Human ancestors could hold the key to early diagnosis of bone disease

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The UK has the highest rate of Paget's bone disease in the world, but now researchers from Liverpool John Moores University (LJMU), the Paget's Association and Norton Priory Museum Trust are analysing ancient bones to better understand the progression of the disease, which may permit earlier diagnosis.

Paget's disease disrupts the normal cycle of bone renewal and repair, causing bones to become weakened and deformed. It is known to affect up to 1 in 12 older men and 1 in 20 women over the age of 80. But symptoms often only show at the later stages.

As Diana Wilkinson, Specialist's Paget's Nurse, of the Paget's Association explains: 'The North West of England is known to have the highest prevalence of Paget's disease and evidence of the condition has been found in 1 in 20 skeletons, believed to date from the 13th to the 15th centuries, unearthed in an archaeological dig at the Priory.'

LJMU houses a collection of over 1,000 skeletons and is one of the few universities to have a dedicated x-ray machine, thus enhancing research capabilities to check for early stage disease within the bone.

Carla L. Burrell, a volunteer at Norton Priory and LJMU PhD Student, will be presenting at the Paget's Association Information Day held in Derby, 8th May 2015 (www.paget.org.uk). As Carla describes: 'What we have found is that Paget's bone disease occurs at a younger age than previously thought long before symptoms come to full effect, which

means that diagnosis could take place for young people and treatment could start earlier.

Carla's talk at the Information Day, 'An osteoarchaeologist's perspective on Paget's Disease', will be discussing the forthcoming research on the identification and occurrence of Paget's Disease in the human remains collection.

Dr James C. Ohman, Senior Lecturer in Palaeoanthropology at LJMU, says: 'Our research on the skeletal collections housed at LJMU has greatly expanded over the last few years, with the initial growth in postgraduate students beginning with me taking on four students including Carla. In addition to Paget's Disease, our research has now expanded to include studies on human growth and development, nutrition and diet, multidisciplinary approaches, and new accurate method for estimating sex from the pelvis. The impact of these studies improve our understanding of past populations, the identification of human remains, and may be used to support the work being done by the Paget's Association.'

Norton Priory houses about 130 medieval skeletons, six have been identified with Paget's Disease. Lynn Smith, Senior Keeper, has made possible a collaboration with LJMU to reanalyse these skeletons and further examine the disease. Additionally, a £3.7m Heritage Lottery Fund project is now underway to conserve the undercroft and redevelop Norton Priory Museum Trust. The new museum will allow the human remains being analysed as a part of this project to be displayed as never before. Professor Bill Fraser, Trustee of the Paget's Association, is providing scientific advice to the team at Norton Priory and scientists at LJMU, the University of Nottingham, and the University of Leicester.

Professor Roger Francis, Chairman of the Paget's Association, explains: '"The intention is to perform the first molecular analyses on some of the

remains with the hope of identifying why there was such a high prevalence of Paget's Disease at Norton Priory. While others at Norton Priory and LJMU are helping to bring the 'remains to life' by providing insights into what life was like in the past for those affected by Paget's Disease. The team at Norton Priory were keen to involve those afflicted with the condition, and so we are delighted that our Specialist's Paget's Nurse, Diana, was invited with the Manchester Paget's Support Group to Norton Priory in order to assist their team in making the proposed new displays relevant to modern day audiences."

Provided by Liverpool John Moores University