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BRIEF COMMUNICATION
Microangiopathic haemolytic anaemia in a siamang
(Hylobates syndactylus)

CASE STUDY
A case of chronic canaliculitis with isolation of Actinomyces
israelii, Leptotrichia goodfellowii and Selenomonas

HAEMATOLOGY UPDATE
A case of plasma cell myeloma in a middle-aged male
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Brief Communication

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THE GLOBAL HAEMOSTASIS SOLUTION

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Microangiopathic haemolytic anaemia in a siamang
(Hylobates syndactylus)

Brian Matthews, David J Schultz

Adelaide Zoological Gardens Veterinary Department, South Australia

Abstract

A brief overview of microangiopathic haemolytic anaemia (MAHA) in humans is compared with an interesting case in a siamang. An adult female siamang (Hylobates syndactylus) was observed to have decreased appetite and activity. Physical examination showed pale mucous membranes and a trace of blood around the vulva, but no other abnormalities were detected. Haematology results showed a mild hypochromic anaemia with a leucocytosis and marked thrombocytopenia. Examination of the blood film showed a neutrophilia, a monocytosis and numerous schistocytes/fragmented red blood cells. Many of these resembled helmet and triangular forms consistent with a diagnosis of MAHA. Following antibiotics, iron and multivitamin B therapy these schistocytes decreased and the siamang returned to normal health.

Key words: Siamang (Hylobates syndactylus), microangiopathic haemolytic anaemia, schistocytes, thrombocytopenia.

Introduction

In the human population MAHA is a usual consequence of endothelial damage with consequent platelet aggregation with or without fibrin deposition in capillaries. The red cell abnormalities occur as a result of fragmentation of the circulating red cells as they pass through the affected vascular area. The anaemia is a result of the progressive removal of these damaged cells and their fragments by the reticulo-endothelial system mainly in the spleen. There are many causes of the vascular damage resulting in this type of blood picture and it is expected that treatment of the underlying cause will result in a resolution of the problem and a return to a normal blood picture (Bain 2002). Pregnancy induced hypertension and a number of obstetric complications such as retention of products of conception, septic abortion and eclampsia are some conditions that can lead to MAHA in humans. This brief communication describes a similar condition found during the examination of an unwell siamang (Fig. 1) at the Adelaide Zoological Gardens.

A decreased appetite and activity was confirmed after close observation of a female siamang, one of three in a treed island exhibit at the Adelaide Zoological Gardens.

Address correspondence to:
Brian Matthews
77 Harrow Road
St Peters, South Australia 5069
E-mail: elbrimat@bigbutton.com.au

Figure 1. Siamang (photo courtesy Adelaide Zoological Gardens)
Methods

The animal was immobilised in a squeeze cage located within a raceway, and given 24 mg xylazine hydrochloride (Ilium Xylazil-20, Troy Laboratories) and 120 mg ketamine hydrochloride (Ketamil, Troy Laboratories) intramuscularly. Anaesthesia occurred within ten minutes. Physical examination showed the animal to have a good pelage and body condition, weighing 11.4 kg. Ears and eyes were normal, both upper and lower molars were worn but the remaining oral cavity was normal, except for pallor of mucous membranes. Chest auscultation and abdominal palpation was unrevealing. A trace of vulval blood was found. No urine could be collected.

Blood was taken from the cephalic vein and haematology tests were performed while the animal was still anaesthetised. See Table 1 for haematology results and Table 2 for biochemistry results.

On the basis of these results an infection of the reproductive tract was suspected, with haemorrhage possibly being the cause of the anaemia. The animal was treated intramuscularly with 280 mg amoxycillin with 70 mg clavulanic acid (Noroclav, Norbrook Laboratories Australia Pty Ltd), 30 mg iron dextran (Dexavin, Pfizer Agricare Pty Ltd), 1.5 mL multivitamin B (Multibex, Jurox Pty Ltd) and 2.5 mg ivermectin (Ivomec, Merial Aus Pty Ltd) because of previous *Trichuris* infections in the group.

Further examination of the red blood cell morphology (Fig. 2) showed moderate to marked anisocytosis, moderate poikilocytosis including numerous schistocytes, many resembling helmet and triangular forms, and slight to moderate polychromasia (reticulocytes 9%). There was also moderate hypochromia present in some of the red cells and platelets were markedly reduced. These findings are consistent with a MAHA blood picture. As shown in Table 2, the biochemistry results suggest some renal dysfunction.

After examination, sampling and treatment, the anaesthetic was partially reversed with 13 mg yohimbine hydrochloride (Reverzine, Parnell Laboratories) intravenously. Anaesthetic recovery was complete after two hours.

Results

The animal’s appetite and demeanour improved during the next seven days. Follow up anaesthesia and sampling was done nine days after the initial investigation. After treatment, follow up blood sampling showed that the haematology parameters had improved; refer to Table 1. The red cells still had a moderate to marked anisocytosis, but poikilocytosis was slight; schistocytes, with an occasional helmet and triangular form were markedly reduced and hypochromia was moderate. The platelet count was now increased. Total white blood cell count was reduced to within normal limits and the neutrophilia and monocytosis had resolved. Similarly the abnormal biochemistry results improved; refer to Table 2.

Intramuscular antibiotics and vitamin B injections continued for nine days. A further sample at day 155 showed no significant haematological or biochemical changes.

**Table 1. Haematological parameters**

<table>
<thead>
<tr>
<th></th>
<th>Day 1</th>
<th>Day 9</th>
<th>ISIS 2002 Mean Ref Range*</th>
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</thead>
<tbody>
<tr>
<td>WBC (10⁹/L)</td>
<td>17.9</td>
<td>9.6</td>
<td>12.36</td>
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<tr>
<td>RBC (10¹²/L)</td>
<td>3.44</td>
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<tr>
<td>Hb (g/L)</td>
<td>64</td>
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<tr>
<td>Hct (L/L)</td>
<td>0.209</td>
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<td>MCV (fL)</td>
<td>60.6</td>
<td>67.7</td>
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<tr>
<td>MCH (pg)</td>
<td>18.7</td>
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<td>MCHC (g/L)</td>
<td>309</td>
<td>293</td>
<td>303</td>
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<tr>
<td>Plt (10⁹/L) †</td>
<td>554</td>
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<td>Neut (10⁹/L)</td>
<td>10.56</td>
<td>7.68</td>
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<td>Lymph (10⁹/L)</td>
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<td>1.54</td>
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<tr>
<td>Mono (10⁹/L)</td>
<td>2.86</td>
<td>0.19</td>
<td>0.48</td>
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<tr>
<td>Eosin (10⁹/L)</td>
<td>0.36</td>
<td>0.1</td>
<td>0.41</td>
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</table>

WBC, white blood cell; RBC, red blood cell; Hb, haemoglobin; Hct, haematocrit; MCV, mean cell volume; MCH, mean cell haemoglobin; MCHC, mean cell haemoglobin concentration; Plt, platelets; Neut, neutrophils; Lymph, lymphocytes; Mono, monocytes; Eosin, eosinophils.

† Markedly reduced.

**Table 2. Biochemical parameters**

<table>
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<th>Day 1</th>
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<th>ISIS 2002 Mean Ref Range*</th>
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<tbody>
<tr>
<td>Total Protein (g/L)</td>
<td>57</td>
<td>71</td>
<td>71</td>
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<tr>
<td>Albumin/globulin¹</td>
<td>0.93</td>
<td>0.92</td>
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<tr>
<td>Creatine (μmol/L)</td>
<td>134</td>
<td>94</td>
<td>88</td>
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<tr>
<td>Urea (μmol/L)</td>
<td>6.5</td>
<td>3.0</td>
<td>7.9</td>
</tr>
<tr>
<td>Serum Iron (μmol/L)</td>
<td>12.53</td>
<td>27.39</td>
<td></td>
</tr>
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</table>

¹ Expressed as a ratio.

*Data reproduced from International Species Information System 2002.
Discussion

Laboratory parameters and well scanned blood film of a siamang, a member of the gibbon family, showed a MAHA similar to that seen in human patients. Clearly therapy caused a significant response in this animal’s attitude and appetite, and in parallel with this there was a marked reduction of red cell fragments and the platelets increased to a level above normal nine days later. In this particular case, the precipitating cause may have been a septic episode involving the reproductive tract, spontaneous abortion, or some other pathology of the reproductive tract. This female has a four year old offspring and should have given birth at least once more since then. There has been suspicion that she has been pregnant in this time frame but no young have been found. Further investigation into her reproductive status is warranted. Although in the wild it is difficult to ascertain the frequency that this may occur, a literature search failed to find any instances of a MAHA due to an obstetric complication in any member of the gibbon family.

References


A 67-year-old man presented with a two-year history of lacrimal canaliculitis. A canaliculotomy was performed with curettage of sulphur granules and irrigation with penicillin G. Organisms isolated from his canaliculus included *Actinomyces israelii* and two anaerobic Gram-negative bacilli, one fusiform and one curved, that could not be identified by routine biochemical methods. 16S rRNA gene sequencing identified the isolates as *Leptotrichia goodfellowii* and a probable *Selenomonas* species, respectively. These are gingival organisms not reported previously from the lacrimal system.

Keywords: canaliculus, canaliculitis, tears, lacrimal system, sulphur granule, *Actinomyces israelii*, *Leptotrichia goodfellowii*, *Selenomonas*, propionibacteria, 16S rRNA gene sequencing

**Introduction**

Canaliculitis, in the ocular sense, refers to inflammation of the canaliculi of the lacrimal drainage system. The condition is usually due to the blockage of a canaliculus by concretions known as “sulphur granules”. The obstruction causes pain, discharge and watery eyes. Microorganisms are a component of many granules and, in nearly all cases, the granules cause an accumulation of flora and pus along the canaliculus. We describe a case of chronic canaliculitis with isolation of bacterial genera not reported previously from this anatomical site. The value of microbiological testing in these patients is discussed.

**Case Report**

A 67-year-old diabetic man presented to his local ophthalmologist with a two-year history of swelling under the right eye. Inflammation of the inferior canaliculus was diagnosed, pus was expressed and a specimen was sent to the microbiology laboratory. Chloramphenicol (0.5%) drops were given but the swelling did not improve and he was referred to a hospital ophthalmology unit. Again, pus was expressed (Fig. 1) and sent for microbiological examination. A canaliculotomy under local anaesthesia
was performed the next day. A number of granules were removed (Fig. 2) and sent to the laboratory. The site was irrigated with penicillin G (60 mg/ml) and the patient was discharged on chloramphenicol (1%) ointment four times daily. When seen one week after the procedure, the incision was healing well and no recurrence of the problem has been reported.

**Microbiology**

The culture media used for the canalicular specimens were cooked meat broth and plain and mupirocin/metronidazole-supplemented horse blood agar (all incubated anaerobically) and chocolate agar (incubated in 5% CO2/air). The plates were placed in plastic bags for extended incubation (≤ 10 days). Smears were prepared from the swabs or by crushing granules between two glass slides. A Gram stain of the initial specimen of expressed pus showed ++ polymorphs and occasional filamentous Gram-positive bacilli. The culture result was scanty growth of *Actinomyces israelii*, *Propionibacterium acnes* and *Propionibacterium propionicum*, each identified using Rapid ID32 A strips (bioMérieux, Marcy l’Etoile, France) and other standard methods (Isenberg 2004). A coryneform and an anaerobic Gram-negative bacillus were also cultured but were not further identified. A Gram stain of the second sample of expressed pus showed + polymorphs and occasional filamentous Gram-positive bacilli. This specimen was not cultured. The Gram stain of granules from the canalicolutomy showed +++ polymorphs and +++ filamentous Gram-positive bacilli (Fig. 3). The culture result was heavy growth of *A. israelii* and two species of anaerobic Gram-negative bacilli, one having fusiform cells and the other curved cells (Fig. 3). Neither coded out by Rapid ID32 A, the profile numbers being 0711412001 and 0400100000 respectively. The curved rod was resistant to vancomycin and susceptible to kanamycin and colistin (Kirby-Bauer disks). As identification by routine methods was proving difficult, 16S rRNA gene sequencing was performed.

**Molecular Biology**

To prepare bacterial DNA, cells were digested in a solution of 5% Chelex 100 (catalog #143-2832, Bio-Rad Laboratories, Hercules, California) and 600 μg/ml proteinase K (Roche Applied Science, Penzberg, Germany) for 45 min at 65°C. The mixture was then boiled for 20 min and centrifuged at 4°C for 5 min at 15,493 g. For both the fusiform and curved rods, the 5’ region of the 16S rRNA gene was amplified using a method described previously (Badenoch et al 2007). In an attempt to sequence the entire gene of the curved rod, two other sets of universal primers were employed. Primers 533f (Lane et al 1985; Maiwald 2004) and 1371r (Chen et al 1989) extended the sequence data, but RW01 and DG74 (Greisen et al 1994) failed to amplify the remaining 3’ region.

A 716 bp and a 1328 bp consensus sequence from the fusiform and curved rods, respectively, were compared with other sequences in GenBank (13/5/09) using BLAST (Altschul et al 1990). The sequence from the fusiform rod showed 99.9% identity (715/716 bp) at 100% coverage with part of the 16S rRNA gene of the type strain (LB57) of *Leptotrichia goodfellowii* (Eribe et al 2004) and 100% identity with another cultured strain designated as *L. goodfellowii*. The identification of the curved rod was less certain. The sequence had ≥ 95% identity with the 16S rRNA gene of only five other cultured organisms: 97% (99% coverage), 96% (100% coverage) and 95% (100% coverage) with isolates entered as *Selenomonas* sp. and 95% (100% coverage) and 95% (98% coverage) with the type strain of *Selenomonas noxia* (ATCC 43541)

![Figure 3. Gram stains of crushed sulphur granule showing filamentous Gram-positive bacilli identified as A. israelii (left; bar = 20 μm), from culture of organism identified as L. goodfellowii (centre, bar = 10 μm), and from culture of organism identified as Selenomonas (right; bar = 20 μm).](image-url)
and another strain of *S. noxia*, respectively. Three other *Selenomonas* species (*S. infelix, S. flueggei* and *S. dianae*) had 93/94% identity. From the size and shape of the cells and the biochemical and DNA sequence data, we concluded that the organism was a selenomonad. It may be a novel species or a species whose 16S rRNA gene sequence is yet to be deposited into GenBank. The isolate has been stored and further characterisation could include additional biochemical testing, DNA-DNA hybridisation with selenomonads from the American Type Culture Collection, and comparative genomic analyses.

**Discussion**

Although canaliculitis may seem to be a somewhat mundane clinical issue, it can make the life of patients a misery and the microbiology can be anything but mundane. Most patients have no obvious risk factors. The condition can be a complication of conjunctivitis including herpes simplex and varicella zoster infections and trachoma. It can also be a complication of lacrimal sac infection (dacryocystitis) or be associated with foreign bodies including Veirs rods and silicon tubing (Iliff 1996).

It is not known whether granule formation is initiated by host, microbial or environmental factors, but it is likely that their development is a complex process. Although often called sulphur granules, they contain little if any sulphur and are generally less than 1% inorganic matter by weight. The principal ions detected are calcium, magnesium, sodium, potassium and phosphorus and the main organic component is mucin (Iliadelis 1999). Other tear components such as lysozyme and immunoglobulins can be found. Microorganisms are a major component of many granules. Anaerobic bacteria are frequently isolated (Fig. 4), as might be expected from a blocked duct. *A. israelii* is often present and forms hard, granular colonies in culture; this morphology can be reflected in the concretions. Leucocytes can also be associated with granules, particularly those granules with a microbial component.

A dozen or more different organisms may be cultured from a canalicular specimen and an issue for the laboratory is what to identify, given limitations of time and money. We suggest that any actinomycetes are likely to be important in the pathogenesis of the problem and should be worked up. Although the treatment is surgical, the condition can re-occur and the identification of actinomycetes will have prognostic implications. When many different organisms are cultured, we tend to identify the dominant three or four species and test their antimicrobial susceptibility where appropriate. Other organisms present in small numbers might simply be reported as corynebacteria, viridans streptococci, coagulase-negative staphylococci, unidentifiable anaerobic Gram-negative bacilli, and so on. As working on cultures from the lacrimal system can be lengthy and complicated, we recommend dedicating one staff member to the task.

The wealth of isolates can include some surprises and in this man alone we detected two organisms not reported previously from the canaliculus. *Leptotrichia* and *Selenomonas* are anaerobes most often found in the gingiva and periodontal crevices. We speculate that their route to the canaliculus was via the sinuses rather than the hands, but only because they are not among the vast number of bacterial species reported from corneal infections. Even

![Figure 4. Organisms cultured from canalicular specimens at Flinders Medical Centre since 1980 (n = 70). Anaerobic bacterial species are shown in red. GNB = Gram-negative bacilli.](image-url)
strict anaerobes can be isolated from the cornea (Badenoch et al 2007).

Leptotrichia species have been implicated in a range of infections such as periodontal disease and septic arthritis. In 2004, a blood isolate was characterised as a new species and named *L. goodfellowii* (Eribe et al). This species has since been implicated in two cases of endocarditis (Caram et al 2008).

Kidney-shaped bacteria from the human mouth, now recognised as *Selenomonas*, were first described by van Leeuwenhoek in 1683. They are motile organisms with a tuft of flagella near the centre of the concave surface of the cell. Selenomonads have been implicated in periodontal disease, a lung abscess (Pinon et al 1985) and bacteraemia after dental procedures or in immunosuppressed patients (Westh et al 1991). We suggest that the careful examination of canalicular specimens could disclose other organisms rarely found beyond the mouth or sinuses.

**References**


A 53-year-old male was referred to the Haematology clinic with severe back pain together with a normochromic, normocytic anaemia for investigation. A full blood count was performed with the following results:

Hb 108 g/L, WBC 4.5 x 10⁹/L, platelet count 227 x 10⁹/L and ESR of 125 mm/h.

The blood film confirmed a normochromic, normocytic anaemia with a marked increase in rouleaux formation. The white cells and platelets were normal in number and morphology.

Serum protein levels were performed. An IgG κ paraprotein of 91 g/L was identified by immunofixation in the beta globulin region.

Bence Jones protein, 3.49 g/24 h, was found in the urine.

A bone marrow aspiration was performed. There was a heavy infiltrate of plasma cells displacing much of the normal haematopoietic tissue of the marrow. The plasma cells were large with eccentrically placed nuclei and basophilic cytoplasm. Binucleate forms were frequent. Mitotic figures were also increased. A bone marrow trephine showed a similar picture.

A diagnosis of plasma cell myeloma was made.

Immunophenotyping of the marrow cells showed that the infiltrating cells had the following expression:

CD19-, CD20-, CD138+, CD38++, and CD79a+

Bone marrow aspirate showing sheets of plasma cells

Bone marrow trephine showing sheets of plasma cells
Plasma cell myeloma is a neoplasm occurring more commonly in males. The median age at presentation is 50 years. The initial presentation is associated with bone pain, back, neck and pelvic pain. Radiographic findings reveal lytic lesions and osteoporosis. Pathological fractures can occur in up to 70% of patients.

Morphologically, plasma cell myeloma is diagnosed from the bone marrow. It is invariably associated with a paraprotein or M-protein in the serum and/or the urine. The protein in the urine is referred to as Bence Jones protein. Symptomatic plasma cell myeloma is associated with CRAB: hypercalcaemia, renal insufficiency, anaemia and bone lesions.

The peripheral blood shows an increase in rouleaux formation. Plasma cells are found in the peripheral blood of approximately 15% of cases and only in small numbers.

The bone marrow shows an increase in plasma cells, more than 10% and sometimes up to 90%. Mature plasma cells are oval to round in shape with round eccentric nuclei. The cytoplasm is basophilic with a perinuclear hof. Crystals as well as globules of immunoglobulin are sometimes seen in the cytoplasm. Plasma cells appear in clusters or sheets within the marrow with preservation of normal haematopoiesis.

When the number of plasma cells in the peripheral blood exceeds 2 x 10^9/L the neoplasm is referred to as plasma cell leukaemia.

Plasma cell myeloma is usually incurable. It has a median survival of 3-4 years. Transplantation may be attempted to increase and prolong quality of life. A range of new drugs have become available which have begun to prolong the mean overall survival.

The patient in this case study remains well.
Ben Chandler

The recent passing of Ben Chandler should not go without comment by the professional body to which he contributed much of his time and energy half a century ago. I first met Ben at a Federal Council meeting held in the mid 1950s at what was then the Institute's office and library in the Old Medical School at the University of Sydney. Even at that first meeting I was impressed with his concern for the correctness of the minutes and other records that was to be a feature of the way he undertook the position of Honorary Federal Secretary and then Honorary National Secretary for three three-year terms between 1960 and 1977.

A review of our history reveals that when Ben was elected as Honorary Federal Secretary (1960-62) the Institute was a federation of state organisations. Each state acted independently collecting annual subscriptions sending out mailings and organising meetings. Following the conduct of a Scientific Meeting and Trade Exhibition by the NSW Branch to which delegates came from other branches, the first National Convention sanctioned by Council was held in Victoria and three years later in Perth, so by end of his first three year term the idea of one “National” body was in the air.

When he started his second term (1970-73) there had been a tremendous transformation in education with the Institute handing over its education and training role to the various state Institutes of Technology. During this term Council resolved that the Institute structure change to a National model and Ben was elected for his third term (1974-77) as Honorary National Secretary. At the end of this term the National Executive located to Queensland and subsequently the Institute’s permanent office was established. The Institute owes a tremendous debt to Ben who worked tirelessly to advance the professional status of our institute.

AJ (Tony) Webber AM PhD FAIMS
AIMS National President 1977-1985
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Tuesday 13 October 2009

Workshop Sessions
Monday 12 & Tuesday 13 October 2009

Conference Sessions
Wednesday 14 to Friday 16 October 2009

Conference Dinner
Thursday 15 October 2009

www.alloccasionsgroup.com/AIMSNSM09
Provisional Program
Updated 14.08.09
Also available online
watch for further updates:
www.alloccasionsgroup.com/aims-nsm-2009-conference-program

www.alloccasionsgroup.com/AIMSNNSM09
<table>
<thead>
<tr>
<th>Time</th>
<th>Workshop</th>
<th>Speaker(s)</th>
<th>Description</th>
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<tbody>
<tr>
<td>09.00 – 12.30</td>
<td>Robyn Wells</td>
<td>Malaria Morphology</td>
<td>This workshop will focus on the morphological characteristics of the five <em>Plasmodium</em> species. The features of each of the stages and species will be discussed and examples of thick and thin films will be shown. A number of cases will be presented and the species determined with input and interaction from the participants.</td>
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<tr>
<td>09.00 – 12.30</td>
<td>Steve Davis</td>
<td>FULL DAY WORKSHOP</td>
<td>Classical approach to fungal identification: macroscopic and microscopic. The purpose of this workshop is to teach individuals how it is possible to identify many fungi from microscopic and macroscopic features alone. There will be a couple of 'walk throughs' using the dichotomous key from 'Atlas of Clinical Fungi' showing delegates how many unusual fungi can be identified using this tool. There will be two talks incorporated into the workshop, the first with the title of the workshop, giving the background information required to identify a fungus from scratch. In the second talk entitled, &quot;Laboratory Mycology&quot;, I will talk about the relevance of various fungi when isolated from clinical specimens. In this last talk, particular attention is focused on the dermatophytes, as well as the yeasts and their differentiation from organisms that may be mistaken for yeasts.</td>
</tr>
<tr>
<td>13.30 – 17.30</td>
<td>Brian Matthews</td>
<td>Fundamental blood cell morphology</td>
<td></td>
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<tr>
<td>18.30 – 20.00</td>
<td>Michael Harrison</td>
<td>Causes of Elevated LFTs</td>
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<tr>
<td>18.30 – 20.00</td>
<td>Liz Clark</td>
<td>FULL DAY WORKSHOP</td>
<td>Dangerous Goods Packaging (CASA Accredited) Training Course for Shippers of Infectious Substances, Genetically Modified Micro-organisms, Genetically Modified Organisms and Dry Ice. This one day course includes: Australian legislation, IATA regulations, Classification of substances, Identification of proper shipping names, Packing instructions, Marking and labelling, Documentation, Surface transport, Transport by Australia Post. Following completion of the training, participants sit for a one hour open-book competency-based examination. Successful participants are issued with a Certificate of Accreditation which is valid for 2 years (and recognised nationally and internationally).</td>
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<td>18.30 – 20.00</td>
<td>Michael Harrison</td>
<td>Causes of Elevated LFTs</td>
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<td>18.30 – 20.00</td>
<td>A Tasting Tour of Scottish Whiskies: Adelaide Convention Centre</td>
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### Workshops

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<td>09.00 –</td>
<td>Robyn Wells</td>
<td>Morphological challenges</td>
<td>This workshop presents cases that many blood film reviewers find challenging. Those cases will be reviewed, the features discussed and differential diagnoses considered. Helpful characteristics that lead to the correct diagnosis will be demonstrated. Cases presented will include childhood leukaemias, Hereditary Spherocytosis, lymphoma cases, acute promyelocytic leukaemia and viral infections.</td>
</tr>
<tr>
<td>10.00 to</td>
<td>Dennis Mok</td>
<td>Effective leadership skills for medical laboratory practitioners</td>
<td>The purpose of this workshop is to provide practical leadership knowledge necessary for leaders to apply in a medical laboratory environment characterised by complexity and uncertainty. The content applies to all levels, therefore both technical and managerial leaders are encouraged to attend. While different aspects of leadership are emphasised over the years, what remains constant is that the more leadership is supported and encouraged, the more it will flourish.</td>
</tr>
<tr>
<td>10.30</td>
<td>Penny Petinos</td>
<td>KIMMS WORKSHOP</td>
<td>Free half day workshop Presentations will address data extraction/capture issues of KIMMS data requirements from Laboratory Information Systems (LIS). Speakers will share information with participants on how they have set up systems to capture/extract data from the LIS, that is required by KIMMS. QAP speaker will update participants with the new KIMMS direct data entry and data analysis software system.</td>
</tr>
<tr>
<td>11.00 –</td>
<td>Becton Dickinson</td>
<td>Phlebotomy</td>
<td>The workshop will be run in two sessions, pre-analytical variables followed by best practice.</td>
</tr>
<tr>
<td>10.30 –</td>
<td>Dennis Mok</td>
<td>Meeting the challenge of incremental change</td>
<td>The purpose of this workshop is to provide practical change leadership and management techniques necessary for leaders to apply in a medical laboratory environment.</td>
</tr>
<tr>
<td>12.30</td>
<td>John Stirling</td>
<td>Scientific writing and publication</td>
<td>The aim of this workshop is to improve critical writing skills and increase understanding of the publication process. The workshop will focus on what is suitable for publication and the basic skills required to write journal articles (with a focus on case studies). The mechanics of publication will also be covered. The workshop is suitable for all inexperienced authors including students, ‘bench’ scientists and technologists and senior staff, in fact anyone who would like to publish or would like an opportunity to improve their writing skills.</td>
</tr>
<tr>
<td>13.30 –</td>
<td>Craig Cox</td>
<td>Snake venom detection</td>
<td>Are your staff experienced in Snake Venom Detection? CSL will present a 2 hour snake workshop. Topics covered: 1. Dangerous Australian snakes. 2. Venoms and envenomation 3. Principles of First Aid. 4. Snake venom detection kit (SVDK) Participants will be able to gain experience in the use of the SVDK during the hands-on practice session.</td>
</tr>
<tr>
<td>12.30 –</td>
<td>Claire Prowse</td>
<td>Snake venom detection</td>
<td>Are your staff experienced in Snake Venom Detection? CSL will present a 2 hour snake workshop. Topics covered: 1. Dangerous Australian snakes. 2. Venoms and envenomation 3. Principles of First Aid. 4. Snake venom detection kit (SVDK) Participants will be able to gain experience in the use of the SVDK during the hands-on practice session.</td>
</tr>
<tr>
<td>14.00 –</td>
<td>Ken Worth</td>
<td>FULL DAY WORKSHOP</td>
<td>Lean Six Sigma The workshop schedule includes:  • Initial introduction to L6S with basic overview of how projects run  • The need for measurements, how to measure, what to measure  • Variation: what is it, why is it caused, why is it important, how can we control it?  • What is waste? How do you see it? Types of waste? Steps to eliminate waste  • Organising workflow and layout: describing workflows with flow charting and Value Stream Mapping, develop understanding of Takt time, learn to sequence activities (flow), balancing of workstations to avoid build ups/ backlogs.  • Introducing the concept of Standard Work: what does it mean, why does it give results, how do we implement it, how do we refine it?  • Developing a “pull” system for workflow, reducing batch size, calculating optimal process design.</td>
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<td>18.00 –</td>
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<td>19.00 –</td>
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**Opening Cocktail Reception: Exhibition Hall Adelaide Convention Centre**
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Speaker/Title</th>
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<tbody>
<tr>
<td>09.00 –</td>
<td>Official opening</td>
<td>His Excellency Rear Admiral Kevin Scarce AC CSC RANR AIMS Award presentations</td>
</tr>
<tr>
<td>09.30</td>
<td>Keynote address</td>
<td>Peter Rathjen Stem Cell Research; Today and Tomorrow</td>
</tr>
<tr>
<td>10.15 –</td>
<td>Saal-Foley lecture</td>
<td>John Glasson Innovation, Automation and Art</td>
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<tr>
<td>11.00 –</td>
<td>Morning break</td>
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<tr>
<td>11.30 –</td>
<td>Plenary session 1</td>
<td>Susan Branford Chronic myeloid leukemia</td>
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<tr>
<td>11.30 –</td>
<td>Plenary session 1</td>
<td>Stuart Blacksell Commercial diagnostics for acute dengue infection – The Southeast Asian experience</td>
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<tr>
<td>14.00 –</td>
<td>Session 1: Biochemistry</td>
<td>Helen Martin Case studies</td>
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<tr>
<td>14.00 –</td>
<td>Session 2: Microbiology</td>
<td>Jan Bell MBLs and ESBLs</td>
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<tr>
<td>14.00 –</td>
<td>Session 3: Haematology</td>
<td>Ross Brown Multiple myeloma</td>
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<tr>
<td>14.00 –</td>
<td>Session 4: Histopathology</td>
<td>Janette Thurley Neuronal and axon guidance in brain development</td>
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<tr>
<td>14.00 –</td>
<td>Session 5: Transfusion and Transplantation</td>
<td>Sue McLennan Blood salvage</td>
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<tr>
<td>14.00 –</td>
<td>Session 6: Molecular Pathology</td>
<td>Graeme Suthers Diversity of genetic testing in Australia</td>
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<tr>
<td>15.30</td>
<td>Lunch and Posters</td>
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<tr>
<td>14.00 –</td>
<td>Session 1: Biochemistry</td>
<td>RCPA QAP</td>
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<td>14.00 –</td>
<td>Session 2: Microbiology</td>
<td>Shaw Callen</td>
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<tr>
<td>14.00 –</td>
<td>Session 3: Haematology</td>
<td>John Merlino MRSA</td>
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<tr>
<td>14.00 –</td>
<td>Session 4: Histopathology</td>
<td>Ian Kay VRE</td>
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<tr>
<td>14.00 –</td>
<td>Session 5: Transfusion and Transplantation</td>
<td>Colin Story Uncertainty of measurement</td>
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<tr>
<td>14.00 –</td>
<td>Session 6: Molecular Pathology</td>
<td>Janette Thurley Neuronal and axon guidance in brain development</td>
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<td>RCPA QAP</td>
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<td>14.00 –</td>
<td>Session 2: Microbiology</td>
<td>Ros Bonar and Fifin Intan</td>
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<tr>
<td>14.00 –</td>
<td>Session 3: Haematology</td>
<td>Advances in haematology QAP including virtual microscopy</td>
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<tr>
<td>14.00 –</td>
<td>Session 4: Histopathology</td>
<td>Ruth Davies IHC Case studies</td>
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<tr>
<td>14.00 –</td>
<td>Session 5: Transfusion and Transplantation</td>
<td>Sharin Prakash Lynch Syndrome (HNPCC) – the role of Immunohistochemistry for mismatch gene protein in screening of patients</td>
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<tr>
<td>14.00 –</td>
<td>Session 6: Molecular Pathology</td>
<td>Sue McLennan Blood salvage</td>
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<tr>
<td>14.00 –</td>
<td>Session 1: Biochemistry</td>
<td>David Roxby Advances in response to massive blood loss</td>
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<tr>
<td>14.00 –</td>
<td>Session 2: Microbiology</td>
<td>Elizabeth Thompson Clinical Perspective of Huntington's Disease</td>
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<tr>
<td>14.00 –</td>
<td>Session 3: Haematology</td>
<td>Lesley Snell Laboratory Diagnosis of Huntington's Disease</td>
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<td>14.00 –</td>
<td>Session 4: Histopathology</td>
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<td>14.00 –</td>
<td>Session 6: Molecular Pathology</td>
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<td>Time</td>
<td>Session 7</td>
<td>Session 8</td>
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<tr>
<td>15.30 – 16.00</td>
<td>Afternoon break</td>
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<td>16.00 – 17.30</td>
<td>Session 7</td>
<td>Session 8</td>
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<td>Biochemistry</td>
<td>Microbiology</td>
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<td></td>
<td>Michael Metz</td>
<td>Andrew Lawrence</td>
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<td></td>
<td>Case studies</td>
<td>Meningococcal disease</td>
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<td>RCPA QAP</td>
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<td>Elizabeth Haremza</td>
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<td>Overview and key challenges</td>
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<td>Mitchell Brown</td>
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<td></td>
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<td>Unusual isolates: tips and troubleshooting ideas</td>
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<tr>
<td>17.30 – 18.30</td>
<td>APACE Happy Hour: Exhibition Hall Adelaide Convention Centre</td>
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<tr>
<td>19.30 - Late</td>
<td>Haematology Discipline Dinner: Red Ochre Restaurant</td>
<td>Histology Discipline Dinner: Jolley’s Boathouse</td>
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<tr>
<td>Time</td>
<td>Session/Topic</td>
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<tr>
<td>07.15 – 08.45</td>
<td>Breakfast meeting TBA</td>
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<tr>
<td>09.00 – 10.30</td>
<td>Plenary session 2</td>
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<tr>
<td></td>
<td><em>Ulysses Balis</em></td>
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<td>TBA</td>
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<td></td>
<td><em>Brendan McMorran</em></td>
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<td></td>
<td>Platelets and Malaria</td>
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<td>10.30 – 11.00</td>
<td>Morning break</td>
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<tr>
<td>11.00 – 12.30</td>
<td>Session 13 QAP</td>
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<td>Session 14 Microbiology</td>
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<td>Rickettsial symposium</td>
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<td>Session 15 Haematology</td>
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<td>Session 16 Histopathology</td>
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<td>Session 17 Molecular Pathology</td>
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<td>RCPA QAP</td>
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<td></td>
<td><em>Penny Petinos</em></td>
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<tr>
<td></td>
<td>KIMMS: a new QAP to measure pre- and post-analytical quality</td>
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<tr>
<td></td>
<td><em>David Porter</em></td>
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<td>Using KIMMS to engender improvement in clinical practice</td>
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<td></td>
<td><em>Kathy Bayley</em></td>
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<td>Making a difference - Pre-analytical errors</td>
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<tr>
<td>12.30 – 13.00</td>
<td>Lunch and Posters</td>
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<tr>
<td>13.00 – 14.00</td>
<td>AIMS AGM</td>
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<td>Meet the AIMS Board – AIMS members only</td>
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<tr>
<td>14.00 –</td>
<td><em>Tony Woods</em></td>
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*Note: TBA: To Be Announced*
### Update on Registration of Medical Scientists - all welcome

<table>
<thead>
<tr>
<th>Time</th>
<th>Session 18 Biochemistry</th>
<th>Session 19 Transfusion and Transplantation</th>
<th>Session 20 Flow cytometry</th>
<th>Session 21 Histopathology: Cut up</th>
<th>Session 22 Pandemic Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.30 – 15.30</td>
<td>Mark Shephard New initiatives in POCT for rural and remote communities&lt;br&gt;&lt;br&gt;&lt;i&gt;Penny Coates TBA&lt;/i&gt;</td>
<td>RCPA QAP Geoff Magrin General Transfusion program: transition to a web-based program&lt;br&gt;&lt;br&gt;&lt;i&gt;Arthur Joyce&lt;/i&gt; Laboratory performance in the detection of weaker expression of ABO blood groups.</td>
<td>Heddy Zola Monoclonal antibodies and flow cytometry – techniques made for each other and for pathology&lt;br&gt;&lt;br&gt;&lt;i&gt;Peter Gambell&lt;/i&gt;</td>
<td>Case studies Yee Khong Changes to NPAAC documentation for the performance of the pathology surgical cut-up&lt;br&gt;&lt;br&gt;&lt;i&gt;Grant Taggart&lt;/i&gt; Surgical cut-up – skin and skin pathology</td>
<td>Keith Eastwood</td>
</tr>
</tbody>
</table>

### Afternoon break

<table>
<thead>
<tr>
<th>Time</th>
<th>Session 23 Proffered papers</th>
<th>Session 24 Proffered Papers</th>
<th>Session 25 Proffered Papers</th>
<th>Histopathology: Cut up (cont)</th>
<th>Session 26 Young Scientists</th>
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<tbody>
<tr>
<td>15.30 – 16.00</td>
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### Proffered papers

<table>
<thead>
<tr>
<th>Time</th>
<th>Session 23 Proffered papers</th>
<th>Session 24 Proffered Papers</th>
<th>Session 25 Proffered Papers</th>
<th>Histopathology: Cut up (cont)</th>
<th>Session 26 Young Scientists</th>
</tr>
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<tbody>
<tr>
<td>16.00 – 17.15</td>
<td>Case studies&lt;br&gt;&lt;br&gt;&lt;i&gt;Christine Mott&lt;/i&gt;&lt;br&gt;&lt;br&gt;&lt;i&gt;Kellie Madigan&lt;/i&gt;&lt;br&gt;&lt;br&gt;&lt;i&gt;Lisa Mills&lt;/i&gt;&lt;br&gt;&lt;br&gt;&lt;i&gt;Stephen Nygaard&lt;/i&gt;</td>
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### Conference Dinner: Adelaide Convention Centre

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<thead>
<tr>
<th>Time</th>
<th>Conference Dinner: Adelaide Convention Centre</th>
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<tbody>
<tr>
<td>19.00 – 23.30</td>
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<tr>
<td>Time</td>
<td>Event</td>
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<tr>
<td>09.00 – 10.30</td>
<td>Plenary session 3</td>
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<tr>
<td></td>
<td><em>Howard Morris</em></td>
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<td>Traceability and standardisation of immunoassays: a major challenge</td>
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<td><em>Barney Rudzki</em></td>
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<td>Present and future directions in diagnostic molecular pathology</td>
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<tr>
<td>10.30 – 11.00</td>
<td>Morning break</td>
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<tr>
<td>11.00 – 12.30</td>
<td>Session 27: New Diagnostics and Research</td>
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<td>Session 28: Microbiology</td>
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<td>Session 29: Haematology/Haemostasis</td>
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<td>Session 30: Histopathology</td>
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<td>Session 31: Economics and transfusion</td>
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<td><em>Enzo Ranieri</em> TBA</td>
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<td></td>
<td><em>Greg Goodall</em> A recent breakthrough in cancer research</td>
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<td><em>Richard Lumb</em> Update on TB</td>
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<td><em>Harsha Sheorey</em> Clinical parasitology</td>
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<td><em>Speaker TBA</em></td>
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<td><em>Simon McRae</em> New therapies and tests in haemostasis</td>
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<td><em>Tom Exner</em> Haemostasis techniques of tomorrow</td>
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<tr>
<td></td>
<td><em>Bronwyn Williams</em> Paediatric Immunity</td>
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<tr>
<td></td>
<td><em>Rob Moore</em> Biology of spinal fusion</td>
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<td></td>
<td><em>Ulysses Balis</em> TBA</td>
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<tr>
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<td><em>Roger Byard</em> Recent advances in forensic pathology – South Australia’s Contribution</td>
</tr>
<tr>
<td>12.30 – 13.30</td>
<td>Lunch and Posters</td>
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<tr>
<td>13.30 – 15.00</td>
<td>Plenary session 4</td>
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<td></td>
<td><em>John McBride</em> Dengue fever</td>
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<td><em>Mr Hieu Van Le</em> Lieutenant Governor of South Australia and Chairman of the South Australian Multicultural and Ethnic Affairs Commission</td>
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<td>Close of conference</td>
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</table>
AIMS Scholarship winners

Congratulations to the two winners of the 2009 AIMS/RCPA Morphology Scholarships.

Ambreen Warsi and Lisa Campbell attended workshops at Westmead Hospital this year.

I am very grateful to AIMS for the scholarship to attend a Blood Cell Morphology Workshop at Westmead Hospital this year. As a new worker in Australian pathology, I found that workshop very beneficial to gain knowledge through studying different cases of different community groups in Australia from normal haematology slides to specific diseases like haemoglobinopathies, leukemias and myelodysplastic syndrome etc.

After attending that workshop, I am able to read blood films better and confidently. All the teaching staff were very helpful and supportive. I would like to thank the RCPA and all the speakers for sharing all the information and practical cases with slides which are the real essence of the workshop. I have the whole box of slides which I shared with my friends and they really loved it.

Firstly I would like to say thank you to AIMS for awarding me the scholarship to attend the AIMS/RCPA Blood Cell Morphology workshop at Westmead Hospital in Sydney. It was a thorough and very informative two day workshop. The topics were presented in a relaxed setting allowing participants to ask questions and receive help without judgement.

The presenters came from different backgrounds and all had a myriad of knowledge to share. An array of topics were covered including; malarial parasites, myelodysplastic syndromes, haemoglobinopathies and myeloproliferative disorders. We also did some basic bone marrow morphology which I found very interesting as it is an area I know very little about. I highly recommend this workshop to anyone, especially new graduates, who are still developing their morphology skills.
CONVENTION & CONGRESS CALENDAR

YEAR 2009


SEPTEMBER 28-30: IBMS Biomedical Science Congress. ICC, Birmingham. www.ibmscongress.com

OCTOBER 1-2: Molecular Pathology Essentials, Copenhagen. American Association for Clinical Chemistry (AACC), Association for Clinical Biochemistry (ACB), Association for Molecular Pathology (AMP), Danish Society for Clinical Biochemistry (DSKB). www.aacc.org/events/meetings/Pages/5263.aspx


NOVEMBER 1-4: The Australasian Flow Cytometry Group 32nd Annual Meeting. Brisbane Convention and Exhibition Centre, Southbank, Brisbane. Contacts: grace.chojnowski@qimr.edu.au; paula.hall@qimr.edu.au. www.afcg.org.au


DECEMBER 5-8: American Society of Hematology Annual Meeting. Ernest N Morial Convention Center, New Orleans, USA. Contact: ash@hematology.org www.hematology.org.

YEAR 2010


OCTOBER 17 - 20: HAA 2010 - The Combined Annual Scientific Meeting of HSANZ, ANZSBT and ASTH. SkyCity Convention Centre, Auckland, New Zealand. Contact: The Conference Company Ltd. Phone: +64 9 360 1240 Fax: +64 9 360 1242. Email: haa@tcc.co.nz www.haa2010.org

OCTOBER 24-29: AIMS AACB Combined National Scientific Meeting. Perth Convention Exhibition Centre.

Jane Fraser, Louise Fuller and Georgina Hutber.
Radcliffe (available through Elsevier Australia)
Soft cover, 140 pages
ISBN: 978-184619-311-8
AU$54.55

Compared to doing the hard yards of actual research, juggling contending work commitments and actually making it to the conference with your paper (or poster) in hand, writing the abstract can seem almost trivial. The abstract is, however, as the authors put it, an “ambassador” for research in the public domain and it needs to be an effective one.

The book’s 500 tips are presented in short paragraphs with large clear topic headings, making it easy to dip into on any given topic while putting together an abstract or poster. For example, Chapter 1 covers the ways in which a good abstract or poster can benefit you and your research. Chapter 3 covers the structure and title of the abstract, including the tip that your colleagues should be able to understand your title within three seconds. Chapter 5 “Submitting your abstract” focuses on online submission giving a number of useful pointers to check before you hit the submit key. Visual representation of data and research through tables, graphs, charts, line drawings and photos are covered in chapters 14-18.

The appendices comprise an example of a structured abstract, sample text styles for a poster, checklists for a poster and an abstract, and four poster templates, three of them downloadable.

Those new to the conference circuit would find this book very useful indeed but there is enough information here to interest old hands, particularly those who find themselves in a mentoring role.

Although the book specifically deals only with conference abstracts and posters, much of the information would prove useful in the preparation of journal abstracts and articles, and oral presentations (particularly those using visual media such as Powerpoint).

Key threads that run through the book include attention to detail, clarity, the importance of checking and re-checking, editing and proofing; and taking care to meet the particular requirements of any given conference or selection committee. All very obvious, but essential to enhancing a professional reputation and communicating data.

Adele Fletcher
AIMS National Office
chapters which provide an important background for understanding cellular and genetic processes in haematology. For those of us who did their undergraduate years before the days of PCR and microarrays, here are some concise pages which explain these processes simply and with relevant illustrations.

Part III has 14 chapters which describe the biology of stem cells and provide an overview of disorders of haematopoiesis. Part IV has 19 chapters devoted to the red cell which mainly covers disorders of haemoglobin and iron metabolism. Part V has 6 chapters on host defence and its disorders, perhaps some topics which are beyond the traditional area of haematology, but the cells involved are blood cells.

The next section is a large section, Part VI, devoted to haematologic malignancies. Part VII relates to transplantation which now includes chapters on gene transfer and stem cells for tissue repair in addition to the more traditional chapters on autologous and allogeneic haemopoietic stem cell transplantation. Haemostasis and thrombosis is covered in Part VIII, transfusion medicine in Part IX and the Part X has 8 chapters on consultative haematology which provides the links to haematologic manifestations in other disorders and conditions (eg. liver, kidney and pregnancy) which might be expected of a consultant haematologist.

While the text provides a fabulous overview, it is not a laboratory haematology text. Apart from Chapter 122 which is entitled “Laboratory Evaluation of Hemostatic and Thrombotic Disorders”, the chapters are not written for the diagnostic haematology laboratory. This is not an expanded “Dacie and Lewis”. It is, as the title describes, a book related to the basic principles and (clinical) practice of haematology.

Thus it has no recipes for the laboratory scientist to make buffers or to process samples. Rather, many chapters tend to follow a disease and describe all aspects of the disease including epidemiology, aetiology, biologic aspects of the disease, clinical manifestations, differential diagnosis and therapy with a section on laboratory evaluation hidden in the middle.

“Hoffman” now not only sits in a prominent position on my book shelf but an online link is prominent on my Internet Explorer “Favourites”. Such is information technology in 2009. This text will be a great reference for myself and my co-workers for many years to come. Well at least until the next edition.

Ross Brown
Principal Hospital Scientist
Institute of Haematology
Royal Prince Alfred Hospital (SSWAHS)
Camperdown, NSW.

Legionella
Molecular Microbiology
Edited by Klaus Heuner and Michele Swanson.
Caister Academic Press, 2008
Hard cover, 249 pages.
ISBN: 978-1-904455-26-4

Legionnaires’ disease caused by Legionella pneumophila was first described in 1976 and remains an affliction of public health importance. This book is an insight into the current trends of identification and antimicrobial treatment of Legionella as well as the advances in research into the immunology of infection and the molecular basis for virulence, survival and adaptation. It is comprised of 12 chapters written by international expert scientists. The chapters are similarly structured with an abstract, introduction, major and minor headings, conclusions or future directions, and references. The text is also augmented with tables, figures and photographs.

The first three chapters describe the history of the disease, clinical findings, diagnostics, treatment and epidemiology. The remaining nine chapters is a focus on current research into the organism’s developmental cycle; genetics and immunology; regulation of flagella and expression of virulence traits; molecular lifecycle; secretion and export; mechanisms of intracellular survival and replication; and nutrient acquisition and assimilation. The use of Dictyostelium (a haploid amoeba) as a model for studying cellular aspects of Legionnaires’ disease is also described.

The book would appeal to students and research scientists interested in a broad range of molecular aspects of Legionella that contribute to pathogenicity. The introductory chapters would be of interest to a wide range of microbiologists but the subsequent focus on molecular biology may not be of relevance to diagnostic laboranitians. To this group of scientists, the chapter on diagnostics and treatment would be especially applicable as it provides a comprehensive critique of current methods for laboratory diagnosis and a description of the therapeutic agents used to treat infections. The book does not contain protocols but provides references for a range of methodologies that are discussed.

It is an excellent reference book for scientists interested in the molecular microbiology of Legionella and its quality is attributed to the topical and interesting content, presentation and editorial style.

Christopher J. McIver
Principal Hospital Scientist,
Microbiology Department (SEALS),
Prince of Wales Hospital, Randwick NSW 2031
Robboy's Pathology of the Female Reproductive Tract
Edited by SJ Robboy, GL Mutter, J Prat, RC Bentley, P Russell and MC Anderson
Churchill Livingstone, Elsevier, 2009
Hard cover, 1066 pages.
ISBN: 978-0-443-07477-6
AU$387

This is the second edition of Robboy's Pathology of the Female Reproductive Tract and it is part of Elsevier's Expert Consult series that also provides online access to the text. The book is a multi-authored text, utilising a multi-national panel of experts, with Stanley J Robboy, Professor of Obstetrics and Gynecology, Duke University Medical Center, USA as the lead editor.

The editors' stated aim is to provide a comprehensive and up to date reference book that can be utilised in daily practice as well as presenting emerging concepts and ideas, where they are relevant.

The book begins with a comprehensive contents section, with each chapter listing divided into headings and sub-headings. The contents section is colour-coded to match the chapters in the book, making it easy to find the corresponding chapter in this thick book. The text is well-illustrated, including images of colposcopic findings and gross pathology, together with numerous colour photo-micrographs that are primarily focussed on haematoxylin and eosin histopathologic images together with immunostaining where relevant. There are also many figures and tables to aid in the understanding of the text.

It is a well written reference book and the images are generally of good quality. The text is indeed comprehensive with 36 chapters extensively covering the female reproductive tract in detail. Beginning with a chapter on embryology, chapters follow covering vulval, vaginal, cervical, uterine, ovarian and gestational pathology. Each section covers the normal findings, infective conditions and benign and malignant pathology. Finally, there are also chapters on disorders of sexual development, the female genital tract that would be of great value as a reference for practising histopathologists. It would also be of value in cytopathology departments, particularly those with a particular interest in female reproductive pathology.

Walter Nespolon
Senior Medical Scientist
Cytopathology Laboratory, Institute of Medical and Veterinary Science
Frome Rd, Adelaide SA

Stress: The Brain-Body Connection
Series title: Key Issues in Mental Health, vol 174
Karger.
by DH and J Hellhammer
Hard cover, 116 pages.
ISBN: 978-3-8055-8295-7
€30.00

Over the years, discussion of stress management in mental health has excluded clinical laboratory perspectives. Translational research and the vast array of emerging diagnostic technologies in the practice of alternative medicine are now bridging the gap. While it would be scientific arrogance for clinical practitioners and scientists to ignore the trend, the new technologies seeking clinical acceptability necessarily require expatiation of their scientific basis for diagnosis.

This is a handy hardcover book and the contents include seven chapters written by five authors including the two editors. Basically the book addresses stress-related bodily disorders and the autonomic nervous system, endocrine and immune mechanisms involved in adaptation processes. The subject index enables an easy search for items of interest.

The first chapter, 'neurobehavioural medicine and stress-related disorders', presents a sort of mini-review of current knowledge on the brain processes involved in stress and associated pathology. The gap between bench and bedside is argued with regards to translational research for neurobehavioural medicine. The second chapter, 'Neuropattern – a step towards neurobehavioural medicine', addresses a set of criteria for a systematic clinical translational approach in neurobehavioural medicine and introduces 'Neuropattern' as a diagnostic tool that satisfies the criteria. Based on the acknowledgement that psychobiological processes are still too complex to be fully understood, and with intent to "characterize such processes in terms which makes temporary understanding easier", the third chapter, the 'principles of the crosstalk between brain and body – glandotropy, ergotropy and trophotropy' are discussed as a concept of the brain-body connection that constitutes the stress response.

The remaining four chapters present discussions on hypercortisolemic, hypocortisolemic, noradrenergic and serotonergic disorders. The discussion on hypercortisolemic disorders is supported with a case report of severe muscle
fatigue that has been persistent for eight years. The discussion on hypocortisolemic disorders is supported with a case report of 47-year-old man with major impairment of physical and psychological well-being. The discussion on noradrenergic and sympathetic disorders is supported with case reports of 40-year-old man with assorted health concerns and family history of hypochondria and mental issues. The discussion on serotonergic and parasympathetic disorders is supported with a case report of 52-year-old patient with ulcerative colitis.

Every chapter is a peer-reviewed article. Thus, this book is not a compendium of unscrutinized opinions. As we would hope of a book published 2008, it is quite up-to-date with the current literature.

The book aims to provide clinicians, researchers and students of neurobiology, psychiatry, psychoendocrinology and psychology with an overview of how knowledge from basic research can be employed or translated into clinical practice. Given the aim and target audience, it is hard to fault this book as lacking relevant material. The major strength of the book is in its second chapter on neuropattern. Presumably, this is one of the first books (if not the first) to highlight a role for diagnostic pathology. Hormonal analysis of saliva is indicated to complement other necessary pre-requisite diagnosis in the neuropattern protocol.

One weakness is a lack of appreciation for medical scientists, for whom this review is written, and who perform the tests and more appropriately interpret the results. There is room for medical scientists to contribute to the cost effectiveness of the protocol by developing possible alternatives to hormonal tests. The concept of stress is related to the complexity of the human body – the interactions between the cells, organs and systems. The body wishes ‘constancy of the internal environment’ (homeostasis). This was first described by 19th century physiologist Claude Bernard. The constancy or homeostasis means that any tendency towards change is automatically resisted by a feedback or feedforward response. Two of the adrenal hormones involved in the neuro-endocrine response to stress are catecholamines and glucocorticoids. The latter mainly potentiates the former. The catecholamines decrease insulin production and increase glucagons release, which culminate in increased glucose level in the blood vis-à-vis glucose metabolism. Stress-induced hyperactivity and hyperglycaemia inherently enhance generation of free radicals that would disturb the antioxidant balance. Typical examples of antioxidants are vitamins C and E, which are currently assessed in clinical practice. Furthermore, imbalance in antioxidant statues leads to oxidative stress, which in turn leads to vascular events particularly hyperviscosity. The latter can be determined more commonly and at a much lower cost compared to salivary cortisol analysis.

For the purpose of following up on clinical research in stress management with a view to being prepared to expand the horizon of diagnostic pathology, this book is an invaluable resource. It is good for lab managers/supervisors who develop new techniques based on research developments. It is a must-read self-help book for every medical scientist considering clinical research on stress-related issues.

Ezekiel Uba Nwose
Hospital/Research Scientist
South West Pathology Service
Albury, NSW
Following is a list of books available for review by resource consultants and members of the Institute with particular expertise in the field.

The reviewer is invited to retain the complimentary copy of the book once the review is received.

As per our agreement with the book publishing companies, complimentary books are submitted to the Institute provided that all reviews are published in the Australian Journal of Medical Science. These reviews must be of a high quality as buying decisions and the reputation of the book and author are important considerations.

Books not requested will be allocated at discretion of the Editors for the Australian Journal of Medical Science. Reviews should be 300 to 700 words depending on the volume of the book. Time limit for return of review is six weeks.

Requests to: Australian Institute of Medical Scientists, PO Box 1911, Milton, Qld 4064. Tel: (07) 3876 2988. Fax: (07) 3876 2999. Email: aimsnat@aims.org.au


37. *Neuromuscular Disorders* authors Anthony A Amato and James A Russell. McGraw-Hill Medical. 775 pages.

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www.aims.org.au
Journal-based CPD No.21
Page 1 of 2

Questions relating to the article “Microangiopathic haemolytic anaemia in a siamang (Hylobates syndactylus).” Page 83 of this issue.

1. In the human population MAHA is a usual consequence of endothelial damage with consequent platelet aggregation with or without fibrin deposition in venules. TRUE/FALSE

2. In MAHA the resulting anaemia is due to the progressive removal of damaged red blood cells and their fragments by the reticulo-endothelial system. TRUE/FALSE

3. Causes of MAHA in humans include pregnancy induced hypertension and a number of obstetric complications such as retention of products of conception, septic abortion and eclampsia. TRUE/FALSE

4. The sex of the siamang referred to in the article could not be determined. TRUE/FALSE

5. The term “pelage” refers to the condition of the animal’s bare skin. TRUE/FALSE

6. The results of the initial urine testing showed proteinuria indicating an infection of the reproductive tract. TRUE/FALSE

7. Despite initially suspecting haemorrhage as a possible cause of the anaemia, examination of the red blood cell morphology indicated that the anaemia could be due to MAHA. TRUE/FALSE

8. Despite treatment with antibiotics and haematinics the full blood count results on day 9 showed a continuing microcytic blood film picture. TRUE/FALSE

9. The polychromasia evident on the blood film was supported by a raised reticulocyte count of 9%. TRUE/FALSE

10. Being part of the gibbon family it is acceptable to use reference ranges applicable to humans to determine whether laboratory values are normal or abnormal. TRUE/FALSE

Name: _______________________________ Membership No: _______________________________

Email: _______________________________
Journal-based CPD No. 21
Page 2 of 2

Questions relating to the article "A case of chronic canaliculitis with isolation of Actinomyces israelii, Leptotrichia goodfellowii and Selenomonas." Page 86 of this issue.

1. Canaliculitis always occurs in the eye. TRUE/FALSE
2. Sulphur granules are so called because they primarily consist of small particles of sulphur which aggregate together to form larger granules of sulphur. TRUE/FALSE
3. When identifying the micro-organisms present in the canalicular specimens all culture plates were incubated anaerobically. TRUE/FALSE
4. The initial Gram stain from the pus showed an occasional filamentous Gram-positive bacilli. TRUE/FALSE
5. The culture results showed scanty growth of Actinomyces israelii, Propionibacterium acnes and Propionibacterium propionicum. TRUE/FALSE
6. To prepare bacterial DNA, cells were digested using a high salt NaCl extraction technique which involves digestion with proteinase K for 45 minutes at 65ºC. The mixture is then boiled for 20 minutes and centrifuged at 4ºC for 5 minutes at 15,493 g. TRUE/FALSE
7. Following DNA extraction and amplification, the sequence from the fusiform rod showed 99.9% identity (715/716 bp) at 100% coverage with part of the 16S rRNA gene of the type strain of Leptotrichia goodfellowii and 100% identity with another cultured strain designated as L. goodfellowii. TRUE/FALSE
8. Selenomonads have been implicated in periodontal disease and are motile kidney-shaped organisms with a tuft of flagella near the centre of the concave surface of the cell. TRUE/FALSE
9. Since 1980 there have been organisms cultured from 70 canalicular specimens the Flinders Medical Centre. TRUE/FALSE
10. Leptotrichia and Selenomonas are anaerobes most often found in the gingiva and periodontal crevices. TRUE/FALSE

Name: ______________________________________ Membership No: ___________________________

Email: ______________________________________________________________________________

Please photocopy this page or print it from the AJMS on the AIMS Member Library in the AIMS Member Lounge at www.aims.org.au, circle your answers and post or fax by 27 February 2010 to:

AJMS APACE Questions, AIMS National Office, PO Box 1911, Milton Qld 4064. Facsimile: 61 7 3876 2999
Submit your Article to the AJMS

Contact the Editorial Office: ajms@aims.org.au
original articles • reviews • case studies
Instructions to authors

The following instructions are based on the “Uniform Requirements for Manuscripts Submitted to Biomedical Journals” also known as the Declaration of Vancouver and on the Australian Government Style manual: for authors, editors and printers, 6th edition, 2002. URLs were correct on January 25th, 2008.

Manuscripts that do not fully comply with the following ‘Instructions to Authors’ may be returned for revision before they are considered for publication.

The Australian Journal of Medical Science (AJMS) will consider for publication any paper relevant to the field of Medical Science. Disciplines include Blood Banking, Clinical Biochemistry, Haematology, Histopathology, Immunology, Microbiology and Molecular Biology. Areas of general interest to medical laboratory scientists, including toxicology, epidemiology, public and community health, and professional and management issues will also be considered.

Papers published in the AJMS are in the form of:

- Review Articles
- Original Articles
- Brief Communications
- Technical Notes
- Case Studies
- Letters to the Editor
- Book Reviews

Articles submitted for publication are understood to be offered only to the AJMS and those accepted become the property of the AJMS.

All individuals listed as authors must have made a substantial contribution to the conception and design of the study, the acquisition of data or the analysis and interpretation of data; the drafting of the article or revising it critically for important intellectual content; and final approval of the version to be published. The corresponding author must take responsibility for obtaining permission from all the authors for the submission of any version of the manuscript and for any changes in authorship.

When the manuscript is submitted the authors must disclose any potential conflict of interest and/or commercial support.

Requirements and preparation of manuscripts

General

Articles should be submitted in electronic format to ajms@aims.org.au. If an article is too large to be submitted by email, it should be submitted on a CD.

Number pages consecutively commencing with the title page.

Arrange the article in the following sequence:

- Title page
- Abstract and key words
- Main Text
- Acknowledgements
- References
- Tables - each table, complete with title and footnotes, on a separate page
- Legends for illustrations.

Authors should ensure that their manuscript communicates their ideas and concepts simply and clearly so that the article is easily read and understood. Authors are strongly recommended to refer to the recommendations on reporting standards as outlined in the statements and checklists of the CONSORT group (see: http://www.consort-statement.org/) and similar groups such as STARD (see: http://www.stard-statement.org/website%20stard/). The principles outlined in these standards may be used as general guidelines and not just as applied to clinical trials and diagnostic studies.

Title Page

The title of the article should not exceed three lines (40 characters per line), including punctuation and spacing. All authors must be identified on the title page (e.g. William Smith, Susan Yeo, ....”). Where applicable, the title page should also include the name of the institution with which each author is affiliated and to which the work should be attributed. In the case of multiple authors, the name, postal address, email address, telephone and facsimile number of the author responsible for correspondence relating to the manuscript should be indicated.
Abstract and Keywords

The abstract should be approximately 150 words and should make sense when read alone or in conjunction with the article. The abstract should be a concise overview that describes the important details of the article including the purpose of the study/investigation, basic procedures (study subjects/experimental animals/observational and analytic methods) and the results and principal conclusions. New and important aspects of the work and its implications may also be included. References should not be included.

Three to ten keywords may be listed. Authors are advised to comply with the terms from the Medical Subject Headings (MeSH) list from Index Medicus. (see: http://www.nlm.nih.gov/mesh/meshhome.html). Keywords should be given below the Abstract.

Text

The style of writing should conform to acceptable English usage. Do not use slang, medical jargon or unnecessary abbreviations. Accepted spelling is the first choice given in the latest edition of the Macquarie Dictionary.

Wherever possible observational or experimental articles should be divided into sections headed:

- Introduction
- Materials and methods
- Results
- Discussion
- References

For other types of articles such as commentaries, reports and reviews, use an appropriate format or consult the Editors for guidance.

Introduction

Clearly state the purpose of the article; lead the reader from the known to the unknown. Summarise the rationale for the study and state the question to be answered as appropriate. Give only strictly pertinent references, and do not review the subject extensively.

Materials and methods

Present the materials and methods in a logical sequence. Describe the selection of the observational or experimental subjects (patients or experimental animals, including controls) clearly. Notification of ethics approval must be given where relevant. Identify the methods, apparatus and procedures in sufficient detail to allow other workers to reproduce the results. Give references to established methods, including statistical methods. Adequately describe new or substantially modified methods. Identify precisely all drugs and chemicals used, including generic name(s), dosage(s), and route(s) of administration. Do not identify patients or hospitals without consent.

Results

Present the results in the same sequence as given in the Materials and methods; use tables and illustrations where these will help the reader understand the work being presented. Do not repeat in the text all the data in the tables or illustrations.

Discussion

Indicate the new and important aspects of the study and emphasise the conclusions that follow. Do not repeat in detail data given in the Results section and do not add new data. Include in the Discussion the implications of the findings and their limitations and compare the observations to other relevant studies. Recommendations may be included if appropriate. Link the conclusions with the goals of the study and answer the experimental question stated in the Introduction. However avoid unqualified statements and conclusions not completely supported by your data. Avoid claiming priority and alluding to work that has not been completed. State new hypotheses when warranted, but clearly label them as such.

Acknowledgements

Acknowledge individuals who have made substantial contributions to the study including technical work and financial support. Authors are responsible for obtaining consent from all the individuals acknowledged by name as inclusion may be interpreted as an endorsement of the article's contents.

References

The AJMS uses a modified Harvard System (author-date system).

Throughout the body of the manuscript cite the author/s name and the publication year in parentheses as in the following examples:
(i) Research in this area (Jones 1999)...

(ii) It has been successfully demonstrated that ... (Smith and Brown 1981; Auteur 1995; Scienziato et al 2007).

(iii) Following further investigation, Wetenschapper (2002) highlighted the difficulties inherent in...

Where there are three or more authors, acknowledge only the first author, e.g. (Smith et al 2007). For two authors the following style should be used (Smith and Brown 2007).

The reference list should be in the format described below. Journal titles should be abbreviated in Index Medicus format (see: ftp://nlmpubs.nlm.nih.gov/online/journals/limjweb.pdf) using standard abbreviations from the ISSN List of Title Word Abbreviations (see: http://www.isssn.org/en/node/344). All authors should be given in the reference list.

Do not use abstracts as references. “Unpublished observations” and “personal communications” may not be used as references, although references to written, not verbal, communications may be cited (in parentheses) in the text. Include in the references manuscripts accepted but not yet published, designate the journal followed by “in press” (in parentheses). Information from manuscripts submitted but not yet accepted should be cited in the text as “unpublished observations” (in parentheses).

Examples of the correct form for references are given below:

i) Journal Reference:


ii) Personal Author(s) of a book:


iii) Editor, Compiler, Chairman as Author:


iv) Chapter in Book:


v) Online documents:


Tables

Number tables consecutively with Arabic numerals and supply a brief title for each. Give each column a short or abbreviated heading. Place explanatory matter in footnotes, not in headings. Explain in footnotes all non-standard abbreviations used in each table.

For footnotes, use the following symbols in this sequence:

* † ‡ § ¶ ** ††

In preparing tables, consideration should be given to the page width of the Australian Journal of Medical Science. All tables should be prepared for publication vertically. In the text, cite each table in consecutive order, and mark in the margin of the text its approximate location.

If data from another published or unpublished source is used, written permission must be obtained and a copy must accompany the manuscript.

Illustrations

Colour illustrations may be submitted on a CD. Images should be scanned at a minimum of 300 dpi.

When plotting points, the following symbols are preferred:
In most instances, figures will be reduced to one column in width. All letters and numbers should be drawn to be at least 1.5 mm high after reduction, symbols at least 1.0 mm. Titles for illustrations belong in the legends for illustrations and not on the illustrations themselves.

Photomicrographs must have internal scale markers and the magnification must be stated. Symbols, arrows, or letters used in the photomicrographs should contrast with the background.

Cite each figure in the text in consecutive order, e.g., “Figure 1 illustrates …” or “… as shown (fig. 2)”. If a figure has been published, acknowledge the original source and submit with the manuscript written permission from the copyright holder to reproduce the material. Permission is required, regardless of authorship or publisher, except for documents in the public domain.

Legends for Illustrations

When symbols, arrows, numbers, or letters are used to identify parts of illustrations, identify and explain each one in the legends. The figure legend must contain a boldface (a) name ("Figure" + arabic figure number) and (b) substantive title.

Abbreviations

Use only standard abbreviations (see list of commonly used abbreviations, above right).

Avoid abbreviations in the title. The full term for which an abbreviation stands must precede its first use in the text unless it is a standard abbreviation for a unit of measurement.

Report measurements in the units in which the measurements were made. In most countries the International System of Units (SI) is standard.

### Commonly used abbreviations

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### Additional Information

The following are useful sources of information. The first two publications are used by the AJMS as standard references.

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