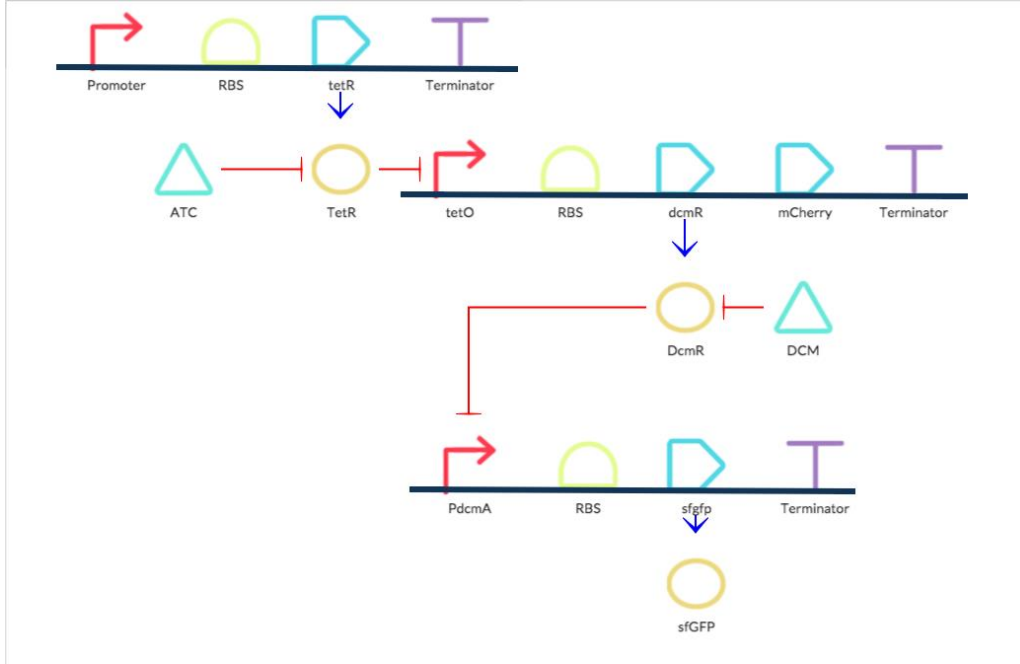


## Biosensor-Detecting chlorinated solvents (DCM)



Formulae for two certain parts

$$\frac{d[\text{DcmR}]}{dt} = \chi_{tetO} \alpha_1 [\text{dcmR}^F] - d[\text{DcmR}]$$

$$[\text{dcmR}^F] = [\text{dcmR}] \frac{1}{1 + \left( \frac{[\text{TetR}]}{\beta_{TetR}} \right)^{\mu_{TetR}}} \frac{Kd}{Kd + [\text{DCM}]}$$

$$[\text{tetR}^F] = [\text{tetR}] \frac{1}{1 + \left( \frac{[\text{ATC}]}{\beta_{ATC}} \right)^{\mu_{ATC}}}$$

$$\frac{d[\text{TetR}]}{dt} = \alpha_3 [\text{tetR}^F] - d[\text{TetR}]$$

sfGFP and sfGFP and DcmR

$$\frac{d[\text{sfGFP}]}{dt} = \chi_{PdcmA} \alpha_2 [\text{sfGFP}^F] - d[\text{sfGFP}]$$

$$[\text{sfGFP}^F] = [\text{sfGFP}] \frac{1}{1 + \left( \frac{[\text{DcmR}]}{\beta_{DcmR}} \right)^{\mu_{DcmR}}}$$

**Parameter Table**

<b>Symbols</b>	<b>Parameters</b>	<b>Values and Units</b>
Alpha_1	Translation rate of DcmR	3.83 $\mu\text{mol} \cdot \text{min}^{-1}$
D	Protein degradation rate	1.34 $\text{s}^{-1}$
Beta_TetR	Repression coefficient of TetR	3.3
Mju_TetR	Cooperativity coefficient of TetR	2
Kd	DCM repression coefficient	3.7
Beta_ATC	Repression coefficient of ATC	4.1
Mju_ATC	Cooperativity coefficient of ATC	2
Alpha_2	Translation rate of sfGFP	3.61 $\mu\text{mol} \cdot \text{min}^{-1}$
Alpha_3	Translation rate of TetR	2.89 $\mu\text{mol} \cdot \text{min}^{-1}$
Beta_DcmR	Repression coefficient of DcmR	3.5
Mju_DcmR	Cooperativity coefficient of DcmR	2

**Reference:** <http://2014.igem.org/Team:Oxford>