**About**

Natalie Kuldell teaches in the Department of Biological Engineering at MIT, where she develops laboratory and project-based curricula for undergraduates. Her classes focus on synthetic biology, a new engineering discipline that generates novel living systems from standard, characterized biological parts. The field holds tremendous promise for solving real world problems as well as potential for mis-use and for mis-understanding -- a realization that prompted Natalie to engage in work around the broader impact of biological engineering.

**Personal narrative, aka “How a shy geek got out of the lab and joined a coalition”**

I wish the story had a measure more “eureka” and “aha,” and a measure less “wow, how lucky” to it. It would be a more interesting narrative if it did. But I can’t point to a single event or reason that prompted me to focus on public engagement in science and engineering. Instead, I’ll list here a few chance happenings and realizations that, together, brought me to be a member of the COPUS core and a hub leader.

1. **Work that matters**: my love for hands-on science started in high school when I had the great good fortune to win a summer stint at the National Institutes of Health. Before the end of my first summer in a lab there, I knew I wanted to be a bench scientist. It seemed like the best job in the world: getting to ask interesting questions, to test them in clever and revealing ways, and then to think about what the test results can and can’t tell you. (thank you Marshall Nirenberg and Alan Peterkofsky!). So how disappointing, then, to finally get to college and see that most of classroom teaching labs were more like cooking and not at all like research. No wonder folks say they don’t like science! After I got my PhD and finished my post-doc at Harvard, I got the chance to design and teach new undergraduate teaching laboratories and classes, first at Wellesley College in the Department of Biological Sciences and now at MIT in the Department of Biological Engineering. The labs are more like apprenticeships and they engage the students as researchers, rather than simply teaching them the mechanics of moving solutions from one tube to the next.
2. **You say that like it’s a good thing**: One of the revelations I had early on at MIT was around the use of the word “hacker.” Most of society hears that word and thinks about computer break-ins and data destruction or theft. But at MIT, people proudly self-identify as “hackers” – including people whose great aim is to hack DNA. In synthetic biology, we have a unifying goal to achieve reliable programming in the language of DNA, but it’s a goal that scares the heck out of most folks when it’s described as “reprogramming the living world.” I was profoundly influenced by my friend and colleague Drew Endy, who made huge strides in advancing the field, and who worked equally hard to explain and discuss the topic in ways we can all understand.
3. **Not a secret anymore:** In an era when people rally around the notion that “information yearns to be free” and when internet sharing has forever changed the notions of privacy, it’s amazing to me that scientists still tend to keep the nature of their work to themselves. I don’t mean the data or the discoveries, but rather the process of working in a scientific way. There’s so much fun in doing science right and it’s so much more than the “five step scientific method” that every school teaches from 5th grade on. It seems like if more people knew about how real science is practiced, we’d have a greater community of do-ers, and a new appreciation for the limits and potential of scientific work. The project that most directly led me to COPUS is the “Understanding Science” site and the incomparable Judy Scotchmoor.

With such exciting scientific questions and ideas on the horizon, and with so many in our society either unaware, misinformed or disenfranchised, it seemed to me that participation in COPUS was part of doing my job. That I can do my job better as I collaborate and discuss it broadly has been a happy surprise. Perhaps there is my “eureka” after all….