



The Road Ahead

COLLABORATING ON ARIZONA'S BIOSCIENCE FUTURE

A P U B L I C A T I O N O F T H E F L I N N F O U N D A T I O N

Full Speed Ahead

Collaboration continues to be the fuel that drives the development of Arizona's bioscience sector. The year 2004 marked the birth of major institutions, widespread construction of research facilities, and advancements in workforce preparation, all stemming from intersections of diverse organizations in the private and public sectors. Equally prominent opportunities await in 2005.

The highlights of Arizona's 2004 progress are reflected on the reverse side of this brochure, categorized under the four major strategies of *Arizona's Bioscience Roadmap*. They set the stage for another eventful year in 2005, headlined by two time-sensitive issues that are critical to address:

Capital Formation: Measures to spur venture capital and earlier-stage funding for bioscience and other high-tech companies failed in the Legislature in 2004. The lack of such capital is one of the foremost needs cited by the *Roadmap* study. The formation of a bio-seed fund and related measures is vital to stimulate private support and investment, and will be vigorously pursued in 2005.

Medical School: The development plan for the Phoenix expansion of the University of Arizona College of Medicine, in partnership with Arizona State University, will be formed in 2005. The process will be overseen by a commission appointed by Gov. Janet Napolitano. Decisions made will have paramount impact on Arizona's future physician training and supply, healthcare research and delivery, and the unfolding of the extensive bioscience campus in downtown Phoenix.

Arizona's Bioscience Roadmap

- » Arizona's long-term plan to bring its bioscience sector to national competitiveness
- » Driven by an extensive collaboration among statewide scientists, business and policy leaders
- » Research and facilitation provided by Battelle
- » Commissioned and coordinated by the Flinn Foundation
- » Translational research component co-sponsored by Arizona Disease Control Research Commission
- » Details available at www.flinn.org

Miles Traveled

A nutshell summary of *Roadmap* highlights to date:

- 2002** » Research concludes that Arizona has the ingredients to achieve national prominence within five years in three scientific disciplines – bioengineering, cancer research, and neurosciences
 - » Four primary strategies and 19 actions are recommended that would strengthen and diversify Arizona’s economy by generating 32,000 well-paying jobs, 120 firms, and tripling research funding from the National Institutes of Health
- 2003** » Multiple *Roadmap* committees and workgroups are formed under the Arizona’s Bioscience Roadmap Steering Committee to implement the recommendations
 - » The Legislature passes seminal legislation to allocate \$440 million for construction of university research facilities
 - » The state’s universities demonstrate unprecedented partnership on collaborative bioscience endeavors
- 2004** » The universities begin to align faculty and facility investments with plans completed by *Roadmap* scientific committees; research workgroups are added to address emerging needs in bio-imaging and translational research
 - » University collaboration leads to plans for the UA medical school in downtown Phoenix in partnership with ASU
 - » The bioscience workforce pipeline is bolstered by a successful \$950 million bond issue for Maricopa Community Colleges that includes more than \$100 million for bioscience and healthcare training

Build Research Infrastructure

Universities unite to expand medical school: ASU and UA agree to work jointly to launch an extension of the UA medical school in downtown Phoenix. The unique arrangement involves the UA colleges of medicine and pharmacy, and ASU programs including its College of Nursing. Gov. Janet Napolitano appoints a commission to guide its formation.

Tucson lures innovative FDA drug institute: UA and Tucson leaders raise pledges of \$7.5 million to form the new Institute for Global Pharmaceutical Development. The firm plans to study ways to speed the drug-development process and involves a partnership among UA, the U.S. Food and Drug Administration, and SRI International.

Tribes plan biomedical campus: The Salt River Pima-Maricopa Indian Community announces plans to build a biomedical research campus involving four buildings totaling 240,000 square feet of lab and office space.

Bio construction booms statewide: Staff at TGen and the Biodesign Institute at ASU move into their new headquarters. More than 1.3 million square feet of scientific labs and related office space opens or is under construction in the Phoenix metro area, Tucson, and Flagstaff.

TGen/IGC make impact: TGen forms extensive research alliances, launches its Center for Translational Drug Development (TD₂), and announces five major genetic discoveries. Plans are unveiled for a TGen Foundation to support research activities. The International Genomics Consortium debuts its cornerstone project, *expO*, intended to accelerate cancer research to bring new therapies to patients.

Federal grants grow: Arizona's funding from the National Institutes of Health increases 30 percent between 2001-03, matching the average growth rate of the top-10 states. Additional major awards are received, such as a \$43.7 million Army contract to ASU to produce flexible computer displays using nanotechnology developed at the Biodesign Institute.

Build Critical Mass of Firms

ASU, Scottsdale form tech center: The university and city establish the ASU Scottsdale Center for New Technology and Innovation to enhance and expand the commercialization of high-tech research. The planned 1.2-million-square-foot facility is expected to employ up to 4,000.

UA tech park to expand: The UA Science and Technology Park announces plans to potentially triple in size, to 6 million square feet, over the next 10 years. Additional wet-lab space would be included.

New bio accelerator in works: The City of Phoenix approves first-phase development of P-Bio, a new accelerator offering 12,000 square feet of space for fledgling bioscience firms in downtown Phoenix. Parent firm Ribomed will also move to the site adjacent to the TGen campus.

Wet-lab solution proposed: An ASU study identifies more than 1.4 million square feet of cleanroom space in the Phoenix metro area that can be converted into wet labs. The excess space from the semiconductor industry could provide a cost-effective means to ease the state's shortage of wet-lab space.

Tech-transfer lessons learned: A failed constitutional amendment to permit universities to take equity positions in companies that use their research innovations provides valuable lessons in proposing the measure again in 2006.

Major life-sciences investor hits town: Lokoya Advisors, a top life-sciences broker dealer, opens a Scottsdale office and signs an agreement to work with TGen. Lokoya has been involved in more than 40 transactions creating the formation of \$7 billion in capital for life-sciences firms.

Venture capital fund underway: A private-sector Knowledge Economy Capital Fund is established to spur development of early-stage tech companies. Organizers land the first \$25 million of a proposed \$100-million pool.

Trade groups unite: The Arizona BioIndustry Association signs partnership agreements with the Bioindustry Organization of Southern Arizona and the Arizona Technology Council, pooling their collective strengths and resources.

'Angel' conference debuts: The Arizona Angel Investment Conference replaces the annual venture-capital conference. The move reflects the state's increasing need for funding of high-tech firms in the formative stage preceding venture-capital investment.

Branding projects launched: Two linked efforts commence to create a consistent identity for Arizona in the high-tech field and the biosciences.

Arizona gains at BIO: The state's presence at BIO 2004, the world's largest biotechnology trade show, continues to grow. Arizona sends a delegation of 60 representatives, compared to 38 in 2003, and doubles its floor space.

\$100 million slated for workforce prep: A successful bond issue for the Maricopa Community Colleges designates more than \$100 million for future facilities and equipment to expand bioscience and healthcare training programs. The community college system also announces plans to open a downtown Phoenix campus, in part to further partnerships with the universities and TGen.

Commerce funds on-job training: The Arizona Department of Commerce awards more than \$1 million in Arizona Job Training Grants to 10 bioscience companies to support customized training of 786 new and incumbent employees.

ASU first in genomics law: ASU introduces a master's program in genomics and biotechnology law – the first of its kind in the nation.

Think tanks arrive: A Columbia University-based science policy group, the Consortium for Science, Policy & Outcomes, moves its operations to ASU. A similar group, the Infotech Institute, debuts in Tucson to study issues involving technology, education, health care, and government.

Consortium explores medical issues: A collaborative group emerges to raise awareness of the ethical, humanistic, legal, and policy facets of medicine through noted lecturers and conferences. The Arizona Consortium for Medicine, Society and Values involves a partnership among ASU, the Flinn Foundation, Mayo Clinic Scottsdale, TGen, and UA College of Medicine.

Town Hall to study biosciences: The Arizona Town Hall devotes its fall 2005 project to exploring the state's developing bioscience industry.

A Statewide “Bio-Tapestry”

MANY DIVERSE ORGANIZATIONS ARE FUELING COLLABORATIVE EFFORTS TO CRAFT ARIZONA'S FUTURE IN BIOSCIENCE.

■ ASSOCIATIONS ■ CORPORATE ■ EDUCATION ■ GOVERNMENT, TRIBES ■ HOSPITALS, RESEARCH INSTITUTES ■ PHILANTHROPY

ARIZONA BIOINDUSTRY ASSOCIATION SALT RIVER PROJECT NORTHERN ARIZONA UNIVERSITY INTEL
INTEGRATED BIOMOLECULE CORPORATION INTERNATIONAL GENOMICS CONSORTIUM MOTOROLA
ARIZONA DEPARTMENT OF COMMERCE HIGH THROUGHPUT GENOMICS ARIZONA STATE UNIVERSITY
DMB ASSOCIATES HERBERGER ENTERPRISES ARIZONA HOSPITAL AND HEALTHCARE ASSOCIATION
PIMA COMMUNITY COLLEGE RESEARCH CORPORATION TECHNOLOGIES SCOTTSDALE HEALTHCARE
BLUE CROSS BLUE SHIELD OF ARIZONA GOVERNOR'S COUNCIL ON INNOVATION AND TECHNOLOGY ALLIANCE BANK
NATIONAL ASSOCIATION OF INDUSTRIAL AND OFFICE PROPERTIES ORTHOLOGIC CORP. ST. LUKE'S HEALTH INITIATIVES
UA BIOS ARIZONA COMMISSION ON MEDICAL EDUCATION AND RESEARCH ARIZONA TECHNOLOGY ENTERPRISES
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COMMERCE AND ECONOMIC DEVELOPMENT COMMISSION BARROW NEUROLOGICAL INSTITUTE LEWIS & ROCA, LLP
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CITY OF MESA ECONOMIC DEVELOPMENT DEPT. GREATER PHOENIX ECONOMIC COUNCIL VALLEY VENTURES, LLC
SONORA QUEST LABORATORIES NATIONAL INSTITUTE OF DIABETES AND DIGESTIVE AND KIDNEY DISEASES MEDTRONIC
L. ROY PAPP & ASSOCIATES CITY OF SCOTTSDALE AND MAYOR'S OFFICE VERITAS HOLDINGS ARIZONA SENATE
CARL T. HAYDEN VETERANS AFFAIRS MEDICAL CENTER AEA ARIZONA ARIZONA PARTNERSHIP FOR HIGHER EDUCATION
CITY OF AVONDALE ECONOMIC DEVELOPMENT DEPT. AMERICA WEST AIRLINES ARIZONA TECHNOLOGY COUNCIL
MARICOPA COMMUNITY COLLEGES GREATER FLAGSTAFF ECONOMIC COUNCIL ARIZONA COMMUNITY FOUNDATION
FLAGSTAFF CHAMBER OF COMMERCE FLAGSTAFF REGIONAL MEDICAL CENTER SUNCOR DEVELOPMENT COMPANY
THE VIRGINIA G. PIPER CHARITABLE TRUST PINNACLE WEST CAPITAL CORP. ARIZONA HOUSE OF REPRESENTATIVES
ARIZONA PUBLIC SERVICE CITY OF BUCKEYE ECONOMIC DEVELOPMENT DEPT. GARY L. BOWEN AND ASSOCIATES
GREATER PHOENIX CHAMBER OF COMMERCE WASATCH VENTURE CAPITAL ARIZONA BIOMEDICAL COLLABORATIVE
CITY OF FLAGSTAFF AND MAYOR'S OFFICE PRICEWATERHOUSECOOPERS BANNER GOOD SAMARITAN MEDICAL CENTER
ARIZONA BUSINESS ACCELERATOR BIODESIGN INSTITUTE AT ASU CITY OF SURPRISE ECONOMIC DEVELOPMENT DEPT.
OFFICE OF THE GOVERNOR THE BUSINESS JOURNAL SOUTHERN ARIZONA TECHNOLOGY COUNCIL STONER-ROLAND, LLC
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WESTERN MARICOPA COALITION VALLEY VENTURES II, LP SUN HEALTH RESEARCH INSTITUTE SNELL & WILMER, LLP
IMARX THERAPEUTICS CITY OF TEMPE AND MAYOR'S OFFICE GREATER YUMA ECONOMIC DEVELOPMENT CORPORATION
CITY OF PRESCOTT ECONOMIC DEVELOPMENT OFFICE ARIZONA CENTER FOR INNOVATION COX COMMUNICATIONS
AVENTIS BIOINDUSTRY ORGANIZATION OF SOUTHERN ARIZONA THE KEMPER AND ETHEL MARLEY FOUNDATION
SALT RIVER PIMA-MARICOPA INDIAN COMMUNITY WELLS FARGO ARIZONA DOWNTOWN PHOENIX PARTNERSHIP
MARICOPA INTEGRATED HEALTH SYSTEMS NORTHERN ARIZONA TECHNOLOGY AND BUSINESS INCUBATOR COMERICA
CREATIVE HEALTHCARE SOLUTIONS CITY OF CHANDLER ECONOMIC DEVELOPMENT DEPT. THE PLAZA COMPANIES
CAPITOL BANCORP ARIZONA BOARD OF REGENTS RIBOMED CITY OF PHOENIX AND MAYOR'S OFFICE
BHHS LEGACY FOUNDATION LEE & ASSOCIATES ARIZONA MEDICAL ASSOCIATION CB RICHARD ELLIS
CITY OF TUCSON AND MAYOR'S OFFICE ST. JOSEPH'S HOSPITAL AND MEDICAL CENTER DEVRY
BANNER HEALTH SYSTEM ARRIS VENTURES ASU RESEARCH PARK SOLSTICE CAPITAL
MARICOPA COUNTY MARTINEZ AND CURTIS, PC MAYO CLINIC SCOTTSDALE
SALT RIVER DEVCO THE FLINN FOUNDATION BANK ONE YAVAPAI COLLEGE

ADDITIONAL INFORMATION ON ARIZONA'S BIOSCIENCE INDUSTRY AND THE FLINN FOUNDATION CAN BE FOUND AT WWW.FLINN.ORG.