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Date: May 5, 2006

Re: Sponsorship of the MIT undergraduate student design team for the iGEM competition

When: Summer 2006

International Genetically Engineered Machines competition
http://igem.mit.edu

Overview

The international Genetically Engineered Machines (iGEM) competition is a team-based challenge in which 39 schools and over 400 students from around the world compete to design engineered biological systems. Typical projects involve engineering a microbe (bacteria or yeast) to perform a novel function. Students design, build and test their system over the summer before coming together at MIT in November to demonstrate their projects to the other teams.

In addition to running the iGEM competition, MIT also fields its own team. This year's team consists of six MIT undergraduates from diverse backgrounds. We are seeking funding for the MIT team to ensure both a tremendous learning experience for the team members and a chance to succeed against other teams.

Members of MIT's iGEM team 2006. See the team bio's below.

Sponsorship

We are soliciting monetary and in-kind donations from individuals and businesses to support the MIT team. These funds are critical to the MIT team's continuing success in its own competition. Donations will be applied toward team expenses including but not limited to:

1. Student stipends (Six students, ~$20k)
2. Lab materials costs (~$10k)
3. Commercial DNA synthesis of novel biological parts (~$20k)

In donating to the MIT iGEM team, you will:

1. help train the next generation of biological engineers
2. contribute to the growth of the emerging field of synthetic biology
3. receive invitations to the iGEM jamboree in November 2006 at the MIT campus where teams from across the world present their projects.
4. be acknowledged on team T-shirts and the team website as a sponsor. (Logo/font size will scale linearly with the size of the donation).

Goals of our team

1. Educate a new generation of talented biological engineers

2. Develop cutting edge synthetic biology technology

3. Grow the field of synthetic biology

4. Cement MITs position as a leader in synthetic biology

The success of iGEM

2003 & 2004
During MIT's Independent Activity Periods (IAP) of January 2003 and 2004, student teams designed glowing bacterial oscillators that blinked on and off and designed pattern-forming bacteria.

Summer 2004
The summer of 2004 brought the first Synthetic Biology Competition. Student teams from five schools competed to build cellular finite state machines: Boston University, Caltech, MIT, Princeton, and UT-Austin. The most developed project was UT, Austin's "photographic bacteria" that

could capture a light image on a layer of cells. In November of 2005, this system was published in Nature.

This image was fixed on a layer of bacteria using light by students at UT Austin and UCSF

2005

In the summer of 2005, student teams from 13 schools (Berkeley, Caltech, Cambridge UK, Davidson, ETH Zurich, Harvard, MIT, Oklahoma, Penn State, Princeton, Toronto, UCSF, and UT Austin) participated in the 2005 iGEM competition. Projects included cells that could swim toward stimuli, communicate with each other, sense temperatures, perform relay races, and count.

MIT iGEM team profile

This year's MIT iGEM team consists of six MIT undergraduates from diverse backgrounds.

Kate Broadbent

Kate is a freshman, expecting to declare as a chemical or biological engineer. In her spare time she manages to be one of the United States' top young equestrians. This summer, she's excited about working with bacteria rather than horses!

Giovanni Franzesi

Giovanni is a mechanical engineering senior. He's getting ready to start a masters in the Health Sciences and Technology program at MIT. His future interests lie in medical technologies and he hopes that synthetic biology will ultimately provide valuable new resources for medicine.

Andre Green

Andre, from Louisiana, is a sophomore in biological engineering. That makes him one of the first of MIT's biological engineering majors. He's been spending his summers working in numerous molecular biology labs so he's very excited about the chance to engineer a biological system.

Stephen Payne
Stephen is also one of the new generation of MIT biological engineers. Stephen spent last summer working with the MIT Registry of Standard Biological Parts. With that experience under his belt, Stephen knows exactly what BioBricks he wants to use in MIT's biological machine this summer!

Veena Venkatachalam
Veena is a freshman, hoping to major in biological engineering or chemistry next year. Veena is relishing the opportunity to actually construct a biological system and get to see it working. Veena was one of two national winners of the Siemens-Westinghouse Advanced Placement Scholarship last year.

Boyuan Zhu
Bo is a freshman who expects to be involved in biotechnology whether he decides on electrical or biological engineering. With experience as an entrepeneur and a researcher, Bo is excited about the opportunity to work on a field with such commercial and scientific potential. Last year he was one of the winners of the Microsoft/VC Angel Roundtable Business Plan Competition.

Advisors
Five graduate students from the departments of Biological Engineering and EECS will advise MIT's iGEM team:

Barry Canton
Beng, MEngSc in Mechanical Engineering, University College, Dublin

Austin Che
MS in Electrical Engineering and Computer Science, MIT; BS in Computer Science, AB in Psychology, Stanford University

Jason Kelly
BS in Chemical Engineering and Biology, MIT

Reshma Shetty
BS in Computer Science, University of Utah

Samantha Sutton
BS in Electrical Engineering, University of Illinois at Urbana-Champaign.

Drs. Drew Endy and Tom Knight will serve as faculty advisors.

iGEM in the news

The iGEM competition has received extensive press coverage in both the mainstream and scientific press. See Appendix A for a compilation of articles on the competition.

"At the world's foremost centres of learning, a potentially revolutionary science is taking shape. The central idea of the field is that by drawing on knowledge developed from biology and applying principles used in engineering design and production it is now possible to create bio-synthetic systems to achieve novel applications with unprecedented power and efficiency. Students from Cambridge University experimenting in this field have had their work featured in the prestigious Nature magazine after competing recently in an international contest – iGEM – that challenged them to design and build machines entirely from biological components such as genes and proteins." – London Press Service – 3/20/2006

With thanks and kindest regards,

Drew Endy, Ph.D.
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Tom Knight, Ph.D.
Computer Science and Artificial Intelligence Lab MIT

Appendix A: iGEM in the news

A compilation of press articles on iGEM.

Mainstream
The March of the Bio-Machines Advances - London Press Service - 3/20/06
Controlling organisms with biological circuits opens up a world of possibilities and dangers - San Diego Union Tribune - 12/6/05
The Biological Camera - Seed Magazine - 11/29/05
Live From the Lab, a Culture Worth a Thousand Words - New York Times - 11/24/05

Science
7 from Penn State enter the Genetically Engineered Machine (iGEM) Competition - Sci/Tech News Service - 2/06/06
Live Photographs - Jumping Electrons - 12/12/06
The Sum of the Parts - Science News - 12/10/06
Synthetic Biology: Designs on Life - Nature - 11/24/05
iGEM 2005: Synthetic Biology's Future - Bio IT World.com - 11/8/2005
Synthetic Life Research Shows Progress—And Raises Questions - American Association for the Advancement of Science - 11/5/2005
The List: R&D Projects that must get done - EE Times - 8/8/05
Life: Reinvented - Wired - 1/05
Starting from scratch Nature - 11/6/04
Conference hones tools for synthetic bio revolution - EE Times - 6/21/04
Conference kicks off synthetic bio revolution - EE Times - 6/15/04
SYNTHETIC BIOLOGY: Microbes Made to Order - Science - 1/9/2004

Institutional coverage
Students plan to devote summer to MIT synthetic biology competition - Brown Daily Herald - 3/20/2006
Endy gives talk on DNA programming - MIT News Office - 3/08/2006
Ready. Set. Grow!? - Penn State - 1/31/06
Designs on life - Cambridge - 1/25/06
The Right Exposure - UT Austin - 12/19/2005
Genetically engineered machines invade MIT - MIT - 12/17/05
Students race bacteria in MIT competition - The Digital Collegian at Penn State - 12/08/05
Davidson Students "Ace" Presentation at MIT Synthetic Biology Competition - Davidson - 11/29/05
Scientists engineer bacteria to create living photographs UCSF - 11/23/05
Teams lay BioBrick foundation for genetic engineering - MIT news office - 11/08/05
Undergraduates spend summer creating living machines - Harvard - 8/25/05
Students build bio-circuits - Daily Princetonian - 2/3/2005

Appendix B: Geographical distribution of 2006 iGEM teams