

## Synthetic Biology – STEM

### Professional Development at Northwestern University

### The Baxter Center for Science Education

You are invited to the BioBuilder 3-day workshop at Northwestern University in Evanston, Illinois. This professional development opportunity prepares educators to bring biological engineering and synthetic biology into their classrooms and laboratories.

**This workshop will be held from July 31 – August 2, 2018.**

#### The workshop will include:

- Lectures that connect the science, technology, engineering, and math aspects of these fields.
- Labs and classroom activities taught from the online [www.BioBuilder.org](http://www.BioBuilder.org) resource and the BioBuilder textbook published by O'Reilly.
- Discussion with members of Northwestern University's research community.
- Activities that address human practice questions such as the safety, security, economics and wisdom of engineering novel biological systems.
- Activities that address the nuts and bolts of running a BioBuilderClub or iGEM team.
- Attendees receive all printed workshop classroom materials in ready to use formats, lunch each day, and a certificate of completion.

#### Who should apply?

This workshop is intended for:

- High school and middle school Biology and STEM teachers, including those looking for new ways to teach the AP content or for compelling material to teach college-bound students.
- College-level instructors looking for classroom and lab curricula to include in a biotechnology-style class.
- Science Club leaders, in particular anyone looking for ways to bring cutting-edge content to students with a variety interests from math to biology to electronics.

#### To Apply:

This workshop is free to teachers thanks to sponsorship by The Baxter Center for Science Education (BCSE). Application is required for all participants, as space is limited. Teachers will be notified by Northwestern University if they are selected for participation.

Candidates must apply directly through the BCSE website:

<https://bcse.northwestern.edu/content/biobuilder>

**Contact:** Emily Hood Ferrin, PhD, Program Director & Resident Scientist, BCOE  
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## What is Synthetic Biology?

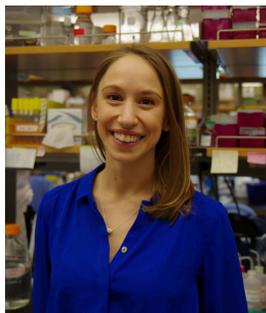
Synthetic Biology is an emerging field that applies engineering and mathematical principles to the development of novel biological systems. These principles and technologies extend the teaching of molecular genetic techniques into real world, authentic applications. Examples of synthetic systems include bacteria that smell like bananas, and light-sensitive bacteria that can serve as pixels in a photograph. These teachable systems are included in the curriculum at [Biobuilder.org](http://Biobuilder.org).

## Why teach Synthetic Biology?

Synthetic biology provides teachers and students an engineering context to learn molecular biology, genetic engineering and microbiology methods. This approach asks students to learn while designing, or testing designs of, engineered biological systems. In addition, this approach provides science teachers with a means of exploring numerous state and national technology standards that are hard to address in most science classes.

## Who's teaching this workshop?

### Jessica Stark



Jessica Stark is a PhD candidate in Chemical and Biological Engineering at Northwestern University. While at Northwestern, Jessica received the NSF Graduate Research Fellowship, an NIH Biotechnology Training Grant Fellowship, and the Henry Luce Foundation Clare Boothe Luce Graduate Fellowship. Jessica has helped lead BioBuilder workshops for K-12 teachers and students and is also actively involved in various outreach projects that help K-12 teachers bring synthetic biology into their classrooms.

### Tom Martinez



Tom Martinez has recently completed his 37th year as a biology instructor. He currently teaches AP Biology and Biotechnology at Glenbard East High School in Lombard, Illinois. A BioBuilder Master Teacher, he has taught the BioBuilder curriculum for the past six years. Tom also leads a BioBuilder after school club that has presented their posters at the BioBuilderClub Final Assembly in Cambridge, Massachusetts.

### SPONSORS:



Expanding Minds with Real-World Science

*The BioBuilder Educational Foundation is a 501(c)3 organization. Donations are tax-deductible and all proceeds go directly to funding the foundation's programs and materials.*