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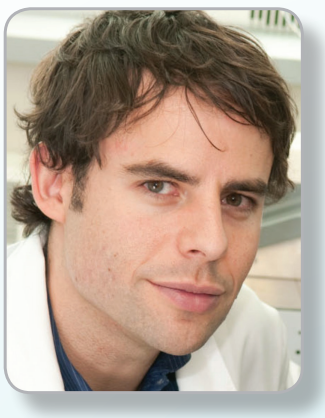
PAPER OF THE MONTH • FEBRUARY 2018



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Identification of 153 new loci associated with heel bone mineral density and functional involvement of *GPC6* in osteoporosis

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The largest study ever conducted on the genetics of common age-related bone disease has resulted in the identification of 153 new gene variants associated with the loss of bone mineral density, the strongest clinical risk factor for osteoporosis, and a frequent cause of fractures. This effectively triples the number of genes known to be implicated in osteoporosis, and the new gene variants account for 12% of the heritability of the disease, which is double the previous level. Particularly exciting is the discovery of a previously unknown link between the gene *GPC6* and osteoporosis. Knocking out *GPC6* in an animal model resulted in increased bone density. This gene is a cell surface protein making it easier to target, enhancing the prospects for successful drug development.

The sheer statistical power of this study is impressive, explaining why so many new gene variants were revealed. The genome-wide study involved more than 140,000 individuals whose records are included in the UK Biobank database. A qualitative ultrasound of the heel was employed to measure for bone mineral density. This study was conducted with the participation of Genetic Factors of Osteoporosis Consortium, which includes nearly every major bone density research team in the world.

doi:10.1038/ng.3949