erties of networks to examining patterns of network change. Recent years have also seen the development of statistical approaches for examining networks, both for static and dynamic network characteristics (through exponential random graph models and actor-oriented models of network evolution, respectively). Several similar future steps will likely influence how broadly networks can influence health research. We need to consider ways to more systematically integrate network-based approaches into new data collection efforts (especially in large, population-based samples) and to effectively combine network advances with other analytic approaches (e.g., spatial analytic methods). As Valente's book indicates, the confluence of widespread interest, a relatively established research "canon," and recent advances in the field has laid the grounds for the network approach to make important contributions to science, in health and writ large, in the coming years.

10.1126/science.1197365

SYNTHETIC BIOLOGY

Inventive Constructions Using Biobricks

Valda Vinson

In early November, 118 teams (wearing group colors and, some, shouting team cheers) from 26 countries descended on the MIT campus for the grand finale of the 2010 International Genetically Engineered Machine (iGEM) competition. The undergraduate students had plunged into their projects at the beginning of the summer, when teams received a kit of "biobricks" from the Registry of Standard Biological Parts. They were to use these to design and build simple biological systems and operate them in living cells. In addition to the existing standard parts, their projects could involve new parts that they created and would contribute to the registry. Under the mentorship of faculty sponsors (who helped them obtain research space, funding, equipment, and expert advice), the students worked through the summer, recording their progress on team wikis. On 27 October, the wikis were frozen, and evaluation of the teams' efforts began. The iGEM Jamboree offered students the opportunity to present their work to the judges, their competitors, and other interested observers. And present they did.

Meeting at MIT. The iGEM 2010 teams gathered for the Jamboree.

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Arriving at the Jamboree on Saturday evening, I felt a little weary and was bracing myself for the task of viewing more than 60 posters. But I was soon energized by the enthusiasm of the young presenters. Entire teams greeted me, eager to explain their creations—such as an "*E. coli* pen," which produced different colors in response to a gradient of hydroperoxide, and a hydrophobic biofilm, touted as a potential alternative to chemical coatings. Through the poster sessions and oral presentations on Saturday and Sunday, the joy of scientific discovery was on display. Dreams were big, with the students undaunted as they described the sometimes small steps they had taken toward large goals. Among those small steps, 1863 new parts were added to the registry. One of the goals of iGEM is to teach, and the students were certainly learning—engaged in their own projects but also eagerly absorbing the details about those of their peers. Message boards were full of congratulatory and encouraging comments between teams (and offers to swap T-shirts). Most projects involved modeling and experimentation, so teams were interdisciplinary, comprising computer scientists, bioengineers, and molecular biologists, among others. I found myself wondering whether this model of "teamwork," rather than the more distant "collaboration," could be applied more broadly.

Excitement peaked on Monday, when everyone gathered to hear the announcement of the six finalists: BCCS-Bristol, who built a soil fertility sensor into *Escherichia coli*; Cambridge, with their bioluminescent bacteria *E. glowli*; Imperial College London, who engineered *Bacillus subtilis* to detect the waterborne *Schistosoma* parasite; Peking, for designing bacteria that could detect and absorb heavy metals; Slovenia, who built a system to control the sequence of steps in a multi-step biosynthetic pathway; and TUDelft, who designed a system that can sense and degrade hydrocarbons in aqueous environments. All finalists gave their presentations again, appearing unintimidated by the tens of judges sitting in the front rows. The judges retired to decide the winner, and the mood switched to celebratory as students shared YouTube videos highlighting talents that went beyond scientific. (Cambridge University's song extolling Gibson assembly was a particular hit.) The buzzing room quieted when the judges reentered; the runners up were announced, and then there were cheers for the winners of the golden biobrick trophy, Slovenia. This year's competition is over, but I'm sure discussions of next year's projects have already begun. With the level of enthusiasm, talent, and hard work demonstrated by these undergraduates, the future of synthetic biology looks bright.

iGEM 2010 Jamboree
Massachusetts Institute of Technology, Cambridge, MA.
6–8 November 2010.
http://2010.igem.org/

10.1126/science.1201091

Published by AAAS