

# BBa\_F2620

3OC<sub>6</sub>HSL → PoPS Receiver

[http://parts.mit.edu/registry/index.php/Part:BBa\\_F2620](http://parts.mit.edu/registry/index.php/Part:BBa_F2620)



F2620



Authors:  
Barry Canton [bcanton@mit.edu]  
Anna Labno [labnoa@mit.edu]

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## Description

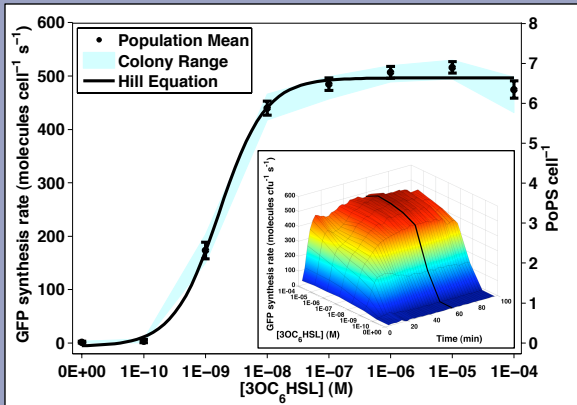
A transcription factor (LuxR, BBa\_C0062) that is active in the presence of cell-cell signaling molecule 3OC6HSL is controlled by a TetR-regulated operator (BBa\_R0040). Device input is 3OC6HSL. Device output is PoPS from a LuxR-regulated operator. If used in a cell containing TetR then a second input signal such as aTc can be used to produce a Boolean AND function.

## Parts



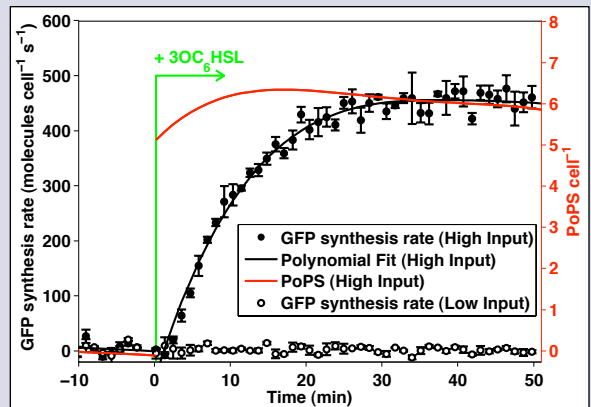
BBa\_C0062: luxR ORF  
BBa\_R0040: LuxR-regulated operator  
BBa\_F2620: TetR-regulated operator

## Transfer Function\*



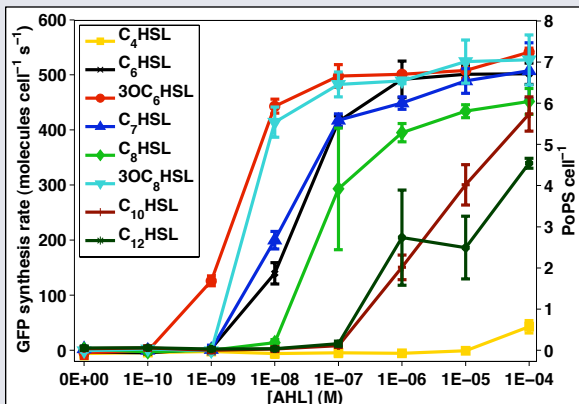
$P_{max}: 6.7 \text{ PoPS cell}^{-1}$   
 $K: 2E-09 \text{ M } 3OC_6HSL$   
 $n: 1.2$   
$$P_{out} = P_{max} \frac{[3OC_6HSL]^n}{K^n + [3OC_6HSL]^n}$$

## Response Time\*



BBa\_F2620 Response Time: <1 min  
(PoPS calculated from polynomial fit to GFP synthesis rate data. High/Low input - 1E-7/0 M 3OC<sub>6</sub>HSL)

## Input Compatibility\*



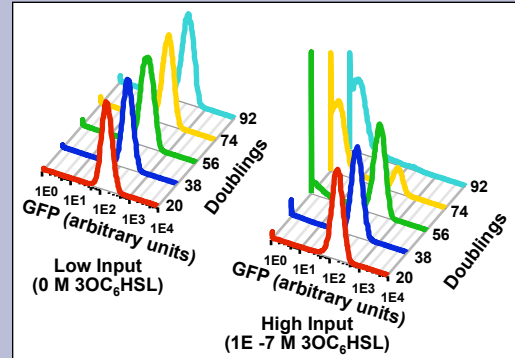
## Part Compatibility

Chassis: MC4100, MG1655, and DH5 $\alpha$   
Plasmids: pSB3K3 and pSB1A2  
Devices: E0240, E0430 and E0434  
Crosstalk with systems containing C0040

## Transcriptional Output Demand (low/high input)

Nucleotides: 0.2xNt / 6xNt nucleotides cell<sup>-1</sup> s<sup>-1</sup>  
Polymerases: 4.4E-3xNt / 1.5E-1xNt RNAP cell<sup>-1</sup>  
(Nt = downstream transcript length)

## Stability\*\*



Genetic: >92/<74 replication events\*\*  
Performance: >92/<74 replication events\*\*  
(low/high input)

## Conditions (abridged)

Output: PoPS measured via BBa\_E0240  
Culture: Supplemented M9, 37°C  
Vector: pSB3K3  
Chassis: MG1655  
\*Equipment: PE Victor3 plate reader  
\*\*Equipment: BD FACScan cytometer

Signaling Devices