At PathLAKE, we are developing the next-generation of AI algorithms for Computational Pathology to assist with early diagnosis and personalised treatment of cancer. The research and development of AI technologies will be complemented by the establishment of a massive data lake consisting of richly annotated pathology images with linked metadata.

Professor Nasir Rajpoot

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Continuing to provide excellence in an uncertain world

PathLAKE (Pathology Image Data Lake for Analytics, Knowledge and Education) is a dedicated research faculty with researchers from the University of Warwick, University of Hospitals Coventry, Warwickshire NHS trust, and Royal Philips. After being funded over £15.7 million for the three-year project, the team work to create cutting edge technologies for pathologists to diagnose cancer more efficiently, use optimal treatment for cancer patients and aim to bring an end to the ‘limbo’ of waiting times.

The aim of PathLAKE is to significantly speed up the time in which cancer is diagnosed and treated, by using innovative solutions in digital pathology and Artificial Intelligence (AI).

The PathLAKE consortium aims to meet the ‘Data to Early Diagnosis and Precision Medicine Challenge’ through two high-impact exemplar projects. Firstly, by embedding and demonstrating the diagnostic efficiencies of computer aided testing of pathology samples. Secondly, by developing novel AI tools to support advanced identification of predictive chemotherapy response markers for personalised medicine and markers of disease progression in disease surveillance.

Links to videos:  • Digital Pathology Animation  • Intro to the area of digital procedure

The PathLAKE Vision

PathLAKE Innovation Platform
Ongoing project Information:

Impact of Covid-19

Following the new government advice, we are currently a home-based project based team. Our way of working has changed significantly due to the pandemic and we have found many ways to improve, improvise and make sure that everyone has a safe and effective working environment.

Although we are keen to get back as soon as is safe and possible in the meantime we have found many ways to successfully adapt using teams, zoom and webex calls. These tools provide excellent ways of keeping in touch with partners and stakeholders across the globe.

We still continue our regular ‘Fika’ style coffee breaks (now on zoom), every Wednesday allowing much needed time to catch up and reflect on the ongoing projects as well as personal interests and snippets of fun!

Snapshot of the Zoom coffee morning!

Well-being

During the pandemic we have also been supported by the well-being team and taken part in a presentation giving tools to deal with the challenges of remote working and the ongoing stress the virus can add to personal and work lives.

Here are a few ideas and links below to think about!

- Staff Wellbeing Hub
- Five ways to Well-being video
- Virtual online classes with Warwick Sport
- Desk exercises
- Breathing Bubble
- Online wellbeing courses

Take care of your mental health during the coronavirus pandemic:

- Be aware of how you are feeling and recognise that there is something wrong with the situation and not with you!
- Keep active
- Keep hydrated and eat regularly
- Make sure to schedule lunch & coffee breaks in your timetable
- Stay connected with friends and family using the many online tools available
- Reach out for support and join community groups to find friendships and help
- Create boundaries between work and home life, especially whilst remotely working!
- Allow for time to relax and breathe!
Congratulations!

3 MONTHS EXTENSION: We are very excited to announce the extension of PathLAKE project is due to be extended to March 2022! We look forward to creating more value and excellence in society provided by the expertise at PathLAKE!

Congratulations to Nasir and Fayyaz on their respective awards of Cancer Research UK (CRUK) grants for early detection of oral and mesothelioma cancers, respectively, and to Shan on the publication of his jointly first-authored paper on the prediction of lung cancer recurrence in Nature Medicine. Our team’s hard work and continued dedication to these projects shows our commitment to making significant contributions towards better understanding of cancer and provision of improved healthcare in society. Please see below for more detail:

Prof Nasir Rajpoot Cancer Research Award UK

We are delighted to announce the award of a Cancer Research UK (CRUK) Early Detection grant in the amount of £406K to Dr Ali Khurram (Sheffield University) and Prof Nasir Rajpoot for research on developing Artificial Intelligence (AI) algorithms to predict malignant transformation of oral epithelial dysplasia.

Dr Fayyaz Minhas

We are delighted to share the following good news about the award of a CRUK grant to Fayyaz and his pathologist colleague from the Royal Brompton hospital in London for research on ML for early detection of mesothelioma. Dr Fayyaz Minhas of the Tissue Image Analytics (TIA) lab at the Computer Science department is a co-PI on a £97K grant by Cancer Research UK’s Early Detection Committee to explore machine learning for discovery of pre-neoplastic signature in mesothelioma. He will be working closely with Dr Jan Lukas Robertus, who is a Senior Consultant Cardiothoracic Pathologist at the Royal Brompton Hospital. Dr Minhas will lead on the machine learning and computational pathology side of the project.

Cancer Research Grant

Dr Shan Raza

Congratulations to Shan Raza who has recently had his jointly first-authored paper on the TRACERx lung cancer trial published in Nature Medicine.

“The team’s work revealed that cancer cells found in immune cold regions may have evolved more recently than cancer cells found in immune hot regions that are packed with immune cells. The researchers suggest that areas of the tumour with fewer immune cells may have developed a ‘cloaking’ mechanism under evolutionary pressure from the immune system allowing them to hide from the body’s natural defences. Their AI tool can assess how many regions with this cloaking mechanism exist within a tumour – which is critical given that these immune cold areas are associated with cancer relapses. This early research could in future be used in the clinic to give doctors more detailed information about the cellular make-up of tumours than can be seen with the naked eye, informing the development of tailored treatment strategies for individual patients.”

Lung cancer trial information
Publications & Recent Events

These are the latest publications but please visit our website for more publications:

warwick.ac.uk/fac/cross_fac/pathlake/publications/


Before the Covid-19 pandemic:
The masterclasses were delivered by world leading experts working in the area of computational pathology and also involved internal/external guests who together shared their experiences, insights, guidance and materials during the masterclasses and discussed issues or topics of a relevant and practical nature.

We are planning to hold another masterclass series hopefully in the future when it is safe to do so! The incredible value and excellence of these masterclasses will not be lost!
Congratulations to Simon Graham and Mary Shapcott on the achievement of their PhD thesis!

It has been a busy few months of recruitment, despite the Covid-19 situation! We welcome on board:

**PathLAKE temporary software engineers:**
- Daniel Smith
- Joshua Hankins
- Giorgos Hadjigeorghiou

**PathLAKE Centre Coordinator:**
- Hannah Blackburn

**PathLAKE Systems Administrator:**
- John Euinton

However, we are sorry to lose Maria-Carmen Popa, our PathLAKE Centre Administrator and thank her for the continued dedication and value Maria has added to the project. All the best for the future!

We also say farewell to Hadi Saki and Daljit Kaur, thanking them for all the hard work and support towards the project. All the best for the future!

We also have one senior research position and two research positions recently successfully filled. We will formally introduce our new team members in the next issue.

Regular news and updates

Check our website: Keep an eye out on our PathLAKE website [here](#) for further information, and also to browse in more detail our team, twitter account, projects and vision for the future.

YouTube:

Our recently uploaded YouTube channel contains excellent videos on recent findings. Please see the link [here](#) for further information.

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