M2D3: Tools for System Engineering

10/18/12
Review of M2D2: Measuring System Performance

Inspect your photograph and document!

Shannon's e.coli
Part I: Library Screen -- Improving our photography system

<table>
<thead>
<tr>
<th>EnvZ</th>
<th>H243</th>
<th>D244</th>
<th>L245</th>
<th>R246</th>
<th>T247R (K+P-)</th>
<th>P248</th>
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<tbody>
<tr>
<td>wt seq</td>
<td>CAC</td>
<td>GAC</td>
<td>TTG</td>
<td>CGC</td>
<td>Thr = ACG</td>
<td>CCG</td>
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<td>D538</td>
<td>L539</td>
<td>R540</td>
<td>T541</td>
<td>P542</td>
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to test: Kinase Dead mutant

NNY mutagenesis

FIG. 1. Schematic presentation of the structure of EnvZ. Conserved regions in the catalytic cytoplasmic domain are indicated with lettered boxes.

Weihong Heing, Frank D. Russo, Karen K. Bernd and Thomas J. Silhavy
Part I: Library Screen -- Electroporation

1. Cells don’t like it
2. Read the protocol
3. Safety glasses

http://www.onemedplace.com/blog/archives/854
Part 2: Registry of Standard Biological Parts -- Building a protein generating system in e.coli

Web address: http://partsregistry.org

3 Parts --> Protein Production
Part 2: Registry of Standard Biological Parts -- Building a protein generating system in e.coli

BioBrick™ Assembly Manual

BioBrick assembly overview

E=EcoRI-HF™
X=Xbal
S=SpeI
P=PstI
M=Mixed site
Part 3: Biology as a circuit?

Circuit designed by Steve Wasserman
Plans for today:

1. Lab & Hand-in Lab Notebooks

2. Document your picture of Butterstick!

3. Electroporation of mutant library

4. Build a protein production system from standard parts

5. Does Electrical Engineering = Biology?

6. Finish up your TinkerCell simulations (Part 4)
<table>
<thead>
<tr>
<th>Group Color</th>
<th>Miller Units in Dark</th>
<th>Miller Units in Light</th>
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