As summer approaches, universities across the globe will begin assembling teams of talented undergraduates from diverse disciplines to participate in the annual international genetically engineered machine (iGEM) competition. The contest tries to spark advancements in synthetic biology by encouraging research teams to design and construct new, unique genetic devices based on biological cells and circuits. The students, along with faculty members and graduate student mentors, are asked a simple question: “What would you like to build this summer?”

The iGEM team at the University of Texas, Austin, for example, engineered Escherichia coli to sense and respond to light in a novel way, enabling the construction of a bacteria-based photo-printing system (see Nature 438, 441–442; 2005). This year the Harvard iGEM team will consist of about a dozen students, mentored by faculty members, postdocs and graduate advisers. It is a rare opportunity for undergraduates to learn from and interact with a host of colleagues who are all interested in fostering the students’ excitement for science and research.

Unlike traditional courses, the iGEM platform gives undergraduates much more freedom in the design, direction and implementation of their projects, and helps build essential skills for team work. Students are encouraged to brainstorm and to propose ideas and experiments to pursue during the summer. These sessions not only build team spirit but also help the students to start thinking critically about how research is really done, from the initial idea to the experimental design.

Students work together throughout the summer. Then in November, teams from across the world come together to present and celebrate their work at the annual iGEM jamboree. Some projects inspire further development by future iGEM teams; others also play an important role by contributing directly to projects that postdocs and graduate students are working on.

The iGEM competition has been growing rapidly since it was launched in 2004, starting with 5 teams in 2004, 13 teams in 2005, and 37 teams in 2006. This year, it is estimated that 80 to 100 teams will participate. We encourage other universities to join us and use this unique platform for research and education.

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