

Winter
2023

BNCP

Div. 6 Newsletter



The Behavioral Neuroscientist
and Comparative Psychologist

PHOTO CREDIT: APOPO

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A Word From Our President

Dear Colleagues,

I hope you all are getting back into the groove after what—hopefully—were restorative and joy-filled holidays and winter breaks.

I feel the need to share with you that in the fall I experienced a significant personal family tragedy that has necessarily taken my focus, energies, and bandwidth away from volunteer duties, and as such I'm humbly asking for grace and forgiveness while I get back in the saddle full-time. Thank you.

I am delighted to share here that Dr. Lauren Highfill, longtime SBNCP member and Professor of Psychology & Animal Studies at Eckerd College, is our President-Elect for 2022-23! Lauren has already brought several exciting ideas forward for how to build upon our strong foundation of interdisciplinary work and collegiality, and I know she will have every success in her term on the SBNCP Executive Committee.

Speaking of which - it's nearing election time! Please see further in the newsletter the open slate of positions we have for our upcoming elections, and do send in your nominations! (Self-nominations are welcome.) This is a wonderful opportunity to gain professional service for any and all career levels.

Related to nominations, I want to underscore our division's commitment to fostering an inclusive and welcoming environment for all our professional colleagues, which I have and will continue to support with my own personal



commitment. We as a professional society should not only strive to achieve this goal because it's the right thing to do, but also because we are bound by duty to work toward this goal every day, as detailed in the [SBNCP Policies & Procedures](#). It is incumbent upon each of us to do the work necessary to ensure that all people feel welcome here, regardless of the myriad identities one holds. I firmly believe that this obligation extends to SBNCP's annual awards and that no one who has exhibited behavior in direct opposition to our society's values and policies should be rewarded for such behavior.

Finally, a special thanks to Erik Thrailkill for his work on the program thus far for our Division programming at APA Convention, which will be in person August 3-5, 2023, in Washington, DC. I look forward to seeing many of you there.

Sincerely,

Amanda M. Dettmer, PhD
SBNCP, Division 6 President

We have six positions on the DIV6 Committee that need to be filled.



If you or someone you know would like to serve as either the Division's [Council Representative](#) to APA, our [member at large](#), one of two Early Career Psychologist Representatives, Secretary Elect, or as our President Elect for the 2024-2025 term, please email Jeremy Bailoo (DIV6 Secretary) with your nominations at JBailoo@gmail.com.

Self nominations are welcome!

Hello from Division 6 President-Elect

Lauren Highfill, PhD

I am humbled to be serving as the President-Elect for Division 6. I have been a member of Division 6 since graduate school and am excited to serve in this important way. For those who do not know me (probably many of you!), I am a Professor of Psychology and Animal Studies at Eckerd College in St. Petersburg, Florida. I am honored to follow in the footsteps of my graduate mentor, the late Stan Kuczaj, who served as the Division 6 President in 2014-15. I am excited to continue the hard work of the division's leadership with a focus on inclusion, diversity, and outreach to education. As a professor at a small, liberal arts college, I am especially dedicated to

raising the profile of comparative psychology and behavioral neuroscience at the undergraduate level. Also, I would like to continue the division's advocacy work for the importance of animal research. As someone who does most of my research with animals housed in zoos and aquariums, I think it is important for these non-traditional "lab" spaces to be included in the conversation more broadly. I am so grateful for the support and guidance of our past president, Tony, and current president, Amanda, as I look towards stepping into this role in August. If any of our members have any questions or ideas for the Division, please reach out. I look forward to seeing you at the Convention this summer!



Dr. Lauren Highfill helping to train dogs at Eckerd College. Photo credit: Eckerd College

Dr. Cindy Fast trains African Giant Pouched Rats to detect landmines and more...

Spotlight on an Early Career Scientist

A few years ago I was scrolling through Twitter and saw a captivating video of a giant rat in a harness and leash being used to sniff out land mines in Cambodia. Like a search and rescue dog—but better—these African Giant Pouched Rats (*Cricetomys ansorgei*) were identifying landmines quicker than the current technology and they could detect Tuberculosis too! All this work was being carried out by a humanitarian non-profit organization called [APOPO](#) (Anti-Persoonsmijnen Ontmijnende Product Ontwikkeling, or in English, Anti-Personnel Landmines Detection Production Development). Recently, I had the chance to sit down with the Head of Training and Innovation at APOPO, Dr. Cindy Fast. Dr. Fast earned her Ph.D. in Psychology from UCLA in 2014 and then did a postdoc at Rutgers in Behavioral and Systems Neuroscience. She's studied the behavior of many animals from hermit crabs to pigeons, mice, and rats.

In our discussion, I learned that my initial presumptions of these pouched rats were incorrect, that working at a non-profit like APOPO is very much like being a PI at a university, and so much more.

Work at APOPO

JUSTIN (JV): I love learning about the unique biology of non-model rodents and when I stumbled upon the African Giant Pouched Rats and APOPO I liked the seemingly special ability of their olfactory sense to remember smells and maybe form a relationship with a person. So I am interested for you to tell us more about their story and yours.



CINDY (CF): Yeah, I don't think a lot of people are familiar with the African Giant Pouched Rat. When I first read the publications from APOPO, I envisioned that they probably had like little kangaroo pouches, but they get their name from their cheek pouches. They are more closely related to hamsters, and they hoard their food in these cheek pouches, and of course, they're giant. They're about the size of a small cat, around 2.5 lbs. That makes them entirely different from lab rats. It's an entirely different species.

In terms of, olfactory abilities, I wouldn't be able to say that they are special or unique in that regard. Many animals have really phenomenal olfactory abilities, whether it's dogs, mice, and even honeybees. Our rats probably have comparable olfactory abilities. But what is unique about them is their lifespan. So rodents live around 2 or 3 years, right? But our rats have an average lifespan of about 8 years.

Spotlight on an Early Career Scientist (cont.)

This is on par with scent detection dogs. So, you have this small nocturnal animal with a highly developed sense of smell that lives a long time. Our oldest rat, her name was "Happy", she just passed away last year at 11 years old. So, they have a very long working career after the training that's needed for them to do the work. That's really the most unique thing about them.

The whole idea of using pouched rats for scent detection came from an engineering student that was doing a master's program in Belgium. He was tasked with solving a humanitarian problem and coming up with a novel solution. He loved the continent of Africa and wanted to solve a humanitarian problem there, so he chose the landmine problem. He came across a paper where someone had trained gerbils for the detection of TNT. And he had pet rats as a child and he said, well, if you can train a gerbil to do this, then I know you can train a rat to do it because rats are so clever. So, he started collaborating with another university that had connections here at the Sokoine University of Agriculture in Morogoro, Tanzania. Where we're at today. And they had a Pest Management Center that was looking at trying to control these giant pouched rats devastating crops. The professor thought this is the perfect rat for you because he has a long lifespan. He has a really great sense of smell. He's big, so he's not going to tire easily while he's searching for landmines, but he's not so big that he would actually set them off. Unlike dogs or people walking, the rat can walk directly on a landmine and never detonate it.

JV: That's very cool. It sounds crazy. That it was just this little project that a student was assigned to do and then it became bigger...

way bigger than he probably ever envisioned. I never considered the age aspect that when you put so much time into training an animal, their lifespan is really important. That makes the rats an interesting model to study age-related diseases and decline of the nervous system.

CF: I am glad you picked up on that. One thing I am always looking at is the rat's performance and I expect to see a gradual decline, but you don't see that at all. What you see is they maintain super high accuracy and then it just drops off. And it's not because they are no longer capable of smelling, they lose motivation for the work. Now, we've built that into our protocols and once we see that a rat is no longer greeting us in its home cage, we do a health check and if everything checks out we take a closer look at their performance. They're usually performing relatively well but not completing the task or taking much more time. They're spending more time grooming and sleeping, they're not really motivated.



A pouched rat sniffing out landmines in Cambodia. Photo credit: APOPO

Spotlight on an Early Career Scientist (cont.)

JV: I was also wondering since they have such long lives, do they have special relationships with their handlers and other people?

CF: These rats don't actually pair bond with their handlers the way that a scent-detection dog might. And that's another benefit of training a scent-detection rat. Once we train them here in Tanzania, we can send them all over the world very easily because they're small enough to ship and transport easily. Then, as long as the trainers and handlers on the ground know how the rat has been trained, the rat can just pick up without missing a beat and go straight to work. With dogs, they pair bond so the handler has to go with the dog wherever it's going to do its work.

JV: Okay, so it has many advantages over a dog. I've also been really curious to know about any individual differences in learning and whether they all can learn. Maybe it takes longer for some other ones to learn. And how do you deal with that? Some might not ever learn or have real difficulties and can't meet the criteria to become sent detection, TNT landmine rats.

CF: That's one of the things that I've been working on since I joined the team. One aspect we have looked at improving is our knowledge and understanding of the rats themselves. How are they smelling things? How do they learn about stuff? What is their memory like? What's the most effective method of communication with the rat, in terms of reinforcement? And what motivates them? All of these things factor into learning and memory and behavior. Particularly in a scent-detection rat. So by applying all of that with our trainers, we've grown our knowledge and improved our skills

and techniques in how we train the rats. Now, we have fewer dropouts, but not every rat makes the grade. I just crunched the numbers and for 2022, we had 6% of our rats drop out of the training program. That was 5 rats out of 82.

JV: Wow, that's nothing.

CF: Yeah, it's a big success but still you have these 5 rats. One of the things that I really like about APOPO is that we value our rats as colleagues. They're not just test tubes that you throw away after you've learned something. We are their stewards, and we're responsible for their well-being. So we do have retirement programs set up after they've had long working careers, we jokingly call it our Florida. The rats can retire in Florida and have these nice very enriched environments to live out their days. Kind of in rat luxury.

But a rat who's only a year old doesn't want to spend 7 years in Florida. There's so much to do. We've had a lot of success in reassigning a rat to another scent-detection program. If they're not cut out for landmine detection, maybe they are really phenomenal at TB detection. I think we forget about TB, or Tuberculosis, in the US in particular because it's pretty much eradicated. But it was the world's deadliest infectious disease until COVID. Now, it's the second deadliest infection. So we have rats trained to sniff out TB in human patient samples. A rat who doesn't do well in landmine detection still saves lives by just switching what his scent target is and learning to detect TB instead. We've also had a few rats though who flunked out of landmine detection, they flunked out of TB, but then we put them on our research program for search and rescue. Send a rat into a collapsed

Spotlight on an Early Career Scientist (cont.)

building and find a trapped survivor, and this rat that flunked all other training programs is a superstar search and rescue rat.

We've also done a study in collaboration with the University of Antwerp that was able to quantify personalities in our rats. We suspect their personality relates to learning aptitude for certain tasks. For a landmine detection rat, he or she has to systematically search an open field environment. For a nocturnal rodent, being exposed to an open field is not always the best or most comfortable. If they have high trait anxiety, they may never do well at landmine detection because they're competing with a state of anxiety and fear. If you transition them to a controlled laboratory environment, sniffing patients' samples in an enclosure then they really shine.

JV: That's incredible and such a good way to take advantage of these animals, by switching to a different scent to detect in a different environment. I wanted to jump back to Tuberculosis. I read that the rats are better at detecting TB than a say a more standardized test, is this true?

CF: Yes and no. We do know that the rats can sniff out the bacteria that causes the disease. But there are World Health Organization endorsed methods for diagnosing TB. Bacterial culture is the gold-standard, but it takes a long time. You have to wait 15 days or more to diagnose a patient or treat them. Plus, in resource poor areas of the world, a patient may travel to the city to get a test then they go back to their community and trying to find them again to start treatment is next to impossible.

Another option is molecular assays, which are super sensitive. But they require a really expensive machine with a lot of maintenance and stable power. Which, again, is something resource poor areas of the world don't have.

Another option is microscopy, but when you have a low concentration it is very hard to see the bacteria. But the rat can smell it. We partner with health clinics using microscopy and then bring the samples back to our lab for the rats to sniff. If they indicate a sample the clinic found positive, we click and reward the rat. If they indicate a sample that the clinic said was negative, we flag it and use more sensitive



Carolina, the African Giant Pouched Rat, is checking this sample for traces of Tuberculosis. In resource poor areas of Africa, rats like Carolina are catching TB when routine microscopy falls short.

Photo credit: APOPO

Spotlight on an Early Career Scientist (cont.)

concentrated smear microscopy to confirm the rat's detection. Then we call the clinic to provide the results within 24-hours so the patient can begin treatment right away. With this model we have increased case detection by around 40%.

Career Background

JV: This is all very neat and we could talk for hours, but how did you get started, and what initially motivated you to pursue a doctorate in Psychology and Behavior?

CF: I've actually always been attracted to animal behavior, and was training pet ducks when I was very young. When I was an undergrad, I wanted to be a forensic psychologist to determine what made the criminally insane deviant in hopes of developing more effective rehabilitation and also preventing others from ever being deviant and the whole world would be a better place. Totally achievable, right? haha

JV: Oh, totally achievable, especially when you're young.

CF: But during undergrad I really loved my courses on neuroscience and the professor took me aside and asked if I would be interested in getting involved in research. I was a little reluctant at first because I was such an animal lover and was unsure I could join the "dark side" of animal research. But I was super surprised to find out that rats were treated with so much respect and well cared for, and there are many measures in place to make sure they had comfortable lives and were treated well.

What I realized was that with research you can really understand the core of why we behave the way that we do. Our learning and memory

guides our decision making. And, it's much easier to ask those questions in animals because you can control their experiences. That's what really motivated me to get a doctorate, and UCLA was perfect because of its collaborative environment. I could work with hermit crabs, pigeons, and rats. I collaborated to do neurosurgeries and imaging of immediate early genes and DREADDs.

JV: What motivated you to leave that more higher level of science with specific questions on olfaction to a more applied setting?

CF: There were a couple of things. As my research expanded into neural mechanisms I got more interested in age-related cognitive decline, especially since losing smell is one of the first symptoms of Alzheimer's disease. My goal was always to work with animals to eventually translate this into a meaningful impact to help people. But it got much harder for me to sacrifice animals every day. I know that the work is incredibly valuable and I am so glad that people are doing it but personally it wasn't for me.

Then, APOPO was just perfect for me because it was applying all those same principles of learning to improving human lives directly. For example, I can say today my rat identified 20 TB patients. I have also visited minefields in Cambodia and watched one of the rats I trained find an unexploded ordnance that was right next to a children's school. I certainly miss some aspects because I wish I could literally look inside this rat's brain but I don't do it.

JV: That's such a great story. I also saw that you have an entire lab of students and postdocs so you are still managing a full lab like a PI would at a university.



Dr. Cindy Fast and Kennedy, Photo Credit: APOPO

CF: It's actually very similar to a university. We have senior and junior researchers and student interns and postdocs. A big part of my job is working together with those students and the research team, analyzing results, securing grants. There's less bureaucracy and it's like we work together as a family.

JV: That essentially sounds like a PI. So are there opportunities for other people interested in working with APOPO that they could pursue it as a career?

CF: If you want to be directly involved with the rats for training and research or breeding, it's here in Tanzania. But we deploy our rats to operational programs where there's potential for research as well in places like Cambodia, Angola, Ethiopia, and Mozambique. And soon we'll have rats in Azerbaijan as well. In terms of TB detection, TB is a huge concern in places like India, so there's a chance we could set up programs in these places. For our search and rescue research, maybe it's the United States where we have lots of natural disasters and the

rats could be quickly mobilized to these sites.

JV: What about other groups that are non-profit and do applied animal behavior applications?

CF: There are a few of them, most of them are using dogs. And it's usually sector specific. There are groups training dogs for detection of wildlife or security applications at airports or urban search and rescue. There is a really great organization called Search Dog Foundation in the U.S. that is non-profit and they actually rescue dogs from shelters to train them to be search and rescue dogs.

JV: It's too bad you can't adopt rescued rats and train them like the dogs.

What would you say is your biggest accomplishment since starting at APOPO in 2016?

CF: This is a tough question. There's just so much we are doing as an organization and so much to be proud of. One is really building the knowledge of my team. Most of my team are Tanzanians that don't have access to psychology topics that we have at American universities. Concepts of reinforcement in neuroscience are completely novel. But by increasing knowledge of these concepts, it has really improved the efficiency of our training.

I also think it has really empowered our team. Once they understand what the rat is going through, it is easier for them to troubleshoot training. That's something I'm really proud of is empowerment that has come from training. I've started a new program for trainers to become a Technical Advisor in Training. It allows our Tanzanian trainers to travel to places like Cambodia, where rats are working, to work

Spotlight on an Early Career Scientist (cont.)

with the local team in real minefields. I had a Tanzanian woman who didn't have a passport before joining our team, who is now leading a team of Cambodian deminers, working with rats that she trained here.

But at the end of the day we're all working as a team, and why I joined APOPO is to save lives. Together as a team we've had 211 trained and accredited rats since I've joined the program, and each one of these has saved more than one life. That's, I think, the hardest to top.

JV: As you started explaining what your biggest accomplishment was, I started to realize that it's not about just one big achievement. You are constantly accomplishing something big by saving lives every day there in Africa, and even globally. That's a big accomplishment.

Is there anything else you might want to mention or talk about?

CF: I was curious if some of the members of APA Division 6 attend the CO3 Meeting, [The International Conference on Comparative Cognition](#). It's a wonderful conference that is held annually in Melbourne, Florida around spring break.

JV: That sounds really interesting, and I've never heard of it. I think members of our society would definitely be interested.

CF: Also, one other thing is that I think I have always believed in diversity and the strength and importance of it, but since being at APOPO, I see it daily. In terms of how we can innovate. I feel that creativity is driven by diversity. If you have a variety of backgrounds and knowledge and experiences, each one

contributes something different. And, collectively it is much more creative and innovative, as long as everyone has a voice.

When I talk to other groups I say to not be afraid to try new things. Opportunity doesn't necessarily knock, but you don't know if that door is locked if you don't try to open it. To me, that's connected to the whole innovation and creativity. I know that a lot of scientists struggle with "imposter syndrome" where you feel that you don't really fit in. This isn't your niche. But we're all scientists and if you aren't perfectly in that niche it is probably your strength because you are going to be more creative.

JV: Exactly! You are going to see things that other people don't see.

Thank you so much for meeting with me.

CF: It was great to meet you and thank you for reaching out.

[END]

If you would like to know more about APOPO and their training protocols follow the link below. You can also donate to APOPO by sponsoring a rat and you'll get monthly updates on how many lives you've saved.

[Scientific publications by APOPO](#)

Photo Credit: APOPO



Justin Varholick, PhD

Early Career Psychologists Network Rep.

Interested in joining SBNCP?

We would love to have you!

It's easy to do: if you are an APA member, simply select Division 6 when you renew your membership. If you are not an APA member, you need to go through the APA website, but you do NOT need to join the APA to join SBNCP

- Membership is always free for undergraduate and graduate student affiliates! Please encourage the students in your lab to join SBNCP!
- Dues are free for the first year and are very reasonable thereafter (\$15-25, depending on the category of membership). Remind your colleagues who aren't members of SBNCP to consider it when thinking about which societies to join and support.
- Again, you do not have to be an APA member! You do have to set up an account on the APA page, but select the "Affiliate" category of membership, which only requires approval by the Membership & Growth Committee and does not require APA membership.
- The link to join is: <https://www.apadivisions.org/division-6/membership/index>

If you have any questions, please don't hesitate to contact me.

Sarah Brosnan (sarah.brosnan@gmail.com)

Membership & Growth Committee Chair, SBNCP/APA Div 6

Update from the Coalition for Psychology in Schools and Education (CPSE)

Amanda M. Dettmer, PhD, Division 6 Rep.

The [Coalition for Psychology in Schools and Education](#) (CPSE) is comprised of members from various divisions within APA. The CPSE mission is to bring together interested psychologists to promote and make publicly accessible applications of the research that psychology has developed to assist the nation in improving the quality of public and private PreK-12 education. I am delighted to be the Division 6 representative to the CPSE, a role I have served since June 2016.

The CPSE finally held its first in-person semi-annual meeting since the start of the pandemic in June 2022! It was a joy and privilege to share physical space with this terrific group of people, whom I admire as experts, colleagues, and friends. There is just nothing that can quite compare with the energies and creativity that flow from small, in-person meetings like these, and this was evidenced by an Op-Ed that I published alongside Dr. Tammy Hughes in Education Week titled, “[This is What Happens to a Student’s Brain When Exposed to Gun Violence](#).” This Op-Ed was a direct result of the June 2022 CPSE meeting, and was published just weeks afterward. It is the first product of the CPSE’s new Communications working group, which prioritizes sharing our work and products with legislative audiences, professional audiences, youth organizations, boards of education (state and local), and the general public. The CPSE held its December semi-annual meeting virtually, as we have done since 2020.

In addition to this work, I also lead the

Mental Health Primers working group. We work to bring our psychological expertise directly to K-12 teachers by developing primers to help them identify student behaviors in the classroom that are symptomatic of mental health and other psychological issues. The goal is to direct teachers to appropriate resources for their students. The intent is not for teachers themselves to treat students, but for teachers to recognize behaviors and provide tangible resources for the students as needed. The published [Mental Health Primers are on the APA website](#): published topics include [Students Experiencing Stress](#), [Students Experiencing Race-Based Hate Speech and Microaggressions](#), [Students Experiencing Bullying](#), [Students Experiencing Sadness](#), [Students Experiencing Low Self-Esteem or Low Perceptions of Competence](#), [Students Experiencing Inattention and Distractibility](#), [Students Who Have Experienced a Crisis](#), [Students Exposed to Trauma](#), and [Students Exploring Gender Identity](#). Please share these primers with your networks!



CPSE Update (cont.)

With subsequent funding from the CDC, we are now finalizing a stand-alone primer on **mental health equity**, with the intent for equity to be a lens with which to learn about all the individual primers. We are also developing a professional development module for teachers focused on the Mental Health Primers.

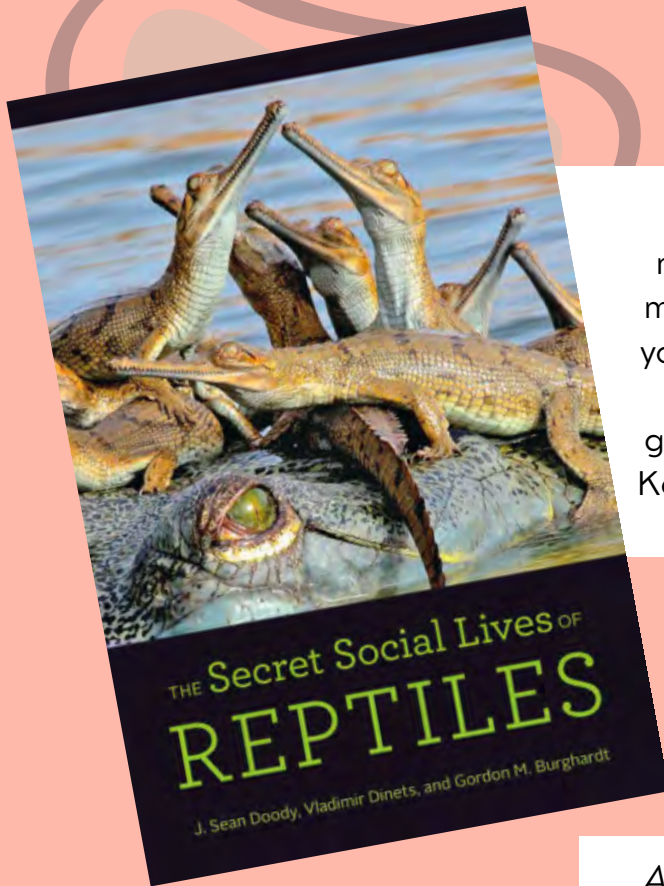
In June 2021, I joined a new project led by Dr. George DuPaul (Division 53) on **Homeschooling** to create easily digestible materials full of relevant information and considerations for parents considering home-schooling for their children. This resource is now available on APA's website.

If you are interested in learning more about the Coalition or have questions about our work, please feel free to email me at amanda.dettmer@yale.edu.

Amanda M. Dettmer, PhD
CPSE Division 6 Rep.



Books you might enjoy!



Learn how
reptiles are far
more social than
you might initially
believe. From
garter snakes to
Komodo dragons

*Animals are
adjusting and
evolving to
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aggressive
butterflyfish are
becoming
pacifists, and
anole lizards are
getting larger
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Thank you to all newsletter contributors!

Newsletter Edited by Justin Varholick, PhD

Please submit contributions at any time to

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