

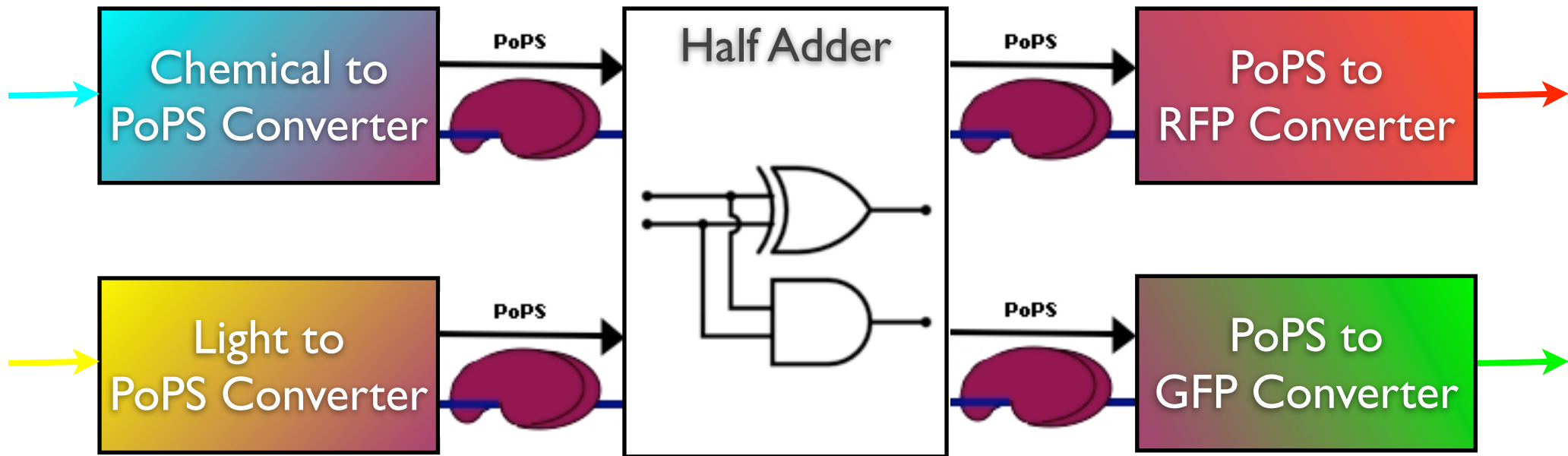
iGEM 2006 ETH Half Adder

Overview

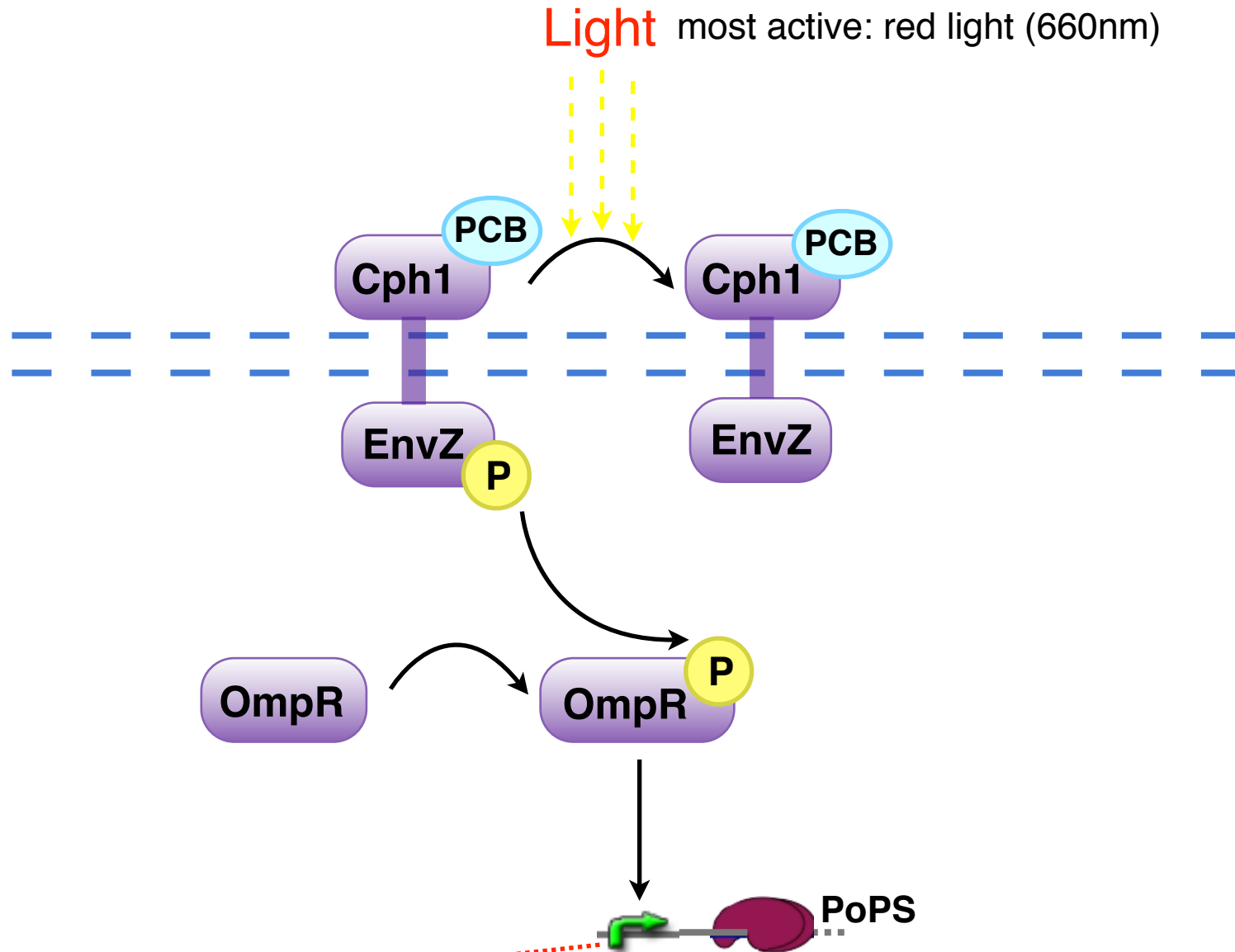
Implementation

Light → PoPS Converter

XOR Variants

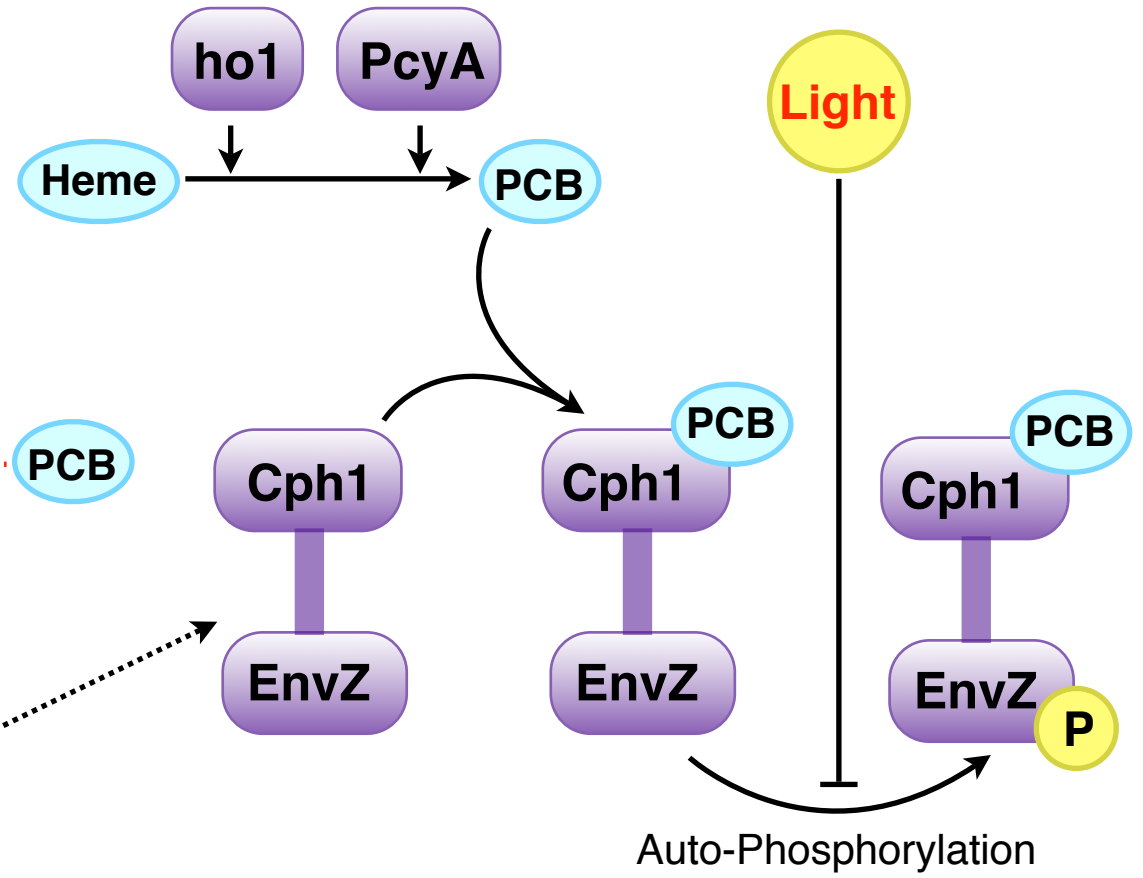
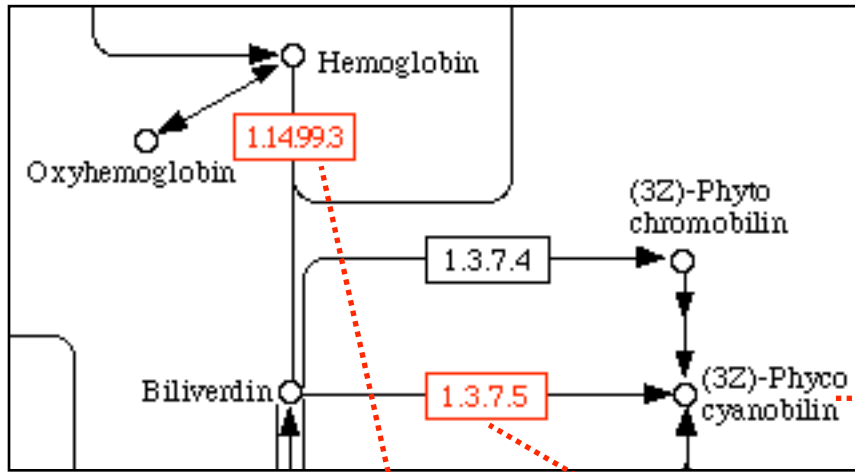


Light to PoPS Converter



Part: BBa_R0082

Light to PoPS Converter



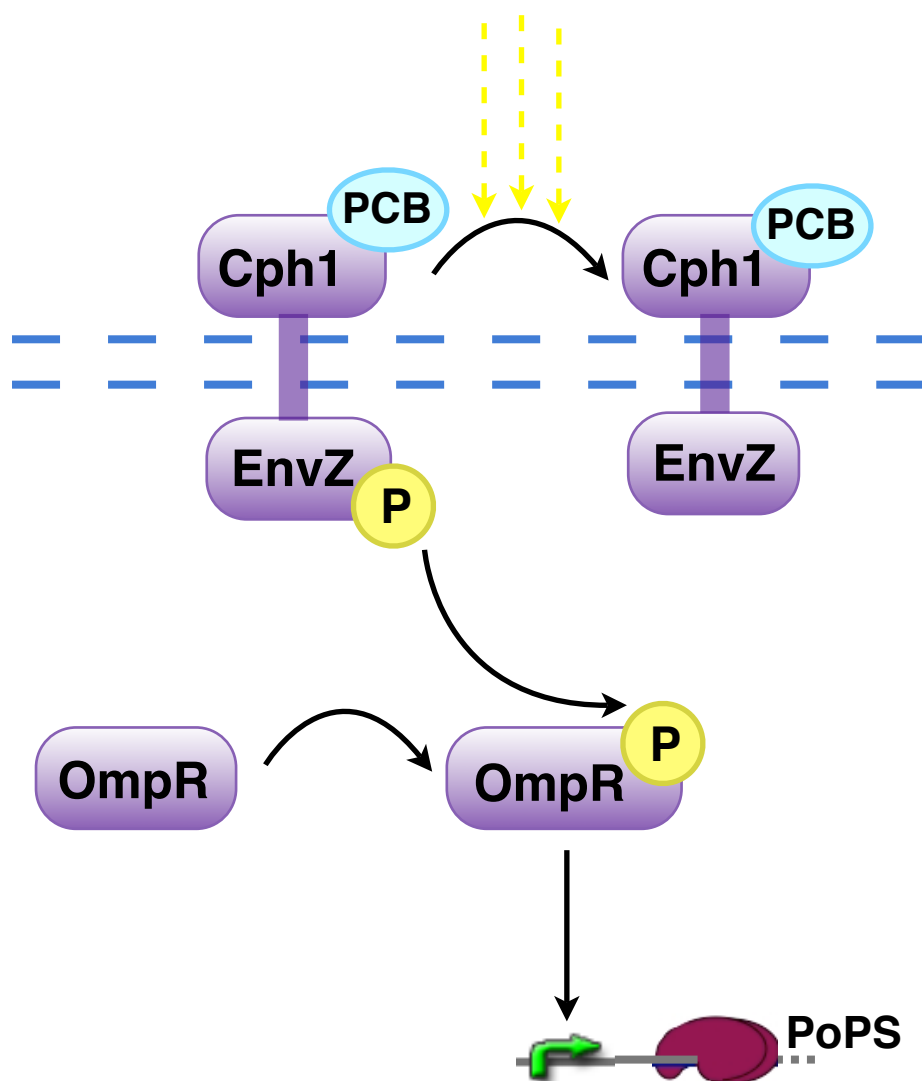
Part:BBa_I15008
Heme Oxygenase (ho1)

Part:BBa_I15009
Phycocyanobilin (PcyA)
ferredoxin oxidoreductase

Part: BBa_I15010
Cph8: Fusion Cph1/EnvZ
Chimeric Cph1 light
receptor/EnvZ protein

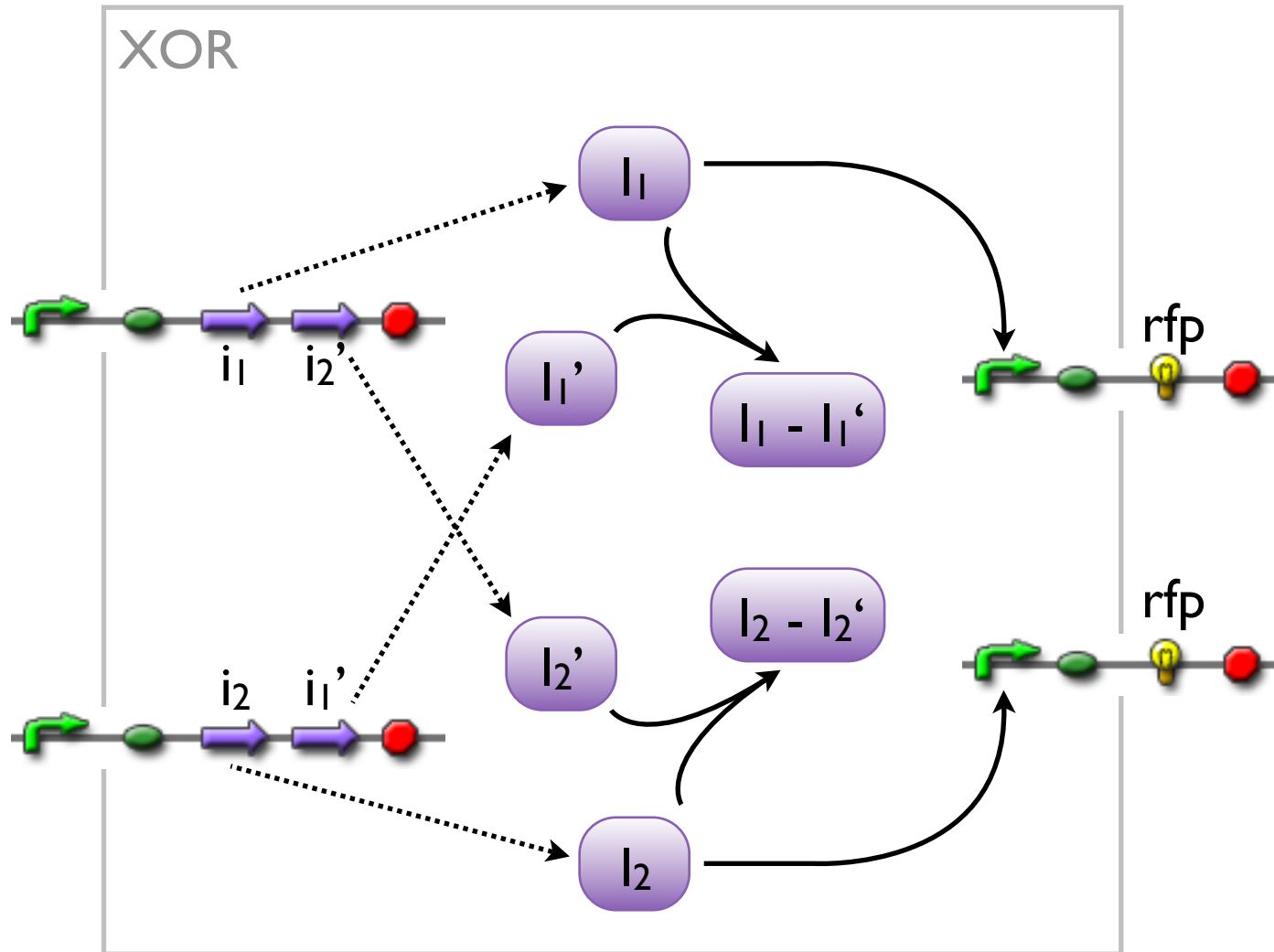
Light to PoPS Converter

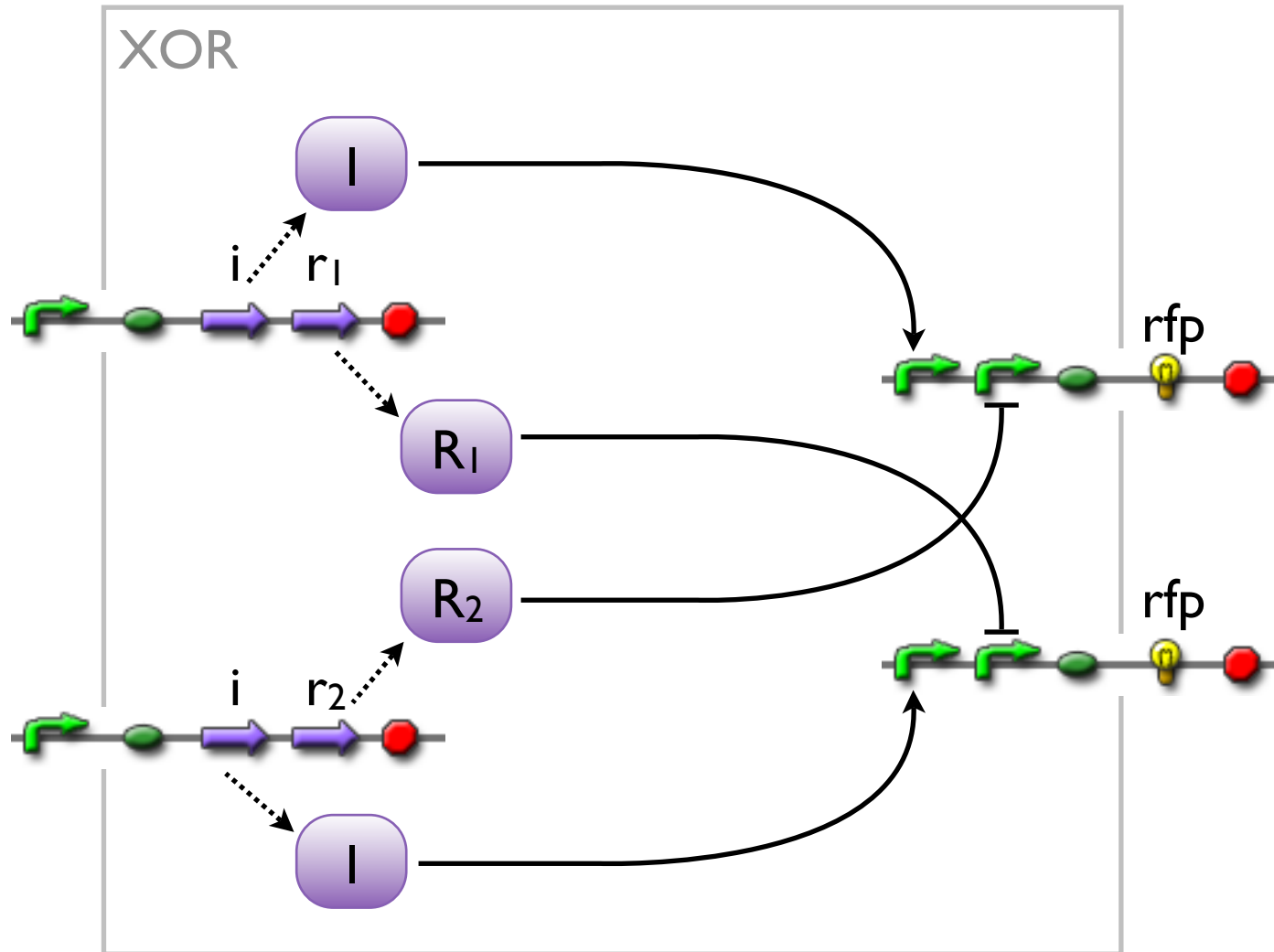
Light most active: red light (660nm)



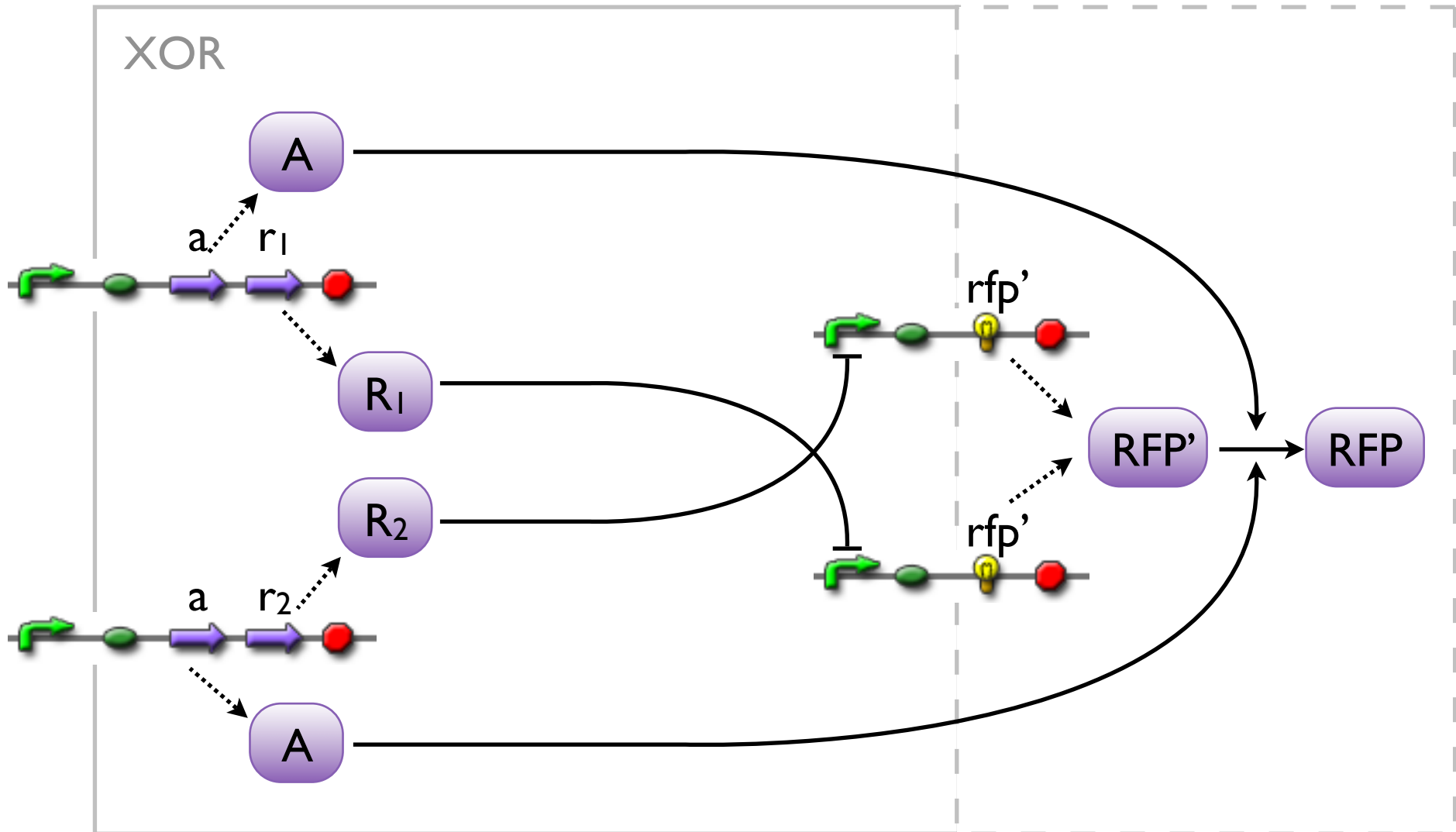
Problems

- low-active:
light \Rightarrow low PoPS
- *E. coli* deficient in natural EnvZ
must be used

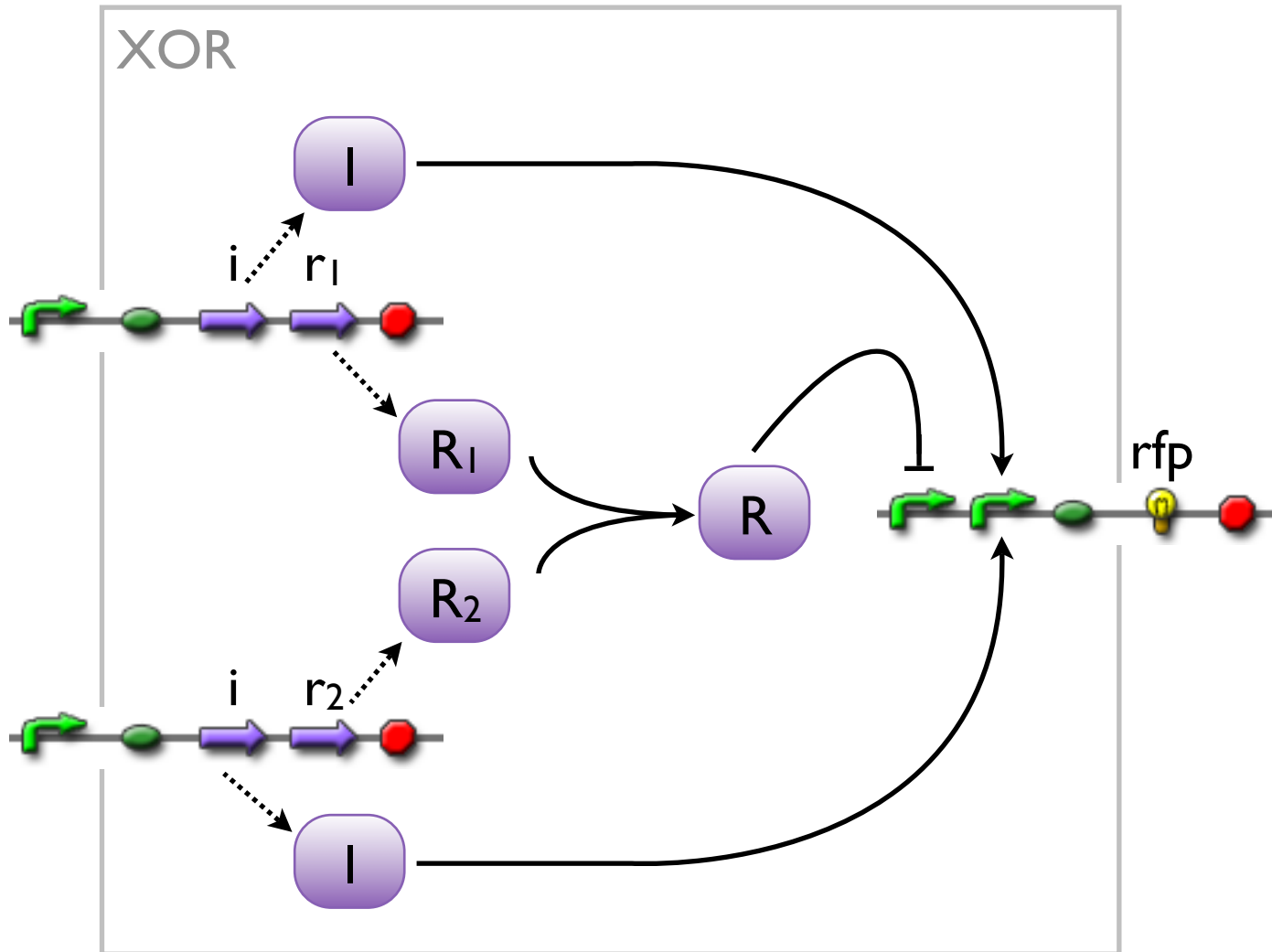


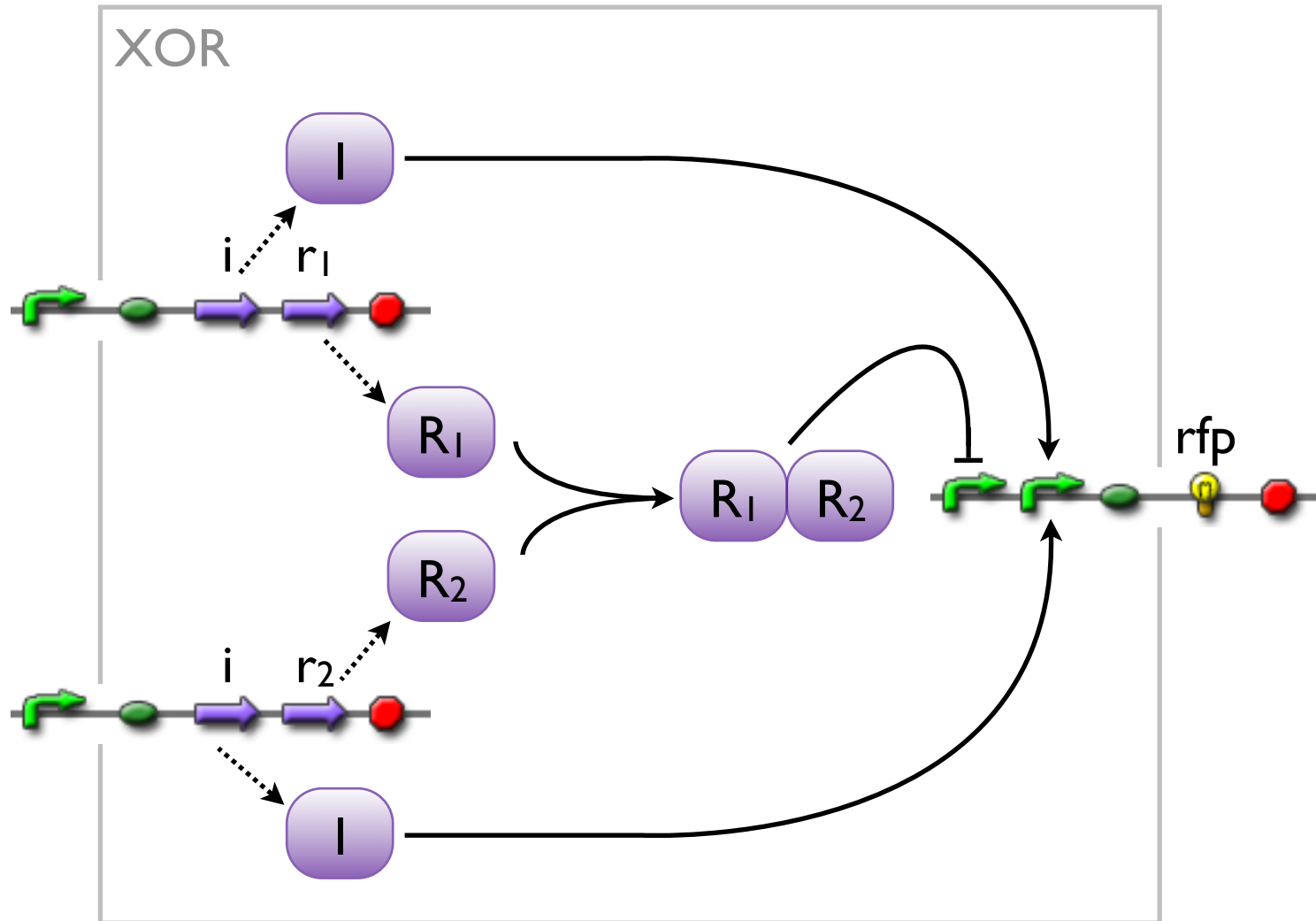


XOR 3 Simultaneous Induction with Activation



XOR 4 Induction + Synthesized Repressor





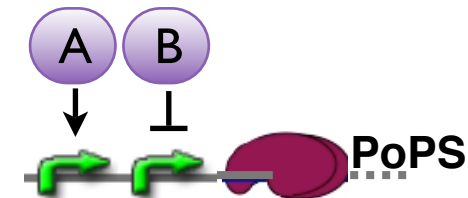
Terminology

- Regulation DNA Level
 - Induction, Repression
- Protein Level
 - Activation, Inhibition

Promoter

- Differentiation **Promoter / Operator**: Symbol?
 - 1 Promoter, can have 0-n Operators
- Multiple Operators: Typically *AND* behavior
 - E.g.: A inducer, B repressor
→ A and not B needed for PoPS

here:  = Operator



Input / Output

- XOR should have **2x PoPS Input, 1x PoPS Output**
 - Not true for Variants 1+2: they have 2x PoPS Output
 - Not true for Variant 3: RFP Output