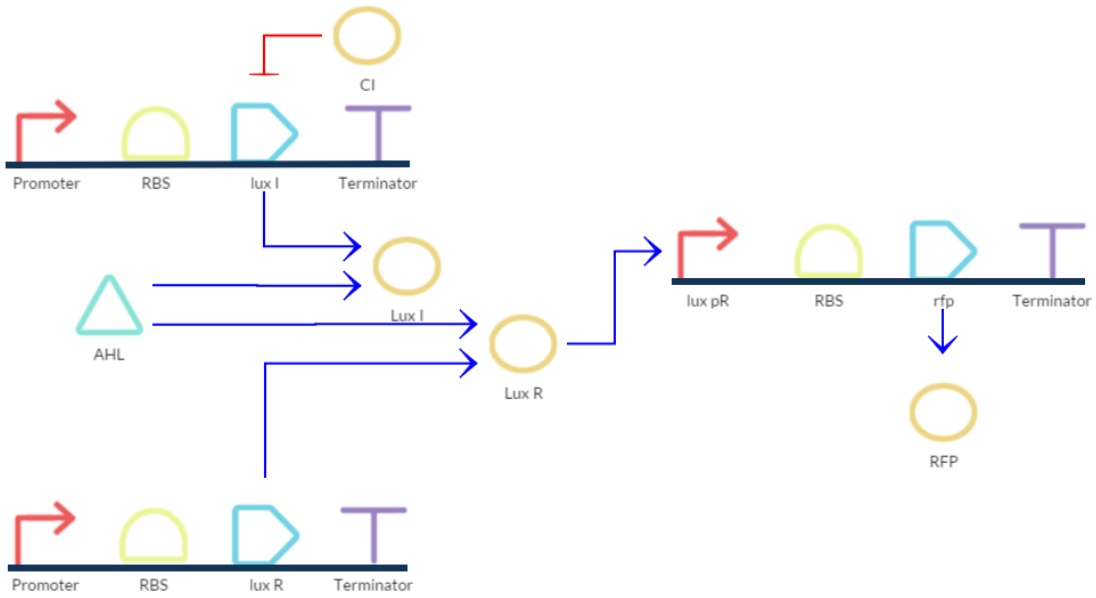
Reporter



Formulae for two certain parts

LuxI and luxI

$$\frac{d[\mathrm{LuxI}]}{dt} = \alpha_{LuxI}[\mathrm{luxI}^F][\mathrm{AHL}] - \gamma_{LuxI}[\mathrm{LuxI}]$$

$$\frac{d[\mathrm{LuxR}]}{dt} = \alpha_{LuxR}[\mathrm{luxR}][\mathrm{AHL}] - \gamma_{LuxR}[\mathrm{LuxR}]$$

RFP and rfp

$$\frac{d[\mathrm{RFP}]}{dt} = \alpha_{RFP}[\mathrm{rfp}^F] - \gamma_{RFP}[\mathrm{RFP}]$$

$$[\mathrm{rfp}^F] = [\mathrm{rfp}]\frac{[\mathrm{LuxR}]^n}{Kd\,\chi_{luxpR} + [\mathrm{LuxR}]^n}$$

Formulae for numerical simulation

$$\frac{d[\mathrm{LuxI}]}{dt} = \alpha_{LuxI}[\mathrm{luxI}^F] - \gamma_{LuxI}[\mathrm{LuxI}]$$

$$[\mathrm{luxI}^F] = [\mathrm{luxI}]\frac{1}{1 + \left(\frac{[\mathrm{CI}]}{\beta_{CI}}\right)^{n_{CI}}}$$

LuxI and AHL

$$\frac{d[\text{LuxI}]}{dt} = \alpha_{LuxI}[\text{AHL}] - \gamma_{LuxI}[\text{LuxI}]$$

LuxR and luxR

$$\frac{d[\text{LuxR}]}{dt} = \alpha_{LuxR}[\text{luxR}] - \gamma_{LuxR}[\text{LuxR}]$$

LuxR and AHL

$$\frac{d[\text{LuxR}]}{dt} = \alpha_{LuxR}[\text{AHL}] - \gamma_{LuxR}[\text{LuxR}]$$

Parameter Table

Symbols	Parameters	Values and Units
Kd	Repression coefficient	4.87
Alpha_AlCR	Production rate of AlCR	4.32umol*min^-1
Alpha_TetR	Production rate of TetR	3.55umol*min^-1
Alpha_LacIm1	Production rate of LacIm1	5.23 umol*min^-1
Alpha_GFP	Production rate of GFP	6.46 umol*min^-1
Alpha_CI	Production rate of CI	4.37 umol*min^-1
Alpha_LacI	Production rate of LacI	2.67 umol*min^-1
Alpha_LuxI	Production rate of LuxI	4.82 umol*min^-1
Alpha_LuxR	Production rate of LuxR	3.63 umol*min^-1
Alpha_RFP	Production rate of RFP	4.27 umol*min^-1
Gamma_TetR	Degradation rate of TetR	1.52 s^-1
Gamma_LacIm1	Degradation rate of LacIm1	0.92s^-1
Gamma_GFP	Degradation rate of GFP	1.14 s^-1
Gamma_CI	Degradation rate of CI	0.83s^-1
Gamma_LacI	Degradation rate of LacI	1.34s^-1
Gamma_LuxI	Degradation rate of LuxI	1.62s^-1
Gamma_LuxR	Degradation rate of LuxR	0.62s^-1
Gamma_RFP	Degradation rate of RFP	1.25s^-1
Beta_ALCR	ALCR Repression coefficient	4
Beta_TetR	TetR Repression coefficient	3
Beta_LacI	LacI Repression coefficient	3
Beta_LacIm1	LacIm1Repression coefficient	4
Beta_CI	CI Repression coefficient	3
n_ALCR	ALCR Cooperativity coefficient	2
n_TetR	TetR Cooperativity coefficient	1
n_LacI	LacI Cooperativity coefficient	2
n_LacIm1	LacIm1 Cooperativity coefficient	2
n_CI	CI Cooperativity coefficient	1
n	Hill coefficient	3
d	Protein degradation rate	1.14 s^-1

Reference: http://2011.igem.org/Team:ETH_Zurich