



**Columbia &  
Cooper Union**



To whom it may concern:

This year, students from Columbia University and The Cooper Union have again teamed up in order to participate in the International Genetically Engineered Machine competition. iGEM's mission is to foster undergraduate interest in synthetic biology while streamlining the field; this includes reducing the complexity of system design by supporting the use and creation of standardized, interchangeable biological parts. Furthermore, the iGEM Foundation hopes their efforts will promote the innovation process, and the construction of biological systems with novel, real world applications.

Last year, the Columbia-Cooper team used safe strains of *E. coli* bacteria to produce semiconducting nanocrystals called quantum dots. Quantum dots have unique properties that make them critical components in exciting new areas of technology such as whole-body biomedical imaging, ultra low-energy lighting, and solar panel efficiency. The team received a gold medal at the regional competition and was invited to the world competition at MIT.

Currently, the Columbia-Cooper iGEM team is working with *Acidithiobacillus ferrooxidans* to create a light-controlled printed circuit board manufacturing process. The metabolism of this bacteria relies on its ability to oxidize iron; the iron can then be used to oxidize, and in turn solubilize, copper. By genetically altering the bacteria, we intend to install a light sensitive mechanism which will enable us to etch copper in a desired pattern, leaving a finished circuit board.

While the prospective environmental advantages of our method and the challenge of creating this pathway serve as worthy motivation to our team, our goals are certainly ambitious. With this in mind, we would like to ask for your support in sponsoring our project. Any contributions, financial or in kind, would be greatly appreciated.

Our goal is to raise at least \$22,450 by October 1, 2012 for the purchase of specialized lab equipment, registration fees, and travel expenses. In return for your contributions, your logo will be featured on our project board, our permanent website, and our t-shirt design. If you have any questions, feel free to email Saimon Sharif at [sharif2@cooper.edu](mailto:sharif2@cooper.edu) or Vincent Xu at [xx2136@columbia.edu](mailto:xx2136@columbia.edu). Tax deductible donations can be made via check to either 501(c)(3) charitable organization:

Columbia University- c/o Scott Banta PhD.  
820 Mudd  
500 West 120th St., New York, NY 10027  
Memo line: For iGEM 2012 PI Scott Banta

The Cooper Union  
CV Starr Foundation c/o Sarah Lerner  
41 Cooper Square, New York, NY 10003  
Memo line: For iGEM 2012 PI David Orbach

The following is a link to our iGEM wiki page: <http://2012.igem.org/Team:Columbia-Cooper-NYC/Project>. We will continuously update the website as we make progress with our research.

Thank you for your time and consideration.

Sincerely,

The 2012 Columbia-Cooper iGEM Team

Scott A. Banta, PhD

David J. Orbach, MD