# PathLAKE
### Computational Pathology Excellence

**Professor Emad Rakha
University of Nottingham**

" Our autumn newsletter focuses on the educational component of the PathLAKE project which is led by University of Nottingham.

Education is central to the adoption of whole slide images and AI technologies in pathology. Our online educational platform provides world-class training and support to both the pathology and computer science communities.

Alongside this we are running workshops and masterclasses which are based on the real-life experience of our consortium members.

PathLAKE's educational activities are open to all, read on to find out more. "

## Contents

# Online Training To Support The Adoption Of Digital Pathology

**The combination of access to high quality digital pathology images and associated meta-data, industrial grade analytics, clinical and academic expertise supports the adoption of digital pathology and AI and will help to drive further innovation.**

PathLAKE's suite of online educational modules is ideal for anyone looking to train and develop their skills in digital pathology and reporting. Available on the Cirdan PathXL Tutor platform, they enable users to work in a safe environment as they develop their confidence and expertise.

## The modules

Modules on prostate, breast and PD-L1 present examples of common and challenging scenarios including histopathology (breast and prostate modules) and immunohistochemistry (PD-L1 module).

By accessing the modules trainees can develop their confidence; others can further develop and refine their skills in digital pathology. All cases are presented with full clinical details just as they would be in the clinical setting.

Each case includes a descriptive report with annotations to highlight areas of interest and includes elements that are widely recognised to be challenging on whole slide images (WSI).

The suite is further enhanced by a module on digital validation. Further modules will be added as the project progresses.

## CPD accreditation

The prostate, breast and PD-L1 courses demonstrate the utility of using a digital platform in the assessment of pathological features. Each module is approved by the UK Royal College of Pathologists. We award four CPD points for completion of the breast or prostate module, and two points for PD-L1.

Your Certificate of Participation could be included in a submission of evidence towards completion of stage 1 validation in digital pathology.

*"Online education is transforming the way we teach pathology. PD-L1 in lung cancer is key to the diagnostic armamentarium of personalised pathology.*

*The PD-L1 module provides basic training in interpretation in NSCLC with all the advantages of such training: easy access, permanent availability of training materials and high-quality from one of UK's leading digital pathology hubs."*

**Professor Manuel Salto-Tellez**
Director of the Precision Medicine Centre at Queen's University Belfast.

**The Royal College of Pathologists**
Pathology: the science behind the cure

The Royal College of Pathologists have accredited our three online modules and commented:

*"They are an excellent attempt to get real world cases online for the benefit of pathologists in training or in transition from glass to digital."*

*"This is a well constructed module with an excellent case mix and easy to follow. It is of great benefit to pathologists in training or transition."*

**Royal College of Pathologists commenting on the prostate module.**

*"Excellent module with well worked examples and many learning points."*

**Royal College of Pathologists commenting on the breast module.**

*"Breast cases are very useful with detailed annotations"*
**Platform user, NHS**

*"Really good module. Excellent images"*
**Platform user, NHS**

*"A good collection of cases with useful educational points"*
**Platform user, NHS**

*"Very good initiative. Please upload some more modules."*
**Platform user, Kolkata**

*"A great opportunity for the pathologists of the developing part of the world to get access to WSI and also see annotations and learning. Enjoyed and learned a lot. Hope to see such more learning activities in future"*
**Platform user, Karachi**

*"It was a good refresher course on digital pathology and the slides were clear for the diagnosis."*
**Platform user**

*"The site is truly excellent. The cases are beautifully presented. A great resource."*
**Ian Ellis**
Professor of Cancer Pathology, University of Nottingham & Honorary Consultant Pathologist, Nottingham City Hospital.

The PathLAKE Education platform is open to all. To register your free account, simply email **pathlake@uhcw.nhs.uk** or complete the Contact Us form at **www.pathlake.org/contact-us**

# Digital Validation Training Workshop Available Online

On 21 June 2021, Professor David Snead led the PathLAKE Digital Validation Training Online Workshop which introduced pathologists to the validation process for transitioning from glass slides to digital reporting. This event was attended by over 60 pathologists.

Dr Yee Wah Tsang is a Consultant Pathologist at University Hospitals Coventry and Warwickshire (UHCW). Her presentation "Transitioning Pathologists from glass slides to digital reporting" reflects upon her experience leading UHCW's project to transition from glass to digital. Yee Wah offers practical advice to anyone about to begin their own journey, highlights the issues encountered and how they were resolved at UHCW.

Topics range from screen calibration to Royal College of Pathologists guidelines.

Prof David Snead is Consultant Pathologist at UHCW and Director of PathLAKE. As a UKAS invited expert, his talk "UKAS validation for digital pathology in practice" is based on his experience on how the standards can be interpreted for digital pathology. The presentation covers validation, verification and considerations for the use of computer assisted diagnostic aids.

Recording of both talks are now available to view on the PathLAKE Digital Pathology Education Tutor.

**To access this useful resource, please click [here](#)**

# PathLAKE Plus

PathLAKE has received a £13.5 million funding boost following its work in Digital Pathology to speed up the diagnosis of deadly diseases such as Cancer. Launched in January 2021, PathLAKE Plus is enabling digital pathology and AI to be rolled out to more than 10 NHS Trusts across England, serving a population of 17 million people.

PathLAKE Plus is the world's largest clinical implementation of digital pathology and AI to date. Its ambition is to deliver these innovative technologies to streamline pathology lab workflows, improve diagnosis and ensure the best outcomes for patients.

Now is an exciting time for PathLAKE Plus, as the first installation of digital pathology equipment is taking place at Nottingham University Hospitals NHS Trust. Dr David Clark, the clinical lead for digital pathology implementation at Nottingham, had this to say on this proud moment:

*"Five high volume Hamamatsu digital pathology scanners were installed in the Nottingham Cellular Pathology laboratory in August. This gives us the capacity to scan all the diagnostic slides in our department. We are very pleased to be starting the implementation of this exciting innovation, which will be the biggest change in the way diagnostic Histopathology is delivered in several generations."*

Digital pathology is the future for tissue diagnosis, offering many opportunities to improve patient care. PathLAKE Plus will be leading the way in realising these opportunities over the coming years.

Dr David Clark

# Publications

In each edition we shine a spotlight on some of the most recent **PathLAKE** publications and interview some of the authors involved in creating these papers. Please see below for extra insights into some of our most recent papers.

## Digital pathology and artificial intelligence will be key to supporting clinical and academic cellular pathology through COVID-19 and future crises: the PathLAKE consortium perspective

**Dr Lisa Browning is a consultant histopathologist (uropathologist) within the Department of Cellular Pathology at the John Radcliffe Hospital, Oxford, and an Honorary Senior Clinical Lecturer at the University of Oxford.**

**1. Can you illustrate three reasons as to why Digital Pathology can be a key tool to enable more efficient use of the NHS services we have, especially when facing the Covid 19 pandemic?**

The workforce pressures in cellular pathology are well-recognised, and Covid-19 has been a challenge to many departments with the enforcement of home-working and the need for self-isolation, aside from the impact of ill-health related to the virus.

An established digital pathology (DP) workflow offers real potential for efficiency improvements; ease of access to cases for prompt review, remote double reporting, expert opinion, and therefore a timely diagnosis, especially in a situation (such as with Covid-19) when this may be more difficult with a glass slide workflow and the need to move slides around physically. Pathologists can work remotely more easily, offering flexibility and for some the option to work additional hours fitted around other commitments. Significantly, DP may also be a solution for longer-term workforce challenges with the networking of cellular pathology departments, removing the element of duplication of some reporting between specialist and general hospitals, and providing the opportunity for easier access to specialist opinion.

**2. What are some of the main challenges when using digital pathology to assist problems presented by the Covid 19 pandemic?**

We saw challenges mainly related to the expedited nature of the rollout of DP during the pandemic, on a practical level with setting up workstations, including remotely in pathologists' own homes to accommodate working restrictions and periods of self-isolation, but importantly also on a governance front.

Governance around the utilisation of DP during the pandemic was addressed at a national level with a guidance document from the RCPath, but at a local level there was a need to train and validate individuals and to support the transition to digital reporting, some of which was possible using videoconferencing.

The pathologists were keen to adapt, and we saw a real upturn in the usage of DP even for less than full reporting of cases, such as for review of cases for immunohistochemistry requests, and particularly for double reporting.

But installing the technology is only part of the journey to DP; the entire workflow needs to be adapted, which requires input from the wider workforce who are also affected by the same working restrictions that the rest of us have endured during the pandemic. Having a shared vision and having an understanding and a degree of patience with one another has been key to making this a success!

**3. Do you think the use of AI and digital pathology has the potential to have a great impact on the effects we are facing from COVID 19 and how can we spread awareness of this?**

In relation specifically to Covid-19, within the research setting AI may provide novel insights into patterns of Covid-19 associated disease that may have clinical impact in the future, and the establishment of datasets of digitised images of histology slides with associated clinical data will be important in facilitating this, particularly enabling collaboration between academics across the world.

More generally, AI is foreseen to offer the potential to ease aspects of a pathologist's reporting time to provide greater resilience within the workforce. For example through automation of quantification of biomarkers, as has been seen in breast pathology. Such tools may increase efficiency allowing a pathologist to focus on diagnostic aspects that need a human eye. The potential is also rapidly approaching for AI to play other efficiency saving roles in routine practice, for example tumour detection tools may provide a second opinion for malignancies that are currently routinely double-reported by two pathologists. The greatest benefits of AI will likely be seen within a fully digital workflow, which is a little way off for many pathology departments. Highlighting these potential benefits may encourage pathologists to champion the adoption of DP, and therefore education of pathologists in general about the impact of DP and AI will be key. It will be important for pathologists to be at the forefront of the introduction of AI into the clinical setting if it is to be successfully adopted and therefore engagement of the pathology community at an early stage is essential.

**Please follow the link here to find a list of our most recent PathLAKE publications**

# Events

**The PathLAKE consortium runs regular events, workshops and masterclasses aimed at supporting those in the pathology and computer science communities in the adoption of digital pathology and AI technologies.**

## From Benchside to Bedside: The implementation of digital pathology into routine practice

The online **PathLAKE** conference took place at the beginning of September. Delegates heard from leaders in the field who shared their experience and gave expert advice on topics ranging from NLP through to regulatory approval.

170 delegates attended, including pathologists, clinicians, lab teams and computer scientists.

Find out more at www.pathlake.org/pathlake-conference-gives-vision-of-the-future/

## Ethics in Imaging: AI Centres of Excellence webinar series

**PathLAKE** hosted a successful event on 22 July which focused on Research Ethics Committee Review of AI projects: what REC members need to know and training needs.

**Further events in the series coming up this autumn.**

For further information please visit our PathLAKE website for any updates: www.pathlake.org

## Nottingham Breast Pathology Online Masterclass: Addressing Challenges in Diagnostic Breast Pathology

Over 250 delegates from across the world joined the Nottingham Breast Pathology Online Masterclass on Friday 16 July which was sponsored by **PathLAKE**. Course Director, Prof Emad Rakha, was joined by leading breast pathologists Prof Stuart Schnitt, Prof Ian Ellis, Prof Abeer Shabban, Prof Maria Pia Foschini and Dr Elena Provenzano. Focusing on challenges in diagnostic breast pathology, the day also included slide seminars and challenging cases.

## Warwick TIA Centre Seminars:

The Warwick **Tissue Analytics Centre** will be starting an exciting seminar series that will take place each month at the TIA Centre, Warwick University.

On 11th October we will be joined by Dr Saad Nadeem who will be discussing the theme: 'Mathematical Oncology Initiative.'
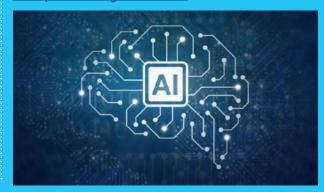
Please see here for more details and the joining link: warwick.ac.uk/fac/cross_fac/tia/seminars/

## AI for Pathologists

The AI for Pathologists masterclass saw researchers, practitioners and industry specialists provide cutting-edge training on AI and related concepts and showcased some of the latest developments in the area of computational pathology.

Sessions included flash talks, industry exhibitions and hands-on demos as well as by eminent researchers and practitioners working in the areas of digital and computational pathology, and much more!

The event was recorded and is available on the PathLAKE Education platform. If you're not already registered, simply email pathlake@uhcw.nhs.uk or complete the Contact Us form at: www.pathlake.org/contact-us



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