Self-contained RNA inhibition with self-cleaving ribozymes

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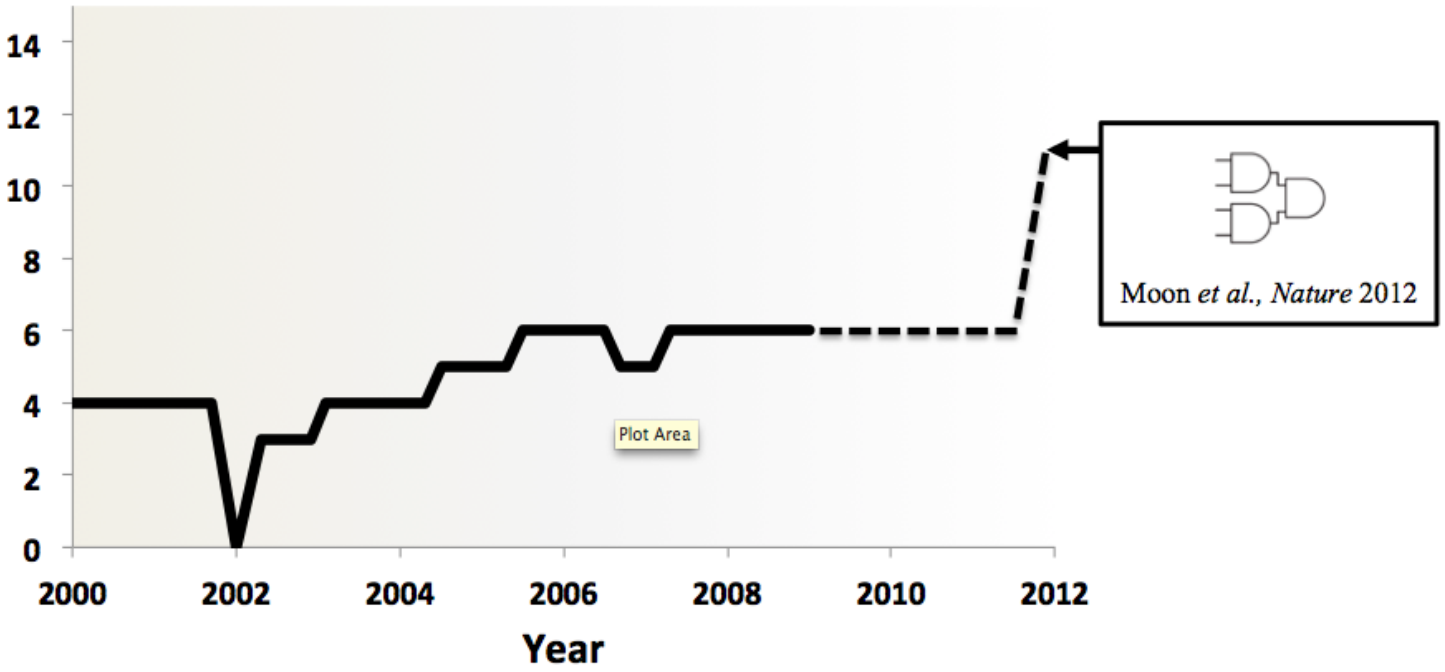
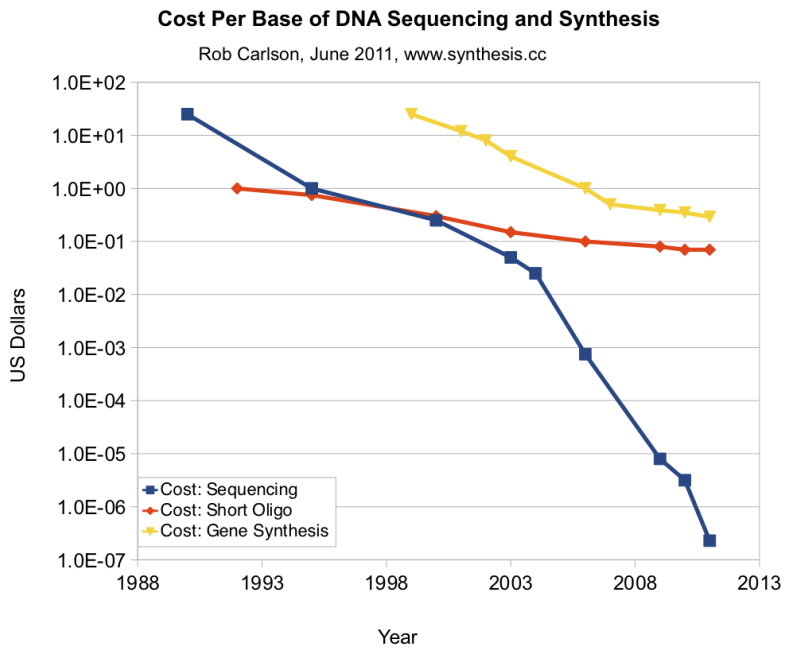
Overview

Motivation

Toggle switch and repressilator in 2000 (images).



Exponential decrease in the cost of enabling technologies should result in exponential growth of circuit complexity.



Pitfalls in current promoter-repressor pair design

gonal - Limited number (until very recently)

table - 40 hour toggle switch breakdown

Safe -

iable -

Types of riboregulation

Why shRNA sucks, because of cleaving mechanism. But this can be avoided.
Self-contained action. removes some dependencies.

Choice of self-cleaving ribozymes

Proof of functional completeness
Include reasoning for not having apatamer effected ribozymes. More difficult to design and predict than simple oligonucleotide effectors.

General riboregulation model

Gillespie algorithm

Toggle switch model DNA-based

Toggle switch model riboregulation

Parameter Comparison

Souces

- Arkin, A. and Weiss, Ron; Principles of Synthetic Biology Fall 2013; Lecture 3
- Carlson, Rob; DNA cost curves; `http://www.synthesis.cc/2011/06/new-cost-curves.html`
- Stanton, B.C. et. al.; *Genomic Mining of prokaryotic repressors for orthogonal logic gates*; `http://www.nature.com/nchembio/journal/vaop/ncurrent/full/nchembio.1411.html`

Blocks of Highlighted Text

Block 2

Pellentesque sed tellus purus. Class aptent taciti sociosqu ad litora torquent per conubia nostra, per inceptos himenaeos. Vestibulum quis magna at risus dictum tempor eu vitae velit.

Block 3

Suspendisse tincidunt sagittis gravida. Curabitur condimentum, enim sed venenatis rutrum, ipsum neque consectetur orci, sed blandit justo nisi ac lacus.

Multiple Columns

Heading

1. Statement
2. Explanation
3. Example

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Integer lectus nisl, ultricies in feugiat rutrum, porttitor sit amet augue. Aliquam ut tortor mauris. Sed volutpat ante purus, quis accumsan dolor.

Table

Treatments	Response 1	Response 2
Treatment 1	0.0003262	0.562
Treatment 2	0.0015681	0.910
Treatment 3	0.0009271	0.296

Table : Table caption

Theorem

Theorem (Mass–energy equivalence)

$E = mc^2$

Verbatim

Example (Theorem Slide Code)

```
\begin{frame}
\frametitle{Theorem}
\begin{theorem}[Mass--energy equivalence]
$E = mc^2$
\end{theorem}
\end{frame}
```

Figure

Uncomment the code on this slide to include your own image from the same directory as the template .TeX file.

Citation

An example of the `\cite` command to cite within the presentation:

This statement requires citation [Smith, 2012].

References

John Smith (2012)

Title of the publication

Journal Name 12(3), 45 – 678.

The End