

The background is a warm, golden-yellow collage. It features several interlocking gears of various sizes, some with dollar signs (\$) on them. In the upper right, there's a close-up of a hand holding a pen, with the pen tip pointing towards the center. The overall aesthetic is one of industry, finance, and education.

Senate Bill No. 287

REPORT TO THE LEGISLATIVE OVERSIGHT COMMISSION
ON EDUCATION ACCOUNTABILITY

WEST VIRGINIA
RESEARCH
TRUST FUND

Brian Noland, *Chancellor*
Paul Hill, *Vice Chancellor for Science and Research*
Higher Education Policy Commission

This report is provided in compliance with WV Code SS 18B-18A-1 et seq



RTF Milestones

January 9, 2008	Governor proposes program during State of the State Address
March 8, 2008	Legislation (SB 287) approved by Legislature
April 3, 2008	Legislation signed by Governor
June 23, 2008	RTF Account established, \$50 million deposited
August 25, 2008	Agency-approved Emergency Rules filed
October 15, 2008	Electronic MRS (Match Request System) completed
April 6, 2009	Legislative Rules approved by Legislature (HB 2904)
April 11, 2009	Rules signed by Governor
April 16, 2009	Final Rules filed with Secretary of State
May 18, 2009	Rules effective
May 15, 2009	First Request for Proposals issued for State Colleges and Universities
March-December 2009	Match transfers to both West Virginia University and Marshall University
November 13, 2009	Awards to Concord University and West Liberty University
December 3, 2010	Draft report presented to Policy Commission for approval
January 1, 2010	Statutory Report presented to Legislature and Governor
March 9, 2010	Second Request for Proposals issued for State Colleges and Universities
June - November 2010	Match transfers to West Virginia University
September 2010	Awards to Shepherd University and Fairmont State University
December 2010	Draft report presented to Policy Commission for approval
January 1, 2011	Statutory Report filed with Legislature and Governor
March 12, 2011	Legislation authorized extending RTF distribution date by two years to July 1, 2015.
June 2, 2011	Third Request for Proposals issued for State Colleges and Universities
August 15, 2011	Annual Institutional reports provided by WVU and MU to Policy Commission
September 16, 2011	Award made to West Virginia State University
December 9, 2011	Draft report presented to Policy Commission for approval
January 1, 2012	Statutory Report filed with Legislature and Governor

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REPORT ON THE RESEARCH TRUST FUND

This report on agency level activities to implement and achieve the goals of WV Code §18B-18A-1 et seq., the Research Trust Fund (RTF) is hereby provided to the Legislative Oversight Commission on Education Accountability (LOCEA). While annual and periodic reports have been provided throughout the first three years of implementation, this report provides a comprehensive assessment in compliance with the authorizing legislation.

Background

The West Virginia Legislature created the RTF during the 2008 regular session to provide endowment funding to Marshall University and West Virginia University, the state's two doctoral-granting, public research universities, and to promote, educate and train researchers and research support staff in science, technology, engineering and mathematics (STEM) fields of study. All awards from the RTF require a 1:1 match from private gifts and all funds must be permanently endowed by the recipient institution. The additional investment of both private donations and state funds is critical to recruiting world-class scientists, researchers, research staff, technicians and professional degree graduates, as well as providing sustained funding for laboratories and scientific equipment. All earnings from the endowments may be used to secure such scientific infrastructure. The Legislature further determined that certain areas of emphasis including energy, national security technology, environmental sciences, health and biomedical sciences, biometrics, biotechnology, gerontology, transportation and nanotechnology should be targeted by endowments established by RTF investments. The Higher Education Policy Commission was charged to administer RTF public funds available to the state's two doctoral-granting public research universities to match qualified private donations and qualified private donation pledges upon successful demonstration that such qualified donations were made to the institutions.

The Legislature subsequently appropriated \$50 million during the 2008 session to the RTF and designated that \$35 million would be available to West Virginia University and \$15 million would be available to Marshall University. All interest earned on the account prior to distribution of the corpus was designated to be distributed primarily to the state's baccalaureate colleges through a competitive process. In order to implement the Legislature's intent, the Higher Education Policy Commission (HEPC or Commission) was authorized to initiate rule making. During the 2011 regular session the legislature extended the original compliance date for fund distribution to July 1, 2015.

RTF Activities through November 2011

The Commission completed its initial implementation plan during the fall of 2008 which resulted in Title 133 Legislative Rules Series 48, subsequently approved by the legislature during the 2009 regular session. The rule establishes guidelines, procedures and documentation standards for the distribution of funds in the West Virginia Research Trust Fund. The rule designates the Vice Chancellor for Science and Research as the administrator of the program, under the general direction of the Chancellor and the Commission. The final rules are available at www.whepc.wvnet.edu.

Commission staff created an electronic "Match Request System" (MRS) in 2008 that allows secure transactions for RTF requests made by the universities. All requests, documentation and invoicing are permanently recorded in files that allow sorting, analysis and up-to-date balance information. The MRS is cross referenced with university records annually to ensure accuracy for this report.

Required "Research Plans" specified by the legislation and approved by institutional Boards of Governors' have been received from both West Virginia University and Marshall University. Both institutional plans are on file at the Commission and are found to be generally compliant with legislative requirements.

The RTF financial account was established in late June 2008 by the State Auditor and made accessible to Commission staff for distribution. This report provides all transaction activities on the RTF within the three and one-half years of its existence.

Interest funds generated by the RTF account have been separately tracked for distribution to State Colleges as defined by the Legislature. On May 15, 2009, the Commission released the first competitive request for proposals for RTF interest funds collected on the account specifically for state colleges and the WV School of Osteopathic Medicine in accordance with provisions of §18B-18A-10 of the code. A second request for proposals was issued on March 9, 2010 and a third on June 2, 2011. Proposals for up to \$100,000 each were received from eligible institutions and subsequently reviewed by external peers for program merit. Two awards were issued in 2009, two in 2010 and one in 2011 as a result.

Transaction Summary

West Virginia University

- Through 2009, combined funds matched by the RTF and transferred to WVU were \$3,489,235. This represented 9.97% of the total funds available to WVU.
- In 2010, new gifts of \$4,541,851 were submitted and matched by the Trust Fund for a total \$8,031,084 or 22.95% of available funds.
- A total of 37 endowments were created through 2010.
- In 2011, new gifts of \$13,835,180 were submitted and matched by the Trust fund for a total of \$21,866,264 or 62.47% of available funds.
- To date, \$13,133,763 or 37% remains available to WVU under the RTF authorization.
- Current proceeds on RTF and gift investments are valued at \$608,073 for 2011.
- Total qualified private gifts received are 667 in 2011.
- Total qualified private gifts received since inception are 875.
- To date, 62 specific endowments with RTF support have led to 11 chairs and professorships; 9 undergraduate scholarship programs; 12 graduate fellowships; 29 research support funds and one (1) library endowment.

Marshall University

- Through 2009, combined funds matched by the RTF and transferred to Marshall were \$742,100. This represents 4.95% of the total funds available to MU.
- In 2010, new gifts of \$136,660 were reported but were not submitted for RTF match. Thus, total transfers to Marshall in 2010 were zero.
- A total of (2) endowments were created through 2010.
- In 2011, new gifts of \$8,194,634 were submitted and matched by the Trust Fund for a total of \$8,936,733 or 59.6% of available funds.
- To date, \$6,063,266.07 or 40.4% remains available to MU under the RTF authorization.
- Current proceeds on RTF and gift investments are valued at \$110,000 in 2011.
- Total qualified private gifts received are 115 in 2011.
- Total qualified private gifts received since inception are 144.
- To date, nine endowments with RTF support have led to three professorships; five research support funds; and one (1) undergraduate scholarship program.

State Colleges

- Total "RTF Interest" accrued reached \$852,188.92 as of 1/28/11.
- An award of \$100,000 was made to West Liberty University on 11/13/09.
- An award of \$100,000 was made to Concord University on 11/13/09.
- An award of \$99,892.50 was made to Shepherd University on 9/17/10.
- An award of \$100,000 was made to Fairmont University on 9/17/10.
- An award of \$100,000 was made to West Virginia State University on 9/16/11.
- Of the commitments totaling \$499,892 to state colleges, \$80,686 has been matched and withdrawn by the institutions.
- The current uncommitted balance in the "RTF interest" account is \$406,292.

Combined Disbursements

- Total combined distributions from the RTF to date are \$30,883,685 or 61.8% of the total fund.
- Of this amount, \$22,110,505 was distributed during 2011 and includes \$80,686 disbursed from the interest account for state college participants.
- RTF current account balance is \$19,197,002 or 38.2%.
- Institutions recently provided updates on respective fundraising activities that are in agreement with this total.
- The rates of giving and matching have increased dramatically in 2011.

Research Trust Fund

Approved Requests Summary as of 12/14/2009

2009	Gifts	Pledges	Total Gifts	Total Pledges	Total Request
WVU	104	14	\$2,214,907	\$1,274,326	\$3,489,233
Marshall	15	4	\$603,100	\$139,000	\$742,100
Combined	119	18	\$2,818,007	\$1,413,326	\$4,231,333

Approved Requests Summary as of 11/30/2010

2010	Gifts	Pledges	Total Gifts	Total Pledges	Total Request
WVU	134	64	\$3,061,857	\$1,480,000	\$4,541,851
Marshall	2*	0	\$136,660*	\$0	\$0
Combined	136	64	3,198,517	1,480,000	4,541,851

Approved Requests Summary as of 11/1/2011

2011	Gifts	Pledges	Total Gifts	Total Pledges	Total Request
WVU	61	12	\$10,586,046	\$3,249,134	\$13,835,180
MU	11	2	\$3,069,634	\$5,125,000	\$8,194,634
SU	1	0	\$39,307	0	\$39,307
FSU	2	0	\$9,250	0	\$9,250
WLU	1	0	\$32,130	0	\$32,130
Combined	76	14	\$13,736,367	\$8,374,134	\$22,110,501

Total Approved Transfers to Date

\$30,883,685

* Although Marshall reported, this gift has not been submitted to the Commission for match.

Combined Transaction History 2010-2011

Date	Recipient	Fund	Amount	Pledge/Gift
11/17/10	WVU	Grace C. Clements Speech Pathology and Audiology Research Endowment	25,534	G
11/17/10	WVU	Branson-Maddrell Endowed Professorship in Orthodontics	75,505	G
11/17/10	WVU	Raymond Brooks Vanscoy Cancer Research Endowment	8,505	G
11/17/10	WVU	Virginia Oil and Gas Research Endowment for PNGE	50,000	G
11/17/10	WVU	Darrell and Diane Williams Research Endowment in the Department of Petroleum and Natural Gas Engineering (PNGE)	50,000	G
11/17/10	WVU	James P. Boland, M.D., Department of Surgery Endowed Research Fund	98,808	G
11/17/10	WVU	Norma Mae Huggins Cancer Research Endowment	97,965	G
12/20/10	WVU	E. Jane Martin Research Doctorate Fund	25,000	G
12/20/10	WVU	Norma Mae Huggins Cancer Research Endowment	13,202	G
12/20/10	WVU	The Martha Gaines and Russell Wehrle Memorial Foundation Pediatric Research Endowment	50,000	P
12/22/10	MU	Named Endowed Professorship in Dementia Research	1,000,000	G
12/22/10	MU	Rahall Transportation Institute	50,000	G
12/22/10	MU	Marshall Institute for Interdisciplinary Research	114,646	G
1/5/11	MU	J.H. Fletcher and Company Endowment for Research in Mechanical Engineering	125,000	P
1/19/11	Shepherd	Undergraduate Research and Experiments in Robotics-Based Accomplishments for STEM (URERAS)	39,307	G
2/10/11	Fairmont	Fairmont State Foundation	250	G
2/10/11	Fairmont	Fairmont State Foundation	9,000	G
2/21/11	WVU	WVU Ruby Scholars Graduate Research Fellowship	4,600,000	G
2/21/11	WVU	John T. and June R. Chambers Chair of Oncology Research	750,000	P
2/21/11	WVU	The Michael Baker Corporation Endowment In Civil and Environmental Engineering	25,000	G
2/21/11	WVU	Christopher Cline Chair in Orthopedic Surgery	2,000,000	G
2/21/11	WVU	Frederick P. and Joan C. Stamp Cancer Research Endowment	104,701	G
2/21/11	WVU	Raymond Brooks Vanscoy Cancer Research Endowment	8,505	G
2/21/11	WVU	Badzek Family Endowment for Nursing Research	100	G
2/21/11	WVU	Grace C. Clements Speech Pathology and Audiology Research Endowment	5,000	G
2/21/11	WVU	James A. Kent Endowment for Biomedical Engineering	4,500	G
2/21/11	WVU	James P. Boland, M.D., Department of Surgery Endowed Research Fund	18,801	G
2/21/11	WVU	James A. & Ruby Romano Department of Civil and Environmental Engineering Endowment	17,187	G
2/21/11	WVU	Bowlby Wood Science Graduate Research Fellowship	492	G
4/8/11	WVU	Grace C. Clements Speech Pathology and Audiology Research Endowment	3,677	G
4/11/11	WVU	James Bergen and Randy Moneith Anderson Endowed Scholarship in Mechanical and Aerospace Engineering	25,000	G
4/11/11	WVU	William "Bill" Closser Memorial Electrical Engineering Scholarship	25,000	P
4/11/11	WVU	Alpha Natural Resources Endowment for Energy Research	225,000	P
4/11/11	WVU	Morton Scholarship	98,498	G
4/11/11	WVU	Preservati Cancer Research Endowment	150,000	G
4/11/11	WVU	James P. Boland, M.D., Department of Surgery Endowed Research Fund	624	G
4/11/11	WVU	James A. Kent Endowment for Biomedical Engineering	1,000	G
4/11/11	WVU	Badzek Family Endowment for Nursing Research	885	G
4/11/11	WVU	Branson-Maddrell Endowed Professorship in Orthodontics	91,942	G
4/11/11	WVU	Norma Mae Huggins Cancer Research Endowment	3,000	G
4/11/11	WVU	Grace C. Clements Speech Pathology and Audiology Research Endowment	12,280	G
4/26/11	MU	Chemistry Summer Undergraduate Research Endowed Professorship	60,444	G
4/26/11	MU	Brickstreet Endowment for Safety Engineering	100,000	G
5/10/11	MU	Shelba Pew Endowment for River Research	115,100	G
5/10/11	MU	Marshall Institute for Interdisciplinary Research	365,100	G
5/11/11	MU	Isabelle D. and Lloyd F. Zacharias OB/GYN Research Endowment	398,357	G
5/18/11	WVU	Schoepp Neuroscience Research Student Sport Fund	5,000	G
5/27/11	MU	Anonymous Translational Sports Medicine Research Endowment	5,000,000	P
6/10/11	WVU	James P. Boland, M.D., Department of Surgery Endowed Research Fund	-	G

Date	Recipient	Fund	Amount	Pledge/Gift
6/13/11	WVU	Morrissey-Ropp Scholarship	74,631	G
6/13/11	WVU	David VanDorn Sutton Scholarship	400,584	G
6/13/11	WVU	James and Betty Hall Fellowship	100,000	P
6/13/11	WVU	Robert and Stephany Ruffolo School of Pharmacy Graduate Fellowship	50,000	G
6/13/11	WVU	Van Wyk Cancer Research Endowment	25,000	G
6/13/11	WVU	West Virginia United Health System Evidence-Based Nursing Practice Research Endowment	42,500	G
6/13/11	WVU	Mike Ross Family Pediatric Diabetes Research Endowment	400,000	P
6/13/11	WVU	Stuart M. and Joyce N. Robbins Distinguished Professorship in Epidemiology	1,000,000	P
6/13/11	WVU	Gary and Lisa Christopher Graduate Fellowship	125,000	P
6/13/11	WVU	Raymond Brooks Vanscoy Cancer Research Endowment	8,516	G
6/13/11	WVU	Grace C. Clements Speech Pathology and Audiology Research Endowment	250	G
6/13/11	WVU	Badzek Family Endowment for Nursing Research	100	G
6/13/11	WVU	James A. Kent Endowment for Biomedical Engineering	4,000	G
6/13/11	WVU	Norma Mae Huggins Cancer Research Endowment	7,725	G
6/13/11	WVU	Rita Radcliff-Deppe and Brian Deppe Fellowship Award	15,000	G
6/13/11	WVU	James P. Boland, M.D., Department of Surgery Endowed Research Fund	19,699	G
9/8/11	MU	Chemistry Undergraduate Research Experience Endowment	11,987	G
9/8/11	MU	Pew Endowments for River Research	100,000	G
9/9/11	MU	Marshall Institute for Interdisciplinary Research	754,000	G
9/29/11	WVU	Raymond Brooks Vanscoy Cancer Research Endowment	8,516	G
9/29/11	WVU	J.F. Brick Chair in Neurology	1,500,000	G
9/29/11	WVU	Women in Science and Engineer Giving Circle Endowment	18,000	G
9/29/11	WVU	Martha Hopkins Hashinger Research Scholarship	26,855	G
9/29/11	WVU	Academy of Chemical Engineers Graduate Fellowship	129,250	G
9/29/11	WVU	Arch Coal Inc. Endowment for Mine Health and Safety Research	300,000	P
9/29/11	WVU	Jarrett Family Research Endowment for Dentistry	100,000	G
9/29/11	WVU	Donald R. and Linda E. Holcomb Research Endowment for Dentistry	100,000	P
9/29/11	WVU	Mabel C. Phares Leukemia Research Endowment	350,000	G
9/29/11	WVU	Benjamin James Galford Research Scholarship	10,000	G
9/29/11	WVU	David VanDorn Sutton Scholarship	635	G
9/29/11	WVU	Wells Fargo Energy Group Scholarship	32,000	G
9/29/11	WVU	James P. Boland, M.D., Department of Surgery Endowed Research Fund	5,005	G
9/29/11	WVU	James A. Kent Endowment for Biomedical Engineering	6,000	G
9/29/11	WVU	The Michael Baker Corporation Endowment In Civil and Environmental Engineering	50,000	P
9/29/11	WVU	Grace C. Clements Speech Pathology and Audiology Research Endowment	100	G
9/29/11	WVU	Badzek Family Endowment for Nursing Research	50	G
9/29/11	WVU	Branson-Maddrell Endowed Professorship in Orthodontics	124,134	P
9/29/11	WVU	Allen S. Pack Endowment for Mining Engineering	1,500	G
9/29/11	WVU	Walter H. Moran, Jr., General Surgery Resident Research Endowment	25,000	G
9/29/11	WVU	Norma Mae Huggins Cancer Research Endowment	104,420	G
10/17/11	WLSU	Bucks For Brains, 01-10-7700	32,130	G

Total Number of Requests	90
Total Funds Requested as of November 14, 2011	22,110,505
Total Number of Pledges	14
Total Funds Pledged	8,374,134
Total Number of Gifts	76
Total Funds Gifted	13,736,371

Research Trust Fund - Combined Total Disbursements to Date (11-1-2011)

June 2008 Opening Balance 50,000,000.00

Doc ID	Item	Date	Amount	Balance	
I009524271	Marshall University Research Corp	3/4/09	-50,000.00	49,950,000.00	
I009524237	Marshall University Research Corp	3/4/09	-415,000.00	49,535,000.00	
I009977397	WVU Foundation	7/17/09	-918,453.00	48,616,547.00	
I009977805	WVU Foundation	7/17/09	-737,575.00	47,878,972.00	
I010174294	WVU Foundation	10/29/09	-1,149,672.00	46,729,300.00	
2009-10	I010264902	Marshall University Research Corp	12/11/09	-277,100.00	46,452,200.00
	I010279363	WVU Foundation	12/17/09	-683,533.00	45,768,667.00
	I010564851	WVU Foundation	2/19/10	-105,246.00	45,663,421.00
	I010846617	WVU Foundation	4/7/10	-2,335,355.00	43,328,066.00
	I011046825	WVU Foundation	6/8/10	-206,583.00	43,121,483.00
	I01199357	WVU Foundation	6/28/10	-536,300.00	42,585,183.00
	I011173548	WVU Foundation	7/26/10	-1,136,862.00	41,448,321.00
	I011319765	WVU Foundation	10/14/10	-221,505.00	41,226,816.00
	I011412479	WVU Foundation	12/13/10	-406,317.00	40,820,499.00
	I011447361	WVU Foundation	1/4/11	-88,201.00	40,732,298.00
2010-11	I011495630	Marshall University Research Corp	2/1/11	-114,646.00	40,617,652.00
	I011495637	Marshall University Research Corp	2/1/11	-125,000.00	40,492,652.00
	I011495616	Marshall University Research Corp	2/1/11	-1,000,000.00	39,492,652.00
	I011495626	Marshall University Research Corp	2/1/11	-50,000.00	39,442,652.00
	I011921416	WVU Foundation	3/30/11	-7,534,286.00	31,908,366.00
	I012185490	Marshall University Research Corp	5/19/11	-60,444.00	31,847,922.00
	I012185489	Marshall University Research Corp	5/19/11	-100,000.00	31,747,922.00
	I012185488	Marshall University Research Corp	5/19/11	-115,100.00	31,632,822.00
	I012185487	Marshall University Research Corp	5/19/11	-365,100.00	31,267,722.00
	I012185491	Marshall University Research Corp	5/19/11	-398,356.93	30,869,365.07
	I012210159	WVU Foundation	5/31/11	-641,906.00	30,227,459.07
	I012235425	Marshall University Research Corp	6/6/11	-5,000,000.00	25,227,459.07
	I012332831	WVU Foundation	7/26/11	-2,273,005.00	22,954,454.07
	I012513399	Marshall University Research Corp	10/26/11	-4,000.00	22,950,454.07
	I012513396	Marshall University Research Corp	10/26/11	-11,987.00	22,938,467.07
I012513342	Marshall University Research Corp	10/26/11	-100,000.00	22,838,467.07	
I012513406	Marshall University Research Corp	10/26/11	-750,000.00	22,088,467.07	
I012513131	WVU Foundation	10/26/11	-2,891,465.00	19,197,002.07	
TOTAL DRAWS			\$30,802,997.93	19,197,002.07	

Research Trust Fund - Total Disbursements To Date (11-1-2011)
MARSHALL UNIVERSITY

June 2008 Balance of 15,000,000.00

	Doc ID	Item	Date	Amount
2009-10	I009524271	Marshall University Research Corp	3/4/09	-50,000.00
	I009524237	Marshall University Research Corp	3/4/09	-415,000.00
	I010264902	Marshall University Research Corp	12/11/09	-277,100.00
	I011495630	Marshall University Research Corp	2/1/11	-114,646.00
	I011495637	Marshall University Research Corp	2/1/11	-125,000.00
	I011495616	Marshall University Research Corp	2/1/11	-1,000,000.00
2010-11	I011495626	Marshall University Research Corp	2/1/11	-50,000.00
	I012185490	Marshall University Research Corp	5/19/11	-60,444.00
	I012185489	Marshall University Research Corp	5/19/11	-100,000.00
	I012185488	Marshall University Research Corp	5/19/11	-115,100.00
	I012185487	Marshall University Research Corp	5/19/11	-365,100.00
	I012185491	Marshall University Research Corp	5/19/11	-398,356.93
	I012235425	Marshall University Research Corp	6/6/11	-5,000,000.00
	I012513399	Marshall University Research Corp	10/26/11	-4,000.00
	I012513396	Marshall University Research Corp	10/26/11	-11,987.00
	I012513342	Marshall University Research Corp	10/26/11	-100,000.00
	I012513406	Marshall University Research Corp	10/26/11	-750,000.00
	Total Draws			
Balance				6,063,266.07

Research Trust Fund - Total Disbursements to Date (11-1-2011)
WEST VIRGINIA UNIVERSITY

June 2008 Balance of 35,000,000.00

	Doc ID	Item	Date	Amount
2009-10	I009977397	WVU Foundation	7/17/09	-918,453.00
	I009977805	WVU Foundation	7/17/09	-737,575.00
	I010174294	WVU Foundation	10/29/09	-1,149,672.00
	I010279363	WVU Foundation	12/17/09	-683,533.00
	I010564851	WVU Foundation	2/19/10	-105,246.00
	I010846617	WVU Foundation	4/7/10	-2,335,355.00
	I011046825	WVU Foundation	6/8/10	-206,583.00
	I01199357	WVU Foundation	6/28/10	-536,300.00
	I011173548	WVU Foundation	7/26/10	-1,136,862.00
	I011319765	WVU Foundation	10/14/10	-221,505.00
2010-11	I011412479	WVU Foundation	12/13/10	-406,317.00
	I011447361	WVU Foundation	1/4/11	-88,201.00
	I011921416	WVU Foundation	3/30/11	-7,534,286.00
	I012210159	WVU Foundation	5/31/11	-641,906.00
	I012332831	WVU Foundation	7/26/11	-2,273,005.00
	1012513131	WVU Foundation	10/26/11	-2,891,465.00
Total Draws				-21,866,264.00
Balance				13,133,736.00

Investment Earnings on RTF Balance to Date (11-1-2011)

Doc ID	Item	FY	Date	Amount	Balance
B000158553	Deposit	2008	6/23/08	72,848.46	72,848.46
B000159850	Deposit	2009	7/23/08	95,111.68	167,960.14
B000161742	Deposit	2009	8/27/08	103,432.45	271,392.59
B000162754	Deposit	2009	9/26/08	106,361.79	377,754.38
B000164313	Deposit	2009	10/28/08	97,418.28	475,172.66
B000165684	Deposit	2009	11/26/08	86,642.71	561,815.37
B000166737	Deposit	2009	12/29/08	56,745.14	618,560.51
B000168129	Deposit	2009	1/29/09	49,224.83	667,785.34
B000169146	Deposit	2009	2/25/09	29,732.46	697,517.80
B000170549	Deposit	2009	3/31/09	16,969.35	714,487.15
B000171926	Deposit	2009	4/27/09	11,943.43	726,430.58
B000172631	Deposit	2009	5/14/09	8,019.46	734,450.04
B000174613	Deposit	2009	6/23/09	16,106.39	750,556.43
B000176131	Deposit	2010	7/31/09	12,239.93	762,796.36
B000177787	Deposit	2010	8/28/09	8,877.13	771,673.49
B000178739	Deposit	2010	9/21/09	5,997.91	777,671.40
I010147485	Reviewer	2010	10/7/09	-472.00	777,199.40
B000180651	Deposit	2010	10/30/09	4,826.35	782,025.75
B000181939	Deposit	2010	11/30/09	3,716.87	785,742.62
B000183168	Deposit	2010	12/30/09	3,731.29	789,473.91
B000184592	Deposit	2010	1/28/10	6,187.79	795,661.70
B000185766	Deposit	2010	2/25/10	5,311.82	800,973.52
B000186801	Deposit	2010	3/19/10	4,278.76	805,252.28
B000188288	Deposit	2010	4/28/10	4,852.94	810,105.22
B000189864	Deposit	2010	5/26/10	5,466.22	815,571.44
B000190758	Deposit	2010	6/16/10	6,663.01	822,234.45
B000192457	Deposit	2011	7/28/10	7,179.78	829,414.23
B000194204	Deposit	2011	8/27/10	7,897.86	837,312.09
B000194905	Deposit	2011	9/13/10	7,705.42	845,017.51
B000196953	Deposit	2011	10/26/10	7,171.41	852,188.92
B000198343	Deposit	2011	11/22/10	7,095.96	859,284.88
B000199686	Deposit	2011	12/23/10	6,633.55	865,918.43
B000201114	Deposit	2011	1/28/11	6,501.96	872,420.39
E000884801	Shepherd University	2011	2/4/11	-39,306.75	833,113.64
E000886016	Fairmont State University	2011	2/16/11	-9,250.00	823,863.64
B000202542	Deposit	2011	2/23/11	6,487.16	830,350.80
B000204010	Deposit	2011	3/28/11	5,674.09	836,024.89
B000204922	Deposit	2011	4/18/11	5,509.04	841,533.93
B000206964	Deposit	2011	5/27/11	4,475.10	846,009.03
B000208025	Deposit	2011	6/16/11	3,266.60	849,275.63
B000209527	Deposit	2012	7/19/11	2,326.78	851,602.41
B000211019	Deposit	2012	8/23/11	2,082.00	853,684.41
B000212617	Deposit	2012	9/29/11	1,922.95	855,607.36
B000214083	Deposit	2012	10/25/11	2,021.20	857,628.56
PENDING	West Liberty Foundation	2012		-32,130.00	825,498.56
Commitments/Balance				-419,205.75	406,292.81
Comittments		budget	draws	balance	
Shepherd		99,892.50	-39,306.75	60,585.75	
Fairmont		100,000.00	-9,250.00	90,750.00	
West Liberty		100,000.00	-32,130.00	67,870.00	
Concord		100,000.00	0.00	100,000.00	
WSU		100,000.00	00.0	100,000.00	
TOTAL AWARDS		499,892.50	-80,686.75	419,205.75	

REPORT ON THE WEST VIRGINIA RESEARCH TRUST FUND

West Virginia University¹

August 12, 2011

Introduction

This third annual report describes the activities and achievements for 2010-2011 regarding WVU's Strategic Research Plan relative to the State of West Virginia's Research Trust Fund initiative. This document also responds directly to the reporting requirements outlined in Series 48 (§ 133-48-14).

In addition, an update on the Eminent Scholars Recruitment and Enhancement Program is included.

Eminent Scholars Recruitment and Enhancement Program (2007-2008)

The predecessor to the Research Trust Fund was the Eminent Scholars Recruitment and Enhancement (ESRA) Program. Under this program, WVU successfully matched the available \$5 million commitment from the State for a total investment of \$10 million to enhance its research and outreach efforts in the areas of cancer and stroke. These initiatives directly enhance WVU's efforts to respond to patient needs in two critical areas of health care. The continuing development of each initiative is reviewed below.

CANCER PROJECT

To recruit and retain eminent scholars in the areas of breast cancer, lung cancer, and gynecological cancer:

1. The Jo and Ben Statler Chair and Eminent Scholar in Breast Cancer Research, Fund 3V805 - \$1.5 million
2. The Bonnie Wells Wilson Distinguished Professor and Eminent Scholar in Breast Cancer Research, Fund 3V804 - \$1 million
3. ESRE Program Matching Funds - \$2.5 million

Fund Purpose Statements:

\$1.5 million from Ben and Jo Statler will support a Chair in Breast Cancer Research to benefit the Mary Babb Randolph Cancer Center (MBRCC), West Virginia University. The Fund's spend is designated to be used annually by the MBRCC to support the Chair, including salary and/or fringe benefits, teaching/research assistants, travel expenses, conference attendance, secretarial and other support staff, and to otherwise support the scholarly activities of a regionally, nationally or internationally recognized outstanding scholar in the field of breast cancer research.

\$1 million from Ben and Jo Statler will support a Distinguished Professorship to benefit the Mary Babb Randolph Cancer Center, West Virginia University. The Fund's spend shall be used annually by the MBRCC to support the Distinguished Professorship, including salary and/or fringe benefits, teaching/research assistants, travel expenses, conference attendance, secretarial and other support staff, and to otherwise support the scholarly activities of a regionally, nationally or internationally recognized outstanding scholar in the field of cancer research.

\$2.5 million from ESRE will support the recruitment and start-up of three physician-scientists in the area of lung, breast and gynecological cancers to conduct Phase I and II clinical trials.

¹ Address questions and requests for additional information regarding the Eminent Scholars Recruitment and Enhancement Program to Dr. Christopher Colenda, Chancellor, WVU Health Sciences Center (ccolenda@hsc.wvu.edu); for additional information regarding WVU's Strategic Research Plan and the Research Trust Fund initiative to Dr. Michele Wheatly, Provost, West Virginia University (michele.wheatly@mail.wvu.edu) or Dr. Curt M. Peterson, Vice President for Research and Economic Development, West Virginia University (curt.peterson@mail.wvu.edu).

Funding Impact:

The impact of this support to grow the research portfolio of the Cancer Center has been significant. It is precisely the type of investment that is needed to submit a Cancer Center Support Grant (CCSG) application and achieve an NCI-designation for the State of West Virginia. Three research and clinical faculty have been recruited to the MBRCC under this plan; and with the last two recruitments including Associate Center Directors for Clinical Research and Translational Research this commitment will have been honored by the MBRCC. There are also prospects to link this plan to opportunities through the WV Research Trust Fund as well. The impact of this funding mechanism through the WVEPSCoR is enormous.

- **Michael Ruppert, MD PhD** – Dr. Ruppert joined our faculty in December 2008 from the University of Alabama – Birmingham and their NCI-designated Cancer Center. He is the inaugural holder of the Jo and Ben Statler Chair and Eminent Scholar in Breast Cancer Research, Professor of Biochemistry, and Co-Leader of our Breast Cancer Program in the MBRCC. He has two NIH R01 grants that focus on tumor oncogenes in breast and skin cancer.
- **Jame Abraham, MD** – In October 2009, following a national recruitment, Dr. Abraham, our current Chief of the Section of Hematology/Oncology and Medical Director of the MBRCC was installed as the Bonnie Wells Wilson Distinguished Professor and Eminent Scholar in Breast Cancer Research. He is Associate Professor of Medicine and also appointed Co-Leader of our Breast Cancer Program in the MBRCC. He is the Principal Investigator on our institutional grant for the National Surgical Adjuvant Breast and Bowel Project (NSABP) and is a nationally recognized breast cancer expert. Dr. Abraham is building our statewide clinical trials network.
- **William Tse, MD** – Dr. Tse joined our faculty in October 2009 from the University of Colorado and their NCI-designated Cancer Center. He is the Eminent Scholar in Hematological Malignancies Research, Associate Professor of Medicine and Co-Leader of the Osborn Hematopoietic Malignancy and Transplantation Program in the MBRCC. He completed an ASCO Young Investigator Award; is defining the biological function of the AF1q gene in acute leukemia, other stem cell disorders, and solid tumors; and is developing novel compounds for treating stem cell disorders in leukemia and brain tumors.
- **Associate Center Director for Clinical Research** – At the time of this report the MBRCC is in the midst of a significant recruitment effort to attract a nationally recognized medical oncologist and cancer clinical trials expert focusing on lung cancer or other solid tumor(s). This individual will be appointed as Associate Center Director for Clinical Research and depending on credentials may be appointed as the Eminent Scholar in Lung Cancer Research and Co-Leader of the Sara Crile Allen and James Frederick Allen Lung Cancer Program in the MBRCC. Eminent Scholar funds will be directed toward this recruitment.
- **Associate Center Director for Translational Research** – At the time of this report the MBRCC is in the midst of its final leadership recruitment. This individual will also have national recognition and NIH funding with a research focus in tumor microenvironment, stem cell biology, and/or hematological malignancies, which are preferred. Eminent Scholar funds will be directed toward this recruitment as well.

Questions and/or requests for additional information should be directed to Dr. Scot Remick (scot.remick@hsc.wvu.edu), Director, Mary Babb Randolph Cancer Center.

STROKE PROJECT

To recruit eminent scholars to enhance new interventions to prevent and treat stroke and enhance recovery of brain function

1. West Virginia University Hospital (WVUH) Private Gift, Fund 2R338 - \$2.5 million
2. ESRE Program Matching Funds - \$2.5 million

Fund Purpose Statements:

\$1.5 million from WVUH will support the recruitment of a Stroke Medical Director. This person will be a clinician-scientist with board certification in stroke neurology who will bring extensive experience with stroke clinical trials and the ability to design new trials based upon research at WVU and other research institutions.

\$1.0 million from WVUH will support the recruitment of a clinician-scientist with board certification in stroke neurology and neuro-intensive care. S/he will bring experience in the design and conduct of clinical trials and the necessary credentials to classify the WVU clinical stroke unit as a comprehensive stroke center.

\$1.5 million from the ESRE Program will support recruitment of a Stroke Translational and Basic Science Research Director. This person will be a clinician-scientist with credentials as both a stroke neurologist and laboratory-based scientist. S/he will guide a research team investigating biological mechanisms that underlie stroke events, new diagnostics of stroke, the neuro-vascular response to stroke and neural repair.

\$1.0 million from ESRE will support the recruitment of an expert in regenerative medicine who uses stem cells or other means to regenerate neurons and neural circuits. This person will develop therapeutic approaches that will be tested in clinical trials.

Funding Impact:

This fund has provided the resources for the work of Dr. Laurie Gutmann, Stroke Director. Through her leadership, Ruby Memorial Hospital, the WVU School of Medicine and the WVU Health Sciences Center have collaborated to create the new WVU Stroke Center. The Center provides a multidisciplinary and comprehensive approach to stroke. An emergency response team is available 24 hours a day to evaluate and treat stroke patients quickly to help minimize lasting damage. Treatment teams include experts in neurology, neurosurgery, interventional radiology, emergency medicine, neuro-imaging, physical therapy and others who collaborate on care for and rehabilitation of patients. This collaborative approach is extremely effective and our current mortality statistics are low compared to national data. The number of patients treated through the Stroke Center increased by 6.4% over the past year.

The WVU Stroke Center outreach efforts involve making West Virginians aware of the warning signs of stroke and working with providers and first responders throughout the state to ensure standards of care. Research groups are working to develop new strategies for treatment, including new diagnostic and therapeutic approaches, as well as monitoring the effectiveness of new therapies. Three National Institutes of Health (NIH) stroke clinical trials are currently active in the Center. The Stroke Center was also recognized by the NIH as the “role model” for a rural comprehensive stroke program. Most recently, the Center’s program received the Get With the Guidelines – Stroke Gold Plus Achievement Award by the American Heart Association/American Stroke Association. The Center’s transient ischemic attack (TIA) mortality is extremely small compared to many peer institutions. Our mortality and length of stay for TIA, as well as for ischemic and hemorrhagic stroke are all substantially lower than established norms for peer American academic medical centers. Only 6% of America’s hospitals meet our door-to-needle time.

Dr. Christopher L. Cummings, a board-certified Stroke Neurologist, has been hired in the Department of Neurology effective July 2011. Dr. Cummings has completed his fellowship training at the Cleveland Clinic.

Questions and/or requests for additional information should be directed to Dr. Laurie Gutmann (lagutmann@hsc.wvu.edu), Director, WVU Stroke Center.

Research Trust Fund (2008-2009)

In March 2008, the West Virginia Legislature enacted Senate Bill 287, commonly referred to as the Research Trust Fund, as an effort to build a critical mass in selected areas of research and thus lay the groundwork for future economic development. The initial Bill provided a five year window for the deposit of qualified donations into its research endowments. Senate Bill 239 (Passed March 12, 2011) amended §18B-18A-9 of the Code of West Virginia to provide a seven year window. Senate Bill 287 committed \$35 million to West Virginia University as a basis for a 1:1 match for private dollars to create endowments that would provide a sustainable source of funds for research and development. West Virginia University's approved Strategic Research Plan identified four areas for investment:

- Energy and environmental sciences
- Nanotechnology and material science
- Biological, biotechnological, and biomedical sciences
- Biometrics, security, sensing and related identification technologies

A brief description of each research area is available at

http://research.wvu.edu/home/research_trust_of_west_virginia_university

These areas build on the expertise of WVU's faculty, are critical issues of importance to the public, and are at the core of WVU's land-grant mission.

An Addendum to WVU's Strategic Research Plan for the Research Trust Fund was approved by the WVU Board of Governors in December 2010 and incorporated therein. Three modifications were made:

1. Adding forensic sciences as an area of emphasis under the biometrics, security, sensing, and related identification technologies, providing the opportunity for private investment into this area of research.
2. Adding a Library endowment to support the acquisition of materials in the four research areas, clarifying the importance that library resources provide to a vibrant research agenda.
3. Removing the language "no research area may receive more than \$17.5 million in private donations within the first two years," allowing WVU to maximize private investment regardless of focus area.

Efforts Over 2010-2011

WVU's Commitment to Research Development

West Virginia University continues to balance its tripartite responsibilities for teaching, research, and service in fulfillment of its land-grant mission. During this past year, the institution's comprehensive strategic planning process was finalized. That Plan, WVU's 2020 Strategic Plan for the Future (<http://strategicplan.wvu.edu>) has as one of its goals – Excel in research, creative activity, and innovation in all disciplines. One overarching objective is to achieve a Carnegie Classification status as an institution of "Very High Research Activity," compared to the current classification of "High Research Activity." This objective will require a significant growth in research funding and in the number of doctoral degrees awarded each year. WVU is currently developing an implementation strategy that will guide the institution toward meeting this objective.

To this end, the total funding for sponsored programs at WVU was 173.9 million in FY11, nearly the same as that in FY10 (\$177.7 million) and \$23 million more than in FY09 (\$152.3 million). As part of the institution's commitment to achieve "Very High Research Activity" status, 21 new faculty positions in disciplines that support the research focal areas of the Research Trust Fund (including 12 in energy and the environment, 2 in nanotechnology, 6 in biological sciences and 1 in biometrics/forensics) have been authorized by the Office of the Provost for fiscal year 2012.

In addition, WVU's Board of Governors approved a new Advanced Engineering Research Building (\$41.4 million) and a new Agricultural Sciences Building (\$88.1 million) for the Davis College of Agriculture, Natural Resources, and Design. Both facilities, with new state-of-the-art research laboratories will directly support WVU's aggressive research agenda.

Through new hires, support for their start-up needs, and major capital investments into the research infrastructure, WVU continues to make tangible commitments to its research agenda.

Energy and environmental sciences.

In October, 2010, the "Business Plan for the Advanced Energy Institute" was drafted and subsequently approved at the Fall, 2010, meeting of AEI's National Advisory Board. The Business Plan is an operational and implementation document that identifies the resources, the support system and the needed infrastructure in order to enable the realization of the 2008 strategic plan, "A Strategic Plan for the Advanced Energy Initiative." It brands WVU as an energy and environmental university, and it increases the capacity of WVU to compete

successfully for large, multi-million dollar, federal research grants. The plan incorporates four approaches to improve WVU's competitive position: sponsorship for the development of emerging interdisciplinary initiatives, strengthening of our capabilities in energy policy research, development of shared space and common laboratories, and implementation of a proposal capture management process for major opportunities. In order to accomplish the intent of the Advanced Energy Initiative, the plan recommends renaming AEI as the Advanced Energy Institute in the near future, thereby clarifying its University-wide responsibility for all aspects of energy research and policy. AEI is moving forward with the implementation of the Business Plan. Examples of progress in key areas identified in the plan are the following:

- An Operations Manager was hired and charged with the responsibility to ensure excellent program management of all major programs such as the U.S.-China Clean Coal Energy Research Center.
- AEI issued RFPs requesting concept papers from WVU faculty and researchers in two areas: 1) Developing Interdisciplinary Energy Research Teams, and 2) Developing WVU's Energy Policy Program. Twenty-eight (28) proposals were received in response to the release of the two RFPs and four (4) finalists have been selected for funding beginning in July, 2011.
- A proposal capture management process was implemented for four (4) major proposal opportunities.

An AEI web site was developed and released in FY2010 and can be accessed at www.energyresearch.wvu.edu. This site provides news and information about AEI, contains articles about recent achievements of faculty and researchers, lists upcoming events, and identifies each National Advisory Board member.

On January 18, 2011, the U.S. and China agreed to a joint work plan officially launching a five-year research agenda for the U.S.- China Clean Coal Energy Research Center. The U.S. DOE selected a competitive proposal submitted by WVU's U.S.-China Energy Center to lead the coal research segment known under the program as the U.S. Advanced Coal Technology (ACT) Consortium. With the signing, the U.S. DOE awarded \$2.5 million of the \$12.5 million in federal funding to support the five- year effort. Members of the U.S. Advanced Coal Technology (ACT) Consortium will provide matching funds. Chinese government agencies and businesses will also provide \$25 million, bringing the total for the combined program to \$50 million over five years. The U.S.-China ACT Consortium will focus on achieving rapid progress in clean coal and carbon capture technology development, demonstration and enhancement.

In June, 2011, three technologies developed by DOE NETL were recognized by R&D Magazine as among the 100 most technologically significant products to enter the marketplace in the past year. One of these technologies, a Manganese-Cobalt spinel coating specifically tailored for interconnects of solid oxide fuel cells (SOFCs) was co-developed by NETL and WVU. Dr. Xingbo Liu was the Principal Investigator for WVU.

An Advanced Virtual Energy Simulation Training and Research Facility (AVESTAR) has been established at WVU in the National Research Center for Coal and Energy (NRCCE). This facility provides fully immersive simulator based training for Integrated Gasification Combined Cycle (IGCC) power generation with carbon capture. The AVESTAR web site provides information on this facility: www.avestar.org. AVESTAR will be used to enhance engineering programs at WVU and for introducing IGCC layout and operation to managers at companies with IGCC plants.

The NETL-RUA (Regional University Alliance) outlined six new energy research areas for evaluation and potential development by the five participating universities. These are energy storage, rare earth materials, smart grid, shale gas, materials for critical environments, and the energy/water nexus. White papers have been developed by the university teams for each of these six areas and a final decision about which of these six areas should be undertaken for development will be made in early FY2012.

The College of Law has hired James VanNostrand as the Director of the WVU College of Law's Center for Energy and Sustainability, Law and Policy. Mr. VanNostrand has over 30 years of experience in energy law. In addition, the Provost has announced that twelve (12) new energy faculty positions have been approved for FY2012. These positions represent an example of "cluster hiring" in a field and will ultimately have a significant impact on energy research at WVU.

Nanotechnology and material science.

The WVNano Initiative is the statewide effort to accelerate research in nanoscale science, engineering, education and medicine. Over 40 faculty members from five colleges and twelve departments at WVU, along with participants from Marshall University, are helping West Virginia develop an international reputation in nanotechnology. Over the last five years, 17 faculty have been hired in nano-related fields. Of these 17, eight are women.

WVNano is entering the second year of a \$20 million, five-year National Science Foundation grant on nano-enabled technology for sensors with potential applications in environmental detection, personal identification, and medicine. This important initiative builds interdisciplinary projects across science, engineering and medicine to address problems of national need.

A full-time education/outreach coordinator, Dr. Aniketa Shinde, was hired; she coordinates research opportunities for about 45

undergraduates each year, public outreach, a graduate fellowship program that will provide assistantships and mentoring for twelve outstanding graduate students, a summer teacher research program, and efforts to increase retention of undergraduates in introductory physics and chemistry.

Two WVNano-affiliated faculty members received the prestigious NSF CAREER award this year: David Klinke (Chemical Engineering) and Justin Legleiter (Chemistry). They join Mike Shi (Chemistry), Sergei Urazhdin (Physics) and Feruz Ghanikanov (Physics), David Lederman (Physics), Lisa Holland (Chemistry) and Diandra Leslie-Pelecky (Physics) as recipients of these competitive National Science Foundation Awards that require faculty members to develop a coordinated research and education plan.

The WVU Shared Research Facilities (SRF) offers access to state-of-the-art nanotechnology equipment to over 60 students and postdoctoral research associates. The SRF provides faculty members with the ability to use a larger number of techniques that are too expensive for single faculty members to support. Four Ph.D. trained scientists and engineers direct the facilities – including a new Electron Microscopy Facility Manager and a Bio-Nano Research Facility Manager. The SRF staff members are responsible for equipment maintenance and repair. More importantly, they provide critical training in data acquisition and analysis to the students who will be the next generation of nanotechnology scientists and engineers. The SRF helps attract faculty members and graduate students to WVU and supports their publishing and getting grant support for nanotechnology research.

Biological, biotechnological, and biomedical sciences.

The Health Sciences Center interdisciplinary research programs are focused upon health disparities relevant to West Virginia and Appalachia. Biomedical research focuses on discovery and understanding of new treatment strategies that translate into improvements in health and well-being.

For example, in cancer cell biology, the National Center for Research Resources designated WVU as a Center of Biomedical Research Excellence (COBRE) in cancer biology. WVU programs for cancer patients – including clinical trials of the latest drugs, radiological and surgical treatments – are directly tied to laboratory research. WVU is also the home of an NIH-designated COBRE in sensory neurosciences which supports our efforts to address the clinically important area of neurological diseases such as stroke.

In cardiovascular sciences and vascular biology, WVU has a full array of researchers in the basic sciences, in clinical care, and in risk prevention and health promotion working together to address some of West Virginia's most pressing health issues.

A major commitment to research has led to impressive institutional growth. Externally funded research awards have grown over the past decade, and the Health Sciences faculty has been particularly successful in competing for federal funding. The largest such grant will build a new 22,000-square-foot biomedical research facility on the Morgantown campus, starting in 2012. Recent facility improvements include the new four-story, 118,000-square foot Erma Byrd Biomedical Research Center and the WVU Pediatric Research Institute in renovated research space.

Some current research highlights from the past year include:

- Laura Gibson, Ph.D., of the Mary Babb Randolph Cancer Center, is collaborating with Protea Biosciences to help understand why some leukemia cancer cells become resistant to chemotherapy. Dr. Gibson is supported by the Osborn Professorship (an RTF established endowment). She is a nationally prominent scholar with 2 RO1 grants from NIH; she is a key member of the team preparing the \$20 million clinical translational research (COBRE) grant that will be submitted in September 2011.
- Georgia Narsavage, Ph.D., R.N., and Yea-Jyh Chen, Ph.D., R.N., Nursing, have been awarded \$366,000 by the National Cancer Institute to study the benefits of telemonitoring for lung cancer patients.
- Yon Rojanasakul, Ph.D., Pharmacy, selected as a distinguished Robert C. Byrd Professor by WVU, is conducting studies on nanomaterials to determine if they may cause lung inflammation or cancer.
- Bingyun Li, Ph.D., Orthopaedics, won the AO Foundation's Berton Rahn Research Prize in recognition of his successful research on innovative ways to treat open fracture-associated infections.
- Giovanni Piedimonte, M.D., Pediatrics, challenging the widespread assumptions about asthma, studied data from 18,000 cases and found increased risks for children of any weight correlated with a poor diet or little exercise.
- Richard J. Crout, D.M.D., Ph.D., Dentistry, and Daniel McNeil, Ph.D., Psychology, found a genetic link between taste pathway genes and the risk of tooth decay.

Biometrics, security, sensing and related identification technologies.

The research activities in biometrics, security and sensing continue to grow. The core research activity revolves around the Center for Identification Technology Research - CITeR (www.citer.wvu.edu). CITeR is one of the three largest Industry – University Cooperative

Research Centers sponsored by the National Science Foundation (NSF). In March 2011, NSF approved a new grant to CTeR, which enables WVU to keep the NSF center status until 2026. CTeR is located in the Lane Department of Computer Science and Electrical Engineering, but research collaborations include faculty from the WVU School of Pharmacy and the Forensic Sciences program in Arts and Sciences. Professors Bojan Cukic and Arun Ross serve as CTeR co-directors, while the founding director, Professor. Larry Hornak, currently serves as a Program Director at the NSF. CTeR provides WVU with national and International visibility and leadership through the scale and scope of its research.

CTeR's research activities have continued to grow as the result of the professional relationships with its industry and government partners. WVU continues to serve as the academic lead for the FBI Biometric Center of Excellence; WVU also partners with the University of Arizona and many other academic organizations nationwide in the DHS Center of Excellence in Border Security and Immigration. New awards received from the Office of Naval Research (\$1.1million) and the Department of Justice (\$3 million) and Intelligence Advanced Research Project Activity (IARPA) are strengthening the research program in the area of video based surveillance and sensing. CTeR has received additional support from the National Institute of Justice (\$1.1 million in 2010 – 2011) supporting the Transition Readiness Assessment Center that facilitates the transition of discoveries into systems of national interest. The RTF Endowment "Verizon WV for Biometrics" is now providing additional support for student fellowships, emphasizing the integration of educational and research programs in biometrics with a growing emphasis on workforce development.

Compliance with Legislative Rule for Research Trust Fund

Three specific reporting requirements are identified in Series 48 (§ 133-48-14), the Research Trust Fund Program.

- 14.1.** By August 15, 2009, and annually thereafter, each participating institution shall provide an annual report to the Commission that includes a full accounting of the trust funds, endowment proceeds, and adherence to the objectives established by the research plan.
- 14.2.** Each participating institution shall detail in its annual report to the Commission the total amount of qualified donations received, the investment earnings realized and any anticipated expenditures of the research endowment proceeds in its annual operating budget.

The data in Table 1 summarize much of the information requested by the Legislative Rule. Thirty-seven (36) endowments were created during the first two years (ending June 30, 2010) of the Research Trust Fund initiative. Another 26 (noted by asterisks) were added during 2010-2011. Each endowment was qualified by the West Virginia University Board of Governors.

Through June 30, 2011 the following results have been achieved.

- **FY11 Market Value for all the Private RTF Endowments**
The market value of Directed Research Endowments established with private gifts invested in the Research Trust Fund Program of the WVU Foundation Endowment for fiscal year ending June 30, 2011 is \$16,244,058.
- **FY12 Spend Available for the open Private RTF Endowments**
The available proceeds from Directed Research Endowments established with private gifts invested in the Research Trust Fund Program of the WVU Foundation Endowment for fiscal year 2012 are \$373,912.
- **FY11 Market Value for all the State RTF Endowments**
The market value of Directed Research Endowments established with trust distributions (state funds) to the Research Trust Fund Program of the WVU Foundation Endowment for fiscal year ending June 30, 2011 is \$16,917,804.
- **FY12 Spend Available for the Open State RTF Endowments**
The available proceeds from Directed Research Endowments established with trust distributions to the Research Trust Fund Program of the WVU Foundation Endowment for fiscal year 2012 are \$234,161.
- **FY11 Total Number and Amount of Gifts Received that Qualified for State Funds**
During fiscal year 2011, the WVU Foundation received 667 qualified private gifts (donations and pledges) totaling \$11,165,220; matching funds equal to this amount were requested from the Research Trust Fund.
- **FY 11 Total Number and Amount of Gifts Received from the State for Matching Funds**
During fiscal year 2011, the WVU Foundation received seven (7) distributions from the state's Research Trust Fund of \$10,565,377 to match 560 qualified gifts (donations and pledges) to Directed Research Endowments.
- **Total Number and Amount of Gifts Received since Inception that Qualified for a State Match**
During the period from March 08, 2008 to June 30, 2011, the WVU Foundation received 875 qualified private gifts (donations and pledges) totaling \$18,974,799; matching funds equal to this amount were requested from the Research Trust Fund.

- **Total Number and Amount of Gifts Received since Inception from the State for Matching Funds**

During the period from March 08, 2008 to June 30, 2011, the WVU Foundation received 13 distributions from the Research Trust Fund totaling \$16,701,794 to match 756 qualified gifts (donations and pledges) to Directed Research Endowments.

14.4. Each participating institution's research corporation and/or foundation shall provide the Commission with an audited financial statement annually. These statements shall be treated as confidential.

A copy of the audited financial statements for years ending June 30, 2010 and 2009 for the WVU Foundation has been forwarded to the Policy Commission through Chancellor Noland under separate cover. Because of timing of submission of this report relative to the receipt of the audited financial statement, the audited financial statement of the WVU Foundation, Inc. will always be a year in arrears.

Examples of the Impact of the Research Trust Fund Initiative

To date, 62 endowments, with matching RTF support, have led to the creation of five generic types of gifts: 11 chairs and professorships, 9 undergraduate scholarships, 12 graduate fellowships, 29 broad-based research support funds, and 1 library endowment. Three gifts are used to illustrate the impact of the Research Trust Fund initiative.

WVU Ruby Scholars Graduate Fellowship Program

Graduate research at WVU took a major step forward with a \$4.6 million gift from the Hazel Ruby McQuain Charitable Trust to support exceptionally talented graduate students. This gift is the largest ever benefitting graduate students at the university. When matched with funds from the Research Trust Fund, the \$9.2 million endowment will allow WVU to recruit and retain exceptional students from throughout the world. In a recent conversation, the trustees of the McQuain Trust have committed to an additional \$400,000 gift that when matched with RTF funds will make this endowment \$10 million. This gift and the matching RTF funds will create life-changing opportunities heretofore unavailable for WVU's graduate programs. The initial Ruby Scholars should be on campus by the Fall 2012 Semester.

James H. Walker Chair of Pediatric Cardiology

Established in February 2009, this gift and the match from RTF were dedicated to continuing to combat chronic coronary disease related to pediatrics. Since its inception in 1998, the CARDIAC (Coronary Artery Risk Detection in Appalachian Communities) Project has provided over 135,000 school-age children with free screening for risk factors for heart disease, diabetes and other chronic illnesses. CARDIAC has helped to raise awareness of risk factors in every West Virginia community. It has documented the health status of our youth which has led to policy change such as the Healthy Lifestyle Act of 2005. The comprehensive data collected by CARDIAC has resulted in publication of noteworthy scientific articles in leading medical journals, such as Pediatrics and the American Journal of Respiratory and Critical Care Medicine. "Universal versus Targeted Blood Cholesterol Screening Among Youth" received national attention on NBC Nightly News, Good Morning America and other prestigious media outlets. It may well influence national screening guidelines for cholesterol in children and adolescents. "Metabolic Abnormalities in Children with Asthma" is the first epidemiologic study to support mechanisms for the link between childhood obesity and asthma. Support of the CARDIAC Project by the State of West Virginia has paid dividends which will lead to the very real promise of a healthier workforce in the future. It is a generous investment in the future of our youth and their families. The CARDIAC Project was enhanced through the funds available from the Walker Chair endowment which provided salary and related costs associated with the Walker Chair, Dr. William A Neal, MD, the first recipient of the Walker Chair in Pediatric Cardiology and the founder of the CARDIAC Project. Because of the Walker gift and the match from the RTF, WVU was able to recognize, reward, and retain one of its outstanding faculty members (like that of the Eminent Scholars Recruitment and Retention Program) and give even greater prominence to the importance and value of the CARDIAC Project.

This example highlights the impact a chair or professorship can have on an academic program.

George B. Bennett Dean's Research Opportunity Endowment

The Bennett Opportunity Endowment provides funds annually that can be used at the discretion of the Dean of the College of Energy and Mineral Resources to support the advancement of research in any and all ways within the four focus areas of WVU's Strategic Research Plan. This flexibility allows the Dean to invest the income where the need is greatest, whether it be travel support, new equipment, supplies, or even personnel support. In this first year the endowment was used to enhance the start-up support for two new faculty members in energy and bio-nano materials, providing new equipment for their laboratory and covering the usage fees for the "WVU Shared Research Facilities." For the coming year, a dicing saw for preparing chip samples in the clean room is under evaluation. The support this endowment provides this college will be immeasurable as new equipment will be needed for the new Advanced Engineering Research Building to break ground in 2012 and open in early 2014. This equipment will be beneficial to faculty success in competing for major external research grants.

Additional Reporting from West Virginia University

Marketing Plans

West Virginia University continues to highlight through public news releases, stories on its home page and that of the WVU Foundation, stories in college and university brochures, and ceremonial activities the receipt of each gift and its potential impact. These actions readily demonstrate to others the impact that their gift can have on changing the lives of students and faculty who receive an honor or recognition or the impact to WVU's future as a 21st century leader in research that changes the lives of our citizens. WVU's Deans are acutely aware of the importance that an RTF gift can have on their academic programs and continue to personally "market" each of the four strategic areas within the Research Trust Fund to potential donors.

Grants and Contracts

Faculty at WVU were successful in obtaining \$101 million in external grants and contracts in 2010-11 in the four research areas identified within WVU's Strategic Research Plan (Table 2). Total funding will vary from year to year as a reflection of the nature of specific awards. For example, in FY10, a \$14.5 million dollar grant for a new biomedical research facility was counted. Removing that grant from the FY10 total would then show a 5% increase in research activity in the biomedical sciences from FY10 to FY11. Of note, WVU's commitment to and investment in energy research through the Advanced Energy Initiative is reflected in the 46% increase in awards between FY09 and FY11. As previously stated, WVU is developing an implementation strategy as part of its 2020 Strategic Plan that will focus on increasing external grants and contracts as an expectation for upgrading its Carnegie Classification status.

TABLE 2. Summary of the Funding Received by WVU through External Grants and Contracts in each Research Area for the Past Three Years.

	Total Number of Awards*			Total Amount Awarded (million)		
	FY09	FY10	FY11	FY09	FY10	FY11
Energy and the environment	145	114	135	\$21.2	\$28.3	\$30.9
Nanotechnology and material Sciences	13	25	46	\$ 3.9	\$ 2.8	\$ 7.4
Biomedical sciences	556	452	526	\$49.0	\$69.5	\$57.4
Biometrics, security and Identification technologies	26	30	44	\$ 3.4	\$ 7.8	\$ 5.3
TOTAL				\$77.5	\$108.4	\$101.0

* Includes renewals and new awards

Partnership with the WVU Foundation

The WVU Foundation continues to be a significant partner in the University's efforts to meet the goal established by the Trust Fund. The receipt of the Ruby Scholars Graduate Fellowship Program was the direct result of the work of a Vice President at the Foundation. Besides the assistance provided in the cultivation and solicitation of gifts, the Foundation plays a critical role in the management of the private and state endowment funds.

To date, all state matching endowments have been for the same purpose as the gift outlined in the private endowment.

Business Plan

In addition to the legislatively mandated reporting requirements, the Higher Education Policy Commission required a business plan for each research area. Table 1 reflects the anticipated use of the money available to spend in fiscal year 2012.

In fiscal year 2011, \$341,661 was available to spend on research – for scholarships, fellowships, prominent scholars, and in support of ongoing research initiatives. Of that amount, 38% was expended. Thus the remainder (\$211,862) is available in fiscal year 2012. In many instances, the amount of available funds was insufficient to meet the objectives of the endowment and thus the money was allowed to accrue.

For FY2012, \$821,356 will be available. This number includes the proceeds from each private endowment and its equivalent state matching endowment plus any unspent money from the preceding year. Of this amount, \$355,828 (43%) will come from the matching state endowments established from the Research Trust Fund. It is important to note that the proceeds from an individual endowment, whether established by private or state funds, depend on the amount in the endowment and the length of time since the endowment was

created. Endowments without any spend for FY2012 have not earned interest because, most often, they were established late in the fiscal year. The funds for each endowment are being distributed according to the intent of the respective endowment.

Concluding Remark

The Research Trust Fund has made an impact on the research initiatives at West Virginia University. In three years, 62 endowments have been established, 25 in the previous year alone. These 62 endowments have allowed WVU to draw on 54% of the available matching state funds in the Research Trust Fund. WVU is confident it will reach the available \$35 million given the amendment to extend the length of Senate Bill 287 by two additional years or through March, 2015.

The Research Trust Fund Program grew out of the strategic planning that began in 2005 with the development and release of Vision 2015, the West Virginia Strategic Plan for Science and Technology. Vision 2015 called for a significant investment in human and physical infrastructure in STEM related disciplines at the two research universities in the state. The Eminent Scholars Recruitment and Enhancement Program began the process of infusing state funds into building this infrastructure. WVU's Cancer Center and Stroke Center continue to become stronger because of the ESRE Program. WVU has made a commitment to adding new faculty in STEM disciplines and to its physical infrastructure through a new Advanced Engineering Research Building, and a new Agricultural Sciences Building. The Research Trust Fund Program continues that visionary support and in FY2012, \$821,356 will be available to support the institution's research agenda. WVU looks forward to the significant and sustained impact that the ERSE and RTF programs will have on addressing some of the nation's most important issues in energy, health care and security.

West Virginia University **Research Trust Fund**

TABLE 1. Endowments established in the West Virginia University Foundation under the Research Trust Fund program and their anticipated use in Fiscal Year 2012. Amounts available include proceeds from endowments plus unspent funds from FY2011.

Fund Name	Brief Description	FY 2011 Spend			Anticipated Use
		Private	State	Total	
Schoepp Neurosciences Research Student Support	Graduate Fellowships and Support for Research	\$1,995	\$1,880	\$3,875	Support for student research activities
Verizon WV for Biometrics	Broad-based Biometrics Research	\$17,522	\$18,995	\$36,517	Operational support for ongoing research
Raymond Brooks Vanscoy Cancer Research Endowment	Broad-based Cancer Research		\$957	\$957	Operational support for ongoing research
Allen S. Pack Endowment for Mining Engineering	Energy Research in Mining Engineering		\$536	\$536	Operational support for ongoing research
L. Zane Shuck Laboratory Endowment in Nanobiotechnology	Facilities Support in Nano-biotechnology	\$7,547	\$4,076	\$11,623	Supplies and equipment for a shared facility
Alpha Natural Resources Endowment for Energy Research	Energy and Environmental Research	\$9,546	\$3,605	\$13,151	Supplies and equipment for two new faculty
Alan Susman Cortico-basal Ganglionic Degeneration Research	Degenerative Neurological Research	\$9,667	\$4,095	\$13,762	Projects that lead to extramural funding
Blaine S. West Endowment for Civil and Environmental Engineering	Broad-based Research Support	\$9,070	\$3,931	\$13,001	Part of start-up packages for two new faculty
William J. Maier, Jr. Chair of Research	Create a Chair in Biomedical Research (Charleston Division)		\$10,041	\$10,041	Hold until Chair is appointed
Branson-Maddrell Endowed Professorship in Orthodontics	Create a Professorship in Dentistry		\$2,074	\$2,074	Hold until Professorship is created
George B. Bennett Dean's Research Opportunity Endowment	Broad-based Research Support	\$60,667	\$36,264	\$96,932	Develop new research opportunities
E. Elizabeth Morgan Cancer Research	Broad-based Research Support	\$1,589	\$960	\$2,549	Operational support for ongoing research
Badzek Family Endowment for Nursing Research	Nursing Research to Support Quality of Life		\$246	\$246	Nursing research supporting the Institute
Ruth and Robert Kuhn Nursing Faculty Research	Broad-based Research Support	\$1,460	\$683	\$2,143	Seed grant for new research effort
Hall - de Graaf Endowment for Women in Science & Engineering	Research Support for Women, Faculty and Students, in STEM Disciplines	\$1,448	\$667	\$2,124	Operational support for ongoing research
Fithian Family Foundation #2/ Behavioral Medicine-Psychiatry	Research Support in Behavioral Medicine	\$1,900	\$390	\$2,290	Operational support for ongoing research
WVU Evidence Based Practice Research Professorship/Nursing	Create a Professorship		\$2,559	\$2,559	Hold until Professorship is created
Quad/Graphics Chair in Internal Medicine, Eastern Division	Create a Research Chair	\$57,923	\$21,619	\$79,542	Hold until Chair is appointed
James H. Walker Chair of Pediatric Cardiology	Create a Research Chair	\$19,780	\$6,094	\$25,815	Support for the Walker Chair, Dr. William Neal
James A. Kent Endowment for Biomedical Engineering	Broad-based Research Support	\$12,467	\$7,782	\$20,249	Supplies and equipment for recently hired faculty
Osborn Professorship in Hematological Malignancies Research	Create a Research Professorship	\$41,303	\$47,868	\$89,171	Support for the Osborn Professorship, Dr. Laura Gibson

Fund Name	Brief Description	FY 2011 Spend			Anticipated Use
		Private	State	Total	
BrickStreet Neurology Fellowship	Create a Graduate Student Fellowship	\$2,947	\$4,147	\$7,094	Create a student fellowship
Robert E. Murray Chairmanship Mining Engineering Department	Create a Named Department Chairmanship	\$66,944	\$33,059	\$100,003	Support for the Chair of Mining Engineering
Rita Radcliff-Deppe & Brian Deppe Fellowship Award	Create a Graduate Student Fellowship		\$319	\$319	Create a graduate student fellowship
Energy Materials Science & Engineering Facilities Support	Broad-based Research Support		\$760	\$760	Operational support for ongoing research
Oleg D. and Valentina P. Jefimenko Library Resources	Library Resources Endowment	\$11,780	\$2,874	\$14,654	Acquire library resources to support research
Oleg D. and Valentina P. Jefimenko Physics Fellowship	Create a Graduate Student Fellowship		\$7	\$7	Create a graduate student fellowship
Professor Oleg D. Jefimenko Professorship in Physics	Create a Research Professorship				
Bowlby Wood Science Graduate Research Fellowship	Create a Graduate Student Fellowship	\$6,214	\$3,965	\$10,179	Create a student fellowship
Robert E. Pyle Chemical Engineering Graduate Fellowship	Create a Graduate Student Fellowship	\$3,009	\$1,353	\$4,362	Support for a graduate student
James & Ruby Romano Civil & Environmental Engineering Endow.	Energy and Environmental Research Support	\$19,921	\$11,291	\$31,212	Operational support for ongoing research
Wells Fargo Energy Group Scholarship	Create a Student Scholarship	\$3,397	\$2,094	\$5,491	1 undergraduate student scholarship
Carl Del Signore Foundation Graduate Fellowship	Create a Graduate Student Fellowship	\$1,757	\$1,511	\$3,268	Support for a graduate student
George M. & Mary Freda Vance Medical Scholarship-Fellowship	Create a Student Scholarship/ Graduate Student Fellowship	\$45,839	\$25,698	\$71,537	Create 1 prestigious post doctoral fellowship
William S. Clapper Mechanical & Aerospace Engineering Scholarship	Create Undergraduate Student Scholarships	\$3,103	\$2,141	\$5,244	5 undergraduate student scholarships
Everette C. Dubbe Research Scholarship	Create a Undergraduate Student Scholarship	\$3,460	\$1,285	\$4,745	3 undergraduate student scholarships
Frederick P. Jr. & Joan C. Stamp Cancer Research*	Broad-based Research Support	\$21,073	\$1,616	\$22,689	Operational support for ongoing research
Norma Mae Huggins Cancer Research Endowment*	Basic and Clinical Colon Cancer Research	\$13,804	\$1,356	\$15,161	Operational support for colon cancer research
Grace C. Clements Speech Pathology and Audiology Research*	Broad-based Research Support	\$1,525	\$197	\$1,722	Operational support for ongoing research
Virginia Oil and Gas Research Endowment for PNGE*	Research Activities in Appalachian Shales	\$1,430	\$296	\$1,725	Operational support for ongoing research
Michael Baker Corporation Endowment/ CEE*	Broad-based Research Support		\$377	\$377	Operational support for ongoing research
Darrell & Diane Williams Research for PNGE*	Research Activites in Appalachian Shales	\$1,418	\$295	\$1,713	Operational support for ongoing research

Fund Name	Brief Description	FY 2011 Spend			Anticipated Use
		Private	State	Total	
Preservati Cancer Research*	Broad-based Research Support				
Martha Gaines & Russell Wehrle Pediatric Research Endowment*	Broad-based Research Support		\$131	\$131	Operational support for ongoing research
E. Jane Martin Research Doctoral Fund*	Research Support for Doctoral Students in Nursing		\$207	\$207	Support research of doctoral students
John T.& June R. Chambers Chair of Oncology Research*	Create a Cancer Research Chair				
Christopher Cline Chair in Orthopedic Surgery*	Create a Chair in Orthopedic Surgery		\$15,091	\$15,091	Hold until chair is created
Gary and Lisa Christopher Graduate Fellowship*	Create a Graduate Fellowship in CEMR				
WV United Health System Evidence-Based Nursing Practice Research*	Research Awards for Faculty and Students in Nursing				
Mike Ross Family Pediatric Diabetes Research Endowment*	Broad-based Research Support				
Van Wyk Cancer Research Endowment*	Broad-based Research Support				
James P. Boland, M.D. Department of Surgery Endowed Research*	Broad-based Research Support	\$1,327	\$556	\$1,884	Operational support for ongoing research
WVU Ruby Scholars Graduate Research Fellowships*	Create Merit-based Graduate Fellowships for Exceptionally Talented Students		\$69,418	\$69,418	Create fellowships for highly meritorious students
Robert & Stephanie Ruffolo Pharmacy Graduate Fellowship*	Create a Graduate Fellowship				
James and Betty Hall Fellowship*	Create a Graduate Fellowship in CEMR				
Stuart M. & Joyce N. Robbins Distinguished Prof/Epidemiology*	Create a Distinguished Professorship				
Benjamin James Galford Research Scholarship*	Create an Undergraduate Research Scholarship in Physics	\$2,695	\$518	\$3,213	Support research activities of undergraduates
James Bergen and Randy Monteith Anderson Scholarship in MAE*	Create Undergraduate/Graduate Scholarships in Energy Research				
Morton Scholarship*	Create Scholarships for Students in CEMR				
David Vandorn Sutton Scholarship*	Create Undergraduate or Graduate Scholarships				
William "Bill" Closser Memorial Electrical Engineering Scholarship*	Create Scholarships for Energy-related Research				
Morrissey-Ropp Scholarship*	Create Scholarships in Arts and Sciences				
TOTAL		\$465,527	\$355,836	\$821,363	

NOTES

Funds with an asterik (*) were added in FY 2011.

The absence of a dollar amount in the private or state column indicates that no money is available to spend in FY 2012.

REPORT ON THE
WEST VIRGINIA
RESEARCH TRUST FUND

Marshall University
Research Endowment Plan Annual Report

2010-2011

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I. Research Endowment Plan: Summary of Goals and Addendum

A. Summary

The Eminent Scholars Recruitment and Enhancement initiative and the Research Trust Fund program continue to have a dramatic impact on the funding and sustainability of research at Marshall University. Marshall's original Research Endowment Plan, approved by the University's Board of Governors in 2008, directed donations to:

- Endowment of the Marshall Institute for Interdisciplinary Research (MIIR), continuing with the plan laid out in Marshall's application to the Eminent Scholars Recruitment and Enhancement (ESRE) initiative; and
- Advancement of Intelligent Transportation Systems research at the Rahall Transportation Institute (RTI).

In November 2010, the Marshall University Board of Governors approved a Research Trust Fund Addendum (Appendix One) that broadened the recognition of Biomedicine/Biotechnology as a focus for donor activity across the University, and further included aspects of Engineering and the Physical Sciences.

B. Endowment Plan Addendum

Based on the successful initiation of the original endowment foci described above and informational discussions with the broader donor community, an expansion of the Marshall University Research Endowment Plan has been approved by the Marshall University Board of Governors to include qualifying endowments in other key departments in biomedical research, environmental research, and basic sciences and engineering.

The rationale for this expansion of the plan is based on the success of the Research Trust Fund program in the initial two areas and its ability to further accelerate other strategic research initiatives at Marshall. For example:

Engineering: With the accreditation of Marshall's engineering program, the potential for development of significant research activity has been enhanced by the construction of The Arthur Weisberg Family Engineering Laboratories facility and this trend will continue with the planned construction of the Biotechnology Incubator and Applied Engineering Complex. The availability of the Research Trust Fund will enhance the Engineering College's ability to attract and sustain research activity in key disciplines crucial to practical development of technology and innovation, and this, in turn will leverage the multidisciplinary research environment called for in Marshall University's Strategic Initiatives¹.

Clinical and Translational Research: There has been substantial growth in biomedical research in the School of Medicine and at the Marshall Institute for Interdisciplinary Research, and new facilities developed to promote translation of basic science discoveries to improvements in patient care, with the construction of the Translational Genomics facility at the School of Medicine. Based on these investments from ESRE, RTF and other sources, Marshall was a successful co-applicant on the University of Kentucky's Clinical and Translational Science Award from the National Institutes of Health program aimed at speeding the time for laboratory discoveries to benefit patients. This award makes Marshall a member of the Appalachian Translational Research Network, which involves not only UK but Ohio State, West Virginia University and Cincinnati Children's Hospital, and makes resources available for further development of Marshall's clinical research effort. Marshall researchers are already accessing pilot funding, mentorship and collaborative opportunities from this partnership, and development of Research Trust Fund endowments to support clinical and translational research will allow Marshall to leverage this support.

II. Research Endowment Plan Fundraising Progress

A. Fundraising in Prior Years (FY 2009 and 2010)

During FY2009 and 2010, \$692,100.00 in qualifying cash donations were received and matched for MIIR, and \$50,000 in qualifying cash donations were received and matched for RTI.

B. Summary of Fundraising in FY 2011

As discussed above, in November of FY 2011, the Research Trust Fund Plan was amended to allow donations to additional areas of research, and several of these areas were recipients of significant gifts. The major new endowments and the amounts contributed to each are listed below in Table One:

¹ <http://www.marshall.edu/President/strategic/initiatives.asp>

² <http://www.marshall.edu/murc/marshall-to-partner-with-uk-as-part-of-national-research-funding-project/>

Table One - Balances and Loci of New Research Trust Fund Endowments Created During FY 2011

Research Endowment	Donations as of 6/30/11	Locus
Fletcher Mechanical Engineering Endowment	\$125,000	CITE
Pew Endowment for River Research	\$115,000	COS
Maier Endowment for Dementia Research	\$1,000,000	SOM
BrickStreet Endowment for Safety Engineering Research	\$100,000	CITE
Endowment for Summer Undergraduate Research in Chemistry	\$60,000	COS
Zacharias Research Endowment in Obstetrics and Gynecology	\$400,000	SOM
Cline Endowment for Translational Sports Medicine Research	\$5,000,000	Interdisciplinary

These gifts reflect a total of just over \$6.8MM during the fiscal year. The distribution of the gifts reflected the breadth of the amended Research Trust Fund Plan and the multidisciplinary emphasis of the original plan. The College of Information Technology and Engineering received \$225,000, the College of Science received \$175,000 and the School of Medicine received \$1,400,000. The \$5,000,000 gift for Translational Sports Medicine Research will certainly support multidisciplinary work across multiple units, but the exact apportionment has not been determined at this time.

Additionally, giving continued to progress significantly for MIIR and RTI, bringing their endowments up to \$1.12 MM and \$100,000, respectively (Table Two). All told, FY 2011 saw Marshall's Research Trust Fund fundraising reach a total of over \$8 MM, with significant gifts slated to bring that total to over \$9 MM in the first quarter of FY 2012.

Table Two - Fund Balances for Existing Research Trust Fund Endowments

Research Endowment	Fund Balance FY 2011	Locus
MIIR	\$1,200,000	Research Corporation
RTI	\$100,000	Research Corporation

Overall the dramatic acceleration of activity indicates the donor education so crucial to making a program like this a success is having the desired effect.

C. Description of Newly Endowed Research Areas

The endowment plans for MIIR and RTI have been described in the original Research Trust Fund Plan and prior annual reports and MIIR activities are described more fully below in Section IV-B. The plans for the new endowments listed in Table One are summarized below. This dramatically illustrates the manner in which the availability of the Research Trust Fund has enabled donor activity to directly address strategic research initiatives supporting work of direct relevance to issues impacting Appalachia.

Fletcher Mechanical Engineering

Following the accreditation of the university's undergraduate engineering degree program in the summer of 2010, the Board of Governors endorsed development of new areas of emphasis in the engineering curriculum. Mechanical Engineering is a high priority, and the Fletcher family's generous gift will support the position of a founding chair of the department of Mechanical Engineering.

Pew Endowment for River Research

The proceeds of the requested endowment will be used to support start-up and research operating expenses of the ESRE Aquatic Ecologist, described in Section IV-A in this report. It is anticipated that the endowment proceeds will be used to support the purchase and maintenance of research equipment, the purchase of research supplies, and/or the support of undergraduate and graduate research fellows who are working with the ESRE Aquatic Ecologist.



Maier Endowment for Dementia Research

The endowment will support the work of promising biomedical/clinical scientists in the Marshall University School of Medicine, engaged in translational dementia research. This research support will foster interdisciplinary research dedicated to investigating the cause(s) of dementia, improving the clinical management, treatment and therapeutic outcomes for present and future generations of people who are at-risk or already suffering with dementia with the goal of eventually preventing this debilitating brain condition.

BrickStreet Endowment for Safety Engineering Research

The College of Information Technology and Engineering's Safety Engineering Research Program is undertaking an initiative to expand its activity in risk management research. Risk management is a highly interdisciplinary field that involves applying the principles of safety engineering and industrial hygiene and integrating them with economic and financial analysis.

This discipline is extremely important to the transportation and logistics and energy sectors. The BrickStreet endowment will support the development of research expertise in the college of engineering in the area of risk management, by promoting these highly interdisciplinary studies at the interface of management, engineering and applied mathematics.

Endowment for Summer Undergraduate Research in Chemistry

The endowment has been created by individual donations and departmental royalties set aside for this purpose. The proceeds will be used to support endowed rotating professorships and undergraduate summer research fellowships in Chemistry.

These summer positions are a central component in the Department's long-term strategy to increase research output and obtain sustainable external funding. Each student selected will do an original, collaborative research project with a supervising faculty member.

Fred and Isabella Zacharias Endowment for Obstetrics and Gynecology Research

Physicians of the Department of Obstetrics and Gynecology at the Joan C. Edwards School of Medicine are active in the investigation into improving the pregnancy outcomes of women with obesity, hypertension and diabetes. Through the Maternal Hypertension Center, there is an ongoing database of pregnancies evaluated and managed through that center for over five years.

The Department will add its second Maternal and Fetal Medicine Specialist and funds from the Fred and Isabella Zacharias Endowment will be used to support this individual in biomedical research. Research interests include:

- Identification of characteristics of hypertensive, diabetic and obese women that increase their likelihood of having poor pregnancy outcomes and investigating the outcomes of the infants born to these mothers.
- Determining what pre-pregnancy and pregnancy related interventions may improve maternal health during pregnancy.
- Determining what interventions before and during pregnancy may impact the short and long term health of these women.



Cline Endowment for Translational Sports Medicine Research

This endowment will support the Translational Sports Medicine Research Center at Marshall University, where comprehensive interdisciplinary research that translates to advances in human injury prevention, injury recovery and accelerated therapeutic outcomes will be conducted. The endowment proceeds will be used to initiate and develop a nationally-competitive research program that enhances human performance and quality of life through discoveries which protect human health and enhance injury repair, while advancing human performance capacity.

The development of a robust, interdisciplinary research program is envisioned in areas such as:

- **Musculoskeletal and Ligament Health and Injury** - research studies that evaluate predictors of joint and muscle injury, innovative techniques for injury intervention and prevention and the efficacy of conventional and novel treatment practices.
- **Biomechanics** - research studies that identify and ameliorate biomechanical risk and factors that predispose individuals to musculoskeletal injury.
- **Muscle Injury and Genomics** - research studies that identify mechanisms of skeletal muscle injury, preventative therapies and underlying genomic factors that predispose humans to injury or limit human performance capabilities.
- **Comparative Orthobiologics** - research studies that examine and discover biologics [e.g., gene therapy, cellular therapy, protein therapy] and other techniques for advancing and accelerating the healing of musculoskeletal injuries while improving the durability of healed sites.

IV. ESRE Update

A- Recruitment of Eminent Scholars

After the recruitment of the first three eminent scholars during FY 2009 and FY 2010 in MIIR and the School of Medicine, one major recruitment remained—the Eminent Scholar in the College of Science. This Eminent Scholar was recruited to spearhead the development of a strong research cluster in freshwater resources, particularly in the scientific focus areas of Energy and the Environment.



Following an extensive recruitment process, Dr. Mindy Yeager, a nationally respected aquatic ecologist from the commercial sector, has been selected. Dr. Yeager will lead an interdisciplinary team of faculty members focused on research and economic development activities associated with West Virginia's extensive water and energy resources. Dr. Yeager will arrive at Marshall in the first quarter of FY 2012.

B-Progress at MIIR

a-Hiring

Nanobiologist Dr. Jingwei Xie joined MIIR's senior scientific staff in January, 2011 as the Eminent Scholar Senior Scientist. He is working in active collaboration with the newly created Center for Diagnostic Nanosystems, which has received seed funding from the U.S. Department of Energy. The Center seeks to apply advances in nanosensor technology to improve the accessibility and capability of rural health care. Dr. Xie joined MIIR from Washington University in St. Louis.

During his first year at the Institute, Dr. Xie has developed an active program exploring the biomedical applications of nanofiber scaffolds. This basic research is having translational implications in development of techniques for tissue repair to alleviate a wide variety of conditions, including myocardial infarction.



³ For further information, please see: <http://www.marshall.edu/murc/marshall-research-institute-adds-expert-in-bone-growth-and-development/>

b-Progress on Collaborative Grants

- MIIR's partnership with Marshall's cohort in the recently awarded NSF Research Infrastructure Improvement grant has helped acquire and staff a next-generation sequencer to aid in the development of genomics research in the organismal biology sectors.
- MIIR has also been an important part of Marshall's recently announced Clinical and Translational Science Award (CTSA) award from the NIH with the University of Kentucky. According to NIH, CTSA's are intended to transform how clinical and translational research is conducted, ultimately enabling researchers to provide new treatments more efficiently and quickly to patients. The consortium will ultimately link 60 institutions together to energize the discipline of clinical and translational science. The presence of MIIR has allowed Marshall access to this strong network.

c-Personnel and Leadership Change at MIIR

Senior Scientist Joan Wilson announced in May that she was returning to industry. Her role has been assumed by Dr. Jingwei Xie, whose research and interests are described above.

As this report was being drafted, after another successful year of research development, collaborations and grant applications, and successful hiring of a new scientist in the area of nanotechnology, the Director of MIIR, Dr. Eric B. Kmiec announced he was moving to Delaware State University to assume the Chairmanship of the Department of Chemistry. Dr. John M. Maher was named Interim Director.

The University is conducting a nationwide search to identify a permanent director and it will be among that individual's first tasks to continue the recruiting of MIIR scientists.

Appendix One - Marshall University's Research Trust Fund Addendum

The University's directed research endowment plan has concentrated initially in two domains of interdisciplinary research, which are strengths at Marshall: research clusters in biomedicine/biotechnology/ bionanotechnology and transportation technology/logistics. Marshall's Research Trust Fund activities are to be expanded to include the following areas:

I. Engineering

Engineering is a foundational discipline essential to the development and implementation of research in the approved areas in the Research Trust Fund legislation . Marshall has recently achieved ABET accreditation of its engineering program, and has experienced dramatic facilities growth with the construction and occupation of The Arthur Weisberg Family Engineering Laboratories facility and is planning for the future addition of an Advanced Engineering and Technology Center Complex. Development of robust undergraduate and graduate programs and the associated integral research opportunities are essential to developing and enhancing the capabilities and profile of the school.

Match from the Research Trust Fund will be requested to enhance private donations for endowed professorships and other research-related positions and initiatives in all aspects of Engineering as they relate to the allowed subject areas of the Research Trust Fund Program and the associated uses allowed in the legislation.

Two examples of gifts that have been received in support of engineering endowments are included, and a third solicitation is discussed:

A. Applied Research- Safety Engineering Program

Risk management is a highly specialized field that involves applying the principles of safety engineering and industrial hygiene and integrating them with economic and financial analysis. Marshall University will expand its Research Trust Fund Plan in this area important to transportation and logistics and energy to support an endowment in risk management research. The proposed endowment will support the development of research expertise in the school of engineering in the area of risk management, a highly interdisciplinary pursuit at the interface of management, engineering and applied mathematics.

The proposed applied research employs advanced risk management concepts and research to identify, trend, estimate and reduce workplace hazards in industry based in WV. The area will be supported by a \$100,000 endowment received from BrickStreet and the corresponding state match.

Risk management is of particular interest to the energy industry in our state because of the safety and economic risks associated with the extraction process. In energy, risk management research is essential to find new ways to:

- deal with its high element of monetary risk due to the uncertainty of the economic and regulatory outlook
- reduce the physical risk associated with extraction and development activities, and improve the safety of individual employee

In transportation and logistics research, risk management has become central to understanding many critical elements such as:

- the robustness and resilience of our transportation systems to interruptions due to system load, natural phenomena, and man-made disruptions
- the risks associated with transport of hazardous materials and the potential benefits of mitigation of those risks
- the robustness of logistics networks
- the risks associated with logistics and supply chain outsourcing

These benefits are of particular relevance to the state given current events, and are particular interests of the donor.

B. Mechanical Engineering

Mechanical engineering applies the principles of physics and materials science for analysis, design, manufacturing, and maintenance of mechanical systems. Mechanical engineers use the core principles of mechanics, kinematics, thermodynamics, materials science, and structural analysis along with tools like computer-aided engineering and product lifecycle management to design and analyze items as diverse as manufacturing plants, industrial equipment and machinery, heating and cooling systems, motorized vehicles, air craft, watercraft, robotics, medical devices and more.

The field has continually evolved to incorporate advancements in technology, and mechanical engineers today are pursuing

⁴ 4.3.1. Energy and environmental sciences;
4.3.2. Nanotechnology and materials sciences;
4.3.3. Biological, biotechnical and biomedical sciences;
4.3.4. Transportation technology and logistics;
4.3.5. Biometrics, security, sensing, and related identification technologies; and
4.3.6. Gerontology.

developments in such fields as composites, mechatronics, and nanotechnology. Mechanical engineering overlaps with aerospace engineering, civil engineering, electrical engineering, and petroleum engineering to varying amounts.

A gift from the Fletcher family will endow a founding Chair of Mechanical Engineering. Mechanical Engineering is an important discipline in Bioengineering and energy sectors. This endowment is essential to developing a Department of Mechanical Engineering, by attracting a senior-level professor to Marshall, with his/her associated research programs.

Another area that is endorsed by the Board of Governors for planning and an active source of solicitation is:

C. **Bioengineering**

In the translation of biomedical and biotechnology advances, bioengineering is a lynchpin in bridging the transition from academe to commercialization. Marshall University is planning to develop a Bioengineering Department contemporaneously with the construction of the Applied Technology and Engineering Complex. The development of the Department would follow a trajectory very similar to that of Mechanical Engineering, with the attraction of a founding research scientist/bioengineer.

“Biological engineering, biotechnological engineering or bioengineering (including biological systems engineering) is the application of engineering principles to address challenges in the life sciences, which include the fields of biology, ecology, and medicine. Biological engineering is a science based discipline founded upon the biological sciences in the same way that chemical engineering, electrical engineering, and mechanical engineering are based upon chemistry, electricity and magnetism, and statics, respectively”⁵.

“Biological Engineering can be differentiated from its roots of pure biology or classical engineering in the following way. Biological studies often follow a reductionist approach in viewing a system on its smallest possible scale, which naturally leads toward the development of tools such as functional genomics. Engineering approaches using classical design perspectives are constructionist, involving the building and research of new devices, approaches, and technologies from component concepts. Biological engineering utilizes both of these methods in concert relying on reductionist approaches to define the fundamental units, which are then commingled to generate something new”.⁶ “Although engineered biological systems have been used to manipulate information, construct materials, process chemicals, produce energy, provide food, and help maintain or enhance human health and our environment, our ability to quickly and reliably engineer biological systems that behave as expected remains less well developed than our mastery over mechanical and electrical systems”.⁷

Given Marshall’s research strengths in the biological and biomedical sciences and the emphasis of new initiatives, like the Marshall Institute for Interdisciplinary Research (MIIR), on translating key research findings into commercialization, the discipline of bioengineering sits at a nexus of opportunity for the University. It will be a critical element in fully developing the potential of Marshall’s applied research enterprise and its translation to economic development.

II. **Mathematics and the Physical Sciences**

Mathematics and the Physical Sciences are basic sciences that have relevance to all aspects of the allowed areas of the research trust fund legislation. Research Trust Fund match will be sought to enhance private donations supporting endowed professorships and other research-related positions and initiatives focusing on research in the allowed areas in these disciplines.

The first application will be for an endowed rotating professorship to promote an undergraduate summer research experience in Chemistry.

This match for the undergraduate research endowment is being requested under the Research Trust Fund because undergraduate summer research in Chemistry is relevant to so many of the legislatively enabled areas;

- Chemistry is one of the fundamental underpinnings of nanoscience because of the molecular nature of the discipline
- The Department of Chemistry at Marshall University has core groups in biochemistry/biotechnology and materials science.
- Faculty members also work on energy research and molecular energetics.

These summer positions are a central component in the Department’s long-term strategy to increase research output and obtain sustainable external funding. Each student selected does an original, collaborative research project with a faculty member. The relevance to the Research Trust Fund is clear from the work the two most recent awardees, Austi Sergent Roush (2009) and Tiffany Bell (2010), who worked with Drs. McCunn and Frost respectively. Austi assisted Dr. McCunn in her first summer at Marshall establishing her lab and generating the preliminary results essential to her obtaining her recent award from the Research Corporation. Tiffany Bell identified transiently palmitoylated proteins while working on Professor Frost’s research project “Identifying Post-translational Protein Modifications via Mass Spectrometry”.

⁵ Cuello J.C., “Engineering to biology and biology to engineering, The bi-directional connection between engineering and biology in biological engineering design”, *Int. J. Eng. Ed.*, 21,1-7 (2005).

⁶ Riley MR, “Introducing Journal of Biological Engineering”, *Journal of Biological Engineering* 1, 1 (2007).

⁷ Endy D, “Foundations for Engineering Biology”, *Nature*, 438, 449-4 (2005).

REPORT ON THE **RESEARCH TRUST FUND FOR STATE COLLEGES**

Concord University was awarded \$100,000 to implement a Faculty-Student Research Program (CUFSRP); a formalized summer undergraduate research initiative for science and mathematics majors designed to stimulate the research atmosphere on campus. The initiative will solidify undergraduate STEM research as an area of distinction at Concord. The primary goal of the program is to connect student learning with faculty development. Anticipated program outcomes include the creation of vibrant student/faculty research communities, increased graduation rates for science and mathematics majors, an increase in academic performance in upper-division courses, and an increase in postgraduate educational activities in STEM fields.

West Liberty University is using its \$100,000 award to provide research stipends to biology students which will develop strong workforce skills and to purchase advanced equipment for biology labs. Stipends are awarded based on student merit, research interests, and placement availability in a competitive process. The advanced equipment will allow faculty to undertake new research, and also prepare students to enter the professional arena with knowledge and experience of the types of instrumentation available and the capabilities of said instrumentation in terms of research and potential advancement.

Fairmont State University received \$100,000 for the “New Media Assessment Project,” which will enable the university’s Open Source Intelligence Exchange to create a process that allows the university to capture large amounts of content from new media applications such as Twitter, social networking sites and discussion boards, and to consequently generate new knowledge about national security and law enforcement threats. Fairmont’s program is anticipated to enhance the university’s competitiveness with federal agencies, its status as a leader in quality STEM research, its ability to incubate entrepreneurial economic development, and the quality of instruction and advising provided to students.

Shepherd University received \$99,892.50 to develop an “Undergraduate Research and Experiments in Robotics-Based Accomplishments for STEM Students” project. Through this robotics initiative, the university will seek to improve the recruitment and retention of STEM students and better prepare them for careers in robotics engineering and science. Robotics is an emerging multi-disciplinary STEM area that combines mechanical, electrical and computer engineering in the design and construction of robots to perform specific tasks, in addition to emphasizing mathematics and computer science.

West Virginia State University was awarded \$100,000 to purchase a 400 MHz Nuclear Magnetic Resonance Spectrometer (NMR) to help strengthen and expand the science, technology, and mathematics research capacity of WVSU. WVSU’s undergraduate, graduate, and research faculty in the Departments of Chemistry and Biology as well as in the WVSU’s Gus R. Douglas Land-Grant Institute will use the NMR to conduct their cross-disciplinary research pursuant to: 1) teaching and learning goals of the approved institutional STEM curriculum and 2) research objectives contained in the Institutional Research Plan. The NMR will permit previously on-going research to continue and allow for new experimentation by faculty and students.



Senate Bill No. 287