**New TB treatment study**

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A team of researchers, led by Professor Juraj Ivanyi at King’s, have identified potential new means to treat tuberculosis (TB).

They have developed a monoclonal antibody which was found to offer protection against tuberculosis infection in experimental models when combined with interferon, a modulator of the immune system.

The study was carried out by researchers from King’s College London, University of Dundee, and St George’s, University of London, and the findings were published in the most recent edition of *Journal of Immunology.*

TB remains a recognised global emergency, claiming around two million lives across the world each year, and 2010 saw the largest number of new cases of TB in the UK for over a decade.

Approximately one-third of the world's population is infected with Mycobacterium tuberculosis, the bacterium responsible for this huge public health problem.

Unfortunately, the BCG vaccine used in some countries does not protect against disease in all adults, and drugs need to be delivered for several months.

The problem has been compounded by a dramatic rise in TB strains displaying multiple drug resistance.

As a result, new ways to prevent and control tuberculosis are urgently required, and the strategy developed by the London/Dundee teams paves the way toward a previously unexplored form of treatment.

With a team of collaborators, Dr Sucharitha Balu in Professor Ivanyi’s team at King’s produced the human monoclonal antibody, which is of the IgA type and can specifically recognise Mycobacterium tuberculosis.

IgA antibodies are proteins normally used by the immune system to identify and neutralise foreign microbes like bacteria and viruses within the lungs and intestinal tract.

The human monoclonal antibody generated in the research is a homogeneous antibody preparation with the capability to specifically attach to the Mycobacterium tuberculosis bacterium and trigger immune processes that prevent bacterial growth.

Although human monoclonal antibodies are widely used to treat various forms of cancer and inflammatory disorders, this is the first demonstration that they might have applicability against tuberculosis.

Dr Woof from the University of Dundee explained the need to develop new treatments and vaccines for TB, and the potential to develop this research further.

'The number of cases of TB remains very high, and so this is clearly a major problem,' she said.

'Across the world, there are millions of people falling victim to infectious diseases such as TB, so the implications of this research could be considerable'.

'Antibodies exist as five different types in humans, with those of the IgG type already being used in some clinical treatments.

Antibodies of the IgA type are slightly different. They possess properties that we believe may be important in governing how this IgA antibody works against TB infection'.

The study, funded in part by the Wellcome Trust and the Dunhill Medical Trust, was the result of a productive collaboration with each team bringing a different sphere of expertise.

Professor Juraj Ivanyi at King’s is an international expert in tuberculosis research, while Dr Woof's team in Dundee brought experience in human IgA antibodies. Dr Reljic at St George’s has expertise and special facilities for experimental models of TB infection.

Several years of previous research by Professor Ivanyi, Dr Reljic and their collaborators at the HPA Salisbury and Palermo, Italy provided general ‘proof of concept’ for this sort of approach, while this study opens the road for translating it toward human application.

Professor Ivanyi is based at the Dental Institute at King’s, which has a long history of pioneering research into mucosal immunology and vaccines.

He said: 'This study brings us much closer to finding new ways to treat tuberculosis, although further research is needed before we can begin to trial this approach in patients.

'I am excited about where this project can lead us in terms of potential new treatments for this devastating disease.'

**Notes to editors**

**King's College London**

King's College London is one of the top 25 universities in the world (2010 QS international world rankings), *The Sunday Times* 'University of the Year 2010/11' and the fourth oldest in England. A research-led university based in the heart of London, King's has nearly 23,000 students (of whom more than 8,600 are graduate students) from nearly 140 countries, and some 5,500 employees. King's is in the second phase of a £1 billion redevelopment programme which is transforming its estate.

King's has an outstanding reputation for providing world-class teaching and cutting-edge research. In the 2008 Research Assessment Exercise for British universities, 23 departments were ranked in the top quartile of British universities; over half of our academic staff work in departments that are in the top 10 per cent in the UK in their field and can thus be classed as world leading. The College is in the top seven UK universities for research earnings and has an overall annual income of nearly £450 million.

King's has a particularly distinguished reputation in the humanities, law, the sciences (including a wide range of health areas such as psychiatry, medicine, nursing and dentistry) and social sciences including international affairs. It has played a major role in many of the advances that have shaped modern life, such as the discovery of the structure of DNA and research that led to the development of radio, television, mobile phones and radar. It is the largest centre for the education of healthcare professionals in Europe; no university has more Medical Research Council Centres.

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**For further information please contact Emma Reynolds, Press Officer at King’s College London, on 0207 848 4334 or email** [**emma.reynolds@kcl.ac.uk**](mailto:emma.reynolds@kcl.ac.uk)