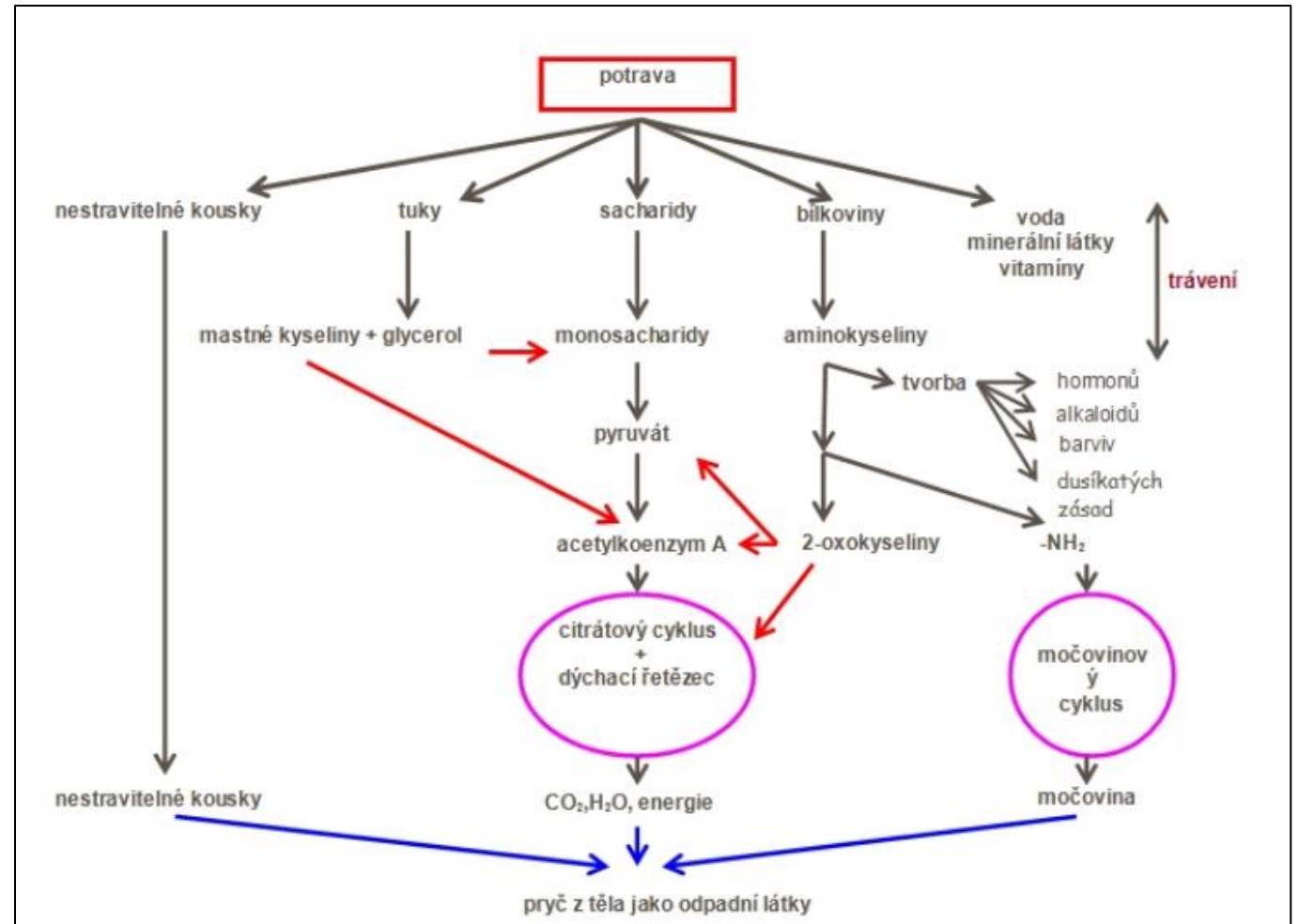
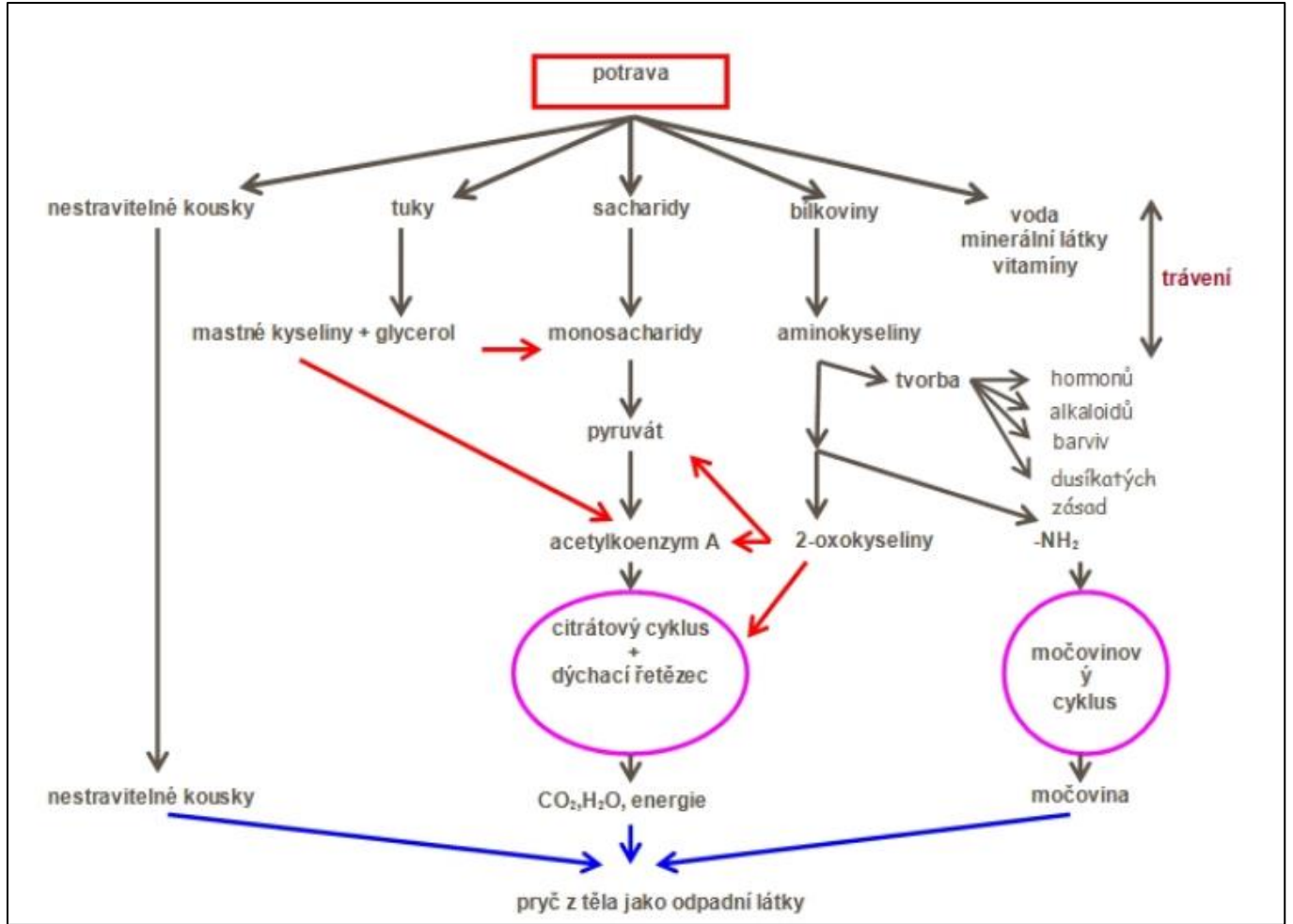
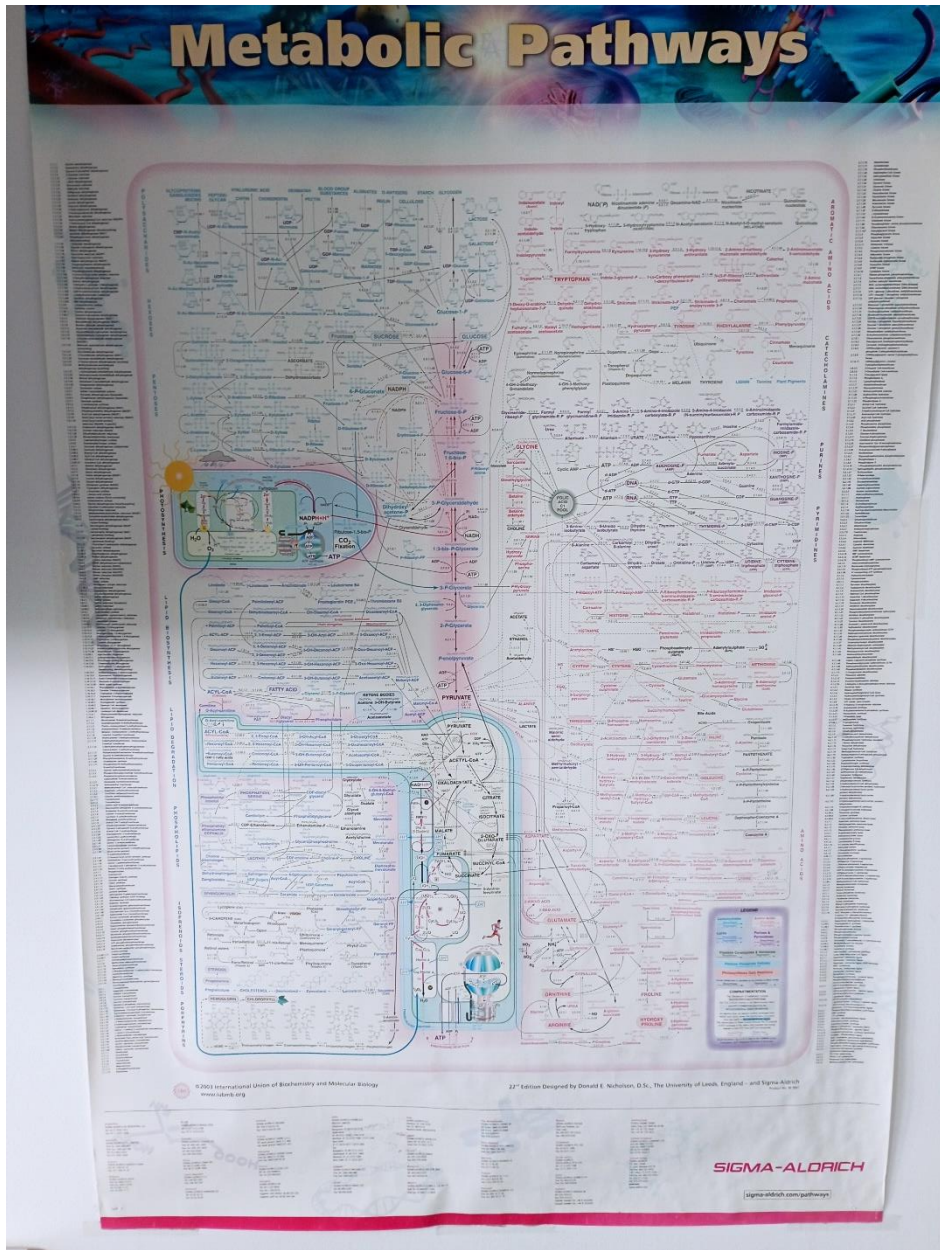


Figure 15-1
Lehninger Principles of Biochemistry, Fifth Edition
 © 2008 W. H. Freeman and Company



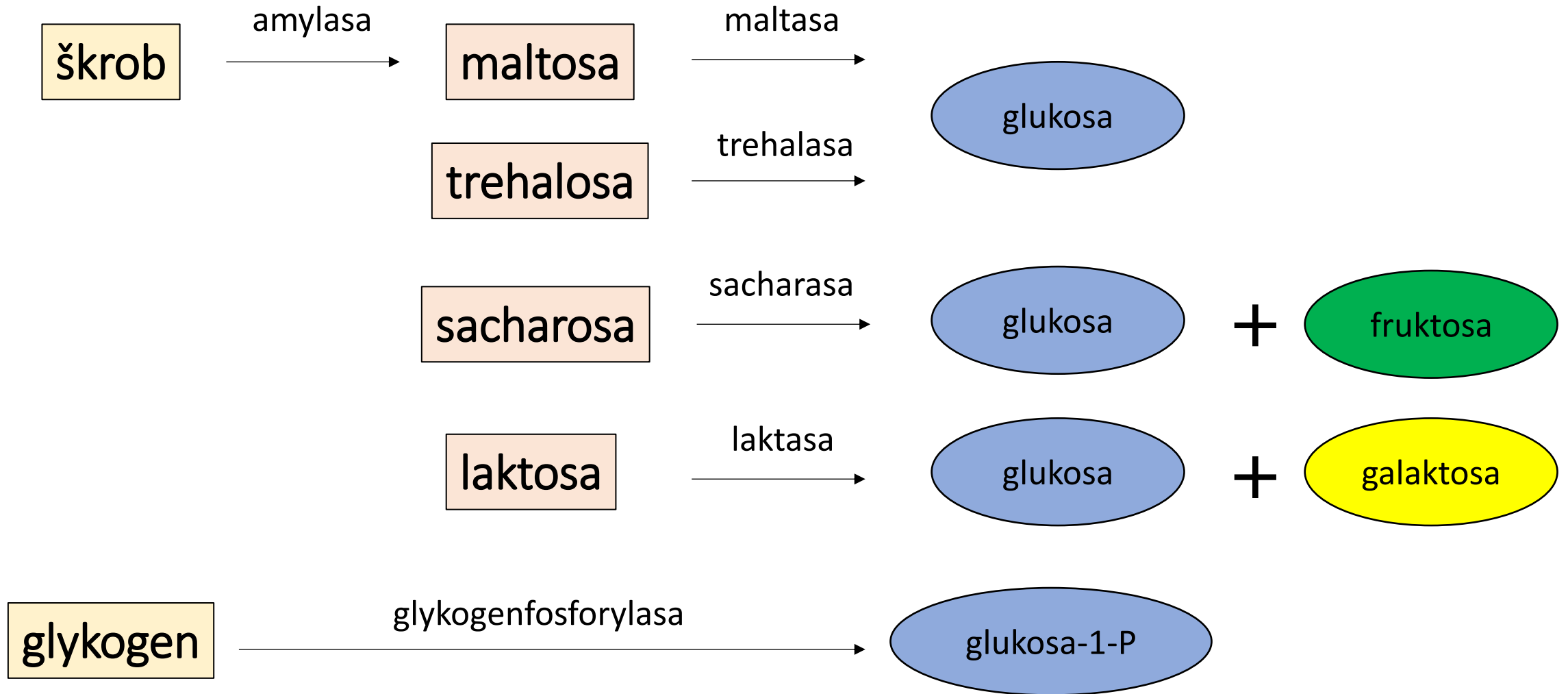
<http://www.studiumbiochemie.cz/metabolismus>

Metabolic Pathways

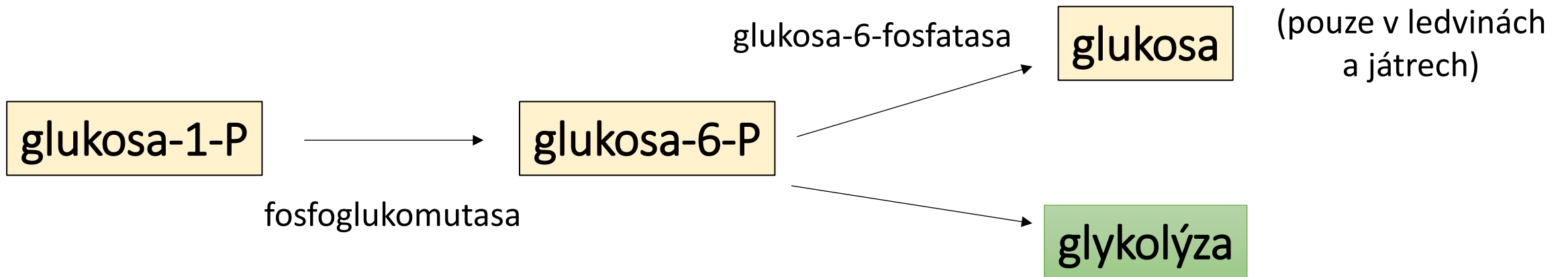
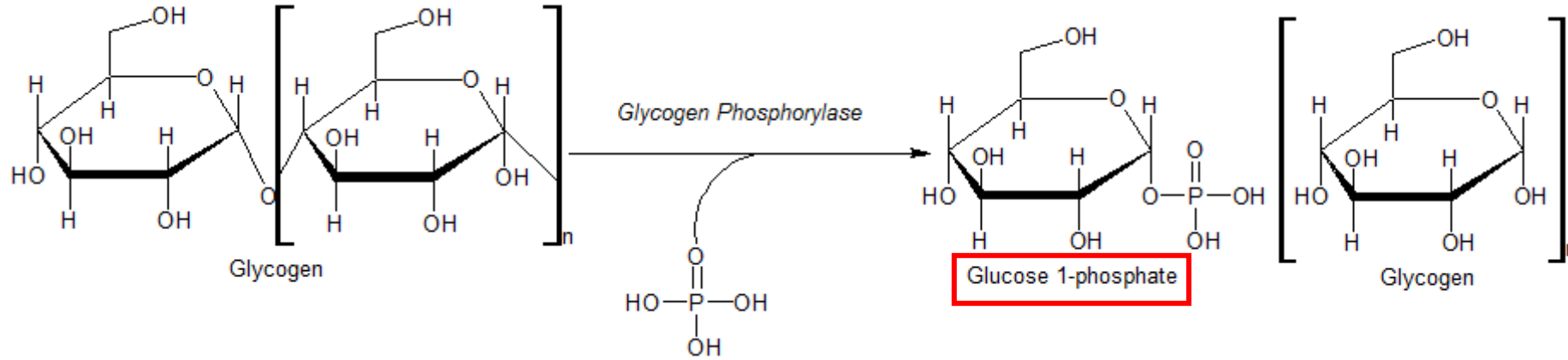


<http://www.studiumbiochemie.cz/metabolismus>

Trávení sacharidů



Glykogenolýza



Glykolýza

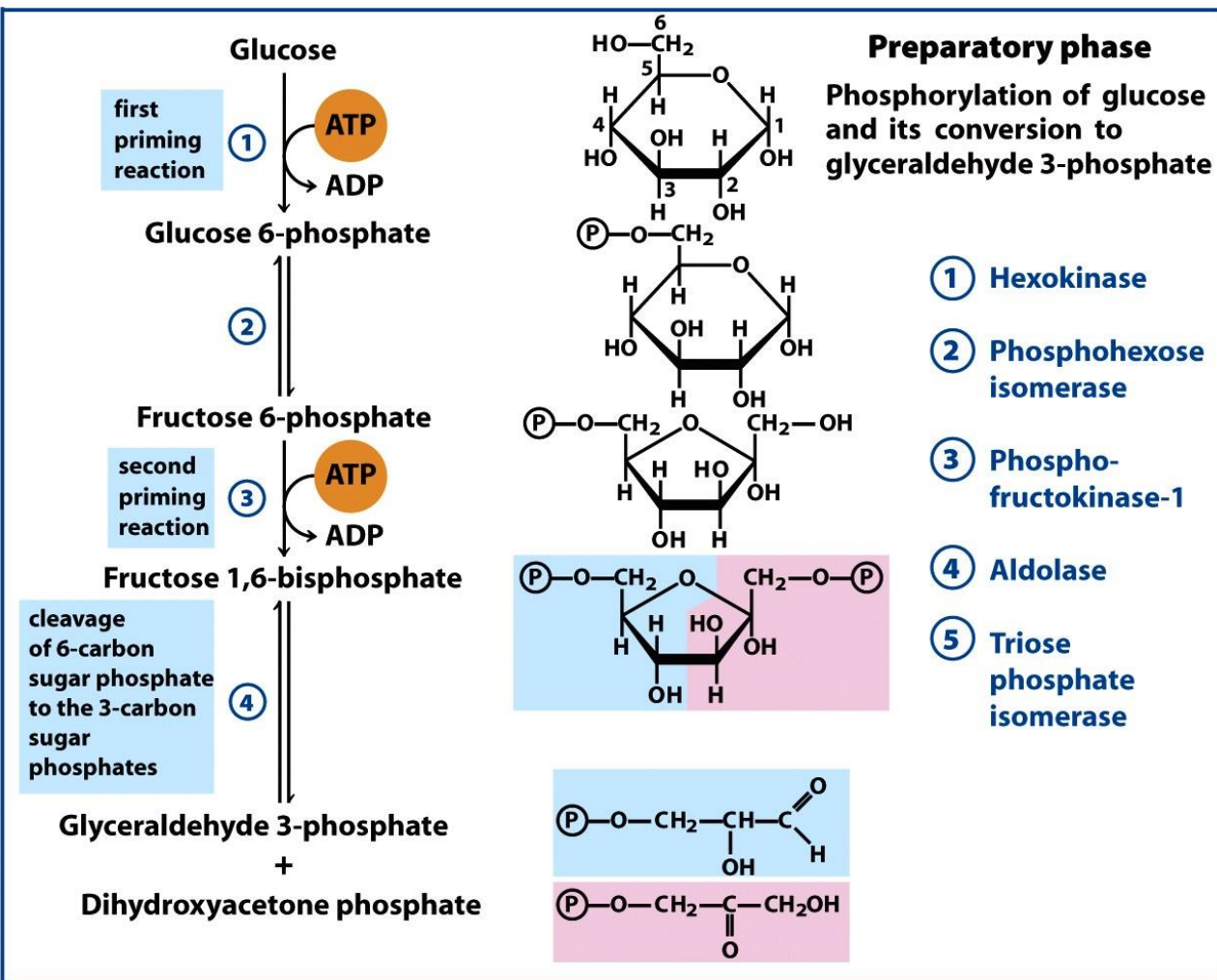


Figure 14-2a
Lehninger Principles of Biochemistry, Fifth Edition
© 2008 W. H. Freeman and Company

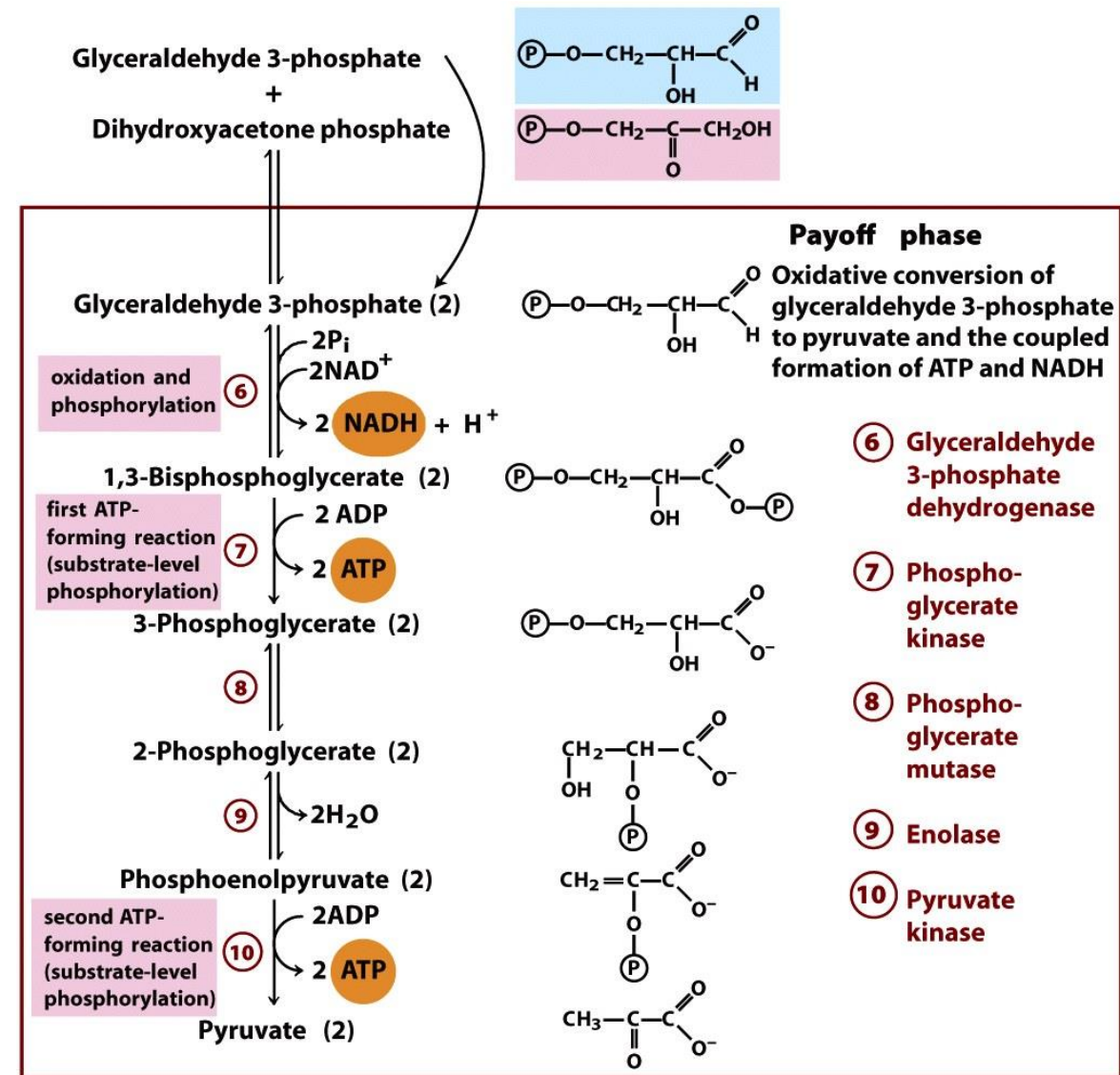
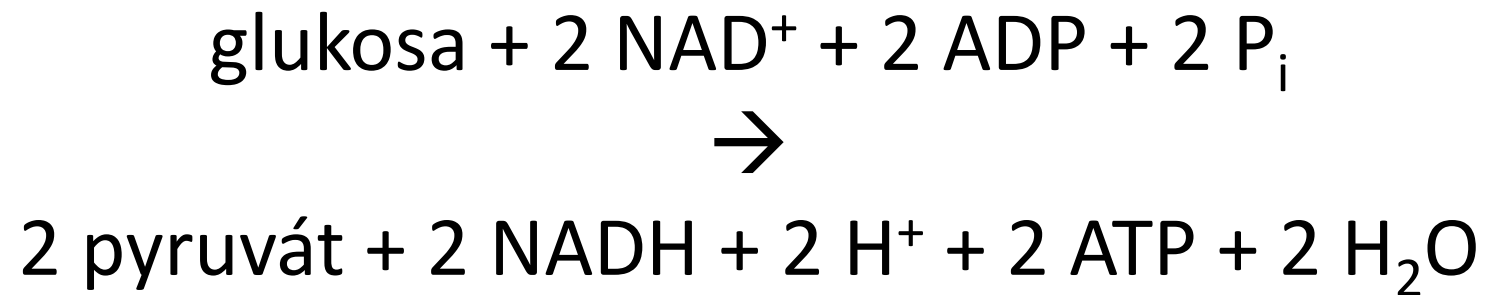


Figure 14-2b
Lehninger Principles of Biochemistry, Fifth Edition
© 2008 W. H. Freeman and Company

Souhrnná rovnice glykolýzy



Co se děje s dalšími významnými monosacharidy?

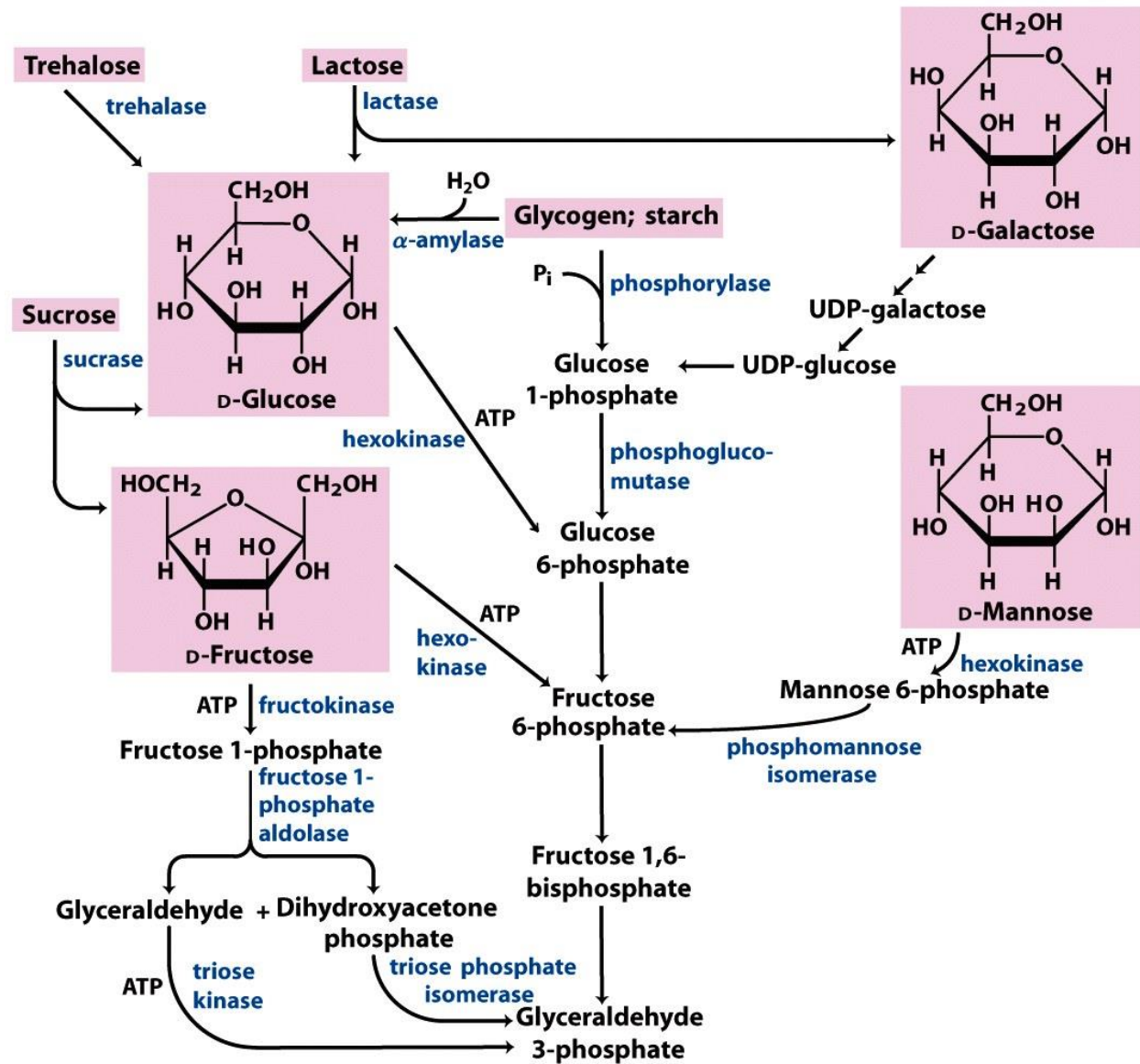


Figure 14-10
 Lehninger Principles of Biochemistry, Fifth Edition
 © 2008 W. H. Freeman and Company

Oxidační dekarboxylace

- enzymatický komplex pyruvátdehydrogenasa katalyzuje rozklad pyruvátu na CO_2 a acetyl-CoA

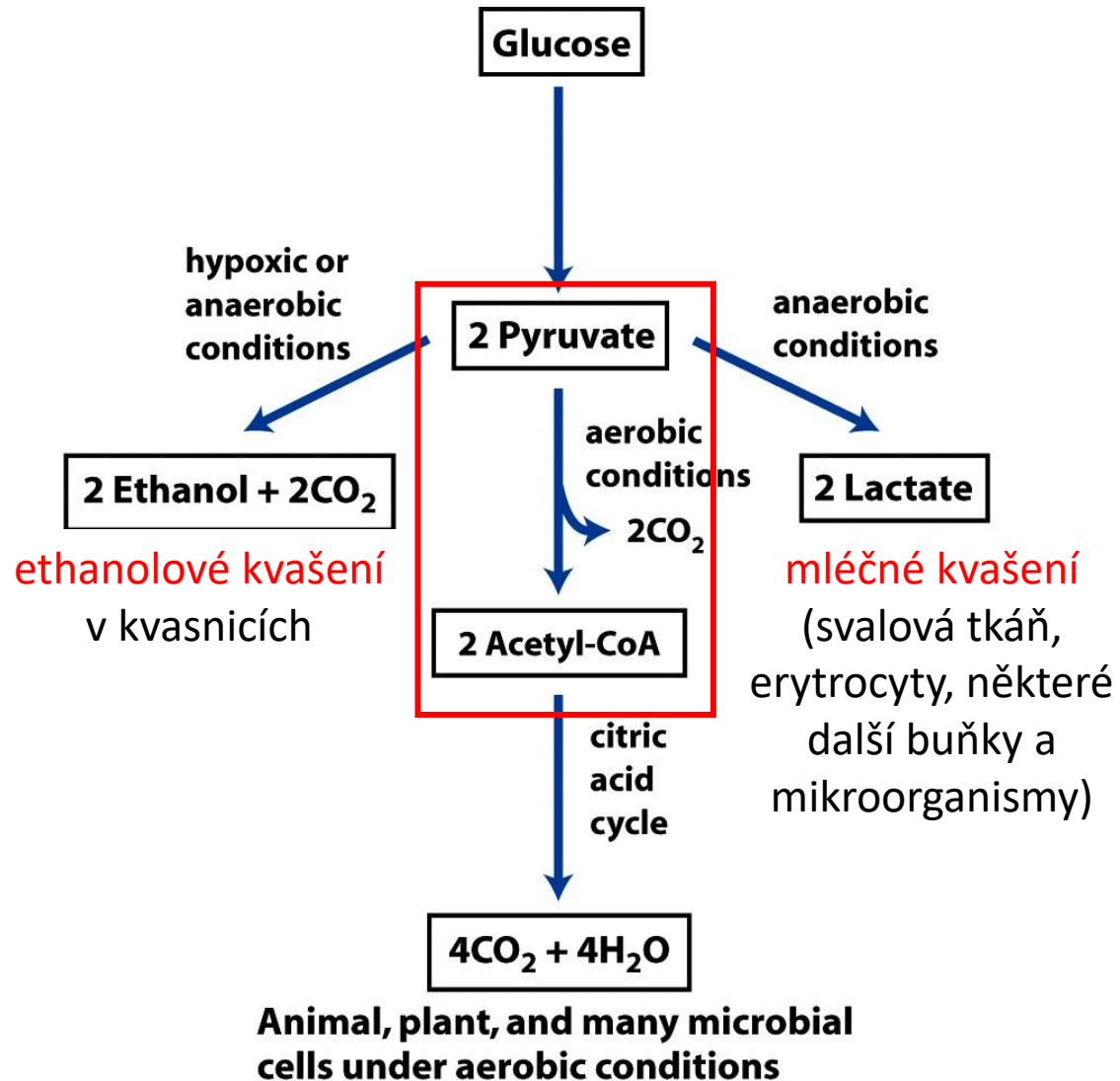
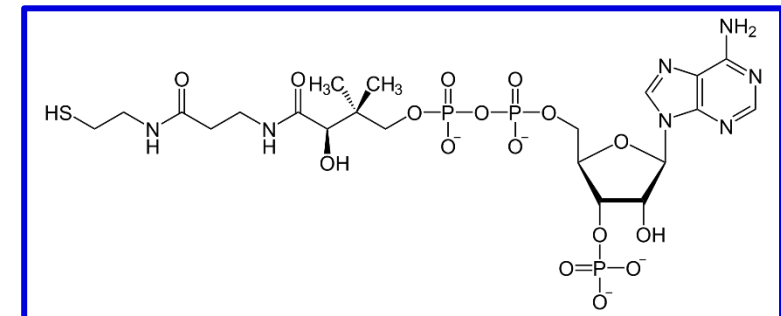
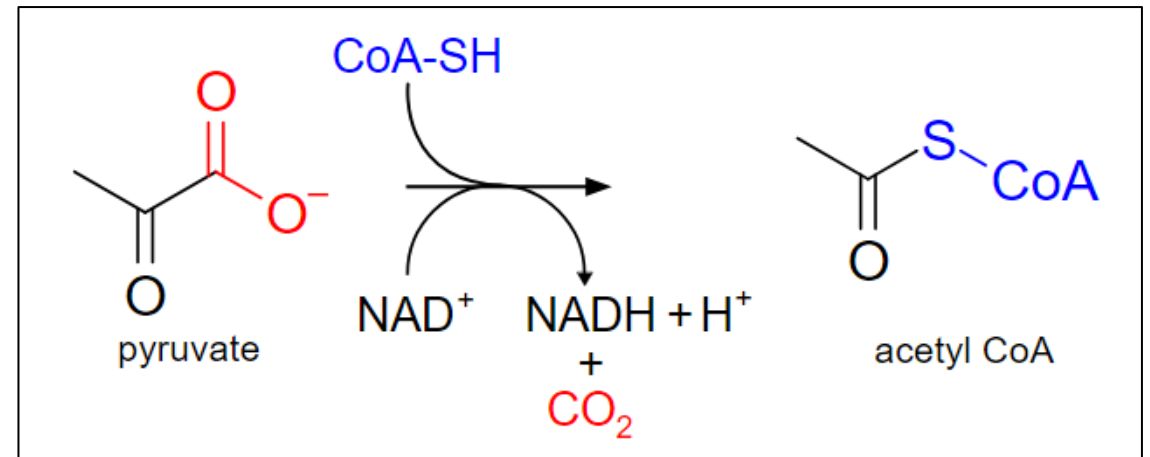
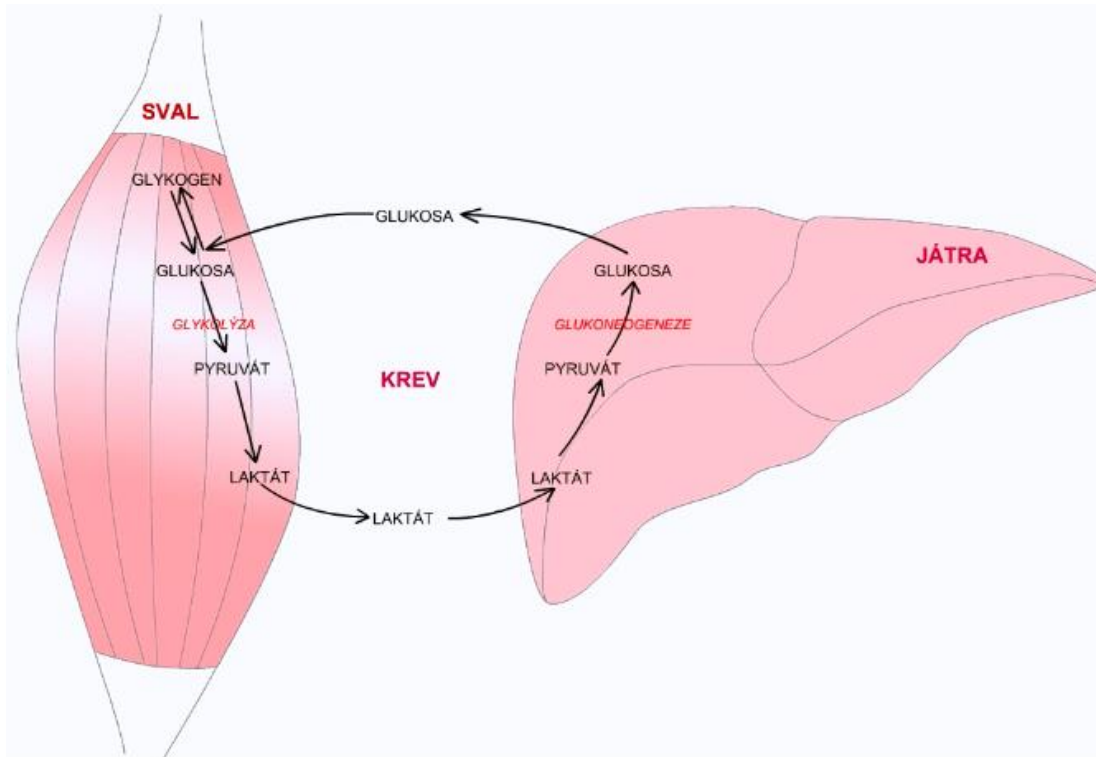


Figure 14-3
Lehninger Principles of Biochemistry, Fifth Edition
© 2008 W. H. Freeman and Company



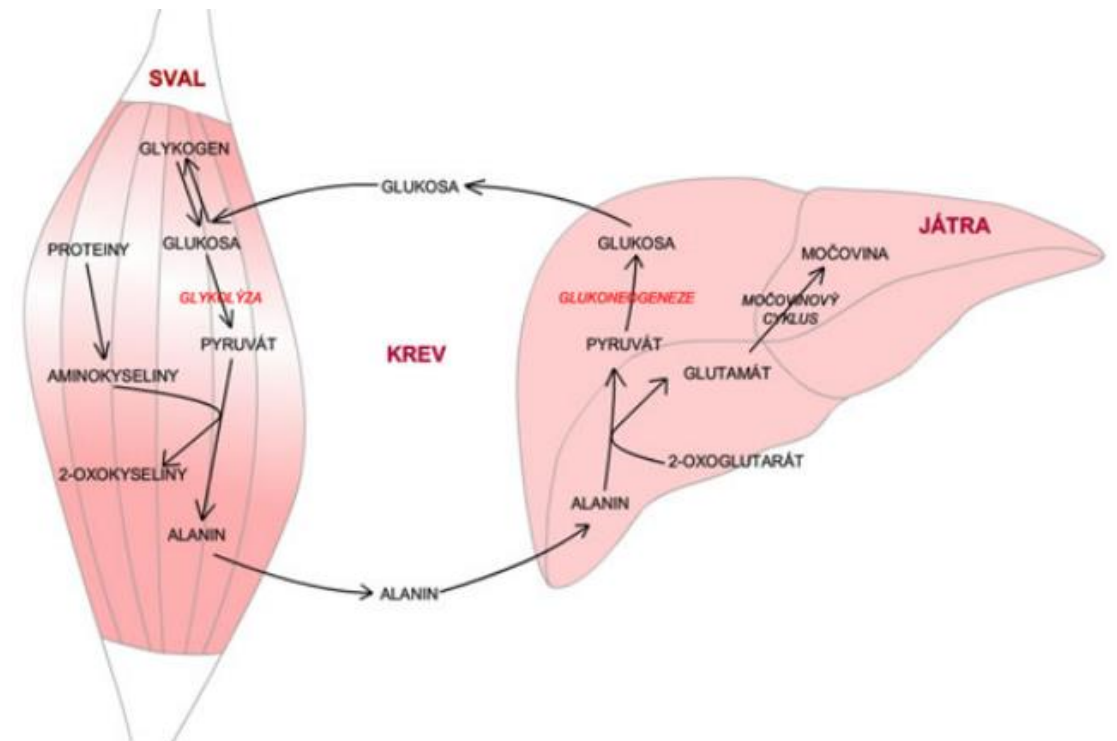
Coriho cyklus

- při nedostatku kyslíku se pyruvát odbourává na **laktát**, který se v játrech použije na syntézu glukosy



Alaninový cyklus

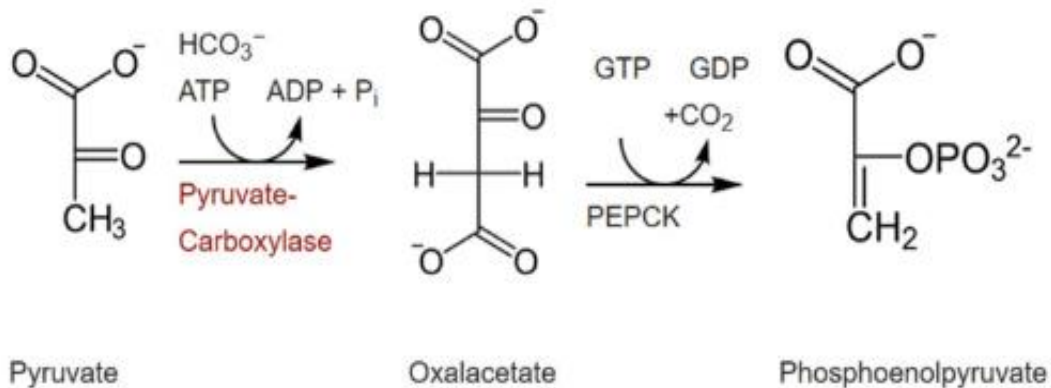
- při degradaci aminokyselin se pyruvát mění na **alanin**, který se v játrech použije na syntézu glukosy



Glukoneogeneze

- anabolická dráha vedoucí k syntéze glukosy
- principem opačná dráha ke glykolýze, ale kvůli energetickým bariérám některých reakcí se určité kroky liší

I. Tvorba fosfoenolpyruvátu



II. Tvorba fruktosa-6-P

- fosfofruktokinasa -> fruktosa-1,6-bisfosfatasa
- nevzniká ATP, pouze fosfát!

III. Tvorba glukosy

- hexokinasa/glukokinasa -> glukosa-6-fosfatasa
- nevzniká ATP, pouze fosfát!

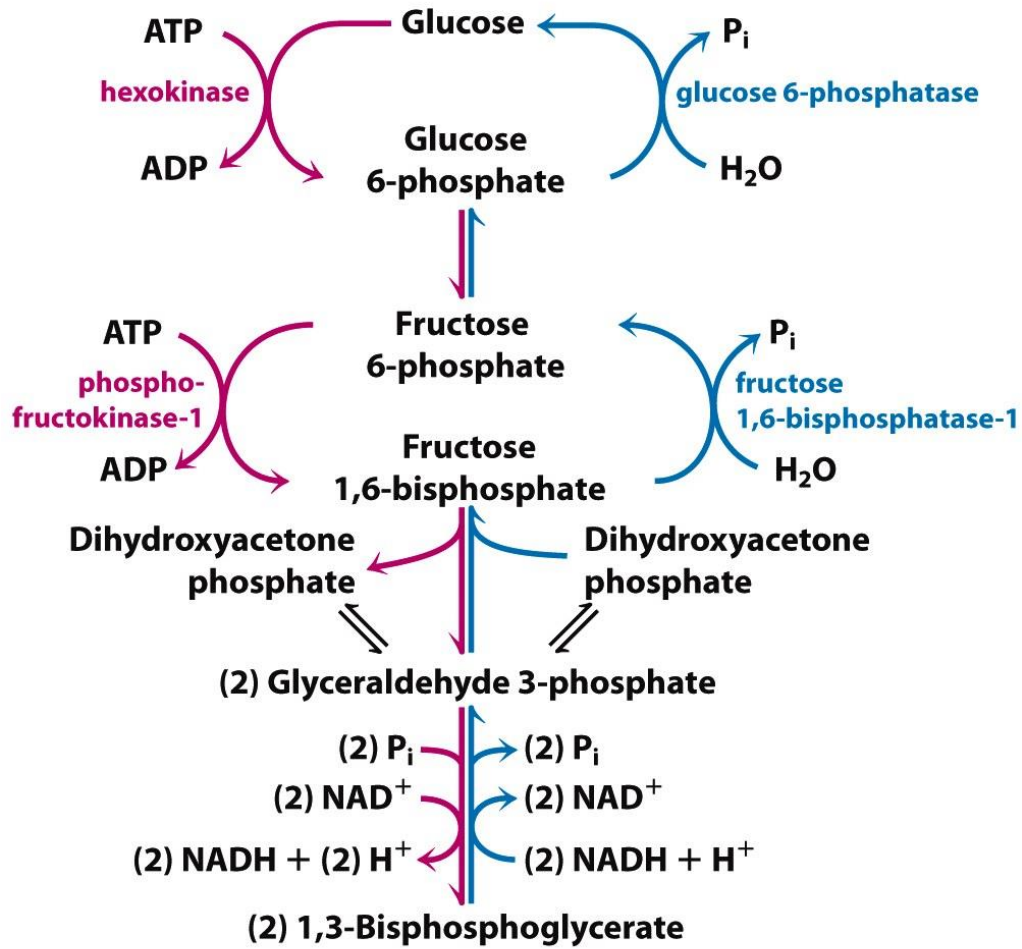
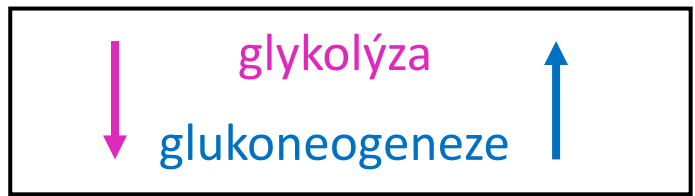


Figure 14-16 part 1
Lehninger Principles of Biochemistry, Fifth Edition
© 2008 W. H. Freeman and Company

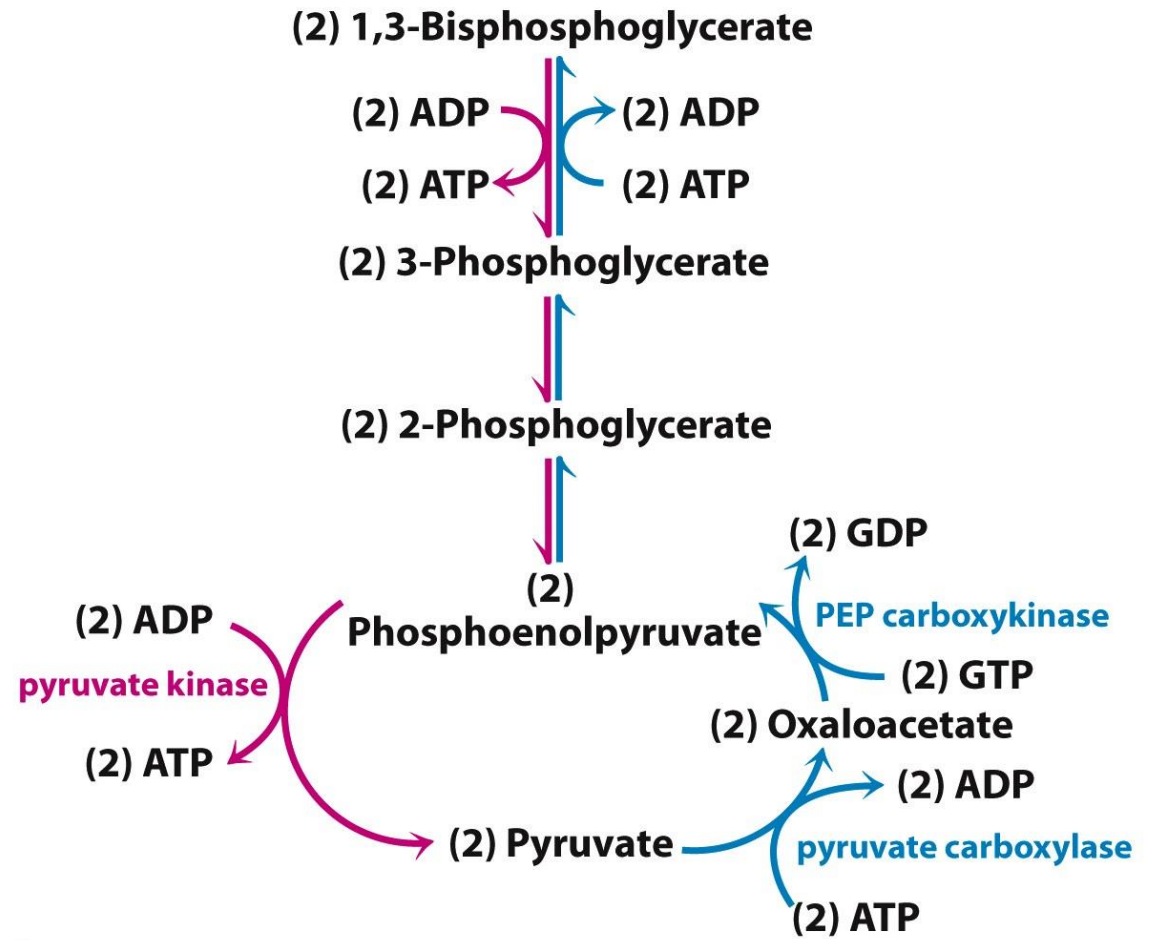
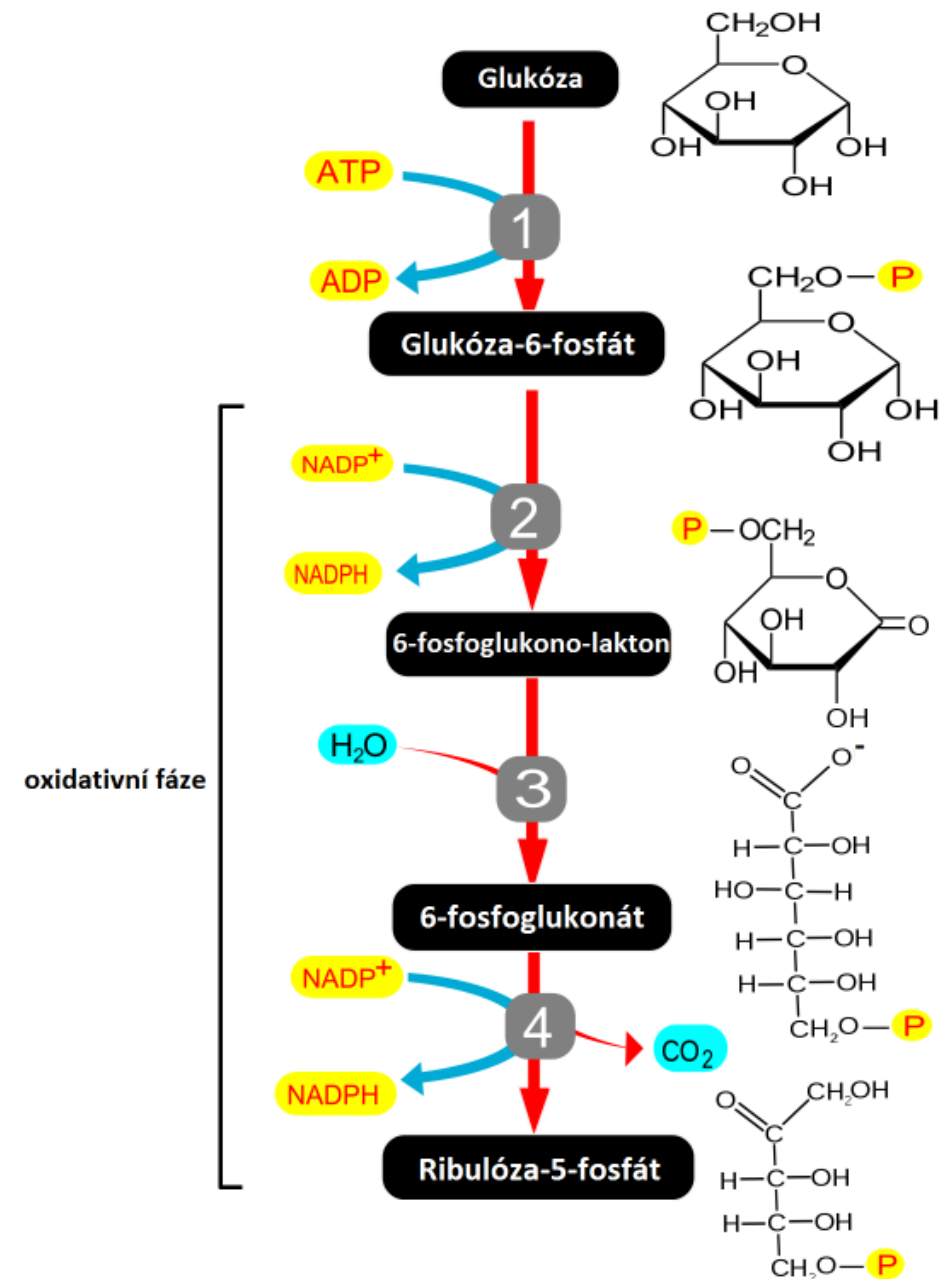
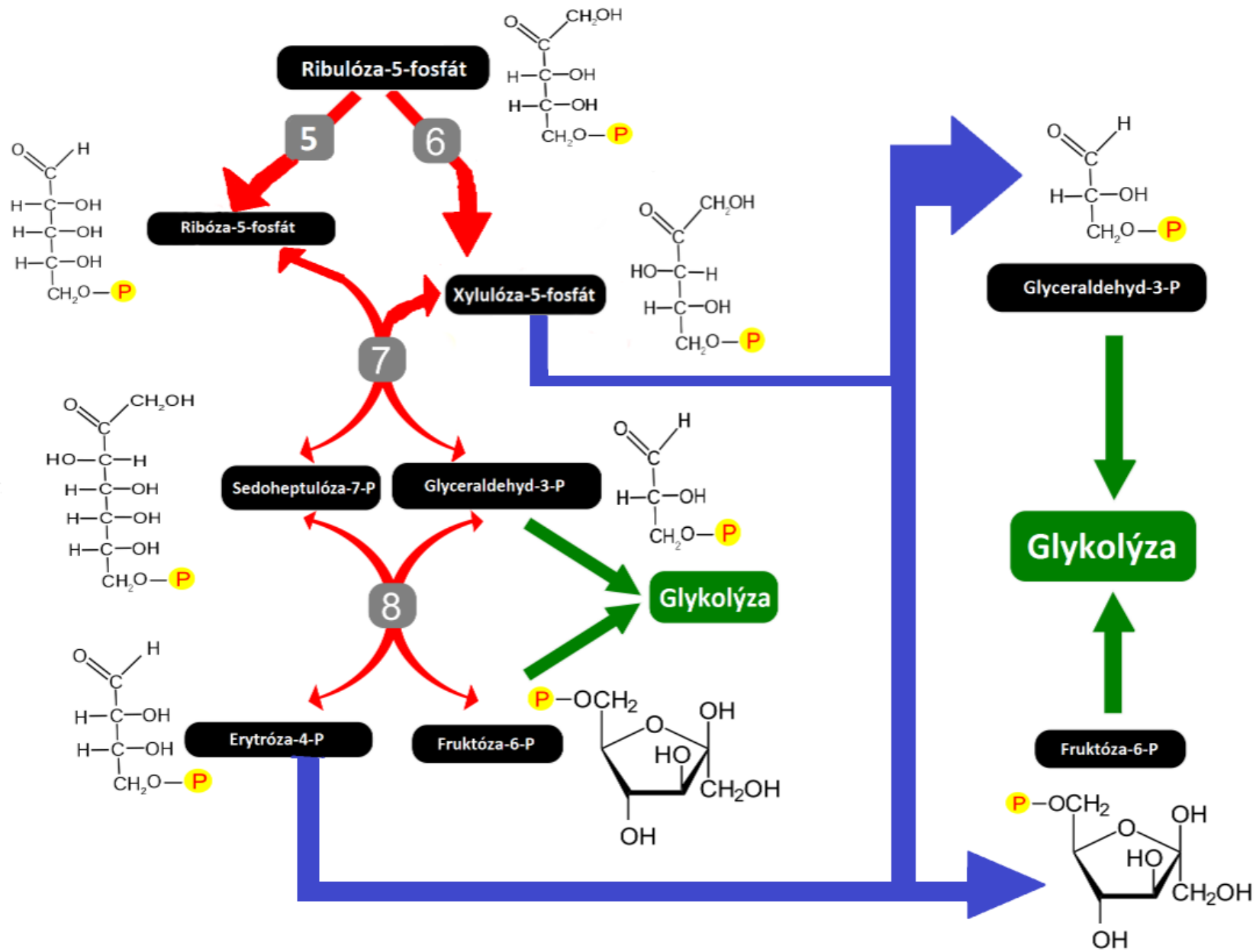


Figure 14-16 part 2
Lehninger Principles of Biochemistry, Fifth Edition
© 2008 W. H. Freeman and Company

Pentosofosfátový cyklus

- alternativní katabolická dráha vedoucí k odbourávání glukosy
- v **oxidativní fázi** vznik NADPH (slouží v syntéze MK a steroidů)
- v další fázi vznik pentos (ribosa → syntéza DNA a RNA)





Funkce insulínu

- antagonist glukagonu
- aktivuje glykolýzu a inhibuje glykogenolýzu
- insulín vazbou na receptory spustí kaskádu reakcí vedoucí k aktivaci glukosových transportérů

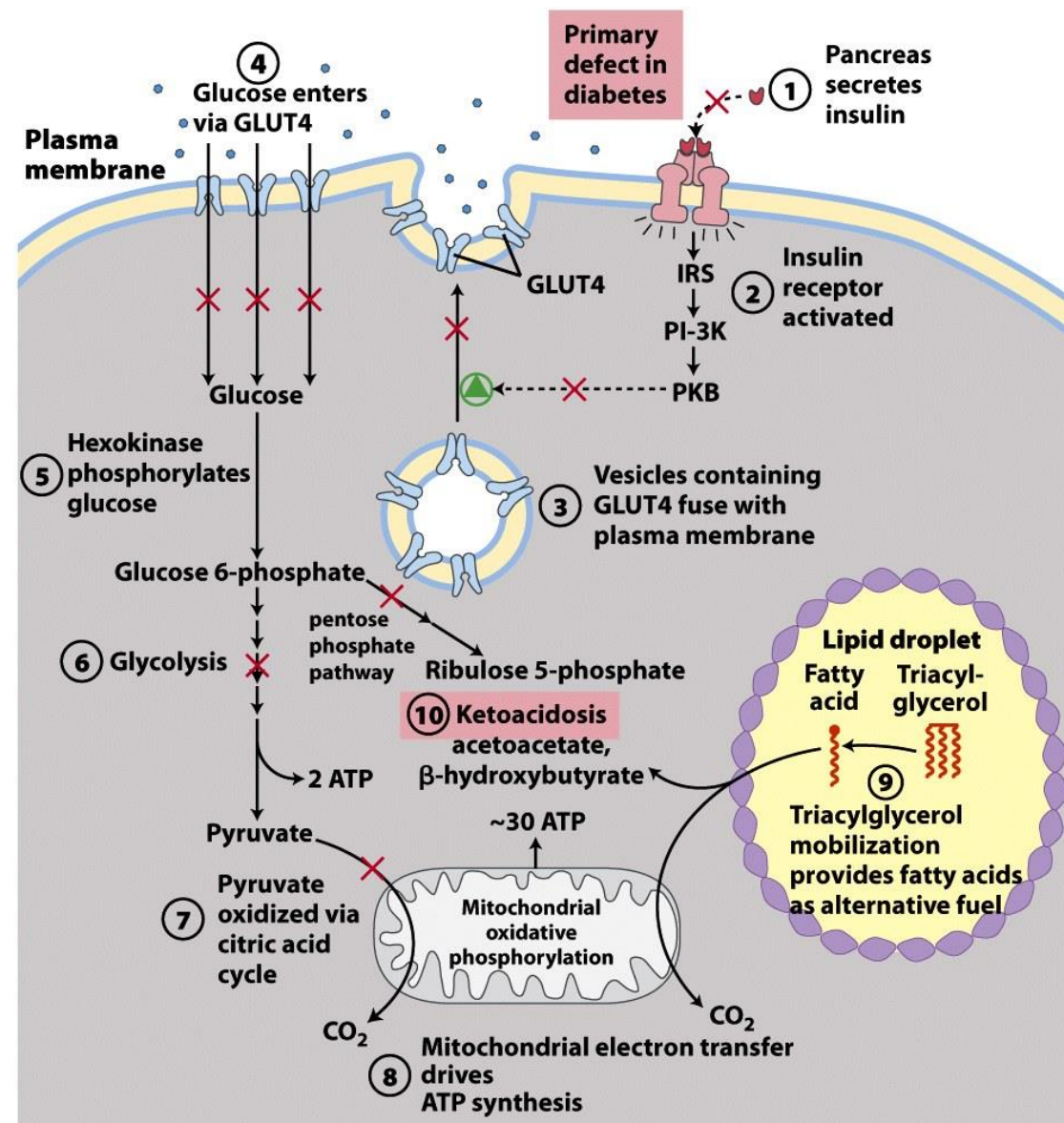


Figure 14-9
Lehninger Principles of Biochemistry, Fifth Edition
 © 2008 W. H. Freeman and Company