BDAthlon Problem #1

Title: Device Specification and Rule Building with Eugene

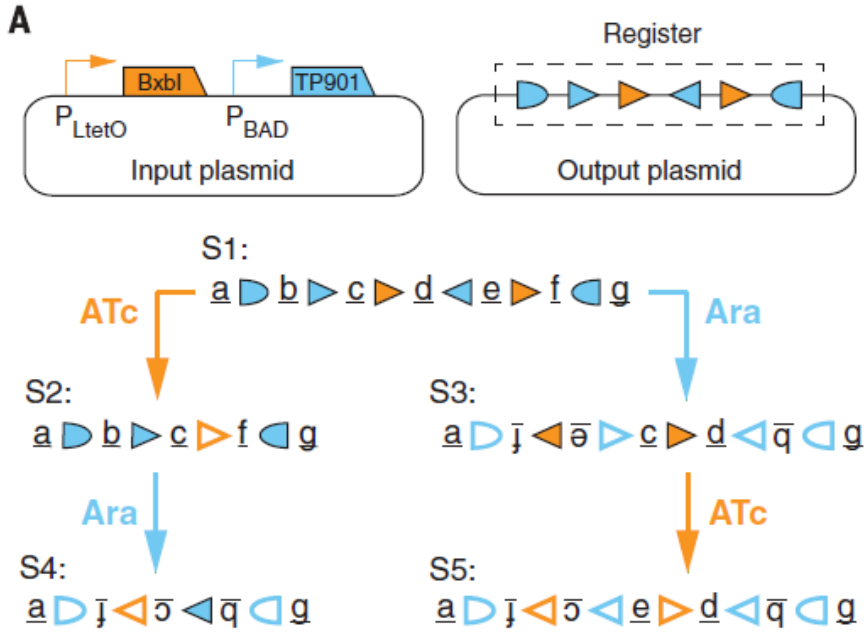
Area: Specification and Design

Objective 1 Create Eugene Files for the Repressilator

Objective 2 Recombinase Circuit

All parts and data taken from: **Synthetic *recombinase-based state machines in living cells, Nathaniel Roquet, Ava P. Soleimany, Alyssa C. Ferris, Scott Aaronson, Timothy K. Lu Science 22 JULY 2016 · VOL 353 ISSUE 6297***

A two-input five-output Recombinase State Machine (RSM) was selected as a our Eugene subject. The below figure outlines the system (it is figure 3 of the paper)



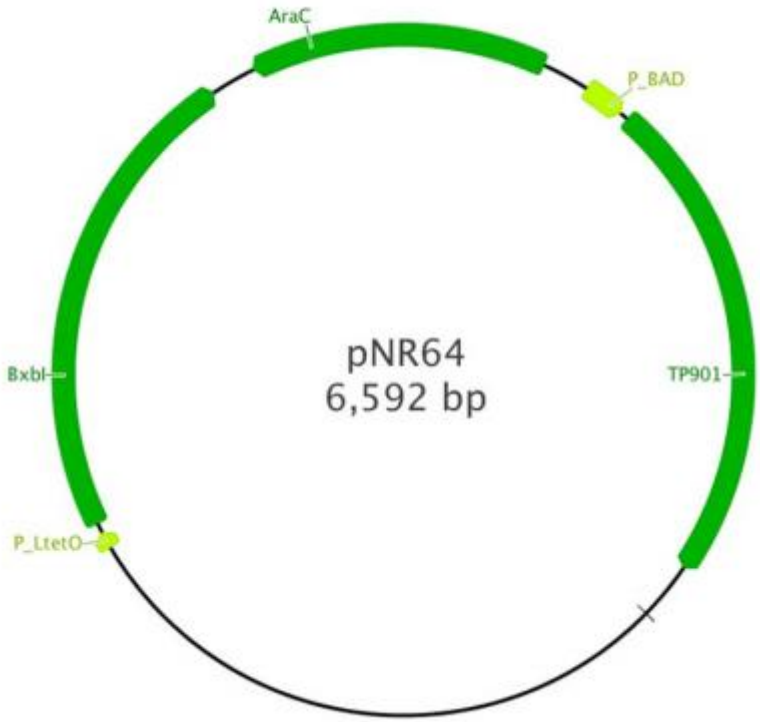
From Supplementary information:

Plasmids used :

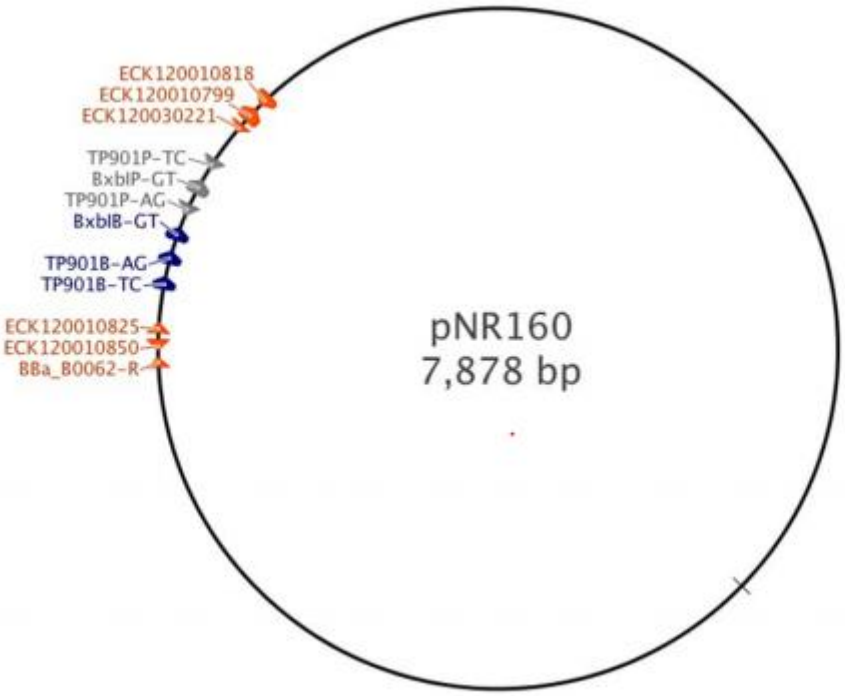
RSM	**Input plasmid**	**Output plasmid**
Fig. 3A	pNR64	pNR160

The following plasmid maps define order of parts (Part sequences were taken from supplementary Information

Input Plasmid pNR 64



Output Plasmid pNR 160



4. Eugene Issues

4.1 EugeneLab

4.1.1 Creating “New Files”

We were unable to create new files as error message came up saying:

```
{"result":"org.cidarlab.eugene.exception.EugeneException: Invalid request!","status":"exception"}
```

4.1.2 Error in File Execution

When running examples from the Eugene Examples git repository error messages showed such as the one below:

```
Exception: org.cidarlab.eugene.exception.EugeneException: @Error! Line 45 Position 15 [prog, statement, declarationStatement, ruleDeclaration, cnf_rule, or_predicate, negated_predicate, predicate, expressionRule, exp_op, relationalOperators] no viable alt; token=[@164,763:771='REPRESSES',<131>,45:17] (decision=52 state 0) decision=<<>>
```

The above error message showed when running the toggle switch example.