



Mizzou Advantage
University of Missouri

*A celebration of
Mizzou Advantage*

Tuesday, May 11, 2010

Donald W. Reynolds Alumni Center
Columns Ballroom

Program

Welcome

Chancellor Brady Deaton

Greetings

Provost Brian Foster

*Recognition of the Spring 2010
Mizzou Advantage Grant awardees*

*Introduction of the Mizzou Advantage
Education Coordinator and Facilitators*

LuAnne Roth

Education Coordinator

Jo Britt-Rankin

Food for the Future

Charles Davis

Media of the Future

Carolyn Henry

One Health, One Medicine: the Convergence of Human and Animal Health

Cerry Klein

Sustainable Energy

Carsten Strathausen

Understanding and Managing Disruptive and Transformational Technologies

Conclusion

Provost Brian Foster

Mizzou Advantage Proposals awarded Spring 2010

In response to the initial call for proposals, Mizzou Advantage has awarded twenty-six grants, with PIs and Co-PIs representing Agribusiness, Agricultural Economics, Agroforestry, Animal Sciences, Art and Archaeology, Arts and Humanities, Biochemistry, Bioenergy Engineering, Biological Engineering, Biological Sciences, Biology, Biotechnology, Business, Chemistry, Civil and Environmental Engineering, Computer Sciences, Convergence Journalism, Dermatology, Economics, Education, Electrical and Computer Engineering, Energy Management, English, Forestry, Genetics, Geography, Health Policy, Informatics, Informational Science and Learning Technologies, Internal Medicine, Journalism, Journalism Library, Law, Library, Management, Marketing, Medical Pharmacology and Physiology, Molecular Microbiology and Immunology, MU Power Plant, Neurology, Nutrition and Exercise Physiology, Ophthalmology, Pathology, Philosophy, Physics, Plant Sciences, Psychological Sciences, Psychology, Public Affairs, Radiology, Science Journalism, Sociology, Statistics, Surgery and MMP, Surgical Oncology, Veterinary Medicine, Veterinary Neurology, and Veterinary Pathobiology.

A 21st Century Program in Cancer Research: Targeting Metastatic Cancer Cells to Improve Diagnosis and Therapy

One Health/One Medicine

In this study, we will develop a flow cytometry system that uses photoacoustic generation and detection of melanoma cells in blood. Once we detect these cells, we will capture them downstream in the cytometer using two phase flow techniques. Once we have cultured these cells derived from the original metastatic cell, we will determine phenotypic characteristics and the presence of key molecular markers of epithelial-mesenchymal transition, the key process that allows tumor cells to become metastatic. This study will result in greater understanding of metastatic disease and may provide the means for personalized cancer therapy.

Steve Alexander is Professor of Biological Sciences. He is a cell biologist studying the molecular basis of cancer chemotherapy. Recently, his lab has discovered new targets for cancer therapy using genetic and proteomic approaches. He was an NIH postdoctoral fellow at the Dana-Farber Cancer Institute at the Harvard Medical School, a faculty member at The Scripps Research Institute, and the recipient of an American Cancer Society Faculty Research Award.

Paul Dale is a Professor of Clinical Surgery and Chief of the Surgical Oncology Division at Ellis Fischel Cancer Center. Dr. Dale also holds the academic honor of being the Margaret Proctor Mulligan Professor in Breast Cancer Research. He completed a fellowship in surgical oncology at the John Wayne Cancer Institute in California. Special interests include breast cancer surgery, colon cancer surgery, liver surgery, pancreatic cancer and surgery, skin cancer, stomach cancer, and surgical oncology.

Mark Hannink has a long-standing interest in the molecular biology of cancer. He earned his PhD at UC-San Diego, working with cancer-causing viruses. As an American Cancer Society postdoctoral fellow with Howard Temin at the McArdle Laboratory for Cancer Research, University of Wisconsin, Dr. Hannink's research revealed how cancer-causing genes are regulated. The current interests of his laboratory at the University of Missouri are the molecular pathways that regulate proliferation and survival of cancer cells.

Scott Holan earned a PhD in Statistics from Texas A&M University in 2004. His research interests include the development and application of time series methods, Bayesian methods, spatio-temporal models, and signal extraction for interdisciplinary research. Dr. Holan has received several awards including an American

Statistical Association/National Science Foundation/Bureau of Labor Statistics (ASA/NSF/BLS) Research Fellowship (2005), a National Institute of Statistical Science (NISS) New Researcher Fellowship (2006), and a NISS/NASS (USDA) Cross Sector Research Fellowship (2009).

John A. Viator is an assistant professor of biological engineering and dermatology, specializing in biomedical optics with an emphasis in photoacoustics. He obtained his Ph.D. in electrical engineering from Oregon Health & Science University. He invented the first photoacoustic flowmeter for detection of circulating cancer cells in human body fluids. His current research interests are in optical diagnosis applied to dermatology, oncology, and surgery.

The Architecture of Collaboration: Defining Networks, Developing Methods

Disruptive/Transformational Technology, Food for the Future, Media of the Future, One Health/One Medicine, Sustainable Energy

Mizzou Advantage aims to build networks of very high-achieving individuals and organizations. But no network model of MU exists. We will develop tools for identifying existing networks at MU and between MU and other entities using the Bond Life Sciences Center and the Center for Arts and Humanities as example sub-organizations. Existing databases and personal interviews will be used to characterize existing networks, and to associate network characteristics with desired outcomes. We will invite experts in organizational management, social networking, and science-of-team science communities to advise us on how to optimize campus networks to meet MU's goals.

Kate Anderson, MA, MLS, is Specialized Services Librarian at the Health Sciences and Veterinary Medical Libraries. She was recently appointed Mizzou Advantage Library Liaison, a position designed to coordinate MU Libraries' support of the interdisciplinary networks created by Mizzou Advantage. Anderson has a long-standing interest in scholarly communication issues, digital institutional repositories, and the assessment of publication metrics. She earned her graduate degrees from University of Wisconsin-Madison and her undergraduate degree from Colorado College.

Mary Barile has been a grant writer at MU since 2001 and has a PhD in Theatre. Her research interests are in 19th century American theatre, early African-American theatre and Missouri history. She works with campus faculty and community arts organizations to acquire funding for projects ranging from research and travel, to theatre and literary events. She has published extensively on American frontier theatre and settlement history and is a state coordinator for outreach programs in history and environmental education.

Roger Gafke serves as director of program development for the Donald W. Reynolds Journalism Institute. He specializes in program evaluation, development and training. His work has also emphasized the use of the Internet and related digital technologies for training, education, journalism, and public relations. In recent years he has expanded the international programs and relationships for the School of Journalism. He joined the School's faculty in 1968 as a member of the broadcast news department.

Jeni Hart is an Associate Professor in the Department of Educational Leadership and Policy Analysis. She has two primary strands of inquiry: women faculty and campus climate issues. She was Co-PI on a 3-year NSF ADVANCE project intended to advance women faculty in Science, Technology, Engineering, and Mathematics. She is also Co-PI of an NSF-funded PRISM grant aimed at enhancing interdisciplinarity between and recruiting students to Mathematics in Life Sciences.

Lindsay Leonhard, Graduate Research Assistant for the Office of the Provost, is earning a Master of Arts in Information Science and Learning Technology with an emphasis in Library Science. Lindsay graduated Magna Cum Laude from Western Washington University, majoring in German and Music. She is President-elect of the MU Progressive Librarians Guild and is a volunteer cataloger for The Center's Social Justice Library. Her professional interests include corporate research, database management, and public librarianship.

Tim Matisziw is an Assistant Professor in the Department of Geography and in the Department of Civil & Environmental Engineering. His research is centered on geospatial analysis methodologies, GIS, network modeling, and facility siting in particular. He has developed and implemented geospatial analysis methods for a range of application areas including transportation systems, ecological conservation, public health, telecommunication and most recently in NSF supported research on mitigating threats to critical infrastructure.

Jack Schultz is Director of the Christopher S. Bond Life Sciences Center at the University of Missouri where he promotes and develops interdisciplinary research among 35 scientists whose interests range from plant breeding to electrical engineering. Schultz is Professor of Plant Sciences at MU and Distinguished Professor of Entomology Emeritus at the Pennsylvania State University. His research on plant-insect interactions has been supported continuously by NSF for 32 years and produced over 250 publications.

Yi Shang is a Professor and Director of Graduate Studies in the Department of Computer Science at MU. He has worked extensively on wireless sensor networks, mobile computing, nonlinear optimization, and intelligence distributed computing. He has published over 130 refereed journal and conference papers and has been granted 6 US patents. Some of his works are widely cited. His research has been supported by NSF, NIH, DARPA, Microsoft, Raytheon, and University of Missouri Research Board.

Chi-Ren Shyu is Director of University of Missouri Informatics Institute and holds the Shumaker Professorship. He is also affiliated with MU School of Nursing, MU College of Education, and Utah Biomedical Informatics Department. During his tenure at Mizzou, he received several awards including seven Departmental Teaching Awards, Engineering Faculty Teaching Excellence Award, Engineering Faculty Research Award, and NSF CAREER Award. He research interests are in the areas of biomedical informatics, personalized medicine, and data mining.

Douglas Steinley is an Associate Professor in Psychological Sciences at the University of Missouri. His primary research interests are multivariate statistics, with an emphasis in cluster analysis, mixture modeling, and social network analysis. His research has been supported by NIH, NSF, ONR, and JWAC, with current support being from an NIH Early Career Award.

John Wedman is Professor and Director of the School of Information Science & Learning Technologies at MU. Wedman's background includes work in business/industry, government, higher education, and K-12 schools. He founded two small businesses dedicated to training design and evaluation, and performance improvement. Wedman is the lead developer of the Performance Pyramid framework and associated needs assessment tools, all of which can be found at <http://NeedsAssessment.missouri.edu>.

Randall E. Westgren is a Professor in the Department of Agricultural and Applied Economics. He joined the University in December 2008 as the Al and Mary Agnes McQuinn Chair in Entrepreneurial Leadership. Prior to his appointment at Missouri, he was Professor of Business Administration and Professor of Agribusiness Management at the University of Illinois. Dr. Westgren's research and outreach focus on firm and inter-firm strategies in the agri-food sector, including the development of supply chains for biotechnology products, high-value intrinsic attributes, and other consumer-driven entrepreneurial opportunities.

Bioenergy Plantations: an Integral Part in the Sustainability of the Biomass Supply Chain

Sustainable Energy

With the commitment of the University of Missouri to reduce their consumption of fossil fuels for energy production by 25%, a new chapter in bio-energy production is about to be written. Mizzou's dedication places our university in an elite company of institutions of higher learning that are forging the way to reduce energy dependence and find renewable and sustainable methods for addressing

energy needs. This project will lay the groundwork for how to establish, maintain, and understand the economic feasibility of bio-energy plantations that will provide woody biomass for Mizzou's new boiler scheduled to go on-line in 2012.

Francisco Aguilar is an Assistant Professor in the Department of Forestry. His research in the area of renewable energy includes the analysis of the economic feasibility of harvesting woody feedstock materials, private landowners' willingness to supply biomass, investors' preferences for renewable energies, and public policies affecting the use of wood-based energy. Aguilar is a former British Council Scholar, and received awards from the Earth Island Institute, World Resources Institute, and Resources for the Future.

John Dwyer is Associate Professor in the Department of Forestry. His research in the bio-energy field has involved evaluating fast-grown tree species for biomass production and flood tolerance. Recent research efforts to evaluate the economics of harvesting small diameter, low-value trees for biomass production has led to his current research into the sustainability of woody biomass extraction and its long-term impacts on Missouri's forests.

Gene Garrett was formerly Professor of Forest Silviculture and Director of the Center for Agroforestry. Over the last 34 years, Dr. Garrett brought in more than 25 million dollars in support of his program, published more than 200 scientific publications including 11 book chapters and two edited books. He received a US patent on foliar fertilizer to stimulate mycorrhizal development. Research emphasis has been in the area of biomass for energy including alley cropping agroforestry technology to create energy plantations.

Shibu Jose has nearly 18 years of experience in conducting teaching and research on the ecology of agroforestry systems and natural and planted forests in the U.S. and overseas. He holds the H.E. Garrett Endowed Professorship in the School of Natural Resources and is the Director of the MU Center for Agroforestry. He serves as Editor-In-Chief of Agroforestry Systems and Associate Editor of Journal of Forestry. He has published over 100 articles and six edited books.

H.E. 'Hank' Stelzer holds graduate degrees in forest genetics (M.S., University of Missouri, 1978; Ph.D., Purdue University, 1986). After 15 years in the private forest products sector, Stelzer returned to Mizzou to serve as MU State Forestry Extension Specialist. Dr. Stelzer developed an online spatial analysis tool that allows individuals to determine the amount of woody biomass potentially available from forest thinnings based upon location of the energy plant and actual drive time to the facility.

Biomass Supplies in the US Midwest: an Integrated Geospatial Assessment of Environmental and Economic Impacts

Disruptive/Transformational Technology, Sustainable Energy

Bioenergy is of increasing interest in agriculture as biomass becomes the largest source of renewable energy in the United States. Predictions of biomass supplies, however, are mostly derived from crop production statistical records at county or state levels. The lack of spatially explicit information limits our understanding of the current and future bioenergy supplies in major US agricultural regions. This research involved faculty in Sustainable Energy and Transformational Technologies to develop a framework for integrating geospatial data and methods with economic and environmental analysis approaches to explore the interaction between bioenergy policy and regional land use change in the Midwest.

Cuizhen (Susan) Wang is an assistant professor in Dept. of Geography. She received her Ph.D degree at Michigan State University in 2004. Her research areas are bio-environmental remote sensing, GIS and spatial analysis. Particular interests are innovative modeling and applications in biophysical remote sensing, vegetation mapping and environmental stress monitoring. Dr. Wang's past research experiences in bio-

environment mapping with geospatial techniques are closely related to Mizzou Advantage's focus areas of Sustainable Energy and Transformational Techniques.

Cancer Drug Development Center Automated Radiopharmaceutical Technology

One Health/One Medicine

This proposal will provide funding to acquire infrastructure to create a state of the art Cancer Drug Development Center (CDDC) which takes advantage of unique strengths at the University of Missouri and the affiliated Harry S. Truman Veterans' Administration Hospital to discover, evaluate, and commercialize new diagnostic imaging and therapeutic agents to directly benefit patients with cancer. Specifically, Mizzou Advantage and internal matching funding will enable the acquisition of automated radiochemistry equipment for developing new clinical diagnostic positron emission tomography (PET) imaging agents for the detection of cancer in a Phase 1 clinical trial environment.

Timothy Hoffman, PhD is a Professor of Internal Medicine, Chemistry, and Nuclear Science & Engineering at MU and a VA Research Career Scientist as well as being the Director of the VA Biomolecular Imaging Center (BIC) at the Harry S Truman Memorial VA Hospital. Dr. Hoffman received doctoral training in radiopharmaceutical chemistry and has spent the past 3 decades collaborating with MU Radiopharmaceutical Sciences Institute faculty performing translational radiopharmaceutical research and molecular imaging related to oncology.

Clinical Interaction Between Stress, Diet, Genetics, And Inflammation in the Etiology of Autism

One Health/One Medicine

Genetics is important to autism, but other factors are also important. Dr. Beversdorf demonstrated prenatal stressors as a risk factor for autism, and subsequently showed in an animal model that prenatal stressors and maternal genetics interact in affecting offspring social behavior, and (with Dr. Will) maternal diets rich in omega-6 also resulted in decreased offspring social interaction. Therefore, to better understand the clinical impact of these factors in autism, we will examine prenatal stress and diet, genetic stress markers, fatty acid profile (with Dr Fritsche), and immunological markers in families of children with autism and families of children without autism.

David Beversdorf graduated from Indiana University and completed Neurology residency at Dartmouth. After his fellowship in Behavioral Neurology at University of Florida, he joined the Ohio State University faculty. He has published on memory disorders, autism, cognitive neuroscience, fMRI, neuropsychopharmacology and drug addiction. He joined the University of Missouri (Radiology, Neurology, Psychology and the Thompson Center) to focus on autism, with particular interest in pharmacofMRI as a potential treatment marker, and gene/stress interactions in autism.

Kevin Fritsche received his doctoral degree from the University of Illinois-Urbana in the field of nutritional biochemistry. He has worked in the area of omega-3 fatty acids for over 20 years with a particular emphasis in investigating how they modulate inflammatory responses and the immune system. He is a recognized leader in this field and has recently published several important reviews regarding the health effects of fatty acids.

Matthew Will received his doctoral degree from the University of Colorado in the field of Behavioral Neuroscience, followed by an NIH sponsored postdoctoral fellowship at the University of Wisconsin, Madison. His research has included examining the rewarding nature of both drugs of abuse and food, as well as the role of diet and stress on behaviors related to autism.

Communication Markets

Disruptive/Transformational Technology

Communication Markets is a new area of study encompassing three levels of analysis of how communication processes develop, operate and are disrupted in markets. The first level examines how individuals' participation in communication markets is changing as a function of the digital revolution. The second level examines processes at the organizational level, that is, how news, marketing, and strategic communication businesses are struggling to remain viable as individuals rapidly change how they communicate. The third level concerns the economics of communication and includes such topics as pricing electronic content, media bias and persuasion; externalities of communication markets; geographic differentiation of communication markets; and communication markets and public policy.

Murali K. Mantrala is the Sam. M. Walton Distinguished Professor of Marketing at MU. He holds a PhD in Marketing from Northwestern University, and MBAs from the Indian Institute of Management Calcutta, and University of Minnesota. His current research focuses on media firms' marketing mix management, pricing, and sales force design. He serves on the editorial boards of Marketing Science, Journal of Marketing, Journal of Retailing, and the Journal of Personal Selling and Sales Management.

Esther Thorson is the Journalism Associate Dean for Graduate Studies and Reynolds Journalism Institute Director of Research. A recent bibliographic study showed she is one of the most published researchers in advertising. Her research also includes econometric modeling of newspaper revenues, health communication, and the structures of news. In 2010 her 39th and 40th doctoral advisees will complete their degrees.

Corporate Governance: The Role of the Board of Directors in Understanding and Managing Disruptive and Transformational Technologies

Disruptive/Transformational Technology

Recent events, from the Enron failure to the subprime crisis, increased attention to improving the board's ability to manage risks, particularly those of a disruptive or transformational nature. Research is needed to improve our understanding of the role of the board in managing risks and innovative means of increasing the effectiveness of boards. We are organizing an international conference to bring together an unusually wide variety of complementary perspectives including economics, law, accounting, finance, marketing and management. The conference should help make Mizzou a recognized expert in the role of the board in understanding and managing disruptive and transformational technologies.

Elaine Mauldin, Ph.D., CPA (inactive), is an Associate Professor of Accounting, and the BKD Professor, in the Trulaske College of Business. She received her Ph.D. in 1997 at the University of Nebraska-Lincoln. Elaine has published articles in The Accounting Review, Accounting Organizations and Society, Journal of Information Systems, International Journal of Accounting Information Systems, and other academic journals. Her primary research interests are corporate governance and control in organizations. Link to more information: <http://business.missouri.edu/87/252.aspx>.

Karen Schnatterly, Ph.D., is an Assistant Professor of Management in the Trulaske College of Business. She received her Ph.D. in 2000 from the University of Michigan. Karen has published articles in the Strategic Management Journal, the Academy of Management Journal, the Journal of Management Studies, the Journal of High Technology Management Research, and other academic journals. Her primary research interests are

corporate governance and fraud in organizations. More information can be found at: <http://business.missouri.edu/1409/3608.aspx>.

The Dark Archives Project

Disruptive/Transformational Technology

Newspaper archives provide a snapshot of a community's culture frozen in time. Over the past three years, 156 newspapers have either closed or stopped publishing their print edition. Many archives have no physical home. We risk losing a vast slice of American history forever. Creating a "dark archive" for orphaned newspaper content would insure that the historical record of communities, formerly served by print newspapers, would be committed to long-term access in digital format. We will convene a conference of scholars and digitization experts to discuss the feasibility and logistics of creating and managing a "dark archive" of orphaned newspapers.

Denice Adkins is an Associate Professor in the School of Information Science & Learning Technologies and former Fulbright Scholar to Honduras. She earned her Master's Degree in Library Science and Ph.D. from the University of Arizona. Her research interests are in public libraries and the information-seeking needs of Latinos.

Kate Anderson, MA, MLS, is Specialized Services Librarian at the Health Sciences and Veterinary Medical Libraries. She was recently appointed Mizzou Advantage Library Liaison, a position designed to coordinate MU Libraries' support of the interdisciplinary networks created by Mizzou Advantage. Anderson has a long-standing interest in scholarly communication issues, digital institutional repositories, and the assessment of publication metrics. She earned her graduate degrees from University of Wisconsin-Madison and her undergraduate degree from Colorado College.

Brian Brooks is associate dean for undergraduate studies at the Missouri School of Journalism, where he earned bachelor's and master's degrees. Upon graduation, he served in the U.S. Army in Germany and Vietnam, where he earned the Bronze Star. He joined the Missouri faculty in 1974 after working for the Memphis (Tenn.) Press-Scimitar. Brooks has been the editor of two daily newspapers, the Columbia Missourian and Stars and Stripes. He is the co-author of four major textbooks.

John Budd is a Professor with the School of Information Science and Learning Technologies. He has published several books and numerous journal articles. Among his areas of interest are the administration of higher education, scholarly communication, and academic libraries. Some of his work has addressed economic issues related to those fields. His teaching areas mirror his research; he teaches courses on the academic library, financing of higher education and academic library, and managing collections and access to information.

Dorothy Carner, MA, MLIS, is Head of the Journalism Libraries and Adjunct Professor at the Missouri School of Journalism. A member of the MU Libraries Committee for Digital Initiatives and Co-PI on LSTA Grant Award for digitization of 1904 Louisiana Exposition Material, she partnered with the State Historical Society of Missouri on two NDNP grant awards to digitize historical Missouri newspapers, a joint initiative of the Library of Congress and National Endowment for the Humanities.

Stephanie Craft's research focusing on press practices and performance and journalism ethics has appeared in a number of journals, including Journalism & Mass Communication Quarterly, Journal of Mass Media Ethics, Communication Law & Policy, and the International Journal of Public Opinion Research. She also completed chapters for the Handbook of Media Ethics and Journalism Ethics: A Philosophical Approach. Craft is an Associate Professor of Journalism. Before earning a doctorate, Craft worked as a newspaper journalist.

Charles N. Davis serves as Executive Director of the National Freedom of Information Coalition at the School of Journalism and is an associate professor in the News-Editorial Department. A veteran journalist, Davis

conducts scholarly research on access to governmental information and media law issues. Teaching awards include: 2008 Scripps Howard Foundation National Journalism Teacher of the Year Award, 2001 Provost's Award for Junior Faculty Teaching, and the 2008 University of Missouri Alumni Association's Faculty/Alumni Award.

Debra Mason, PhD, is an award-winning journalist with more than 25 years of experience creating tools and training to improve the coverage of faith and values news. She directs the interdisciplinary Center on Religion & the Professions and Religion Newswriters Association. In addition to being an online media entrepreneur, she has edited or authored numerous publications and resources, including Readings on Religion as News, Religion Reporting: A Guide to Journalist's Best Beat, and ReligionLink.org.

Earnest L. Perry is associate professor and chair of Journalism Studies. He teaches Cross Cultural Journalism and undergraduate and graduate media history. Dr. Perry has conducted research on the African-American press, the media's role in serving underrepresented groups and the lack of ethnic minority journalists in the mainstream media. He is president of the American Journalism Historians Association and vice chair of the Association for Education in Journalism and Mass Communication Standing Committee on Research.

Richard C. Reuben is the James Lewis Parks Professor of Law and co-director of the Center for the Study of Conflict, Law & the Media. A Senior Fellow at the Law School's Center for the Study of Dispute Resolution, Professor Reuben is the co-author of one of the country's leading ADR law school casebooks, Dispute Resolution & Lawyers (4th ed. 2009). Reuben is one of the nation's leading authorities on confidentiality in ADR processes.

Lilliard Richardson is a Professor and Associate Director for Policy Research in the Truman School of Public Affairs. Richardson received his PhD in Government from the University of Texas. He has published over thirty-five academic articles on the policy process and health policy, including in the American Journal of Public Health and Journal of Policy Analysis and Management. He has directed policy reports and presented research to public officials and academics in America, Europe and Asia.

Developing and Validating Emission Models for Commercial Swine Finishing Barns

Food for the Future, One Health/One Medicine

Many large animal feeding operations (AFOs) are facing more stringent regulations. The goal is to leverage the existing National Air Emission Monitoring Study (NAEMS) data and human infrastructure to calibrate/develop process-based models, and provide in-depth data interpretation, based on the largest ever agricultural aerial pollutant emission data base. This research will be important and meaningful because results are expected to be distributed before the completion of regulatory work of emission inventory and possibly permitting aerial pollutant emissions, of many livestock and poultry facilities, for positive impacts.

Albert Heber has 24 years experience in livestock facility research, education, and consulting with emphasis on air quality. He directs Purdue's Agricultural Air Quality Laboratory, and the National Air Emissions Monitoring Study. He developed a mobile air quality lab in 1994 to monitor gas emissions, and to establish science-based air emission factors for livestock. Dr. Heber has led several large-scale, comprehensive emission measurement campaigns with 11 other universities and dairy, swine and poultry producers.

Teng Lim graduated from Purdue University, and is a licensed professional engineer. He has been focusing on the assessment and mitigation of dust, odor and gas emissions of agricultural facilities. Dr. Lim has also developed a web-based, interactive odor-setback distance guideline. He is a faculty of the Agriculture System Management, and Commercial Agriculture Program. Dr. Lim's current research involves application and improvement of bio-filtration and anaerobic digester.

Jiqin Ni's research interest is in knowledge, methodology, and technology in environmental protection, including data processing, analysis and interpretation; pollution assessment and mathematical modeling; design of laboratory and field experiment systems; development of data acquisition and control software quality assurance project plans, and standard operating procedures. Dr. Ni has conducted measurement of baseline gases, dust, and odor at animal agriculture using advanced setup and instruments; and laboratory and field tests of air pollution control technologies.

Early Breast Cancer Detection Using Novel Optical Imaging Techniques

One Health/One Medicine

Breast cancer is the most common type of cancer among women in the United States. Development of reliable technologies for early and accurate detection of breast cancer is most significant since the earlier that a breast cancer is diagnosed the more likely the disease is curable with therapies. The goal of this proposal is to develop a new biomedical optical imaging system, frequency domain heterodyne based fluorescence mediated tomography for early imaging of primary and secondary human breast cancer with high sensitivity and specificity. The technology can be used in cancer diagnosis as well as development of tumor targeting pharmaceuticals.

Ping Yu is associate professor from the Department of Physics and Astronomy. He is a physicist whose research combines laser physics and biomedical optical imaging. His research contributions include the pioneering work on ZnO room temperature lasing, contribution to understanding semiconductor quantum dots, and innovation in holographic optical coherence imaging and fluorescence mediated tomographic imaging. The biomedical imaging techniques that he is working with have shown great potential for pre-clinical and clinical imaging applications.

Food and Society Speaker Series

Food for the Future

The "Food and Society Speaker Series" will offer a sequence of educational and networking events at the Museum of Art and Archeology during the Fall 2010 semester. Bringing distinguished scholars to campus, while also highlighting local research expertise, the series seeks to explore current research on the complex relationships among food, culture, and society, as well as to develop an association of scholars examining these dimensions of food. This speaker series is the first of its kind at MU, opening the door for cross-disciplinary collaborations on some of the crucial issues facing the future of food in our society.

LuAnne Roth has been in MU's English Department since 2001, where her research and teaching have primarily focused on American folklore (especially foodways) and film studies (especially "food films" and horror). Before her recent appointment as Education Coordinator for Mizzou Advantage, she also served as editor for the Center for eResearch and the Journal of American Folklore. Roth's current research project interrogates media representations of the Thanksgiving meal in terms of ethnicity, gender, and power.

Food, Fuel and Society

Food for the Future, Media of the Future, Sustainable Energy

"Food, Fuel and Society," presented by KBIA 91.3 FM and the Reynolds Journalism Institute, will be an interactive forum presented by MU faculty from a range of disciplines, including agriculture, natural resources, science, sociology, immigration studies, international programs and journalism. Faculty will work together to bring key organizations, journalists and citizens from across the region,

to participate in a day of discussion and exchange. The result will be an ongoing community of innovators, scholars, advocates, citizens and journalists promoting education and understanding around the issues of food and fuel in our society.

Janet Saidi is an assistant professor of radio-television journalism and news director at KBIA, one of the most successful NPR affiliates in the country. She came to KBIA in 2006 from California, where she was the associate producer for the four-hour series "Remaking American Medicine," broadcast nationally on PBS in October 2006. Saidi also co-produced a nightly culture magazine on San Diego's NPR-affiliate station. She has written for the Christian Science Monitor and the Los Angeles Times. Saidi earned a master's degree in literature from University College, London.

Metagenomics Use at a Former Coal Mining Environment to Bio-prospect for Enzymes with Applications to Sustainable Energy

Sustainable Energy

"Red Lake", just north of Columbia at the Rocky Fork Lakes Conservation Area, represents an "extreme" environment. Located on former coal mining area, it possesses an acidic pH and high levels of iron and sulfate. Fresh and weathered biomass, (leached from remnant coal seams), enter into the lake, providing a natural enrichment for lignin and other biomass degrading microorganisms. Thus, "Red Lake" provides a unique opportunity for us to further develop metagenomic expertise directed towards identifying novel enzymes, specifically for biomass breakdown. Anticipated results include recovery of extremophilic biofuel enzymes and an enhanced network of research collaborators across Missouri.

Melanie Mormile is an Associate Professor in the Department of Biological Sciences at Missouri S&T. She is an environmental microbiologist with expertise in extremophilic microorganisms, anaerobic microbiology, and biodegradation. At S&T, she teaches Microbiology, Environmental Microbiology, Bioremediation, and Astrobiology. She has received S&T's Faculty Excellence Awards five times and was named S&T's Woman of the Year in 2008. She is currently on sabbatical leave and enjoying doing research in Dr. Gary Stacey's laboratory.

Gary Stacey is a Professor of Plant Sciences at the University of Missouri whose research focuses on plant-microbe interactions. He was awarded the 2007 Distinguished Research Award in the College of Agriculture, Food and Natural Resources. In 2008, he was elected a Fellow of the American Association for the Advancement of Science (AAAS). In 2010, he was elected a Fellow of both the American Academy of Microbiology and the American Society for Plant Biology.

Mizzou Advantage in Reproduction Biology

Food for the Future, One Health/One Medicine

Reproductive biology is a critical Animal Science discipline in part due to the pressing global need for a safe, plentiful, reliable, and affordable food supply. In our minds, we clearly have strength in Animal Reproductive Biology at Mizzou. We now have an opportunity (Mizzou Advantage) to morph our reproductive biology program into a larger program. This larger program will ensure the long-term health of reproductive biology on the MU campus. The inaugural event for the Mizzou Advantage in Reproductive Biology will be a two-day science-based conference that brings premier reproductive biologists (Nobel Laureates and National Academy of Sciences members) to MU in the fall of 2010.

Matthew C. Lucy, Professor, is the leader of the Food for the 21st Century Reproductive Biology Cluster. He has a BS from Cornell University, an MS from Kansas State University, and PhD from the University of Florida. Dr. Lucy's research focuses on the interaction of nutrition with reproduction in farm animals.

Randall S. Prather, Curators' Professor, serves as Associate Leader of the Food for the 21st Century Reproductive Biology Cluster, and Co-Director of the National Institutes of Health funded National Swine Research and Resource Center. He has a BS and MS from Kansas State University, and PhD and Postdoc from the University of Wisconsin-Madison. For the past 28 years, Dr. Prather's research has focused on the early mammalian embryo.

Modeling Childhood/Adolescent Obesity in a Pig

One Health/One Medicine

A Presidential Memorandum established a Task Force on Childhood Obesity on February 9, 2010. Strategies to address the best scientific evidence information are mandated. However, insufficient scientific information is available. It is unethical to collect such information from children. Our project addresses this science deficiency with uniquenesses at Mizzou. The proposal will employ a special type of pig, which has "thrifty" genes to store fat in large amounts when food is abundant. Pigs will be overfed and the development of obesity, cardiovascular disease and type 2 diabetes will be determined in young pigs to mimic these developing disorders in children.

Frank Booth, Ph.D, is an international expert as to how changes in gene plasticity by exercise prevent metabolic diseases and as to how sedentary lifestyle is a primary cause of metabolic diseases. He has numerous recent papers on obesity and metabolic dysfunctions when physical activity is decreased. He has three Honor Awards for research related to his work. Other PIs on the grant are Jamil Ibdah, James Perfield, Scott Rector, and Cuihua Zhang.

Jamal Ibdah is currently the Senior Associate Dean for Research and Professor of Internal Medicine, Medical Pharmacology and Physiology, Raymond E. and Vaona H. Peck Chair, and Director of the Division of Gastroenterology and Hepatology. His research focuses on utilizing animal models to explore the role of genetic and environmental alterations in mitochondrial fatty acid oxidation in the development of fatty liver disease. Dr. Ibdah's recent publications and work in the lab explore the effects of exercise on fatty liver disease.

One Health, One Medicine, One Community Network

One Health/One Medicine

Through the One Health One Medicine One Community Network, Missouri communities with strong MU Extension presence and University faculty will be organized to address health disparities in Missouri using Community-Based Participatory Research (CBPR) models. The outcomes include: a Network of committed community and university partners who are responsive to CBPR funding opportunities and a CBPR action plan for addressing the social determinants of health in Missouri. The Network will honor the value of each unique Missouri community and at the same time highlight our shared goal of ensuring equitable access to healthcare for all Missouri communities through strong MU leadership.

Karen Edison, MD, is Chair of the Department of Dermatology, Medical Director of the Missouri Telehealth Network, and Director of the Center for Health Policy (CHP) at the University of Missouri. She served as RWJ Health Policy Fellow in the US Senate from 1999-2001. She has helped to lead work on health care access, telemedicine policy, Missouri Medicaid data analysis, health equity, health information technology, and improving health literacy for all Missourians.

Opportunistic Discovery of Information

Disruptive/Transformational Technology, Media of the Future

Opportunistic discovery of information (ODI) is common in every type of human endeavour; however, research on ODI is fragmented and with a limited impact on current information systems. With an objective to establish understanding in interdisciplinary, fundamental research on ODI, our team will study ODI by integrating perspectives from library and information science, media psychology, information systems, and computer science. We plan to organize The First International Workshop on ODI, to conduct a study of ODI among academics at MU, to identify grant funding opportunities for ODI research, and become a leading research team in this emerging area.

Guilherme DeSouza is an Assistant Professor at the Department of Electrical and Computer Engineering, an Adjunct Assistant Professor at the Computer Science Department and the founder of the Vision-Guided Intelligent Robotics Lab (ViGIR) at MU. He is also a founding member and the chair of the MU Chapter of the IEEE Computational Intelligence Society and his research/teaching interests include: Robotic Vision, Human Robot Interaction, Visual Sensor Networks, 3D Modelling and Object/Pattern Recognition.

Sanda Erdelez is an Associate Professor at the School of Information Science and Learning Technologies and the founder of Information Experience Laboratory. As a Fulbright Scholar from Croatia, she received Ph.D. from Syracuse University. Her research on human information behavior (information search, accidental discovery of information) has been funded by SBC Communication, Dell and NSF. She is the co-editor of *Theories of Information Behavior* (Information Today, 2005) and author of more than 50 peer-reviewed publications.

Chi-Ren Shyu is Director of University of Missouri Informatics Institute and holds the Shumaker Professorship in Engineering. He is affiliated with School of Nursing, College of Education, and Utah Biomedical Informatics Department. During his tenure at MU, he received several awards including seven Departmental Teaching Awards, Engineering Faculty Teaching Excellence Award, Engineering Faculty Research Award, and NSF CAREER Award. His research interests are in the areas of biomedical informatics, personalized medicine, and data mining.

Antonie Stam is the Leggett & Platt Distinguished Professor of Management Information Systems in the Management Department, and co-Director of the MU Center for the Digital Globe. He holds a PhD in Management Science from the University of Kansas and has served as a Visiting Professor and Research Scientist in Belgium, Austria, Finland, France, Italy, South Africa and Spain. His research interests include information systems, decision support systems, applied artificial intelligence, multicriteria decision making and applied statistics.

Kevin Wise is an Assistant Professor of strategic communication and co-director of the Psychological Research on Information and Media Effects (PRIME <<http://primelab.missouri.edu/>>) Lab at the MU School of Journalism. He earned his bachelor's and master's degrees from Indiana University and his doctorate from Stanford University. His research explores how different features of online media affect cognition and emotion.

Print for the People

Disruptive/Transformational Technology, Media of the Future

Our network brings together campus and local archival units to work together on integrated digital humanities projects, extending our ongoing initiatives. We will harness faculty expertise to shape how our unique digital materials are selected and presented to the campus, state, and beyond.

Proposed mentorship of graduate and undergraduate students will provide opportunities to make use of these materials; we also hope to make connections to K-12 educators. "Print for the People" will advance scholarly and curricular innovations in digital humanities and media, anchored by interdisciplinary collaborations and a proposed national symposium on the history of print and visual culture.

Michael Holland is Director of the Special Collections, Archives, and Rare Books Division (SCARaB) of the University of Missouri Libraries. He has served as PI on a number of state and federal digitization grants. Holland has served as President of the Academy of Certified Archivists (ACA) and President of the Missouri Center for the Book (MCB). His research interests include the history of modern science, the history of libraries, and government information policy.

Berkley Hudson has taught at the Missouri School of Journalism since 2003. He earned his doctorate at the University of North Carolina at Chapel Hill. For twenty-five years, including at the Los Angeles Times, he worked as a journalist. His scholarly publications include ones in *Southern Cultures*, *Media History*, *Visual Communication Quarterly*, *Literary Journalism Studies*, and book chapters in *Journalism 1908: Birth of a Profession* and *The Oxford History of U.S. Popular Print Culture*.

Devoney Looser is Professor of English at MU. She is the author of *British Women Writers and the Writing of History, 1670-1820* and *Women Writers and Old Age in Great Britain, 1750-1850*, published by Johns Hopkins UP. She is co-editor of the *Journal for Early Modern Cultural Studies* and serves on the Advisory Committee of PMLA. She has held fellowships from the NEH, the National Humanities Center, and the American Philosophical Society, among others.

Proposal to Establish Evolutionary Studies and Science Studies on Campus

Disruptive/Transformational Technology, Food for the Future, Media of the Future, One Health/One Medicine

The Life Sciences & Society Program will use this grant to establish two campus-wide working groups – in Evolutionary Studies and Science Studies – that will bring together the many and varied faculty members presently working in these areas in isolation. Evolutionary Studies uses evolutionary theory to understand a broad range of biological and cultural processes. Science Studies investigates the reciprocal interaction of science and culture. We will institute (1) research briefings, (2) invited talks, (3) on-line communities, and (4) an interdisciplinary educational program to (a) foster collaboration on and beyond campus, (b) increase external funding, and (c) assist recruitment of faculty and graduate students.

Heidi Appel, a Senior Research Scientist in the Division of Plant Sciences since 2007, was previously a Research Scientist at The Pennsylvania State University after receiving her PhD in Biology from the University of Michigan. Her research focuses on the ecology and evolution of plant-insect interactions. She has been involved in innovative science education at all educational levels, always with an emphasis on science as an ongoing process of discovery and understanding of the world.

Stefani Engelstein, currently Director of the Life Sciences & Society Program and Associate Professor of German, has been at MU since her 2001 PhD in Comparative Literature at the University of Chicago. She studies the human body in literature, aesthetics, natural history, medicine, and the sciences of human population diversity, particularly in Germany and Britain around 1800. Her research relates this work to theories of subjectivity, gender, race, ethical behavior, political organization, and scientific self-understanding.

Noah Heringman is currently Associate Professor of English at MU and has been on the faculty here since receiving his PhD in English from Harvard in 1998. In the past he has published research on both Romantic literature and the history of geology. His current research draws more broadly on natural history as well as

archaeology in the era of Captain Cook to track the emergence of deep time as an alternative to classical antiquity.

Mark Smith trained as both a medieval historian and a historian of science at the University of Wisconsin and has been a member of the history department here at MU since 1986. Viewed narrowly, his research-interest focuses on the development of optics and visual theory from Greek antiquity to the early modern theory. Viewed more widely, it extends to various aspects of the history of pre-Darwinian science, from medical and biological thought to mathematics and methodological theory.

Realistic Decision-Making

Disruptive/Transformational Technology

MU has enormous potential to be the site of path-breaking inter-disciplinary research on realistic decision-making. To spark the realization of this potential, we will organize a major conference which will bring together relevant MU faculty and internationally renowned figures from psychology, economics, and philosophy who work on realistic decision-making. The conference will have six sessions spread over two days, to be held in the spring semester of 2011. Each session will include a 50 minute presentation from a distinguished outside researcher, a 20 minute commentary by an MU researcher, and ample opportunity for the audience to ask questions.

David Mandy, Professor of Economics and Department Chair at MU, received his Ph.D. in economics from the University of Illinois in 1987 and joined MU in 1994. He teaches microeconomic theory with particular emphasis on business strategy and the economic organization of industries. He has published numerous monographs and peer-reviewed articles in these areas as well as in econometrics, forecasting and policy analysis. Mandy serves on the editorial board of the Journal of Regulatory Economics and the University of Missouri Research Board.

Andrew Melnyk, Professor of Philosophy and Department Chair at MU, holds three degrees from Oxford University and joined MU in 1991. He has published many papers in leading international journals on issues in philosophy of mind and philosophy of science, and also a monograph, *A Physicalist Manifesto: Thoroughly Modern Materialism* (Cambridge University Press, 2003). Before becoming chair, he served for many years as the Philosophy Department's Director of Undergraduate Studies.

Ann Bettencourt is also an Investigator on this grant.

Regional Symposium on Molecular Biophysics: Single-Molecule Analysis of Macromolecules

Food for the Future, One Health/One Medicine, Sustainable Energy

Biophysics, particularly Molecular Biophysics, is poised to become a strength in the Life Sciences at MU. In recent years, significant university investments in faculty appointments and infrastructure for this fundamental and rapidly growing area have established a broad base of excellence from which we can attain national and international prominence. However, there is no campus identity for biophysics. As a first important step in developing a campus-wide biophysics network, we propose a recurring regional Symposium on Molecular Biophysics, the first of which will highlight Single Molecule Analysis, one of the newest and most vibrant areas in the molecular Life Sciences.

Gerald Hazelbauer is a biochemist who studies transmembrane receptors and sensory transduction. He received his Ph.D. from the U. Wisconsin and did postdoctoral work in Paris. Prior to MU, he was a faculty member in Uppsala, Sweden and Washington State University. He received awards or honors from the Alfred

P. Sloan Foundation, the McKnight Foundation, the American Cancer Society, the American Academy of Microbiology and the AAAS. He has been funded for more than 30 years by the NIH.

Symposium and Faculty Workshop on Integrin Signaling in Physiology and Disease

One Health/One Medicine

Integrins are cell surface receptors that control key cellular functions including adhesion and motility, have been linked to a variety of diseases and pathologies, and are significant therapeutic targets. The MU campus has an excellent core of researchers investigating the role of integrin signaling in cardiovascular physiology, and other laboratories examining integrin function in development, disease and tissue engineering. The proposal aims to leverage campus strengths in integrin signaling by organizing a regional symposium and faculty workshop to identify challenges facing the field, and to provide a forum for intensive interactions among campus faculty to facilitate new collaborations.

Anand Chandrasekhar received undergraduate degrees in 1987 in biology and electrical engineering from Birla Institute of Technology and Science in India, and a PhD in developmental biology in 1994 from the University of Iowa. Following post-doctoral work at the University of Michigan, Dr. Chandrasekhar joined the Division of Biological Sciences at MU in 1998. His lab uses cell biological and genetic tools to investigate signaling pathways regulating neuronal migration in the zebrafish and mouse brain.

A Symposium on Building Networks for the Center for Translational Neuroscience

One Health/One Medicine

A two-day symposium will be launched to promote the newly-established Center for Translational Neuroscience (CTN) at the University of Missouri-School of Medicine. This Center aims at bridging basic neuroscience and clinical research, and providing the catalyst and synergism for neuroscience investigators to collaborate and interact in a multi-disciplinary environment. The newly renovated space is on the 7th floor of the Medical Science Building. Besides laboratory space, it includes four specialized neuroscience cores. This symposium will bring nationally recognized scientists in Alzheimer's disease and stroke to visit the Center, and to build networks with neuroscience faculty on the MU campus.

Doug Anthony, M.D., Ph.D. – Professor, Pathology&Anatomical Sciences (PAS), Neurology, INP. Dr. Anthony's research is focused on the neuronal cytoskeleton and brain tumors, including both primary brain tumors and metastatic tumors of the brain. He is a neuropathologist, a member of the Interdisciplinary Neuroscience Program (INP), and director of the MD-PhD program. He has special interests in neuroanatomy and neuropathology, and the translation of research findings from basic molecular research to the practice of medicine.

Targeting Plasminogen Activator Inhibitor-I to Inhibit Neointimal Hyperplasia

One Health/One Medicine

Balloon angioplasty and bypass surgery are used to treat patients with blocked coronary arteries. While these procedures are highly effective, both are limited by the subsequent re-formation of blockages that obstruct blood flow to the heart and cause heart attack. The overall objective of this proposal is to develop new strategies to prevent new blockages from forming in coronary arteries and bypass grafts by pharmacologically inhibiting the blood clotting system.

William Fay, MD, is Professor of Internal Medicine and Medical Pharmacology & Physiology, and Director, Division of Cardiovascular Medicine, University of Missouri. Dr. Fay's main research interests are thrombosis (abnormal blood clotting) and mechanisms and treatment of coronary artery disease. Dr. Fay's research is funded by NIH, the Department of Veterans Affairs, and the Missouri Life Sciences Research Board. In addition to his research interests, Dr. Fay is a practicing clinical cardiologist.

Whole Genome Sequencing of an Animal Model of Cerebral Cortical Dysplasia: Developing the Next Generation of Genomics for Human and Animal Health

One Health/One Medicine

Cortical dysplasias are congenital brain malformations that cause intractable seizures in children as well as their canine companions. The next generation of gene sequencing technology is now available at MU and permits sequencing of the entire genome of an individual in a cost effective manner. We will apply this new paradigm of gene discovery to search for the mutation responsible for a hereditary cortical dysplasia in a family of Standard poodles. Identifying the gene responsible will illuminate the pathways involved in development of higher brain functions and the causes of epilepsy, ultimately benefiting both human and canine health.

Gary Johnson received a PhD from Kansas State University in 1971 and was postdoctoral student at Johns Hopkins University from 1971 to 1973. He received a DVM from the University of Minnesota in 1977 and was postdoctoral student from 1977 to 1980 at the New York State Department of Health. He joined the faculty in the College of Veterinary Medicine in 1980 and is currently an Associate Professor in the Department of Veterinary Pathobiology.

Marty Katz obtained his undergraduate education at Marquette University in 1974 graduating Summa Cum Laude. He obtained his doctoral degree from the University of California in Santa Cruz in 1981 with a primary emphasis on biochemistry. From 1981 to 1986 he was on the research staff at the National Eye Institute. Since 1986 he has been a faculty member at the University of Missouri, Department of Ophthalmology and currently holds the rank of Professor.

David Lardizibal is Assistant Professor of Neurology and Medical Director Epilepsy Center and Intraoperative Monitoring at the School of Medicine. Prior to joining MU in 2006, he was a resident in neurology and a fellow in epilepsy at Cleveland Clinic Foundation. He received his MD degree from Cebu Institute of Medicine, Philippine in 1992, completed a residency in medicine at Cebu Velez Hospital in 1996 and residency in neurology at Philippine General Hospital in 1999.

Dennis O'Brien is Professor of Veterinary Neurology in the College of Veterinary Medicine and the Chancellor's Chair in Comparative Neurology. He received his DVM degree from the University of Illinois in 1975. After 3 years in general practice in Chicago, he returned to U of I to complete a residency in neurology and a PhD in neuroscience.

Bob Schnabel is Research Assistant Professor in the Division of Animal Sciences at the University of Missouri-Columbia. His postdoctoral research was in the Bovine Functional Genomics group at the USDA in Beltsville Maryland. Bob received his B.S. and M.S. degree in Biology from the University of Akron and a Ph.D. in Genetics from Texas A&M University.

Jerry Taylor is Professor of Animal Sciences and Genetics. He holds the Wurdack Chair in Animal Genomics in the Division of Animal Sciences and is a Fellow of the AAAS. Prior to joining MU in 2002, he was Director of Genomics at RTI International in the Research Triangle Park. From 1986 to 2000, he was an Associate and then full Professor in the Faculty of Genetics and Department of Animal Science at Texas A&M University.