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Annual Report, 2010-2011

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Office of the Vice Provost for Research and Economic Development

**Annual Report
Fiscal Year 2011**

**Submitted by
James M. Rankin**

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Executive Summary

The University of Arkansas was promoted in the Carnegie Classifications from “Research University/High Activity” to “Research University/Very High Activity”. This is the top research category and has 108 universities in this classification.

After a national search, **Dr. James M. Rankin**, Ohio University, was appointed Vice Provost for Research and Economic Development effective July 19, 2010.

Dr. Carol A. Reeves was appointed to a half-time administrative position as Associate Vice Provost for Entrepreneurship on January 1, 2011.

A new **Office of Research Compliance** was created to oversee compliance activities formerly residing in the Office of Research and Sponsored Programs (RSSP). **Rosemary Ruff** was appointed its first director. **Dr. Dennis Brewer** was appointed director of the RSSP.

Sponsored awards administered by RSSP for FY2011 totaled \$52,556,928 representing a decrease of 18.2% compared to FY2010. Including the Division of Agriculture, University of Arkansas external support for sponsored activities received in FY2011 was \$74,088,362, an overall decrease of 10.0% from FY2010, but an increase of 15.6% compared to the last pre-stimulus year, FY2009.

The **Office of Research Compliance** received 679 protocol requests for research involving human subjects.

The **Technology Licensing Office** received 27 disclosures of inventions or copyrightable works, filed nine new patent applications, and had eight patents issued.

University student teams placed fourth and sixth in the Rice University **Business Plan Competition** (among over 500 entries). Both teams were featured in *Fortune Magazine*.

Arkansas Space and Planetary Science Center faculty and students were responsible for over 70 publications and conference presentations during the year.

The **University of Arkansas Press** published several books during the year chronicling Arkansas history and the civil rights movement. Among these books is *Dearest Letty, The World War II Love Letters of Sgt. Leland Duvall*.

High performance computing capacity was significantly enhanced this year with the acquisition Razor, a supercomputer acquired through NSF grants. Razor has 126 compute nodes and 1512 cores, with a theoretical peak performance of 17.75 TFlops per second.

The **Survey Research Center** engaged in 24 projects during the year. The Center closed its doors to new projects on June 30, 2011.

Office of the Vice Provost for Research and Economic Development

Vice Provost for Research and Economic Development

Dr. James Rankin assumed the role of Vice Provost for Research and Economic Development on July 19, 2010. This is a new position and organization that was created when the Vice Provost for Research and Dean of the Graduate School units were separated upon Dr. Collis Geren's retirement.

Many activities during the year were related to establishing the organizational and financial structure for the Office of the Vice Provost for Research and Economic Development. It was also important to establish an identity for the unit through a new website and campus communications.

The University of Arkansas research community received outstanding news when it was announced that the university was promoted in the Carnegie Classifications from "Research University/ High Activity" to "Research University/Very High Activity". This is the top research category and has 108 universities in this classification.

In an effort to enhance research funding, two groups of faculty used the university aircraft for a trip to Washington DC to visit federal agency sponsors. The first trip in February sent seven faculty members to NSF. The second trip in April had sponsors visiting NIH, NSF, and the US Department of Education. The faculty on these two trips have reported being invited to NSF study groups and having a proposal funded. The goal is to continue offering one trip each semester, including summer.

Dr. Rankin created two advisory groups to aid communication between the VPRED office and the university community. The first group includes the Associate or Assistant Deans of Research from each of the colleges plus the Division of Agriculture. The second group involves the Center and Institute Directors.

Huron Consulting was hired to conduct a study of how the University of Arkansas uses its Facilities & Administrative reimbursement on grants and contracts (indirect cost). The study looked at the current distribution of Research Incentive Funds (RIF) and provided suggestions on how to enhance the use of these funds. The Huron report was distributed to the campus in Spring and the discussion on how to implement changes will continue into FY12.

The federal appropriations process was continued for FY12 funding. The university lobbyist traveled to campus to meet with faculty in June 2010. Each college submitted their ranked list of appropriation requests in Fall 2010. The selected appropriation requests were then provided to our Congressional delegation. A "No Earmarks" policy adopted by House Republicans in 2011 limited potential to get appropriations.

Associate Vice Provost for Research

Professor Dennis W. Brewer continued as Associate Vice Provost for Research as a half-time position during the academic year and full-time during the summer months through December 31, 2011. Effective January 1, 2011, Dr. Brewer became full-time in the Office of the Vice Provost for Research and Economic Development. At that time he also became Director of the reorganized and reduced Office of Research and Sponsored Programs.

Dr. Brewer was responsible during FY11 for projects and ongoing responsibilities

- Serving the Arkansas Space Grant Board and attending six meetings of the board in Little Rock, Arkansas
- Serving on the NASA EPSCoR Technical Advisory Committee and attending three meetings of the committee in Little Rock, Arkansas
- Serving on the Advisory Council for the Great Plains Network
- Introducing the Graduate Professional Learning Series at Graduate School Orientation
- Managing the university's response to funding solicitations which limit the number of proposal submitted by a single campus
- Nominating faculty for the Ralph Powe Award sponsored by Oak Ridge Associated Universities and the Pew Scholar Award
- Providing administrative support for the Research Council, especially as it relates to inquiries into cases of research misconduct (none were reported in FY11)
- Assisting in the establishment of new research centers and maintaining accurate records of existing centers
- Organizing and conducting three workshops for graduate students on topics related to the responsible conduct of research
- Serving as co-principal investigator on a funded NSF Noyce Scholarship Program for prospective math and science teachers
- Generally facilitating and nurturing cross-campus research collaboration and funding competitiveness
- Attended a National Science Foundation regional grants conference in Salt Lake City, Utah, October 24-26, 2010
- Serving on a United States Department of Education review panel September 6-19, 2010 in Washington, DC
- Attended a fundamentals of research administration workshop organized by the National Council of University Research Administrators
- Managing information technology support for all units reporting to the Vice Provost for Research and Economic Development
- Assisting faculty and students with software tools to detect plagiarism
- Serving on the Goldwater Scholar Nominee Selection Committee
- Serving on a committee to select the John A. White Student Research Collaboration Awards
- Serving on a steering committee to prepare a proposal to the NSF ADVANCE program
- Serving as campus administrator for the NSF EPSCoR ASSET II award
- Serving as Interim Vice Provost for Research from July 1-16, 2010.
- Serving as Department of Energy EPSCoR liaison on the EPSCoR Advisory Committee

Research and Sponsored Programs

Proposals and Awards

Award Administration

The Office of Research Support and Sponsored Programs (RSSP) accepted a total of 598 awards from various sponsors during FY2011. Total sponsor awards administered by RSSP for FY2011 was \$52,556,928 representing a decrease of 18.2% compared to FY2010. The Division of Agriculture administered research support in the amount of \$21,531,434 representing an increase of 19.4%. As shown in Table 1, University of Arkansas external support for sponsored activities received in FY2011 was \$74,088,362, an overall decrease of 10.0% from the prior year.

Table 1. Summary of Awards FY03-11 (Including the Division of Agriculture

Table 1: Summary of Awards FY03-11 (including the Division of Agriculture)									
Unit	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011
ADMIN	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 957,967	\$ -	\$ -
AFLS	\$ 14,629,058	\$ 15,193,476	\$ 17,335,331	\$ 14,931,201	\$ 13,696,441	\$ 14,811,857	\$ 19,989,692	\$ 21,290,763	\$ 25,061,033
ARCH	\$ 2,046,916	\$ 527,989	\$ 1,433,944	\$ 1,778,349	\$ 1,043,038	\$ 586,961	\$ 855,246	\$ 468,085	\$ 191,493
ARSC	\$ 14,333,548	\$ 27,408,401	\$ 20,634,520	\$ 19,886,493	\$ 17,220,638	\$ 19,891,658	\$ 21,308,726	\$ 21,858,369	\$ 18,666,359
CTED	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 100,000	\$ -	\$ -	\$ -
EDUC	\$ 5,302,161	\$ 6,494,183	\$ 5,348,988	\$ 7,676,504	\$ 6,368,064	\$ 7,272,031	\$ 7,176,954	\$ 8,698,295	\$ 8,226,951
ENGR	\$ 7,508,027	\$ 7,466,224	\$ 10,399,587	\$ 20,994,561	\$ 10,992,697	\$ 17,935,215	\$ 8,755,641	\$ 19,326,484	\$ 15,474,529
GRAD	\$ 164,357	\$ 176,346	\$ 197,136	\$ 615,541	\$ 1,527,150	\$ 436,831	\$ 649,833	\$ 3,477,614	\$ 490,240
LAW	\$ 150,904	\$ 222,180	\$ 39,744	\$ 46,510	\$ 117,853	\$ 89,529	\$ 11,000	\$ 39,744	\$ 39,412
LIBR	\$ 28,000	\$ -	\$ 30,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
VCAA	\$ -	\$ -	\$ 355,000	\$ 1,028,362	\$ 43,418	\$ 70,000	\$ 700	\$ 51,516	\$ 140,000
VCFA	\$ 35,864	\$ 823,730	\$ 1,010,333	\$ 1,736,322	\$ 3,114,851	\$ 1,578,067	\$ 1,386,081	\$ 3,569,906	\$ 1,914,342
VCSA	\$ 3,313,565	\$ 2,822,405	\$ 1,682,489	\$ 2,876,985	\$ 1,959,914	\$ 2,482,727	\$ 1,803,320	\$ 2,900,192	\$ 2,097,931
WCOB	\$ 838,162	\$ 1,549,525	\$ 1,135,109	\$ 775,381	\$ 1,501,740	\$ 918,644	\$ 1,197,457	\$ 618,478	\$ 640,988
Other									\$ 1,145,084
Total	\$ 48,350,562	\$ 62,684,459	\$ 59,602,181	\$ 72,346,209	\$ 57,585,804	\$ 66,173,520	\$ 64,092,617	\$ 82,299,446	\$ 74,088,362

The composition of total FY2011 awards is \$47,574,845 (64.2%) from federal sources, \$10,984,197 (14.8%) from state sources, and \$14,384,236 (19.4%) from other sources such as industry and private foundations. These amounts are summarized by unit in Table 2.

American Recovery and Reinvestment Act of 2009 (ARRA)

The University received \$4,002,710 in ARRA (stimulus) funding in FY2011. This compares to \$20,426,270 in FY2010.

Unit	Federal	State	Other	
ADMIN	\$ -	\$ -	\$ -	\$ -
AFLS	\$ 13,804,053	\$ 312,350	\$ 10,944,630	\$ 25,061,033
ARCH	\$ 14,868	\$ 156,625	\$ 20,000	\$ 191,493
ARSC	\$ 16,036,289	\$ 1,396,502	\$ 1,233,568	\$ 18,666,359
CTED	\$ -	\$ -	\$ -	\$ -
EDUC	\$ 1,723,858	\$ 5,988,695	\$ 514,398	\$ 8,226,951
ENGR	\$ 11,744,925	\$ 2,542,115	\$ 1,187,489	\$ 15,474,529
GRAD	\$ 395,214	\$ 48,123	\$ 46,903	\$ 490,240
LAW	\$ -	\$ 39,412	\$ -	\$ 39,412
LIBR	\$ -	\$ -	\$ -	\$ -
VCAA	\$ 70,000	\$ 70,000	\$ -	\$ 140,000
VCFA	\$ 1,564,342	\$ 350,000	\$ -	\$ 1,914,342
VCSA	\$ 2,097,931	\$ -	\$ -	\$ 2,097,931
WCOB	\$ 123,365	\$ 80,375	\$ 437,248	\$ 640,988
Other	\$ 102,750	\$ 1,042,334	\$ -	\$ 1,145,084
	\$ 47,574,845	\$ 10,984,197	\$ 14,384,236	\$ 74,088,362

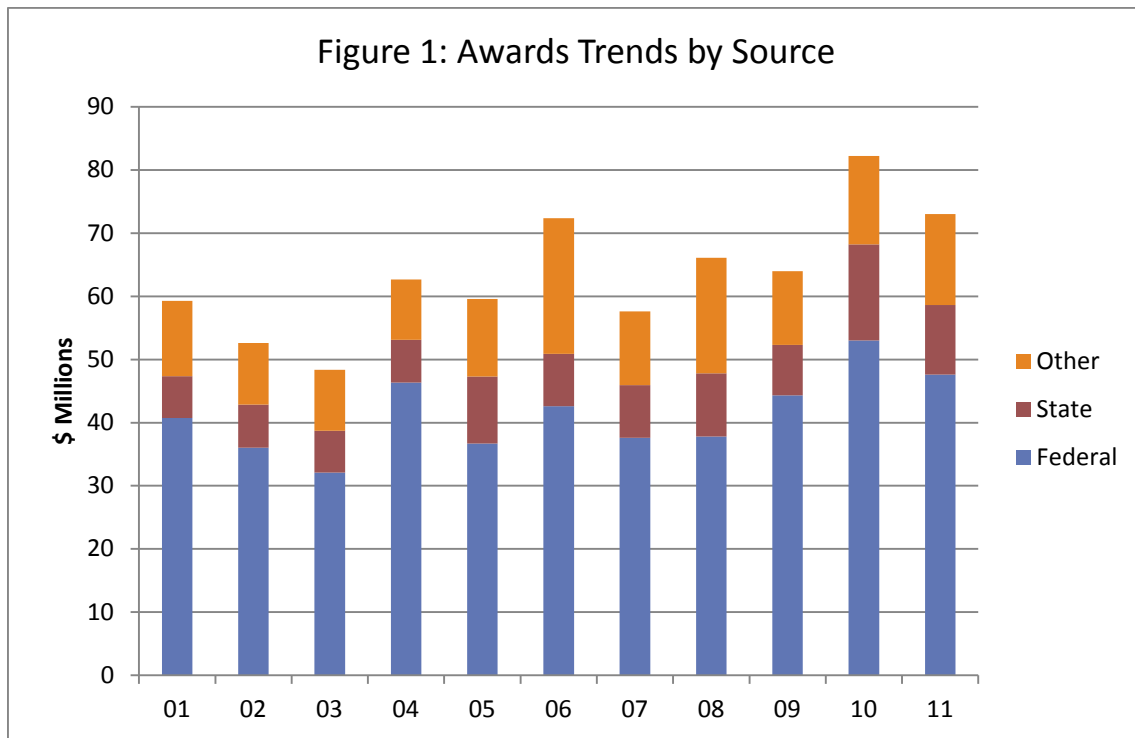


Figure 1. Awards Trends by Source

Proposal Development and Submission

RSSP assisted with the development and submission of 774 proposals and requests for continuation, exclusive of requests for no-cost extensions, in FY2011. The number of proposal

submissions to all sources decreased by 12.2% over the previous fiscal year. Total funds requested were \$209,546,474. This includes requests of \$179,506,158 (85%) for federal funding, \$18,344,224 (9%) for state funding and \$11,696,092 (6%) for other types of funding. Figure 2 illustrates the history of submissions from FY1992 through the current fiscal period.

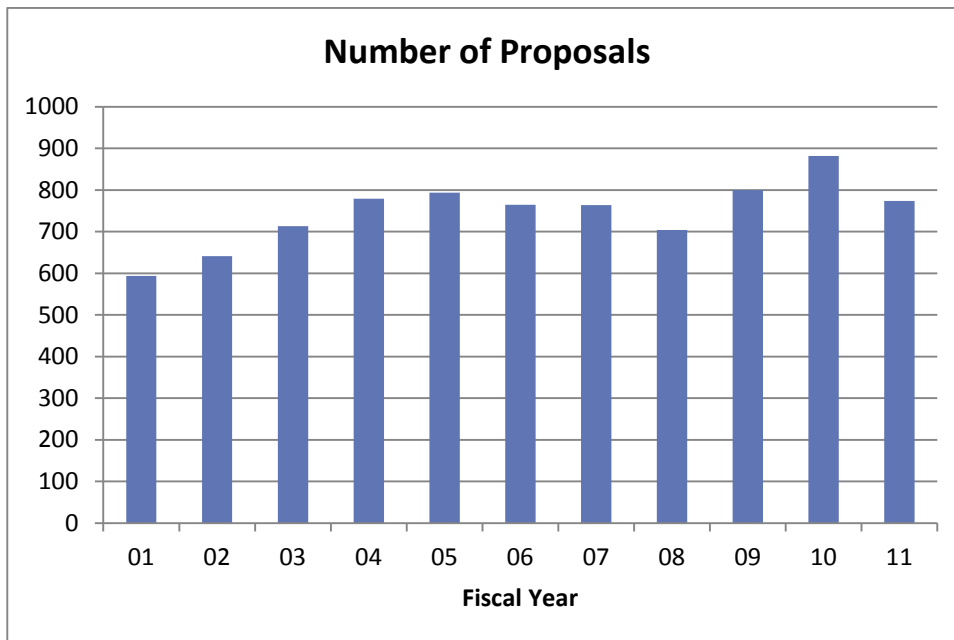


Figure 2. Number of Proposals Submitted

RSSP Highlights for FY2011

Office Reorganization

The responsibilities of RSSP were reduced on January 1, 2011 with the creation of the Office of Research Compliance to handle issues such as research involving humans and animals, dangerous substances, research misconduct, and export control. Dr. Dennis Brewer was appointed director of the Office of Research and Sponsored Programs.

Moving

The Offices of the Vice Provost for Research and Economic Development, Research and Sponsored Programs, and Research Compliance moved from Ozark Hall to the Administration Building (Rooms 205 and 210) on April 21-22, 2011.

Research Administrators Post (RAP)

In April of 2009, RSSP organized a University-wide group of administrators who wish to improve their understanding and assist investigators/ program managers to comply with of the rules, regulations, policies and procedures which govern the administration of sponsored activities. The purpose of the group is to standardize practices and procedures and improve

services to investigators/programs directors. At the present time, RAP has 141 members. Attendance varies but ranges from 40 to 60 attendees per meeting.

Meeting topics are selected based on member needs, requests, and current issues. In addition to discussing compliance issues, the group attempts to identify areas of common concern and/or frustration and improve the processes which hinder the effective and efficient administration of sponsored projects.

Using the materials prepared for the monthly RAP presentations/training, the group has begun to draft a "Research Administrator's Handbook" which is a primary goal of the group. Also to be created are "Preaward (Proposal) Management" and "Award Negotiation and Acceptance." From the Administrator's Handbook the group hopes further to create a handbook for investigators/program managers to assist them with proposal creation and submission, post award management, and project closeout.

Research Administrators Post (RAP) Presentations FY2011

A-21 - The Basics of Cost Principles
Kuali Coeus - Arkansas Electronic Research Administration (AeRA)
Effort Certification – Draft/Proposed Policy
Effort Certification Training in the New WebBASIS System
Enhancing Support for Research
Leave for Grant Funded Employees
Procurement/Purchasing Ethics and Arkansas State Laws
RazorBuy – The New Procurement System for the U of A
Research Vision from the Office of the Vice Provost for Research and Economic Development
U of A Policy - Roles and Responsibilities for Sponsored Programs
WebBasis – Monitoring and Reviewing Financial Transactions
Your Cost Centers – How They Really Function

Electronic Research Administration

In 2011, the Office of Research and Sponsored Programs conducted a Proof-of-Concept (POC) for the Kuali-Coeus (KC) electronic research office management system. The goal of the POC was to assess the feasibility of implementing KC. The feasibility criteria were based upon cost, level of effort to implement, timeline required, and were designed to determine if the KC system would provide the necessary features and functionality for the University of Arkansas research office, research accounting, and faculty investigators.

The result of the POC is a running KC system, loosely configured on the university hierarchy, where we are able to send proposals through the proposal development process and create a final proposal, with the final step being the awarding of the proposal. The POC of concept also included a simplified workflow and electronic approval to demonstrate the routing and approval process. As a result of the POC, we have been able to analyze and estimate costs, level of effort

required by the university, provide an estimate for a timeline, and conclude that KC would be able to provide all the key features and functionality required for our workflow process.

Glass Blowing and Machine Shops

The Glass and Machine Shops provided services to fourteen UA departments, seven universities (in addition to UA) and six private businesses during FY2011. Chemistry is requesting a glassblowing instruction class for FY2012. John Pace serves as Master Scientific Research Technician in the Glassblowing Shop. Dennis Rogers serves as Master Scientific Research Technician in the Machine Shop.

Revenues Generated in FY11

The Glass Shop saw a decrease in revenues of 16% and the Machine Shop showed a decrease in revenues of 43%. The Machine Shop decrease was partially due to a reduction of 3 months of service in order to prepare for a move to the Engineering Research Center. Effective, July 1, 2011, the machine shops in Engineering Hall and the Engineering Research Center were combined under the management of the College of Engineering.

Shop	Jobs	Shipping and Materials	Labor	Total Income	Change from FY10
Glass Shop	65	\$4,100	\$9,922	\$14,022	-16%
Machine Shop	34	\$1,140	\$3,730	\$4,870	-43%
Total	99	\$5,240	\$13,652	\$18,893	-24%

Research Compliance

The Research Compliance office was established on January 1, 2011. Prior to that time research compliance activities were the responsibility of Research and Sponsored Programs. For the sake of continuity, this report contains compliance demographics and information for the full fiscal year.

The office has four full-time employees and one part-time employee. Much of the first few months were spent in organizational activities such as developing a new website, rewriting position descriptions, and improving service.

Compliance Committee Support

Biosafety Committee (IBC)

FY 11 Biological Safety Research Protocol Activity	
New Protocols	24
Protocol Renewals	24
Protocol Modifications	3

Institutional Animal Care and Use Committee (IACUC)

FY 11 IACUC Research Protocol Activity	
<i># of New Protocols</i>	<i>Type of Review</i>
44	Full Committee
12	Expedited Review
<i># of Modification Requests</i>	<i>Type of Review</i>
13	Full Committee
7	Expedited Review

Institutional Review Board (IRB)

FY 11 Human Subjects Research Protocol Activity	
<i># of New Protocols</i>	<i>Type of Review</i>
514	Exempt
136	Expedited
16	Full Board
13	Administrative – determined not to be human subjects research
<i># of Protocol Modifications</i>	<i>Type of Review</i>
92	Exempt
62	Expedited
6	Full Board
<i># of Protocol Extensions</i>	<i>Type of Review</i>
122	Exempt
58	Expedited
10	Full Board

There were 6 adverse events reported, all in one study involving exercise with the elderly; none were reportable.

Radiation Safety Committee (RSC)

The RSC met a total of four (4) times in FY 11. The Arkansas Department of Health performed its annual inspection in February, 2011 and reinstated the University's broadscope license which allows the University considerably more flexibility in its approval and monitoring of authorized isotope users and laboratories. A broadscope license is awarded only to those entities which have demonstrated the knowledge, ability and resources to oversee an internal monitoring and enforcement program.

Toxic Substances Committee (TSC)

The TSC met three times during FY11. In addition to reviewing and assisting with the creation of laboratory Standard Operating Procedures (SOP) for investigators wishing to expand the use of extremely hazardous materials in campus laboratories, the Committee is working on the following policies/procedures:

- Laboratory moving and closings
- A hazardous materials newsletter (assisted by the Chemistry and Biochemistry Department)
- Establishment of a nanomaterials safety committee/subcommittee

The TSC also worked with the Office of Environmental Health and Safety to update and improve the laboratory safety audit process and checklist.

Compliance Training

RSCP staff provides training opportunities in a variety of formats. Training is provided without charge for faculty, staff, and students.

Laboratory Animal Training Association (LATA)

Faculty, staff, and students completed a total of two hundred and forty-six (246) LATA training modules in FY11.

Collaborative Institutional Training Initiative (CITI) — Human Subjects Research and Responsible Conduct of Research

One hundred and three (103) people completed one hundred and twenty-two (122) CITI courses.

Live Presentations (external and internal)

RSCP staff completed ten live training presentations in FY2011. Examples of the training opportunities provided are a research misconduct presentation for the Graduate School's Responsible Conduct of Research seminar series, an export control presentation for the faculty and staff of University of Central Arkansas, a research misconduct presentation for the Agricultural Experiment Station at the Rice Research Institution in Stuttgart (AR), and multiple IRB protocol submission presentations to graduate students. In addition, the IACUC veterinarian and the Central Laboratory Animal Facility manager conducted numerous "one-

on-one” training sessions on research/surgical techniques, animal husbandry, etc. for faculty, staff and student researchers.

Clerkships and Traineeships

RSCP negotiated and executed twenty (20) clerkship and traineeship agreements – thirteen (13) for Rehabilitation, Human Resources and Communication Disorders (RHRC) and seven (7) for Health, Human Performance and Recreation (HHPR).

Material Transfer Agreements

RSCP negotiated and executed eleven (11) Material Transfer Agreements for six (6) faculty.

Central Laboratory Animal Facility

The Central Laboratory Animal Facility (CLAF), an area of approximately 9000 sq. ft. located in the basement of the “A” wing of the Animal Sciences Building (AFLS), has been in operation since early 2000. A total of \$15,097.89 in *per diem* charges was collected for FY11.

Technology Licensing Office

The Technology Licensing Office touches many aspects of the contractual bases for research and commercialization: negotiate and sign confidentiality agreements for the University; support the Division of Agriculture and RSSP in negotiating IP clauses in sponsored research agreements; report inventions to sponsors; negotiate multi-institutional IP agreements; teach classes in entrepreneurship; apply for federal funding; and, most visibly, obtain patents and license companies to commercialize inventions. Recent statistics suggest that TLO output (patents and licenses) continues to compare well with our peers.

UA Inventions

On the invention side, as can be seen in the Figure 3, FY11 was similar to FY2010. TLO received 27 disclosures of inventions or copyrightable works, filed nine new patent applications, and had eight patents issue. Because the numbers are small, it is hard to find meaningful trends, although it does appear that disclosures are increasing, while issued patents are decreasing.

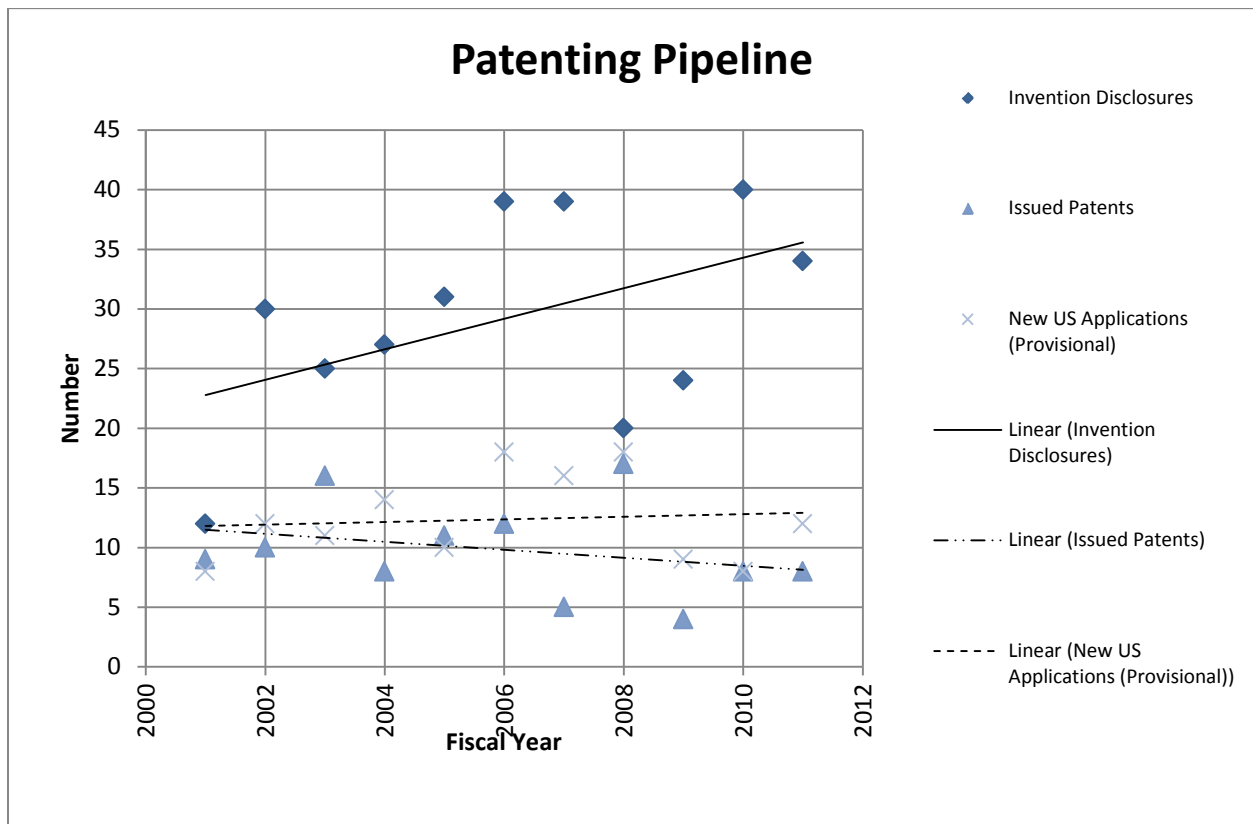


Figure 3. Patenting Pipeline

As for patent costs, as seen in Figure 4, while TLO continues to spend more each year in patent attorney fees, unreimbursed fees (e.g., the fees over which we have some control) have remained essentially flat or even trended downward over the last twelve years. In FY2011, just \$71,000 was spent on unreimbursed attorney fees, about half of the previous low in FY2000. There was an uptick in patent cost reimbursement, which was due to two of the licensees requesting a large number of (expensive) foreign filings.

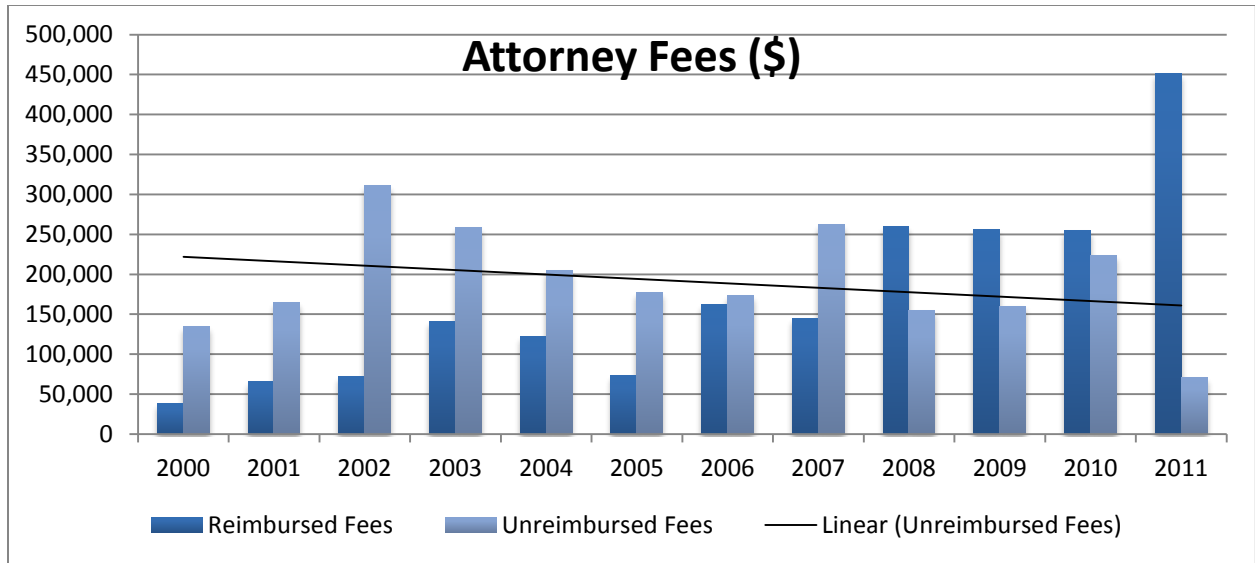


Figure 4. Attorney Fees, including Patent Costs

Licensing and Revenue

Three licenses were executed in FY11, including one to an Arkansas start-up (NanoWatt Design LLC) and two to existing companies, as well as six options, including three to Virtual Incubation Company, one to a Walton College team, and two to existing companies. Gross licensing revenue continues at a fairly steady pace, with a slight upward trend. (See Figure 5.)

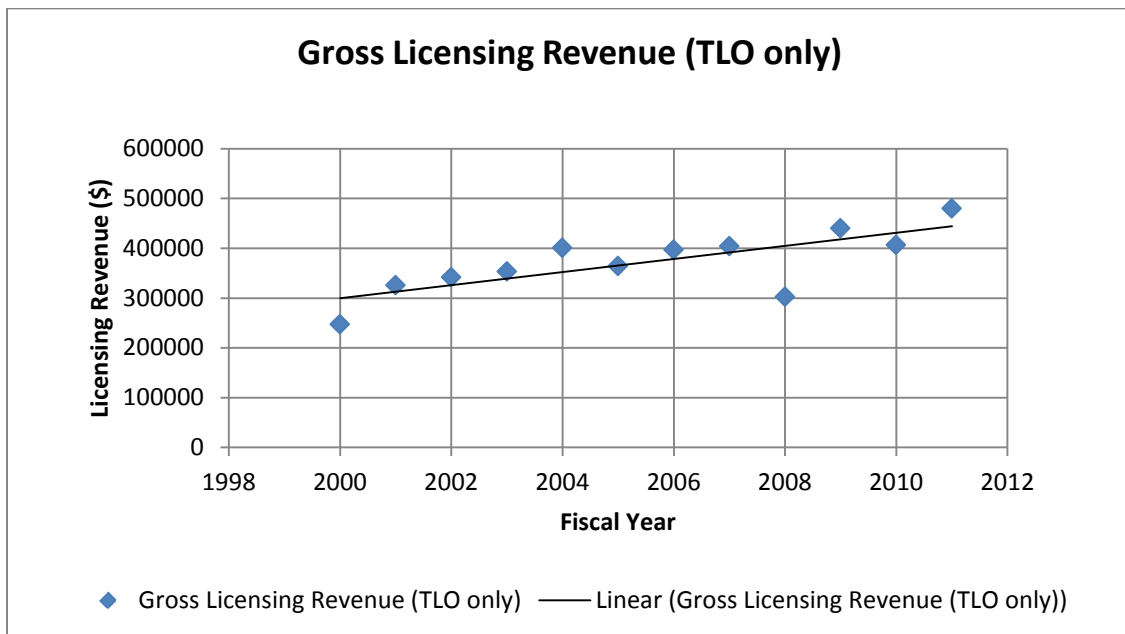


Figure 5. Gross Licensing Revenue

The campus generated about 28% of the revenue this year, up from 13% for FY2010. The balance of licensing revenue is generated by Division of Agriculture IP.

Comparison to Peers

The Association of University Technology Managers (AUTM) published report on FY2009 data ranks the University of Arkansas, Fayetteville + Division of Agriculture highly in key areas:¹

1. The University is 9th in cumulative active licenses,
2. 5th in the number generating active royalties,
3. 30th in the number of invention disclosures received.
4. 24th in total legal fees, and 18th in total, reimbursed legal fees, suggesting that UA is pursuing patent protection for commercially relevant technologies.

AUTM's data show, for **all** 151 participating universities (with or without medical schools), that UAF/Division:

- ranked 8th for number of start-ups formed per total research expenditures;
- tied for 21st in number of licenses/options executed;
- tied for 20th (with Johns Hopkins and Yale, and just ahead of WARF) in the number of licenses and options yielding income, and
- tied for 36th in number of start-ups formed.

To put this in perspective, UAF and the Division of Agriculture together ranked 102nd in total sponsored research expenditures.

In contrast to some universities, TLO does not have a dedicated budget for legal fees, so the only way to fund patent costs is by requiring our licensees to reimburse them or use the net revenues from incoming royalties. Some of our licensees are pursuing an extensive, and thus expensive, foreign portfolio so our reimbursements are commensurately high.

University Outreach and Support

TLO negotiated 88 non-disclosure agreements (NDAs) in FY2011. Of these, 15 were multi-party, and six involved four parties, and one required four parties to reach agreement. And, as is shown in the Figure 6, non-disclosure agreements are going up year over year.

Jeff Amerine has been leading activities to support the regional economic development objectives related to developing the knowledge economy as outlined in NWA Council regional strategic plan. Those efforts thus far have involved the creation of a robust angel network (Natural State Angel Association) and greater entrepreneurial networking with NWA Entrepreneurship Alliance.

The Division of Agriculture hired a second technology licensing officer, Karen McSpadden, this fall. This spring, Division also hired an intellectual property fiscal support specialist, Sarah O'Brien.

¹ This data is from the 62 participating schools without medical schools. These FY2009 data include, in our case, data obtained from the small fruits program.

Entrepreneurship

Dr. Carol A. Reeves was appointed Associate Vice Provost for Entrepreneurship on January 1, 2011. Dr. Reeves also holds the Cecil & Gwendolyn Cupp Applied Professorship in Entrepreneurship in the Sam Walton College of Business.

University of Arkansas student teams won over \$110,000 in cash and in-kind awards in business plan competitions this fiscal year. Their success is summarized below:

- Second place and elevator pitch, Donald W. Reynolds Tri-State Competition (first and second place teams from state competitions in AR, NV, OK compete in Las Vegas)
- First and second places, agriculture award, elevator pitch, Arkansas Governor's Cup
- Fourth and sixth places, elevator pitch, sales and marketing award, space commercialization award, Rice University Business Plan Competition (over 500 entries). Both teams were featured in *Fortune Magazine*.
- Finalist, Licensing Executives Society Business Plan competition (6 finalists from 78 global entries).
- Elevator pitch winner, Cardinal Challenge, Univ. of Louisville.
- Finalist, Walmart Sustainability competition (six finalists from more than 100 entries; won regional competition at Rice University).
- Third place and Green Prize, San Diego State Business Plan Competition.
- Winner, consolation track, and elevator pitch, Stuart Clark Venture Challenge, Univ. of Manitoba.
- Semi-finalist, Cleantech Open, final competition in November 2011.

Arkansas Center for Space and Planetary Sciences

STATUS AND PROGRESS—2010 – 2011

Introduction

Academic Year 2010 – 2011 has been an exciting and challenging year of many transitions within the Arkansas Center for Space and Planetary Sciences (the Space Center). One of the most exciting events in the life of the Space Center during the last year was the celebration of its tenth anniversary. This multi-disciplinary research and educational center was created on December 9, 2000 when the original Space Center faculty, campus administrators, students, industrial partners, and the External Advisory Board met to officially open the Center. Several events and activities were held during the fall semester of 2010 to celebrate the 10th anniversary of the Space Center, highlighted with an open house and a workshop on the state of the Center held on December 8, 2010. This was followed on December 9, 2010 with a day of technical talks by the faculty and graduate students showcasing the Center's research. We were pleased to have the Chair of our External Advisory Board, Dr. Steve Saunders of the Lunar and Planetary Institute, join us for these festivities.

Currently, the Space Center has one emeritus, two adjunct, and 15 regular faculty members, from four departments within the J. William Fulbright College of Arts and Sciences and two departments within the College of Engineering. In addition, the Space Center currently has 24 graduate students, two of whom seek master's degrees and 22 of whom are en route to the Ph.D.

Center Direction

Personnel Changes

Dr. Larry Roe of the Mechanical Engineering department stepped down as Center Director on June 30, 2010, and Dr. William (Lin) Oliver of the Physics Department took over in this position effective July 1, 2011. Dr. Rick Ulrich of the Chemical Engineering Department was to serve as Director of Graduate Programs of the Space Center, but Dr. Ulrich withdrew as a participating faculty member from the Space Center. Dr. John Dixon of the Geosciences Department was appointed as Deputy Director of the Space Center.

Finally, with respect to personnel changes, University Professor Derek Sears announced that he was leaving the University of Arkansas for a new position at the NASA Ames research facility in California. Professor Sears was a visionary founding member of the Space Center and its director for nearly eight years.

Physical Facilities

Plans were underway to move to new expanded facilities within the next two years. A team had been studying the suitability of converting the three-story Wilson Sharp dormitory (with a large high-bay space) to our use. In late July 2010, construction was put on hold as FAMA was working hard to deal with issues related to the surge in students expected to arrive in August of 2010. In early October of 2010, it was revealed that plans were being made to move the Space Center out of the Museum to make room for the School of Architecture's students and faculty. A series of meetings and discussions were held to determine where the Space Center would move.

The Space Center is keeping its main offices and third-floor space, while compressing the rest of its activities into a majority of the basement of the building. The planetarium has been dismantled and stored until a new location can be worked out for it in the future. The planetarium plays a significant part in the Center's outreach program and is used in the Astronomy Labs serving more than 400 astronomy and honors astronomy students per year.

Research

Table 2 shows that 15 grants were in effect during the academic year. These grants have a total value of approximately \$2.7 million although several are multi-year grants. The space center received approximately \$300 thousand in new grants during the year.

Table 2. Grants active during the academic year 2010-2011.

PI	Co-I	Title	Agency	Amount
Vincent Chevrier	L. Roe, R. Ulrich	Experimental Study of the Stability of Prebiotic Organic Volatiles on the Surface of Titan	NASA	\$516,049
Vincent Chevrier		Study of the Stability and Dynamics of Water at the Phoenix Landing Site	NASA	\$249,456
Vincent Chevrier		Experimental simulations of the mineralogical properties and alteration of the surface of Venus	ASGC	\$5,400
Po-Hao Adam Huang	L. Roe	Balloon Sat-based Micro Thruster Flight Tests	ASGC	\$58,000
Po-Hao Adam Huang		Gimbaled Permanent Magnet Based Attitude Control of Pico/Nano Satellites	SURF	\$2,650
Po-Hao Adam Huang		Characterizing Heavy Fluorine-Based Gases for Small Satellite Propulsion Systems	Honors College	\$2,650
Dan Kenefick	J. Kenefick, C. Lacy, M. Seigar	Arkansas Galaxy Evolution Survey (AGES)	NASA-EPSCoR	\$503,838
Julia Kenefick	D. Sears	REU Site: Interdisciplinary Research Experience in the Astronomical, Space, and Planetary Sciences	NSF	\$273,750
Derek Sears		Radiation and Thermal History of Stardust Particles	NASA	\$421,090
Fang-Zhen Teng		Magnesium Isotopic Investigations of Oceanic Basalts and Olivines	NSF	\$175,022
Fang-Zhen Teng		Magnesium and Iron Isotopic Investigation of Lunar Samples	ASGC	\$11,400

PI	Co-I	Title	Agency	Amount
Fang-Zhen Teng		Studies of Magnesium Isotope Geochemistry	NSF CAREER	\$458,928
Fang-Zhen Teng		Lithium and Magnesium Isotopic Studies of Adakitic Rocks from North China Craton	NSF of China	\$14,500
Fang-Zhen Teng		Investigations of olivine zoning in Kilauea Iki lavas	NSF of China	\$14,500
Rick Ulrich	D.G. Blackburn	Studies of Iapetus Thermal Properties from the Cassini Spacecraft	ASGC	\$8,525

Education

Undergraduate education—the REU program

The Research Experience for Undergraduates (REU) program is an interdisciplinary summer program that the Center began conducting in 2002. The current REU program is funded by a three-year grant from the NSF astronomy division. Fourteen students participated during the summer of 2010 and another dozen during the current summer. Students from a variety of science and engineering backgrounds are recruited to the Center through a competitive process to conduct research projects relevant to the research programs in the Space Center. REU research projects cover topics from astronomy and astrophysics to geomorphology, planetary simulations, and instruments for spacecraft. REU participants are also required to present midterm oral presentations and end-of-term posters. In addition, they are encouraged to attend a national conference during the following year, and we had six from the 2010 program attend and present posters at the Lunar and Planetary Sciences Conference last March in The Woodlands near Houston, Texas.

Graduate degree programs in Space and Planetary Sciences

The Space Center's degree programs produced three Ph.D. degrees in 2010 – 2011, bringing the total of Ph.D. degrees granted by the six-year-old graduate program to 10. Of the 24 current graduate students currently enrolled, 13 have passed the PhD candidacy exam, two are M.S. students, and nine are just completing one year and have not yet taken their candidacy exams. Seventeen of the students are US citizens, and 14 are female.

Public Outreach

The Center monthly newsletter, Space Notes, is distributed on campus and to other interested parties. *Meteorite* magazine is written for a wide audience and published quarterly. We provide a meteorite identification service which results in about 20–30 sample submissions per year from members of the public. The Center offers several public lectures each year, including the Barringer lecture (funded by the Barringer Crater Company) and the Arkansas Public Lectures in Space and Planetary Science, typically given by Center faculty.

This year's Fall Barringer lecturer was given by Dr. Ralph Lorenz, from the Advanced Physics Laboratory at Johns Hopkins University, who gave a great talk entitled: *Titan Unveiled*. This

public presentation was given in the Space Center's Auditorium on the evening of December 6 to kick off the 10th anniversary celebration week.

CENTER ACHIEVEMENTS—2010 – 2011

Publications and Conference Presentations

During the 2010 – 2011 academic year, Center faculty and students produced over 45 invited and contributed conference presentations, 25 refereed journal publications, five papers in conference proceedings, and two invited book chapters.

University of Arkansas Press

In a year of tumult and not much shouting, the University Press suffered along with the industry, generally. Sales revenues were down due to a smaller, less remunerative list, a poor economy, the continued rush to close retail book stores (both chains and independents) exemplified, finally, in the last days of the fiscal year, by the closing of Borders Books, the second largest book retailer in the United States, maybe the world.

In anticipation of a sub-par sales year, the Press scrutinized its cost-of-goods (manufacturing costs/paper print binding) and, in spite of lower sales we were able to hold cost-of-goods to the same percentage as last year.

Likewise, we went down every line of our operating expenses early on and cut nearly \$50,000 in expenses. (Of those savings, 2% were in salaries and benefits and 19% were in discretionary expenses.)

The Fall 2012 list has the potential to be one of our strongest; likewise, there is great potential in the following Spring list. An unplanned and temporary shortage of human resources in our new title acquisition program makes growing the list exceedingly difficult but we have done some careful and severe reorganizing to facilitate the effort in that category. No matter how much we cut costs, tighten our belt, scrimp and save, we will not prosper, we will not succeed, without a full-blooded acquisitions program.

Speaking of savings, our efforts at cost containment at the Provost's request will result in a \$100,000+ savings in FY2012. This is largely a savings in salaries and benefits but also reflects containment and postponement or elimination of discretionary/operating expenses.

Much of our planning efforts in recent months will carry over into FY2012 and beyond as we move ever more seriously into the *e-book* world. Stay tuned.

Arkansas Cyberinfrastructure

Executive Summary

This has been a year of significant progress for HPC at the University of Arkansas and for its regional partners. In May, 2010, this MRI-R2 was awarded to the University of Arkansas, providing funding for the key computational resource for the next three years.

In September, 2010, ARI-R2 was awarded to the University (PI Apon), which provides funds for the data center upgrades to support the full complement of hardware in MRI-R2. At the writing of this report, about one fourth of the MRI-R2 funds have been spent. The plan is to complete the acquisition of hardware for MRI-R2 in the late fall, 2011, or early spring, 2012, timeframe, after the data center upgrade is complete.



The Razor supercomputer, acquired through use of MRI-R2 funds and also in part through the use of EPS #0918970, consists of 126 compute nodes, each with 2 Xeon X5670 processors from Intel having a clock speed of 2.93GHz. The total core count is 1,512 cores and the system has a theoretical peak performance of 17.75 TFlop/s. Each node is configured with at least 24GB of memory. Four nodes have 96GB, which allow for research simulations with large memory requirements. Razor's nodes are interconnected with both Gigabit Ethernet and 40Gbps QLogic quad-data rate InfiniBand. The IBM GPFS file system has been implemented. Razor has 74TB of long-term storage, 27TB of shared scratch storage, and 1TB of local storage on each of the 126 nodes. In addition to its performance features, Razor will be cooled by chilled water through heat-exchange rear doors, reducing the impact on data center resources.

The remainder of this section describes the activities and outcomes of the research enabled by this MRI-R2 grant.

Cyberinfrastructure-enabled science and engineering projects and products

There were numerous publications produced by the MRI-R2 grant. There were 17 journal publications and three publications in conference proceedings.

Usage Report

The MRI-R2 hardware became operational for early users in January, 2011. At the writing of this report, the total number of active users on AHPCC systems is 188, including several dozen undergraduate students and several dozen graduate students. There are users from at least ten different partner institutions.

Survey Research Center

Significant Achievements and Changes in Fiscal Year 2010 to 2011

Projects

The Survey Research Center (SRC) engaged in 24 projects during the year. The staff completely administered 17 surveys during the year (74% of the projects) and wrote 11 reports for 48 percent of the projects. The SRC entered data as part of 13 percent of all the projects (n = 3), analyzed data as the focus of three projects (13% of all projects) and drew University sample for one University administrator's project and one graduate student.

The SRC worked with the faculty, nonprofit or governmental leaders for the first time on 14 of the 24 projects conducting in FY11. On the other hand, 2010 was the twelfth time that the SRC has administered the Arkansas Poll for Drs. Parry and Schreckhise and their colleagues.

Effects of the SRC's Research Results

The research results generated via the SRC have been used to:

- Help understand roles of symbolic racism in state and national politics:
 - Ford, Pearl K.; Maxwell, Angie; Shields, Todd. "What's the Matter with Arkansas: Symbolic Racism and 2008 Presidential Candidate Support", *Presidential Studies Quarterly*. June 2010
 - In review: Angie Maxwell, Pearl K. Ford Dowe, Todd Shields. "The Next Link in the *Chain Reaction*: Symbolic Racism and Obama's Religious Affiliation." *Social Science Quarterly*.
 - Dowdle, Andrew and Giammo, Joseph. "Arkansas: Deep Blue and Bright Red at the Same Time?" in *The New Politics of the Old South*, fourth edition. S. Bullock III and Mark J. Rozell, Eds. (Lanham, MD: Rowman and Littlefield, 2010).
- Inform citizens, policymakers and educators of Arkansas with accurate estimates of opinions of Arkansans as opposed to opinions related to news items or those with special interests on important social issues ranging from health care policy to beliefs about immigration and tax policy;
- Inform Fayetteville Public School's administrators about voter preferences and provide insight for public school administrators about factors influencing votes for school levies;
- Contribute to an understanding of how Americans with low incomes manage financial and other resources;
- Informs political leaders, the public, potential funders and board members about NW Arkansas residents' knowledge of and demand for public transportation which is now jeopardized as a result of change in government funding;
- Help one UA engineering department at the University renew accreditation and achieve a national rating as an excellent program;
- Convince funders of the importance of and success of funded programs e.g. evaluations of programs of non-profits funded by Care Foundation;
- Help a UA engineering program continue to improve an NSF-funded Research Experience for Undergraduates;
- Provide sample so that students' health could be better measured and thus provided for;

- Help a nonprofit determine the effectiveness of its program to aid Arkansas residents in their quest to become citizens of the United States;
- Help the U.S. military better care for the health of active duty soldiers and other personnel and veterans globally;
- Help UAMS better estimate the number and types of physicians needed to provide adequate health care in future years;
- Help a local school system provide an education and support system that will encourage students to succeed and remain in school;
- Enable Arkansas' Extension Service to better serve the needs of a group of farmers whose needs have been overlooked for several years;
- Contribute to the development of an effective marketing strategy for the University of Arkansas – one that will accurately inform Arkansans and regional residents about the quality of education offered and that will inspire students to attend and citizens to continue supporting the university;
- Inform professional members of the UA about an important service offered on campus that could make their work easier and improve the efficiency with which education and research are conducted on campus;
- Help UA advisors continuously improve the advising of undergraduate students;
- Contribute to an understanding of the roles that faith plays within academic and health workplaces;
- Contribute to an understanding of how NW Arkansans view housing density and the choices needed in order to live sustainably.

Closure of the Survey Research Center

The Survey Research Center ceased operations on June 30, 2011, due to fiscal constraints. The SRC staff wish to express our deep gratitude for the opportunity to have served the University, northwest Arkansas, the state, region and beyond over the past 13 years. It is our hope that the more than 130 projects conducted have helped the University better serve students through improving both graduate and undergraduate education and thus the residents of Arkansas, the U.S. and global community. We likewise hope that the information the SRC has provided to policymakers throughout the region and state have helped them make sounder decisions that have and will contribute to the well-being of all.