Fischer and Lewis rats and recorded blood alcohol levels at different times post injection—15, 60, and finally, 180 minutes.

Roma works with Professor Anthony Riley in the psychopharmacology laboratory, where the primary research focus is on animal models of genetic and environmental factors in the etiology of drug use and abuse. He is part of a PhD program called behavior, cognition, and neuroscience.

Roma earned a dual BA in psychology and communication studies at West Chester University in Pennsylvania before his research training fellowship at the National Institutes of Health, where he studied biobehavioral development in nonhuman primates.

Edwardsen hopes to do advanced analytical chemistry research or forensic chemistry for the FBI, the Secret Service, or another government agency. He has experience as an emergency medical technician and has observed a variety of people at different levels of intoxication; such experiences have provided him with a keen appreciation for how drugs affect people in everyday life.

Roma said the interdepartmental collaboration is important because "the long-term goal of our [psychology department] partnership with the chemistry department is to strengthen our behavioral research by including biochemical data, such as circulating levels of drugs or stress hormones, and seeing how those data correlate with the behavioral effects we observe. This partnership also provides chemistry students opportunities to expand their technical repertoires into the realm of biobehavioral research."

BLACK HOLES, PHOTONS, AND NASA

By Rebekah Moan, journalism '06

ALTHOUGH BLACK HOLES ARE REGIONS OF space-time from which nothing can escape, not even light, what we know about them could change in the near future. **JOHANNA TESKE (CAP '08),** who is interning at the National Aeronautics and Space Administration's Goddard Space Flight Center, is working on just that.

Teske, who is at Goddard through the D.C. Space Grant Consortium's Academic Internship with NASA, said her mentor, Demos Kazanas, is "trying to describe a theory of black holes that doesn't end in a singularity." A singularity occurs when the laws of physics break down. In a black hole, she said, matter has infinite volume yet is infinitely small, and space-time folds in on itself.

"Currently, the theory of black holes is kind of stuck since a singularity is reached and all the equations that could be used outside a black hole break down," Teske said. She went on to confirm that a total information loss occurs.

Teske said the research she is assisting in is important because "if we can help describe nonsingular black holes, then the whole idea of a black hole could change. Right now we know light and everything else goes into it and never escapes, but what happens to it?"

So far Teske has mostly conducted background research to prepare for the nonsingularity research. She and another intern have mostly been brushing up on their classical mechanics and trying to figure out the Mathematica software so they can plot photon orbits in black holes.

Teske said the most rewarding part of interning at Goddard so far has been figuring out how to "plot the orbit of a particle coming toward a black hole, but then getting shot out again." By using the Mathematica software she can animate the equation and "see" it happen.

"In the upcoming weeks we're going to start digging into the real research aspect of the project, where the equations get messy and we don't know what will happen," she said

The outcome of the research will bring scientists one step closer to understanding how black holes work and affect our universe and will help create a more elegant theory of black holes.

Teske is very excited about this unique internship opportunity. "I actually pulled a jaw muscle from screaming when I found out I'd gotten the internship," she said. "In my opinion, you really can't get an internship better than this one. What could top exploring the mysteries of our universe and getting paid for it?"