outcomes and to educate physicians on treating minority populations.

The changes will give the center "more impact, more influence, more power," says Anthony Fauci, head of the National Institute of Allergy and Infectious Diseases. Fauci and NIH acting deputy director Yvonne Maddox are leading a working group examining health disparities research across the institutes that will help shape NIH's priorities for addressing health disparities in 2002.

Although major biomedical lobbying groups have pushed for the center's creation, some observers question the decision by NIH principal deputy director Ruth Kirschstein to put longtime ORMH director John Ruffin in charge instead of conducting a national competition. Ruffin has fought successfully to fund specific studies and establish new clinical centers at historically black medical schools, but a source who requested anonymity says he's "not very aggressive in moving the agenda." However, others say that Ruffin's familiarity with top NIH officials could be critical to the center's success. "It seems prudent to me to maintain the core infrastructure of the office to ensure a smooth transition," says Keith Norris, a clinical researcher at Charles R. Drew University of Science and Medicine in Los Angeles.

–JOCELYN KAISER

With reporting by Laura Helmuth.

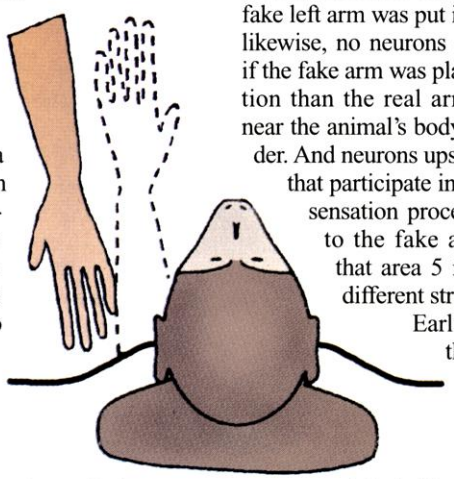
NEUROSCIENCE

Where the Brain Monitors the Body

As any klutz will attest, coordination is complicated. Just to keep track of their limbs, for example, people and animals use information from several senses, such as vision, touch, and proprioception, which tells them their body's position. Indeed, large portions of the brain are devoted to keeping track of these sensations and dictating the body's movements. "As you interact with the world, you need constant information about where the body is," says neurophysiologist Lawrence Snyder of Washington University in St. Louis. Researchers haven't known exactly where all those signals are integrated, but now a team may have located some of the neurons that first make these multisensory connections.

On page 1782, a team led by psychologist Michael Graziano of Princeton University reports evidence that a small region of the parietal cortex of the monkey brain known as area 5 may enable the monkey to integrate many sources of information about its body and thereby update its mental model of what the body is doing. The researchers based this conclusion on their finding that some area 5 neurons fire at their fastest rates when the visual feedback from a monkey's arm matches the sensory feedback, an indication that the neurons are sensitive to both streams of information.

Neuroscientists had suspected for some time that parts of the parietal cortex, located below the crown of the head, might be involved in maintaining a coherent representation of the body. One indication of this came from instances in which people with damage in the parietal cortex fail to recognize one of their limbs. Such patients might wake up startled, thinking someone put a fake leg in the bed.



Mismatched. Neurons in area 5 aren't fooled by flipped arms.

CREDIT: M. GRAZIANO *ET AL.*

Graziano and his colleagues were inspired to look for multisensory neurons a few years ago when they uncovered "roundabout evidence" that neurons in another movement area, called the premotor cortex, are sensitive to both vision and proprioception. If neurons in areas that process the body's movement and sensations also respond directly to vision, they reasoned, such neurons might be key to integrating the different kinds of signals that provide a coherent model of the body. Graziano and colleagues then decided to track down where this integration starts—where in the brain's body-sensory system vision first makes an appearance.

To do this, the researchers devised a technique for giving a monkey information from both vision and proprioception; this would enable the researchers to identify neurons that are sensitive to whether the information matches. After fitting the monkey with a long collar that restricts its near-body vision, the researchers hide one of the animal's arms beneath a shallow ledge. They then place a realistic, stuffed monkey arm or other objects on top of the ledge, either in the same position as the hidden arm or on the other side of the body. Because of the collar, the fake arm might appear, from the monkey's perspective, to be coming from its own body.

When the researchers recorded the responses of single neurons in area 5 of the monkey's brain, they found cells that are sensitive to whether the sight of a fake arm matches the feel of its real arm. Neurons that respond to one arm didn't change their firing rate when the researchers placed apple slices on the ledge or lined the fake arm up with the monkey's other, also hidden, arm. But when the fake arm was aligned in the same position as the real, hidden, arm, 29% of the neurons changed their firing rate.

What's more, these neurons weren't fooled by mismatched arms: Right-arm–sensitive neurons didn't fire strongly when a fake left arm was put in the right arm's place; likewise, no neurons ramped up their firing if the fake arm was placed in a different position than the real arm, say, with the palm near the animal's body rather than the shoulder. And neurons upstream of area 5—those that participate in earlier stages of body-sensation processing—didn't respond to the fake arm at all, suggesting that area 5 is the first to integrate different streams of input.

Earlier research had shown that area 5 responds to proprioceptive signals, says Snyder, but this new result suggests that "the information processed by area 5 is more multisensory, more abstract" than simple proprioception. And if area 5 neurons integrate signals from many channels, Snyder says, they might be the first stages of a "representation of where the body is in space."

–LAURA HELMUTH

INDIA

Disease Data Stolen In Lab Break-In

NEW DELHI—The hard drives of nine computers, containing epidemiological data gathered from around India, have been stolen from the Indian Council of Medical Research (ICMR). The missing data, stored on personal computers in the council's Epidemiological and Communicable Diseases (ECD) unit, include published and unpublished information collected by 16 regional centers on the incidence of AIDS, malaria, tuberculosis, and other killers. Health officials say they have no idea who stole the drives, or for what purpose.

The hard drives were removed on the night of 10 November from the ICMR's third-floor offices. The thieves systematically dismembered functional computers after breaking open locks to as many as six different rooms but did not touch other, more expensive equipment on the premises. They also left undisturbed the council's main bioinformatics computer center on the ground floor.

ECD chief Lalit Kant says he is "heartbroken" by the break-in, which represents the loss of years of "sweat and blood." Individual data sets still exist in the regional centers, he notes, but what is now missing is