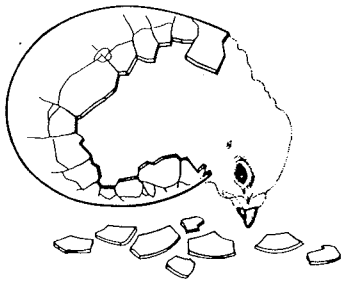

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No 54

Newsletter of the Australian Veterinary Poultry Association Summer 1996

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The Australian Veterinary Poultry Association is a Special Interest Group of the Australian Veterinary Association.

Membership is available to individuals and groups working in or showing an interest in any veterinary aspect of poultry.

The annual subscription is $30.00.

Enquiries to the Honorary Secretary

Dr SJ McGoldrick
Inghams Enterprises
Lytton Road
Hemmant, Queensland 4174
Mobile 0419 670 267 Fax 07 3824 3211

Contributions to this newsletter are welcome. Please send as typed copy and, preferably, also on disc to

Trevor Faragher
28 Parlington Street
Canterbury, Victoria 3126
Tel/Fax (03) 9882 6412

Letter from the President

A number of potentially divisive issues involving the poultry industry have occurred over the past six months. While the AVPA has not played a pivotal role in any of these issues, they have re-inforced the role that the Association plays in formulating policy. The three major issues are importation of cooked chicken meat, importation of finished live bacterial and viral vaccines and importation of embryonated eggs from Denmark.

Each of these issues involves the Commonwealth Animal Quarantine Inspection Service (AQIS), either as the primary source of policy (chicken meat and vaccines) or as the body from which approval is sought (egg import). As a special interest group of the Australian Veterinary Association, the AVPA becomes involved in these matters at the invitation of the AVA and our response is normally channeled back to AQIS via the AVA. Of, course there is not reason why we cannot make a submission directly to AQIS, and this has happened in the past.

Each of these issues has presented quite different technical issues, but the main difficulty that I have faced in attempting to put together a view that reflects the views of the AVPA is the quite divergent opinions expressed by AVPA members. This was particularly true of the vaccine importation issue.

One view was that no live finished product should be allowed into Australia under any circumstances. Another view was that overseas seed stock could be allowed but not for viruses with known genetic diversity or the capability of recombination with other strains – so importation of seed stock of Marek's disease virus would be acceptable but not seed stock of infectious bronchitis virus or infectious bursal disease virus.

The third view was that there should be no hindrance to the importation of any live finished product, as this would provide inexpensive vaccines for the poultry industry. Clearly there is a mixture of technical and commercial attitudes reflected in these different views, which are difficult to encapsulate in a statement representative of the Association as a whole.

I would be interested in your feedback on how the AVPA should deal with issues of this nature in the future. My view of our role is that we should provide technical information to policy makers and make them aware of issues that may otherwise be overlooked. In my opinion, this information should be provided without undue concern for commercial issues – not because commercial issues are unimportant but because there are other avenues for these issues to be raised and because AVPA should remain a technically-oriented organisation.

Peter Young

Talents for talent

The Chicken Meat Research and Development Committee and the Egg Industry Research and Development Committee of the Rural Industries Research and Development Corporation contribute about $2.5 million towards the national research, development and extension for the poultry industries.

This year the CMRDC funded the following projects into health problems of poultry and public health:

Continuing projects

Identification of in vivo expressed antigens of *Pasteurella multocida*

$70 961 – Dr Ben Adler, Monash

Improvement of chicken disease resistance by cytokines

$30 000 – Dr Richard Boyd, Monash

Expression of *Eimeria* genes in *Toxoplasma*

$25 000 – Dr John Ellis, U Technology, Sydney

Development of Marek's disease type 1 vaccine

$23 100* – Prof Greg Tannock, RMIT

Rapid and specific detection for avian bacterial pathogens

$40 000* – Dr Pat Blackall, QDPI

Field evaluation of mass vaccination techniques using V4 and heat-resistant V4 (HRV4) Newcastle disease virus vaccines on caged layers

$57 688* – Dr George Arzey, EMAI, NSW Ag

Development of DNA vaccines and techniques for cytokine manipulation for improved mucosal immunity in chickens

$34 652 – Prof Alan Husband, U Sydney

Infectious bursal disease virus: to determine whether current vaccination strategies prevent the emergence of very virulent IBDV in Australia

$61 590* – Dr Jagoda Ignatovic, CSIRO Geelong

Development of a new fowl pox vaccine

$65 000 – Profs Wayne Robinson & Peter Spradbrow, U Q'land

Epidemiological studies of salmonella using serotyping, plasmid analysis, chromosomal and PCR analysis

$50 290 – Dr Michael Heuzenroeder, IMVS, SA

Differentiation of virulent and avirulent *Campylobacter jejuni* and *Campylobacter coli* strains isolated from humans and chickens

$55 000 – Dr Victoria Korolik, RMIT

Rodent research

$20 000* – Grains R&D Corporation

The development of a model of abnormal bone development in broiler chickens as an aid in the assessment of welfare

$43 800 – A/Prof Wayne Bryden, U Sydney

New projects

The control of big liver and spleen disease

$64 563 – Dr Trevor Ellis, WA Dept Ag

Attenuation and characterisation of *Eimeria* spp for use in a living vaccine for avian coccidiosis

$68 650* – Dr Wayne Jorgensen, QDPI

Marek's disease vaccine seed attenuation and challenge trial

$15 126* – Dr Greg Underwood, Vic Dept Ag, Attwood

Marek's disease challenge trial 4

$28 200* – Dr Peter Young, QDPI

Development of improved serological diagnosis of *Mycoplasma synoviae*

$50 000* – Dr Glenn Browning, U Melb

Defined probiotic preparations for competitive exclusion of enteropathogens from poultry

$36 300 – Dr Julian Cox, U NSW

The effect of Salmonella Sofia on intestinal infection with other salmonellae in chickens

$59 588 – Dr Phillip Widders, Vic Dept Ag, Attwood

Alexandra Coombes continues work under a post-graduate scholarship on a chicken anaemia virus project, supervised by Dr Geoff Crawford, Charles Sturt University, NSW

The proposed total funding allocation (including commissioned Marek's disease research) by CMRDC for 1996-1997 is $1 606 372.

The proposed total funding allocation for 1996-1997 by Egg Industry Research and Development Committee is $1 470 329. This amount includes awards for projects and junior research fellowships. Jane Gaunson continues work under a post-graduate studentship on a project, supervised by Dr Kevin Whithear, Melbourne U.

Projects funded by the EIRDC included:

Effects of foot lesions and feather loss on the welfare of caged layers using anatomical and behavioural approaches

$12 542 – Drs Christine Lunam, Flinders University, & Philip Glatz, SA PPPI, Roseworthy

Establishment of the age and level of beak trimming which prevents chronic pain in the laying hen

$47 541 – Dr Philip Glatz, SA PPPI, Roseworthy

* Project funded jointly by the CMRDC and the EIRDC

Ingham imports Cobb meat bird

Inghams Enterprises Pty Ltd has constructed a private quarantine facility for the import of meat chicken great grandparent stock in egg form from the Cobb Breeding Co Ltd in England.

The company is introducing the new genetic material to provide a level of performance that will be more competitive on a world-wide basis.

The facility is located at Bungonia, near Goulburn NSW, and will be run under an approved quality management system supervised and audited by the Australian Quarantine and Inspection Service (AQIS).

These procedures include:

- premises construction and approval
- procedures for transfer of imported fertile eggs to the quarantine facility
- maintenance of negative pressure
- procedures for ingress and egress of personnel
- procedures for ingress and egress of materials
- procedures for disposal of birds after a prescribed disease outbreak
- procedure for staff approval and control
- procedure for clean out and disposal at the end of batch
- procedure for husbandry and management of the hatching eggs and birds
- monitoring and audit procedures and records/ documentation
- microbiological sampling procedures for:
  - serological testing of all SPF sentinel birds at 6 weeks
  - serological testing of all sentinel birds and a sample of quarantine birds to give a 99% confidence of detecting disease if there was an 0.5% disease prevalence at 9 weeks
  - samples of hatchery waste (shell debris and membranes) from each hatching tray at hatch
  - all pipped embryos at hatch
  - all mortalities that die within 10 days after hatching
  - 5% of healthy culls from 1 to 10 days
  - faeces from the floor of each holding carton during sorting at hatch.

Eggs will be imported from Denmark each 20 weeks to provide great grandparents. The eggs will be hatched in the facility and the day-old chicks will also be reared in the facility. Subject to the stock being free of the poultry pathogens determined by the AQIS regulations after a specified testing program at CSIRO AAHL, the birds will be released from the quarantine facility at 12 weeks of age.

The first import is programmed to occur in October 1996, resulting in the first meat chicken parent stock being placed in early 1998 and the first broilers being placed in later 1998.

By the year 2000 it is anticipated that all broilers produced by the Ingham company will be from imported stock.

Death in Venice

The phoenix is a fabulous Egyptian (or Arabian or Indian, etc) bird, the only one of its kind, according to Greek legend. It was said to live a certain number of years, at the close of which it makes in Egypt (or Arabia or India, etc) a nest of spices, sings a melodious dirge, flaps its wings to set fire to the pile, burns itself to ashes, and comes forth with new life. Paracelsus wrote about it and alchemists adopted it to symbolise their vocation. Its recent adoption as the symbol of a Chinese airline appears a little unfortunate however appropriate.

In the late 18th century, although the 1000-year-old Venetian Republic was not what it was, it could still be grand: an opera house was designed to be a symbol of an immortal if fading Venice, a phoenix perpetually rising out of the ashes and hence named La Fenice. Prophetically, the gilded gem burned down in 1836, but was rebuilt in a year.

Venetians and perhaps most Italians had become accustomed to the city's glorious backwardness – at least until La Fenice burned again this year while being renovated to make it safe from fires. The fire could not be doused because nearby canals had been drained for dredging. Mayor Massimo Cacciari pledged to rebuild it in two years – exactly the way it looked when it opened in 1792, all carved wood, gold and red velvet. Sprinklers were not mentioned.

Dame Joan was aghast but, having retired, did not emote a melodious dirge. Dame Kiri was less distraught. She checked her bookings, phoned her agent and offered to appear in the opening production in the new house – Rimsky-Korsakov's *Golden Cockerel.*

Rickets and TD in broilers

• Parkinson et al 1996 Res Vet Sci 60: 173-178, studied commercial broiler flocks of two distinct strains at weekly intervals from day-old to 21 days to assess the progressive endochondral ossification of the proximal tibiotarsus and the serum concentrations of 1,25-dihydroxycholecalciferol.

The incidence of defects of endochondral ossification differed in the two strains, strain B having an incidence of tibial dyschondroplasia of 10-70% and strain A an incidence of 10-20%. In strain B, 40% of the bone samples collected at 14 days of age also had lesions of calcium deficiency rickets. The concentration of 1,25-(OH)2D3 in the two flocks was similar in day-old chicks but was 40 to 50% lower at 7, 14 and 21 days of age in strain B during the development of the rachitic and dyschondroplastic lesions.

The authors concluded that TD in some broiler strains is related to an inherent predisposition to rickets and to lower serum concentrations of 1,25-(OH)2D3.

• A knowledge of the role and biological function of vitamin D and its principal hormone precursor, 25-(OH)D3, in avian nutrition is necessary because decisions on the use of 25-(OH)D3 as a supplement in replacement of cholecalciferol (D3) may soon become a reality. Soares et al 1995 Poultry Sci 74: 1919-1934, have written a timely review on this topic.

The concentration of 25-(OH)D3 in blood seems to be well correlated with dietary vitamin D intake or exposure to light. Feeding studies with 25-(OH)D3 suggest that it has nearly twice the activity of vitamin D3. Hatchability studies have shown that 25-(OH)D3 supports good fertility and hatchability, whereas hens fed only 1,25-(OH)2D3 did not have normal hatchability. Likewise, 1,25-(OH)2D3 seems to reach toxic levels at dietary concentrations only 2 to 3 times optimal dietary levels whereas feeding 25-(OH)D3 for extended periods at levels 8 to 10 times requirement seems to have no adverse effects. It seems that 25-(OH)D3 is the most active metabolite of vitamin D3, ultimately capable of supporting both cellular functions and embryonic development in chickens and turkeys when fed as the sole source of vitamin D3.

The use of 25-(OH)D3 as a feed supplement seems to be limited only by costs and availability of sufficiently stable preparations that can be added to diets.

REV in USA

Twenty years ago, reticuloendotheliosis was detected in vaccinated chicken flocks in Australia and Japan as a runting disease characterised by immunodepression and abnormal feathering. For the first time in the USA, Fadley et al 1966 Avian Pathology 25: 35-47, have detected REV in chickens of two adult commercial broiler breeder flocks with lesions of visceral lymphomas with bursal involvement. The source of the REV infection was a REV-contaminated commercial fowl pox vaccine.

ND in UK – after 12 years

Newcastle disease has been confirmed in the UK for the first time for 12 years. All birds in the infected flock were slaughtered immediately and compensation will be available for uninfected birds that have to be slaughtered. A protection zone of at least 3 km and an extended surveillance zone of at least 10 km have been established. Movement controls in the surveillance zone include all birds kept in captivity, including racing pigeons.

In the last case of ND in the UK in 1984, 22 confirmed cases led to the slaughter of 800 000 birds and compensation payments of almost £2 million. The relatively high level of vaccine use and quarantine controls of imported birds are believed to have prevented further outbreaks.

Comparing NDV from wild birds and turkeys

Seventeen Newcastle disease virus isolates obtained from cormorants, turkeys, a pelican and a gull in Canada and the USA collected in 1975, 1990 and 1992 were analysed for relatedness by monoclonal antibody profiling and nucleotide sequence analysis by Heckert RA et al 1966 Can J Vet Res 60: 50-54.

No difference in the antigenicity of these 17 NDV, as determined by monoclonal antibody binding patterns, was seen. The amino acid sequences obtained by nucleotide sequencing for the isolates were consistent with velogenic (ICPI > 0.7) NDV and virtually identical regardless of the species, year of isolation or location. However, the NDV isolated from a cormorant in 1975 showed marked differences from the NDV isolated from cormorants and turkeys in 1990 and 1992.

The authors conclude that the 1990 and 1992 ND outbreaks were caused by the same epizootic virus and that the population of NDV in these wild birds may be very stable. That no distinction could be made between the NDV isolated from turkeys and wild birds indicted that velogenic NDV circulating in cormorants in 1992 was transmitted into flocks of turkeys on free-range near the cormorants in North Dakota. The authors emphasise the danger of rearing commercial birds in conditions that allow wild birds to mix freely with domestic poultry.

IBV in pheasants

The isolation and identification of infectious bronchitis virus from pheasants with signs of sneezing, lesions of nephritis and high mortality (1000 of 7000 breeders) was reported by Gough et al 1996 Vet Rec 138: 208-209. The aetiological role of the IBV is unclear because pheasant coronavirus antibodies were also detected in convalescent sera from the affected flocks.

IBV antibodies have been detected since in many sera from pheasants in various parts of Britain, often in the absence of clinical disease. The authors intend to study the antigenic relationships between pheasant coronaviruses and strains of IBV.

Botulism in California

Avian mortality from botulinum Type C toxin continues on the Salton Sea in southern California's Imperial Valley. By 15 September, 10 364 birds had been picked up, including 6565 white pelicans and 1028 endangered brown pelicans. This is the largest known mortality of pelicans in US history. State and Federal authorities have been cleaning up and monitoring. Sick brown pelicans are housed and given supportive care until they can be released.

Field investigations by the National Wildlife Health Centre at Madison, Wisconsin, include identifying the geographic distribution of toxin and the role of tilapia, the predominant species of fish in the Salton Sea, as a source of toxin. The toxin has been identified in about 40% of dead tilapia and in about 10% of live, apparently healthy fish. Fish are presumed to be the source of the toxin for the fish-eating birds that are dying. Whether other sources of toxin exist that may be available to the many migratory waterfowl that arrive in the autumn, is unknown.

EEE kills emus

The natural cycle in the USA for infection for Eastern equine viral encephalomyelitis (EEE) and its Western cousin (WEE) is between birds and/or small mammals and mosquitoes. Both infections have caused outbreaks of disease in poultry and various species of farmed birds that are exotic to the Americas.

That there have been a human fatality and deaths in horses and five emus during October this year in the States along the eastern seaboard of the USA is of concern but is not unexpected in late summer after hot and excessively rainy weather. The mosquito, *Culiseta melanura*, the endemic vector for EEE virus, is responsible for its spring-summer amplification by a mosquito-water bird cycle in freshwater swamps. Bird movements, notably the glossy ibis, take the virus into other areas where other hosts – farmed pheasants, quail, emus and ostriches – are infected. A vaccine is available.

Listeriosis in SA

Five cases of listeriosis, which were associated with an Adelaide hospital, were reported within 48 h of 20 September 1996. One case died. The common factor was chicken sandwiches prepared in the hospital with diced chicken from a commercial supplier. *Listeria monocytogens* O1 was isolated from the blood of all cases, from the diced chicken, and from swabs of the deboning area and samples of chicken where the chicken was prepared. Further typing of the organisms by pulsed field gel electrophoresis confirmed the epidemiological link. Chicken products manufactured by the plant were withdrawn from sale and recalled on 27 September. Investigations are continuing. These cases bring the number notified in SA in 1996 to 14, the most notified since 1993 when listeriosis was listed as notifiable. [*Comm Dis Intell* 1996 20:465]

Featherbedding asthmatic adolescent children

Recent concern about environmental influences on childhood asthma has focused on the possible hazards of outdoor pollutants, particularly those derived from vehicle exhausts, such as nitrogen dioxide and ozone. Less attention has been directed towards the indoor environment, although many people spend upwards of 90% of their time indoors.

Certain indoor pollutants, such particulates and nitrogen dioxide, may be present at higher concentrations indoors, and domestic allergens, such as house dust mites and pet dander, are a major source of allergenic sensitisation that relate specifically to asthma in children.

The idea that feather pillows increase the risk of allergenic asthma is widely accepted, but there was little information on the topic until publication of a case-control study drawn from a cross-sectional survey of allergic diseases among 18 203 secondary school pupils in Sheffield, UK, in 1991 (Strachan DP and Carey IM 1995 Br Med J 311: 1053-1056). Their study suggests a substantially lower risk of troublesome asthma among children using feather bedding relative to those using non-feather bedding.

At first sight, the most likely explanation for this observation was avoidance or removal of feather bedding by families of an asthmatic child or by allergic parents. The inverse ratio of severe asthma to feather pillows, however, remained strong and highly significant even after restriction to non-allergic families who denied making changes to the bedroom.

This raises the intriguing possibility that non-feather substitutes may pose a greater risk of asthma than any allergens associated with feather bedding. Further epidemiological studies are required to confirm the apparent risk associated with non-feather pillows. If this association is causal, then the authors estimate that it accounts for 53% of the severe asthma in their population.

Duck plague in Vietnam

Duck plague, a disease caused by a herpes virus, can kill up to 90% of affected flocks. ACIAR has commissioned the University of Queensland, in collaboration with CSIRO and National Veterinary Company/Veterinary Research Centre, Vietnam, to produce the most effective vaccine to protect ducks in Vietnam.

Data on the strains of herpes virus in Vietnam will be gathered and rapid diagnostic tests developed for early detection of outbreaks, which can then be contained by vaccination with a local vaccine. Routine vaccination of ducks is not practised at present.

The project will train Vietnamese scientists and fund the establishment in Vietnam of CD–ROM facilities through CAB International to give them access to veterinary publications.

Non-specific results with CAV-ELISA

A sensitive and specific serological test for antibodies to chicken anaemia virus is still sought. The IFA test suffers from non-specific reactions and some lack of sensitivity. The SN test is cumbersome and time-consuming. ELISAs, which can be automated, are rapid but some results are non-specific.

Investigations with SPF chickens at CSIRO Animal Health, Parkville, have shown that CAV-specific reactions in naturally infected chickens can be detected by ELISA within two to three weeks of initial infection. Antibodies then persists for at least 20 weeks, hence transitory reactions can be presumed to be non-specific. In the period between the initial reactions and a bleed that gives negative results, the chickens must be presumed to be infected.

Michalski et al 1996 Avian Pathology 25:245-254, at the same laboratory, found that on some occasions up to 18% of reactions in chickens in some isolators containing SPF chickens were positive. The overall reaction rate in these isolators was 2.7%. Most of the chickens that gave positive reactions on these occasions gave negative reactions on subsequent bleeding, indicating that the previous reactions were false positives.

The composition of protein in the sera that appeared CAV-negative or -positive in the ELISA were compared using chromatographic techniques. This showed that the antigen-binding activity in the false-positive sera was associated with a protein fraction (fraction 2) that was different from that found in positive sera. The fraction in the false-positive sera has been characterised but no simple treatment to remove the reaction has been found.

DNA tests for *Haemophilus paragallinarum*

The difficulties associated with the conventional culture methods for *Haemophilus paragallinarum*, the causative agent of infectious coryza, make an alternative approach based on a DNA probe or polymerase chain reaction (PCR) assay attractive.

Chen, Miflin, Zhang and Blackall 1996 Avian Diseases 40: 398-407, reported the development of species-specific probes for *H paragallinarum* from a genomic DNA library and a PCR assay based on primers designed from the sequence of one of these probes.

Two PCR tests, termed HPG-1 and HPG-2, were shown to be specific. A method for using the HPG-2 PCR test directly on sinus swabs was developed. Using this method, there was 100% agreement between culture and the direct HPG-2 PCR for the 36 swabs processed.

The DNA probes and PCR tests appear to be useful diagnostic methods for the detection of infectious coryza. The tests can be used as confirmatory tests after the isolation of a haemophile organism. As well, the HPG-2 PCR test appears to be an alternative to culture.

Aversive reactions of turkeys to stunning gas mixtures

Gas stunning has been proposed as a less stressful alternative to the use of electrical stunning baths in the pre-slaughter handling of poultry.

In previous studies, Dr Mohan Raj at Bristol measured the time before loss of brain function in turkeys exposed to different stunning gas mixtures. High concentrations of carbon dioxide produced rapid loss of consciousness but appeared to cause some distress to the birds.

Raj 1996 Vet Rec 138: 592-593, has described further studies in which he examined the behavioural response of turkeys exposed to the different gas mixtures along a tunnel leading to a feeding chamber. The intensities of head shaking, gasping and vocalisation were recorded, and attempts to return along the tunnel to the normal atmosphere of the roosting chamber.

Raj concluded that a high (73%) concentration of CO_2 caused more significant aversive reactions than either argon alone or the mixture with 30% CO_2. The high argon atmosphere and the argon/CO_2 mixture did cause some aversive behaviour but the stress was likely to be small compared with that involved in the shaking and pre-stun electric shocks, received at the entrance to the waterbath, during electric stunning.

Recombinant FPV vaccines against MDV

Three serotypes of Marek's disease virus have been described: serotype 1 includes pathogenic isolates of chicken origin and their attenuated derivatives, serotype 2 includes the naturally apathogenic isolates of chicken origin, and serotype 3 includes the naturally apathogenic isolates of turkey origin known as turkey herpesvirus (HVT). Vaccines derived from all three serotypes offer different levels of protection against the disease either alone or in bivalent or trivalent combinations.

Glycoprotein B (gB) is highly conserved among herpesviruses, including all 3 serotypes of MDV. Nazerian, Witter, Lee & Yanagida 1996 Avian Diseases 40: 368-376, used recombinant fowl pox viruses (rFPV) expressing gB, other glycoproteins, and tegument proteins of serotype 1 MDV as well as those expressing gB from serotypes 2 and 3 of MDV, either alone or in combination with HVT, to study their protective efficacy against MD in chickens with MD maternal antibodies.

The bivalent rFPV/gB1 + cell-free HVT vaccine was more protective than cell-free HVT alone and, thus, may be the most protective, cell-free MD vaccine thus far described.

A Marx-eyed view of the hen-house

Higgledy Piggledy, my white hen;
She lays eggs for gentlemen.
You cannot persuade her with gun or lariat
To come across for the proletariat.

Dorothy Parker

Australian Veterinary Poultry Association

Scientific Meeting

21 – 22 November 1966

Victorian Institute of Animal Science, Attwood

Thursday 21 November

	9.30 am	**Coffee and Registration**
10.00	**Keynote Lecture** Dr Rod Reece	Broiler proventriculitis, wet litter and stunting syndrome
10.40	Dr Phil Lehrbach	In-ovo technology for control of IBDV – safety and efficacy of V877 virus/antibody blend vaccine
11.00	Dr Peter Scott	Temperature differential sanitisation of hatching eggs
11.20	Dr Kevin Whithear's group	Colisepticemia
11.40	Dr Kevin Whithear's group	Mycoplasma synoviae
12.00 pm	Discussion	
	12.15 pm	**Lunch**
1.30	Dr Kevin Whithear's group	Mycoplasma gallisepticum
1.50	Dr Kevin Whithear's group	Mycoplasma gallisepticum
2.10	Dr Kevin Whithear's group	Mycoplasma gallisepticum
2.30	Dr Kevin Whithear's group	Mycoplasma gallisepticum
2.50	Discussion	
	3.00 pm	**Afternoon tea**
3.20	Mr David Tinworth	Commercial vaccines of the future
3.50	Dr Clive Jackson	Conference report – World poultry science India
4.10	Dr Peter Scott	Conference report – USA poultry disease conferences
4.30	Dr Greg Underwood	Conference report – Marek's disease symposium USA
4.50	Discussion	

7.00 Dinner at the Westmeadows Tavern, Attwood ($20.00 per head)

Friday 22 November

	8.45 am	**Coffee**
9.00 am	Dr Sandra Sapats	Characterisation of Australian isolates of IBDV
9.20	Dr Phil Lehrbach	Nucleotide sequence analysis of Australian IBDV isolates with particular reference to vaccine culture and tissue-adapted strains
9.40	Dr Christine Payne	Development of an ELISA for BLS and progress on a vaccine
10.00	Dr Grant Richards	Coccidiosis– New laboratory and vaccines
10.20	Discussion	
	10.30 am	**Morning tea**
10.50	Dr David DeLaney	Marek's trial results using RMIT clones as vaccines
11.20	Dr Peter Groves	Marek's trial results at ARI and Baiada using commercial vaccines
11.40	Dr Clive Jackson	Field trial results using CR/6 Marek's vaccine
12.00 pm	Discussion	
	12.15 pm	**Lunch**
1.00	Dr Sarah Khan	Importation – AQIS perspectives
1.30	To be advised	Importation – Industry concerns
2.00	Discussion	
2.30	Dr Sharon Cuningham	Chicken anaemia virus ELISA
2.50	Dr Greg Underwood	Field Report – recent ILT outbreak in Victoria
3.05	Dr Roy Mason	Field Report – uric acid deposits in cervical vertebrae of ostriches
3.20	Dr Grant Richards	Field Report – emu aspergillosis
3.35	Close	

Accommodation may be booked at either of two motels.

- Airport Motel, 33 Ardlie Street, Attwood 3040
  Tel (03) 9333 2200 Fax (03) 9333 2696
  Cost is $75 per single or double room. This motel is closer to Attwood.
- Tullamarine Airport Motor Inn, 265 Mickleham Road, Tullamarine 3043
  Tel (03) 9338 3222 Fax (03) 9338 3878
  Cost is $87single; $95.50 double. This motel has a higher rating.

For further information, contact Greg Underwood, VIAS
Tel (03) 9217 4200 Fax (03) 9217 4299