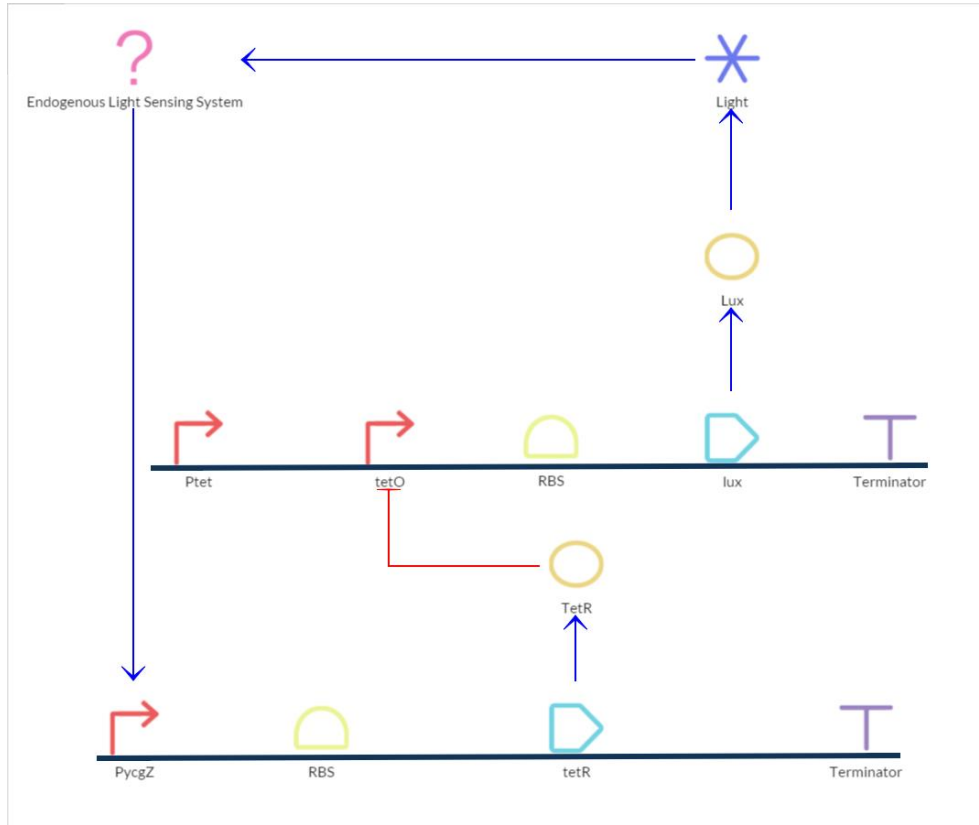


## Biosensor-light



### Formulae for two certain parts

Lux and TetR:

$$\frac{d[\text{Lux}]}{dt} = k_2 \chi_{P_{tet}} N \frac{1}{1 + \left( \frac{[\text{TetR}]}{\beta_{TetR}} \right)^2} [\text{lux}] - d_2 [\text{Lux}]$$

Light density:

$$Z = k_3 [\text{Lux}] + t$$

Endogenous Light Sensing System:

$$\frac{d[\text{Endogenous Light Sensing System}]}{dt} = Z * [\text{Endogenous Light Sensing System}] * \left( 1 - \frac{[\text{Endogenous Light Sensing System}]}{k_5} \right) * \left( 1 - \frac{Z}{k_6} \right)$$

TetR and Ls1:

$$\frac{d[\text{TetR}]}{dt} = k_7 \chi_{pycgZ} N \frac{[\text{Endogenous Light Sensing System}]^2}{h_0^2 + [\text{Endogenous Light Sensing System}]^2} [\text{tetR}] - d_3 [\text{TetR}]$$

### Parameter Table

Parameters	Values and Units
K_1	0.01umol/min
K_2	0.01umol/min
K_3	8.4
K_5	20
K_6	20
K_7	0.01umol/min
beta_TetR	0.5
d_1	0
d_2	0
h_0	1
N	2

**Reference:** [http://2012.igem.org/Team:Fudan\\_Lux](http://2012.igem.org/Team:Fudan_Lux)