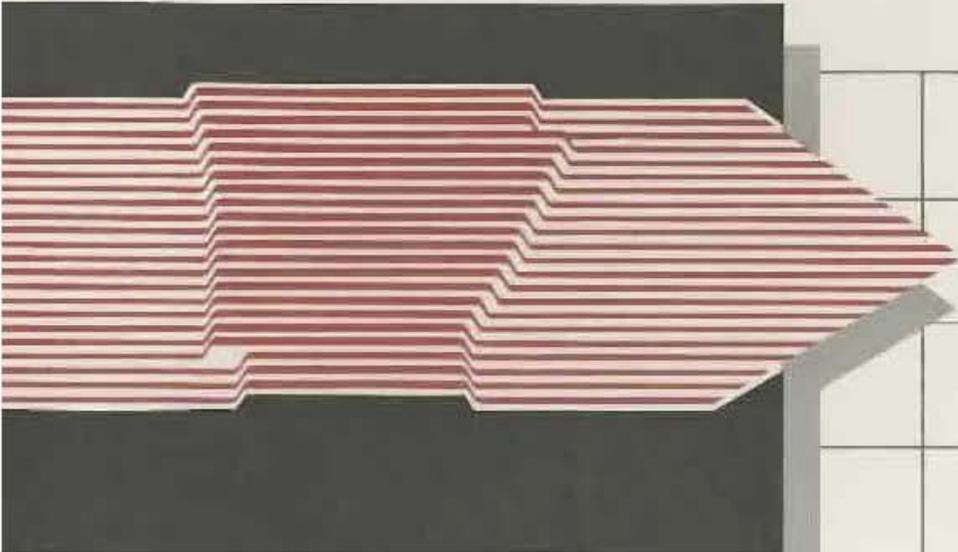


**ARKANSAS  
SCIENCE &  
TECHNOLOGY  
AUTHORITY**



**1986  
ANNUAL REPORT**



**BILL CLINTON**  
GOVERNOR  
OF ARKANSAS



**DR. JOHN W. AHLEN**  
ARKANSAS SCIENCE  
& TECHNOLOGY  
AUTHORITY PRESIDENT

## BOARD OF DIRECTORS

### CHAIRMAN

**William H. Bowen**, chief executive officer and chairman of the board, First Commercial Bank, N.A., and First Commercial Corporation, Little Rock. Term expires: 1988.

### VICE CHAIRMAN

**Winfred L. Thompson**, vice chancellor for finance and administration, University of Arkansas, Fayetteville. Term expires: 1990.

### SECRETARY

**Joe F. Nix**, Ph.D., professor, Department of Chemistry, Ouachita Baptist University, Arkadelphia. Term expires: 1987.

**Joycelyn Elders**, M.D., professor of pediatrics and endocrinology, University of Arkansas for Medical Sciences, Little Rock. Term expires: 1989.

**Ronald W. Hart**, Ph.D., director, National Center for Toxicological Research, Jefferson. Term expires: 1990.

**Bart Lindsey**, executive vice president, First National Bank of Helena. Term expires: 1987.

**Paul Marion**, Ph.D., director, Arkansas Department of Higher Education, Little Rock. Permanent statutory member.

**Harry Truman Moore**, lawyer, Goodwin, Hamilton & Moore, Paragould. Term expires: 1989.

**Louis L. Ramsay Jr.**, lawyer, Ramsay, Cox law firm, Pine Bluff. Term expires: 1988.

**Marian Barr**, M.D., physician, West Memphis. Resigned: 1986. Term expires: 1988.

**Charles Mimbs**, division vice president and director of Sparrow Missile Systems for General Dynamics, East Camden. Resigned: 1986. Term expires: 1989.

**State Senator Max Howell**, lawyer, Howell & Price, P.A., Little Rock. Senate ex-officio member. Term expires: 1987.

**State Representative John Lipton**, investor and wholesale oil and gas dealer, Warren, House of Representatives ex-officio member. Term expires: 1987.

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**ON THE COVER:** *Richard A. Komoroski, a researcher at the University of Arkansas for Medical Sciences, is studying magnetic resonance imaging of metabolites with state-of-the-art equipment provided by UAMS and a basic research grant from the Authority. (Photo courtesy of David Waters/UAMS)*

December 31, 1986



WILLIAM H. BOWEN  
ARKANSAS SCIENCE  
& TECHNOLOGY AUTHORITY  
BOARD CHAIRMAN

Governor Bill Clinton and  
Members of the 76th General Assembly  
State Capitol Building  
Little Rock, Arkansas 72201

Dear Governor Clinton and Legislators:

This year the Arkansas Science & Technology Authority focused its energies on its assigned mission of building the state's scientific and technological resources. Among the Authority's most noteworthy accomplishments were:

1. The loan of \$150,000 in start-up capital to a Clarksville manufacturer of computer-integrated, flexible manufacturing systems.
2. Establishment of two business incubator facilities to assist promising technology-based enterprises through their critical start-up phases; and
3. The awarding of \$745,244 for basic and applied research grants to scientists at Arkansas colleges and universities.

In addition, the Authority sponsored "Winning the Race with Change," a highly successful conference on science and technology issues facing Arkansas. The Authority also began publication of a newsletter, *The Authority Report*, as another part of its informational effort.

As a result of the Authority's activities and your own insightful leadership, Arkansas was chosen for two prestigious awards in 1986: The National Science Foundation selected Arkansas to participate in a pilot study to determine how technology development programs can make the United States more competitive; and the Small Business High Technology Institute cited the state's comprehensive financing programs for technology-based small businesses as the best among states west of the Mississippi.

We appreciate your support of the Authority's work in the past year and look forward to working with you to better serve the people of Arkansas.

Sincerely,

A handwritten signature in dark ink that reads "William H. Bowen". The signature is written in a cursive style with a large, prominent "W" and "B".

William H. Bowen  
Chairman of the Board

A handwritten signature in dark ink that reads "John H. Ahlen". The signature is written in a cursive style with a large, prominent "J" and "A".

John H. Ahlen, Ph.D.  
President

**TECHNOLOGY:** The application of knowledge to develop new products, services, processes or management.

**SCIENCE:** Systematic knowledge derived from observation, study and experimentation.

## **THE ARKANSAS SCIENCE & TECHNOLOGY AUTHORITY: A PROFILE**

The General Assembly created the Arkansas Science & Technology Authority through Act 859 of 1983 and assigned it the mission of developing the state's scientific and economic resources. The Authority's ability to accomplish this mission was enhanced by Act 409 of 1985, which established its four funded programs:

**BASIC RESEARCH —** This program of grants to researchers at the state's colleges and universities seeks to build the state's scientific infrastructure, the backbone of future economic development, and improve the ability of Arkansas research scientists to compete for awards at the national level.

**APPLIED RESEARCH PARTNERSHIPS-WITH-INDUSTRY —** This program seeks to pair bright, capable researchers at our colleges and universities with industrial cosponsors in research projects demonstrating clear economic potential.

**BUSINESS INCUBATOR —** This program seeks to stimulate the development of new technology-based businesses and transfer of technology from universities to the private sector by the establishment of "incubator" facilities in cooperation with the state's colleges and universities.

**SEED CAPITAL INVESTMENT FUND —** This program stimulates the creation of new technology-based enterprises by providing up to 25 percent of the start-up capital required by such firms. Such investments are funded from a \$1.8 million revolving fund established by the 1985 General Assembly. The fund is expected to be self-perpetuating.

The Authority also administers the Research and Development Tax Credit authorized by Act 759 of 1985 and has taken the lead in establishing a network of individuals involved in technology transfer initiatives.

The Authority is governed by an 11-member board of directors appointed by the Governor; it is managed by a nine-member staff headed by a president who is selected by the board and serves at the pleasure of the Governor. Its programs are administered by three vice presidents: the vice president for research directs the two research programs, the vice president for information directs the Business Incubator Program, and the vice president for finance directs the Seed Capital Investment Program.



(Left) Dr. Delbert Gatlin III of UAPB checks catfish aquarium system at Agricultural Experiment Station (Photo courtesy of Phil Cushman/Pine Bluff Commercial). (Top center) UAF graduate student Kevin Clark peers through microscope in University's Biomass Research Center. Biotech firms leasing space in the center's business incubator facility have access to the center's laboratories and the faculty's expert advice (Photo courtesy of Chris Boese/UAF News Service). (Top right) Authority President Dr. John W. Ahlen (head of table) listens to discussion during a weekly staff meeting in the Authority's new conference room. (Bottom right) Board Chairman Bill Bowen presents the Authority's first check for Genesis, the business incubator at the University of Arkansas at Fayetteville, to Chancellor Dan Ferritor.

## HIGHLIGHTS OF 1986

### JANUARY 7

Governor Clinton announced the Arkansas Science & Technology Authority's four programs were open for business.

### APRIL 17

The Authority's board of directors approved funding of seven basic research proposals and two business incubator proposals.

### JUNE 19

The board approved funding of six basic research proposals.

### AUGUST 21

The board approved funding for five basic and three applied research proposals.

### SEPTEMBER 30

The National Science Foundation, Conference Board of New York and National Governors' Association announced that Arkansas was one of four states chosen to participate in their joint study of ways to make the United States more competitive.

### OCTOBER 3

Genesis, the state's first business incubator, opened at the University of Arkansas at Fayetteville, and the board approved its first seed capital loan.

### OCTOBER 21

President Reagan signed into law the Federal Technology Transfer Act of 1986, for which the Authority had actively lobbied.

### NOVEMBER 1

The Authority moved into Suite 450 of the Technology Center (formerly the Continental Building) at 100 Main Street, Little Rock.

### NOVEMBER 12

The Small Business High Technology Institute named Arkansas the outstanding western state for financial programs assisting technology-based small business firms.

### NOVEMBER 20

The Authority distributed the first issue of *The Authority Report*, its newsletter on science and technology issues.

### DECEMBER 8-9

The Authority cosponsored "Winning the Race with Change," a conference on science and technology issues affecting economic development.

## MAKING A DIFFERENCE IN THE ARKANSAS ECONOMY

In 1986 the Arkansas Science & Technology Authority invested almost \$1.3 million in helping new technology-based businesses and almost \$750,000 in scientific and technological research.

The 1985 General Assembly gave the Authority four "tools" to use in building new Arkansas-based technology and transferring it to the marketplace: Basic research grants, applied research partnerships with industry, business incubators and seed capital investments. These programs are a year old. Here is what the Authority accomplished with them in 1986:

**BASIC RESEARCH GRANTS AND APPLIED RESEARCH PARTNERSHIPS WITH INDUSTRY** — The Authority awarded funds to 20 research projects

selected for both scientific merit and economic development potential. In many cases, the Authority's awards increased the researchers ability to obtain federal research dollars. "Partners" from private industry matched the Authority's two applied research grants.

For example, Pel-Freez, Inc., a Rogers biotech firm, matched the Authority's grant to a university researcher studying ways to commercially produce large quantities of monoclonal antibodies—important proteins used in diagnostic tests and therapeutic products. The success of the study could mean the beginning of a new biotech industry in Arkansas.

The other applied project, sponsored by Riceland Foods, DICKEY-john

Corporation and Abbott Laboratories, is trying to find out what causes rice grains to break during drying and storage. Whole-grain rice commands higher prices than "brokens," yielding higher profits for the rice industry. A Riceland representative told the Authority that the ability to produce more higher-quality rice could help save agricultural jobs.

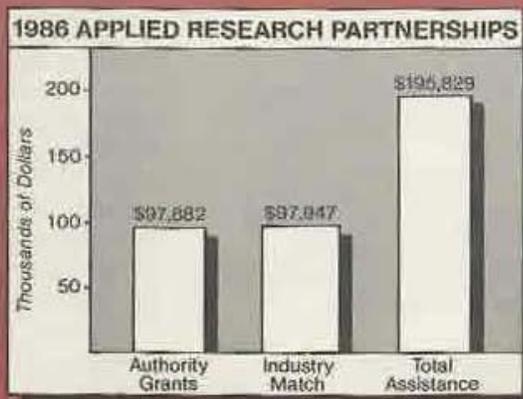
The 18 basic research projects the Authority funded in 1986 will also stimulate the Arkansas economy. For example, one grant is funding a Little Rock researcher's experiments in producing construction materials from rice hulls and cheese whey, both waste products.

Other projects have the potential to increase productivity in the fishing, timber and turf industries. Four could lead to new medical products or methodologies. One could lead to a safer



**Basic Research Develops Job Potential, Generates Federal Dollars**

The 18 Basic Research Grants should develop job potential in all sectors of the Arkansas economy, particularly manufacturing, agriculture and health services. The grants should also help the scientists obtain federal research funds to continue their research.



**Applied Research Partnerships Help Rice, Biotech Industries**

The Authority paired state dollars with private funds for two applied research projects. One could dramatically increase rice industry profits by determining ways to preserve rice quality during drying and storage; the other could create a profitable new biotech industry by identifying the process to use in manufacturing large quantities of monoclonal antibodies, important biomedical products.

tractor-trailer brake, another to better factory robots, another to development of commercial feedstocks from coal, another to laser methods of manufacturing chemical compounds—the list goes on.

**BUSINESS INCUBATOR PROGRAM** — In 1986 the Authority awarded \$1.1 million to the University of Arkansas at Fayetteville and Arkansas State University at Jonesboro for the establishment of two business "incubators." Incubators lease space to young technology-based businesses and provide technical and managerial advice to the fledgling firms.

The Fayetteville incubator opened in October and has several tenants; ASU will break ground for its incubator in January 1987.

**SEED CAPITAL PROGRAM** — The Authority provided start-up capital to a new Clarksville firm, Arkansas Technologies, Inc. (ARTECH), which designs, manufactures and installs flexible, computer-integrated-manufacturing systems.

ARTECH used the Authority's \$150,000 loan to leverage funds from other sources, including its local bank—financing that may not have been available without the Authority's willingness to share part of the risk.

In addition to these formal programs in 1986, the Authority assisted U.S. Sen. Dale Bumpers's office in obtaining passage of the Federal Technology Transfer Act of 1986. This law encourages federal laboratories like the National Center for Toxicological Research near Pine Bluff to enter into cooperative research agreements with private industry and license

ECONOMIC SECTORS AFFECTED BY OUR BASIC RESEARCH PROJECTS	
PROJECT DESCRIPTION	ECONOMIC SECTOR
Catfish Growth Factors	 Agriculture
Minerals in Catfish Nutrition	 Agriculture
Stream Resource Management	 Agriculture
Parasite Transmission in Bait Fish	 Agriculture
Forest Management Instruments	  Agriculture, Manufacturing
Factors Affecting Rice Quality	 Agriculture
Making Rice Hull Building Boards with Cheese Whey Resin	   Agriculture, Manufacturing, Sanitation, Health Services
Herbicide-Resistant Bermuda Grass	 Agriculture
Laser Instrumentation for Medical and Industrial Diagnoses	  Manufacturing, Health Services
New Laser Materials	 Manufacturing
Making Chemical Compounds with Lasers	 Manufacturing
New Chemical Solvents	   Manufacturing, Mining, Agriculture
Friction Characteristics of a New Brake Design	  Manufacturing, Transportation
Robotics in Factory Automation	 Manufacturing
Large-Scale Antibody Production	  Manufacturing, Health Services
Complications in Knee-Joint Injuries	 Health Services
Diagnosis of Congenital Hip Disease	 Health Services
Magnetic Resonance Imaging of Metabolites or Drugs	 Health Services
Potential Earthquake Hazard	 Construction
Mathematical Approach to Modeling Complex Systems	 General Services

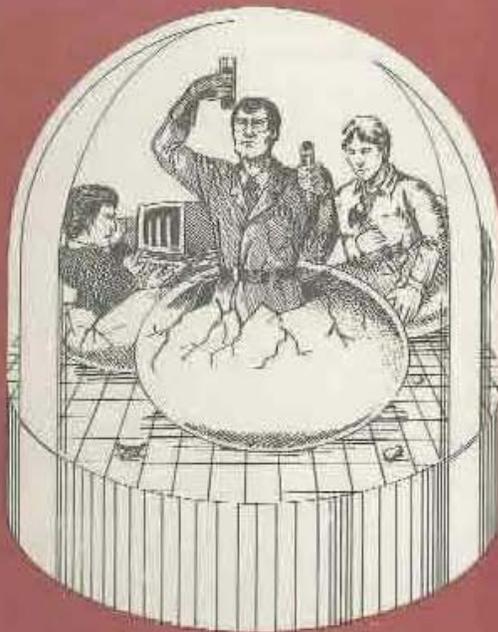


*UAF engineering students set up computer-automated assembly line in a robotics lab in the University's Engineering South Building. Technology-based firms leasing space in Genesis, the University's business incubator, have access to the robotics lab and the faculty's engineering expertise. (Photo courtesy of C. Boese/UAF News Service)*

government discoveries and innovations for commercial use.

The Authority cosponsored a conference on science and technology development issues in December. This resulted in several matchings of researchers and technology-based firms with potential markets and sources of funds.

The Authority received confirmation that its programs were on track in November. First, the Small Business High Technology Institute honored the state for having the best development finance programs west of the Mississippi River for assisting technology-based small businesses. The Institute also praised



### **INCUBATORS — 'JOB HATCHERIES' FOR TECHNOLOGY-BASED BUSINESSES**

The two business incubators funded in 1985 are job hatcheries for technology-based business. In their first two-year cycle, they should assist 13 to 18 fledgling firms and hatch 52 to 72 new jobs.

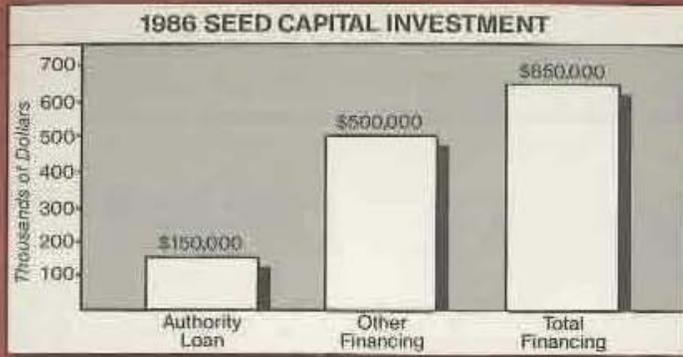


*Dr. Ernest J. Peck Jr. (left) and Dr. James W. Hardin of the University of Arkansas for Medical Sciences have a basic research grant from the Authority to study the molecular biology of the channel catfish. (Photo courtesy of D. Waters/UAMS)*

Arkansas' overall strategy for technology-based development, rating it second only to Colorado among western states.

In addition, the Southern Growth Policies Board cited the Authority's program of applied partnerships with industry as an effective way

to encourage information transfer between academia and the private sector.



**Authority's Seed Capital Leverages Other Dollars**

The Authority's \$150,000 Seed Capital Investment enabled a new, technology-based business to obtain \$500,000 in other financing. As a result, the state has a new computer-integrated-manufacturing firm that can improve the competitiveness of other Arkansas firms while creating new jobs for Arkansans. Arkansas Technologies, Inc., of Clarksville expects to employ 22 by the end of its first year and 45 by the end of its second.



Hillary Clinton, Arkansas' first lady, was a featured speaker for "Winning the Race with Change."

**GEOGRAPHICAL DISTRIBUTION OF 1986 AWARDS**

**Authority's Projects Build State's Economic Potential**

The Authority built the state's capacity for science and technology development in 1986 through its 18 basic research grants, two applied research partnerships, two business incubator awards and one seed capital investment. Locations are indicated on map.

- Basic Research Grants
- Applied Research Partnerships With Industry
- Incubator Awards
- Seed Capital Loan



**BASIC RESEARCH:** The fundamental or essential theoretical study of some field knowledge to establish facts or principles.

**APPLIED RESEARCH:** A study of some field of knowledge that is directed toward making things or creating situations which will serve a practical purpose.

## **BASIC RESEARCH GRANTS/APPLIED RESEARCH PARTNERSHIPS WITH INDUSTRY**

In 1986 the Arkansas Science & Technology Authority awarded \$720,244 to Arkansas researchers out of more than \$7 million in requests. Additional awards are possible in early 1987.

Competition for 1986 basic research grants is closed, but individuals had until January 15, 1987, to apply for Applied Research Partnerships-With-Industry Grants.

Researchers from 12 colleges and universities submitted 138 basic and nine applied research proposals.

World-class scientists reviewed these proposals and scored them for scientific merit; then the Authority's Science Advisory Committee, comprised of 10 Arkansas scientists who have served on national review boards, determined minimum cutoff scores. The board's Research Committee evaluated the economic development potential of the 54 best basic research proposals, and the board funded 18. (The Authority pays up to 60 per cent of the costs of each basic research

project, and its sponsoring college or university pays the remainder.)

The board funded two of the seven applied research projects judged meritorious.

In the applied research program, industry or business cosponsors provide at least 50 per cent of each project's costs, and the Authority provides the remainder. Cosponsors are eligible for state income tax credits for their contributions. All applied research projects directly benefit the industry sponsor by saving or creating jobs.

## **R&D TAX CREDIT PROGRAM**

The General Assembly established the Research and Development Tax Credit in 1985 to stimulate technology transfer through university/industry cooperation on applied research projects. The credits, granted to industries participating in the Arkansas Science & Technology Authority's applied research partnerships, also serve to encourage private contributions of money and equipment to college and university research programs.

Participants in the program are granted income tax credits worth 33 per cent of the value of their contribution for an amount up to 50 per cent of their net tax liability.



*Dr. Richard A. Komoroski (seated) of UAMS views display screen image of patient's brain in the UAMS Magnetic Resonance Imaging facility. Komoroski has a basic research grant from the Authority to study the magnetic resonance imaging of metabolites. (Photo courtesy of Dr. Waters/UAMS)*

### 1986 BASIC RESEARCH AWARDS

SCHOOL	RESEARCHER	PROJECT	AWARD
ASU	Stanley E. Trauth	Transmission of parasites in the Golden Shiner bait fish.	\$ 18,971
UAF	D.A. Renfro	Studies of oil viscosity between friction plates in a newly patented brake design.	77,816
UAF	Larry D. Merkle	Investigation of the use of europium (Eu) ions as a new laser material.	47,500
UAF	John W. King and Feng H. Huang	Selection of herbicide-resistant bermuda grass through cell culture.	30,010
UAF	Engin Yaz	Moving horizon control and its application to robotics.	25,181
UAF	David L. Monts	Heavy bridging atoms as energy-flow blockers in the laser manufacture of chemicals.	14,898
UAF	Norbert J. Pienta	New solvents for manufacturing chemical compounds.	24,615
UAF	Zdzislaw Jackiewicz	Numerical solution of neutral functional differential equations and Volterra integral equations.	16,267
UAF	Roy B. VanArsdale	Potential earthquake hazard to Enola, Arkansas (site of earthquake swarms).	16,646
UAF	Arthur V. Brown	Zooplankton resources in Ozark headwater streams.	44,075
UA/GIT	Malay K. Mazumder	Laser doppler instrumentation in bioprocess engineering.	50,003
UA/GIT	Paul C. McLeod Jr.	Goniometer-based system for screening congenital hip disease.	16,221
UA/GIT	James D. Wilson	Development of microprocessor-based instrumentation and digitized imagery for investigation of the varying light environment of the forest floor.	24,695
UALR	Tito Viswanathan	Rice hull reinforced building boards using resins derived from whey.	51,250
UAMS	Ernest Peck Jr. and James W. Hardin	Growth factors in the channel catfish.	53,200
UAMS	Richard Webber	Tissue origin of synovial fluid lubricin in knee-joint injuries.	51,330
UAMS	Richard A. Komoroski	Magnetic resonance imaging of metabolites.	43,442
UAPB	Delbert Gatlin III	Mineral interactions in channel catfish nutrition.	16,242
TOTAL BASIC RESEARCH AWARDS:			<u>\$622,362</u>

### 1986 APPLIED RESEARCH PARTNERSHIPS-WITH-INDUSTRY AWARDS

INST.	RESEARCHER	SPONSORS	PROJECT	AWARD
UAF	Terry Siebenmorgen	Riceland Foods, Abbott Laboratories, DICKEY-john Corp.	Study causes of rice breakage during drying and storage.	\$34,655
UAF	Collis R. Geren	Pei-Freez, Inc.	Large-scale methods for producing monoclonal antibodies.	63,227
TOTAL APPLIED RESEARCH AWARDS:				<u>\$97,882</u>

Note: The Authority also awarded a \$25,000 grant to George E. Marsh of the University of Arkansas at Fayetteville, but the industrial sponsor withdrew sponsorship and the project was cancelled.

ASU	Arkansas State University	UALR	University of Arkansas at Little Rock
UAF	University of Arkansas at Fayetteville	UAMS	University of Arkansas for Medical Sciences
UA/GIT	University of Arkansas Graduate Institute of Technology	UAPB	University of Arkansas at Pine Bluff



-  Concentrations of industries identified as "high tech" by the Office of Technology Assessment.
-  Concentrations of colleges and universities in the state.

## THE ARKANSAS TECHNOLOGY NETWORK

The Arkansas Science & Technology Authority has worked to organize a network for the transfer of technology from the research lab to commercial settings. The map above illustrates some of the potential players in such a network.

## BUSINESS INCUBATOR PROGRAM

On April 17, 1986, the Arkansas Science & Technology Authority awarded almost \$1.1 million to two universities for the establishment of Arkansas' first two business incubators. Additional awards are expected in 1987.

The business incubator program is part of the 1985 legislation to stimulate the development of technology-based business in the state. Business incubators, in cooperation with state

colleges and universities, provide management and technical advice, temporary rental space and centralized services to young technology-based businesses.

The Authority awarded \$550,000 to the University of Arkansas at Fayetteville for the establishment of Genesis, the Fayetteville incubator, and \$522,502 to Arkansas State University at Jonesboro for the establishment of the East Arkansas

Business Incubator System (EABIS).

The first component of Genesis opened October 3 in the Engineering Experiment Station, a former manufacturing plant which houses the university's Center for Robotics and Automation; the second will open shortly in the university's Biomass Research Center and will specialize in assisting biotechnology firms. EABIS will open in 1987 in a new building under construction in the Jonesboro Industrial Park.



*The Authority's staff and board members were among the visitors to the University of Arkansas at Fayetteville's robotics laboratories during opening ceremonies for Genesis, the University's new business incubator center.*

## SEED CAPITAL INVESTMENT PROGRAM

The Arkansas Science & Technology Authority on November 13 finalized its first seed capital loan of \$150,000 to Arkansas Technologies, Inc., of Clarksville, a computer-integrated-manufacturing business.

ARTECH, as the firm is known, contracts with manufacturing firms to design and build computer-driven manufacturing devices to make them more competitive. It expects to employ 22 people by the end of its first year and have first-year sales of almost \$1 million.

The Authority is currently reviewing the applications of two other technology-based firms for possible funding. Action on the two requests could come in early 1987.

Altogether, 26 firms filed pre-application information with the Authority during 1986, and more than 100 others inquired about the Seed Capital Investment Program.

The legislative mandate of the seed capital program is to provide initial financing to Arkansas-based enterprises with technically or scientifically innovative products when traditional bank financing is not available—as is often the case in start-up ventures.

The Authority must, however, find that there

is a "reasonable" chance that the business will succeed and that its investment will be repaid. The firm must demonstrate potential to create new jobs in Arkansas.

The Authority seeks at least a 3:1 match of all its investments in technology-based firms under this program.

Unlike the Authority's other programs, the Seed Capital Investment Program received one-time funding of \$1.8 million from the General Assembly. This has been invested in a special "Investment Fund" that will become self-perpetuating as technology-based businesses repay the Authority's investments.



*ARTECH employee operates computerized milling machine to make special parts for computer-integrated-manufacturing systems.*

**ARKANSAS SCIENCE & TECHNOLOGY AUTHORITY**  
**Status of Capital Improvement Funds**  
**Research Grants and Business Incubator Programs**  
**Updated through December 31, 1986**

	<b>Research Grants Programs</b>	<b>Business Incubators Program</b>
1986-87 Appropriations	\$1,800,000	\$1,900,000
Funds Released	<u>(745,244)</u>	<u>(1,221,403)</u>
Unreleased Appropriations	<u>\$1,054,756</u>	<u>\$ 678,597</u>
Grants Awarded	\$ 745,244	\$1,072,502
Grants Paid*	<u>(669,902)</u>	<u>(500,000)</u>
Grant Funds Held in Reserve	<u>\$ 75,342</u>	<u>\$ 572,502</u>

\*While released in 1986, these funds were not to be delivered to the colleges and universities until January 1987.



*ARTECH president Jerry Stokes shows the "brains" of a computer-driven strapping machine to James T. Benham, the Authority's vice president for finance. ARTECH, a firm which designs, manufactures and installs flexible, computer-integrated-manufacturing systems, opened in Clarksville in 1986 with the help of a loan from the Authority.*

**ARKANSAS SCIENCE & TECHNOLOGY AUTHORITY**  
**Comparative Statement of**  
**Government Fund Revenues and Expenditures**  
**For the Fiscal Years Ended June 30, 1985 and 1986**

	1986	1985
<b>REVENUE:</b>		
Revenue Appropriation	\$533,451.00	\$254,867.56
Deferments*	<u>(159,926.06)</u>	<u>(6,187.00)</u>
Net Revenue Allocation	\$373,524.94	\$248,680.56
<b>EXPENDITURES:</b>		
Personal Services - Payroll	\$203,789.00	\$ 82,623.84
Employee Benefits - Matching	40,669.15	18,606.00
Communication - Postage	5,128.70	688.37
Printing, Advertising	4,742.67	7,057.50
Repairing, Servicing	775.58	2,192.67
Utilities, Rent	22,139.98	9,805.53
Travel, Subsistence	21,721.31	18,696.87
Professional Fees	26,838.64	50,682.38
Centrex Services	8,343.73	8,552.13
Conference, Convention Fees	2,710.00	2,795.96
Insurance, Bonds & Taxes	392.00	125.58
Publications, Office Supplies	6,369.67	7,943.06
Data Processing Software	2,249.79	846.96
Travel Fund	500.00	0.00
Capital Outlay - Equipment	<u>21,689.98</u>	<u>2,153.26</u>
Less Total Expenditures:	<u>(368,060.20)</u>	<u>(212,770.11)</u>
<b>UNSPENT ALLOCATION:</b>	<u>\$ 5,464.74</u>	<u>\$ 35,910.45</u>
Revenue Appropriation:	\$533,451.00	\$254,867.56
Less Total Expenditures:	<u>(368,060.20)</u>	<u>(212,770.11)</u>
<b>UNSPENT APPROPRIATION:</b>	<u>\$165,390.80</u>	<u>\$ 42,097.45</u>

\*Budget reductions accounted for \$83,426.00 of the deferments, or unallocated funds, for Fiscal Year 1986.

**ARKANSAS SCIENCE & TECHNOLOGY AUTHORITY**  
**Statement of Fund Balance**  
**Seed Capital Investment Fund**  
**For the Fiscal Year Ended June 30, 1986**

Appropriation to Fund		\$1,800,000.00
Investments:		
Money Market Accounts	\$ 205,000	
Certificates of Deposit	<u>1,595,000</u>	
Interest Earned		<u>69,299.17</u>
Ending Fund Balance		<u>\$1,869,299.17</u>

Note: This revolving fund was established with a one-time appropriation of \$1.8 million, which was allocated to the Authority in two installments during the fiscal year. All interest payments and repayments of principal are deposited into money market accounts.

After the end of the fiscal year, the Authority made a \$150,000 loan from this fund. The balance of the fund on December 31, 1986, was \$1,779,545.79.



*UAF graduate student Kevin Clark prepares a solution in the University's BioMass Research Center. New biotech firms leasing space in the University's incubator may use the Center's laboratories and consult its faculty. (Photo by Chris Boese, UAF News Service)*

## BOARD COMMITTEES

### RESEARCH COMMITTEE

Dr. Ronald W. Hart (chairman), Dr. Joycelyn Elders and Dr. Joe F. Nix.

### PLANNING COMMITTEE

Winfred L. Thompson (chairman), Dr. Marian Barr and Dr. Paul Marion.

### INVESTMENT COMMITTEE

Bart Lindsey (chairman), Louis L. Ramsay Jr., Charles Mimbs and Harry Truman Moore.

## SCIENCE ADVISORY COMMITTEE

### CHAIRMAN

Dr. K. David Straub, John L. McClellan Memorial Veterans Administration Hospital, Little Rock.

Dr. Ed Bennett, Department of Chemistry, Arkansas State University, Jonesboro.

Dr. Carl Cerniglia, National Center for Toxicological Research, Jefferson.

Dr. Tom Goodwin, Department of Chemistry, Hendrix College, Conway.

Dr. Gary Heidt, Department of Biology, University of Arkansas, Little Rock. (Heidt is president of the Arkansas Academy of Science.)

Dr. Malay Mazumder, Graduate Institute of Technology, University of Arkansas, Little Rock.

Dr. Ernest Peck Jr., Department of Biochemistry, University of Arkansas for Medical Sciences, Little Rock.

Dr. Greg Salamo, Department of Physics, University of Arkansas, Fayetteville.

Dr. Neil Schmitt, College of Engineering, University of Arkansas, Fayetteville.

Dr. William Willingham, Department of Natural Sciences, University of Arkansas, Pine Bluff.

## STAFF

John W. Ahlen, Ph.D., President

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