

**CoreSBML**  
**Networks/BioModels/curated/B023.xml: Rohwer2001\_Sucrose**  
Presented by BioComputing's Network-Graph Tool

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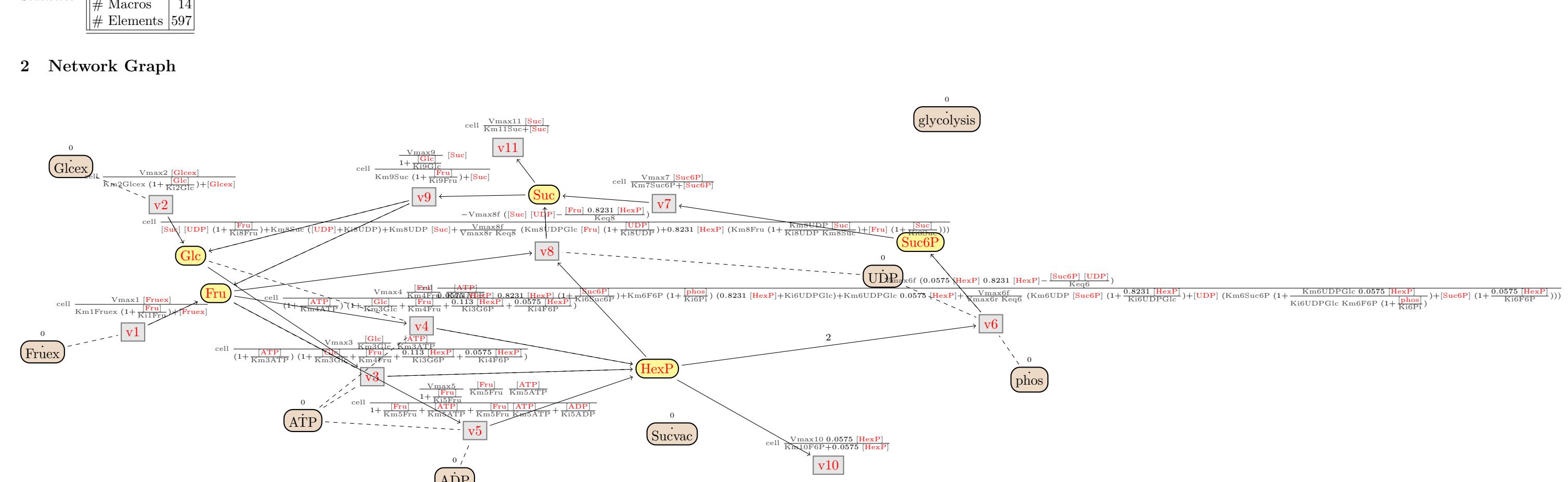
## 1 Reaction Network

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

Tool: BioComputing's Network-Graph Tool Version 1.99

Application Date: February 21, 2024

## 2 Network Graph



## 3 Initial values

| Initial values of species |     |
|---------------------------|-----|
| [Fru]                     | = 1 |
| [Glc]                     | = 1 |
| [HesP]                    | = 1 |
| [SnfD]                    | = 1 |
| [Suc]                     | = 1 |
| [Sucne]                   | = 0 |
| [glycolysis]              | = 0 |
| [phos]                    | = 0 |
| [UDP]                     | = 0 |
| [ADP]                     | = 0 |
| [ATP]                     | = 0 |
| [ATP]                     | = 0 |
| [Glex]                    | = 0 |
| [Fruex]                   | = 0 |
| [cell]                    | = 1 |

## 4 Equations over time

| Macro definitions |                |
|-------------------|----------------|
| [Fru]             | = [Fru]        |
| [Glc]             | = [Glc]        |
| [HesP]            | = [HesP]       |
| [SnfD]            | = [SnfD]       |
| [Suc]             | = [Suc]        |
| [Sucne]           | = [Sucne]      |
| [Sucne]           | = [Sucne]      |
| [glycolysis]      | = [glycolysis] |
| [phos]            | = [phos]       |
| [UDP]             | = [UDP]        |
| [ADP]             | = [ADP]        |
| [ATP]             | = [ATP]        |
| [ATP]             | = [ATP]        |
| [Glex]            | = [Glex]       |
| [Fruex]           | = [Fruex]      |
| [cell]            | = [cell]       |

| Algebraic and differential variables |     |
|--------------------------------------|-----|
| Sucne                                | = 0 |
| glycolysis                           | = 0 |
| phos                                 | = 0 |
| UDP                                  | = 0 |
| ADP                                  | = 0 |
| ATP                                  | = 0 |
| Glex                                 | = 0 |
| Fruex                                | = 0 |

| Kinetic laws of reactions  |  |
|--|--|
| v1 = cell $\frac{V_{max1} [\text{Fruex}]}{Km[\text{Fruex}] (1 + \frac{[\text{Glc}]}{Km[\text{Glc}]} + \frac{[\text{Fru}]}{Km[\text{Fru}]})}$   | where $\begin{cases} V_{max1} = 0.296 \\ Km[\text{Fruex}] = 0.2 \\ Km[\text{Glc}] = 1 \\ Km[\text{Fru}] = 1 \end{cases}$   |
| v2 = cell $\frac{V_{max2} [\text{Glex}]}{Km[\text{Glex}] (1 + \frac{[\text{Glc}]}{Km[\text{Glc}]} + \frac{[\text{Fru}]}{Km[\text{Fru}]})}$   | where $\begin{cases} V_{max2} = 0.296 \\ Km[\text{Glex}] = 1 \\ Km[\text{Glc}] = 1 \end{cases}$  |
| v3 = cell $\frac{V_{max3} \frac{[\text{ATP}]}{Km[\text{ATP}]} \frac{[\text{Glc}]}{Km[\text{Glc}]} \frac{[\text{Fru}]}{Km[\text{Fru}]}}{(1 + \frac{[\text{ATP}]}{Km[\text{ATP}]} + \frac{[\text{Glc}]}{Km[\text{Glc}]} + \frac{[\text{Fru}]}{Km[\text{Fru}]})}$   | where $\begin{cases} V_{max3} = 0.197 \\ Km[\text{ATP}] = 0.07 \\ Km[\text{Glc}] = 0.25 \\ Km[\text{Fru}] = 10 \\ Km[\text{GDP}] = 0.1 \\ Km[\text{GTP}] = 10 \\ Km[\text{ATP}] = 10 \\ Km[\text{GDP}] = 0.07 \\ Km[\text{GTP}] = 0.07 \end{cases}$  |
| v4 = cell $\frac{V_{max4} \frac{[\text{ATP}]}{Km[\text{ATP}]} \frac{[\text{Glc}]}{Km[\text{Glc}]} \frac{[\text{Fru}]}{Km[\text{Fru}]}}{(1 + \frac{[\text{ATP}]}{Km[\text{ATP}]} + \frac{[\text{Glc}]}{Km[\text{Glc}]} + \frac{[\text{Fru}]}{Km[\text{Fru}]})}$   | where $\begin{cases} V_{max4} = 0.164 \\ Km[\text{ATP}] = 0.25 \\ Km[\text{Glc}] = 0.07 \\ Km[\text{GDP}] = 0.1 \\ Km[\text{GTP}] = 10 \end{cases}$  |
| v5 = cell $\frac{V_{max5} \frac{[\text{ATP}]}{Km[\text{ATP}]} \frac{[\text{Glc}]}{Km[\text{Glc}]} \frac{[\text{Fru}]}{Km[\text{Fru}]}}{(1 + \frac{[\text{ATP}]}{Km[\text{ATP}]} + \frac{[\text{Glc}]}{Km[\text{Glc}]} + \frac{[\text{Fru}]}{Km[\text{Fru}]})}$   | where $\begin{cases} V_{max5} = 0.164 \\ Km[\text{ATP}] = 0.12 \\ Km[\text{Glc}] = 0.1 \\ Km[\text{GDP}] = 0.085 \\ Km[\text{GTP}] = 2 \end{cases}$  |
| v6 = cell $\frac{V_{max6} (0.0575 [\text{HesP}] 0.8231 [\text{HesP}] - \frac{[\text{SnfD}][\text{UDP}]}{Km[\text{UDP}] (1 + \frac{[\text{SnfD}]}{Km[\text{SnfD}]})})}{(0.8231 [\text{HesP}] + Km[\text{UDP}][\text{Glc}] 0.0575 [\text{HesP}] + \frac{[\text{SnfD}][\text{UDP}]}{Km[\text{SnfD}] (1 + \frac{[\text{SnfD}]}{Km[\text{SnfD}]})})}$   | where $\begin{cases} V_{max6} = 0.379 \\ Km[\text{HesP}] = 10 \\ Km[\text{SnfD}] = 0.07 \\ Km[\text{UDP}] = 0.6 \\ Km[\text{Glc}] = 3 \\ Km[\text{ATP}] = 1.4 \\ Km[\text{GDP}] = 1.8 \\ Km[\text{GTP}] = 0.2 \\ Km[\text{SnfD}] = 0.3 \\ Km[\text{SnfD}] = 0.1 \\ Km[\text{GDP}] = 0.4 \end{cases}$ |
| v7 = cell $\frac{V_{max7} [\text{SnfD}]}{Km[\text{SnfD}] [\text{SnfD}]}$   | where $\begin{cases} V_{max7} = 0.5 \\ Km[\text{SnfD}] = 0.1 \end{cases}$  |
| v8 = cell $-\frac{V_{max8} ([\text{UDP}] - \frac{[\text{SnfD}][\text{Glc}]}{Km[\text{Glc}]})}{Km[\text{UDP}] (1 + \frac{[\text{Glc}]}{Km[\text{Glc}]}) + Km[\text{UDP}] [\text{Suc}] + Km[\text{UDP}] [\text{Suc}] (\text{KmUDPGlc} [\text{Fru}] 0.8231 [\text{HesP}] + \text{KmUDPGlc} [\text{Fru}] (1 + \frac{[\text{Glc}]}{Km[\text{Glc}]}) + [\text{Fru}] (1 + \frac{[\text{Glc}]}{Km[\text{Glc}]}))}$ | where $\begin{cases} V_{max8} = 0.677 \\ Km[\text{Glc}] = 5 \\ Km[\text{UDP}] = 4 \\ Km[\text{Suc}] = 50 \\ Km[\text{GDP}] = 0 \\ Km[\text{GTP}] = 0.3 \\ Km[\text{ATP}] = 0.3 \\ Km[\text{GDP}] = 0.3 \\ Km[\text{GTP}] = 4 \\ Km[\text{ATP}] = 40 \end{cases}$                                     |
| v9 = cell $\frac{-V_{max9} [\text{Suc}]}{Km[\text{Suc}] (1 + \frac{[\text{Suc}]}{Km[\text{Suc}]}) + [\text{Suc}]}$   | where $\begin{cases} V_{max9} = 0.372 \\ Km[\text{Suc}] = 15 \\ Km[\text{Glc}] = 10 \\ Km[\text{Fru}] = 15 \end{cases}$  |
| v10 = cell $\frac{V_{max10} 0.0575 [\text{HesP}]}{Km[\text{HesP}] 0.0575 [\text{HesP}]}$   | where $\begin{cases} V_{max10} = 0.1 \\ Km[\text{HesP}] = 0.2 \end{cases}$   |
| v11 = cell $\frac{V_{max11} [\text{Suc}]}{Km[\text{Suc}] [\text{Suc}]}$  | where $\begin{cases} V_{max11} = 1 \\ Km[\text{Suc}] = 100 \end{cases}$  |

| Differential equations of species     |  |
|---------------------------------------|--|
| Fru = v1 - v2 - v5 + v8 + v9          |  |
| Glc = v2 + v3 + v4 + v5               |  |
| HesP = v3 + v4 + v5 - 2*v6 - v8 - v10 |  |
| SnfD = v6 - v7                        |  |
| Suc = v7 + v8 - v9 - v11              |  |