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The 'Itch Gene' Has Been Found!

Itching, different from pain

At last, you went out with that sexy bomb and suddenly that crazy itch has started. You feel like scratching anywhere...on the table, chair, floor. Well, researchers finally found that a mere protein is behind this shameful sensation of yours. A team led by Dr. Zhou-Feng Chen at Washington University School of Medicine in St. Louis has found the first gene for the itch sensation in the central nervous system, a hope for those suffering of chronic and severe itching. The "itch gene" is not new: it is GRPR (gastrin-releasing peptide receptor), which codes for a receptor encountered in some spinal cord neurons where pain and itch signals are directed from the skin to the brain. Lab mice lacking this gene scratched much less than their normal counterparts did when exposed to itchy stimuli. This is the first proof of a receptor specific to the itch sensation in the CNS. Chronic itching can be caused by skin disorders like eczema, or it can be a symptom of kidney failure or liver disease, but also a severe side effect of cancer therapies or powerful painkillers (like morphine). This condition can induce sleep impairment or lead to scarring due to intense scratching. Effective treatments are scarce as scientists neglect the itch, regarded merely as a less intense pain sensation. The team was in fact investigating GRPR in connection with the pain pathway. But amongst potential pain-sensing genes encountered, GRPR was different as it was active in just a few neurons in the spinal cord. The first tests revealed that the gene was not linked to pain sensation. Instead, when injected in the spinal cord with a chemical that turns on the GRPR, the mice began scratching themselves as if they felt a bad itch. "That's when we thought the gene might be involved in the itch sensation. So we began to systematically investigate this possibility", Chen said. GRPR knockout mice scratched much less than normal mice did when exposed to itch-producing chemicals. "The fact that the knockout mice still scratched a little suggests there are additional itch receptors. We know of some proteins that are similar to GRPR, so now we're trying to determine if there is functional redundancy in the itching pathway", Chen said. "Scientists have been studying this receptor (GRPR) for more than a decade. One interesting thing they've found is that GRPR is implicated in tumor growth. As a result of research like this, a lot of substances have been made that block the activity of GRPR. So now researchers can study the effect of these agents on the itch sensation and possibly move that research to clinical applications fairly soon.", he also added.