



# Differential Equation System

*Output*

# 1 Global Parameters

Parameter	Value	Value Units
$k_{B0032}$	0.16667	

## 2 Rate Laws

### 2.1 Reaction 1

	Reactants	Products
Species	Gene_GFP OmpF_var_transcr_rate	mRNA_GFP Gene_GFP OmpF_var_transcr_rate

#### Reaction Rate

$$v_1 = OmpF_{var.transcr.rate} \cdot Gene_{GFP} \quad (1)$$

Parameters	Parameter	Value	Value Units
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### 2.2 Reaction 2

	Reactants	Products
Species	mRNA_GFP	GFP mRNA_GFP

#### Reaction Rate

$$v_2 = mRNA_{GFP} \cdot k_{B0032} \quad (2)$$

Parameters	Parameter	Value	Value Units
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### 2.3 Reaction 3

	Reactants	Products
Species	mRNA_GFP	sa10_degraded

#### Reaction Rate

$$v_3 = mRNA_{GFP} \cdot d_{mRNA_{GFP}} \quad (3)$$

Parameters	Parameter	Value	Value Units
	$d_{mRNA_{GFP}}$	0.0023	

### 2.4 Reaction 4

	Reactants	Products
Species	GFP	sa11_degraded

#### Reaction Rate

$$v_4 = GFP \cdot d_{lva} \quad (4)$$

Parameters	Parameter	Value	Value Units
	$d_{lva}$	0.0002814	

### 3 Equations

#### 3.1 Species: sa10\_degraded

$$\frac{d[sa10_{degraded}]}{dt} = +v_3 \quad (5)$$

#### 3.2 Species: Gene\_GFP

$$\frac{d[Gene_{GFP}]}{dt} = +v_1 - v_1 \quad (6)$$

#### 3.3 Species: mRNA\_GFP

$$\frac{d[mRNA_{GFP}]}{dt} = +v_1 + v_2 - v_2 - v_3 \quad (7)$$

#### 3.4 Species: sa11\_degraded

$$\frac{d[sa11_{degraded}]}{dt} = +v_4 \quad (8)$$

#### 3.5 Species: GFP

$$\frac{d[GFP]}{dt} = +v_2 - v_4 \quad (9)$$

#### 3.6 Species: OmpF\_var\_transcr\_rate

$$\frac{d[OmpF_{var.transcr.rate}]}{dt} = +v_1 - v_1 \quad (10)$$

### 4 Compartments

#### 4.1 output

Species	Initial Amount	Initial Amount Units
sa10_degraded	0	
Gene_GFP	1	
mRNA_GFP	0	
sa11_degraded	0	
GFP	0	
OmpF_var_transcr_rate	0	