TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)

GROWING BIOTECHNOLOGY INITIATIVE (GBI)

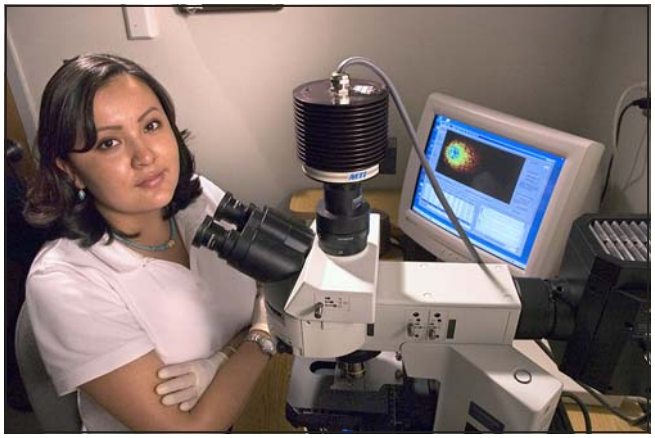
NORTHERN ARIZONA UNIVERSITY

December 2005

GROWING BIOTECHNOLOGY

The Growing Biotechnology Initiative (GBI) enables outstanding research and development in biosciences at Northern Arizona University (NAU) to be translated rapidly and effectively to address critical health issues at the forefront of modern life.

GBI will continue its focus on the threat of bioterrorism, research in new and emerging diseases and vaccines, forensic genetics, cancer, musculoskeletal and cardiopulmonary rehabilitation, and endocrine systems.



Monica Yazzie, an undergraduate student studies the role of heavy metals in cancer biology.

These research areas address issues identified by United States Environmental National Institutes of Health (NIH), Environmental Protection Agency (EPA), Centers for Disease Control (CDC), and other leading organizations as being among the most important health concerns today. Not surprisingly, these issues are also among the "biotechnology platforms" identified in the *2002 Arizona's Bioscience Roadmap*.

GBI's vision is to position Arizona as a global leader in the fast-growing biotechnology industry through research, technology transfer, business recruitment, and workforce development.

An emphasis on student participation in research combined with the high productivity of university researchers, give NAU a unique position in Arizona to provide cutting-edge research, educate a workforce for the growing bioscience industry, and contribute directly to the growth of the industry in our state.

Contents

Dr. Richard Coast, Growing Biotechnology Director

PERFORMANCE ANALYSIS

METRICS ($ in millions)	FY 02 Proj	FY 02 Act	FY 03 Proj	FY 03 Act	FY 04 Proj	FY 04 Act	FY 05 Proj	FY 05 Act	FY 06 Proj	FY 07 Proj	FY 08 Proj	FY 09 Proj	FY 10 Proj	FY 11 Proj
Return on Investment														
Increased External Funding - Federal	$1.4	$1.4	$1.5	$6.3	$2.0	$5.6	$2.0	$1.3	$1.5	$1.7	$2.5	$2.5	$3.0	$3.0
Increased External Funding - Other-Private	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	$.3	$.5	$.5	$1.0	$1.0
Increased Number of Scholarly Publications	7	12	15	0	18	59	20	3-8	20	20	30	30	40	40
Technology Transfer														
Patents Generated	2	1	1	2	1	2	1	1	1	2	2	2	2	2
Products Generated and in the Marketplace	0	0	1	5	1	0	1	2	1	1	2	1	2	2
Business Expansions	0	0	2	0	2	0	2	2	1	1	1	1	1	1
Technology Transfer: startup companies created	0	0	0	2	0	1	0	0	0	0	1	0	0	1
Industry Partnerships	0	0	0	2	0	2	2	2	3	1	1	2	1	2
Economic Development														
Incubation/Formation of Biotech Concerns in Flagstaff/Northern Arizona	0	0	1	0	1	0	2	2	1	0	0	1	1	2
Work Force Contributions														
Graduate/Postdoc Students in Pipeline	57	60	60	62	60	60	60	25	70	10	20	20	25	30
Undergraduate Students with Research Experience	76	80	80	79	80	43	65	53	110	70	80	100	110	125
M.S./PhD Graduate Increases	2	1	3	12	3	5	3	8	5	3	3	3	3	3
Specific Collaborations														
New Research Collaborations	4	6	6	29	6	3	1	17	2	2	2	5	5	7

PERFORMANCE ANALYSIS

- Return on investment is measured by comparing the total dollars invested with the number of dollars those activities attract through grants, contracts, and gifts. TRIF funds will be leveraged as a result of anticipated new dollars received from agencies, industry, and business.

Environmental Genomics and Genetics Laboratory

- Technology transfer measures are based largely on the development and licensing of new technologies and products. GBI will provide specific grant support to faculty for intellectual property development.
- GBI works closely with the Greater Flagstaff Economic Council and the Northern Arizona Technology and Business Incubator to assist in the incubation, formation, and recruitment of biotechnology companies to northern Arizona.
- Workforce development is a major emphasis area for GBI. Recruiting undergraduate and graduate students into the bioscience pipeline and preparing them for the biotechnology workforce is a high priority.
- GBI is committed to developing new partnerships with industry, business, universities, national laboratories, and governmental agencies. The number of new collaborations and partnerships in joint research ventures is expected to increase over the next five years as the bioscience industry in Arizona continues to grow.

FINANCIAL INFORMATION

	FY 2002 Actual	FY 2003 Actual	FY 2004 Actual	FY 2005 Actual	FY 2006 Budget	FY 2007 Budget	FY 2008 Budget	FY 2009 Budget	FY 2010 Budget	FY 2011 Budget	TOTAL
REVENUE											
Carry Forward	$0	$363,216	$510,270	$18,410	$22,663	$ -	$ -	$ -	$ -	$ -	
New TRIF Revenue	967,002	1,123,132	817,501	768,000	806,400	913,880	913,880	913,880	913,880	913,880	$9,051,435
TOTAL REVENUE	967,002	1,486,348	1,327,771	786,410	829,063	913,880	913,880	913,880	913,880	913,880	
OPERATING BUDGET											
Personal Services	$216,402	$377,561	$706,203	$696,382	$738,060	$630,577	$630,577	$630,577	$630,577	$630,577	$5,887,493
Operating	387,384	598,517	603,157	67,366	91,003	283,303	283,303	283,303	283,303	283,303	$3,163,942
TOTAL EXPENDITURES	$603,786	$976,078	$1,309,360	$763,748	$829,063	$913,880	$913,880	$913,880	$913,880	$913,880	$9,051,435
ROII	2.3:1	6.4:1	4.2:1	1.8:1	1.5:1	2.2:1	3.1:1	3.0:1	3.7:1	3.5:1	

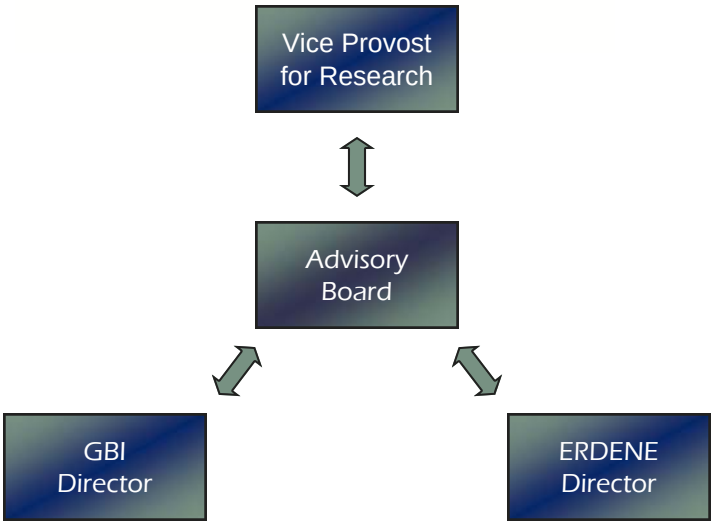
Funding of the Arizona Board of Regents' Technology and Research Initiative Fund (TRIF) is provided by a 0.6 percent increase in the Arizona sales tax rate approved by the voters through Proposition 301 on the November 2000 general election ballot.

GOALS

GBI will foster biotechnology innovation, discovery, technology transfer, and workforce development.

Specific goals include:

- Facilitate technology transfer: patents, licenses, and new businesses based in the biosciences.
- Work closely with the Greater Flagstaff Economic Council and the Northern Arizona Technology and Business Incubator in recruiting and developing new biotechnology business in northern Arizona.
- Create and refine courses in biotechnology and related fields to provide the training and experience NAU graduates will need to be productive members of Arizona's biotechnology workforce
- Create and maintain partnerships with government, business, and research institutions. Focus on our relationships with University of Arizona and Arizona State University to build the State's bioscience capacity.



LEARN MORE

Contact Dr. Richard Coast at the Department of Biological Sciences at Richard.Coast@nau.edu, or 928-523-8018

The NAU Greenhouse

MANAGEMENT

GBI's director, Richard Coast, reports to Dr. Carl Fox, Vice Provost for Research and Graduate Studies for TRIF related activities. Research initiatives within GBI report to Dr. Coast.

ADVISORY BOARD

A new Research and Development Advisory Board has been formed to oversee Growing Biotechnology and Environmental Research, Development, and Education for the New Economy (ERDENE) Initiatives. This board will consist of deans, faculty, and people from off campus, with expertise in environmental biotechnology areas.

Michael Bittner
Translational Genomics Research Institute

Russell Douglass
Northern Arizona Technology and Business Incubator

Barry Gold
Gordon and Betty Moore Foundation

Laura Huenneke
NAU College of Engineering and Natural Sciences

David LaRoche,
U.S. Environmental Protection Agency

Edwin Lewis
NAU Department of Chemistry and Biochemistry

Stephanie McKinney,
Greater Flagstaff Economic Council

Mary O'Connell
New Mexico State University Plant and Environmental Science Department

David Patton
NAU Consortium of Professional Schools

Thomas Whitham
NAU Department of Biological Sciences

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