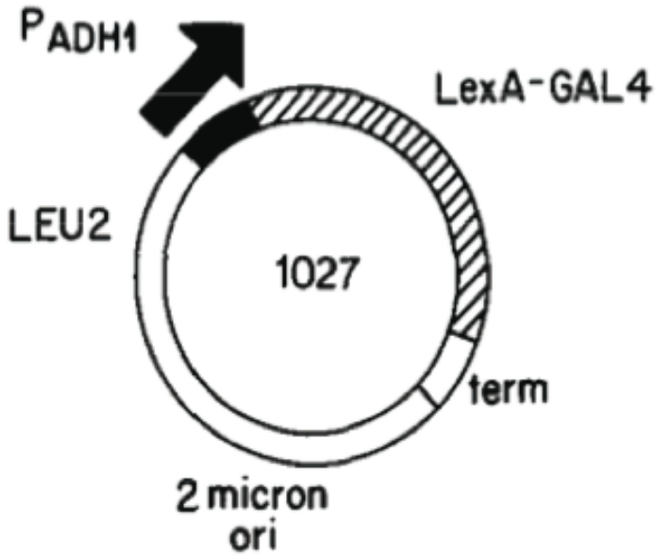
Synthetic Biology Open Language Visual

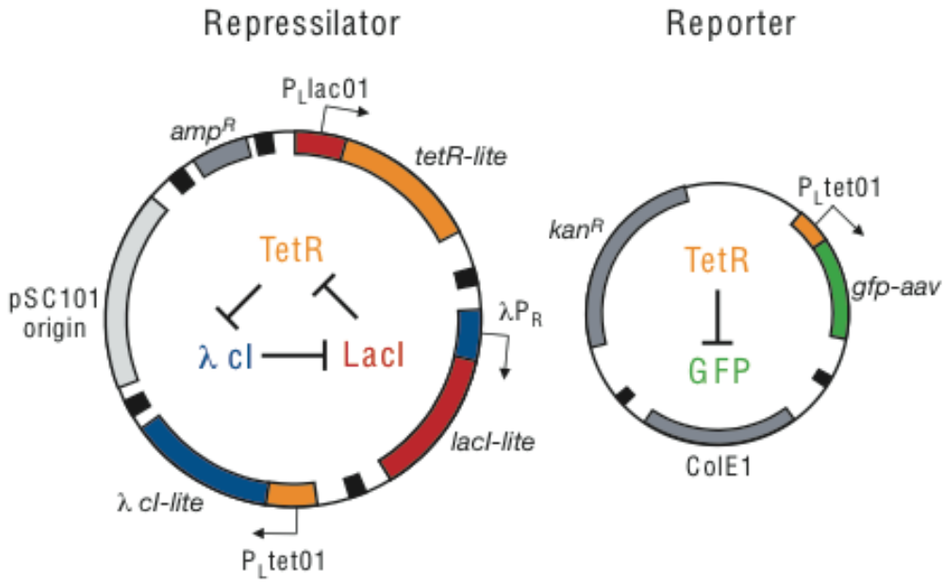
An open-source graphical standard for synthetic biology

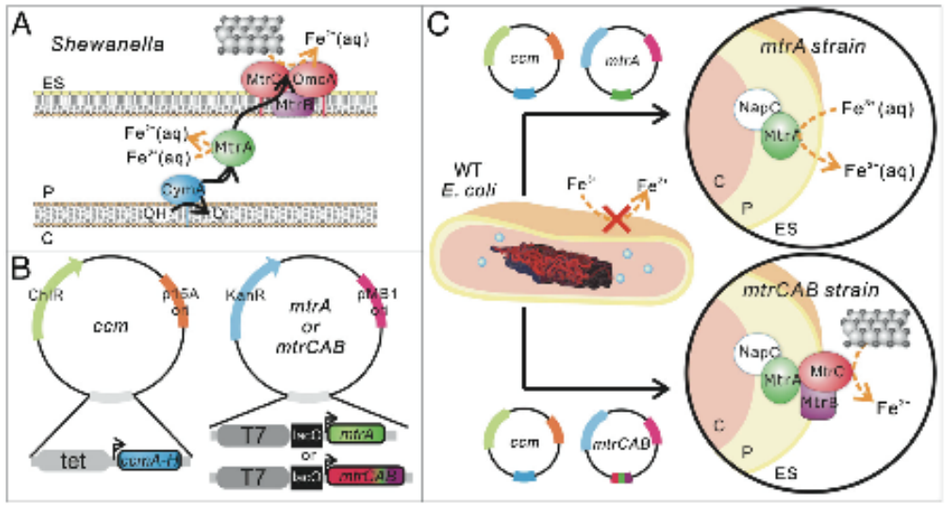
Jackie Quinn

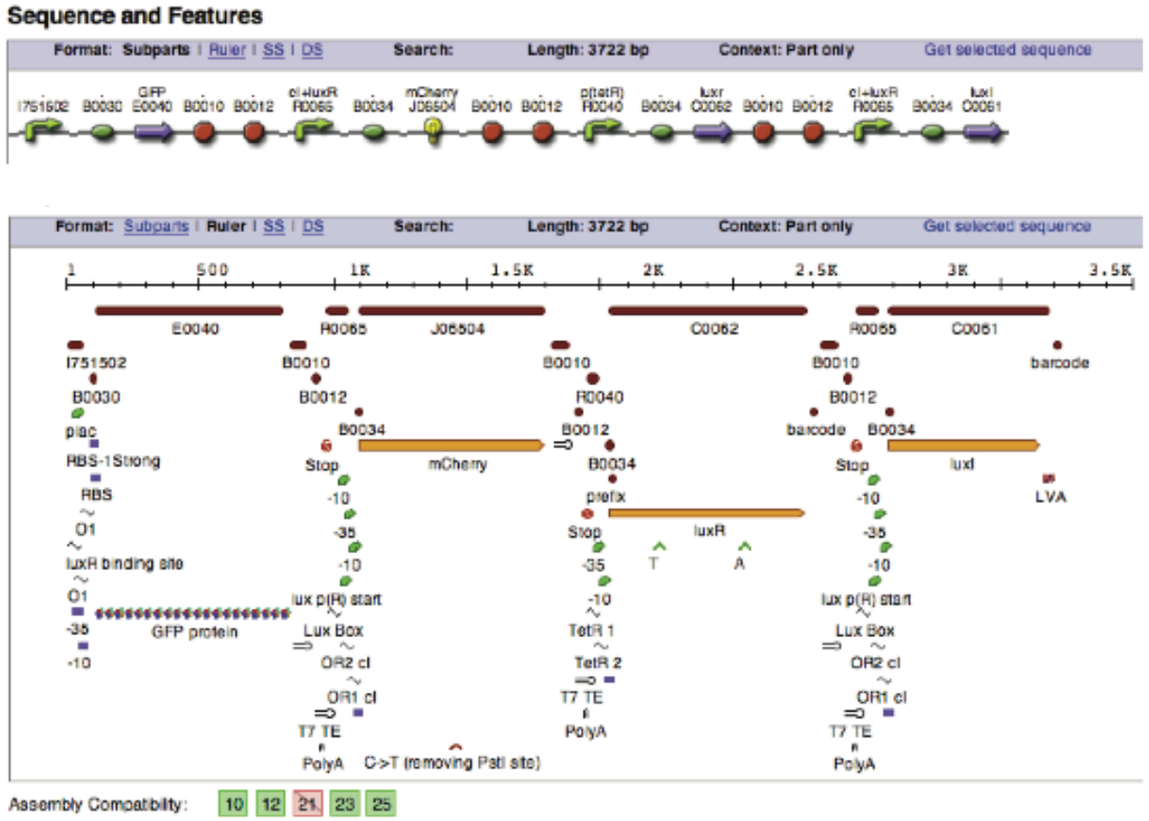
SBGN 10 - August 17, 2014

SBOL and SBOL Visual (the basics)

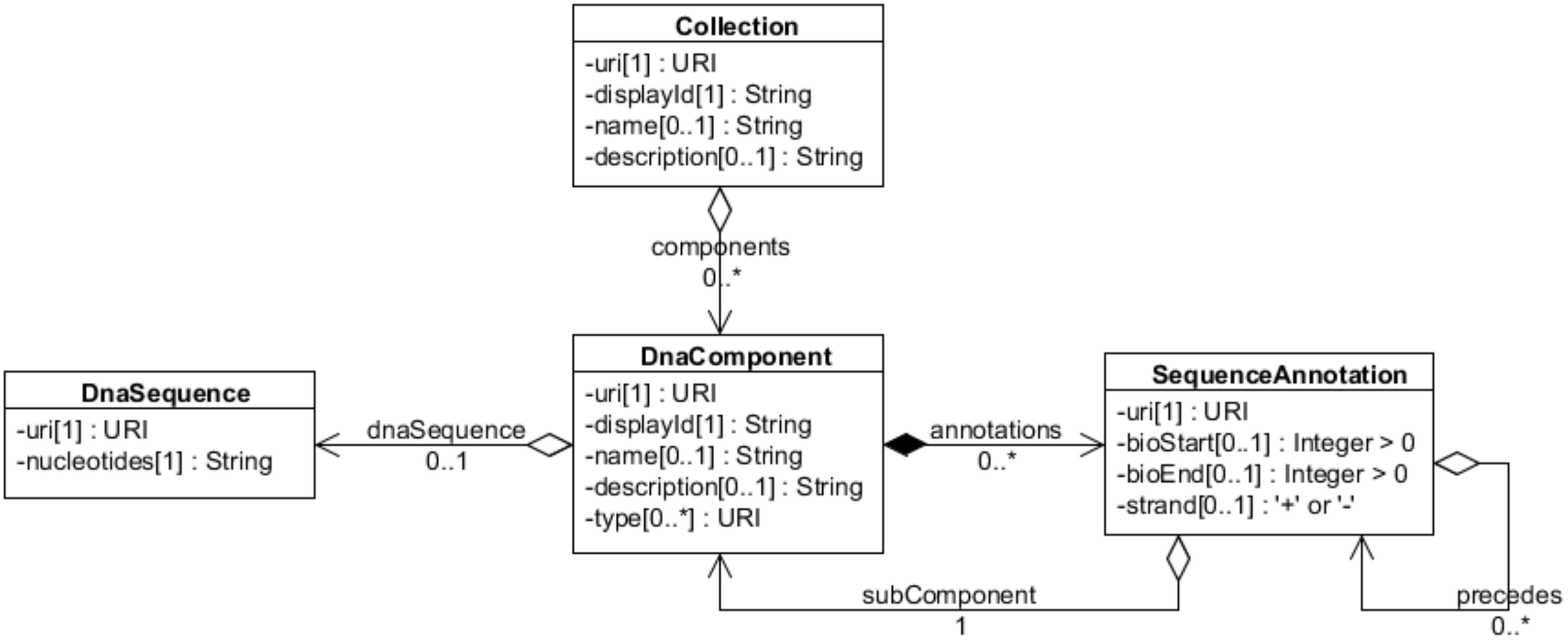








visual representation of genetic design


Collection
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annotations
0..*
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subComponent
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precedes
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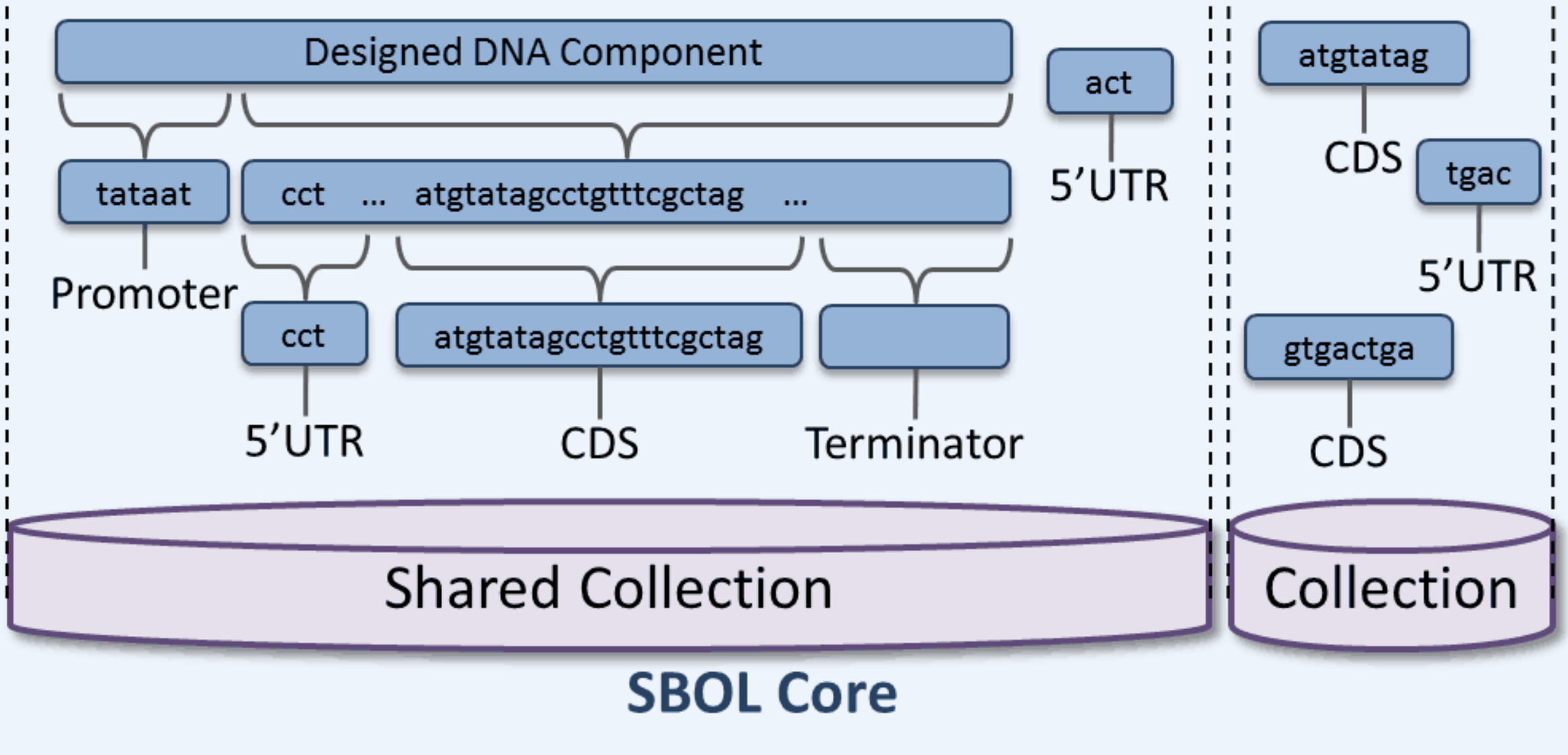
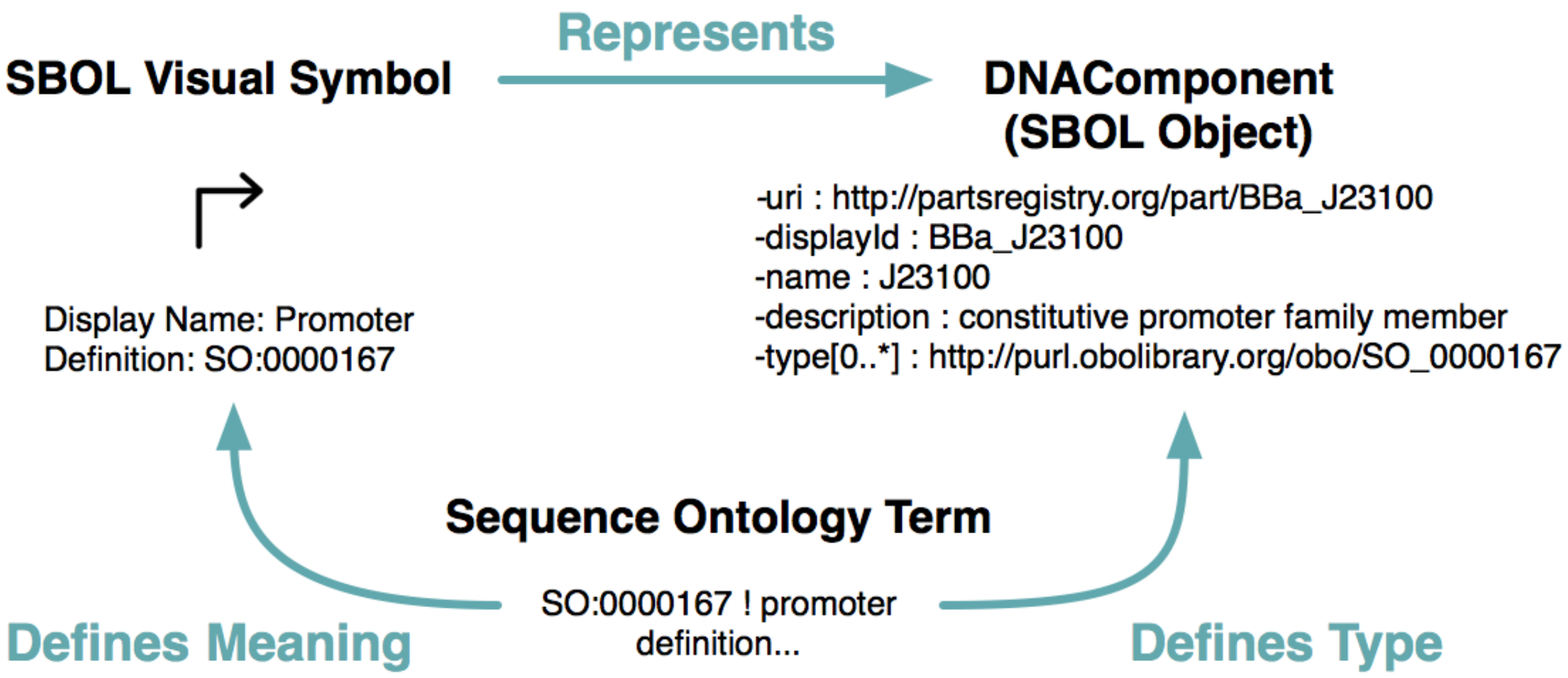
SBOL Visual



SBOL Core

promoter	origin of replication
cds	primer binding site
ribosome entry site	blunt restriction site
terminator	sticky restriction site
operator	5’ overhang
insulator	3’ overhang
ribonuclease site	assembly scar
rna stability element	signature
protease site	user defined
protein stability element	

standardized symbol set



relationship to SBOL

use in various contexts

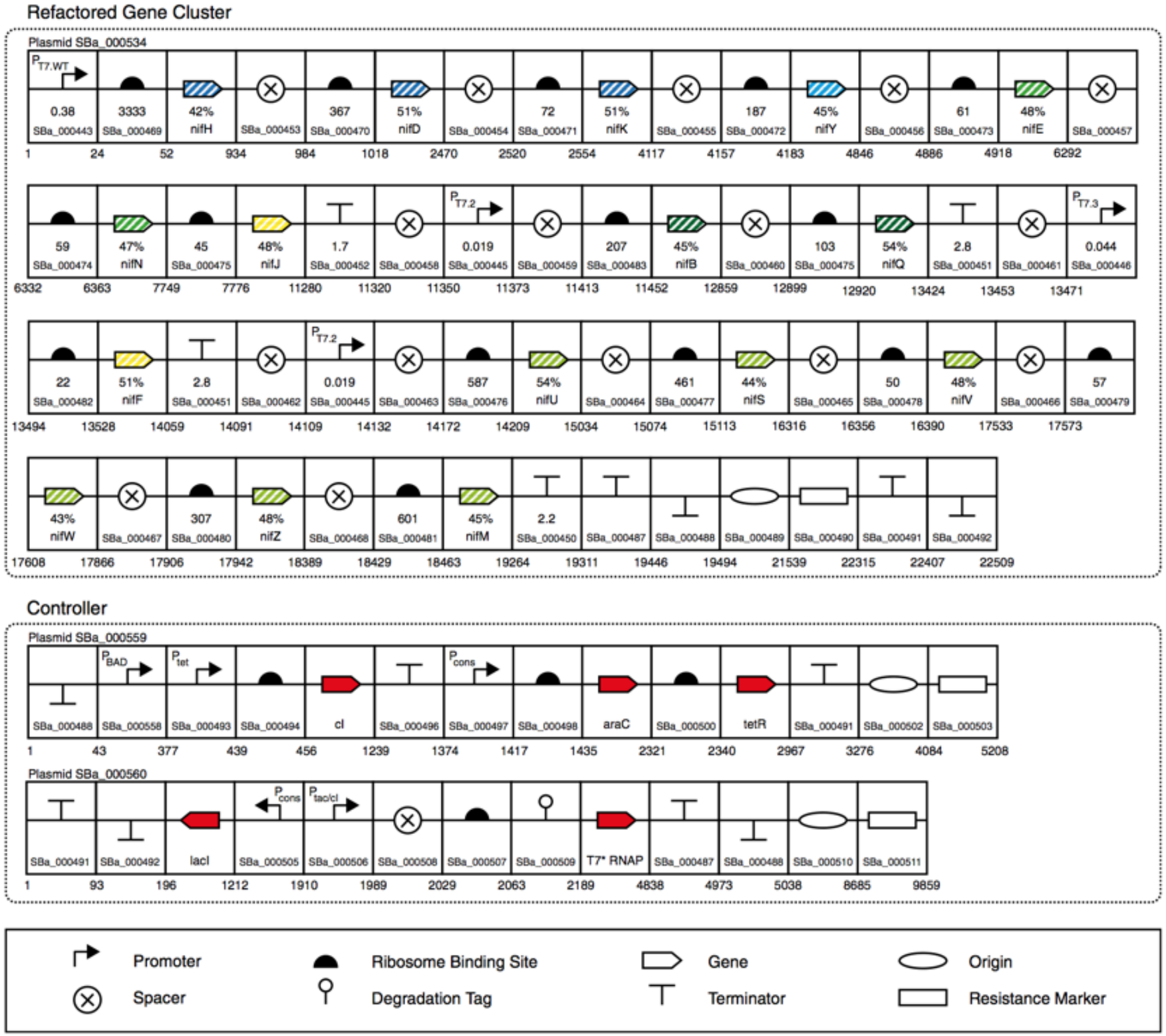


Fig. 4. Comprehensive schematic illustration for the complete refactored gene cluster and controller. Each of the 89 parts is represented according to the Synthetic Biology Open Language visual standard (www.sbolstandard.org), and the SynBERC Registry part number (registry.synberc.org) and part activity are shown. The full sequences of each plasmid have been deposited in GenBank (SBa_000534, JQ903614; SBa_000559, JQ903615; SBa_000560, JQ903616). The T7 promoter strengths are measured with monomeric red fluorescent protein and reported in REUs (*Materials and Methods*). Terminator strengths are measured in a reporter plasmid and reported as the fold reduction in monomeric red fluorescent protein (RFP) expression compared with a reporter without a terminator. The RBS strength is reported in as arbitrary units of expression from the induced P_{tac} promoter (1 mM IPTG) and a fusion gene between the first 90 nt of the gene and RFP. The nucleotide numbers for the plasmids containing the refactored cluster and controller are shown. The codon identity of each recoded gene compared with WT is shown as a percentage.

Using MiCodes in a zipper assay

When you see this MiCode...

...you know you're assaying this zipper pair

Strong zipper pair

UC Berkeley

STD. CIRCUIT

1:V OPT.

YFP

RFP

CFP

1:1 1 2 3

5:1 4 5 6

10:1 7 8 9

20:1 10 11 12

36

1-LEGGE RAND.

1:1 1 2 3 4 5

5:1 6 7 8 9 10

10:1 11 12 13 14 15

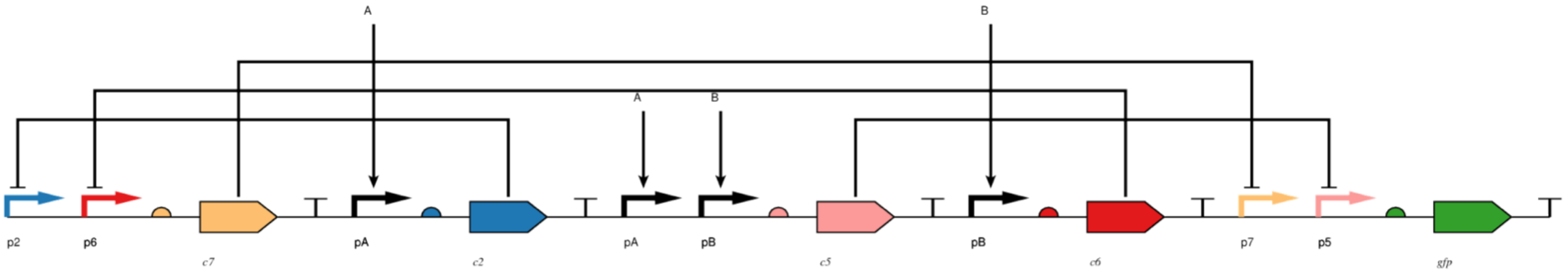
45

3. GEGE RAND.

1:100 1 2 3 4 5 6

x3

software




```
p p2 2
p p6 6
r r 7 nl
c c7 7
t
```

```
p pA
r r 2 nl
c c2 2
t
```

```
p pA
p pB
r r 5 nl
c c5 5
t
```

```
p pB
r r 6 nl
c c6 6
t
```

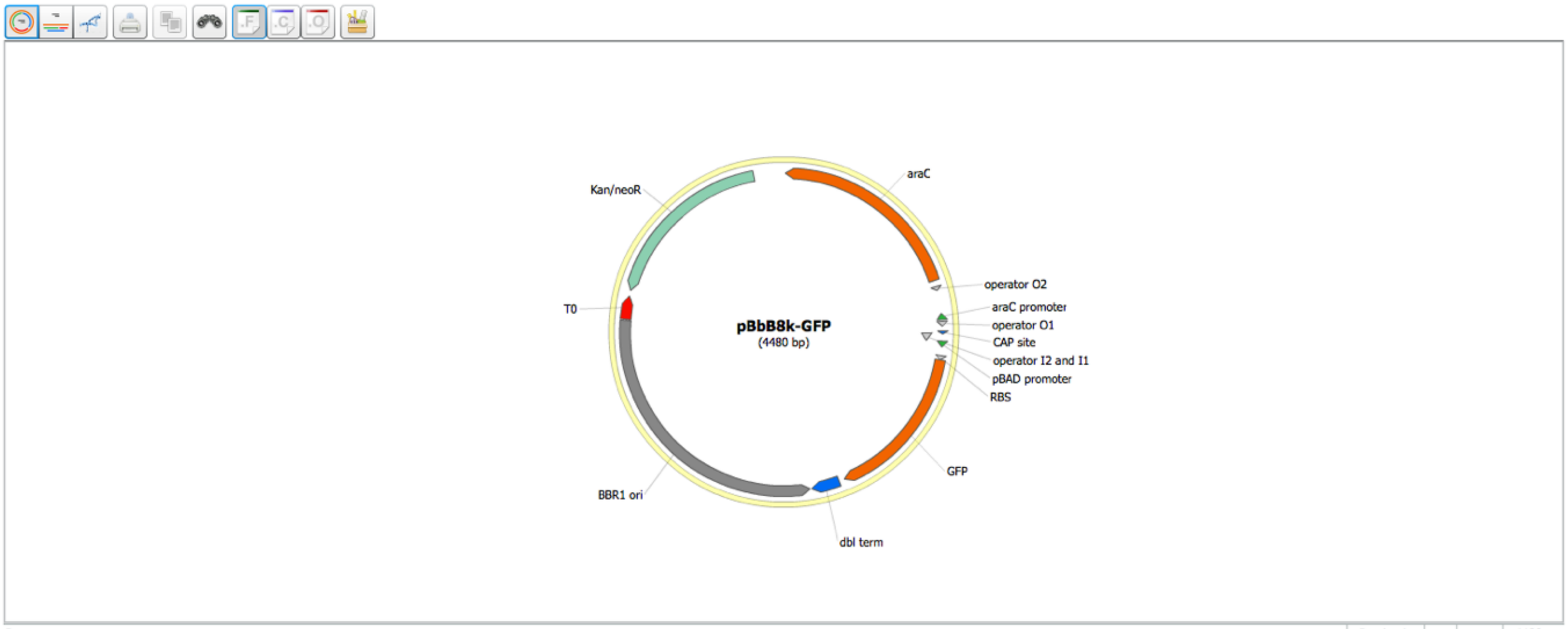
```
p p7 7
p p5 5
r r 4 nl
c gfp 4
t
```

```
# Arcs
c2 rep p2
c5 rep p5
c6 rep p6
c7 rep p7
A ind pA
B ind pB
```

PigeonCAD
pigeoncad.org

SEQUENCE

Delete | Open | Download | Hide Pigeon Image



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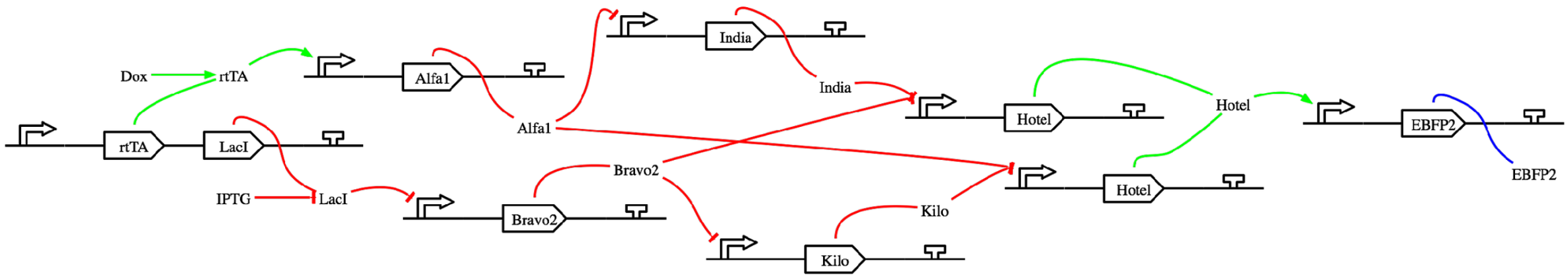
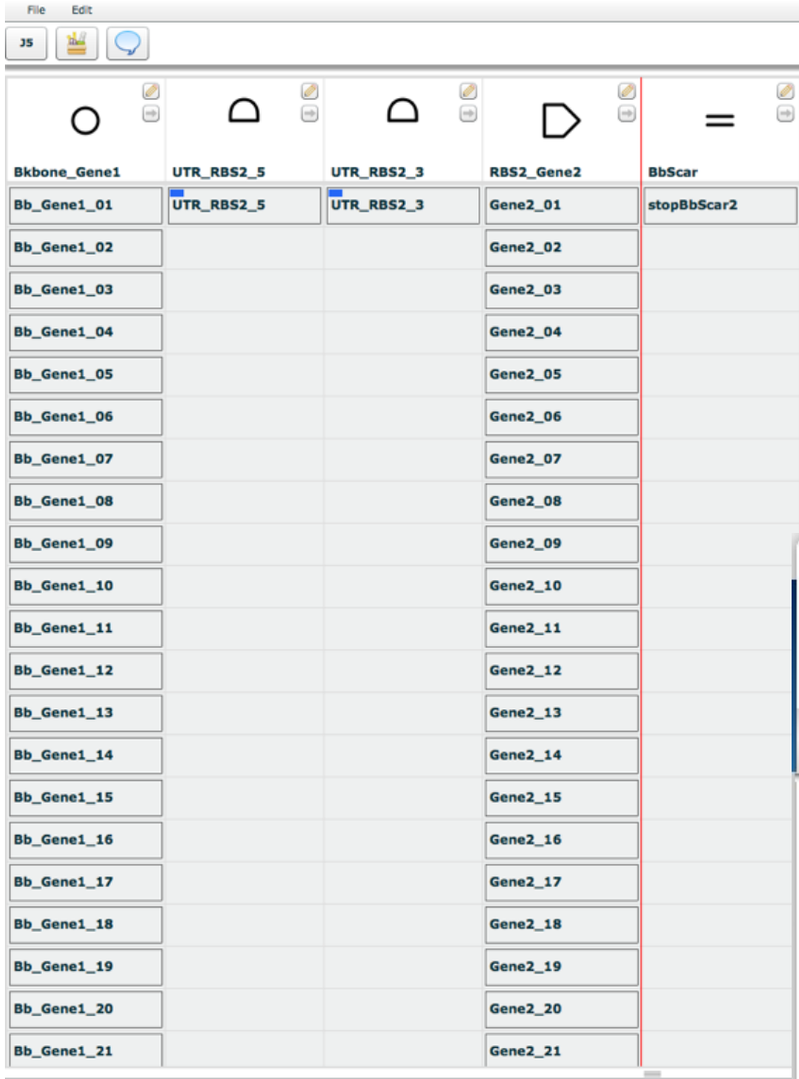
JBEI-ICE

public-registry.jbei.org



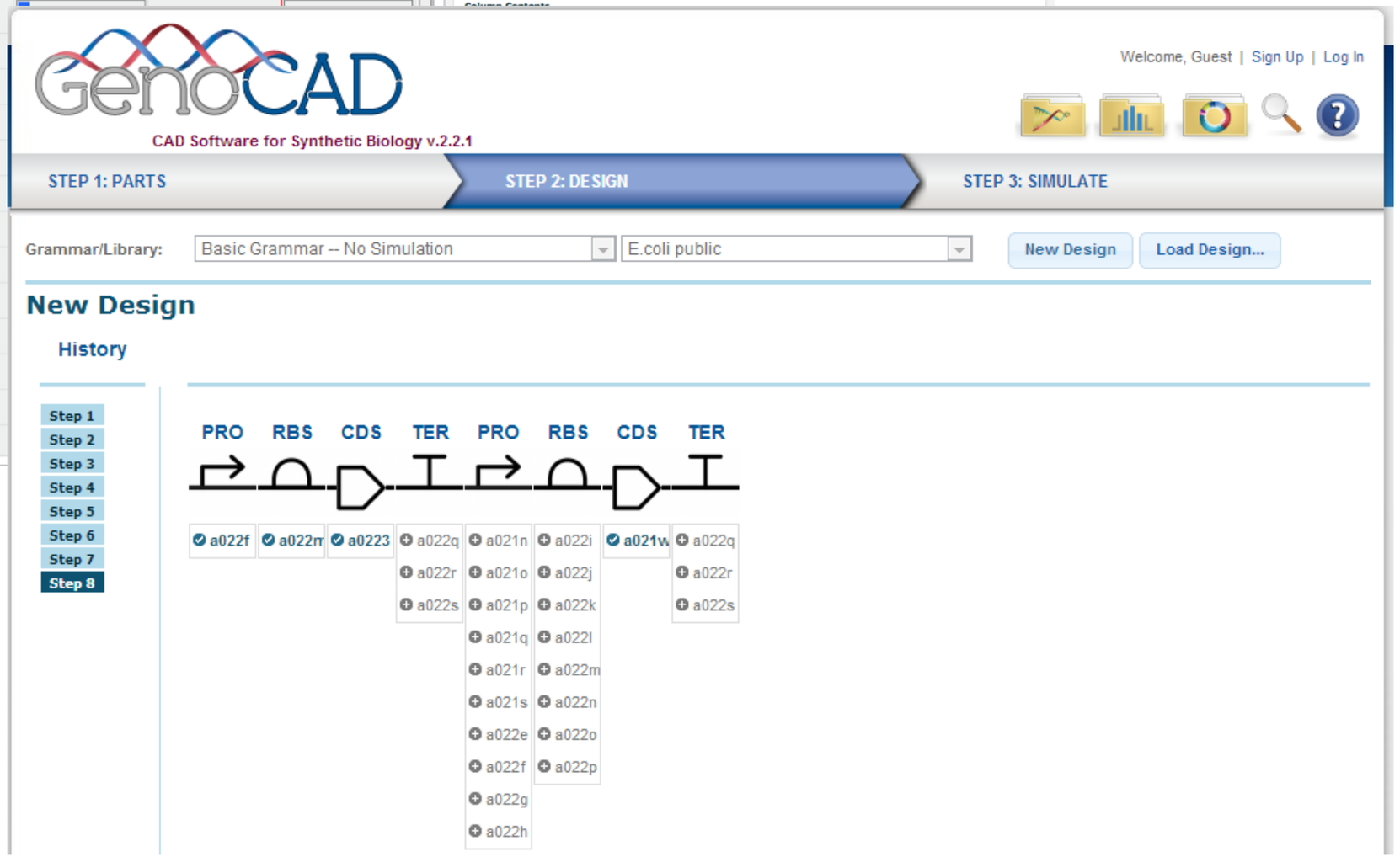
BioCompiler

synbiotools.bbn.com



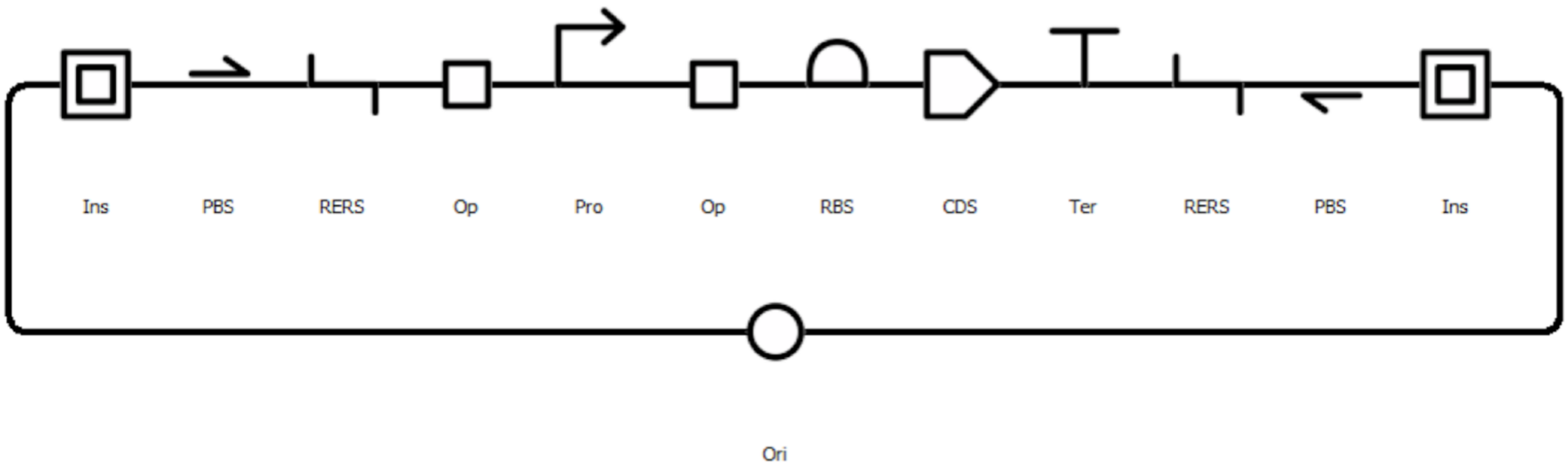
DeviceEditor

j5.jbei.org

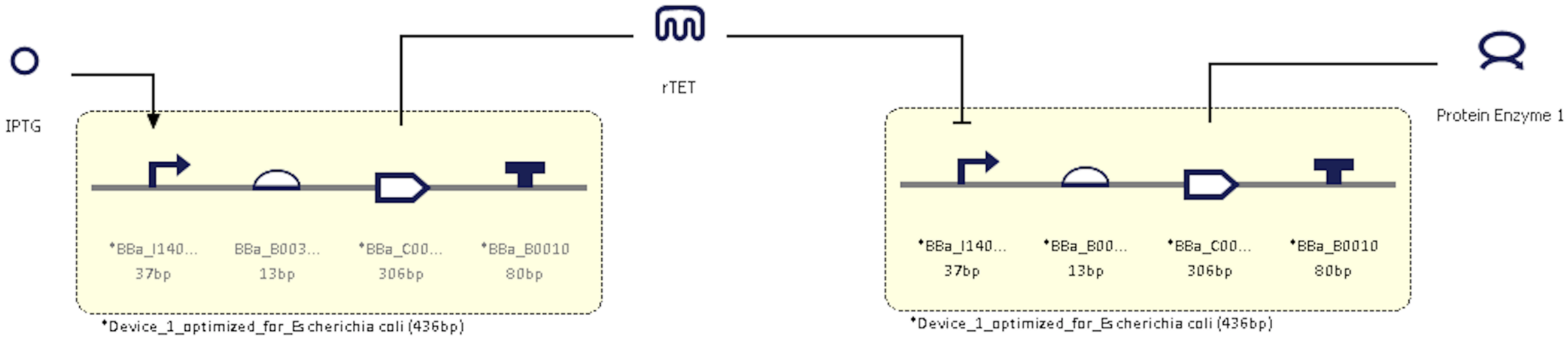


GenoCAD

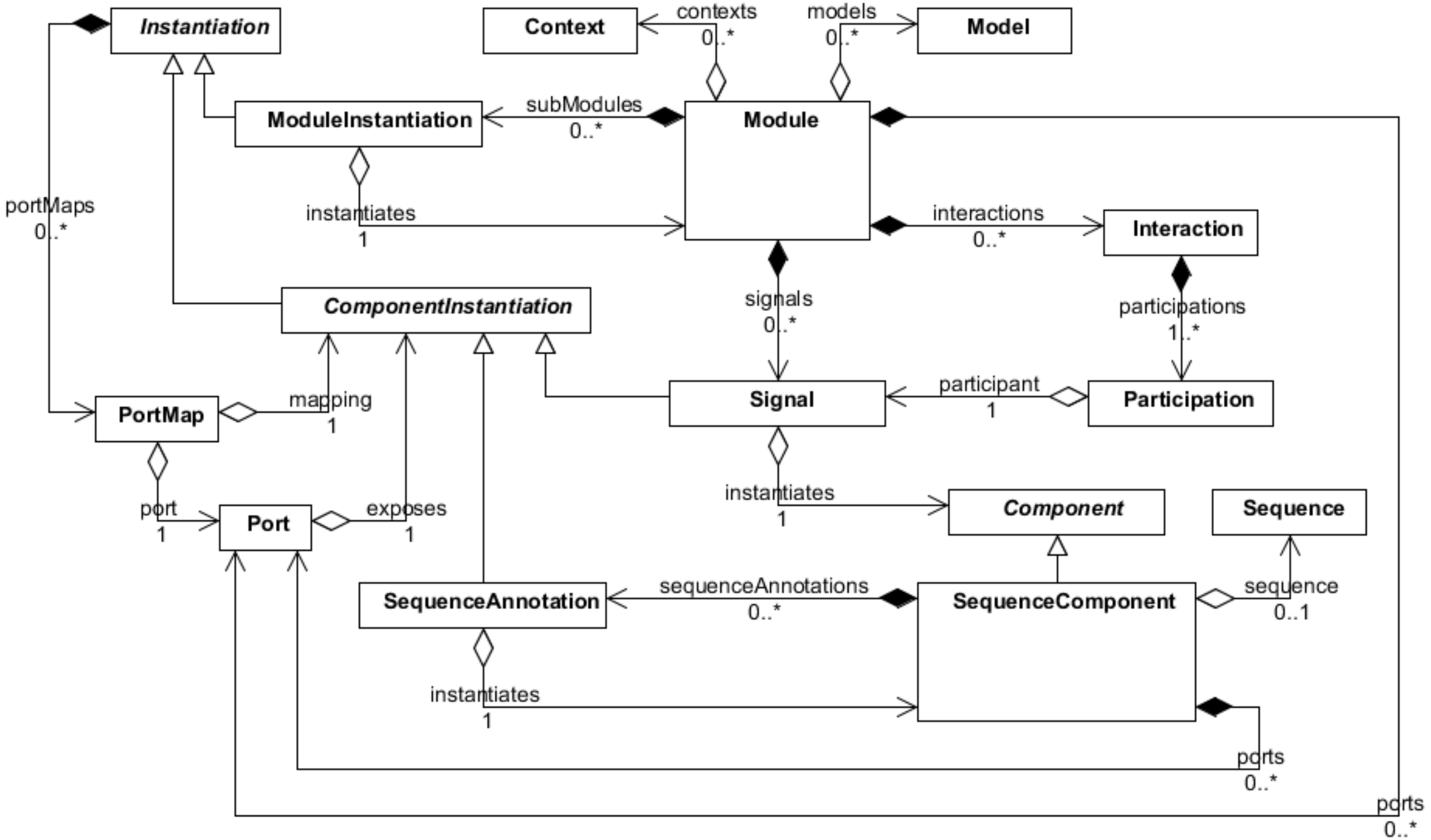
genocad.org



SBOL Designer



VectorNTI Express Designer


Instantiation
Context
contexts
0..*
models
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Model
ModuleInstantiation
subModules
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Module
portMaps
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instantiates
1
interactions
0..*
Interaction
ComponentInstantiation
signals
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participations
1..*
PortMap
mapping
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Signal
participant
1
Participation
port
1
Port
exposes
1
instantiates
1
Component
Sequence
SequenceAnnotation
sequenceAnnotations
0..*
SequenceComponent
sequence
0..1
instantiates
1
ports
0..*
ports
0..*

SBOL Visual Working Group

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Thank You!

www.sbolstandard.org/visual

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