

Preliminary study to detect immune complex and complement deposits in renal biopsies initiated with the University Hospitals Coventry and Warwickshire in the UK

A proof of concept-study to explore the potential of Lumito's UCNP to detect immune complex and complement deposits in renal biopsies has been initiated in collaboration with University Hospitals Coventry and Warwickshire NHS Trust in the UK and a research team led by Dr. Kishore Gopalakrishnan.

Obtaining a renal biopsy is an invasive procedure but is nevertheless an important part of the management of renal disease. The diagnostic algorithm includes the detection of immunoglobulin and complement deposits in the kidney, primarily in the glomeruli. The conventional and well-established technique to do this is with the use of immunofluorescence. While the results are good, this process needs an additional core of renal tissue. It is also a more demanding process requiring frozen sections to be taken from a fresh core of renal tissue. Interpretation needs to be performed and imaged relatively quickly as the fluorescence fades rapidly. Immunohistochemistry is an alternative method that can be applied when fresh, non-formalin fixed tissue is unavailable. However, this often results in heavy background staining and makes meaningful interpretation difficult.

- *With Lumito's technique, we hope the problem of background staining can be eliminated by clearer imaging of renal biopsy tissue," says Kishore Gopalakrishnan. There will also be the added advantage of being able to preserve the slides for review. In addition, being able to use formalin fixed paraffin embedded tissue would potentially mean an additional biopsy core of fresh tissue will not be required.*



Dr Kishore Gopalakrishnan is the lead renal pathologist at University Hospital Coventry, UK. He has over 12 years of experience in reporting medical and transplant renal biopsies. He has been reporting renal biopsies using digital pathology for over 5 years now and has been involved in a number of studies involving validation of digital pathology.

University Hospitals Coventry and Warwickshire NHS Trust was among the first hospitals in Europe to move into digital pathology for routine diagnostic reporting. The department, together with the Department of Computer Science at the University of Warwick, has published many original articles on digital and computational pathology.

As lead for the PathLAKE consortium, it continues to play a major role in the development, validation and implementation of artificial intelligence in cellular pathology.

- *In our efforts to create the most sustainable and competitive product possible, where our unique technology delivers the most benefit, we have now established a collaboration with University Hospitals Coventry and Warwickshire and PathLAKE. It is our hope that the study will show that Lumito's technology can also be successfully used to detect immunoglobulin and complement deposits in renal tissue while offering researchers and eventually clinicians another indication where our technology can be used, says Lumito's CEO Mattias Lundin.*

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Lumito specializes in medical technology for digital pathology. Through its proprietary and patented technology, Lumito aims to provide healthcare providers with a powerful tool to meet the demands for fast and safe tissue diagnostics in personalized healthcare. The technology enables higher contrast images where unimportant background information is sorted out, making it easier for pathologists to find cancer indications. The technology, based on Up Converting Nano Particles (UCNP), has the potential to significantly improve the diagnosis of tissue samples through higher quality analyses and shorter analysis times. The method has several potential applications, but Lumito has chosen to focus primarily on digital pathology. The company is a spin-off from a research group at Lund University's Department of Atomic Physics and Laser Centre. www.lumito.se.

The share is traded on NGM Nordic SME, under the name LUMITO and Mentor is Mangold Fondkommission, phone: +46 (8) 5030 1550 and email, ca@mangold.se.

University Hospitals Coventry and Warwickshire NHS Trust (UHCW) is one of the largest acute teaching Trusts in the UK, comprising University Hospital in Coventry and the Hospital of St Cross in Rugby and working in partnership with Warwick University Medical School and Coventry University. It has over 9,000 staff and delivers services across the West Midlands region. This includes hosting region-wide services such as the Coventry and Warwickshire Pathology Network and Bowel Cancer Screening programme. The Trust works closely with its partners in health and social care in Coventry and Warwickshire to develop patient-focused services that meet the needs of our communities (www.uhcw.nhs.uk).

PathLAKE is one of a network of five Centres of Excellence in digital pathology and medical imaging supported by a £50m investment from the Data to Early Diagnosis and Precision Medicine strand of the Industrial Strategy Challenge Fund, managed and delivered by UK Research and Innovation (UKRI). Project Reference number (104689) (www.pathlake.org). Ethical approval for this study was granted by the Arden Research Tissue Bank (REC reference 18/SC/0180).