



## HOW I BECAME A

SLEEP  
SPECIALIST

BY CLETE KUSHIDA, M.D., PH.D.

I WAS ALWAYS interested in science as a kid. But what led me to medicine was a middle-school assignment that reminds me of this column: We had to interview people who worked in a field we were curious about, and I chose a doctor. Then, in high school, I did an internship at a hospital in Los Angeles. Even though I got woozy once watching a surgery, I was still drawn to medicine. I just didn't know what area I wanted to go into.

I started to figure it out during my first year at Stanford University. My roommate told me about an ad in the campus newspaper that said, "Are you interested in sleep?" We were intrigued, so we went to what turned out to be a session for students who wanted to study sleep for academic credit.

I signed up and got to work. We'd monitor patients with narcolepsy, a disorder that causes extreme drowsiness, while they slept overnight in a research lab. We hooked them up with electrodes to machines that recorded their brain waves, movements and heartbeat. Watching all those squiggly lines on the chart reader is how I became interested in sleep medicine and neurology, the study of the nervous system — I even learned how to tell if someone was asleep just by looking at their brain waves.

Later I took a class, Sleep and Dreams, with Dr. William Dement, a founder of the sleep-medicine field, and he became a mentor to me. Like him, I went to the University of Chicago, where I studied neuroscience, and then I went to the university's medical school.

That meeting I went to years ago with my college roommate was at the Stanford Center for Human Sleep Research, and now I'm its director. I study why people have trouble sleeping to improve the diagnosis of sleep disorders and create treatments for them. There are close to 90 sleep disorders, so I help people with things like sleep apnea, which is when you have trouble breathing during sleep, and sleepwalking.

Sleep is one of the youngest areas of medicine, so there are a lot of unanswered questions. We don't even know why we sleep! That's what keeps me going — there's so much to learn and explore. Interview by Alexa Diaz

## TINY STORY



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The number of teeny-tiny sensors zoologists brought to Tahiti to stick on snails living on the island. Each sensor is about 2-by-5-by-2 millimeters and is thought to be the world's smallest computer that has a battery. The sensors helped the scientists observe the snails' behavior, like where they traveled and how much sun they were exposed to.

## HOW AN ELEPHANT TRUNK USES

## SUCTION POWER

BY RICHARD SIMA • ILLUSTRATION BY CRISTINA SPANÒ

**A**N ELEPHANT'S trunk is an incredible tool. Made of pure muscle, it is capable of both uprooting entire trees and carefully plucking leaves one by one. It also has a sense of smell more powerful than a bomb-sniffing dog's.

Elephants use their trunks in many ways, like to drink and store and spray water. They also blow air through them to communicate — their loud bellows can be heard for miles. Recently, researchers

at the Georgia Institute of Technology discovered that elephants can use their trunks for something else too: applying suction to grab food.

Working closely with keepers at Zoo Atlanta, the researchers videotaped how Kelly, a 34-year-old female African elephant weighing over 7,400 pounds, grabbed different types of food. When she was offered large cubes of rutabaga (a root vegetable that elephants like to snack on), Kelly used her trunk's two opposable "fingers" to grab them, much as we use our fingers. But when she was

given many small rutabaga cubes, the elephant inhaled air through her trunk to create suction to pick them up. (Picture the strong suction of a vacuum cleaner. In fact, the elephant's suctioning even produced a loud vacuuming sound.) Kelly also used suction to pick up a single tortilla chip, the most challenging piece of food the researchers set on the table. The chip was thin, easily breakable and hard to grasp on a smooth surface, but Kelly was able to use suction to lift and grab the chip without breaking it.

How does an elephant create such

strong suction? The secret seems to be that it widens its nostrils while breathing in through its trunk. The researchers calculated that elephant noses could inhale at speeds exceeding 490 feet per second, or almost 30 times as fast as humans can sneeze out of ours!

Scientists and engineers often turn to animals, like octopuses, geckos and insects, for inspiration on how to build better robots. And this new study on elephant trunks could help with that too, says Andrew Schulz, the lead researcher. So is there anything a trunk can't do? ♦



## LOOKING FOR CRITTERS

## IN THE CLOUDS

BY JOSH OCAMPO • PHOTO ILLUSTRATIONS BY CHRIS JUDGE



CHRIS JUDGE SNAPPED a photo of a cloud last summer, and then he noticed something funny: It looked like a giant monkey! To reveal its face, he drew on the photo using a design program on his tablet, tracing the cloud's lines. He then took more photos of clouds and saw other creatures — a pack of bears, a narwhal, a T. rex — and drew their paws, fins and other limbs.



In September, he began posting these photos to Instagram and Twitter under the name A Daily Cloud. An illustrator for children's books, Judge thought of it as a fun challenge during quarantine. "You have this changing landscape, or changing canvas, every day," he says.

Look at the clouds, and you might also see a floating



monkey one day. The secret, Judge says, is to search at the right time. Sunrise and sunset are your best bets, because there are more shadows then, giving the clouds a 3-D look. It also helps to let your imagination run wild. His two daughters — Joey, 7, and Juno, 4 — are expert cool-cloud spotters: "They see some crazy stuff that I wouldn't notice." ♦