UNDERSTANDING & UTILIZING DIGITAL PATHOLOGY AS A TOOL FOR ADVANCING PATHOLOGY PRACTICE & ENABLING ENHANCED PATIENT CARE

http://www.globalengage.co.uk/digital-pathology-asia.html

Global Engage is pleased to announce the Digital Pathology Congress Asia, which will be held on September 21-22 2015 in Kuala Lumpur, Malaysia at the Renaissance Kuala Lumpur Hotel. This international conference attracting delegates from not only Malaysia, but the entire region including Singapore, Japan, China, Korea and even as far afield as USA, Europe and UAE is part of their successful Drug Discovery series. The series includes events on precision medicine, synthetic biology, human microbiome and digital PCR as well as being a sister event to their successful European Digital Pathology Congress which attracted over 260 people and 25+ exhibitor companies and the USA Congress which is scheduled to take place in San Diego in June 2015. http://www.globalengage.co.uk/events/

The continuing growth and advances in digital pathology solutions is transforming the industry. With wide ranging applications and benefits including reduction in lab costs, increased workflow efficiency, greater interconnectivity, effective training / education methods, improved decision making is enabling enhanced patient care. The result is that Digital Pathology is rapidly gaining momentum worldwide.

Attracting over 175 industry & academic experts working in all areas of Pathology this two day interactive meeting will provide the opportunity to take home cutting edge strategies, analysis techniques, case study examples and methods to allow you to fully understand both the technology and accompanying informatics and image analysis tools and utilize digital pathology to its greatest potential.

This will be achieved through a vibrant exhibition room full of technology providers showcasing their technologies and other solutions, networking breaks allowing interaction with your peers, poster presentation sessions, expert led case study presentations and incisive Q&A panel discussions during three separate tracks which will examine the topics below.

Conference Agenda

Digital Pathology - Strategy and Technology

- Introduction, benefits & future developments of Digital Pathology
- Implications on pathology practice
  - Uses in education and training
- Converting to/ integration of digital pathology
- Technology advances in digital pathology
- Digital Pathology project updates
- Standardisation in Digital Pathology
- Quality control and improvement
- Validation
- Panel Discussion – Overcoming barriers in adoption of Digital pathology

Pathology Informatics

- Acquisition, processing, archiving & retrieval of WSI
- Cloud Computing
- Access through mobile devices
- Pathology PACS
- Automation
- Improving WSI workflow efficiency
- Telepathology
  - Virtual networks
  - Use in remote areas
- Telediagnosis
- Pathology IT

Digital Image Analysis

- Overcoming challenges in image analysis
  - Image standardization
  - Compression techniques
- Analysis software
- Automated image analysis
- Quantitative image analysis research
- Visualization methods for diagnosis and prognosis
- Annotation tools
- Pattern recognition
- Scoring
- Algorithm development / Image analysis algorithms

Digital Pathology Applications and Research Case Studies

Research case studies utilizing digital pathology in

- Clinical trials
- Diagnosis
- Diagnostics
- Next generation sequencing
- Biomarker analysis /research / quantification
- Tissue-based research / imaging
- Biobanking
- Precision / personalised medicine
- Image analysis

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For more information please contact Steve Hambrook, Conference Director, Global Engage, steve@globalengage.co.uk +44 (0)1865 849841

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Digital Pathology Congress Asia - Confirmed Speakers

- Anil Parwani, Division Director, Pathology Informatics, Professor of Pathology and Biomedical Informatics, Shadyside Hospital, University of Pittsburgh Medical Centre, USA
- Johan Lundin, Research Director and Professor of Medical Technology, Institute for Molecular Medicine Finland (FIMM), Helsinki, Finland and Karolinska Institute, Sweden
- Afzan Adam, Lecturer and Researcher, Pattern Recognition Research Group Group, Center For Artificial Intelligence Technology (CAIT), University Kebangsaan Malaysia
- Chen Zhou, Clinical Associate Professor, Department of Pathology, British Columbia Cancer Agency, University of British Columbia, Vancouver, Canada
- Will Howat, Head of Histopathology/ISH, Cancer Research UK
- Ichiro Mori, Professor Department of Pathology, Mita Hospital, International University of Health and Welfare, Japan
- Daniel Racoceanu, Professor, Sorbonne Universités, Université Pierre et Marie Curie (UPMC), France & Adjunct Professor, National University of Singapore (NUS)
- Kazuaki Nakane, Professor, Faculty of Medicine, Osaka University, Japan
- Tomoo Itoh, Professor, Department of Diagnostic Pathology, Kobe University Hospital, Japan
- Hwee Kuan Lee, Head of Division, Senior Principal Investigator, Imaging Informatics division, Bioinformatics Institute, A* Star, Singapore
- Junya Fukuoka, Chair/Professor, Department of Pathology, Nagasaki University Graduate School of Biomedical Sciences, Japan
- Peter Gardner, School of Chemical Engineering and Analytical Science, Professor of Analytical and Biomedical Spectroscopy, Manchester Institute of Biotechnology (MIB), The University of Manchester, UK
- Ryan Hutchinson, Fellow in Molecular Pathology, University of Melbourne, Raphaël Maree, GIGA Research and Montefiore Institute, University of Liège (Belgium), and Quantitative Image Analysis Unit, Pasteur Institute, Paris (France)
- Sanja Stifter, Associate Professor, Department of Pathology, Faculty of Medicine, University of Rijeka, Croatia
- Susan Anderson, Director of Undergraduate Studies and Associate Professor in Pathology, Division of Medical Sciences & Graduate Entry Medicine, School of Medicine Faculty of Medicine & Health Sciences, University of Nottingham Royal Derby Hospital Centre, UK
- Nasir M. Rajpoot, Associate Professor, Department of Computer Science & Engineering, Qatar University, Qatar
- Sheng-Lung Huang, Professor, Department of Electrical Engineering, and Graduate Institute of Photonics and Optoelectronics, National Taiwan University, Taiwan
- Hammad Qureshi, Assistant Professor IT University-Punjab, Pakistan & Majmaah University, KSA, India
- Glenn Edwards, National Medical Director, Pathology, St John of God, Australia
- Matthew Di Franco, Post-doc Research Assistant, Quantitative Hybrid Imaging Group, Center for Medical Physics and Biomedical Engineering, Medical University of Vienna, Austria
- Kate Lillard Tunstall, Chief Scientific Officer, Indica Labs Inc.
- Senior Representative, Philips
- Congress Chair - Dato' Dr Norain Karim, Consultant Pathologist & Head of Pathology Department, Hospital Raja Permaisuri Bainun, Ipoh, Perak. Deputy President of the International Academy of Pathology/Malaysian Division

Venue

Renaissance Kuala Lumpur Hotel
Corner of Jalan Sultan Ismail and Jalan Ampang,
Kuala Lumpur
50450
Malaysia

A discounted group rate is available to all attendees. Details of how to book are available on registration. Space is limited and accommodation is available on a first come basis.



Digital Pathology Congress Asia

Day 1 – Monday, September 21, 2015, Kuala Lumpur, Malaysia

08.00-08.50	**Registration & Coffee**	
08.50-08.55	**Global Engage Welcome Address**	
08.55-09.00	**Steam Chair Welcome Address** **Dato' Dr Norain Karim, Consultant Pathologist & Head of Pathology Department, Hospital Raja Permaisuri Bainun, Ipoh, Perak. Deputy President of the International Academy of Pathology/Malaysian Division**	
09.00-09.40	**Keynote Address** **The Emergence of Digital Pathology: Opportunities and Challenges** Digital pathology has grown dramatically in the last 10 years and has created opportunities to not only support the triaging of difficult cases among specialists within an organization, but also enable remote pathology consultations with external organizations across the world. Many applications have emerged and as a result digital pathology is increasingly being used in both clinical and research areas. The focus of this talk will be on the number of exciting developments in this field in recent times and the challenges that lie ahead. Confirmed: **Anil Parwani, Division Director, Pathology Informatics, Professor of Pathology and Biomedical Informatics, Shadyside Hospital, University of Pittsburgh Medical Centre, USA**	
09.40-10.10	**Keynote Address** **Scalable Semantic Integrative Microscopy Framework for High-Content Imaging in Digital Pathology** Being able to bring justified and traceable responses has become an ethical priority for the patients and the healthcare professionals in modern medicine. After initiating – during the last few years, - a semantic cognitive virtual microscopy approach for routine-pathology-compliant protocols dedicated to mitotic count and nuclear atypia and some pioneer international benchmarking initiatives (Int. Conf. Pattern Recognition ICPR 2012 : MITOS – Tsukuba, Japan and ICPR 2014 : MITOS & ATYPIA – Stockholm, Sweden), our present priority is to design an integrative microscopy framework able to combine reasoning, medical ontologies, knowledge-based WSI (Whole Slide Images) exploration rules with scalable imaging protocols. Therefore, we focus on two families of methods based on a strong mathematical formalism: one inspired by Marked Point Process and on based on Point-set Mathematical Morphology. In addition to be scalable and efficient, these methods are very promising with regard to integrative approaches as the big data challenge, both inherent to the future of Digital Pathology. Confirmed: **Daniel Racoceanu, Professor, Sorbonne Universités, Université Pierre et Marie Curie (UPMC), France & Adjunct Professor, National University of Singapore (NUS)**	
10.10-10.40	**Solution Provider Presentation** For sponsorship opportunities please contact Steve Hambrook at steve@globalengage.co.uk	
10.40-11.40	**Morning Refreshments** **Poster Presentation Sessions** **One to One Meetings**	
	Digital Pathology Application and Research Case Studies	**Pathology Informatics**
11.40-12.05	**Image Analysis of Large Scale Breast Cancer TMA Datasets** Confirmed: **Will Howat, Head of Histopathology/ISH, Cancer Research UK**	**Immunohistochemical Diagnosis and its Informatics** Immunohistochemistry is an essential component of modern pathology, which yields a great deal of information in addition to morphological data. However, the number of antibodies is increasing day by day, making it difficult to fully understand the details of each of these antibodies. I established in 2005 a website named "Immuuno", which contains a database of useful antibodies for diagnostic pathology, end explains their advantages and drawbacks. The database already comprises over 200 kinds of antibodies. In addition, various tips for staining and other useful information are included. This information is currently in Japanese only, but is now being translated into English. I believe this website will be beneficial for pathologists and technicians worldwide. Confirmed: **Tomoo Itoh, Professor, Department of Diagnostic Pathology, Kobe University Hospital, Japan**

12.05-12.30	**Primary Diagnosis using WSI** Confirmed: **Junya Fukuoka, Chair/Professor, Department of Pathology, Nagasaki University Graduate School of Biomedical Sciences, Japan**	**Probing the Tumor Microenvironment with Cloud-Based Computer Vision** Recent studies show a remarkable genomic diversity of cancerous tumors and indicate that various trajectories of genetic changes can lead to the common phenotypic hallmarks of cancer. In fact, cancer might be a disease of microenvironmental opportunity. Our research vision is to explore the tumor microenvironment by a series of ground-breaking quantitative and descriptive tissue characterization methods. The methods include probing of whole-slide digitized tissue samples with cloud-based computer vision and multiplexed readout of molecular profiles - all aimed at capturing the biologically relevant information in a spatial context. Computerized tissue morphological analysis and tissue niche-specific molecular profiles are then combined with clinical data for the purpose of a more precise prediction of disease outcome, particularly in cancer. Confirmed: **Johan Lundin, Research Director and Professor of Medical Technology, Institute for Molecular Medicine Finland (FIMM), Helsinki, Finland and Karolinska Institutet, Stockholm, Sweden**
12.30-13.00	**Solution Provider Presentation** **Title to be Confirmed** Confirmed: **Kate Lillard Tunstall, Chief Scientific Officer, Indica Labs Inc.** indica labs informed pathology	**Solution Provider Presentation** For sponsorship opportunities please contact Steve Hambrook at steve@globalengage.co.uk
13.00-14.00	**Lunch** **Poster Presentation Sessions** **One to One Meetings**	
14.00-14.25	**The Value of Digital Histology and Pathology in Medical Education** Virtual microscopy is a potentially important tool in medical education. In this talk, the use of virtual histology and pathology at the University of Nottingham is described along with an evaluation of the advantages and disadvantages from both the staff and student perspectives. Some key uses of the virtual microscope will be discussed including enabling staff to prepare better assessment material and encouraging the development of student-generated tailored revision resources. The talk will also focus on future directions which use this technology to bridge the gap between pre-clinical and clinical phases of education as well as opportunities for postgraduate training Confirmed: **Susan Anderson, Director of Undergraduate Studies and Associate Professor in Pathology, Division of Medical Sciences & Graduate Entry Medicine, School of Medicine Faculty of Medicine & Health Sciences, University of Nottingham Royal Derby Hospital Centre, UK**	**A New Method for Detecting Regions of Interest from the WSI of Colonic Digital Images** Computer-assisted diagnosis, *The Betti numbers*, Histology of Colon. A region of interest (ROI) is a part of tissue that contains important information for diagnosis. Since malignant tumors grow in the innermost layer, most ROIs will be located in the colonic mucosa and will be an accumulation of tumor cells and/or integrated cells with distorted architecture. An area with unusual contact degree is expected to be a potential ROI. Homology is a mathematical concept that can quantify the contact degree. By using this concept, we propose a new method to detect ROIs. Although we have many false positives and there is a possibility of missing undifferentiated types of cancer, this system is very effective for detecting ROIs. Because our method can detect ROIs very quickly, it could be used to screen WSIs. Confirmed: **Kazuaki Nakane, Specially Appointed Associate Professor, Faculty of Medicine, Osaka University, Japan**
14.25-14.50	**Elucidating EGFR-mediated insights in metastatic colorectal cancer through Pathology Integromics** Confirmed: **Ryan Hutchinson, Fellow in Molecular Pathology, University of Melbourne, Australia**	**Shedding a Different Light on Disease: An Introduction to Infrared Based Spectral Pathology** Given that the eye is an excellent photon detector and the human brain is one of the most advanced image processing systems known to man it is not surprising that visible light microscopy has been the mainstay of pathological analysis. However significant advances in detector technology and computer processing power make other regions of the electromagnetic spectrum attractive for tissue analysis. In this presentation I will introduce the revolutionary new techniques of infrared based technology that can facilitate detailed tissue analysis. Hyperspectral imaging coupled with sophisticated computer algorithms enable cancerous tissue to be indentified, and graded and in favourable cases and indication of prognosis to be obtained. This techniques lends itself to automation would be particularly useful for screening large numbers of biopsy samples for the common types of cancer. Confirmed: **Peter Gardner, Prof & Director of Assessment (CEAS) School of Chemical Engineering and Analytical Science, Professor of Analytical and Biomedical Spectroscopy Manchester Institute of Biotechnology (MIB), The University of Manchester, UK**

14.50-15.15	**The Benefit of 3D Histology Visualization in Multiple Myeloma Research, A Potentially Useful Quantitative Methodology Tool** The three-dimensional (3D) viewing in histopathology enables researcher to visualize tissue and cellular components. This gives us better information regarding tissue organization, cellular function and disease processes, upon which pathology diagnosis is largely based. The important fact is the recognition that tissue constitutes a 3D structure and that disease is a 3D process as well. A tissue section provides us with an (almost) two-dimensional (2D) translucent slice and reduces the dimensionality of features which exist in 3D. The aim was to make 3D reconstruction of serial sections of multiple myeloma bone marrow biopsies. We consider they can be a useful method to observe the appearance of tissue structure in the third dimension giving us an opportunity to more closely analyze cell to cell relationship. Confirmed: **Sanja Stifter, Associate Professor, Department of Pathology, Faculty of Medicine, University of Rijeka, Croatia**	**Pathology Informatics - Title to be Confirmed** Confirmed: **Hammad Qureshi, Assistant Professor IT University-Punjab, Pakistan & Majmaah University, KSA, India**
15.15-15.45	**Solution Provider Presentation** **Title to be Confirmed** PHILIPS	**Solution Provider Presentation** For sponsorship opportunities please contact Steve Hambrook at steve@globalengage.co.uk
15.45-16.35	**Afternoon Refreshments** **Poster Presentation Sessions** **One to One Meetings**	
16.35-17.05	**Title to be Confirmed** Confirmed: **Afzan Adam, Lecturer and Researcher, Pattern Recognition Research Group Group, Center For Artificial Intelligence Technology (CAIT), University Kebangsaan Malaysia**	
17.05-17.30	**Knowledge management, decision support and the clinical pathologist's role** • Clinical pathologists play a key role in assuring appropriate use of laboratory tests and their application to clinical decision making • The rise of pathology informatics presents an important new opportunity for pathologists • With the right tools, the clinical pathologist in a busy automated laboratory can support test selection, interpretation and patient management • Effective decision support in a high volume environment requires a flexible, customisable and evolutionary approach to clinical knowledge management • Pathologist-managed decision support, providing patient-specific interpretation, has been shown to be effective in modifying requestor behaviour and clinical outcomes Confirmed: **Glenn Edwards, National Medical Director, Pathology, St John of God, Australia**	
	Chairman's Closing Remarks and End of Day 1	
17.30-18.30	**Drinks Reception**	

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Digital Pathology Congress Asia

Digital Pathology Congress Asia - Day 2 – Tuesday September 22, 2015, Kuala Lumpur, Malaysia

08.20-09.00	**Morning Coffee** **One to One Meetings**
09.00-09.30	**Keynote Address** **Proving Experiments of International Virtual Slide Telepathology Consultation System, Vietnum, China, and Myanmar Trials** • These proving experiments were performed as a part of projects supported by Japanese Ministry of Economy, Trade and Industry • We connected Mita Hospital with Ho-Chi-Minh City/Vietnam, Beijing/China, Yangon/Myanmar, and Hanoi/Vietnam by Teleconference system. Then, observing the same Virtual slide pictures, case conferences were successfully performed. • We are now planning to open the "Ningen-dock", the multiphasic health screening facilities, in these countries using this remote diagnostic imaging system. Confirmed: **Ichiro Mori, Professor, Department of Pathology, Mita Hospital, International University of Health and Welfare, Japan**
09.30-10.00	**A Nationwide Telepathology Consultation Network in China: Implementation and Result Analysis** • Digital pathology using whole slide imaging could play an important role in pathology consultation, second opinion and quality control for cancer diagnosis in China. • A nationwide telepathology consultation network using internet based telepathology platform (www.mpathology.cn) was implemented in late 2011 in China. • From late 2011 to July 2013, 16,247 pathology cases were submitted using whole slide imaging for consultation and the result were analyzed. Confirmed: **Chen Zhou, Clinical Associate Professor, Department of Pathology, British Columbia Cancer Agency, University of British Columbia, Vancouver, Canada**
10.00-10.30	**Solution Provider Presentation** For sponsorship opportunities please contact Steve Hambrook at steve@globalengage.co.uk
10.30-11.40	**Morning Refreshments** **Poster Presentation Sessions** **One to One Meetings**
11.40-12.05	**Automated Prominent Nucleoli Detection** Nucleolar changes in cancer cells are one of the cytologic features important to the tumor pathologist in cancer assessments of tissue biopsies. However, inter-observer variability and the manual approach to this work hamper the accuracy of assessment by pathologists. We propose a computational method for prominent nucleoli pattern detection. Our method is based on a farm of cascades of classifiers similar in design to those used in fact detection. Confirmed: **Hwee Kuan Lee, Head of Division, Senior Principal Investigator, Imaging Informatics division, Bioinformatics Institute, A* Star, Singapore**
12.05-12.30	**Morphometric Profiling for Colorectal Cancer Prognostics** Assessment of colorectal cancer (CRC) tissue slides for prognostic purposes is often done by visual examination by expert histopathologists. However, not only is this process subjective by its very nature, there does not exist a widely accepted system of grading for CRC. I will present our work on the development of an integrated environment for computing tissue morphometric features from whole-slide images of CRC slides. The proposed framework carries tremendous potential for the identification of cancer-related characteristics and provides a more accurate and reproducible means to assess the prognosis of CRC. Confirmed: **Nasir M. Rajpoot, Associate Professor, Department of Computer Science & Engineering, Qatar University, Qatar**
12.30-13.00	**Collaborative Analysis of Digital Slides Using Cytomine** We will present Cytomine (http://www.cytomine.be/), our web-based software environment for remote and collaborative analysis of gigapixel images. It is an open-source and extensible platform that we are continuously developing since 2010. It is based on modern web and distributed software development methodologies and semantic image analysis using machine learning. We will review its various recent applications to analyze large sets of cytology and histology digital slides in lung, breast, and thyroïd cancer as well as in renal pathology. Recent extensions for education and training will also be presented. Confirmed: **Raphaël Maree, GIGA Research and Montefiore Institute, University of Liège (Belgium), and Quantitative Image Analysis Unit, Pasteur Institute, Paris (France)**
13.00-14.00	**Lunch** **Poster Presentation Sessions** **One to One Meetings**

14.00-14.45	**45 Minute Workshop** **Creating Collaborative Quality Improvement Using Digital Pathology** The workshop will address the issues and barriers that can destroy the implementation of the digital pathology solution into today's Histology laboratory. Currently, there are major forces; culture, process and standards, that are in conflict and are working to slow or stop the vital change solution required to move Anatomic Pathology from THE WAY IT IS to THE WAY IT NEEDS TO BE. We must address the fundamental changes needed to the Histotechnology process that will support a stable structure, where each step and task are dependent on each other and share the burden of quality control and assurance. There will be discussion of the importance of standardization and quality process improvement in Histotechnology and its significance to the success of implementing a digital pathology solution; utilizing the positive aspects of digital pathology technology; developing the Histotechnology improvement process, on a day to day basis, to improve overall efficiency and quality documentation and how collaborative quality will combine digital pathology technology and process improvement techniques to aid in the development of a continuous quality assurance program for routine, special and IHC stains. **Steps in Creating Collaborative Quality:** Reduction of Variables; Data, Metrics and Measurement; Process Analysis; Process Structure; Interoperability **Objectives:** Gain understanding of the importance of standardization and process improvement in the pre-analytical steps Learn to apply appropriate quality and process improvement techniques Understand the value of quality improvement to the implementation process Reserved: **William DeSalvo, Owner/Consultant, Collaborative Advantage Consulting**
14.45-15.10	**Whole-Slide Imaging Informatics in Clinical Imaging Studies** • Image-based features linking digital histology with in-vivo imaging (e.g. PET, MR) • Detailed tissue annotations for more robust classification and validation • Robust, scalable workflows for generating predictive models in pathology informatics Confirmed: **Matthew Di Franco, Post-doc Research Assistant, Quantitative Hybrid Imaging Group, Center for Medical Physics and Biomedical Engineering, Medical University of Vienna, Austria**
15.10-15.35	**Tissue segmentation by quadratic discriminant analysis with cellular resolution** Full-field optical coherence tomography (FF-OCT) can offer 3D tomogram with submicron resolutions in both the lateral and longitudinal dimensions. After image stitching, tissue, cell as well as organelle information can be viewed in centimeter by centimeter area for histopathological diagnosis. Using the depth dimension (z axis) to extract data features, the lateral 2D tomogram (x-y plane) can be segmented without losing the lateral resolution. As a demonstration, tissues from colorectal cancer and melanoma were adopted for quadratic discriminant analysis. More than 90% of sensitivity and specificity were achieved in general. Confirmed: **Sheng-Lung Huang, Professor, Department of Electrical Engineering, and Graduate Institute of Photonics and Optoelectronics, National Taiwan University, Taiwan**
15.35-16.05	**Afternoon Refreshments** **Poster Presentation Sessions**
Chairman's Closing Remarks and Conference Close	