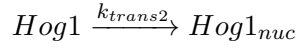
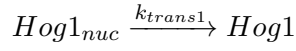
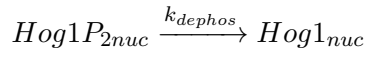
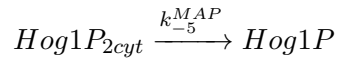
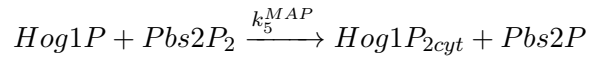
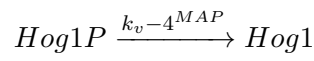
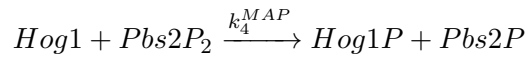
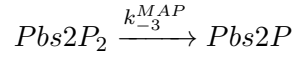
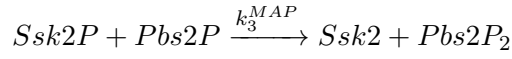
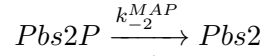
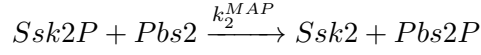
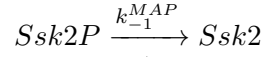
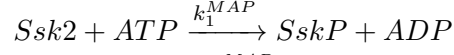


$$\frac{dA}{dt} = -k_1 * A$$

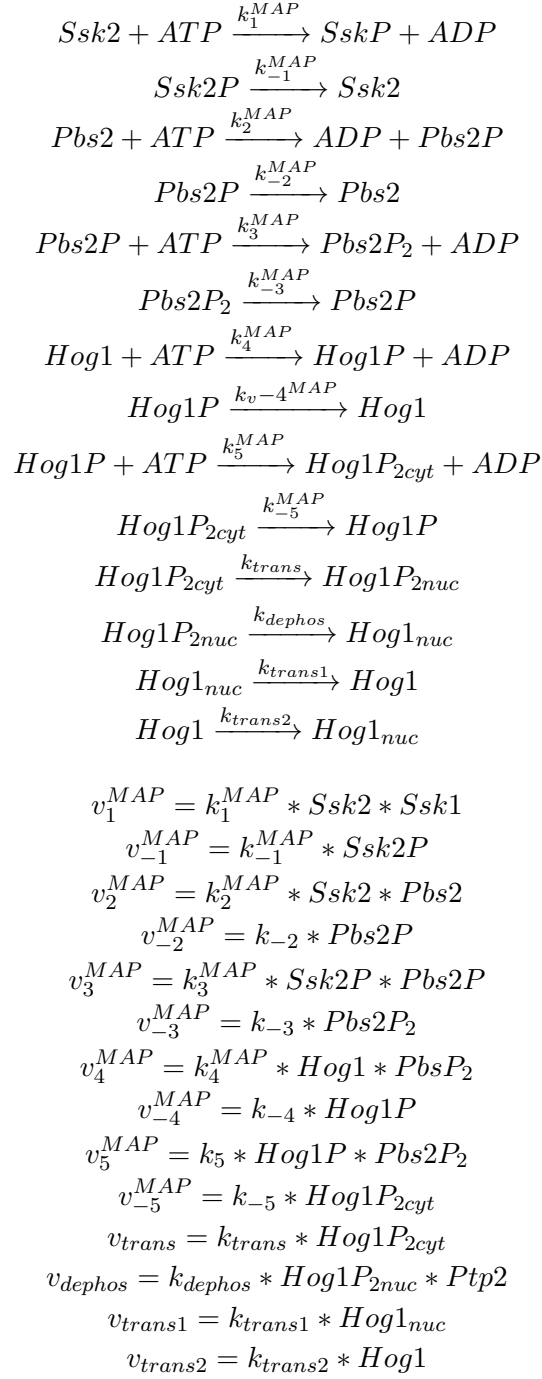
$$\frac{dA}{dt} = -k_{2f} * A + k_{2r} * B$$

$$\frac{dB}{dt} = k_{2f} * A - k_{2r} * B$$

Karin's



Paper's

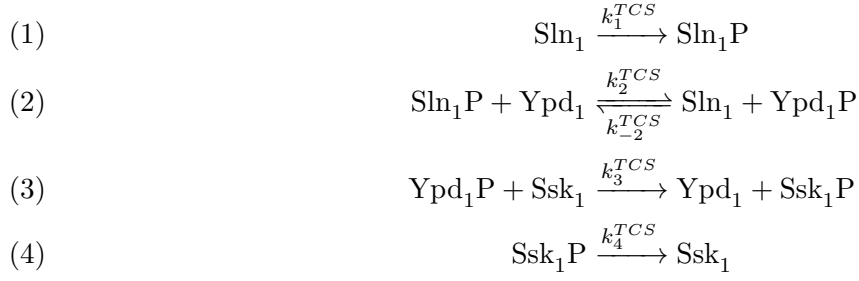


Karin's

$$\begin{aligned}
\frac{dSsk2}{dt} &= -v_1^{MAP} + v_{-1}^{MAP} + v_2^{MAP} + v_3^{MAP} \\
\frac{dSsk2P}{dt} &= v_1^{MAP} - v_{-1}^{MAP} - v_2^{MAP} - v_3^{MAP} \\
\frac{dPbs2}{dt} &= -v_2^{MAP} + v_{-2}^{MAP} \\
\frac{dPbs2P}{dt} &= v_2^{MAP} - v_{-2}^{MAP} - v_3^{MAP} + v_{-3}^{MAP} + v_4^{MAP} \\
\frac{dPbs2P_2}{dt} &= v_3^{MAP} - v_{-3}^{MAP} - v_4^{MAP} - v_5^{MAP} \\
\frac{dHog1}{dt} &= -v_4^{MAP} + v_{-4}^{MAP} + v_{trans1} - v_{trans2} \\
\frac{dHog1P}{dt} &= v_4^{MAP} - v_{-4}^{MAP} - v_5^{MAP} + v_{-5}^{MAP} \\
\frac{dHog1P_{2cyt}}{dt} &= v_5^{MAP} - v_{-5}^{MAP} - v_{trans} \\
\frac{dHog1P_{2nuc}}{dt} &= v_{trans} - v_{dephos} \\
\frac{dHog1_{nuc}}{dt} &= -v_{trans1} + v_{dephos} + v_{trans2}
\end{aligned}$$

Paper

$$\begin{aligned}
\frac{dSsk2}{dt} &= -v_1^{MAP} + v_{-1}^{MAP} \\
\frac{dSsk2P}{dt} &= v_1^{MAP} - v_{-1}^{MAP} \\
\frac{dPbs2}{dt} &= -v_2^{MAP} + v_{-2}^{MAP} \\
\frac{dPbs2P}{dt} &= v_2^{MAP} - v_{-2}^{MAP} - v_3^{MAP} + v_{-3}^{MAP} \\
\frac{dPbs2P_2}{dt} &= v_3^{MAP} - v_{-3}^{MAP} \\
\frac{dHog1}{dt} &= -v_4^{MAP} + v_{-4}^{MAP} + v_{trans1} - v_{trans2} \\
\frac{dHog1P}{dt} &= v_4^{MAP} - v_{-4}^{MAP} - v_5^{MAP} + v_{-5}^{MAP} \\
\frac{dHog1P_{2cyt}}{dt} &= v_5^{MAP} - v_{-5}^{MAP} - v_{trans} \\
\frac{dHog1P_{2nuc}}{dt} &= v_{trans} - v_{dephos} \\
\frac{dHog1_{nuc}}{dt} &= -v_{trans1} + v_{dephos} + v_{trans2}
\end{aligned}$$



$$\begin{aligned}
\frac{dVolume}{dt} &= -v_0^{TCS} \\
\frac{dSln1}{dt} &= -v_1^{TCS} + v_2^{TCS} \\
\frac{dSln1P}{dt} &= v_1^{TCS} - v_2^{TCS} \\
\frac{dYpd1}{dt} &= -v_2^{TCS} + v_3^{TCS} \\
\frac{dYpd1P}{dt} &= v_2^{TCS} - v_3^{TCS} \\
\frac{dSsk1}{dt} &= -v_3^{TCS} + v_4^{TCS} \\
\frac{dSsk1P}{dt} &= v_3^{TCS} - v_4^{TCS} \\
v_0^{TCS} &= k_0^{TCS} * Ssk1 \\
v_1^{TCS} &= k_1^{TCS} * Sln1 \\
v_2^{TCS} &= k_2^{TCS} * Sln1 * Ypd1 - k_{-2}^{TCS} * Sln1 * Ypd1P \\
v_3^{TCS} &= k_3^{TCS} * Ssk1 * Ypd1P \\
v_4^{TCS} &= k_4^{TCS} * Ssk1P
\end{aligned}$$

$$\begin{aligned}
v0 &= k0 * Receptor \\
v1 &= k1 * MAPKKK * Receptor \\
v2 &= k2 * MAPKKKP * Phosphatase \\
v3 &= k3 * MAPKK * MAPKKKP \\
v4 &= k4 * MAPKKP * Phosphatase \\
v5 &= k5 * MAPK * MAPKKP \\
v6 &= k6 * MAPKP * Phosphatase
\end{aligned}$$

$$\begin{aligned}
\frac{dReceptor}{dt} &= -v0 \\
\frac{dMAPKKKP}{dt} &= v1 - v2 \\
\frac{dMAPKKP}{dt} &= v3 - v4 \\
\frac{dMAPKP}{dt} &= v5 - v6 \\
\frac{dMAPKKK}{dt} &= -dMAPKKKP \\
\frac{dMAPKK}{dt} &= -dMAPKKP \\
\frac{dMAPK}{dt} &= -dMAPKP \\
\frac{dPhosphatase}{dt} &= 0
\end{aligned}$$

$$\begin{aligned}
v_0 &= k_0 * Ssk1 \\
v_1^{MAP} &= k_1^{MAP} * Ssk2 * Ssk1 \\
v_{-1}^{MAP} &= k_{-1}^{MAP} * Ssk2P \\
v_2^{MAP} &= k_2^{MAP} * Ssk2 * Pbs2 \\
v_{-2}^{MAP} &= k_{-2} * Pbs2P \\
v_3^{MAP} &= k_3^{MAP} * Ssk2P * Pbs2P \\
v_{-3}^{MAP} &= k_{-3} * Pbs2P_2 \\
v_4^{MAP} &= k_4^{MAP} * Hog1 * PbsP_2 \\
v_{-4}^{MAP} &= k_{-4} * Hog1P \\
v_5^{MAP} &= k_5 * Hog1P * Pbs2P_2 \\
v_{-5}^{MAP} &= k_{-5} * Hog1P_2
\end{aligned}$$

$$\begin{aligned}
\frac{dSsk1}{dt} &= -v_0^{MAP} \\
\frac{dSsk2}{dt} &= -v_1^{MAP} + v_{-1}^{MAP} \\
\frac{dSsk2P}{dt} &= v_1^{MAP} - v_{-1}^{MAP} \\
\frac{dPbs2}{dt} &= -v_2^{MAP} + v_{-2}^{MAP} \\
\frac{dPbs2P}{dt} &= v_2^{MAP} - v_{-2}^{MAP} - v_3^{MAP} + v_{-3}^{MAP} \\
\frac{dPbs2P_2}{dt} &= v_3^{MAP} - v_{-3}^{MAP} \\
\frac{dHog1}{dt} &= -v_4^{MAP} + v_{-4}^{MAP} \\
\frac{dHog1P}{dt} &= v_4^{MAP} - v_{-4}^{MAP} - v_5^{MAP} + v_{-5}^{MAP} \\
\frac{dHog1P_2}{dt} &= v_5^{MAP} - v_{-5}^{MAP}
\end{aligned}$$

$$vts = kts_1 * Hog_1 P_{2nuc}$$

$$vex = kex * mRNA_{nuc}$$

$$vrd = kts * mRNA_{cyt}$$

$$vtl = ktl * mRNA_{cyt}$$

$$vpd = kpd * Protein$$

$$\frac{dmRNA_{nuc}}{dt} = vts - vex$$

$$\frac{dmRNA_{cyt}}{dt} = vex - vrd$$

$$\frac{dProtein}{dt} = vtl - vpd$$

$$f(E, S, ES)$$