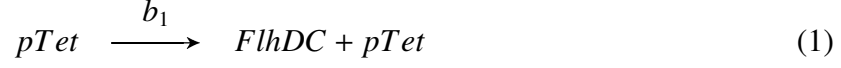
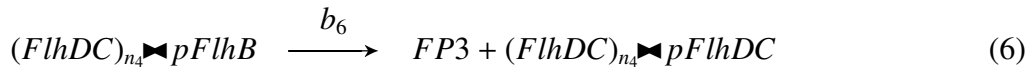
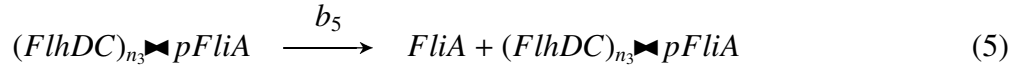
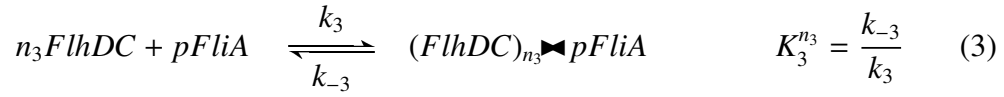


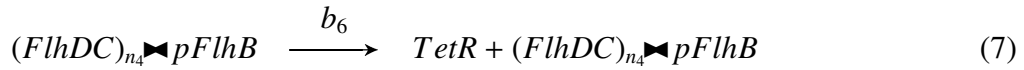
specific to pTet-circuit



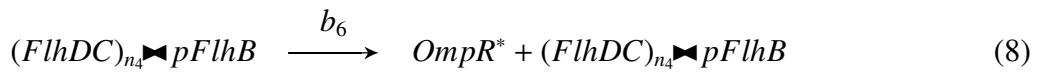
specific to pFlhDC-circuit



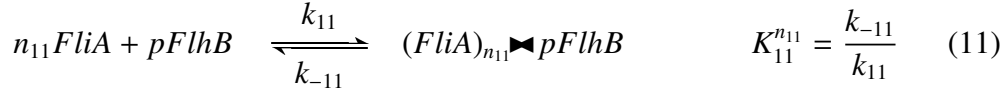
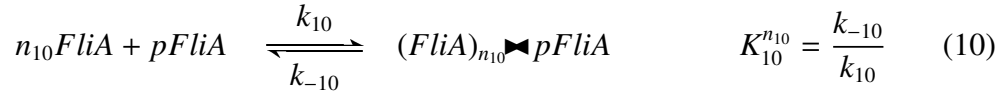
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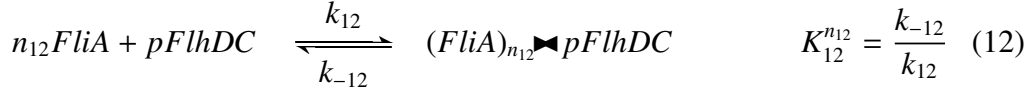
specific to pFlhDC/OmpR\*-circuit



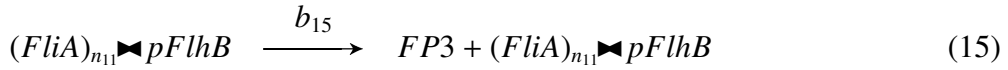
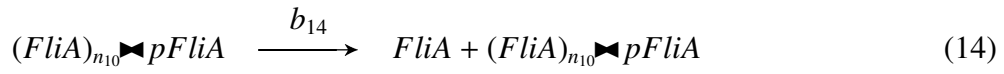
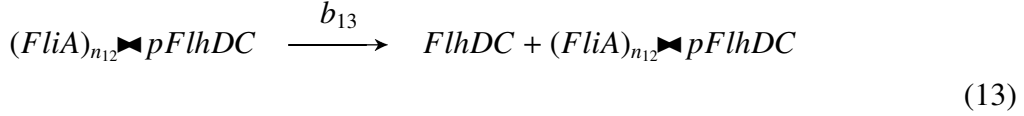
specific to pFlhDC/EnvZ-circuit



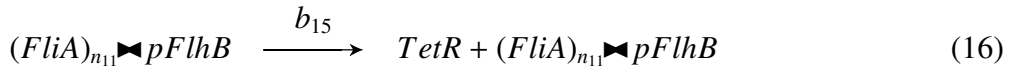
specific to pFlhDC-circuit



specific to pFlhDC-circuit



specific to pTet-circuit

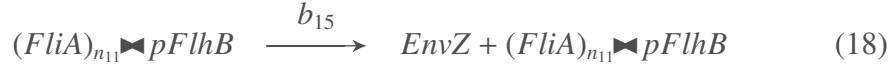


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specific to pFlhDC-circuit

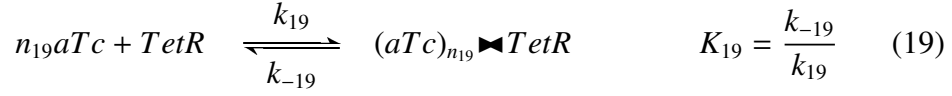


specific to pFlhDC/EnvZ-circuit



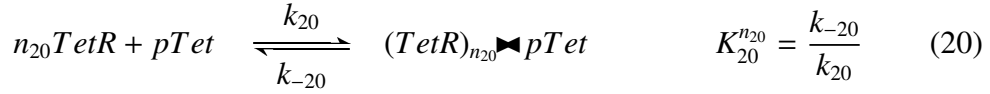
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specific to pTet-circuit



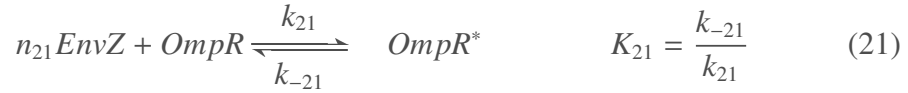
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specific to pTet-circuit

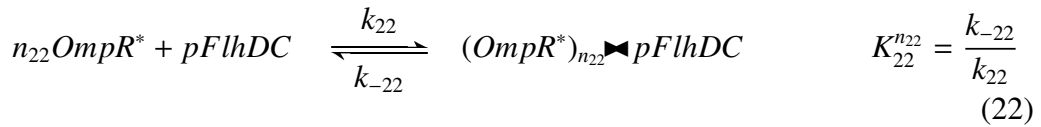


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specific to pFlhDC/EnvZ-circuit



specific to pFlhDC-circuit

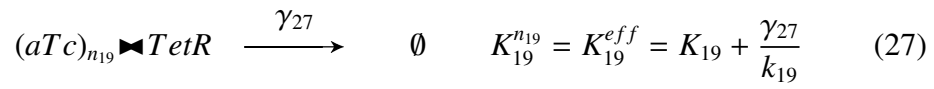




specific to pTet-circuit



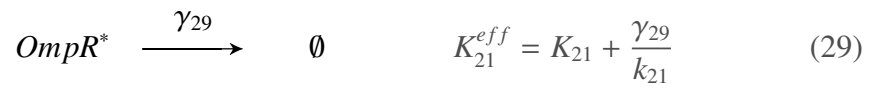
specific to pTet-circuit



specific to pFlhDC/EnvZ-circuit



specific to pFlhDC-circuit



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$$(3) \Rightarrow [(FlhDC)_{n_3} \blacktriangleright pFliA]_{eq} = \frac{[FlhDC]^{n_3}}{K_3^{n_3} + [FlhDC]^{n_3}} \cdot [pFliA^{total}] \quad (30)$$


---

$$(4) \Rightarrow [(FlhDC)_{n_4} \blacktriangleright pFlhB]_{eq} = \frac{[FlhDC]^{n_4}}{K_4^{n_4} + [FlhDC]^{n_4}} \cdot [pFlhB^{total}] \quad (31)$$


---

$$(10) \Rightarrow [(FliA)_{n_{10}} \blacktriangleright pFliA]_{eq} = \frac{[FliA]^{n_{10}}}{K_{10}^{n_{10}} + [FliA]^{n_{10}}} \cdot [pFliA^{total}] \quad (32)$$


---

$$(11) \Rightarrow [(FliA)_{n_{11}} \blacktriangleright pFlhB]_{eq} = \frac{[FliA]^{n_{11}}}{K_{11}^{n_{11}} + [FliA]^{n_{11}}} \cdot [pFlhB^{total}] \quad (33)$$


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specific to pFlhDC-circuit

$$(12) \Rightarrow [(FliA)_{n_{12}} \blacktriangleright pFlhDC]_{eq} = \frac{[FliA]^{n_{12}}}{K_{12}^{n_{12}} + [FliA]^{n_{12}}} \cdot [pFlhDC^{total}] \quad (34)$$


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specific to pTet-circuit

$$(19) \Rightarrow [TetR^{free}] = \frac{K_{19}^{n_{aTc}}}{K_{19}^{n_{aTc}} + [aTc]_i^{n_{aTc}}} \cdot [TetR^{total}] \quad (35)$$


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specific to pTet-circuit

$$(20) \Rightarrow [pTet]_{eq} = \frac{K_{20}^{n_{20}}}{K_{20}^{n_{20}} + [TetR^{free}]^{n_{20}}} \cdot [pTet^{total}] \quad (36)$$


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specific to pFlhDC/EnvZ-circuit

$$(21) \Rightarrow \begin{cases} ([EnvZ^{total}] - n_{21} OmpR_{eq}^*)^{n_{21}} ([OmpR^{total}] - OmpR_{eq}^*) - K_{21}^{eff} OmpR_{eq}^* = 0 \\ 0 < n_{21} OmpR_{eq}^* \quad ; \quad 0 < OmpR_{eq}^* < [OmpR^{total}] \end{cases} \quad (37)$$


---

specific to pFlhDC-circuit

$$(22) \Rightarrow [pFlhDC]_{eq} = \frac{K_{22}^{n_{22}}}{K_{22}^{n_{22}} + [OmpR^*]^{n_{22}}} \cdot [pFlhDC^{total}] \quad (38)$$

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specific to pTet-circuit

$$(1) \Rightarrow \frac{d[FlhDC]}{dt} = b_1[pTet]_{eq} - \gamma_{23}[FlhDC] \quad (39a)$$

$$(35) \Rightarrow \frac{d[FlhDC]}{dt} = \beta_1 \cdot \frac{K_{20}^{n_{20}}}{K_{20}^{n_{20}} + \left( \frac{K_{19}^{n_{aTc}}}{K_{19}^{n_{aTc}} + [aTc]_i^{n_{aTc}}} \cdot [TetR] \right)^{n_{20}}} - \gamma_{23}[FlhDC] \quad (39)$$

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specific to pFlhDC-circuit

$$(2) \Rightarrow \frac{d[FlhDC]}{dt} = b_2[pFlhDC^{free}]_{eq} + b_{13}[(FliA)_{n_{12}} \blacktriangleright pFlhDC]_{eq} - \gamma_{23}[FlhDC] \quad (40a)$$

$$(34) \Rightarrow \frac{d[FlhDC]}{dt} = \frac{K_{22}^{n_{22}}}{K_{22}^{n_{22}} + [OmpR^*]^{n_{22}}} \left( \beta_2 \cdot \frac{K_{12}^{n_{12}}}{K_{12}^{n_{12}} + [FliA]^{n_{12}}} + \beta_{13} \cdot \frac{[FliA]^{n_{12}}}{K_{12}^{n_{12}} + [FliA]^{n_{12}}} \right) - \gamma_{23}[FlhDC] \quad (40)$$

$$(5) \Rightarrow \frac{d[FliA]}{dt} = b_5[(FlhDC)_{n_3} \blacktriangleright pFliA]_{eq} + b_{14}[(FliA)_{n_{10}} \blacktriangleright pFliA]_{eq} - \gamma_{24}[FliA] \quad (41a)$$

$$(30) \Rightarrow \frac{d[FliA]}{dt} = \beta_5 \cdot \frac{[FlhDC]^{n_3}}{K_3^{n_3} + [FlhDC]^{n_3}} + \beta_{14} \cdot \frac{[FliA]^{n_{10}}}{K_{10}^{n_{10}} + [FliA]^{n_{10}}} - \gamma_{24}[FliA] \quad (41)$$

$$(6) \Rightarrow \frac{d[FP3]}{dt} = b_6[(FlhDC)_{n_4} \blacktriangleright pFlhB]_{eq} + b_{15}[(FliA)_{n_{11}} \blacktriangleright pFlhB]_{eq} - \gamma_{25}[FP3] \quad (42a)$$

$$(31) \Rightarrow \frac{d[FP3]}{dt} = \beta_6 \cdot \frac{[FlhDC]^{n_4}}{K_4^{n_4} + [FlhDC]^{n_4}} + \beta_{15} \cdot \frac{[FliA]^{n_{11}}}{K_{11}^{n_{11}} + [FliA]^{n_{11}}} - \gamma_{25}[FP3] \quad (42)$$

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specific to pTet-circuit

$$(7) \Rightarrow \frac{d[TetR]}{dt} = b_6[(FlhDC)_{n_4} \blacktriangleright pFlhB]_{eq} + b_{15}[(FliA)_{n_{11}} \blacktriangleright pFlhB]_{eq} - \gamma_{26}[TetR] \quad (43a)$$

$$(31) \Rightarrow \frac{d[TetR]}{dt} = \beta_6 \cdot \frac{[FlhDC]^{n_4}}{K_4^{n_4} + [FlhDC]^{n_4}} + \beta_{15} \cdot \frac{[FliA]^{n_{11}}}{K_{11}^{n_{11}} + [FliA]^{n_{11}}} - \gamma_{26}[TetR] \quad (43)$$

eqn.(35) gives then  $[TetR^{free}]$  in function of  $[TetR^{total}] := [TetR]$

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specific to pFlhDC/EnvZ-circuit

$$(9) \Rightarrow \frac{d[EnvZ]}{dt} = b_6[(FlhDC)_{n_4} \blacktriangleright pFlhB]_{eq} + b_{15}[(FliA)_{n_{11}} \blacktriangleright pFlhB]_{eq} - \gamma_{28}[EnvZ] \quad (44a)$$

$$(31) \Rightarrow \frac{d[EnvZ]}{dt} = \beta_6 \cdot \frac{[FlhDC]^{n_4}}{K_4^{n_4} + [FlhDC]^{n_4}} + \beta_{15} \cdot \frac{[FliA]^{n_{11}}}{K_{11}^{n_{11}} + [FliA]^{n_{11}}} - \gamma_{28}[EnvZ] \quad (44b)$$

$$[EnvZ^{total}] = [EnvZ_b] + [EnvZ] \quad (44)$$

Solve then eqn.(37) to get  $[OmpR^*]$  in function of  $[OmpR^{total}] := [OmpR_b]$

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specific to pFlhDC/OmpR\*-circuit

$$(8) \Rightarrow \frac{d[OmpR^*]}{dt} = b_6[(FlhDC)_{n_4} \blacktriangleright pFlhB]_{eq} + b_{15}[(FliA)_{n_{11}} \blacktriangleright pFlhB]_{eq} - \gamma_{29}[OmpR^*] \quad (45a)$$

$$(31) \Rightarrow \frac{d[OmpR^*]}{dt} = \beta_6 \cdot \frac{[FlhDC]^{n_4}}{K_4^{n_4} + [FlhDC]^{n_4}} + \beta_{15} \cdot \frac{[FliA]^{n_{11}}}{K_{11}^{n_{11}} + [FliA]^{n_{11}}} - \gamma_{29}[OmpR^*] \quad (45)$$