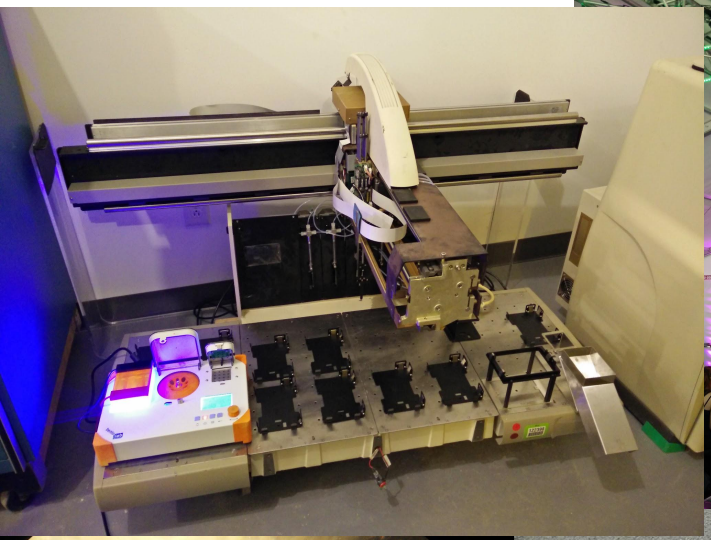
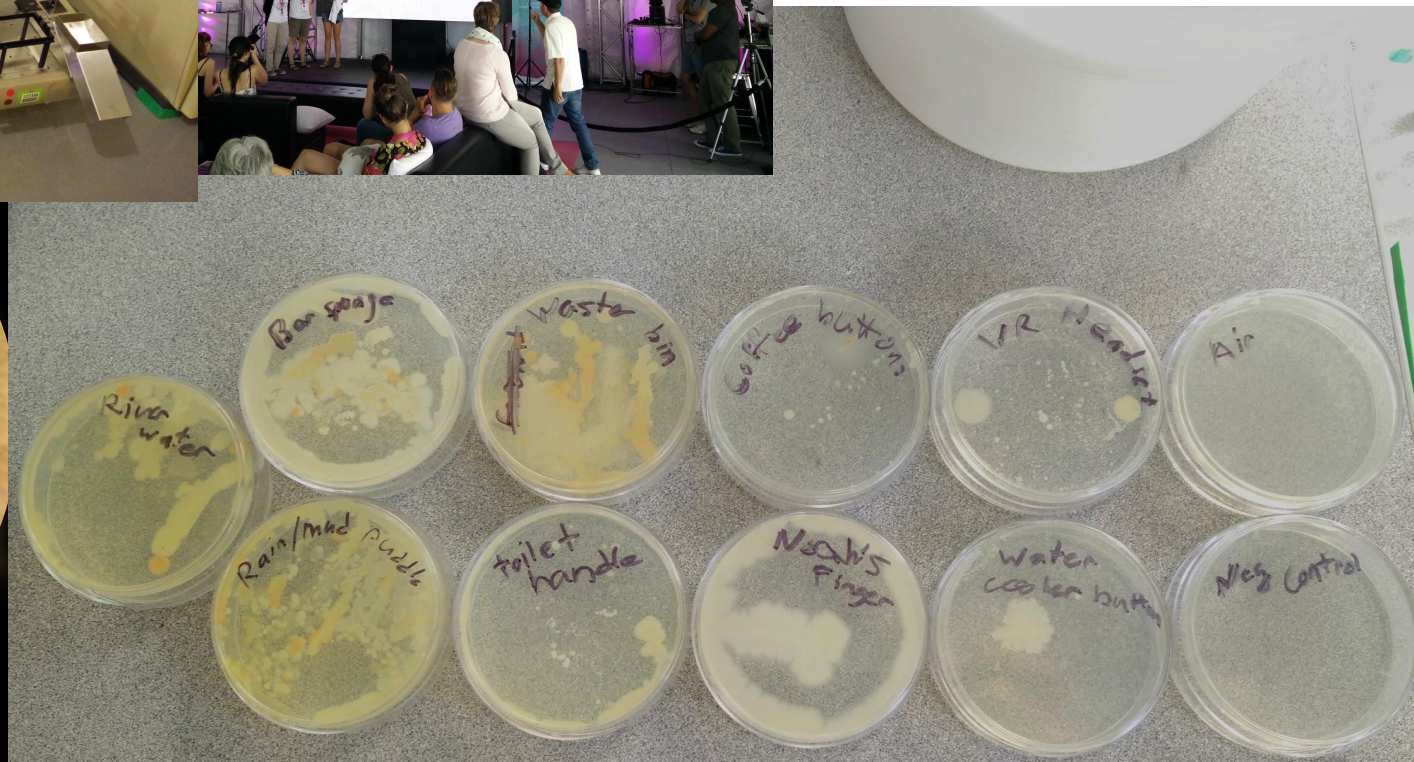
>brico.bio

hyasynth









Your first Biobrick

(no more strawberry DNA and fluorescent protein stuff…)



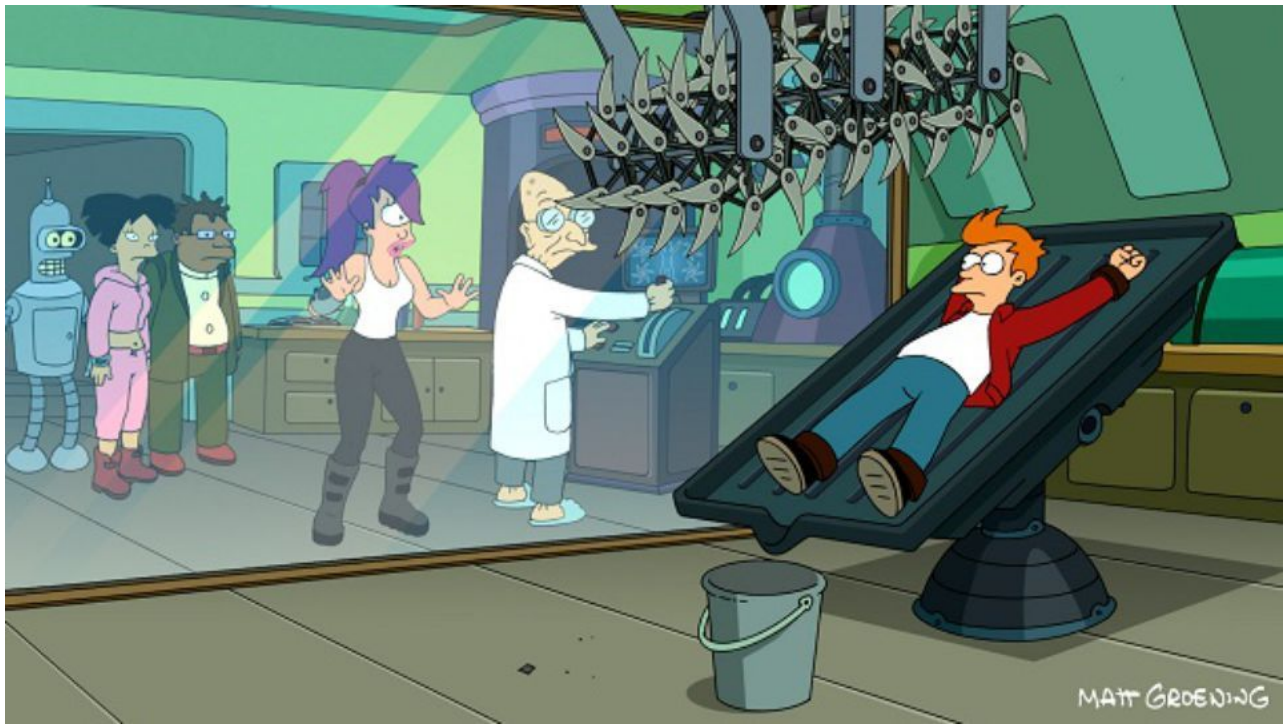






Find a DNA Extraction Protocol

1. Example: “plant dna extraction protocol” or “…kit”



Find a DNA Extraction Protocol

1. Example: “plant dna extraction protocol” or “...kit”
2. Prepare materials and chemicals. You’ll probably need:
   a. Pipettes
   b. Glassware
   c. Centrifuge
   d. A safe and clean place to work
   e. Avoid dangerous chemicals (like chloroform and methanol)

DNeasy Plant Mini Kit

Print



For isolation of up to 30 µg total cellular DNA from plant cells and tissues, or fungi

- Pure DNA, free from contaminants and enzyme inhibitors
- Rapid isolation of ready-to-use DNA
- No organic extraction, no ethanol precipitation

The DNeasy Plant Mini Kit provides fast and easy silica-based DNA purification in convenient spin column format. Typical yields are 3–30 µg of high-quality DNA, depending on the samples used. Purification of DNA using the DNeasy Plant Mini Kit can be automated on the QIAcube.

Buy Products | Product Details | Specifications | Product Resources

Cat No./ID: 69104

DNeasy Plant Mini Kit (50)

$218.00

50 DNeasy Mini Spin Columns, 50 QIAshredder Mini Spin Columns, RNase A, Buffers, Collection Tubes (2 ml)

Order Product

PCR amplify your target gene

What's PCR?

"Polymerase Chain Reaction"

It makes more copies of the gene you want.

(and no copies of the genes you don't want, ideally)

PCR amplify your target gene

1. Get a thermocycler
    a. You can also use 3x hot water baths (EX: one at 72C, one at 98C one and 65C)
2. Order “primers”
3. Materials for doing PCR
    a. PCR Polymerase kit
    b. Primers
    c. Tubes that fit your machine (often 0.2mL)

Or… DNA Synthesis

2600 base pairs = ~300$
or
500 bp = ~70$

Getting a PCR Machine

bento lab

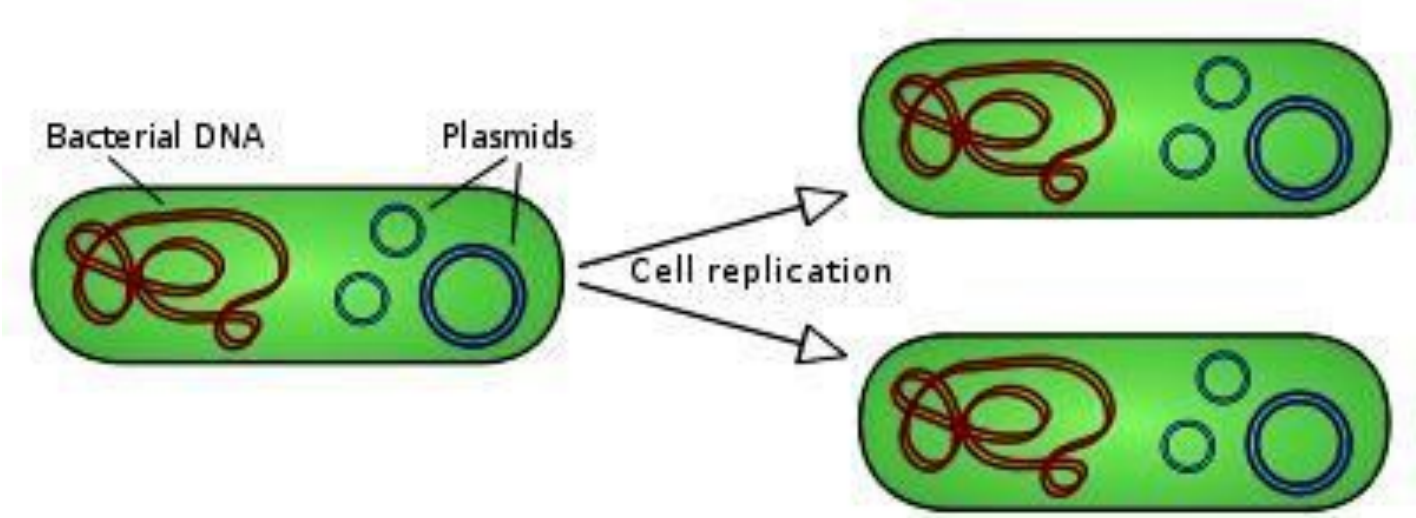






Getting your gene into a plasmid

1. Get E. coli, and a plasmid backbone
   a. From… your local DIY-bio lab, bio-friends, or maybe a shop like The ODIN



Getting your gene into a plasmid

1. Get E. coli, and a plasmid backbone
2. Clone your gene into the backbone
   a. DNA ligation
   b. Materials: Enzymes kits, (Restriction digest and ligate)

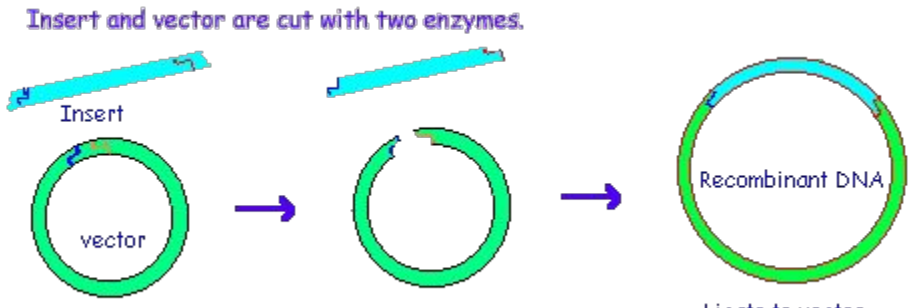
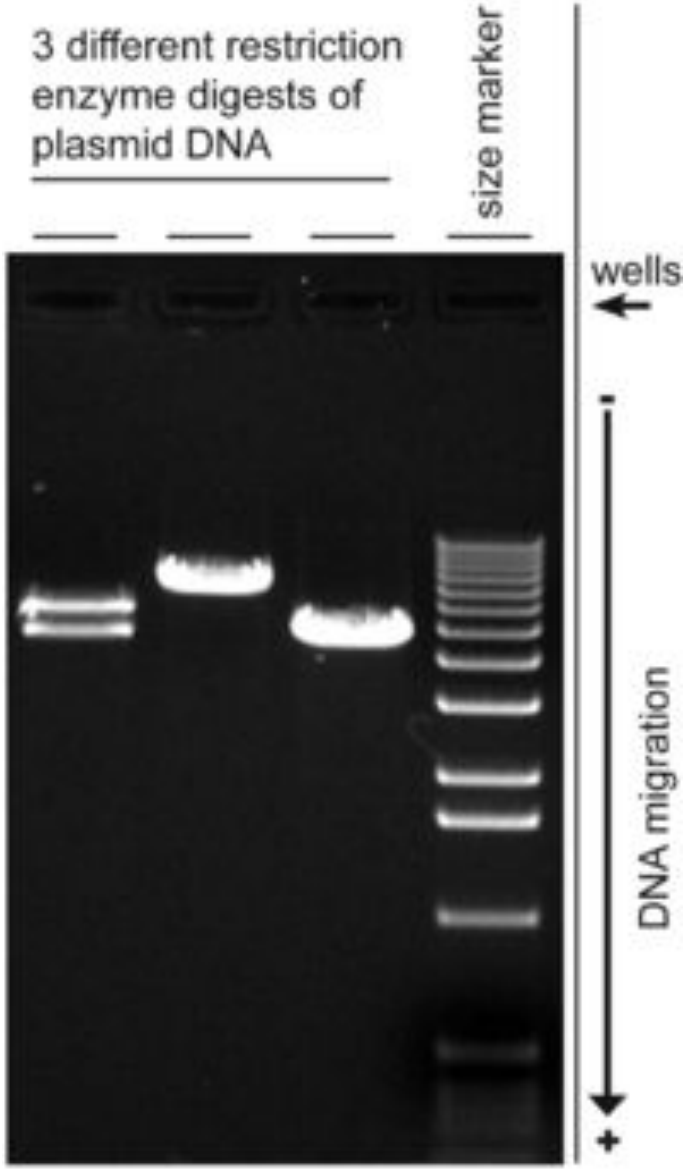


Figure 7: Making Recombinant DNA

Getting your gene into a plasmid

1. Get E. coli, and a plasmid backbone
2. Clone your gene into the backbone
3. Plasmid transformation
    a. Electroporation or chemical competent cells
4. Grow bacteria and get the DNA out (aka “miniprep”)
    a. Get a miniprep kit.

Sequencing and Storage



Check your sequence by:

1. Gel Electrophoresis
   a. Size check, only.
2. Sequencing (~10$)

Storage:

1. Air dry or -192C freezer
2. -80C freezer
3. Or, kitchen freezer/fridge (short term)

How do you know if your gene works?

(good question)

Budgeting

PCR Machine (or Bento Lab)	700$
Pipettes and glassware	200$
Miniprep and other DNA kits	50$
DNA Polyemerase	50$
DNA Ligase and Digest	50$
Sequencing	10$
Total	**~1000$**
Estimate per experiment	**~10-15$**

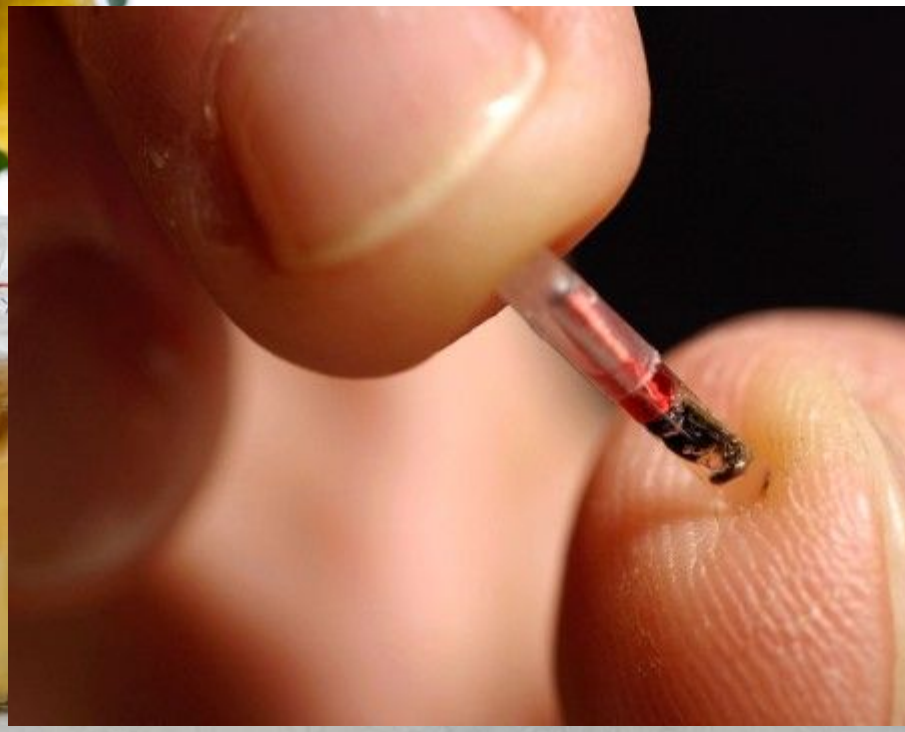
HOPE XII GENE SWAP

Bring your genes!

What is the best way to share and collaborate on a guide?

Question for the Audience

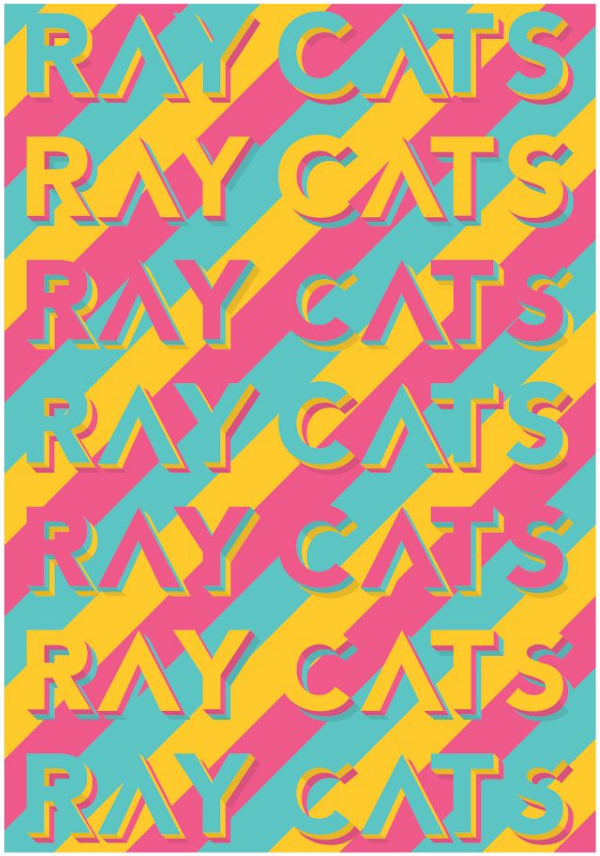


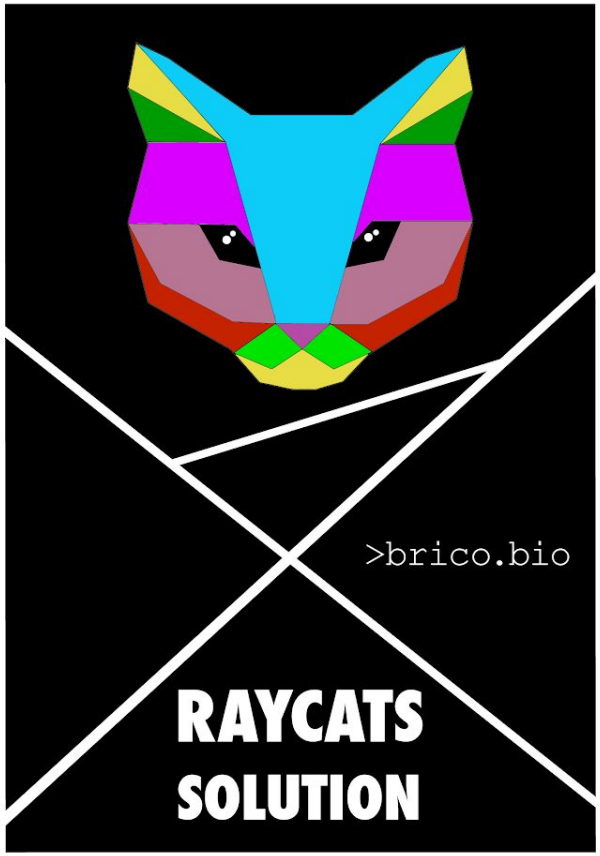




“Health Care Hackers”
June 2014,
renderedradio.org

www.theraycatsolution.com







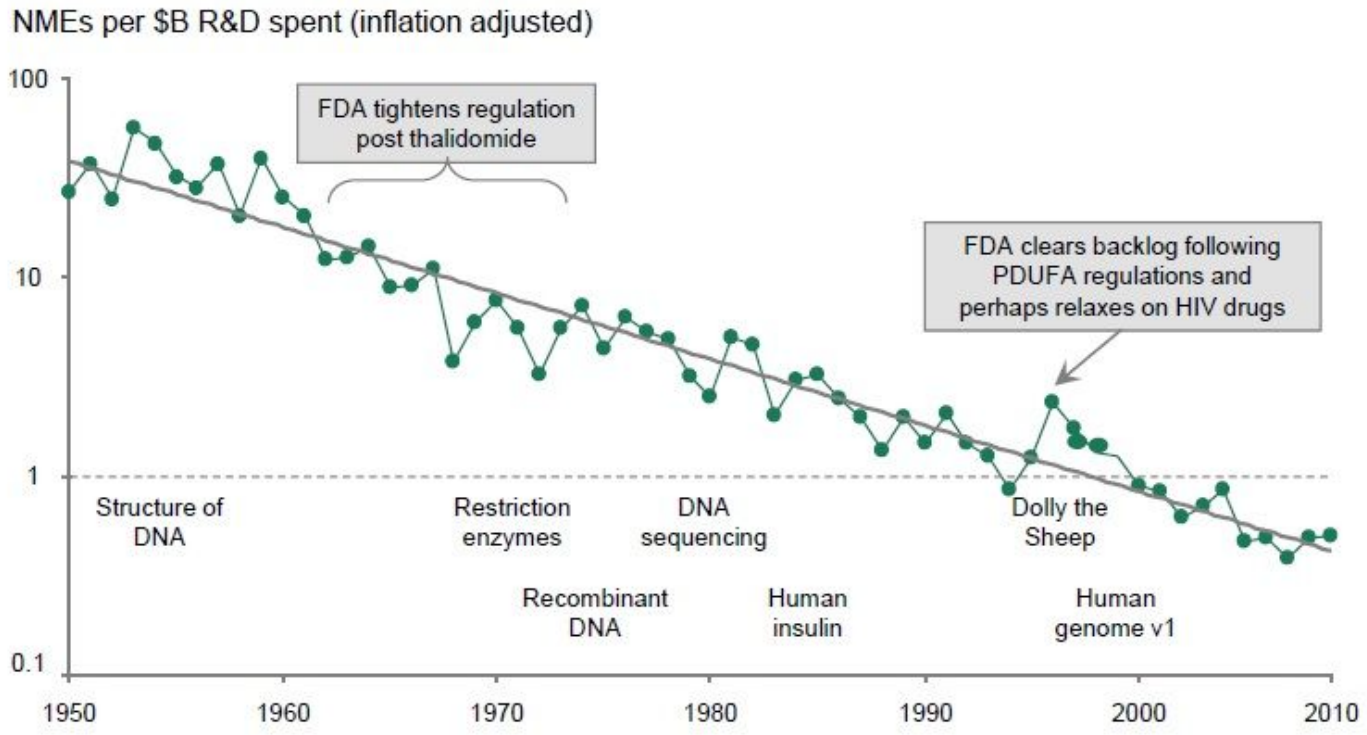
Works by students of the New Hampshire Institute of Art


OKAY, THIS TIME I'VE DILUTED THE SEMEN 30x.
WE'LL BE SURE TO GET PREGNANT NOW!
BELIEF IN HOMEOPATHY IS NOT, EVOLUTIONARILY, SELECTED FOR.


VACCINES
ARE TOXIC
PROTECT OUR CHILDREN
VACCINE


SCI-HUB
...to remove all barriers in the way of science
enter URL, PMID / DOI or search string
open

R&D productivity is on the decline



Note: R&D costs are estimated from PhRMA annual survey 2009; NMEs are the total number of small molecule and biologic approvals by the FDA
Source: Bernstein Research "The Long View – R&D Productivity" (September 30, 2010)

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Why think biology?

1. It needs help
    a. Data sharing and collaboration sucks
    b. The tools suck
    c. The culture and structure is broken

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2. Save the world?



Why think biology?

1. It needs help
   a. Data sharing and collaboration sucks
   b. The tools suck
   c. The culture and structure is broken
2. Save the world?
3. Because it's awesome.



To see a World in a Grain of Sand

And a Heaven in a Wild Flower,

Hold Infinity in the palm of your hand

And Eternity in an hour.

- William Blake in "To See A World"

More Biotech at HOPE

- Come into My (Biohacking) Lab and See What's on the Slab - Tom Keenan - Sunday 1600 Noether
- Hacking DNA: Heritage and Health Care - Nina Alli - Saturday 2000 Friedman
- Hacking Sex: Toys, Tools, and Tips for Empowerment and Pleasure - Kit Stubbs - Saturday 1900 Noether
- Is the Brain the Next Hackable Driver? - Ellen Pearlman - Friday 1400 Friedman
- Matehacking: Legalizing Autonomous Production and Permaculture - Establishing a Hack Farm - Fabrício do Canto - Friday 1200 Friedman
- **DIYSECT: film screening of Biotinkering for the Web - Mary Tsang - Friday 1400-1600 Paris**
- **Open Source Estrogen - Mary Tsang - Friday 1600-1900 Paris**
- **Pop-Up Plant Lab - Sebastian S. Cocioba, Sung won Lim - various times in Biohacking Area (Mezzanine) -- please check poster there**

Unofficial Biohackers Meetup: 9PM Saturday