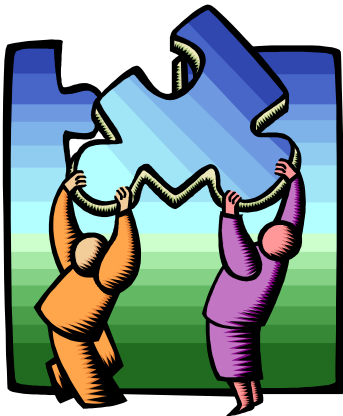




KY EPSCoR's Role in Facilitating Academic Research



Liz Knapp, Assistant Director
KY Statewide EPSCoR Program

Science & Health Research Funding in KY
Center for Research and Development, Bowling Green, KY

April 28, 2014

What is KY EPSCoR?

- **infrastructure** building program at KYs colleges & universities for:
 - STEM research,
 - applied innovation, and
 - education & workforce development
- A **federally** initiated– **state** matched partnership

Experimental Program to Stimulate Competitive Research

A Federal / State Partnership



What are our Goals?

- For faculty:
 - Independent federally funded researchers
- For the state:
 - Establishing Research Centers of Excellence



What Areas Do We Fund?

- Research Priority Areas:
 - **Material Science & Advanced Manufacturing**
 - **Human Health & Personalized Medicine**
 - **Energy & Environmental Technologies**
 - **Biosciences & Agriculture**
 - **Information Technology & New Media**



How Do We Accomplish Our Goals?

- **Nurturing research talent**
 - Providing seed grants and match funding for federal awards
- **Coordinating R&D interests:**
 - Annual conference,
 - sponsoring workshops, events
 - statewide committee meetings, members from academia (6 comprehensive, + 2 research institutions), industry,
 - Subcommittee organizational structure
- **State Support** – annual program funding through CPE
 - House Bill 572, 2000 Kentucky Innovation Act (KIA)
- **Federal level Communication**
 - National Coalition of EPSCoR/IDeA States
 - Washington Council – that has lobbying authority



Annual Budget
~ \$1,460,000

Who Provides the Federal Funding?

7 Federal Agencies



Collective Funding Sources:

7 Federal Agencies

+

State Matching (\$1.5 million/yr)

- **EPSCoR Programs**

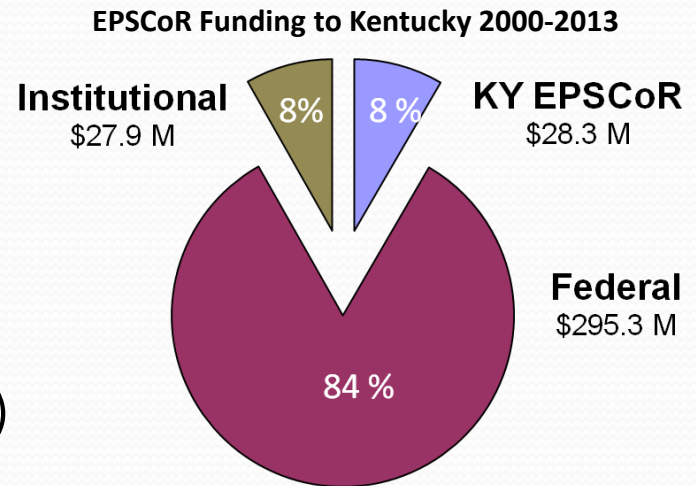
- NSF
- DOE
- NASA
- DOD (program suspended in 2010)
- EPA (program suspended since 2004)

- **IDeA** (Institutional Development Awards)

- NIH

- **AFRI** (Agriculture & Food Research Initiative)

- USDA



No state matching

State Level Program Organization



KY EPSCoR Statewide Committee



**KY EPSCoR Program
Director & Assistant Director**

**KY NSF
EPSCoR**
Subcommittee

UK

www.kynsfepscor.org

**KY DOE
EPSCoR**
Subcommittee

UK

www.kydoeepscor.org

**KY NASA
EPSCoR**
Subcommittee

UK

nasa.engr.uky.edu

**KBRIN
NIH -IDeA**
Subcommittee

UofL

www.kbrin.louisville.edu



Kentucky Statewide EPSCoR Committee

Director of Statewide
EPSCoR Program

KY NSF
EPSCoR
Subcommittee

KY DOE
EPSCoR
Subcommittee

KY NASA
EPSCoR
Subcommittee

NIH -IDeA
Subcommittee



State Level
Program
Organization:

Federal
Programs:



KY EPSCoR Program



- Rick Kurzynske, Director



- Liz Knapp, Assistant Director

www.kyepscor.org

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 KYEPSCoR

KY EPSCoR Infrastructure Seeding Program

Grant Categories					Cash Matching	Eligibility	Award Requirement
Full Name	Abbrev	Purpose	Period	Max Amounts	EPSCoR:Univ.		
1 Research Start-up Fund	<u>RSF</u>	Provide funding to attract high quality applicants for the establishment of new STEM research & teaching faculty positions.	1 - 2 years	\$10,000 - \$35,000 (Total for award term)	1:1	KY's 6 Comprehensive Universities : EKU, KSU, MoSU, MuSU, NKU, WKU	Submit a research proposal(s) for Federal Funding
2 Collaborative Research Initiation Grant	<u>CRIG</u>	To bring groups together to discuss the possible formation of multi-investigator programs, centers, or institutes	up to 1 year	\$10,000	None Required	Faculty members or researchers from any of KY's state colleges or universities	Pursue Federal funding
3 Collaborative Research Development Grant	<u>CRDG</u>	To seek extramural funding for a major research initiative.	up to 1 year (renewable for a 2nd yr)	\$30,000 / year	None Required	Faculty members or researchers from any of KY's state colleges or universities	Must submit a proposal(s) seeking funding for a major research initiative
4 National Laboratory Initiative	<u>NLI</u>	Travel funds to develop strong individual and institutional relationships with national laboratories and research centers	up to 1 year	\$1,500 for a visit \$5,000 for residence up to 12 months	None Required	Faculty members or researchers from any of KY's colleges or universities	Pursue federal funding

Rolling receipt until funds exhausted ~ (\$80 - \$100k /FY available)

Research Start-up Fund awardees

RSF
Awardees
2002-2008



Dr. Suguru Nakamura,
Murray



Dr. Rodney King, WIKU



Dr. Matthew Zacate, NIKU



Dr. Doyle Saar, Murray



Dr. Stefan Paula, NIKU



Dr. Sean Reilly, Morehead



Dr. Vladimir Dobrokhoto,
WIKU



Dr. Wafaa Farwy, Murray



Dr. Rebekah Walker, EIKU



Dr. David Brown, EIKU



Dr. Gregory Goodrich, WIKU



Dr. Joseph Mester, NIKU



Dr. Thomas Pannuti,
Morehead



Dr. Laurel Morton, EIKU



Dr. Alexander Barzilov, WIKU



Dr. Kristi Haik, NIKU



Dr. Bangbo Yan, WIKU



Dr. Andrew Wulff, WIKU



Dr. Jonathan Quiron, WIKU



Dr. Michael Flinn, Murray



Dr. Christine Curran, NIKU



Dr. Patrick Hare, NIKU



Dr. Alexey Arkov, Murray



Dr. Michael Smith, WIKU



Dr. Steve Huskey, WIKU



Dr. Heather Bullen, NIKU

Collaborative Research Initiation Grant Awardees

	Type	First	Last	Org	Title	Start	End	KY EP
1	CRIG	Frank	Shaw	EKU	Protein Biochemistry & Proteomics between The ECU Department of Chemistry and The UK Department of Molecular & Cellular Biochemistry	4/15/02	4/15/04	\$20,000
2	CRIG	James	Watters	UofL	Permeable Reactive Barriers: Applicability to Radionuclides and Other Hazardous Materials	10/1/02	9/30/04	\$20,000
3	CRIG	Terry	McCreary	Murray	To Pursue an NSF Project to Perform Research, Design and Testing of Alternate Rocket Propellants & Motors.	1/1/04	12/31/04	\$10,000
4	CRIG	Maeve	McCarthy	Murray	Biomathematics at Murray	8/1/04	11/30/05	\$10,000
5	CRIG	Gang	Cao	UK	Novel Electronic Oxides: Living on the Edge	11/1/04	10/31/05	\$10,000
6	CRIG	Charles	Ziegler	UofL	Establishment of an Institute for Democracy and Development	5/1/05	4/30/07	\$10,000
7	CRIG	Yousef	Kwaik	UofL	Interdisciplinary Studies in Biodefense and Emerging Infectious Diseases	11/1/06	4/30/08	\$10,000
8	CRIG	Lakshmi	Narasimhan	WKU	Kentucky EPSCoR Intensive Workshop on High Performance Computing for Informatics and Biosciences	3/1/07	6/30/08	\$10,000
9	CRIG	Yuan	Liao	UK	Exploring New Operating and Control Algorithms for the Composite Electric Power System	6/15/08	12/31/09	\$10,000
10	CRIG	Edward	Kintzel	WKU	Phase I CRIG: Establishment of the WKU Nondestructive Analysis Center (WKU NOVA Center)	7/1/10	2/29/12	\$10,000



The Large Chamber Scanning Electron Microscope

EPSCoR Funded Centers & Initiatives

- **CAM** Center for Advanced Materials UK
- **MNTC** Micro/Nano Technology Center UofL
- **CeNSE** Center for Nanoscale Science and Engineering UK
- **KY NanoNET** collaborative network statewide
- **ERTL** Environmental Research and Training Lab UK
- **ERI** Eastern KY, Environmental Research Institute ECU
- **VOEIS** Virtual Observatory & Ecological Information System Murry
- **KY SPACE** collaborative, UK & Morehead
- **VisCenter** Center for Visualization & Virtual Environments UK
- **NOVA** Nondestructive Analysis Center WKU
- **Bioengineering** UofL & UK
- **Metabolomics** UofL
- **Genomics** UK
- **Proteomics** UK

Collaborative Research Development Grant Awardees

	Type	First	Last	Org	Title	Start	End	KY EP
1	CRDG	Mahendra	Sunkara	UofL	Toward University/Industry Collaborative Research Center in Materials Nanotechnology	8/1/03	7/30/05	\$40,000
2	CRDG	I.S.	Jawahir	UK	Engineering Research center (ERC) for Sustainable Products , Processes and Systems	1/4/04	12/31/04	\$20,000
3	CRDG	Kozo	Saito	UK	Engineering Research center (ERC) in Surface Coatings Research and Applications	4/1/04	12/31/08	\$19,987
4	CRDG	Michael	Jay	UK	Lowering Drug Costs through a New Manufacturing Paradigm	11/1/04	12/31/05	\$20,000
5	CRDG	Suzanne	Smith	UK	Establishing an Engineering Research Center (ERC) for Unmanned Aerial Vehicles at the University of Kentucky	11/1/04	10/31/06	\$20,000
6	CRDG	Stephen	Winters	UofL	Pursuit of a Center for the Study of Neuroendocrine and Testicular Mechanisms in Male Infertility	6/1/05	5/31/07	\$29,574
7	CRDG	Bert	Lynn	UK	Collaborative Proteomics Research for Kentucky: A Standard Bioinformatics Infrastructure for Proteomics Data at UK and Uof L	6/1/06	5/31/08	\$28,971
8	CRDG	Gang	Cao	UK	Formation of a Center for Advanced Materials - Novel Electronic Materials and their Applications in Epitaxial Thin Films and Device Structures	5/1/07	6/30/08	\$30,000
9	CRDG	Patrick	Kitzman	UK	Health and quality of life challenges for individuals with spinal cord injury , living in medically underserved areas of Kentucky, receiving rehabilitation services.	6/15/08	6/14/10	\$16,706
10	CRDG	Jinze	Liu	UK	The Development of a Model of Molecular Events Leading to Seed Germination	6/15/08	6/14/09	\$19,002
11	CRDG	Dave	McNear	UK	Integrated Research, Education, and Extension to Enable Sustainable Biofuel Production – A Workshop to Organize Research Efforts in the Southeast U.S.	4/5/10	4/8/11	\$27,335

**Results : 7 of the 11 CRDG awardees (64%)
secured federal/major funding subsequent to their award.**

KY EPSCoR Infrastructure Seeding Program

National Laboratories Visited





- Suzanne Weaver Smith, PhD, PE, Director



- Janet K. Lumpp, PhD, Associate Director



- Jacob Owen, Assistant Director

nasa.engr.uky.edu



@NASAKentucky

NASA KY Space Grant – Funding Available

Award Program	Program Abbreviation	Program Description	US Citizen Required	Maximum Award	Indirect Costs Allowed	Required Cost-Share \$CS:\$Award
Graduate Fellowships	GF	Salary or stipend, tuition, materials and travel for MS and PhD students to conduct NASA aligned research	YES	\$30,000	No	1:1 including 12.5% faculty FTE
Undergraduate Scholarships	US	Salary or stipend, materials and travel for undergraduate students to conduct NASA aligned research	YES	\$6,000	No	None ¹
Team Projects	TP	Materials and travel for student teams participating in NASA related competitions	YES	\$10,000	No	0.5:1
Research Initiation Awards	RIA	Faculty directed research to explore NASA collaborations and NASA aligned research topics	YES	\$15,000	Yes	1:1
Course Development/Revision	CDR	Higher education curriculum development and revision of aerospace courses	YES	\$3,000	Yes	1:1
Mini-Grants	MG	Precollege and science center outreach activities, targeted recruiting and teacher PD	YES	\$5,000	Yes	None ¹

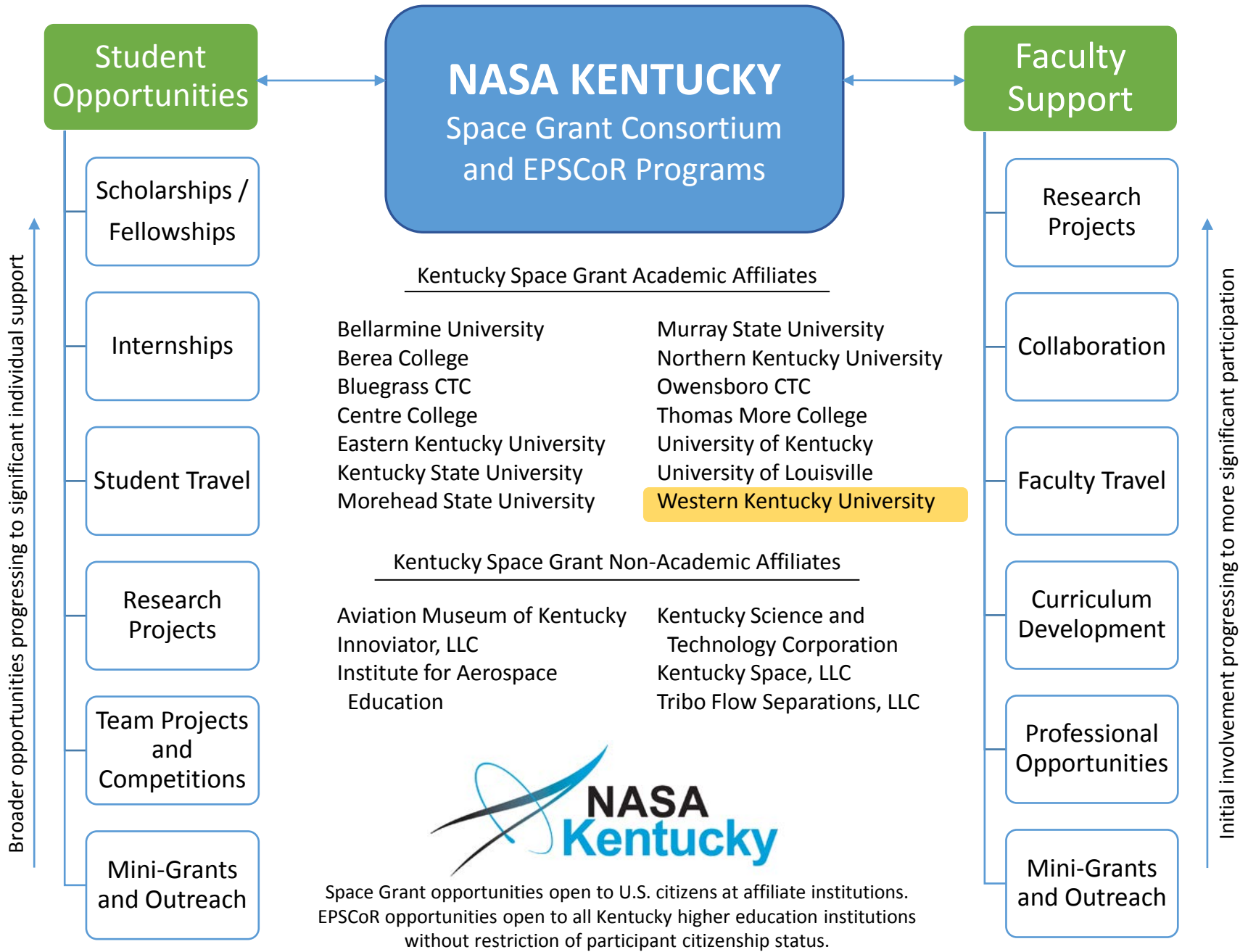
Call for proposals in August 2014

NASA KY Space Grant

Undergraduate Student Travel Scholarship

- -> \$500
- -> students at Affiliate Institutions
- -> travel to:
 - conferences
 - NASA Centers or
 - other relevant scientific sites and events

Available until funds run out



“Aerospace is now the **leading Kentucky export**, increasing over the last three years and expected to continue to increase”

- Louisville Business First article :

Kentucky’s aerospace products and parts exports exceeded **\$5 billion** through November of last year, making it the highest export total for any individual industry sector in Kentucky’s history.

<http://www.bizjournals.com/louisville/news/2014/01/29/kentuckys-industry-with-the-highest.html>

- Lexington Herald-Leader article:

Leading Kentucky’s export growth is **aerospace products** (\$5.6 billion), followed by **motor vehicles and parts** (\$5.5 billion) and **synthetic rubber and resin** (\$1.4 billion). <http://www.kentucky.com/2014/02/15/3089780/ky-sets-exports-record-for-third.html>



Kentucky College Students Interning at NASA Centers in 2011-2012:

Alec Lewis, Georgetown College,
Isolator Dynamics Research Lab (IDRL),
Langley Research Center (left)



Megan Fuldner, NKU, Wind Tunnel
Testing, NASA Ames Research Center
(right)



Ishita Jain, Uofl, Prototype Space Suit
Design and Testing, Johnson Space
Center (left)



Barrett Tirey, UK, Advanced Propulsion
Technologies - Designed Most Promising
System to Power the Team's ERA
Aircraft, NASA Langley Aeronautics
Academy (right)



Timothy Hennig, WKU, Construction
Projects, Operations Directorate,
Johnson Space Center (left)



Carolina Rojas Ramirez, Hopkinsville
Community College, Nanocomposites,
Langley Research Center (right)

Robot Design Competition



A Murray State University student programs their robot for competition.

Autonomous Robot Design Competition

Autonomous robots will play a crucial role in the success of future NASA missions due to the fact that the robots are out of contact with mission control for long periods of time. Murray State University's Robot Team (with three returning members from the 2001 team) designed and built an autonomous robot that competed in the IEEE Southeast Conference 2012 Student Hardware Competition in March 2012 in Orlando, FL.

The objective of the 2012 competition was for the robot to traverse a maze-like course, analyzing electrical signals and other information along the way in order to point the robot in the right direction. The competition required team members with expertise in electrical and mechanical engineering, and computer programming with knowledge of circuit analysis, Fourier series, sensors, circuit building, model simulation software packages, and troubleshooting.

Airplane Design Competition



University of Kentucky student test their plane prior to flight



University of Kentucky DBF team member sends the "Blue Dawn" in flight.

BLUE CAT: A Student Design Challenge – UAV's

NASA KY Space Grant funding supported the 2011-2012 Boundary Layer UAV for Experimental Characterization of Turbulence (BLUE CAT) design challenge. This project provided undergraduate seniors with hands-on experience applying analytical principles, problem solving ability and design skills towards designing, building and flying an unmanned aerial vehicle (UAV) capable of meeting specific set of requirements.

The mission objective for 2011-2012 was to produce an autonomous platform capable of conducting scientific measurements of atmospheric turbulence.

Design/Build/Fly (DBF) Competition

The University of Kentucky's "Blue Dawn" team competed against nearly 100 student teams from around the world in the 2011 Cessna Aircraft Company/Raytheon Missile Systems Design/Build/Fly Competition at TIMPA Field in Tucson, AZ April 15-17, 2011. Each year, teams must design a lightweight aircraft to successfully complete three action specific flights.

The contest theme was a Soldier Portable Unmanned Aerial Vehicle (UAV). The airplane had to fit in a commercially available suitcase meeting airline carry-on requirements. UK's DBF team competed well, despite some mid-flight difficulties and recorded their best overall finish tied for 49th place with The Ohio State University.

"Many teams crashed and only 30 or so actually completed all three missions," said team member Austin Loxton. "Regardless, [the competition] was an excellent opportunity for each team member to apply concepts from the classroom into designing, building and flying a complex system."

Rocket Design Competition



Specially crafted rockets soared high into the skies April 22 at the 2011-12 NASA Student Launch Projects challenge.

USLI Rocket Launch Competition

NASA University Student Launch Initiative, or USLI, is a competition that challenges college students to design, build and launch a reusable rocket. Students vie to see whose rocket can come closest to the 1-mile altitude goal and safely return its onboard science payload to Earth.

The project engages students in scientific research and real-world engineering processes with NASA engineers.

In the 2012 competition, held at Bragg Farm in Tonet, Ala, students from the University of Louisville received the Best Rookie Team Award placing 14th out of 51 teams.



Fifty-one teams of college students from around the country took part in the event.

Image credits: NASA/MSFC/Fred Deaton

Airplane Wing Design Competition



Remote controlled airplanes and the students who engineered their wings gathered for the 2012 flight competition.

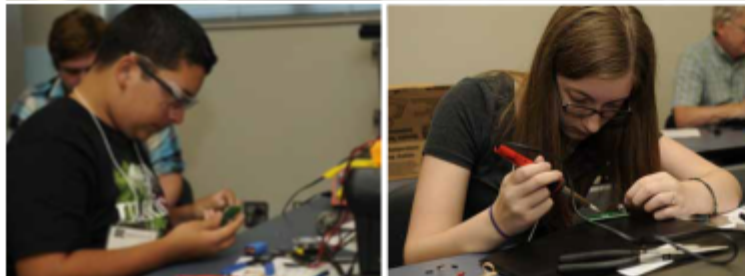
2012 Wing Design Competition, Nicholasville, KY, May 14, 2012

Planes designed and built by nine Kentucky high schools took to the air Monday, May 14, in the second Kentucky Institute for Aerospace Education (KIAE) Wing Design Competition, held at Lucas Field in Nicholasville, Ky. The event was again hosted by R.J. Corman Aviation Services and coordinated by the UK College of Engineering and NASA Kentucky.

More than 125 students, faculty and volunteers from across Kentucky participated. The students assembled a remote-controlled airplane from kits and were challenged to design and construct a wing for their aircraft in place of the one provided. The winning design was based on the amount of weight the aircraft could carry with respect to the weight of its wing and a new "speed round" required teams to build for speed and strength. Teaching modules on aerodynamics and stability were provided by UK mechanical engineering professors Sean Bailey and Jesse Hoagg.

KIAE's CEO Tim Smith commented last year on students reaction to the event saying, "The level of engagement was through the roof ...with STEM learning demonstrated in great depth." NASA KY Director Suzanne Smith added this year that, "[The] competition inspires students with flight, but gives them a great hands-on opportunity to apply math, science and problem solving in ways they don't get in a classroom."

Space Science Education – cubesat build



SPACE SCIENCE CAMP – **(top)** Prof. Benjamin Malphrus, director of the Morehead State University Space Science Center, delivers a lecture on extra-solar planetary systems to eastern KY high school students.

Prof. Robert Twiggs led advanced circuitry activities with seven advanced students who constructed CubeSats including, (left) Alex Mendoza, Pike County and **(right)** Willa Daniels, Owsley County.

Robinson Scholars Program - Space Sciences Academy

The Robinson Scholars Program completed year two of its Space Science Camp for high school student enrichment in astronomy and space sciences. The intent of the program is twofold: 1) improve math and science outcomes and college preparation and 2) increase the number of students from Eastern Kentucky pursuing careers in STEM disciplines.

Thirty-two high school students attended the program which was held at Morehead State University, June 24-29, 2012. Year one students participated in activities such as basic circuit building, laboratory techniques, programming, optical and radio telescope usage, applied math, and astronomy. Year two students participated in activities in applied math, planetary sciences, and mechatronics.

Rocket Design Competition



Hart County's Team Alpha and Team Nobel at the 2011 Team America Rocket Challenge

Hart County's Cave Area Rocket Scientists enter the Team America Rocketry Challenge (TARC)

TARC is the world's largest annual rocket contest where student teams aged 11-18yrs design, build and fly a model rocket that meets a specified set of mission and performance requirements. The top 100 teams from across the US, based on local qualification flights, are invited to Washington, DC in May for the national finals. Prizes include \$60,000 in cash and scholarships split between the top 10 finishers who are then eligible to compete in international competition.

Kentucky students have excelled in the TARC challenge sending four teams from Butler and Hart County in 2011 and five teams including LaRue County in 2012 to the national finals. In 2011, Butler County students placed 14th out of the top 100.

Space Grant funds were used to purchase materials and supplies for the two Hart County 4-H teams (The Cave Area Rocket Scientists), pictured below, to build rockets for the competition. A recent survey of TARC alumni indicated that 81% of students who have participated in the rocket competitions plan to pursue careers in STEM.

NASA KY EPSCoR Grants

Award Program	Program Abbreviation	Program Description	US Citizen Required	Maximum Award	Indirect Costs Allowed	Required Cost-Share \$CS:\$Award
Research Infrastructure Development Grants	RIDG	Faculty directed research to enhance existing collaborations with NASA collaborators	NO	\$40,000	Yes	0.5:1
Workshop/Conference/Seminar	WCS	Researchers meeting to explore aerospace topics and joint funding opportunities	NO	\$3,000	Yes	None

Call for proposals in August 2014

NASA KY EPSCoR

Research Area Awards

- Topic Specific projects that address a high priority NASA research and technology development need.
- \$250 k Federal + \$100k KY EPSCoR +\$150 alt match/**year**
- Project term -> **3 years**
- Total Funding -> **\$1.5 million**

Call for proposals in September 2014

NASA KY EPSCoR

Recent Research Area Awards

1. Efficacy of Countermeasures to **Cardiovascular Deconditioning** in Men and Women During **Simulated Moon and Mars Explorations** - Joyce Evans, UK
2. Versatile Biosensing Platform for Monitoring **Bone Markers for Space Medicine** - David Puleo, UK
3. The **CubeLab** Standard for Improved Access to the International Space Station for Scientific Payloads - James Lump, UK
4. **Shape Memory Alloys** for High Temperature and Surface Morphing Applications in Aerospace Industry - Dr. Haluk Karaca and Dr. Y.T. Cheng, UK
5. A Paradigm-Shifting Therapy for **Mitigating Cellular and Tissue Damage** in Humans Exposed to Radiation - Dr. Patricia Soucy and Dr. Robert Keynton, UofL
6. Improving **Heat Shields for Atmospheric Entry**: Numerical and Experimental Investigations for Modeling Ablative Thermal Protection System Surface Degradation Effects on Near-Wall Flow
Dr. Alexandre Martin, Dr. Sean Bailey, Dr. Michael Winter, Dr. Chi Shen, UK

NASA KY EPSCoR

Faculty Travel Grants

- -> \$1,500/ea
- -> Eligibility not limited to NASA Kentucky Space Grant Consortium Affiliate Institutions. US Citizenship is not required
- -> travel to:

<input type="checkbox"/> Ames Research Center	<input type="checkbox"/> Dryden Flight Center
<input type="checkbox"/> Glenn Research Center	<input type="checkbox"/> Goddard Research Center
<input type="checkbox"/> Goddard Space Flight Center	<input type="checkbox"/> Jet Propulsion Laboratory
<input type="checkbox"/> Johnson Space Center	<input type="checkbox"/> Kennedy Space Center
<input type="checkbox"/> Langley Research Center	<input type="checkbox"/> Marshall Space Flight Center
<input type="checkbox"/> NASA Headquarters	<input type="checkbox"/> Stennis Space Center
<input type="checkbox"/> Wallops Flight Facility	<input type="checkbox"/> White Sands Test Facility

- Apply 1 month prior to travel

Funds available until May 15, 2014 – Travel Complete by June 30, 2014



- Rodney Andrews, Director



- Jeff Mossey, Program Administrator

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KyNSFEPSCoR

KY NSF EPSCoR (Pending Available Funding)

Research Infrastructure Initiative (RII) Track-1

“Powering the Kentucky Bioeconomy for a Sustainable Future”

-> \$20M Federal + \$4M state match -> \$24M over 5 years

1) Bio-Inspired Membrane Technologies

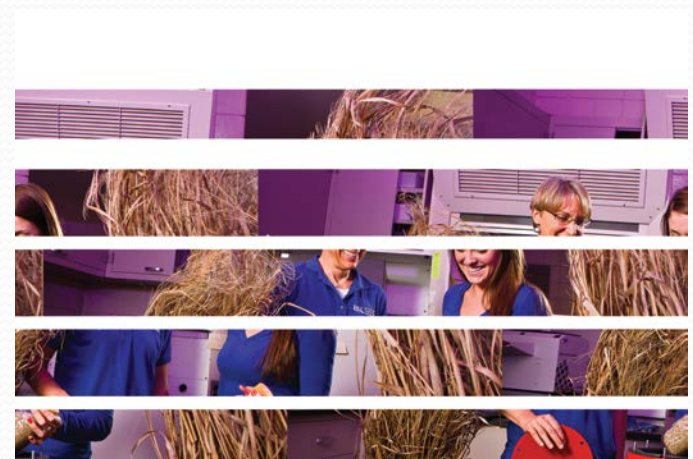
- water purification, biomass conversion and bioproduct separation

2) Chemical Biology for Advanced Materials

- Engineering of biomass systems with tractable lignin

3) Electrochemical Energy Storage

- Self-healing electrodes and bio-based battery materials



KY NSF EPSCoR – Potential funding in Summer/ Fall 2014

- **REG – Research Enhancement Grant**

Eligibility -> non-UK/non-UofL participants and institutions.
-> submit an NSF research proposal within 1 year



- **Track1:** Faculty Research Seed Funding for Kentucky's regional faculty to establish their research programs and enable competitive follow-on applications to NSF. (\$25,000).
 - **Equipment purchases allowed (existing faculty)**
- **Track2:** Startup packages for newly hired STEM faculty recruited from outside of Kentucky to a (non-UK/non-UofL) Kentucky institution. (\$50,000).

KY NSF EPSCoR – Potential funding in Summer/ Fall 2014

- **RSP – Research Scholars Program – (no \$ limit)**
 - mentored research projects for undergraduate and graduate students
 - underrepresented students in STEM majors,
 - a minimum of a 3.0 GPA in related course work
- **ROC – Research Outreach and Communication – (\$15,000)**
 - communicate and distribute meaningful results of STEM research projects with the public. (Examples: STEM teacher training programs or highlight/ instructional video)



KY NSF EPSCoR – Examples of Previous Awardees (FY12-13)

	PI	Institution	Amount	Funded?		Program			
				Yes	No	REG_T1 (\$25K)	REG T2 (\$50K)	RSP	ROC
1	Horne, Lloyd	Murray	\$ 25,000	1		1			
2	Gupta, Sanju	WKU	\$ 49,992	1			1		
3	Kim, Moon-Soo	WKU	\$ 24,992	1		1			
4	Nee, Matthew	WKU	\$ 25,000	1		1			
5	Celestian, Aaron	WKU	\$ 24,956	1		1			
6	Shi, Buchang	EKU	\$ 25,000	1		1			
7	Trzepacz, Chris	Murray	\$ 24,487	1		1			
36	Guiton/Hudek	UK	\$ 19,156	1				1	
37	Guiton/Yu	UK	\$ 6,588	1				1	
38	Dakshinamurthy/Modi	WKU	\$ 10,255	1				1	
39	Dakshinamurthy/Waghwani	WKU	\$ 10,255	1				1	
40	Melanie Bentley (Otieno)	EKU	\$ 7,637	1					1
41	Guiton/Fiefhaus	UK	\$ 6,588	1				1	
42	Guiton/Wallace	UK	\$ 6,210	1				1	
43	Naydam	Centre	\$ 8,698	1				1	
			\$1,069,502	23	20	23	6	13	1



KY^{NSF}
EPSCoR

Kentucky Organic Electronic Materials Symposium

An introduction to applied applications

June 22 - 24, 2014

Lexington, KY

Welcome

Register

Hotel Info

EPSCoR Researchers

Contact



Kentucky Organic Electronic Materials Symposium

Progress in the development of new functional organic materials has accelerated in recent years, leading to a host of design rules for a variety of applications that are not necessarily enumerated in current chemical literature. This Symposium is designed to introduce researchers from EPSCoR states to the latest in organic electronics materials design and characterization, as well as present the current state-of-the-art in





- Eric Grulke, Director
- Monica Mehanna, Program Manager

www.kydoeepscor.org

DOE EPSCoR Implementation Grant

- Award Term: **3 years,**
- Award Amount: **\$2.5 M / yr** (\$7.5 Million total)
- # of awards expected: **2-3**
- No cost share required
- Proposal submitted to DOE 4-15-14



Center for self- sustaining electronics



Selected project



+ Core competencies

- Energy harvesting
- Energy storage
- Low-power devices

Cover page supplement for collaborations

Table 1: Senior / key personnel on the application and institutional affiliations

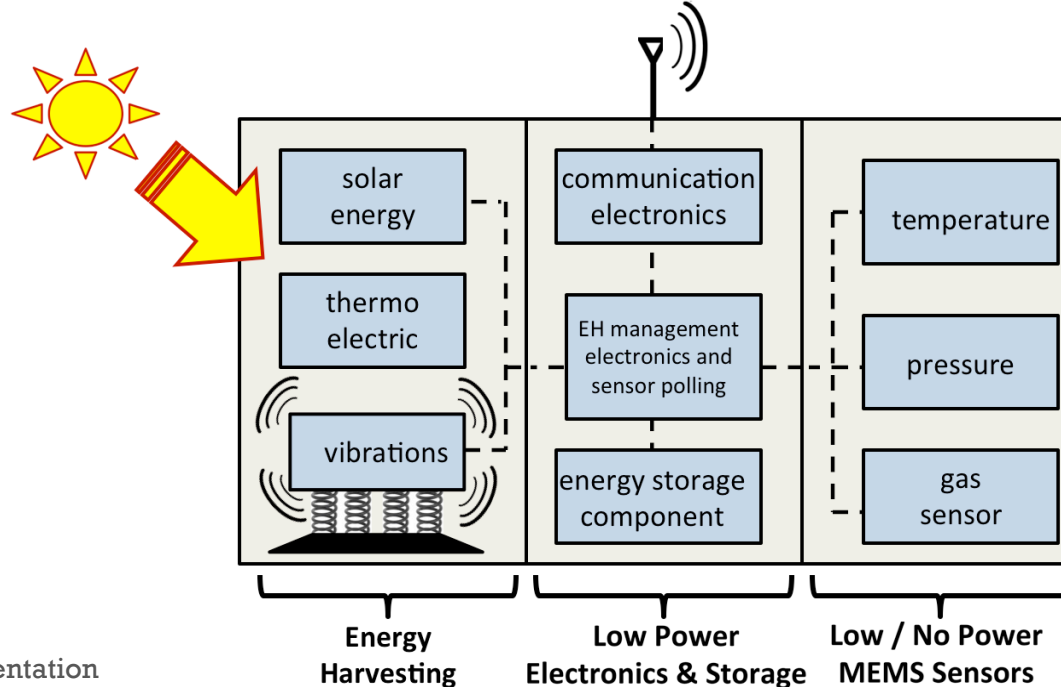
Senior / Key Personnel			Institution
Last Name	First Name	Title	Institution Name
Alphenaar	Bruce	Professor	University of Louisville
Brill	Joe	Professor	University of Kentucky
Graham	Kenneth	Asst. Professor	University of Kentucky
Liu	Jinjun	Asst. Professor	University of Louisville
McNamara	Shamus	Assoc. Professor	University of Louisville
Naber	John	Professor	University of Louisville
Odom	Susan	Asst. Professor	University of Kentucky
Russel	KC	Professor	Northern Kentucky U.
Walsh	Kevin	Professor	University of Louisville
Weisenberger	Matt	Assoc. Director	Center for Applied Energy Research



Demonstration project:

helps focus the team on an integrated, problem-solving product

- **Figure 1.** Schematic of the integrated sensor module that is the end-goal of CSSE's 3-year DOE EPSCoR project. Initial demonstrator devices will have dimensions of roughly 9cm x 9cm x 2cm, but our end goal are 3cm x 3cm x 0.5cm products.



Vision for CCSE...

(UK), the Center for Applied Energy Research (CAER), and Northern Kentucky University (NKU). The project will bring together Kentucky's experts in energy harvesting and storage, along with researchers experienced in low-power sensors and the fabrication of electronics by low-cost methods using flexible substrates. Our budget request is not simply asking for the traditional support for a collection of individual researchers – rather, in the true spirit of the EPSCoR program, this project is strongly focused on building infrastructure, in terms of both equipment and personnel, to fill in existing gaps in capacity that have precluded Kentucky researchers from pursuing center-type funding opportunities from traditional funding sources. While we will describe the key physical deliverables from this project over the course of this proposal, the most significant outcome will be the completion of a cohesive group of Kentucky-based researchers with the capability to translate fundamental discoveries in the areas of materials and electronic phenomena into functional devices for the benefit of society.

For More Information contact: KY Statewide EPSCOR Program



- Nancy Martin, Chair *(position open - retiring October 2014)*



- Rick Kurzynske, Director



- Liz Knapp, Assistant Director

www.kyepscor.org



@ KY_EPSCoR



KYEPSCoR

Questions ?

KENTUCKY
SCIENCE & TECHNOLOGY
CORPORATION

KSTC

Kentucky Science & Technology Corporation

KEF

**Economic
Development**
-small company
start-ups



KSEF

**University
Research**
STEM



KY SPACE

**Space Research
and
Commercialization**



Advance
Kentucky

**High School
Education**
Math, Science,
English, AP



KY
EPSCoR

**University
Infrastructure &
Research**
STEM



IDeA – NIH

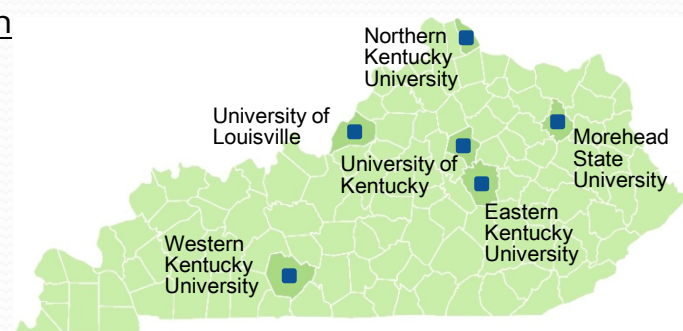
Centers of Biomedical Research Excellence (COBRE)

Centers at the **University of Louisville:**

<u>Research Focus</u>	<u>Award Total</u>	<u>Yrs in Operation</u>
• Spinal Cord Injury	\$18.5 Million	2000 – 2010
• Cancer Targets	\$21.0 Million	2003 – 2013
• Birth Defects	\$11.6 Million	2002 – 2013
• Diabetes & Obesity	\$ 8.1 Million	2008 – 2013

Centers at the **University of Kentucky:**

<u>Research Focus</u>	<u>Award Total</u>	<u>Yrs in Operation</u>
• Oral Health	\$23.4 Million	2004 – 2014
• Human Disease	\$21.8 Million	2004 – 2014
• Women's Health	\$21.1 Million	2000 – 2011
• Obesity & Heart Disease	\$ 6.5 Million	2008 – 2013



IDeA Networks of Biomedical Research Excellence (INBRE)

Expand & connect biomedical research across the state at primarily undergraduate universities:

- Student training & career development
 - Build bioinformatics infrastructure
- \$41.6 Million** 2001 – 2014

Track 2 Participating Institutions:

1. Alabama A&M University
2. Auburn University
3. Kentucky State University
4. Murray State University
5. Northern Kentucky University
6. Tuskegee University
7. University of Alabama
8. University of Alabama at Birmingham
9. University of Alabama in Huntsville
10. University of Kentucky
11. University of South Alabama
12. SmartStart Educational Consulting Services (program evaluation)