

GOOD PROPOSAL

Name
JOUR 572
Date
Mini-Profile

Humble Wings of Greatness

Charles van Riper III
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From the temperate woodlands of the Hudson River Valley to the lush Hawaiian rain forest, Charles van Riper studied the sounds of the wild through birdsong. After migrating to Hawaii, van Riper completed his doctoral degree on two native species of birds, then began his long career as an ornithologist.

This mini-profile will focus on van Riper's love of birds and his concern about their future in view of climate change. The article could be published in the local newspaper, a wildlife magazine or a University of Arizona publication where readers will discover his dedication to nature and the well-being of the birds.

I plan to interview one of van Riper's research associates, a graduate student he works with and one of his birding buddies.

Second Choice

Sara Parker
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Sourav Ghosh, a UA assistant professor of cellular and molecular medicine, and his assistant, doctoral candidate Sara Parker, recently discovered how nerve cells make connections. This discovery could lead to better understanding of how damaged nerve cells create new axons and dendrites, the nerve cell components through which signals are transmitted. Further research might help people with spinal injuries or neurodegenerative diseases, such as Alzheimer's.

Although Ghosh is probably in charge here, I think Parker would be a more interesting subject because this is a significant discovery for someone who's only at the beginning of her career. Working on a project like this as a doctoral candidate leads me to believe she has a lot of potential, and I would like to learn more about her background, motivation and aspirations.

GOOD PROPOSAL

Name
JOUR 472
Date
Narrative Interview

Flowering Development

Bruce Ellis
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Bruce J. Ellis is a professor in the John and Doris Norton School for Family and Consumer Sciences. Recently he was cited in The Wall Street Journal for his contribution to the new coining of flower-based terminology in nature vs. nurture research. Ellis helped develop the theory that some people are like orchids, while others are like dandelions. Orchid-like people wilt in bad conditions but flourish with support, while dandelion-like people aren't affected by the outside world, supportive or not. The theory will help researchers understand child development and develop therapies. How people react to stress is important in the treatment of conditions such as depression.

I will also speak with Dr. David Bjorklund, who has co-authored several papers with Ellis. Bjorklund launched the field of evolutionary developmental psychology. I also would like to speak to one of his grad students. My target publication is the Arizona Daily Star or the Tucson Weekly.

Second Choice

Sally Dickinson
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My other possible narrative interview would be with Dr. Sally Dickinson, who is doing research on how direct application of sulforaphane, a natural compound in broccoli, could help prevent skin cancer.

GOOD PROPOSAL

Name
JOUR 472
Date
Narrative Interview

Seeing Stars: Taking Clearer Photos of the Night Sky

Laird Close
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Jared Males
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Two UA astronomers, Laird Close and Jared Males, were recently involved in research that allowed scientists to take the sharpest photos ever of the night sky. The technology has been under development for almost 20 years. Close, the principal scientist on the project, said the new imaging technology would be so detailed that it would allow observers to see a baseball diamond on the moon, and observe the night sky without much atmospheric interference.

While the narrative will be written in a way that allows any reader to understand it, the article will mostly appeal to those interested in stargazing or astronomical developments. I will try to publish the article in the Arizona Daily Wildcat.

Additional Sources:

Astrophotographer Adam Block, as he would definitely be involved in using the new imaging technology

Daniel Stark, a NASA Hubble Fellow at the UA. Because of his work with the Hubble Telescope, Stark could explain the importance of improved imaging quality on Earth and what that could mean about our understanding of the universe.

Back-Up Idea

Martin Reimann
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Martin Reimann recently led a study analyzing brain function with regard to breaches of trust. Reimann investigates both the neurological and social implications involved with relationships where the level of trust has dropped. He realized that relationships that had been more firmly established before the breach of trust were more likely to repair themselves.

WEAK PROPOSAL

For my researcher, I found two interesting professors at the UA who are doing compelling research in the field of science. The first is Diane E. Austin, who is a professor with the School of Anthropology. Her research comes through environmental anthropology, and she focuses mainly on dynamics in a community during large-sied industrial activity. She looks at not only the environmental issues but also the social ones. I think it's interesting because it combines science with everyday life.

Another professor is Parker Antin, who works in cellular and molecular medicine. A lot of his research involves things that take place while a baby is still an embryo. I think its interesting because not only is it something that most people know basically nothing about, but it can also help teach us a lot about how the cellular aspect of things work. His work loks at genes and traits.

WEAK PROPOSAL

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I would like to do a narrative interview on Steve Larson. The Catalina Sky Survey is under his direction. He has led the world in asteroid discoveries since 2005. The most recent asteroid that went past earth happened September 13.

Background info:

NASA is awarding \$4.1 million to the Catalina Sky Survey to upgrade its search capabilities for near-Earth objects - asteroids that might cross the Earth's path someday.

The **Catalina Sky Survey**, or CSS, a UA-based program that searches for hazardous asteroids that might pose a collision threat to the Earth, will receive a new NASA grant totaling more than \$4.1 million to upgrade and operate its telescopes through 2015.

The CSS program, part of the UA's [Lunar and Planetary Laboratory](#), has led the search for so-called near-Earth objects, or NEOs, since 2005. CSS consists of two wide-field survey telescopes and a dedicated follow-up telescope located in the Catalina mountains north of Tucson, Ariz.

In 2011 the CSS science team discovered 586 near-Earth asteroids, representing 65 percent of NEO discoveries for the year. In addition to its record-setting searches for asteroids, the team was the first to observe an asteroid on a collision course with the Earth, allowing it to be tracked and eventually recovered as meteorites in the desert of Northern Sudan.

Their large and growing data set has also found new relevance in the search for objects far beyond the solar system. With their new grant, CSS astronomers will be able to expand the power of their largest telescope four-fold, develop more sensitive software, and conduct their search more nights every month.

"NASA has recognized that over the last seven years, our program has constantly strived to improve its performance, and has collaborated with others to find new ways to exploit the nearly 1,000 images we take every night with our two telescopes in the mountains north of Tucson," said **Edward Beshore**, principal investigator of the Catalina Sky Survey. "I think NASA recognizes the CSS as a valuable service to, well, humanity."

To spot NEOs, CSS observers use two telescopes to take four images of selected portions of the sky, spaced about 10 minutes apart. Software then processes the images, looking for faint objects that appear to be moving across the sky in a straight line.

Specialized software then removes known asteroids, applies filters to remove false detections and presents the results to the observer for final validation. Asteroids suspected of qualifying as NEOs are reported to the Smithsonian Institution for analysis and follow-up images are scheduled.

It takes several hours of such observations to reveal whether an object is a NEO. Finally, objects whose orbits intersect with the Earth's are called out for additional study by amateur and professional astronomers around the world.

A key element of the new grant, a more powerful camera will allow the project to cover more sky with the 1.5-meter telescope on the summit of Mt. Lemmon.

CSS co-investigator Steve Larson, who designed the new camera, said: "When we began observing in 2000, our image sensor was 16 megapixels, which was large by any standard. Today, commonly available consumer digital cameras have surpassed that size, and we were reaching the limit of productivity with our current camera design." A few years ago, Spectral Instruments, a local vendor of scientific imaging systems, presented a sensor totaling 110 megapixels. Together with Tucson-based optical designer Richard Buchroeder, Larson developed a powerful new camera system that would increase the amount of sky it can cover each month by four times.

"We believe this will translate into a nearly proportional increase in the number of discoveries we make each month," Larson said.

The grant will facilitate other enhancements too, such as support additional software development to improve the speed and sensitivity of the CSS software, and the addition of a new observer that will allow them to work more nights each month.

"This grant represents a nice boost for the local economy, with almost 100 percent of our funds being spent right here in Tucson," Beshore said.

The CSS program is not limited to the search for asteroids. A spinoff project called the **Catalina Realtime Transient Survey** makes further use of the data acquired for the asteroid survey.

"We image the entire sky every month with our telescope on Mt. Bigelow," Beshore said, "in partnership with colleagues at Caltech who had developed software to search for changes in the stationary cosmic objects. Almost as fast as we can acquire the data, they are able to detect changes in the brightness of stars and galaxies that can reveal important clues about objects millions of times farther away than the asteroids we search for."

In 2010, Beshore's team discovered more supernovae, stars that end their lives in a violent explosion, than other programs specifically designed for just that task. More recently, CSS and Caltech [announced the web publication](#) of data documenting the brightness history of nearly 200 million objects with more than 20 billion independent observations, a catalog 10 times larger than anything previously published.

"We were thrilled to get the news from NASA about our grant," Beshore said. "At the same time, we regularly remind ourselves that we have an important responsibility to all those who support our work with their tax dollars." "Aside from helping to ensure that we don't get blindsided by an asteroid, we owe the public the most efficient use of our funding, and we are grateful that we have once again been given the chance to show the world what we can do."

If that doesn't work, it would also be cool to do a narrative interview on Bob McMillan. He does kind of the same similar stuff as Steve Larson.

McMillan works on asteroid surveys, space watch and planetary astronomy.

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Background info:

SPACEWATCH® is the name of a group at the [University of Arizona's Lunar and Planetary Laboratory](#) founded by Prof. Tom Gehrels and Dr. Robert S. McMillan in 1980. Today, Spacewatch is led by Dr. Robert S. McMillan. The primary goal of Spacewatch is to explore the various populations of small objects in the solar system, and study the statistics of [asteroids and comets](#) in order to investigate the dynamical evolution of the solar system. CCD scanning studies the Centaur, Trojan, Main-Belt, Trans-Neptunian, and Earth-approaching asteroid populations. Spacewatch also finds potential targets for interplanetary spacecraft missions, provides followup astrometry of such targets, and finds objects that might present a hazard to the Earth.