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# Genome-wide comparison of medieval and modern leprosy

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Prof Gurdyal Besra

A recent report comparing modern and medieval leprosy (*Mycobacterium leprae*) by **Professor Gurdyal S. Besra (http://www.birmingham.ac.uk/schools/biosciences/staff/profile.aspx?ReferenceId=4298&Name=professor-gurdyal-besra#)** , Bardrick Professor of Microbial Physiology and Chemistry, and **Professor David E. Minnikin (http://www.birmingham.ac.uk/schools/biosciences/staff/profile.aspx?ReferenceId=36569&Name=professor-david-e-minnikin)** , Emeritus Professor of Microbial Chemistry, of the School of Biosciences, has been published in *Science* (**DOI: 10.1126/science.1238286 (http://www.sciencemag.org/content/early/2013/06/12/science.1238286)** ).

Leprosy was endemic in Europe until the Middle Ages. Using DNA array capture, we have obtained genome sequences of *Mycobacterium leprae* from skeletons of five medieval leprosy cases from the UK, Sweden, and Denmark. In one case, the DNA was so well preserved that full de novo assembly of the ancient bacterial genome could be achieved through shotgun sequencing alone.

Prof David Minnikin

The ancient *M. leprae* sequences were compared with those of 11 modern strains, representing diverse genotypes and geographic origins. The comparisons revealed remarkable genomic conservation during the past 1000 years, a European origin for leprosy in the Americas, and the presence of an *M. leprae* genotype in medieval Europe now commonly associated with the Middle East. The exceptional preservation of *M. leprae* biomarkers, both DNA and mycolic acids, in ancient skeletons has major implications for palaeomicrobiology and human pathogen evolution.

**More on this story here (http://www.birmingham.ac.uk/news/latest/2013/06/12-Jun-13-Medieval-leprosy-genomes-reveal-insights-into-the-history-of-the-disease.aspx)**

**Professor Besra (http://www.birmingham.ac.uk/schools/biosciences/staff/profile.aspx?ReferenceId=4298&Name=professor-gurdyal-besra#)** heads a world-leading multidisciplinary team investigating key aspects of the microbial physiology of the Mycobacterium tuberculosis cell wall and the potential role of iNKT/CD1d therapeutics. He has been awarded and successfully managed over 35 research grants valued at over £11 million from The Wellcome Trust, the Biotechnology and Biological Sciences Research Council (BBSRC) and the Medical Research Council (MRC) during the period 2001-2011.

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