

**Table 3**

The mathematical model of the *Ps/Pr* promoters of TOL.

Description	Equation
XylR <sub>i</sub> concentration	$\frac{dXylR_i}{dt} = \frac{\beta_{XylR_i} Pr_{TC}}{K_{Pr, XylR_i} + Pr_{TC}} - r_{XylR} XylR_i S_1 + 3r_{R, XylR} XylR_a (S_{0,1} - S_1) - \alpha$
XylR <sub>a</sub> concentration	$\frac{dXylR_a}{dt} = \frac{1}{3} r_{XylR} XylR_i S_1 - r_{R, XylR} XylR_a (S_{0,1} - S_1) - \alpha_{XylR_a} XylR_a$
<i>Pr</i> promoter activity	$\frac{d Pr_{TC}}{dt} = \frac{\beta_{Pr}}{1 + \left( \frac{XylR_i}{K_{XylR_i}} \right)^{n_{Pr,i}} + \left( \frac{XylR_a}{K_{XylR_a}} \right)^{n_{Pr,a}}} \frac{1}{1 + K_{SUC,Pr} S_2^2} - \alpha_{Pr} Pr_{TC}$
<i>Ps</i> promoter activity	$\frac{dPs_{TC}}{dt} = \beta_0 + \beta_{Ps} \frac{XylR_a^{n_{Ps,a}}}{K_{XylR_a,Ps}^{n_{Ps,a}} + XylR_a^{n_{Ps,a}}} \frac{1}{1 + \left( \frac{S_2}{K_{SUC,Ps}} \right)^2} - \alpha_{Ps} Ps_{TC}$