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My Favourite Parasite

Capsala martinieri from the sunfish, *Mola mola*. Photo supplied by Ian Whittington, South Australian Museum and the University of Adelaide.

Capsala martinieri was one of the first dozen or so monogenean species described. When removed from the skin of its host, the Ocean Sunfish (*Mola mola*), this monogenean is conspicuous because of its size (up to 27 mm long and nearly as broad)! On the host, however, it is hard to see due to a combination of transparency plus pigmentation, so it blends in with host colouration.

Capsala and its whole subfamily, the Capsalinae, are currently under revision by Leslie Chisholm (Uni of Adelaide [UA]) & Ian Whittington (SA Museum / UA). Concurrently, Honours student Lizzie Perkins (UA) is studying the phylogeny of the entire Capsalidae using molecular genetics.



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DOCTOR FUN

From the President's Desk

This will be my last update as President of the ASP. David Piedrafita will take over in October at the joint WAAVP/ASP meeting in Christchurch, which looks set to be a fantastic event. I hope that a good number of our membership will attend and make the meeting a success. The delights of the South Island are too good to miss, not to mention the science and of course the generous \$200 subsidy for ASP members! The 2005 Annual General Meeting will also be the occasion for the award of the triennial JFA Sprent Prize (and oration) for the best PhD thesis submitted in the last years. Unfortunately the AGM will be held on Wednesday evening following the free time set aside for people to take tours. This may present a problem for those who wish to join some of the longer tours that involve an evening meal. I urge everyone to support the AGM despite the impending clash because it is an important event in the Society's calendar when you will be able to get first hand information on the status of the Society and have your say. This year the AGM will also include the President's oration (a very short one) and the presentation by the recipient of the JF Sprent Prize. I also nearly forgot to mention that we may pass around a few bevvy's as well, just to oil the wheels...

On behalf of the ASP I would like to thank Emmanuela Handman and Nick Smith who organized the inaugural scientific meeting of the ARC/NHMRC Research Network for Parasitology, which was held at WEHI in July this



Games intestinal parasites play

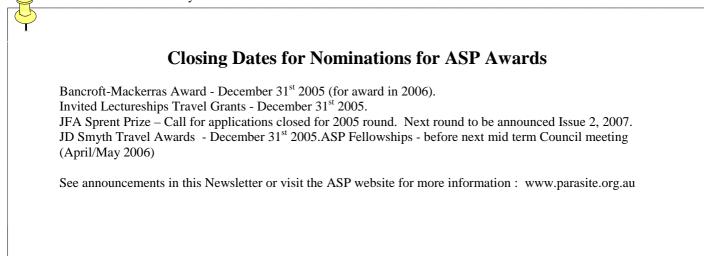
Doctor Fun cartoon reprinted from http://www.ibiblio.org/Dave/ index.html. Used with permission.

year (see report in centre pages). The meeting can only be described as a roaring success. The quality of the venue and the quality and breadth of the scientific presentations was outstanding. Even the fickle Melbourne weather treated us kindly. I think the success of this meeting epitomizes the spirit of the Network, which I think will grow even stronger in the coming years. Nick has also been working extremely hard to develop the programs of the Network aimed at increasing research collaboration within the discipline.

The IJP (our journal) has continued to go from strength to strength in terms of its impact factor (currently above 3) and income which rose about 25% compared to 2004. Nick Sangster who has done a remarkable job in managing the Journal over the past three years will be stepping down as Editor in Chief early next year. We are now actively seeking to a new EiC who will oversee the next phase in the Journal's development. If anyone is interested in pursuing this challenging but rewarding position please contact either myself or David Piedrafita for more information.

I look forward to seeing a large ASP contingent enjoying themselves at the WAAVP and I hope the rest of the year treats everyone well.

Simon Reid



viewing only

Internet for personal those of the author.

http://sunsite.unc.edu/Dave/drfun.html

This cartoon is made available on the Opinions expressed herein are solely

Dr Bernard Stone AM, DSc

Dr Bernie Stone, ASP member and CSIRO scientist passed away earlier this year. Bernie was a member of the society for many years and an active researcher in the field of tick biology and their resistance to acaricides. Among his career highlights, Bernie published a singleauthored paper in Nature in 1963. entitled: Pathogenesis in the cattle tick, Boophilus microplus. Two colleagues from CSIRO, Alan Scott and David Kemp, kindly forwarded the following memories and tributes for the newsletter. Alan's oration was given at Bernie's funeral service, while Dave's words were published in the CSIRO Horizons Newsletter.

I worship here at Kenmore with Bernie and Anne, and I have recently retired from CSIRO. I am privileged by involvement in Bernie's recent life journey, and I am honoured and humbled by the opportunity to say a few words about Bernie's career in CSIRO, and what he means to me.

Although his initial research interest was in the food industry, Bernie joined the CSIRO Division of Entomology in 1954. He began at the Veterinary Parasitology Laboratory at Yeerongpilly working on resistance to biocides by the Australian cattle tick. In his own words a fairly tenuous link with food! He worked on documentation of resistance and developed a method of evaluating biocide resistance in ticks which became the standard international FAO (Food & Agriculture Org) method which is still used today. With DNA work in its infancy, Bernie then studied the formal genetics and biochemical genetics of biocide resistance by classical Mendelian genetics. His BSc in invertebrate zoology and chemistry was then followed by an MSc in entomology. A CSIRO overseas post-graduate studentship to Canada saw Bernie (accompanied by Anne and two children) studying biochemical and physiological resistance mechanisms to biocides in a species of mosquito which transmitted elephantiasis In Rangoon, Burma. Bernie's research director in this project was the eminent WHO authority Professor AWA Brown, and the research led to the award of a PhD in medical entomology by the University of Western Ontario (Zoology Department). On his return to Australia he began work with the CSIRO Division of

work with the CSIRO Division of Tropical Animal Science into tick physiology. He sought to achieve a unique control mechanism by disrupting the attachment of cattle ticks to their hosts. This was at Indooroopilly, where, during his absence overseas, the Veterinary Parasitology Laboratory had moved. The knowledge gained through this project enabled Bernie to switch to studies on immunity to the highly potent tick paralysis toxin secreted by the Australian scrub tick. The tick injects a potent toxin which causes progressive paralysis in limbs and cardiac failure and often results in the death of its host. The only preventative measure was to remove the ticks or kill them before they have time to secrete toxins, and neither of these measures is completely effective. Bernie felt that another way of controlling ticks was to vaccinate animals, and he researched the practicality of producing a commercial vaccine by means of molecular biology by cloning the gene or genes. Cloning was very much in its infancy, but by 1984 he had prepared a toxoid which successfully immunised rabbits and dogs. Bernie had successfully detoxified the tick's natural toxin to form a vaccine which stimulated immunity to the toxin. Although successfully collaborating with such well known entities such as CSL and Coopers Animal Health and other vaccine manufacturers to genetically engineer a toxin for use in a commercial vaccine, it proved impossible to produce quantities that were commercially viable. But Bernie's work on

the detection and characterization of tick resistance to biocides was of immense value to the cattle industry. It enabled the authorities, the farmers, and the manufacturers of these products to keep abreast of changes in the field and helped prevent the breakdown of tick control, thus avoiding heavy losses in livestock and livestock products. Although Bernie's dream of a vaccine was not realised, there was a useful commercial spin off from the research which led to the development of a method for standardisation of the existing antitoxin or antidote widely used along the east coast of Australia for treatment of paralysed domestic pets and livestock.

Bernie retired from CSIRO in 1991, but until recently continued to carry out the evaluation of commercial antitoxin as an Honorary Research Consultant and Research Manager at the University of Queensland School of Molecular & Microbial Sciences.

His PhD was added to by a Higher Doctorate (DSc), and Bernie also became a member of the Order of Australia (AM).

In science, the passage from initial concept to a final product is often long and frustrating, requiring great tenacity as well as scientific knowledge and, most importantly, long term vision (now called strategic vision). Bernie had all of these gifts in abundance. I first met Bernie in 1986 when I joined the Division of Tropical Animal Production, and I came to admire his quiet, gentle but tenacious personality. His many research colleagues, some of whom are here today all agree that this captures the essence of what Bernie was all about - vision and tenacity. These strengths were evident as he dealt with his recent health issues, and he is an inspiration to me. I hope that, if required, I will be able to deal with issues as he has done. I will miss our chats over coffee in the courtyard, but he will never leave



my memory. Farewell, Bernie, my friend and mentor, thank-you for allowing me to be a part of a life well lived. Rest in peace, you have fought the good fight.

Alan Scott

Dr Bernard F Stone AM, DSc., died last month. Remembered more fondly as Bernie by his colleagues, he worked in CSIRO from 1954 to 1991, first at the Yeerongpilly lab now occupied by QDPI, Animal Research Institute and then at Long Pocket Laboratories, Brisbane. His first task was to develop a test for acaricides resistance in the cattle tick, Boophilus microplus. This was very important at the time because ticks had become resistant to the few chemicals that were available and there was no standardised, easy to use, test available. The LPT (Larval Packet Test) that he and his colleagues developed was quickly adopted in Australia and after comparison with other tests available, FAO adopted it as the best test for world wide use.

FAO went further and, with donors, funded a facility in Berlin as a source of the LPT for distribution to any country that required it. Having completed the first task, Bernie went on to use this and other tests to study the genetics of resistance and its dominance, the first of such studies in the world. He was also interested in the mode of action of acaricides. especially amitraz and showed that ticks were highly sensitive to this chemical and would become highly active at concentrations much lower than those needed to kill. He was also interested in tick chromosomes and collaborated on this research with Jim Oliver, a colleague from the USA.

All good things come to an end and funding ceased for the acaricide research group, who had a leading international reputation at the time. Undaunted, Bernie turned his efforts to solving a very difficult problem, paralysis by the scrub tick *Ixodes holocyclus*. He obtained considerable external funding for this work, always a difficult task. While much was learnt about the onset of paralysis, the origin of the toxins and the development of prototype vaccines, the isolation of the toxic peptides was elusive and this was needed for preparation of a recombinant peptide vaccine in bulk. It should be noted that although others subsequently took up this work, there is still no vaccine against the tick peptide toxins.

Although he was a highly practical scientist with an eye on funding he took the opportunity to investigate with others the principles underlying his practical results. For example, in looking at the action of the formamidine acaricides, he worked with others on the adrenergic nervous system of ticks. His work on the paralysis toxin included a study of salivary gland cellular changes during development of toxicity in ticks.

Bernie did not always agree with the opinions of management and vice versa, but he was a tough character who survived the ups and downs of scientific research in CSIRO, no small feat. He worked through the ranks and studied for some years on his PhD in Canada. It might surprise a few to know of his considerable sense of humour and his somewhat adventurous approach to taking on new research.

Bernie had many interests outside of CSIRO and these took a lot of his time and organising abilities, but for Bernie, throughout a busy life, his family came foremost.

David Kemp, CSIRO



Roberts Tick Collection benefits from ASP Funding

Parasitologists at the University of South Australia have been entrusted by Dr Bruce Halliday Curator of Arachnids at the Australian National Insect Collection (ANIC) to look after the Roberts' tick collection. This is the major arachnid component of the nationally heritage listed ANIC.

Lack of appropriate funding in the past has allowed the collection to deteriorate. The ASP has seen fit to provide funding to enable us to be-



gin to rectify this situation. As a first priority, we are attempting to create a computerized database from Roberts' original hand written data cards, which are in a very poor state, some of them being almost unreadable. The data cards will also be scanned into a computer so that we have a graphic historical record of them. We are also obtaining more appropriate and up to date vials/caps to safely secure specimens for a much longer period with minimal maintenance.

The support of the ASP in this endeavour is greatly appreciated as this collection is a valuable national resource for use by generations to come.

Ross Andrews



Vic State News

University of Melbourne Veterinary Science, Werribee

The second quarter of 2005 has seen the Werribee campus become a hive of activity as renovations/building works come into full swing in preparation for the faculty's application for accreditation of its Bachelor of Veterinary Science degree by the American Veterinary Medical Association. Despite the jackhammering next door to her office, Pauline Cottee is busily beavering away at writing her PhD thesis as is Craig Kyngdon. Craig, incidentally, recently traveled to Spain, France and Italy for a brief holiday, where he met up with and traveled with his girlfriend from Mexico City and (possibly getting caught up in the romantic setting that Florence has to offer) returned to Melbourne officially engaged to be married. Congratulations Craig and Veronica!

Marshall Lightowlers has traveled to Lima in Peru to attend an NIH sponsored International Symposium on Control of Cysticercosis and Hydatid Disease held on 17 May. In June he traveled to Tegucigalpa in Honduras to attend a planning meeting on cysticercosis and to give a presentation to the II National Meeting of the Honduran College of Microbiology. He also went to Montreal in Canada to attend the Annual Symposium of the Centre for Host Parasite Interactions held on 13-14 June 2005 at the invitation of Terry Spithill. Marshall found Terry and his partner Maureen in high spirits and enjoying their life in Canada. Maureen has established a B&B business in a unit on the ground floor of their beautiful riverside home that would be of interest to anyone looking for accommodation in the Montreal environs

http://www.riverviewbandb.ca/). Terry's institute was positively overflowing with enthusiastic staff and students and seemingly bursting at the seams with new equipment. While at the conference Marshall caught up with Conan Chow who is working as a post doc on *Leishmania* at the Centre de Recherche en Infectiologie de l'Université Laval in Quebec. Marshall reports that Conan was in good form and still unequivocally "Conan".

Marshall also traveled to Asahikawa in Japan to attend the International Symposium on Taeniid Cestode Infections on 5-8 July 2005.

Christen Fornadel, from Haverford Col-

lege, New Jersey, USA, has completed her one year (on a Fullbright Scholarship) with Marshall Lightowlers and has returned to Baltimore where she is embarking on a PhD at Johns Hopkins University in molecular microbiology and immunology.

Thomas Schneider, from the Veterinary School in Hannover, Germany, was recently in Melbourne on holidays with his family yet still found the time to call in to Werribee where he met with those of us who have been around long enough to remember Thomas from way back when he was on sabbatical in Werribee.

Ian Beveridge has traveled to France and the Czech Republic and is also working at the Natural History Museum in Vienna. He is also expected to do some collaborative work at the Natural History Museum in London.

Robin Gasser was recently promoted to Professor. Congratulations Robin! A new member of Robin's group is Bronwyn Campbell who previously worked on insecticide resistance at the CSIRO Division of Entomology and the ANU.

University of Melbourne Centre for Animal Biotechnology

Simone Beckham has submitted her thesis on the characterization of a cathepsin B-like cysteine protease from juvenile Fasciola hepatica. We congratulate Simone and her supervisors, Rob Pike, David Piedrafita and Terry Spithill on her achievement! She has meanwhile started her first post-doc in David Kemp's lab. at QIMR. Here, Simone will be working on the active and inactive serine proteases of the scabies mite. We wish Simone all the very best as she moves forward in the discipline of parasitology. Nick Kennedy is also close to finishing his PhD thesis on the immunogenicity of DNA vaccines in ruminants and has been selected to present a paper on his work at the symposium session "Helminth Vaccines - The Way Forward" at the combined ASP/WAAVP conference in Christchurch later this year. David Piedrafita will also be presenting a paper at this session, so if you want the inside word, be there! Els Meeusen, Vern Bowles, Mike de Veer, Jill Pleasance and Rebecca Smith will also be attending ASP/WAAVP and Bec has been awarded a travel grant from Louisiana State University to attend the meeting. Well done Bec! In other news regarding conferences, the same motley crew as listed above, along with Nick Robinson, attended the ARC/NHMRC Network for Parasitology inaugural meeting. David gave a presentation on the parasitology and immunology being conducted at CAB, and we all thoroughly enjoyed the scientific program and opportunity to meet up with new and old faces on the parasitology scene. We'd also like to welcome Dr Joanna Kemp as a new post-doctoral research fellow to CAB. Jo did a PhD at CAB on immunological responses to single shot vaccines and later a post-doc at the Ludwig Institute working on asthma. She's now returned to CAB to work with David on immunity to Haemonchus. Some of you may have met Jo at the ARC Parasitology Network Conference. We welcome her!

Department of Primary Industries Attwood

The Nematode Vaccine program continues in its strides, with staff working towards milestones and project deliverables. Having successfully completed its latest project review (April), staff in the Novartis Vaccine project continue to evaluate vaccine candidates against *H. contortus*. Those working on the GINTIP projects have also recently completed their project reviews, achieving excellent results.

Congratulations to all! Some of the work arising from these projects was presented at the inaugural Conference of the ARC/NHMRC Research Network for Parasitology held in Melbourne, July 2005. Jennifer Sexton presented work on H11 (Progress towards a recombinant H11 vaccine against Haemonchus contortus) whilst Jody Zawadzki presented the work on RNA interference in H. contortus (Development of RNA interference in Haemonchus contortus). Some of the team members are now preparing to attend WAAVP, where Jenny, Jody, Debbie Donald and Paul Presidente, will present their research findings - It promises to be a great meeting.

On the student front, Sia Nikolaou, cosupervised with Robin Gasser at the University of Melbourne, has just submitted her third publication from her studies on signalling pathways in *H. contortus*. Sia is also working with us part-time as she completes the writing of her PhD Thesis. PS look out for Sia at the upcoming wrestling tour- she is an avid fan!

Other news: we welcome Nina Gatt back from maternity leave, who is very excited to be working on the GINTIP projects. We also welcome Kathy Viduka, to the team, who joins us having completed her degree at La Trobe University. We are sad to say farewell to Catriona Thompson, who is moving to the Target Validation team here at DPI ?Attwood, thanks and good luck. Kind regards to all our colleagues from all of us in the Nematode Vaccine Program, Molecular Biology, DPI Attwood. For any queries contact Dadna Hartman, Molecular Biology, DPI-Attwood, (03) 92174 286

Dadna.Hartman@dpi.vic.gov.au

La Trobe University Malaria Labs

Leann Tilley has been appointed Deputy Director of the Australian Research Council Centre of Excellence for Coherent X-ray Science that has recently received funding for the next 5 years. The grant is headed by Federation Fellow Prof Keith Nugent (Melbourne University). The ARC has contributed \$9m over 5 years and along with \$1.8M funds from the State Government and additional funds for Melbourne, La Trobe, Monash and Swinburne Universities. Researchers from Biochemistry and Physics aim to develop fundamentally new approaches to probing biological structures and processes. The Centre will combine world-class expertise in imaging, structural biology, laser science and molecular theory to develop novel high-resolution imaging and probing using the Australian Synchrotron and, ultimately, x-ray lasers. An overarching scientific aim will be to determine the structure of membrane proteins without the need to form large 3D crystals

Also in Leann's lab Akin Adisa has flown off to London, sponsored by the Parasitology Network to visit Graham Mitchell's lab and Nick Klonis has just returned from a Fluorescence Networksponsored trip to Europe.

Jesse Schloegel in Mick Foley's lab has been successful in his application for a Churchill Fellowship (sponsored by Dr. Dorothy Sanders). Jesse will use this prestigious award to facilitate a visit to visit Papua New Guinea as part of his studies into plasmodial vaccines. He visited Government House and accepted his fellowship from the Governor of Victoria, John Landy. Jesse didn't miss the opportunity to spread the word about the importance of malaria research and Mrs. Landy was apparently very interested in what he had to say about the disease and the burden it has on the developing world. Goodonya Jess.

Anyone lucky enough to attend the Parasitology Network meeting at WEHI will

have seen Mick Foley present some of our recent discoveries in the world of Plasmodial AMA1. Much of this work is currently being written up by Karen Harris in her Ph.D thesis. Ross Weston took out the Morning poster prize at the Melbourne Protein Meeting at Bio21. He scored \$250 for his efforts but we are vet to see any cakes at morning tea. We're sure this diversion from protocol is purely temporary but still have our fingers crossed. Robin Anders has disappeared to PNG to walk the Kokoda trail so best of luck to him. All the honors students are now back in their respective labs after a break to prepare assignments presentations. They are all working furiously to complete their research projects by the end of October.

La Trobe University Parasite Control Laboratory

Mark Sandemann writes: At home with a nasty little virus seems like a perfect opportunity to write my piece for the newsletter. I've been back from Canada for a couple of months and am once again firmly ensconced in teaching and administration with occasional forays into the research lab to see what's happening. While I was away our new PhD student Jacquie Burgess got stuck into her project and started to capture volatiles from sheep faeces and put them through a GCMS to see if there any specific for Ostertagia infections. Kate kept the dog going and has succeeded in teaching it to discriminate infected from uninfected faeces suggesting that Jacquie's project is well founded. Steve has kept going with the Trichs and his protein analysis and is working towards presenting the dog work in New Zealand.

We have also been joined by two honours students Amanda and Hayley who have booked flights to Singapore later in the year to investigate some parasite problems in the Zoo. The main idea is to determine if the Haemonchus in the giraffes is resistant to ivermectin but they will also have a look at the general parasite population. Thus, if any of you gets a frantic call later in the year or an email with a parasite attached you might help the girls with an identification. Meantime Peyman is working away on the CRC diagnostic project trying to determine which monoclonal best binds to faeces. I think its time we got back to some blowfly work there is a lot less concentration on faeces!

SA State News

SARDI Livestock

Ian Carmichael hosted a Sheep CRC group involving Brown Besier, John Steele, Malcolm Knox and Jan van Wyk (University of Pretoria) to discuss present and future projects just prior to his departure for the 6th *International World Sheep Veterinary Conference* in Crete. Ian was very impressed with Greece and the primary production enterprises, but ate too many tomatoes and returned to Australia with gout. He and his wife mastered the new digital camera and Ian has recently selected the best 400 of the 1000 Grecian images.

Collection of field samples for our group's project work was somewhat hampered by the late 'break'. There was no rainfall in SA in autumn and the first significant rainfall did not occur until well into June. That meant a lack of grazing pasture and prolonged hand feeding of sheep. On one of our prime lamb project farms, there has been a 30% loss (1000/3000) of lambs due to the unavoidable disturbance of lambing ewes associated with supplementary feeding, i.e. 'mis-mothering'. It was almost impossible to collect substantial pasture for larval counts prior to the late break and those processed consisted predominantly of dirt with a few very short blades of grass!

Micko has been delving into the intestines of foxes, magpies and hares and conducting Toxoplasma serology on pigs to break the customary sheep nematode work. In Ian Carmichael's absence, the boys recently ventured onto a farm in Western Victoria (Heywood) for fieldwork. An early Monday morning start required Sunday travel for an overnight stay. Some oversights, e.g. loss of time when crossing the border, meant a later than planned check-in at the motel. Still in good spirits, the team made a swift departure to the local for a beer and meal, only to find it closed at 7pm. Devastated, the boys returned to the motel with fish and chips ... and no beer.

Di Barton has been collating the lab's archived data from sheep nematode trials conducted between 1976 and 1982. The process has tested the memory of Richard Martin, the only remaining lab member directly involved in that trial. For the sporty minded, Di has recently



been appointed State (SA) women's rugby union coach. Some lunchtimes have been occupied by planning exercises for training and studying coaching manuals. [Keep working at it, Di. We've heard that another rugby team in Australia might be looking for a new coach-Ed].

Di's 12 month job with SARDI Primary Industries is nearing its end. She's been keeping a watchful eye open for other opportunities and has landed a position as an Academic Programs Officer in the School of Agriculture & Wine at The University of Adelaide. The job entails supervising a team of admin staff who oversee students at the University's Waite and Roseworthy campuses. So after a brief breather, Dr Di is returning to the Uni system. Good luck, Di!

SA Museum / University of Adelaide

Members of the Marine Parasitology Lab have been very busy since the last update. Julia Lackenby successfully completed her Honours Degree and is hoping to continue her career in Parasitology. Current Honours student, Lizzie Perkins, now has use of both arms (after her 'falling off a horse' episode) and has been lab-bound sequencing many capsalid monogeneans. She is now so skilled that she can successfully extract DNA from tiny larvae (in exchange for king-size Mars Bars). PhD students Kate Hutson and Rissa Williams have completed their field work on the Eyre Peninsula and are happy to be back 'at home' after several months away. Allan Mooney is extremely thrilled to see the tail end of his yellowtail kingfish that he has been tending in facilities at SARDI Aquatic Sciences to investigate in vivo life-cycle parameters of Zeuxapta seriolae. He has now finished fish sitting and is busily writing up his thesis. Ian Whittington and Leslie Chisholm spent a few chilly wet June days in Whyalla looking at parasites of giant cuttlefish. Two days later, they were in sunny (???; 554 mm of rain in one night!) Queensland with PhD student Vanessa Glennon, collecting monogeneans from elasmobranchs off Stradbroke Island, Moreton Bay.

Allan, Ian, Leslie, Lizzie and Vanessa are currently frantically preparing their presentations for the 5th International Symposium on Monogenea (ISM5) in Guangzhou, China (8-12th August, 2005). Between them, they will be giving 8 presentations at the conference.

Sadly, 2 members of the lab have left the

group. Clinton Chambers and his family have moved to Canberra and we wish them all well. Brad Smith completed his short-term contract of tagging and releasing wild kingfish in Spencer Gulf. His hard work and monogenean spotting ability was honoured by naming a new monocotylid species, *Dendromonocotyle bradsmithi*, after him.

Several students in the Marine Parasitology Lab have received a variety of awards and prizes recently. Vanessa Glennon won an ABRS Travel Bursary (value: \$1,000) to attend ISM5. She has also secured a bursary from the Australian Federation of University Women to support her research activities in Parasitology. Rissa Williams was awarded a J.D. Smyth Travel Award (value: \$2,000) from the Australian Society for Parasitology to help fund travel to the Sixth Symposium on Diseases in Asian Aquaculture (DAA6) in Colombo, Sri Lanka (25-28th October, 2005). David Schmarr won the award of Best Student Fisheries Oral Presentation for a talk about his PhD studies on stock discrimination of Blue Mackerel at the recent Australian Marine Science Association Annual Conference in Darwin (11-13th July, 2005). Congratulations guys!

Compiled by Ian Whittington with contributions from Mick'O, Di Barton & Leslie Chisholm

Kate Hudson from Ian Whittington's lab forwarded this joke:

A minister decided that a visual demonstration would add emphasis to his Sunday Sermon.

Four worms were placed into four separate jars. The first worm was put into a jar of alcohol. The second worm was put into a jar of cigarette smoke. The third worm was put into a jar of human ejaculate. The fourth worm was put into a jar of good clean soil.

At the conclusion of the sermon, the Minister reported the following results:

The first worm in alcohol - Dead.

The second worm in cigarette smoke - Dead.

The Third worm in semen - Dead.

The Fourth worm in good clean soil - Alive.

So the Minister asked the congregation, "What can you learn from this demonstration?"

A little old woman in the back quickly raised her hand and said,

"As long as you drink, smoke and have sex, you won't have worms."

Queensland News

Queensland Museum

Steve Wesche is busy in the Molecular Identities Laboratory at the QM gathering final data for completion of a NSW Fisheries-funded Sydney rock oyster/Marteilia sydneyi project that he and Rob Adlard have been working on since the completion, in March, of the FRDCfunded oyster disease zoning project. This latest project is focused on the window of infection of QX in Sydney rock oysters from the Hawkesbury River and will be of importance for future stock management. Rob's cross-appointment with UQ also means he has had a busy year so far with lecturing commitments and student supervision. Congratulations to one of his students, Nicole Gunter (cosupervised by Tom Cribb), who recently received 1st Class Honours for her thesis on risk assessment of Kudoa in finfish. Mieke Burger, another co-supervised Honours student, is entering the final phase of her thesis researching the trophic distribution of myxozoans in finfish. Mal Bryant has his Collection Manager hat on again registering a mountain of turbellarian slide material generated by Kim Sewell and Lester Cannon. This represents a major revision of the Temnocephalidae from Euastacus in Australia and includes more than 40 new species descriptions.

Department of Primary Industries and Fisheries, Applied Animal Biotechnology (ARI, Yeerongpilly).

A replacement for Glenn's tenured position was found -Jess Morgan and she will be starting in late September as a Molecular Parasitologist with our group. Danielle Nottage from Gatton UQ finished her industrial placement and Tadeja Bakaj completed her honours characterising entomopathogenic (ie. tick killing) strains of fungi. Lyle McMillen finished up on the MLA venereal disease project and has taken up a position in the Rumen Ecology Laboratory at ARI. Bronwyn Venus (kindly on loan from Animal Science group) is busy completing this study handling the processing of samples for real time analysis (Tritrichomonas and Neospora). Constantin Constantinoiu (UQ postdoc with Wayne and Glen Coleman UQ who's working on Eimeria antigen localisation), Ala and Wayne attended the Parasitology Network meeting in Melbourne which was a well organised meeting where it was good to catch up and good



to introduce Con to Australian parasitology groupees. Jan Maree and Anthea Bruyeres are still slogging away developing Eimeria diagnostics in the RIRDC project with John Molloy and Con. Wayne is still busy designing animal facilities at Gatton (and having Cathy is also still free lunches). 'ticking' away with Wayne's tick cell cultures. Louise (TFC), Wayne and Ala are still busy with the new CRC for Beef Genetic Technologies planning projects in bovine tick resistance. So...we are in holding patterns of activity - as the best way to describe our group at the moment.

DPI&F Integrated Parasite Management Group (ARI, Yeerongpilly) Much awaited rain through much of the sheep producing areas of Queensland has seen a recent rise in Haemonchus counts on many Queensland properties - or is it that they just feel safer with the recent retirement of Arthur LeFeuvre. Arthur retires after more than 40 memorable and remarkable years with DPI and the successful launch of his pet project, the Wormboss website. Maxine Lyndal-Murphy travelled to Melbourne to represent DPI&F at a recent Wormboss committee meeting. Arthur has not gone altogether and will be helping to keep the Wormboss program running and improving. He is "certainly available" (at the right price) for any other consultancy work that any body would like to offer him.

Recent visits of Richard Milner and Robin Bedding to Diana Leemon and Peter James to discuss fungal biopesticides and entomopathogenic nematodes provided always- welcome dining opportunities. Rosy Bright and Vincent O'Shea, who has become something of a fixture in the IPM lab, have been battling adversity to get a sheep lice assay for resistance to insect growth regulators running. After much difficulty with survival of controls someone remembered that some years ago the lab was used to store samples for arsenic and organochlorine residue testing. Successful assays support the suggestion of woolgrowers that resistance may indeed be developing. Vin has also had a couple of recent trips to northern Queensland with Lex Turner doing cattle tick assessments. Rudolf Urech is again on holidays, while his dedicated team soldier on trying to develop better controls for flies in beef feedlots and Trevor and Tina Lambkin

have returned from an extended stay in Sicily to help Steven Rice and Justin Bartlett begin work on the new RIRDC darkling beetle control project.

DPI&F Tick Fever Centre (Wacol)

Out in the field, work on improving the frozen form of the tick fever vaccine has come to halt while previous work is reviewed. After more than 400 mice and 1400 cattle have been used to test various experimental combinations of cryopreservative, diluents and storage temperatures for tick fever vaccines, nothing seems better than the commercially available frozen form stored in liquid nitrogen. Back in the laboratory, the story is much more optimistic. Babesia bigemina is now growing well in a serum-free medium and we are now attempting to grow B. bigemina and B. bovis in a totally chemically-defined medium free. This will make it easier to gain approval to test laboratory-grown strains of Babesia in cattle. Two more strains of B. bovis are undergoing attenuation by passaging in splenectomised calves as possible future vaccine strains and we will be studying the parasites at each step to try and understand the attenuation process more fully. Work with Ala Lew (ARI, DPI&F) on setting up a transformation system in B. bovis is progressing, but slowly.

Queensland Institute of Medical Research

Dr Li Yuesheng, who works with Don McManus on the development of new control interventions against schistosomiasis in China, has been awarded a five year International Research Scholarship of the Howard Hughes Medical Institute; he is the first scientist from OIMR, indeed Oueensland, to receive such a prestigious award. Congratulations to Mitta Chai, supervised by Geoff Gobert and Mal Jones, who received 1st Class Honours for her thesis on microarray analysis of developing schistosomes. Mitta is now hiking somewhere in the Wilds of South America.

Many of the QIMR helminthologists are on the road at the moment. Alex Loukas has been in Thailand visiting collaborators on a project investigating the human liver fluke *Opisthorchis viverrini*. Alex, along with most of his lab (Mark Pearson, Mai Tran, Tegan Don), together with James McCarthy and Alex Sykes, are soon bound for Hydra, Greece, to attend the Molecular

Helminthology Workshop. Geoff Gobert, from Don McManus lab has been working with Paul Brindley at Tulane University, New Orleans on schistosome transgenesis and no doubt adding to his Blues collection. Amber Glanfield. PhD student with Mal Jones and Don McManus, has downed pipettes for a few weeks for a round the world tour, visiting Danielle Smyth, a former member of Don's lab, now working with Murray Selkirk in London. After London, Amber heads off to Mexico for a 2 week tour before returning to prepare her talk for WAAVP2005.

Don's lab welcomes new student Julie Balen from the UK, who will work on disease burden of schistosomiasis in China. Julie studied most recently in the Swiss Tropical Institute with Juerg Utzinger on schistosomiasis in Africa. Julie is heading off to China in September to begin her field work. Also China-bound is Mal Jones, who will be heading to the Ningxia Medical College to participate in workshops on medical parasitology, stopping on the way back in Shanghai to catch up with collaborators there.

Louise Randall, from Chris Engwerda's lab, has returned from USA, where she attended the Woods Hole Course in Molecular Parasitology. Louise was sponsored in part by the Network, and has come back raving about the course and the great learning opportunity. Her only disappointment in her US trip was not being able to find THE vineyard at Martha's Vineyard. She is keen, however, to go back and have another look!

University of Queensland

Congratulations to Peter O'Donoghue, who was recently awarded a Doctor of Science from the University of Queensland. POD drew on his extensive publication record in protozoology to weave together his higher doctorate. POD is celebrating this recent success by getting down to a rigorous bout of teaching, teaching, teaching......

Meanwhile Aaron Jex, from Tom Cribb's lab, has completed his PhD studies on oxyuroid parasites of cockroaches and has returned to Canada. Aaron has not secured a post-doc position as yet, but has plenty of irons in that fire and we expect some success soon.



Central Queensland University

At this time of year we in the middle of Queensland are able to bask in the winter sun, get out in the field, collect data, think deeply about life and otherwise enjoy our research but really have no breakthroughs or funding bonanzas or new projects starting up to report on. Some of us are anticipating a thoroughly pleasant parasitological experience in Christchurch. Lee Barnett has been lured to the dark side of parasitology, as she focuses more on the identification of trematode cercaria and less on the behaviour of molluscs on the mud flats. Eridani and Haylee continue to pursue rats various and pythons water with enthusiasm, looking for strange beasts and significant patterns, whilst Lesley focuses on thinking deeply.

ACT News

Dave Spratt presented the opening plenary at the International Wildlife Diseases Conference held in Cairns June 26 - July 1, entitled, "Overview of Wildlife Health in Australasia - an assessment of the ecology, management, and the impact on conservation, of introduced diseases." One of his PhD student's, Vicky Stokes, presented a poster entitled "Presence of Angiostrongylus species in Rattus rattus and Rattus fuscipes in coastal forests of NSW, Australia." Vicky is looking at the competitive interactions between R. rattus and *R.fuscipes* in the forests north and south of Jervis Bay. By experimental manipulation she has demonstrated that the introduced R.rattus displaces the native R.fuscipes. A series of enclosure studies will attempt to assess the mechanism by which this occurs. As an addendum to these studies Vicky has been looking at the occurrence of lungworm larvae in faeces, haematozoa in blood films and endoparasites in both species. Angiostrongylus mackerrasae was found in R.fuscipes populations at 7 of 8 sample sites south of Jervis Bay. Low numbers of larvae in faeces and degenerated adult worms in a single R.rattus examined from these southern populations suggests that the black rat may not be a suitable host for the native lungworm. Angiostrongulus cantonensis has been found in R.rattus at sites north of Jervis Bay and lungworm larvae have been found in faeces of R.fuscipes at 3 of 6 northern sites, although the species has not been determined by autopsy at this stage. This is the most southern geographic record of A.cantonensis and has possible human health implications, the parasite occurring in black rats in bushland close to popular campgrounds.

The International Conference was held previously in Australia in 1981, but the approximately 270 delegates in Cairns far outnumbered the approximately 50 delegates at Taronga Zoo some 24 years ago. A longstanding international ASP member, Ian K. Barker from the Department of Pathobiology at the University of Guelph, presented Dave with the Emeritus Award of the International Wildlife Disease Association in recognition of meritorious contributions to the study and understanding of diseases of wildlife and he was named an emeritus member of the Association for life.

From Chris Bryant

Chris Bryant has finished the first draft of the chapter on the History of the Australian Society for Parasitology for the forthcoming volume on the History of Parasitology in Australia. It is with the editor, Ian Beveridge, for feedback and, he hopes, *constructive* criticism!

Although Chris has had unlimited access to the ASP archive, he feels that the chapter is still a little short of human interest stories. If any members have such stories at their fingertips, he would be delighted to read about them. Please contact him on:

Chris.Bryant@anu.edu.au.

From the Behm lab, ANU

Carol and her six PhD students attended the 15^{th} International *C. elegans* meeting held at U.C.L.A. at the end of June (See picture). Two of her students, Julie-Anne Fritz and Suzannah Hetherington, presented posters entitled "Investigating the role of sterols in moulting and the `clear' phenotype" and "Functional analysis of *gei-16*, a developmental gene with multiple splice variants" respectively. Both received useful feedback regarding their respective projects. Following this meeting, Carol and Suzannah travelled to Adelaide to attend the ARC Centre for Molecular Genetics of Development (CMGD) meeting, where again, Suzannah presented a poster. Carol, along with several other students, then jetsetted to Melbourne to attend the first meeting of the ARC/NHMRC Research Network for Parasitology. Here Julie-Anne spoke on behalf of the lab, giving an overview of how the lab uses C. elegans to functionally characterise essential nematodespecific genes.

Congratulations to Nick Johnson, a PhD student in the lab, who recently had a paper accepted in 'Gene'. The paper describes the use of the vector, pWormGate, to deliver hairpin dsRNA and its usefulness in achieving an RNAi effect in neurons, which are generally refractory to RNAi.

Congratulations also to Ranga Kumarasinghe, who successfully completed her Graduate Diploma. Ranga spent the last year and a half working on the function of a nematode-specific gene in *C. ele*gans.

Apart from attending meetings, Carol continues to keep herself busy teaching. Her load this semester involves coordinating a course on Current Topics in



From left to right: Nick Johnson, Julie-Anne Fritz, Suzannah Hetherington, Alison Knight, Carolyn Behm and Paul Lloyd at UCLA



Developmental and Molecular Biology, lecturing on developmental biology, and lecturing in the Parasitology course on parasitic nematodes.

WA News

Murdoch University

Let's start by introducing the fascinating case of "Jed", the young dog that came to live in Perth from the United Kingdom. Jed was referred to Associate Professor Peter Irwin at the Murdoch Small Animal Clinic with a history of a twomonth long cough. Thoracic radiographs revealed an unusual pattern of lung consolidation but it so happened that a new radiologist, from the UK, had joined our staff in the previous week. She thought this pattern was typical of Angiostrongylus vasorum infection, which is an emerging parasite disease in the UK. This infection was confirmed using a combination of fine needle aspirates directly from the lung (using ultrasound guidance) and a Baermann faecal analysis. Wow! It appears that the dog came from southeast of England, where this heartworm (the "French" heartworm) is now considered endemic. A. vasorum has been diagnosed occasionally before in Australia, again in dogs imported from Europe. Molluscs capable of acting as intermediate hosts are known to exist in Perth, so the owners other two dogs (of Australian origin) are being monitored.

The dog has responded very well to fenbendazole and a full recovery is expected!

We have an array of visitors again, this time from Canada as well as Thailand. John Barta from the University of Guelph has been awarded a DEST Endeavour Research Fellowship and will join the parasitology group at Murdoch for five months arriving in early September. John's research will focus on the relationships between gregarine protozoa and Cryptosporidium, an important part of our ARC Linkage grant with Sydney Water (Nawal, Andy, Annika and Una at Murdoch; Paul Monis at SA Water and Peter Cox at Sydney Water). Andy is hoping that John's visit will also contribute to a number of other ongoing projects with molecular phylogenetic components including those on Blastocystis and Giardia..

Lydden Polley from the University of Saskatoon will arrive in early November

for seven months. Lydden's major aim while with us is to develop on-line teaching aids and as such will work closely with Russ Hobbs. In addition, we have a number of current projects involving wildlife all of which will benefit with input from Lydden.

Pla (Jitbanjong Toomphong), has already been working hard for the last couple of months and is working closely with Nevi on establishing in vitro models of Neospora and Toxoplasma, as well as developing a research plan with Ryan and Andy (PhD co-supervisors) for experiments she will undertake on her return to Mahidol University in Bangkok later this year, comparing the pattern of infection between Neospora and Toxoplasma during pregnancy in cattle. Professor Yaowalark Sukthana (Yao), Pla's principal PhD supervisor and a Partner Investigator on our Linkage Grant looking at canine parasitic zoonoses in Thailand, will visit for a week at the end of August. In addition to discussing results from our current project that is looking at the epidemiology of a number of zoonotic infections including food-borne trematodes, hookworm, Giardia and Blastocystis, Yao's lab at Mahidol has embarked on a new project on waterborne diseases in Thailand and is keen to develop further collaboration in this area with the Murdoch group. Nook (Chantira Sutthikornchai), a Researcher working with Yao on our Linkage grant in Thailand will also be visiting our labs at the end of August for two months to work with Rebecca and Caroline. Nook will be working on molecular techniques to characterize

Giardia, Cryptosporidium and *Blastocystis* from clinical and environmental samples.

John Horton who is currently acting as a consultant to WHO/TDR and numerous other organisations, Chair of the Epichem Board and the new Editor of Experimental Parasitology managed to spare some time to 'drop in' at Murdoch in order to discuss progress in research on our antiparasitic drug development project, as well as help in developing a submission to the Drugs for Neglected Diseases Initiative (DNDi) with Bill Charman at Monash - fingers crossed! Rebecca had some interesting stories and photographs to share following her visit to Amsterdam (invited speaker at the FECAVA Conference) and Germany in mid April! Apart from the obvious memorable highlights in Amsterdam, Rebecca had the opportunity to catch up with Dwight Bowman, Michael Lappin and Paul Overgaauw among many others at the FECAVA meeting. She also had the opportunity to spend a week in Germany, where Dr Norbert Mencke of Bayer HealthCare, Animal Health Division (Industry Partner on our Linkage grant for canine parasitic zoonoses in Thailand), invited Rebecca on an exciting tour of Leverkusen. Following this, it was off to the Veterinary School in Hannover, where Rebecca made some lasting friendships with Christian Epe, Thomas Schneider and Georg von Samson Himmelstjerna and their warm and wonderful students over beers, schnitzel and bratwurst! She will definitely be baaack!

Rebecca and Andy visited Bangkok in

Rebecca Traub and Any Thompson with collaborators in Thailand



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June to discuss the progress of the Linkage grant with our collaborators and Rebecca stayed on for a further week to assist with fieldwork. Andy was also invited to give a presentation of his research at Kasetsart University Veterinary School and had the opportunity to catch up with Dr Tawin Inpankaew, Prof. Sathaporn Jittapalapong and Prof. Akrom from the Department of Parasitology. Both Andy and Rebecca were in awe of the exclusive new Olympic-sized swimming pool recently constructed at the University by His Majesty of Thailand for aqua-therapy for dogs!

Caroline Wielinga, a new Research Assistant in Parasitology has already proved a great addition to the group. She is always bubbly, optimistic and willing to "get down to the core" of troubleshooting and as such has been an excellent 'leveller' when things have not gone as planned! Focused and dedicated, she is always lending a helping hand to students and always has great stories to share from her weekends down on the farm! Congratulations too to Caroline as she soon to wed her fiancé Andrew in September!

Congratulations too to Ryan and his lovely wife Diane on the delivery of their baby boy Daniel Ryan O'Handley, born in Perth on the 20th June. Diane, elder brother Morris and the baby are doing well. As for Ryan, well, he took paternity leave to supposedly help Diane – but when contacted a couple of times during his time off he was on the golf course with his Dad!

Congratulations too to Zablon Njiru on securing a new job as an Associate Lecturer at the School of Nursing at the Peel Campus, Murdoch University. Zablon is in the process of submitting his thesis on the molecular epidemiology of Trypanosomiasis.

Unfortunately, Nawal Hijjawi will be returning to Jordan in September for family reasons. We are all very disappointed but wish Nawal good luck back in Jordan where she has landed an excellent parasitology position at the University there. So really, congratulation is in order! We will all miss the influence of Nawal's disciplined and patient approach to microscopy and *in vitro* culture but are pleased that our collaboration will continue albeit at a distance.

University of Western Australia Dr Hugh Jones attended the 1st Symposium of the Scandinavian-Baltic Society for Parasitology in Vilnius, Lithuania, from May 26-29 this year. As a leading bird haemtozoan parasitologist works there (Gediminas Valkiunas), there were plenty of presentations and a lot of discussion in this field. Hugh co-authored three papers which were presented on African rain-forest bird blood parasites, and on the nomenclature of pigmented haemosporidians. Robin Gasser was the only other Australian at this symposium - but he expects that Robin will tell you about his own presentation!

Compiled by Rebecca Traub

NSW State News

Institute for the Biotechnology of Infectious Diseases

The members of IBID have continued to get out and about with Michael Wallach. Sabina Belli, Kate Miller, Nigel Beebe Sheila Donnelly, Colin Stack, David Witcombe, Mary Davey and our very own media darling, Nick Smith, just back from the inaugural meeting of the ARC/NH&MRC Network for Parasitology held in Melbourne. All are agreed that it was a great start for the Network and would like to express our appreciation and thanks to the conference organisers (especially Maureen Grant and Marion) and WEHI for hosting it. Since the last report Nick Smith has been on a very successful trip to Europe and Canada to 'network' with overseas Networks and has returned full of enthusiasm and ideas while Nicky Boulter travelled to Corsica for the 8th International congress on Toxoplasmosis. Nicky's talk on Toxoplasma and the P2X₇ receptor generated a lot of interest. Nigel Beebe heads off at the end of July to attend the 2nd EMBO Workshop on Molecular and Population Biology of Mosquitoes and Other Disease vectors to be held in Crete. Nigel had a fantastic time at the workshop when it was last held and he swears it wasn't just the beauty of Greece in summer!

Two of our bacteriologists, Liz Harry and Lyndal Thompson, have also recently returned from Vancouver where they attended the Prokaryotic Development meeting held by the American society for Microbiology. Our students continue to do well with Catherine Macalpine, Mike Lees and Sarah Flowers all making the Dean's Merit List in the recent graduations. Congratulations also to Sarah Flowers for winning an ARC/NH&MRC Network award to travel to the US to conduct some of her PhD work in the lab of Prof. Brian Chait.

On a personal note, we would like to congratulate Nicky Boulter on her success in the world of Dragon Boat racing. Nicky's team came second in the recent National Dragon Boat racing championships held in Canberra and she was also named female Rookie of the year by her club. Congratulations Nicky!

Faculty of Veterinary Science, University of Sydney

It has been an eventful few months in the parasitology department here at Sydney Uni. We have had a busy time jetting about the countryside to various conferences. Michelle Power gave an overview of cryptosporidium infection in marsupials at the Wildlife Disease Association Conference in Cairns. This was closely followed by the first conference of the ARC/NHMRC Research Network for Parasitology held at WEHI in Melbourne and I think all would agree it was well organised, very interesting and most importantly enjoyable, we look forward to making it an annual event on our calendar. Just recently two of our group attended the National Parasitology Symposium in the Centre for Infectious Diseases and Microbiology (CIDM) at Westmead Hospital, Parramatta and of course we are all gearing up for WAAVP in Christchurch in October, where Michelle is again presenting as are Nick Sangster and Tony Rowe,

The IJP continues its success, now the highest cited journal publishing original research in parasitology, with a recently calculated impact factor of 3.092. This was celebrated in true parasitological fashion with lots of drinks and nibbles for those able to attend. Nick and Maria Meuleman are constantly busy with the stream of high quality submissions arriving daily, July saw a record number for the month and with current supply the yearly record for submissions may be broken as well! The Web based submission system launched in May has been running now for almost four months, Maria reports that authors are finding it user friendly. The journal will be producing a thematic issue in October covering zoonotic diseases.

A new student Abdulla Al'anazi, has joined our group after completing his Masters in Saudi Arabia. Abdulla will be investigating horse cyathostomes, he is a welcome addition and his work with horse parasites makes an interesting change from the usual sheep parasites generally cluttering our benches.

Michelle Power



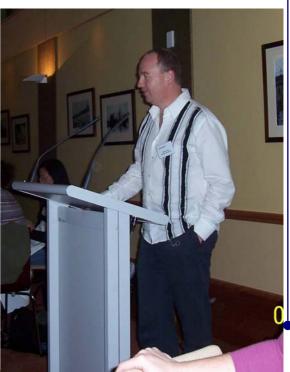
First Conference of the ARC/NHMRC Network for Parasitology Melbourne, July 2005

Over 210 parasitologists from across the country attended the first conference of the "Network", held at the Walter and Elisa Hall Institute for Medical Research in Melbourne. Most of the interstate and international delegates stayed at the Travel Inn in Carlton, just a block from the famed Lygon Street and a brisk 20 minute walk from the conference venue.

Most non-Melburnians were impressed by the balmy weather put on for our benefit. Not least among the grateful northerners (accustomed as they are to daytime temperatures of 22 C in July!) was Alex Loukas of QIMR, who in his haste to catch his plane forgot to pack anything but T-shirts (and the appropriate lower-body vestments, of course)!

What a truly inspiring conference! The meeting covered a diverse range of parasite themes, with 55 presentations over the 2 days. Given the interest and large numbers of registrants at the conference, it became necessary for the organisers to schedule concurrent sessions, a matter of some regret for a few delegates who would have preferred to attend all of the talks! We left the conference with the impression that Parasitology was really moving forward in Australia and there was renewed enthusiasm for more interaction.

The opening address of the conference was given by Professor Alan Johnson (former IJP editor, now with the Australian Research Council) who spoke,









Assembled delegates of the First Conference of the Australian Research Council/

with his usual enthusiasm, on the ARC and funding opportunities open to Australian researchers. The plenary speakers were John Horton (who spoke about the prospects of developing drugs for neglected diseases [read parasitic diseases]), Emanuella Handmann (drugs for *Leishmania*), Gordon Langsley

(*Theileria*) and Mick Foley (Malaria surface proteins).

Highlights of the conference (and there were many) must include the Drugs and Resistance session on Thursday, in which Geoff McFadden presented his exquisite descriptions of apicoplast and mitochondrial development during schizogony in malaria, and Vern Bowles talk on new treatments for head lice, complete with movies of hatching louse nymphs.

The conference dinner was held at University House of Melbourne University. There was plenty of opportunity for interaction, at lunches, afternoon happy hours and the din-





National Health and Medical Research Council Network for Parasitology Meeting

ner. Some of the delegates "talking parasites" are shown on the accompanying pages.

It became apparent through the conference that the large numbers of Australian who call themselves parasitologists, or, who at least work on organisms we know as parasites, is a large and influential group. This, coupled with the knowledge that parasites remain significant and neglected problems, bodes well for the future of our discipline.

Congratulations to the organizing committee, Emanuella Handmann, Nick Smith, Geoff McFadden, Alan Cowman, and Marshall Lightowlers for an excellent conference.

The next conference of the ANNP will be held in conjunction with the ASP2006 meeting in July at the Legends Hotel on the Gold Coast. See the advertisement in this issue for more information.

Malcolm Jones





More highlights from the ARC/NHMRC Network for Parasitology meeting at WEHI, Melbourne, July 2005



Australian Society for Parasitology Inc.

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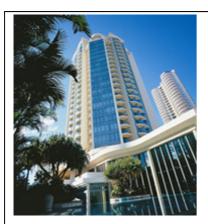
From Science to Solutions

ASP Conference 2005

This year, the Conference will be held as part of the WAAVP2005 Conference in Christchurch, New Zealand.

For all late-breaking news, visit the conference website www.waavp2005.org.nz.

Remember that financial members of the society are eligible for a registration rebate of \$200. To apply for the rebate, fill out the form in the April 2005 issue of the ASP newsletter (also available at www.parasite.org.au).



ASP/ANNP Conference July 2-5 2006 Legends Hotel, Surfers Paradise



"Parasites in Paradise?"

The ASP2006 was originally intended as the Benchmarking Conference. In view of the recent launch of the ARC/NHMRC Network for Parasitology (ANNP), it was felt that benchmarking should fall under the auspices of the Network, thereby allowing the ASP and the Network to organise and present a new concept for ASP 2006.

The conference will be organised by the ASP and ANNP as a full residential conference at Legends Hotel on the Gold Coast. Legends is in Surfers Paradise, on the northern end of the Gold Coast, about 40 minutes from Coolangatta Airport and an hour from Brisbane airport.

Two major themes are proposed:

International Symposium on Therapies for Neglected Diseases

Biodiversity, Ecology and Evolution, with emphasis on marine parasitology

Key symposia will include, **New technologies for Parasitology**, **Vector Biology** and **10 things you didn't know about para**sites (aka the "Well, I'll be......" symposium)!



Of course, there will also be ample opportunity for contributed talks and posters. A full social program is being organised, and the conference dinner is to be held in Q1 building, with a pre-dinner trip to the observation deck on the top floors of the building (see picture, left).

More information will be provided in the December issue of the Newsletter and on the ASP web site.

The Organising committee is working to minimize costs of the conference. We anticipate that the costs should be very reasonable, despite the opulent surroundings.



Notice of Proposed Amendments to the Constitution of the Australian Society for Parasitology Inc.

In accordance with Article IX of the Constitution of the Australian Society of Parasitology Inc, notice is hereby given of a proposal to amend Articles IV and XII of the Constitution at the Annual General meeting of the Society in Christchurch, New Zealand on 19 October 2005.

Proposed Amendment

ARTICLE IV. ADMINISTRATION

Section 1 The Society shall be governed by a Council consisting of the following officers of the Society, namely: the President, President-Elect, Vice-President, Secretary, Executive Secretary, Treasurer, Editor(s), Convenor of the Bancroft-Mackerras Medal Committee, Archivist (non-voting), Newsletter Editor (non-voting) and not less than 6 other elected members of which there shall be not more than one representative from each of the States and mainland Territories of the Commonwealth of Australia. A State Representative may not serve more than 3 consecutive terms.

Section 2

Paragraph 3

The Editor(s) and Newsletter Editor shall be elected for a period of three (3) years and then subject to re-election for further periods of three years with no limit to the number of years of continuous service.

The following amendments are proposed:

<u>Section 1</u> insert after "Newsletter Editor (non-voting)" the word "Webmaster (non-voting)". Section 2, Paragraph 3. Change "The Editor(s) and Newsletter Editor shall be" to "The Editor(s), Newsletter Editor and Webmaster" shall be.

In recent years, the ASP website has become an integral part of the business and communication of the society. It is felt by council that the role of ASP Webmaster requires representation on council and a non-voting position, accordingly, should be established.

Article XII. Student Travel Grants

Eligibility for Scientific Meeting Travel Grants to assist members attending scientific meetings of the Society is limited to <u>bona fide</u> students who are enrolled at a recognized Australian University, receiving an after-tax salary in the preceding financial year not exceeding the stipend of the unsupplemented Australian Postgraduate Award (or equivalent) for the period of their studies and for an additional period of one year following completion of their fulltime studies. Applicants who have completed their postgraduate studies will additionally be required to present a paper at the scientific meeting for which the grant is awarded. Eligibility for Scientific Travel Grants is further limited to individuals who have been financial members for at least six months prior to the General Business Meeting.

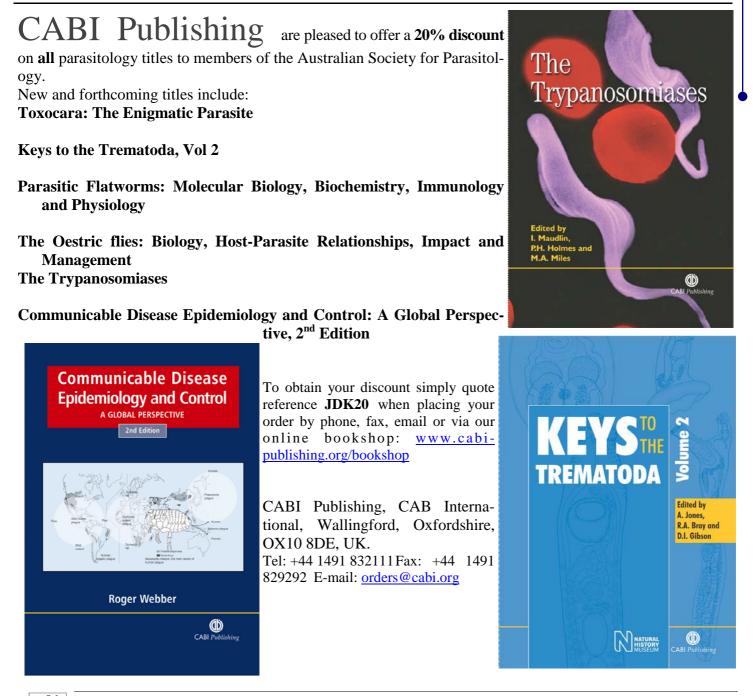


It is proposed that the article should read:

Eligibility for Scientific Meeting Travel Grants to assist members attending scientific meetings of the Society is limited to <u>bona fide</u> students who are enrolled at a recognized Australian University and for an additional period of one year following completion of their studies. Eligibility for Scientific Travel Grants is further limited to individuals who have been financial members for at least six months prior to the General Business Meeting. Applicants who have completed their postgraduate studies will additionally be required to present a paper at the scientific meeting for which the grant is awarded.

It is acknowledged by Council that the wording of the Article is at best confusing and may be too restrictive. The amendment is proposed to ensure that as many students as possible are given opportunity to attend ASP conferences.

Ryan O'Handley, Executive Secretary



Nominations for Bancroft-Mackerras Medal

The Bancroft-Mackerras Medal may be awarded to a member of the Society who, in the opinion of the selection committee, has made an outstanding contribution to the science of parasitology, particularly in work published during the last five years.

Nominations should be made by a proposer and seconder, and should consist of:

- A detailed statement of nomination describing the nature of the "outstanding contribution to the science of parasitology" for which he/she has been responsible. The statement should be signed by the proposer and seconder, or each may submit a separate statement.
- A *curriculum vitae* including a list of all publications.

Note that the Medal is intended for members whose research program has been productive during the last five years. The permission of the nominee is not required and the nominee need not be aware of the nomination.

Nominations should be sent direct to the current ASP President. Detailed information on nomination and selection procedures is given in the By-Laws of the ASP Constitution. Nominations are due each year at the end of October.

Nominations for ASP Invited Lectureship Travel Grants

To complement the scientific presentations at the Scientific Meetings of the ASP, overseas researchers of international reputation in a field of parasitology may be invited to attend and present their work. The invited speaker's expertise must be common to a discipline or symposium conducted at the Scientific Meeting. The visitor must be nominated by a member of the Society.

The Society will provide a travel grant to



assist in the finance of the trip. The support will be based on an economy class direct return airfare from the recipient's home city to Australia, the necessary interstate travel and reasonable living expenses based on actual costs. Registration at the Scientific Meeting will also be included.

The total value of the lectureship will be determined by Council but it is expected that the recipient, or his/her Australian sponsor, will also seek to provide additional or alternative financial support.

Applicants must include the following information:

Details of visiting specialist

An up-to-date *curriculum vitae* must be attached to the application. The following details should be supplied:

- Date and place of birth
- Present nationality (and former nationality, if applicable)
- Present position held
- Full address of employing institution, including phone, fax and Email numbers

• Detailed evidence of expertise in relevant

discipline (list of publications, etc.).

Details of Australian nominator

- Name of member organizing the visit, including full address, phone, fax and Email numbers
- Details of all other applications which have been made for financial assistance towards travel/accommodation costs. Total value of other contributions must be included.

Details of program

The program should normally last a minimum of 2 working weeks and cover at least 2 States or Territories. Details should include:

- Date of visit
- Program being arranged, including institutions to be visited (with dates) and the purpose of each visit (lecture, seminar, workshop, research discussion, etc)
- Aims, rationale and likely benefits of visit
- Contribution to be made at Society's Scientific Meeting

Applications plus supporting documentation should be sent to the ASP President by the end of December in the year preceding the Conference. Applicants should check with the Conference Organisers for details of conference theme, symposia, workshops, etc. before submitting an aapplication.

JD Smyth Travel Awards

These awards are specifically designed to assist postgraduate students travel internationally to conduct research and/or to present their research at international conferences. Applicants must be members of the ASP Inc. of at least <u>6 months</u> standing and enrolled in a postgraduate degree at an Australian university.

Four scholarships will be awarded each year and applications will be considered in two rounds with closing dates in June and December of the preceding year. Each scholarship will be up to the value of, but not exceeding, \$A2000. For research-based proposals, applicants should nominate the international laboratory they intend to visit, the purpose of the visit and the time frame. A short, abstract-length (approximately 250 words) proposal of the techniques and skills to be gained should be attached.

For travel that primarily involves attendance at a conference, applicants must nominate the conference, supply an abstract and justify their attendance at a recognised international conference preferably though not exclusively held outside of the Australasian region.

The award will only be made once proof is received of acceptance of the abstract by the conference organisers. If the student does not attend the conference the ASP funds must be returned to the Society. On return from the Conference a short report must be written to the Council detailing the student's experiences. Applicants should apply to the current ASP Secretary giving details of the conference, their research and supervisor's support plus an abbreviated c.v. and conference abstract, as outlined on the accompanying application form. The application must not number more than 6 pages including the c.v. and abstract. Applications must be received by the next due dates of June 30th or December 31st each vear.





Application form for JD SMYTH Travel Award

Name:	
Address:	
	Phone: Fax:
	Email:
University:	
Enrolled Degree:	
Supervisor's Certification I hereby affirm that the ab	ove-named person is a bona fide postgraduate student under my supervision.
Signed:	Date:
Laboratory Details (for re	search applications)
Laboratory to be visited	
Address	
Purpose of Visit	
Conference Details (for ap Conference Title:	oplications to attend conferences)
Conference Title.	
Venue:	
Conference Address: Title of Abstract (<i>Please a</i>	attach a copy of the abstract):
Author(s) Awards will only be paid	on receipt of proof that the abstract has been accepted.

For all applications: Attach statement justifying attendance, budget (include all other support), brief curriculum vitae [application not to exceed 6 pages]



ANNP-Network News

Election of Professor Geoff McFadden to the Australian Academy of Science

One of this year's new Fellows is Network Participant and Management Committee Member, **Geoff McFadden** (**University of Melbourne**), for research that has demonstrated that the malaria parasite contains a relic chloroplast indicating that it evolved from a parasitic alga. This has enabled him to pioneer a novel approach to combating malaria. Congratulations Geoff !

Congratulations to Nick Hunt, on appointment to the Editorial Board of *The American Journal of Pathology*

Professor Nick Hunt (University of Sydney) has been appointed to the Editorial Board of *The American Journal of Pathology*, the highest ranked journal in pathology, which publishes quite a few papers on malaria. Congratulations Nick!

Leann Tilley named Deputy Director of the ARC Centre of Excellence for Coherent X-ray Science

Congratulations to Network participant and Management Committee Member, Professor Leann Tilley on being named the Deputy Director of the Leann Tilley named Deputy Director of the new ARC Centre of Excellence for Coherent X-ray Science. See Details in Vic State News in this Newsletter. Well done Leann!

Recent Grant Successes

Howard Hughes Medical Institute Scholars in Infectious Diseases and Parasitology.

Alan Cowman, Division of Infection and Immunity, WEHI.

Brendan Crabb, Division of Infection and Immunity, WEHI.

Simon Foote, The Menzies Research Institute, Hobart .

Geoff McFadden, School of Botany University of Melbourne, Melbourne. **Lou Schofield,** Division of Infection and Immunity, WEHI, Melbourne.

For details of the successful grant applications, visit www.hhmi.org

Grand Challenges in Global Health Program:

Alan Cowman (WEHI) is part of a team awarded US\$13.5 million to "explore the use of a weakened malaria sporozoite as a potential vaccine against the disease". Lou Schofield (The Walter and Eliza Hall Institute of Medical Research) is part of a team awarded US\$8 million. "Working with two Canadian groups and a research team from the Louis Pasteur Institute in Paris, Lou will be developing ways to boost the human immune response to malaria infection".

The following Network Participants were recently awarded almost \$13 million for an NHMRC Program Grant for "Host Parasite Interactions: Disease, Pathogenesis and Control":

Alan Cowman, Brendan Crabb, Emanuela Handman, Terry Speed, Lou Schofield (the Walter and Eliza Hall Institute of Medical Research), Graham Brown, Malcolm McConville and Geoff McFadden (The University of Melbourne) will "carry out research into how parasites cause disease in humans. They will study two particular parasitic disease that cause enormous problems around the world - malaria and leishmaniasis".

ARC Linkage International Grant

Sabina Belli and Nick Smith, of the Institite for the Biotechnology of Infectious Diseases, in conjunction with Professor Brian Chait of Rockefeller University: "Identification of structural proteins in the tissue cyst wall of *Toxoplasma gondii*".

ARC Linkage Grants

UM Ryan (Murdoch), C Ferguson, P Cox, RB Gasser (Melbourne), YG Abs El-Osta, "Using molecular tools to understand and control the transmission of *Cryptosporidium.*"

SG Fenwick, D Algar, ID Robertson, PJ Adams, S Reid (Murdoch). "Risks to human health and the ecosytsem from feral pigs in Perth metropolitan water catchments."

Marshall Lightowlers (University of Melbourne) was successful in receiving funding through the Wellcome Trust Animal Health in the Developing World initiative. The research project titled Optimisation and field testing of a practical vaccine against Taenia solium cysticercosis in pigs will enable further development of the group's new recombinant vaccine for pigs which is expected to play an important role in controlling the transmission of Taenia solium and reducing the number of cases of human neurocysticercosis. The 5 year research project has a budget of more than \$1.8M

and, in addition to the work being carried out at Werribee, includes components to be undertaken at the Prins Leopold Instituut voor Tropische Geneeskunde in Belgium, University of Dschang Faculty of Agriculture in Cameroon, Departamento de Microbiología y Parasitología UNAM in Mexico and the Universidad San Marcos in Peru.

Alex Loukas (QIMR) is part of two international teams that were recently awarded very significant and prestigious research grants:

[1] The Gates Foundation has awarded the Human Hookworm Vaccine Initiative with another round of funding (US\$22 million) to test hookworm vaccines in the field in Brazil.

[2] Alex, Paul Brindley (at Tulane University), and Thai colleagues at Khon Kaen University in NE Thailand) received US\$2 million over 5 years from NIH (via the ICIDR mechanism) to initiate a project on *Opisthorchis viverrini* and the mechanisms by which it causes cholangiocarcinoma.

Network Travel Awards

Paula Hawthorn, QIMR, for assistance to travel to Leann Tilley's laboratory at LaTrobe University to investigate the function of three malaria parasite proteins for her PhD;

Sarah Flowers, IBID, UTS, for assistance to travel to the laboratory of Professor Brian Chait at Rockefeller University in New York to take advantage of some unique proteomic analysis facilities and expertise important to her PhD project on *Toxoplasma* development;

Nick Hunt, University of Sydney, to bring Professor Jacob Golenser of the Hebrew University, Israel, to Australia to collaborate on a project examining the effects of immunomodulators on cerebral malaria. Nick and Jacob were also successful in securing funding from the Sir Zelman Cowen Universities Fund for this exciting project.

Louise Randall of QIMR, for assistance to attend this year's Woods Hole Biology of Parasitism Course. Louise was also successful in securing a scholarship from the Marine Biological Laboratory to attend the course.

Nick Smith



New Parasitology Books

Klaus Rohde has written to draw our attention to two new books (one authored, the other edited by him), due for publication later this year. Even the Ecology one contains a lot of parasite examples and will therefore be of interest to parasitologists.

Nonequilibrium Ecology

Klaus Rohde University of New England, Australia **Cambridge University Press** (www.cambridge.org)

Ecology has long been shaped by ideas that stress the sharing of resources and the competition for those resources, and by the assumption that populations and communities typically exist under equilibrium conditions in habitats saturated with both individuals and species. However, much evidence contradicts these assumptions and it is likely that nonequilibrium is much more widespread than might be expected. This book is unique in focusing on nonequilibrium aspects of ecology, providing evidence for nonequilibrium and equilibrium in populations (and metapopulations), in extant communities and in ecological systems over evolutionary time, including nonequilibrium due to recent and present mass extinctions. The assumption that competition is of overriding importance is central to equilibrium ecology, and much space is devoted to its discussion. As communities of some taxa appear to be shaped more by competition than others, an attempt is made to find an explanation for these differences.

Marine Parasitology

Edited by: Klaus Rohde University of New England

CSIRO Publishing

October 2005

This comprehensive, authoritative and up-to-date work provides the definitive overview of marine parasites worldwide. It is an invaluable reference for students and researchers in parasitology and marine biology and will also be of interest to ecologists, aquaculturists and invertebrate biologists. Initial chapters review the diversity and basic biology of the different groups of marine parasites, discussing their morphology, life cycles, infection mechanisms and effects on hosts. The ecology and importance of marine parasites are discussed in the second part of the book, where contributions investigate behavioural and ecological aspects of parasitism and discuss the evolution and zoogeography of marine parasites. In addition, the economic, environmental and medical significance of these organisms is outlined, particularly their importance in aquaculture and their effects on marine mammals and birds.

Written by an international team of contributors, the emphasis is on a thorough grounding in marine parasitology combined with reviews of novel concepts and cutting-edge research.





The plaque of the John Frederick Adrian Sprent Prize. A JFA Sprent Prize will be awarded at WAAVP 2005 in October.

Emeritus Professor John Sprent, founding Professor of the Department of Parasitology (Uni of Qld), has donated significant personal material to the Queensland Museum. The collection includes John's lifetime collection of scientific reprints on parasitic worms (several thousand reprints), professional correspondence and the medals he won for his prodigious contribution to science and the community, including the Companion of the British Empire (1984), the Australian Centenary Medal, medals from his university successes in the late 1930's at the Royal Veterinary College (London), the Coleman Prize Medal, Henry Baldwin Ward Medal (USA), Ferdinand von Mueller Award (Aust/NZ). The parasite collections of the Museum already contain Professor Sprent's specimens and this additional material now complements the story of the man and his exceptional life.

Dr Robert Adlard, Senior Curator, Queensland Museum

New Editor-in-Chief sought for the International Journal for Parasitology

The IJP has developed to the point where it is the world's leading parasitology research journal (impact factor 3.092), a flagship of the Australian Society for Parasitology (ASP) and a major source of income to the Society (\$180,000 in 2004). It is important that its position is maintained and even improved.

The reputation of the journal is built on attracting good quality papers across a range of topic areas and rapid processing of manuscripts. The strength of the impact rests on invited reviews and thematic issues as well as submitted papers. We maintain a good relationship with our publisher Elsevier through their representative, Claire Minto in London. The journal recently moved to web-based submission and refereeing through the Elsevier system.

Applications are now sought for a new EiC for the IJP to guide it through the next phase of its development. The initial term will be for 3 years commencing from February 2006 and the journal would be coordinated in the appointees institute within Australia. A suitable funding arrangement is being developed to facilitate the functions of the EiC and the IJP editorial office. The Editor-in-Chief holds the position as "editor" on the Council of the ASP.

Position description

As the EiC of the IJP you will take overall responsibility for managing the operation of the IJP, including:

- Management of the IJP editorial office
- Review and acceptance or rejection of each manuscript submitted to the IJP office
- Promotion of the IJP to the scientific community
- Liaison with Elsevier Ltd and the ASP Council on matters concerning the IJP
- Maintaining the current high standards with regards to the journal's impact factor and income

Initiating new directions for the journal in the changing world of publishing

Selection criteria

- Demonstrated excellence in research in the field of parasitology
- Membership of the ASP
- Past experience in scientific publishing will be highly regarded

Information on the journal is available at http://www.sciencedirect.com/ijpara

Information on the selection process and possible funding models can be obtained from Simon Reid.

Information on editorial processes and running of the IJP can be obtained from the current Editor-in-Chief (Nick Sangster) on n.sangster@vetp.usyd.edu.au.

Correspondence will be strictly confidential. Candidates will be considered by a small committee of ASP members.

At this stage expressions of interest are sought and should be directed initially to David Piedrafita (dpied@unimelb.edu.au), by 31st August 2005. (This issue of the Newsletter will most likely be distributed in early September. If you are interested in applying for the position, and have not received earlier notification by email, please contact David as soon as possible to express your interest– Ed.).



Parasite Culture

I came across this piece in a website constructed by Professor Thomas Buckelew of the California University of Pennsylvania, USA. Even though I am sure all of us have come across countless numbers of "Ascaris-tales", I thought this was worth reprinting. All of the material on this page comes from http:// workforce.cup.edu/buckelew/ (used with permission).



Thomas writes:

I earned both my Master of Science and Doctor of Philosophy degrees at the University of South Carolina in the late 1960s. My advisor was Felix H. Lauter, a graduate of Louisiana State University who worked under the legendary Asa Chandler. Lauter, was awarded a government grant of some size to educate pre-school age children in the "low country" (southeastern tip of South Carolina) of the dangers of becoming infected with intestinal worms.

At that time, preliminary studies had revealed that in the southern counties of South Carolina, rural pre-schoolers were infected with *Ascaris* and/or *Trichuris* at the incredible rate of 73%. I was finishing my degree and was not involved with the grant work but many of my classmates were. They related sad stories of how the kids would question whether they had worms too. The kids thought that being parasitized was normal, since they routinely passed ascarids with their daily stool. (My classmates routinely took periodic doses of piperazine citrate as a prophylaxis since they daily handled contaminated faeces).

The team pursued a novel approach to education of these children, most of whom could not read given their age. Lauter and his students designed a comic book entitled Carrie *Ascaris* with a storyline that depicted a cartoon, dragon-like worm that was portrayed as evil and caused sickness. During this period of time, a unrelated incident occurred that is worth repeating. Though these intestinal worms proved common amongst children in the "low country", they were also common amongst all segments of the population in the south-eastern US. The janitor on our floor knocked on my office door one day and asked me if he could ask me a question. He presented me with a Coke bottle which had a 10" *Ascaris lumbricoides* in it. After I told him what it was, I asked him where he obtained it. He replied, "I woke up this morning with it in my mouth".

Ascaris, which normally inhabits the small intestine, will migrate through digestive tract sphincters during heavy worm bur-

dens. Some emerge from the anus. Some may even pass up the common bile duct to the liver. And.....some will pass through the pyloric sphincter into the stomach, through the cardiac sphincter into the oesophagus and ultimately end up in the mouth.

That was not the only case of this nature that occurred while I was at the university. A colleague related the following episode to me. At a pre-school in a suburb of Columbia, a teacher was supervising kids colouring. She noticed that no one was paying attention to what she was saying but instead staring at a child sitting near her. She was horrified to see that this child had an ascarid sticking out of his nose. When he pulled that worm out, another soon appeared and then another. The other children were horrified because they thought he was pulling out his "insides". The psychological and emotional distress in parasitized children can not be underestimated.



ICOPA XI





6 -11 August 2006 SECC Glasgow Scotland UK http://www.icopa-xi.org

ICOPA XI will be held next year in the "Armidillo" (Scottish Exhibition and Convention Centre) in Glasgow.

The organisers are pleased to announce that the following Parasitologists have accepted invitations to be plenary speakers:

Professor Keith Vickerman F.R.S., ICOPA X1 Honorary President

Professor Lord May of Oxford, President The Royal Society

Professor Monique Capron, Institut Pasteur de Lille, France

Professor George Cross F.R.S., The Rockefeller University, USA

Professor Robin B. Gasser, The University of Melbourne, Australia

Professor Kevin Marsh, KEMRI Wellcome Research Programme, Kenya

Professor Pat Nuttall, NERC Institute of Virology and Environmental Management, Oxford

Professor Robert Poulin, FRSNZ, University of Otago, New Zealand

In addition plenary speakers associated with the Genetics Society Symposium on The genetics of malaria in the host and vector will be:

Professor Fotis C. Kafatos, Imperial College, UK

Professor Sir David Weatherall, Weatherall Institute of Molecular Medicine, Oxford, UK



THE AUSTRALIAN SOCIETY FOR PARASITOLOGY INC

Secretariat: ASP Inc c/- RGSQ, 237 Milton Road, Milton QLD 4064 Fax: (07) 3367 1011 Email: rgsq@gil.com.au APPLICATION FOR MEMBERSHIP Tax Invoice ABN: 65 979 686 445

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*Seconded	by (Name):		(Signature)):		

*The Society's Constitution requires that the Applicant be known personally to at least one of the sponsors for membership. Both the proposer and seconder must be members of the Society.

This application must be accompanied by payment of one year's subscription in Australian dollars: \$80 for full members (Inc GST), \$20 for student members (Inc GST)[†], \$500 (Inc GST) for sustaining members.

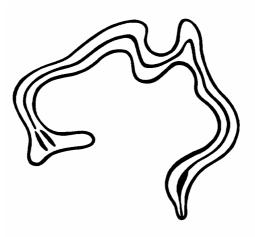
[†] Applicants for **student membership** must have the following statement signed.

I enclose a cheque or money order for A\$ payable to the "Australian Society for Parasitology Inc." OR please debit my (tick one)

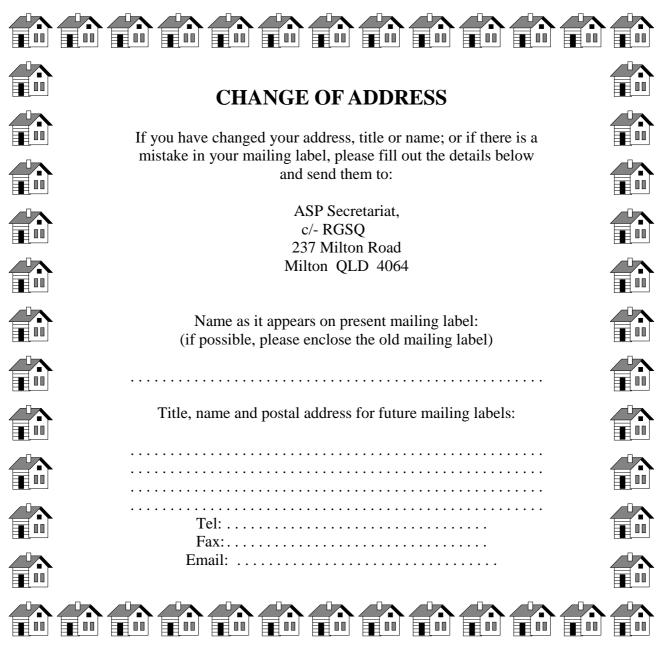
Applications for membership are considered by a Committee of the ASP and applicants duly notified.

Amount received	Office use only
Date elected:	
Elected by:	





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