Focus on a few areas of excellence

### Information Science & Technology

Optogenetics

The field of Optogenetics is revolutionizing neuroscience through the use of microbial opsins and light to activate or inactivate specific brain cell types with high specificity. Optogenetics and CLARITY (a new neuroanatomy method for intact circuit mapping) enable scientists to understand brain circuit function and dysfunction, vastly expanding knowledge of the brain and its associated psychiatric and neurological disorders. Through the Beckman Institute Optogenetics Neuroscience Initiative and CLARITY (the BIONIC Center), Caltech is currently developing and expanding upon these molecular and hardware tools and applying them to neural circuitry problems for understanding and improving deep brain stimulation for DBS-targeted disorders. See: [www.glab.caltech.edu](http://www.glab.caltech.edu) and [www.davidandersonlab.caltech.edu](http://www.davidandersonlab.caltech.edu)

### Energy at Caltech

Two centers are the focal point of Caltech’s pioneering research in energy: the Resnick Sustainability Institute and the Joint Center for Artificial Photosynthesis (JCAP). Resnick scientists address critical challenges in renewable energy and sustainability science with global impact such as photoelectrochemistry and new biochemical processes to reduce the carbon footprint and generation, storage, conversion and distribution of energy. Established as a Department of Energy (DOE) Energy Innovation Hub, JCAP focuses on artificial solar-fuel generation technology and cost-effective methods to produce fuels using only sunlight, water, and carbon dioxide as inputs. See: [www.resnick.caltech.edu](http://www.resnick.caltech.edu) and [www.solarfuelshub.org](http://www.solarfuelshub.org)

### Medical Engineering

Medical Engineering

The Department of Medical Engineering (MedE) is truly translational and interdisciplinary by nature. Its focus is on applying medical sciences and multidisciplinary engineering principles to the design, analysis, and physical demonstration of micro and nanoscale medical devices and systems for translational medicine, including innovative diagnostics, implants, and therapeutic systems. The core group of MedE faculty has been drawn from Aerospace Engineering, Applied Physics, Biological Engineering, Computer Science, Electrical Engineering, Material Science and Mechanical Engineering, and they collaborate very closely in a highly synergistic interdisciplinary environment. See: [www.mede.caltech.edu](http://www.mede.caltech.edu)
**Drive** the transfer of scientific and engineering knowledge created by our researchers to maximize societal impact by developing partnerships with industry through the creation of new ventures, collaborations with corporations and transfer of intellectual property, while nurturing an entrepreneurial environment.

**Targeted Immunity**

Focusing investment in the Caltech laboratory of Prof. Robert M. Huber, with contributions from Prof. Samieeni, and Prof. Christian T. Greve, Caltech researchers are looking to target disease mechanisms to enable drug development.

**Awards for Innovation**

Google supported Caltech Prof. Pietro Perona, who developed the Never Failing Goggles. These goggles are a lightweight, computer vision system that allows individuals with visual impairments to “see” their environment.

**Never Failing Goggles**

Google supports the efforts of Caltech Prof. Pietro Perona, who has developed Never Failing Goggles. These goggles help individuals with visual impairments to “see” their environment by using novel technologies.

**Flying with Boeing**

The partnership between Boeing and Caltech was established in 1995, and has produced multiple patents and research findings. Through a multi-year commitment, Boeing and Caltech strengthened their relationship in a collaboration that is anticipated to have a major role in the regional innovation ecosystem.

**Good Chemistry with Dow**

Since 2009, Caltech and Dow have been strategic partners in exploring new and emerging research collaborations in the United States. In October 2011, Caltech and Dow strengthened their relationship in a collaborative effort to address key world challenges.

**A One-Stop Shop**

The Office of Technology Transfer (OTT) is the new administrative home for both Technology Transfer and Corporate Relations. OTT manages the workflow of new invention disclosures, licensing, industry sponsored research agreements, intellectual property, and transfer of technology. Caltech startups highlight our entrepreneurial spirit and major role in the regional innovation ecosystem.