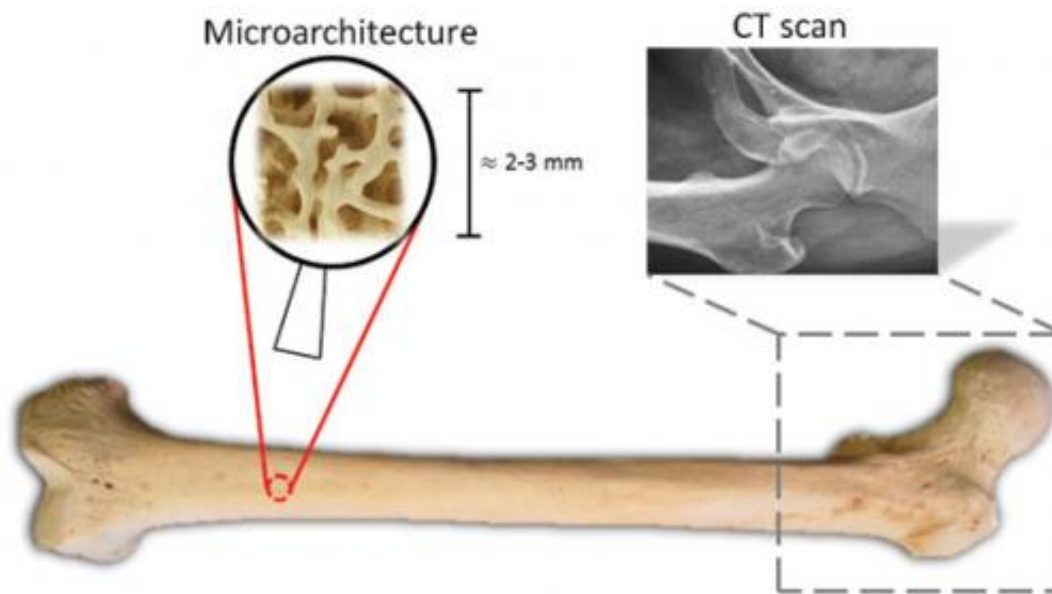


Universities develop tissue diagnostic tool to look inside patients' bones

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Looking at bone on a microscopic level.

A hip fracture after the age of 65 could lead to death for one out of four people, but UK scientists are working on a method that will help diagnose weakened bones before they break and provide more effective treatment should a break happen.

Looking inside bone at a microscopic level

Scientists at four universities across the UK are developing a framework

that helps determine the quality and strength of an individual patient's bone tissue. The research will gather clinical data using advanced imaging techniques that look inside bone on a [microscopic level](#), compared with conventional radiography that simply measures [bone mineral density](#) (BMD).

As bone is not made of a completely solid material, the mathematical tool will measure how porous bone tissue is, its connectivity on a microscopic level and therefore how bone tissue manages daily loads. This will not only measure [bone density](#), but provide essential information to diagnose individual patients' conditions and identify the most efficient treatment plan following a fracture or the general wear and tear on bone throughout life.

Improving treatment

Understanding bone quality on a microscopic level will assist the pharmaceutical industry to target relevant biological processes and develop better drugs, as well as giving doctors more information on patients' specific bone structures meaning more [effective treatment](#) both to prevent a break or following one.

Dr Yuhang Chen, an expert in computational biomechanics in the School of Engineering and Physical Science at Heriot-Watt University, said, "Currently, around 25 per cent of patients aged 65 to 80 die after a [hip fracture](#). This figure could be reduced by this unique tool.

"In addition to existing technologies, our research will help doctors assess the quality and strength of a patient's [bone tissue](#) leading to more effective and detailed diagnosis of individual conditions, as well as the ability to predict the likelihood of a [bone](#) fracture occurring.

"It will also allow people to live more flexible lifestyles after something

like a hip fracture, which can often be quite debilitating and emotionally stressful."

Collaborative research between four universities

Dr Chen is working with scientists from the University of Liverpool, who are leading on the project, the University of Edinburgh and Durham University to create the new diagnostic tool, in a project funded by the Engineering and Physical Sciences Research Council (EPSRC).

Professor K Chen, Director of CMIT, in the Department of Mathematical Sciences at Liverpool University, said, "This award is the result of a genuinely collaborative effort by a national team bringing together leading experts in Material Sciences, Computational Mechanics and Biomedical Engineering."

Provided by Heriot-Watt University

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