



Differential Equation System “FILTER”

1 Rate Laws

1.1 Reaction: re2

$$v_1 = d \cdot [s_3] \quad (1)$$

1.2 Reaction: re6

$$v_2 = d_{geslotenmRNAT_7} \cdot [s_9] \quad (2)$$

1.3 Reaction: re10

$$v_3 = d_{pT_7} \cdot [s_{19}] \quad (3)$$

1.4 Reaction: re12

$$v_4 = [s_1] \cdot [s_{30}] \quad (4)$$

1.5 Reaction: re13

$$v_5 = k \cdot [s_8] \quad (5)$$

1.6 Reaction: re14

$$v_6 = k \cdot ([s_{22}] + [s_{25}]) \quad (6)$$

1.7 Reaction: re15

$$v_7 = k \cdot [s_9] - k \cdot [s_{22}] \quad (7)$$

1.8 Reaction: re16

$$v_8 = d_{openmRNAT_7} \cdot [s_{22}] \quad (8)$$

1.9 Reaction: re19

$$v_9 = k \cdot [s_3] \cdot [s_9] - k \cdot [s_{25}] \quad (9)$$

1.10 Reaction: re21

$$v_{10} = d_{openmRNAT_7} \cdot [s_{25}] \quad (10)$$

2 Equations

2.1 Species: s2 (transcription)

$$\frac{d[s_2]}{dt} = 0 \quad (11)$$

2.2 Species: s3 (mRNA_RIBOKEY)

$$\frac{d[s_3]}{dt} = -v_9 - v_1 + v_4 \quad (12)$$

2.3 Species: s5 (sa3_degraded)

$$\frac{d[s_5]}{dt} = 0 \quad (13)$$

2.4 Species: s8 (Gene_T7)

$$\frac{d[s_8]}{dt} = 0 \quad (14)$$

2.5 Species: s10 (sa10_degraded)

$$\frac{d[s_{10}]}{dt} = 0 \quad (15)$$

2.6 Species: s14 (translation)

$$\frac{d[s_{14}]}{dt} = 0 \quad (16)$$

2.7 Species: s17 (sa15_degraded)

$$\frac{d[s_{17}]}{dt} = 0 \quad (17)$$

2.8 Species: s19 (pT7_tag)

$$\frac{d[s_{19}]}{dt} = -v_3 + v_6 \quad (18)$$

2.9 Species: s9 (gesloten_mRNA_T7)

$$\frac{d[s_9]}{dt} = -v_9 - v_7 - v_2 + v_5 \quad (19)$$

2.10 Species: s22 (open_mRNA_T7)

$$\frac{d[s_{22}]}{dt} = -v_8 + v_7 \quad (20)$$

2.11 Species: **s23** (sa18_degraded)

$$\frac{d[s_{23}]}{dt} = 0 \quad (21)$$

2.12 Species: **s25** (open_mRNA_T7_complex)

$$\frac{d[s_{25}]}{dt} = -v_{10} + v_9 \quad (22)$$

2.13 Species: **s29** (csa3_degraded)

$$\frac{d[s_{29}]}{dt} = 0 \quad (23)$$

2.14 Species: **s1** (Gene_RIBOKEY)

$$\frac{d[s_1]}{dt} = 0 \quad (24)$$

2.15 Species: **s30** (OmpF var transcr rate)

$$\frac{d[s_{30}]}{dt} = 0 \quad (25)$$

2.16 Species: **s26** (mRNA_RIBOKEY)

$$\frac{d[s_{26}]}{dt} = 0 \quad (26)$$

2.17 Species: **s27** (gesloten_mRNA_T7)

$$\frac{d[s_{27}]}{dt} = 0 \quad (27)$$

3 Species

Species	Initial concentration	compartment
s_2	0.0	default
s_3	0.0	default
s_5	0.0	default
s_8	1.0	default
s_{10}	0.0	default
s_{14}	0.0	default
s_{17}	0.0	default
s_{19}	0.0	default
s_9	0.0	default
s_{22}	0.0	default
s_{23}	0.0	default
s_{25}	0.0	default
s_{29}	0.0	default
s_1	0.0	default
s_{30}	0.0	default
s_{26}	4.9E-324	
s_{27}	4.9E-324	

4 Compartments

Compartment	Volume
<i>default</i>	1.0