

# NEW FRONTIERS

*Celebrating Outstanding Research and Scholarship*



The Youngstown State University College of Graduate Studies provides an integrated program of advanced study leading to discipline mastery and an understanding of related subjects. Graduate students working with highly qualified graduate faculty members demonstrate mastery of their discipline and document discovery of knowledge through research and scholarly activity.

### Spring Dissertation Titles

**Lora Annette Adams-King**  
**Educational Leadership**

*Explaining the Achievement Gap of African American Males Relative to Other Student Groups*

**Nicholas V. Cascarelli Jr.**  
**Educational Leadership**

*The Impact of Physical Education on Childhood Obesity in Ohio School Children*

**Diane P. Kandray**  
**Educational Leadership**

*A Study of Underrepresented Minorities in the Dental Hygiene Profession*

**Kyle Matthew Myers**  
**Materials Science and Engineering**

*Structure-Property Relationship of Binder Jet Printed Fused Silica Preforms to Manufacture Ceramic-Metallic Interpenetrating Phase Composites*

**Susan M. Olive**  
**Educational Leadership**

*The Value of Science Fair and the Factors that Have Led to the Decline in Ohio Science Fair Competition*

**Silvia A. Stefan**  
**Educational Leadership**

*Assessing the Impact of Course Delivery on Student Success*

**Kimberly Justham Zippie**  
**Educational Leadership**

*The Early Learning Harvest: The Relationship Between Teacher Education Levels and Child Outcomes*

**David Zupsic**  
**Educational Leadership**

*Exploring the Values of Education Using Student Viewpoints to Redesign the Educational Structure to Achieve Optimal Experiences*

### Spring Thesis Titles

**Mohamad Ali Al-Azzawi**  
**Chemistry**

*Investigation of Perovskite-type Compounds*

**Samuel J. Amazing**  
**Creative Writing**

*The Disappearance of Desmond Willows*

**Liseli Jeanette Baich**  
**Industrial and Systems Engineering**

*Impact of Infill Print Parameters on Mechanical Strength and Production Cost in Material Extrusion Based Additive Manufacturing*

**Patrick Albert Bascom**  
**Interdisciplinary Communication**

*Political Discussions and the Media*

**Jillian L. Billeck**  
**Biology**

*Investigation of Empathy-like Behavior in Social Housing*

**Kayla A. Brown**  
**Biology**

*Changes in Gene Expression of *Neurospora Crassa* in Response to Quinic Acid*

**Brielle Retha Campos**  
**English**

*Hybrid Genre and Character Representation: Noir Fantasy and Fantasy Noir in Constantine Pushing Daises and the Dresden Files*

**Aaron Maureese Carmichael**  
**Criminal Justice**

*The War Amongst Our Homes: Society's Attitude Towards the Increased Militarization of American Policing*

**Joseph Edward Corpa**  
**Applied Behavior Analysis**

*Reducing and Eliminating Persistent and Severe Aggression and Property Destruction with Consistently Contingent Positive Reinforcement for Instructional Compliance and Academic Behaviors*

**Timothy James Daugherty**  
**Mechanical Engineering**

*Computational Fluid Dynamics Modeling of a Chemical Vapor Deposition Process*

**Kathleen Masena Fleming**  
**Chemistry**

*The Gas Phase Ligand Exchange of Select Alkaline Earth and Transition Metal B-Diketonate Complexes*

**Brian Karl Friedrich II**  
**Mechanical Engineering**

*An Experimental Study of Volumetric Quality on Fluid Flow and Heat Transfer Characteristics for Two Phase Impinging Jets*

**Anne Leigh Garwig**  
**Creative Writing**

*Re: Verse Libre*

**Kory Kenneth George**  
**Biology**

*Induction of the *qa-y* and *qa-1F* genes in *Neurospora crassa* at Differing Times of Quinic Acid Exposure*

**Robert Christian Granchie**  
**Environmental Science**

*Distribution and Partitioning of Lead Related to Soil Characteristics in a Former Gun Range*

**Garrett Thomas Guerrieri**  
**History**

*The Catholic Church in Italy and Italian Catholic Immigration to the United States: 1880-1914*

**Joshua Scott Hall**  
**Criminal Justice**

*Religiosity and Mental Illness: A Comparison of Combat Veterans Active Duty Veterans and Civilians*

**Chelsey Marie Haney**  
**Criminal Justice**

*Are Clinically Depressed Adolescents More Likely To Carry a Handgun than Non Clinically Depressed Adolescents?*

**Marissa Christine Hundelt**  
**Criminal Justice**

*Comparative Analysis of Drug Courts: Effectiveness of Sentencing an Offender to Treatment and Rehabilitation*

**Imran**  
**Computing and Information Systems**

*Predicting Bug Severity in Open-Source Software Systems Using Scalable Machine Learning Techniques*

**Travis John Kneen**  
**Mechanical Engineering**

*Characterizing the High Strain Rate Mechanical Behavior of Stainless Steel 316L Processed by Selective Laser Melting*

**Mohan Krishna Kundeti**  
**Electrical Engineering**

*Comparative Study of Implementing Multilevel Inverters Powered by PV-battery Stand-alone System to Enhance the Performance on Induction Motor Drive*

**Niraj Lamichhane**  
**Civil, Environmental and Chemical Engineering**

*Development of a Flood Warning System for the Grand River near the City of Painesville, Ohio*

**Lukas Lenner**  
**Mechanical Engineering**

*Engine Redesign Utilizing 3D Sand Printing Techniques*

**Shannon Marie Grove-Lutz**  
**English**

*Phonological Language Attitudes: Exploring the Discriminatory Paradigm of Predetermined Perceptions and a Plan for Intervention*

**Preetham Madeti**  
**Computing and Information Systems**

*Using Spark MLlib to Predict Closed Questions on StackOverflow*

**Amira Nabil Moatassem**  
**Computing and Information Systems**

*Online Writing Tutoring Applications*

**Mohd Faseeh**  
**Computing and Information Systems**

*Probabilistic Smart Terrain*

**Kamal Neupane**  
**Civil, Environmental and Chemical Engineering**

*Bacterial Inhibition in Frack Related Water Using Copper Ion Solution*

**David Matthew Nickell**  
**English**

*Meeting at the Intersection of Delaware and Chauncy Street: Roseanne Conner as a Working-Class Paradigm*

**Binod Paudel**  
**Civil, Environmental and Chemical Engineering**  
*Determining Material and Geometric Properties of Flat Slab Bridges Without Plans*

**Monica Victoria Ramunno**  
**Chemistry**  
*Synthesis and Characterization of New Ceramic-Metal Interpenetrating Phase Composites via the Reactive Metal Penetration of 3D-Printed Ceramic Precursors*

**Lawrence Paul Reents**  
**Criminal Justice**  
*What Influences Mental Health Treatment Among Military Veterans?*

**Gary Russell Repasky**  
**Criminal Justice**  
*Do Critical Incident and Organizational Stressors Vary Between Races in Law Enforcement?*

**Nicholas L. Sauer**  
**History**  
*Disability in Late Imperial Russia: Pathological Metaphors and Medical Orientalism*

**Vinayak Sinha**  
**Computing and Information Systems**  
*Sentiment Analysis on Java Source Code in Large Software Repositories*

**Shobha Kanta Subedi**  
**Civil, Environmental and Chemical Engineering**  
*Determining Load Bearing Capacity of Flat Slab Bridges Without Plans*

**Yonatan Abebe Tadesse**  
**Electrical Engineering**  
*The Electromagnetic Simulation of Birdcage Coil in Magnetic Resonance Imaging*

**Claret Mengwi Tening Ndfet**  
**Environmental Science**  
*Phytoremediation of Historic Lead Shot Contaminated Soil Grand Valley Ranch NE Ohio*

**Yener Ulus**  
**Biology**  
*Phytoremediation of Heavy Metals by Using EDDS*

**Jamison Paul VanLocke**  
**English**  
*The Influence of Spacing on Reading Comprehension*

**Marshall Lee Winkler**  
**Biology**  
*Effects of Social Housing on Conditioned Place Aversion*

**DaVena Zivkovic**  
**Chemistry**  
*Enzymatic Characterization of Aldose Reductase and Its Inhibitors*

ON THE COVER: Stephen Harvey, Master of Music student, with his original composition "Suite Childhood".



**YOUNGSTOWN  
STATE UNIVERSITY**

**Acknowledgements**

#### College of Graduate Studies

Dr. Salvatore Sanders  
Dean

#### Office of Research

Michael Hripko  
Associate Vice President of Research

#### Andrew Shepard-Smith

Director, Office of Research Services

#### Writers and Editors

##### Writer and Editor

Fiona Kelly  
Graduate Assistant, English

Office of Marketing & Communications Staff:

Editor  
Angela Ireland

Advertising & Publications Coordinator

##### Layout Design

Renée Cannon  
Layout & Design Artist

##### Photography

Joel Lewis  
Photographer

#### Advisors

##### Dr. Jay Gordon

Associate Professor, English

##### Angie Urmsom Jeffries

Graduate Administrative Affairs

# GOOD HAIR GENES

## Research Targets Alpaca Hair Quality



April Chestnut aims to help alpaca breeders produce animals with superior hair quality.

Alpaca fur provides material to create socks, scarves and other items. In order to make important breeding decisions, however, owners need to be aware of the quality of fur that certain lineages of alpaca produce. April Chestnut, an MS Biology student, is studying the structure of alpaca skin and hair in order to aid alpaca owners in making breeding decisions.


According to Dr. Mark Womble, April's project will allow for superior alpaca hair production by looking at alpaca skin and hair fibers.

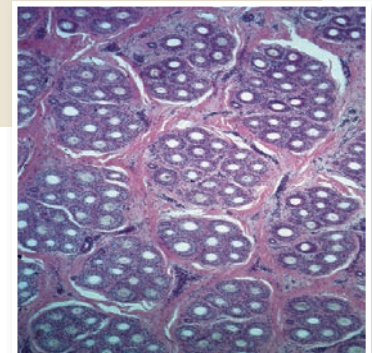
Chestnut examines alpaca skin and hair under a microscope to determine the quality. She specifically looks for animals which have a greater density of hair follicles (which will produce more hair), follicles that will produce softer, narrower hairs, and the number of oil-secreting sebaceous glands. Within her project, she is defining and identifying each of these qualities.

In order to best examine the tissue samples, Chestnut cuts and stains the samples. She then looks at them under a microscope and uses digital software to record her findings.

When she has found animals with highly desired hair types, she traces their lineage to see if their offspring have similar features.

"These animals can go for thousands of dollars, so it's economically important that we know these qualities exist," stated Womble.

After she finishes her project, Chestnut hopes to submit her findings to a scientific journal for publication. Chestnut's research project was reviewed by YSU's Institutional Animal Care and Use Committee and it was determined that the purpose of the research fit within the guidelines of work to improve the fur on an agricultural animal. 



*The two types of alpacas, Suri and Huacaya, are bred primarily for their very different fleece types. Through fiber analysis and microscopic examination of the skin at the cellular level, comparisons are being made to determine what factors contribute to the most desirable fiber traits of each breed.*

# EVERYTHING OLD IS *New Again*

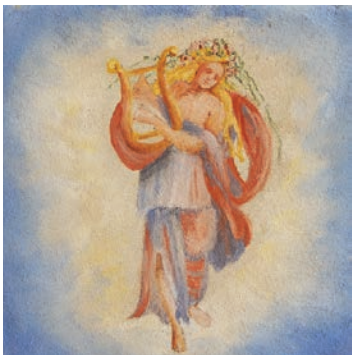



Artisans in Florence have followed Renaissance techniques for nearly a thousand years. Ellen Jones, a Youngstown artist and assistant professor of theater and dance, recently traveled to Italy to study Italian Renaissance painting techniques, which she says “are as sustainable as they are beautiful. The Renaissance works have a beauty and a grace, and art for art’s sake that didn’t exist before.”

Jones received a fellowship from The United States Institute of Theater Technology and a grant from the YSU University Research Council to travel to Italy to work with artisans who are still using Renaissance techniques and materials. She says her goal was “to see if these works were more sustainable because they were not synthetic, and if such techniques could be used in contemporary painting practices.”

Jones says she did not anticipate the significant difference in materials before she traveled to Italy. “I didn’t know if they would be more sustainable because they were natural, or more dangerous because of the difference in safety standards.” Her interest in studying sustainability of Renaissance art materials was both for personal enrichment and for teaching. Through knowledge gained, she plans to teach her students and peers about more sustainable painting materials and new methodologies for creating theatre set pieces based on the Renaissance techniques.

During her fellowship, Jones spent five weeks in artisan studios, making pieces which she brought back to Youngstown.



Jones says she became interested in this field of study because of the attraction to Renaissance pieces by all students of the visual arts. “There is something about being in a place where all the art produced in the city is still there. It has a sense of history, and the fact that all of the people there are still working in traditional ways using traditional materials and traditional methods. We are talking about a chain of knowledge that hasn’t been broken for a thousand years, and something about that appeals to me on all levels.” 

*Works completed by Jones during her time in Florence.*

# FIGHTING FIRE WITH...TECHNOLOGY

When fighting fires, every second counts. That is why John Bralich, YSU's Geographic Information Systems Manager and his student intern, YSU Senior Jordan Wolfe, are using geographic information system (GIS) technology to help precisely map every fire hydrant throughout the Youngstown area.

Geographic information science is the science underlying geographic concepts, applications and systems. A geographic information system is a system designed to capture, store, manipulate, analyze, manage and present all types of spatial

or geographical data. In general, GIS describes any information system that integrates, stores, edits, analyzes, shares and displays geographic information. GIS allows users to create interactive queries (user-created searches), analyze spatial information, edit data in maps and present the results of all these operations.

YSU has provided GIS services to local, regional and national clients for more than 15 years. During that time, literally thousands of data-rich maps have been created to better depict data and information in a meaningful way, offering enhanced clarity of data and information to a broad spectrum of clients.

Bralich has previously provided the city with GIS maps depicting a broad array of community infrastructure, including roads, bridges and utility poles. He points out that, "While the city had available GIS data and computer-based information on the location of sewer lines, they had only paper blueprint-based information on the location of water lines."

As he was recently conducting a vacant property survey, he took note of the number and locations of fire hydrants on the property, and he captured their precise geographic coordinates. Recognizing the value of this information to firefighters, he met with the City officials, who requested that he provide detailed GIS mapping of every fire hydrant in the city.

Like many vehicles today, Fire Department vehicles have GPS systems; but uniquely, Fire Department GPS Systems portray all known fire hydrants. If the map coordinates of the hydrants are not precise, any delays in locating the hydrants can be costly to property and more importantly, to human life. "Using mobile

data terminals located in the vehicle, precise GIS mapping allows firefighters to quickly find the exact location of the closest fire hydrant," says Bralich.

In order to complete this project, Bralich and Wolfe are using various technologies to locate all the fire hydrants in the City

of Youngstown. For example, rather than travelling through the city to individually find and map each hydrant, they first consult aerial views of each street using Google Maps. Then they add precise geographic latitude and longitude designations to each hydrant. "This process results in a detailed GIS map that is extremely accurate, eliminating any offset or variance," says Bralich.

"On average, I am able to locate and map about 1,000 hydrants per week,"

says Wolfe.

A senior majoring in political science and minoring in non-profit leadership, Wolfe initially interned in economic development, and later became an intern working on a variety of GIS projects as part of the University's Regional Economic Development Initiative (REDI). He says that this project is personally important to him because of the history of firefighters within his immediate family, such as his father and several uncles. Wolfe also has personally observed the result of firefighters being unable to find a fire hydrant. While recently working with YSUscape, a student organization that helps to clean up vacant properties in Youngstown, he witnessed a house catch fire. Though the firefighters quickly arrived on site, they lost precious time trying to locate the nearest fire hydrant. Wolfe hopes that, with the completion of this project, situations like that will no longer happen.

Upon graduation from YSU, Wolfe plans to attend graduate school in public policy. He views GIS technology as a critical element for this field of study. "GIS can really help public policy decision making. It enables any local government or township in the community planning process, the inventory and location of community assets, and even in support of public health decisions." ▼



*Wolfe (left) and Bralich work to map fire hydrants on a GIS layer.*

# Keeping Their Head in the Game:

## *Concussion identification and treatment for low-income student athletes*



*Wallace performing a concussion test on a YSU athlete.*



*Wallace with high school athletes during her data collection in 2015.*

Dr. Jessica Wallace, assistant professor of Human Performance and Exercise Science, is involved in concussion research for high school student athletes, particularly in the diagnosis and care of athletes from high schools in low-income areas. Starting next fall, Wallace will begin working with coaches, trainers and athletes in high schools, to provide them with tools to assess baseline neurocognitive function and help with follow-up care when student athletes get a concussion. Her analytical and diagnostic tools include neurocognitive software, vestibular ocular motor screening, balance testing and the standard concussions assessment test.

According to Wallace, a concussion is not a structural injury, but is instead a functional injury. “There are 22 different signs and symptoms of concussions, but a concussion is a very heterogeneous injury. As a result, concussion symptoms vary from person to person, making identification and treatment more difficult than with other injuries.”

In her research, she is focused on the vestibular system (inner ear) as well as the ocular system (eyes), the areas in which current concussion research is focused.

Ultimately, Wallace hopes to increase awareness about concussions and enhance the health and safety of student athletes. “I want to assess the level of standard care of student athletes in low socioeconomic neighborhoods and schools, and offer meaningful solutions. With my research, I hope to help student athletes by providing the appropriate medical personnel with the tools to quickly diagnose and treat the injuries, and provide the appropriate follow-up care.” In addition, she intends to add to the established database of composite and normative data for these groups of students.

Although experts do not agree on exactly what happens if a concussion is not treated, the results, says Wallace, are always bad for the patient. “If a concussion is not treated properly, the patient tends to have symptoms that linger for a longer period of time, or symptoms which potentially could lead to other long term issues,” says Wallace.

Wallace also states that, if untreated, concussed student athletes are occasionally also at risk for “second impact syndrome.” “If a student athlete is concussed, they experience a whole metabolic crisis in the brain. If they continue to have symptoms and their brain has not healed and they get another concussion, there’s a very high risk of a catastrophic event,” warns Wallace. **Y**

# STARGAZING: YSU PLANETARIUM RECEIVES NASA FUNDING



*“YSU’s  
Planetarium  
is receiving  
\$650,000  
to fund  
Cosmoquest”*

The increase of technology and electricity has polluted the night sky with light. As a result, many can no longer see the stars. However, the increase of technology also enables people to photograph and view areas of the sky and world never before seen. Youngstown State University’s planetarium faculty makes these images accessible to anyone with internet access.

According to Patrick Durrell, YSU associate professor of Astronomy and director of the planetarium, Cosmoquest is a virtual facility that gives free access to images that can be projected onto a half-sphere planetarium.

Planetarium faculty photograph pictures of stars, telescopes, and other significant aspects of cosmology and convert the image to be projected on a half-sphere. Therefore, anyone with the proper equipment can create planetarium shows for free.

Although Cosmoquest is not a new website, they recently received a sub-award from NASA to continue this project. The University of Southern Illinois in

Edwardsville is the main university on the grant, but YSU’s planetarium is receiving

\$650,000 to fund Cosmoquest as part of the \$11.5 million five-year cooperative agreement with NASA.

The funding will go towards maintaining and improving Cosmoquest. Currently, the website has multiple shows and images that planetariums, museums and universities can use. The funding from the NASA award will now allow planetarium faculty to make new content. The funding will go towards travel, filming and production of new content that can be put up on the website.

Ultimately, this funding will go towards improving the outreach of the scientific community. Rather than spending precious financial resources on shows and images, planetariums can now access quality material for free.



# A HISTORY

# Etched in Steel



*The Labor Museum and a sculpture, "The Steelmakers" by George Segal, modeled after workers Peter Kolby Jr. (right) and Wayman Paramore, members of the local 1462.*

United States Museums of Labor and Industry are relatively rare; however, YSU is fortunate to be the home to The Youngstown Historical Center of Industry and Labor, where visitors can learn a great deal about our steel mill town history. The museum is open to all ages.

The Youngstown Historical Center of Industry and Labor was established in the mid-1980s, but during the 2008 economic downturn, The Ohio History Connection (OHC), (formerly known as The Ohio Historical Society), was forced to reevaluate the museums it administered due to budget cuts.

George Kane, the Director of Historic Sites & Facilities, recognized the significant historical value of the museum, and contacted the YSU History Department to determine YSU's interest in running the day-to-day operations of the museum. The department accepted the offer and has administered the museum since, growing in scope and services.


Each year since 2010, the museum has received \$100,000 in grant funding to sustain operations. In addition, the museum receives assistance from YSU, OHC and private philanthropy. Dr. Martha Pallante, chair of the YSU History Department and professor of history, says the museum has operated in the black for the past six years.

According to Pallante, running the museum offers a unique opportunity for the History Department and community. YSU

Students work at the museum as student workers, in a variety of roles, including customer service, archival work, and in graduate assistantship positions. Positions are not limited to students in the history department, providing valuable work experience for students from all academic disciplines.

The museum has a variety of diverse displays and collections, including an impressive archive. According to Pallante, the museum looks for original sources, such as journals and letters, from those involved in the labor industry at every level: workers, supervisors, executives, families and others.

The main exhibit in the museum, "By the Sweat of Our Brow," depicts what life was like for workers in the steel and iron industry. Pallante says that the exhibit was constructed "using local examples to exemplify the whole of the industry."

One of the other significant features of the museum is its architecture. The museum was designed by renowned architect Michael Graves, and it has won awards for its unique architecture. "Graves wanted the structure to include some of the skyline elements of the steel mills. It is also designed with the buildings around it in mind, particularly the cathedral across Wood Street and the Powers Auditorium on Federal Street downgrade to the south," says Pallante. Each side of the building showcases a different era of steel manufacturing. 



# PLEASE TURN **ON** YOUR PHONES FOR CLASS

## Professor develops mobile app to “talk to students where they live.”



*Thompson displays his newly-developed mobile app, Study.*

Dr. R.J. Thompson, assistant professor of Art in Youngstown State University’s College of Creative Arts and Communication, combines technology and history in some of his recent initiatives.

Recently, Thompson’s mobile app, *Study*, which allows instructors to easily connect with students via their cell phones and tablets, was featured at the United States Distance Learning Association (USDLA) Conference. The USDLA is among the first of the national distance learning education organizations, responsible for standards, research and development in the field of distance learning education technology.

Thompson calls his app a “customized learning management solution using open-source technology.”

Thompson’s app bridges the gap between his parallel interests in both fine arts and interactive design technology. Typically, fine arts education involves face to face interaction in a classroom. Since his own art portfolio was already posted online, he began to use open-source applications to help manage his classes online.

“I found that through that process, the students were more interested in art, largely because it was not only more accessible to them, but it was a direct application of the skill sets that I was teaching them,” says Thompson. Afterwards, his students were inspired to begin their own online projects.

He hopes that his presentation at the conference will serve to inspire other educators. Thompson stated, “My view is that app design and development technology are both growing at a rapid pace; so quickly, in fact, that you do not even need to have coding or design skills in order to build these things.”

Thompson also pointed out that the apps will “talk to students where they live. If, during a lecture, students look at their smartphones, why not deliver academic content to those same smartphones?” Thompson says that this combined technology medium allows students to hear and see the lecture, as well as access additional reading material via their smartphones. This methodology enables students to engage at any time on multiple levels. As Thompson says, “learning does not stop when the class is over.”

In addition to his work with educational technology, Thompson also recently developed a market campaign for the City of Youngstown.

Using a variation on the term “YO,” a common shorthand abbreviation for Youngstown, Thompson’s campaign is called “The City of You.” His artistic and community goal was to center and coalesce the rich history and diversity of Youngstown and its residents into one unifying brand, which could be used to both instill community pride among current residents, and to depict the city in a positive and forward manner to those living outside the community.

*Youngstown Design Works*, a student initiative led by Thompson, was involved in the project. This student art design and business education experience takes on a wide variety of community art and marketing projects throughout the year. The campaign will launch later this year. **Y**

# EDUCATIONAL RELATIONSHIPS Made in China



*Clockwise from left:*

*Drs. Abraham and Crist with a Yanching Institute of Technology (part of the Union of Northern International Universities) faculty member.*

*The 3D printed gift presented to the Chinese Universities.*

*Dr. Jiang and a YSU representative at the Chinese Education Expo in Chengdu.*

In order to be successful, colleges and universities must market themselves on an international scale. Youngstown State University recognized this call to action and recently traveled to China to create partnerships with Chinese universities. Not only will this allow YSU to increase its international student population and create a more diverse campus, it will also offer domestic students more opportunities to travel internationally for study abroad programs.

While in China, YSU met with nine universities and five agencies with the goal of either creating relationships or establishing agreements for future collaboration. When the university signs an agreement with YSU, they are agreeing to work and grow with our university. Often, this involves sending domestic students to the international university, which allows an exchange of ideas on a global scale.

Because YSU was marketing the university as a whole and not one specific program, a diverse group of faculty traveled to China to promote YSU. Dr. Martin Abraham, provost of YSU; Dr. Michael Crist,

Interim Dean College of Creative Arts & Communication; Dr. Hazel Marie, distinguished professor and chair of mechanical engineering; Dr. Patrick Bateman, assistant professor of business management; Dr. Qi Jiang, professor of sociology who was also pivotal to the trip for providing translation while abroad; and Ann Gardner, assistant director of international studies and programs, all traveled to China to create these important connections. They also attended recruitment fairs to encourage international students to consider YSU for their education. Additionally, Mousa Kassis, international trade advisor, and the Ohio Development Services Agency were instrumental in the success of the trip. They provided free logistical support services, which allowed YSU to most effectively reach out to universities and agencies.

Additionally, YSU also showed off promotional videos during their meetings and recruitment fairs. These videos were in both English and Chinese and showed YSU's innovative programs, particularly additive manufacturing. This program was particularly interesting to students due to YSU's state-of-the-art technology and hands-on experience. YSU also presented each of the universities they visited with a 3D printed penguin and panda standing together on a platform, which read "a gift from Youngstown State University students."

According to Dr. Abraham, YSU had three goals when they traveled to China: to improve and increase international recruitment, to provide more study abroad opportunities for domestic students, and to better integrate international students across YSU's campus. By increasing the international student population, there will be more opportunity to share a vast number of cultures rather than create a cultural divide. This is valuable for both international and domestic students. By experiencing cultures first hand, YSU students can gain a better understanding of the world and therefore become better graduates. These interactions are critical to getting a well-rounded education.

Ann Gardner said this trip was essential to making YSU into "a globalized diversified campus." This allows for a global exchange of ideas in a domestic location. Although many may not consider YSU to be part of a global market, they soon will be. Their recent efforts to grow their international student population and create international opportunities for students will benefit the university by giving members of the university community opportunity to experience the world as well as to contribute to a global exchange of ideas. **Y**



# STAKING OUR CLAIM: *YSU Professor Receives First Federal Patent*



*Dr. Tom Oder*

While research at Youngstown State may often focus on the academic, many students and faculty are also focused on creating innovative ways to help industry. Recently, Tom Oder, a physics professor at Youngstown State University, received a federal patent for a device that improves the capability of semiconductors. This is the first federal patent for a YSU professor.

Since he was in graduate school, Dr. Oder has focused his research on semiconductors. One of the problems he found facing semiconductors is with their ability to withstand high temperatures. Dr. Oder created the device using silicone combine, a material that provides unique processing. This material can withstand the temperature of the semiconductor while also improving the work ability of the semiconductor.

In addition to his patent, Dr. Oder also received three grants from the National Science Foundation. The grants total more than \$700,000. The most recent grant will allow him to travel and discuss the component with other researchers and organizations that use semiconductors. This not only allows him to spread the word about his research and patent, but also enables a graduate student to learn alongside him.

In the future, Dr. Oder hopes his research will help to train graduate students interested in the processes behind semiconductors. Because he is doing advanced, in-depth research, he is able to provide hands-on training with experimentation and interactions with companies and engineers. This provides a unique opportunity for students. ♣

## THE DIVERSITY OF SCHOLARSHIP AT YSU

On Youngstown State University's campus, students are always encouraged to explore new possibilities in research and to exchange ideas. In order to accommodate the academic process and give graduate students opportunities to share their work, the Graduate College and the Office of Research presents The Diversity of Scholarship. This annual event allows graduate students to present their research and discuss the role it has played in their university experience.

While YSU's graduate students all heavily research their chosen subject matter, only a few outstanding proposals are selected. These projects are from a variety of students in different academic programs, but all share the quality of exceptional research in their field.

Diane Kandry, with assistance from her advisor, Karen Larwin, completed original research in demographics of dental hygienists. Kandry explored why certain demographics were underrepresented in dental hygienist student populations and investigated practices that may help improve recruitment.

In his research on life satisfaction, Danny Cesene, with his advisor, Karen Larwin, studied the relationship between adverse childhood experiences and the physical, social and emotional development of these individuals over their lifetime. Since much of the research focuses on life satisfaction for adolescents and geriatric populations, Cesene strove to create original research focused on middle-aged populations.

In addition to their research, some students are also creating original works. For instance, Stephen Harvey, advised by David Morgan, is researching mixed ensemble music of American jazz composer Chris Potter. After researching and analyzing the



*The student presenters featured at the Diversity of Scholarship Event.*

music, Harvey is applying concepts and techniques to his musical composition, "Suite Childhood."

In his presentation, "The Values of Goldman Sachs: A Marxist Ideological Perspective," Philip Monrean uses ideological analysis based on Marxist thought to examine digital publications by Goldman Sachs. Through this ideology, Monrean will discover if Goldman Sachs is changing its communication based on class.

Jennifer Canter, with her advisor Diana Awad Scrocco, is focusing her research on an original annotation tutorial. Canter plans to describe a tutorial she uses to show students how to effectively research and cite their scholarly sources in academic writing. This tutorial is effective across disciplines and can be helpful to more than just college students.

Finally, Sepideh Khavari, with advisor Andy Chang, plans to present his research on subcellular location. Khavari plans to calculate the subcellular location of animal and human proteins by using computational predictors. Predicting these subcellular locations is crucial to understanding the function of cells, since the two are closely related. ♣



**YOUNGSTOWN  
STATE  
UNIVERSITY**

ONE UNIVERSITY PLAZA • YOUNGSTOWN, OHIO 44555

**College of Graduate Studies**  
[www.yсу.edu/gradcollege](http://www.yсу.edu/gradcollege)  
330.941.3091

**Office of Research**  
[www.yсу.edu/research](http://www.yсу.edu/research)  
330.941.2377

*Published jointly by The Office of Research and The College of Graduate Studies, New Frontiers is a bi-annual report highlighting a portion of the research and scholarly activities of Youngstown State University students, faculty and staff.*

*Please contact us to discuss possible research collaborations, request further information, or learn more about opportunities in the College of Graduate Studies.*

## HANDLE WITH CARE: MANAGING RISK FOR HUMAN RESEARCH PARTICIPANTS



*Karen Larwin*

Youngstown State University places a great emphasis on conducting safe and ethical research on living test subjects. Before conducting such research, students and faculty researchers must first secure approval from the Internal Review Board (IRB). At YSU, the IRB is comprised of faculty members, staff members, and community members.


“The IRB’s role is first, to ensure that any human subject participating in university research is protected and second, to ensure that the researcher and university are protected from any form of liability,” according to Dr. Karen Larwin, associate professor and chair of the IRB.

Before conducting any research involving human subjects, students and faculty need to complete online training provided by the *Collaborative Institutional Training Initiative (CITI)*. CITI training instructs the researcher on ethical research techniques as well as provides historical perspectives in human research.

After training is completed, researchers will submit a detailed research protocol to the IRB. The protocol is “evaluated to make sure no individual is ever harmed or hurt, emotionally or physically. We must make sure that no participant is ever suffering any harm in any way,” says Larwin. While some research poses little or no threat to its participants, Larwin says that some human subject research might naturally come with risk.

When a research protocol is judged to potentially have some measure of risk to the human subjects involved, Larwin and her committee “carefully and thoroughly assess the research to make sure that there’s going to be a genuine benefit of knowledge gained that justifies the potential for a human subject to become frightened, or physically or emotionally affected by the research.” Dr. Larwin notes the difficulties of such assessment and decisions for the committee, which is challenged to provide constructive feedback to the researcher that will include as many safeguards as possible. If the researcher and the committee cannot determine a reasonable way to mitigate the risks, the IRB committee will deny the protocol unless and until the risk is removed.

The IRB is particularly helpful and instructive to graduate students who are performing research involving human subjects. “In terms of graduate research, I think we’re the mechanism that helps to prepare students to understand what they’re going to experience once they get into their professional role or continue their further education,” says Larwin.

In addition to ensuring the safety of human subjects involved in research, the IRB also informs and mentors students, ensuring that all human subjects-research students perform ethically, and that the university promotes a culture of respect for all individuals involved in the research process. 



Youngstown State University does not discriminate on the basis of race, color, national origin, sex, sexual orientation, gender identity and/or expression, disability, age, religion or veteran/military status in its programs or activities. Please visit [www.yсу.edu/ada-accessibility](http://www.yсу.edu/ada-accessibility) for contact information for persons designated to handle questions about this policy.

*Learn more at*  
**[ysu.edu/gradcollege](http://ysu.edu/gradcollege)**