# The International Congress of Pathology & Laboratory Medicine (ICPALM) 2025: Pathology & Artificial Intelligence: Transforming Diagnostic & Patient Care held on 21st – 23rd July 2025 at Shangri-La Hotel, Kuala Lumpur, Malaysia

**ICPALM 2025: International Speakers**

**1. Anatomical Pathology**

**Cancer reversion: A new therapeutic approach from systems biology**

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Current cancer treatments predominantly rely on inducing cancer cell death. However, from an evolutionary perspective, this approach inherently leads to limitations such as drug resistance, recurrence, and adverse side effects. What if cancer cells could be reprogrammed to revert to a state resembling normal cells instead of being destroyed? In this talk, I will introduce the concept of 'cancer reversion', a novel therapeutic strategy that aims to reverse cancer cells to a non-malignant state from a systems biology perspective. Furthermore, our recent research findings will be discussed, highlighting how this approach has the potential to overcome the fundamental limitations of current anticancer therapies and provide an eventual cure of cancer while maintaining the quality of life of patients.

**The Challenges and Pitfalls in the Diagnosis of Extranodal Extension in Head and Neck Squamous Cell Cancers**

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Extranodal extension (ENE) in p16-negative head and neck squamous cell cancers (HNSCC) is a critical prognostic factor, influencing staging, treatment decisions, and patient outcomes. However, its diagnosis presents significant challenges and pitfalls, stemming from both clinical and pathological complexities. A multidisciplinary approach, involving oncologists, radiologists, surgeons and pathologists, is essential to mitigate diagnostic pitfalls and ensure accurate staging. Clinically, ENE often manifests subtly, complicating its detection through physical examination alone. Imaging modalities such as computed tomography (CT) and magnetic resonance imaging (MRI) are important for identifying radiologic ENE (rENE), yet their sensitivity and specificity remain limited, particularly in distinguishing subtle cases. Radiological findings may be confounded by inflammation, fibrosis, or adjacent anatomical structures, leading to potential misdiagnoses. Pathologically, the assessment of ENE relies on histological examination of lymph nodes (LN)s. Currently, histopathologically detected major (>2mm) ENE (pENE) in surgical neck dissection specimens from patients with HNSCC leads to treatment escalation with addition of adjuvant radiotherapy or chemoradiation given its significantly poorer prognosis. There is marked variation in the prevalence reported of pENE ranging from 20% to 80%. The reasons include variability in macroscopic examination, definitions and interobserver interpretations posing challenges in achieving diagnostic consistency. Practical guidelines have been recently published by the pENE Working Group, a body established to refine and harmonize diagnoses in head and neck pathology with the goal of improving the care provided to patients with diseases of the head and neck. pENE should be diagnosed only when viable carcinoma extends through the primary LN capsule and directly interacts with the extranodal host environment with or without desmoplastic stromal response. Identifying the original LN capsule and reconstruction of its contour can assist in the detection and assessment of pENE. Principles that can be used for assessment of pENE in challenging histologic situations such as the nodal hilum, post fine needle aspiration or adherent lymph nodes are provided.

**Diagnostic Approach to Non-Neoplastic Salivary Gland Lesions**

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Non-neoplastic salivary gland lesions encompass a diverse range of conditions and can broadly be divided into developmental or non-developmental. The non-developmental lesions include inflammatory, infectious, autoimmune, deposits, and obstructive pathologies. Accurate diagnosis is essential for effective management, as these lesions often mimic neoplastic processes both clinically and radiologically. A systematic diagnostic approach to these conditions, integrating clinical, radiological, and pathological findings is required. Age, gender and features such as pain, swelling, xerostomia, systemic symptoms and whether single or multiple glands are involved guide the differential diagnosis. Imaging modalities, including ultrasound, CT and MRI, play a pivotal role in characterising many lesions and identifying ductal obstructions or sialolithiasis. Fine-needle aspiration cytology (FNAC) serves as a minimally invasive tool to distinguish between inflammatory and neoplastic processes, while serological tests aid in diagnosing autoimmune conditions like Sjögren's syndrome and IgG4-related disease. Histopathological examination remains the gold standard for definitive diagnosis, particularly in cases of chronic sialadenitis or granulomatous inflammation. Non-neoplastic lesions are more frequent in major salivary glands with non-specific chronic sialadenitis constituted the most common diagnosis in surgically excised specimens. A multidisciplinary approach, involving general practice, radiologists, surgeons and pathologists,

contributors to resistance. The integration of AI with WGS offers a robust approach for the early detection of resistance, facilitating the development of diagnostics and informing treatment strategies for challenging drug-resistant pathogens.

**MM63: When Typhoid Skips the Gut: Salmonella Typhi Presenting as a Submental Abscess**

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*Introduction:* Salmonella enterica serovar Typhi typically causes enteric fever, with bacteraemia and gastrointestinal involvement. Isolation from extraintestinal sites such as soft tissue abscesses is rare. We report an unusual case of *Salmonella* Typhi isolated from a submental abscess in a patient with no gastrointestinal symptoms. *Case report:* A 61-year-old man with underlying uncontrolled diabetes mellitus presented with painful anterior neck swelling for 2 weeks, associated with odynophagia. Examination revealed a fluctuant 7x7 cm submental mass, erythematous with necrotic patch and pus discharge. Pus and tissue cultures yielded pure growth of Gram-negative rod, non-fermenter, positive for O, H and Vi antigen confirmed as *Salmonella* Typhi. The isolate was susceptible to ampicillin, ceftriaxone, trimethoprim-sulfamethoxazole and ciprofloxacin. He was treated successfully with a combination of surgical drainage and intravenous ampicillin-sulbactam for 10 days. *Discussion:* Extraintestinal infections due to *Salmonella* Typhi are uncommon and often associated with predisposing conditions such as diabetes mellitus or immunosuppression. In such cases, haematogenous dissemination from an unrecognised or asymptomatic bacteraemia may seed distant tissues. The absence of gastrointestinal symptoms in our patient highlights the potential for *Salmonella* Typhi to present atypically, complicating clinical diagnosis. This rare case of *Salmonella* Typhi in a submental abscess broadens the clinical spectrum of extraintestinal salmonellosis and highlights the importance of microbiological testing in head and neck infections. Prompt culture, targeted antimicrobial therapy, and appropriate surgical intervention remain essential to achieve favourable outcomes.

**MM64: From ice to rainforest: preliminary lichens antibacterial properties against multidrug-resistant organisms**

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*Introduction:* The emergence of multidrug-resistant (MDR) bacteria including methicillin-resistant *Staphylococcus aureus* (MRSA) and *Acinetobacter baumannii* (MDRAB) poses a critical threat and creates an urgency for alternative antimicrobial agents. Lichens, known for their unique secondary metabolites, offer promising antimicrobial potential. This study evaluates the antibacterial activity of lichen crude extracts from Antarctica and Malaysia against MDR organisms. *Materials and Methods:* Crude extracts from five Antarctic and one Malaysian lichen species were screened against 14 clinical MDR isolates (7 MRSA, 7 MDRAB). Extraction was performed using acetone and methanol through maceration. Antibacterial activity was assessed via the Kirby-Bauer disc diffusion method. Extracts were further purified by solid-phase extraction (SPE) and analysed by LC-MS. *Results and Discussion:* Acetone and methanol extracts showed significant antibacterial activity against MRSA, while activity against MDRAB was limited. Among acetone extracts, the Antarctic lichen *Cladonia deformis* showed the highest activity (12–21 mm inhibition zones), followed by the Malaysian *Cladonia rudis* (16–18 mm). All Antarctic lichens, except *Usnea aurantiaco-atra*, inhibited MRSA. Limited MDRAB activity was observed in *Umbilicaria antarctica*, *Usnea antarctica*, and *C. deformis*. Methanol extracts displayed moderate to strong MRSA activity (9–20 mm), but no activity against MDRAB. *Conclusion:* Lichen crude extracts, particularly from *Cladonia deformis* and *C. rudis*, demonstrated promising antibacterial effects against MRSA. Ongoing LC-MS analyses are focused on non-targeted metabolite screening, highlighting the need for targeted MS/MS to confirm specific metabolites that possess antibacterial properties. These findings support the potential of lichen-derived compounds as alternative strategies to combat antimicrobial resistance.

**MM65: From Gold Standard to New Benchmark: National Parasite Centre Validates PCR for Helminth Detection**

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*Introduction:* Helminth infections still remain a health burden in Malaysia especially in the Borneo region. Although stool microscopic examination (FEME) is still the standard diagnostic test, its sensitivity is low especially with low levels of infection or mixed infections. PCR as a diagnostic test is more sensitive and specific than a stool microscopic examination. The present study assessed the accuracy and the incremental value of helminth PCR testing; it is carried out at two national parasitology laboratories, Hospital Sibu and the National Cancer Institute (IKN). *Material and Methods:* Both stool FEME and multiplex helminth PCR targeting *Strongyloides* spp, Ancylostoma spp, Hymenolepis spp, *Necator americanus*, *Taenia* spp, and *Trichuris trichiura* were performed on 20 stool samples. PCR testing was done independently by Hospital Sibu and IKN. Microscopy was considered the gold standard. The following diagnostic values (sensitivity (Sn), specificity (Sp) and inter-laboratory concordance were tested. *Results:* True positives and true negatives were 7 and 12, respectively out of 20 samples evaluated by stool FEME. One case was PCR-positive but microscopy-negative, which could represent a false positive, or an earlier/subclinical infection not detected on