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Solving the enigma of migraine

Novel Migraine Mechanisms as Targets for Therapy

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Advances in genetics, laboratory models, and imaging techniques are providing new information about migraine mechanisms that may be targets for new treatments. Imaging and physiological recording of cortical spreading depression in rodent models reveals complex neuronal, glial, and vascular changes that may last for hours after a single spreading depression event. We have identified multiple pharmacological approaches to inhibiting cortical spreading depression and the cellular changes that accompany it. We have also developed rodent behavioral models to investigate migraine-related pain behavior. Administration of nitroglycerin, a well known migraine trigger, evokes hyperalgesia and avoidance behaviors in mice. Repetitive intermittent admini-

stration of nitroglycerin over days results in progressive and sustained hyperalgesia, which may represent a model for chronic migraine. We have been using these behavioral models, along with the spreading depression model, to identify and characterize new potential migraine treatments. We have also used the spreading depression and behavioral models to study the functional effects of a new human migraine gene. These results may facilitate the rapid development of novel therapeutic approaches to patients with migraine.

※ Author's disclosure of potential Conflicts of Interest (COI).

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