

2015

## Inquiro 9 (Front Matter)

Inquiro Staff

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# inquirō

Volume 9 • 2015

UAB's UNDERGRADUATE RESEARCH JOURNAL

THE UNIVERSITY OF ALABAMA AT BIRMINGHAM

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**Front cover art:**

"Solace"

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**Inside cover art:**

"Tree of Life"

Ellen Besh

Sophomore, Art History Major





# inquireo

Volume 9 • 2015

Founded and staffed by undergraduates at the University of Alabama at Birmingham, *Inquireo* is an annual journal produced with the mission of highlighting the contributions of undergraduates to UAB's many outstanding research programs and supporting the development of these student researchers by providing an outlet for them to publish their work. Any students who have conducted research at UAB, including those visiting from another institution, are invited to submit research manuscripts, short reports derived from scientific posters, or personal narratives regarding their research experiences. Authors retain full rights to their work, and are free to submit to other journals after publishing in *Inquireo*.

"The scientist does not study nature because it is useful; he studies it because he delights in it, and he delights in it because it is beautiful." In the present era of "big science," extreme competition for both jobs and funding in research, and ever more-obvious impacts of technology on our lives and our world, these words from the brilliant French mathematician Henri Poincaré may seem to be less true than when he wrote them over a century ago. Yet they are also more important than ever before. Whatever its practical implications, science always has been and always will be a vehicle for our inherent curiosity, desire for beauty, and yearning to know the story of ourselves and our world. These are the things that first draw us to science and that sustain us even when work is difficult and results elude us. As the challenges and opportunities associated with science become ever greater, so does our need to visit these inexhaustible wells of inspiration and perspective.

If science is partly about knowing the story of our universe and ourselves, then it also needs good storytellers. Thanks to scientific communication in its many forms, both the beauty and the practical rewards of science are now more accessible to more people than they have ever been. I am proud to say that *Inquiro* has its own small part in this global conversation, helping both to support the development of young scientists at UAB and to raise awareness and enthusiasm for science within our community. During my time as Editor of the journal, I have tried to keep these dual missions always in mind and I have had the privilege and challenge of exploring new ways to accomplish them. Many of the changes I have overseen have had to do with expanding the journal's accessibility to potential readers. For example, this issue marks a notable increase in *Inquiro's* online presence—on Facebook, Twitter, and our own website—as well as a wider distribution of printed copies across the UAB campus. We have also made strides to ensure that our general interest content—such as news, book and film reviews, interviews, and more—is more original, relevant, and understandable without compromising scientific accuracy. Other changes have involved making *Inquiro* more representative of the diversity that is one of UAB's great strengths. To this end, we have sought to ensure that both our editorial board membership and our technical research articles encompass a wider array of academic backgrounds than in the past.

It is with great excitement that I invite you to dive further into this issue of *Inquiro* and see for yourself what we have been up to and what we have to offer to the UAB community. Whatever your interests or level of scientific knowledge, there is something here for you. If you would like to know more about how your own learning and memory work at a molecular level, or about the tiniest of subatomic particles—hundreds of billions of which pass through your body every second without ever striking anything—or about prime numbers and how they help keep digital information secure, our editorial board has broken down these and other topics in excellent and accessible reviews. For a look at how science and technology intersect with culture, check out our article on scientific accuracy in films and television and our exploration of national and cultural differences in STEM education. You can also hear firsthand about some of the amazing work being done right here at UAB by your own classmates, professors, and colleagues: in this issue you will find interviews with Forrest Satterfield, a student who has founded his own startup to develop more affordable prosthetics, and Professor Steven Austad, whose work on aging has been both widely cited in the scientific literature and frequently discussed in popular media. Finally, we encourage you to explore this issue's collection of original research articles prepared by undergraduate scientists at UAB. There is no better way to understand a novel experiment than from the original literature, and you might find that it is easier than you think. There is much more to be discovered in this issue, and no matter what catches your interest we hope you enjoy it, learn something new, and perhaps even feel inspired to get more involved with science.

Of course, none of this content would be possible without a host of people who have helped *Inquiro* to succeed and grow throughout this year and its nearly ten years of operation. Our staff—entirely made up of undergraduates and including fifteen editorial board members, my co-Editor Maggie Collier, and Assistant Editor Josh Purvis—have worked diligently and enthusiastically on every aspect of the journal and have continually provided new ideas on how it might be improved. Undergraduate researchers have contributed the scientific articles that are *Inquiro's* reason for existing, and the journal has been made as beautiful as the science inside it thanks to the student artists who provided the cover designs and to Ryan McAnulty and Tammy Bracknell of UAB Printing Services. Numerous members of the faculty have volunteered their time to serve as expert reviewers on each research article, working with the authors to make each manuscript as strong as it could be. Faculty members like Mike Sloane, Peter O'Neil, Diane Tucker and Cristin Gavin have also offered their assistance and advice on the journal. Vital financial and administrative support has been provided by Gareth Jones, Libba Vaughan, Suzanne Austin, and Robert Palazzo. To all of these individuals, and to our readers, we offer our sincere thanks.

As my own time working on *Inquiro* draws to a close, it is easy to reflect on how satisfying the work has been. I have loved to talk about science to anyone who would listen since I was a young child, and I have also been an undergraduate researcher struggling to learn the ropes in lab, get results, and communicate them effectively. *Inquiro* has allowed me to share the beauty and joy I find in science with the community I have called home, as well as to lend a hand to other researchers just starting their careers by making opportunities available for them that are often out of reach for undergraduates. I and the rest of the staff have certainly enjoyed putting this issue together and learned a lot in the process, and I hope you have the same experience in reading it. Most of all, I hope you find in it something that makes you stop, look at the world around you, and wonder.

John Decker

Chief Editor, 2015–2016

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