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Inquiro 6 (Front Matter)

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Volume 6 • 2012



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"Emulsions"

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"Anatomy of a Peasant"

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Volume 6 • 2012

Founded and staffed by undergraduate students at the University of Alabama at Birmingham, *Inquire* is an annual research journal produced as an outlet for the publication of undergraduate scientific research. UAB is an excellent undergraduate research university, and with the addition of a journal such as *Inquire* in which to publish their findings, the package is complete. Any undergraduate student at UAB, as well as any student participating in a summer program at the university, is eligible to submit research. The rights to every paper published in *Inquire* are retained by the author, leaving each individual free to submit to and publish in a larger national journal or magazine. Students are invited to submit research papers, short reports derived from posters or research narratives throughout the year.

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letter from the editor

Science impacts our lives. When Edward Jenner created the smallpox vaccine, he forever changed the world's understanding of disease and its prevention. James Watt's invention of the steam engine enabled the Industrial Revolution. Charles Darwin's theory of evolution launched a paradigm shift within multiple scientific disciplines.

The influence of science may be undeniable, but progress does not come without complications. Curiosity about disease led to human rights abuses like the infamous Tuskegee Syphilis Study. The Industrial Revolution generated environmental pollution and overuse of natural resources. Even evolution, a simple theory about how species change over time, has polarized society to the point that many do not want it taught in schools.

The conflicting implications of these examples illustrate that science cannot be separated from its context. Knowledge is not important for the sake of knowledge; instead, knowledge serves as a vital tool that can be used to better understand and improve the world. In order to use science as an agent of positive change, scientists have many responsibilities. For example, they must understand how to answer scientific questions. Their experiments must be conducted in ways that minimize biases and yield significant and reproducible results. Scientists must also share their findings with others. An integral component of the dissemination of scientific results is review by an independent third party. Once the results have been reviewed and verified, the investigator must publish his or her work. However, publishing in peer-reviewed scientific journals is only one element of successful distribution: scientists should also translate their results to the general population. Cutting-edge research is becoming increasingly interdisciplinary, and researchers must effectively communicate with those outside of their specific field of study in order to make meaningful contributions to scientific and social progress.

Miranda's and my editorial partnership has been defined by our commitment to these principles. In this volume, we have combined our experiences to sustain and improve *Inquire*. My path started in the Department of Philosophy. Through my studies of the history of medical research, I learned about the suffering that can result from irresponsible science. However, I also learned about the miraculous benefits that can result from careful and ethical investigation. I seized the opportunity to assume a leadership position on *Inquire*'s editorial board. During my two-year tenure as editor, I have helped to create a more rigorous review protocol that holds the published authors to a higher standard.

UAB's emphasis on undergraduate research quickly engaged Miranda's interests. During her freshman year, she joined the lab of Professor Stephen Barnes in the Department of Pharmacology, and she started to devote long hours to the trying but rewarding task of research. After two additional years in Dr. Barnes's lab and an internship at the University of Oxford, Miranda decided to pursue a career in structural biochemistry. Her strengths as an editor include critiquing experimental design and editing articles to be more simple and concise. Next year, she hopes to continue to improve *Inquire* and to instill the value of scientific research and publication into potential future scientists.

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Since its first edition, Inquire has been committed to encouraging young scientists to share their research. When Suzanne McCluskey founded the journal in 2007, she recognized UAB's strengths as a world-class research university with ample opportunities for undergraduate research experience. While she appreciated the opportunities to learn and investigate, she realized that students did not have a platform to share their results with others. To address this problem, she created Inquire. Miranda and I have thoroughly enjoyed the opportunity to promote her vision.

This journal could not have been created without the guidance and mentorship of many UAB faculty and administrators. Dr. Mike Sloane's unwavering support has enabled the journal to expand and flourish. Dr. Peter O'Neil's feedback has helped the journal adapt to the needs of the UAB community. During the academic realignment, Dr. Brad Newcomer maintained Inquire's administrative support. As he restores the Office for Undergraduate Research, Nick Bieser has taken an active role in improving the journal.

This year, we expanded the journal's mission to target a larger audience, so we worked with authors to make the articles more accessible to readers with a general science background. On page 64, you will find an incredible physics article that is one of the clearest we have ever read. If you were curious about the Higgs Boson discovery, Naveed describes its meaning and implications on page 4. Even though we have made this edition more accessible, we have not compromised Inquire's rigorous review process.

The editorial board and authors have worked diligently to produce the articles contained in Volume 6, and we hope that you enjoy the product of their labor. However, Inquire's value cannot be limited to these pages. The real value of this publication comes from the impact that it has on the UAB community. Miranda and I hope that Inquire inspires you to contribute to the scientific community, both at UAB and wherever your careers take you.

Rachael Rosales, Chief Editor 2012 - 2013