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Laser-scanning Microscope Images Brain Cells In Freely Moving Animals

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“We need to let the animal behave as naturally as possible if we want to understand how its brain operates during interaction with complex environments.”

Source: www.sciencedaily.com

Scientists at the Max Planck Institute for Biological Cybernetics in Tübingen, Germany have designed a Laser-Scanning microscope small enough to be worn by freely moving rats. This new technology will provide critical information for studies of attention and perception processes because of the way that neurons can now be observed:

“We need to let the animal behave as naturally as possible if we want to understand how its brain operates during interaction with complex environments. The new technology is a major milestone on the way to helping us understand how perception and attention work,” says Jason Kerr, lead author of the study.

This new, non-invasive microscope uses a high-powered pulsing laser and fiber optics to scan cells beneath the surface of the brain. Insertion of electrodes, therefore, is not necessary. The lightweight, miniaturized laser scanning microscope images fluorescent neurons while animals are awake and active.

Attention and perception are complex processes that involve the utilization of senses simultaneously to construct our view of the world. In the past, it has been difficult for researchers to study such processes because information about attention and perception are dependent on the observance of meaningful signals from groups of neurons while the organism is in motion. Past study methods include presenting a restrained animal with movies, images, and scenes while observing brain activity.