

Finger Lakes

	Regional totals	% of total in region	Independent Sector state totals
No. of Independent Sector institutions	12		145
Degree Productivity ¹			
Bachelor & graduate degrees, Independent Sector	9,918	74%	127,073
Bachelor's in engineering	505	100%	3,082
Bachelor's in mathematics	124	61%	856
Bachelor's in physical sciences	171	77%	884
Economic Impact ²			
Employees	36,386		360,158
Economic impact (millions)	\$4,163		\$54,296
Payroll (millions)	\$1,565		\$19,576
Capital construction (millions)	\$133		\$1,637
Student/visitor spending (millions)	\$318		\$3,925
Quality Measures			
2010 National Merit Scholars entering college ³	56		355
Doctoral Research Universities (Carnegie Classification) ⁴	2		18
Association of American Universities member ⁵	1		4
U.S. News Top 50 Universities and Liberal Arts Colleges ⁶	1		13
U.S. News Top 50 Research Medical Schools ⁷	1		6
Nobel Laureates ⁸	3		135
National Academy of Sciences members ⁹	8		160
Proven Expertise			
Licensing income ¹⁰	\$46,025,270		\$347,706,425
Start-up companies formed ¹⁰	2		46
Licenses executed ¹⁰	15		172
Total active licenses ¹⁰	106		1,298
New patent applications ¹⁰	63		615
U.S. patents issued ¹⁰	27		304
National Science Foundation FY2009 ¹¹	\$425,770,000		\$3,009,877,000
National Institutes of Health FY2009 ¹²	\$188,915,366		\$1,297,720,896

Sources:

1. New York State Education Department, Office of Research and Information Services. Degrees granted are public and Independent Sector, 2008-09.
2. Center for Governmental Research, January 2011.
3. The National Merit Scholarship, <http://www.nationalmerit.org/nmsp.php#entryreq>
4. The Carnegie Classification, <http://classifications.carnegiefoundation.org/>
5. Association of American Universities, <http://www.aau.edu/>
6. U.S. News university and college rankings 2011, <http://colleges.usnews.rankingsandreviews.com/best-colleges>
7. U.S. News university and college rankings 2011, <http://grad-schools.usnews.rankingsandreviews.com/best-graduate-schools/top-medical-schools/research-rankings>
8. Nobel Laureates through 2010.
9. National Academy of Sciences, http://www.nasonline.org/site/PageServer?pagename=MEMBERS_Main
10. Association of University Technology Managers, FY2009, <http://www.autm.net/Home.htm>
11. National Science Foundation, College and University R&D FY2009, data file.
12. National Institutes of Health, http://report.nih.gov/award/trends/State_CongressionalStateOverview.cfm

Independent Sector: Centers of Research, Innovation, and Economic Development Finger Lakes

Institution	Center	Description	Category
University of Rochester Rochester Institute of Technology	Center for Emerging and Innovative Sciences (CEIS)	Technology Commercialization (biotechnology, nanotechnology, electronic imaging, bioimaging, medical imaging, telecommunications, and renewable energy). CEIS connects academic research with corporate product development.	Center for Advanced Technology
St. John Fisher College	The Center for Community Engagement (CCE)	Its mission is to enhance nonprofit leadership by providing programs and resources that strengthen the capabilities of boards of directors and professional staff. Special emphasis is placed on the needs of small and midsize organizations. CCE offers programs in leadership development and nonprofit management that; emphasizes practical approaches to needs identified by nonprofit organizations; promotes networking and the sharing of best practices among volunteer and professional leaders; strives to provide nonprofit leaders with convenient access to a broad array of resources. http://www.cce-rochester.org/index.html	Community and Workforce Development
University of Rochester	High Tech Rochester (HTR)-- Regional Technology Development Center (Rochester/Finger Lakes Region)	HTR serves as Empire State Development Corp's Regional Technology Development Center for the Rochester / Finger-Lakes region, and is therefore part of the national NIST Manufacturing Extension Partnership (MEP) program. HTR's mission is to be a catalyst for entrepreneurship and innovation based economic development, by providing hands on expertise and network connections to aid in the formation and profitable growth of local companies. HTR is a University of Rochester affiliate with a board of directors representing a broad cross section of the local business community, and offers a suite of services across the spectrum of a business life cycle, including: technology commercialization for early stage opportunities, business incubation for high-growth-potential startups, and growth services for existing local companies.	Economic Development
Rochester Institute of Technology	Clean Energy Incubator	The role of CEI is to assist early stage clean energy companies in product development, business and marketing planning and technology commercialization. The incubator is one of four statewide and is a part of New York State's clean energy initiative. The Clean Energy Incubator enhances continued economic development in a host of areas, including wind energy, solar power, and fuel cell development.	Incubator
Rochester Institute of Technology	Venture Creations	RIT's Venture Creations incubator is a place where mid-seed stage companies can advance their concepts on their way to joining the ranks of profitable, viable businesses in New York State. Located adjacent to the RIT campus, Venture Creations supports its member companies through a two-fold mission to first, support the creation of new businesses which create "living wage" jobs in Western New York and second, to provide experiential learning in entrepreneurship to RIT's students and faculty. Venture Creations provides companies with experienced on-site staff who can provide assistance in evaluating business opportunities, support for developing business plans or preparing grant applications and coaching/guidance in the development of a business, access to RIT's faculty and wide range of resources, access to its service provider network, connections to potential investors and student co-ops and interns.	Incubator

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University of Rochester	High Tech Rochester (HTR) - Lennox Tech Enterprise Center	The Lennox Tech Enterprise Center is a 50,000 square foot incubator facility operated by HTR, which opened in 1997. Companies admitted to the Center are those with high growth potential--the capability of reaching more than \$10M in revenues, competitive barriers to entry, and a good early management team. HTR provides hands on coaching, mentoring, and connections to accelerate the growth of its client companies, including access to Entrepreneurs-in-Residence, programs like The Entrepreneurs Network, PreSeed Workshops, and others.	Incubator
University of Rochester	High Tech Rochester (HTR) - Rochester BioVenture Center (RBC)	The RBC is a 42,000 square foot wet-lab incubator facility operated by HTR, which opened in 2007. Life-sciences and medical device companies admitted to the Center are those with high growth potential - the capability of reaching more than \$10M in revenues, competitive barriers to entry, and a good early management team. HTR provides hands on coaching, mentoring, and connections to accelerate the growth of its client companies, including access to Entrepreneurs-in-Residence, programs like The Entrepreneurs Network, PreSeed Workshops, and others.	Incubator
Rochester Institute of Technology University of Rochester	High Tech Rochester (HTR)	HTR was created in 2001 to establish an environment in which technology-based business ventures can be derived from innovations that are tightly connected to the Institute. The goal of HTR is to foster innovation and to translate inventions, ideas, or intellectual property created by RIT students, faculty, staff, alumni or partners into commercially viable high technology companies. For start-up and growing technology firms, HTR offers incubation and acceleration services through the technology business incubator, the Lennox Tech Enterprise Center. For established and growing manufacturers, HTR's Manufacturing Extension Partnership (MEP) Center offers a variety of expert technical assistance and business solutions for established manufacturing firms seeking to improve their competitive positions. http://www.htr.org/	Incubator/ESDC-designated Regional Technology Development Center
Rochester Institute of Technology	Center for Remanufacturing & Resource Recovery	The National Center for Remanufacturing and Resource Recovery (NC3R) is internationally recognized as a leading center for applied research in remanufacturing. NC3R's mission is to deliver to industry advanced technologies and tools for efficient and cost-effective remanufacturing and the design of products that have no negative environmental impacts.	National Research Center
University of Rochester	Excell Partners, Inc.	Excell Partners is a regional economic development partnership established in cooperation with the University of Rochester and the State of New York to manage a state supported fund which provides pre-seed and seed stage financing to high-tech start-ups emerging from the community and universities across the upstate region including the University of Rochester, Cornell University, Cornell's Ag-Tech Food Science Park, Rochester Institute of Technology, University of Buffalo and STC MEMS, Center for Excellence.	New York State-supported Seed Fund

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University of Rochester	Health Sciences Center for Computational Innovation (HSCCI)	Biotechnology and nanotechnology, with implications for cleantech and renewable energy. The UR and IBM have partnered to create a center that could potentially make upstate NY the world leader in high performance computing in health care. This partnership is expected to serve as a significant source of innovation and new technologies that will improve the quality and delivery of health care, reduce costs, and spur significant regional economic growth. It will attract and grow new companies and jobs, as well as strengthen and potentially expand the existing research partnerships that the University already has with health industry leaders. http://www.rochester.edu/provost/hscci/	Research Center
Rochester Institute of Technology	NanoPower Research Labs (NPRL)	The NanoPower Research Labs (NPRL) at RIT are dedicated to the development of new materials and devices for power generation and storage for microelectronic components and micro-electromechanical systems (MEMS). The NPRL's focus is to develop the materials and devices that are compatible with the current needs of a wide variety of microsystem technologies by exploiting the potential opportunities afforded through nanostructured materials and nanotechnology. Examples of targeted technologies include: carbon nanotubes for high-density storage in lithium ion batteries; semiconductor quantum dots for high-efficiency thin film solar cells and nanotube doped polymeric films for microelectronic PEM fuel cells.	Research Laboratory
University of Rochester	Laboratory for Laser Energetics (LLE)	The LLE is a vital component of our nation's scientific capital and leadership, a key to strategic work on an independent energy future, and a crucial part of the high-tech economy of upstate New York. Since the 1970s, the University of Rochester's LLE has been the only inertial confinement fusion program jointly supported by the federal (DOE) and state governments (NYSERDA), industry, utilities, and a university. Since its inception, the LLE has attracted more than \$1.5 billion to the State of New York and more than 500 individuals are currently involved in the program.	Research Laboratory
Rochester Institute of Technology	Center for Integrated Manufacturing Studies (CIMS)	The Center for Integrated Manufacturing Studies (CIMS) at Rochester Institute of Technology was established in 1992 with a mission to increase the competitiveness of manufacturers through applied technology and training. CIMS represents a dynamic collaboration of in-house technical experts, as well as academic, industry and government resources. Located on the campus of Rochester Institute of Technology, our unique, world-class facility houses research centers, industrial programs, and an all-encompassing training program. CIMS provides technology and workforce development solutions that strengthen our clients' ability to compete in the global marketplace.	School-based Center
Rochester Institute of Technology	Golisano Institute for Sustainability (GIS)	GIS academic and research programs focus on sustainable production, sustainable energy, sustainable mobility, and ecologically friendly information technology systems. These programs are led by a multidisciplinary team of faculty and researchers who collaborate with organizations locally, nationally, and internationally to create implementable solutions to complex sustainability programs.	School-based Center

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Rochester Institute of Technology	Chester F. Carlson Center for Imaging Science	The Chester F. Carlson Center for Imaging Science has worked closely with corporate and individual partners since its inception. Through this rich interaction, the partners enjoy active participation in the journeys of discovery and invention that have been the hallmark of the center's interdisciplinary program. As a partner, companies help the center tailor its education and research programs to better meet industry needs and produce graduates who are ideally suited to the opportunities and challenges companies face.	Strategic Partnerships
University of Rochester	Office of Research Alliances	Strategic Partnerships across all industry clusters. The mission of the Office of Research Alliances is to identify and enhance strategic research partnerships between the University's research community and industry, government agencies and labs, and other institutions. http://www.urmc.rochester.edu/ora/	Strategic Partnerships
University of Rochester	Center for Entrepreneurship	The Center for Entrepreneurship, launched by the Ewing Marion Kauffman Foundation grant awarded to the University in 2003, identifies and creates partnerships with students, alumni, local businesses, and non-profit organizations; coordinates and publicizes school-based experiences, including courses and signature programming; informs faculty of grant and bridging fellowship opportunities; and encourages collaboration among the schools engaged in entrepreneurship education at the University of Rochester. http://www.rochester.edu/entrepreneurship/	Strategic Partnerships
Rochester Institute of Technology	The Information Technology Collaboratory at the Rochester Institute of Technology	The Information Technology (IT) Collaboratory will create key technologies and capabilities to design and integrate next-generation information technology systems. The Center will focus on four key areas: Microsystems, photonics, high-bandwidth networks and remote systems.	Strategically Targeted Academic Research Centers
University of Rochester	Technology Development Fund (TDF)	Technology Commercialization - Early Stage Development. The TDF is devoted to supporting University researchers who wish to further the process of translating their scientific and engineering research into commercial opportunities.	Technology Development
Cornell University	Cornell Agriculture & Food Technology Park	The Cornell Agriculture & Food Technology Park is a financially self-sustaining entity that fosters the creation, retention, and expansion of agriculture, food, and bio-based research enterprises for the benefit of state and local economies and to strengthen the NYS Agricultural Experiment Station by creating partnerships between the Experiment Station and firms seeking commercial applications of research discoveries related to agriculture, food, and bio-based technologies.	Technology Park
Rochester Institute of Technology	Intellectual Property Management Office	RIT's Intellectual Property Management Office (IPMO) is responsible for working with RIT's principal investigators to identify, capture and commercialize (tech transfer) intellectual property on behalf of the Institute as well as research sponsors. Intellectual Property (IP) is protected by patents or other means of protection including copyrighted software. RIT's IPMO commercializes the Institutes IP by licensing the technology to existing as well as start-up companies. http://www.rit.edu/research/ipmo	Technology Transfer
University of Rochester	Xactiv, Inc	Supports commercializations path for industry- and university-based technologies, principally in energy and health care. http://www.xactiv.com/	Technology Transfer

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University of Rochester	Clinical and Translational Science Institute (CTSI)	The CTSI is dedicated to accelerating biotechnology discoveries into new ways to understand, treat, prevent, and cure diseases. Among other things, it facilitates academic-industry partnerships for preliminary and proof-of-concept studies critical to moving discoveries into clinical applications.	Technology Transfer
University of Rochester	Offices of Technology Transfer - Medical Center and for College of Arts, Sciences, School of Engineering and Applied Sciences, School of Business, and the Eastman School of Music	Technology Commercialization (biotechnology, nanotechnology, cleantech and renewable energy, and telecommunications). The mission of the OTTs is to facilitate the transfer of technology arising from university research to industry. To date, the University has created more than 43 start-up companies, 31 in New York. http://www.urmc.rochester.edu/technology-transfer/	Technology Transfer
Rochester Institute of Technology	New York State Pollution Prevention Institute (NYSP2I)	NYSP2I is a statewide research and technology transfer center funded by the New York State Department of Environmental Conservation. RIT is a partner with Rensselaer Polytechnic Institute, Clarkson University, the University of Buffalo, and the state's ten regional technology development centers (RTDC). NYSP2I is to foster the transformation and development of sustainable businesses and organizations in New York State in a collaborative program committed to making the State a leader in environmental stewardship.	Technology Transfer, Strategic Partnerships, Research Lab
University of Rochester	The University Technology Seed Fund (UTSF)	The University Technology Seed Fund (UTSF) is a \$6.5 million venture fund organized in 2002 by Trillium Group and the University of Rochester. Its limited partners include accredited investors, educational institutions, corporations, trusts, and others in the community. The mission of the fund is to support economic development in the Rochester region while generating substantial long-term capital gains for all stake holders. http://www.trillium-group.com/university-venture-capital.htm	Venture Fund

Finger Lakes

Below are just a few examples of how independent (private, not-for-profit) colleges and universities nurture startup companies, provide valuable expertise to private sector businesses, and harness intellectual property that helps to generate new products and ideas that create economic vitality throughout the State.

Start-Up Companies

Sweetwater Energy

Sweetwater Energy uses ensiled biomass to produce both cellulosic-based and starch-based concentrated liquid sugar feedstocks for others to use in the production of bio-fuels, bio-plastics, and bio-chemical. Sweetwater's decentralized business model utilizes portable processors located on or near biomass producing farms which dramatically reduces the transportation costs of feedstocks. Sweetwater has gone from two unpaid employees in December 2009 to 11 full time employees as of April 1, 2011. Initially Sweetwater used two **Rochester Institute of Technology (RIT)** MBA students to help with development of the company's business plan and investor presentation. Sweetwater currently employs two RIT graduates. Sweetwater is also working with RIT's Center for Integrated Manufacturing Studies (CIMS) to develop waste streams to energy. Currently, Sweetwater is shipping sugar to its first customers using its scale up processors pilot system that was developed with Seed Round funding. Sweetwater is located at a 3,500 square foot pilot plant in Rochester. The corporate offices and analytical lab are located at **RIT's** Venture Creations.

AWR Energy, Inc.

AWR Energy, Inc. has developed a technology proven line of high-efficiency Diffuser Augmented Wind Turbines (DAWTs). These products are capable of extracting more energy from the wind and producing more annual energy output (AEO) starting at lower wind speeds than traditional open-bladed systems of the same size. These turbines were developed with guidance from experts at **RIT's** Golisano Institute for Sustainability (GIS). A patent is currently pending for the DAWTS that AWR Energy, Inc. designed. The company is housed at **RIT's** Clean Energy Incubator.

Lucidity Works

In an industry that is still dominated by manual functions, Lucidity™ (U.S. Patent No. 7,827,164), the latest advance in search and report generation software, reduces the volume of search clutter, extracts only the most meaningful data, and automatically formats that data into an individually customized Word report. With Lucidity, companies gain a competitive advantage. Lucidity increases productivity more than 75% and accelerates time-to-market. Lucidity is targeted to analysts in the life sciences, financial services, and energy sectors. When you don't know what you don't know yet need to know, Lucidity will find those nuggets for you and display the rough draft of your report in your browser window as the first set of results. Lucidity won the AIIP 2010 Technology Award. Venture Creations, **RIT's** business incubator has assisted Lucidity Works in developing their management team.

Start-Up Companies/Licensees

ONY Inc. (<http://www.onyinc.com>) produces InfaSurf, a lung surfactant for the prevention and treatment of respiratory distress syndrome in premature and newborn infants. In brief: 26 employees; based on research conducted by University at Buffalo, **University of Rochester** and University of Western Ontario; product approved in 1999 by the U.S. Food and Drug Administration.

VirtualScopics (www.virtualscopics.com) offers never-before-available medical imaging measurements, which are critical to treating illnesses from cancer to Alzheimer's disease. In brief: Established in 2000, based on research conducted at **University of Rochester's** Medical Center and School of Engineering; licenses its core technology from UR, an equity investor.

Calorics, LLC led by a **University of Rochester** professor is a drug discovery platform company based on a high throughput life-span screening technology. This cell-based, phenotypic assay affords a significant advantage over other approaches in drug discovery. It is automated, quantitative, and compatible with industry standard high throughput screening techniques, unlike previous tedious microscopic techniques; this, in turn leads to faster drug discovery and development for age related diseases. This platform has broad applications in the discovery of new therapeutics for the treatment of cancer, diabetes, arthritis, Alzheimer's and Parkinson's diseases, and heart disease.

Led by **University of Rochester** professor, enVision, LLC is based on discoveries arising in the laboratory of Krystel Huxlin, Ph.D.. enVision plans to develop and commercialize software-based systems and methods for vision retention and improvement. Dr. Huxlin's research has shown that rigorous visual retraining is highly effective in restoring vision lost due to stroke or other injury to the primary visual cortex. This software and methods retrain the patient's brain to interpret signals from the eyes and enhance the patient's visual perception.

Meliora Devices (**University of Rochester**) was formed to develop, manufacture, and market intubation devices, catheters, and other invasive medical devices that become visible from outside of the patient's body when illuminated with specific wavelengths of light. This will potentially eliminate the misplacement of these devices, thereby avoiding medical disasters, such as the placement of nasogastric tubes in airways. Although other products of this nature exist, they employ radiologic elements that can cause issues of their own. Meliora's proposed product line avoids this complication and would be safe and practical for use in the smallest of patients.

PharmAdva in Rochester, NY has been created to develop and commercialize automated medication dispensing devices and software invented by Michel Berg, M.D. from the **University of Rochester**. These devices and systems will improve patient compliance with medication regimens and will help eliminate patient errors that currently cost the American healthcare budget billions of dollars a year.

Licensing **University of Rochester** technology, TET Solutions in Webster, NY was created to develop, manufacture, and commercialize an innovative method of transmitting

energy through the skin to power implanted medical devices, such as pacemakers. This eliminates the need for wires passing into the skin, which can make the body prone to infection.

DarkWind Media is developing Luster, a platform on which designers to easily make 3D applications useful for scientific visualizations, music, games, and graphic arts. Incorporated in 2007, the founders are **Rochester Institute of Technology (RIT)** alumni that are utilizing various resources including faculty and students at RIT's world-renowned School of Interactive Games and Media to develop their technology. DarkWind is supported by Venture Creations, RIT's business incubator.

Vnomics® is a leading provider of Intelligent Telematics Software for the commercial trucking industry. The flagship solution, FleetKnowSys™, intelligently knows what information to use and how to deliver decision-supporting recommendations instantly, clearly, and effectively at the most opportune time to maximize returns relating to reducing fuel consumption, ensuring truck and driver safety minimizing downtime, staying in compliance and effectively minimizing unnecessary truck wear and tear. Located in the **Rochester Institute of Technology's (RIT)** business incubator Venture Creations, the patent-pending technology Vnomics has developed was invented at **RIT**. Vnomics currently employs 26 people.