psb

FALL
2013

PHOTOGRAPHIC SCIENCES BULLETIN

Meet the Editors



JAMIE KRAUS
Chicago, IL
"Mulan"



SHANNON WRIGHT
Hopkinton, MA
"Batman"



ERIN MCINTOSH
Oswego, NY
"Captain America"



NANCY DETERS
Chicago, IL
"Hawkeye"

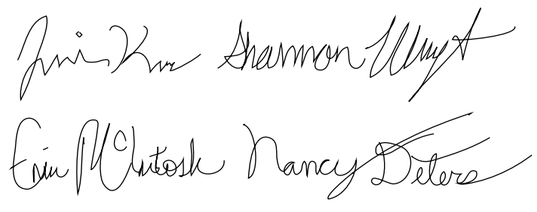
This academic year has involved big changes for RIT as well as our program. In the last few months, we have started on the new semester system, combined our two Bachelor of Science programs, and the Bulletin has a new name! We would like to introduce you to the first ever Photographic Sciences Bulletin. This name reflects our reformed and renamed major Photographic and Imaging Technologies, and coincides with our newly named student organization, the Photo Sciences Club. We would also like to congratulate this year's freshmen on being the first students to enter into our new combined program.

This semester we are embracing these changes fully with our first edition as the PSB. In order to stay connected with our readers, we've delved into Instagram and Twitter, even going so far as to create our own hashtags. These exciting new elements have been incorporated to provide viewers with behind the scenes content and updates. For sneak peeks and information on future issues, follow us on social media.

We've had a whole semester to bring together our program's finest content, images, videos, projects and design. Inside this all-digital issue, you'll get the scoop on summer co-ops and reviews of our favorite new gadgets. You will also learn about one of our program's most popular courses, Surgical Photography, gain some insight on a new exciting innovative imaging software project called IRENE and find out the Class of 2017's (and our) favorite superheroes.

We would like to thank our wonderful faculty advisors Rachael Gootnick, Josh Shagam, and program chair Christye Sisson for all their guidance and help over the course of this semester. Without them, we're not quite sure what this thing would look like! We would also like to take the time to send a warm welcome to Ted Kinsman, our newest full time faculty member, as well as Emily Koelle, our new academic advisor. Lastly, we would like to thank all of the Photo Science students for their submissions, positive attitudes and hard work. Without you, we wouldn't have anything to publish!

Love, your PSB editors:



photosciencesbulletin@gmail.com

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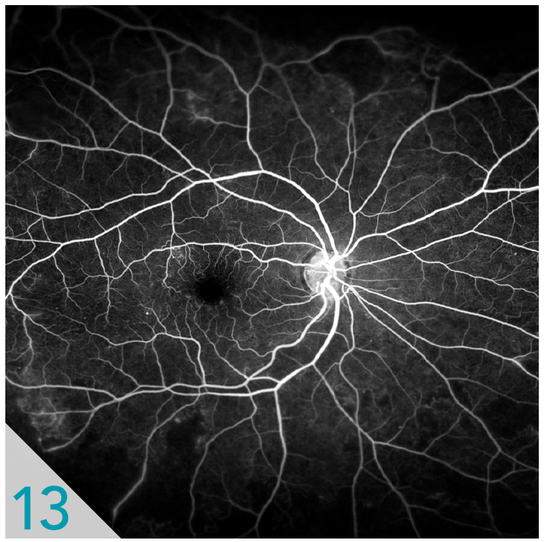
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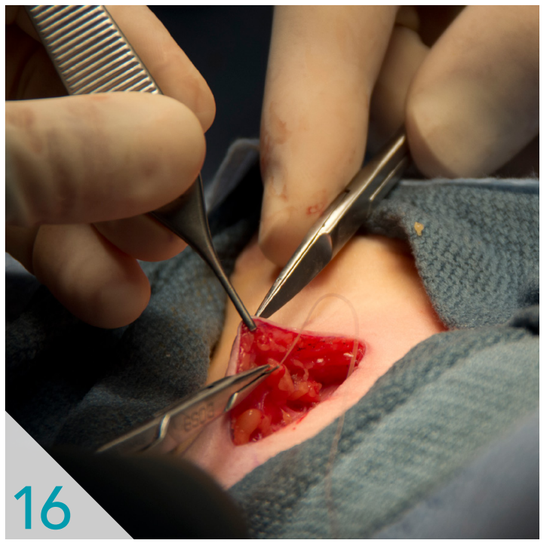
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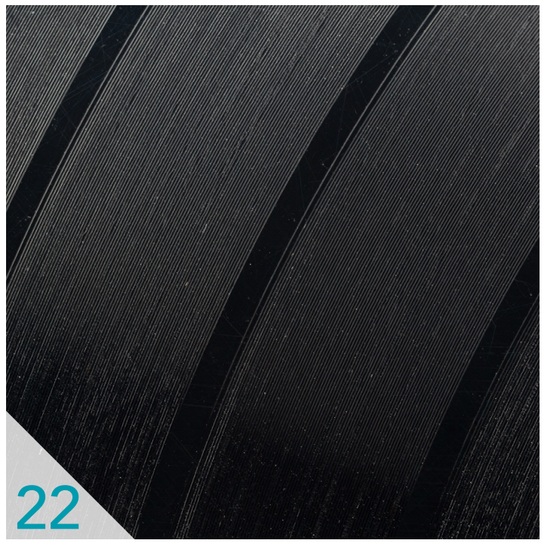
Send us an email with questions or feedback.

PSB Fall 2013 Edition









Cover image by Marissa Masek

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Introducing Ted Kinsman

New full-time faculty

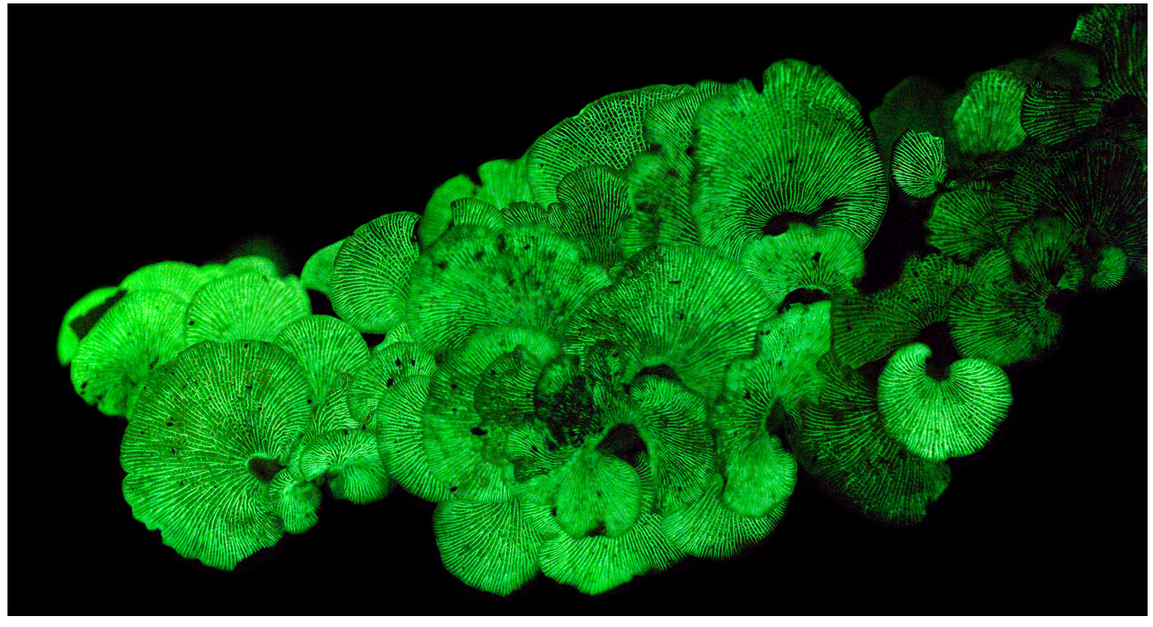


I come from a background in technical and scientific photography primarily involved with supplying stock images to science books, magazines, and even television shows. Most of my work is about showing science in a positive way. There is nothing like a cool science image to attract a young reader to a topic. My favorite areas of photography are highspeed, timelapse, and scanning electron microscopy.

Recently, I have been testing new improvements in noise reduction at high ISO settings in modern cameras. I achieved great results from the Canon 5D Mark III, for example, being able to photograph the light-emitting ability of local bioluminescent fungus with an exposure of 120 sec. ISO 12,800. A truly remarkable achievement in technology!

Since beginning full time in the program this semester, I have had the opportunity to guest lecture in the advertising photography classes. I demonstrated how to trigger a camera using sound or light, and how the triggering can be controlled with a microprocessor. In collaboration with visiting Advertising Photography faculty member Don Cochran, we did a mock fashion shoot, showing the students how to use a sound trigger to photograph a boot breaking a balloon. During the same demo we used high-speed flash to capture the action of a student bobbing for apples.

I am always involved in many side projects throughout the year. My personal project this winter is to modify a scanning electron microscope to hold a liquid nitrogen cooled stage. The goal of this experiment is to develop procedures for imaging a snowflake without a conductive metallic coating.



Above: Bioluminescent fungus, Ted Kinsman. *Below:* Highspeed photograph, Ted Kinsman and Don Cochran.

As a full time faculty member, I will be more involved with grant writing. My goal is to see updates to a lot of the equipment and facilities in the Photographic Sciences Department. I would also like to spend time expanding our educational outreach program to show local high school students some of the wonderful imaging careers that are available to them though our unique program at RIT. Overall, I enjoy teaching at RIT, and I cannot wait to see what the future of this program holds and how I can make an impact.



Meet the Freshmen

We asked the class of 2017 to name their favorite superhero!



1. Taylor Repetski
Fairless Hills, PA
"Captain America"

2. Alexandra Shipman
Livonia, NY
"Captain America"





3. Charlotte Guthery
Fairfax, VA
"Bane"

4. Justin Gerard
Weston, MA
"The Penguin"





5. Anka Parzych
Niskayuna, NY
"Superman"

6. Weston Ierardi
Laguna Niguel, CA
"Starfire"





7. Tamika Chandler
Willow Grove, PA
"Batman"

8. Teresa Zgoda
Campbell Hall, NY
"Mr. Incredible"





9. Hayley Payne
Rochester, NY
"Ninja Turtles"

10. Jason Dinelli
Hopewell, NY
"Captain Underpants"





11. Jana Maravi
Baltimore, MD
"Batman"

12. Kelsey Kreider
Houston, TX
"Joker"





13. Katherine Broderick
Lansdale, PA
"Batman"

Not pictured: Adrianna Gleaton, Carrie Ratkoski, Katherine Snyder and Megan Woodrow.

Summer Co-ops 2013

AMBER KATES	Wills Eye Institute
BARBIE PITTS	Ricoh Production Print Solutions
CAITLIN FOSTER	Rochester General Health System
CARISSA HURDSTROM	Cornerstone Eye Associates
CASI FLEISCHMAN	University Hospital of Wales
DAVID BEYERLEIN	National Geospatial-Intelligence Agency
ERICH FIEDERER	Northeast Document Conservation Center
EVAN DARLING	Carl Zeiss Microscopy, LLC
GRIFFIN KETTLER	Capture Integration
HARRISON CO	NJ Retina
JAMIE KRAUS	The Glimmerglass Festival
KATELYN DONOVAN	Costello Eye Physicians and Surgeons
KATIE LACHUT	Columbia University Flanzer Eye Institute
LINDSAY QUANDT	Canon USA Inc.
LINDSEY WEIDENBORNER	Rochester General Health System
MARGARET GRANZIER	Katzen Eye Group
REBECCA GERHART	Wills Eye Institute
SAMANTHA CHALUT	Nikon Inc.
SAMMY FALGIANI	Rochester General Health System
SARAH ALHARBI	Booksmart Studio
SARAH MICHAELS	Virginia Eye Institute
SONIA IRONS	Naehas Inc.
STEVEN WILBERT	RIT - College of Science
YAN LI	Paleontological Research Institution
YASMEENA AZER	RIT - Image Permanence Institute
ZACH PEZZILLO	University Hospital of Wales

Image by Marissa Masek

Lindsay Quandt

Canon USA Inc.



I was involved in the "Canon Insights Program" over this past summer with Canon USA Inc. in Mellville, NY. Unlike the technical and science based co-ops most students within our program go on, I had a marketing position. Most of the other students in the program with me were business, liberal arts or law majors. Though I was placed in a marketing type position, my knowledge obtained at RIT was extremely valuable while I worked to support Canon's line of professional photo and video products.

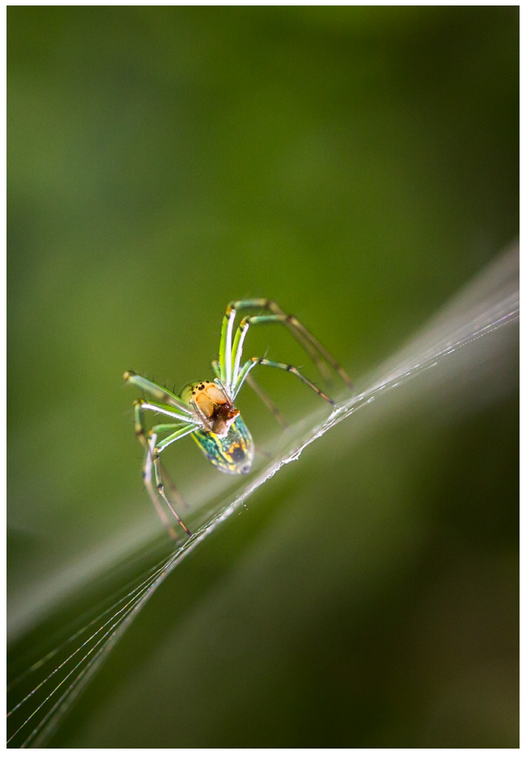
The bulk of my time was spent conducting different types of research. For example, there was marketing research— to determine where Canon's unique products, like the 1DC, have opportunities to grow. I also worked on camera comparison and compatibility research to evaluate how Canon's EOS product line matches up against other brands like Nikon and Sony. I spent a lot of time reviewing documentation for technical accuracy. This meant fact-checking any bulletins or notices being released about upgrades or new products. This process taught me many technical details about Canon's products such as auto-focus systems, lens manufacture, internal data processing, and video capture.

The most important task my department handled was building and maintaining relationships. We acted as liaisons between professional customers and the multinational corporation; this included the Canon-sponsored professional photographers (Explorers of Light), wire services like Associated Press, and dealers, like B&H, to gather their feedback to send to Canon. We also looked to constantly foster new connections. These external connections are essential to the success of Canon.

In the end, I learned about Canon as a business. In order to support improved technology, less expensive products, and the jobs we crave, we must propel the business of photography. My department did that by understanding the relationship between customer needs and Canon's products. My experience taught me to adapt in new and challenging situations, to embrace how my perspective differs from others, and to assimilate the wisdom and experience of those around me.

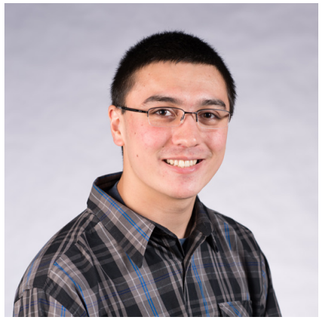


Above: Lindsay Quandt (third from top left) posing with her fellow interns at Canon.
Below: "Orchard Spider" winner of the Canon Intern Photo Shoot-Out contest.



Harrison Co

NJ Retina



Over the summer, I completed a co-op at NJ Retina, a large ophthalmology practice located in northern New Jersey. Over the course of three months, I developed strong working relationships with my fellow photographers and clinical staff members alike.

My first few weeks, I learned how the practice ran, familiarized myself with equipment, and slowly met and introduced myself to other staff. I was paired with a veteran photographer, Mary, who served as my mentor. She guided me when I had questions, while still letting me operate independently when I was able. By the end of my time with the practice, Mary had become a friend to me and we became a team. I gained valuable knowledge when she coached me on my photography.

I became far more comfortable running tests on my own and troubleshooting my own issues as the co-op continued. For the first few weeks of the experience I was observed by a full-time photographer during every test, whether it be an OCT (optical coherence tomography) or an angiogram. I was eventually allowed a greater amount of autonomy as I became more comfortable. By the second week of full time work, I was doing OCTs on patients with no assistance from my preceptor. By the fifth week, I had demonstrated enough proficiency that the staff felt comfortable letting me run fundus photos and fluorescein angiograms on my own, the only condition being that a staff photographer had to be available in the office to help me in case I needed it.

I found that my coursework at RIT and Christye's ophthalmic photography class in particular was extraordinarily helpful, especially while I was familiarizing myself with the work I was expected to do at NJ Retina. Although no amount of coursework can prepare one for working with real patients, the baseline knowledge from the courses at RIT provided me with a level of confidence going into a professional work field that I would not have had otherwise. The ophthalmic class that our program offers is incredibly thorough in the depth and breadth of knowledge covered, which prepared me for the clinical setting at NJ Retina. I was able to apply the knowledge that I gained during the class sequence on a daily basis. For example, I felt confident explaining a particular test to a patient or providing basic image interpretation to other staff members who were less familiar with the technical aspects of ophthalmic photography.

"Ophthalmic photography is a serious career possibility"

I greatly enjoyed the experience I gained at NJ Retina overall. It showed me what it was like to work in a clinical setting and it introduced me to real-life problems that medical photographers encounter on a regular basis. More importantly, however, it showed me that ophthalmic photography is a serious career possibility for me when I graduate, and I'm looking forward to it.





Above: Ophthalmic images taken by Harrison during his co-op at NJ Retina.

Samantha Chalut

Nikon Instruments, Inc.



This summer I did my co-op at Nikon Instruments Inc. in Melville, NY. Nikon Instruments is the microscopy division of Nikon Inc. I worked closely with the Bio-Marketing department as a Marketing Assistant Intern. The majority of my task work for the summer was helping to build a web-based cataloging system for all of Nikon Instruments products. I photographed a wide range of scientific equipment from the well-known microscope systems, such as the Eclipse system, to various parts that benefit scientific research, including lasers, fiber optics, and gas-mixers to name a few.

During this co-op my object-lighting skills were strengthened and solidified. When shooting Nikon Instruments products, it was very important for me to be able to adapt my lighting techniques to cater to various objects, and maintain a consistent lighting appearance from image to image. I was able to adapt techniques I learned during the Applications of Scientific Photography class to work with my studio set-up using multiple flash units.

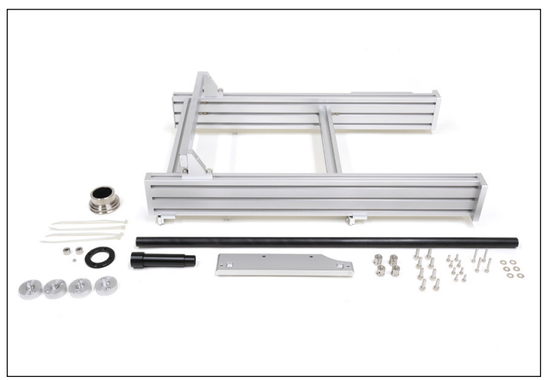
"[I helped] develop and design the Nikon Small World Competition 2014 Calendar."

The most interesting project I got to work on was definitely getting to help develop and design the Nikon Small World Competition 2014 Calendar. Be sure to check out the 2014 calendar when it is released this winter!

Overall I had a positive experience with Nikon. All my coworkers were awesome and always full of good advice that has further expanded my knowledge of photography. By the end of the summer I felt like part of the family. Altogether, I had a great experience with my co-op at Nikon Instruments Inc.



Above and Below: Nikon Instruments scientific products photographed by Samantha during her co-op.





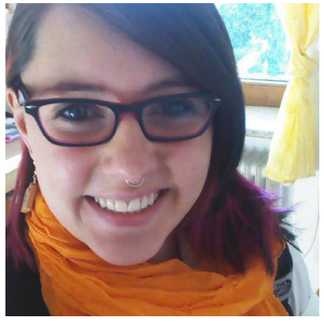
Co-op Abroad: Germany

For students who want to combine a great educational experience with world travel, a co-op abroad is a dream come true. It gives students the opportunity to work and live in another country, while gaining relevant experience in their field of study. Adrienne Sherman is currently living in Munich, Germany and working for Fogra, a printing industry service provider as a student co-op.

Image by Adrienne Sherman

Adrienne Sherman

Fogra in Germany

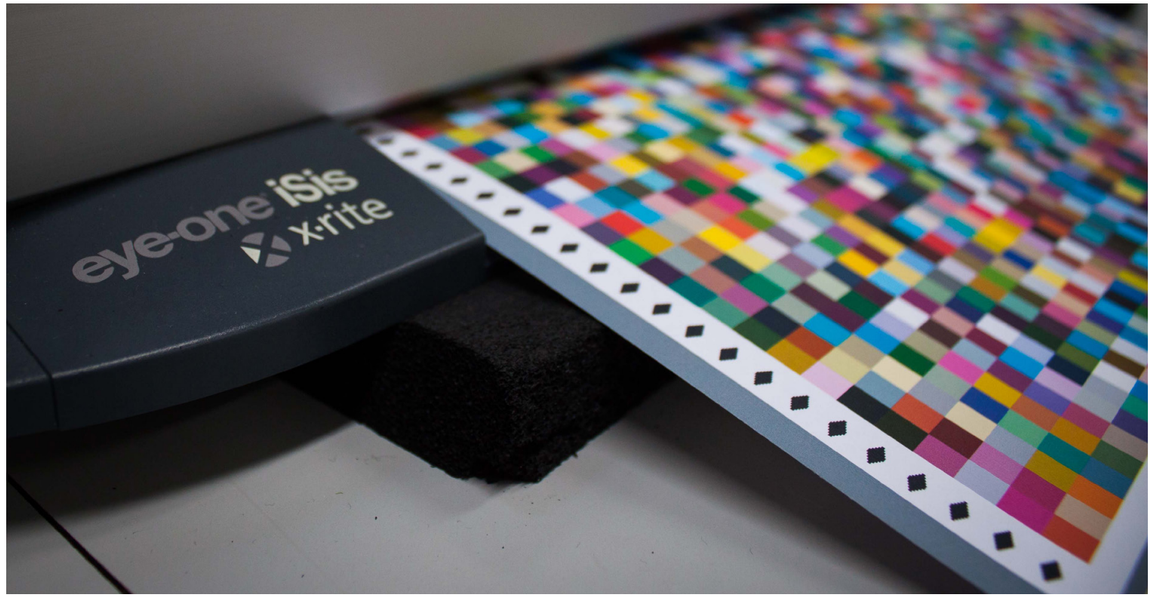


At one point or another, all college students are asked the same question, "What's your major?" When I respond with "Biomedical Photographic Communications," I get a lot of blank stares and confused looks in return. This uncommon four year program is loaded with unique classes, many of which have to be taken in a specific order. Taking that into consideration, one big question I had coming into this program was, with such a rigid curriculum, would I be able to study abroad?

I was told initially that students within this program do not normally study abroad. The classes for the program are specific, and unique to RIT, since it is one of the only programs of its kind. I was also under the impression that studying abroad would pose the risk of falling behind in course work, and possibly not graduating on time. Starting with my freshman year, I made sure to learn as much as I could about the classes I was responsible for and when I was expected to take them. By learning how the program was set up and taking as many classes as possible, my plan was to find a way to free up a term to pack up and take off. Studying abroad was an experience I did not want to miss out on, and I was determined to spend some of my college career out of the country.

"I decided that I couldn't pass up the opportunity"

Last year, I began visiting the study abroad office to learn more. I found there were no classes for me to take off campus that met the requirements of my core curriculum, which I expected. However, I was told that a few students in programs like mine managed to pull off studying abroad by fulfilling general education requirements. I planned to complete a concentration in liberal arts in Italy for the first fall semester of 2013. I met with the College of Liberal Arts to make sure that the credits taken abroad would transfer to RIT. I also met with individuals in the Biomed department to ensure my core classes could be taken in the sequence I planned. I then met with my academic advisor to map everything out to make sure I wasn't missing any details that could delay my graduation. Things were a little foggy with the upcoming conversion to semesters, but I felt confident that I could still finish my degree within the two years I had left.



Above: An eye-one iSis x-rite automated color profiling device that is used at Fogra. Image by Adrienne.

There was only one question left: how much would studying abroad cost? The price of the program I had chosen sent me on another trek around campus asking questions, this time to the financial offices. After a few more weeks of questions and number crunching, I realized that there was no way I could afford to go even with the jobs I was working. I was devastated.

At the end of the 2012-2013 academic year, I stumbled upon a co-op posting for a company called Fogra, in Germany. I realized that working abroad would be



Above: An ornate structure on the Berlin Lock Bridge in Berlin, Germany taken by Adrienne Sherman.

much more affordable and I could still get an international experience. Although the start date for the position was only a few weeks away, I decided it wouldn't hurt to apply, and I was quickly informed that Fogra would be unable to hire me for a summer co-op due to the amount of paperwork required to hire international interns. When I asked if they ever took fall interns, they asked me when I could start! I hesitated at first because students in the Biomed Photo program usually do not co-op during the academic year, for the same reasons they normally do not study abroad. I realized that it would be even more difficult to graduate on time if I took the position, as I would miss a whole semester's worth of classes. Ultimately I decided that I couldn't pass up the opportunity. I would double up on classes, overload on credits, take general education classes over the summer, whatever it was going to take; I was determined to go to Germany.

All of that work paid off, and I am currently at Fogra in Munich, Germany as a fall co-op student. Fogra is a German company that was founded in 1951. They participate in the research and development of printing technologies, printing standards and color management. Although the company is unique to Germany, they are internationally involved in the print and color management industries. Fogra holds and participates in international conferences and symposiums that shape the direction of the industry through an exchange of knowledge. They have an international member base, providing members with the latest research, discounted products, personal assistance and advice, as well as an internationally recognized certification of print quality.

The company is founded on four branches: research and development, consultancy, testing and control devices, committee work and standardization and knowledge transfer and further education. With teaching as one of Fogra's pillar objectives, they are well equipped to guide interns such as myself through the ins and outs of the printing industry with a hands-on approach. Interns are individually given relevant research projects to conduct. I am currently conducting research concerning the measurement of print quality and how it might be measured effectively without the subjective input of human observers. This involves a lot of research, tests to collect observer's opinions about quality as well as the measurement and analysis of many different paper and printer combinations. Statistical analysis of these results will indicate if there is a correlation between numerically measured image quality metrics and the images that observers find to have the best quality.

Working at Fogra has been a great experience thus far and I will be able to graduate on time without having to overload my schedule. I learned that with some persistence, a little hard work, and meeting with helpful individuals from my program, the curriculum can be molded to accommodate any student's unique or personal academic goals.

Interviewing Joe Territo

Joe is an award-winning ophthalmic photographer, currently employed at the Retina Associates of Western New York. His sports photographs of the Rochester Red Wings baseball team have been featured on the Major and Minor League Baseball's official web-sites. Territo is also an Adjunct Instructor of the Ophthalmic Photography course at the Rochester Institute of Technology.

Image by Joe Territo

Keeping His Eye on the Ball

Interview with Joe Territo



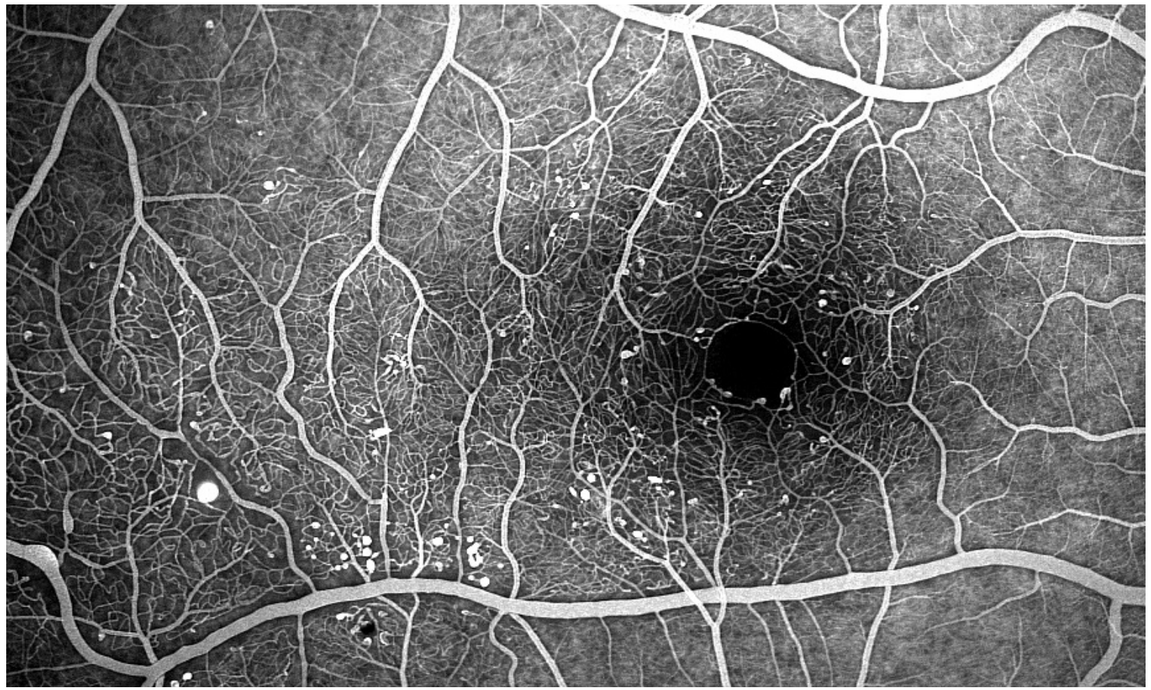
In addition to being adjunct faculty in our program, Joe is an RIT alum with a degree in Mechanical Drafting and Design. Although his career has taken him to a different field than he studied, he speaks about the highlights of his career path as a photographer.

Can you describe your career path?

My career path has not been a straight one. I didn't know it at the time, but it started in the operating room at Park Ridge Hospital. During high school and college, I worked various part time jobs in the hospital. After graduating from RIT's School of Applied Industrial Studies, I began to look for full time employment in mechanical drafting and design. During my job search, a full time surgical technician position became available at the hospital. I applied for it and got it, thinking it would be temporary. I began an extensive training program and quickly became fascinated by what I started to learn and see in the operating room. The idea of pursuing a career in [Mechanical Drafting and Design] started to fade. Initially, photography was something I did as a hobby; shooting on the weekends to relieve the stress of the operating room. The minute I learned that my passion for photography could be combined with my interest and knowledge of medicine, I knew I found my vocation.

Are there any skills that you feel overlap between ophthalmic and sports photography?

They are two completely different types of photography of course, but the one thing they have in common is the need to be able to anticipate what will likely unfold in



Above: A Fluorescein Angiogram of Telangiectasia, commonly known as spider veins. *Below:* Vergil Vasquez helps his team out by hitting infield drills during batting practice before an away game in Buffalo.





Above: Minnesota Twins' second baseman, Brian Dozier, takes a practice swing in Fort Myers, Florida.

front of the lens. Understanding the subject matter, whether it's a disease process like diabetic retinopathy or knowing that a speedy runner at first base, with no outs, is likely to try to steal second, is critical to capturing great images in both. These two types of photography rely on anticipation and timing. In ophthalmic photography, I'm always anticipating the dynamic flow of fluorescein dye through the blood vessels of the retina, for example. And in my work with the Rochester Red Wings, I anticipate and try to predict what the players on the baseball diamond are going to do before they do it.

What professional experience had the biggest impact on your career?

For my career in ophthalmic photography, I think working as a surgical technician and then later joining the Ophthalmic Photographers' Society, has had the greatest impact. As for my work as a baseball photographer, it would have to be networking and having a professional approach with fellow sports photographers, team front office staff members and editors.

What is one thing you wish you had done at RIT before graduating?

It's been over 30 years since I was a student at RIT, but looking back, I now know that I was going to the right college but I was in the wrong program. I wish that I would have explored what other programs RIT had to offer.

What is your favorite part about your job at Retina Associates?

There are a number of things that I enjoy about my work, but patient interaction is right at the top of the list. And as a photographer, being part of a team dedicated to preserving vision is also extremely rewarding and kind of ironic. I'm reminded daily not to take my vision for granted.

And your favorite part about Rochester Red Wings baseball?

Being able to document exciting moments and players and to think that hopefully someday my work will bring back memories for fans in the future, is exciting for me to think about. I'm a huge baseball history enthusiast and I have relied heavily on old photographs as primary resources for various research projects that I've been involved in. I have a special appreciation for the importance of photographs as historical records.

What advice would you give to students with various interests?

This might not be easy to do because there is a lot of diversity in professional photography. My advice would be to try specializing in one area while at the same time develop strong skills in any areas that may interest you. I would also advise students to seek out mentors from their fields of interest.

An Unseen Perspective

The Photographic Sciences program offers a distinct curriculum to students interested in the scientific and medical applications of photography. In addition to the core curriculum, students can choose from a variety of electives. One of the many unique courses offered by the Photographic Sciences department is Surgical Photography.

> **!**
>
> Images in this article are graphic and show real individuals undergoing real surgeries.
>
> Viewer discretion is advised.

Image by Jamie Kraus

Surgical Photography

A look inside the operating room

Jamie Kraus

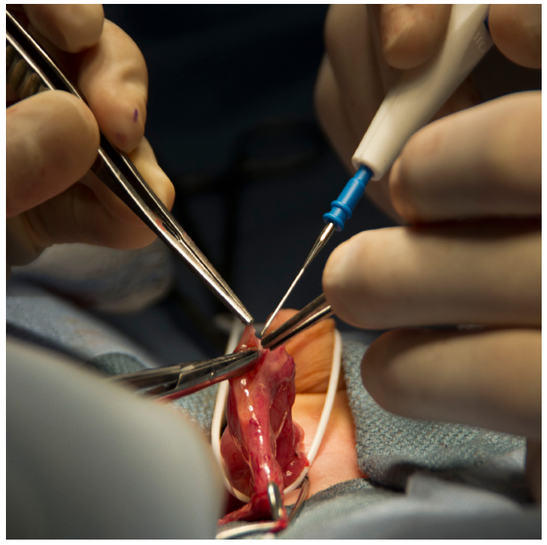
The Surgical Photography class gives students the unique opportunity to photograph patients undergoing various types of surgical procedures. The course is offered as a one-credit photography elective in the Fall and is taught by Professor Michael Peres in conjunction with Ralph Pennino, MD the Chief of Surgery at Rochester General Hospital. Students photograph numerous surgeries, up to four visits per semester, in the Rochester General Hospital operating rooms. Images are then critiqued in class during the following week.

The class provides students with experience working in the medical industry as well as working around other professionals in sensitive environments. Spending time in the operating room introduces students to surgical protocol and standardization techniques. This knowledge is very useful when working in any area of the medical field. The class also gives students an introduction to Health Insurance Portability and Accountability Act (HIPAA) protocol and can prepare students for navigating legal issues in the field of medicine.

Working with patients is another skill that can be learned through the class. Treating patients with discretion and respect is just as important the images. This includes making sure the patient is comfortable at all times, avoiding photographing sensitive areas unless it is absolutely necessary, and treating patients humanely whether they are conscious or not.

Equipment is also something that needs to be taken into consideration when photographing surgeries. Surgical photography must be as close as possible to a true and honest representation of reality. The images need to be color corrected, well exposed and with minimal warping or aberration.



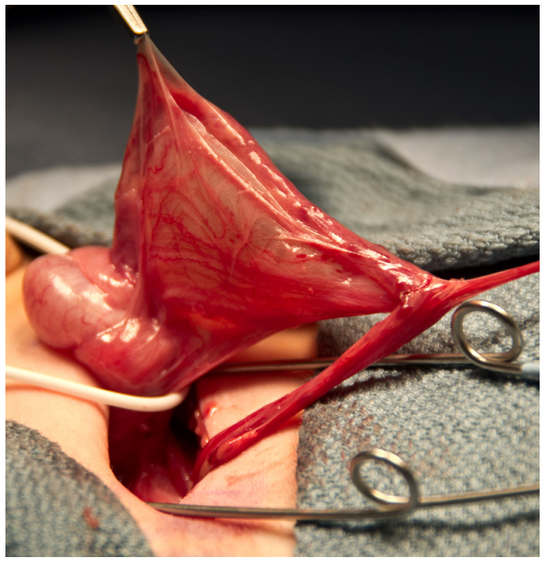




Above: Medical professionals prepare for surgery. *Bottom Left:* A view from a pediatric surgery. *Bottom Right:* Instruments used for surgical procedures.



Above: An amputation procedure in progress. *Below:* Another view of a pediatric surgery.



In the surgical field, there is an incredible exposure range between the overhead and surgical lights. There is generally a difference of about 5 or 6 stops between the areas, which makes it impossible to properly expose for both in the same frame. Shooting with an external flash or ring flash will ensure even, consistent exposure. Using a macro or a flat field corrected lens will eliminate lens distortion. Alternatively, students can shoot without flash and allow the background to fall to black thus isolating the subject. This unique lighting situation during a surgery can prepare students for various fields of photography, such as performance or studio photography.

Students taking the class should experiment with different camera brands and white balance settings to determine what combination they can use to achieve color accuracy. This is especially important since reds and yellows are dominant colors in the surgical field but difficult for most cameras to properly reproduce.

What would a typical OR visit be like?

After signing up for a surgery on the class calendar, the student would arrive at the hospital before the operation begins. They would use their ID card to get into the staff locker room and change into scrubs. They would then find the room number of their assigned surgery. After putting on a face-mask and checking to see that the patient and medical staff are all settled in, they enter the operating room. Students must write their name on a white board and photograph another board that identifies the surgery. Students should introduce themselves and ask the circulating nurse where to put any extra photo equipment. They may then begin to photograph the surgery, equipment and medical staff. Students must be very careful and conscious of their surroundings when photographing surgeries. They have to stay out of the way of the nurses, avoid bumping into any equipment or people and most importantly, not touch anything in the sterile field (the area draped in blue, surrounding the surgical site).

When students are done photographing, they return to the locker room to change and gather their things. Before leaving, they must place their memory cards in a labeled envelope and leave them with Dr. Pennino. The cards will be returned, cleared and formatted at the next class meeting and images that pass HIPAA regulations are given back to students at the end of the semester. Students will leave the course with new knowledge of the medical field and portfolio pieces they can be proud of.

Holiday Wish List

With so many new “toys” and helpful accessories constantly emerging on the market for photographers, it’s hard to keep up with all of them, let alone choose five top picks. We’ve managed to put together a list of products we think are worth looking into this gift-giving season, featuring our first choice, a new smartphone-friendly product called Triggertrap.

Image by Jamie Kraus

PSB 2013 Wish List

Meet our top pick: Triggertrap

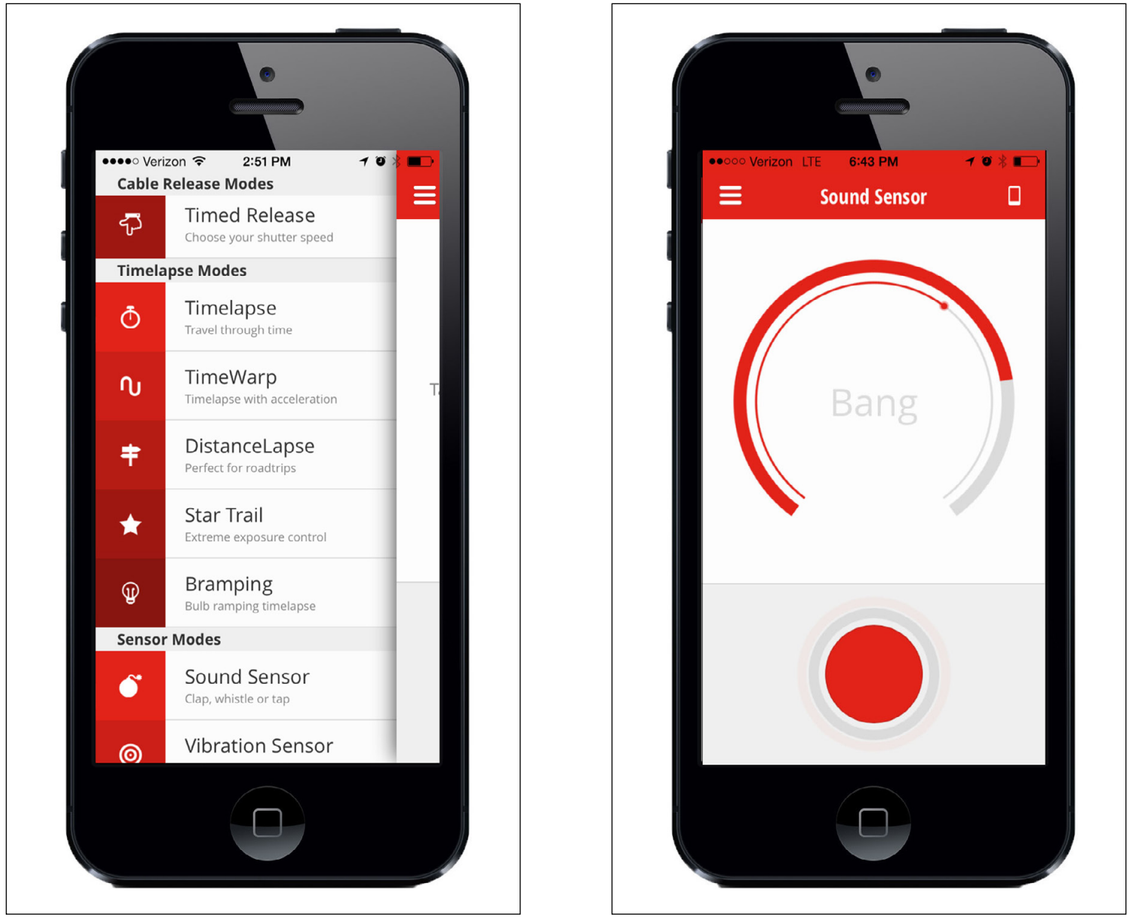
Shannon Wright

Photographers of all kinds are always looking out for the latest gear. With the growing presence of smartphones, photographers are starting to find that the technology in their phones often create overlaps between phone and profession. Apps can provide almost anything ranging from model releases to light meters, and one company is taking it to another level by allowing photographers to trigger their DSLR with their smartphone.

Triggertrap, Ltd. a company based in the UK, took an innovative leap in the relationship between smartphones and photographers by making a direct link from phone to camera. Their product, self-named, uses a dongle to connect your iOS or Android device to your DSLR. The app, available free for download, offers users several different options of remote firing from your phone once connected with the dongle. Some of the options within the app include various shutter release triggers that fire the shutter of your DSLR from the touch of a big red button, in lieu of a traditional cable release.

The Triggertrap device and app duo allows photographers to completely customize a shutter release system. A precise delay or length of the exposure can be user programmed, as well as two different kinds of self-timed bulb exposures. The app also includes different programmable releases for several situations, ranging from traditional Timelapse mode to "DistanceLapse," which fires the shutter at a set distance interval. Another unique setting includes "Bramping," which uniquely blends timelapse and star trail settings. Even further into the app are more interesting features, including sound and vibration triggers and a Wi-Fi remote setting. These triggers do exactly what their names suggest; the sound trigger uses your phone to "listen" for a set sound level to release the shutter, and the vibration utilizes the accelerometer in your phone to trigger the shutter after a vibration or movement of your phone. Both sound and vibration triggers have sensitivity settings that can be customized by the user. The Wi-Fi Slave option can be used with two smartphones; one phone is connected to the DSLR via the dongle, while the other is used to wirelessly set off the shutter.

> "Triggertrap [creates] a direct link from phone to camera."



Above left: The menu options for the Triggertrap app. *Above right:* Triggertrap's sound sensor in action.

In this single app there are an overwhelming number of functions (many of which were not mentioned!) that allow for a unique customizable shutter release system. We found three prominent uses that brought Triggertrap to the number one spot on our wish list:

Vibration Reduction

Use: Simple Cable Release, Timed Release, Wi-Fi Slave

High Speed

Use: Sound Sensor, Vibration Sensor (Note: Test these triggers with different sensitivity levels. We found that these settings can affect the trigger precision considerably if the sensitivity is too low or too high.)

Time Lapse

Use: Timelapse, DistanceLapse, Star Trail, TimeWarp, Bramping

Note: The PSB was not paid to review or test any of these products.





More Gifts for Your Inner Photo Nerd

OutdoorTech Waterproof Case

Since all photographers have photographed in the field (literally, in fields, streams, the ocean, you name it), we thought this inexpensive version of a waterproof case might come in handy. *(Pictured at left)*

Click to View OutdoorTech Case online

$50

Sony QX10 Lens-style Camera

A new lens-camera by Sony eliminates the camera body from the lens by placing a camera sensor in the lens itself. For users with a smartphone or tablet, a 'live view' option is available over Wi-Fi. An alternate option features Zeiss elements.

Click to View Sony QX10 online

$250

Optrix Waterproof iPhone Case

If you want a case that can dive up to 33 feet, you may want to check out Optrix *(Pictured at left)*. In addition to waterproof cases, they also bike and chest mounts, as well as underwater lenses.

Click to View Optrix Case online

$150

Carson Optical MicroMax Lens

Okay, maybe you shouldn't shoot your assignments with this one, but how awesome is a tiny, portable microscope lens for your smartphone? Available for iPhone and Andriod devices.

Click to View MicroMax Lens online

$25

Visualizing Vinyl

The preservation of historical documents and artifacts is important, and audio is no exception. There are hundreds of songs and sounds recorded onto historical cylinders and disks in public archives. Cylinders and disks have been made out of many materials over time, including rubber, tin foil, vinyl and glass. Due to the age and delicate state of these objects, the content is unable to be played; However, a new 2D/3D reconstructive technology by the name of IRENE is making it possible to hear this audio once again.

Image by Nancy Deters

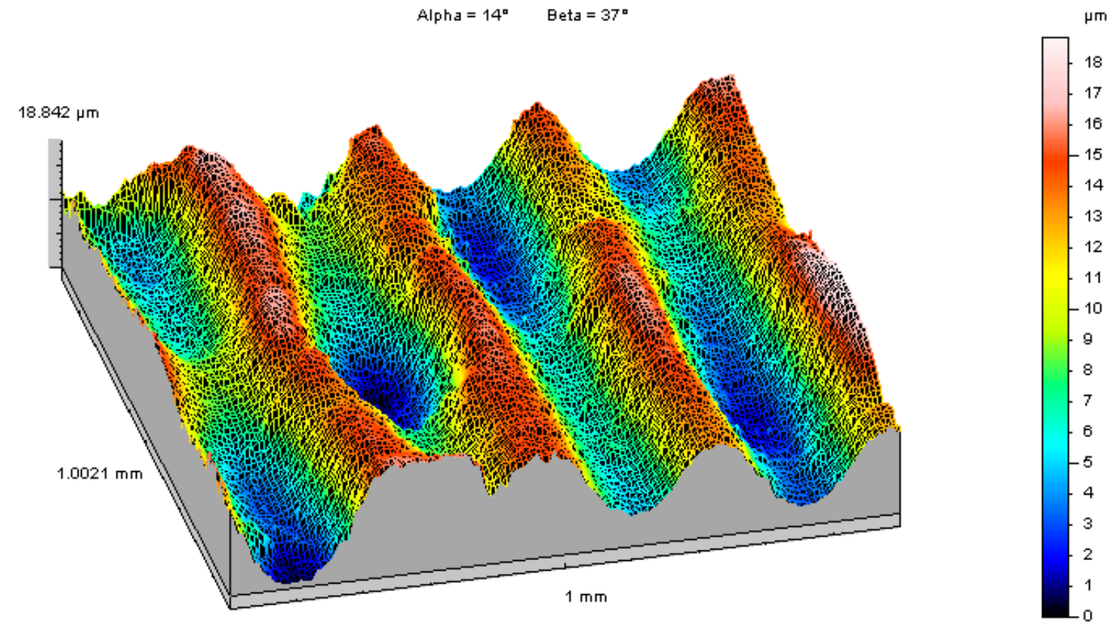
Introducing IRENE

Restoring sound with imaging technology

Erin McIntosh

Preceding the digital age, audio was recorded on “mechanical sound devices” such as cylinders and disks, each being made from a variety of materials. Over time, these cylinders and disks break, deteriorate, or are in too fragile a state, so the contents can no longer be played. In terms of historic preservation, this is not an ideal situation. In a study done in 2010 by the Library of Congress, American archives showed that public organizations and libraries collectively hold about 46 million audio recordings (via Library of Congress website). A large portion of these recordings are said to be in poor or broken condition, meaning the recorded contents can no longer be played. The developers of an innovative technology called IRENE/3D are taking the initiative to bring the sounds on these deteriorating devices back to the ears of the public.





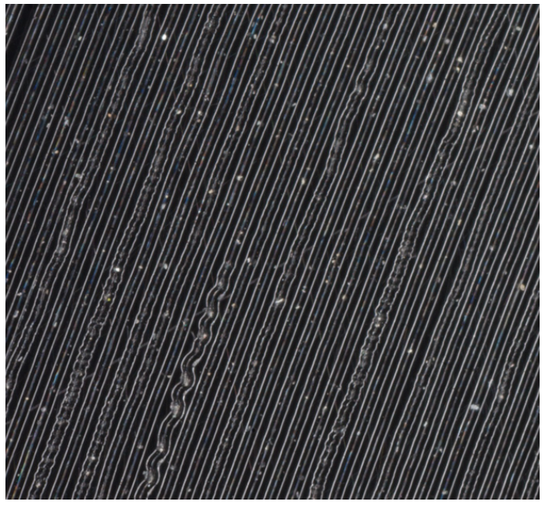
Above: The area shown is a high magnification topographic map of the surface of a wax cylinder record. The map area shown is exactly 1mm² in size. (Image via Institute of Museum and Library Services Official Blog)

IRENE (Image, Reconstruct, Erase Noise, Etc.) is a non-invasive system that uses 2D optical scanning to recover sound data from historical disc and wax cylinder recordings. IRENE does this by greatly magnifying the surface grooves of the sound device without actually touching it. The software then combines the 2D images to create a 3D digital map of the cylinder or disk and then processes these images into a digital sound file. Since this procedure never touches the subject, it allows for damaged records or cylinders to be digitally reconstructed, and once lost content can be heard again. Since its creation, IRENE has been successfully tested on a multitude of sound recordings at the Library of Congress, and was used to retrieve a 130-year-old audio recording of Alexander Graham Bell.

Up until now, IRENE’s applications have been used mainly for research, and small project applications. The next step is to utilize the innovative technology for public use. An independent document conservation laboratory by the name of Northeast Document Conservation Center (NEDCC), is working to make a consumer-based application of this technology a reality.



Above: Vinyl records photographed by Shannon Wright. *Below:* High magnification image of a vinyl record by Nancy Deters.

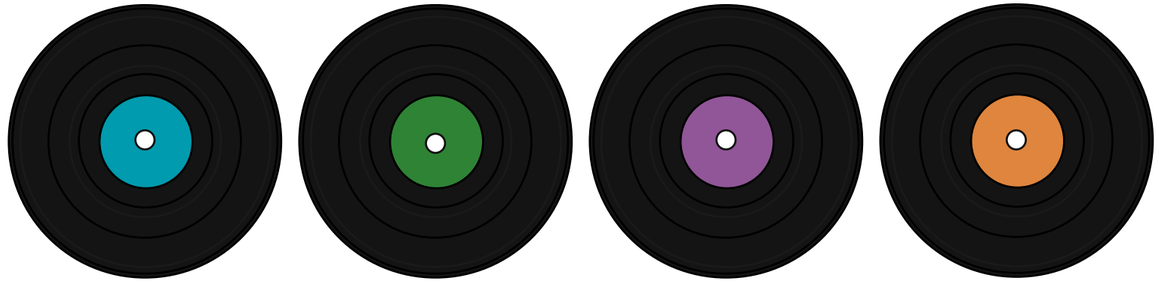


Recently the NEDCC was given the $250,000 National Leadership Grant from the Institute of Museum and Library Services. This grant was awarded to NEDCC to work alongside Lawrence Berkeley National Laboratory, home of IRENE's developers. The project will be managed mainly by a few individuals; Tom Rieger, the director of Imaging Services at NEDCC will manage the project along with Dr. Carl Haber, senior scientist at Berkeley Labs, recent Genius Grant recipient and one of the original creators of IRENE. Together these two groups will take the basis of the IRENE technology and develop and test a new digital reformatting service for early mechanical sound carriers and their contents. They are hoping to publicly release this service in the spring of 2014.

One of the primary goals of the grant project is to shift the initial IRENE technology from its lab environment into a new sustainable and affordable digital recovery service. This user-friendly service will be provided for libraries, museums, and archival facilities so they may reconstruct recordings from their cylinder and disk collections. A few facilities such as the Carnegie Hall Archives and Middlebury College in Vermont will be lending broken disks and cylinders to be used during testing of the new developments. Middlebury will provide an estimated 200 wax cylinders and over 1,000 records from their Helen Hartness Flanders Ballad Collection. Carnegie Hall will also allow access to a collection of lacquer disks that contain recorded performances conducted within their facilities over the years.

The preservation of historical items is necessary for appreciating and learning about the past. With advances in the world of technology, it is easier to permanently preserve an array of historical artifacts. Paper documents can be scanned or photographed, and now, contents of old cylinders and disks with important or commemorative recordings can be digitally recreated. With IRENE's unique combination of 2D and 3D digital images, it is possible to create an audio file that can be saved, shared and easily stored for years to come. Across the nation and around the world, there are large archives of vinyl disks and wax cylinders with audio recordings that run the risk of being lost to the ears of mankind. With the help of the IRENE technology, these recordings will be heard once again.

To hear audio samples digitally reproduced by IRENE, click the records below:



Sound clips courtesy of newscenter.lbl.gov

Student Gallery

Traditionally, every Bulletin has included a gallery of student work. In the past, these galleries have strictly included still images, but this year we are continuing the recent addition of a video gallery. We have chosen images and videos that show a variety of work from our program, including medical, ophthalmic, nature and high magnification images as well as students' personal work. We hope that you will enjoy these highlights from our program as much as we do.

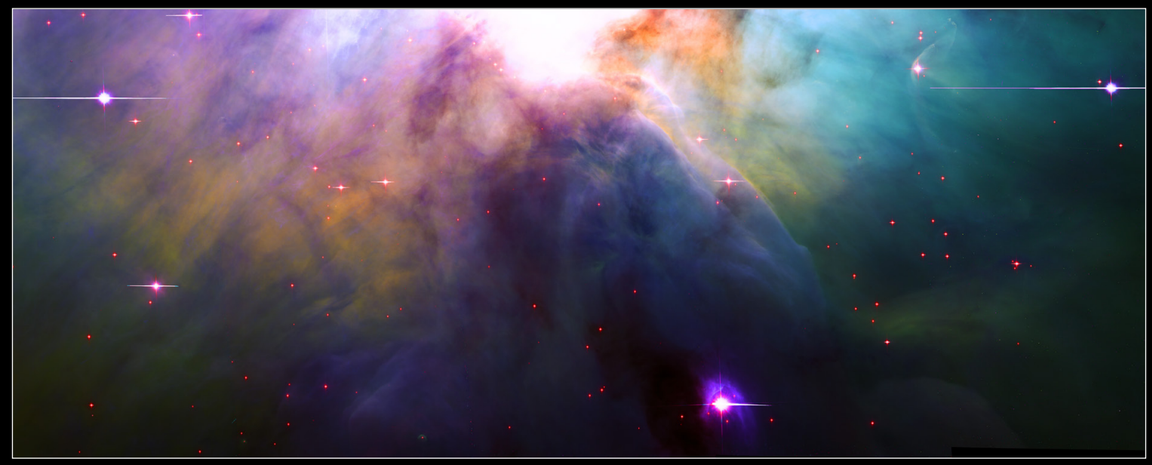
Image by Zach Pezzillo



Jace Artichoker



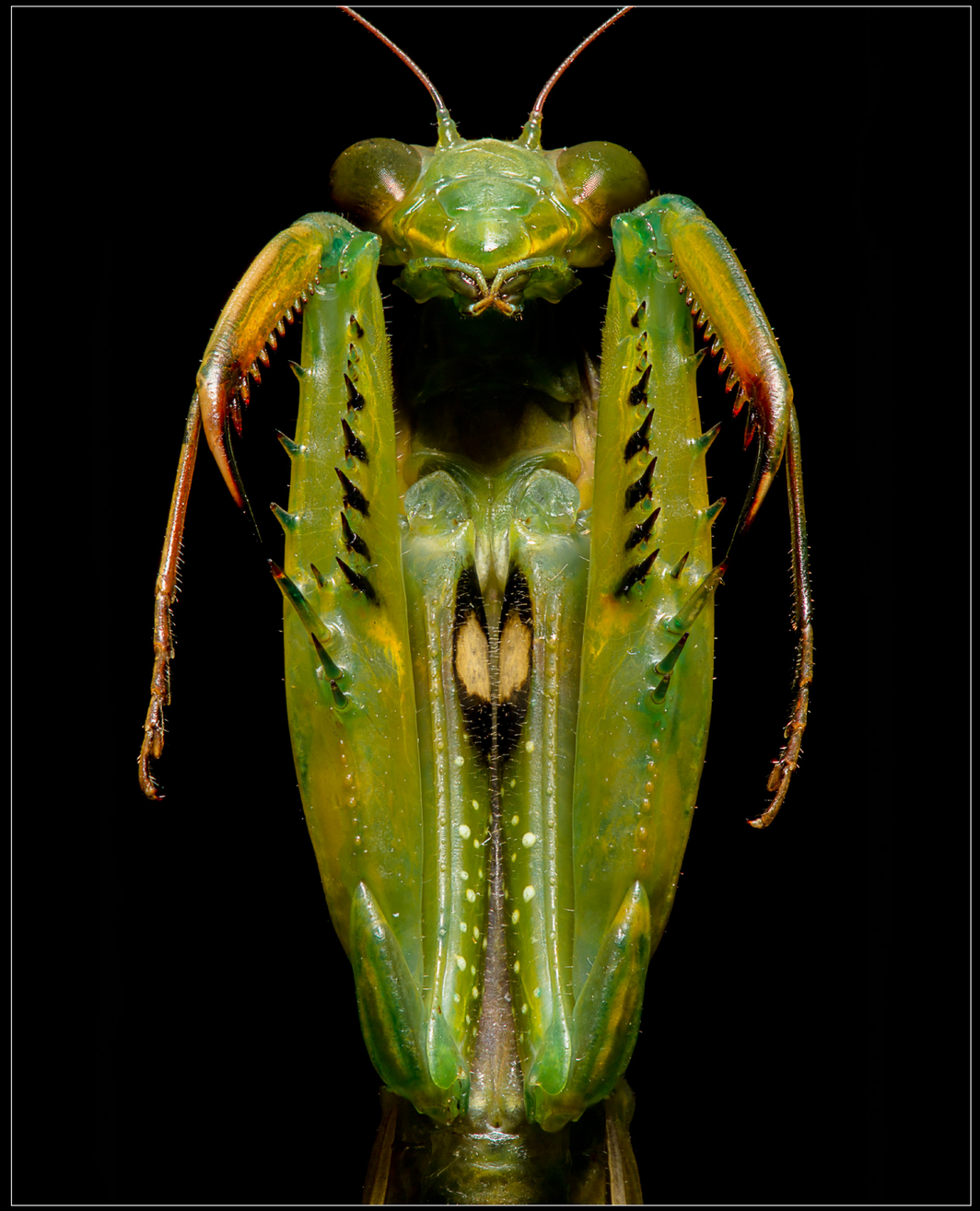
Jamie Kraus



Colorization by Joseph DeMartino (Image from ESA/Hubble)



David Beyerlein



Jace Artichoker



Lindsay Quandt



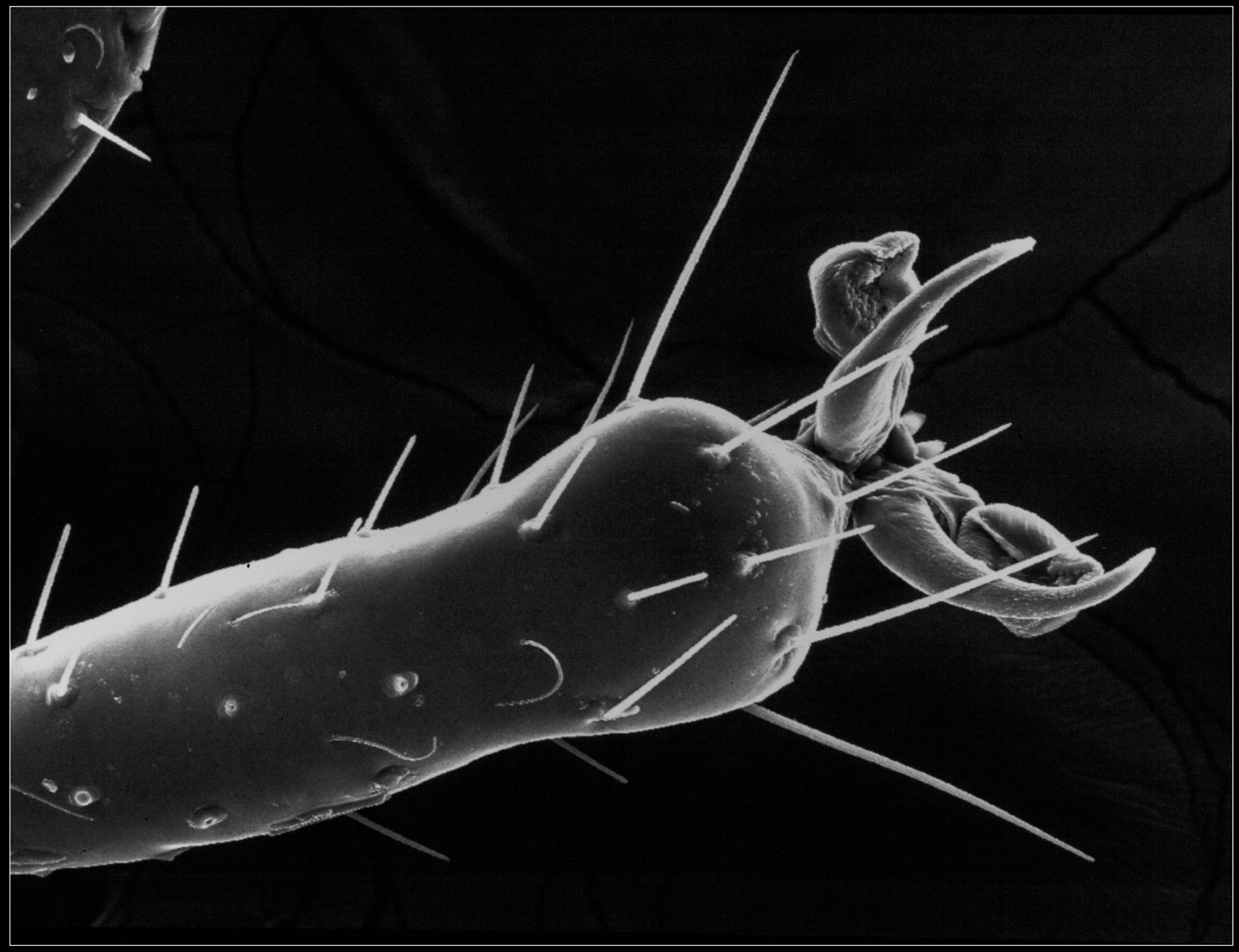
Jordan Briscoe



Evan Darling



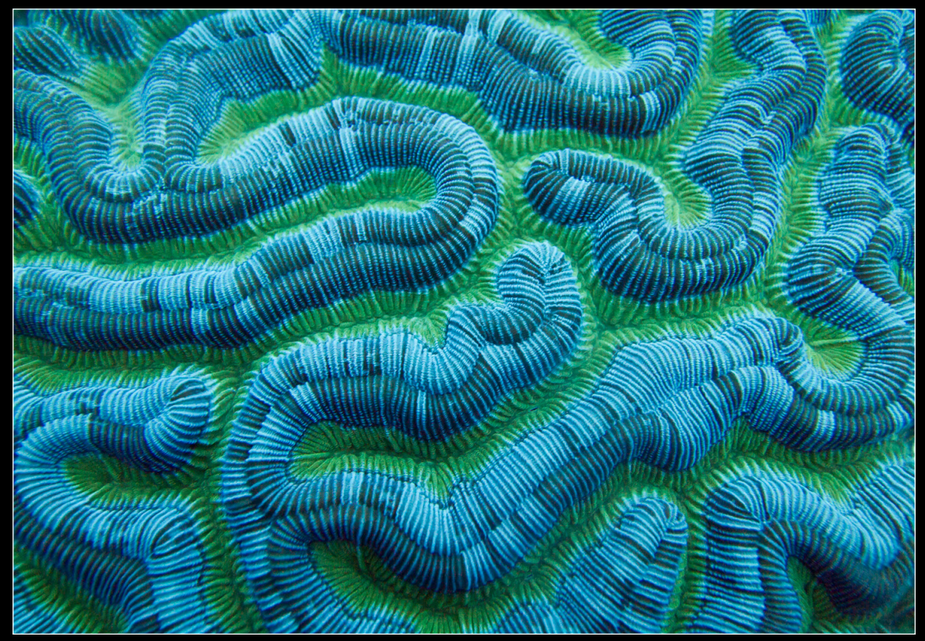
Milena LaFranca



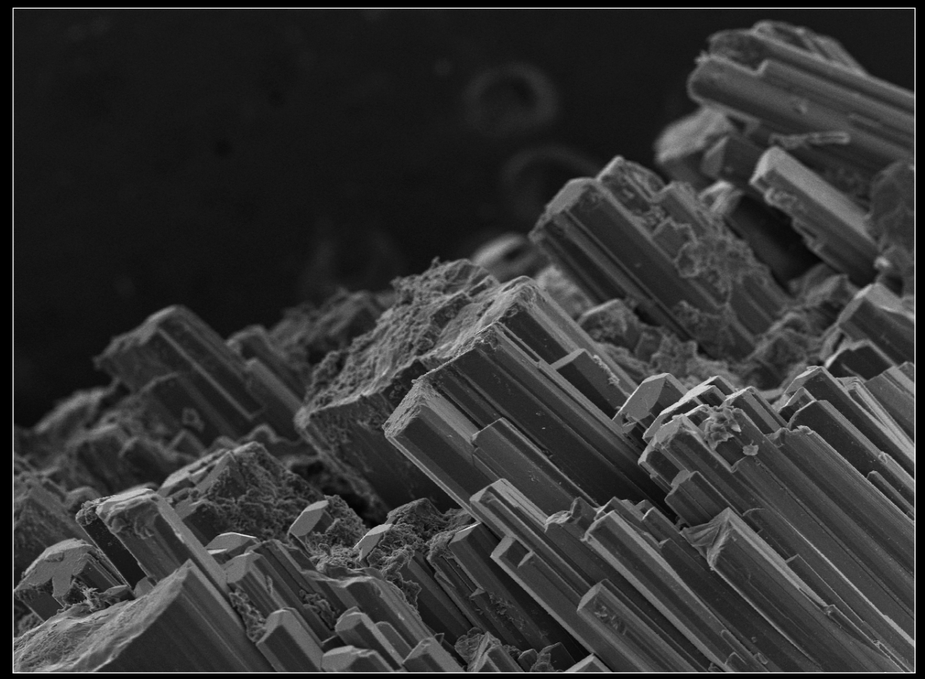
Lia DiRico



Erin McIntosh



Nick Neumann



Erich Fiederer



Zach Pezzillo



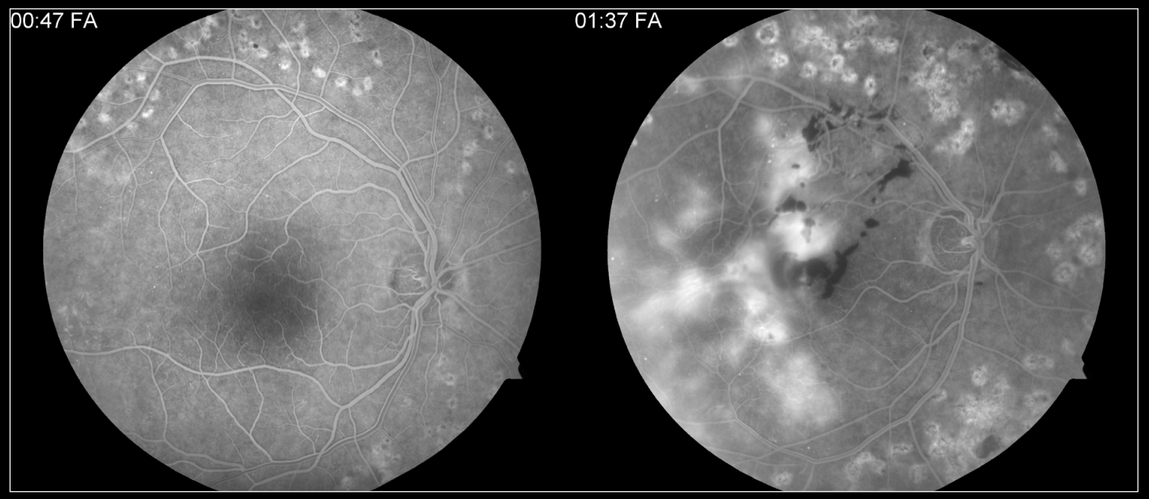
Milena LaFranca



Marissa Masek



Jordan Briscoe



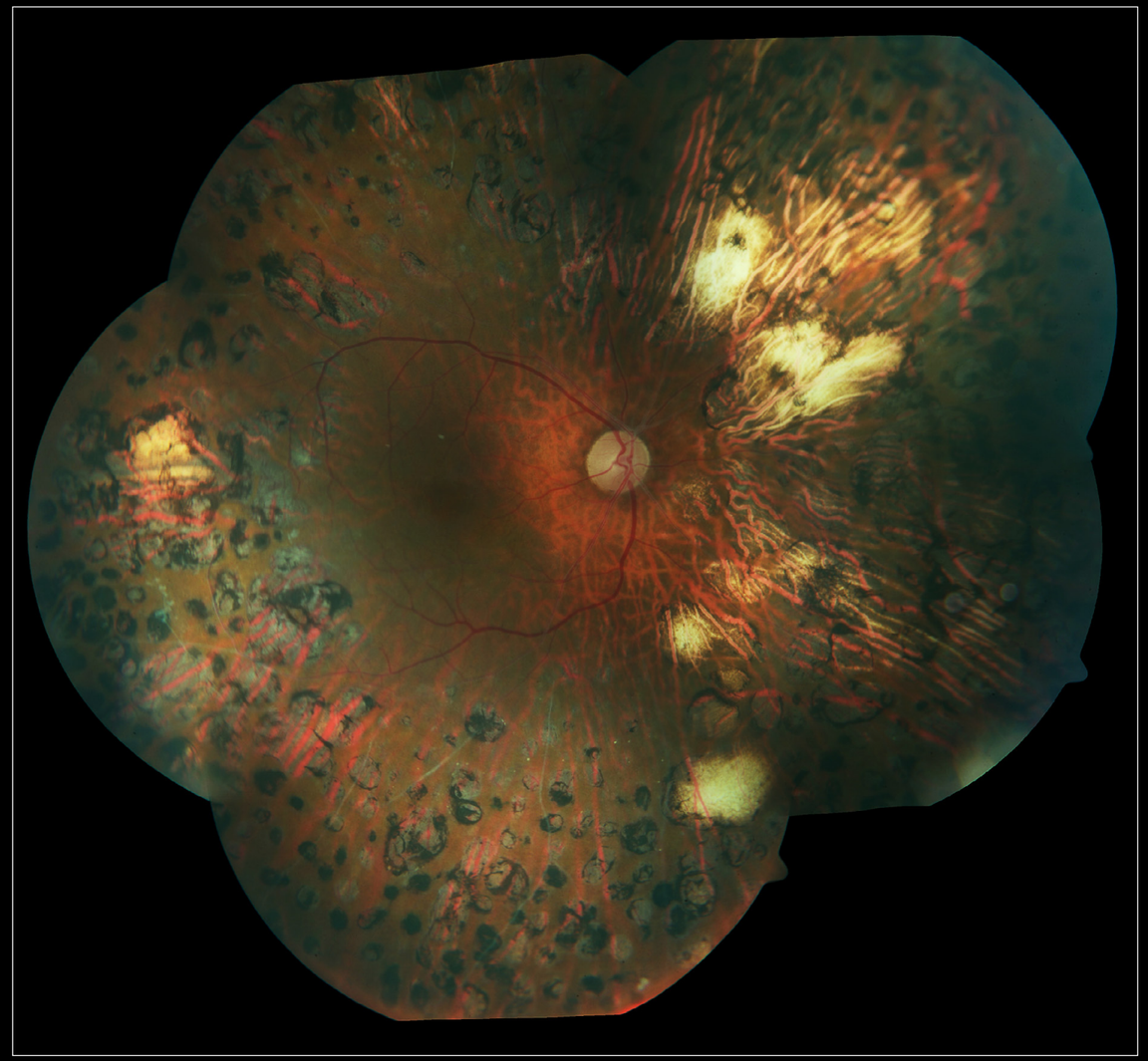
Katie Lachut



Maddie Becker



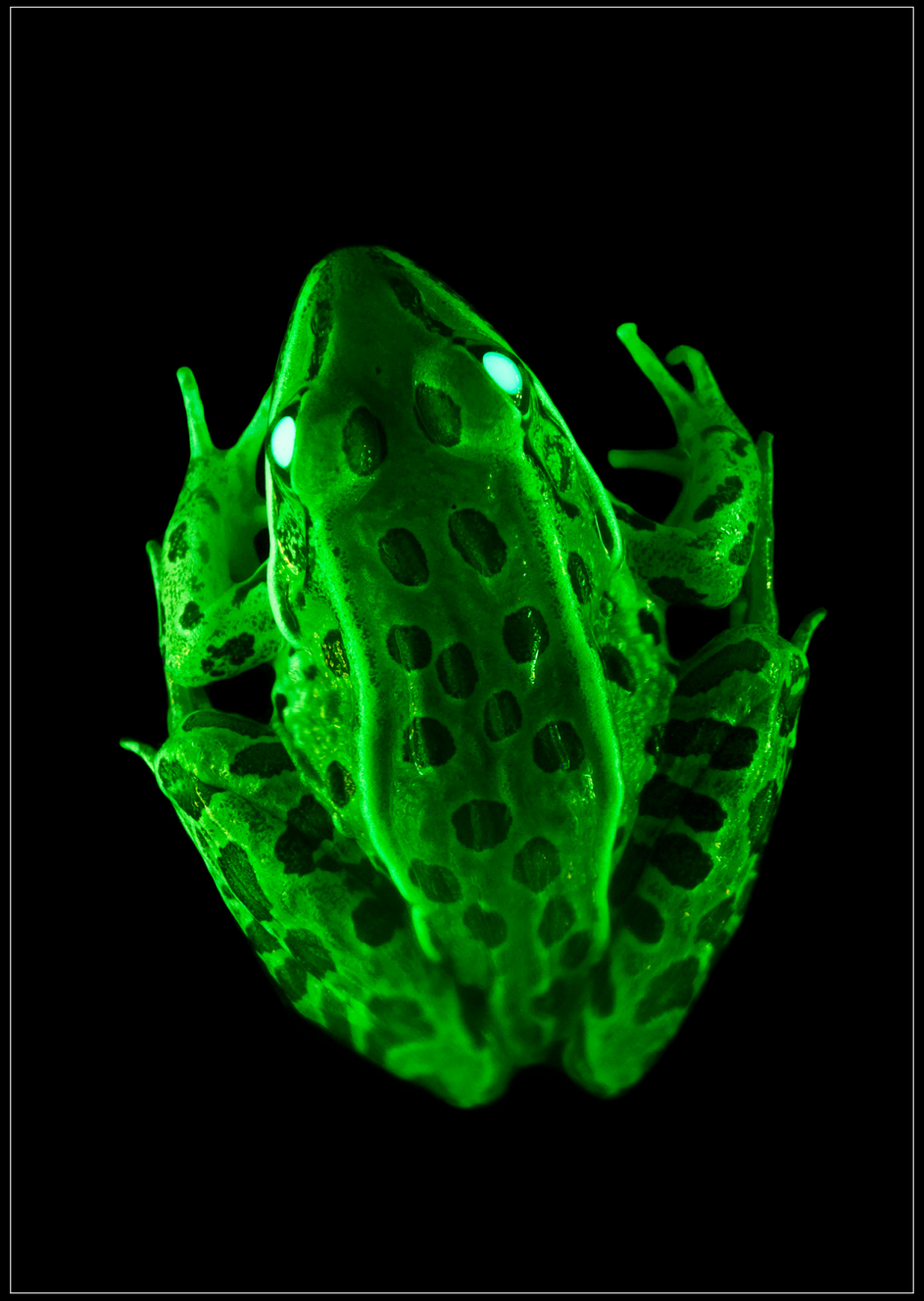
Milena LaFranca



Katie Lachut



Nancy Deters



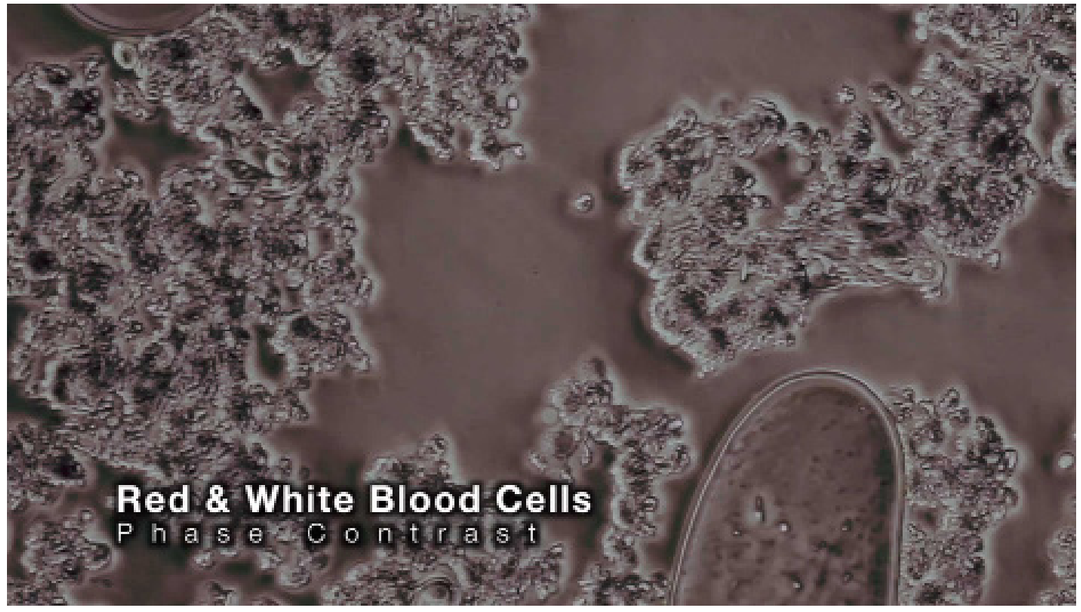
Maddie Becker

Video Gallery

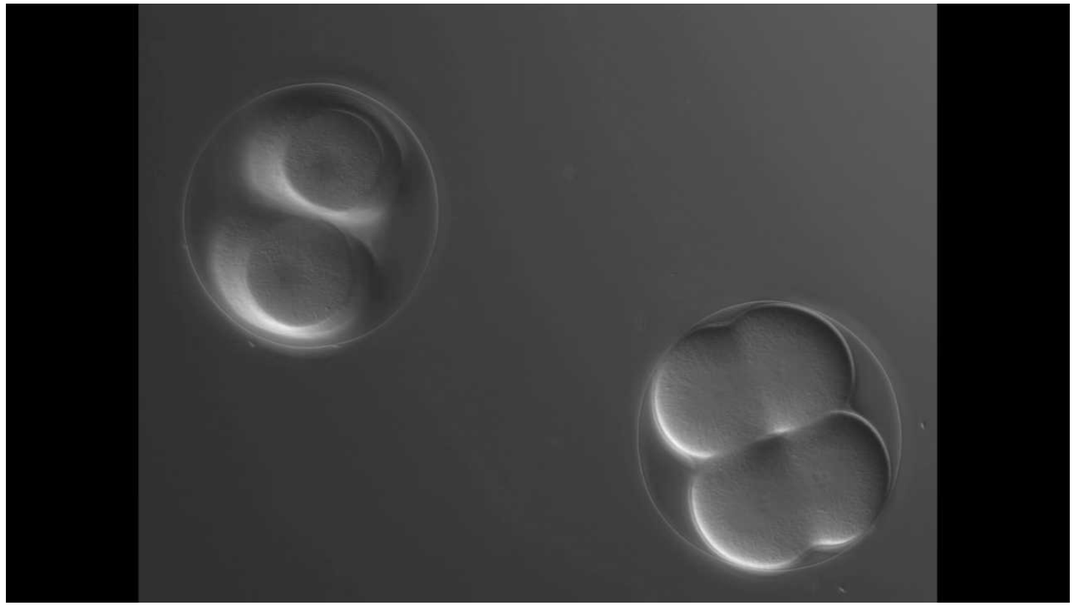
Click each image to view the selected videos.

These videos, captured by students in our program, highlight scientific photography in motion.

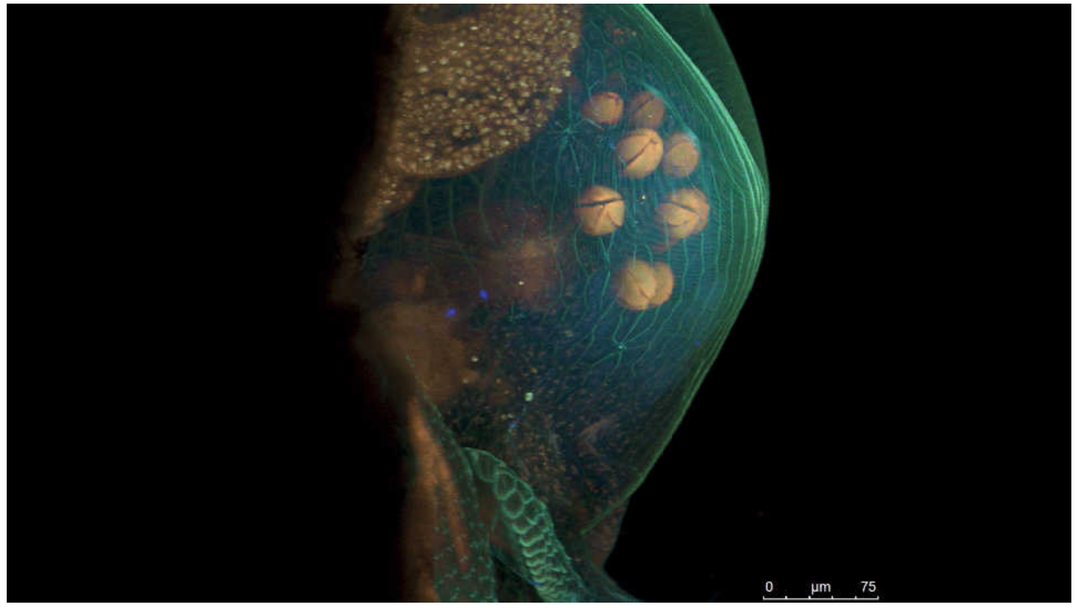
Note: The latest version of Adobe Reader or Flash plugin for Acrobat must be installed to play videos.



Milena LaFranca



Evan Darling



Steven Wilbert

Photo Sciences Club Events

Images by David Beyerlein



Students and alumni play video games in Tech Alley during the first annual Game Night.



Students set up for the High Speed class.



Lindsay Quandt at RIT Photo Day.



Students at a Photo Sciences Club vs. National Press Photographers Association Bowling Night.



Ryan Harriman, CIAS College Delegate and BPC graduate at RIT Commencement 2013.



Students and faculty pose for a group photo at the 2013 Spring Picnic.

Thanks & Contributors

Allison Forlenza
Art Papier, MD
Bill Bond
Bill Fischer
Capt. Eddy Kraus
Christye Sisson
Dave Gallagher
Don Drake
Elizabeth Reeves-O'Conner
Frederick Dushay, MD
Helena Vieira
Jason Faulring
Jay Packer, MD
Jim Bashant
Jim Fosse
Joseph Territo
Josh Shagam
Julie Martin
Keith Mancini
Kenny Patterson
Lisa Vasaturo
Lynne Tsang
Mara Goldberg
Mark Sowa
Matt Carnavale
Michael Peres
Michael Turano
Nathan Pallace
Noah Cohen
Norman Koren
Paul Crompton
Rachael Gootnick
Rachel Hollar
Ralph Pennino, MD
Robert LaTorre
Ron Goldberg
Sarah Moyer
Susanne Loomis
Ted Kinsman
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Tim Steffens
Tom Rieger
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Canfield Scientific, Inc.
Carl Zeiss Meditec Microscopy
Carl Zeiss Meditec, Inc.
Flaum Eye Institute at Strong Memorial Hospital
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Imatest, LLC
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University Hospital of Whales
Xerox Corporation
Optrix, Inc.



Image by Andrew Kempchinsky