This page contains the reactions that are used in the model. It shows how reaction change the number of molecules and the rate at which they happen.

1 .Transcription of $m r n a$ :

$$
m \xrightarrow{O \cdot \frac{\alpha_{0}}{4}} m+1
$$

2.+3. Decay of mrna:

$$
\begin{gathered}
m \xrightarrow{\frac{m}{\tau_{m}}} m-1 \\
m \xrightarrow{m \cdot E_{f} \cdot k_{c}} m-1
\end{gathered}
$$

4. +5 . Transcription and decay of $\operatorname{Rel} B_{2}$ :

$$
\begin{gathered}
B_{2} \xrightarrow{\text { trans }_{B} \cdot m} B_{2}+1 \\
B_{2} \xrightarrow{\frac{B_{2}}{\tau_{B}}} B_{2}-1
\end{gathered}
$$

6.+7. Transcription and decay of RelE:

$$
\begin{gathered}
E_{f} \xrightarrow{\text { trans }_{E} \cdot m} E_{f}+1 \\
E_{f} \xrightarrow{\frac{E_{f}}{\tau_{E}}} E_{f}-1
\end{gathered}
$$

8.+9. Reaction for $\operatorname{Rel} B_{2}$ Rel $E$ complex

$$
\begin{gathered}
E_{f}+B_{2} \xrightarrow{B_{2} \cdot E_{f} \cdot k_{b}} B_{2} E \\
B_{2} E \xrightarrow{K_{D}\left(B_{2} E\right) \cdot k_{b} \cdot B_{2} E} B_{2}+E f
\end{gathered}
$$

10.     + 11. Component decay in $\operatorname{Rel} B_{2} R e l E$ complex

$$
\begin{gathered}
B_{2} E \xrightarrow{\frac{B_{2} E}{\tau_{c}}} E f \\
B_{2} E \xrightarrow{\frac{B_{2} E}{\tau_{E}}} B_{2} E-1
\end{gathered}
$$

12. +13 . Reaction for $\operatorname{Rel} B_{2}$ Rel $E_{2}$ complex

$$
\begin{gathered}
B_{2} E+E_{f} \xrightarrow{B_{2} E \cdot E_{f} \cdot k_{b}} B_{2} E_{2} \\
B_{2} E_{2} \xrightarrow{K_{D}\left(B_{2} E_{2}\right) \cdot k_{b} \cdot B_{2} E_{2}} B_{2} E+E f
\end{gathered}
$$

14. +15 . Component decay in $\operatorname{Rel} B_{2} R e l E_{2}$ complex

$$
B_{2} E_{2} \xrightarrow{K_{D}\left(B_{2} E_{2}\right) \cdot k_{b} \cdot B_{2} E_{2}} 2 E f
$$

$$
B_{2} E_{2} \xrightarrow{\frac{B_{2} E_{2}}{\tau_{E}}} B_{2} E_{2}-1
$$

Equations related to the operator: 16. +17 . Binding of $\operatorname{Rel} B$ to operator

$$
\begin{gathered}
O+B_{2} \xrightarrow{O \cdot B_{2} \cdot k_{b}} O \cdot B_{2} \\
O \cdot B_{2} \xrightarrow{K_{D 1} \cdot k_{b} \cdot O \cdot B_{2}} O+B_{2}
\end{gathered}
$$

18.     + 19. Binding of RelB $B_{2}$ RelE complex to operator

$$
\begin{gathered}
O+B_{2} E \xrightarrow{O \cdot B_{2} E \cdot k_{b}} O \cdot B_{2} E \\
O \cdot B_{2} E \xrightarrow{K_{D 3} \cdot k_{b} \cdot O \cdot B_{2} E} O+B_{2} E
\end{gathered}
$$

20. +21 . Binding of second $\operatorname{Rel} B_{2} R e l E$ complex to operator

$$
\begin{aligned}
& O \cdot B_{2} E+B_{2} E \xrightarrow{O \cdot B_{2} E \cdot B_{2} E \cdot k_{b}} O \cdot\left(B_{2} E\right)_{2} \\
& O \cdot\left(B_{2} E\right)_{2} \xrightarrow{K D 2 \cdot k_{b} \cdot O \cdot\left(B_{2} E\right)_{2}} O \cdot B_{2} E
\end{aligned}
$$

22.-25. Stripping through RelE

$$
\begin{gathered}
O \cdot B_{2} E+E f \xrightarrow{k_{b} \cdot E f \cdot O \cdot B_{2} E} O+B_{2} E_{2} \\
O+B_{2} E_{2} \xrightarrow{O \cdot B_{2} E_{2} \cdot \frac{K_{D}\left(B_{2} E_{2}\right)}{K_{D 3}}} O \cdot B_{2} E+E f \\
O \cdot\left(B_{2} E\right)_{2}+E_{f} \xrightarrow{k_{b} \cdot E_{f} \cdot O \cdot\left(B_{2} E\right)_{2}} O \cdot B_{2} E+B_{2} E_{2} \\
O \cdot B_{2} E+B_{2} E_{2} \xrightarrow{O \cdot B_{2} E \cdot B_{2} E_{2} \cdot \frac{K_{D}\left(B_{2} E_{2}\right)}{K_{D 2}}} O \cdot\left(B_{2} E\right)_{2}+E_{f}
\end{gathered}
$$

