

PRESS RELEASE

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NEW SCREENING METHOD CAN DETECT A RANGE OF CLINICAL CONDITIONS FROM A SINGLE DRIED BLOOD SPOT

Scientists have developed a rapid method that can be used to simultaneously screen patients for a range of genetic and acquired clinical conditions from a single dried blood spot.

The test uses a highly sensitive and specific technique, known as mass spectrometry, to simultaneously analyse proteins, enzymes and metabolites in the blood, without the need for the large liquid blood samples currently used. Collection of dried blood spots is less invasive for patients and the costs and biohazards associated with sample transport, processing and storage are minimised.

Researchers at King's College London, together with clinicians from Guy's and St Thomas' NHS Foundation Trust, as part of King's Health Partners Academic Health Sciences Centre, have built on their innovative approaches to dried blood spot screening for inherited metabolic disease and sickle cell disease in newborn babies. This approach can now be used in the early detection and clinical monitoring of chronic health problems, including kidney and heart disease and diabetes.

King's has today officially launched a spin-out company, SpotOn Clinical Diagnostics Ltd, to provide both analytical services and technical support for other clinical laboratories, many of which already have appropriate mass spectrometry instrumentation, to offer this new method.

Requiring only a drop of blood from a simple finger-prick, or heel-prick in newborns, this new blood spot analysis method has many potential applications:

- The method is faster, more specific, and cheaper than the methods currently used to screen all 750,000 babies born each year in the UK for sickle cell disease and other clinically significant haemoglobinopathies (abnormalities in haemoglobin within the blood). The current methods for ante-natal screening for sickle cell disease and thalassaemia require fresh liquid blood samples, which are more expensive to process, store and transport.
- The method has already been successfully used to provide rapid diagnosis of a comprehensive range of inherited metabolic diseases in acutely ill children admitted to intensive care with life-threatening symptoms.
- Pre-symptomatic screening for chronic health problems will introduce personalised clinical diagnostics and cost-effective early detection and monitoring of diabetes and kidney and heart disease.

Dried urine spots can also be used for the very early detection of kidney disease, particularly in patients with a high risk of developing renal complications, for example patients with type 1 or type 2 diabetes.

The test works by converting proteins to peptides and then using a mass spectrometer to select and accurately measure diagnostic metabolites and/or peptides.

Liquid blood and urine samples can also be screened using the method.

Compared with conventional clinical laboratory diagnostics the major advantages of the new method are that the measurements for proteins and metabolites can be done simultaneously with both high accuracy and sensitivity. Dried blood spots and/or dried urine spots offer significant cost savings in the logistics of sample collection, transport to the laboratory, sample processing, and storage.

Neil Dalton, Professor of Paediatric Biochemistry at King's, and co-founder of SpotOn, said: "The lessons we have learned from universal pre-symptomatic screening of newborn babies using dried blood spots can now be cost-effectively applied to provide a personalised medicine approach to the early diagnosis and clinical monitoring of major chronic health problems like diabetes and kidney and heart disease."

The two founding organisations behind SpotOn, King's College London and Guy's and St Thomas' NHS Foundation Trust, are part of King's Health Partners, one of the UK's five Academic Health Sciences Centres (AHSCs). SpotOn is an example of how academic innovation can be seamlessly translated into clinical practice and a commercial proposition. It is the result of successful collaboration between academic, clinical and commercialisation teams.

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Notes to editors:

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SpotOn Clinical Diagnostics Limited

The company has been formed to exploit the commercial potential of patents arising from the innovative work of Neil Dalton and Charles Turner on the application of mass spectrometry for cost-effective population screening.

The method for sickle cell disease and haemoglobinopathy screening using mass spectrometry was granted an EU patent in 2010.

www.spotoncd.com

King's College London

King's College London is one of the top 30 universities in the world (2011/12 QS World University Rankings), and the fourth oldest in England. A research-led university based in the heart of London, King's has nearly 23,500 students (of whom more than 9,000 are graduate students) from nearly 140 countries, and some 6,000 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.

King's College London and Guy's and St Thomas', King's College Hospital and South London and Maudsley NHS Foundation Trusts are part of King's Health Partners. King's Health Partners Academic Health Sciences Centre (AHSC) is a pioneering global collaboration between one of the world's leading research-led universities and three of London's most successful NHS Foundation Trusts, including leading teaching hospitals and comprehensive mental health services. For more information, visit: www.kingshealthpartners.org.