Science & Technology

A Spoonful of Humor Helps the Neuroscience Go Down

Rai Sen is the founder of the Lab, an improv troupe that uses comedy to communicate science to the public.

By
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Illustration by *Columbia Magazine*

Rajyashree “Rai” Sen drags a chair to the middle of the stage at Magnet Theater on West 29th Street in Manhattan. Across from her sits Vikram Gadagkar, a fellow neuroscientist at Columbia’s Zuckerman Institute and the special guest for this

evening’s improv comedy show.

Joining Sen and Gadagkar onstage are about a dozen people who make up the Lab, the improv comedy troupe that Sen started three years ago with a grant from the Zuckerman Institute. The crew — made up of Sen, the only scientist/comedian, and a group of people who daylight in other jobs and moonlight in comedy — work with a selected guest to put on a show each month, with the aim of communicating science to the public.

Before them sits a small audience of about twenty-five people, some clutching drinks, eager for some science and maybe even some laughs.

“Could you tell us how you got into science?” Sen asks Gadagkar. She has handpicked him for this exercise not only because of his impressive work as a neuroscientist, but also because she can see some of herself in him. They are both Indian immigrants, and they have both shown remarkable adaptability in their careers, pivoting to neuroscience from other fields: Sen from microbiology, Gadagkar from physics.

Gadagkar’s face brightens like the spotlights trained on him as he talks through a broad smile, punctuating his words with sweeping hand gestures. “When I was in sixth grade in India,” he answers Sen, “I fell in love with bird-watching.”

The improv comics then take turns in the interviewer chair, asking Gadagkar more questions about his childhood (his dad was an evolutionary biologist studying wasps), as well as his current research into birdsong.

Gadagkar explains how dopamine, the reward and motivation chemical in the brain, aids young male birds in learning the best courting songs from their fathers. He measured the dopamine levels in zebra finches and tricked them into thinking they’d made a mistake in their song. He determined that a drop in dopamine levels acts as an error signal during practice to help the birds make corrections. The birds’ goal is to perfect their song to attract a mate.

“It’s kind of like what you’re doing here,” Gadagkar says, gesturing to the stage. “It’s a performance. By singing this beautiful song, they’re communicating their fitness.”

Gadagkar then leaves the stage, and Sen and the other improvisers go about performing a few skits based on the contents of the interview: a creepy man in a van tries to lure kids with the promise of a Nobel Prize; a middle-school boy asks his dad for help flirting; three women act as the judges for *Birdsong Idol*, promptly rejecting the first male's singing performance.

Sen hopes that these skits — silly, playful, witty, and surprising — help people find science more approachable. Her own interest in improv goes back to her young adulthood in her home of Kolkata, India. She started out in community theater, then a friend invited her to an improv group. She was hooked, and her improv and her science grew up together.

Sen sees the improv work as integral to her pursuits as a scientist. "I'm interested in social behaviors," she says. "How we understand social status and rank, how we recognize others, how we categorize others into groups, how we switch between social hierarchies." And it was with an improv-inspired openness to surprise that, as a Columbia postdoc, she "bumped into" a discovery: a region of the mouse frontal cortex not traditionally associated with navigation, but which seems to encode the spatial relationships between locations in a way that could support flexible navigation.

Despite her years of experience in comedy, Sen always feels stage fright before a performance. And sometimes her jokes do bomb, she says. But the performances with the Lab train her to follow her instincts, something that is essential to making progress in neuroscience. As she knows from her work in the actual lab, scientific discoveries often come about by accident, products of curiosity, flexibility, and creativity.

"The best scientists use whimsy and play," Sen says. "You might find something unexpected."

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