



In this issue:

Page 1:

Bee behavior: Lessons in teaching and learning

Page 2:

Co-chair Corner
Future leaders in science education and communication

Page 3:

The appropriation of the lab coat:
A (very) short history

Bee behavior: Lessons in teaching and learning

By Laura Lecce

Two recent manuscripts published by a research group at the School of Biological and Chemical Sciences, Queen Mary University of London have shown that bees are capable of learning tasks, using tools, and teaching learned behavior to other bees. In the first study¹, bees were taught in sequential steps to pull on a thread to reach an artificial flower with a sucrose reward. After learning this behavior, some of these bees were used as skilled demonstrators to investigate whether other bees could learn this technique through observing a trained individual. Interestingly, 60% of bees that observed the skill by a trained bee managed to complete the task and obtain the reward on their first try. This result is made even more significant by the fact that a group of untrained bees cannot spontaneously complete the task even after learning that the flower contains a reward. Beyond this, the study went on to show that multiple successions of individual bees could continue learning the task and passing it on long after the original skilled bee is removed. In this way, foraging skills and adaptations necessary for bee survival can spread throughout bee populations quite rapidly and traditions can continue to be sustained beyond multiple generations.

The second study² was aimed at exploring behavioral flexibility by teaching bees a very obscure and unnatural task which required the manipulation of a tool to obtain a reward. To begin the experiment, bees were taught that the correct location of a small yellow ball was inside a drawn circle and this resulted in a sucrose reward. The bees were then required to relocate a misplaced ball into the correct location for the reward. Bees that were unable to understand this were then given a demonstration by a plastic model bee. After bees had learned the correct task they progressively improved at the task by completing it in shorter times using shorter distances. When untrained bees were given demonstrations by trained bees, they had more successful trials in shorter times than when given a ghost demonstration (ball moved by experimenter with no bee) or no demonstration at all, showing that the behavior of the demonstrator significantly impacted the success of the learner. In even more complex scenarios where multiple balls were placed in the arena, bees showed a preference for the ball that was closest to the goal even if the ball was a different color.

Together these studies have built on the knowledge that complex learning and tool use stretches beyond vertebrates such as mammals and birds, and shows that complex cognitive flexibility and novel behavior may be used by invertebrates to overcome future ecological pressures.

For the full articles and videos of these experiments please click on the references below.

References:

1. Alem, S., et al., Associative Mechanisms Allow for Social Learning and Cultural Transmission of String Pulling in an Insect. *PLoS biology*, 2016. 14(10): p. e1002564. <http://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.1002564>

2. Loukola, O.J., et al., Bumblebees show cognitive flexibility by improving on an observed complex behavior. *Science*, 2017. 355(6327): p. 833-836. <http://science.sciencemag.org/content/355/6327/833.full>





Greetings fellow postdocs,

It seems that spring is finally upon us! The sun is shining, the birds are singing, and we have several interesting events lined up in the next few weeks.

First off, on April 20, 2017, come and attend the “Graduate School Town Hall Meeting for Postdoctoral Fellows” at 5pm, in the Goldwurm Auditorium. It’s a unique opportunity to make our voices be heard! Dr. Marta Filizola, Dean for the Graduate School of Biomedical Sciences (GSBS), will introduce the new Leadership Team of the GSBS, including Dr. Guy Montgomery, the new Faculty Director of The Office of Postdoctoral Affairs (OPA). There will be updates on the Graduate School’s objectives for the future, highlighting new training initiatives affecting postdoctoral fellows, and the Graduate School will describe how it is evolving to meet the demands of today’s biomedical research. We will also have the opportunity to participate in a “question-and-answer” session led by the leadership of the Graduate School and OPA. To finish with style, an informal Social for Postdocs, Faculty, and Graduate School leadership will immediately follow.

A much-deserved celebrative event will take place on April 24, 2017 at the “**Spring Awards Ceremony**” (5:00 pm, Davis Auditorium) for the postdoctoral fellows who won the “New Graduate School Awards for 2017”. Come and celebrate your colleagues as they get awarded for “Outstanding Leadership”, “Outstanding Research Innovation”, and “Best Publication”. Winners will be notified shortly.

Finally, on “Earth Day” (April 22, 2017), wear your most comfy shoes if you feel like joining Mount Sinai in the “**March for Science**” in NYC and Washington, D.C. Many prominent scientific organizations have endorsed this March, including AAAS, ASCB, the Society for Neuroscience, and the New York Academy of Sciences, to stand together to acknowledge and voice the critical role that science plays in each of our lives. The Graduate School of Biomedical Sciences and the Mount Sinai Administration is supporting students, postdoctoral fellows, and faculty who want to participate in the march. For more information regarding the events, poster making sessions, and Skedaddle bus availability to D.C., take a look at the website: <http://webcommons.mssm.edu/sinai-marchesforscience/>

On a final note, I am elated to serve as your next PEC co-chair, along with Dr. Catarina Saiote. After learning the ropes in different advocacy groups and committees at Mount Sinai in the past few years, I’m now eager to collaborate with all of you to help improve postdocs’ working experience and sense of community at Mount Sinai.

Best,

Nicholas (Nick)

Nicholas Barbieri, PhD and Catarina Saiote, PhD are your PEC co-chairs



We are pleased to announce a call for applications for the Future Leaders in Science Education and Communication Program Spring/Summer 2017! This program is directed by Alison P. Sanders, PhD and Laura Lecce, PhD, postdoctoral fellows at the Icahn School of Medicine at Mount Sinai. The course is designed to develop and improve postdocs’ teaching and lay science communication skills by providing hands on teaching experience.

Program includes:

- An introduction to classroom teaching elements and instruction principles
- Evening class times to accommodate the postdoc schedule (8 classes total)
- Instruction in public speaking
- Emphasis on active learning methods to improve classic lecture-based teaching
- Mentored teaching opportunities at the graduate or 5th grade levels
- Supportive peer and mentor feedback
- A certificate of completion and honorarium

To be eligible you must be a current postdoctoral fellow at ISMMS and submit a statement of commitment to the duration of the program. Details are provided in the [Application Form](#) and [FAQ](#) including program dates, PI consent forms, and detailed application instructions.

Applications are due Monday May 1st, 2017!

Please email completed applications to Laura Lecce (laura.lecce@mssm.edu)

Ways to keep in touch

- Our website: <http://icahn.mssm.edu/education/post-doctoral-training>
- Follow our Twitter account: [@MtSinaiPostdocs](#)
- Join our Facebook page: “**Mount Sinai Postdocs**”
- Follow us on LinkedIn (**Mount Sinai Postdocs and Postdoc Alumni**)

The Mount Sinai Postdoc Periodical

Chief editor: Delaine Ceholski Editors: Przemek Gorski, Natasha Eliyahu-Shtraizent, Laura Lecce, Salvador Sierra, Elena Sanchez-Rodriguez, Alison Sanders, Agata Kurowski, Ben Shackleton, Ishaan Gupta

The appropriation of the lab coat: A (very) short history

By Ben Shackleton

Lab coats. That thing you wear when you're trying to look science-y because there are cameras around or the lab is a bit nippy. However, when you line up for your first of many coffees of the day, the casual observer may see something different - it will probably be assumed that you are an MD. But why is this so? Why did the lab coat go from a symbol of scientific endeavour to a symbol of medical authority?

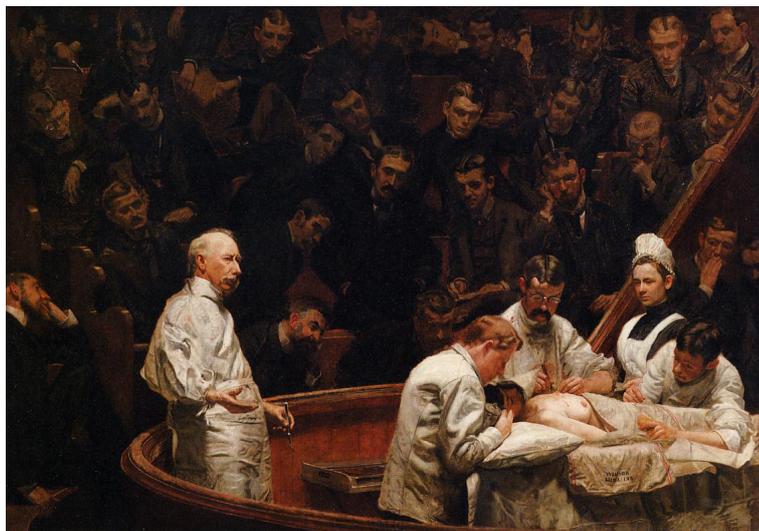
Originally, physicians wore dark robes which were probably adopted from monastic attire to help reinforce what was then considered a solemn duty. This later changed to smart attire, as famously depicted by the painting 'The Gross Clinic' by Thomas Eakins in 1875. Here, Dr. Gross, with his hands covered in blood, is lecturing to a group of students while surgeons, garbed in jackets, waistcoats, bowties, and sporting some rather spiffy moustaches, crowd around a patient and carry out surgery for osteomyelitis. At the time, this depiction was considered shocking and brutal, not helped by the chaotic tangle of surgeons around the operating table and the obviously distraught relative not 6 feet away from the slab. It was around this time that the current medical status quo was becoming unacceptable. Archaic procedures, such as blood-letting and urine therapy (literally bathing in urine), were still common practice and the public was beginning to realise that these methods may be less than reliable. In contrast, in the early 1800's, people thought scientists were all that – with their snazzy white coats and evidence-based methods of enquiry. New and exciting discoveries were being made in rapid succession, with breakthroughs such as the isolation of the first enzyme, the discrediting of the theory of vitalism (inorganic materials did not contain the "vital force" of life), and the establishment of the first law of thermodynamics all occurring within the first half of the 19th century. As such, it was relative boon period for research science.

The low level of trust for the medical profession, coupled with the advent of germ theory, meant that it was time for a change and a rebranding of sorts. And thus, the white coat was adopted as a symbol of cleanliness and to reflect their new scientific approach to medicine. This is commonly illustrated in the 'The Agnew Clinic' also by Thomas Eakins completed in 1889. This depicts another operation, this time in a serene setting, with bright lighting, sterile white sheets, and a complete lack of blood spatter. What's more, the doctors have adopted white coats. Since then the lab coat has increasingly become a symbol of the medical profession, with patients seeing it as a mark of authority, trust, and a status symbol.

So there you have it. Next time you're standing in a line waiting for your coffee beside an MD, wearing a pristine, freshly-pressed and blindingly white lab coat, you can be safe in the knowledge that your profession has been wearing lab coats since before they were cool.



The Gross Clinic by Thomas Eakins, 1875
(Philadelphia Museum of Art)



The Agnew Clinic by Thomas Eakins, 1889 (Philadelphia Museum of Art)