

October 23, 2013

**Ask a Biosafety Expert:**  
User-driven advisory  
service for the Do-It-Yourself  
Biology (DIYbio) Community

ABSA Annual Meeting  
Kansas City, MO

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# New Teen Hobby: DIY DNA labs



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## Fish Tale Has DNA Hook: Students Find Bad Labels



Lars Klove for The New York Times

Kate Stoeckle (left) and Louisa Strauss eating sushi.

By JOHN SCHWARTZ

Published: August 21, 2008

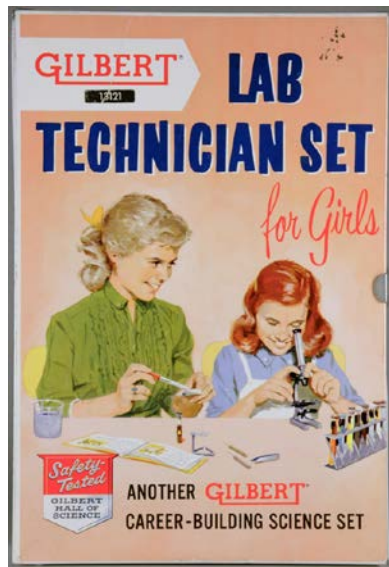
 SIGN IN TO



Dawn of the Biohackers. Discover Magazine. Oct 5, 2011.  
Photo by Grant Delin

# Vibrant Hobby Communities

## CHEMISTRY



Lab Technician Set for Girls  
c. 1958

## PERSONAL COMPUTING



Homebrew Computer Club  
September 1976

## ASTRONOMY



Hanny's Voorwerp discovered  
August 13, 2007

## ROCKETRY



Amateur Saturn V launch in MD  
April 25, 2009

# Biology is Next: Global DIYbio Community

## **NORTH AMERICA**

Atlanta  
Baltimore  
Boston  
Brooklyn  
Cambridge  
Carlsbad  
Chicago  
Houston  
Los Angeles  
Nashville  
New York City  
Oakland  
Portland  
San Diego  
San Francisco  
Seattle  
Sunnyvale  
Toronto  
Vancouver  
Victoria

## **EUROPE**

Budapest  
Copenhagen  
Cork  
Eindhoven  
Graz  
Groningen  
Kiev  
Lausanne  
London  
Manchester  
Munich  
Namur  
The Hague  
Paris  
Prague  
Switzerland

## **ASIA**

Singapore  
Tel-Aviv

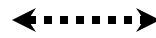
## **OCEANIA**

Auckland  
Sydney

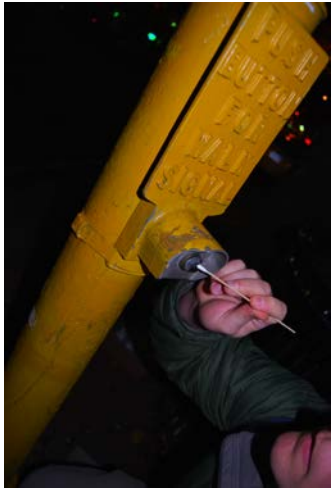


# Scope of Activities

Exploratory Biology



Constructive Biology



Environmental Sensing



Personal BioMonitoring



Re-imagining Laboratory Devices



Genetic Engineering

Doing Biology at Home: A Look at Home Workshops  
in the DIYbio Community, 2008 - 2010



# Home Workshops

1. **Garage:** cancer biotech start-up
2. **Closet:** Personal genotyping facility
3. **Kitchen:** yogurt engineered to sense melamine (toxin)
4. **Dorm:** R&D lab for low-cost PCR machine



# Community Labs

Genspace (Brooklyn, NY)



NYTimes. December 19, 2010. Photo Michael Nagle

# Community Labs

## BioCurious (Sunnyvale, CA)



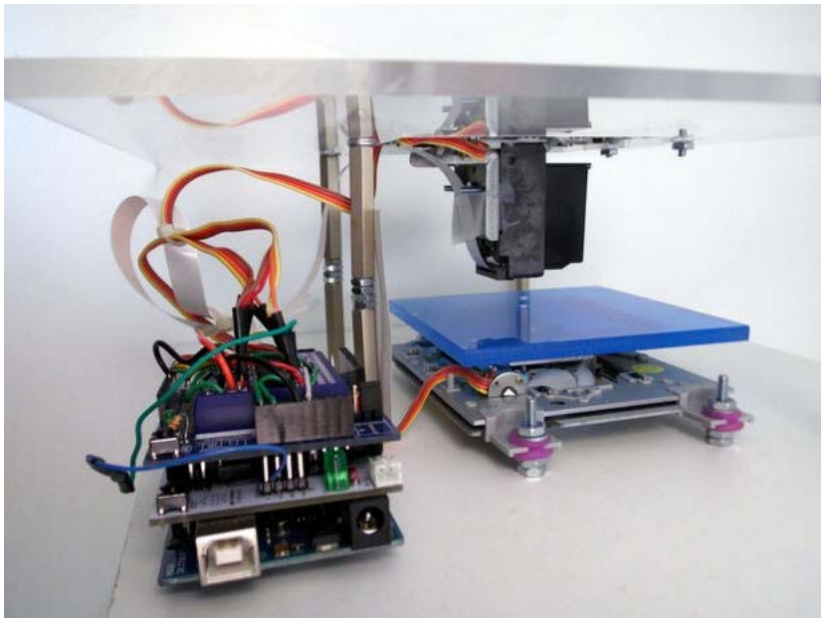
<http://biocuriosity.files.wordpress.com/2011/07/welcome-to-biocurious-sign.jpg?w=630>

[http://biocuriosity.files.wordpress.com/2011/09/img\\_0551.jpg?w=630](http://biocuriosity.files.wordpress.com/2011/09/img_0551.jpg?w=630)

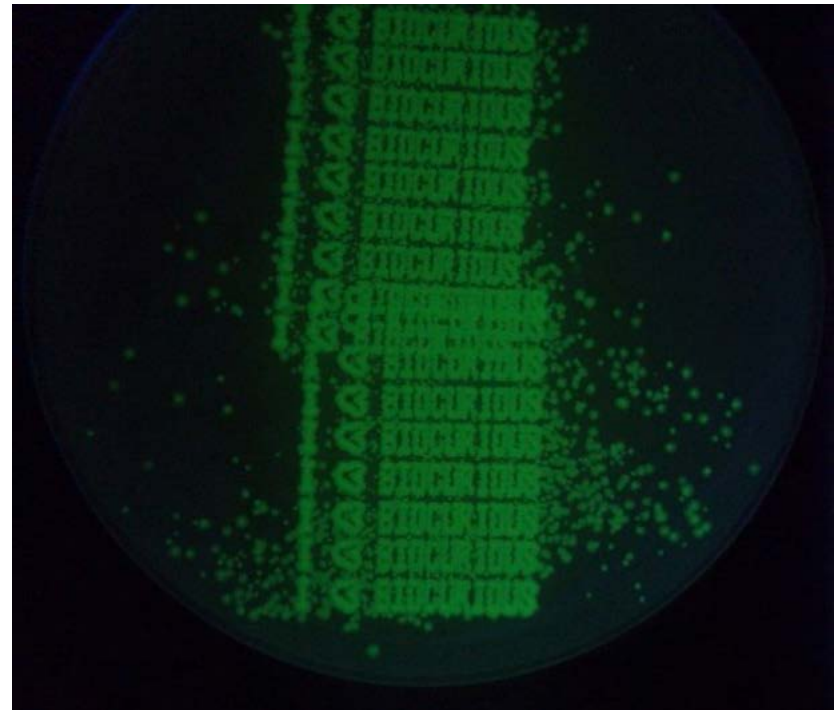
# Biocurious Project: BioPrinter



<http://www.instructables.com/id/DIY-BioPrinter/>



[http://www.technologyreview.com/sites/default/files/styles/view\\_body\\_embed/public/images/bioprinter\\_0.jpg?itok=ZkO-8Tay](http://www.technologyreview.com/sites/default/files/styles/view_body_embed/public/images/bioprinter_0.jpg?itok=ZkO-8Tay)



[http://www.technologyreview.com/sites/default/files/styles/view\\_body\\_embed/public/images/biocurious.jpg?itok=CAGwqHG9](http://www.technologyreview.com/sites/default/files/styles/view_body_embed/public/images/biocurious.jpg?itok=CAGwqHG9)

# Innovation Engine: Small Start-Ups Creating Low-Cost Kits & Devices --> Crowdsourcing \$\$\$



Open GelBox 2.0



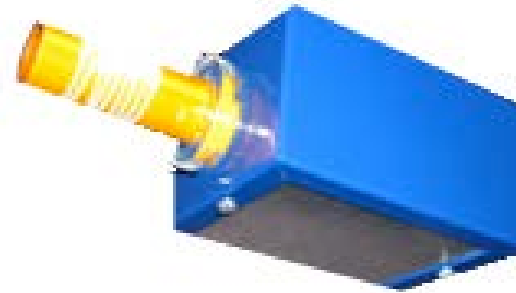
Microbial Fuel Cell



OpenPCR



Dremelfuge



LavaAmp



# iGEM: International Genetically Engineered Machines Competition



[http://2012.igem.org/wiki/images/6/65/Biobrick\\_trophy.jpg](http://2012.igem.org/wiki/images/6/65/Biobrick_trophy.jpg)



<http://www.flickr.com/photos/igemhq/sets/72157625225590751/show/>

- 3200 active members
- 215 teams & 200 labs
- Sections
  - High school
  - Undergraduate
  - Overgraduate
  - **DIY / Community Lab section planned for 2014**

# Ask a Biosafety Expert

## Ask a biosafety professional your question

Submitted questions are sent to a panel of [professional biosafety experts](#) and members of the American Biological Safety Association (ABSA.org).

**Ask Now**

I have read the [disclaimer](#)



How it works

**Outreach, education, and good, practical biosafety advice**

<http://ask.diybio.org>

**Some of the questions so far...**

*How can I tell if the bacteria that  
I'm growing on agar plates in my  
room are toxic?*



*How should I dispose of my  
bacterial plates if I don't have  
access to an autoclave?*

*How can I make bioart pieces with  
embedded non-pathogenic  
bacteria safe to sell to the public?*

# Real Opportunities for Biosafety Professionals

- Movement is growing rapidly, but is still relatively small
- An opportunity to build in safety culture from the earliest stages
- Challenging questions, new technology, new contexts, new types of clients, open access resources

# Call for Volunteers

please join our expert advisory board

- Required training and experience
  - All levels
  - RBP and CBSP highly desirable
  - Different roles for different levels of training, experience, certification
  - Need diverse mix of domain expertise
- Minimum volunteer commitments
  - respond to 1 question per month
  - Monthly 1 hour conference call
  - ~5 hours per month
- About the Organization
  - DIYbio.org is nonprofit corporation
  - ABE is a free educational service
  - Insured



# **BIG THANKS TO OUR CURRENT ADVISORY BOARD MEMBERS**

Molly Stitt-Fischer, Ph.D., CPH.

Ted Myatt, Sc.D., RBP.

J. Craig Reed, Ph.D., RBP.

Special thanks to Woodrow Wilson Center for International Scholars, Synthetic Biology Project, Dave Rejeski and Todd Kuiken.

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