IN THE NEWS

Calling all kleptomaniacs

Researchers at Stanford University are asking people with a propensity for stealing to come forward — but not with the intention of turning them in to the authorities. Rather, they are being invited to participate in a study to find out whether Lexapro, a drug that increases serotonin levels, could be used to treat kleptomania.

However, in spite of assurances of confidentiality, the team, led by Lorrin Koran, are having difficulty recruiting their subjects. Team member Elias Aboujaoude said "People are hesitant to come forward, because what they are doing is illegal and very stigmatized. We're approaching it as an impulse control disorder" (*San Francisco Chronicle*, 8 November).

Also, the definition of kleptomania is very specific, so few of their volunteers actually fit the bill. True kleptomania resembles an obsessive-compulsive disorder, and is believed to be triggered by internal factors in the brain. In most cases of compulsive shoplifting, the behaviour is found to be attributable to external factors, such as stress.

Winona Ryder's trial has put shoplifting in the news recently, and support groups for compulsive stealers hope that such cases will raise the profile of their condition. Terrence Shulman of Cleptomaniacs and Shoplifters Anonymous said "We had Betty Ford for addiction and Magic Johnson for HIV, but no-one for shoplifting. We need someone to come forward. I'm trying to do it, but I'm not famous" (*San Francisco Chronicle*).

Koran has previously studied compulsive shoppers, and he suspects that local businesses are keeping a close eye on his research: "[The Stanford Shopping Center] didn't want me to do the shopping study. But they want me to do this study" (*Mercury News*, 3 October).

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of neurons in this region was sensitive to horizontal rotation. Vestibular responses were usually in phase with head velocity, although they sometimes reflected acceleration or even position. Surprisingly, these responses were always codirectional with the visual on-direction — neurons preferred visual stimulus motion and movement of the head (which involves movement of the visual scene in the opposite direction) in the same direction. Most cells were sensitive to tactile stimulation in the head region, and somatosensory responses were found to be aligned with the visual preferred direction, either in the same or in the opposite direction.

These studies provide compelling evidence for a role of the VIP in the processing of self-motion in near space, but many questions remain unanswered. In particular, further studies will be needed to unravel the meaning of non-complementary visual, vestibular and somatosensory responses of VIP neurons. Ultimately, the aim will be to describe the neural mechanisms that allow the monkey to detect and respond to both active and passive movements of the head and body, in addition to other moving objects, as it makes its way through an unstable environment to secure its reward.

Rebecca Craven

References and links

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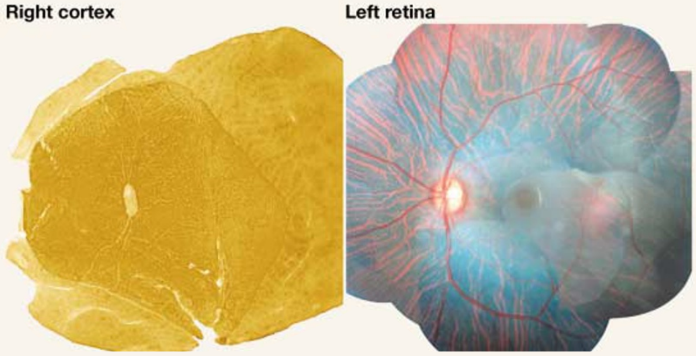
VISUAL SYSTEM

Space invaders



Right cortex of a squirrel monkey (left), stained for cytochrome oxidase. The pale oval represents the blind spot of the left eye, and emerging from it are channels that are reminiscent of the blood vessels that supply the retina. These channels correspond to remodelled ocular dominance columns, and each column can be matched to the retinal vessels (right). Courtesy of D. Adams, Beckman Vision Center, University of California, San Francisco, USA.

In the primary visual cortex of many higher species, eye-specific afferent fibres from the lateral geniculate nucleus (LGN) segregate into stripes known as ocular dominance columns. During a phase of development called the critical period, changes in retinal activity can profoundly alter the patterning of these columns. For example, closing one of the eyes causes that eye's designated cortical territory to become invaded by afferents that represent the open eye. But do these geniculate afferents actively compete for cortical space during normal development, or is this merely a compensatory mechanism that comes into play when retinal activity is severely perturbed? In a new study reported in *Science*, Adams and Horton have made some progress towards answering this question, by identifying a naturally occurring change in retinal activity that can subtly shift the allocation of cortical space.

The mammalian eye has what might be considered to be a design fault. The retinal blood vessels traverse the retina in front of the photoreceptor layer, creating microscopic blind streaks called angioscotomas. The LGN neurons, which relay visual information from the retina to the cortex, operate on a 'use it or lose it' basis — if they are not stimulated, their axons retract from the cortex. In the squirrel monkey, the authors examined the fate of afferents from LGN neurons that receive input from the regions that are obscured by blood vessels. It seems that these neurons retract their axons, causing a precise topographical map of the vascular branching pattern to be etched into the visual cortex. The resulting gaps become filled in by fibres that correspond to the opposite eye.

This is not the first example of this type of reciprocal filling-in of cortical space. It was previously shown that the territory that represents the blind spot of each eye becomes filled by afferents from the opposite eye. However, this is different to the angioscotoma situation — because the blind spot is devoid of photoreceptors, the LGN never detects activity from this part of the retina. So, afferents that represent the blind spot are presumably never established in the first place. By contrast, the photoreceptor and ganglion cells that lie behind retinal blood vessels develop normally, and it is assumed that they exhibit the same patterns of activity as their neighbours until the retina becomes exposed to light after birth.

This new study is an important step forward in understanding activity-dependent development in the visual system. It indicates that plasticity during the critical period is a natural developmental phenomenon, and that LGN afferents are inherently competitive during this time, making the ocular dominance pattern of the visual cortex exquisitely sensitive to changes in retinal activity.

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