

SESSION SUMMARIES

Session 1: Innovation and Entrepreneurship Leading to Technology Transfer

Speaker: Stephen C. Fleming, Georgia Institute of Technology

Moderator: Kris Kimel, Kentucky Science and Technology Corporation

Universities are central to any model that is developed to accelerate knowledge-based economic development. They provide a pipeline of ideas, technological innovations and, in many cases, serve as a hub for new start-ups. Further, universities play a critical role in attracting and retaining businesses. Universities with a strong research focus and passionate researchers serve as magnets to attract young minds who continue to innovate, providing a pipeline of valuable technologies that become candidates for technology transfer. State initiatives to seed research at early stages greatly help in developing home-grown ideas, ultimately yielding large Federal R&D funds. Hiring key personnel and creating a supportive entrepreneurial culture are key to commercialization and the creation of new start ups. Universities with a research and entrepreneurial environment that support the advancement of faculty and its graduates, partner with businesses, and capture innovations to enhance technology transfers, contribute to local economic growth. Stephen Fleming will be presenting the common threads that connect successful models of economic development acceleration. He will also provide examples of successful strategies implemented at Georgia Tech's Institute of Technology.

Session 2: Assessing Changes in Kentucky's Economy and Innovation Capacity

Speaker: Trent Williams, Regional Technology Strategies

Moderator: Kris Kimel, Kentucky Science and Technology Corporation

This session will outline an economic context for crafting an updated Science and Technology strategy for the state of Kentucky. It will include a thumbnail sketch of the economy in which the Commonwealth's original 1999 strategy was embedded and an analysis of significant developments within Kentucky's economy over the ensuing decade. The session will conclude with an assessment of three key elements that will shape the new strategy: innovation capacity, entrepreneurial energy, and access to capital.

Session 3A: USDA- NIFA: Future Investments for Agricultural Research, Education, and Extension Challenges

Speaker: Diana Jerkins, USDA National Institute for Food and Agriculture, Washington, DC

Moderator: Nancy Cox, University of Kentucky

The use of agricultural lands is changing in both the intensity and the diversity of products being provided for human consumption. The grand challenge for agriculture is how to reconcile agricultural productivity with environmental and social integrity. Agricultural and forest lands and environs can be managed to respond to increasing demand for resources and services which it can provide while valuing the health of the environment. Agricultural lands, encompassing over 940 million acres of working ranch and farm lands or approximately half the U.S. landmass, have had major impacts on the function, production, and economics of agricultural services.

The National Institute of Food and Agriculture (NIFA) funds about 2000 competitive research grants yearly and approximately the same number of formula-funded (direct payment to institutions of higher education) research projects. The Agriculture and Food Research Initiative (AFRI) at NIFA is charged with promoting and funding research, education, and extension efforts that address all components of agriculture sustainability, including farm efficiency and

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profitability, ranching, renewable energy, forestry (both urban and agroforestry), aquaculture, rural communities and entrepreneurship, human nutrition, food safety, biotechnology, and conventional breeding. In addressing the needs to increase available food, fiber, and fuel production for a growing domestic and international population, NIFA has identified Challenge Areas through the AFRI program: Childhood Obesity Prevention, Climate Change, Global Food Security, Food Safety, and Sustainable Bioenergy. These Challenge Areas are complemented by additional programs to support student education through the Fellows program and the Foundation program for basic research activities. Additional Competitive Funding such as the Small Business Innovation Research (SBIR), Beginning Farmers and Ranchers Development, Specialty Crops, 406 Integrated, and Higher Education programs provide additional support for efforts related to specific priority topics.

This presentation will demonstrate the types of programs available for funding research, education, and extension efforts to a broad range of eligible recipients.

Session 3B: DOE: "Powering" Outside the Box

Speaker: Srimi Mirmira, Advanced Research Projects Agency- Energy (ARPA-E)
Moderator: Len Peters, Kentucky Energy and Environment Cabinet

The need to increase the use of renewable and alternative energy sources has become paramount, challenging scientists and innovators to not settle for incremental improvements but to rapidly accelerate discoveries and translate them into marketable technological innovations.

Dr. Mirmira's presentation will be on the vision leading to the creation of ARPA-E "to bridge gaps in the energy innovation pipeline", its priorities and opportunities.

Session 3C: International Space Station as a Platform for Innovation, Economic Development, and STEM Education

Speaker: Marybeth Edeen, ISS National Lab Office, National Aeronautics and Space Administration (NASA)
Moderator: Kris Kimel, Kentucky Science and Technology Corporation

This presentation will discuss what it means for the International Space Station (ISS) to have been designated as the nation's newest National Lab and how that designation is being used to broaden the approach to and scope of research done on the ISS to benefit the American people. The designation as a National Lab has allowed the approach to research to open up to include a more commercial model which some entrepreneurial companies are taking advantage of. Additionally, the scope of research has broadened beyond NASA's research areas to include research of interest to other government agencies and the private sector. Capitalizing on these changes can open up space flight research so anyone can participate, including students of all ages.

Session 3D: Graduating Soon? Exploring Your Career Choices

Panel: Gregory M. Jones, Booz Allen Hamilton and Don Fitzpatrick, Global Cisco Alliance-IBM Corporation
Moderator: Aman Singh Das, Vault Inc

Why is there an urgent need for Science, Technology, Engineering and Math (STEM) graduates in developing new processes, new technologies, new systems, and how can you leverage these opportunities into lucrative and successful careers? Join Aman Singh Das from Vault, Inc on an interactive panel discussion with Booz Allen Hamilton and Cisco Alliance representatives Dr. Gregory Jones and Don Fitzpatrick.

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This session presents how scientific training opens opportunities to careers by the bench and beyond (in public and private sectors), what skills are in demand, and what opportunities are available at IBM and Booz Allen.

Session 4A: Access to Federal Labs

Speaker: Rick Shindell, Federal Laboratory Consortium for Technology Transfer, Zyn Systems
Moderator: Mahendra Jain, Kentucky Science and Technology Corporation - KSEF

This presentation provides an overview of the Federal Laboratory Consortium for Technology Transfer, and numerous ways academic and business groups can engage the technology resources and expertise available within the more than 500 Federal laboratories across the US. There are many opportunities to enhance projects and programs through the Federal laboratories – from licensing technologies (in order to commercially develop them for US and international markets) to teaming with Federal laboratory scientists on technology development projects. Information about Cooperative Research and Development Agreements (CRADAs), licensing agreements, partnership agreements, and upcoming events and opportunities to meet Federal laboratory technology transfer representatives will be shared.

Session 4B: Imagination Powering Local Economies: The Role of University Research and Technology Development in Fostering Growth of Local Economies

Speaker: Justin Anderson, Wisconsin Alumni Research Foundation
Moderator: Mehdi Yazdanpanah, NaugaNeedles

“We need to out-innovate, out-educate, and out-build the rest of the world...This is our generation’s Sputnik moment.” These words, from President

Obama during his State of the Union Address on January 25, 2011, highlight the importance of innovation and its impact on the economy. Investments in education, research, and science are important – not only for the knowledge generated, but also for the potential to create new jobs and industries while improving our overall quality of life. Where will the next big idea originate, and who will take that idea and turn it into a product or a business? The answer could be right here and the person could be you. This session will provide the framework protecting your ideas, identifying resources, and engaging your inner entrepreneur.

Session 4C: Conversations on Kentucky’s Science and Technology Strategy

Speaker: Trent Williams, Regional Technology Strategies
Moderator: Rick Kurzynske, Kentucky Science and Technology Corporation - KY ESPCoR

This breakout session’s conversation will address two important dimensions for the new science and technology strategy. First, what are the key strategic elements that this plan should target? The actions that defined the 1999 strategy addressed Enterprise Development, Manufacturing Modernization, Technological Infrastructure, and People. Second, what specific technology and R&D domains hold the most promise for Kentucky’s economic future?

Session 5A: Women, Science, and Entrepreneurship

Speaker Panel: Lisa Sobolewski, DHS; Jenny Servo, Dawn Breaker; Jen White, University of Kentucky;
Moderator: Marybeth Edeen, ISS National Lab Office, NASA

In 1925 Cecilia Payne theorized that the composition of stars, the sun in particular, was mostly hydrogen and not heavy metals. She was

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the first woman (or man) to receive a PhD in Astronomy from Harvard University. Cecilia was born in England and attended Cambridge University. But she decided to continue her studies at Harvard because she thought women scientists in the United States might be more accepted. She was committed to pursuing a career in Astronomy even though very few women astronomers were known. She worked for years under several eminences, including her husband, but finally in 1956 she was appointed Harvard Faculty, and later became the first woman head of a department at Harvard.

This story is one of many examples of American creativity and innovativeness. It also exemplifies strategies common to successful women scientists and entrepreneurs. Successful women, as Cecilia, set their goals at an early stage and align their everyday efforts towards that goal. Successful women are also pragmatic; they draw their plan on how to get from A to B and simply execute it. When facing barriers, pioneering and leading women will simply adjust. Successful women are always open to learning. However, there is a particularity of successful women that clearly distinguishes them from their male counterparts: their networks. Women create support networks at every stage of their careers. The relationships they build are deep, meaningful, mutually beneficial, and rooted in deep trust. "Schmoozing" is not networking to leading women.

Join this panel of successful women and hear how their stories parallel that of Cecilia Payne.

Jenny Servo, was born in England, her immediate family was her support network, their mottoes "Anything that is worth doing, is worth doing well". Federal programs and program managers have been essential in helping build her business. Prejudice "...has not been frequent, and it never stopped me."

Jen White opted for a career in academia, then further challenged her career, and pessimistic

research studies, by opting to start a family. Jen has a successful research track and has created a network of supportive peers and positive female role models that has allowed her to balance academic and family life.

Lisa Sobolewski, building on her undergraduate degree in mathematics and minor in physics, learned engineering the "hard way." After a spending five years in industry managing government engineering efforts, she joined the federal government where she's been managing high-risk, high pay-off R&D programs for the past 27 years. Not satisfied with the technical side of things, Lisa returned to school in 2000 and earned her MBA. Lisa laughs and says, "I figured that after getting a strong-minded, independent daughter through high school, there was no MBA course in the world that could be as challenging!"

Session 5B: Triangulation for Success: Navigating the FDA Approval, Academic Research, and NIH Granting Processes

Speakers: Daniel Wermeling, University of Kentucky

Moderator: Ruth Voor, Vivorte

In this session Dan Wermeling will review the FDA regulations governing development and approval of drugs and drug delivery systems. Application of the regulatory framework to academic drug discovery and development will be described in two contexts. One context is to garner the funding necessary to conduct discovery and development research. The second is conducting the necessary preclinical research required to initiate human studies and perhaps proof of concept.

Integrating the development science with regulatory requirements and grant offerings is a considerable challenge to academic investigators, and the subject of this presentation.

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Session 5C: Competitive Grantsmanship in a Tight Federal Budget: Strategies for Success

Speaker: Anna Palmisano, Department of Energy, USDA, and Department of Defense (retired)
Moderator: Nancy Martin, University of Louisville

Scientists are facing one of the tightest funding environments in over 20 years, as Congress and the President struggle to reduce the federal deficit. While science and technology are recognized as drivers of economic well-being, many competing priorities are vying for a decreasing pool of available funds.

In this session, Dr. Palmisano will draw from her experience at the Department of Energy, the U.S. Department of Agriculture, the Department of Defense, and other federal agencies to share strategies to position scientists to be more competitive. This presentation's topics will include how to work effectively with agency program managers, how to understand and address requests for applications, and how to write competitive proposals that appeal to reviewers. She will also address some of the changing program trends in Washington, DC, and the need to diversify and expand funding sources.

Session 5D: Lost in Translation

Speaker: Jason Levin, Vault Inc
Moderator: Aman Singh Das, Vault Inc

What your resume does not say might be the reason for your demise ... or at least the reason you will not get as many calls back from potential employers.

Jason Levin will present the art of writing a competitive resume during "*Lost in Translation*.. He has reviewed some of the resumes from this year's conference registrants and will use those resumes as examples on how your resume is "an opportunity to engage employers into talking

about you" and how to *distinguish yourself!* The number one question in an employer's mind will be how are you different than any other candidate? Make a *Resume goal oriented!* It helps employers assess how you added value to just a research task.

Sessions 5E: KY EPSCoR Subcommittee Breakouts

KY NSF EPSCoR Program: Ongoing Research

Directors: John Connolly (former), University of Kentucky, and Rodney Andrews (current), University of Kentucky

This breakout session will offer short presentations on the currently funded Track I and Track II Research Infrastructure Initiative (RII) awards. Projects supported by the awards fall under the areas of: Cyberinfrastructure (CI), nanomaterials, bioengineering, ecological genomics, data management, and modeling of water-quality sensors in lakes and streams. The presentations will include progress on the existing work, future goals, metrics and timelines for the remainder of the award periods.

NASA KY Space Grant and EPSCoR Program: Research and Activities

Director: Suzanne Smith, University of Kentucky
Associate Director: Janet Lumpp, University of Kentucky

The NASA breakout session is a joint meeting of the NASA Kentucky Space Grant Consortium and EPSCoR Programs. This breakout session will feature a review of the past year's activities and awards, along with presentations from the Science PI's for the three NASA EPSCoR Research Area Awards in Kentucky.

The NASA EPSCoR Research Area Awards are competitively awarded at the national level and are the largest awards available through the NASA EPSCoR program.

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KY DOE EPSCoR Program: NEW and Existing Research Opportunities

Chair: Eric Grulke, University of Kentucky

The Federal DOE EPSCoR program has released a solicitation calling for \$4 million in new Implementation Awards. This breakout session will discuss the funding objectives and requirements for this new opportunity and provide feedback on preparing a response to the solicitation. Secondly, the session will discuss needed elements for the current Implementation Group's final report. Thirdly, in a closed session, the subcommittee chair and PI's will discuss re-budgeting for the three year renewal which was recently awarded to the current Implementation group.

KY NIH-IDeA Sub-committee Inaugural Session

Director: Nigel Cooper, University of Louisville

Kentucky currently has nine ongoing multi-million dollar NIH Institutional Development Awards (IDeA). Eight of the awards are for Centers of Biomedical Research Excellence (COBRE). Four each are located at the University of Louisville and the University of Kentucky. One award is for a Statewide IDeA Network of Biomedical Research Excellence (INBRE) hosted by the University of Louisville. This breakout session will bring together the nine COBRE and INBRE research groups in an inaugural meeting. INBRE/COBRE PI's will give 15 minute presentations on their Centers and Networks. Then discussions will be held to facilitate collaboration among the programs on the topics of summer student placement, core laboratories, and bioinformatics needs.

Session 6: Business Planning and Market Research

Speaker: Jenny Servo, Dawn Breaker

Moderator: Vickie Yates Brown, Nucleus

"Plans are nothing. Planning is everything." This quote from General Dwight Eisenhower applies

equally well to business planning as it does to battle, for it is the forethought and strategic vision that helps you transform your team and develop a successful plan.

Dr. Jenny Servo's presentation will provide practical and engaging tips on how to conduct strategic planning and market research – essential prerequisites for developing and executing an excellent business plan.

Session 7: Protecting Your Technology During the Commercialization Process

Speaker: Stephen C. Hall, Esq. Stoll Keenon Ogden PLLC

Moderator: Blaine Ferrell, Dean and Professor Ogden College, Western Kentucky University

The technology world is an elaborate ecosystem. Rarely does an innovator conceive, develop, and take an invention to market without the benefit of solid relationships with other organizations. Research partnerships, licenses, non-disclosure/non-competition agreements, and consulting agreements are just some of the kinds of contracts that these relationships are centered around. However, these private contracts, which are often necessary in forming those important relationships on the path to commercialization, may limit the innovator's ability to capitalize on the technology to its full potential.

This presentation examines three cases in which the innovators entered into various private contracts while developing or commercializing their technologies. Later, after patents were granted on the inventions, legal disputes arose over the rights and obligations created by those contracts. The ownership of the patents and the right to use information to develop competitive products were at issue in these disputes.

The goal of this presentation is to show how purposeful and careful contract drafting can be

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used to avoid such situations and foster certainty over the ownership of valuable patents.

"Protecting Your Technology..." will be presented by Stephen C. Hall, a registered patent attorney with Stoll Keenon Ogden PLLC, and a former research chemist. The presentation examines the interplay between the patent system and the various private contracts that are often necessary in the development of technology.

