How can a three-pound mass of jelly that you can hold in your palm imagine angels, contemplate the meaning of infinity, and even question its own place in the cosmos?
—V.S. Ramachandran

Hovering just above the optic nerve are a pair of tiny structures in the brain, the suprachiasmatic nuclei (SCN). They sense daylight and work with genetic clocks in every cell to govern our circadian rhythms. If one’s SCN are damaged, one’s body slips its tempo, creating hormonal cacophony. Pitt’s Colleen McClung studies how our internal rhythm section performs and its relation to mood disorders and addiction; she’s especially interested in the adolescent brain. Her recent observations suggest that lasting neurodevelopmental deficits can result if this system becomes chronically out of sync.

The SCN fit on the head of a pin. It’s astonishing to consider the power they have over us. Scores of brain structures are equally critical, but none operates in a vacuum. And neither do the best scientists.

Colleen is in fine company in our Department of Psychiatry. The University of Pittsburgh has been the leading recipient of awards from the National Institute of Mental Health for 19 of the past 20 years. The department’s emeritus chair, David Kupfer, used to test the collaborative nature of potential recruits by taking them to dinner to see whether they’d share tastes of their meals. The department’s synergy has been critical to Pitt’s dominance in the field. Through our Brain Institute, we are building on that spirit, creating a Bell Labs for the mind.

The Institute, led by scientific director and National Academy of Sciences member Peter Strick, thrives from the interplay of Pittsburgh’s all-star lineup of 150 neuroscience experts in dozens of departments throughout Pitt and also at Carnegie Mellon University. Neuroscientists and clinicians here partner also with experts in engineering, philosophy, artificial intelligence, data analytics, and imaging.

So many advances in neuroscience originated on our campus. To name just a few, in addition, of course, to the polio vaccine: Pittsburgh Compound B, which allows for early detection of Alzheimer’s disease; the world’s most advanced brain-computer interface technology that allows a user to control a robotic arm and hand with just thoughts; the first Gamma Knife in the United States for brain surgery; and the discovery that some cases of severe and otherwise unrelenting depression can be alleviated by balancing metabolites.

And now, we finally have powerful tools to explore previously uncharted and enigmatic gray matter. I’m so taken with the possibilities, that in my own lab, which has focused on DNA damage and repair, we are now also beginning to investigate the molecular underpinnings of Alzheimer’s disease. Who knows—I may become our 151st neuroscientist!

Furthering my own understanding of this extraordinary organ has not lessened my reverence for it. I like the way Ramachandran, a neuroscientist at UC San Diego, put it:

Especially awe-inspiring is the fact that any single brain . . . is made up of atoms that were forged in the hearts of countless, far-flung stars billions of years ago [and] now form a conglomerate . . . that can not only ponder the very stars that gave it birth but can also think about its own ability to think and wonder about its own ability to wonder.

That three-pound mass of jelly must be the greatest wonder of our world.

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