AUSTRALIAN AND NEW ZEALAND COLLEGE OF VETERINARY SCIENTISTS

MEMBERSHIP GUIDELINES

Veterinary Parasitology and Parasitic Diseases

ELIGIBILITY REQUIREMENTS OF CANDIDATE

The candidate must meet the eligibility prerequisites for Membership outlined in the *Membership Candidate Handbook.*

OBJECTIVES

To demonstrate that the candidate has acquired a sufficient level of postgraduate knowledge and skill in the field of Veterinary Parasitology and Parasitic Diseases, to be able to give sound advice in this field to veterinary colleagues.

To demonstrate that the candidate is an advanced veterinary practitioner in the field of veterinary parasitology, representing a middle-tier of knowledge, competence and experience.

LEARNING OUTCOMES

1. The candidate will have **sound[1] knowledge** of:
   - 1.1. The concepts of host-pathogen-environment interactions to produce parasitic disease.
   - 1.2. The aetiology, pathogenesis, and pathological features of:
     - 1.2.1. Arthropod, helminth and protozoal diseases of companion and commercial animals, including poultry in Australia and New Zealand.
     - 1.2.2. Major parasitic animal diseases exotic to Australia and New Zealand.
   - 1.3. Common diagnostic techniques relevant to Veterinary Parasitology and Parasitic Diseases
     - 1.3.1. Principles, limitations and interpretation of routine laboratory procedures (clinical, visual, microscopic and gross)
     - 1.3.2. Principles, limitations and interpretation of available immunodiagnostic and molecular techniques, including robotic/AI assisted methodology.
   - 1.4. Principles of diagnosis, epidemiology and effects on production of Veterinary Parasitic Diseases
   - 1.5. Treatment, control and prevention of Veterinary Parasitic Diseases, including treatment thresholds and effects on production in production animals and principles of control programs.

1.6. Treatment, control and prevention of Veterinary Parasitic Diseases in companion animals.

1.7. Investigation of loss/lack of treatment efficacy and management of drug resistance (in both companion and production species).

1.8. Parasitic zoonoses, including the endoparasites and ectoparasites of companion and commercial animals that may infect humans, the Public Health aspects of parasitic zoonotic diseases, and the epidemiology and control of these zoonoses.

1.9. Key parasitological terms, product labelling requirements (APVMA) and awareness of appropriate parasitology resources available for reference (e.g. WAAVP, Paraboss, VICH). Principles, limitations and interpretation of routine laboratory procedures (clinical, visual, microscopic and gross)

2. The candidate will have **basic[1] knowledge** of:

2.1. Principles of disease related to *pathological processes* (mechanisms of cell injury, inflammation and repair, vascular disturbances, disorders of growth, and pigmentations and deposits) and their *causes* (physical, chemical, infectious, genetic and immune-mediated).

2.2. Pathobiology of organ systems, including the *structural* and *functional* changes at the subcellular, cellular, tissue and organ levels.

2.3. Regulatory framework, product development pathway and design of research studies to support product registration.

2.4. The aetiology, pathogenesis and pathological features of major parasitic diseases of aquatic species particularly commercially-farmed species, laboratory animals, and wildlife (including domestic bees) and zoo species in Australia and New Zealand.

2.5. Diagnostic (technical and interpretive) aspects of related disciplines, including Veterinary Epidemiology, Veterinary Pathology, Veterinary Microbiology, Immunology and Toxicology, including routine laboratory procedures.

3. The candidate will have **sound**[2] expertise in the ability to**:**

3.1. Name, describe and identify the common internal parasites (nematodes, cestodes, trematodes, protozoans) and ectoparasites (insects, arachnids) and diagnose the internal parasitoses and ectoparasitoses of the common companion and commercial animals.

3.2. Examine faeces or urine from companion or commercial animals for parasites, using standard techniques, and identify any parasitic structures present.

3.3. Examine a blood sample from an animal and identify intra- and intercellular parasites using routine methods, including immunological tests where commercially available.

3.4. Carry out a routine necropsy on a common companion or commercial animal and, using standard methods, recover and preserve helminths present in the gastro-intestinal tract, liver or lungs, identify the parasites, and estimate the total population and percentage of individual species.

3.5. Examine an animal for ectoparasites and identify the parasites using routine methods and immunological tests where available. Know where to seek help in the identification of ectoparasites on zoo animals and wildlife.

3.6. Apply appropriate tests to identify or confirm anthelmintic resistance in helminth parasites of **ruminants** and **horses**. Based on the results of the tests and knowledge of the management system, suggest alternative control measures for farms and horse establishments.

3.7. Provide, to veterinarians and non-veterinarians, information and advice on **parasitic infections** in animals, using concise clear verbal and written communication.

3.8. Plan an appropriate investigation into apparent treatment failure.

3.9. Interpret and explain product labels.

3.10. Apply relevant reference tools and resources in a practical setting (including on-line resources).

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1. Knowledge levels:

Sound knowledge — candidate must know all of the principles of the topic including some of the finer detail, and be able to identify areas where opinions may diverge. A middle level of knowledge.
Basic knowledge — candidate must know the main points of the topic and the core literature

2. Skill levels:

Sound expertise — the candidate must be able to perform the technique with a moderate degree of skill, and have moderate experience in its application. A middle level of proficiency.
Basic expertise — the candidate must be able to perform the technique competently in uncomplicated circumstances

EXAMINATIONS

For information on both the standard and format of the Written and Practical/Oral examinations, candidates are referred to the *Membership Candidate Handbook.* The Member examination has **two separate, components**:

1. **Written Papers** *(Component 1)*
    - **Written paper 1:** Principles of subject (two hours)
    - **Written paper 2:** Applied aspects of subject (two hours)

2. **Image Based Oral Examination** *(Component 2)*
    - **Image based (**one hour)

The written examination will comprise two separate written papers taken on the same day. There will be an additional 15-minutes perusal time for each paper, during which no typing is permitted. There is no choice of questions. Marks allocated to each question and to each subsection of questions will be indicated on the written papers. The examination is worth a total of 120 marks.

Written Paper 1:
Written Paper 1 assesses knowledge of the principles of Veterinary Parasitology and Parasitic Diseases (including disease mechanisms associated with parasites) as described in the Learning Outcomes. The candidate should be able to give examples of the application of the principles of pathobiology to specific parasitic diseases of animals. The candidate should be aware of recent advances in pathobiology (as covered in recent review articles). Questions may be short essay type or a series of shorter answer sub-questions.

Written Paper 2:
Written Paper 2 assesses the candidate's ability to apply the principles of Veterinary Parasitology and Parasitological Diseases, with an emphasis on knowledge of the aetiology, pathogenesis, pathological features, epidemiology, diagnosis, treatment and control of parasitic diseases of animals, as described in the Learning Outcomes. Emphasis will be on domestic species and major endemic diseases, but the candidate should have knowledge of important parasitic diseases of other animal species and of major exotic parasitic diseases of animals. Questions may be short or long essay type or a series of shorter answer sub-questions.

Image Based Oral Examination:
This examination assesses the ability to identify the common parasites of the domestic animals, and to detect, describe and interpret gross and microscopic (including histological) changes in organs and tissues associated with parasitic infections. In all cases the host species and the site of infection will be given. The candidate will be required to evaluate projected gross and microscopic images and answer related verbal questions in a face-face online setting. The examination is a total of 60 marks.

RECOMMENDED REFERENCES

The candidate is expected to read widely within the discipline, paying attention to areas not part of their normal work experiences. Candidates should have ready access to the following references and have a sound knowledge of the contents

Textbooks**

- Domenico Otranto, Richard Wall (2024) Veterinary Parasitology, 5th Edition Wiley-Blackwell
- Anne M. Zajac, Gary A. Conboy, Susan E. Little, Mason V. Reichard (2021) Veterinary Clinical Parasitology, 9th edition Wiley-Blackwell
- Ian Beveridge, David Emery (2015) Australasian Animal Parasites Inside and Out, https://www.parasite.org.au/publications/australasian-animal-parasites-inside-and-out/

Journals (past 3 years)**

- *Veterinary Parasitology* - *https://www.sciencedirect.com/journal/veterinary-parasitology*
- *Veterinary Parasitology: Regional Studies and Reports* - *https://www.sciencedirect.com/journal/veterinary-parasitology-regional-studies-and-reports*
- *Australian Veterinary Journal - [content relevant to parasites] https://onlinelibrary.wiley.com/journal/17510813*
- *International Journal for Parasitology* - *https://www.sciencedirect.com/journal/international-journal-for-parasitology*
- *The International Journal for Parasitology – Drugs and Drug Resistance* - *https://www.sciencedirect.com/journal/international-journal-for-parasitology-drugs-and-drug-resistance*
- *Trends in Parasitology* - *https://www.cell.com/trends/parasitology/home*

Websites *

Candidates are expected to have awareness of the resources available on these websites and how they can be utilized.

- https://paraboss.com.au/
- https://www.waavp.org/education/published-guidelines.html
- https://vichsec.org/guidelines/

ADDITIONAL REFERENCES

Candidates may find these references useful for evaluating cases and broadening breadth of species knowledge. Only a basic knowledge of their content relevant to parasites is required, and candidates should seek mentor guidance regarding study of these references or others according to candidate background and pathology experience.

Textbooks*

- McGavin MD, Zachary JF. Pathologic Basis of Veterinary Disease 7th edn. Elsevier (2021) (Chapters 1 to 6).
- Noga EJ. Fish Disease: Diagnosis and Treatment. Blackwell Publishing 2010
- Ladds PW. Pathology of Australian Native Wildlife CSIRO Publishing (2009)
- Avian Disease Manual. 8th edn. The American Association of Avian Pathologists. (2019)

- Schmidt, RE, Reavill, DR, Phalen, DN. Pathology of Pet and Aviary Birds 2nd edn.Wiley (2015).

Journals (past 3 years)*
International Journal for Parasitology: Parasites and Wildlife -
https://www.sciencedirect.com/journal/international-journal-for-parasitology-parasites-and-wildlife

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Definitions of Textbooks
**Recommended textbook – candidates should own or have ready access to a copy of the book and have a sound knowledge of the contents.
*Additional textbooks – candidates should have access to the book and have a basic knowledge of the contents.

Definitions for journals:
**Recommended Journal – candidates should have ready access to either print or electronic versions of the journal and have a sound knowledge of the published articles in the subject area.
* Additional Journal – candidates should be able to access either printed or electronic versions of the journal and have a basic knowledge of the published articles in the subject area

FURTHER INFORMATION

For further information contact the College Office

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