

# Growing Your Business:

The Untapped Resources of Ohio's Colleges and Universities



**Thursday, Nov. 17, 2016**

**The Ohio State University**  
Ohio Union  
1739 N. High St.  
Columbus, OH 43210



**MIKE DEWINE**  
OHIO ATTORNEY GENERAL



**THE OHIO STATE UNIVERSITY**

# GROWING YOUR BUSINESS

## Table of Contents

Sponsored Programs .....	1
Ohio Research Capabilities.....	2
Master Alliance Agreement.....	34
Workforce Development.....	60
Ohio Two-Year Workforce Development Capabilities.....	61
RAPIDS.....	70
Raising Capital.....	75
Ohio State Start Ups.....	76
Ohio State: Incubating Technologies.....	97
The Ohio State Innovation Fund.....	116
Ohio Third Frontier: TVSF.....	123
Technology Transfer Offices.....	162
Ohio State Commercialization Tool Kit.....	163
Template Documents.....	201
Technology Transfer Office Contacts.....	235

# SPONSORED PROGRAMS

# **OHIO RESEARCH UNIVERSITY CAPABILITIES**

## **University of Akron**

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- **Akron Polymer Technology Services**

At APTS (formerly the Akron Polymer Training Center and Applied Polymer Research Center), our mission is to advance all sectors of the polymer industry through the delivery of training, testing, and processing services that enrich learning and optimize industrial performance. Services are enhanced by the capabilities within The University of Akron and by developing domestic and international partnerships with business, industry, community, and other institutions of higher education.

- **The Magnetic Resonance Center**

The Magnetic Resonance Center operates eight superconducting NMR spectrometers, including an INOVA 750 MHz instrument with a cryoprobe and other accessories to perform every possible experiment yet devised. Seven other instruments with frequencies from 200 to 500 Mhz are equipped to perform solution and solid state multiple resonance 2D- and 3D-experiments. The techniques available on some of the lab's instruments include quadruple resonance, shaped pulses for selective excitation and pulsed field gradient work. The lab is also equipped with a Q-band ESR instrument for continuous wave experiments.

- **Maurice Morton Institute of Polymer Science and Polymer Engineering**

The Maurice Morton Institute of Polymer Science and Polymer Engineering conducts basic and applied research, focusing on the creation of new polymers and the study of their physical properties. Within the institute are the Macromolecular Modeling Center, the Applied Polymer Research Center, Microscopy Laboratories and the Magnetic Resonance Center.

- **Coalescence Filtration Nanofibers Consortium (CFNC)**

The CFNC conducts fundamental research on the performance of coalescing filters, design of filter media and the fabrication of nanofibers for use in filter media. The CFNC is a forum for industry-university cooperation. The CFNC hosts semi-annual meetings with industrial sponsors. CFNC faculty also works with government agencies and small businesses in developing nanofiber materials from polymers, carbon and ceramics for a wider range of applications.

## **Bowling Green**

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- **Developing Effective Businesses and Organizations**

A strong economy requires the development of effective organizations in the private, nonprofit, health care, social service and educational sectors. Bowling Green State University's Center of Excellence in Developing Effective Businesses and Organizations addresses the state's need to nurture talent and foster innovation in order to make Ohio competitive. Goals include building partnerships with businesses to provide access to University data and expertise and collaboration with regional organizations to create new knowledge and innovations.

- **Health and Wellness Across The Lifespan**

Building on the University's distinctive educational role and nationally recognized research programs, the Center focuses on the promotion of wellness and improved quality of life – which in turn can help produce lower costs for health care and less lost time at work for Ohio's citizens.

- **Sustainability and the Environment**

The Center builds on existing strengths in the sciences and technology and charts a course for future synergies that address critical needs of the state and nation. It couples basic and applied research in the areas related to environmental sustainability with economic and technological development.

## **University of Cincinnati**

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Most of the collaboration that we facilitate happens in conjunction with one of sixteen business centers on campus. These are the colleges, departments and specialties that most regularly work with the private sector.

MetroLAB  
Skin Science and Technology Center of Excellence  
The Thompson Center  
UC2U  
UCommunicate  
UC Biology  
UC Chemistry  
UC Engineers  
UC Geology  
Advanced Manufacturing Center  
Coming Soon: UC Psychology  
center for collaborative medical device design

- **Center for Collaborative Medical Device Design (CCMDD)**

We are an expert resource where leading medical device manufacturers like C.R. Bard and Halyard Health turn to spark innovation for existing product enhancement and new device development. CCMDD combines innovative front-end research techniques with great product development to optimize medical device design. Our relationships with key hospitals such as the University of Cincinnati Medical Center enables us to conduct design research in the clinical environments where healthcare providers use medical devices daily. With the faculty, students and facilities of four separate UC colleges also at our disposal, CCMDD offers a multi-disciplinary team with a proven record of success in device development. We ask questions. We design. We engineer. We solve real problems for real people. We partner with device manufacturers to create medical devices that improve patient care and impact clinical practice.

- **MetroLAB**

MetroLAB is a design/build/research program that aims to design, innovate and construct projects that support the infrastructure and development of the built environment. That means working with architecture, design and construction firms to apply research to industry projects; learning through the process of creating; and engaging the community on the impact of design on neighborhoods.

- **Skin Science and Technology Center of Excellence**

P&G is the founding partner behind this innovation center, which was created to advance the understanding of the science behind skin. Research is fundamental to the company's product development, and this center—exclusive to UCRI—will be pivotal to furthering P&G's needs in skin science and technology.

- **The Thompson Center**

The Thompson Center at UCRI creates need-driven medical device technology. The center starts with a clinical need, ensures a defensible business case, then tackles it through the invention of medical devices that can be sold in the medical marketplace. Every project the center undertakes has the goal of creating a business that will improve health and health systems.

- **UC Biology**

UC Biology provides traditional research assistance that impacts product development and design. For example, one recent project tested the impact of heat, light, scent, chemicals and other natural and artificial stimuli on the efficacy of insect capture devices. The center calls on a combination of researchers and graduate assistants to deliver its work.

- **UC Chemistry**

UC Chemistry advances and expands industrial sponsorship of chemistry-related research and development. The center, along with UCRI's efforts, encourages technology commercialization and economic development in Cincinnati and surrounding regions. It also offers resources to enhance research infrastructure, strengthen graduate research and invest in new emerging areas of research. Current industry partners include P&G and Ribonova.

- **UC Engineers**

UC Engineers delivers a wide range of engineering services that spans advanced technology, consulting expertise, state-of-the-art testing and groundbreaking research. Relationships with industry partners strengthen college infrastructure and allow increased investment in emerging/strategic areas to the benefit of companies across the tri-state. UC Engineers clients experiencing success include GE Aviation, P&G, GE Power and Water, Hyundai Motors, VP Korea, AMP, Okeanos Technologies, Lubrizol and L3-CE.

- **UC Geology**

UC Geology complements outside industry by applying its specialized knowledge, labs and equipment to client problems. One recent example: crushing 1,000 pounds of zircon pellets to extract the highest yield of usable material possible. Current partnerships include Central Mineral Processing.

- **Advanced Manufacturing Center**

The Advanced Manufacturing Center at UCRI houses some of the industry's most cutting-edge technology, offering virtually limitless possibilities. Think of it as 3D printing on steroids: Instead of little plastic models, this technology allows the design, manufacture and functional use of prototypes printed on a variety of materials such as polymers, metals, bone... even chocolate. Advanced Manufacturing offers numerous benefits that other manufacturing techniques don't. Rapid prototyping. Material development. Optimized design. These are just a few reasons why many technology-driven industries like aerospace engineering and healthcare are investing significant resources in developing Advanced Manufacturing.

## **Cleveland State University**

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- **Center for Advanced Control Technologies (CACT)**

**Mission:** Establish a renowned, interdisciplinary, research and development environment to extend the boundary of knowledge in control technologies, in partnership with business and government. Generate a valuable portfolio of intellectual property based on these new technologies. Assist the center's business and government partners with the adoption and application of this intellectual property to significantly enhance their products, services or internal processes to their competitive advantage. Disseminate the newly developed knowledge throughout the partner's organizations via research reviews and publications, technical workshops and onsite training, internships, sabbaticals, and research collaboration. Provide specific problem-solving expertise to the center's partners in process control, machine control, system monitoring, diagnostics, machine intelligence, vision sensing, etc. Maintain a hands-on learning environment for students to develop and apply these new technologies to solve real-world problems.

**Research Goals:** The past 80 years have seen great leaps in control theory. Indeed, the advances have been so great as to spawn an entire new branch of mathematics. Modern control theory has literally put humans on the moon and brought distant galaxies into focus, but it has not found its way into the lives of ordinary people, because it is too complex to understand and apply by any but the most practiced mathematicians. It unfortunately remains in the realm of rocket science. CSU has, over the last few years, built the CACT into a world class research center. The CACT emphasis is not limited to academic research, but rather addressing the most timely and difficult commercial and consumer product control issues with cutting edge control technology. Most control applications use the same PID technology today as 80 years ago, because it is "good enough" and easy to apply. The CACT vision is to implement these new control technologies in a manner as simple to use yet more powerful and reliable than PID.

**Technologies:** In the area of developing cutting edge technologies to help companies to maintain a competitive advantage in industrial control, the CSU research center is without peer. The CACT is pursuing technologies such as:

- Advanced control algorithms: Active Disturbance Rejection Control, Non-linear PID, multi-variable time varying control, scaling and parameterization, discrete time control, adaptive control, self-tuning control, model independent control, and distributed control systems.
- System diagnostics and health monitoring, signature analysis.

- System optimization: statistical sampling, fuzzy logic, neural networks, system estimators, wavelet transformations, filters, and observers. 2D & 3D optical and vision recognition and measurement.
- Machine intelligence and model building.
- Multi-sensor fusion, multi-input and multi output systems.
- Robotics and automation.
- Intelligent signal processing.
- Hardware in the loop simulation.
- Control hardware at all levels: PC based, card based as well as embedded UP/DSP chip based systems.
- Rapid prototyping: electronic design, circuit layout, in-circuit emulation, enclosure testing.

All of these technologies have exciting theoretical applications, and the potential to make machines many times more efficient, but what interests the researchers at the CACT is their potential to make control practical. This is the most valuable aspect of these technologies, because that gives them the potential for rapid and widespread application. These technologies have been proven at the CACT in many industrial applications.

- **Center for Gene Regulation in Health and Disease**

The Center focuses on research to improve understanding of biological processes and how malfunction of these processes results in various diseases. This research has significant potential to improve our understanding of the mechanisms and specific molecules that control reproductive health and those that control the aging process as well as implications for the diagnosis and treatment of many of the most common diseases found around the world, including heart disease, neurological disease, infectious disease and cancer. **Vision Statement:** To enhance and integrate research focused on Gene Regulation in Health and Disease leading to better understanding of the molecular mechanisms controlling these processes and the identification of therapeutic targets.

- **Center for Research in Electronics and Aerospace Technology (CREATE)**

The Fenn College of Engineering at Cleveland State University has launched the CREATE program to provide focus and support to its current and future aerospace-related research efforts. These efforts are aimed at producing real innovation within the aerospace industry, yielding the giant strides in technology academia used to be known for. From Advanced Power Systems and Controls technology, to flywheel research, CREATE is working to make real the promise of a more-electric future.

- **Center for Rotating Machinery Dynamics and Control (RoMaDyC)**

The Center's mission is to serve as a catalyst for interaction with industry and federal research sponsors, foster collaborations with researchers from other disciplines, and attract outstanding undergraduates, graduate students, postdoctoral visitors, and faculty in machine dynamics and control. The RoMaDyC is dedicated to enhancing productivity and competitiveness of its

partners in industry, focusing on research to provide cutting-edge technical innovations to solve complex problems in engineering systems involving rotating machinery, structures, dynamics and control. The Center serves as an intellectual resource for the industry with the aim of continuous improvement and long-term development. In addition to research and development, RoMaDyC maintains an active educational mission to both educate and provide information to the community regarding rotating machinery, advanced dynamics and control.

- **Great Lakes Environmental Finance Center**

The Great Lakes Environmental Finance Center is a partnership between the U.S. EPA and the Maxine Goodman Levin College of Urban Affairs. Our mission is to help in the financing of investments to improve environmental quality and assure a sustainable future for regulated communities in Region 5 (Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin). The Great Lakes EFC is a technical assistance, training, and research resource for state and local government, private sector, and non-profit organizations. Great Lakes EFC helps solve financial problems related to environmental facilities and resources.

- **Wright Center for Sensor Systems Engineering**

Sensors measure temperature, pressure, contaminants in water and oil. But there are opportunities to make sensors that measure new things, or measure them better, so that machinery, cars and our bodies run better and longer. To do this, we need new types of sensors to measure new parameters and do so in a smaller, less expensive or more robust package. And we need new sensor systems – new ways to communicate, validate and interpret sensor data.

Better sensors and sensor systems will improve the products for which Ohio is well known – automotive, aerospace, biomedical, agriculture and food processing – and emerging markets such as advanced energy and advanced materials. And, northeast Ohio has significant business presence and world-class research and development capabilities in Instruments, Controls and Electronics. This provides critical enabling capabilities for development and commercialization of sensor and sensor systems technologies.

The Wright Center for Sensor Systems Engineering (WCSSE) addresses the opportunity to improve Ohio products using Ohio business and university resources

## **Kent State University**

Division of Research and Sponsored Programs  
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- **Liquid Crystal Institute**

Research at the LCI addresses the entire range of multidisciplinary topics associated with the science and technology of liquid crystals and related self-organized materials and devices. A series of pivotal contributions have been made by the LCI researchers, including the invention of the twisted nematic cell, the heart of LCDs. The field of liquid crystals is now undergoing a quantum leap, beyond information displays into the advanced photonics, sensors, bio- and medical molecular devices, and smart materials for new energy applications. The LCI is the place where the future of the liquid crystals is relentlessly pursued, fostering cross disciplinary and academia-industry collaborations, and offering society the next generation of bright minds.

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- **Center for Nuclear Research**

Kent State University's Center for Nuclear Research offers consultation and collaboration on research into the structure and interaction of subatomic matter including nuclear materials, nuclear medicine, particle detectors and image processing. Graduate students here learn theoretical and experimental techniques for nuclear and particle physics, and may travel to national laboratories and accelerator facilities to perform experiments. In addition, the center brings distinguished physicists to campus for research seminars and scientific collaborations. The program receives strong support from the National Science Foundation and the U.S. Department of Energy.

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- **Center for Materials Informatics**

Materials informatics is an emerging interdisciplinary field that promotes data management, standards, and exchange as well as data mining and analysis as a means of accelerating scientific

research. CMI is initially focusing on soft matter (e.g., liquid crystals, polymers and proteins), biomaterials and nanomaterials.

- CMI Objectives:
  - Using a full array of modern informatics technology
  - Producing tools, applications, data resources and knowledge on a multi-disciplinary scale
  - Supporting acceleration of development and adoption of new materials
  - Helping to prepare the next generation of scientists as early adopters of new approaches to conducting science
  - Contributing to the mission of Kent State University and the State of Ohio
  
- Services Provided: Adoption, application, consultation, and development relating to:
  - Materials data management and databases
  - Open data platforms for collaborative, multi-institutional efforts
  - Open materials standards and protocols
  - Computational materials tools

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- **How We Work With Industry**

Research at Kent State focuses on solving major global challenges in energy, healthcare and education. Our research in areas such as advanced materials, aging, bioengineering, neuroscience and water makes an economic impact on Ohio and the nation. We partner closely with industry to move research discoveries into the marketplace and to create jobs and economic vitality. We work with companies early in the research and technology development process so that we can develop innovative solutions to real problems and access state and federal funding for public-private partnerships. We also collaborate with companies to create favorable license terms that are most likely to lead to commercial success. By recognizing that the true value of intellectual property is in economic development, we are able to significantly reduce the time required to execute a license.

## **Miami University**

Research Centers & Institutes  
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- **Augmented Reality Center**

The Augmented Reality Center is a cross-disciplinary creative community focused on advancing augmented reality as a cultural practice. This means inventing and creating augmented reality (AR) applications that can benefit ordinary people, collaborating with partners in industry and with cultural institutions, ensuring that theory informs practice, and that the lessons learned from practice feed back into scholarship. The Center invites participation from anyone with an interest in AR, regardless of discipline.

Contact:

Bo Brinkman, Technical Director  
Phone: 513-529-0354, or  
Helen Armstrong, Creative Director  
Phone: 513-529-2232

- **Center for Aquatic and Watershed Sciences**

The Center for Aquatic and Watershed Sciences (CAWS), was established to promote research and education on the linkages between watersheds and aquatic ecosystems.

- **Center for Bioinformatics and Functional Genomics**

The Center for Bioinformatics and Functional Genomics is a state of the art research and training facility available for all members of Miami University. The CFBFG employs full-time staff, who are available for training, operation, and maintenance of the Center's equipment. The equipment in the CFBFG includes 4 Applied Biosystems capillary DNA sequencers, a robotic liquid handling system, Real-time PCR thermocyclers, a DNA microarray scanner, an Agilent 2100 bioanalyzer, a UV/VIS/fluorescent plate reader, and a computer cluster for bioinformatics analyses.

- **Center of Excellence for Structural Biology and Metabonomics**

An Ohio Center of Excellence, Miami's Center for Structural Biology and Metabonomics, develops metabolic profiling databases for children's diseases targeting gastrointestinal and cardiovascular diseases, cancer and obesity. The Center is a unique State of Ohio resource for protein structure-function studies and offers state-of-the-art capabilities for metabonomics research. Research is done in a collaborative consortium with physicians at the Cincinnati Children's Hospital Medical Center, Nationwide Children's Hospital in Columbus and Rainbow Babies Hospital in Cleveland

Contact:

Dr. Michael Kennedy, Director.

Phone: 513-529-8267.

- **Center for Neuroscience and Behavior**

The Center for Neuroscience and Behavior is an interdisciplinary research center with a mission to promote neuroscience research as well as to train graduate and undergraduate students for a career in developmental, cellular, molecular, and behavioral neuroscience. Center faculty conduct research in behavioral neuroscience; cellular, molecular, and developmental neurobiology; neuroanatomy; neurophysiology; neurochemistry; neuroendocrinology; neuropharmacology; and neuroimaging.

## **NEOMED (Northeast Ohio Medical University)**

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- **The Research, Entrepreneurship, Discovery and Innovation Zone (REDIzone®)**

REDIzone® enables innovators of biotechnology to take their research from concept to capital. With a mission to improve health worldwide, the program forms strategic partnerships to unite entrepreneurs and early stage biomedical companies with University resources to catalyze the development of biotechnology. Strategic partnerships with the REDIzone open doors to new opportunities and provide invaluable resources, including: state-of-the art wet lab space and facilities adjacent office and conference spaces world class scientists, technology and technology transfer operations access to teaching hospitals, business development and funding resources.

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- **Analytical Core**

The Analytical Core Laboratory within the Department of Integrative Medical Sciences is equipped with a diverse array of analytical instruments that facilitate the execution of a wide variety of experiments. The analytical core has the following equipment available to NEOMED investigators:

- **Shimadzu UV-2101PC spectrometer**, NEOMED #0011510 for spectra scanning, enzyme kinetics and endpoint analysis. Uses: Spectra analysis of organic compounds and biological proteins, enzyme kinetic analysis and endpoint UV-visible absorbance of proteins and organic compounds.
- **Gene Amp PCR 9600 machine**, NEOMED #00340045. Uses: Amplification of cDNA and DNA templates for analysis by gel electrophoresis.
- **Labconco Lyophilizer and Centrivap Concentrator**, NEOMED #000011501; Uses: Concentration of organic compounds and biological solutions to increase analyte level and remove water.
- **Waters 600 High Pressure Liquid Chromatography System with controller and system software**, NEOMED# 007000955, **dual pump, photodiode array**

**detector, auto-sampler and fluorescence detector**, NEOMED #00700958.  
Uses: Separation and quantization of organic and biological compounds including steroid, nucleotides, fatty acids, eicosanoids, drug metabolites and other small molecules. System provides continuous injections through auto-sampler and compilation of results with system software

- **Pharmacia Fast Performance Chromatograph**, NEOMED #000112176. Uses: Can separate proteins and recombinant expressed proteins using either size exclusion or ion-exchange chromatography. System software and data analysis with fraction collector provides investigators off-hands use during separation of proteins or lipoproteins from plasma.
- **Typhoon 8610 Scanner Image analysis System**, NEOMED #002000249, used for detection of fluorescence, chemiluminescence and radioactivity compounds. Uses: Phosphoimager for detection and quantization of DNA fragments, DNA southern blots, Northern RNA blots, electrophoretic mobility shift assays (EMSA), DNA footprinting and differential display. Fluorescent assays for detection of western immunoblots, microplate analysis DNA amount, lipid accumulation in cells, apoptosis assay, MTT cytotoxicity assay and drug metabolism with fluorescent drugs or chemicals. Chemiluminescence analysis of western immunoblots and gene reporter assays.
- **Biotek Synergy 4 Microplate Reader, with the capabilities of fluorescence, luminescence, absorbance, FRET, polarized fluorescence**, NEOMED #206853; Uses: Luminescence gene reporter assays, Elisa absorbance assays and cell viability and cytotoxicity assays, time resolved fluorescence (TRF), fluorescence polarization and fluorescence resonance energy transfer (FRET) assays. Fluorescence is used in multiple assays from measurement of reactive oxygen species and lipid peroxidation, to drug-protein interactions by FRET.
- **Real Time PCR ABI 7500 System**, NEOMED #N00001289, used real-time analysis of PCR amplification. Uses: Gene expression quantization either by absolute or relative methods using SYBR Green or Taqman fluorescent primers and probes. Investigators can determine DNA copy number and allele discrimination using this instrument. High resolution melting point analysis for small nucleotide polymorphisms (SNPs) and mutation analysis can be performed using this instrument.
- **Brinkman Polytron**, NEOMED #000010287. Uses: Homogenization and tissue disruption of soft tissues and cells with large or small tissue disintegrator probes.
- **Heat System Sonicator Cell Disruptor Model WI85F**, NEOMED #0000643. Uses: disruption of cells, chip assay reduction in chromatin size, production of micelles –microsomes and solubilization of immiscible liquids.

- **Cardiovascular Phenotyping Core**

The Department of Integrative Medical Sciences offers an Echo Core Laboratory well equipped with the latest technology available for any small animal study that requires echocardiographic assessment. Investigators have access to state-of-the-art instruments, including the VisualSonics Vevo 770 micro-imaging system, capable of delivering the highest quality 2-D ultrasound images, contrast imaging, tissue Doppler and Doppler blood flow. Also in our facility is the Siemens Sequoia system used for perfusion imaging.

Our machines, complete with versatile software packages, allow for easy image acquisition and assist investigators in developing customized protocols for imaging of various organ systems. Our facility is also equipped with other useful instruments such as pressure transducer catheters (Millar) and data acquisition systems (ADInstruments) that make other hemodynamic assessments, such as pressure/volume measurements possible. Several current studies being conducted in our facility include structural/functional studies following myocardial infarction, ischemia/reperfusion models and myocardial perfusion (contrast) imaging. Also located within our echo facility are surgical platforms and dissecting microscopes to facilitate the use of the applications.

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- **Comparative Medicine**

The Comparative Medicine Unit (CMU) is a centralized 41,000-square-foot secured facility located on the University campus. It provides animal care services in support of the research and teaching programs at Northeast Ohio Medical University. The facility can accommodate a broad range of laboratory animal species in a safe and secure environment. A disaster plan has been developed to assure appropriate animal care during emergencies. The institution has an Animal Welfare Assurance on file with the Office of Laboratory Animal Welfare (OLAW) and is registered as a research facility with the United States Department of Agriculture (USDA).

The CMU participates in the highly regarded voluntary accreditation program offered by the Association for Assessment and Accreditation of Laboratory Animal Care (AAALAC) International. The CMU has been fully accredited by AAALAC since 1982. The CMU was again awarded Continued FULL accreditation status by AAALAC, International on June 9, 2014.

- **Viral Core Facility**

The Viral Core facility of the Department of Integrative Medical Sciences is an important biotechnological and knowledge resource for the Department's investigators and their collaborators who request assistance in the use of viral gene expression vectors. The primary function of the core is to construct and purify viral vectors for basic research studies in tissue

culture and animal experimentation. The services provided by the core facility include construction of new adenovirus vectors, large scale purification, quantification of adenovirus gene vectors and long term storage. The facility will also assist in bacterial cell transformation, plasmid isolation and large scale purification if needed.

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## **Ohio University**

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- **The Industry Partnership Office (InPO)**

InPO's mission is to find and enhance synergies between university and corporate sponsors for mutual benefit, as well as for the economic and cultural enrichment of the state of Ohio and region. InPO helps build mutually beneficial relationships by matching OHIO's vast resources to industries' specific needs. InPO maintains strong connections with our research and clinical faculty, college administrators and key institutional entities so we are informed of their current capabilities and technologies. To achieve its mission, InPO places a high value on the relationships created between industry partners and the university's internal stakeholders involved in collaborations for research, technology commercialization, entrepreneurship, philanthropy and student internship and career placement services.

- **Edison Biotechnology Institute**

The Edison Biotechnology Institute (EBI) is a research institute of Ohio University. Our rich interdisciplinary and entrepreneurial environment fosters basic discovery research, the development of new technology -- and the transfer of that technology to the private sector to create companies, jobs and investment in Ohio. This Institute combines internationally recognized expertise in molecular, cellular, and developmental biology into an integrated system of basic and applied research for human medical, drug discovery, and agricultural applications. Our investigators help to find new ways to diagnose and treat illness through research programs in growth disorders, diabetes, obesity, autoimmune diseases, inflammation, aging, infectious diseases and cancer.

With 40,000 square feet of laboratory space and state-of-the-art equipment, the Wilfred R. Konneker Research Center was designed to meet the needs of interdisciplinary biotechnology research. Our facility accommodates:

- Proteomics
- Genomics
- Cell and molecular biology
- Flow cytometry
- Transgenic mouse models
- Bioimaging

Additional specialized research tools available to EBI scientists include:

- Electron microscopy
- Quantitative microscopy and imaging with a laser scanning confocal microscope
- Hybridoma generation
- Molecular genetics laboratory with computer-assisted DNA, RNA and protein sequencing, and microarray analysis
- NMR
- Mass spectrophotometry

Contact:

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- **Nanoscale and Quantum Phenomena Institute**

This interdisciplinary institute was founded to nurture, spotlight, and formalize nanoscience and nanotechnology research at the university. Participating departments include: Physics & Astronomy, Electrical Engineering & Computer Science, Chemistry & Biochemistry, Biological Sciences, and Chemical Engineering.

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- **Center for Intelligent Chemical Instrumentation**

The term, "intelligent instrument", refers to a new generation of analytical instruments with advanced capabilities for data interpretation, self-optimization, and decision-making. Building upon these concepts, researchers at CICI are conducting basic research in the development of new methods and instrumentation for a variety of chemical analyses. Work is currently underway in each of the areas of electrochemistry, spectroscopy, and chromatography. CICI has contributed to research related to "Homeland Security" for over a decade.

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- **Institute of Nuclear and Particle Physics**

The institute is a perfect vehicle for sponsoring joint seminars, inviting visiting scientists, providing matching money for new initiatives with federal funding agencies and national laboratories, and generally promoting and supporting research in these fields.

Contact:

Carl Brune, Ph.D., Director

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- **Institute for Quantitative Biology**

The Institute serves to stimulate and focus interdisciplinary research and training efforts to quantitative biology. The field brings formal mathematical analyses and computer modeling techniques to the study of the complex systems and expanding databases of the life sciences. Participating departments include Biological Sciences, Mathematics, and Physics & Astronomy.

Contact:

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- **Center for Electrochemical Engineering Research (CEER)**

A state-of-the-art, in-situ electrochemical/analytical and electrochemical modeling and simulation facility, the mission of the CEER is to enhance research and scholarship in electrochemical engineering, expand outreach activities to educate future generations and for public awareness, and contribute to economic development in southeastern Ohio. The center supports the commercialization of the technologies as they develop on the different stages of the road-map: incubation, demonstration, market entry, and growth and sustainability. It provides education to the work force required to operate, fabricate, and design the units, and also serves as the research and development center to continuously improve the technologies during their growth and sustainability stages.

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Phone: 740-593-9670

Email: botte@ohio.edu

- **Institute for Sustainable Energy and the Environment**

The Institute will help foster partnerships between universities, business, governments, and community groups and will help meet the region's need for economic development and utilization of the region's energy resources while ensuring environmental protection and public health and safety. The Institute integrates the efforts of two centers: The Center for Air Quality under the direction of Kevin Crist, Chemical Engineering, and Ohio Coal Research Center, under the direction of David Bayless, Mechanical Engineering.

Contact:

Ben Stuart, Director

Phone: 740-593-9455

Email: stuart@ohio.edu

- **Center for Advanced Materials Processing**

The Center focuses on interdisciplinary manufacturing applications for both traditional and new, high-technology materials. In the use of traditional materials, the center explores various applications of Computer Integrated Manufacturing (CIM) as a tool for optimizing product, process, and quality control, thereby increasing productivity and reducing costs. The Center concentrates on researching the behavior of high-technology materials (such as composites, powder metallurgy alloys, intermetallic compounds, and polymers) in production, since many must be processed within narrow temperature and deformation ranges to prevent the formation of defects. The challenge for the Center lies in gaining an understanding of the mechanical and thermal characteristics of a wide range of materials and designing processes which accommodate these characteristics.

Contact:

Frank Kraft, Ph.D., Director

Phone: 740-597-1478

Email: kraftf@ohio.edu

- **Center for Advanced Systems and Transportation Logistics Engineering (CASTLE)**

The Center serves the manufacturing community, government, and people of Ohio by developing manufacturing software systems integration strategies, systems and technologies and by disseminating the knowledge gained from their evaluation and synthesis.

Contact:

Robert Judd, Ph.D., Director

Phone: 740-593-1539

- **Avionics Engineering Center**

The Center is a unique research organization specializing in aviation research. For more than 37 years, AEC has been active in Communications, Navigation & Landing Systems, and Surveillance (CNS) research for the FAA, NASA, and DOD.

Contact:

Michael DiBenedetto, Director

Phone: 740-593-1534

Email: avionics@ohio.edu

- **Institute for Corrosion & Multiphase Technology**

This is the home for research concerning the behaviors of liquids and gases in different settings. The Center for Corrosion in Multi-Phase System Research has been recognized as a premier pilot plant test facility for multiphase corrosion studies in the world.

Contact:

Srdjan Nestic, Ph.D., Director

Phone: 740-593-9945

Email: nestic@ohio.edu

- **Center for Scientific Computing and Immersive Technologies**

The center is engaged in an active computer science and information technology research program. Engineers and scientists are developing computer technologies ranging from tiny robots that use artificial intelligence to a smart computer network that can detect hacker attacks and safeguard important data.

Contact:

Lonnie Welch, Ph.D., Director

Phone: 740-593-1575

Email: welch@ohio.edu

- **Ohio Research Institute for Transportation and the Environment. Center for Pipe and Underground Structures**

The Institute offers a multidisciplinary approach to solving environmental and transportation problems. Areas of research include: Acid mine drainage, field evaluation of bridges and pavements, human factors, noise abatement, Ohio SHRP test pavements, and subsurface exploration.

Contact:

Gayle Mitchell, Ph.D., Director

Phone: 740-593-2476

Email: orite@bobcat.ent.ohiou.edu

- **Ohio Musculoskeletal and Neurological Institute**

The Ohio Musculoskeletal and Neurological Institute (OMNI) facilitates basic and applied research in muscle, nerve, bone, and connective-tissue biology and medicine. OMNI is devoted to supporting research aimed at understanding the causes of musculoskeletal and neurological disorders, and improving the diagnosis, treatment, and prevention of these disorders. Presently, OMNI has more than 20 affiliated faculty in four colleges and eight departments. OMNI affiliation is open to researchers with interests in the musculoskeletal and/or neurological systems.

Contact:

Brian Clark, Ph.D., Director  
Phone: 740-593-2354  
Email: clarkb2@ohio.edu

- **Diabetes Institute**

The Diabetes Institute is a collaborative group of research scientists, clinicians, professors, educators, health administrators and students with a common interest in diabetes. The institute stimulates collaborative research across colleges and disciplines at Ohio University in the area of diabetes and strives to create mentors and research opportunities for undergraduate, graduate and postgraduate training as well as pre-tenured faculty. Our mission is to improve the quality of life for those affected by diabetes and related diseases through innovative basic and translational research, progressive clinical care, education and community outreach.

Contact:  
Darlene Berryman, PhD, RD, Executive Director  
Phone: 740-593-9943  
Email: berrymad@ohio.edu

## **Ohio State University**

Matt McNair  
Vice President of Economic and Corporate Engagement  
1524 N. High Street  
Columbus, Ohio 43201  
Phone: (614) 292-2994  
[mcnair.25@osu.edu](mailto:mcnair.25@osu.edu)

## **Shawnee State University**

Chris Shaffer  
Director, Institutional Research and Sponsored Programs  
940 Second Street  
Portsmouth, OH 45662  
Office: (740) 351-3688  
[cshaffer@shawnee.edu](mailto:cshaffer@shawnee.edu)

Please contact Chris for research and testing services available at Shawnee State.

## **University of Toledo**

Health Science Campus  
CCE 2102  
Mail Stop 1020  
Phone: 419-383-4252  
Email: ResearchAdmin.HSC@utoledo.edu

- **The Science and Technology Corridor**

A partner in Economic Development for connecting and developing the region's assets (including the University) in research, technology commercialization, location utilization, infrastructure availability and enhanced workforce capabilities, thereby stimulating the area's economic and social revival.

- **Wright Center for Photovoltaics Innovation and Commercialization (PVIC)**

The Wright Center for Photovoltaics Innovation and Commercialization (PVIC) is a means whereby the State of Ohio will expand its high technology research base in Ohio's core competency of advanced manufacturing using advanced materials. PVIC supports the generation of employment opportunities for Ohio's workforce through innovation and commercialization activities centered on eliminating commercialization barriers currently facing Ohio companies in the photovoltaics (PV) sector. Companies active in the PV industry, from those researching advanced materials development to those deploying the energy producing devices, advise and coordinate experts in Ohio universities and national laboratories in their PVIC contributions.

- **LaunchPad Incubation at The University of Toledo (LPI)**

The LaunchPad Incubation Program (LPI) at The University of Toledo provides intensive entrepreneurial assistance, state-of-the-art facilities and other valuable resources to early-stage, technology-based startup companies. The program is focused on taking business ventures from concept to commercialization and providing a framework for companies to become thriving, self-sustaining members of the community. LPI works to bolster innovation in Northwest Ohio by providing access to capital, business development resources and expertise focused on enhancing community collaboration and communication for entrepreneurial development.

- **Rocket Innovations (RI)**

Rocket Innovations promotes relationships between the University of Toledo researchers and business leaders and to spur technological discoveries and commercialization and assists UT in coordinating economic development related activities for the economic growth of the region. RI support UT through the development, support and investment in services for public and private economic development projects.

- **Technology Clusters in Northwest Ohio**

The Jack Ford Urban Affairs Center, working collaboratively with Bowling Green State University's Center for Policy Analysis and Public Service, identified a number of technology clusters for Northwest Ohio that are the focus of a coordinated economic development program involving the Regional Growth Partnership, the Toledo-Lucas County Port Authority, the City of Toledo, and Lucas County.

- **The Intermodal Transportation Institute (ITI)**

The University of Toledo (UT) has initiated efforts to establish an Intermodal Transportation Institute (ITI). The purpose of the ITI is to work cooperatively with public and private sector partners in transportation, logistics, and supply chain management to increase economic opportunity and improve the quality of life.

- **The University of Toledo University Transportation Center (UTUTC)**

The UT-UTC focuses on economic development through transportation research and education. The initial plan for the Center was articulated by businesses that depend on transportation to compete successfully in a global economy.

- **The Global Business Development Institute**

The International Business Institute (IBI) at The University of Toledo is dedicated to strengthening the global competitiveness of firms in the Great Lakes region through educational programs, contract research, training services, management consulting, and timely publications. The IBI is committed to advancing international programs at UT through faculty development, international business co-ops/internships, study-abroad programs, and a world class curriculum.

## **Wright State University**

Wright State Research Institute  
4035 Colonel Glenn Hwy., Suite 200  
Beavercreek, OH 45431  
Phone: 937-705-1000  
Fax: 937-705-1095

Wright State Applied Research Corporation  
4035 Colonel Glenn Hwy., Suite 100  
Beavercreek, OH 45431  
Phone: 937-705-1010  
Fax: 937-705-1095  
Email: terry.rapoch@ws-arc.org

- **Remotely Piloted Aircraft**

The scope of the Remotely Piloted Aircraft (RPA) program is to conceive, identify, research, develop, quantify, evaluate, demonstrate, and support the transition of single RPA operator / supervisor human performance enhancements to the Air Force operational user community. The human performance enhancement technologies, methods, and techniques support cradle-to-grave research development for: human automation interactions; information integration, visualization, and management; and dynamic telepresence of remote operations.

- **Analyst Test Bed**

The Analyst Test Bed (ATB) effort is designed to test innovative Processing, Exploitation, and Dissemination (PED) technologies and capabilities within a realistic, multi-intelligence analyst environment that is optimized to deliver to the analyst the most information with the least possible workload.

- **Aerospace Technology Evaluation & Assessment**

The object of the Aerospace Technology Evaluation & Assessment (ATEA) program is to provide research and engineering for the technical requirements of AFRL and ASC. By employing and generating state-of-the-art modeling, simulation and analysis tools, techniques, and flight tests, this program will provide: research, development, demonstration, integration, and transition of new air vehicle technologies and modeling, and analysis and evaluation of current and future warfighter needs.

The scope of this program encompasses a broad spectrum of research and development activities and includes the development, maturation, assessment, and integration of aerospace vehicle technologies including, but not limited to: vehicle flight management systems; control theory; cooperative control; autonomous control; integrated guidance/navigation control; operator vehicle interfaces; vehicle configuration and aerodynamic performance; multidisciplinary design; multifunctional structures and systems; adaptive structures and systems; thermal management; sensor and effector systems.

- **Ahead**

The Alliance for Human Effectiveness and Advancement (AHEAD) brings together academic, government, and industry partners to collaborate on human systems research and technologies. The Alliance overcomes barriers and discovers breakthrough solutions that might not be possible individually.

- **Rehabilitation Engineering**

The Rehabilitation Engineering Services & Technology Program is a licensed professional engineering service that provides individualized education and employment accommodation solutions for people with disabilities, including wounded warrior veterans. The program specializes in assistive technology assessments and training for ADA Sections 503, 504 & 508 compliance, special education, and vocational rehabilitation.

- **Tec^Edge Works**

WSRI is a foundational stakeholder in the Tec^Edge Works facility in Dayton, OH. This facility provides a flexible environment for hands-on rapid prototyping and experimentation by government, university, and industry collaborators. It features open high-bays, prototyping equipment and quick access to the Dayton region's precision fabrication, manufacturing, and transportation resources. In collaboration with AFRL and industry partners, WSRI executes Unmanned Aerial Vehicle (UAV) research projects at this facility and also provides operational and facilities management support.

- **Wright Brothers Institute**

The Wright Brothers Institute's Tec^Edge initiative provides innovation capability through its offerings of development workshops, solution forums, and long term resident team support. Over 8,000 innovators have collaborated at the Tec^Edge environment over the course of nearly 300 collaborative forums. By utilizing knowledge management disciplines, WSRI designed and developed a formal process and set of database tools to measure success of those collaborations through metrics. The reporting system provides metrics in key performance areas to include human capital, collaboration, research innovation, technology development, technology transfer and commercialization, and economic development.

- **Big Data**

Working with experts in Wright State University's College of Engineering and Computer Science, the Institute is compiling meaningful data for partners and customers who need to search and organize enormous and complex volumes of information. Through the Big Data program, Wright State Research Institute is helping provide answers to questions and solutions to problems.

- **Healthlink (Social Security Disability Exchange)**

The Wright State HealthLink (Social Security Disability Exchange) provides efficiency, organization, and value to the disability benefits process. By leveraging intellectual properties in the areas of engineering and medicine, electronic records and transactions are streamlined and automated to reduce time and errors involved in applying for benefits or processing requests. This program is one example of how Wright State Research Institute is partnering to discover cutting-edge research and provide a development pathway to bring new technologies to the commercial market.

- **Clinical Trials and the Clinical Trials Research Alliance (CTRA)**

Within the Clinical Trials Research Center, researchers study how technology and medicine can work together to provide medical solutions to patients and healthcare providers. Whether it's attracting or conducting clinical trials, the Institute and its partners are finding new and better ways to prevent, detect, diagnose, control, and treat illnesses. Some of the capabilities contained in the Clinical Trials Research Center include:

- **Human Sciences Research Center**

Within the Human Sciences Research Center, researchers investigate how people analyze information and perform tasks related to warfare, healthcare, intelligence analysis, technology, and more. With this knowledge, the Institute and its partners look for ways to improve human performance in these areas. Some of the capabilities contained in the Human Sciences Research Center include:

- Neuroscience and Medical Imaging
- Intelligence Analyst Performance
- Cyber Operator Performance
- Rehabilitation Engineering

- **Data Analytics Research Center**

The Wright State Research Institute, in collaboration with Wright State University's College of Engineering and Computer Science, is turning Big Data into solutions. By searching enormous volumes of information then organizing it in new applications or adapted use, our experts are helping people answer questions, make sound decisions, reduce excess costs, provide better insight, and improve the human experience.

- **Sensor Exploitation Research Center**

Within the Sensor Exploitation Research Center, researchers are focusing on breakthrough innovations that improve the ability to gather and use information from intelligent sensing programs. Some of the capabilities contained in the Sensor Exploitation Research Center include:

- Automatic Target Recognition; and
- Intelligent Sensing

**Youngstown State University**

Michael Hripko  
 President, Youngstown State University Research Foundation  
 Room 253  
 314 Phelps Hall  
 One University Plaza  
 Youngstown, OH 44555  
 Office: 330-941-3092  
[mahripko@ysu.edu](mailto:mahripko@ysu.edu)

Areas of Emphasis	Key Principal Investigators	Current relevant research	Key Assets/ Facilities
YSU Center of Excellence in Additive Manufacturing	Dr. Brett Conner Dr. Darrell Wallace	Additive Manufacturing  First Piece Samples and Small Batch Manufacturing	Siemens NX and PLM Software ExOne M-Flex Powder Bed/Binder Jet printer ExOne S-Max Sand Core printer
			Design and Print Services
			3D printers and scanners, laser cutters, advanced metrology equipment and a sintering furnace
			Printers, scanners, cyber-enabled for remote operation and education
		Access to assets at America Makes (NAMII)	
		Hybrid Manufacturing	Economic Development and Educational Services
			Laser Fusion printer

Areas of Emphasis	Key Principal Investigators	Current relevant research	Key Assets/Facilities
YSU Center of Excellence in Materials Science and Engineering	Dr. Tim Wagner	Material Development, Analysis, and Characterization	Bruker Prospector CCD Diffractometer
			Bruker Quest CMOS Diffractometer
	Dr. Virgil Solomon	Composites (Mechanical and impact properties)	Bruker SMART APEX CCD Diffractometer

Areas of Emphasis	Key Principal Investigators	Current relevant research	Key Assets/Facilities
	Dr. Allen Hunter	Fracture mechanics	Bruker-Nonius D8 Advance Powder Diffractometer
	Dr. Hazel Marie	Smart Materials	Rigaku Miniflex II XRD
	Dr. Clovis Linkous	Nanomaterials (adaptive properties of shape memory composites)	S2 Ranger X-ray fluorescence spectrometer
	Dr. Darrell Wallace		JEOL JIB-4500 Multibeam System
	Dr. Peter Norris		JEOL 2100 Scanning transmission electron Microscope
	Dr. Pedro Cortes		JEOL JSM-7600F Scanning Electron Microscope
			JEOL JSM-IT300LV Variable Pressure SEM
			Bruker Avance magnet, robotic sample changer and variable temperature accessories and a Triple resonance probe optimized for 13C observation with simultaneous 1H and 19F decoupling
			Bruker Avance 400 spectrometer with a refurbished magnet with a multinuclear broadband inverse probe for indirect detection of less sensitive nuclei and multidimensional NMR data collection.
			Chemical Vapor Deposition Unit (synthesis of carbon nanotubes)
			Gas and powder gun (impact properties of materials)
			Drop impact tower (impact properties of materials)
			Universal mechanical testing machine (mechanical properties of materials)
			Molding press (manufacture of composites)
	Data Acquisition systems (detection of bio-chemical analytes)		

# **MASTER ALLIANCE AGREEMENT**

## MASTER ALLIANCE AGREEMENT

This Master Alliance Agreement (“MAA”) is between the \_\_\_\_\_ University (“University”), a public University of higher education of the State of Ohio and The Procter & Gamble Company, an Ohio corporation, acting through its Procter & Gamble business at 1 P&G Plaza, Cincinnati, Ohio (hereinafter, together with its Affiliates, “P&G”).

The parties to this agreement desire to engage in a continuing program of mutual interest and benefit which will encompass research, education, service, task oriented and general program support projects. P&G is willing to fund these programs and projects pursuant to the terms of this MAA. University is willing to enter into this MAA with P&G, which will further the educational and research objectives of University and which provides a benefit to a valued Industrial Sponsor (P&G) and to the community that is consistent with University’s status as a public comprehensive system of learning and research.

University and P&G hereby agree as follows:

### 1 Definitions.

- 1.1 “Background IP Rights” means patent rights, copyright rights (excluding copyrights in scientific articles), design rights, mask works, and other forms of intellectual property rights for which are filed or registered at a national or regional governmental office to perfect or secure said rights that preceded or otherwise did not arise from a Project, are known to the Principal Investigator, the Co-Principal Investigator(s) if any, and which would affect P&G’s rights to practice the Results as contemplated in the Project Specification.
- 1.2 Category A “Research Project” will mean research which University conducts to uncover new and different trends or facts leading to a discovery. The pathway to discovery and the creativity of new ideas is in the hands of Principal Investigator (PI), Co-Principal Investigator (Co-PI) and University employees and students and usually starts as a Research Proposal which outlines a promising area of research. Research is an investigation aimed at the discovery and interpretation of facts, revision of accepted theories in light of new facts, development of new analytical and experimental protocols, or practical applications of such new theories, analysis, data gathering and experiments. The investigation may be of either generic or specific interest to P&G. University faculty, staff, employees, and students (“University Personnel”) may produce new research results, materials and inventions, which lead to University Intellectual Property.
- 1.3 Category B “Fee for Service Project” is work generic to the work of a service oriented University Center wherein an investigation or Deliverable requested by P&G is aimed at practical applications of standard procedures and established theories, analyses and standard experiments. The applications are of specific interest to P&G and may involve off-the-shelf tools and established protocols. There is no University Intellectual Property expected in this type of Project.
- 1.4 Category C. “Unrestricted Grant” is a grant by P&G to University for use by the PI or a Co-PI to fund work at University. No Project Specification can be written by University or P&G and no Deliverables or reports are required. Any intellectual

property generated during the performance of a Category C project, whether intended or unintended, will belong to the University.

- 1.5 “Confidential Information” has the meaning set forth in Article 4.
- 1.6 “Copyrightable Works” shall mean all copyrighted or copyrightable works (including reports and publications of the Results and software).
- 1.7 “Deliverable” A Deliverable will be the work product specified to be delivered from the Project as specified in the Project Specification.
- 1.8 “Direct Costs” are expenses directly related to the research such as, but not limited to, supplies, equipment, salaries, benefits, etc, and excluding overhead.
- 1.9 “Disclosing Party” means a party under this MAA that is disclosing Confidential Information or providing Proprietary Material to the Receiving Party.
- 1.10 “Facilities and Administrative Costs” or “F&A” represent University costs incurred in maintaining a research infrastructure. This rate is renegotiated between the University and the designated federal agency every three years and applied to all new University projects as dictated by University policy and applicable law.
- 1.11 “Field” means P&G’s area of commercial interest for the Option rights, which will be specified in the Project Specification on a Project by Project basis.
- 1.12 “Inventions” means inventions, improvements, trade secrets, designs, and discoveries, whether or not patentable.
- 1.13 “IP Rights” or “Intellectual Property Rights” means any patent rights, Copyrightable Works, design rights, mask works, trade secret rights, or other forms of intellectual property rights which arise as a direct result of, or which are included within, the Deliverables of a Project, excluding copyrights to theses, dissertations, and articles describing the results for periodicals or other literature publications.
  - 1.13.1 “University IP Rights” means IP Rights to University Inventions that are owned by University under the terms of this MAA.
  - 1.13.2 “Joint IP Rights” means IP Rights to Joint Inventions that are jointly owned according to the terms of this MAA.
  - 1.13.3 “P&G IP Rights” means IP Rights to P&G Inventions, University Inventions or Joint Inventions that are owned by P&G under the terms of this MAA. P&G IP Rights shall be owned solely by P&G.
  - 1.13.4 Notwithstanding the above Sections 1.13.1 – 1.13.3, Inventions resulting from Category B projects shall be owned solely by P&G and shall be considered P&G IP Rights.
- 1.14 “Joint Inventions” means Inventions conceived and/or reduced to practice before the start of or during the performance of a Project jointly by one or more P&G employees or consultants and one or more University Personnel.
- 1.15 “Materials” means any tangible biological, chemical, or physical materials, devices, or products that are discovered or developed in performance of a Project or provided by one party to another party pursuant to or within the scope of this MAA.

- 1.16 “P&G Inventions” means Inventions conceived and/or reduced to practice before the start of or during the performance of solely by P&G employees or P&G consultants.
- 1.17 ”Project” is a task or group of tasks, which are applications oriented or research oriented.
- 1.18 “Project Budget” is the estimates and final authorized Total Project Costs of a University Project in Category A or B.
- 1.19 “Project Materials” means Materials that are discovered, created, or developed in performance of a Project. If a Project Material incorporates one or more P&G Proprietary Materials or University Proprietary Materials, neither University nor P&G may exploit commercial rights in that Project Material without the written consent of the other party.
- 1.20 “Project Specification” is the complete written specification of the Project as seen in Exhibit A attached to this MAA.
- 1.21 “Proprietary Materials” means any proprietary materials other than Project Materials that are furnished by one party (the “Supplier”) to the other party (the “Recipient”) in connection with performance of a Project.
- 1.22 “Receiving Party” shall mean a party under this MAA that receives Confidential Information or Proprietary Materials from a Disclosing Party.
- 1.23 “Research Results” or “Results” means all data, test results, laboratory notes, and any other research results that are obtained in performance of the Project. The term Research Results does not include any Project Materials or IP Rights based on the Research Results.
- 1.24 “Total Project Costs” shall be equal to Direct Costs plus the appropriate F&A rate.
- 1.25 “University Inventions” means Inventions conceived before the start of or during performance of a Research Project made solely by University Personnel.

## 2 Commitment and Operational Aspects of the MAA

- 2.1 Commitment from P&G. No commitment is made by P&G to contract and pay for any Research Project, Fee for Service Project, or Unrestricted Grant, by the execution of this MAA alone. Commitments for Category A and B Projects are to be made by a fully executed Project Specification of the format shown in Exhibit A which is signed by both authorized management personnel of P&G and the authorized representative at the University, PI, Co-PI (if applicable), and the [University Office of Sponsored Programs – *this name will be different depending upon the Institution*] (“OSP”). P&G commitment for Category C Unrestricted Grants can be made only by a grant letter executed by both a duly authorized management member of P&G and the authorized representative at the University.
- 2.2 Order of Precedence. In the event of any conflict in terms between documents relating to this MAA or Projects or grants hereunder, the terms of this MAA document will govern, except to the extent that such other document expressly contemplates

superseding the terms of this MAA and such other document is executed in writing by authorized management members of P&G and authorized personnel of the University.

- 2.3 Principal Investigator and Co-Principal Investigator. Each Project will be directed and supervised by a Principal Investigator (PI). The PI will have primary responsibility for the performance of an individual Project and will also monitor financial performance of the Project. The PI, in concert with the P&G Technical Representative (see Section 2.4 “Technical Representative), will judge the PI’s and/or Co PI’s research performance and adherence to the requirements of the Project Specification and decide on changes in scope and funding in accordance with Sections 2.6 and 2.7 below. If the PI ceases to fulfill his/her obligations for a Project for any reason, University will promptly notify P&G, and University and P&G shall use good faith efforts to identify a mutually acceptable replacement within sixty (60) days. If a suitable replacement PI cannot be identified within the sixty-day period, P&G or University shall have the right to terminate that individual project as provided in Section 7.3. If the Co-PI (if applicable) ceases to fulfill his/her obligations as the Co-PI for a Project for any reason, University will promptly notify P&G, and University and P&G shall use good faith efforts to identify a mutually acceptable replacement within sixty (60) days. If a suitable replacement Co-PI cannot be identified within the sixty-day period, and if one is deemed necessary for the completion of the project, P&G or University shall have the right to terminate the individual project covered under this MAA as provided in Section 7.3.
- 2.4 Technical Representative. P&G shall designate one of its employees for each of the Projects as its principal Technical Representative (the “Technical Representative”) for consultation and communications with University and with PI and the Co-PI directly. P&G may change its Technical Representative for any of the Projects, at any time, upon written notice to University.
- 2.5 Reports. The PI and/or Co-PI will be reasonably available by telephone or in person to discuss the progress and results, as well as ongoing plans, or changes therein, of a Project. Unless otherwise set forth in the Project Specification, the PI shall provide written progress reports every three (3) months describing a Project’s progress, results, any anticipated difficulties and a review of the expenditures and budgeted finances of the project, as applicable to date. The PI shall also be responsible for providing a final written report for each Project.
- 2.6 Management of Projects. P&G will have the right to evaluate each of the Category A and B Projects at a project review scheduled by mutual agreement between the PI and P&G Technical Representative. At the project review P&G may make changes within the scope and within the project funding giving a reasonable notice so that the appointments and work of the Graduate Students can be continued without severe interruption in project nature and funding. All changes in scope and all contractual administration changes are to be coordinated through a designated contact in the University’s Office of Sponsored Programs and put in writing.
- 2.7 Amendments. Project Specifications can be amended from time-to-time in writing. Signature of the Project Specifications and any amendments thereto must be by a duly authorized management member of P&G. Signatures for the University must include

the University authorized representative, those persons indicated in the Project Specification, and the OSP, as provided in Section 2.1 and below in Section 3.1 regarding approval of the Project Budget. Beyond the normal management of a given Category A and B Project which allows for mid-course corrections in scope and funding, as seen above in Sections 2.4, 2.5 and 2.6, P&G shall have the right, after conferring with the PI and Co-PI, to completely change the Project Specifications in Category A and B Project or to terminate the Project if the project is not accomplishing the desired objectives. P&G shall give thirty (30) days notice of such a desire to change the Project Specifications and shall, if it elects to change the specifications, supply either a completely new Project Specification or an amendment to the Project Specification for review and signatures within that time period. Expenditures during this realignment of the project objectives will be limited to payroll, prior ordered materials, and prior contracted services that cannot be mitigated upon University's efforts to use all commercially reasonable efforts to do so until the new Project Specifications (including a new budget) is mutually agreed. Both parties will work together cooperatively to fit the available personnel, academic objectives, post doctoral skills to a suitable Project for P&G. If such changes are not possible, then P&G has the right to cancel this Project, after reviewing with PI and University all non-cancelable commitments of a Project, as provided in Section 7.3.2.

## 2.8 Background IP Rights.

- 2.8.1 Prior to execution of a Project Specification, the PI and any Co-PI shall disclose to P&G any and all Background IP Rights. The University and P&G shall mutually agree upon which, if any, of Background IP may be incorporated, used, or relied upon in the Project. This mutually agreed Background IP shall be specified in the Project Specification. The PI and any Co-PI's will also discuss with P&G prior to execution of the Project Specification any other IP Rights owned or controlled by University or others that they are aware of which in their good faith belief are relevant to the Project and/or application of the Results of the Project in P&G's Field for the particular Project.
- 2.8.2 Further, the PI and any Co-PI shall promptly disclose by written notice to P&G any and all Background IP Rights for which becomes known to them after execution of the Project Specification and prior to expiration of P&G negotiation rights under this MAA. The University and P&G shall mutually agree upon which, if any, of such additional Background IP that may be incorporated, used, or relied upon in the Project. This mutual agreement for inclusion of additional Background IP shall be specified in an amended Project Specification that is duly executed with the same or equivalent formalities as the original Project Specification. The PI and any Co-PI's will also discuss with P&G any other IP Rights owned or controlled by University or others that they become aware of after execution of the Project Specification and before expiration of P&G option and negotiation rights under this MAA which in their good faith belief are relevant to the Project and/or application of the Results of the Project in P&G's Field for the particular Project.

3 Funding of Research Project.

3.1 Budget. The final Project Budget must have an authorized signature from the University's authorized representative and will be attached to the Project Specification in the format required by item 8 of Exhibit A.

3.1.1 Total Project Costs for a Category A or B Research Project(s) will contain the appropriate University F&A rate. Such F&A rate (percentage) may change with new Project Specifications due to negotiations between the University and the designated federal agency.

3.1.2 P&G also agrees to pay reasonable expenses (i.e., travel expenses and related out of pocket expenses) incurred incident to performance under this MAA. Such payments will be made by P&G within forty-five (45) days after receipt of the accurate University invoice, which includes a statement itemizing expenses incurred and referencing this MAA, the Project, and the budget items, and complies with Exhibit B - P&G Invoice Requirements. P&G's permission will be sought before incurring expenses not appearing on the approved Project Budget on P&G's behalf. No Project Specification will be processed to start a Project without a Project Budget, including a payment schedule (see item 8 of attached Exhibit A).

3.2 Payments. Each Project payment shall be governed by the category of project and the F&A rate as seen below. The following terms and conditions governing payments of fees shall be clearly stated in the Project Specification for each Project.

All payments shall, except in the case of Category C (which shall be received in full as general program supports at the start of the grant), be paid in response to accurate invoices (which reference this MAA and the Project, and comply with Exhibit B - P&G Invoice Requirements) received from the University in quarterly installments, beginning 45 days in advance of the start of the Project and 45 days in advance of each succeeding quarter during which work is to be performed as set forth in the Project Specification (item 8 of attached Exhibit A).

All completed purchase orders sent by P&G to University shall clearly identify P&G and shall be sent to:

XXXXXX  
[address]  
Tel:  
Fax:  
email:

Each check shall be accompanied by a letter indicating that it is being submitted in this MAA pursuant to [Project Name; name of PI, name of P&G Technical representative; date of execution of Project Specification; University Invoice number or OSP number]

The check shall be made out to:

[University]

All payments shall be sent directly to:

[University]

Accounts Receivable

\_\_\_\_\_  
\_\_\_\_\_

- 3.3 Use of Funds. University shall monitor expenditures, in accordance with its University policies, on Projects to ensure that the funds provided by P&G are spent in connection with the performance of the Project. P&G shall be supplied with summaries of quarterly accounting expenditures (including salaries by employee group, fringe benefits, supplies, animals, and equipment) on each of the Category A projects. On Category B projects, the delivery to P&G of Deliverables in a “Fee for Service” project shall be the measure of the correct use of the expenditure. P&G shall have the right to receive reports upon request including methods, procedures, and test plans for Category A and Category B Projects, as well as resource allocations and costs for Project A Projects. Upon reasonable advance notice P&G may visit University once per year to audit all expenses associated with a Project.
- 3.4 Ownership of Equipment. Except as otherwise provided in a Project Specification, upon termination or expiration of this MAA, University shall retain title to all equipment purchased or fabricated by University with funds provided by P&G unless otherwise specified in the Project Specification.
- 4 Confidential Information and Materials.
  - 4.1 In preparation of and during the course of the Project, it may be necessary for the parties to disclose, orally, visually, or in writing, technical and business information and materials including without limitation trade secrets, know-how, inventions, designs, technical data or specifications, testing methods, materials and samples, and research and development methods and/or activities (hereinafter referred to as “Confidential Information”). Prior to either party disclosing Confidential Information to the other party, the Disclosing Party shall first obtain the Receiving Party’s express agreement to receive such information on a confidential basis. In order to obtain such agreement, the Disclosing Party may provide the Receiving Party with a nonconfidential description of the nature and scope of information to be disclosed. Information that is disclosed outside the scope of such nonconfidential description will not necessarily be treated as Confidential Information. Disclosure of Confidential Information in writing shall be marked “Confidential.” Oral and visual disclosures of Confidential Information shall be indicated at the time of disclosure as confidential and shall be confirmed in writing as Confidential within thirty (30) days of disclosure.
  - 4.2 The Results of any Category B Project, Research Results developed by P&G under a Category A Project, or any P&G IP Rights developed pursuant to either Category A or Category B Projects, shall also be considered Confidential Information of P&G.
  - 4.3 The Results developed by University under a Category A Project, or any University IP Rights developed pursuant to a Category A Project, shall be Confidential Information

of the University. P&G shall have the right to disclose the Results to its suppliers, consultants, and collaboration partners so long as such suppliers, consultants, and collaboration partners are subject to confidentiality and non-use restrictions at least as stringent as those set forth in this MAA. Further, the University, PI, and any Co-PI's shall treat said Confidential Information as if it were also Confidential Information of P&G until such time as the Results or the University IP, as the case may be, are published or patent applications are filed in accordance with the terms of this MAA. For avoidance of doubt, this section is not meant to enable P&G to exclude Results from potential publications by University or its personnel or students wherein said publications do not include Confidential Information disclosed by or owned by P&G.

- 4.4 The Results developed by University under a Category C Project, or any University IP Rights developed pursuant to a Category C Project, shall be considered Confidential Information of University.
- 4.5 The Receiving Party agrees to take all reasonable precautions to prevent disclosure of Information and Results to others and to not use Confidential Information and Results of the other party without prior express written consent. These restrictions upon disclosure and use of Confidential Information shall be in force for a period of 5 years from the date of receipt by P&G of the final report for the Project, but shall cease to apply to any specific portion of Confidential Information or Results which:
- 4.1.1 is already in the Receiving Party's possession at the time of disclosure thereof as established by relevant documentary evidence;
  - 4.1.2 is or later becomes available to the public other than by the Receiving Party's default;
  - 4.1.3 is received by the Receiving Party from a third party having no obligation of confidentiality to the Disclosing Party;
  - 4.1.4 is independently developed by the Receiving Party's personnel not aware of the Confidential Information as established by relevant documentary evidence; or
  - 4.1.5 is required to be disclosed by law or government regulation.

## 5 Intellectual Property.

This article is designed to balance P&G's ability to exploit the commercial advantage presented by technologies, designs, products, or processes derived from the Research Project with the University's responsibility to ensure the broadest public benefit. The University recognizes the commercial aspirations of P&G, and P&G understands the obligation of the University to utilize Research Results in a manner which maximizes public benefit in the expansion of knowledge and provides for the education of graduate and undergraduate students.

- 5.1 Notice of IP Rights. The Principal Investigator and/or P&G Technical Representative shall promptly disclose to his or her employer, the University or P&G, the conception and/or reduction to practice of any Inventions developed pursuant to this MAA or any

Project hereunder and the development, creation or discovery of any commercially valuable Project Material developed by University employees that is not otherwise disclosed as an IP Right. University and P&G shall provide prompt written notice to the other of an internal disclosure of any such Inventions directly relating to the work under a Project Specification or made by the University relating to the work under a Project. University and P&G shall discuss whether to obtain patent protection or other intellectual property protection for the Inventions developed pursuant to this MAA or any Project hereunder, and whether the corresponding IP Rights constitute University IP Rights, Joint IP Rights, or P&G IP Rights.

5.2 Proprietary Materials, Assignment and Ownership of IP Rights.

- 5.2.1 “Ownership”. The Intellectual Property developed in a Category A Project will belong solely to the University if developed solely by University Personnel, will belong jointly to University and P&G if developed jointly by University Personnel and personnel of P&G, and will belong solely to P&G if developed solely by personnel of P&G. If the Project Specification indicates that P&G expects ownership of the Deliverables from a Category B Project, then those Deliverables and all IP Rights developed in such a Category B Project shall belong solely to P&G.
- 5.2.2 “Limited Use and Transfer”. The Receiving Party shall use Proprietary Materials only for performance of the Project. The Receiving Party shall use Proprietary Materials only in compliance with all applicable federal, state and local laws and regulations. The Receiving Party shall not use the Proprietary Materials in any in vivo experiments on human subjects or animals without the prior written consent of the other party, and any such use shall be in compliance with all applicable legal and regulatory requirements. The Receiving Party shall not transfer any Proprietary Materials to any third party without prior written consent of the Disclosing Party.
- 5.2.3 “Warranty Disclaimer”. Proprietary Materials that are furnished pursuant to this MAA are provided for experimental purposes and may have hazardous properties. THE DISCLOSING PARTY MAKES NO REPRESENTATIONS, AND EXTENDS NO WARRANTIES OF ANY KIND, EITHER EXPRESS OR IMPLIED, WITH RESPECT TO ANY PROPRIETARY MATERIALS. THERE ARE NO EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR THAT THE USE OF PROPRIETARY MATERIALS WILL NOT INFRINGE ANY PATENT RIGHTS OR OTHER PROPRIETARY RIGHTS OF A THIRD PARTY.
- 5.2.4 “Ownership and Return”. The Recipient acknowledges that the Disclosing Party (or any third party entrusting its Materials to the Disclosing Party) owns its Proprietary Materials in the possession of the Receiving Party. Upon the expiration or termination of this MAA, the Receiving Party shall at the written instruction of Disclosing Party either destroy or return any unused Proprietary Materials.

- 5.2.5 “Background IP Rights”. The University and/or P&G may possess IP Rights in Background Intellectual Property. This MAA does not convey any IP Rights to Background Intellectual Property to the other party to this MAA; IP Rights to Background Intellectual Property will remain the sole property of the original owner. However, where the University and/or P&G determine that Background Intellectual Property may exist and is available for licensing, consideration should be given to negotiating license rights which will allow the practice and commercialization of the results of the Project. Disclosure of Background IP to P&G under this MAA and any Project Specification hereunder is governed by the terms set forth in Section 2.8.
- 5.2.6 University represents and warrants that it will cause all University Personnel to assign IP rights to the University hereunder, consistent with Ohio Revised Code § 3345.14.
- 5.3 Responsibility for IP Rights
- 5.3.1 “Responsibility”. University shall have primary responsibility for the preparation, filing, prosecution and maintenance of all University IP Rights, using counsel reasonably acceptable to P&G. University and P&G shall mutually agree which party will have primary responsibility for the preparation, filing, prosecution and maintenance of all Joint IP Rights, using counsel reasonably acceptable to the University and P&G. The primary responsible party shall consult with the other party as to the preparation, filing, prosecution and maintenance of Joint IP Rights it has responsibility for, reasonably prior to any deadline or action with the relevant U.S. or any foreign agencies or authorities and shall furnish the other party with copies of all relevant documents reasonably in advance of such consultation.
- 5.3.2 “Cooperation”. University and P&G shall cooperate fully in the preparation, filing, prosecution and maintenance of all University IP Rights, P&G IP Rights and Joint IP Rights. Such cooperation includes, without limitation, (i) promptly executing all papers and instruments or requiring employees of University or P&G to execute such papers and instruments as reasonable and appropriate so as to enable University or P&G to file, prosecute and maintain such IP Rights in any country; and (ii) promptly informing the other party of matters that may affect the preparation, filing, prosecution or maintenance of any such IP Rights.
- 5.3.3 “IP Costs”. P&G shall reimburse University (pursuant to Section 5.4.1.1 hereof) for reasonable patent- or other intellectual property-related expenses mutually agreed upon by the parties incurred by University pursuant to this Subsection within sixty (60) days after University invoices P&G. P&G may elect, upon thirty (30) days written notice to University, to cease payment of future expenses associated with obtaining or maintaining patent protection for one or more previously filed University or Joint IP Rights in one or more countries. In such event, if University reasonably desires that P&G continue to pay such costs and P&G does not pay such costs, P&G shall lose all rights

under this MAA with respect to such IP Rights in such countries unless otherwise agreed in accordance with a separate written agreement.

#### 5.4 Option for Exclusive License or Non-Exclusive License.

5.4.1 “Option”. In exchange for P&G’s sponsorship of the project, University grants P&G a first option to obtain a worldwide, royalty-bearing, exclusive license (with the right to sublicense) or non-exclusive (with the right to have made) license, at P&G’s discretion, in the Field under University’s commercial rights in University IP Rights, University’s interest in Joint IP Rights, University Project Materials and University’s interest in Joint Project Materials, in accordance with the terms set forth in this Section. P&G may exercise the Option with respect to a particular University IP Rights or Joint IP Right or Project Material by written notice to University which is received by University no later than sixty (60) days after the later of the end of the Project or written disclosure (in a writing expressly referencing this section of this MAA) to P&G of the relevant Invention or Project Material (the “Option Period”).

5.4.1.1 “Exclusive License IP Fees”. P&G’s exercise of the exclusive option right hereunder shall constitute its agreement to pay for reasonable patent preparation, filing, prosecution, and maintenance costs during the Negotiation Period that are necessarily incurred (based upon then-available information) during the Negotiation Period (as defined below) for preserving the University’s IP Rights in such Invention(s) or as otherwise mutually agreed by the parties. In addition, University, PI and Co-PI agree that should P&G request University to file a patent application on a University IP Right or Joint IP Right, University will do so provided that P&G agrees to pay reasonable preparation and filing costs. The parties agree that circumstances (such as an approaching bar date) may require the filing of a patent application before the end of the Option Period. In such cases, the parties will work in good faith to reach agreement concerning the preparation, filing, associated costs, and disposition of property affected by such circumstances.

5.4.1.2 “Negotiations of Exclusive and/or Non-exclusive License”. If P&G exercises the Option right, University and P&G shall negotiate in good faith a license agreement containing commercially reasonable terms and conditions including, to the extent applicable, any applicable University Background IP Rights for a period of up to 6 months (unless extended as provided below) after the date that P&G first exercised the Option (the “Negotiation Period”). P&G shall have the right to convert an exercise of Option for an exclusive license to a non-exclusive license at any time during the Negotiation Period. If P&G converts the Option to a non-exclusive license Option less than 3 months before the end of the Negotiation Period, the Negotiation Period shall be extended to provide a period of at least 3 months for negotiation of the non-exclusive license. If University and P&G are unable to reach agreement for the license agreement during the

Negotiation Period, University may offer its commercial rights in the relevant University IP Rights, University's interest in Joint IP Rights or Project Materials owned solely or jointly by the University to any third parties. However, for a period of one (1) year after the Negotiation Period expires, University may only offer exclusive rights to third parties on terms and conditions that are not more favorable than the last offer made by University to P&G, unless University first provides P&G with written notice of the more favorable offer and P&G either (i) declines in writing to accept offer or (ii) fails to respond to the notice within thirty (30) days after receiving the notice.

- 5.4.2 “Failure to Exercise Exclusive or Non-Exclusive Option Right”. If P&G exercises neither Exclusive Option right nor the Non-Exclusive Option right during the Option Period, University is free to license its commercial rights either exclusively or non-exclusively under the relevant IP Rights to any third party.
- 5.4.3 “Patent and Commercialization Obligation”. If P&G exercises either the Exclusive or Non-Exclusive License Option, it is the expectation of the parties that the parties will negotiate for the license agreement terms for P&G: (1) to conduct reasonable diligent efforts to commercialize the University IP Rights and Joint IP Rights or comply with/fulfill reasonable milestones and (2) subject to Section 5.3.3 hereof, to pay fair and reasonable costs of preparation, filing, prosecution, and maintenance of such IP Rights consistent with P&G's normal patent filing and portfolio management strategies and taking into consideration the type of license (exclusive or non-exclusive), the existence (at that time as well as in the future) of other licensees of the University and/or revenue generating uses of such IP Rights. Further, any and all intellectual property-related costs borne by P&G shall be taken in good faith consideration by University with respect to royalty negotiations for such license agreement.
- 5.5 Use of Research Results and Project Materials. Each party may use Research Results for any internal research and development purpose and use Project Materials for internal research (but not in a commercial product or in connection with a commercial service); provided, however that the use does not infringe any intellectual property rights of the other party developed independently of work under this MAA, including but not limited to pending patent applications and University IP Rights or Joint IP Rights for which P&G has failed to obtain a license as provided in Section 5.4.1 or 5.4.2 above. If P&G desires to obtain a license under the commercial rights of University in any Project Materials subsequent to expiration of the option period of Section 5.4 above, University agrees to discuss the possibility of granting a license, provided that commercial rights are available for licensing when P&G make its request. Both P&G and University shall have the right to make, have made, reproduce, use, sell, offer to sell, sub-license, assign, copy, distribute, make derivative works, make compilations, and make modifications to Joint IP Rights without consultation or consent of the other party, subject to the other party's solely owned intellectual property rights and the obligations set forth under Article 4 of this MAA.

- 5.6 Copyrightable Works. University shall solely own all Copyrightable Works that are created solely by University employees in the performance of the Project in Category A and Category B unless otherwise expressly and mutually agreed for any particular Project in the Project Specification. When Copyrightable Works are designated as a Deliverable in a Category A Project, wherein the University retains ownership of the work, P&G shall have the royalty-free right to use, copy, modify, make derivative works, and make compilations of such works without further compensation to the University. If such rights are exclusive, P&G shall have the right to enforce said copyrights against third parties. The University shall cooperate as reasonably requested to assist P&G to enforce such copyrights, albeit at no out-of-pocket cost to University. When Copyrightable Works are designated as a Deliverable in Category B Project, the work shall be P&G IP to the extent permissible or in the alternative P&G shall have an unlimited, exclusive, royalty-free, irrevocable license to the work (subject to University's right to use for educational and research purposes). The University shall provide P&G personnel with proper accreditation for their contributions, subject first to University obtaining prior written consent from P&G to include such accreditation. University grants P&G an irrevocable, royalty-free, nontransferable, non-exclusive right to copy and distribute any research reports furnished in Category A or B projects. By prior understanding in the Project Specifications, P&G can negotiate with University to own any such Copyrightable Works (including reports and publications) that are created by University employees in the performance of a Category B project. University will at all times retain a right to use such Copyrightable Works from a Category B project for educational and research purposes under this MAA.
- 5.7 P&G IP Rights. Notwithstanding anything to the contrary herein, P&G grants no rights to University or University Personnel to any P&G IP Rights, other than those limited rights necessary in order for the University to carry out the work for P&G under a specific Project Specification.
- 6 Publication Rights.
- 6.1 University and its employees will be free to publicly disclose (through journals, lectures or otherwise) the Results of Projects, provided that the Principal Investigator and Co-Principal investigator shall have (i) furnished P&G with a copy of the proposed disclosure at least sixty (60) days before the proposed disclosure and (ii) received P&G's comment concerning such disclosure so that P&G may be assured that no P&G Proprietary Information is included. P&G has the right to a delay in the publication until the end of the sixty (60) day period so that it may review the proposed disclosure, communicate with University identifying all P&G Confidential and Proprietary Information to be excluded from such disclosure, and allow time for preparation and filing of patent applications. At the request of P&G or University, the Principal Investigator and Co-Principal Investigator will agree to further delay of public disclosure for an additional period not to exceed sixty (60) days in order to permit the preparation and filing of a U.S. patent application to preserve its patent rights. In both cases above, P&G shall use its reasonable best effort to respond in writing to University after reviewing the proposed publication within thirty (30) days after receipt of a request. It is not the purpose or desired effect of this provision to

delay the normal academic progress of a graduate student of University with respect to preparation and submission of a graduate thesis or dissertation. In the event that the graduation of a graduate student could, in University's reasonable opinion, be delayed as a result adherence to the provisions of this paragraph, University shall provide notice of its concern to P&G and the parties will discuss in good faith, with recognition that time is of the essence, a mutually acceptable plan for maintaining the student's graduation schedule while avoiding any loss or forfeiture of IP Rights due to publication or non-confidential disclosure of the Results.

- 6.2 If publication(s) by the University or University Personnel are desired from a Category B Project then the publication rights must be mutually agreed and determined by the PI and Co-PI with P&G.
- 6.3 In addition to the Publication Rights stated above, the Principal Investigator and Co Principal Investigator can agree with P&G on any Category B Project that no publication can be issued (or can be issued only under special restrictions) during or at the conclusion of a Project, if the Project Specification contains such a written restrictions and all parties have signed the Project Specification prior to the start of the Project.

## 7 Term and Termination.

- 7.1 Term. This MAA shall commence on the date last written below and shall remain in effect for either (a) a period of five (5) years (60 months) from the date last written below ("Base Term") or (b), the expiration or termination date of the last Project Specification during the Base Term, whichever is later, unless earlier terminated in accordance with the provisions of this MAA. Each Project carried out under this MAA will carry an individual "Project Term" set forth in the Project Specification under which it shall run and that Project Term shall govern the term of such Project. This MAA may be extended by mutual consent in a written document executed with the same formalities as this MAA.
- 7.2 Termination of Project for Default. In the event that either party commits a material breach of its obligations under a specific Project Specification or if in P&G's reasonable, good faith discretion the University is not using reasonable efforts towards attaining a Deliverable within a specific Project Specification under this MAA and fails to cure that breach within sixty (60) days after receiving written notice thereof, the other party may terminate that specific Project immediately upon written notice to the party in breach.
- 7.3 Termination without Cause.
  - 7.3.1 Termination of MAA. Either party may terminate this MAA without cause upon sixty (60) days written notice. Termination of this MAA under this section shall not cause termination of any pending Project unless such Project is terminated pursuant to Section 7.2 or other provisions of this Article 7. Accordingly, in the event that there are any pending Projects, this MAA shall terminate upon the termination or expiration of the last to terminate or expire Project Specification, in accordance with Section 7.1. However, in the period between notice of termination and actual termination, no new project

Specifications or Category C Unrestricted Grants may be entered into or agreed hereunder.

### 7.3.2 Termination of Project.

7.3.2.1 By P&G: P&G may terminate a Project without cause upon sixty (60) days prior written notice. In the event P&G terminates a Project without cause, P&G shall pay University for all financial obligations which are noncancelable and honor stipend and/or tuition obligations to Graduate Students and/or Post-Doctoral employees through a number of months to the next break or for a minimum of two (2) months stipend which ever is greater. P&G shall not unreasonably object to any financial obligation to which University can show that it is unreasonably harmed due to the cancellation of a Project or of this MAA.

7.3.2.2 By University: University may terminate a Project in the event of material breach by P&G. In the event University terminates without cause, University will finish out such Projects to the fullest extent possible as mutually agreed to by the parties.

7.4 Force Majeure. Neither party will be responsible for delays resulting from causes beyond the reasonable control of such party, including without limitation fire, explosion, flood, war, acts of terrorism, strike or riot, provided that the nonperforming party uses commercially reasonable efforts to avoid or remove such causes of nonperformance and continues performance under this MAA with reasonable dispatch whenever such cause are removed.

7.5 Effect of Termination. The following provisions shall survive the expiration or termination of this MAA: Article 4 (with respect to Confidential Information disclosed during the term of this MAA), Article 6 and Sections 8.1, 8.2, 8.3, 8.5, 8.7 and 8.8. In addition, the provisions of Article 5 shall survive termination of this MAA, as necessary to effectuate the rights of P&G and/or University, unless University has terminated this MAA because of a material breach by P&G. Upon termination of this MAA, dependent on cause, P&G shall pay University the entire amount of any noncancelable financial commitments incurred by University in relation to the performance of the individual Projects, not to exceed the total estimated project cost previously agreed upon by the parties.

## 8 Miscellaneous

8.1 Indemnification. P&G shall indemnify, defend, and hold harmless University and its trustees, officers, faculty, students, employees and agents and their respective successors, heirs and assigns (the "Indemnities"), against any liability, damage loss, or expense (including reasonable attorneys fees and expenses of litigation) incurred by or imposed upon any of the Indemnitees in connection with any claims, suits, actions, allegations, demands or judgments (hereinafter "Claims") to the extent caused by the negligent acts of P&G (including without limitation actions in the form of tort, warranty or strict liability) relating to P&G's Performance under this MAA or the Work Products (Deliverables) of this MAA or concerning any product, process or

service that is made, used, or sold pursuant to any right or license granted under this MAA; provided, however, that such indemnification shall not apply to any liability, damage loss, or expense to the extent directly attributable to (i) the negligence or criminal activities or the intentional or criminal misconduct of the Indemnitees or (ii) the settlement of a claim, suit, action, or demand by Indemnitees without prior written approval of P&G. In order for such indemnification obligation to apply, University must promptly notify P&G after becoming aware of such Claims or possible Claims. The Attorney General of the State of Ohio (hereinafter, "Ohio AG") is by statute the legal counsel for the University. P&G and the Ohio AG shall consult with one another and to cooperate with one another as reasonably requested with respect to the management, resolution, negotiation, settlement, and conduct of any litigation and/or dispute resolution proceedings arising pursuant to any Claim indemnified by P&G under this paragraph. University shall cooperate fully with P&G in the defense of any such Claim as reasonably requested by P&G. Nothing herein shall be interpreted to waive any rights or remedies P&G may have against the University under applicable law, except to the extent expressly and specifically set forth above.

- 8.2 Publicity Restrictions. Neither P&G nor University shall use the other's name or that of any of its trustees or directors, officers, management or employees or any adaptation of such names, or any terms of the MAA or trademarks in any promotional material or other public announcement or disclosure without the prior written consent of the other party. University's standard reports of Sponsored Activities and internal announcements shall be exempt from this requirement, provided they refer only to the title of the sponsored Project and other descriptive terms that are not Confidential Information of P&G such as sponsor name, project term and total funding. University agrees to let P&G review the description of Projects used in these standard reports and internal announcements at any time and to consider implementing such comments in good faith.
- 8.3 Warranty Disclaimer. Except as expressly set forth below, P&G and University make no express warranties and disclaims any implied warranties as to any matter relating to this MAA, including without limitation the performance or results of a Project; the availability of legal protection for any Research Results, Materials, Inventions, Copyrightable Works, or any other work product of the Project; or the validity or enforceability of any Patent right that may be obtained pursuant to this MAA. THERE ARE NO EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE FOR ANY MATERIALS OR RESEARCH RESULTS, OR THAT USE OF MATERIALS OR RESEARCH RESULTS WILL NOT INFRINGE ANY PATENT RIGHTS OR OTHER PROPRIETARY RIGHTS OF A THIRD PARTY. The University, the PI and Co-PI will use its best reasonable efforts in Category A, "Research," and Category B "Fee for Service," Projects, to obtain the expected Research Results or the Deliverable of the Project Specification, but makes no warranty expressed or implied on these Projects.
- 8.4 Research Partially Funded by Grants/Contract. To the extent that any Invention has been partially funded by the federal government, this MAA and the grant of any rights in such Invention is subject to and governed by federal law as set forth in 35 U.S.C. §

201-211, and the regulations promulgated thereunder, as amended, or any successor statutes or regulations. To the extent that any Invention has been partially funded by a non-profit organization or state or local agency, this MAA and the grant of any rights in such Invention is subject to and governed by the terms and conditions of the applicable MAA. University will inform P&G of any such funding before the start of any Project and obtain P&G's written permission to proceed.

8.5 Assignment. The MAA may not be assigned by either party without the prior written consent of the other party.

8.6 Governing Law and Forum. This MAA shall be governed by and construed in accordance with the laws of the State of Ohio irrespective of any conflicts of law principles. Each party agrees that any legal action arising out of or in connection with this MAA shall be brought in a court of competent jurisdiction in the State of Ohio.

8.7 Dispute Resolution

8.7.1 "Procedures Mandatory". The parties agree that any dispute arising out of or relating to this MAA shall be the subject of good-faith attempts at resolution by means of the procedures set forth in this Section 8.7, and that such procedures constitute legally binding obligations that are an essential provision of this MAA; provided, however, that all procedures and deadlines specified in this Article may be modified by written agreement of the parties in a document executed by duly authorized management members of the parties. If either party fails to observe the procedures of this Article, as modified by their written agreement, the other party may bring an action for specific performance in any court of competent jurisdiction.

8.7.2 "Dispute Resolution Procedures"

8.7.2.1 "Negotiation". In the event of any dispute arising out of or relating to this MAA, the affected party shall notify the other party, and the parties shall attempt in good faith to resolve the matter within twenty (20) days after the date such notice is received by the other party (the "Notice Date"). Any disputes not resolved by good faith discussions shall be referred to senior executives of each party, who shall meet at a mutually acceptable time and location within sixty (60) days after the Notice Date attempt to negotiate a settlement.

8.7.2.2 "Mediation". If the matter remains unresolved within sixty (60) days after the Notice date, or if the senior executives fail to meet within sixty (60) days after the Notice date, either party may initiate mediation upon written notice to the other party, whereupon both parties shall be obligated to engage in a mediation proceeding under the CPR Institute for Dispute Resolution ("CPR") Model Procedure for Mediation of Business Disputes, except that specific provisions of this Section shall override inconsistent provisions of the CPR Model Procedure. The mediator will be selected from the CPR Panels of Neutrals. If the parties cannot agree upon the selection of a mediator within ninety (90) days after the Notice Date, then upon the request of

either party, the CPR shall appoint the mediator. The parties shall attempt to resolve the dispute through mediation until one of the following occurs: (i) the parties reach a written agreement; (ii) the mediator notifies the parties in writing that they have reached an impasse; (iii) the parties agree in writing that they have reached an impasse; or (iv) the parties have not reached a settlement within one hundred and twenty (120) days after the Notice Date.

8.7.2.3 “Trial Without Jury”. If the parties fail to resolve the dispute through mediation, or if neither party elects to initiate mediation, each party shall have the right to pursue any other remedies legally available to resolve the dispute, provided, however, that the parties expressly waive any right to a jury trial in any legal proceeding under this section.

8.7.3 “Preservation of Rights Pending Resolution”

8.7.3.1 “Performance to Continue”. Each party shall continue to perform its obligation under this MAA pending final resolution of any dispute arising out or relating to this MAA; provided, however, that a party may suspend performance of its obligations during any period in which the other party fails or refuses to perform its obligations.

8.7.3.2 “Provisional Remedies”. Although the procedures specified in this Article are the sole and exclusive procedures for the resolution of dispute arising out of relating to this MAA, either party may seek a preliminary injunction or other provisional equitable relief if, in its reasonable judgment, such action is necessary to avoid irreparable harm to itself or to preserve its rights under this MAA.

8.7.3.3 “Statute of Limitation”. The parties agree that all applicable statutes of limitation and time based defense (such as estoppel and laches) shall be tolled while the procedures set forth in Sections 8.7.2.1 and 8.7.2.2 are pending. The parties shall have the right to take any actions necessary to effectuate this result.

8.8 Notice. Any notices required or permitted under this MAA shall be in writing, shall specifically refer to this MAA, and shall be deemed delivered when sent by hand, or recognized national overnight courier, confirmed facsimile transmission (followed by hard copy delivery by regular mail), confirmed electronic mail (wherein confirmed for electronic mail means confirmation of receipt, and followed by hard copy delivery by regular mail), or registered or certified mail, postage prepaid, return receipt requested, to the following addresses or facsimile numbers of the parties:

First and foremost to University:

Director [TBD]

[address]

Tel:

Fax:

email:

And then to PI (whose contact information shall be set forth in the Project Specification:

*Name of PI*

University of \_\_\_\_\_

*Title and department of PI*

*Campus address*

Tel:

Fax:

email:

And, if to P&G:

The Procter & Gamble Company

Attention: Jeffrey Weedman, Vice-President,  
Global Business Development

Two Procter & Gamble Plaza  
Cincinnati, Ohio 45202

and

The Procter & Gamble Company

Attention: Kelly McDow,

Associate General Counsel, IP – Corporate Functions

299 East 6<sup>th</sup> Street

Cincinnati, Ohio 45202

Tel: 513-983-3798

Fax: 513-945-6791

And also to all signators on the Project Specification.

A party may change its contact information immediately upon written notice to the other party in the manner provided in this Section.

- 8.9 Affiliates. The term “Affiliates” as used herein, means any company, or other business entity, controlling, under common control with, or controlled by The Procter & Gamble Company.
- 8.10 Entire Agreement. This MAA constitutes the entire agreement between the parties with respect to its subject matter and supersedes all prior agreements or understandings between the parties relating to its subject matter.

AGREED AND ACCEPTED:

\_\_\_\_\_ UNIVERSITY

\_\_\_\_\_, OH

THE PROCTER & GAMBLE  
COMPANY

Cincinnati, Ohio

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

By: \_\_\_\_\_

Name: Jeffrey D. Weedman

Title: Vice-President, Global Business  
Development

Date: \_\_\_\_\_

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

**PROCTER & GAMBLE and [UNIVERSITY]  
MASTER ALLIANCE AGREEMENT**

**EXHIBIT A  
\*\*\*\* PROJECT SPECIFICATION \*\*\*\***

P&G Technical Representative: \_\_\_\_\_

P&G Project Number: \_\_\_\_\_

OSP Number: \_\_\_\_\_

University Principal Investigator: \_\_\_\_\_

University Co-Principal Investigator: \_\_\_\_\_

*[Project Specification shall be attached to the Purchase Order listed above and will be agreed to by P&G, as represented by \_\_\_\_\_, and the University. Note: This template is available on a PC/Mac disk so that the P&G Technical Representative and the University Co-Principal Investigator can fill in the blanks and directly generate this Exhibit A which must be appended to each P&G Purchase Order.]*

1. Project Category (A. or B) and Title:

2. University Personnel:

*[ Identify the University's employees such as the Principal and Co-Principal Investigator and other key personnel who will perform work.]*

3. Attach a Statement of Work:

*[A description of the work to be performed by each party and the Project Deliverables.] Describe with particularity those aspects of the work that are considered "Confidential" or proprietary]*

4. Publication Restrictions:

*[Describe any additional restriction of publication for this Project pursuant to Sections 5 and 6 of the MAA.]*

5. Duration of Project:

*[A schedule for the performance of the research described in the Statement of Work and frequency of University/P&G Project Reviews during the Term of the Project].*

6. Specified Deliverable Items:

*[Identify any Deliverables (devices, samples, data, reports, software, or source code, etc.) if any, that shall be the result of this work, that will be delivered to P&G. Indicate ownership of Category B Deliverables]*

7. Equipment (if any):

*[Identify any equipment provided by P&G to the University or purchased by the University with P&G funding. Describe the final disposition of all equipment pursuant to Section 3.4 of the MAA. Unless otherwise indicated, all equipment will be the property of University].*

8. Budget (including a payment schedule):

*[Attach a draft copy of the proposed cost of the project obtained from the PI or the final Project Budget and signed by the University authorized representative, which includes a payment schedule and states that payments shall be made by P&G forty-five (45) days prior to the start of the next quarters work (on the project) or within forty-five (45) days of receiving the University invoice, whichever is sooner.]*

9. Field:

*[P&G desires the Field to include all key areas of its business. P&G has interests in the manufacture and sale of consumer goods worldwide as well as in provision of services to consumers in its areas of business. These include but are not limited to: beauty care and personal care products and services such as cosmetics, deodorants, fragrances, hair care, personal*

cleansing, skin care, grooming such as and blades and razors, hair removal, face care, and shaving; home appliances; health and well-being products and services such as feminine care, oral care, and personal health care, medical diagnostic devices, and medical and wellness services; pet food and pet services; snacks; food storage, cooking, and preparation products and garbage disposal products such as bags, wraps, and containers; household products and services such as air care, batteries, dish care, cleaning, surface care; fabric care such as fabric cleaning and treatment products and laundry cleaning services; and disposable absorbent or paper products such as baby wipes, bath tissues, diapers, facial tissues, and paper towels; auto care products and services such as air care, surface care, fabric care products and auto cleaning/detailing services; and home and personal water purification. The specific Field as agreed for a particular Project is to be set forth below.]

The specific Field as agreed for this project is \_\_\_\_\_

10. Background IP Rights (if any):

*[Identify Background IP Rights – including a designation of the owner of the IP.]*

11. Contact information for signatories of this Project Specification:

University Authorized Representative: [Address]
Phone: \_\_\_\_\_
Fax: \_\_\_\_\_
Email: \_\_\_\_\_

Principal Investigator: \_\_\_\_\_ [Address]
Phone: \_\_\_\_\_
Fax: \_\_\_\_\_
Email: \_\_\_\_\_

Co-Principal Investigator: \_\_\_\_\_ [Address]
Phone: \_\_\_\_\_
Fax: \_\_\_\_\_
Email: \_\_\_\_\_

P&G Technical Representative: [Address]
Phone: \_\_\_\_\_
Fax: \_\_\_\_\_
Email: \_\_\_\_\_

P&G Signatory of Project Specification: [Address]
Phone: \_\_\_\_\_
Fax: \_\_\_\_\_
Email: \_\_\_\_\_

The undersigned have in their possession and have read and understood all terms and conditions in the P&G/University Master Alliance Agreement (MAA) in force as of April 22, 2010. No Research Project specification or P&G Purchase Order shall be issued without incorporating or referencing the P&G/University MAA.

**An approved Project Specification can be modified from time-to-time by an amendment to the original Project Specification, and thus made part of the MAA.**

UNIVERSITY

THE PROCTER & GAMBLE COMPANY

\_\_\_\_\_  
[Signature of Principal Investigator]

\_\_\_\_\_  
[Signature of authorized management member of P&G]

Name: \_\_\_\_\_

Title: \_\_\_\_\_

\_\_\_\_\_  
[Date]

\_\_\_\_\_  
[Date]

\_\_\_\_\_  
[Signature of Co-Principal Investigator]

\_\_\_\_\_  
[Date]

\_\_\_\_\_  
[Signature of Authorized Representative]

\_\_\_\_\_  
[Date]

Exhibit B  
**P&G Invoice Requirements**

To ensure that invoices are processed accurately and promptly, please use **the list below as a guide** for required information. Also, note that in some regions additional information (such as VAT number) may be required. If the invoice is not related to a Purchase Order, which shall not be issued without incorporating or referencing the MAA, the P&G contact name and T# responsible for the purchase must be provided, otherwise the invoice will be returned to the vendor. Please contact your local Accounts Payable Help Desk for any questions. (*REFER to "P&G Invoice Requirements"*)

- **Supplier Invoice Number & Invoice Date**
- **P&G SAP Purchase Order Number**  
One Purchase order per invoice (omit dashes/slashes, etc.). There must be an "SAP box #" (i.e., G4P, GBP, N6P etc.) followed by a 10-digit number (i.e. 45..., 55..., 56..., 58...).
- **Mail Invoices to:**  
Invoices must be mailed to the address listed on the Purchase Order
- **Line Item Number**  
Line Item Number that corresponds with the part number and/or description, must match exactly
- **Line Description**  
Part # or description of the item (which ever is applicable)
- **Order Quantity**  
Quantity on invoice must not exceed Purchase Order line item quantity.
- **Unit of Measure**  
Must equal unit of measure on purchase order
- **Unit Price**  
Must not exceed the price and match currency of each line item on the Purchase Order
- **Bill-to address**  
This is the P&G Company which is paying for the purchase.
- **Payment Terms**  
Must match the Purchase Order terms
- **Freight Conditions**  
If freight is prepaid, add a copy of the freight bill and attach the Bill of Lading.
- **Remit-to address**  
This is the vendor address where P&G should send the payments
- **Wire Transfers**  
Your complete bank information for wire transfers
- **Invoice notes**  
Required for progress payments and debit/credit adjustments. Include reason for adjustment and parked credit # if applicable. Identify previous payments (down payments), total percentage to be invoiced and amount if applicable.
- **Bill Of Lading (BOL)**

One BOL per invoice (6 maximum). It must match the BOL included on the GR/Confirmation entered on the system (omit dashes/slashes, etc.).

Unexpected additional charges and credits should be included for payment on separate invoices.

**Invoice will be returned for correction if the information above is missing or incorrect.**