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Stroke modeled with increased precision

SAN DIEGO, Jan. 24 (UPI) -- University of California-San Diego scientists say they've found a way to model different types of stroke with unprecedented precision.

UC neurophysicist David Kleinfeld says the method involves targeting individual rat blood vessels with controlled laser bursts. Any disruption in the flow of blood to the brain can potentially be devastating, and even a mild stroke can result in lingering neurological damage.

The physiological causes of stroke typically involve physical obstruction or damage to the integrity of cerebral blood vessels. Most current animal models for stroke involve either surgical manipulation or the direct injection of blood or clotting agents.

Kleinfeld and colleagues developed an alternative approach offering greater precision, as well as enabling modeling of three different scenarios for the onset of stroke.

Using brain mapping and imaging technologies they target rat brain vasculature with short pulses of laser light. By controlling the duration and energy of the pulses they found they could control the nature of the damage being induced.

Preliminary experiments demonstrate the potential value of the technique for testing therapeutic agents to help prevent or counter the damage resulting from stroke.

The study is detailed in the February issue of Nature Methods.

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