Fire Hose Sessions

Thursday, July 9

Atlanta 2015

Fire Hose Lineup

- Joe Kays, University of Florida
- Nick Houtman, Oregon State University
- Melanie Goux, Georgia Tech
- Catherine Zandonella, Princeton
- Kathi Wallace, Georgia Tech
- Erica Endicott, Georgia Tech
- Natasha Martineau, Imperial College
- Cherie Winner, Penn State

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Coffee Talks: Communication with Research Administrators

Joe Kays, University of Florida

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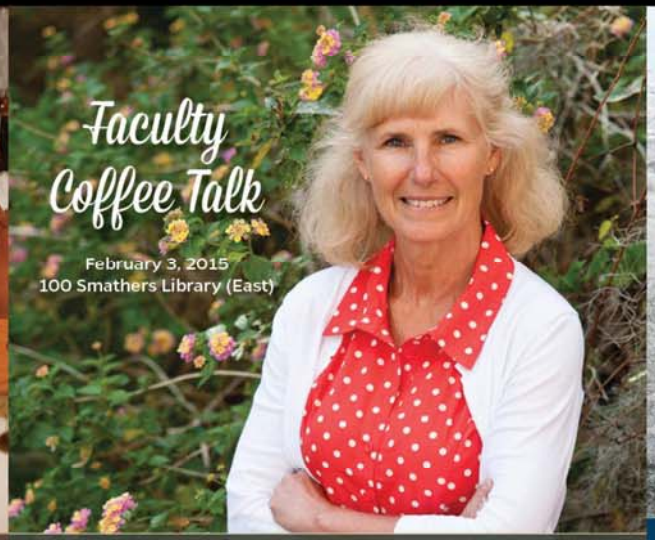
Coffee Talks: Communication with Research Administrators
Joe Kays, University of Florida

David Reed — *Jan. 6, 2015*
Florida Museum of Natural History
"Tracking human development through parasites"

David Reed is best known for research that explores human evolution through the lens of our species' longtime traveling companion, the lowly louse. Reed's research on human migration has received widespread public attention. In addition, as curator of mammals at the Florida Museum of Natural History, Reed oversees more than 30,000 mammal specimens collected from around the world.



Pam Soltis
Florida Museum of Natural History
"Decoding the plant Tree of Life"

Pam Soltis has played a major role in reconstructing the plant branch of the tree of life and relaying this information to the scientific community and the public. As curator of Molecular Systematics and Evolutionary Genetics at the Florida Museum of Natural History, her research interests are in plant biodiversity, emphasizing angiosperm phylogeny, polyploidy, the evolution of the flower, conservation genetics of rare plant species and phylogeography.

Ellen Martin
Department of Geological Sciences
College of Liberal Arts and Sciences
"Understanding ancient climate change and ice sheet retreat"

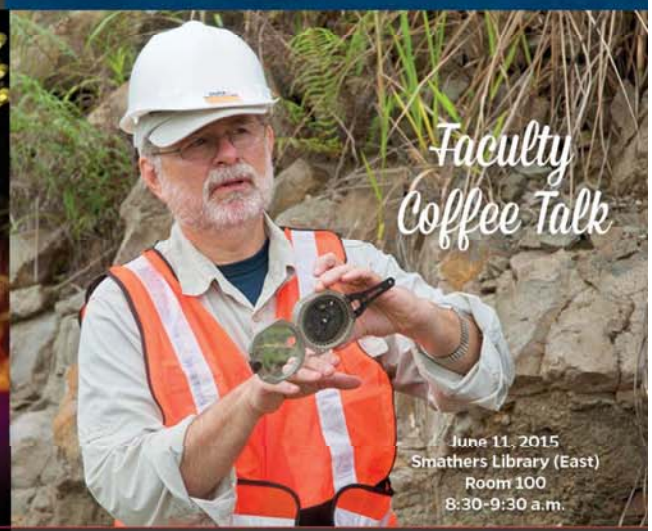
Geological Sciences Professor Ellen Martin has spent the past few summers in western Greenland collecting samples of rocks, sediment and water to learn about weathering in different glacial environments. This information will ultimately be used to understand the history of glacial advance and retreat on Greenland, and thus the stability of the Greenland Ice Sheet in response to climate change.

Ruth Steiner
Department of Urban & Regional Planning
College of Design, Construction and Planning
"Active Transportation"

Urban and regional planning Professor Ruth Steiner directs the Center for Health and the Built Environment, which addresses the relationship of the built environment to health outcomes, with special attention to those disproportionately affected by the consequences of poverty and poor land use planning. Recent projects have focused on bicycle and pedestrian safety, and children's travel to school.

Kevin Folta
Department of Horticultural Sciences
College of Agricultural and Life Sciences
"Plant Whispering: The vocabulary of light in plant growth"

Horticultural sciences Professor Kevin Folta is decoding plants' responses to light across the spectrum. The colors in the spectrum of light give a plant information—the time of day, the season, its proximity to its neighbors—and the plant uses the information to change the way it grows.



Bruce MacFadden
Florida Museum of Natural History
"Digging Panama:
A Once-In-A-Century Opportunity"

The Panama Canal is currently undergoing a $7 billion expansion that will excavate 150 million cubic meters of soil. Bruce MacFadden, curator of vertebrate paleontology at the Florida Museum of Natural History, is leading a $10 million NSF project to use this expansion to uncover fossils from 20 million years ago before North and South America were joined. The project is also offering dozens of undergraduates, graduate students and K-12 teachers from the U.S. and Panama the opportunity to experience field research.

“UF is a huge place and there are so many people working in contracts and grants who I had never met in person. This was a great opportunity to put faces with names and meet people who may be able to help me with proposal/grant questions in the future.”

Ellen Martin
Professor of Geological Sciences

“The people who work in the sponsored projects office often see us at our worst — under the gun just before a grant deadline or when there is a problem with an existing grant award. Getting the chance to meet with them when there is no crisis is a great idea.”

David Reed
Curator of Mammals, Florida Museum of Natural History

“There was quite a buzz of positive feedback, like “I really enjoyed listening to him,” “what an interesting topic,” and “it really gets you thinking.”

Cheryl Stephens
Research Administrator II

Creativity When the Cupboard is Bare

Nick Houtman
Oregon State University

Atlanta 2015

INFECTIOUS DISEASE

New drugs turn the tables on pathogens

BY NICK HOUTMAN

Carnivores eat their prey from the outside, author David Quammen writes in his 2012 book *Spillover*. Pathogens attack from within and are no less deadly. They enter our bodies unseen when we breathe, have sex, take a drink of water or just walk in the woods.

And they are relentlessly opportunistic. Pathogens that cause about six out of 10 human diseases — including AIDS, influenza, cholera, malaria, tuberculosis and Ebola — infect animals such as birds, bats, cattle, monkeys, camels and other species. These microbes bring humans and animals together in a deadly exchange driven in part by shifting environmental conditions. Through a global initiative known as One Health, veterinary and human health organizations are coordinating research and sharing results. They are tracking pathogens wherever they go.

Researchers at Oregon State University take a multipronged approach to these diseases. They are delving into the social and historical dimensions of disease transmission and medical science. In the face of growing resistance to antibiotics, they are developing new drugs, including antivirals. They are helping public-health agencies get the most from vaccination campaigns and efforts to combat outbreaks.

While the nearly complete eradication of smallpox, polio and other diseases stands as a triumph of medicine and science, new threats are emerging. For example, climate change raises the possibility that malaria, eradicated in the United States in the early 1950s, could come back. And as the footprint of human development expands, pathogens such as the bacteria that cause Lyme disease proliferate along with their preferred host, the blacklegged tick.

"It's a race that humans cannot win," says Luiz Bermudez, Oregon State professor of Veterinary Medicine. "Microbes grow too fast. They modify too fast. There are billions of them." Our best chance, he says, is to disarm them without promoting resistance.

"Infectious disease is a kind of natural mortar, binding one creature to another, one species to another, within the elaborate biophysical edifices we call ecosystems."

— David Quammen, *Spillover: Animal Infections and the Next Human Pandemic*

Inside Job

Researchers target microbial machinery

As Patrick Iversen tells it, the push for a new Ebola drug got started with a kick from a laboratory mouse. On a Friday in 2004, the senior vice president for research at AVI BioPharma (now Sarepta Therapeutics) was having lunch with Alan Timmins, AVI's president, when Iversen received a call from a colleague at the U.S. Army Medical Research Institute for Infectious Diseases (USAMRIID) in Maryland. A lab worker was injecting Ebola into a mouse when the animal kicked and sent the virus-filled needle into the researcher's double-gloved hand.

Iversen, now a research professor at Oregon State University, had just returned from USAMRIID. He had talked up AVI's success in treating two deadly viral infections: West Nile in penguins at the Milwaukee Zoo and feline calicivirus in Eugene and Atlanta.

"'It takes only one particle (of Ebola virus) for this woman to be killed,'" Iversen says the caller told him. "'We're going to try everything. What can you do?'"

Iversen turned to Timmins. "I asked him, 'What do you think? Is this something we can try?' He made the decision immediately. 'Yeah, let's do it,'" Iversen recalls.

"The whole company became Ebola for the weekend in 24-hour shifts," he explains. "We had designed the compound by 2:30 or 3 and (sent it) over to the chemistry group by 4. They started assembling their reagents, and that evening they

Oregon State UNIVERSITY

Unraveling the Tangled Threads of a Stealthy Disease

BY LEE SHERMAN

Last fall, the nation was riveted to the story of Brittany Maynard, a 29-year-old California woman afflicted with inoperable brain cancer. She captured the media spotlight when she moved to Oregon to access lethal drugs under Oregon's death-with-dignity law. Maynard had chosen to die before the tumor took her autonomy. Her 100-watt smile, captured in photos from happier times, shone from every screen in America as we witnessed her struggle against glioblastoma, the same deadly disease that struck down Senator Edward Kennedy and kills some 13,000 U.S. residents yearly.

Maynard's illness "reminded the world that science seems stuck in its bid to cure the most common type of brain cancer," wrote journalist Bill Briggs of NBC News.com in November. Dr. Henry Friedman at Duke University's brain tumor center observed, "We do not have enough weapons to deal with these tumors."

But several potential new weapons are under the microscope at Oregon State University — next-generation approaches that could change the outlook for future patients like Maynard. Biomedical researchers at OSU, for example, are investigating the curative powers of a rare marine organism discovered on a Panamanian reef by medicinal chemist Kerry McPhail (see "Total Immersion," Terra, spring 2014). In test tubes, this purple cyano-bacterium clobbers glioblastoma cells with a supertoxic chemical it uses in its ocean ecosystem to ward off predators. To fund further studies, the American Brain Tumor Association recently awarded a $50,000 Discovery Grant to OSU pharmacology researcher Jane Ishmael, a McPhail collaborator.

Another team is working with Portland's Oregon Health & Science University and Knight Cancer Center on targeting tumors intravenously via nanoparticles loaded with drugs. Still others have spun off a company called Lasso Metrics to design a product for quick, easy, reliable cancer detection using "peripheral biomarkers" — substances in blood, urine or saliva that signal cancer in very early stages. In all, 60 scientists and social scientists at OSU are investigating some aspect of cancer.

Nano Zip Codes

"Cancer," observes OSU biochemist Oleh Taratula, "is a very smart disease."

To outwit this cunning foe is Taratula's single-minded focus during countless late-night hours in his new lab on Portland's South Waterfront. As he experiments with nanotechnologies for targeting deadly tumors, he holds memories of his Ukrainian grandfather who died of prostate cancer. As he investigates light and heat as treatment tools, he thinks of the nearly 600,000 people who succumb to cancer each year in the United States alone. His fierce drive to give hope to those who face devastating diagnoses fills his body with kinetic energy as he talks. "Every family has some history of cancer," he says, poised restlessly on the edge of his swivel chair. "It is very difficult for families when there's nothing that can be done. I want to change that."

He came to the College of Pharmacy to be part of a new interdisciplinary team, four researchers whose collective expertise in nanomedicine and other next-generation technologies for drug delivery has been honed at Rutgers, MIT, Stanford, the University of Wisconsin, the University of Washington's Department of Neurosurgery, Seattle Children's Hospital and other academic settings around the country. The team's mission: develop nanotechnologies for delivering anticancer drugs directly to a tumor, thus avoiding chemotherapy's indiscriminate, whole-body barrage of chemicals.

Jane Ishmael *Oleh Taratula* *Adam Alani* *Gaurav Sahay* *Conroy Sun*

Oregon State UNIVERSITY

Producing Quality Research Videos with Your iPhone

Melanie Goux
Georgia Tech

Atlanta 2015

WHAT'S IN THE PRODUCTION PURSE?

Sunpak - PlatinumPlus
Mini-D 11.5" Tripod

$19.99

Shoulderpod - S1 - Professional
Smartphone Rig

$34.99

Sony ECM-44B - Omnidirectional
Lavalier Microphone

$157

iPod, iPhone - Professional XLR
Cable Adapter with Headphone Jack

$29.95

OTHER AUDIO OPTIONS:

The Mighty Mic - Analog

$79

Movo P-10 Delux Lavalier for Smartphones (Analog)

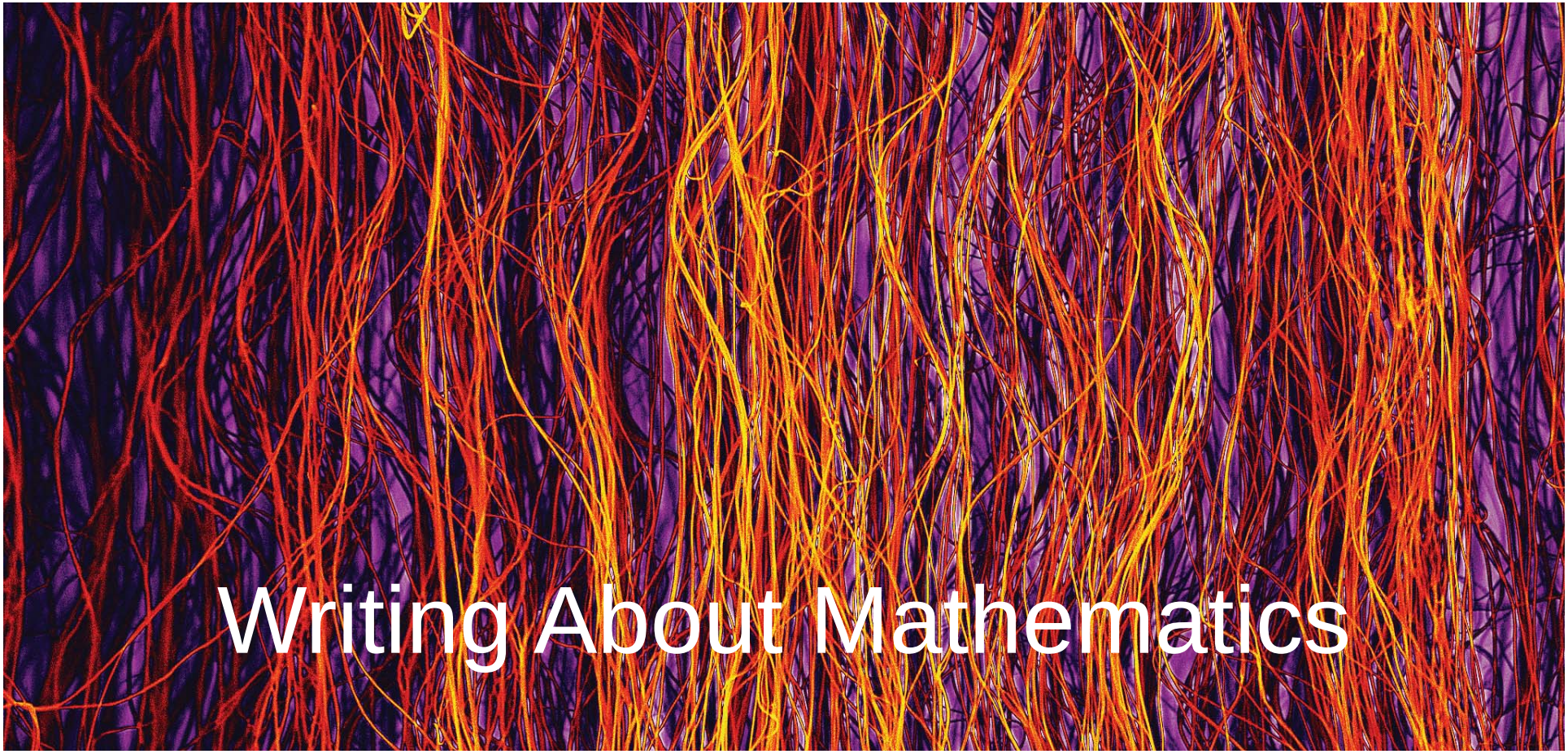
$24.95

Blue Microphone - Mikey Digital for iPhone, iPad

$99.95

Zoom - iQ6 - IOS Lightninh X/Y Microphone (Digital)

$98.95



Writing About Mathematics

Catherine Zandonella
Princeton University

Atlanta 2015

Writing about mathematics

Catherine Zandonella, Princeton University

Writing about mathematics

- Develop your beat
- Find the motivation
- Look for the drama
- Use analogies and diagrams
- Wallow in the mathiness of it all

Catherine Zandonella, Princeton University

Cash Poor, Data Rich Audience Research

Kathi Wallace
Georgia Tech

Atlanta 2015

Cost-effective Audience Research

Why? Without understanding, there is no influence

1. **Marshall internal resources – requires planning ahead!**

2. **Qualification #1 - Objectivity**

3. **Designate 2 project co-owners - you and a researcher**
   - Market research
   - Office of Assessment
   - Institutional Research & Planning
   - Market research/marketing faculty or class
   - Magazine design vendors
   - Someone with objective interviewing/focus group experience
   - Survey software provider

Cost-effective Audience Research

4. Create your own participant list

- Current readers
- PROSPECTIVE readers (alumni database, Development, faculty
- Internal faculty (secondary audience)

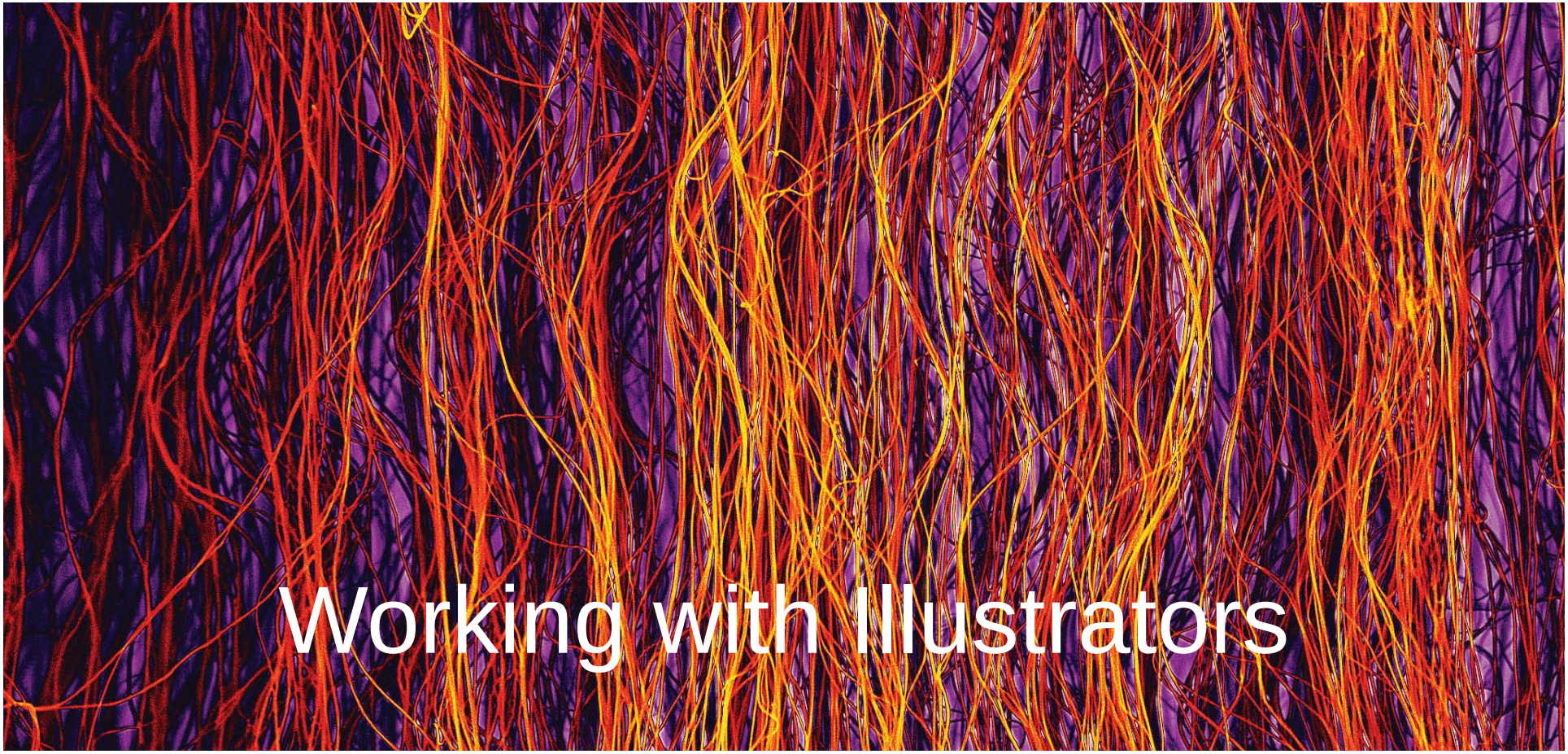
5. Qualitative gets you in the ballpark

- 1:1 interviews (audience convenience = efficiency)
- Focus groups

6. De-mystify the stats!

- User-friendly survey software (Survey Gizmo, Survey Monkey, etc.)
- "Auto" reports

7. Build your magazine around the sweet spot
(intersection of audience needs/preferences and your institutional goals)



Working with Illustrators

Erica Endicott
Georgia Tech

Atlanta 2015

illustration

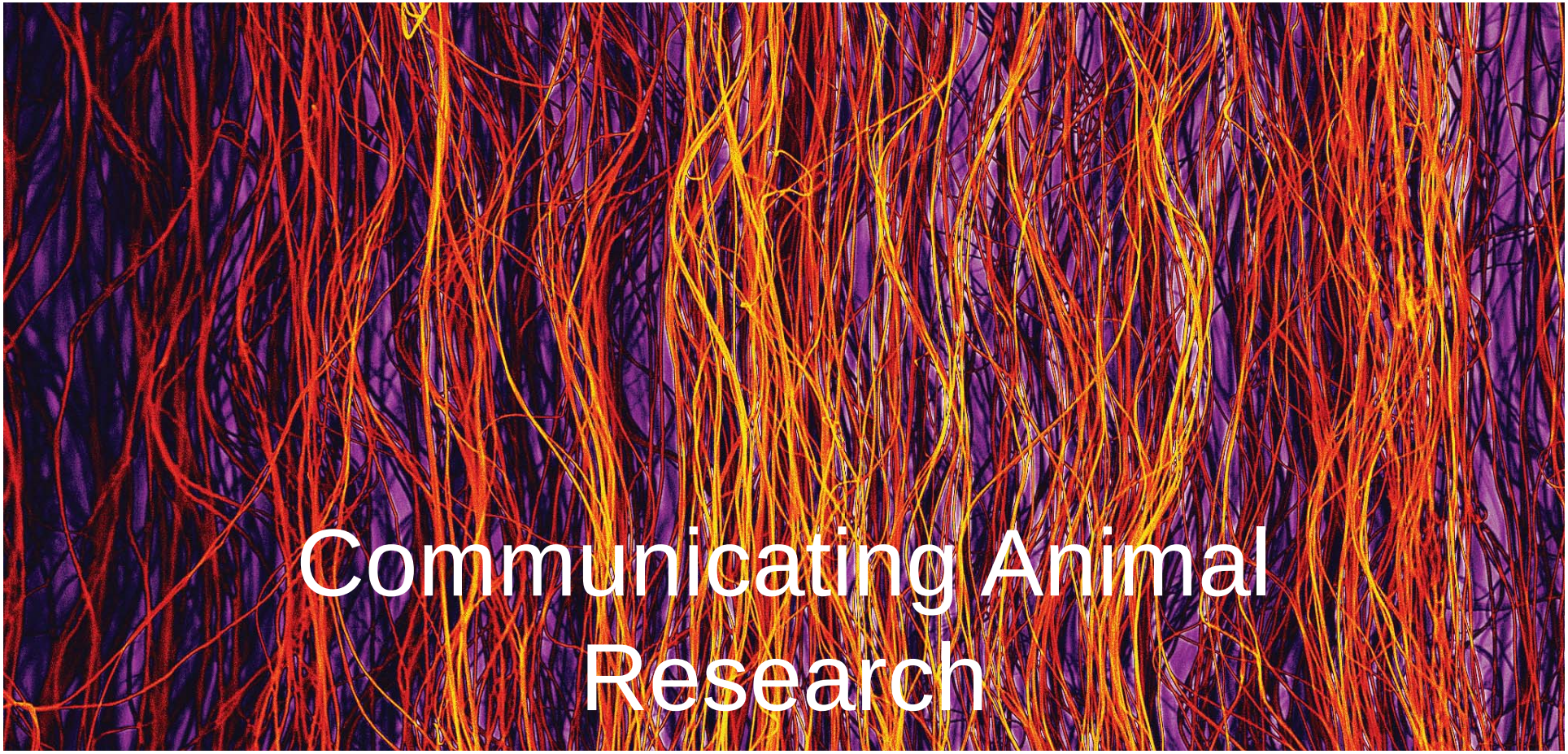
"How do I get them to work for me?"

five steps

1. Who you are
2. Who they are
3. What your job is about
4. Scope, rights, deadline

...and...

5. NOT budget



Communicating Animal Research

Natasha Martineau
Imperial College

Atlanta 2015

Imperial College London

Engaging with different audiences

Imperial College London

Behind the scenes

Take a look behind the scenes

1. Lighting
Ambient lighting is programmed to day and night, with dawn and dusk settings to reflect the natural environment. Some rooms also have red ambient lighting at night time, which rats and mice cannot see in, but humans can. Cages on the top row are shaded so they are exposed to the same amount of light as cages lower down.

2. Cage label
Each cage is labelled with the name of the lead researcher, project details, and the number of animals it contains. The label also has a unique barcode ID, so it can be stored and identified on a central computer system.

3. Ventilation
Filtered air is ducted into the individually ventilated cages, and is filtered once more as it is extracted, before being vented directly out of the building through the white ducts in the centre of the ceiling.

4. Two-level cage
This cage design provides more space for rats to exercise, and includes objects to make a more stimulating environment, such as nesting material and tunnels. Each cage is ergonomically designed so that one person can safely lift it.

5. Protective clothing
Everyone entering an animal room must put on a cap, lab coat, and disposable overshoes, gloves and face mask to protect both the animals and the handlers.

6. Change station
Stacks of cages are wheeled over to the change station where animals are transferred to the clean cages waiting on the left. The change station has its own ventilation unit. Yellow bump rails around the room protect the animals in their cages as they are moved around.

7. Floors, walls and ceilings
These are made from impermeable surfaces for regular washing and sanitising.