teusink_reaction_model_2000

1 "environment" component

This component has no equations.

2 "Glc_out" component

$$\frac{\mathrm{d}(Glc\_out)}{\mathrm{d}(time)} = delta\_Glc\_out\_rxn8$$

3 "Glc_in" component

$$\frac{\mathrm{d}(Glc\_in)}{\mathrm{d}(time)} = (delta\_Glc\_in\_rxn8 + delta\_Glc\_in\_rxn4)$$

4 "G6P" component

$$\frac{\mathrm{d}(G6P)}{\mathrm{d}(time)} = (delta\_G6P\_rxn4 + delta\_G6P\_rxn1 + delta\_G6P\_rxn15 + delta\_G6P\_rxn14)$$

5 "F6P" component

$$\frac{\mathrm{d}(F6P)}{\mathrm{d}(time)} = (delta\_F6P\_rxn13 + delta\_F6P\_rxn1)$$

6 “F16bP2” component

$$\frac{\mathrm{d}(F16bP2)}{\mathrm{d}(time)} = (delta\_F16bP2\_rxn13 + delta\_F16bP2\_rxn9)$$

7 “F26bP2” component

This component has no equations.

8 “Trio_P” component

Trio_P_calculation

$$Trio\_P = (GraP + glycerone\_phosphate)$$

9 “glycerone_phosphate” component

$$\frac{\mathrm{d}(glycerone\_phosphate)}{\mathrm{d}(time)} = (delta\_glycerone\_phosphate\_rxn9 + delta\_glycerone\_phosphate\_rxn18 + delta\_glycerone\_phosphate\_rxn16)$$

10 “GraP” component

$$\frac{\mathrm{d}(GraP)}{\mathrm{d}(time)} = (delta\_GraP\_rxn9 + delta\_GraP\_rxn18 + delta\_GraP\_rxn5)$$

11 “BPG” component

$$\frac{\mathrm{d}(BPG)}{\mathrm{d}(time)} = (delta\_BPG\_rxn5 + delta\_BPG\_rxn6)$$

12 “three_GriP” component

$$\frac{\mathrm{d}(three\_GriP)}{\mathrm{d}(time)} = (delta\_three\_GriP\_rxn2 + delta\_three\_GriP\_rxn6)$$

13 "two_GriP" component

$$\frac{\mathrm{d}(two\_GriP)}{\mathrm{d}(time)} = (delta\_two\_GriP\_rxn2 + delta\_two\_GriP\_rxn3)$$

14 "PEP" component

$$\frac{\mathrm{d}(PEP)}{\mathrm{d}(time)} = (delta\_PEP\_rxn3 + delta\_PEP\_rxn7)$$

15 "PYR" component

$$\frac{\mathrm{d}(PYR)}{\mathrm{d}(time)} = (delta\_PYR\_rxn7 + delta\_PYR\_rxn10)$$

16 "AcAld" component

$$\frac{\mathrm{d}(AcAld)}{\mathrm{d}(time)} = (delta\_AcAld\_rxn11 + delta\_AcAld\_rxn10 + delta\_AcAld\_rxn17)$$

17 "ADP" component

$$\frac{\mathrm{d}(ADP)}{\mathrm{d}(time)} = (delta\_ADP\_rxn4 + delta\_ADP\_rxn14 + delta\_ADP\_rxn15 + delta\_ADP\_rxn13 + delta\_ADP\_rxn6 + delta\_ADP\_rxn7 + delta\_ADP\_rxn12 + delta\_ADP\_rxn$$

18 "ATP" component

$$\frac{\mathrm{d}(ATP)}{\mathrm{d}(time)} = (delta\_ATP\_rxn4 + delta\_ATP\_rxn14 + delta\_ATP\_rxn15 + delta\_ATP\_rxn13 + delta\_ATP\_rxn6 + delta\_ATP\_rxn7 + delta\_ATP\_rxn12 + delta\_ATP\_rxn17 +$$

19 "AMP" component

$$\frac{\mathrm{d}(AMP)}{\mathrm{d}(time)} = delta\_AMP\_rxn19$$

20 “ethanol” component

$$\frac{\mathrm{d}(ethanol)}{\mathrm{d}(time)} = delta\_ethanol\_rxn11$$

21 “glycerol” component

$$\frac{\mathrm{d}(glycerol)}{\mathrm{d}(time)} = delta\_glycerol\_rxn16$$

22 “glycogen” component

$$\frac{\mathrm{d}(glycogen)}{\mathrm{d}(time)} = delta\_glycogen\_rxn14$$

23 “trehalose” component

$$\frac{\mathrm{d}(trehalose)}{\mathrm{d}(time)} = delta\_trehalose\_rxn15$$

24 “succinate” component

$$\frac{\mathrm{d}(succinate)}{\mathrm{d}(time)} = delta\_succinate\_rxn17$$

25 “P” component

P_calculation

$$P = (2.0 * ATP + ADP)$$

26 “NADH” component

$$\frac{\mathrm{d}(NADH)}{\mathrm{d}(time)} = (delta\_NADH\_rxn5 + delta\_NADH\_rxn11 + delta\_NADH\_rxn17 + delta\_NADH\_rxn16)$$

27 “NAD” component

$$\frac{\mathrm{d}(NAD)}{\mathrm{d}(time)} = (delta\_NAD\_rxn5 + delta\_NAD\_rxn11 + delta\_NAD\_rxn17 + delta\_NAD\_rxn16)$$

28 “CO2” component

$$\frac{\mathrm{d}(CO2)}{\mathrm{d}(time)} = delta\_CO2\_rxn10$$

29 “HK” component

This component has no equations.

30 “PGI” component

This component has no equations.

31 “PFK” component

This component has no equations.

32 “ALD” component

This component has no equations.

33 “TPI” component

This component has no equations.

34 “G3PDH” component

This component has no equations.

35 “GraPDH” component

This component has no equations.

36 “PGK” component

This component has no equations.

37 “PGM” component

This component has no equations.

38 “ENO” component

This component has no equations.

39 “PYK” component

This component has no equations.

40 “PDC” component

This component has no equations.

41 “ADH” component

This component has no equations.

42 “AK” component

This component has no equations.

43 “ATPase” component

This component has no equations.

44 “HXT” component

This component has no equations.

45 “reaction1” component

This component has no equations.

46 “reaction2” component

This component has no equations.

47 “reaction3” component

This component has no equations.

48 “reaction4” component

This component has no equations.

49 “reaction5” component

This component has no equations.

50 “reaction6” component

This component has no equations.

51 “reaction7” component

This component has no equations.

52 “reaction8” component

This component has no equations.

53 “reaction9” component

This component has no equations.

54 “reaction10” component

This component has no equations.

55 “reaction11” component

This component has no equations.

56 “reaction12” component

This component has no equations.

57 “reaction13” component

lamda_1_calculation

$$lamda\_1 = \frac{F6P}{KR\_F6P}$$

lamda_2_calculation

$$lamda\_2 = \frac{ATP}{KR\_ATP}$$

R_calculation

$$R = (1.0 + lamda\_1 * lamda\_2 + gR * lamda\_1 * lamda\_2)$$

T_calculation

$$T = (1.0 + cATP * lamda\_2)$$

L_calculation

$$L = Lo * \left(\frac{\left(1.0 + \frac{Ci\_ATP * ATP}{K\_ATP}\right)}{\left(1.0 + \frac{ATP}{K\_ATP}\right)} \right)^{2.0} * \left(\frac{\left(1.0 + \frac{Ci\_AMP * AMP}{K\_AMP}\right)}{\left(1.0 + \frac{AMP}{K\_AMP}\right)} \right)^{2.0} * \frac{\left(1.0 + \frac{Ci\_F26bP2 * F26bP2}{K\_F26bP2} + \frac{Ci\_F16bP2 * F16bP2}{K\_F16bP2}\right)}{\left(1.0 + \frac{F26bP2}{K\_F26bP2} + \frac{F16bP2}{K\_F16bP2}\right)}$$

58 “reaction14” component

This component has no equations.

59 “reaction15” component

This component has no equations.

60 “reaction16” component

This component has no equations.

61 “reaction17” component

This component has no equations.

62 “reaction18” component

This component has no equations.

63 “reaction19” component

Keq_AK_calculation

$$Keq\_AK = \frac{AMP * ATP}{(ADP)^{2.0}}$$