

New gene offers hope for preventive medicine against fractures

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A big international study has identified a special gene that regulates bone density and bone strength. The gene can be used as a risk marker for fractures and opens up opportunities for preventive medicine against fractures. The study, led by the Sahlgrenska Academy, University of Gothenburg, Sweden, was published in the journal *PLoS Genetics*.

The international study, which involved more than 50 researchers from Europe, North America and Australia and was led by Associate Professor Mattias Lorentzon and Professor Claes Ohlsson at the Sahlgrenska Academy, University of Gothenburg, is based on extensive [genetic analyses](#) of the genetic material of 10,000 patients and experimental studies in mice.

Through the combined studies, researchers have succeeded in identifying a special gene, Wnt16, with a strong link to [bone density](#) and so-called cortical bone thickness, which is decisive to bone strength.

The [genetic variation](#) studied by the international research network could predict, for example, the risk of a forearm fracture in a large patient group of older women.

"In the experimental study, we could then establish that the gene had a crucial effect on the thickness and density of the femur. In mice without the Wnt16 gene, the strength of the femur was up to 61 per cent lower," according to Mattias Lorentzon at the Institute of Medicine, the Sahlgrenska Academy, University of Gothenburg.

The discovery opens up opportunities to develop [new medicines](#) to prevent the most common fractures.

"Low cortical bone mass is a decisive factor in, for example, hip and forearm fractures. Unfortunately, the treatments currently used for brittleness of the bones have very little effect on the cortical bone mass," says Mattias Lorentzon.

"If we can learn to stimulate the signaling routes of the Wnt16 gene, we could strengthen the skeleton in these parts too, thereby preventing the most common and serious fractures. The discovery of Wnt16 and its regulation of [cortical bone](#) mass is therefore very important," according to Mattias Lorentzon.

More information: The article "WNT16 influences Bone Mineral Density, Cortical Bone Thickness, Bone Strength and Osteoporotic Fracture Risk" was published in PLoS Genetics on 5 July.

Provided by University of Gothenburg

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