November 14, 2012

Office of Undergraduate Research (OUR)
ANNUAL REPORT 2012

Due Date of Report:  Fall Semester 2012

Time Period to be covered in report:  AY 2011-2012, Summer 2012

Project Title:  Office of Undergraduate Research

Persons Completing Report:  Thomas Kvale  and  Larry Connin

Summary Statement

OUR has now completed its sixth year of existence and the OUR programs continued to receive healthy interest from the students and strong support from the faculty. This is reflected in the strong average FYSRE and USRCAP proposal review scores. Dr. Kvale contributed substantially to sections of the UT Self Study concerning research (especially, undergraduate) and The Higher Learning Commission made special mention of the strong undergraduate research involvement on at UT.

Grant support: OUR played a key supportive role for three state and national grants totaling about 2M$ over their current duration. All three grants benefited from OUR’s summer seminar series ARS2980: Issues in Research and Scholarship, which concentrates on the safe and ethical conduct of research. Responsible conduct of research formal training is a high priority for state and national granting agencies such as the National Science Foundation. Individually, we were in the third year of the 1.53M$ grant from the OBOR-funded Choose Ohio First Scholarship Program: “Building Ohio’s Sustainable Energy Future.” (G. Martin P.I., with T. Kvale, a Co-P.I.) This grant involves collaboration between UT, BGSU, Northwest State, Owens, and Terra to fund scholarships to students in the renewable energy area. A key component of this grant is the involvement of undergraduate students in research and this grant funded two research students (Tyler Kinner and Anthony Bova) in summer 2012. We were in the third year of the current NSF-REU (Research Experiences for Undergraduates) grant in Physics and Astronomy (R. Irving, P.I. and T. Kvale, Co-P.I.). This grant funded students from across the nation to conduct research in physics and/or astronomy at UT. Likewise, Chemistry had a separate NSF-REU grant to conduct research in chemistry at UT. All of these REU students were required to attend the ARS2980 presentations and OUR coordinated with Residence Life to house these students together to create a Living/Learning Center during summer 2012.

The OUR staffing model was revisited and a full-time, full year graduate student (Jamie Teeple) was added to OUR’s staff. The Graduate Assistant (GA) stipend costs were covered by OUR and the tuition was covered by the HSHS/JHCoE. This position commenced in the Fall 2011 semester and has worked very well. The specification of the GA duties is attached in the Appendix.

OUR Budget reduction for FY12 meant that Dr. Larry Connin was on an academic year 9 month appointment and was not regularly available in the summer. This greatly impacted OUR, since his duties were mainly in facilitating ARS2980 and in the distribution of stipend checks. Also, since he is normally in Sullivan Hall, he had frequent interactions with the students throughout the summer. Because Mr. Teeple was with OUR the entire academic year prior to the summer 2012, he was familiar with its operation and picked up the summer duties and interactions well.

Nationally, Dr. Kvale presented a poster at the Council of Undergraduate Research (CUR) national conference in June 2012 at the College of New Jersey in Trenton, New Jersey. Sigma Xi, The Scientific Research Society presented the UT chapter of Sigma Xi a chapter program excellence award (one of only seven, nationally) for their support of Posters at the Capitol: Undergraduate Research in Northwest Ohio. OUR is one of the prime organizers of the event.

We have continued to seek extramural funding for undergraduate research. A proposal (“Academic Preparation for a Sustainable Energy Impact (APSEI) at The University of Toledo”) requesting funds of 1.9M$ over five years was submitted to the National Science Foundation STEM
Talent Expansion Program (NSF-STEP). Although the proposal was not funded, the reviewers’ comments were positive toward the undergraduate research key component. As an additional funding source for the support of undergraduate research, the Honors College has identified undergraduate research as a priority Development initiative (details in the Appendix).

In discussions and preparation for the UT Self Study and the Higher Learning Commission review of the university and its accreditation, a good path toward authorship for our undergraduates would be to publish a peer/professionally-reviewed journal. We have held multiple meetings this past year and Dr. Kvale attended sessions at the national CUR conference devoted to best practices in undergraduate research journal publishing. More details of the journal will be in next year’s Annual Report. We are planning for the inaugural publication of the UT-Journal of Undergraduate Research this spring semester.

Other objectives of the OUR in the upcoming year include: continuous outreach to inform the undergraduate population of OUR programs; develop an up-to-date and thorough data base of UT undergraduates involved in faculty-led research beyond the programs sponsored by OUR; promote the creation of more research intensive courses across the university; enhanced funding both internal and external (mainly through the NSF-REU program); grow OUR programs (including the STARS); grow the Posters at the Capitol event; and increase research activities by UT undergraduates, including students in the arts and humanities.

Major Activities

- **Proposals/Grants** (Proposal Summaries included in the Appendix)
  - Choose Ohio First Scholarship Program: “Building Ohio’s Sustainable Energy Future” (Co-Principal Investigator), OUR-UT to administer research positions/internships. 1.53MS OBOR. Collaborating institutions: UT, BGSU, Owens CC, Northwest State CC, and Terra CC. funded, Year 3 of 5, 08/2009. T. Kvale, Co-Principal Investigator.
  - National Science Foundation: “NSF-STEP: Academic Preparation for a Sustainable Energy Impact (APSEI) at The University of Toledo”
  - NSF-REU Physics and Astronomy (TJK Co-PI)

- **Undergraduate Research Programs** (Details in Appendix)

- **AY2011-12 Research Programs**:
  - 4 STARS participants (A. Hall, J. Rigsby, H. Seyoum + H. Seyoum summer 2012)
  - 4 Research Travel grants awarded (J. Ozbolt (page charges), S. Coleman (travel), A. Dellinger (travel), C. Becher (NCUR)) + Posters at the Capitol funding

- **Summer 2012 Research Programs**:
  - Selection committees met, March 2012.
  - Summer 2012 research Proposals reviewed: FYSRE (9 proposals), Toledo Internship (2 proposals), USRCAP (44 proposals). FYSRE and USRCAP selection committees rated the proposals on a scale of 1-5, with 5 being outstanding. They (in each program) were instructed to identify at most twelve proposals with a rating of 5 and at most four proposals with a rating of 4. There were no limits on the number of proposals that could be rated 1-3.
  - FSYRE (8 participants / 9 proposals) Total FYSRE Average Proposal Score: 3.9/5.0
  - UT-City of Toledo Internship Program (2 participants / 2 applications)
  - USRCAP (30 participants / 44 proposals) Total USRCAP Average Proposal Score: 3.9/5.0
  - End-of-Summer Undergraduate Student Research Presentations, August 02, 2012.

- **ARS2980**: Issues in Research and Scholarship course, summer session III. Average attendance: 40. Summaries of two key evaluation questions for the course are included in the Appendix.

- **Student Research Handbook AY2011-12** Published electronically. Paper copies available upon request from OUR-UT.

- **External Presentations**:
• Poster Presentation: “Undergraduate Research at The University of Toledo and Evaluating its Impact on Students,” at the national CUR Conference, College of New Jersey, Trenton, NJ, June 23-26, 2012.

• UT Presentations:
  o Undergraduate Research presentations at the Student Honors Council on “Preparing for your Honors Thesis”.

• Student Government Research Survey (8 responses -- very low response rate). Survey summaries included in the Appendix.

• Proposal Writing Workshops (Sullivan Hall)
  o January 24, 2012 -- Arts, Humanities, Business, Education, and associated disciplines
  o January 25, 2012 -- Sciences, Engineering, Medicine, Pharmacy, and associated disciplines

• Posters At The Capitol: Undergraduate Research in Northwest Ohio (Details in Appendix)
  o Event date: March 27, 2012.
    o Students presenting:
      ▪ BOSEF grant BGSU&UT (3 posters / 24 co-authors)
      ▪ Bowling Green State University (7 posters / 20 co-authors)
      ▪ Heidelberg University (13 posters / 17 co-authors)
      ▪ Northwest State Community College (1 poster / 1 co-author)
      ▪ Ohio Northern University (2 posters / 4 co-authors)
      ▪ The University of Findlay (23 posters / 46 co-authors)
      ▪ The University of Toledo (9 posters / 9 co-authors)
  o Students were recognized in the Senate Chamber while in session. Sen. Edna Brown, Reps. Matthew Szollosi, Michael Ashford, and Teresa Fedor individually met the students in their offices.
  o Complete Book of Abstracts is available upon request

• Office of Undergraduate Research Advisory Committee -- ACUR (AY2011-12)
  o Adult & Lifelong Learning
    Peggy Fritz
  o Business & Innovation
    Margaret Hopkins
  o Health Sciences & Human Services
    Phillip Gribble
  o Education HSHS
    Florian Feucht
  o Engineering
    Abdul-Majeed Azad
  o Honors
    Glenn Sheldon
  o Innovative Learning
    Wade Lee
  o Languages Literature & Social Sciences
    Russell Reising
  o Medicine
    Joshua Park
  o Natural Sciences & Mathematics
    Alison Spongberg
  o Nursing
    Diane Salvador
  o Pharmacy & Pharmaceutical Sciences
    James Slama
  o Research
    Elsa Nadler
  o Student Government
    Jordan Maddock
  o Visual & Performing Arts
    Barbara Miner
  o Undergrad Research
    Thomas Kvale
  o Undergrad Research
    Larry Connin

Major expenditures for the period
• Undergraduate Research Summer 2012 programs (grand total: $ 116,750 )
  o OUR-UT (TOTAL): $ 106,750
    ▪ FYSRE: $ 23,500
    ▪ TollInterns: $ 5,500
    ▪ USRCAP: $ 77,750
  o Faculty grants: $ 4,500
  o Sullivan grants: $ 6,000
- Bosef grant: $8,000
- Posters at the Capitol: $886
- CUR institutional membership: $800
- CUR national meeting travel (TJK): $1,331
- Publication of the AY2011-12 Student Research Handbook was electronic this year, so no direct printing costs were incurred.

Assessment activities
- The Assessment Report for AY2011-12/Sum2012 is included in the Appendix.

Development activities
- OUR-UT Development Plan is included in the Appendix. Progress has been made in several categories but much is needed to fully realize the current plan.

Challenges or problems encountered this period (if any)
- Main challenges encountered:
  - OUR budget was initially reduced due to budget reductions in all colleges mandated by the university. This meant the elimination of the secretarial support and the summer elimination of the Associate Director, Larry Connin, as well as uncertainty in the number of research stipends to be awarded for summer. Late spring, the budget was restored so that we could award the number of stipends consistent with recent years.
  - Summer research supplies budget procedure for individual projects needs to be modified due to the fiscal year falling in the middle of the summer research period.
  - Final Report deadline was moved to September 01 from the end of the Fall Semester in order to increase student compliance of Final Report submission.
  - To keep an accurate census of undergraduate research activities in individual faculty research, especially those supported by external funding agencies or volunteered time.
  - The need for advance knowledge of exact funding levels from all sources supporting undergraduate research.

Progress on goals set for AY2011-2012
- Revise and resubmit proposal to the National Science Foundation NSF-STEP program.
  - Resubmitted as Academic Preparation for a Sustainable Energy Impact (APSEI) at the University of Toledo
  - Created a Research Travel Grant Program
  - Perform complete Assessment Tasks
- Office of Equity & Diversity provided $5,000 to fund the STARS program
- Increase Research Intensive courses

Goals for AY2012-2013
- Creation of a professionally-refereed, archival undergraduate research journal.
- Support proposals to be submitted to the National Science Foundation NSF-REU program.
  - Physics and Astronomy (TJK Co-PI -- Co-write and submit proposal)
  - Chemistry support
- Increase the number of undergraduate students involved in research.

OUR-UT Office Organization
- Director of Undergraduate Research (Prof. Thomas Kvale)
- Associate Director of Undergraduate Research (Dr. Larry Connin)
- Graduate Assistant (Jamie Teeple, AY2011-12, Sum 2012)
- OUR is housed in the Honors College, Sullivan Hall
Appendix:

Supporting Materials

Grant proposals -- Summaries (funded and newly submitted)

Posters at the Capitol: Undergraduate Research in Northwest Ohio
UT Sigma Xi Chapter Program Excellence Award

STARS and Other Academic Year Programs

OUR-UT Summer Research Participants

ARS2980 Summary

Research Evaluation Summary -- Students

Research Evaluation Summary -- Faculty

Student Government Survey Fall 2011

OUR-UT Development

OUR-UT Assessment

OUR-UT Graduate Assistant Specifications/duties

OUR-UT Advisory Committee

OUR-UT Assessment AY2011-12, Summer 2012
Ohio Board of Regents

Choose Ohio First Scholarship Program: “Building Ohio’s Sustainable Energy Future”

Proposed Duration: 60 months
Starting Date: August 01, 2009
Amount Requested: $1,563,005 (OBOR); $1,275,381 (UT/BGSU/NSCC/OWENSCC/TerraCC)

Principal Investigator
Geoffrey Martin, Vice President, Institutional Research / Associate Professor, Mathematics

Co-Principal Investigators:
Thomas Kvale, Director of Office of Undergraduate Research and Professor of Physics
Daryl Moorhead, Professor, Environmental Sciences
Brian Randolph, Associate Dean, College of Engineering
Charlene Gilbert, Director of the Catharine Eberly Center for Women

Project Summary
This proposal would increase the recruitment, training and graduation of STEM students to supply the growing job markets in renewable energy and sustainable environment technologies. Northwest Ohio has a growing reputation for research, development and manufacturing in the high technology, renewable energy fields of photovoltaics (PV) and wind. In addition, NW Ohio has major research and development strengths in remediation and renewable technologies. In this Choose Ohio First Scholarship (COFSP) proposal, The University of Toledo (UT), Bowling Green State University (BGSU), and the Community Colleges of Owens, Terra, and Northwest State will leverage the enormous public interest and burgeoning job markets in these fields to recruit, educate, and retain the best and brightest of Ohio’s students to support these rapidly developing high tech professions.

This COFSP: Building Ohio’s Sustainable Energy Future (BOSEF) proposal will broaden and enhance several ongoing programs at the collaborating institutions that have already demonstrated success in these areas. Our program will recruit broadly into these fields and enhance student success through a cooperative summer bridge program focused on mathematics, undergraduate research experiences for all, and integration with the Wright Center for PV Innovation and Commercialization, the Lake Erie Research Center, Center of Photochemical Sciences, and the Environmental Remediation and Restoration Experimental Park. It will prepare students for scientific and technical careers by providing internships with business, industry, agencies and non-profits in renewable energy and environmental sustainability fields. Recruiting and retaining minority and women scientists is a goal of this program and our students will benefit from the active collaboration of the existing AIMS (BGSU) and WISE (UT) programs. New undergraduate Minor degree programs in Renewable Energy also will introduce students to the broader natural and social science connections of energy and sustainability. Although the primary program focus is on the undergraduate STEM pipeline, it will include Ph.D. students and in-service high school teachers working toward M.S. degrees.

Through this grant, the participating institutions will have a comprehensive and vertically integrated approach to STEM education that will maximize student success and provide skilled professionals in these crucial STEM areas. The principal components of this program are:

- Scholarships for undergraduate students pursuing a relevant degree program.
- Stipends for summer research projects for undergraduate students pursuing a relevant degree program.
- Stipends for first year BOSEF students to attend the AIMS summer bridge program.
- Faculty Interest Group seminar series on a Sustainable Energy Future (FIG:SEF).
- Mentoring to enhance student success and retention.
- Graduate student and K-12 teacher participation.
NOT FUNDED

Proposal to the U.S. National Science Foundation
Science, Technology, Engineering, and Mathematics Talent Expansion Program (STEP)
Program Solicitation NSF 08-569
Directorate for Education & Human Resources: Division of Undergraduate Education

NSF-STEP: Academic Preparation for a Sustainable Energy Impact (APSEI)

Proposed Duration: 60 months
Starting Date: June 01, 2012
Amount Requested: $1,918,194 NSF; $538,541 UT

Principal Investigator
Thomas Jay Kvale Professor of Physics and Director, UT Office of Undergraduate Research

Co-Principal Investigators
Daryl Dwyer Associate Professor, Environmental Sciences
Brian Randolph Professor of Civil Engineering and Associate Dean of Undergraduate Studies, College of Engineering
Andrew Jorgensen Associate Professor, Chemistry
Geoffrey Martin Vice Provost for Academic Enterprises and Director of Institutional Research

Project Summary
We have designed a comprehensive, vertically integrated, and sustainable plan with the goal of increased numbers of STEM (Science, Technology, Engineering, Mathematics) graduates at The University of Toledo (UT). This plan emphasizes the recruitment, retention, and experiential learning (research/internships) of undergraduate students throughout their academic journey. It also involves industries, offices, and agencies to provide connections for the students after receiving their baccalaureate degree. We plan to attract students from diverse backgrounds in our program by expanding our recruitment efforts to involve pre-college students from local high schools and students at four community colleges (three in northwest Ohio and one in northern Minnesota). This plan includes close interaction with existing STEM programs and grants (specifically the University System of Ohio’s Choose Ohio First Scholarship Program; Building Ohio’s Sustainable Energy Future (COFSP:BOSEF); the NSF-URM grant; peer student and faculty mentors; high-school physics/energy summer camps; summer Math/Science bridge programs for incoming freshmen and rising sophomores; and meaningful student research and/or internships with faculty and/or professionals in the renewable energy and environmental impact fields. The plan will be built upon already successful academic degree programs and enhance the newly approved Minor in Renewable Energy (MRE) at UT. The infrastructure to facilitate the proposed plan already exists at UT, including: various mentoring programs and the UT Office of Undergraduate Research. Another key aspect of this program is the increased articulation of curricula for transfer students from four community colleges into the STEM disciplines at UT. Thus, the proposed programs will include students with diverse backgrounds and prepare them for an extremely important area in the twenty-first century.

The University of Toledo (UT), in its Strategic Directions Document (approved by the Board of Trustees, March 2007) identifies sustainable energy as one of the focus research areas for priority funding. It also makes a commitment to engaged undergraduate learning as a developing strength. Since the UT Directions Document was adopted, both areas have seen strong institutional support and UT has been successful in obtaining external funding at improving STEM education at both the GK-12 and graduate levels. Thus, the proposed NSF-STEP funded program (APSEI) complements existing programs by enhancing the STEM undergraduate program. For these reasons and those discussed later on in the proposal, it is anticipated that UT will strive to continue these programs initiated and/or enhanced by this NSF-STEP grant after the conclusion of the grant.
"Posters at the Capitol" event earns Sigma Xi Chapter Program Award for distinguished performance. Award criteria focuses on the impact of a specific program on the institution or community (i.e., the size and diversity of the audience, outreach and exposure) and the level of innovation or initiative (uniqueness of program, creative use of resources). The Program Award recognizes initiatives which address the four major issues at the foundation of the Society's mission: honor in science and engineering, science education, science policy and the public understanding of science.

Sigma Xi is committed to supporting the research enterprise, and the strength of this organization comes from the strong foundation of 522 chapter-based programs. UT is one of seven chapters to receive the Chapter Program Awards recognition this year. "The grassroots nature of the Society allows us to "think globally and act locally." In a world increasingly impacted by science and technology, the need for informed science leadership in our communities and neighborhoods is great," said Cristina Gouin-Paul, chair, Sigma Xi Committee on Qualifications and Membership. "Your award-winning chapter is helping to create that kind of leadership, and we hope you feel a part of that success and we appreciate the time and effort your chapter put in to your chapter and program.”

"Posters at the Capitol" is an annual event where undergraduate students from across northwest Ohio display their research at the Ohio Statehouse in Columbus. Last April, for it’s the fourth annual event, more than 50 students from The University of Toledo, Bowling Green State University, The University of Findlay, Ohio Northern University and Heidelberg University participated. "Posters at the Capitol" is led by UT's Office of Undergraduate Research and has been supported by UT’s chapter of Sigma Xi: The Scientific Research Society since the inception of the events in 2008.

"Posters at the Capitol provides an opportunity for undergraduate students from northwest Ohio to showcase their research,” said Dr. Thomas Kvale, director of the UT Office of Undergraduate Research. “This event is designed for students to become more involved with their elected officials and thank them for their support and for the representatives and senators to learn more about the students’ research and discoveries on a one-on-one basis.” Two students were recognized in the Ohio Assembly this year during the event.

All award-winning chapters are honored during the Society's Annual Meeting November 10-13, 2011 in Raleigh, North Carolina.

UT’s Sigma Xi Chapter was established in 1955, a UT student research symposium commenced in 1980, and undergraduate research started presenting in 2002. The national Sigma Xi is celebrating its 125 year anniversary this year.
Posters at the Capitol: Undergraduate Research in Northwest Ohio
March 27, 2012

Schedule of Events  Statehouse Atrium  March 27, 2012
- 10:30am - 11:00am  Arrive and set-up posters
- 11:00am - 12:00pm  Morning session - present research
- 12:00am - 1:00pm  Lunch
- 1:00pm - 1:30pm  Statehouse & Capitol tours
- 1:30pm - 3:00pm  Afternoon session - present research
- 3:00pm - 3:30pm  Reception and Group photo
- 3:30pm - 4:00pm  Remove posters and leave

Scheduled Office Meetings
- 11:30am  Senator Edna Brown
- 1:30pm  Representative Matthew Szollosi
- 2:00pm  Representative Michael Ashford
- 2:30pm  Representative Michael Ashford
- 3:30pm  Representative Teresa Fedor

Students with Sen. Brown

PATC 2012 Group Photo
Students being recognized in the Senate Chamber

**Students, Research Presentation Titles (Faculty Mentor)**

**Multi-Institution Collaborative Research**

**Choose Ohio First Scholarship Program: “Building Ohio’s Sustainable Energy Future”**

Brian Ashenfelter and Nathan Reaver, *Building Ohio’s Sustainable Energy Future: Using Partnerships in Green Energy and Sustainability to Advance STEM Education*, (Dr. Robert Midden)

Chad McElvany, Braeden Gilchrist, Puja Nagarseth, Mitch Pittsenger, and Clint Messner, *Clean Energy is a Breeze: Meeting Put-In-Bay’s Energy Needs by Wind Turbines*, (Drs. Thomas Kvale and Brian Randolph)


**Bowling Green State University**

Merissa Acerbi and Verner Bingman, *The Golden Compass: Detection of Inclination in a Novel Conditioning Paradigm* (Faculty Mentor: Dr. Cordula Mora)

Matthew Browne, *Vertical Axis Wind Turbines in a Highway Median Setting* (Faculty Mentor: Dr. Todd Waggoner)

Eric Budge and Brian Rutter, *Identification of a Novel DNA Binding Domain From a Soybean Pathogen, Phytophthora sojae* (Faculty Mentor: Dr. Vipaporn Phuntumart)

Brittany Frazer, *Modeling Human Phonation to Determine Phonation and Collision Threshold Pressure* (Faculty Mentor: Dr. Ronald Scherer)
Kendra Gorman, *Prediction of Time of Restraints Among Psychiatric Hospital Youth: Can Schools Contribute to Decrease in Misconduct and Aggressive Behavior?* (Faculty Mentor: Dr. Carolyn Tompsett)

Lance Kruse, Corrinne Sullivan, Kristi Frank, Abbey Tobe, Ja’Quan Frazier, Sarah Jindra, Bria Green, Abbey Tobe, and Jennifer Lowinski, *Water Quality in the Wood County Watershed: The Effects of Fertilizer and Pollutants* (Dr. W. Robert Midden)

Abbey Tobe, Alex J. Clune, Lacee J. Lovins, Kayla M. Miller, and Raymond L. Szparagowski, *Fertilizer Effects on Portage River Tributaries* (Dr. W. Robert Midden)

**Heidelberg University**

Kyle Bensman, *Reducing Phosphorus in Grand Lake St. Marys through Chemical Precipitation* (Faculty Mentor: Dr. Aaron R. Roerdink)

Nathan Boggs and Nicholas Comer, *Strength of Ideology and Education as they Affect Interest in Presidential Elections in Different Years* (Faculty Mentor: Dr. John Bing)

Candice Brothers, *Biodegradation of Printer Paper in Two Composting Environments* (Faculty Mentor: Dr. Amy Berger)

Chelsea Cox, *Naphthalene in Anti-Dandruff Shampoos* (Faculty Mentor: Dr. Susan Carty)

Erica Dilyard, *Eugenics: America’s Hidden Past* (Faculty Mentor: Dr. Traci Sittason Stark)

Andrew Jackson, *The Antibiotic Resistance of Normal Human Bacterial Gut Flora* (Faculty Mentor: Dr. Susan Carty)

Joshua Kempf, *Phosphorus Removal from Water by Duckweed* (Faculty Mentor: Dr. Susan Carty)

Mengna Li, *Comparing the algae species causing blooms in reservoirs and lakes in Ohio, United States and Hubei Province, China* (Faculty Mentor: Dr. Susan Carty)

Andrew Long-Higgins and Max Danko, *The Role of Education and Gender as they Affect Interest in Different Presidential Elections* (Faculty Mentor: Dr. John Bing)

Kathryn Martin, *Anglo-Saxon Medicine: Methods of Infection Prevention and Treatment as Tested on Staphylococcus aureus* (Faculty Mentor: Dr. Susan Carty)

Paige Pierce and Noami Villaca, *It’s Not All About the Parties* (Faculty Mentor: Dr. John Bing)

Ryan Smith and Michael Juart, *The Varying Relationship between Age and Interest in Presidential Election* (Faculty Mentor: Dr. John Bing)

Allison Willis, *Persistence of Escherichia coli in Two Civil War Latrines* (Faculty Mentor: Dr. Susan Carty)

**Northwest State Community College**

Brad Geer, *Testing Ohio’s Alternative Energy Resources in a controlled environment* (Faculty Mentor: Karen Wylie)

**Ohio Northern University**

Sean McKee and Jessica Larkey, *Preclinical antidepressant and antipsychostimulant properties of a novel triple reuptake inhibitor lead compound identified via virtual screening* (Faculty Mentor: Dr. Jeffery Talbot)

Danielle Nicolai and Brittany Stanek, *The regulatory effects of RGS4 on mood and depression* (Faculty Mentor: Dr. Jeffery Talbot)

**The University of Findlay**

Caitlin Adkins, *Kyosei [Coexistence] Between Genders: Identity of Young Japanese Women and Their Career Choices* (Faculty Mentor: Dr. Hiroaki Kawamura)
Caitlin Amiot, Phylogeography of the Black-Mountain Dusky Salamander, Desmognathus Welteri (Caudata: Plethodontidae) with a Comparison with the Seal Salamander, Desmognathus Monticola (Faculty Mentor: Dr. Jessica Wooten)

Ashton Atkins, Proton Pump Inhibitors: Their Misuse, Overuse, and Concomitant Effects (Faculty Mentor: Dr. M. Chandra Sekar)

Tayler Barr, Megan Limes, and Ashton Brown, When I Was Your Age: Math Changes Impact on Education (Faculty Mentor: Dr. Kim Forget)

Joshua Bintz, Community Education LEADs to Grand Lake Rehabilitation (Faculty Mentors: Drs. Michael Homsher and Matt Hoostal)

Bridget Black, Student Teaching Abroad: the Adventures, the Blunders, the Revelations (Faculty Mentor: Dr. Kim Forget)

Jonathon Combs and Shawn Warner, Comparative Analyses of Intrinsic Disorder in Arenavirus Proteins Using Bioinformatic Prediction (Faculty Mentor: Dr. Matt Hoostal)

Lindsay Dahl and Clarinda Ellison, Tetracycline Resistance Expression in Coliforms (Faculty Mentor: Dr. Bethany Henderson-Dean)

Eden Dulka, A Comparison of Red-Backed Salamanders (Plethodon Cinereus) in Four Populations Across Ohio: Is there a Difference in the Lead-Backed and Red-Backed Phases? (Faculty Mentor: Dr. Jessica Wooten)

Diana Finkler and Lindsay Schofield, MRSA Distribution in Equine Populations (Faculty Mentor: Dr. Bethany Henderson-Dean)

Samuel K. Gothke, In Vitro Investigation on Cadmium Genotoxicity (Faculty Mentor: Dr. Alexander K. Vaglenov)

Matt Grisnik and Krista Baldauf, The Discovery and Prevalence of a Ranavirus Species in a Natural Preserve and a Restored Wetland in Northern Ohio (Faculty Mentor: Dr. Jessica Wooten)

Danielle Hoffman, Jamie Siesel, and Ashley Patton, Mutagenic Effects of Cadmium on Mitochondrial and Nuclear DNA (Faculty Mentor: Dr. Michael Edelbrock)

Ashley Kasper and Samuel Gothke, Genotoxic Effect of Antihypertensive Drug Atenolol on Human Lymphocytes Evaluated Through CBMN, Neutral and Alkaline Comet Assays (Faculty Mentor: Dr. Alexander Vaglenov)

Maegan Klosterman, Nicole Coleman, Katie Hummel, Brett Clouse, Jared Wonders, Patrick Pekarčík, and Josh Walker, A Comparison of Drug Information Responses Between Pharmacists and Supplement Store Employees (Faculty Mentor: Dr. Sandra Earle)

Sara Kubera, Lauren Timperman, and Brian Dent, Alkylation Induced Apoptosis in Cadmium Treated Cells (Faculty Mentor: Dr. Michael Edelbrock)

Brianne Kuns and Jonathon Combs, Modeling Small Molecule-Protein Interactions of Glucosamine-6-Phosphate Derivatives to Investigate Antimicrobial Properties and Aid in Drug Design (Faculty Mentor: Dr. Matt Hoostal)

Joseph McCauley, Virtualized Defense: How Secure is Your Slice of the Cloud? (Faculty Mentor: Dr. Helen Schneider)

Thomas Pierson and James Hummel, Effects of Caffeine on Cancer Cell Growth (Faculty Mentor: Dr. Xu Lu)

Lindsey Reiff, Influence of ethinyl estradiol D-Ring bulk on ER-positive MCF-7 cell proliferation (Faculty Mentor: Dr. Richard Dudley)

Azia Routson, Qualitative Analysis of Carbon-less Notebook Paper by Gas Chromatography - Mass Spectrometry (Faculty Mentor: Dr. Jeff Frye)
Derek R. Sherman, Megan Cross, and Kelsey Radigan, Social Dimensions of Witchcraft (Faculty Mentor: Dr. Christine Denecker)

Sara K. Steward, Carolyn Lund, and Kelley E. Black, Development of an Equine Lymphocyte Model to Evaluate Genotoxicity (Faculty Mentor: Dr. Michael Edelbrock)

The University of Toledo

Brad Bever, Conversion of Cow Manure to Biosolid Fuel (Faculty Mentor: Dr. Dong-Shik Kim)

Zachary R. Dehm, Influences on the Life and Theology of Karl Rahner, S.J. (Faculty Mentor: Dr. Benjamin Grazzini)

Anthony Dietrich, An Analysis of the Relationship of Building Characteristics and Rainwater Harvesting Feasibility (Faculty Mentor: Dr. Defne Apul)

Luke Kwiatkowski, Theoretical Calculations of Atomic Polarizabilities (Faculty Mentor: Dr. David Ellis)

Chase Maag, Computational Tool for Creating Simplified Knee Geometry (Faculty Mentor: Dr. Matthew Dressler)

Chad McElvany, Determination of Energy Band-Edge Locations for PbS Semiconducting Quantum Dots Using Cyclic Voltammetry (Faculty Mentor: Dr. Randy Ellingson)

Justina Mueller, Synthesis of Betulinic Acid Analogues as Potential Anti-Arthritic Agents (Faculty Mentor: Dr. Viranga Tillekeratne)

Emily Numbers, Correlations between soil quality and arthropod communities in organically managed farms in NW Ohio (Faculty Mentor: Dr. Stacy Philpott)

Anthony Passero, The Study of Circumstellar Disks around Be Stars (Faculty Mentor: Dr. Karen Bjorkman)
Description
The Student Achievement in Research and Scholarship Program (STARS) is an undergraduate research program designed to prepare high achieving low-income, (potential) first generation and students from underrepresented groups for the next level in their educational continuum through graduate education and professional careers. STARS is open to all undergraduate students that are Pell Grant eligible at all levels, but high priority will be given to sophomores and juniors that are goal oriented, highly motivated, and high achieving.

The STARS Program offers undergraduate students the opportunity to conduct scholarly research with a faculty mentor, receive paid research assistantships that will better prepare them for the graduate school admissions process and for the Graduate Record Exam (GRE). While the immediate focus of the program is to encourage and help undergraduate students successfully enroll and participate in graduate school, the long-term goal of the program is to enlarge the pool of those wishing to become college faculty members and/or trained professions in Ohio.

STARS Scholars 2011-12

<table>
<thead>
<tr>
<th>NAME</th>
<th>Department</th>
<th>Research Title (Faculty Mentor)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amber Hall</td>
<td>Bioengineering</td>
<td>“Phase Switching’ to Enhance Isomerization of Biomass Sugars” (Patricia Relue)</td>
</tr>
<tr>
<td>Jimmy Rigsby</td>
<td>Kinesiology</td>
<td>“Effects of Low Intensity Resistance Training with High and Low Blood Flow Occlusion Pressures on Endothelial Function” (Barry Scheuermann)</td>
</tr>
<tr>
<td>Helen Seyoum</td>
<td>Pharmacy</td>
<td>“A Systematic Study on the Sulfation of Oil Dispersant Compounds by the Zebrafish Cytosolic Sulfotransferases – A Major Group of Phase II Detoxifying Enzymes” (Ming-Cheh Liu)</td>
</tr>
</tbody>
</table>

Summer 2012

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Helen Seyoum</td>
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</tr>
</tbody>
</table>

Research Travel Grants


Sydni Coleman, (Biological Sciences) “Cetacean Sanctuary Research in the Ligurian Sea,” conference presentations 2011.

A. Dellinger, (Mechanical Engineering) “Participation in GREEN (Global Renewable Energy Education Network), in Costa Rica in 2012”

C. Becher, (Environmental Sciences) “The Impact of Dredging on Heterogeneity and Fish Communities in Agricultural Streams of the Greater Sandusky River Watershed, Ohio“ (NCUR conference 2012)
The Office of Undergraduate Research  
Summer Research Program Participants, 2012

<table>
<thead>
<tr>
<th>NAME</th>
<th>Department</th>
<th>Research Title</th>
<th>Faculty Mentor</th>
</tr>
</thead>
<tbody>
<tr>
<td>USRCAP (30 Participants)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farouk Abu Alhana</td>
<td>Biology</td>
<td>Evaluating epidermal expression and RNAi phenotype of the IF interacting proteins DIM-1, FLN-1, and TAG-60 (John Plenefisch)</td>
<td></td>
</tr>
<tr>
<td>Emily Bernath</td>
<td>Chemistry</td>
<td>Deadenylation of mRNA by Nocturnin and its Effects on Circadian Rhythms (John Bellizzi)</td>
<td></td>
</tr>
<tr>
<td>Anthony Bova</td>
<td>Chemistry</td>
<td>Conversion of the renewable biomass resource 2-furaldehyde to polymer precursor molecules and polymers (Mark Mason)</td>
<td></td>
</tr>
<tr>
<td>Alyssa Brown</td>
<td>Art</td>
<td>Creating an E-Book for The Irish in Toledo (Barry Whittaker)</td>
<td></td>
</tr>
<tr>
<td>Shin Hae Cho</td>
<td>Pharmacy Practice</td>
<td>Developing Alginate Nanoparticles with Tunable Properties in Self-Assembling Mixtures (Jerry Nesamony)</td>
<td></td>
</tr>
<tr>
<td>William T. S. Cole</td>
<td>Chemistry</td>
<td>UV-assisted Methods for the Production of Polymeric Ionic Liquids and their Use as Solid-Phase Microextraction Sorbent Coatings (Jared Anderson)</td>
<td></td>
</tr>
<tr>
<td>Lela Day</td>
<td>Psychology</td>
<td>Identifying Gender Differences in a Behaviorally Disinhibited Subset of Socially Anxious Individuals (Laura Seligman)</td>
<td></td>
</tr>
<tr>
<td>Zachary R. Dehm</td>
<td>Philosophy and Religious Studies</td>
<td>Ecclesiology and the Second Vatican Council (Peter Feldmeier)</td>
<td></td>
</tr>
<tr>
<td>David W. Folck</td>
<td>Art</td>
<td>Lang Leben Die Insekten! (Diana Attie)</td>
<td></td>
</tr>
<tr>
<td>Daniel Wojciech Janisz</td>
<td>Kinesiology</td>
<td>The effect of chronic ankle instability on hip neuromuscular control (Phillip Gribble)</td>
<td></td>
</tr>
<tr>
<td>Tyler Kinner</td>
<td>Physics &amp; Astronomy</td>
<td>Photovoltaics (Randy Ellingson)</td>
<td></td>
</tr>
<tr>
<td>Michael Koludrovich</td>
<td>Mechanical Engineering</td>
<td>Nano Particle Reinforced Metal Composites Prepared by Electrodeposition (Yong X. Gan)</td>
<td></td>
</tr>
<tr>
<td>David E. Long</td>
<td>Chemistry</td>
<td>Synthesis of α-L-Rhamnosylceramides (Steven Sucheck)</td>
<td></td>
</tr>
<tr>
<td>Calinda Lowler</td>
<td>Rel. Studies/ Women's Studies</td>
<td>Walking with the Goddess: A Study of the Revival of Ancient Goddess Religions (Barbara Mann)</td>
<td></td>
</tr>
<tr>
<td>Emily Numbers</td>
<td>Environmental Sciences</td>
<td>Food Sovereignty in an Urban Food Desert: Produce in Toledo (Stacy Philpott)</td>
<td></td>
</tr>
<tr>
<td>Joseph S. Ozbolt</td>
<td>Physics &amp; Astronomy</td>
<td>A Theory of Multilayered Thin-Film Radiation Detectors (Victor Karpov)</td>
<td></td>
</tr>
<tr>
<td>Robert Phillips</td>
<td>Civil Engineering</td>
<td>An Analysis of the Relationship of Building Characteristics and Rainwater Harvesting Feasibility (Defne Apul)</td>
<td></td>
</tr>
<tr>
<td>Lakshmi Radhakrishnan</td>
<td>Biological Sciences</td>
<td>The Regulation of Autoimmune Responses Using an Analog of Mitoxantrone (Anthony Quinn)</td>
<td></td>
</tr>
<tr>
<td>Jimmy Rigsby</td>
<td>Kinesiology</td>
<td>Effects of Low Intensity Resistance Training with High and Low Blood Flow Occlusion Pressures on Endothelial Function (Barry Scheuermann)</td>
<td></td>
</tr>
<tr>
<td>Jake Rogala</td>
<td>Med. and Bio. Chemistry</td>
<td>Synthesis of a class of potential anticancer agents (Viranga Tillekeratne)</td>
<td></td>
</tr>
</tbody>
</table>
Nader Rouhofada, Pharmacology

Detoxification of Alcohol by Sulfation: A Comprehensive Analysis of the Alcohol-sulfating Activity of Human and Zebrafish Cytosolic Sulfotransferases (Ming-Cheh Liu)

Danielle Samblanet, Chemistry

New Palladium-Based Hydroamination Catalysts: A Study of the Electronic Effects in 3-1 minophosphine Ligands (Joseph Schmidt)

Helen Seyoum, Pharmacology

A systematic study on the sulfation of oil dispersant compounds by the zebrafish cytosolic sulfotransferases - a major group of Phase II detoxifying enzymes (Ming-Cheh Liu)

Joshua D. Smith, Chemistry

Purification of Adomet Synthetase and Characterization of Mutant Asportuasylese (Ronald E. Viola)

Bradley J. Sommer, History

The Electric Auto-Lite Strike of 1934 and Its Influence on American Labor (Thomas Barden)

David J. Taylor, Bioengineering

Simultaneous Isomerization and Reactive Extraction of Biomass Sugars for High Yield Production of Ketose Sugars (Patricia Relue)

Jasmine Townsend, English

Experimenting with Artisan Book-Binding (Timothy Geiger)

Viralkumar Upadhyay, Pharmacology

Effects of Laminar Fluid Shear Stress on Renal Epithelial Cilia (Surya Nauli)

Tyler Williams, Biology

Sequencing and characterization of Viral Hemorrhagic Septicemia Virus M gene (Douglas Leaman)

Morrison Wilson, English Language, Philosophy

Research and Analysis of Alumni Giving Based on Age, Major, and Region (Patricia Keller)

NAME  Department  City Office
TollInterns  (2 Participants)

Joshua Egler  Political Science  Human Resources
Butheina Hamdah  Political Science  Youth Commission
ARS 2980: Issues in Research and Scholarship
(Summer Semester III, 2012)

Topics and Speakers

Class Meetings: Thursdays, 9am-10am (6/3 – 8/5)
Location: Sullivan Hall (SL), Rooms 3050-3060-3070

May 31 Welcome
William McMillen, Exec. V. P., & Provost, Main Campus
Summer Schedule & Procedures
Thomas Kvale, Director, Office of Undergraduate Research
Laboratory Safety
Heather Lorenz, Office of Safety & Health
Pizza Lunch

June 07 Research Ethics and Compliance
Walter Edinger, Office of Research & Sponsored Programs
June 14 Math in Acad. and Ind. Research
David Corliss, PhD candidate in Astrophysics and Ford Motor Company

June 21 Adv. Research in the Library
Wade Lee, University Libraries
June 28 Plagiarism and Acad. Honesty
Barbara Schneider, Director, UT Writing Center
July 05 Independence Day Holiday -- no presentation
July 12 Ethics and Commitment in Res.
Thomas Barden, Dean, Honors College
July 19 Business Prospects and Patents
Mark Fox, Office of Research & Sponsored Programs
July 26 Overview and Summation
Thomas Kvale, Director, Office of Undergraduate Research

Aug. 02 Research Presentations (9a-3p)
Student Researchers

ARS2980 Course Summary Questionnaire 2012
(Selected Questions)
Office of Undergraduate Research (OUR-UT) Summer Research Programs
The University of Toledo

1. Is research just an enhanced classroom experience or is it something different?
   a. 6 an enhanced classroom experience  b. 28 something different

9. Listed below are examples that are unethical (or highly questionable) practices in research. Please rank them for seriousness, with 1 being the least serious infraction and 5 being the most serious infraction. If you think that that practice is OK, write 0 or “N/A” as your response.
   _____ putting your friend as a co-author on a research publication
   _____ fabricating data
   _____ deleting data because they didn’t fit the preconceived theory
   _____ not citing previous work and/or not citing competitor’s work
   _____ submitting the same data/paper to multiple journals
   _____ not keeping a good, complete research journal
   _____ plagiarizing work/data
   _____ allowing your relationship with co-researchers to become personal

<table>
<thead>
<tr>
<th>Practice</th>
<th>putting your friend as a co-author</th>
<th>fabricating data</th>
<th>deleting data</th>
<th>not citing previous work</th>
<th>submitting the same data/paper</th>
<th>not keeping a good, complete research journal</th>
<th>plagiarizing work/data</th>
<th>allowing your relationship with co-researchers</th>
</tr>
</thead>
<tbody>
<tr>
<td>(34 responders)</td>
<td>average</td>
<td>2.48</td>
<td>4.53</td>
<td>4.16</td>
<td>3.59</td>
<td>1.56</td>
<td>2.16</td>
<td>4.44</td>
</tr>
<tr>
<td>Number answering</td>
<td>N/A or blank</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>
Student Government Survey 2011  
October 11, 2011

Internal funding for undergraduate research at UT has more than tripled over 2006. What should be the next phase of undergraduate research enhancement, keeping in mind that priorities may have to be set? Rank the following items, with 1 = highest priority, 6 = lowest priority. Please do NOT list duplicate numbers.

<table>
<thead>
<tr>
<th>Number of Respondents: 8</th>
<th>Increase summer stipend amount</th>
<th>Increase number of summer stipends</th>
<th>Include summer housing</th>
<th>Include summer course credit (tuition)</th>
<th>Create focused, interdisciplinary research groups</th>
<th>Create academic year research programs</th>
<th>Other</th>
<th>Description &amp; Suggestions</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUM</td>
<td>31</td>
<td>26</td>
<td>34</td>
<td>17</td>
<td>29</td>
<td>31</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>AVERAGE</td>
<td>0.26</td>
<td>0.22</td>
<td>0.28</td>
<td>0.14</td>
<td>0.24</td>
<td>0.26</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>1.11</td>
<td>0.89</td>
<td>1.16</td>
<td>0.69</td>
<td>0.95</td>
<td>1.01</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>Number of 1s</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Number of 2s</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Number of 3s</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Number of 4s</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Number of 5s</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Number of 6s</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Priority: 1 = Highest priority, 6 = lowest priority
Which of the following are good methods to inform students about research programs, opportunities, events, etc.? 1= best method to reach the most number of students, 6 = reaches the least numbers of students. Duplicate numbers are OK for this question.

<table>
<thead>
<tr>
<th>Method</th>
<th>MYUT</th>
<th>Direct emailing</th>
<th>Bulletin boards</th>
<th>iCollegian ads</th>
<th>Student Government</th>
<th>Networking sites (e.g., Facebook)</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>S U M</td>
<td>18</td>
<td>15</td>
<td>23</td>
<td>35</td>
<td>49</td>
<td>37</td>
<td>21</td>
</tr>
<tr>
<td>Average</td>
<td>0.15</td>
<td>0.13</td>
<td>0.19</td>
<td>0.29</td>
<td>0.41</td>
<td>0.31</td>
<td>0.18</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>0.63</td>
<td>0.53</td>
<td>0.83</td>
<td>1.13</td>
<td>1.55</td>
<td>1.20</td>
<td>0.77</td>
</tr>
<tr>
<td>Number of 1s</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Number of 2s</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Number of 3s</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Number of 4s</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Number of 5s</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Number of 6s</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

Information Transmittal: 1 = Best method for most students, 6 = least numbers of students
The University of Toledo
Honors College
Undergraduate Research Activities

“Affect the Future by Investing in Students Today”

Tell me about something,  
...........................  I’ll forget

Show me something, 
...........................  I’ll remember

Involve me in something,  
...........................  I’ll understand
-- anonymous

Vision Statement
The Office of Research strives to provide meaningful research experiences for all UT undergraduate students. We believe that active engagement in research greatly enhances students’ intellectual and professional developments. The term “research” is understood to encompass substantial methods of discovery in every discipline.

Major Funding Initiative

UNDERGRADUATE RESEARCH  Goal: $_____________

To expand the activities of the Office of Undergraduate Research within the Honors College to more students during their academic programs: Implementing this activity will include named research scholarship programs in areas of the donor’s choosing. These areas could include Research Scholarships in the Arts and Humanities; Research Scholarships in Renewable Energy; Research Scholarships in the Environment; Research Scholarships in pre-Medical Sciences; or any other area of the donor’s choosing.

Additional Undergraduate Research Initiatives:

- Named Endowed Research Scholarships (proposed)  
  $_____________

- Undergraduate Research Progress Fund (30-401-532 existing)  
  $_____________
Office of Undergraduate Research (OUR)

Job Description:

The Office of Undergraduate Research graduate assistant is offered an opportunity to gain a variety of responsibilities and skills associated with mentoring and facilitating undergraduate research and scholarship. Essentially working in cooperation with the Honors College and across the various university Colleges and Departments, the graduate assistant will gain experience with such areas as office management and organization; program and event planning; assessment and experiential learning objectives/outcomes; faculty/student/alumni database management; research programs participation requirements verification; and undergraduate mentorship.

Primary Responsibilities:

- Routine or reoccurring tasks of the office.
  - Provide “First Contact or Q&A” for students interested in research involvement.
  - Maintain tracking of grant applications.
  - Help maintain the OUR website and email system.
- Coordinate with the marketing personnel to develop advertisements, flyers, brochures, and news for/about undergraduate research.
- Work with the Director and Assoc. Director of OUR and the Honors Staff in planning and programming of events such as: the Proposal Writing Workshops, Research Receptions, research and scholarship panels, the annual Posters at the Capitol event, the End-of-Summer Research Symposia, and others that may need to be scheduled.
- Coordinate, promote, and track Research Intensive courses.
- Participate in recruitment activities for prospective students and their families.
- Participate in the OUR Annual Reports, OUR Self-Studies, external funding proposals, and Assessments.
- Coordinate with the Honors staff, various College and Departmental personnel, and students to facilitate and/or enhance opportunities for undergraduate research and scholarship.
- Develop new and creative ways to better serve student’s research needs.
- Work with the Director and Assoc. Director of OUR in other ways as may arise for the better functioning of the office.

Graduate assistants are able to tailor their experience working with the Office of Undergraduate Research to their particular interests and needs. The identified duties could be appropriate for the student’s graduate thesis research. Some examples of additional opportunities include:

- Teaching research and scholarship preparation to undergraduates
- Develop learning communities for scholars and researchers
- Advising of students seeking scholarship endeavors
- Coordinate discussions with faculty panels
- Coordinate student research retreats
- Work closely with select groups of Honors students to prepare them for post-graduate endeavors
- Design and implement additional programs, such as career development seminars, panel discussions, and social events

Supervisor: Thomas Kvale, Director, Office of Undergraduate Research
Time Commitment: 20 hours per week
Contract Dates: AY2011-12 and Summer 2012
Remuneration: Stipend plus tuition and fee coverage.
Contact Person: Thomas Kvale
Sullivan Hall, Rm 2140, MS504, Toledo, OH 43606
telephone: 419/530-2983  e-mail: undergradresearchs@utnet.utoledo.edu
http://www.utoledo.edu/honors/undergradresearch
GA Activities:

- Maintained Office hours devoted to undergraduate research of about 20 hours/week in Sullivan Hall, Rm 3010
- Served as a faculty and student contact for the summer research course, ARS2980, 2012
- Organized and documented all student data, including Summer Research Scholarship Applications, finals reports, and surveys
- Organized and documented faculty evaluations for students' summer research applications
- Assisted with poster printing for both the 2011 Posters at the Capitol and ARS2980, 2012
- Managed student attendance and research hours
- Managed and presented students' research funding checks
- Contributed as a co-author to “Undergraduate Research at The University of Toledo and Evaluating Its Impact on Students,” presented by Dr. Thomas Kvale at the 2012 CUR Conference
- Posted all advertisements for student programs
- Served as a contact for faculty and staff connected to the Office of Undergraduate Research
- Served as a general organizer/assistant for student events
- Assisted in any ways possible the goals of the University of Toledo Honors College
- Maintained the OUR-UT event calendar
Advisory Committee for Undergraduate Research
(revised 01/2012)

Charge:
To oversee, advise, and assist the Office of Undergraduate Research (OUR-UT) in promoting and conducting undergraduate research at The University of Toledo.

Composition:
The following colleges will have one member each (with the exception of the Judith Herb College of Education, Health Science & Human Service). These members will be appointed by their respective college offices.
College of Adult & Lifelong Learning
College of Business Administration
College of Engineering
College of Languages Literature & Social Sciences
College of Medicine
College of Natural Sciences & Mathematics
College of Nursing
College of Pharmacy & Pharmaceutical Sciences
College of Visual & Performing Arts
Honors College
Judith Herb College of Education, Health Science & Human Service
One member from Education
One member from Health Science & Human Service
University Libraries

Also serving on the committee:
Director, Office of Undergraduate Research, (ex officio)
Associate Director, Office of Undergraduate Research, (ex officio)
One member from the Office of Research
One member from Student Government

Duties:
The committee will meet at the beginning of each semester to establish the calendar for that semester, and as needed throughout the semester. The committee will form the selection committee to determine the recipients of the university-wide, internally-funded undergraduate research programs (currently, the Academic Year Research Program (AYRP), the First Year Summer Research Experience (FYSRE), Research Abroad/Away Program, Undergraduate Summer Research and Creative Activities Program (USRCAP) and the Work-Study Research Program (WSRP). The director of the Office of Undergraduate Research will present an Annual Report to the committee each Fall semester covering the previous academic year and summer.

Duration:
The expected service duration of the committee members from the colleges and the University Libraries is three years, with the possibility of reappointment. The service duration of the member from Student Government and the Office of Research is one year, with the possibility of reappointment. The Director and Associate Director of the Office of Undergraduate Research are permanent members of this committee.
Bylaws of the Advisory Committee for Undergraduate Research
(Amended January 2012)

1. College representatives serving on the committee are eligible to also serve as the chair of the committee. The committee chair elect will be elected by a vote of the committee members during the first meeting of the committee each Fall semester. The chair elect will become the chair of the committee at the start of the Fall semester of the year following his or her election, or if the current chair is unable to serve.

2. To promote continuity, the three-year duration membership terms will be staggered. Each term runs from the Fall semester through the summer of the third year. The composition and appointment cycle of each group is as follows:
   - Cycle A: Terms ending 2013, 2016, 2019, …
     - College of Adult & Lifelong Learning
     - College of Engineering
     - Honors College
     - College of Nursing
     - College of Pharmacy & Pharmaceutical Sciences
   - Cycle B: Terms ending 2014, 2017, 2020, …
     - College of Business & Innovation
     - Judith Herb College of Education Health Science & Human Service: Education Departments
     - College of Medicine
     - College of Visual & Performing Arts
   - Cycle C: Terms ending 2015, 2018, 2021
     - Judith Herb College of Education Health Science & Human Service: Health Sciences & Human Services Departments
     - University Libraries
     - College of Languages Literature & Social Sciences
     - College of Natural Sciences & Mathematics

After their initial terms, the representatives from all of the above named colleges will serve three year terms (with possibility of reappointment).

3. Research Intensive Courses
Research Intensive (RI) identified courses designation proposal was adopted by Faculty Senate on March 31, 2009. OUR-UT is charged with playing an integral role in the designation process. To this end, the RI Course Designation Committee will be formed and composed of 6 members chosen by the Advisory Committee for OUR-UT and 2 members selected by Faculty Senate. The Director and Associate Director of the Office of Undergraduate Research will also serve on this committee as *ex officio* members. The selection procedure for the six members chosen by the Advisory Committee for OUR-UT will be determined by the Advisory Committee.
Advisory Committee Members for Undergraduate Research Membership
AY 2011-2012

- Adult & Lifelong Learning          Peggi Fritz
- Business & Innovation             Margaret Hopkins
- Health Sciences & Human Services  Phillip Gribble
- Education HSHS                     Florian Feucht
- Engineering                       Abdul-Majeed Azad
- Honors                            Glenn Sheldon
- Innovative Learning               Wade Lee
- Languages Literature & Social Sciences  Russell Reising
- Medicine                          Joshua Park
- Natural Sciences & Mathematics    Alison Spongberg
- Nursing                           Diane Salvador
- Pharmacy & Pharmaceutical Sciences James Slama
- Research                          Elsa Nadler
- Student Government                Jordan Maddock
- Visual & Performing Arts          Barbara Miner
- Undergrad Research                Thomas Kvale
- Undergrad Research                Larry Connin

Advisory Committee for Undergraduate Research (ACUR)

HIGHLIGHTS OF ACUR MEETING November 17, 2011
- Welcome by Committee Chair 2010-2011: Glenn Sheldon
- Election of Committee Chair 2011-2012: Wade Lee
- Committee received the OUR Annual Report, AY2010-11
- Chair Wade Lee electronically issued the following bylaws change ballot to the ACUR members.

Advisory Committee for Undergraduate Research Bylaws Changes
December 19, 2011 Bylaw Changes Ballot

With several changes in the University's structure, we wanted to revisit the Bylaws of this committee to see what changes may need to be made. Rather than attempt to meet at the end of the semester or over break, we thought that we might do this electronically. See here for a summary of responses & comments so far:
* Required Name ____________________

1. Will you be continuing on the Committee this year (through July 2012) * The answer to this question (and the question about college representation) will help me determine which College Deans I need to approach about new member appointments.
   - Yes
   - No

2. College Representation: Should the committee have one member appointed by each college? Or should the Judith Herb College of Education, Health Science & Human Service have two members, similar to the former College of Arts & Sciences? This change would mean that a new member would be appointed from the Honors College, College of Innovative Learning would
replace University Libraries (University Libraries faculty are members of CoIL), the College of Adult & Lifelong Learning would replace University College, all three colleges formerly part of A&S (Natural Sciences and Mathematics; Languages, Literature & Social Sciences; and Visual & Performing Arts) would each have one member, and the Judith Herb College of Education, Health Science & Human Service would have either one or two members. The rest of the membership would be one member from College of Business & Innovation, College of Engineering, College of Medicine, College of Nursing, College of Pharmacy, Office of Research, Student Government, and two ex officio members from Office of Undergraduate Research.

- One Member per College
- One Member for most Colleges, two members for JHCOEHSHS, one from Education, another from Health Science & Human Service.

Comments on college membership.

3. Chair & Chair Elect: To provide for continuity of leadership, should the committee have a chair and a chair elect? Each year we would only need to elect a chair elect for the next year, unless the previously elected Chair or Chair elect cannot serve.

- Yes
- No

Comments on chair elect system.

HIGHLIGHTS OF ACUR MEETING January, 2012 (electronic)

- Results of the Bylaws Change ballot
  - Each College with the exception of the Judith Herb College of Education Health Science and Human Service will have one member, and the Judith Herb College will have two to represent their major divisions.
  - We will implement a chair-elect system with next year’s election.
- Committee Members were invited and encouraged to attend the Proposal Writing Workshops for students submitting summer research proposals to be held Tuesday, January 24 and Wednesday January 25 at 4 p.m. in Sullivan Hall.
- Deans of colleges without representation due to expired terms or college representation restructuring were contacted by Chair Wade Lee for replacement appointments to the committee before the proposal review would begin in March.

HIGHLIGHTS OF ACUR MEETING March 29, 2012

- ACUR member proposal review spreadsheets had been compiled by the Chair, with each member reviewing one half of the USRCAP and all of the FYSRE proposals. Working from the mean scores and committee member comments, all proposals were evaluated and ranked.
- It was suggested that each department/program should have viable proposals funded as a first priority, with additional funding then distributed to programs/departments with multiple well-scored proposals in order to maximize the impact of the funding University-wide. This procedure was used and a recommended list of proposals was provided to the Office of Undergraduate Research.
UNIVERSITY OF TOLEDO OUTCOME ASSESSMENT REPORT 2011 - 2012
Assessment of Service Outcomes

Program/Unit Name ___Office of Undergraduate Research___ Date ___09/24/2012___

Program/Unit Director(s) ___Thomas Kvale___________________

Instructions:
Assessment of service outcomes is required of all service units that provide services that support student learning across the University. Furthermore, assessment of service outcomes is required of any academic units that provide support services such as academic advising or career placement.

Please respond to the items below to describe the assessment of services provided by your service or academic unit. The completed form should be submitted as a Word document to your University Assessment Committee (UAC) liaison. For a list of UAC liaisons, please refer to the UAC website.

All assessment of service outcome reports will be summarized by your UAC liaison. This summary for all service programs in your college or service unit will then be submitted to the UAC. The UAC will develop a report for the Provost, Chancellor and President to summarize assessment of service outcomes across all service units and colleges.

I. Mission:
Describe the mission of your service program. In particular, describe how the services provided support student learning in their respective academic programs.

The Office of Undergraduate Research provides meaningful research opportunities for all UT undergraduate students. We accomplish this mission by being a resource for faculty members to increase undergraduate involvement in their research, by being a resource for the community and local industries to increase their involvement in undergraduate research, and by aiding in the integration of a research component to existing courses and/or development of new research intensive courses.

II. External accreditation status:
If your service program is reviewed and accredited by an external organization, please provide information regarding this accreditation including the name of the accrediting body, your accreditation status and the date of your next self-study and review.

If you do not undergo a regular accreditation process, but follow the guidelines of an external advisory body, please provide the name of this advisory body and whether your program complies with their current guidelines.

Not Applicable

III. Service outcomes:
List the service outcomes for this program. These must be written in measureable, quantifiable terms. Service outcomes describe services the unit or college provides to support teaching and learning across multiple academic programs, and activities of the
service program required to satisfy its objectives and mission. More information about writing service outcomes can be found at the UAC website.

Student Learning Outcomes from participation in the programs of the Office of Undergraduate Research:

1. Students will be able to formulate a research project and convey its significance to professionals outside of their area of research.
2. Students will develop time-management skills be able to work diligently on their research for an extended period of time.
3. Students acquire increased proficiency/knowledge of the tools/techniques/methods of inquiry in the profession in which the research project was conducted.
4. Students will develop analysis skills to critically-examine their results and reach conclusions based on their findings.
5. Students will develop presentation skills to present their research to the general public and other professionals (both orally and through written materials).

IV. Assessment measures:
Complete the following table. List the explicit assessment measures or methods used as a means to validate service outcomes in your unit. For each measure, provide information about the frequency of data collection and the review of this information. Add additional rows as needed.

A variety of measures to assess service performance can be employed. In contrast to the assessment of student learning, surveys of service quality are considered to provide a direct measurement of service quality and performance. Other metrics designed to assess the quality, timing and efficiency of the services provided may be used.

An italicized example of an assessment measure is provided in the first row of the table.

<table>
<thead>
<tr>
<th>Data collection methods, metrics and sources</th>
<th>Applicable service outcomes</th>
<th>Frequency of data collection and review</th>
<th>Person(s) responsible for reviewing data</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLO1: review/rating of submitted proposals</td>
<td>Outcome 1 from section III</td>
<td>semesterly</td>
<td>Program director and the OUR-UT Advisory Committee</td>
</tr>
<tr>
<td>SLO2: timecards from participants</td>
<td>Outcome 2 from section III</td>
<td>throughout the individual program</td>
<td>Program director and the OUR-UT Advisory Committee</td>
</tr>
<tr>
<td>SLO3: Research Evaluation Forms</td>
<td>Outcomes 3&amp;4 from section III</td>
<td>End of Summer</td>
<td>Program director and the OUR-UT Advisory Committee</td>
</tr>
<tr>
<td>SLO4: Final Reports of Students’ research projects</td>
<td>Outcome 5 from section III</td>
<td>End of the particular research program</td>
<td>Program director and the OUR-UT Advisory Committee</td>
</tr>
<tr>
<td>SLO5: Student Presentations</td>
<td>Outcome 5 from section III</td>
<td>varies</td>
<td>Program director and the OUR-UT Advisory Committee</td>
</tr>
</tbody>
</table>
V. **Assessment results:**
Provide a sample of your findings from the 2011-2012 academic year. Report the data collected for at least three and no more than six of the measures listed in the table above. In a brief narrative, describe the significance of these data and how these data provide evidence to determine whether your program is meeting its service outcomes.

**SLO1:** Students will be able to formulate a research project...
Review/rating of submitted proposals to the Summer 2012 FYSRE and USRCAP programs.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Total (Funded)</th>
</tr>
</thead>
<tbody>
<tr>
<td>COUNT total number of USRCAP proposals</td>
<td>44 (32)</td>
</tr>
<tr>
<td>COUNT the number of proposals rated &gt;3.75</td>
<td>38 (31)</td>
</tr>
<tr>
<td>AVERAGE rating score (1.0-5.0)</td>
<td>3.90 (3.95)</td>
</tr>
<tr>
<td>COUNT total number of FYSRE proposals</td>
<td>9 (8)</td>
</tr>
<tr>
<td>COUNT the number of proposals rated &gt;3.75</td>
<td>8 (8)</td>
</tr>
<tr>
<td>AVERAGE rating score (1.0-5.0)</td>
<td>3.87 (4.03)</td>
</tr>
</tbody>
</table>

Note: Each individual in the Review committee can score at most 10 proposals with the highest rating of 5 and at most 10 proposals with the next highest rating of 4. There are no limits on scores 1-3 for the USRCAP proposals and same for the FYSRE proposals.

**Significance:** Since a limited number of proposals can be scored 4 and above, the count of the number of proposals rated 3.75 and above and the average proposal rating score indicates that the students are learning to design and articulate research projects to other professionals.

**SLO2:** time management: Data are being summarized

**SLO3** and **SLO4:** Students acquire increased proficiency/knowledge...
Research Evaluation Questions 4 and 5 -- Student responses Summer 2012

<table>
<thead>
<tr>
<th>Question</th>
<th>Very skilled/ knowledgeable</th>
<th>Neutral</th>
<th>Not very skilled/ knowledgeable</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. How skilled in the tools/techniques/methods of inquiry in the profession of the research project did you start with at the beginning of the summer?</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. How skilled in the tools/techniques/methods of inquiry in the profession of the research project did you acquire by the end of the summer?</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Students responses are summarized on the following graph.
**Significance:** The range goes from -6 (entered the summer with a mastery of the field and ended the summer with no skills) to +6 (entered the summer with no skills and ended the summer with a mastery of the field). The FYSRE average gain of over 3.5 indicates that the research experience has been extremely valuable. The USRCAP average gain of 2.8 also indicates that the research experience has been very valuable. The lower average gain for USRCAP is expected since the USRCAP students are typically older, more experienced, and possibly already had a prior research involvement.

**SLO5:** Students will develop presentation skills...

The FYSRE, TolInterns, and USRCAP summer 2012 programs are applicable for this assessment report. These research programs require that the students write a Final Report (currently being collected) and present their research (either orally or a poster presentation) at the End of Summer Research Symposium. The schedule to talks is posted on the Undergraduate Research website and can be made available upon request.

**VI. Actions to improve services:**

Describe examples of changes made in your unit in response to the data gathered. You do not need to limit this discussion to the data presented in section V above. Explicitly describe the data that led to the changes. These changes or modification can be at any level in the unit, for example, at the point of delivery, in unit practices, or in policies.
If no changes are planned for the upcoming academic year (2012 – 2013), please state that this is the case and explain your decision.

Based on the Research Evaluations returned from student participants and faculty mentors, no significant changes to the research programs are anticipated for AY2012-13.

The ARS2980 will be renamed due to the retirement of the “ARS” alpha code, but no changes to the content are planned.

If changes were made for the previous academic year (2011 - 2012), please describe whether your assessment measures have shown that these changes have led to improvements in service outcomes.

VII. Communication of assessment results:
Describe how your assessment results are made known to stakeholders. These assessment results should include the assessment data described in sections IV - V and the planned changes described in section VI.

Stakeholders should include current and prospective students, faculty, alumni, administrators and the larger university community.

The Assessment Reports are contained in the Annual Reports of the Office of Undergraduate Research, nominally published in the Fall semester each year.

VIII. Students’ involvement
Describe how students are involved in any aspect of the assessment process for your service program. This could involve eliciting their feedback and recommendations for services in general or their participation on service committees or advisory boards that review data and recommend changes. Include any strategies used to encourage students to provide feedback that has the potential to improve service outcomes.

Student participants and faculty mentors fill out the Research Evaluation forms for the programs. In addition, each Fall semester the Student Government fills out a SG Survey for ranking research priorities.

IX. Actions to improve the assessment process
Describe changes made in any aspect of the process of assessment of service outcomes for your service program. These changes may include new or revised assessment methods or tools, changes in the way data are reviewed, or new strategies related to communication of assessment results revised methods.

In particular, you should address any issues raised by your UAC liaison during the review of your assessment process from the 2010-2011 academic year.

If no changes are planned or made, state that this is the case and explain your decision.

Based on the Student, Faculty, and Student Government surveys/evaluations, we don’t anticipate making changes to the program in AY2012-13.

X. Dissemination of this assessment report
A copy of this report will be distributed to your UAC liaison, the entire UAC and your dean or vice-provost. Please list other individuals or groups that will receive a copy of this report.