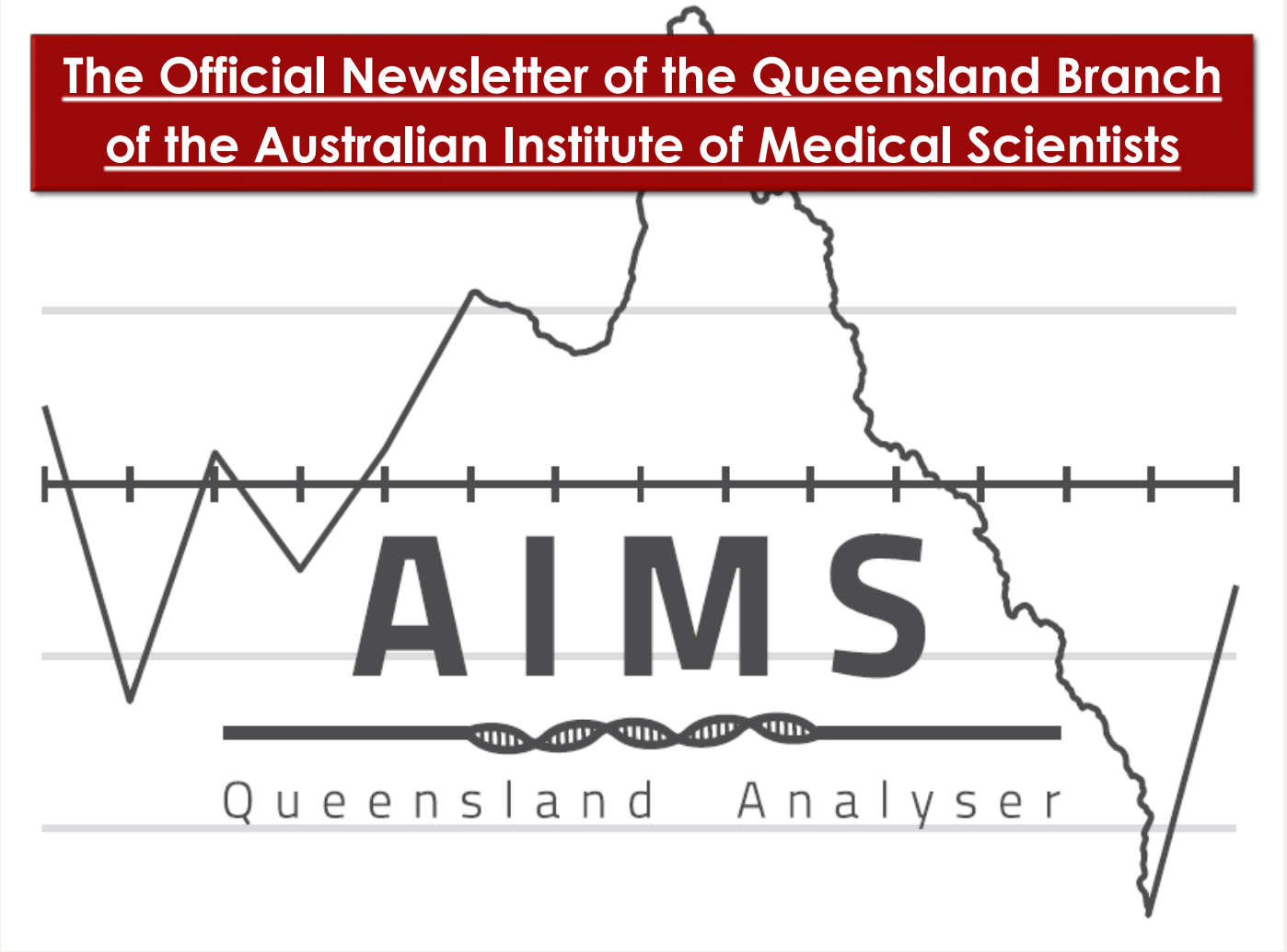
The Official Newsletter of the Queensland Branch of the Australian Institute of Medical Scientists



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AIMS Qld Branch Committee Members 2018/2019

Chair: Indu Singh

Vice-Chair: Anne-Marie Christensen

Treasurer: Christine Knauth

Secretary: Patricia (Trish) Laube & Avinash Kundur

Committee Member: Ali Baradaran

Committee Member: Ritwik (Ricky) Palit

Committee Member: Ian Cassady

Committee Member: Jacqueline DeWirral

Committee Member: Patricia (Trish) Laube & Avinash Kundur

Committee Member: Deborah Orr (PaLs)

Student Members: Wendy Walker & Jarod Edgeworth (QUT)

Arthur Colquhoun & Andre Jones-Dorr (Griffith)

For all branch enquiries, please contact queenslandaims@gmail.com

Chair's Report

Welcome to the Queensland Analyser August 2019. We have had a few changes in the AIMS Queensland Branch Committee over last year. The committee would like to thank Anne-Marie for dedicating her time and huge contribution to the AIMS Queensland Branch in her time as chairperson.

For recent past activities, in August 2018, we saw about 45 people attend the annual HGQ-AIMS combined scientific meeting on Renal Pathology, which was preceded by our 2018 AIMS Queensland State branch annual general meeting and Chair's Branch Report to Queensland Members. It was a good networking event and thanks go to HGQ President Jerres Alcober and the Committee for their ongoing support for this combined educational meeting. We look forward to next meeting on 22nd August 2019 with the theme of 'Liver'.

In May 2019, the annual AIMS Queensland State Branch and Preanalytical & Laboratory Staff (PaLs) combined networking meeting was held with the theme of 'Preanalytical Errors'. The presenters included an expert in the field as well as a recent graduate. I would like to thank our sponsors, speakers, volunteers, and committee members who made these events throughout the year successful.

This issue of the Analyzer includes the summary of the events organized and our regular '5 minutes with' featuring Mike Nolan, the current Chief Executive of AIMS, who has more than 40 years of experience as a medical scientist with specialization in Microbiology. We thank our AIMS PaLS committee member Debbie Orr for her feature article on Sun, Sea, & Science, Scientific Conference at Airlie Beach by AIMS Tropical Division. We are happy to include an interesting and informative article by Ali Baradaran about new concepts in cancer diagnosis.

We are looking forward to South Pacific Congress in September 2019, AIMS-AACB combined scientific meeting in October 2019 and AIMS-AACB annual end of year Quiz at QUT Garden Points campus on 3rd December 2019.

I hope to see you all at the sunny Gold Coast for the AIMS South Pacific Congress, 17-19 September 2019. Have a fruitful and enjoyable time reading this newsletter.

Indu Singh

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Queensland Branch Events Update

AIMS & HGQ Combined Scientific Meeting 2018

The annual AIMS and HGQ combined scientific meeting for 2018 was successfully held again at the Pineapple Hotel in Brisbane. As requested by the attendees in the previous year, the topic for the 2018 scientific meeting was Renal Physiology.

Dr David Wong from Mater pathology was the first speaker of the night. In his topic ***"The medical renal biopsy: Aspects of tissue processing and histologic assessment"*,** Dr Wong discussed the significance of renal biopsies in conditions associated with the glomerulus.

The next speaker, Dr Deepak Ipe from Griffith University presented his topic ***"Genomic and metabolic characterisation of human urine utilisation of ABSA"*** (ABSA – Asymptomatic bacteriuria-causing *Streptococcus agalactiae*). Talking about his research, Dr Ipe has presented the mechanism by which *S. agalactiae* can metabolise malic acid and grow in human urine, thus causing symptomatic and asymptomatic urinary tract infections.

The final talk of the night was presented by Suellen Hopkins from the Princess Alexandra Hospital (PA). In her talk ***"Delving into Duffy"***, Ms Hopkins has presented an interesting case study, where the patient has showed a reaction to Duffy antigen, following a kidney transplantation surgery.

The evening continued after the presentations, with the attendees networking and catching up with each other, as food and drinks were being served. Overall, the AIMS and HGQ combined scientific meeting for 2018 was a huge success, as the fully packed room included participants from labs such as SNP, QML, The Prince Charles Hospital, The Princess Alexandra Hospital, Gold Coast University Hospital, as well as academics and students from Griffith University and Queensland University of Technology. Special thanks to Roche for sponsoring the event. We would also like to thank all the speakers, Jerres Alcober (President HGQ) and the HGQ colleagues for organising and making the event a great success.

AIMS PaLS Pre-Analytical Combined Networking Meeting

On the 8th of May 2019, the Board room at the Plough Inn, saw the annual AIMS Queensland State Branch and Preanalytical & Laboratory Staff (PaLS) combined networking meeting. The event was well attended by both preanalytical and scientific delegates, many travelling from the Gold coast for the evening. After a drink and a chat, we all settled down for our first Speaker Kerri Prain, Senior scientist in Immunology at Pathology Queensland, entitled "Primary Reasons for Primary Tubes". We learned about what, how why and when tests were performed, and the issues that arise if insufficient or an incorrect sample is received. This was followed by two interesting case studies, the first on ANCA immune Vasculitis, and the second on anti-NMDA encephalitis, which is the same condition that Susannah has in the Netflix movie "Brain on fire".

After a short refreshment break, Amanda Green, a recent Medical Laboratory science graduate from Griffith University, presented "Preanalytical errors – a student's perspective". The information presented to us was gained during Amanda's time on placement with Pathology North, and highlighted scenario's that may happen in the real world. Much time as a student is spent learning about the pathology of certain conditions, but awareness of preanalytical errors is just as crucial for diagnosis. In conclusion, Amanda highlighted the value of placements, as some things can't be taught in the classroom.

Thank-you to both Kerri and Amanda, who generously gave up their time to come and speak to us.

The night ended with some more refreshments and platters on the veranda at the Plough Inn, the Pork belly was to die for!

A big thank-you to BD Diagnostics and Dijana, for generously agreeing to sponsor this event, and to Deb Orr, our chair for the evening.

A great night was had by all.

Griffith University Medical Sciences Student Award Night

Mid December 2018, Griffith University held their Student Awards Night at the Gold Coast Exhibition and Convention Centre. It was a fun evening attended by staff, industry partners, proud students and family members. The DUX of 2018 MLS Graduating Class was Mr Nicholas Everson, who obtained top marks for Clinical Biochemistry, Microbiology, Haematology and Transfusion Science. Other graduates recognised on the night for their excellent performance and high GPA included Ms Angie Gunning (Histopathology), Ms Jade Anderson (Clinical Placement) and Ms Courtney De'Cent (Research project).

QUT School of Biomedical Sciences Student Award Night

In February 2019, Branch members attended the QUT Student Awards Night which takes place at Room Three-Sixty at the Gardens Point campus each year. As with Griffith University, the evening is an annual highlight, bringing together staff, students, industry and professional representatives to celebrate outstanding student achievements. It was our pleasure to see Charlotte Yip awarded the Barbara Bain Prize for Haematology, Robyn Pennings honoured by the S. Walsh Memorial Prize for Blood Banking, Jacinta Luck awarded for Quality in Pathology Practice and Bianca Watts the JR Saal Award for Outstanding Performance in Medical Laboratory Science. Again, our congratulations to all students who received awards on the night. Prize-winning students photographed with Assoc Prof Indu Singh (AIMS representative) and Prof David Waugh, Head of School, QUT School of Biomedical Science.

Note on Student Membership Application Forms

The one-page form is currently for full-time students only and has to be signed by the Course Coordinator or an officer of the university. The two-page form is for all other applicants. Both forms are available at http://www.aims.org.au/membershipinformation/join

The **APACE** (**Australasian Professional Acknowledgement of Continuing Education**) scheme is a voluntary programme that recognises continuing education, formal courses and a wide range of professional activities which contribute to your professional growth.

The healthcare industry is undergoing rapid change. We are expected to keep our knowledge and skills up to date to enable us to perform to the highest professional standard. The **APACE** scheme provides a method by which your professional activities are recognised.

APACE has been approved by the **New Zealand Medical Laboratory Science Board** as a re-certification programme for **New Zealand Medical Laboratory Scientists**.

APACE has been approved by the **Royal College of Pathologists Australia** (**RCPA**) as a continuing professional development recognition programme for Fellows of the Faculty of Science.

For more information and to enrol visit http://www.aims.org.au/apace

'5 minutes with Mike Nolan'

1. Where do you work?
I have been the Chief Executive of AIMS for the past three years. Prior to this I spent over 40 years as a medical scientist working in pathology laboratories in Townsville, Toowoomba and the last 27 years as the Chief Scientist in Microbiology at the Royal Brisbane and Women's Hospital.

2. What do you like about your current position?
The opportunity to represent, help and promote the profession especially the silent majority of pathology workers (scientists, technicians and pre-analytical staff) who get very little recognition for the work they do and the knowledge and expertise they bring to make the Australian pathology industry the best in the world. AIMS has been doing this for 105 years, and is the oldest, largest and most respected biomedical professional association in Australia. It is a privilege to build on all the good work that went before and help our members face the opportunities and challenges that lie ahead.

3. Do you anticipate any challenges with regard to the potential go-ahead of certification for medical laboratory scientists, and how, if at all do you believe this project will affect public perception and confidence in the pathology industry?
Dealing with the second part of the question first, two quotes from the '*Aim of the (certification) project*' answers this;
'*Medical laboratory scientists are currently one of the few remaining Australian healthcare professions that do not have certification schemes to recognise professional skills.'*
'Some means for assuring the quality of the pathology scientist workforce has been a long-held ambition for many in the profession.'
AIMS has been pursuing registration for our profession for over 90 years and firmly believes that when certification is fully operational, employment in a pathology laboratory will only be available to certified scientists and technicians. We expect that within 10 years it will be a NPAAC requirement. This will formally recognise the profession and enhance public perception and confidence in the pathology industry.
Certainly, there will be challenges, especially in the early stages. An implementation plan is in place and the project is now moving into Phase One, the establishment of an independent authority that will manage certification. Three key requirements for certification will be; an appropriate qualification, fulfilment of competencies, and continuing professional development. If you are an AIMS member working in a NATA accredited laboratory you should already fulfil these requirements. Initially certification will be voluntary, but it is expected that, as time goes on and employers begin to insist on only employing certified scientists, it will become a NPAAC requirement and hence compulsory. Nothing in life is free, so certification will involve an initial certification fee and a recertification fee every three years. I see the main challenge in the early voluntary stage is uptake by scientists and technicians. I encourage all AIMS members to join the certification scheme when it begins and to sign up to APACE (it's free for AIMS members) to keep your CPD up to date. AIMS members will be 'grandfathered' into the scheme in the early days.

4. What emerging development/technology in the pathology industry are you excited about?
Two developments spring to mind. Firstly, I have been following the evolution of point-of-care testing since the early 1980s and believe that it is only a matter of time before pathology testing will move from the traditional laboratory to be performed closer to the patient – at the bedside, in the doctor's office, in the back of an ambulance or in the family home. Elements of this are happening now and as technology becomes even better, it is only a matter of time before POCT is the norm, providing the patient and clinician with convenient, on-the-spot, simple and cheap pathology tests. The question our profession needs to ask is, who will perform these tests?
Secondly, some traditional disciplines are under threat from technology. Two notable examples are the development of instruments that can perform multiple cross-discipline analyses leading to the evolution of 'core laboratories'. The other is molecular diagnosis replacing traditional techniques in every discipline. Everyone needs to become a molecular biologist, at least until there is a POCT that won't be done in a laboratory! Both examples can be good for the patient, generally offering a more accurate, faster and cheaper test and a definitive diagnosis in the case of molecular assays. The boundaries between disciplines is quickly disappearing.
Are these two developments good or bad for our profession and the pathology industry?

5. What has been your favourite holiday?
A six-week trip from Beijing to Istanbul along the Silk Road in 2007. An amazing adventure – crossing China, then through Kyrgyzstan, Uzbekistan, Turkmenistan, Azerbaijan, Georgia and Turkey. Wonderful scenery from the Gobi Desert to the Himalayas to the Russian border to the Caspian Sea and the Black Sea, fascinating people and cultures and religions, interesting food - a reminder that, deep down, people are the same all over the world.

July 2019

Contribution from TDAIMS for AIMS Qld Analyser
***by* Tiffany Daley & Deborah Orr**

In June 2018, 15 months after Cyclone Debbie devastated the Whitsundays, the AIMS Tropical Division hosted the Sun, Sea, & Science, Scientific Conference at Airlie Beach. Over the two days, 75 delegates enjoyed 36 talks from a variety of local, interstate and international speakers.

The conference would never have been the success it was without our generous volunteer speakers. To show our appreciation, the organising committee announced that from the proceeds of the conference a donation would be made on behalf of the speakers to the CQ Rescue Service. The RACQ CQ Rescue helicopter is a 24/7, 365 days per year emergency helicopter rescue service that delivers life-saving aeromedical and emergency services to the people of Central Queensland. Since the conference the service has received national acclaim for their efforts in the emergency rescue and medical treatment of three tourists that were attacked by sharks in three separate incidents at the now infamous Cid Harbour.

On behalf of the AIMS Tropical Division, the organising committee members offered a $500 donation to CQ Rescue. To show their appreciation the staff at CQ Rescue kindly offered a tour of their headquarters in Mackay. During the tour the organising committee members were able to meet the staff that included the medical team and flight crew.

Pictured above left: L – R Deborah Orr; Melissa Evers; Tiffany Daley; Organising Committee, AIMS TD Scientific Conference, 2018
Pictured above right: Organising Committee, AIMS TD Scientific Conference, 2018; with the flight crew and staff at RACQ CQ Rescue Headquarters, Mackay, Qld, 4740.

New concept in cancer diagnostic: challenge in path to clinical application

by **Ali Baradaran**

In spite of advance effort in cancer diagnostic and therapy, cancer is expected to continue as a major health and economic problem worldwide. For cancer patients, time is a matter of life and death. The early detection and diagnosis of cancer even before the clinical symptom usually increases the chances of successful treatment [1].

A long-standing goal in cancer biology has been to develop tests that can detect cancer early. The time waiting for the results of a cancer-screening and diagnostic are essential, when an early diagnosis and quick action lead to better outcomes [2]. Currently, physicians and researchers work towards providing an accurate cancer diagnosis, screening, and prognostic test to increase the better the chance of survival. In addition, treatments for early cancer are often less complex and less expensive than treatments for more-advanced disease. Till now, too many cancers are still diagnosed at late stages, when effective treatment and long-term survival may not be possible [3, 4].

Although tissue biopsy is the gold standard and most direct cancer diagnosis method, it is limited by constraints on sampling frequency and because it is an incomplete representation of the entirety of the organ. Identification on tumour tissue that is predictive biomarkers of response to targeted treatments is prerequisite for optimal patient care but faces several biological and technological challenges. In tissue biopsy the comprehensive 'picture' of the tumour is often limited by the tumour accessibility and an availability of an adequate amount of tissue for biomarker testing. Moreover, tissues biopsies also increase the cost of patient care and the time for getting results [5, 6]. To address these limitations new ways to observe tumour genetics and tumour dynamics have should be evolved in clinic.

General adoption of these tests for clinic requires that the assays are accurate, relatively inexpensive, non-invasive, and provide sufficient lead-time, that is, the test detects the tumour well before symptoms develop to allow for effective intervention [6, 7]. Naturally, considerations of expense and non-invasiveness have focused attention on biomarkers in blood, urine, or other bodily fluids. A liquid biopsy is a simple non-invasive alternative to tissue biopsies in which a body fluid specimen is obtained for detailed laboratory analyses. The liquid biopsy currently mainly includes circulating tumor cells (CTC), circulating tumor DNA (ctDNA) and tumor-derived extracellular vesicles (exosomes), and samples can be derived from blood, urine, saliva and the like. Here, liquid biopsy offers several advantages compared to "conventional" tissue biopsy: Liquid biopsy is less burdensome than a tissue biopsy, Moreover, tissue biopsies may not appropriately reflect the complex molecular profile of a primary tumor. Furthermore, liquid biopsies may also provide insights into the molecular drivers of different primary tumors or metastases, which may significantly differ in the same patient [7, 8,9].

The potential of liquid biopsies is highlighted by the fact that it can track the evolutionary dynamics and heterogeneity of tumours and can detect very early emergence of therapy resistance, residual disease, and recurrence. The liquid biopsy show that has the potential to provide a way to track tumour evolution in a non-invasive and more comprehensive way [10]. In general liquid biopsy are non-invasive, simple to administer, more patient-friendly, overcome the problem of heterogeneity in tumour makeup, and, by serial testing, allow the progression of a tumour to be more easily followed to help inform treatment decisions. However, the clinical utility of current liquid biopsy tests is limited and many questions remain unanswered. Indeed, robust, reproducible and shared procedures are mandatory for reaching the clinical validation of the best assays to isolate and/or characterize the tumor burden in peripheral blood, and for definitively proving their individual or complementary use as a companion diagnostic [10, 11].

A major limitation on the use of CTC assays and liquid biopsy into clinical practice is the lack of a consensus on standard operating procedures (SOPs) for its assessment. Standardization in methodology has been instrumental in facilitating multicentre trials with the purpose of evaluating the clinical utility of CTCs. These tests need to follow regulatory guidelines to establish assay performance and analytic validity [11]. It is only after analytic validity and clinical utility have been established that liquid biopsies can be expected to impact cancer screening and precision oncology. While promising, many challenges remain in the use of liquid biopsies from sample collection to data analysis. Liquid biopsy has increasingly been adopted and explored for clinical care, but careful analytic and clinical validation, as well as additional preclinical studies addressing the biology of liquid biopsy analytes, still need to be performed. Another challenge for liquid biopsies for cancer screening is determining the site of the tumour, thus researcher recommended that individuals who test positive twice by liquid biopsy should undergo imaging to find the tumour site. Moreover, despite the development of numerous new CTC capture devices and a wealth of clinical studies demonstrating strong correlations between CTC counts and clinical outcomes, because of very low concentrations of CTCs in the peripheral blood of cancer patients, the information on the functional properties of CTCs is still very limited. Indeed, robust, reproducible and shared procedures are mandatory for reaching the clinical validation of the best assays to isolate and/or characterize the tumour burden in peripheral blood, and for definitively proving their individual or complementary use as a companion diagnostic [10, 11,12].

In conclusion, it is evident that liquid biopsies are revolutionizing oncology and hold several advantages over a tissue biopsy. However, validation is still needed to enable the enlargement of the potential applications of liquid biopsies before widespread use in routine clinical practice in Oncology Laboratory. Moreover, before these goals can be achieved, liquid biopsies must pass rigorous analytic validation to reach high clinical utility.

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LIVER

A COMBINED SCIENTIFIC MEETING BROUGHT TO YOU BY THE

HISTOTECHNOLOGY GROUP of QUEENSLAND
&
AIMS QUEENSLAND STATE BRANCH

Thursday 22 August 2019 Pineapple Hotel

706 Main St, Kangaroo Point

6.00pm for AIMS Annual Meeting followed by presentations at 7.00pm

Dr Kayla Tran - (TPCH-Anatomical Pathology)

"Interesting Liver Cases"

Dr Gautam Rishi (IHBI, QUT)

"Genetic Modifiers of Iron Overload and Identification using NGS"

Jo Beggs – Supervising Scientist (Queensland Health)

"Maintaining the Balance"

Limited seating. Please register at the weblink below
http://www.hgq.org.au/events/scientific-meeting-2019-2nd/

FREE for AIMS and HGQ members/student members
$20 – Non-members (pay on arrival)

Upcoming Events for the Remainder of 2019