



VOLUME 27, NUMBER 2 June 2022

The HGVT aims to provide a dynamic continuing education program in which all persons with an interest in Histology and Histotechnology are freely invited to participate.

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Committee Page

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President's Report – Behind the Bench

Welcome to the chilly mid-year edition
It has been pleasing to see the return of face-to-face meetings/gatherings in the workplace and broader community. It was great to see the immunohistochemistry conference go ahead in Tweed Heads a few weeks ago. Feedback was good with high engagement, and just a little splattering of covid. The Queensland histo group have a conference in October in Cairns, so fingers crossed we will be a further step away from the pandemic and flu season. (Look for a flyer in this edition of Paraffinalia)

The Committee will begin to meet again in person, so this is our first steps towards getting our community back together. We are looking at a central venue for the October meeting with a forum style face to face meeting, so fingers crossed that this is an option.

On a sad note, the Victorian Histology family has lost someone who contributed greatly to the wider knowledge of our group. Julian Richardson, who worked at St Vincent's Hospital and then a long stint at Cabrini passed away last week. He contributed his knowledge at education sessions and in this edition, we have included some tributes from 2 of his peers. RIP Julian.

Keep warm and



Kerrie Scott (Leica/ Dorevitch Pathology) HGVT President





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TRIBUTES TO JULIAN RICHARDSON

BY ALAN SUTTON AND ALAN GOOEY

As a fellow laboratory supervisor and longstanding colleague of Julian, my most compelling memory is of a very tall, amicable man, quiet yet fiercely intelligent. And if I had to choose one overriding characteristic, it is that Julian excelled: as an academic (one of the few Fellows in our discipline), achieving expert status in martial arts, in running a busy laboratory and nurturing its staff, in his contribution and commitment to our fledgling professional society. In short, an interesting and engaging character who you looked forward to seeing again, even years later, with a real sense of anticipation. Sadly, gone far too early! Vale Julian.

- Alan Sutton



Sensei Richardson and I first crossed paths when Melbourne Diagnostic and BPMS laboratories merged to become Melbourne Pathology in 1988. I was working for Melbourne Diagnostic and Sensei Richardson was with Cabrini Pathology, under the auspices of BPMS.

Sensei Richardson and I only ever worked together for about a week. As Cabrini Pathology was not actually a part of BPMS our labs were not combined, but during those early days of the merger, Liz Baranyai (my counterpart at Cabrini) and I swapped positions for about a week, to learn each other's methods and to "foster relations" (for lack of a better term).

It was those early days I realised I was in the presence of an "histologist extraordinaire"! Anything Sensei Richardson DIDN'T know about the art of histology just was not worth knowing. As colleagues I have asked him for advice from time to time, to which he gave freely and generously.

Over the years I got to know the Sensei outside of work. Our encounters were few but when we did meet up it was always royally stimulating and entertaining for me. He had a vast wealth of knowledge on various subjects and since he and I share quite a few similar interests, I always found our conversations immensely interesting. I always left feeling, to paraphrase Hercule Poirot, that my little grey cells were greatly stimulated.

I recall on one occasion, I think it was after some meeting, a few of us went to dinner. I can tell you Sensei Richardson held court! Everyone present was fascinated by the Sensei's discourse on various topics, both histological and not. When he spoke, you listened!

And he and I shared a similar sense of humour. I was told by my colleague Rebecca (who was at Cabrini before coming to The Alfred) that at one NATA assessment, where everything we pinned on the wall had to be "controlled", the Sensei got a rubber chicken, stamped "controlled" on it and nailed that to the wall. That is the sort of thing I would have done had I been permitted. I do not think the assessors were too amused, but I thought "Yeah! right on, you da man!"

I was afforded the honour of being invited to the Sensei's 60th birthday party. I enjoyed it greatly but what stuck with me on that occasion was some bright spark decided to organise a Strippogram. What caught my attention was not the seminaked lady prancing around the living room, but the expression on the Sensei's face! If looks could kill! He was NOT amused!

By now you may be wondering why I keep referring to Julian as Sensei. Some of you may well know he was deeply interested in Japanese culture and was a genuine Kendo master. I freely and unashamedly admit that I was in awe of him. In my book he was a walking Wikipedia on a wide range of subjects of interested to me, the art of histology but one. He was the Master.

The one regret I have is not taking up his invitation to visit him in Buchan and to shoot some black powder muskets.

Rest in peace Julian. You will be missed.

Alan Gooey Senior Scientist Anatomical Pathology Department Alfred Hospital

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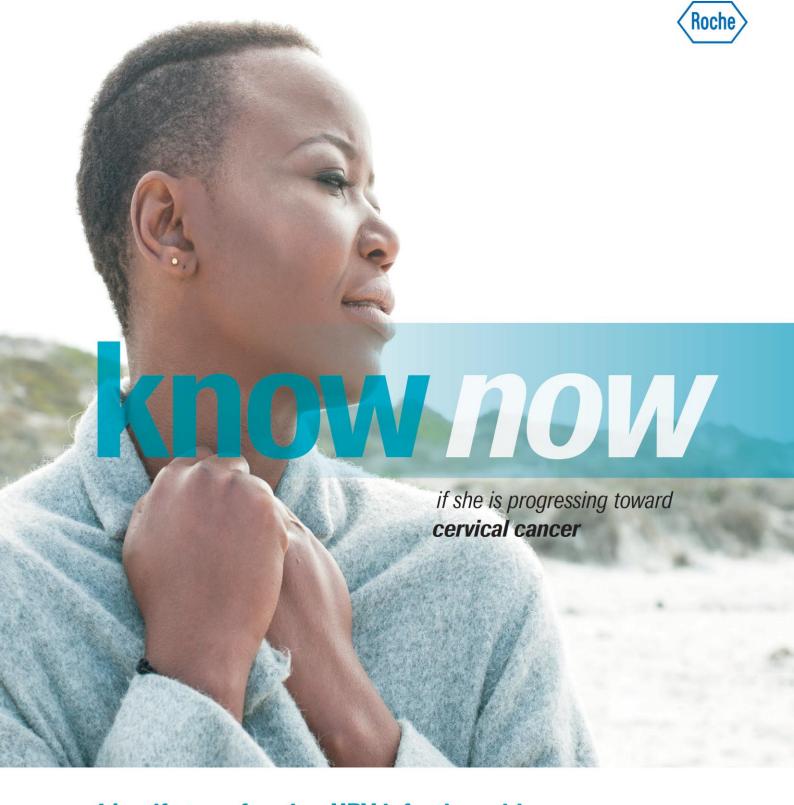


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HEAD AND NECK – INTERESTING CASE STUDIES

BY BRON CHRISTIANSEN, ROYAL CHILDREN'S HOSPITAL

Bropn Christiansen was kind enough to offer his case studies of 17 year old girl presenting with a recurrent palatal fistula and a 9 year old boy presenting with a lump on hiright forehead.. Read on below to discover the unexpected and interesting outcomes.

Case study 1 - 17 year old girl

- · Cleft palate at birth
- · Presented with recurrent palatal fistula
- · Elective surgery for chin implant

The Macroscopic description

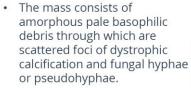
 Two irregular pieces of brownish friable material, 15x10x5mm and 20x15x6mm. Larger piece bisected.

Histology requested

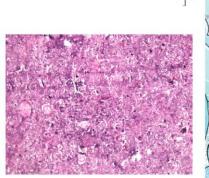
- · ? Foreign body
- · R nasal floor



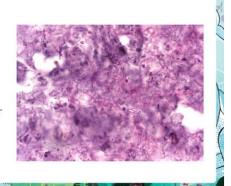
Sections show.....



 Cannot identify the nature of the basophilic granular material itself but it is not vegetable matter, woven fibre or the silicate fragments that would be seen in dirt or gravel.



- Further staining shows abundant slender branching organisms in areas of the material.
- These have been discussed with mycologists in Microbiology and they appear to represent a filamentous bacterium.





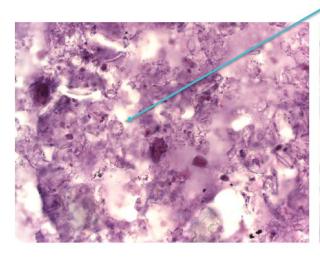
What the??

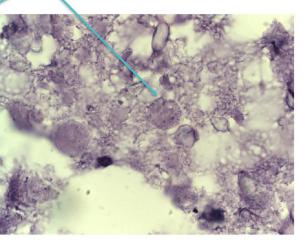
- · Previous history was cleft palate
- Alginate used to create a palate impression
- Theory is that some alginate from the moulding was left in the roof of the mouth
- Stayed behind in the nasal floor and became a haven for bacteria



Case study 1 – Alginate!







Follow up

- Now 27
- Doing well (by all accounts)
 - Teeth implants
 - Speech is good
- No follow up since 2013.



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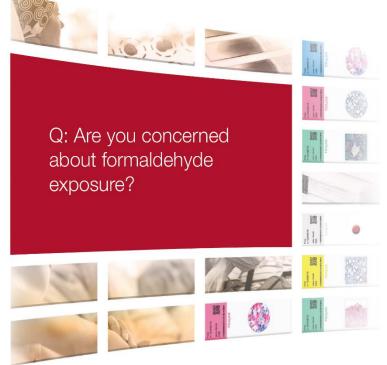


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48203111	500 mL ZERO container with 115 mL 20% non-buffered formalin and 115 mL PBS * Carton/16

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Showing the right path

HEAD AND NECK – INTERESTING CASE STUDIES CONTINUED...

BY BRON CHRISTIANSEN, ROYAL CHILDREN'S HOSPITAL

Case study 2- 9 year old boy

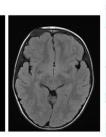
- Previous history of Langerhan's Cell Histiocytosis (LCH) 8 months ago
- Now presents with lump on right forehead

Clinical Questions: How many specimens? I Source of Specimen A: Forehead Right [1376] Clinical notes: Langerhan histiocytosis tumor? Eroding through frontal bone

CT/MRI Brain





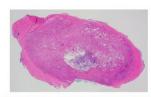


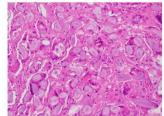
CT Findings

- An ovoid, relatively hyperdense, 2.5 x 1.2 x 1.6cm (previously 2.5 x 1.0 x1.6 cm) soft tissue lesion is seen at the right frontal bone with resultant erosion of the skull vault.
- · Anteriorly, it extends to the subcutaneous tissues.
- The posterior aspect of the lesion appears well defined and separate from the extra axial spaces of the underlying brain.
- There has been some interval bony remodelling with the eroded area now smoothly marginated.

Histology

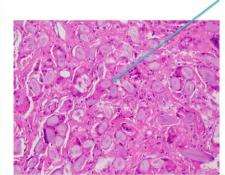
- It comprises a dense fibrous pseudocapsule surrounding a mass of unusual basophilic material that has excited a florid foreign body type giant cell reaction.
- The process is clearly chronic as in addition to the mature fibrous pseudocapsule there is extensive fibrosis within the mass surrounding fragments or fibres of the basophilic material.

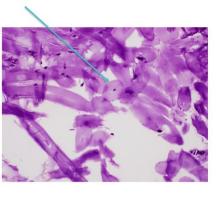






Case Study 2





What the??





- Previous frontal bone eroding tumour in Right Supraorbital area removed
- · Dressing used to reduce bleeding

 Kaltostat used as packing in surgery Findings: Right Supraorbital -Frontal bone erodi intracranial • PLangerhans cell histocytosis Procedure: GA LA (Marcain 0.5% with ADR)

GA. LA (Marcain 0.5% with ADR)
 Prepped & Draped
 Transverse incision overlying lesion
 Discretion down to project our Project out of the Adres of

frontal bone, curettage of bone edges
Intracranial turnour biopsy performed - sent fresh to
Histopathology

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Follow up



- Nearly 9
- Presented to ED in Dec with bump on forehead
 - NAD
- · No further presentations

UNDER THE MICROSCOPE WITH SANDRA LIM

What was your first part-time job?

My first part time job was during high school, I worked as a cashier/cook at Nandos at the Melbourne Central Franchise.

How long have you worked in histology?

I've been working in Histology since 2014, so about 8 years now. I fell into this field accidently during my placement. After my placement I was offered a technician position at Tissupath Pathology and eventually I was promoted to scientist. I'm now currently at Dorevitch Pathology fulltime working as a grade 3 evening cut up supervisor.

When people ask, "So, what do you do?" How do you explain Histology?

I usually respond with 'I cut human tissue for a living', I like seeing people's reactions when I say that. I then I go into a bit more details and clarify what I actually do.



What is a skill you'd like to learn and why?

I would love to learn the piano, I've always enjoyed watching and listening to people play, there's just something about it that's just so soothing a calming.

If money was no object, what would you do all day?

Spending time with my friends and family and more importantly my dogs. I have two huskies that require a lot of exercising and attention.

What's an ideal weekend for you?

Hiking with my dogs in the outer regions of Victoria on a nice sunny day.

If you could take only THREE items with you to a deserted island, what would they be?

A lighter, a knife and a water bottle.

What's on your bucket list this year?

Enjoy the freedom that I have now and do all the things I wanted to do in 2020/2021 that I couldn't.

Where do you most want to travel, but have never been?

Japan is top of my list of places I want to travel to then I think right underneath that would be Europe.





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JOURNAL ARTICLE:

ANGIOTENSIN-CONVERTING ENZYME 2 (ACE2), TRANSMEMBRANE PEPTIDASE SERINE 2 (TMPRSS2), AND FURIN EXPRESSION INCREASES IN THE LUNGS OF PATIENTS WITH IDIOPATHIC PULMONARY FIBROSIS (IPF) AND LYMPHANGIOLEIOMYOMATOSIS (LAM): IMPLICATIONS FOR SARS-COV-2 (COVID-19) INFECTIONS BY SUKHWINDER SINGH SOHAL

This issue, the HGVT's very own Sukhwinder Sohal and his team have provided their investigation into various enzyme expression and the implications that this has for SARS-CoV-2 (COVID-19) infections. Please see the below Abstract and Introduction and use the following link to access the full article: FULL ARTICLE (https://www.mdpi.com/2077-0383/11/3/777)

Abstract

We previously reported higher ACE2 levels in smokers and patients with COPD. The current study investigates if patients with interstitial lung diseases (ILDs) such as IPF and LAM have elevated ACE2, TMPRSS2, and Furin levels, increasing their risk for SARS-CoV-2 infection and development of COVID-19. Surgically resected lung tissue from IPF, LAM patients, and healthy controls (HC) was immunostained for ACE2, TMPRSS2, and Furin. Percentage ACE2, TMPRSS2, and Furin expression was measured in small airway epithelium (SAE) and alveolar areas using computer-assisted Image-Pro Plus 7.0 software. IPF and LAM tissue was also immunostained for myofibroblast marker α-smooth muscle actin (α-SMA) and growth factor transforming growth factor beta1 (TGF-\beta1). Compared to HC, ACE2, TMPRSS2 and Furin expression were significantly upregulated in the SAE of IPF (p < 0.01) and LAM (p < 0.001) patients, and in the alveolar areas of IPF (p < 0.001)and LAM (p < 0.01). There was a significant positive correlation between smoking history and ACE2 expression in the IPF cohort for SAE (r = 0.812, p < 0.05) and alveolar areas (r = 0.941, p < 0.01). This, to our knowledge, is the first study to compare ACE2, TMPRSS2, and Furin expression in patients with IPF and LAM compared to HC. Descriptive images show that α -SMA and TGF- β 1 increase in the IPF and LAM tissue. Our data suggests that patients with ILDs are at a higher risk of developing severe COVID-19 infection and post-COVID-19 interstitial pulmonary fibrosis. Growth factors secreted by the myofibroblasts, and surrounding tissue could further affect COVID-19 adhesion proteins/cofactors and post-COVID-19 interstitial pulmonary fibrosis. Smoking seems to be the major driving factor in patients with IPF.

Introduction

The coronavirus disease 2019 (COVID-19) outbreak has caused more than 240 million infections so far with approximately 4.9 million deaths worldwide until October 2021 [1]. Chronic lung disease has been recognized as a risk factor for COVID-19 [2,3]. Smoking is one of the significant risk factors in chronic lung diseases such as chronic obstructive pulmonary disease (COPD) and lung cancer. A recent study has indicated that smokers have almost two-times higher odds of progression of COVID-19 severity than non-smokers, which confirms that smoking is a risk factor for COVID-19 progression [4]. We and others have previously reported increased expression of the severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2) receptor, angiotensin-converting enzyme 2 (ACE2) in smokers and patients with COPD [5,6].

Leung et al. [6] showed increased ACE2 gene expression in small airway epithelial cells of smokers and COPD patients, and the smoking status was significantly associated with the ACE2 gene expression levels in smokers, which was higher in smokers than non-smokers. Our study further indicated ACE2 protein expression was significantly increased in small airway epithelium, alveolar type II pneumocytes, and alveolar macrophages in current smokers with COPD compared to normal lung function smokers and normal controls [5]. We also reported that increased ACE2 expression was associated with increased endocytic vacuoles in smokers and COPD patients [7]. These results provided further evidence that smokers and COPD patients are highly susceptible to SARS-CoV-2 infection.

High expression of ACE2 is also a potential risk factor for severe COVID-19 outcomes in patients with interstitial lung diseases (ILD) [8]. Among the ILDs, idiopathic pulmonary fibrosis (IPF) is an irreversible fatal fibrotic lung disease with unknown etiology [9]. IPF affects over 3 million people worldwide and brings on a significant burden to patients, their families, and the healthcare system [10,11]. Risk factors including cigarette smoking, environmental exposures, microbial pathogens, and genetic factors play potential roles in IPF pathogenesis, which lead to alveolar epithelial cell injuries and replace injured alveolar epithelium with fibrotic tissue [12]. Patients with IPF usually have 2–4 years of survival after diagnosis and the mortality rate of IPF surpasses many types of cancers [8,13]. Another rare ILD mainly affecting females is lymphangioleiomyomatosis (LAM). LAM is a chronic and progressive rare neoplastic disease [14] that can occur sporadically (S-LAM) or associated with tuberous sclerosis (TS-LAM) [15,16]. LAM is characterized by hyperproliferation of abnormal mesenchymal "smooth muscle" like cells, resulting in multiple cysts and cystic lesions [17,18], which grow anomalously in the airway, parenchyma, axial lymphatics, and pulmonary blood vessels [19]. Research has found that a significant proportion of LAM patients shows inflammation in airways surrounded by LAM cells [20]. Histological observation shows LAM cysts lined with hyperplasic type II pneumocytes, possibly progressing through underlying chronic inflammation and fibrosis [20]. In both IPF and LAM diseases, the lung has prolonged airway losses, especially in distal parts of the lung parenchyma, leading to severe respiratory failure [<u>21</u>].

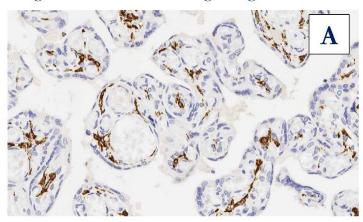
During the COVID-19 pandemic, patients with ILDs, such as IPF and LAM who had severe COVID-19 infection, experienced severe and fatal complications [22,23]. Therefore, understanding the role of the COVID-19-related biomarkers in ILDs would help to mediate and improve these patients' treatment management. Apart from ACE2, Furin and Transmembrane protease serine 2 (TMPRSS2) are two additional proteins that help establish the SARS-CoV-2 virus infection [24]. ACE2, Furin and TMPRSS2 together play a pivotal role in COVID-19 pathophysiology [25,26]. Here, we examine the expression of ACE2, Furin, and TMPRSS2 in the lung parenchyma, especially in the small airway epithelium and alveolar regions of patients with IPF and LAM compared to normal healthy controls. We further evaluated the growth factor transforming growth factor beta1 (TGF-β1) and myofibroblast marker α-smooth muscle actin (α-SMA) in similar areas as with COVID-19 markers.

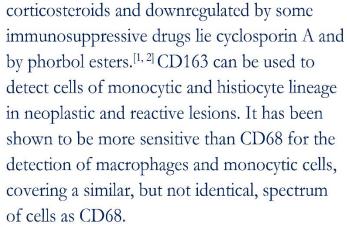


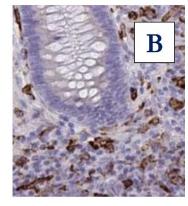


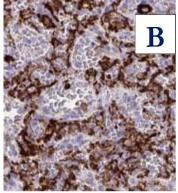
IHC ANTIBODY SPOTLIGHT: CD163

CD163 is involved in the clearance of hemoglobin-haptoglobin complexes and is considered to have anti-inflammatory functions. The antigen expression is restricted to the monocytic/macrophage lineage and reported to be present on all circulating monocytes and most tissue macrophages. ^[1] Exceptions to this include those found in the mantle zone and germinal centers of lymphoid follicles, interdigitating reticulum cells and Langerhans cells. Some examples include splenic dendrocytes, alveolar macrophages and Kupffer cells of the liver. It is not present in macrophages in the mantle zone and some of the germinal center cells in lymph follicles, nor in Langerhans cells and interdigitating reticulum cells. The protein is generally upregulated by









- **A.** Human placenta: immunohistochemical staining for CD163. Note cytoplasmic staining of Hofbauer cells. CD163: clone 10D6 Source: https://shop.leicabiosystems.com/us/ihc-ish/ihc-primary-antibodies/pid-cd163
- **B.** IHC staining in examples of appendix (left) and spleen (right) tissue

References

- Nordiqc.org. 2022. NordiQC Immunohistochemical Quality Control. [online] Available at: https://www.nordiqc.org/epitope.php?id=38 [Accessed 1 June 2022].
- Shop.leicabiosystems.com. 2022. *CD163 IHC Primary Antibodies*. [online] Available at: https://shop.leicabiosystems.com/us/ihc-ish/ihc-primary-antibodies/pid-cd163 [Accessed 1 June 2022].

TekEquipment

ErgoTekMed 80/180 Microtome Benchtop

TekEquipment has designed an extremely stable, chemical resistant bench top supported by a four leg, electronically adjustable hydraulic system.



Designed to improve the workplace ergonomics for your staff!

- 70-120cm height range
- 400kg maximum load
- 40mm tabletop thickness
- Range of colours available
- 80 x 180cm benchtop, customised sizes available
- Dedicated height control panel
- Hidden cable tray with optional powerboard
- Made in Australia
- Excellent stability for microtome use

ErgoTek



Down-Draft GrossPath GP Workstations

 Integrated active carbon air recirculation filter

(+ HEPA option)

- No ducted ventilation system needed
- Height adjustable
- · Simple installation
- Full range of accessories
- Widths available:125cm, 150cm, 175cm,200cm



Cut Grinder Diamond Pathology Saw

- Water cooling of blade eliminates aerosol material
- Safe to touch blade
- Quick tensioning saw band
- Perfect cut surface
- 22 or 31cm cutting height models available







Org. No. A0035235F

"Virtual Meeting"

'Research Presentation'

Speaker: Cristina George – "Intersexuality in Pigs" (Holmesglen

TAFE)

Date: Thursday 30th June 2022

Time: 6:45 - 7 - Joining the meeting

7 - 8.15 - Presentation

Link: Zoom Meeting

Join Zoom Meeting

https://us06web.zoom.us/j/81048311976?pwd=NVB SR1IOemtTdHRONII0UzBESDR6QT09







20 22



HISTOTECHNOLOGY GROUP OF QUEENSLAND



QUEENSLAND STATE HISTOLOGY CONFERENCE & HGQ AGM

Friday 7 - Sunday 9 October 2022 Pullman Reef Hotel Casino, Cairns

On behalf of the Histotechnology Group of Queensland (HGQ) Committee, I welcome you to join us in Cairns for the Queensland State Histology Conference and HGQ Annual General Meeting. The conference will be held in Cairns – the gateway to the tropics.

Join us in Cairns where you can feel grounded and connect with nature in a place unlike anywhere else – fringed by reef and enveloped by rainforest, with the Great Barrier Reef at our doorstep. Visiting Tropical North Queensland feels like a world away from the rest of Australia. From ancient culture and modern marvels, larrikin characters and must-see creatures to reef and rainforest, peaks and palm trees, it's the perfect place for this years' conference.

The conference will be filled with technical presentations, learning of new products and services from our sponsors and exhibitors, as well as the all-important networking activities.

Please put Friday 7 – Sunday 9 October 2022 in your diary so you can attend what will be a sensational conference. The Pullman Cairns Reef Hotel Casino is Conference Headquarters.

We look forward to seeing you in Cairns.

Mr Jerres Alcober President



Future Events: 2022

Org. No. A0035235F

Date: 16th June, 2022

Scientific Meeting

Topic: Intersexuality in Pigs by Cristina George (Holmesglen TAFE)

Venue: Zoom Meeting (streamed and recorded)

Date: 15th September, 2022

Scientific Meeting

Topic: TBA

Venue: Zoom Meeting (streamed and recorded)

Date: 27th October, 2022

HGVT AGM **Topic:** TBA

Venue: Zoom Meeting (streamed and recorded)