AUSTRALIAN AND NEW ZEALAND COLLEGE OF VETERINARY SCIENTISTS

FELLOWSHIP GUIDELINES

Veterinary Oncology

ELIGIBILITY

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

2. Membership of the College, in Small Animal Medicine, must be achieved prior to the Fellowship examination.

OBJECTIVES

To demonstrate that the candidate has attained sufficient knowledge, training, experience and accomplishment to meet the criteria for registration as a Specialist in Veterinary Oncology.

RESPONSIBILITY

It is the candidate's responsibility to ensure they have fulfilled all the requirements of the training program guidelines prior to submitting their credentials for eligibility for examination.

LEARNING OUTCOMES

1. The candidate will have a **detailed**[1] knowledge of:

    1.1. The aetiology, including but not limited to physical, chemical, inflammatory and viral carcinogenesis of oncological diseases of cats and dogs.

    1.2. The pathogenesis of oncological diseases of cats and dogs.

    1.3. The pathology, diagnosis, treatment and management of oncological diseases of cats and dogs.

[1] **Knowledge levels**:
Detailed knowledge — candidates must be able to demonstrate an in-depth knowledge of the topic including differing points of view and published literature. The highest level of knowledge.
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 major literature.

1.4. The cellular, genetic, immunological, molecular and biological mechanisms of tumour development, progression and metastasis.

1.5. The principles of chemotherapy (including but not limited to cytotoxic agents, small molecule inhibitors and monoclonal antibodies) including indications, mechanism of action, toxicity, interactions, resistance and response.

1.6. The pharmacology of cancer chemotherapy including pharmacokinetics, pharmacogenomics and pharmacodynamics.

1.7. The fundamentals and interpretation of cytology, irrespective of collection method, of tumour types affecting domestic animals.

1.8. The diagnostic techniques as they relate to cancer, and their interpretation, including but not limited to flow cytometry, electrophoresis, polymerase chain reaction, immunocytochemistry and immunohistochemistry.

1.9. The staging and grading criteria of common veterinary cancers.

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

2.1. The principles of and practical applications for radiation therapy, including radiobiology, effects of ionizing radiation on cancer growth and on normal tissues.

2.2. The fundamentals and interpretation of cytology, irrespective of collection method, of tumour types affecting non-domestic animals.

2.3. Molecular diagnostic techniques as they relate to cancer, and their interpretation.

2.4. The principles of surgery in general, and specifically in relation to oncologic disease.

2.5. The interpretation of, and applications for, imaging modalities used in the diagnosis and staging of cancer in common domestic animals. These modalities include, but are not limited to radiology, ultrasonography, myelography, computed tomography (CT) and positron emission tomography – computed tomography (PET - CT), magnetic resonance imaging (MRI), nuclear scintigraphy and sentinel lymph node mapping.

2.6. The pathophysiology of organ dysfunction and the principles of systemic disease as relevant to the discipline of oncology in common domestic animals.

2.7. The comparative aspects of veterinary and human oncology.

2.8. The use of laboratory animals in cancer research, including investigation of fundamental cancer biology, and drug discovery and development.

2.9. The common statistical terms used in veterinary journals and be able to interpret common statistical tests used in veterinary oncology.

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

3.1. The aetiopathogenesis, epidemiology, pathology, diagnosis, and clinical management measures for common cancers of production animals, horses and non-domestic vertebrates.

3.2. The aetiopathogenesis, epidemiology, pathology, diagnosis, and clinical management measures for oncological diseases of domestic pets including but not limited to rodents, ferrets and birds.

3.3. The fundamentals and interpretation of histopathology, irrespective of collection method, of tumour types affecting non-domestic animals.

3.4. The interpretation of, and applications for, endoscopy, including biopsy where appropriate, of the respiratory, alimentary, and genitourinary tracts, specifically in relation to oncologic disease.

3.5. The interpretation of, and applications for, cerebrospinal fluid tap, specifically in relation to oncologic disease.

4. The candidate will be able to do the following with **detailed**[2] expertise:

4.1. Recognise, investigate and evaluate complex oncologic diseases and paraneoplastic syndromes.

4.2. Formulate sound, rational approaches to the clinical management of complex oncologic diseases and paraneoplastic disease conditions.

4.3. Evaluate and incorporate new scientific information relevant to the practice of veterinary oncology.

4.4. Administer cytotoxic chemotherapy with due regard to the safety of the patient, medical personnel and patient caregivers.

4.5. Biopsy multiple tissue types using appropriate techniques including fine needle aspiration and cutting needle core samples, with and without imaging guidance; bone marrow biopsy and aspiration; thoracic, abdominal, and pericardial centesis.

4.6. Communicate effectively with clients, referring veterinarians and peers to provide high quality care for animals with the most efficient use of resources in a manner that is responsive to the owner's needs and wishes.

4.7. Advance knowledge in veterinary oncology through clinical innovation, research and publication.

[2] **Skill levels:**

Detailed expertise – the candidate must be able to perform the technique with a high degree of skill and have extensive experience in its application. The highest level of proficiency.

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

Refer to the *Fellowship Candidate Handbook*, Section 5. The Fellowship examination has **four separate, autonomous components**:

1. **Written Paper 1** *(Component 1)*
   Principles of the Subject (four hours)

2. **Written Paper 2** *(Component 2)*
   Applied Aspects of the Subject (four hours)

3. **Practical Examination** *(Component 3)*
   Practical **(**two hours)

4. **Oral Examination** (*Component 4*)
   Oral (up to two hours)

The written examination will comprise of two separate four-hour written papers taken on two consecutive days. There will be an additional 20 minutes perusal time for each paper, during which no typing is permitted. The exam may include a series of short answer questions, multiple choice questions or may require an essay-type response.

Written Paper 1:
This paper is designed to test the candidate's knowledge of the principles of oncology as described in the Learning Outcomes. Answers may cite specific examples where general principles apply but should primarily address the theoretical basis underlying each example.

Written Paper 2:
This paper is designed to a) test the candidate's ability to apply the principles and pathophysiology of oncology to particular cases, problems or tasks and b) test the candidate's familiarity with the current practices and current issues that arise from activities within the discipline of oncology in Australia and New Zealand.

Paper 1 and Paper 2 are worth a total of 240 marks each and all questions must be answered. Allocated marks to each question/sub question will be clearly indicated on the written paper.

Practical Examination:
The practical examination is designed to test practical aspects of the Learning Outcomes. To pass this examination, candidates must be able to discuss complex case presentations and interpret the results of diagnostic tests. Candidates must demonstrate deep understanding and practical application of equipment used in oncology. Written answers will be required. No perusal time will be given for the practical exam.

The practical examination will consist of a series of questions with sub-questions, equating to a total of 120 marks. Marks allocated to each question and to each sub-section will be clearly

indicated on the examination paper. Diagnostic imaging studies (including radiographs, ultrasound images, CT images and MRI images), photographs of cytology and histopathology slides, clinical pathology test results, ECGs and photographs of gross tissue specimens or animals are likely to be used during this examination.

Oral Examination:
The oral examination is designed to test practical aspects of the Learning Outcomes. To pass this examination, the candidate must be capable of justifying their views in a professional and scientific manner, on important and controversial topics in Veterinary Oncology. Candidates may be asked to discuss detailed case material. Cases are presented with supporting questions asked verbally in a face-to-face setting. The oral examination equates to a total of 120 marks. Diagnostic imaging studies (including radiographs, ultrasound images, CT images and MRI images), photographs of cytology and histopathology slides, clinical pathology test results, ECGs and photographs of gross tissue specimens or animals are likely to be used during this examination.

TRAINING PROGRAMS

Refer to the *Fellowship Candidate Handbook*, Section 3.3.

TRAINING IN RELATED DISCIPLINES

Refer to the *Fellowship Candidate Handbook*, Section 2.4.2.

Candidates for Fellowship in Veterinary Oncology must spend supervised time in each of the related disciplines training as per the following:

- Radiation Therapy (80 hours, two weeks) with a veterinary or human radiation oncologist to participate in and discuss clinical management of patients receiving radiation therapy, radiation planning, dosimetry, and physics related to clinical radiation therapy.
- Diagnostic Imaging - radiology, ultrasonography, CT, MRI and others as available (80 hours, two weeks)
- Small Animal Surgery (80 hours, two weeks), preferably with a surgical oncologist however a surgeon with a high soft tissue surgical load will be accepted; training must include the surgical management of patients being treated for cancer.
- Small Animal Medicine (80 hours, two weeks) including the medical management of patients with diseases other than cancer that might be encountered during oncology practice
- Diagnostic clinical cytology (40 hours, one week)
- Surgical histopathology (40 hours, one week)
- Elective discipline (candidate to select discipline e.g. molecular oncology, molecular genetics and diagnostics) (80 hours, two weeks)

The TRD proposal and report templates can be found on the College website under Fellowship – Fellowship Forms.

SECONDARY SUPERVISOR:

Fellowship Candidates must have a minimum of TWO (2) Supervisors during their Fellowship training program. The Primary Supervisor must have a recognised specialist qualification in Veterinary Oncology. The secondary supervisor can be a board-certified off-site Oncologist or on-site internal medicine specialist, radiation or surgical oncologist (a board certified surgeon who has completed additional training in surgical oncology). Both the primary and the secondary supervisor should be familiar with the ANZCVS fellowship process, either a fellow themselves or having been involved in the training of fellowship candidates.

The role of the primary supervisor is to guide the candidate through the training program, as approved by the TCC, and to ensure that the candidate adheres to that program, so that the candidate emerges prepared for the examination and able to undertake the roles of a veterinary oncology specialist. The primary supervisor is supported in this role by the secondary supervisor(s). The primary and secondary supervisors must be familiar with the requirements of the relevant Subject Guidelines. The secondary supervisor must support the primary supervisor by assisting with the candidate's training program (including co-signing the annual supervisors report to document their involvement in the candidate's training and feedback), assist in a candidate's development of practical skills at a specialist level and help with preparation for the examination. A secondary supervisor also acts as a backup to the primary supervisor. If the primary supervisor is absent for periods of more than one week, the secondary supervisor will take over the role of primary supervisor during this time.

Where the secondary supervisor is an on-site oncologist, the clinical training may be more evenly divided between the primary and secondary supervisors. If the secondary supervisor is an off-site Oncologist, then the candidate will undertake direct supervised training with the supervisor at the secondary location (providing that the secondary site has been approved by the TCC as a training facility). This training period with the secondary supervisor will be equivalent to at least 18 weeks of full-time training in addition to the 96 weeks training program. This training can occur at any time throughout the fellowship training program as either single days or blocks of time. The four-week externship in veterinary oncology can be included in this 18 -week period if the secondary supervisor is an off-site oncologist.

During directly supervised periods, be they at the primary or at the secondary site, the resident must have primary responsibility for their cases. This includes being the principal decision-maker under supervision and actively formulating diagnostic and treatment plans. This structure ensures the resident develops independent clinical judgement, confidence and case ownership, which are essential for preparation toward Fellowship-level competency.

EXTERNSHIPS

Refer to the *Fellowship Candidate Handbook*, Section 2.4.1.

ACTIVITY LOG SUMMARY

The Candidate must document, within the Activity Log Summary, a minimum of **500** cases over the training period. Cases suitable for inclusion are those where the candidate is the primary

clinician performing the majority of the clinical procedures and client communication on the case. Revisit appointments on the same case for the same presenting problem are **not** to be entered separately in the Activity Log Summary. Of the 500 cases, a minimum of 100 cases must be dogs and a minimum of 100 cases must be cats. Candidates must also manage at least 100 cases in each of the following categories for any species;

Round Cell Tumours
Epithelial Tumours
Mesenchymal Tumours

The Activity Log Summary (ALS) should be recorded using the templates in Appendix A.

A full **Activity Log (AL)** is no longer required.

PUBLICATIONS AND PRESENTATION

Refer to the *Fellowship Candidate Handbook*, Section 2.10

The publication pre-approval and presentation proposals templates can be found on the College website under Fellowship – Fellowship Forms.

RECOMMENDED READING LIST

The candidate is expected to research the depth and breadth of the knowledge of the discipline. This list is intended to guide the candidate to some core references and source material. The list is not comprehensive and is not intended as an indicator of the content of the examination.

Core Textbooks:

The following texts are essential to provide a detailed knowledge base in oncology.

1. Small Animal Clinical Oncology. Withrow and Vail, 6th edition, 2020.
2. The Basic Science of Oncology. Tannock, Hill, Bristow and Harrington, 6th edition, 2021
3. The Biology of Cancer. Weinberg, 3rd edition, 2023.
4. Cancer Chemotherapy Immunotherapy and Biotherapy: Principles and Practice. Chabner and Longo, 6th edition, 2018.
5. Radiobiology for the radiologist. Hall and Giaccia, 8th edition, 2018.

Supplementary Textbooks:

1. Cancer: Principles and Practices of Oncology. DeVita et al, 12th edition, 2022.
2. Diagnostic cytology and haematology of the dog and cat. Cowell & Tyler, 5th edition, 2019.
3. Veterinary Surgical Oncology. Kudnig and Seguin, 2nd edition, 2022.
4. Biostatistics- the Bare Essentials. Norman and Streiner 4th edition, 2014.

5. Textbook of Veterinary Internal Medicine. Ettinger and Feldman, 9th edition, 2024.

Literature

Core Journals: *Candidates are expected to be familiar with relevant veterinary cancer literature from the following journals, published within the 10 years preceding the examination year, unless specifically cited in the prescribed core texts. Publications that contain material not yet available in textbooks are especially important. Both print and online journal versions should be reviewed (including early view):*

1. Veterinary and Comparative Oncology
2. Journal of Veterinary Internal Medicine.
3. Journal of the American Veterinary Medical Association.
4. Journal of Feline Medicine and Surgery.
5. Journal of Small Animal Practice.
6. American Journal of Veterinary Research.
7. Journal of the American Animal Hospital Association.
8. Veterinary Pathology
9. Veterinary Radiology and Ultrasound
10. Veterinary Clinical Pathology.
11. Australian Veterinary Journal.
12. Veterinary Surgery
13. Frontiers in Veterinary Science
14. Research in Veterinary Science
15. The Veterinary Journal
16. BMC Veterinary Oncology
17. BMC Veterinary Research
18. Journal of Veterinary Medical Science
19. Journal of Comparative Pathology
20. Veterinary Clinics of North America. Small Animal Practice
21. Veterinary Sciences

Recommended Journals: Comparative

Candidates are responsible for seeking out articles on veterinary oncology published in the human literature and review articles discussing concepts in cancer biology and general therapeutic strategies. This list is not exhaustive.

1. PLOS one
2. Clinical Cancer Research
3. Nature
4. Nature reviews: Cancer
5. Cell
6. BMC (Biomed Central) Journals
7. Science
8. Cancer
9. Cancer Research
10. Cancer Chemotherapy and Pharmacology
11. Oncogene
12. Journal of the National Cancer Institute
13. American Journal of Clinical Oncology
14. Nature Reviews Clinical Oncology
15. The Oncologist

Additional Reference Sources:

The candidate should have ready access to texts detailing Dermatology, Gastroenterology, Endocrinology, Cardiology, Infectious Diseases, Clinical Pathology, Diagnostic Imaging, Nutrition, Urogenital diseases, Toxicology and Neurology. Choice of text should be discussed with your Supervisor.

FURTHER INFORMATION

For further information contact the College Office

Telephone: International +61 (07) 3423 2016

Email: examinations@anzcvs.org.au

Web: www.anzcvs.org.au

Postal Address: Building 3, Garden City Office Park, 2404 Logan Road
EIGHT MILE PLAINS QLD 4113 Australia

APPENDIX A: (1) **Activity Log Summary** **Month of the Program**	**Minimum number of cases required**	AUG	SEPT	OCT	NOV	DEC	JAN	**FEB**	**MAR**	APR	MAY	JUN	JUL	Sub-Total	Previous Total	Total to date
CATEGORY																
ROUND CELL TUMOURS	**100**															
Plasma Cell Neoplasm																
Multiple myeloma																
Mast Cell Tumours																
Canine Lymphoma																
Feline Lymphoma																
Epitheliotropic lymphoma																
Leukaemias and Myeloproliferative Disorders																
Transmissable Venereal Tumour																
Histiocytic sarcoma																
Other (list type below)																
Feline																
Canine																
Other																

APPENDIX A: (2) **Activity Log Summary** **Month of the Program**	**Minimum number of cases required**	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	Sub-Total	Previous Total	Total to date
CATEGORY																
EPITHELIAL TUMOURS	**100**															

Tumours of Skin and Subcutaneous tissue																
Salivary Glands																
Oesophageal																
Exocrine Pancreas																
Hepatic																
Gastric																
Intestinal Tract																
Perianal Tumours																
Nasal																
Larynx and Trachea																
Lung																
Endocrine Pancreas																
Other Endocrine System																
Female Reproductive																
Mammary Gland																
Male Reproductive																
Urinary Tract																
Nervous system																
Thymoma																
Other (list type below)																
Feline																
Canine																
Other																

APPENDIX A: (3) Activity Log Summary **Month of the Program**	**Minimum number of cases required**	**AUG**	**SEPT**	**OCT**	**NOV**	**DEC**	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUNE**	**JULY**	**Sub-Total**	**Previous Total**	**Total to date**
CATEGORY																
Mesenchymal Tumours	**100**															
Osteosarcoma																
Other skeletal tumour																
Melanoma																
Haemangiosarcoma																
Soft-tissue sarcoma																
Mesothelioma																
Other (list type below)																
Feline																
Canine																
Other																