

OFFICE OF THE VICE PROVOST, TUFTS UNIVERSITY

STARTING UP

INNOVATION

IMPACT

Tufts University
Tufts–New England Medical
Center

Technology Licensing and
Industry Collaboration

techtransfer.tufts.edu

TRANSACTIONS

- Invention disclosure intake
- Patent applications
- Patent maintenance
- Nondisclosure agreements
- Options
- License agreements
- Start-ups
- Material transfer agreements
- Clinical trial agreements
- Industry-sponsored research agreements
- Trademark and copyright agreements
- Interinstitutional agreements

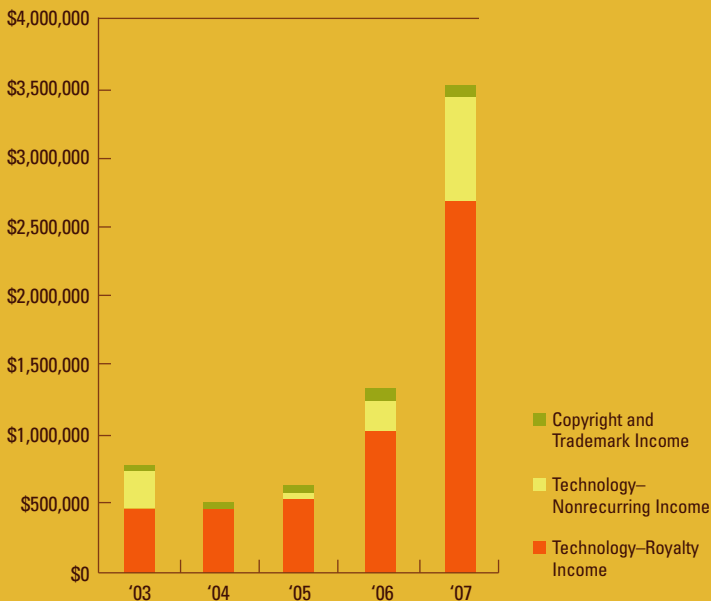
OUTREACH

- Intellectual property seminars
- Departmental visits
- Start-up clinics
- Tech transfer internships
- BIO Innovation Corridor

RESOURCES

- AUTM**
Association of University Technology Managers
www.autm.net
- BIO**
Biotechnology Industry Organization
www.bio.org
- LES**
Licensing Executives Society
www.usa-canada.les.org
- MATTO**
Massachusetts Association of Technology Transfer Offices
www.masstechtransfer.org
- MTTC**
The Massachusetts Technology Transfer Center
www.mattcenter.org

Tufts University License Income Five-Year Trend





Office for Technology Licensing and Industry Collaboration

The mission of the OTL&IC is to make Tufts University and Tufts–New England Medical Center discoveries available for public benefit, to promote research by facilitating appropriate relationships between the institutions and industrial collaborators, and to generate income to support research activities. In keeping with regulations of the federal government—the chief source of funding for many early-stage inventions—Tufts University and Tufts–New England Medical Center inventors receive a personal share of income generated from the commercial exploitation of their discoveries.

The staff of the OTL&IC work closely with the inventors and industrial collaborators who can develop the early-stage technologies that basic research generates. Increasingly, we find that the best way to transfer early-stage technology is to create start-up companies. The OTL&IC helps catalyze start-ups by building relationships with organizers of private funding—such as angel, seed-stage, and venture investors—and by proactively seeking corporate research collaborations. The OTL&IC also helps investigators tap public funding sources such as the Massachusetts Technology Transfer Center and the Small Business Innovation Research (SBIR) program of the federal government. To encourage a culture of technology transfer and entrepreneurship, the OTL&IC provides seminars on intellectual property development and start-up company formation.

In 2007, five new start-up companies were launched through the efforts of the OTL&IC working with Tufts University faculty. Two goals of the Tufts research community are to make a difference and to improve the lives of others. Technology transfer helps to achieve these goals, and each successful development of an early-stage invention can improve the world around us.

Tufts–New England Medical Center Start-Up Companies

POINT THERAPEUTICS (1997)

www.pther.com

Cancer, diabetes

**Andrew Plaut, Department of
Medicine**

KATAMA BAY BIOSCIENCES

(2004)

Drug discovery

**Alan Kopin, Martin Beinborn,
Molecular Cardiology
Research Institute**

ACCUGESICS (2004)

Pain therapies

**Daniel Carr, Department of
Anesthesia**

IGAN BIOSCIENCES (2006)

www.iganbio.com

Kidney disease therapy

**Andrew Plaut, Department of
Medicine**

ASCENT THERAPEUTICS (2006)

**Platform pharmaceutical
technology: cancer,
inflammation, cardiovascular
disease**

**Athan Kuliopulos, Lidija Covic,
Molecular Oncology Research
Institute**

ION SIGNATURE TECHNOLOGY (1996)

www.ionsigtech.com

Data analysis software for the scientific and analytical instrument markets

Albert Robbat, School of Arts and Sciences

NANOFAMES (1997)

Protein-based nanostructures

Edward Goldberg, School of Medicine

PARATEK PHARMACEUTICALS (1997)

www.paratekpharm.com

Antibiotic therapy

Stuart Levy, School of Medicine

POINT THERAPEUTICS (1997)

www.pther.com

Cancer, diabetes

William Bachovchin, School of Medicine

ILLUMINA (1998)

www.illumina.com

Sensors, diagnostics

David Walt, School of Arts and Sciences

ARISAPH PHARMACEUTICALS (1999)

www.arisaph.com

Drug profiling and development

William Bachovchin, School of Medicine

SERICA TECHNOLOGIES (2000)

www.sericainc.com

Silk-based medical devices

Gregory Altman, David Kaplan, School of Engineering

COGNISCENT (2003)

www.cogniscentinc.com

Chemical sensing devices

John Kauer, Joel White, School of Medicine

BA LOGIX (2007)

www.balogix.com

Software, multiple applications

Karen Panetta, Sos Agaian, School of Engineering

CENTEGEN (2007)

Drug-resistant bacterial infections

Naomi Balaban, Cummings School of Veterinary Medicine

LAKEWOOD PHARMACEUTICALS (2007)

www.lakewoodpharma.com

Hemolytic-uremic syndrome therapy

Saul Tzipori, Cummings School of Veterinary Medicine

QUANTERIX (2007)

www.quanterix.com

Single molecule detection

David Walt, School of Arts and Sciences

TEMPO CONTROL TECHNOLOGIES (2007)

Music synchronization

Joseph Cerra, Michael Visconti, School of Engineering, Class of 2005

Tufts University opened a dedicated technology transfer office in 1999. Within a year of its founding, the Office for Technology Licensing and Industry Collaboration (OTL&IC) also assumed responsibility for Tufts–New England Medical Center’s intellectual property management. Before establishing the OTL&IC, Tufts University had outsourced management of its technology transfer activities (from 1993 to 1998) to the Massachusetts Biotechnology Research Institute, an economic development organization that subsequently became known as Massachusetts Biomedical Initiatives.

Start-Up Company Snapshots

Paratek Pharmaceuticals

Paratek, a privately held biopharmaceutical company headquartered in Boston, was formed by **Stuart Levy**, a professor at Tufts University School of Medicine, and Walter Gilbert, a Nobel Prize–winning University Professor at Harvard University. Paratek uses two scientific programs, TET and MAR, to develop products that target infectious and other serious diseases.

Tetracycline (TET): Paratek’s two most advanced broad-spectrum antibiotics and its narrow-spectrum compound for acne derive from this program. So also does a novel anti–multiple sclerosis drug. Paratek’s lead TET antibiotic, which treats TET-resistant as well as TET-sensitive bacteria, has entered Phase II testing for complicated skin and skin structure infections.

Multiple Antibiotic Resistance/Multiple Adaptational Response (MAR): Paratek is developing drugs which interfere with bacterial MAR proteins that control the ability of bacteria to cause an infection. MAR inhibitors stop infection from occurring.



ILLUMINA

ILLUMINA was founded with venture funding from the CW Group, which negotiated an exclusive license to a technology (now known as BeadArray) that had been developed in the laboratory of **David Walt**, Tufts University Department of Chemistry. ILLUMINA completed its initial public offering in July 2000, began offering single nucleotide polymorphism (SNP) genotyping services in 2001, and launched its first system—the ILLUMINA BeadLab—in 2002. ILLUMINA currently offers microarray-based products and services for an expanding range of genetic analysis applications, including SNP genotyping, gene expression, and protein analysis.

ARISAPH PHARMACEUTICALS (formerly Triad Pharmaceuticals)

ARISAPH PHARMACEUTICALS, Inc., is an emerging biopharmaceutical company focused on developing drugs for cancer, cardiovascular disease, and diabetes. ARISAPH has licensed a portfolio of intellectual property that includes a patent owned jointly by Tufts University, Tufts–New England Medical Center, and 1149336 Ontario, Inc. **William Bachovchin** and **Andrew Plaut** are the Tufts and Tufts–New England Medical Center inventors, respectively. ARISAPH has leveraged the intellectual property it has in-licensed to form a drug discovery partnership with a major pharmaceutical company to develop novel therapies for the treatment of atherosclerosis. ARISAPH currently has seven active drug discovery programs in various stages of preclinical development.

“The Office for Technology Licensing and Industry Collaboration at Tufts has been instrumental in making sure the technology coming from my research lab is properly protected. The team at the office has been extremely supportive of faculty entrepreneurs in terms of assistance with intellectual property protection, marketing, and licensing. The staff offer the complete package—they support the faculty member’s commercial aspirations while representing the university’s best interests. They genuinely understand all aspects of what it takes to transfer a research discovery into the private sector.”

David Walt, Tufts University Department of Chemistry

Serica Technologies (formerly Tissue Regeneration, Inc.)

Serica Technologies is a medical device company specializing in silk-based biomaterial platforms for tissue rejuvenation. The company is developing products for orthopedic and sports medicine, aesthetic and reconstructive plastic surgery, and other structural tissue repair needs. Serica was founded on the basis of research into scaffold-driven tissue growth performed at Tufts University School of Engineering. Among the researchers in an ongoing collaboration are **Gregory Altman**, a Tufts alumnus who is founder and CEO of the company, and **David Kaplan**, a professor in the Department of Biomedical Engineering.

IGAN Biosciences

IGAN was formed by **Andrew Plaut**, **Jiazhou Qiu**, and **Peter Bonis**, all of Tufts–New England Medical Center’s Division of Gastroenterology. The trio formed the company to commercialize treatments for IgA nephropathy that had been developed at Tufts–New England Medical Center by Drs. Plaut and Qiu. IgA nephropathy is a leading cause of kidney failure worldwide. The hope is to reverse the disease by administering IgA protease—a bacterial enzyme discovered by Dr. Plaut—to clear immunoglobulin deposits from patients’ kidneys.



Tempo Control Technologies

TCT was formed to commercialize software developed by Tufts undergraduate engineering students **Joseph Cerra** and **Michael Visconti** (E'05). The software synchronizes the tempo of music on an MP3 player to the pace of a user's aerobic exercise without altering the pitch of the music. TCT has been acquired by Klegg Electronics.

BA Logix

Boolean Accelerator Logic Systems, or BA Logix, was optioned to commercialize digital system algorithms from the laboratory of **Karen Panetta**, Tufts University Department of Electrical and Computer Engineering. These accelerated algorithms use a novel methodology that can be applied to imaging and compression technologies to result in fast and efficient implementations in hardware or software, and they can support a broad set of end users while optimizing their wireless, security, video, and signal-processing needs. BA Logix is funded by Allied Minds, a pre-seed investment company.



Quanterix

ARCH Venture Partners, Bain Capital Ventures, and Flagship Ventures have all invested in Quanterix, a company formed to develop a platform technology from the laboratory of **David Walt** of the Tufts University Department of Chemistry. The goal with this new company is to develop a novel platform for single molecule and single cell analysis that will bring a new level of sensitivity, precision, and robustness to life science research, drug discovery, and diagnostics applications. This platform represents a significant improvement over existing techniques, which can only detect the aggregate presence or behavior of many molecules. Promising applications include ultrasensitive protein detection, enzymatic drug screening assays, functional analysis of single cells, and novel in vitro diagnostics.

Lakewood Pharmaceuticals

Lakewood is a development-stage company focusing on new products and technologies to treat infectious diseases. The company's lead product is a human monoclonal antibody for the treatment of hemolytic-uremic syndrome that was developed in the laboratory of **Saul Tzipori**, Department of Biomedical Sciences, Cummings School of Veterinary Medicine at Tufts University. HUS is of particular biosafety as well as public health concern because it arises from *E. coli*-contaminated food. The antibody is scheduled to begin an NIH-funded Phase I trial in 2008; Lakewood will be responsible for advanced trials and GMP production of the antibody.

“The technology transfer office has been incredibly supportive as I have launched my new Center for Integrated Tissue Engineering (CITE). The office has been very proactive in arranging meetings with potential users of CITE and has played a critical role in facilitating all contract work that our center has performed. This has included addressing IP issues and negotiating contracts with industrial collaborators. All of these activities have been done with great professionalism and dedication to the task at hand. I know that we would not be successful at CITE without the incredible assistance provided by the technology transfer office. They have really made it happen!”

Jonathan Garlick, Tufts University School of Dental Medicine

Technology Licensing Snapshots

The LEGO Group

The Office for Technology Licensing and Industry Collaboration completed a license for next-generation **ROBOLAB™** software, whose primary market is K–12 and college. This updated software will enable new and existing **ROBOLAB** users to migrate to the LEGO Group’s newest hardware platform. A group headed by Tufts School of Engineering Professor **Chris Rogers** is developing the software, and revenues from the license are being used to support the Center for Engineering Educational Outreach.

O.I. Corporation

Tufts University signed a license with O.I. Corporation to commercialize a carbon analyzer developed in the laboratory of **Samuel Kounaves** of the Department of Chemistry. The Kounaves group discovered an electro-chemical method to analyze for total organic carbon (TOC) while working under a grant from NASA to develop analytical equipment compact and efficient enough to be used for a scientific investigation on a future Mars-landed mission.



Cascade Sports

Mark Link of Tufts–New England Medical Center’s Division of Cardiology investigates the rare and mysterious cause of commotio cordis, a commotion of the heart linked with the deaths of otherwise healthy young athletes hit in the chest by a ball during a game. His research has led to the design of better chest-wall protection for young athletes, which could save dozens of lives yearly. Dr. Link’s invention has been licensed to Cascade Sports, which is developing this much-needed protective gear for several sports.

Topiramate

While studying the seizure medication topiramate, **Bruce Ehrenberg** of Tufts–New England Medical Center’s Department of Neurology observed that the same drug alleviated migraine headaches and, with daily use, that topiramate prevented the onset of these crippling headaches. On the basis of this discovery, Tufts–New England Medical Center was issued U.S. patent 7,018,983 for a method of treating migraine in non-epileptic patients. Topiramate is now widely prescribed for the prevention of migraine headache.



Celgene

Andrew Greenberg of the Jean Mayer USDA Human Nutrition Research Center on Aging at Tufts University discovered methods for using Jun N-terminal kinase (JNK) inhibitors to treat diseases associated with insulin resistance and related disorders. Celgene took an exclusive license to the patent portfolio and has developed lead compounds that are now in preclinical testing.

AnvetPharma

Tufts University and AnvetPharma, a subsidiary of Accura Animal Health PLC, have two exclusive licenses for veterinary medical inventions. The company has rights to patents for using selective serotonin reuptake inhibitors (SSRIs) to treat dominance-related aggression in dogs and for using N-methyl-D-aspartic acid (NMDA) antagonists to treat compulsive behaviors in animals. The NMDA antagonist portfolio was developed by **Louis Shuster** of Tufts University School of Medicine and **Nicholas Dodman** of the Cummings School of Veterinary Medicine at Tufts University, and the SSRI portfolio was developed by Dr. Dodman.