

Appendix Table 5. What are some of the investments being made in university-affiliated business incubators, or science and technology parks in other states?

Alabama

University of Alabama—Birmingham *Office for the Advancement of Developing Industries.* Professional services, including business plans, marketing strategy, and to proprietary rights, with links to accounting, insurance, payroll and legal firms offering discounted rates to start-up companies within the incubator. The Office runs a 100 acre Oxmoor Research Park and a Technology Center, a 67,000 sq ft facility with 20,000 sq ft of offices and 20,000 sq ft of laboratories. (www.uab.edu/oadi/).

Auburn University: —

Alaska

University of Alaska—Fairbanks: —

Arizona

Arizona State University *Research Park.* Collaborative educational opportunities, use of university equipment by research park corporations, joint research projects for new product development. Exchanges of products and lecture time to the university from research park corporations and the hiring of ASU graduates and interns. Formed in the mid 1980s. It features several large corporations with high square footage on large acreage (e.g., Motorola Labs (275,000 sq ft, 38 acres); Philips (140,000 sq ft, 14 acreage); Edward Jones (128,000 sq ft, 18.4 acres), with over 1.5 million total square feet and over 170 acres. (<http://researchpark.asu.edu/>).

University of Arizona *Science and Technology Park.* A premier research and development facilities, to foster technology development from laboratory to marketplace. Started in 1994, the Park is now the 6th-largest U.S. university-related research park in occupancy and jobs (>6,000 employees on site). Facility has 1,345 acres, >30 businesses, and 1.8 million sq ft of fully occupied leased space, with plans for a 600,000 sq ft expansion ~ 90% of tenants employ U of A graduates, >half use U of A students as interns, and >half have research partnerships with the University. (See also www.uatechpark.org/). (www.enet-tucson.com/ResearchPark/index.htm/).

Arkansas

University of Arkansas *Genesis.* Started in 1986; houses 10 small startups and 3 “member firms;” lists 13 graduated firms. New facilities are located in the Engineering Research Center.

California

California Institute of Technology: — Note: Caltech is a small, private,

coeducational university dedicated to exceptional instruction and research in engineering and science. The student body is composed of 900 undergraduate and 1,100 graduate students who maintain a high standard of scholarship and intellectual achievement. With an outstanding faculty — including several Nobel laureates — and such off-campus facilities as the Jet Propulsion Laboratory (which CalTech manages for NASA), Palomar Observatory, and the W. M. Keck Observatory, Caltech is one of the world’s major research centers.

Stanford University *Research Park.* Opened in 1951, the first of its kind in the U.S.. 700 acres; 10 million sq. ft in 162 buildings; 162 companies with 23,000 employees. Predominantly scientific, technical and research oriented industries with major representation in electronics, space, biotechnology, computer hardware and software. (www.stanford.edu/dept/SMC/researchpark/).

University of California—Berkeley: —**UCal—Davis** *Technology Campus* (under development) (www.davistech.com)

UCAL—Irvine *University Research Park.* Project (under development) with 180 acres adjacent to campus, 40 buildings at buildout containing 2.4 million sq. feet of Research, Technology and Business space, flexible building design, build-to-suit and leasing opportunities, flexible leasing options. Access to UCI equipment and facilities available for sharing. (<http://www.uadv.uci.edu/urp/>).

UCal—Los Angeles: —

UCal—Riverside *Research Park.* Project (under development) with 39-acres for product development and research activities; core of designated 856-acre Riverside Regional Technology Park, which includes more than 500 acres of ready-to-develop industrial property. (http://nied.ucr.edu/research_park/).

UCal—San Diego: —

UCal—San Francisco *Mission Bay.* New campus, started in 1999, to contain 2.65 million sq ft at buildout (~15-20 years), with ~half of program space for research, emphasis on basic sciences. UCSF was co-discoverer of DNA splicing; UCSF researchers and discoveries have spawned at least 57 life science and pharmaceutical companies, including giants Genentech and Chiron. UCSF inventions produced ~70% of the \$88.5 million in patent licensing revenues generated in 1998 from the nine UC campuses. Surrounding UCSF Mission Bay will be land zoned for 5 million square feet of research space for private industry.

UCal—Santa Barbara: —

UCal—Santa Cruz *Monterrey Bay Education, Science, and Technology Center* Project (under development) on 1,100 acres (former Fort Ord), with ~484 acres for a research and technology center. Roadway and utilities were completed in 2000, opening 67 acres for development. New buildings,

including the UC MBEST Center Headquarters and the City of Marina Business Incubator, were completed in the spring 2001.

University of Southern California:—

Colorado

Colorado State University *Center for Advanced Technology* (no information available via www).

University of Colorado—Boulder *Research Park*. 97 acres, 11 tenants, including USWest (Internet-based data, voice, image and multimedia communications), under development. (fm.colorado.edu/researchpark/).

Connecticut

University of Connecticut. Recommended in 1996 Strategic Plan and as part of the UConn 2000 process, but a search of the web shows no indication of subsequent development.

Yale University. The Yale Office of Cooperative Research has been instrumental in attracting several major biotechnology firms and startups into the New Haven area. For related press articles, see the OCR site, (<http://www.yale.edu/ocr/ocr.html>).

Delaware

University of Delaware *Biotechnology Institute*. A partnership—state government, higher education (University of Delaware, Delaware State University, Delaware Technical and Community College) and industry—centered on life sciences. Includes Center for Poultry Disease (C. C. Allen Jr. Biotechnology Laboratory, UDel), Center for Applied Optics (DSU), and Center for Marine Environmental Genomics (College of Marine Sciences in Lewes). Incubator space at the Institute at Delaware Technology Park, 40 acres at Udel.; ~25 tenants, including large corporations (Dupont).s (<http://www.deltechpark.org/about.htm>).

Florida

Florida State University *Innovation Park*. In Tallahassee, adjacent to Florida A&M University and FSU College of Engineering (electrical, mechanical, civil, industrial and chemical engineering); 115 acres, 650,000 sq ft of building space; ~35 tenants, including the FSU Office of Research. (<http://www.innovation-park.com/tenants.htm>).

University of Florida *Interdisciplinary Center for Biotechnology Research (ICBR)* Started in 1987. Features Core Laboratories with expertise, instrumentation, and technologies for faculty, staff, graduate students, and research partners. Core technologies include DNA and protein synthesis and sequencing, protein expression, hybridoma, histology, glycobiology, flow cytometry, electron microscopy, biological computing, molecular

biomarkers, and genetic, reproductive and immunological analysis. (<http://www.biotech.ufl.edu/>).

University of Miami:—

University of South Florida *University Technology Center Research and Development Park*. Collaborative research and technology transfer between Park occupants and USF faculty and students; 87 acre Park accommodates freestanding R&D buildings of large companies, and multi-tenant buildings for smaller ones; currently four buildings; two (of 12) lots proposed for Incubator and USF Research Laboratories.

Georgia

Emory University:—

Georgia Institute of Technology *Advanced Technology Development Center* (To form and grow technology-based companies in Georgia; provides entrepreneurs market assistance; Started 1992; 79 successful startups. Assistance in three key areas: 1)customers, markets, channels and stakeholders; 2) funding, partnership opportunities, business expertise and university resources; and 3) physical settings, intellectual stimulation, and business relationships. With Clark Atlanta University, Emory University, Georgia State University, Medical College of Georgia, and the University of Georgia. (<http://www.atdc.org/index.html>).

University of Georgia:—

Hawaii

University of Hawaii—Manoa *Innovation Center*. A high-tech business incubator, linking ventures to university R&D. 3 acres, 46,000 sq ft. (<http://www.htdc.org/mic/mic.html>).

Idaho

University of Idaho *Research Park*. Links technology companies to the University of Idaho and other Northwest universities. ~25 large and many smaller technology companies, University satellite programs, and some related service and commercial businesses; 120 acres (under development). (<http://www.uirp.com/>).

Illinois

Northwestern University/*Evanston Research Park*. Emphasis on materials and manufacturing technology; biotechnology (pharmaceutical); and software development (artificial intelligence, robotics, and internet applications). Joint venture with Evanston; 24 acres. (<http://researchpark.com/>).

Southern Illinois University—Carbondale *Dunn-Richmond Economic Development Center* Emphasis on light manufacturing, R&D, and service; flexible work areas, affordable production space; shared office and meeting rooms, business counseling; 55,000 sq ft. (<http://www.siu.edu/~econdev>).

University of Chicago:—

University of Illinois—Chicago *Chicago Technology Park*. Emphasis on medical, biological, chemical, engineering, computer, and other technological R&D; space for purchase or lease (built to suit); access to University facilities and Rush-Presbyterian-St. Luke's Medical Center. 56 acres; Park Research Center has 56,000 sq ft incubator. (<http://www.uic.edu/depts/ovcr/ctp/>).

University of Illinois—Urbana-Champaign *Technology Commercialization Laboratory*. Emphasis on technology commercialization; linked to agriculture College and others (under development). (<http://www.tech.com/>).

Indiana

Indiana University *Advanced Research and Technology Institute* (under development?) (<http://arti.indiana.edu/>).

Purdue University *Purdue Research Park*. Supports faculty for technology commercialization; opened 1961; >90 companies, 2,500 employees; incubator started 1993; shared offices; flexible, low rents; equipment, services and resources at minimal cost; video-conferencing, internet access; access to Purdue libraries, laboratories and staff; mentoring (markets, prototypes, financing). Innovation Center for older companies (48,000 sq ft, at higher rents); 650 acres. (<http://www.adpc.purdue.edu/PRF/prp-home.html>).

Notre Dame University:—

Iowa

Iowa State University *Research Park*. Technology incubator, started in late 1980s; 38 companies, 1,100 employees; 270,000 sq ft, 230 acres. (<http://www.isupark.org/>).

University of Iowa *Technology Innovation Center*. Incubator offering low rent offices, conference rooms, and standard lab spaces to ventures and established companies. 20,000 sq ft. (http://www.vpr.uiowa.edu/techtransfer/tic_main.htm).

Kansas

Kansas State University *Mid-America Commercialization Corporation*. Emphasis on technology commercialization; joint venture with State and Manhattan. Building dedicated May 1998. (<http://www.ksu.edu/tech.transfer/macc/macc.htm>).

University of Kansas:—

Kentucky

University of Kentucky *Advanced Science and Technology Commercialization Center*. Research and commercialization for faculty- or UK-connected start-ups; \$17 million building opened in 1994; focus on biopolymers, computational sciences, materials sciences, molecular biology, and pharmaceutical engineering; 11 start-ups; 10 graduated businesses; 80,000 sq ft. (<http://>

www.rgs.uky.edu/astecc/).

University of Louisville:—

Louisiana

Louisiana State University *Louisiana Business and Technology Center*. Department of the College of Business Administration; on-campus business incubator; technology focus; Started 1988; collaboration with Baton Rouge and Louisiana Public Facilities Authority; past dealings with >1,850 businesses and entrepreneurs, starting ~100 businesses, with >500 jobs; 48,000 sq ft. (<http://www.bus.lsu.edu/lbtc/index.html>).

Tulane University:—

Maine

University of Maine:—

Maryland

Johns Hopkins University:—

University of Maryland—College Park *Technology Advancement Program*. Engineering Research incubator offering space and support services for technology startups. (<http://www.erc.umd.edu/TAP/index.html>). The *Maryland Industrial Partnerships Program* offers matching funding for faculty engaging in collaborative research with Maryland companies, up to \$100,000 per year for a project (<http://www.erc.umd.edu/MIPS>).

Massachusetts

Boston University:—

Brandeis University:—

Harvard University:—Harvard has an enrollment of more than 18,000 degree candidates, including undergraduates and students in 10 graduate and professional schools. An additional 13,000 students are enrolled in one or more courses in the Harvard Extension School. Over 14,000 people work at Harvard, including more than 2,000 faculty. There are also 7,000 faculty appointments in affiliated teaching hospitals. Seven presidents of the United States – John Adams, John Quincy Adams, Theodore and Franklin Delano Roosevelt, Rutherford B. Hayes, John Fitzgerald Kennedy and George W. Bush – were graduates of Harvard. Its faculty have produced nearly 40 Nobel laureates. Harvard *is* research and technology.

Massachusetts Institute of Technology:—MIT is a coeducational, privately endowed research university dedicated to advancing knowledge and educating students in science, technology, and other areas of scholarship that will best serve the nation and the world in the 21st century. The Institute has more than 900 faculty and nearly 10,000 undergraduate and graduate students, and is organized into five Schools -- Architecture and Planning, Engineering, Humanities, Arts, and Social Sciences, Management, and Science -- and the

Whitaker College of Health Sciences and Technology. Within these are twenty-seven degree-granting departments, programs, and divisions. In addition, a great deal of research and teaching takes place in interdisciplinary programs, laboratories, and centers whose work extends beyond traditional departmental boundaries. The University's recent successful capital campaign raised \$2.6 billion.

For an analysis of the economic relevance of MIT, see "MIT: The Impact of Innovation," prepared by the BankBoston Economics Department, which presents the results of a major new study on the national economic impact of companies founded by MIT alumni and alumnae. Among other findings, the study reveals that MIT graduates have founded 4,000 companies, creating 1.1 million jobs worldwide and generating annual sales of \$232 billion. This is the first national study demonstrating the key role that higher education and research play in the economic vitality of this nation (<http://web.mit.edu/newsoffice/founders/>).

Northeastern University:—

Tufts University:—

University of Massachusetts—Amherst:—

Michigan

Michigan State University:—

University of Michigan:—

Wayne State University:—Planned park on 75 acres north of will feature business incubation, offices and residential development. Completed park expects 60 new businesses to create 1,800 jobs.

Minnesota

University of Minnesota:—

Mississippi

Mississippi State University:—

University of Mississippi:—

Missouri

St Louis University:—

University of Missouri—Columbia:—

Washington University:—

Montana

Montana State University—Bozeman *Advanced Technology Park*. Space and building sites for research, light manufacturing, high-technology and knowledge/information-based industries with alliances with the University scientists; owned and managed by subsidiary of the Montana State University Foundation; 90 acres.

Nebraska

University of Nebraska—Lincoln *Technology Park*. 130-acre high-amenity, master-planned development near campus, with technology oriented incubator with 23,000 sq ft (~14,000 sq ft of lab, production, and office space); to expand to 60,000 sq ft. 30,800 sq ft multi-Tech Building I provides customized space for maturing companies and established firms. (<http://www.unebtechpark.com/default.asp>).

Nevada

University of Nevada—Reno:—

New Hampshire

University of New Hampshire:—

New Jersey

Princeton University:—

Rutgers:—

New Mexico

New Mexico State University:—

University of New Mexico *Science & Technology Park*. Business technology park with 360,000 sq ft office and research space; focus on micro-electronics, photonics, optoelectronics, advanced materials, manufacturing, internet; and medical devices; 153 acres. (<http://stc.unm.edu/scitechpark/techparkhome.cfm>).

New York

Columbia University:—

Cornell University *Business and Technology Park*. Technology based (67%) companies working with Office of Technology Access and Business Assistance; help for faculty, staff, and student startups (business plans, legal, financing, logistics; assists in placing MBA interns. (<http://corporate.cornell.edu/ecodev.html>).

New York University *Center for Advanced Technology*. Fosters media industry growth through new technologies and business assistance to new companies; founded 1993; One of 13 New York State Centers for Advanced Technology; help with finance, education, entertainment, communications, publishing, and other fields; develops multimedia technologies, tools, services, and products; includes Film and Television, Photography, Interactive Telecommunications, Journalism, Computer Science, Biology, Music Technology. (<http://www.cat.nyu.edu/>).

Rensselaer Polytechnic Institute *Rensselaer Incubator Program*. Founded in 1980 as the first U.S. wholly university-based incubator. Objectives include enrichment of the academic environment; technology transfer and commercialization; and regional economic development. (<http://www.rpi.edu/dept/>

[incubator/homepage/index.html](#))

Rockefeller University:—

SUNY—Albany *Center for Environmental Sciences and Technology Management*. High-technology business incubator provides office and laboratory space for start-ups; includes microelectronics; telecommunications; atom-spherics; analytical instrumentation; computers; thin films and material; semi-conductors; and photonics; access to University's nuclear accelerator; electron microscopes; gas chromatographs; mass spectrometer; NMR spectrometer; peptide synthesizer; libraries; computing; and the transgenic facility. (<http://www.albany.edu/pr/CESTMINGU.html>).

SUNY—Binghamton:—

SUNY—Buffalo:—

SUNY—Stony Brook *Long Island High Technology Incubator* (description not usable)(<http://www.lihti.org>).

Syracuse University *Center for Advanced Technology in Computer Applications and Software Engineering*. Research with industry; focus on computer-based products and processes, solutions to technical problems, and general infusion of new technology. (<http://www.cat.syr.edu/>).

University of Rochester *High Technology of Rochester*. Technology-based training and consulting. (<http://www.htr.org/>).

Yeshiva University:—

North Carolina

Duke University *Research Triangle Park* is recognized internationally as an international center for cutting-edge R & D. It is owned by the private, not-for-profit Research Triangle Foundation, named for the Triangle formed by the three cities and universities: **Duke University in Durham, the University of North Carolina at Chapel Hill, and North Carolina State University in Raleigh**. 140 private, governmental and non-profit companies share the Parks 7,000 acres. 106 of them are involved in research. These companies employ over 45,000 people and have in excess of 17 million square feet under roof. Companies like Glaxo, SmithKline Inc., IBM, Covance, Cisco Systems, Inc., Ericsson, Eisai Inc. and Nortel Networks thrive and grow in a campus-like setting that lends itself to interactive research. Approximately 50% of the employees in the Park work for multinational corporations. Park research includes Biotechnology/Biopharmaceutical; Computer Hardware and Software; Chemicals; Environmental Sciences; Information Technology; Instrumentation; Materials Science; Microelectronics; Pharmaceuticals; Public Health; Telecommunications; and Statistics. Almost 40% of Park employers have less than 10 employees. The average salary of an RTP employee is \$54,145. Capital investment exceeds \$2 billion and the total payroll is esti-

mated at \$2.7 billion (<http://www.rtp.org/home.html>).

North Carolina State University at Raleigh (see above).

University of North Carolina at Chapel Hill:—

North Dakota

North Dakota State University *Research and Technology Park* (currently under construction on campus). First building, dedicated in May 2001, has >300 technicians and staff in Phoenix International (a John Deere company); second building, scheduled for completion in Fall 2001, will house NDSU research administration; includes wet labs and Net-wired, technology-related areas. Business incubator planned. (<http://www.ndsu.nodak.edu/wwwdev/vprct/research-techpark.shtml>)

Ohio

Case Western Reserve University *Cleveland Biotechnology Park* (initial planning stages) (<http://www.cwru.edu/pubaff/univcomm/biopark-inc.htm>).

Kent State University:—

Ohio State University:—

Ohio University *Innovation Center* is a business incubator offering space and support services for new or emerging technology, service or light manufacturing businesses (<http://www.ictto.ohiou.edu/ic/whoWeAre.html>).

University of Cincinnati:—

Oklahoma

Oklahoma State University *Oklahoma Center for the Advancement of Science and Technology*. Technology development, transfer, and commercialization. Services include technology assessments and technical concept analysis; engineering, testing and prototype development; market research and analysis; economic feasibility studies; development of strategic marketing plans; development of strategic business plans; and access to early stage risk capital. (<http://www.ocast.state.ok.us/INFOotcc.HTM>).

University of Oklahoma:—

Oregon

Oregon State University:—

University of Oregon:—

Pennsylvania

Carnegie Mellon University:—

Lehigh University:—

Pennsylvania State University *Innovation Park* Technology transfer and economic development; includes incubator; material research institute class 10 clean room and materials characterization lab; the Penn Stater Conference Center Hotel; Daybridge Child Care; Penn State's technology transfer organiza-

tion; multi tenant and single tenant office, lab and manufacturing space; services include technical consultation; access to public and private funding; research collaborations between university and industry; technology commercialization; intellectual property services; marketing consultation; business and strategic planning assistance; 118 acres. (<http://www.innovationpark.psu.edu/>).

Temple University *Small Business Development Center* offers consulting and business incubator services (<http://www.sbm.temple.edu/~sbdci/incubator.html>).

University of Pennsylvania:—

University of Pittsburgh:—

Rhode Island

Brown University:—

University of Rhode Island:—

South Carolina

Clemson University *Research Park* has 265 acres overlooking the shores of Lake Hartwell in the foothills of the Blue Ridge Mountains. The Park has 9 tenants on 59 acres, with the rest available (<http://rpg.scra.org/clemson.html>).

University of South Carolina:—

South Dakota

South Dakota State University:—

Tennessee

University of Tennessee:—

Vanderbilt University:—

Texas

Rice University:—

Texas A&M University *Research Park* Long term site leases; building options. (<http://researchpark.tamu.edu/index.html>).

Texas Tech University:—

University of Houston:—

University of Texas at Austin:—

Utah

Brigham Young University:—

University of Utah *Research Park*. High-technology research and development. Tenants occupy 32 new buildings and employ ~ 5,100 persons; ~300 acres. (http://www.research.utah.edu/research_park.shtml).

Utah State University *Research and Technology Park*. Research and technology-oriented collaborations with University; 38-acres + ~100 acres for future development; landscaping features central, common pond and fountain.

Shuttle service and direct telecommunication links to University. Opened 1986. 12 buildings with 264,260 sq ft. (<http://www.usu.edu/~rschpark/>).

Vermont

University of Vermont:—

Virginia

University of Virginia:—

Virginia Commonwealth University *Biotechnology Research Park*. Life sciences research; in Richmond adjacent to the medical sciences campus of Virginia Commonwealth University and the Medical College of Virginia Hospitals; 34 biotechnology/bioscience companies and research institutions. (<http://www.vabiotech.com/about/>).

Virginia Polytechnic Institute and State University *Corporate Research Center*. Established 1985; supports technologies in agriculture, biotechnology, design automation, diagnostics, electronics, engineering, environmental engineering, information technology, library science, materials and chemistry, and transportation. 16 single and multi-tenant buildings with >100 companies; 120 acres. (<http://www.g3.net/crc/>).

Washington

University of Washington—Seattle:—

Washington State University *Research & Technology Park*. Technology transfer; One 50,000 sq ft building has 12 companies and a 5,000 sq ft incubator for start-ups. A second building, completed in 1998, has 7 companies in 6,000 sq ft, some of which graduated from the incubator. ~100 acres of undeveloped land. (<http://www.wsu.edu/~rtp/Default.htm>) (see also <http://www.wabio.com/Default.asp>).

West Virginia

West Virginia University Research park planned for the Morgantown campus. (www.wvu.edu/~research).

Wisconsin

University of Wisconsin—Madison *Research Park* Opened 1984; 136 acres (27 available); 88 companies, 2500 employees in 31 buildings, 1,283,000 sq ft. Offers specialized technology incubator, the Madison Gas & Electric (MGE) Innovation Center. Park pays property taxes to Madison (\$1.7million), and returns all profits to UW-Madison. (<http://www.universityresearchpark.org/index.html>).

University of Wisconsin—Milwaukee

Wyoming

University of Wyoming:—