Osteoarthritis could be treated as two diseases, scientists reveal

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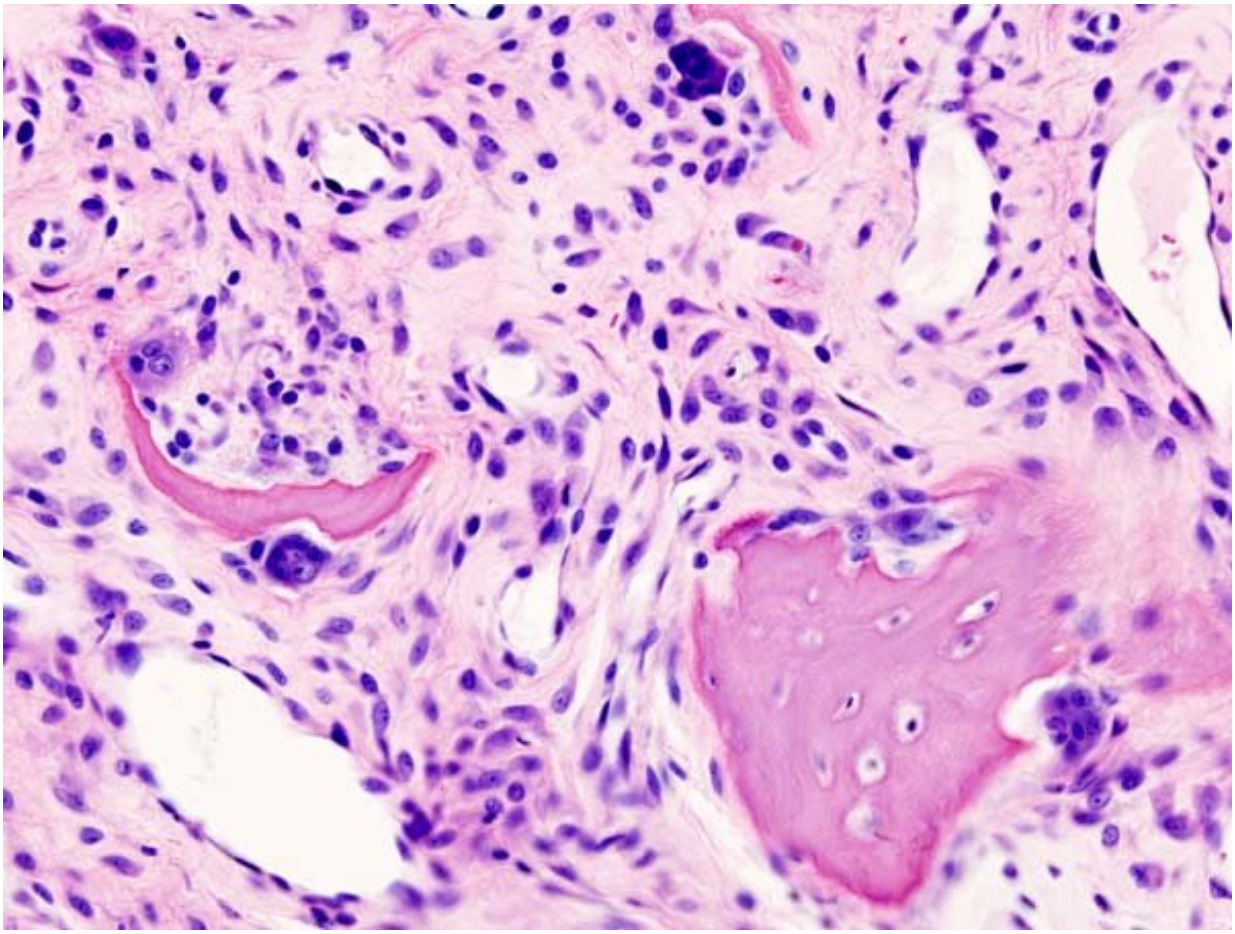

Histopathology of osteoarthrosis of a knee joint in an elderly female. Credit: GNU Free Documentation License

Scientists at The University of Manchester have discovered that most people with osteoarthritis can be subdivided into two distinct disease groups, with implications for diagnosis and drug development.

Professor Tim Hardingham, based at The University's Wellcome Trust Centre for Cell-Matrix Research and Division of Cell Matrix Biology and Regenerative Medicine says the team has identified two different patterns of disease activity.

The research, funded by Arthritis Research UK is published in the international journal *Annals of the Rheumatic Diseases*.

The discovery of the two disease groups was made by using mathematical analysis of the thousands of genes expressed from tissue obtained from 60 individual patients with knee osteoarthritis.

As the stratification is based on active metabolism in the diseased tissue, the team believe it may help predict different patient responses to treatment.

Osteoarthritis is a complex and debilitating disease which affects more than 8 million sufferers in UK, which is increasing as the population ages.

Professor Hardingham said: "This is an important new discovery in Osteoarthritis, which reveals a metabolic basis for developing patient specific treatments targeted at the two different groups

"It will inform the future design, set up and analysis of drug trials and may help predict different patient responses to treatment.

"There is an urgent need for better treatments and we hope this research may help us along that road.

"Musculo-skeletal conditions cost the NHS £4.76 billion per year in 2013-14 and there has been little advance in the treatments for osteoarthritis over that past 30 years; new approaches tested have yielded little benefit."

The team also developed a more simple method of analysis, generating a list of candidate biomarkers for detection in patients' synovial fluid—found in the cavities of joints—to distinguish patients in the two Groups

They hope the analysis will help future research.

He added: "This is a significant step forward in our understanding of osteoarthritis, a complex and debilitating disease which has a major socio-economic impact.

"However, the discovery is just the first step in a long process that may lead to developing new drugs and treatments that are targeted to each group."

"The disease has many clinical criteria and treating it as a single disease has become recognised as unproductive.

"So any new treatments which delayed the onset, or reduced progression of osteoarthritis in either group, would relieve much patient suffering and reduce the healthcare burden."

Dr. Natalie Carter, head of research liaison and evaluation at Arthritis Research UK, comments:

"We know that millions of people live with the daily pain of osteoarthritis. This, coupled with stiffness and fatigue, can make everyday life difficult, limiting a person's ability to get dressed, go to

work or even climb the stairs.

Although it's still very early days, this study is good news for people with osteoarthritis and helps us to build on our understanding of the condition. We welcome more research, like this study, that has the potential to improve the way we understand, diagnose and treat osteoarthritis and so that people with arthritis can live the pain free life they deserve."

More information: "Osteoarthritis –Two major disease subsets identified by genome-wide expression analysis." *Annals of the Rheumatic Diseases*

Provided by University of Manchester