

1 Reaction Network

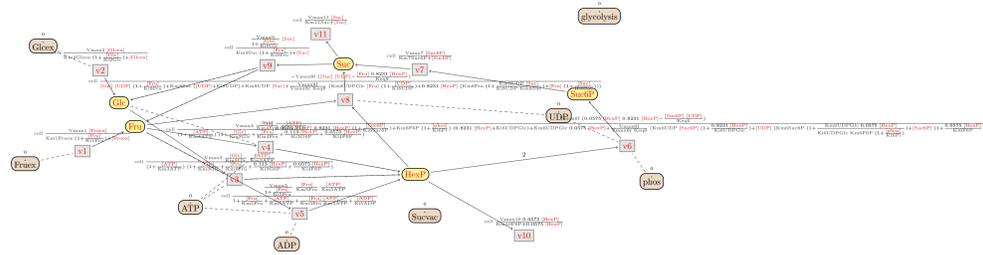
Source File: Networks/BioModels/curated/B023.xml from CoreSBML.

Tool: BioComputing's Network-Graph Tool Version 1.99

Application Date: February 21, 2024

Statistics	# Species	13
	# Reactions	11
	# Macros	14
	# Elements	197

2 Network Graph



3 Initial values

Initial values of species

Fru	= 1
Glc	= 1
HexP	= 1
Suc6P	= 1
Suc	= 1
Sucrose	= 0
glycolysis	= 0
pibos	= 0
UDP	= 0
ATP	= 0
Glcex	= 0
Fruex	= 0

4 Equations over time

Macro definitions

Fru	= Fru
Glc	= Glc
HexP	= HexP
Suc6P	= Suc6P
Suc	= Suc
Sucrose	= Sucrose
glycolysis	= glycolysis
pibos	= pibos
UDP	= UDP
ATP	= ATP
Glcex	= Glcex
Fruex	= Fruex
cell	= 1

Algebraic and differential variables

Sucrose	= 0
glycolysis	= 0
pibos	= 0
UDP	= 0
ATP	= 0
Glcex	= 0
Fruex	= 0

Kinetic laws of reactions

$v1 = \text{cell} \frac{V_{\text{max}1} \text{Fruex}}{K_{\text{m}1} \text{Fruex} (1 + \frac{\text{Fru}}{K_{\text{m}1} \text{Fru}} + \frac{\text{Glcex}}{K_{\text{m}1} \text{Glcex}})} \text{ where } \begin{cases} V_{\text{max}1} = 0.286 \\ K_{\text{m}1} \text{Fruex} = 0.2 \\ K_{\text{m}1} \text{Fru} = 1 \\ V_{\text{max}2} = 0.286 \\ K_{\text{m}2} \text{Glcex} = 0.2 \end{cases}$	
$v2 = \text{cell} \frac{V_{\text{max}2} \text{Glcex}}{K_{\text{m}2} \text{Glcex} (1 + \frac{\text{Fru}}{K_{\text{m}2} \text{Fru}} + \frac{\text{Glcex}}{K_{\text{m}2} \text{Glcex}})} \text{ where } \begin{cases} V_{\text{max}3} = 0.197 \\ K_{\text{m}3} \text{Glc} = 0.07 \\ K_{\text{m}3} \text{ATP} = 0.25 \\ K_{\text{m}3} \text{Fru} = 10 \\ K_{\text{m}3} \text{GDP} = 0.1 \\ K_{\text{m}3} \text{FDP} = 10 \\ V_{\text{max}4} = 0.197 \\ K_{\text{m}4} \text{Fru} = 10 \\ K_{\text{m}4} \text{ATP} = 0.25 \\ K_{\text{m}4} \text{Glc} = 0.07 \\ K_{\text{m}4} \text{GDP} = 0.1 \\ K_{\text{m}4} \text{FDP} = 10 \end{cases}$	
$v3 = \text{cell} \frac{V_{\text{max}3} \text{Glc} \text{ATP}}{(1 + \frac{\text{ATP}}{K_{\text{m}3} \text{ATP}} + \frac{\text{Fru}}{K_{\text{m}3} \text{Fru}} + \frac{\text{Glc}}{K_{\text{m}3} \text{Glc}} + \frac{\text{GDP}}{K_{\text{m}3} \text{GDP}} + \frac{\text{FDP}}{K_{\text{m}3} \text{FDP}})} \text{ where } \begin{cases} V_{\text{max}5} = 0.164 \\ K_{\text{m}5} \text{Fru} = 12 \\ K_{\text{m}5} \text{ATP} = 0.1 \\ K_{\text{m}5} \text{ATP} = 0.085 \\ K_{\text{m}5} \text{ADP} = 2 \end{cases}$	
$v4 = \text{cell} \frac{V_{\text{max}4} \text{Glc} \text{ATP}}{(1 + \frac{\text{ATP}}{K_{\text{m}4} \text{ATP}} + \frac{\text{Fru}}{K_{\text{m}4} \text{Fru}} + \frac{\text{Glc}}{K_{\text{m}4} \text{Glc}} + \frac{\text{GDP}}{K_{\text{m}4} \text{GDP}} + \frac{\text{FDP}}{K_{\text{m}4} \text{FDP}})} \text{ where } \begin{cases} V_{\text{max}6} = 0.075 \\ K_{\text{m}6} \text{ATP} = 0.821 \\ K_{\text{m}6} \text{Fru} = 0.0001 \\ K_{\text{m}6} \text{Glc} = 0.0001 \\ K_{\text{m}6} \text{GDP} = 0.0001 \\ K_{\text{m}6} \text{FDP} = 0.0001 \\ K_{\text{m}6} \text{UDP} = 0.0001 \\ K_{\text{m}6} \text{ATP} = 0.0001 \\ K_{\text{m}6} \text{Fru} = 0.0001 \\ K_{\text{m}6} \text{Glc} = 0.0001 \\ K_{\text{m}6} \text{GDP} = 0.0001 \\ K_{\text{m}6} \text{FDP} = 0.0001 \end{cases}$	$\text{ where } \begin{cases} V_{\text{max}6} = 0.379 \\ K_{\text{m}6} = 10 \\ K_{\text{m}6} \text{Suc6P} = 0.07 \\ K_{\text{m}6} \text{FDP} = 0.6 \\ K_{\text{m}6} \text{Fru} = 3 \\ K_{\text{m}6} \text{UDP} = 1.4 \\ K_{\text{m}6} \text{Glc} = 1.8 \\ V_{\text{max}6} = 0.2 \\ K_{\text{m}6} \text{UDP} = 0.3 \\ K_{\text{m}6} \text{Suc6P} = 0.1 \\ K_{\text{m}6} \text{FDP} = 0.4 \end{cases}$
$v5 = \text{cell} \frac{V_{\text{max}5} \text{Fru}}{K_{\text{m}5} \text{Fru} (1 + \frac{\text{Fru}}{K_{\text{m}5} \text{Fru}} + \frac{\text{Glcex}}{K_{\text{m}5} \text{Glcex}})} \text{ where } \begin{cases} V_{\text{max}7} = 0.5 \\ K_{\text{m}7} \text{Suc6P} = 0.1 \end{cases}$	
$v6 = \text{cell} \frac{V_{\text{max}6} \text{Glc} \text{UDP}}{(1 + \frac{\text{UDP}}{K_{\text{m}6} \text{UDP}} + \frac{\text{Fru}}{K_{\text{m}6} \text{Fru}} + \frac{\text{Glcex}}{K_{\text{m}6} \text{Glcex}} + \frac{\text{GDP}}{K_{\text{m}6} \text{GDP}} + \frac{\text{FDP}}{K_{\text{m}6} \text{FDP}})} \text{ where } \begin{cases} V_{\text{max}8} = 0.677 \\ K_{\text{m}8} = 5 \\ K_{\text{m}8} \text{Fru} = 4 \\ K_{\text{m}8} \text{Suc} = 10 \\ K_{\text{m}8} \text{UDP} = 0.3 \\ V_{\text{max}8} = 0.3 \\ K_{\text{m}8} \text{UDP} = 0.3 \\ K_{\text{m}8} \text{Fru} = 4 \\ K_{\text{m}8} \text{Suc} = 40 \end{cases}$	
$v7 = \text{cell} \frac{V_{\text{max}7} \text{Suc6P}}{K_{\text{m}7} \text{Suc6P} (1 + \frac{\text{Suc6P}}{K_{\text{m}7} \text{Suc6P}})} \text{ where } \begin{cases} V_{\text{max}9} = 0.372 \\ K_{\text{m}9} \text{Glc} = 15 \\ K_{\text{m}9} \text{Suc} = 10 \\ K_{\text{m}9} \text{Fru} = 15 \\ V_{\text{max}10} = 0.1 \\ K_{\text{m}10} \text{Fru} = 0.2 \end{cases}$	
$v8 = \text{cell} \frac{V_{\text{max}8} \text{Glc} \text{UDP}}{(1 + \frac{\text{UDP}}{K_{\text{m}8} \text{UDP}} + \frac{\text{Fru}}{K_{\text{m}8} \text{Fru}} + \frac{\text{Glcex}}{K_{\text{m}8} \text{Glcex}} + \frac{\text{GDP}}{K_{\text{m}8} \text{GDP}} + \frac{\text{FDP}}{K_{\text{m}8} \text{FDP}})} \text{ where } \begin{cases} V_{\text{max}11} = 1 \\ K_{\text{m}11} \text{Suc} = 100 \end{cases}$	
$v9 = \text{cell} \frac{V_{\text{max}9} \text{Glc} \text{UDP}}{(1 + \frac{\text{UDP}}{K_{\text{m}9} \text{UDP}} + \frac{\text{Fru}}{K_{\text{m}9} \text{Fru}} + \frac{\text{Glcex}}{K_{\text{m}9} \text{Glcex}} + \frac{\text{GDP}}{K_{\text{m}9} \text{GDP}} + \frac{\text{FDP}}{K_{\text{m}9} \text{FDP}})} \text{ where } \begin{cases} V_{\text{max}10} = 0.372 \\ K_{\text{m}10} \text{Glc} = 15 \\ K_{\text{m}10} \text{Suc} = 10 \\ K_{\text{m}10} \text{Fru} = 15 \\ V_{\text{max}11} = 0.1 \\ K_{\text{m}11} \text{Fru} = 0.2 \end{cases}$	
$v10 = \text{cell} \frac{V_{\text{max}10} \text{Glc} \text{UDP}}{(1 + \frac{\text{UDP}}{K_{\text{m}10} \text{UDP}} + \frac{\text{Fru}}{K_{\text{m}10} \text{Fru}} + \frac{\text{Glcex}}{K_{\text{m}10} \text{Glcex}} + \frac{\text{GDP}}{K_{\text{m}10} \text{GDP}} + \frac{\text{FDP}}{K_{\text{m}10} \text{FDP}})} \text{ where } \begin{cases} V_{\text{max}11} = 1 \\ K_{\text{m}11} \text{Suc} = 100 \end{cases}$	
$v11 = \text{cell} \frac{V_{\text{max}11} \text{Suc}}{K_{\text{m}11} \text{Suc} (1 + \frac{\text{Suc}}{K_{\text{m}11} \text{Suc}})} \text{ where } \begin{cases} V_{\text{max}11} = 1 \\ K_{\text{m}11} \text{Suc} = 100 \end{cases}$	

Differential equations of species

Fru	= v1 - v3 - v5 - v8 + v9
Glc	= v2 - v3 + v9
HexP	= v3 + v4 + v5 - 2 v6 - v8 - v10
Suc6P	= v6 - v7
Suc	= v7 + v8 - v9 - v11