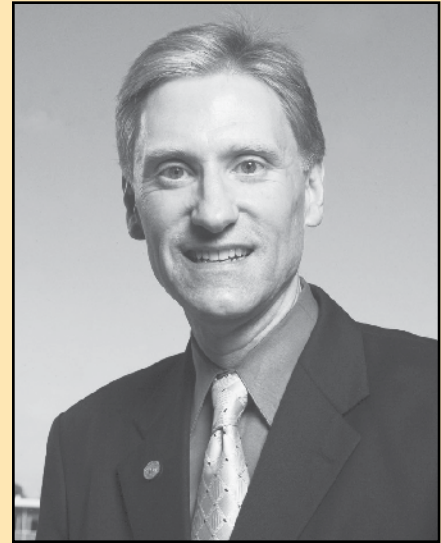


Letter from the President

Undergraduate research and scholarly activity has a dramatic impact on our students and the University as a whole. Collaborations between students and faculty enhance undergraduate education by creating opportunities to explore undiscovered regions of theory and practice. The work of our Undergraduate Research and Scholarly Activity (URSA) office assists in those individual and collective interactions which move Murray toward goals set by our University Community as well as the Council on Postsecondary Education.



As part of an effort to highlight and encourage greater undergraduate student development through academic research, we are pleased to announce the third edition of *Chrysalis: The Murray State University Journal of Undergraduate Research*. I am confident that you will find the selected articles and the diversity of research and scholarly topics valuable as they address complex challenges facing our society. The work of our undergraduates published in this Journal is contributing new ideas, creative thoughts, and challenging questions for us to ponder.

Randy J. Dunn
President
Murray State University

Letter from the Editors

The interested reader is an elusive creature, as the saying goes, but if you are reading this editors' note, then perhaps we have caught one, and maybe we can entice you further into the pages of our journal. In this volume you can contemplate for a moment with student author Jill Ligon the struggles of those who bear the debilitating effects of dementia from Alzheimer's, and perhaps like us you will better appreciate the simple pleasure of being a full participant in the life of a community. In Katie Oller's article you can read about the battle for religious freedom around the world --- and you might be surprised to find out which western countries were recent recipients of formal communications from the UN expressing concern for alleged violations of religious freedom. Kristyn Brown will acquaint you with the titular character of the Henry James novel *What Maisie Knew*, and will help you understand why, in James' words, Maisie "was to feel henceforth as if she were flattening her nose upon the hard window-pane of the sweet-shop of knowledge."

Ever felt that way? Then don't fog up the window. Sit with our journal, and stay a while. You need not be an expert or expert-in-training to be edified by what you will read here. You might join the company of at least one of the editors who was surprised to learn from Courtney Thomasson and Tiffany Hedrick that he should be concerned about the immunological health of white-footed mice (and that there is such a thing as Purina Rat Chow). You might better understand from Chris Bensing's article the difficulties faced by a colleague or student peer who has Attention Deficit Disorder. Or you might find out from Jonathan Hill how psychologists wrangle precise and meaningful answers to questions such as: How do different types of music affect your mood? From a team of biology students you might learn something about the impact of exotic plants introduced into our local environment through nurseries ponder the ineluctable changes wrought on an ecosystem by the choices you make in spring planting.

A scholarly journal which covers such a broad range of disciplines is a rarity, and it is a privilege to showcase students' scholarly work. *Chrysalis* is made possible by the efforts of many. Presidents F. King Alexander, Kern Alexander and Randy J. Dunn, and Provost Gary Brockway have provided encouragement and financial support, for which we are grateful. This publication would not be possible without professional support from the MSU Publications and Printing Services staff. Through every stage, Jody Cofer has skillfully managed manuscripts, abstracts, student and faculty biographies, and editorial communications. Most important, however, are all of the student researchers and faculty mentors whose labors lead to this years' submissions, which we believe represent some of the best student scholarship on this campus. We hope that the selections included in this volume will inspire conversation and inform critical thinking. Perhaps one of these selections will lead to a thought, or a question, or an hypothesis that will be the impetus for you, our dear reader, to consider making a scholarly contribution of your own in the coming years.

Kevin Binfield

Department of English and Philosophy

Rob Donnelly

Department of Mathematics and Statistics

John Mateja

URSA and McNair Programs

CHRYSA LIS

The Murray State University Journal of Undergraduate Research

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Achieve Your Potential The URSA Program Can Help

URSA Undergraduate Research and Scholarly Activity

What are URSA Grants?

The URSA Grants program is designed to encourage collaborative scholarly, research and creative work between undergraduate students and faculty. Student participants may become engaged in the scholarly pursuits of MSU faculty or carry out a project of their own under the supervision of a faculty mentor. This competitive program will provide undergraduates with financial support of up to \$500 for supplies, equipment, operating expenses and travel.

Full-time undergraduates enrolled at Murray State University are eligible to apply. Similarly, all university faculty, whatever their college, rank or nature of appointment, may serve as URSA Grant mentors. Students may work with faculty from their own colleges or from another of MSU's five colleges or the School of Agriculture.

Opportunities provided through undergraduate research and scholarly activity:

- **Posters-at-the-Capitol**
Participants present their work to legislators at the State Capitol Building in Frankfort, Ky.
- **Scholars Week**
Includes oral and poster sessions, exhibits and performance opportunities for undergraduate and graduate students.
- **Get Published**
Chrysalis: The Murray State University Journal of Undergraduate Research provides an avenue for undergraduates to publish their research.
- **Research Scholar Fellowships**
Undergraduates receive support in the form of stipends paid throughout the year, a supply budget, and a faculty support stipend for the purpose of conducting a scholarly project.



Call 270-809-3192 for more
information about Undergraduate
Research and Scholarly Activity.

<http://campus.murraystate.edu/services/URSA>

In Memoriam

Dr. Ken Bowman lived life to the fullest according to the “Success is a journey, not a destination” axiom. He perhaps invented the “been there, done that, have the shirt” saying. If there was something going on at Murray State, Dr. Bowman wanted to experience it. He was part of the “Agriculture Roads Scholar Brigade” before Roads Scholars was cool. He sacrificed his commitment to Agriculture students for two years to serve the larger student body as faculty head of Springer Franklin College. He was also co-founder and co-editor of the *Chrysalis: The Murray State University Journal of Undergraduate Research*. Dr. Bowman was an unusually gifted individual and faculty member. As noted during the presentation of his promotion packet last spring, “Although outstanding, Dr. Bowman was not the most productive researcher at MSU ... but he could have been. Although outstanding, he was not the most active community or university servant... but he could have been. The reason he wasn’t the absolute best of the two aforementioned criteria was that he only had so much time and he put most of his time and energy into being a GREAT teacher, indeed among the very BEST.”



Dr. Bowman served students ... and he served quite a few of them. He served as advisor to 93 students, undoubtedly one of the largest advising loads at MSU. Dr. Bowman worked well with students. He hosted student clubs at his home and even took some of them with him to his favorite professional sports events. Ironically, on the day that he passed he was headed to Nashville to watch the Titans and he had asked another faculty member to accompany him. If it was Friday, you could count on him to sport his favorite athletic team jersey. His teaching career at MSU was cut far too short and his loss will leave a great void in our School. The loss of Dr. Ken Bowman was definitely a sad day for *Chrysalis* and Murray State University.

Dr. Tony Brannon
Dean
School of Agriculture

Call for Articles

Chrysalis: The Murray State University Journal of Undergraduate Research is published annually by the Undergraduate Research and Scholarly Activity Office with support from the Office of the President. The purpose of *Chrysalis* is to celebrate the research, scholarly and creative accomplishments of our undergraduates and their faculty mentors.

Undergraduates in all academic disciplines may submit articles to *Chrysalis*.

Articles must be submitted electronically.

Photographs, illustrations and diagrams should be submitted separately in high resolution jpg format.

Authors should follow the guidelines of the professionally accepted style for the discipline.

Articles may be posted on the Undergraduate Research and Scholarly Activity Office website at Murray State University.

<http://campus.murraystate.edu/services/URSA>

If you have questions regarding
Chrysalis: The Murray State University Journal of Undergraduate Research
please call 270-809-3192
or contact us electronically at ursa@murraystate.edu.