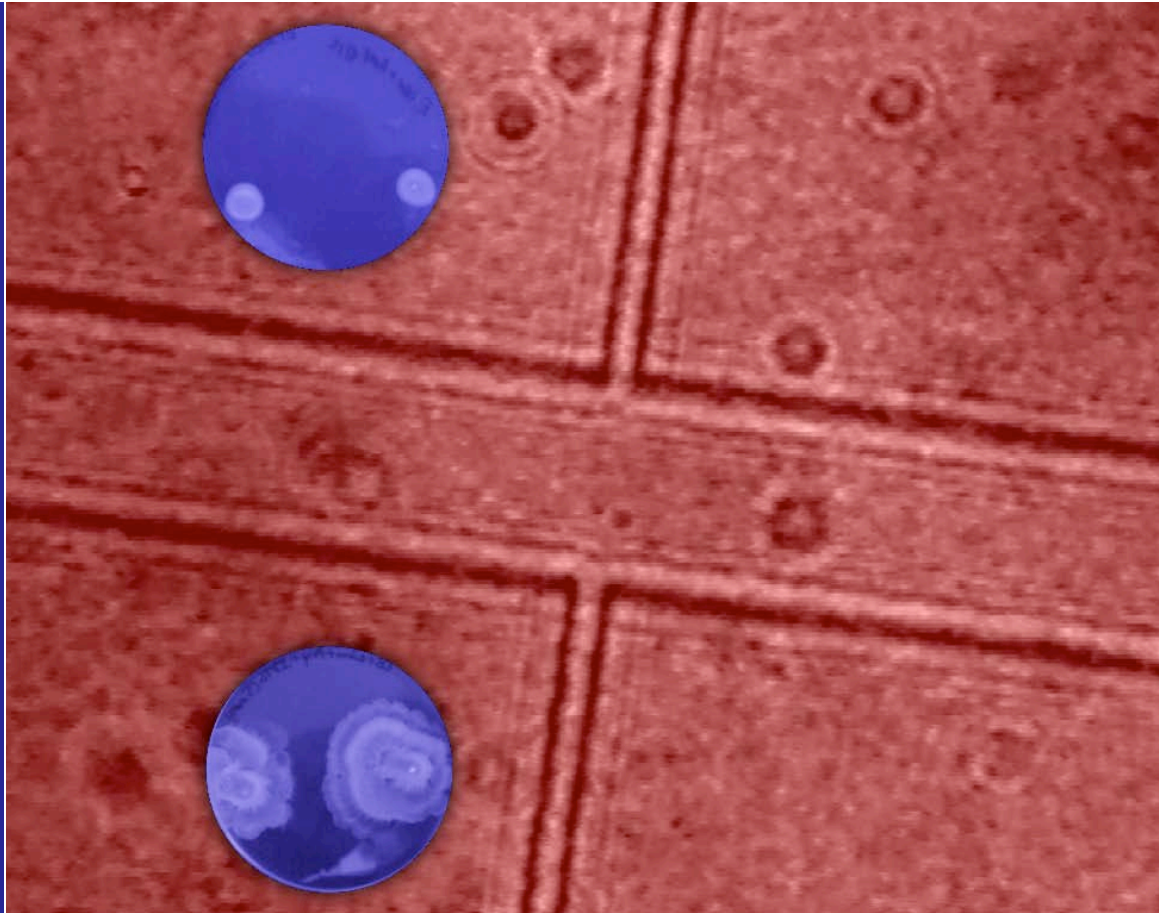


iGEM COMPETITION

Penn State MRSEC

A microfluidic channel in which engineered bacteria are designed to hand off chemical signals. The insets demonstrate that the team has successfully engineered a new signaling function into the bacteria.



Genetically engineered machines bacterial relay race

IRG2/Outreach



In 2005, Penn State participated in the Intercollegiate Genetically Engineered Machine (iGEM) competition, hosted by MIT. Two dozen student teams from the U.S. and Europe tried to program bacteria, through genetic engineering, to perform a task of their design.

The Penn State team, composed of seven undergraduate science and engineering majors and supervised by faculty mentors (including MRSEC member Will Hancock), undertook to create a "Bacterial Relay Race." One strain of bacteria would swim down a microfluidic channel and

then signal a second population to turn on their own bacterial motor. These second bacteria would then signal the first group to shut down, and they swim away down the channel carrying the "baton." The student team designed and computationally modeled this system, obtained bacteria that are activated to swim only in the presence of a soluble signal, and designed and fabricated micro-scale channels in which the bacteria could swim. At the iGEM Jamboree in November, 2006, the Penn State team received an award for the "Best New Bio-Brick" for their contribution to a

data bank of genetic widgets. The iGEM competition was written up in *Nature* and *The New York Times*. Our MRSEC-sponsored team is continuing their work during the school year, and will make another concerted push in Summer 2006.