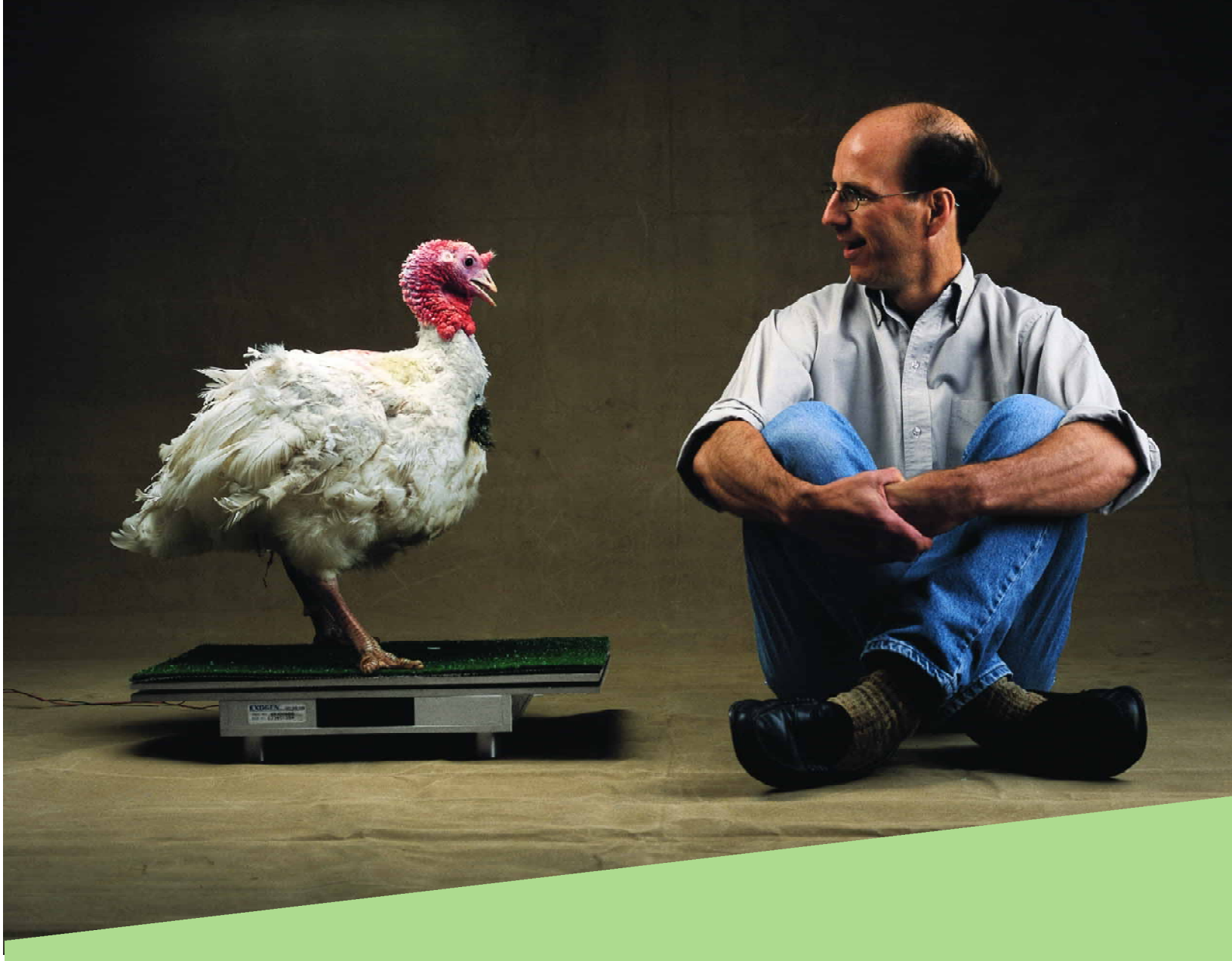


From Bench to Bedside

What does a turkey have to do with space travel and osteoporosis?

Translational research conducted by Dr. Clinton Rubin, Director of the Center for Biotechnology, has demonstrated that brief daily treatments with low-level mechanical signals will promote bone growth in several animal models. These findings provide the foundation for NASA's interests in exploring the application of this technology to astronauts, who can lose up to 2 percent of their bone density per month during prolonged exposure to microgravity. The device is in the design and development phase for evaluation in the International Space Station. The technology has commercial applications in the prevention and treatment of osteoporosis, a disease that afflicts more than 27 million people annually in the US, costing health care services over $25B.

Adapted from National Geographic Jan. 2001

Director's Message

Clinton T. Rubin, Ph.D.

May 1, 2004

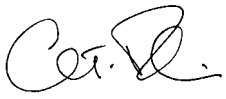
With $2B in federally sponsored research expenditures annually, New York's academic research enterprise represents a significant resource capable of fueling positive economic growth in New York State. The Center for Biotechnology has capitalized on this resource by fostering the identification and translation of basic research discoveries into commercially valuable technologies, and by investing in the development of strategic infrastructure that will support industry growth.

As evidence of our "bench to the bedside" research programs, we have contributed to the development of several commercial products that have had a positive impact on human healthcare including ReoPro™, Periostat®, and the V3D Colon™ virtual colonoscopy, and catalyzed the creation of several new companies including Cornerstone Pharmaceuticals, STAR, Vitatex, and AcousticScan. Companies such as Curative Health Systems (NASDAQ: CURE), The Collaborative Group, and Vasomedical (NASDAQ:VASO), have their origins in the Incubator program founded by the Center. Collectively, their revenues exceed $150M annually. Most importantly, we are proud to have contributed to the growth of a rich and vibrant bioscience industry within New York State, one that is well positioned to compete – if not lead – our State's 21st century economy.

Building upon the Center's success, Stony Brook University was awarded $15.7M by New York State to establish a Strategically Targeted Academic Research (STAR) Center in Biomolecular Diagnostics and Therapeutics. The STAR Center will serve as the epicenter of applied research and technology development in the areas of diagnostic and therapeutic development, bringing together world class industry and academic scientists, engineers, and business development professionals to maximize the potential for collaboration toward commercial goals.

The Center's success would not be possible without the tremendous support of many. Stony Brook University, with a sponsored research enterprise of more than $140M annually, represents a powerful asset in the State's goal to foster growth of bio-related industries. Further, I would like to thank the New York State Office of Science, Technology and Academic Research (NYSTAR), who continues to allow us the flexibility to invest our State resources to serve a rapidly evolving and expanding biotechnology industry. Finally, I would like to thank the Governor and the New York State Legislature for their sustained investment in the biotechnology industry. We believe they have made a sound investment, and one which will secure New York's position as a leader in this Life Sciences century.

Sincerely,



Clinton T. Rubin, Ph.D.
Director, Center for Biotechnology
Professor & Chair, Department of Biomedical Engineering

Economic Growth

Jobs, Revenue, Savings

The Center for Biotechnology's productivity is evaluated based on economic impact metrics developed by the New York State Office of Science, Technology and Academic Research (NYSTAR). These metrics include jobs created, new corporate revenues and savings, corporate research expenditures, license income related to Center-sponsored technologies, and federal and private funds leveraged as a direct result of Center-supported programs and activities. All of the corporate impacts reported by the Center are documented in writing by New York State company executives and independently verified by NYSTAR each year.

Reported below is a 5 year summary of economic impact related to the Center's activities. All but the most recent year (FY 2002-03) have been verified by NYSTAR. For the period beginning July 1, 1998 and concluding June 30, 2003, the Center was responsible for the creation of 733 new jobs, approximately $339M in new corporate revenues, $18.2M in corporate savings, $7.3M in corporate research expenditures, $17.4M in federal and private funds leveraged, and approximately $7M in license income. Total economic impact related to the State's $5M investment in the Center for this five year period is approximately $499M. A detailed economic impact statement appears in Appendix A.

ECONOMIC IMPACT SUMMARY 1998-2003

Jobs Created	733
Corporate Revenues	$339M
Corporate Savings	$18.2M
NY Corporate Research Expenditures	$7.3M
Funds Leveraged	$17.4M
License Income	$7M
Economic Impact	**$499M**

Small opportunities are often the beginning of great enterprises.

- Demosthenes (384 BC - 322 BC)

Economic Growth

Technology Development

The Center for Biotechnology invests a significant portion of its budget in commercially promising faculty research in the biomedical sciences. The goal is to proactively identify promising technology, and through a highly targeted process add value that will facilitate the generation of new intellectual property, licensing, strategic partnerships, and/or new company formation in New York State.

In addition, the Center cost-shares collaborative research and development projects between small, New York bioscience companies and academic faculty as a means of accelerating discovery and development of technologies that will have a predetermined path to market.

Since 1998, the Center has invested $1.5M in fifty-six promising academic research projects through this process. Of these, eighteen projects involved collaborations with small New York State corporate partners who invested $504,435 in their development. A detailed summary of Technology Development Investments appears in Appendix B.

INVESTMENTS IN TECHNOLOGY DEVELOPMENT 1998-2003

Number of Projects Funded	56
Number involving small NY companies	18
CAT Investment	$1.5M
Corporate Investment	$504,435
Patents	34
License Agreements	22

These investments over time have resulted in an active pipeline of approximately forty-eight commercially valuable technologies at various stages of development. Thirty-four of these have had patents filed or issued, and of these, twenty-two have been licensed. These technologies, and their development status, are listed in the following pages.

INVESTIGATOR	TECHNOLOGY	STATUS
Chen, Wen-Tien	Cancer Invasiveness Analyzer	New Company Formation (Name Confidential)
Bingham, Paul	Cancer Chemotherapy Targeting Tumor Specific Pyruvate Dehydrogenase Complex	New Company Formation (Name Confidential)
Wishnia/Wagshul	MRI Using Hyperpolarized 129Xe	Licensed (Magnetic Image Technology)
Kaufman, Arie	3D Virtual Endoscopy	New Company Formation (Viatronix)
Prestwich, Glenn	Disulfide Containing Hyaluronic Acid Hydrogels and Modification of Carboxylates in Hyaluronic Acid Oligosaccharides	New Company Formation (Clear Solutions Biotech)
Ojima, Iwao	Taxoid Anti-Tumor Agents & Pharmaceutical Composition and Process for the Preparation of Taxane	Licensed (Aventis Pharmaceuticals)
Bell, Thomas	Anti-Viral Triaza Compounds	Licensed (RCT)
Luft, Benjamin	Borrelia Burgdorferi Recombinant Outer Surface Membrane Proteins with a Single Amino-Promimal Cystein Residue	New Company Formation (Brook Biotechnologies)
Ojima, Iwao	Anti-Tumor Compounds, Pharmaceutical Compositions, Methods for Preparation Thereof & for Treatment	Licensed (Indena Pharmaceuticals)
Sieburth, Scott	Silanol Enzyme Inhibitors	Licensed (Amedis Pharmaceuticals)
Bell, Thomas	Reagents and sensors for urea, guanidines and amidines	Licensed (Multiple Licensees)
Fields, Stanley	Two hybrid technology to detect protein-protein interaction and In Vivo Detection of Protein-Peptide Interactions	Licensed (Multiple Licensees)
Kleinberg, Israel	Salivary Stimulant	Licensed (Ortek Therapeutics)
Erichsen, Jonathan	Monoclonal antibody to a fragment C of tetanus toxin	Licensed (Boehringer Mannheim Corp.)
Levine, Joel	Mouse Monoclonal Antibody Directed Against Receptor Tyrosine Phosphatase Beta and Neurocan	Licensed (Name Confidential)
Carter, Carol	FS II - A Plasmid that Encodes for HIV-1 Proteins that can be Isolated and Purified in their Native Form	Licensed (Name Confidential)
Trimmer, James	Monoclonal Antibodies	Licensed (Name Confidential)
Coller, Barry	Thrombo-erthrocytes	Licensed (Ariad Pharmaceuticals)
Dhadwal, Harbans	Method & Apparatus for Determining the Physical Characteristics of Ocular Tissue	Licensed (INFOSYS)
Soroff/Pollak	Sternal Band	Licensed (Stony Brook Surgical)
Kaufman, Arie	System and Method for Performing a Three-Dimensional Virtual Examination, Navigation and Visualization	
Reinstein, Lawrence E.	Automated Radiotherapy Quality Assurancer System	Licensed (Nuclear Associates)
Wimmer, Eckard	Nonpathogenic Polio Recombinants as Therapy for Malignant Brain Tumors	NCI Sponsored Clinical Trial
McLeod, Kenneth J.	Methods and Means of Physiologic Vibration Quantifications	
Chu, Benjamin	A New Separation Medium for Capillary Electrophoresis	License Option in Negotiation

Key: ■ Disclosure ■ Patent ■ License □ License Pending

INVESTIGATOR	TECHNOLOGY	STATUS	
Citovsky, Vitaly	Protein-DNA Complexes as a System for Efficient Delivery of DNA into the Cell Nucleus and a Genetic Screen for Protein Nuclear Import and Export	■ ■	
Mishra, Prateek	SBMICS: Stony Brook Medical Image Consultation System	■ ■	
Malbon, Craig	Vector for Antisense RNA Expression in Hybrid mRNAs Driven by Tissue-Specific Promoters	■ ■	
Rokita, Steven	Reactive appendages for triplex inhibition of gene expression	■ ■	
Kaufman, Arie	Apparatus & Method for Eye Tracking Interface	■ ■	
Burrows, Cynthia	Cleavage of DNA and oligonucleotides using macrocyclic nickel (II) complexes	■ ■	
Golub, Lorne	Chemically Modified Non-Antibacterial Tetracycline Analogs as New Anti-Fungal Agents	■ ■ □	License Option
Chu, Benjamin	Controlled Post-Treatments of Electrospun Membranes to Generate New Morphology and Improve Properties Bioabsorbable membranes for the Prevention of Post-Operative Adhesions, and for Cell Delivery Applications	■ ■ □	License Pending New Company Formation (STAR)
Qin, Yi-Xian	Scanning Confocal Acoustic Diagnostic for Bone Quality	■ ■ □	License Pending New Company Formation (AcousticScan)
Gouma, Pelagia	Ammonia Sensor and Electronic Nose Based on Selective Resistive Sensors	■	
Dhundale, Anil	A Method for Identification and Testing of Functional Antisense Sequences	■	
Johnson, Roger	Nonsubstituted Adenlyl as ProDrug Regulators of Cell and Tissue Function	■	
Skiena, Steven	Building Better Phages	■	
Skiena, Steven	Genome-Level Assembly from Short Sequence Reads	■	
Chen, Weiliam	Biodegradable Polymer Device for Preventing Atrial Fibrillation	■	
Dhundale, Anil	Hyaluronate Synthase Promoter Elements and Use as Drug Target	■	
Khalsa, Partap	Multiple, Single-Unit Peripheral Neuron Sensor	■	
Marcu, Kenneth	In Vivo Life/Death Drug Screen Specified by Directional Signaling Cascade of 3 or more Recombinant Retroviruses	■	
Citovsky, Vitaly	Production of Agrobacterium-Resistant Plants	■	
Hadjiargyrou, Michael	Genetic Material Involved in Wound Healing and Bone Repair	■	
Clark, Richard	A Fibrinogen Preparation for Wounds	■	
Parise, John	A Simple Test for the Detection of H. Pylori Infection	■ ■ ■	Licensed (Enteric Products)
Long/Luft	Extract & Medical Effect of Gusuibu (Rhizoma Drynariae)	■	

Key: ■ Disclosure ■ Patent ■ License □ License Pending

There is a single **light** of science, and to **brighten** it anywhere is to brighten it **everywhere**.

-Isaac Asimov

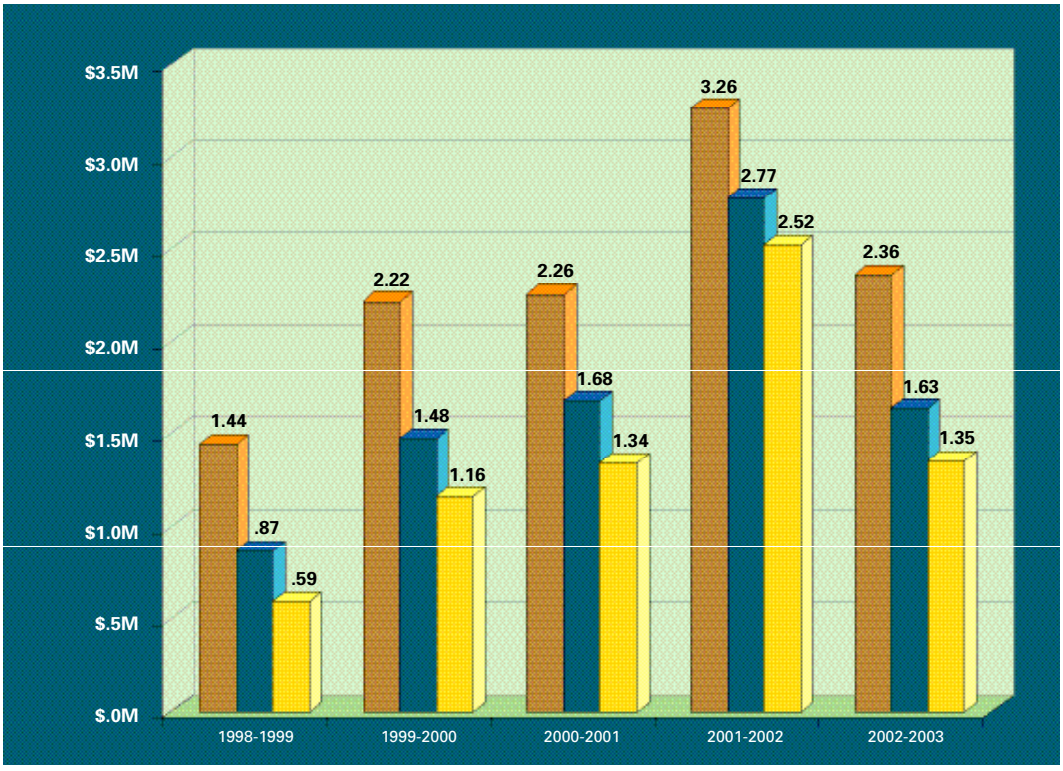
Economic Growth

License Income

The Center for Biotechnology's Technology Development Initiative has contributed significantly to the value of the University's intellectual property portfolio. Stony Brook University ranks 15th nationally in terms of royalty/licensing income according to the 2002 Association of University Technology Managers (AUTM) survey. For the fiscal year ending June 30, 2003, the University's gross license income was $12.8M, and the cumulative total over the last five years approaches $73M.

A substantial portion of this license income, more than 85%, is related to a single technology, the drug known as ReoPro™. The Center contributed to the development of this novel drug by providing support for core research facilities that aided this discovery, and by providing financial support for related projects. Excluding the contributions of this invention, technologies that received support from the Center represented 83% of Stony Brook University's gross license income and 57% of gross license income SUNY-wide in fiscal year 2002-03. Five-year cumulative (1998-2003) license income related to Center-supported projects is $6.9M. A detailed summary of license income appears in Appendix C.

CENTER – CONTRIBUTION TO GROSS LICENSE INCOME



Key: ■ SUNY System w/o ReoPro ■ Stony Brook University w/o ReoPro ■ Center-Related

Economic Growth

Company Formation

The Center for Biotechnology's Technology Development Initiative focuses on the discovery and development of technologies most likely to impact New York State's economy. Particular emphasis is placed on the development of platform technologies that have the potential to lead to new company formation.

The Center provides a variety of "value added" services including:

- Commercial assessment of the technology
- Development of critical path management strategies
- Financial investment to accomplish technical goals
- Hands-on technical support utilizing the Center's Applied Bioscience Laboratory and/or Custom DNA Microarray Facility
- Introduction to potential industry or academic collaborators
- Exploration of external financing opportunities

Eight technologies related to, or directly supported by the Center, have been the foundation for new company formation in New York State.

AcousticScan

AcousticScan, established in 2001, is focused on the commercialization of high performance bone imaging technologies for the early diagnosis and monitoring of treatment of osteoporosis, delayed fracture unions, and other musculoskeletal disorders. The Company is developing a proprietary Scanning Confocal Acoustic Navigation (SCAN) System that is capable of non-invasive, high resolution, image-based determination of the material properties of bone.

Brook Biotechnologies

Brook Biotechnologies was created in 1994 to develop and commercialize the first FDA-approved diagnostic test kit for Lyme Disease. Brook Biotechnologies has recently ceased operations and the technology has been licensed to Baxter Diagnostics.

Clear Solutions Biotech

Clear Solutions Biotech®, was launched in November 1994 to commercialize a family of patented technologies developed by the Center for the derivitization of Hyaluronic Acid (HA) and other natural or synthetic polymers. Clear Solutions Biotech is part of The Collaborative Group of companies.

Cornerstone Pharmaceuticals

Cornerstone Pharmaceuticals, formed in 2000, is developing novel anti-cancer drug delivery technology and unique anti-cancer agents for the treatment of diverse cancers. Individually and in combination, the Company's unique Emulsiphan technology and AEM compounds are expected to represent a radical advancement in cancer treatment. The company is about to enter human clinical trials with its first product.

Ortek Therapeutics

Ortek Therapeutics, founded in 1998, is a fully integrated specialty pharmaceutical company engaged in developing and commercializing proprietary products for the treatment of dental disorders. Ortek currently sells ProClude® desensitizing prophylaxis paste. In addition, the company is developing additional products for dentinal sensitivity and new therapies for tooth decay, drug resistant infections and cancer. All technologies are exclusively licensed by the Company from the Research Foundation of SUNY, and developed in the Department of Oral Biology and Pathology at Stony Brook University.

STAR

Stony Brook Technology & Applied Research (STAR), founded in 2002, is a development stage, tissue engineering company that is developing novel scaffolding materials with wide applicability in tissue regeneration. The initial focus of the company is on the development of an effective means of delivering cells for augmenting bone regeneration.

Viatronix

Viatronix, founded in 1999, is a company with breakthrough software technology in the field of medical diagnostics. The company's V3D technology platform uses state-of-the-art, computer-based, three dimensional (3-D) volumetric rendering to display a patient's anatomy as a virtual computer model. This virtual model, displayed on a computer screen, offers a trained V3D user an accurate, non-invasive method for detecting anomalies such as colon polyps, calcified plaque build up or aortic aneurysms.

Vitatex

Vitatex, established in 2001, is developing therapies that battle cancer cells without the side effects normally associated with existing treatments. The company has developed monoclonal antibodies that inhibit specific protein digesting enzymes and stop tumors from developing new blood vessels. Vitatex scientists are now using this science to explore novel antiangiogenesis therapies that can restrict tumor growth.

Economic Growth

Industry Collaborations

The Center for Biotechnology continues to serve as a valuable resource to New York's bioscience industry, as well as the pharmaceutical and medical device sectors. Dozens of New York State companies enter into contract research agreements with the Center each year to advance their research programs. These relationships augment corporate research capabilities and often represent significant cost savings over establishing the same research infrastructure in-house.

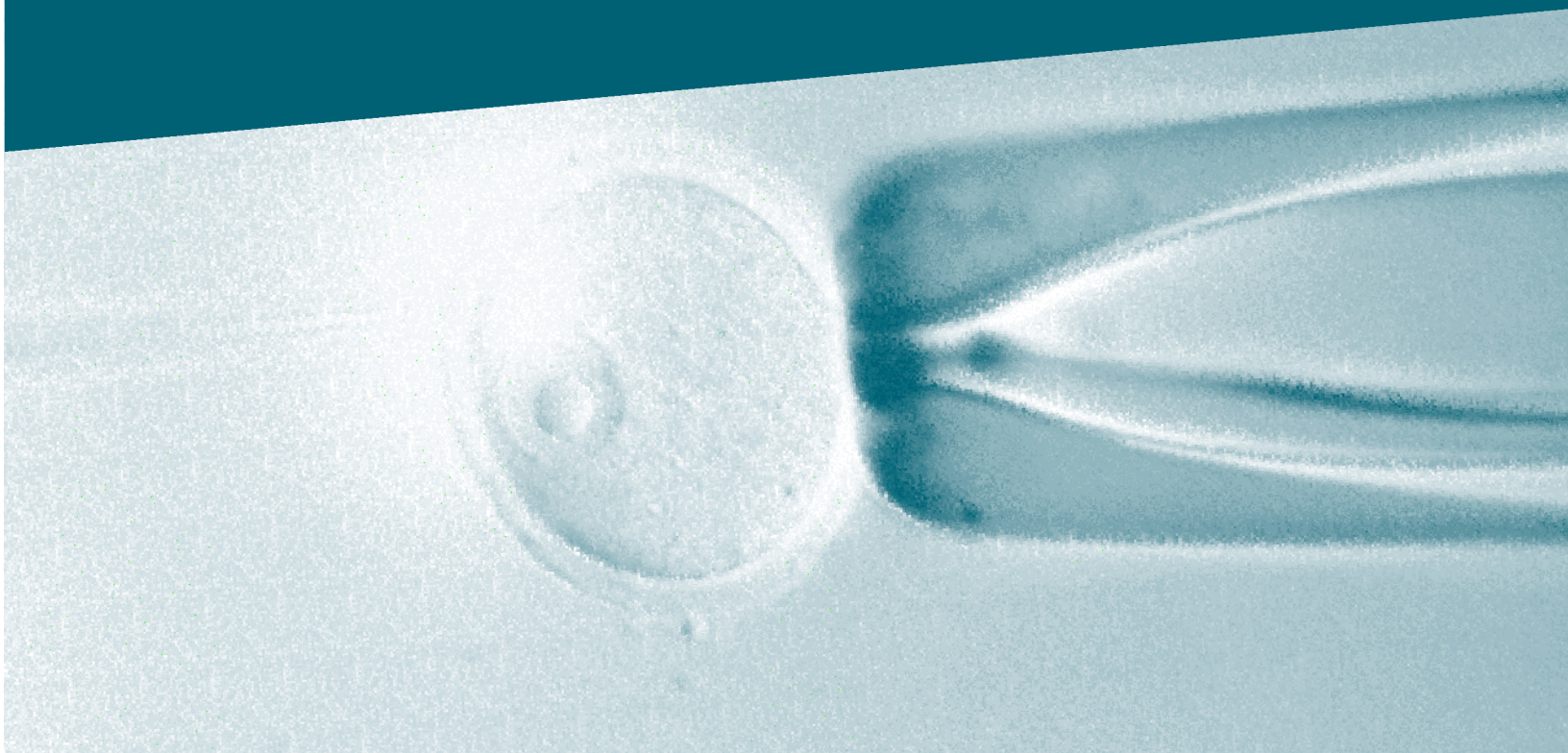
Over the last five years the Center has entered into 334 collaborations with as many as thirty-four different New York State bioscience companies each year. Fifty-six percent of these collaborations involved small (less than 250 employees) New York State bioscience companies. Cumulative investment in sponsored research collaborations by New York State companies between 1998–2003 totals $7.3M. A detailed summary of annual corporate investments, along with a list of New York State corporate clients, appears in Appendix D & E.

CORPORATE SPONSORED RESEARCH EXPENDITURES 1998-2003

334	Projects
$7.3M	Corporate Expenditures
56%	Projects Involving Small NYS Companies

The vitality of thought is in adventure. Ideas won't keep.
Something must be done about them.

- Alfred North Whitehead



Economic Impact

Investments in Infrastructure

A cornerstone of the Center for Biotechnology's success has been its investment in the development of strategic infrastructure to support industry growth. These investments have had a profound impact on the industry, and serve as a foundation on which to build for the long-term. By all accounts, New York's bioscience industry continues to expand, evident by an increase in new company formation, increased capitalization, and increased employment.

Long Island High Technology Incubator (LIHTI)

The Center's role as founder of the Incubator Program on the campus of Stony Brook University in 1986 had a significant effect on both the academic culture as well as on the nascent, biotechnology industry sector. Initially housed within the Life Sciences Building on campus, incubator tenants conducted their research and development activities side-by-side with faculty and students. Over time this informal program outgrew the space available within the Life Sciences Building, and the Center joined forces with the campus and business communities to seek funding for a dedicated campus facility.

On January 17, 1992 ground was broken for a new 42,000 square foot Long Island High Technology Incubator facility on a site adjacent to the Health Sciences Center on campus. The highly successful Program, now independently managed, serves as a model for other incubation programs nationwide.

Twenty-six high technology companies have graduated from the program with twenty-three maintaining operations in New York State. Collectively these companies generated revenues in excess of one hundred and fifty million dollars ($150M) and employ several hundred people. Twenty-four companies are currently enrolled in the Program and are located within the main facility and in specialized laboratories across campus. Eight companies participate in the Incubator Without Walls (IWW) program which has been designed for companies that do not yet need space, but who may benefit from the professional affiliation with the program as they organize their business and begin to secure financing. Seven companies have discontinued their operations. A list of current and past Incubator tenants appears in Appendix F.

Incubator Program Summary	
26	Graduates
24	Current Tenants
8	IWW Participants
$150M+	Corporate Revenues

New York Biotechnology Association (NYBA)

The Center for Biotechnology has been actively involved in the evolution of New York's biotechnology industry since its designation as a Center for Advanced Technology in 1983. In 1990 it joined with other local leaders to form the New York Biotechnology Association (NYBA), a not-for-profit trade association dedicated to the development and growth of New York State-based biotechnology-related industries and institutions. With more than 260 member companies, NYBA provides access to a network of professional services that support company growth. NYBA also serves as an advocate on behalf of the industry to ensure a supportive business environment, and has facilitated several beneficial changes to the New York State tax code. The Center for Biotechnology provided financial and staff support to NYBA during its early formation, and continues to serve on its Board of Directors.

Long Island Life Sciences Initiative (LILSI)

The Long Island region represents the largest bioscience industry cluster in New York State. The Long Island Life Sciences Initiative (LILSI) was founded by the Center for Biotechnology and local industry leaders in 2001 to represent the specific interests of the region's life science industry sectors. These sectors include biotechnology, pharmaceuticals, medical devices, and life systems. Of primary importance to the industry is access to capital and sufficient and adequate facilities for industry expansion. LILSI is proactively working with other high tech industry trade organizations to cultivate investment capital for early-stage companies. They are also working closely with industry, local government, and professional support groups to develop a strategic plan that identifies specific sites suitable for emerging industry growth, as well as major development projects that can accommodate industry clustering.

Access to preclinical facilities that will support testing and evaluation of novel diagnostics and therapeutics in preparation for human clinical trials has been identified as a major need, and LILSI will be pursuing funding for this critical addition to the region's bioscience infrastructure. Not only are these facilities critical to meeting current industry demand, but they are expected to serve as a significant asset in the attraction of emerging bioscience companies to the region. The Center for Biotechnology has provided financial and staff support to the Initiative since its creation in 2001, and serves on its Board of Directors.

Workforce Development

Preparing for the Future

The opportunities that exist within the life sciences to address some of the most devastating human diseases and conditions will require a highly educated, scientifically trained workforce. The Center for Biotechnology's Workforce Development Initiative has implemented several programs to enhance undergraduate and graduate student education, and to help increase the productivity of the industry's current workforce.

Department of Biomedical Engineering

The Center played a fundamental role in the establishment of the Department of Biomedical Engineering at Stony Brook University in December 2000. It is the first BME department in the entire 64-campus SUNY system to offer a Bachelors degree in Engineering (B.E.) in Biomedical Engineering and an M.S. and Ph.D. in Biomedical Engineering. This multidisciplinary program brings together faculty with diverse backgrounds in sensor technology, imaging, nanotechnology, informatics, functional genomics, and advanced materials to explore opportunities to advance human healthcare through translational research and to educate the next generation of biomedical scientists. The department now has 17 core faculty members with sponsored research expenditures approaching $6M annually.

Fundamentals of the Bioscience Industry

The Fundamentals of the Bioscience Industry Certificate Program provides graduate students, postdocs, and incumbent life science industry employees with a comprehensive understanding of the bioscience business environment. The four-module, 80 hour evening program is fully taught by industry executives, and provides an in-depth introduction to life science product development cycles, regulatory practices, financial models, managerial challenges, and corporate culture. Thirty-four students are participating in the inaugural program which is sponsored by Pfizer, The Collaborative Group, Forest Laboratories, InGenious Targeting Laboratories, Cornerstone Pharmaceuticals, and Pall Corporation. The Certificate Program is complimented by a highly interactive mentoring program, BIO Mentor e-Network, that allows graduate students participating in the Center's programs to access our extensive network of life science industry professionals.

Internships

The Center offers a variety of industrial internship opportunities at the graduate and undergraduate levels. In partnership with the Department of Biomedical Engineering, the Center was awarded a 3 year, $155,000 program grant by the prestigious Whitaker Foundation to establish a graduate level Industrial Research Internship program. Undergraduate research internships take place over the course of two years and typically begin in the summer following the student's sophomore year. The Center also offers a Graduate Student Internship in Biotechnology & Patent Law, which allows graduate students to learn the basic principles of intellectual property law.

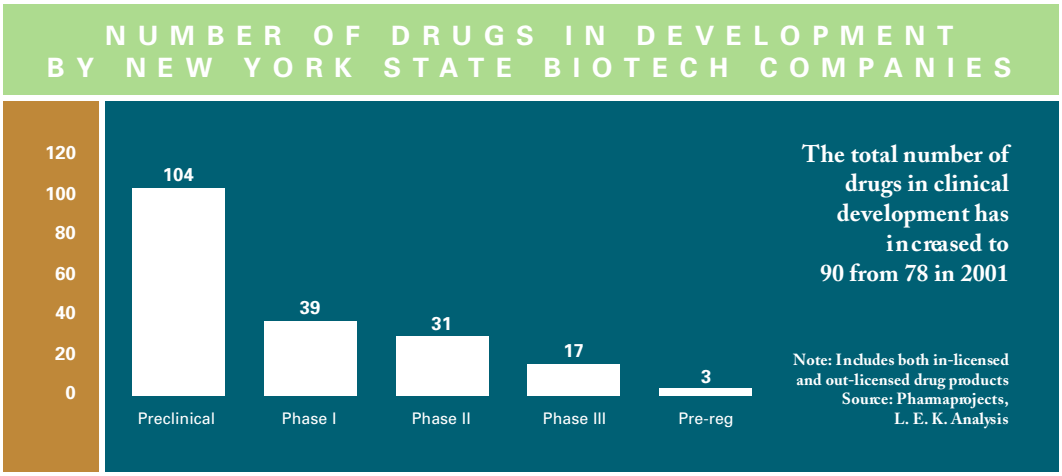
New York's Bioscience Industry

Poised for Exponential Growth

New York's bioscience industry is comprised of more than three hundred and sixty-five companies in the biotechnology, pharmaceutical, medical device and life systems technology sectors. While current growth statistics are unavailable for the life science industries as a whole, a biotechnology industry study published by the New York Biotechnology Association (NYBA) in 2003, indicated that between the years 2000 and 2002 the number of biotechnology companies within the State grew by 13%, from 89 to 101, and total employment has grown at approximately 30% annually since 1999. Corporate revenues for this same time frame grew by 33% from $1.2B to $1.6B.

Potentially more important is the maturation of the industry's product portfolio. In October 2003 Forest Laboratories announced FDA approval of its drug candidate, Namenda, for the treatment of moderate to severe Alzheimer's Disease. In February 2004, Imclone Systems and Bristol-Myers Squibb announced that the FDA had approved Erbitux™ for the treatment of metastatic colorectal cancer. Several other New York companies are in Phase III clinical trials, the final stage in the FDA approval process. In April 2004, OSI Pharmaceuticals announced FDA approval of their lead product Tarceva, for the treatment of non-small cell lung cancer. Acorda Therapeutics is in Phase III clinical trials with its drug candidate, Fampridine-SR, for the treatment of spinal cord injury. Similarly, Eyetech reported successful results from the first year of their Phase II/III pivotal clinical trials for the use of Macugen in the treatment of age-related macular degeneration, and in February 2004 concluded an initial public offering raising $140M. Antigenics has two products in phase III clinical trials. Their flagship cancer product, Oncophage (HSPPC-96), is a personalized vaccine designed to treat cancer while minimizing side effects.

These companies, as well as dozens of others throughout New York State, have additional products in various stages of preclinical and clinical development. The potential annual economic impact is in the tens of billions of dollars per year.



STAR Center

Strategically Targeted Academic Research

In May 2001 Stony Brook University was awarded $15.7M by New York State to build a Strategically Targeted Academic Research (STAR) Center in Biomolecular Diagnostics and Therapeutics. The STAR Center, which will house the Center for Biotechnology, Department of Biomedical Engineering, and Center for Sensor Systems, will serve as the epicenter of applied research and technology development in the areas of functional genomics instrumentation, gene discovery, drug design and delivery, and smart micro- and nano-based biomaterials. It is anticipated, and fully expected, that the mixing of disciplines and backgrounds within the STAR Center is where the innovations will arise, and having companies work side by side with academic scientists, engineers and business development professionals will be an essential component of driving research programs toward tangible commercial goals. Programming of the building is in the final phases, and construction is expected to begin in late 2004.

The world is so fast that there are days when the person who says it can't be done is interrupted by the person who is doing it.

-Anonymous

Financial Summary

1998-2003

The Center for Biotechnology is eligible for up to $1M in State funding each year based on its ability to generate matching investment from New York industry, federal sources, and our host institution, Stony Brook University. The first $750,000 in State funding must be matched equally, $1:$1. Amounts provided by NYSTAR in excess of $750,000 must be matched $2:$1, for a total match requirement of $1.25 million annually. At least twenty-five percent of this match must be cash from New York State Companies to support the Center's NYSTAR – approved activities.

The Center has exceeded this match requirement with investment from New York companies averaging 85% of the total corporate investment over the last three years. Due to the administrative burden associated with the complex reporting requirements, the Center actually reports only a portion of the match investment it actually receives.

NYSTAR funds may be used for faculty, staff, graduate student and undergraduate salaries or stipends, purchase of equipment and supplies, travel associated with Business Development, and subcontracts to not-for-profit partner organizations. Salary-related expenses (salary, fringe, & IDC) continue to constitute the largest expenditure category for both the NYSTAR and corporate investments in the Center, representing approximately 70% of the total. The majority of the Center's non-salary related outreach and workforce development expenses, including costs associated with our involvement in the Long Island Life Sciences Initiative, New York Biotechnology Association, and our own Fundamentals of the Bioscience Industry Certificate Program are captured under "Other". Materials and supplies are next, followed by equipment representing 12% and 2% of gross expenditures respectively.

All expenditures are reviewed by NYSTAR on a semi-annual basis.

Financial Report 1998 - 2003

	NYSTAR	1998/99 Corp	NYSTAR	1999/2000 Corp	NYSTAR	2000/2001 Corp	NYSTAR	2001/2002 Corp	NYSTAR	2002/2003 Corp	Total
Salary	495,453	1,343,821	681,127	1,455,158	634,553	1,147,626	506,265	906,194	552,898	749,646	8,472,741
Fringe							143,396	209,117	153,792	228,883	735,188
IDC	74,318	395,947	102,169	489,898	95,183	172,144	96,393	166,941	106,003	145,290	1,844,286
Equipment	127,239	31,755	6,500	26,933	21,993	9,735	47,326	35,091		23,181	329,753
Supplies	210,137	384,103	160,000	302,793	89,834	165,822	52,262	209,441	60,570	187,743	1,822,705
Travel	6,920	56,495	7,918	43,406	4,135	33,861	5,026	23,578	5,738	36,047	223,124
Tuition	295		892	68,099				2,614		3,122	75,022
Other	70,827	546,170	210,821	574,288	68,717	520,844	86,673	54,456	113,315	140,877	2,386,988
Total	985,189	2,758,291	1,169,427	2,960,575	914,415	2,050,032	937,341	1,607,432	992,316	1,514,789	15,889,807

Fringe benefits included in salary calculation for 1998-2000

Appendix A

Center for Biotechnology Economic Impact Summary 1998 - 2003

Year	Jobs Created	Job Impact in $$	New Corporate Revenues	Corporate Savings	NY Corporate Research Exp.	Funds Leveraged**	License Income	Economic Impact	NYSTAR Investment
1998-1999	87	$13,050,000	$51,587,000	$5,308,000	$1,587,411	$1,701,022	$588,606	$73,822,039	$1,000,000
1999-2000	146	$21,900,000	$72,847,392	$4,867,100	$1,642,712	$347,171	$1,163,194	$102,767,569	$1,000,000
2000-2001	95	$14,250,000	$61,138,200	$3,712,063	$1,389,103	$1,811,493	$1,342,513	$83,643,372	$1,000,000
2001-2002	91	$13,650,000	$70,122,000	$1,992,000	$1,333,817	$9,032,791	$2,518,863	$98,649,471	$1,000,000
2002-2003*	314	$47,100,000	$83,276,987	$2,351,306	$1,319,683	$4,536,813	$1,353,883	$139,938,672	$1,000,000
Total	733	$109,950,000	$338,971,579	$18,230,469	$7,272,726	$17,429,290	$6,967,059	$498,821,123	$5,000,000

** Not yet verified by NYSTAR*

*** Data for 1998-1999 reflect private funds leveraged by CAT-related companies.*

2000 -2003 data include federal, foundation, as well as private funds leveraged by CAT-related faculty & companies.

Appendix B

Technology Development Investments 1998 - 2003

Years	# of Projects	State Investment	Small Corp Invest*	Total Investment	Patents Issued	Licenses
1998-1999	17	$396,211	$133,157	$529,368	7	2
1999-2000	16	$465,506	$103,936	$569,442	4	1
2000-2001	12	$325,252	$140,638	$465,890	9	4
2001-2002	5	$119,000	$64,000	$183,000	4	1
2002-2003	6	$182,650	$62,704	$245,354	4	
Total	56	$1,488,619	$504,435	$1,993,054	28	8

**Small corporate investment, as defined by NYSTAR, refers to companies with less than 250 employees.*

Appendix C

License Income Related to Projects Supported by the Center for Biotechnology 1998 - 2003

R-Number	1998/1999	1999/2000	2000/2001	2001/2002	2002/2003	Totals
R-0782	$2,000.00	$2,000.00	$2,500.00	$2,500.00	$2,500.00	$11,500.00
R-7319	$0.00	$0.00	$5,000.00	$5,000.00	$5,000.00	$15,000.00
R-7344	$1,500.00	$0.00	$0.00	$0.00	$0.00	$1,500.00
R-0632	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
R-0779	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
R-0360	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
R-0617	$378,639.10	$408,610.19	$380,136.93	$392,709.27	$405,656.60	$1,965,752.09
R-7045	$873.15	$1,345.30	$896.00	$781.00	$870.00	$4,765.45
R-0234	$170,693.49	$728,338.21	$725,779.02	$1,816,087.99	$885,954.02	$4,326,852.73
R-0457	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
R-7342	$0.00	$0.00	$744.36	$1,000.59	$791.15	$2,536.10
R-7343	$1,000.00	$0.00	$0.00	$458.37	$883.93	$2,342.30
R-1055	$0.00	$176.16	$22.24	$225.92	$0.00	$424.32
R-7066	$0.00	$10,000.00	$50,000.00	$40,000.00	$50,000.00	$150,000.00
R-1024	$0.00	$0.00	$159,830.00	$239,960.00	$0.00	$399,790.00
R-0332	$5,900.00	$724.50	$4,445.50	$0.00	$0.00	$11,070.00
R-7379	$0.00	$0.00	$159.50	$2,748.25	$816.30	$3,724.05
R-0937	$0.00	$0.00	$0.00	$4,980.00	$0.00	$4,980.00
R-7162	$0.00	$0.00	$1,000.00	$411.63	$1,411.63	$2,823.26
R-7016	$28,000.00	$12,000.00	$12,000.00	$12,000.00	$0.00	$64,000.00
Total	$588,605.74	$1,163,194.36	$1,342,513.55	$2,518,863.02	$1,353,883.63	$6,967,060.30

Appendix D

New York State Corporate Sponsored Research Expenditures 1998 - 2003

Year	Projects	NY Sponsors	Small NYS Sponsors*	NY Corporate Investment
2002-2003	84	34	22	$1,319,683
2001-2002	41	19	14	$1,333,817
2000-2001	41	23	9	$1,389,103
1999-2000	60	18	10	$1,642,712
1998-1999	108	31	15	$1,587,411
Total	334			$7,272,726

** Companies with less than 250 employees.*

Appendix E
New York State Corporate Clients

Company	City	State
Advanced Viral Research	Yonkers	NY
AGI Dermatics	Freeport	NY
Angion BioMedical	Great Neck	NY
Bausch & Lomb	Rochester	NY
Bayer Corporation	Rexford	NY
Biomerix Corporation	New York	NY
BioLife Solutions	Binghamton	NY
Biopeptides	E. Setauket	NY
Biophotonics	Stony Brook	NY
Biospecifics Technologies	Lynbrook	NY
Bristol-Myers Squibb	New York	NY
Cadus Pharmaceuticals	Tarrytown	NY
Class	New Windsor	NY
Clear Solutions	Stony Brook	NY
Collaborative Group	Stony Brook	NY
Collagenex	Stony Brook	NY
Cornerstone Pharmaceuticals	Stony Brook	NY
Del Pharmaceuticals	Uniondale	NY
Eele Laboratories	Bohemia	NY
Ericsson	New York	NY
Estee Lauder Corp	Melville	NY
Forest Pharmaceuticals	New York	NY
Frontier Pharmaceuticals	Farmingdale	NY
Garnett McKeen	Islip	NY
Ion Focus Tech	Stony Brook	NY
Lab 21	New York	NY
Lawrence Gelb Research Foundation	New York	NY
Lifetree Technologies	Great River	NY
LIPA	Uniondale	NY
Medicine Rules	Stony Brook	NY
Nanoprobes	Yaphank	NY
Nastech Pharmaceuticals	Hauppauge	NY
Nuclear Associates	Hicksville	NY
Omni Corder Tech.	East Setauket	NY
Ortek Therapeutics	Roslyn Heights	NY
OSI Pharmaceuticals	Melville	NY
Pfizer Pharmaceutical	New York	NY
Renal Tech LLP	New York	NY
Research Testing Laboratory	Great Neck	NY
Unilever	New York	NY
Viatronix	Stony Brook	NY
Vitatex	Stony Brook	NY
Wyeth Ayerst	Pearl River	NY
XSB	Stony Brook	NY
Zeptogen	Buffalo	NY

Appendix F

Long Island High Technology Incubator (LIHTI) Program 2003

Company	City	State
Status: Graduate		
Altaire Pharmaceuticals	Holbrook	NY
Aqua-Novus	Melville	NY
Brookhaven Technology Group	Nesconset	NY
Communications Systems Design	Yaphank	NY
Cosper Environmental	Bohemia	NY
Curative Health Services	Hauppauge	NY
Exogen	Piscataway	NJ
E-Z-EM (Enteric Products)	Lake Success	NY
Flame Spray Industries	Denver	CO
Garnett-McKeen Laboratory	Islip	NY
Hotel Interactive	Smithtown	NY
INSYS Development Corp.	East Setauket	NY
LifeTree Technology, LLC	Great River	NY
Moltech	Phoenix	AZ
Nanoprobes	Yaphank	NY
OmniCorder Technologies	East Setauket	NY
Perlucid	Huntington	NY
Photonics Industries	Bohemia	NY
Renaissance Technologies Corp.	East Setauket	NY
Softheon	Hauppauge	NY
Tularik Genomics Division	Greenlawn	NY
Vasomedical	Westbury	NY
eele Laboratories, LLC	Bohemia	NY
Stony Brook Surgical	Stony Brook	NY
Ortek Pharmaceuticals	Garden City	NY
Brookhaven Sensors Corp.	Stony Brook	NY
Total 26 Graduates		
Status: Incubator Without Walls		
Advanced Immuni T	Stony Brook	NY
BCC Microimaging Corporation	Stony Brook	NY
Biopeptides	Stony Brook	NY
Plus Ultra Technologies	Stony Brook	NY
Poly Therm Corp.	Stony Brook	NY
ProSeed Technologies	Stony Brook	NY
SelfTest	Stony Brook	NY
Wireless.Com	Stony Brook	NY
Total 8 Incubator Without Walls		

Company	City	State
Status: Current/Campus Tenant		
Applied Communication Technology	Stony Brook	NY
BioPhotonics Corp.	Stony Brook	NY
Clear Solutions Biotech	Stony Brook	NY
Cornerstone Pharmaceuticals	Stony Brook	NY
Epitaxial Laboratory	Stony Brook	NY
Evotope Biosciences	Stony Brook	NY
inGenious Targeting Laboratory	Stony Brook	NY
LifeAFM	Stony Brook	NY
Mesoscribe Technologies	Stony Brook	NY
New York Biotechnology Association	Stony Brook	NY
Quantum Research & Technologies	Stony Brook	NY
Thaerocomp Technical Corp.	Stony Brook	NY
The Collaborative Group, Ltd.	Stony Brook	NY
Viatronix	Stony Brook	NY
Vitatex	Stony Brook	NY
XSB	Stony Brook	NY
Apex Scientific	Stony Brook	NY
Chem-Master International	Stony Brook	NY
Collagenex Pharmaceuticals	Stony Brook	PA
Del Laboratories	Stony Brook	NY
IFOSYS	Stony Brook	NY
Ion Focus Laboratory	Stony Brook	NY
Privicom	Stony Brook	NY
STAR	Stony Brook	NY
Total 24 Current/Campus Tenants		