RESEARCH?

But I'm an

Artist

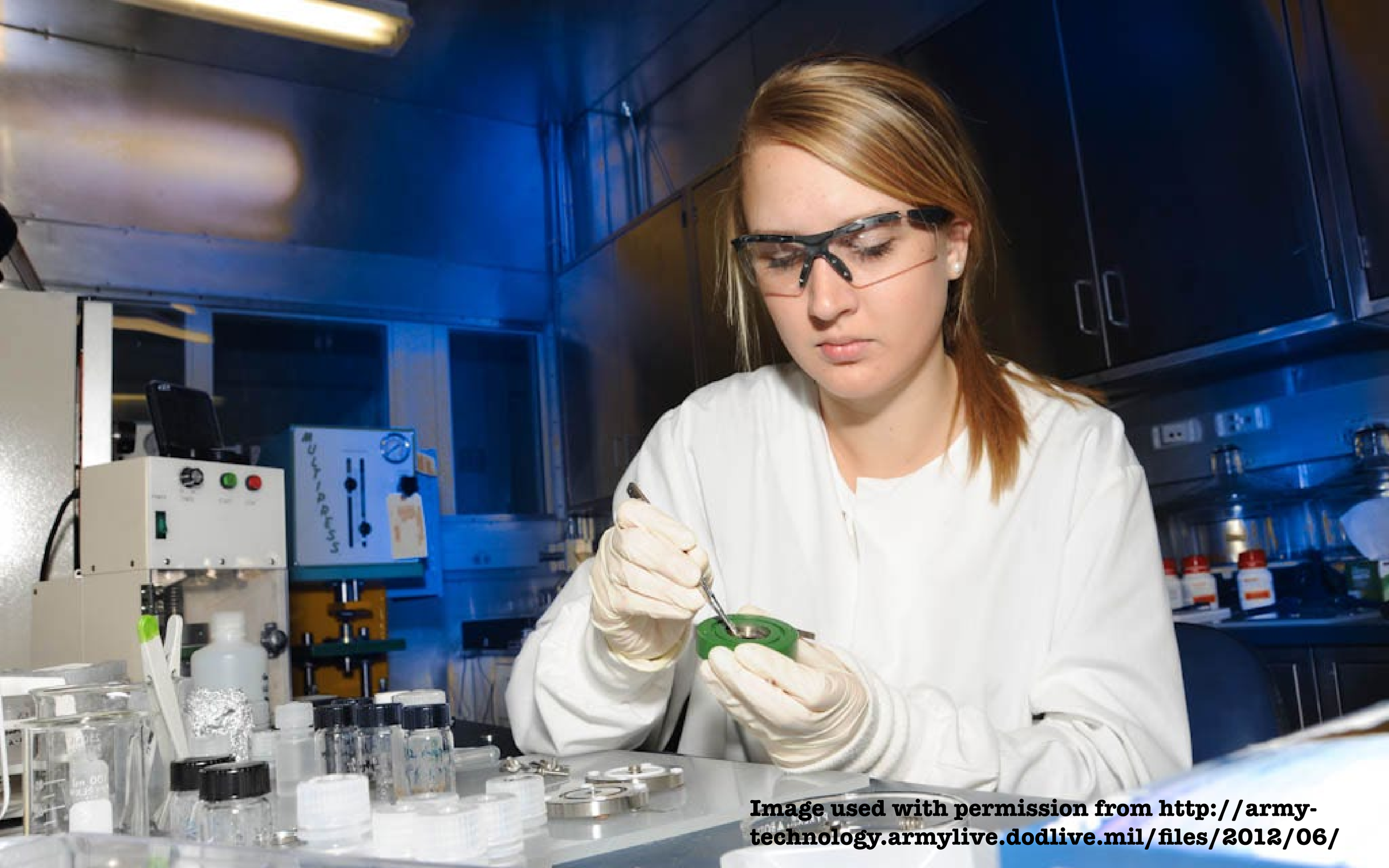


Image used with permission from http://army-technology.armylive.dodlive.mil/files/2012/06/

Importance of research

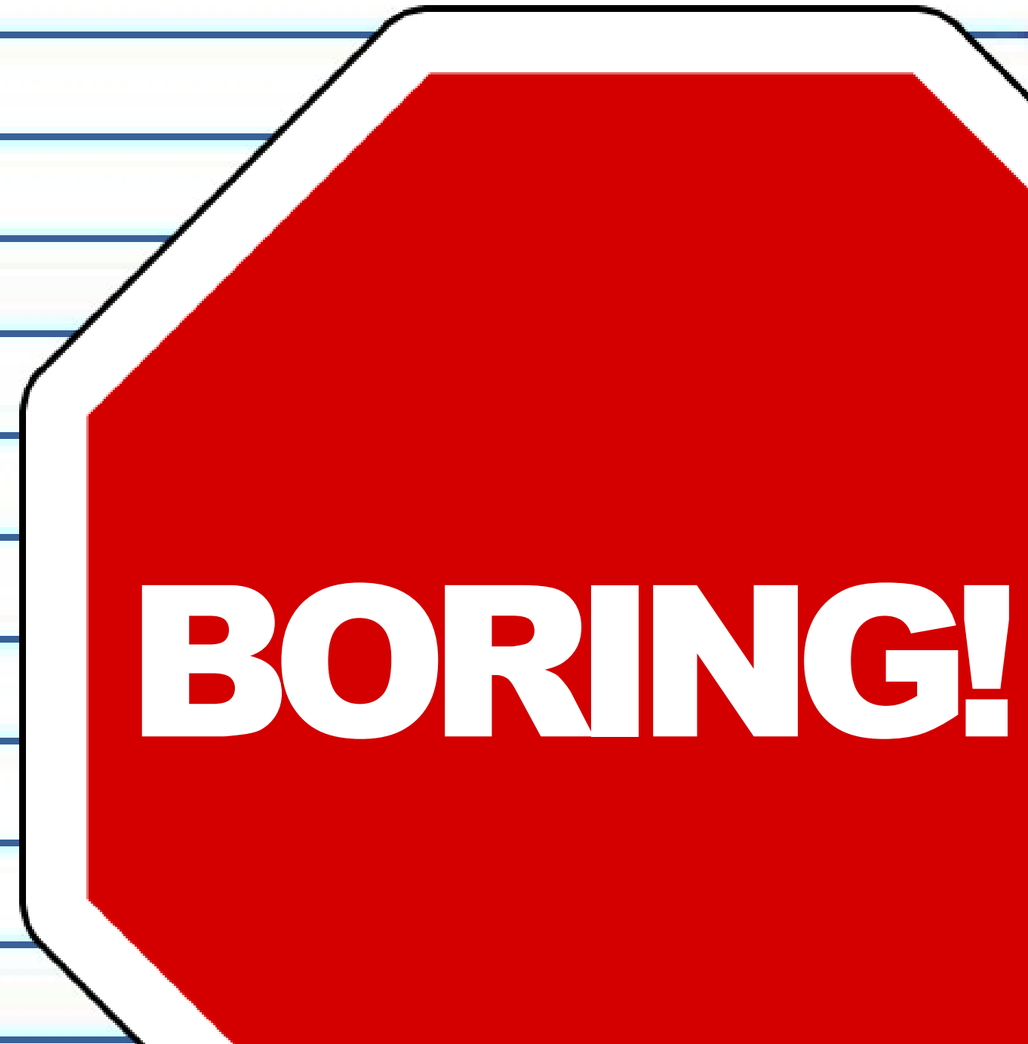
professor and student

- New Discovery
- Push Limits
- Personal engagement
- Tenure & Promotion
- Recognition

Roadblocks to research

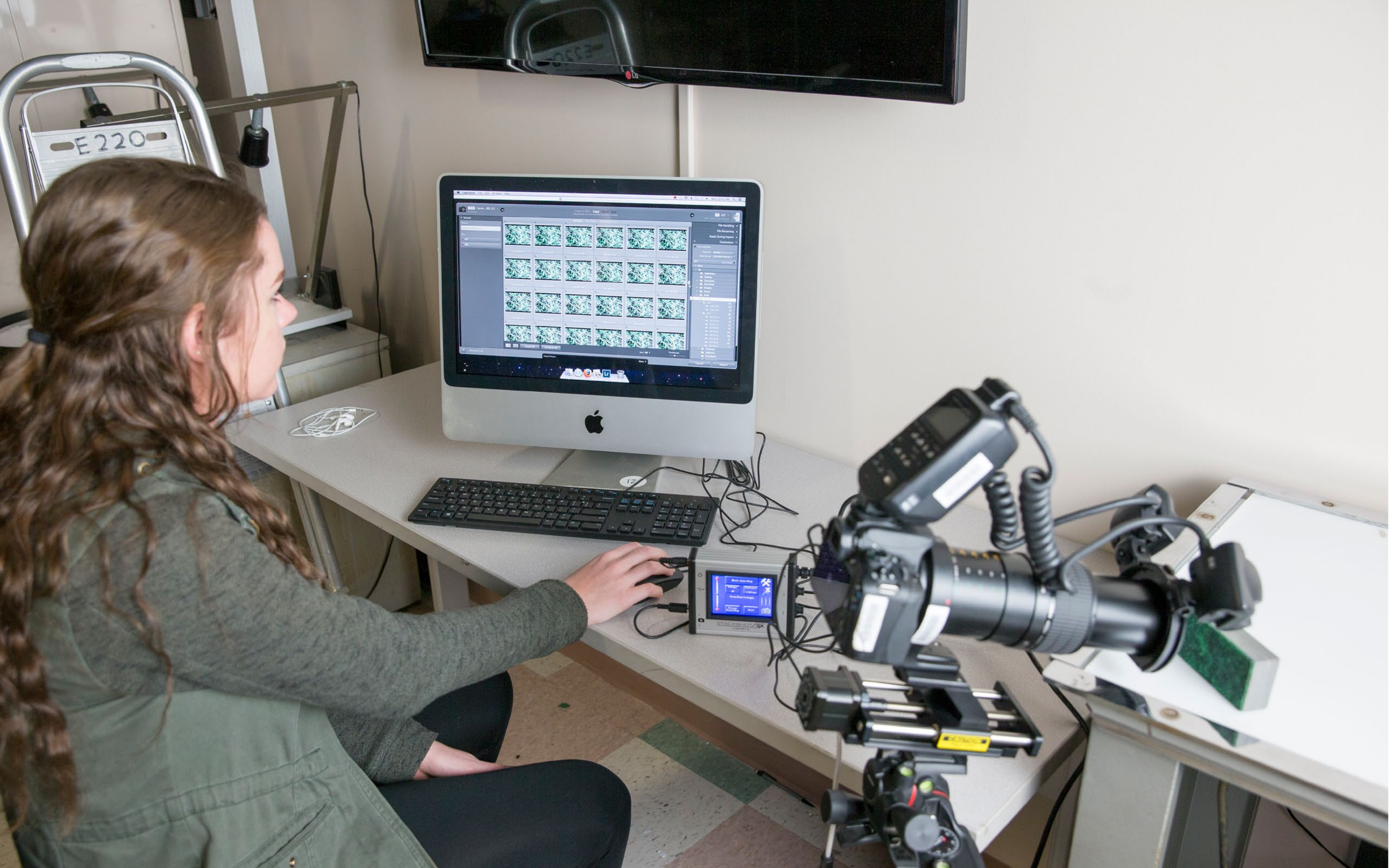
professor and student

- Not enough time!
- Perceived Difficulty
- Perceived enjoyment
- Funding



Solutions

- Clarity - What is research really?
- Sneak Attack (don't let them know!)
- Show value and rewards
- Make it part of a class or special topic
- Search interally & externally for funding


E220


CANON MACRO PHOTO
CAUTION
PINCH POINT

111

ging Intricate Details to Life with Automated Focus Stacking

uter, Rion Huffman

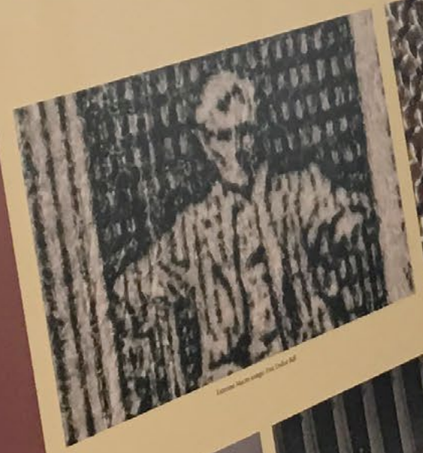
Intro

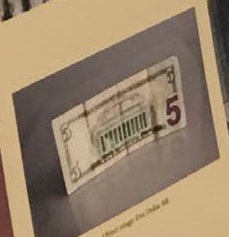
Macro photography allows us to see extreme details of subjects that we typically cannot see with our naked eye. A major limitation of traditional macro photography, however, is shallow depth of field. Due to the subject being so close to the lens, details become blurred and out of focus, except for on a single plane of focus. To remedy this problem, a photographer may attempt to use an extremely small aperture to lengthen the depth of field. The issue with this technique is that there must be a tremendous amount of light present to properly expose the subject, and using that amount of light might not even be possible depending on the circumstances.

A more feasible alternative is to focus stack. Focus stacking refers to the technique of taking multiple images and stacking them together. Each image will be taken with focus placed on a different plane. These images can then be stacked together in image editing software, and the result is a perfectly focused image from the front of the subject all the way to the back. This practice is tedious, as it may require hundreds of shots to be stacked together. Focus stacking takes very precise instruments and dedication from the photographer; however, the result allows humans to see intricate details of the subject that would have only previously been able to be seen if under a microscope.

Purpose

This project aims to use automated focus stacking hardware and software to create incredibly detailed photographs of everyday items, and then compare the focus stacked images to images of the same subject using traditional macro techniques (single macro capture). This project will help show the capabilities of extreme macro photography and the specialized equipment used for capture.





Pittsburg State University

Katherine Sauter

RESEARCH COLLOQUIUM

Certificate of Participation

Conclusion

Impact of a job well done

student

- New knowledge base and way of thinking
- Expanded possibilities
- Well rounded for employment
- Innovator instead of consumer
- Confidence boost

Impact of a job well done

professor

- Gained knowledge as well
- Lays foundation for student involvement
- Shared responsiblity & rewards

PURPOSE AND
ER PROPERTIES

34

ent of Plastics Engineering
ttsburg, KS 66762

Polypropylene Rheology at 230°C

- No appreciable change in viscosity of samples
- No appreciable drop in molecular weight with successive rounds of processing
- Possible degradation of thermo-oxidative stabilizing additives in polypropylene

Sample Appearance

uman color difference thresholds between

hnology, Pittsburg State University

rials/Method

lation

e population will include Pittsburg State University
phics and Imaging Technology major and minor students.

Survey Instrument

There will be three different survey instruments used for study. Participants must first pass two color vision tests that they are not color deficient, and to assure normal color vision. Normal color vision will sworth-Munsell 100 (FM 100) color ion will be defined as a total error the FM 100 test. This range of determined by the makers of of normal color vision.

ess Test

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Acuity Test

neasure rate perior, re the The test colored ther. m y in d also 100 TES) rnsworth- fall within a has superior range and the 00 TES range and

shold Test

ment used to gather sts were simply pants had normal color tered to find if participants differentiate between similar ference values. These values es and will be measured by a device.
Creative Cloud Version), color

swatches were created that was three inches wide by three inches tall. This size was used in order to give enough space to take random color readings with the Node+Chroma® for generalization purposes. It was also found to be a convenient size for judging color samples from an approximate distance of one foot. The distance between the subject and the sample needs to be held constant in order to get generalizable results. The measurement of one foot was used simply because it was deemed to be a comfortable viewing distance compared to the size of the swatches and viewing booth. The distance was measured from the edge of the viewing booth to the approximate plane of the subject's eyes for consistency.

Two sets of color tests were chosen for the test. The colors chosen to test individuals were in the hue designation of blue and red. Blue and red were chosen based upon a previous study done by Hurlbert and Ling that found a preference for blues across both genders and a preference for reds or pinks across both genders.

A control blue swatch was created with the CMYK values of: Cyan = 100%, Magenta = 50%, Yellow = 0% and Black = 0%. A control red swatch was also created with the values of: Cyan= 0%, Magenta = 100%, Yellow = 75% and Black = 0%. From the control, four more swatches were created for each color. These four swatches would need to have an approximate color difference from the control of 1.5ΔE, 2.0ΔE, 2.5ΔE and 3.0ΔE.

Using a collective theory from previous studies, the saturation of the color was manipulated in order to achieve the various color differences. A swatch would have incremental amounts of yellow added into it in order desaturate the blue or it would have cyan added to desaturate the red. A sample was printed, then the Node+Chroma® device was used to determine color differences between the control and each desaturated swatch. Because of the variability of paper fibers, each swatch was tested ten times in different areas and an average color difference was calculated. The characteristics of the final swatches chosen are documented in figure 3.

Once the swatch values were identified, they were arranged in InDesign to put four swatches on an 11x17" sheet. These swatches were arranged in such a way that they would create two separate pairs of swatches. In each pair there would be a control and one of the swatches that would have a color difference from the control. There was also two pair that was both controls with a negligible color difference

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Pittsburg State University
Thank you to
Gage Rogers
RESEARCH COLLOQUIUM
Certificate of Participation

Pittsburg State Universityty
Research Colloquium
2016
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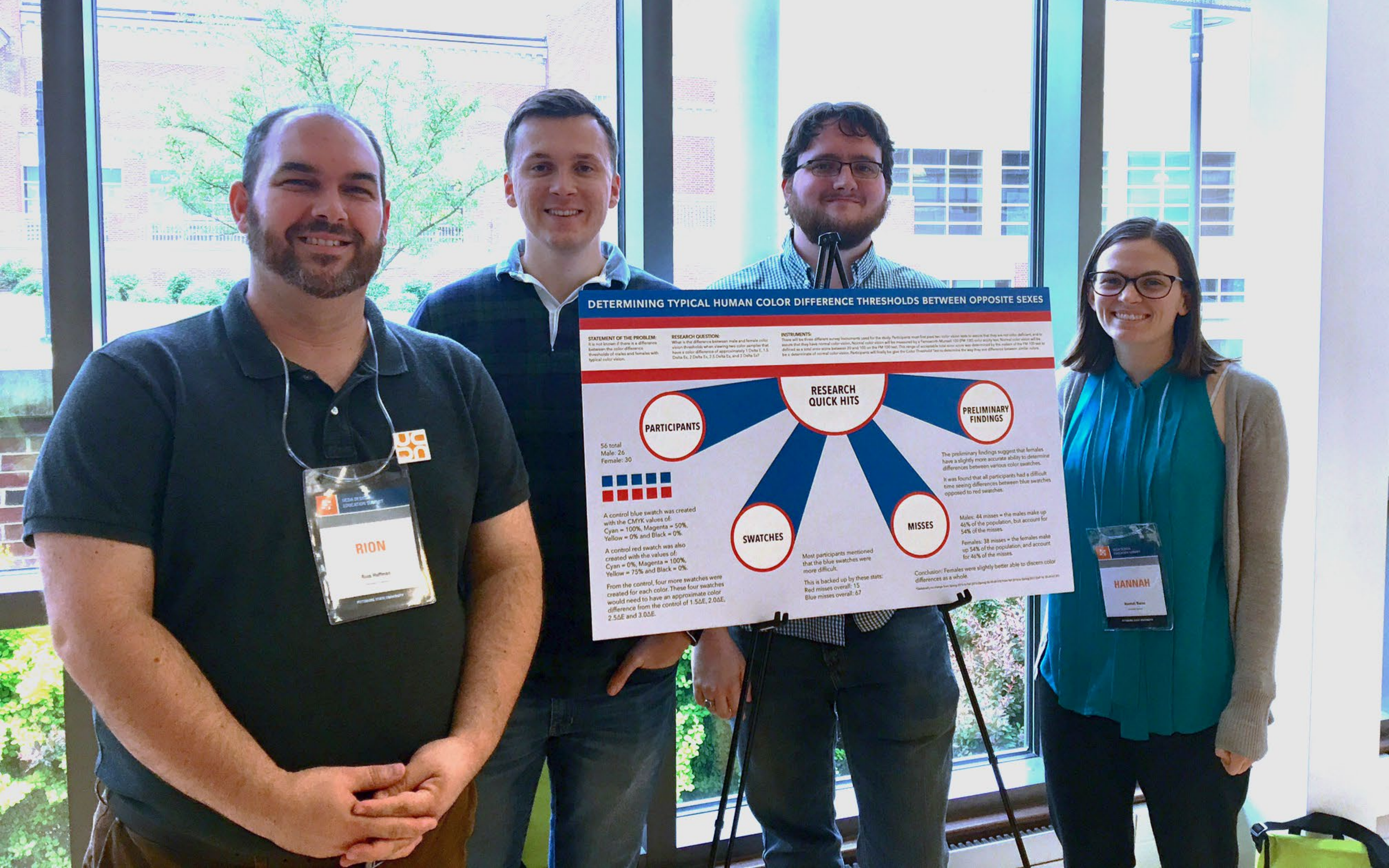
Impact of a job well done

university

- recognition
- stronger program built on findings
- sets standard for other departments and students


DETERMINING TYPICAL HUMAN COLOR DIFFERENCE THRESHOLDS BETWEEN OPPOSITE SEXES
STATEMENT OF THE PROBLEM:
It is not known if there is a difference between the color difference thresholds of males and females with typical color vision.
RESEARCH QUESTION:
What is the difference between male and female color vision thresholds when viewing two color samples that have a color difference of approximately 1 Delta E, 1.5 Delta Ex, 2 Delta Ex, 2.5 Delta Ex, and 3 Delta Ex?
INSTRUMENTS:
RESEARCH QUICK HITS
PARTICIPANTS
56 total
Male: 26
Female: 30
A control blue swatch was created with the CMYK values of: Cyan = 100%, Magenta = 50%, Yellow = 0% and Black = 0%.
A control red swatch was also created with the values of: Cyan = 0%, Magenta = 100%, Yellow = 75% and Black = 0%.
From the control, four more swatches were created for each color. These four swatches would need to have an approximate color difference from the control of 1.5ΔE, 2.0ΔE, 2.5ΔE and 3.0ΔE.
PRELIMINARY FINDINGS
The preliminary findings suggest that females have a slightly more accurate ability to determine differences between various color swatches.
It was found that all participants had a difficult time seeing differences between blue swatches opposed to red swatches.
SWATCHES
Most participants mentioned that the blue swatches were more difficult.
This is backed up by these stats:
Red misses overall: 15
Blue misses overall: 67
MISSES
Males: 44 misses = the males make up 46% of the population, but account for 54% of the misses.
Females: 38 misses = the females make up 54% of the population, and account for 46% of the misses.
Conclusion: Females were slightly better able to discern color differences as a whole.
RION
HANNAH