

BBa_F2620

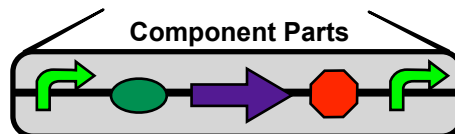
3OC₆HSL → PoPS Receiver

Mechanism & Function

A transcription factor (LuxR) that is active in the presence of a cell-cell signaling molecule (3OC₆HSL) is controlled by a regulated operator (P_{LtetO-1}). Device input is 3OC₆HSL. Device output is PoPS from a LuxR-regulated operator. If used in a cell containing TetR then a second input such as aTc can be used to produce a Boolean AND function.

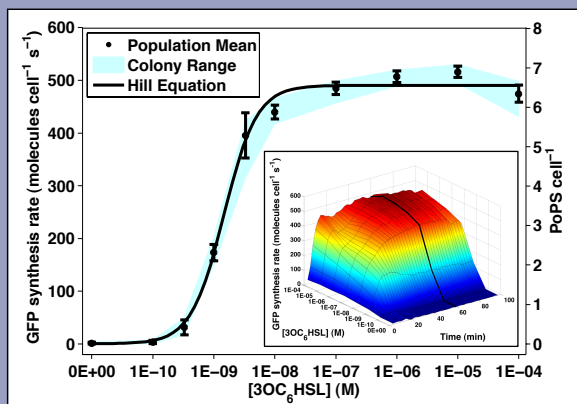


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R0040 B0034 C0062 B0015 R0062
P_{LtetO-1} RBS luxR Term. P_{luxR}

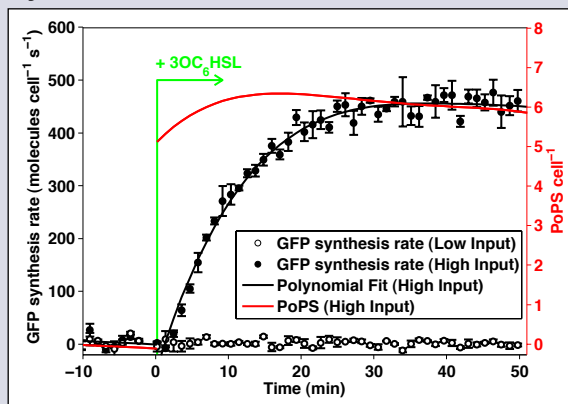
Static Performance*



$$P_{out} = \frac{P_{max} [3OC_6HSL]^n}{K^n + [3OC_6HSL]^n}$$

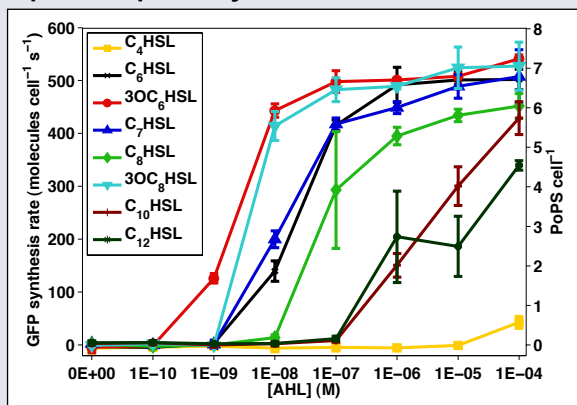
P_{max} : 6.6 PoPS cell⁻¹
 K : 1.5E-09 M 3OC₆HSL
 n : 1.6

Dynamic Performance*



BBa_F2620 Response Time: <1 min
 BBa_T9002 Response Time: 6±1 min
 Inputs: 0 M (Low), 1E-07 M (High) 3OC₆HSL

Input Compatibility*



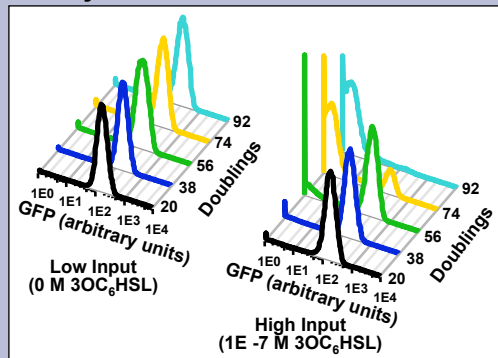
Part Compatibility (qualitative)

Chassis: MC4100, MG1655, and DH5α
 Plasmids: pSB3K3 and pSB1A2
 Devices: E0240, E0430 and E0434

Transcriptional Output Demand (low/high input)

Nucleotides: 0 / 6xNt nucleotides cell⁻¹ s⁻¹
 Polymerases: 0 / 1.5E-1xNt RNAP cell⁻¹
 (Nt = downstream transcript length)

Reliability**



Genetic: >92/>56 culture doublings
 Performance: >92/>56 culture doublings
 (low/high input during propagation)

Conditions (abridged)

Output: PoPS measured via BBa_E0240
 Culture: Supplemented M9, 37°C
 Plasmid: pSB3K3
 Chassis: MG1655
 *Equipment: PE Victor3 multi-well fluorimeter
 **Equipment: BD FACScan cytometer