The Royal College of Pathologists

Pathology: the science behind the cure

2015 CURRICULUM FOR SPECIALTY TRAINING IN VETERINARY PATHOLOGY

Approved by the Royal College of Pathologists Council on 17 September 2015.

Contents

INTRODUCTION

This document has been prepared by the Specialty Advisory Committee on Veterinary Pathology to provide trainees, educational supervisors and trainers with guidance on how to prepare for the College entrance examinations in veterinary pathology. The document is intended to be helpful rather than prescriptive and should be seen in the context of a 3-year programme of preparation for the examination. In that context the document should not seem too daunting and veterinarians preparing for the examination diligently over such a period with good guidance and regular supervision from senior colleagues and sponsors/supervisors should expect to be successful in the examinations.

The College would welcome any input from trainees, sponsors, mentors, examiners or others for improvements to this document. They should be sent to the secretary of the SAC on Veterinary Pathology at the College.

OVERALL AIM

To guide the training of veterinary pathologists capable of assuming responsibility for the broad spectrum of specimens and problems encountered in general veterinary pathology. In addition, to guide the acquisition of competence and skills in a particular species-group speciality sufficient to lead a diagnostic or research team, in this area if required.

Detailed regulations and guidelines for trainees considering examinations are to be found in the most recent edition of the College publication 'Regulations and Guidelines for the College Examinations for Membership (Part 1 and Part 2)', which should be obtained from the College at the earliest possible opportunity. Candidates will find additional information about the College, and opportunities to sign up for College publications, such as the Bulletin, in the trainees' area of the College's website (www.rcpath.org).

Examinations may be taken in one of the following five species group specialities:

1. Small domestic animals (dog, cat)
2. Large domestic animals (cattle, sheep, goat, deer and either horse or pig)
3. Laboratory animals (rabbit, rat, mouse, mini pig, hamster, dog, non-human primate)
4. Birds (poultry, game birds, cage birds, wild birds)
5. Fish

The following curriculum outlines the areas common for all 5 species group options with greater additional detail on the requirements for the subspecialties 1-3 given in Appendices 2a-2c. Additional curriculum detail for subspecialties 4 and 5 is not included in this document.

Further information on the FRCPath Examination can be found in the regulations and guidelines for Fellowship exams in Veterinary Pathology

ENTRY REQUIRMENTS

Trainees will have achieved an RCVS recognisable degree (or equivalent) in veterinary science or veterinary surgery and/or medicine. A period of clinical experience is considered desirable.

DURATION OF TRAINING

FRCPath Part 1 would normally be taken after a minimum of two years full time training in veterinary pathology, usually as part of a residency programme. Where training is not achieved as part of a full time programme, experience of past trainees suggests that 4-5 years may be required to satisfy the requirements for the Part 1 examination. A period of

training in an appropriate speciality e.g. MSc, PhD may be accepted as contributing to this time period by the College.
It is recommended that candidates entering for the Part 1 exam should show:

- evidence of satisfactory completion of the veterinary pathology curriculum and the minimum training period
- satisfactory outcomes in the requisite number of workplace-based assessments

FRCPath Part 2 will normally be taken a minimum of 1 year after successful completion of Part 1 and on the recommendation of their suitability to sit the exam from their sponsor/ supervisor.

STAGES OF TRAINING AND LEARNING

The curriculum is divided into three stages, A–C. These stages roughly correlate with years 1 to 3 of a full time residency training programme. Trainees should gain appropriate experience within their programme to achieve all necessary curricular objectives and to ensure they are adequately prepared to attempt FRCPath Part 1 and 2 at the appropriate time.

It is strongly recommended that during Stages B–C, trainees should take increasing levels of responsibility for their work as they progress towards independent practice.

Throughout training, trainees should maintain a training portfolio.

Stage A

Stage A of training is 12 months full-time equivalent.

The aims of this stage are to provide:

- a general introduction to necropsy, histopathology and cytology

Competencies recommended to exit stage A:

- independent selection and trimming of most common and simple specimens
- ability to write an appropriate report for a wide range of histopathology and simple cytology specimens, ability to demonstrate time management and task prioritisation (e.g. prioritisation of specimens for trimming and reporting, timely turn-around of reporting)
- independent dissection of a straightforward necropsy case
- ability to write a necropsy report including appropriate clinicopathological correlation for a straightforward case.

Recommended minimum practical experience for year 1 is given below by species group (equivalent figures for years 2 and 3 are in succeeding sections covering stages B and C of training). Please note that these are guidelines and are not intended to be prescriptive. Please note also that a candidate can demonstrate sufficient experience through a mix of cases and studies in the appropriate species. A case equals an individual animal or diagnostic case whereas a study includes analysis of the pathology of tissues from multiple animals and the generation of an appropriate report (this is particularly relevant to the laboratory animal option, where a range of studies appropriate to the work or training environment should be included to demonstrate familiarity with different species, lengths and types of study).

Laboratory animals

necropsy	5 cases
histopathology (cases or studies)	500 cases/5 studies (these can include archived samples)

Small domestic animals

necropsy	50 cases
histopathology (biopsy or PM	150 cases (these can include archived samples
cytology	15 cases (these can include archived samples)

Large domestic animals

necropsy	40 cases
histopathology (biopsy or PM)	100 cases (these can include archived samples)
cytology	15 cases (these can include archived samples)

Assessments:

workplace-based assessments	satisfactory - a minimum of 18 with at least 12 being from Directly Observed Practical Skills section
educational supervisor/sponsor's report*	satisfactory

*For example this might be the annual appraisal undertaken in the training institute.

Stages B–C: general advice regarding time spent in stages

The time spent in training in stages B and C should amount to a minimum of two years

Stage B

Stage B of training should generally take a minimum of 12 months. The aims of this stage are to:

- broaden experience and understanding of histopathology and necropsy pathology
- broaden understanding of the chosen species group
- develop a basic knowledge base in cytology

Competencies recommended to exit stage B:

- independent cut-up of all simple and common specimens appropriate to the species (e.g. skin masses, brain trimming, cardiac dissection and sampling, skin biopsies - excisional, punch and wedge biopsies; liver biopsies - wedge and core, eyes, mammary strips, muscle biopsy, nerve biopsy, intestinal resections, ovaries and uterus)
- ability to write an appropriate report for a wide range of histopathology and simple cytology specimens
- ability to demonstrate effective time management and task prioritisation
- independent dissection of more complex necropsy cases, including forensic cases where appropriate
- ability to write a necropsy report including appropriate clinicopathological correlation for a more complex case (as described above).

Recommended minimum practical experience for year 2 (based on 12 months spent in stage; increased pro rata for extended stage):

Laboratory animals

gross necropsy pathology	15 cases
histopathology (cases or studies)	750 cases/20 studies (these can include archived samples)

Small domestic animals

gross necropsy pathology	150 cases
histopathology (biopsy or PM)	100 cases (these can include archived samples)
cytology	30 cases (these can include archived samples)

Large domestic animals

gross necropsy pathology	120 cases
histopathology (biopsy or PM)	300 cases (these can include archived samples)
cytology	15 cases (these can include archived samples)

Assessments:

workplace-based assessments	satisfactory - a minimum of 18 with at least 12 being from Directly Observed Practical Skills section
FRCPath Part 2	pass
educational supervisor's report	satisfactory

Stage C

Stage C of training is a minimum of 12 months, unless extended training is required.

The aims of this stage are to:
develop increasing levels of confidence and the ability to work in appropriate contexts without direct supervision in veterinary pathology

- satisfactorily complete all areas of the veterinary pathology curriculum including that related to their chosen species group

Competencies recommended to exit stage C:

- independent cut-up of all specimens (including limbs, brains, spinal cords, digits, jaws)
- ability to report most histopathology and simple cytology specimens independently
- ability to appropriately refer for specialist/second opinion
- ability to demonstrate appropriate time management and task prioritisation for the stage of training.
- ability to demonstrate knowledge of specialist species group
- ability to prepare a case report for internal presentation and/or publication
- experience of teaching less experienced trainees or other colleagues (including laboratory technicians, veterinary students and/or other residents)
- awareness of quality control and quality assurance schemes applicable to veterinary pathology

Recommended minimum practical experience for year 3 (based on 12 months spent in stage; increased pro rata for extended stage):

Laboratory animals

gross necropsy pathology	15 cases
histopathology (cases or studies)	750 cases/20 studies (these can include archived samples)

Small domestic animals

gross necropsy pathology	150 cases
histopathology (biopsy or PM)	1000 cases (these can include archived samples)
cytology	30 cases (these can include archived samples)

Large domestic animals

gross necropsy pathology	120 cases
histopathology (biopsy or PM)	300 cases (these can include archived samples)
cytology	15 cases (these can include archived samples)

Assessments:

workplace-based assessments	satisfactory - a minimum of 18 with at least 12 being from Directly Observed Practical Skills section
FRCPath Part 2	pass
educational supervisor's report	satisfactory

TRAINING PROGRAMMES

Training programmes should be reviewed regularly by the Speciality Advisor. This will enable all training centres to offer the same standards of training, and allow SAC members to offer assistance, where necessary, to the primary training centre.

Training programmes should include suitable rotational arrangements to cover all the necessary areas of the curriculum and an appropriate balance between general and specialist pathology interests such that each trainee gains the breadth of training required for satisfactory completion of the curriculum. The exact arrangements will vary according to the size of the department, the number of trainees on the training programme and the material accessible at the centre.

Each trainee should have an identified educational Supervisor/Sponsor who has overall over sight and responsibility for their complete training programme. The educational Supervisor/Sponsor should usually be the programme coordinator at their main training centre. A trainer is any person involved in training the trainee [e.g. pathologist or laboratory scientist). A trainee may be trained by a number of trainers during their training.

If there is a breakdown of relationship between a trainee and their educational Supervisor/Sponsor and the matter is not resolved to the trainee's satisfaction, then he/she should seek further advice from an appropriate line manager at the centre where they are working. As a last resort, trainees can seek advice from the College through the appropriate College specialty advisors.

TRAINING REGULATIONS

This section of the curriculum outlines the training regulations for Veterinary Pathology.

Part-time training
It is accepted that in some training environments and under some circumstances training in veterinary pathology will occur as a part time activity usually alongside related employment (including research activities).

Part-time trainees should accept two important principles:

- part-time training shall meet the same requirements (in depth and breadth) as full-time training
- the total duration and quality of part-time training of specialists must be not less than those of a full-time trainee.

In other words, a part-time trainee will have to complete the minimum training time for their specialty pro rata.

Overseas training
Non-UK based veterinary pathology trainees are welcome to attempt the FRCPath examinations. It is in their interests to familiarise themselves with this curriculum and ensure that their training programme meets the appropriate standards. If in doubt they should contact the Speciality Advisor for advice.

RATIONALE

Purpose of the curriculum
The purpose of the curriculum for specialty training in veterinary pathology is to set the standards required by The Royal College of Pathologists for attainment of Fellowship of the college and to ensure that successful candidates are fully prepared to work independently as veterinary pathologists.

The educational programme should provide opportunities for candidates to acquire or develop:

- **The habit of lifelong learning** by a combination of reading, literature searches, consultation with colleagues, attendance at scientific meetings, and the presentation of his/her own scientific work as part of his/her continuing professional development.
- **Factual knowledge** of general pathology including pathogenesis and disease processes with specific knowledge of veterinary morbid anatomy and histopathology
- **Interpretive skills** at both macroscopic and microscopic levels such that clinically useful opinions can be produced from histology and cytology specimens and from the findings of post-mortem examinations
- **Familiarity with health and safety regulations** (including COSHH) relating to veterinary pathology such that the working environment is safe both for themselves and for their colleagues
- **Sufficient technical knowledge** of the processing, sectioning and staining of histological sections (including special techniques such as immunohistochemistry, molecular pathology and electron microscopy) and of cytological preparations to be able to interact appropriately with colleagues responsible for those aspects of technical work
- **Understanding of information technology** sufficient to be able to use computers for producing pathology reports, to search databases, access e-mail and internet services
- **Critical skills for the assessment of published literature** and, where possible, to contribute to the advancement of such knowledge
- **Management and communication skills** in order to interact appropriately with medical, scientific, technical and clerical colleagues in the workplace and eventually to function as a team leader, if so requested

- **Responsibility for their standard of professional practice** with an awareness of their own limitations, the benefits of team working, and the requirements for continuing professional development stipulated by the Royal College of Pathologists and the Royal College of Veterinary Surgeons.

CURRICULUM DEVELOPMENT

This curriculum was originally developed in 2012 (with subsequent review and amendments made in the period from 2012 to 2015 by the Veterinary Pathology Curriculum Working Party with input from the Specialty Advisory Committee (SAC) on Veterinary Pathology. In addition a draft version of the curriculum was published on the College website for consultation with College Fellows, Examiners and Registered Trainees for a 6 week period in spring 2015.

The content of this curriculum was derived from current UK university based and industry based residency programmes in veterinary pathology. Educational supervisors and trainees were involved in its development via their representation on various College committees such as the Veterinary Pathology SAC and the Trainees Advisory Committee (TAC).

This version of the curriculum is designed to be trainee-focussed, to allow trainees to take control of their own learning and to measure achievement against objectives. It will help in the formulation of a regularly updated education plan in conjunction with an educational supervisor.

The curriculum was agreed by the Veterinary Pathology SAC on 15 July 2015 and approved by the Council of The Royal College of Pathologists on 17 September 2015.

CONTENT OF LEARNING

The curriculum details the level of knowledge and its application, skill and professional behaviour that a trainee should acquire and demonstrate in practice to provide a high quality service as a veterinary pathologist.

The general professional and specialty-specific content of the curriculum is outlined below.

1. Basic knowledge and skills (see pages 15 – 18)
2. Veterinary pathology (see pages 19 – 43)
3. Species specialist areas of veterinary pathology (see Appendix 2)

The curriculum outlines the knowledge, skills, behaviours and expertise that a trainee is expected to obtain in order to achieve Fellowship of the RCPath.

Upon satisfactory completion of the veterinary pathology training programme, the trainee must have acquired and be able to demonstrate:

- appropriate professional behaviour to be able to work as a veterinary pathologist
- good working relationships with colleagues and the appropriate communication skills required for the practice of veterinary pathology
- the knowledge, skills and attitudes to act in a professional manner at all times
- the knowledge, skills and behaviours to provide appropriate teaching and to participate in effective research to underpin veterinary pathology practice
- management skills required for the running of a veterinary pathology laboratory
- familiarity with health and safety regulations, as applied to the work of a veterinary pathology department.

PURPOSE OF ASSESSMENT

The Royal College of Pathologists' mission is to promote excellence in the practice of pathology and to be responsible for maintaining standards through training, assessments, examinations and professional development.

The purpose of The Royal College of Pathologists' assessment system in veterinary pathology is to:

- indicate the capability and potential of a trainee through tests of applied knowledge and skill relevant to the specialty
- demonstrate readiness to progress to the next stage(s) of training having met the required standard of the previous stage
- provide feedback to the trainee about progress and learning needs
- support trainees to progress at their own pace by measuring a trainee's capacity to achieve competencies for their chosen career path
- help to identify trainees who should change direction or leave the specialty
- promote and encourage learning
- gain Fellowship of The Royal College of Pathologists
- assure the public that the trainee is ready for and capable of unsupervised professional practice.

Methods of assessment

Trainees will be assessed in a number of different ways during their training. Satisfactory completion of all assessments and examinations will be monitored and will be one of the criteria upon which eligibility to progress will be judged. Trainees are required to have passed the FRCPath examination in order to become a Fellow of the College.

Workplace-based assessment
Trainees will be expected to undertake workplace-based assessment throughout their training in veterinary pathology, regardless of chosen species group. In general, workplace-based assessments are designed to be formative in nature; as such they are best suited to determine educational progress in different contexts. To this end, it is strongly recommended that workplace-based assessment be carried out regularly throughout training to assess and document a trainee's progress. However, a minimum number of 'satisfactory' workplace-based assessments should be completed during each stage of training. The general format of WBA should be included for review in the training programme submitted to the Specialty advisor.

These could include:

- case-based discussion (CbD)
- directly observed practical skills (DOPS)
- evidence of competence (ECE)

Specific guidance for each stage of training is provided in Appendix 4.

FRCPath examination
The major summative assessments will occur during Stage B (FRCPath Part 1 examination) and towards the end of Stage C (FRCPath Part 2 examination).

Examination results are evaluated after each session and an annual review of validity and reliability is undertaken and reported to the Examinations Committee.

MODELS OF LEARNING

The majority of the curriculum will be delivered through work-based experiential learning, but trainees will also need to develop independent self-directed learning skills. It is the trainee's responsibility to seek opportunity for experiential learning and make opportunities for relevant off-the-job education by making provision for attendance at local, national and, where appropriate, international meetings and courses. The training programme may also allow for participation in research projects and this is to be encouraged.

Independent self-directed learning should be encouraged by, for example, making use of e-learning or providing reference textbooks. Learning for knowledge, competence, performance and independent action will be achieved by assessment and graded responsibility for reporting, allowing trainees at various stages of training to acquire responsibility for independent reporting. Assessment will be set by The Royal College of Pathologists in the form of workplace-based assessment and the FRCPath examination.

LEARNING EXPERIENCES

The following teaching/learning methods will be used to identify how individual objectives will be achieved.

a. **Routine work/work based experiential learning:** the most important learning experience will be day-to-day work. Veterinary pathology trainees will be closely supervised especially in the early stages of training. This close supervision allows frequent short episodes of teaching by mentors and trainers, which may hardly be recognised as such by trainees.
b. **Textbooks:** veterinary pathology departments should have a wide range of reference texts available. These should allow trainees to 'read around' routine cases that they are reporting. Veterinary pathology is a subject requiring a great deal of background learning and reading, as well as the practical experience gained within day-to-day working, and trainees should take every advantage to 'read around' their subject.

c. **Private study/formal study:** more systematic reading of textbooks and journals will be required in preparation for examinations.
d. **Regional and national CPD and training courses:** provided by a variety of organisations including BSVP, CL Davis, BSTP, ESTP, STP, ACVP, ECVP, all of which are valuable learning opportunities. Trainees should be released from rotas and duties to attend.
e. **Scientific meetings:** research and the understanding of research are essential to the practice of histopathology. Trainees should be encouraged to attend and present their work at relevant meetings.
f. **Discussion with laboratory staff:** Laboratory staff can provide excellent training, particularly in relation to laboratory methods, health and safety, service delivery, procurement and human resources.
g. **Externships at other establishments:** attachments of this kind may be required to provide an all-round training and to complement in-house training for example where certain species or types of case are less common.
h. **E-learning.;** where available e-learning material can often provide useful background information.
i. **Learning with peers.** Trainees should be encouraged to work together within their own centre or in external networks to share experience.
j. **Practical laboratory experience.**
k. **Formal postgraduate teaching.**
l. **Independent self-directed learning.**

SUPERVISION AND FEEDBACK

Specialist training must be appropriately supervised by the senior pathology and scientific staff on a day-to-day basis under the direction of a designated educational supervisor.

Trainees will usually work under the supervision of an experienced veterinary pathologist gradually widening their knowledge and experience in each area so that by the time they have passed the FRCPath Part 2 examination they are able to work largely independently. The day-to-day supervised training will be supplemented by more formal teaching and on regionally and nationally organised training courses (see above).

If a veterinary pathology report generated by the trainee states that they have been supervised by an experienced veterinary pathologist, this is usually taken to mean that the supervising pathologist has examined that report with the trainee. It also implies that the supervising pathologist accepts not only the microscopic but also any macroscopic description as accurate, even if the supervisor has not personally reviewed the specimen. However, there is also a more general level of supervision in day-to-day work. A trainee may ask for assistance at any time if a specimen with which they are dealing is unfamiliar or unusual. Supervision also extends to working relationships and communication within and beyond the veterinary pathology department.

Educational supervision is a fundamental conduit for delivering teaching and training. It takes advantage of the experience, knowledge and skills of educational supervisors/trainers and their familiarity with pathological situations to guide and steer the learning process of the trainee.

The College expects all trainees reaching the end of their training to demonstrate competence in supervision of junior colleagues The College also acknowledges that the process of gaining competence in supervision starts at an early stage in training with trainees potentially supervising veterinary students and/or technicians, and late stage trainees supervising more junior trainees.

The role of the educational supervisor is to:

- have overall educational and supervisory responsibility for the trainee in a given post
- ensure that the trainee is familiar with the curriculum relevant to the year/stage of training of the post
- ensure that the trainee has appropriate day-to-day supervision appropriate to their stage of training
- ensure that the trainee is making the necessary clinical and educational progress during the post
- ensure that the trainee is aware of the assessment system and undertakes it according to requirements
- act as a mentor to the trainee and help with both professional and personal development
- agree a training plan with the trainee and ensure that an induction (where appropriate) has been carried out soon after the trainee's appointment
- discuss the trainee's progress with each trainer with whom a trainee spends a period of training
- undertake regular formative/supportive appraisals with the trainee (two per year, approximately every 6 months) and ensure that both parties agree to the outcome of these sessions and keep a written record
- regularly inspect the trainee's training record, inform trainees of their progress and encourage trainees to discuss any deficiencies in the training programme, ensuring that records of such discussions are kept.

In order to become an educational supervisor, a veterinary pathologist must have a demonstrated interest in teaching and training and have access to appropriate teaching resources. Educational supervisors are expected to keep up-to-date with developments in postgraduate veterinary training, have access to the support and advice of their senior colleagues regarding any issues related to teaching and training and to keep up-to-date with their own professional development.

MANAGING CURRICULUM IMPLEMENTATION

The curriculum outlines the minimum training requirements for delivery in a suitable training programme. It guides educational supervisors as to what is required to deliver the curriculum and guides trainees in the learning and assessment methods required for satisfactory completion of training.

It is the responsibility of the head of department at each training centre, to ensure that the programme delivers the depth and breadth of training outlined in the curriculum.

It is the responsibility of the educational/ supervisor of a particular post or attachment within a programme to ensure that the training delivered in their post meets the requirements of the relevant section(s) of the curriculum. The educational supervisor must undertake regular educational appraisal with their trainee, at the beginning, middle and end of a section of training, to ensure structured and goal-oriented delivery of training.

It is the trainee's responsibility to familiarise themselves with the curriculum and assessment requirements both for the satisfactory completion of each stage of training. They must be familiar with all aspects of the assessment system; workplace-based assessment and the FRCPath examination. It is the trainee's responsibility to ensure that they apply in good time for any assessments and examinations that demand an application.

CURRICULUM REVIEW AND UPDATING

The curriculum will be evaluated and monitored by The Royal College of Pathologists as part of continuous feedback from Examiners, Specialty Advisors, trainers and trainees.

The curriculum will be formally reviewed in the first instance within 2 years of publication. In reviewing the curriculum, opinions will be sought from the College's SAC on Veterinary Pathology, its related subspecialty sub-committees, the Trainees Advisory Committee, and its Fellows and Registered Trainees.

Any significant changes to the curriculum will need the approval of The Royal College of Pathologists' Council.

EQUALITY AND DIVERSITY

The College is currently revising its Equality and Diversity policy to take account of the Equality Act 2010 and in particular to recognise its obligations under the public sector equality duty that no one should be treated more or less favourably on the grounds of age; disability; gender reassignment; pregnancy and maternity; race; religion or belief; sex or sexual orientation (the 'protected characteristics').

Having considered the public sector equality duty, we do not believe that anyone holding any of these protected characteristics would be affected by the proposed change.

The following is an extract from The Royal College of Pathologists' *Diversity and Equality Policy and approach*. A full copy of the policy is available on the College website.

The Royal College of Pathologists is committed to the principle of diversity and equality in employment, membership, academic activities, examinations and training. As part of this commitment we are concerned to inspire and support all those who work with us directly and indirectly.

The Training Department collects information about the gender and ethnicity of trainees as part of their registration with the College. This information is recorded by the College and statistics published on an annual basis in the annual report. Further information about the monitoring activities of the College trainees, candidates and Fellows are available in the College policy.

ACKNOWLEDGEMENTS

Development of this draft curriculum was dependent on input from multiple trainees and Fellows of the Royal College of Pathologists, whose input is gratefully acknowledged.

APPENDIX 1: GENERAL VETERINARY PATHOLOGY CURRICULUM

The general veterinary pathology curriculum outlines the training requirements for all trainees. Species speciality requirements are detailed in Appendices 2a-c.

All trainees are expected to undertake training in the basic knowledge and skills of anatomic histopathology in their chosen speciality. This includes surgical pathology and basic necropsy (during stages A and B).

Trainees are also expected to have some exposure to forensic pathology, foetal / neonatal pathology, specialised neuropathology techniques and molecular pathology as part of their general histopathology training.

Expected training during Stage A of training

There is no intention to use this appendix as a measure of aptitude or achievement. It is simply an indication of the range and level of experience that could be reasonably expected of a trainee in Stage A. In serving as an indicator, the list should be interpreted in the light of workload and case-mix in the training department.

The level of knowledge gained within each of the areas described below will vary between trainees. However, for each disease process listed, it is recommended that the trainee possesses at least a basic level of knowledge within the following six categories.

- Epidemiology
- Aetiology
- Pathogenesis
- Clinical features
- Pathological features (macroscopic and microscopic)
- Major complications of treatment

It is important that sufficient basic knowledge of major pathological processes is gained at this early stage. This should include topics such as: causes of and responses to cellular injury, acute and chronic inflammation, neoplasia, the effects of genetics and the environment in health and disease, infections and the basics of immunology.

Surgical pathology

System	Macroscopic pathology	Microscopy	Knowledge base
General	Correctly identify patient details relevant to each specimen Correctly orientate specimens Open fresh specimens Correctly obtain fresh tissue for touch preparation, freezing, electron microscopy etc Lymph node anatomy and dissection in cancer specimens	Sets up a microscope correctly Recognise normal histology and normal variations of common tissue types Select/identify appropriate histochemical stains for glycogen, fat, mucins and amyloid, fungus and bacteria Familiarity with basic immunohistochemical markers for major tissue and tumour types and interpretation of a basic panel of immunohistochemical markers on an undifferentiated tumour	Normal anatomy and histology Pathological basis of disease Common pathological abnormalities

Necropsy pathology

During Stage A trainees should begin to understand the level of certainty with which macroscopic features can be interpreted at necropsy and when histological examination of necropsy tissues is important. They should begin to recognise histological changes that occur.

Systems	Anatomical features and dissection technique	Clinicopathological knowledge base
General	Trainees should be able to demonstrate: Methods for identification of the patient External examination Removal of organs Organ weights	Full details of current practice for retention of organs and tissues Knowledge of agonal, post mortem and incidental changes (e.g. euthanasia-associated) often found at necropsy Knowledge of normal organ weights
Cardiovascular	Excision of heart Master one technique for the dissection of the heart Species relevant dissection of pulmonary vessels, major bronchi and local lymph nodes	Normal, age-related and pathological abnormalities of cardiac valves Assessment of ventricular thickness and atrial and ventricular dilatation

Respiratory system	Removal of lungs from mediastinum Dissection of pulmonary vessels and major bronchi, trachea and upper airways	Identification of respiratory tract infection, pneumonia and emphysema Appearances of primary and secondary lung tumours
Upper gastrointestinal tract	Removal and dissection of oesophagus, stomach (or forestomachs) and duodenum Identification and sampling of pancreas Examination of oral cavity	Range of appearances due to autolysis in stomach. Identification of, gastric / abomasal erosions, ulcers and neoplasia
Lower gastrointestinal tract	Removal and/or opening of abdominal aorta and cranial mesenteric artery where relevant for species Examination of intestinal mucosal surface	Identification of anatomic abnormalities, inflammation and neoplasia Identification of bowel necrosis and distinction from autolysis or post-mortem change
Hepatobiliary system	Removal of liver and its dissection Identification of portal and hepatic veins Dissection of gall bladder (where present in the species of interest), common bile duct, and pancreatic ducts Bile duct patency	Assessment of hepatic congestion and dilatation of hepatic veins Appearances of intra- and extra-hepatic ducts Identification of primary and secondary tumours Identification of hepatic fibrosis Hepatic lipidosis
Nervous system	Removal of brain Sectioning of cerebral and cerebellar hemispheres and brain stem Removal of spinal cord Removal of eyes Identification and removal of sciatic nerve	Deviation of normal anatomy, brain swelling, malformations Assessment of cerebral and cerebellar atrophy Taking of ‘key’ blocks for histological examination

Urogenital system	Dissection of renal arteries and veins and ureters Removal of kidneys, examination of cut surfaces and renal pelvices Examination of bladder mucosa and identification of ureteric orifices Examination of the prostate gland Examination of the penis, prepuce, testes and accessory sex glands in a male animal Examination of the ovaries, uterus, vagina and vulva in a female animal	Estimation of degree of renal cortical atrophy Identification and assessment of cortical scarring and cyst formation. Hydronephrosis and ureteric dilatation Variation during oestrous cycle and pregnancy
Endocrine system	Removal of pituitary Identification of parathyroid glands and dissection of thyroid Removal of adrenal glands	Size and overall appearance of thyroid gland Size of parathyroid glands Adrenal cortical hyperplasia or adrenal atrophy
Lympho-reticular system	Examine all lymph node groups (e.g. mediastinal or para-aortic) for evidence of lymphadenopathy Examination of the spleen Sampling of bone marrow	Significance of lymphadenopathy in different anatomical sites Clinical explanation for splenic enlargement or atrophy
Musculoskeletal system	Examination of joints Examination of bones including growth plates, bone strength Examination of skeletal muscle	Recognition of changes in synovial fluid
Report	Preparation of report, to include summary of history as provided, time, date and staff involved in PME, full gross and microscopic description, summary and conclusion Include the cause of death as appropriate and a clear clinicopathological summary	Detailed list of all macroscopic abnormalities Summary relating abnormalities to aspects of clinical history (wherever possible) Appropriate tissue blocks for histology (with appropriate consent)

CURRICULUM CONTENT FOR STAGES B–C

GOOD CLINICAL CARE

Objective: to demonstrate adequate knowledge and skills and appropriate attitudes in routine clinical work.

Pathologists with FRCPath by examination will:

- have the breadth of knowledge and skills to take responsibility for safe clinical decisions
- have the self-awareness to acknowledge where the limits of their competence lie and when it is appropriate to refer to other senior colleagues for advice
- have the potential (or the ability) to take responsibility for clinical governance activities, risk management and audit in order to improve the quality of service provision.

HISTOPATHOLOGY

Knowledge	Assessment Methods
Show sufficient general clinical knowledge including major changes in trends of diagnosis and treatment	CbD, DOPS, ECE
Show sufficient knowledge of normal anatomy, physiology and pathophysiology	CbD, DOPS, ECE
Skills	
Show the ability to solve complex clinical (and research, when applicable) problems by applying sound knowledge of basic principles without the requirement always to rely on 'pattern matching'	CbD, DOPS, ECE
Behaviours	
Demonstrate the importance of integration of clinical and pathological data for accurate diagnosis	ECE

Surgical cut up/Trimming in	
Knowledge	**Assessment Methods**
Explain the principles of specimen dissection, macroscopic description and block selection in neoplastic and non-neoplastic disease	CbD, DOPS, ECE
Skills	
Demonstrate sufficient manual dexterity to perform dissection safely and accurately, without damage to tissues	CbD, DOPS, ECE
Behaviours	
Demonstrate the importance of accuracy and requirement for attention to detail during specimen description and block selection	ECE
Demonstrate the importance of ensuring that request form and	ECE

specimen identification is accurate and the requirement to identify and resolve any errors or discordance

Laboratory processes	
Knowledge	**Assessment Methods**
Recognise the principles of laboratory processing within surgical pathology and cytopathology	CbD, DOPS, ECE
Recognise the basic laboratory processing including section cutting	CbD, DOPS, ECE
Recognise the principles of internal quality control and external quality assurance as applied to laboratory techniques	CbD, DOPS, ECE
Recognise the importance of maintaining specimen and data continuity throughout the laboratory process	CbD, DOPS, ECE
Behaviours	
Recognise the work of the technical staff in preparing slides for viewing	ECE
Demonstrate the ability to analyse reports on laboratory quality issues and to understand appropriate corrective actions	ECE

Surgical reporting	
Knowledge	**Assessment Methods**
Describe and explain the principles of microscopy	CbD, DOPS, ECE
Describe the microscopic features of the range of normality within tissues as well as the major common pathological processes and patterns of disease (Stage A)	CbD, DOPS, ECE
Skills	
Demonstrate the ability to set up a microscope with ergonomic safety and operate it effectively	CbD, DOPS, ECE
Recognise the microscopic features of tissue structure in normality and disease, as appropriate to one's level of experience	CbD, DOPS, ECE
Behaviours	
Demonstrate the requirement for attention to detail during surgical reporting and the need for correlation with the clinical situation	ECE
Demonstrate and explain the importance of surgical pathology to clinicians and colleagues(e.g. timeliness and accuracy of reporting)	ECE

Special techniques	
Knowledge	**Assessment Methods**
Explain the principles of 'special' histochemical and immunohisto-chemical methods	CbD, DOPS, ECE
Explain the principles of common molecular pathology techniques (e.g. ISH and PCR)	CbD, DOPS, ECE
Explain the principles of electron microscopy	CbD, DOPS, ECE
Skills	
Demonstrate when to resort to special techniques	CbD, DOPS, ECE
Recognise histological features of histochemical and immunohisto-chemical stains in normal and diseased tissues	CbD, DOPS, ECE
Interpret molecular techniques	CbD, DOPS, ECE
Behaviours	
Recognise cost benefit issues when considering the use of additional techniques	ECE
Recognise the inclusion of results of special techniques in histopathology reports	ECE

MOLECULAR PATHOLOGY

This section lists the required basic knowledge in molecular methods and their applications, both potential and actual, within veterinary pathology. The section is focussed on DNA - and RNA-based techniques.

Fundamentals of molecular biology	
Knowledge	**Assessment Methods**
Demonstrate a basic understanding of the underlying principles of molecular genetics and molecular pathology	CbD, DOPS, ECE
Skills	
Demonstrate the origins of and justifications for molecular tests	CbD, DOPS, ECE

Fundamentals of databases and bioinformatics	
Knowledge	**Assessment Methods**
Identify the basic molecular databases	CbD, DOPS, ECE
Skills	
Demonstrate the ability to retrieve relevant data from public sources	CbD, DOPS, ECE
Behaviours	
Demonstrate appreciation of state of knowledge and how to update that knowledge	ECE

Sample preparation	
Knowledge	**Assessment Methods**
Describe how histological samples for molecular analysis are taken and prepared	CbD, DOPS, ECE
Skills	
Demonstrate practical understanding of how to undertake the appropriate sample collection, retrieval and preparation for the common molecular tests, whether performed on extracted nucleic acid or *in situ*	CbD, DOPS, ECE
Behaviours	
Relate to histological sample types and availability to the molecular analyses which might be performed on them	ECE

Molecular techniques	
Knowledge	**Assessment Methods**
Outline the principles of the most up-to-date molecular methods Demonstrate basic knowledge of sequencing, PCR, microarrays (DNA and RNA), in situ hybridisation, mutation detection	CbD, DOPS, ECE

GENERAL NECROPSY

This section of the curriculum incorporates the basic necropsy practice competences that all trainees will acquire. Ideally, most of these necropsies should allow histopathological and other analyses to explore the pathologies and pathogeneses that lead to death. Because the availability of necropsy training opportunities is variable, the educational supervisors and programme directors have a significant role in ensuring that adequate experience is obtained by all trainees.

Pathological basis of disease	
Knowledge	**Assessment Methods**
Show extensive knowledge of the pathological basis of disease and the macroscopic/microscopic pathology of various types of death	CbD, DOPS, ECE
Skills	
Demonstrate a basic standard of practice in the techniques used for identifying morphological abnormalities at necropsy examination	CbD, DOPS, ECE
Behaviours	
Demonstrate a desire to learn about common disease processes through the necropsy	ECE

General	
Knowledge	**Assessment Methods**
Show knowledge of anatomy, macroscopic features of major disease processes and common tissue dissection techniques relevant to necropsy practice	CbD, DOPS, ECE
Skills	
Demonstrate manual dexterity sufficient to perform necropsies safely and to demonstrate the major abnormalities	CbD, DOPS, ECE
Behaviours	
Identify and address the questions and issues raised by the death	ECE
Show clinicians and other appropriate visitors to the post mortem room and slide reading rooms to share knowledge	ECE
Demonstrate an understanding of the importance of necropsy findings to clinicians	ECE

Clinical liaison	
Knowledge	**Assessment Methods**
Show an understanding of the use of clinical information and the health record in necropsy examination	CbD, DOPS, ECE
Skills	
Demonstrate the ability to interrogate the clinical and laboratory records and understand the utility and limitations associated with various types of investigation including imaging, microbiology and biochemistry	CbD, DOPS, ECE
Identify issues to be addressed by the necropsy examination	CbD, DOPS, ECE
Behaviours	
Be conversant with current clinical practice	ECE
Demonstrate the ability to liaise with clinical colleagues in order to obtain clinical information prior to necropsy	ECE

Necropsy technique	
Knowledge	**Assessment Methods**
Show knowledge of, and the ability to perform, necropsies in a variety of situations	CbD, DOPS, ECE
Skills	
Demonstrate the ability to carry out a normal full evisceration	CbD, DOPS, ECE
Demonstrate the ability to dissect the internal organs	CbD, DOPS, ECE
Describe the appearances accurately and succinctly	CbD, DOPS, ECE
Interpret the findings in the light of the clinical information available	CbD, DOPS, ECE
Demonstrate presenting the findings to relevant colleagues	CbD, DOPS, ECE

Sudden deaths	
Knowledge	**Assessment Methods**
Show basic knowledge of the aims of the necropsy and investigations required where death occurs unexpectedly and there are no suspicious circumstances	CbD, DOPS, ECE

Microbiology	
Knowledge	**Assessment Methods**
Show knowledge of those areas of microbiology that are	CbD, DOPS, ECE

relevant to necropsy practice	
Skills	
Demonstrate the ability to take appropriate samples with appropriate precautions	CbD, DOPS, ECE
Behaviours	
Demonstrate the ability to liaise constructively with microbiology colleagues to achieve a positive diagnostic outcome?	ECE

Histopathology	
Knowledge	**Assessment Methods**
Show knowledge of the necropsy histological appearances of various common conditions	CbD, DOPS, ECE
Skills	
Demonstrate the ability to select appropriate tissue blocks	CbD, DOPS, ECE
Behaviours	
Demonstrate the ability to think laterally	ECE

Other investigations	
Knowledge	**Assessment Methods**
Show knowledge of those areas of haematology, biochemistry, medical genetics and other investigative modalities that are relevant to necropsy practice	CbD, DOPS, ECE
Skills	
Demonstrate the ability to take appropriate samples	CbD, DOPS, ECE
Behaviours	
Demonstrate the ability to display flexibility and open mindedness in the approach to final diagnosis	ECE

Consent	
Knowledge	**Assessment Methods**
Be conversant with current policy in relation to informed consent for necropsies and for tissue or organ retention	CbD, DOPS, ECE
Skills	
Obtain informed consent for necropsies where appropriate and for further investigation of tissue or whole organs	CbD, DOPS, ECE
Behaviours	
Explain the investigations required by a necropsy examination	ECE

Explain to clinicians when tissue or organs may need to be sent away for expert review	ECE
Show an understanding of the issues of informed consent	ECE

Health and safety	
Knowledge	**Assessment Methods**
Describe and explain relevant protocols and documentation of departmental working practices	CbD, DOPS, ECE
Show a working knowledge of the regulatory aspects of health and safety issues	CbD, DOPS, ECE
Skills	
Demonstrate working in the PM room in a safe way	CbD, DOPS, ECE
Behaviours	
Demonstrate care for the safety of all staff and visitors in the PM room	ECE

Reports	
Skills	
Write a final gross and microscopic report with suitable summaries	CbD, DOPS, ECE
Generate finished reports in a timely way	CbD, DOPS, ECE

Teaching	
Knowledge	**Assessment Methods**
Be aware of the value of the necropsy as a teaching aid	CbD, DOPS, ECE
Skills	
Demonstrate appropriate teaching skills	CbD, DOPS, ECE
Behaviours	
Be prepared to teach at every available opportunity	ECE

Feedback to owners and other interested parties	
Skills	**Assessment Methods**
Demonstrate communication skills required to inform clinical colleagues and other non-clinical professionals involved in the case	CbD, DOPS, ECE
Behaviours	
Demonstrate an ability to interpret necropsy findings in the context of past medical history, clinical progression of disease	ECE

or injury and circumstances of death and an ability to communicate those findings and opinions fully, clearly and simply to those who need explanation of them

SPECIES SPECIFIC CYTOLOGY

Technical aspects	
Knowledge	**Assessment Methods**
Show knowledge of preparation and staining techniques for common specimen types	CbD, DOPS, ECE
Show knowledge of use of special techniques, e.g. immunocytochemistry	CbD, DOPS, ECE
Skills	
Demonstrate the ability to recognise faults and artefacts of preparation, e.g. air-drying	CbD, DOPS, ECE
Behaviours	
Demonstrate the ability to work with laboratory staff	ECE

Diagnosis	
Knowledge	**Assessment Methods**
Identify features of malignancy in sites commonly investigated with cytopathology	CbD, DOPS, ECE
Identify features of specific non-malignant diagnoses, e.g. infection	CbD, DOPS, ECE
Skills	
Demonstrate the ability to integrate clinical information and histology or other investigations into diagnosis	CbD, DOPS, ECE
Demonstrate the ability to recognise when definitive diagnosis is beyond capability	CbD, DOPS, ECE
Behaviours	
Show care and attention to detail	ECE
Demonstrate acknowledgement of personal limitations	ECE
Demonstrate the ability to investigate discrepancies between histology and cytology findings	ECE

Reporting	
Knowledge	**Assessment Methods**
Prepare list requirements for a report	CbD, DOPS, ECE
Skills	
Demonstrate the ability to write an accurate report that gives clinicians the information they need	CbD, DOPS, ECE

Demonstrate knowledge of the likely outcome in terms of further investigation or management of the patient	CbD, DOPS, ECE
Behaviours	
Demonstrate an understanding multidisciplinary approach to diagnosis and management	ECE
Summarise cytological findings at a multidisciplinary team meeting	ECE

MAINTAINING GOOD VETERINARY PRACTICE

Objective: to keep knowledge and skills and appropriate attitudes up to date.
Veterinary pathologists will:

- take responsibility for and keep up-to-date in their own relevant professional and self-development, and facilitate that of others
- acknowledge that the balance of their skills and expertise will change as their careers progress and they specialise in certain areas of pathology

Overall clinical judgement	
Knowledge	**Assessment Methods**
Describe and explain sufficient clinical and pathology knowledge to enable integration of clinical data and pathological features	CbD, DOPS, ECE
Skills	
Interpret test results in the context of available clinical information	CbD, DOPS, ECE
Behaviours	
Critically appraise the available clinical and laboratory data in coming to diagnostic/treatment decisions	ECE

Recognise own limitations	
Knowledge	**Assessment Methods**
Show awareness of the extent of one's own limitations and know when to ask for advice	CbD, DOPS, ECE
Behaviours	
Demonstrate the ability to consult and admit mistakes	ECE

Decision making	
Knowledge	**Assessment Methods**
Demonstrate the priorities for investigation and management	CbD, DOPS, ECE
Skills	
Analyse and manage problems effectively	CbD, DOPS, ECE
Behaviours	
Demonstrate flexibility and willingness to change in the light of changing conditions	ECE
Demonstrate the ability to ask for help when necessary	ECE

Life-long learning	
Knowledge	**Assessment Methods**
Demonstrate in practice the importance of continuing professional development	CbD, DOPS, ECE
Skills	
Recognise and use learning opportunities	CbD, DOPS, ECE
Demonstrate the ability to maintain a professional portfolio	CbD, DOPS, ECE
Demonstrate monitoring own performance through feedback	CbD, DOPS, ECE
Behaviours	
Demonstrate self-motivation and eagerness to learn	ECE
Show willingness to learn from colleagues and to accept constructive feedback	ECE

Good use of information technology	
Knowledge	**Assessment Methods**
Communicate results by e-mail, fax, internet or telephone	CbD, DOPS, ECE
Skills	
Demonstrate competent use of database, word processing and statistics programmes	CbD, DOPS, ECE
Demonstrate finding, access and evaluate websites and health-related databases (including literature searches)	CbD, DOPS, ECE
Use digital imaging devices effectively	CbD, DOPS, ECE
Use videoconferencing and telepathology equipment when necessary	CbD, DOPS, ECE
Behaviours	
Be prepared to use IT tools within a diagnostic and, where relevant, research setting e.g. video-conferencing and telepathology systems	ECE
Demonstrate keeping up-to-date with new developments within IT that are pertinent to histopathology	ECE
Demonstrate investing time and effort in learning new IT skills as appropriate to one's role	ECE
Demonstrate awareness of ethical issues that might arise during the use of IT tools	ECE

Risk management	
Knowledge	**Assessment Methods**
Demonstrate appropriate knowledge of risk management issues pertinent to laboratory processing	CbD, DOPS, ECE
Demonstrate appropriate knowledge of risk assessment, perception and relative risk	CbD, DOPS, ECE
Skills	
Demonstrate the ability to balance risks and benefits	CbD, DOPS, ECE
Behaviours	
Show truthfulness and admit error to colleagues	ECE

Media awareness	
Knowledge	**Assessment Methods**
Explain the importance of media awareness and public communications training and where to obtain it	CbD, DOPS, ECE
Skills	
Recognise situations when it may be appropriate to implement such training and/or seek further advice	CbD, DOPS, ECE
Behaviours	
Demonstrate professional behaviour	ECE
Demonstrate willingness to ask for help	ECE

Managing resources	
Knowledge	**Assessment Methods**
Demonstrate an effective knowledge of how financial pressures are experienced by the department and are managed	CbD, DOPS, ECE
Skills	
Demonstrate the ability to respond effectively in terms of delivering services	CbD, DOPS, ECE
Behaviours	
Demonstrate awareness that in addition to specific clinical records, clinical staff also have responsibilities for other records (e.g. good research practice)	ECE

Managing people	
Knowledge	**Assessment Methods**
Demonstrate knowledge of: • relevant legislation (e.g. equality and diversity, health and safety, employment law) and local human resource policies • the duties, rights and responsibilities of an employer, and of a co-worker (e.g. looking after occupational safety of fellow staff) • individual performance review purpose, techniques and processes, including difference between appraisal, assessment and revalidation	CbD, DOPS, ECE
Skills	
Demonstrate the ability to: • work as part of a team and engage in shared diagnostic rotas • contribute to staff (or student) development and training, including mentoring and supervision	CbD, DOPS, ECE
Behaviours	
Demonstrate: • a willingness to supervise the work of less experienced colleagues • commitment to good communication whilst also inspiring confidence and trust	ECE

Applying knowledge and evidence	
Knowledge	**Assessment Methods**
Demonstrate knowledge of: • research methods and how to evaluate scientific publications including the use and limitations of different methodologies for collecting data	CbD, DOPS, ECE
Skills	
Demonstrate the ability to: • use a broad range of scientific and best practice publications relating to delivering services	CbD, DOPS, ECE
Behaviours	
Evaluate issues and potential solutions before acting	ECE

TEACHING AND TRAINING

Objective: to demonstrate the knowledge, skills and attitudes to provide appropriate teaching and to participate in effective research.
Veterinary pathologists will:

- be able to demonstrate the potential to teach and train effectively at all levels of undergraduate and postgraduate education where required
- demonstrate skills and strategies in the process of feedback to colleagues and trainees, ensuring positive and constructive outcomes
- be capable of judging competence and professional attributes in others.

To have the skills, attitudes and practices of a competent teacher	
Knowledge	**Assessment Methods**
Show skills, attitudes and practices of a competent teacher	CbD, DOPS, ECE
Skills	
Identify adult learning principles	CbD, DOPS, ECE
Identify learner needs	CbD, DOPS, ECE
Recall the structure of a teaching activity	CbD, DOPS, ECE
Demonstrate varied teaching strategies	CbD, DOPS, ECE
Identify learning styles	CbD, DOPS, ECE
Identify principles of evaluation	CbD, DOPS, ECE
Behaviours	
Identify learning outcomes	ECE
Design and plan an effective teaching event	ECE
Demonstrate the ability to communicate effectively with the learners	ECE
Demonstrate the ability to teach large and small groups effectively	ECE
Demonstrate giving constructive effective feedback	ECE

To be able to plan and analyse a research project	
Knowledge	**Assessment Methods**
Outline the principles of performing a research study	CbD, DOPS, ECE
Use appropriate statistical methods	CbD, DOPS, ECE
Describe and explain the principles of research ethics and the structure and function of local research ethics committees	CbD, DOPS, ECE

Demonstrate an understanding of how to write a scientific paper	CbD, DOPS, ECE
Understand the principles of research funding and how to obtain it	CbD, DOPS, ECE
Skills	
Prepare systematic critical review of scientific literature	CbD, DOPS, ECE
Demonstrate the ability to frame questions to be answered by a research project	CbD, DOPS, ECE
Develop protocols and methods for research	CbD, DOPS, ECE
Demonstrate the ability to use databases	CbD, DOPS, ECE
Demonstrate the ability to accurately analyse data	CbD, DOPS, ECE
Demonstrate the ability to accurately analyse data	CbD, DOPS, ECE
Demonstrate the ability to write a scientific paper	CbD, DOPS, ECE
Demonstrate good written and verbal presentation skills	CbD, DOPS, ECE
Demonstrate the ability to participate as part of a team involved in a research project or two case reports by the end of training, and be able to demonstrate their role in its publication or presentation	CbD, DOPS, ECE
Behaviours	
Demonstrate curiosity and a critical spirit of enquiry	ECE
Practice confidentiality at all times	ECE
Demonstrate knowledge of the importance of ethical approval (and owner consent for clinical research)	ECE
Show humility	ECE

WORKING WITH COLLEAGUES

Objective: to demonstrate good working relationships with colleagues and appropriate communication skills.
Veterinary pathologists will:

- strive for continuing improvement in all aspects of their work and that of colleagues while mindful of priorities and high standards
- have effective interpersonal skills which enable them to bring out the best in colleagues, to resolve conflicts when they arise and to develop working relationships within the team
- support teams that bring together different professions and disciplines and other agencies, to provide high quality veterinary care
- develop an understanding of leadership by drawing on values, strengths and abilities to deliver high standards of care.

Working with multi-disciplinary teams	
Knowledge	**Assessment Methods**
Use specific techniques and methods that facilitate effective and empathic communication	CbD, DOPS, ECE
Appropriately apply facilitation and conflict resolution methods	CbD, DOPS, ECE
Skills	
Demonstrate effective communication. Seek advice if unsure	CbD, DOPS, ECE
Recognise when input from another specialty is required	CbD, DOPS, ECE
Work effectively with other professionals, including demonstration of material at meetings	CbD, DOPS, ECE
Value skills and contribution of colleagues	CbD, DOPS, ECE
Recognise and work within own limitations	CbD, DOPS, ECE
Recognise when to delegate	CbD, DOPS, ECE
Show leadership and supervise safely	CbD, DOPS, ECE
Behaviours	
Show respect for others opinions	ECE
Show conscientiousness and work cooperatively	ECE
Value colleagues, including non-medical professionals, and recognise good advice	ECE
Recognise and work within own limitations	ECE
Show recognition of a team approach and willingness to consult and work as part of a team	ECE

Communication with colleagues	
Knowledge	**Assessment Methods**
Communicate with other members of the pathology department, and other departments	CbD, DOPS, ECE
Communicate appropriately in writing, through letters and reports	CbD, DOPS, ECE
Justify when to phone a referring vet or client	CbD, DOPS, ECE
Skills	
Use appropriate language	CbD, DOPS, ECE
Select an appropriate communication method	CbD, DOPS, ECE
Behaviours	
Show promptness and respond courteously and fairly	ECE

Complaints	
Knowledge	**Assessment Methods**
Show awareness of the local complaints procedures	CbD, DOPS, ECE
Show an awareness of systems of independent review	CbD, DOPS, ECE
Justify when to discuss a complaint by phone or in writing with a referring vet or client	CbD, DOPS, ECE
Skills	
Anticipate potential problems	CbD, DOPS, ECE
Manage dissatisfied colleagues	CbD, DOPS, ECE
Behaviours	
Act with honesty and sensitivity promptly	ECE
Prepared to accept responsibility when appropriate	ECE

Creating an environment in which mistakes can be openly discussed and lessons learned	
Knowledge	**Assessment Methods**
Show awareness of good diagnostic and laboratory practices in place within institutions	CbD, DOPS, ECE
Skills	
Recognise the advantages and disadvantages of guidelines	CbD, DOPS, ECE

Report and investigate critical incidents	CbD, DOPS, ECE
Demonstrate the ability to take appropriate action if you suspect you or a colleague may not be fit to practise	CbD, DOPS, ECE
Behaviours	
Recognise and show respect for diversity and differences in others	ECE

Self-awareness

Knowledge	**Assessment Methods**
Demonstrate knowledge of: • ways in which individual behaviours impact on others; personality types, group dynamics, learning styles, leadership styles • methods of obtaining feedback from others	CbD, DOPS, ECE
Skills	
Maintain and routinely practice critical self-awareness, including ability to discuss strengths and weaknesses with supervisor, recognising external influences and changing behaviour accordingly	CbD, DOPS, ECE
Show awareness of and sensitivity to the way in which cultural and religious beliefs affect approaches and decisions, and to respond respectfully	CbD, DOPS, ECE
Behaviours	
Recognise and show respect for diversity and differences in others	ECE

Self-management

Knowledge	**Assessment Methods**
Demonstrate applying tools and techniques for managing stress	CbD, DOPS, ECE
Recognise the role and responsibility of occupational health and other support networks	CbD, DOPS, ECE
Recognise personal and professional limitations as a pathologist	CbD, DOPS, ECE
Skills	
Recognise the manifestations of stress on self and others and know where and when to look for support	CbD, DOPS, ECE
Demonstrate balancing personal and professional roles and responsibilities	CbD, DOPS, ECE

Prioritise tasks, having realistic expectations of what can be completed by self and other	CbD, DOPS, ECE
Behaviours	
Be conscientious, able to manage time and delegate appropriately	ECE
Recognise personal health as an important issue	ECE

Self-development	
Knowledge	**Assessment Methods**
Describe local processes for dealing with and learning from errors	CbD, DOPS, ECE
Acknowledge the importance of best practice, transparency and consistency	CbD, DOPS, ECE
Skills	
Use a reflective approach to practice with an ability to learn from previous experience	CbD, DOPS, ECE
Use assessment, appraisal, complaints and other feedback to discuss and develop an understanding of own development needs	CbD, DOPS, ECE
Behaviours	
Prepared to accept responsibility when appropriate	ECE
Show commitment to continuing professional development which involves seeking training and self-development opportunities, learning from colleagues and accepting constructive criticism	ECE

Acting with integrity	
Knowledge	**Assessment Methods**
Describe the professional, legal and ethical codes pertaining to the trainee's specialty	CbD, DOPS, ECE
Skills	
Recognise, analyse and know how to deal with unprofessional behaviours in the workplace	CbD, DOPS, ECE
Create open and non-discriminatory professional working relationships with colleagues	CbD, DOPS, ECE
Demonstrate awareness of the need to prevent bullying and harassment	CbD, DOPS, ECE
Behaviours	
Acceptance of professional regulation	ECE

Promotion of professional attitudes and values	ECE
Demonstrating acting with probity and willingness to be truthful and to admit errors, when appropriate	ECE

Applying knowledge and evidence	
Knowledge	**Assessment Methods**
Describe the professional, legal and ethical codes pertaining to the trainee's specialty	CbD, DOPS, ECE
Skills	
Create open and non-discriminatory professional working relationships with colleagues	CbD, DOPS, ECE
Awareness of the need to prevent bullying and harassment	CbD, DOPS, ECE
Behaviours	
Acceptance of professional regulation	ECE
Promotion of professional attitudes and values	ECE
Demonstrating acting with probity and willingness to be truthful and to admit errors, when appropriate	ECE

HEALTH

Objective: to understand the importance of the personal health.

Veterinary pathologists will:

- act quickly and effectively if they have reason to believe that their own or a colleague's conduct, performance or health may put patients, colleagues or study data at risk.

Personal health

Knowledge	Assessment Methods
Demonstrate knowledge of occupational health services	CbD, DOPS, ECE
Demonstrate knowledge of one's responsibilities to the staff	CbD, DOPS, ECE
Skills	
Recognise when personal health takes priority over work pressures and to be able to take the necessary time off	CbD, DOPS, ECE
Behaviours	
Recognise personal health as an important issue	ECE

Stress

Knowledge	Assessment Methods
Demonstrate awareness of the effects of stress	CbD, DOPS, ECE
Demonstrate knowledge of support facilities for veterinarians	CbD, DOPS, ECE
Skills	
Develop appropriate coping mechanisms for stress and ability to seek help if appropriate	CbD, DOPS, ECE
Behaviours	
Recognise the manifestations of stress on self and others	ECE

PROBITY

Objective: to be able to demonstrate probity in all aspects of professional practice.

Veterinary pathologists will:

- always act in their personal and professional lives to maintain public trust in the profession
- undertake duties such as writing reports, giving evidence and completing and signing documents in a timely, honest and conscientious way
- through their leadership encourage the development and practice of these qualities in their colleagues

Service information	
Knowledge	**Assessment Methods**
Outline legal framework for laboratory publicity	CbD, DOPS, ECE
Skills	
Produce clear and accurate advertisements and supporting paperwork	CbD, DOPS, ECE
Behaviours	
Recognise absolute importance of accuracy and impartiality	ECE

Writing reports and giving evidence	
Knowledge	**Assessment Methods**
Show understanding pathological data required to produce reports and prepare written or oral evidence	CbD, DOPS, ECE
Skills	
Produce clear and accurate oral and written reports	CbD, DOPS, ECE
Behaviours	
Show honesty and integrity	ECE
Show timeliness	ECE

Research	
Knowledge	**Assessment Methods**
Show understanding of methodologies applied to research projects	CbD, DOPS, ECE
Skills	
Demonstrate the ability to obtain ethical approval	CbD, DOPS, ECE
Behaviours	

Conduct research with honesty and integrity	ECE

Financial dealings	
Knowledge	**Assessment Methods**
Show understanding of financial basis of pathological investigations	CbD, DOPS, ECE
Skills	
Monitor annual budget information	CbD, DOPS, ECE
Behaviours	
Manage funds for the purpose for which they are intended	ECE
Declare conflicts of interest	ECE

APPENDIX 2 a-c

Appendices 2 are the species specific requirements in addition to Appendix 1 the species specific curricula are intended as a guide only to the range of skills and knowledge that are required and are not intended to be exhaustive.

Candidates are encouraged to read curricula for other species groups to get an idea of the range of knowledge required to reach the required standard.

Appendix 2a: Laboratory Animal

GENERAL

Rat, mouse, monkey, dog, rabbit, minipig, PME

Knowledge and skills	Assessment Methods
Prepare full necropsy, full tissue list	CbD, DOPS, ECE
Show the ability to sample and fix gross abnormalities	CbD, DOPS, ECE
Examine all tissue	CbD, DOPS, ECE
Differentiate spontaneous changes from any which might be artefactual, infectious and/or xenobiotic induced	CbD, DOPS, ECE
Differentiate between pathological and autolytic changes	CbD, DOPS, ECE

HISTOLOGY

Rat, mouse, monkey, dog, rabbit, minipig

Knowledge and skills	Assessment Methods
Show the ability to trim tissues so suitable for routine toxicology study	CbD, DOPS, ECE
Show the ability to sample tumours and other gross abnormalities	CbD, DOPS, ECE
Demonstrate basic knowledge of ways to prevent artefacts and reworking of blocks	CbD, DOPS, ECE
Recognise artefacts of processing and sectioning	CbD, DOPS, ECE
Demonstrate the ability to interpret IHC for various conditions/tumours	CbD, DOPS, ECE
Demonstrate basic knowledge of antigen retrieval, antibody structure, epitope blocking and the use of controls for IHC	CbD, DOPS, ECE
Demonstrate knowledge and interpretation of ‘special’ tinctorial stains	CbD, DOPS, ECE

Mechanisms and Modes of Action in Laboratory Animals	
Knowledge and skills	**Assessment Methods**
Demonstrate a basic understanding of induced changes (including xenobiotics, infectious diseases, ageing, genetic modifications, biologicals, pharmaceuticals and other chemical agents)	CbD, DOPS, ECE
Demonstrate a basic understanding of molecular pathology techniques e.g. IHC,ISH, Laser Capture Microdissection and their utility	CbD, DOPS, ECE
Demonstrate a basic understanding of the types and roles of all laboratory animal models and the rationale for their use – e.g. models of disease, human safety and risk assessment	CbD, DOPS, ECE

ORGAN SYSTEMS

Upper gastrointestinal tract	
Knowledge and skills	**Assessment Methods**
Demonstrate knowledge of congenital/developmental, inflammatory, infectious, degenerative, vascular, proliferative and neoplastic conditions	CbD, DOPS, ECE
Recognise and describe the microscopic appearance of inflammatory, proliferative, metaplastic and neoplastic lesions	CbD, DOPS, ECE
Recognise macroscopically common lesions including: Oesophageal ulceration and perforation, Gastric ulceration and hyperplasia (forestomach), gastric erosion/ulceration (glandular)	CbD, DOPS, ECE
Recognise gastric gaseous distension in rodents(due to aerophagia)	CbD, DOPS, ECE

Lower gastrointestinal tract	
Knowledge and skills	**Assessment Methods**
Demonstrate knowledge of congenital/developmental, inflammatory, infectious, degenerative, vascular, proliferative and neoplastic conditions: including inflammatory bowel disease and wasting syndromes in non-human primates	CbD, DOPS, ECE
Recognise Tyzzers's disease macroscopically	CbD, DOPS, ECE
Recognise and describe inflammatory, proliferative, metaplastic and neoplastic microscopic lesions	CbD, DOPS, ECE

Ocular	
Knowledge and skills	**Assessment Methods**
Demonstrate knowledge of congenital/developmental, inflammatory, infectious, degenerative, vascular, proliferative and neoplastic conditions affecting the globe, adnexae and retro-orbital region	CbD, DOPS, ECE
Describe appropriate handling and processing of the globe for LM and EM	CbD, DOPS, ECE
Recognise and describe developmental anomalies, inflammatory, degenerative and neoplastic lesions of globe and eyelids	CbD, DOPS, ECE

Head and neck, including nasal cavities	
Knowledge and skills	**Assessment Methods**
Demonstrate knowledge of congenital/developmental, inflammatory, infectious, degenerative, vascular, proliferative and neoplastic conditions including: An understanding of the anatomy of the nasal passages of mouse, rat, dog , rabbit and non-human primate SDAV infection in rats	CbD, DOPS, ECE
Demonstrate a knowledge of inhalation route pathology	CbD, DOPS, ECE
Recognise the macroscopic appearance of salivary gland tumours, Zymbal's gland tumour	CbD, DOPS, ECE
Recognise reactive changes and distinguish from neoplasia	CbD, DOPS, ECE
Recognise degenerative, proliferative and metaplastic changes	CbD, DOPS, ECE
Recognise changes due to local application of nasal xenobiotics	CbD, DOPS, ECE
Recognise changes in the nasal cavity due to gavage dosing – inhalation and regurgitation	CbD, DOPS, ECE

Respiratory	
Knowledge and skills	**Assessment Methods**
Demonstrate knowledge of congenital/developmental, inflammatory, infectious, degenerative, vascular, proliferative and neoplastic conditions including: Signature xenobiotic induced changes e.g. PQ, blephoromycin, the effects of gavage misdosing and intra-tracheal dosing	CbD, DOPS, ECE
Recognise the macroscopic appearance of Gavage Misdosing	CbD, DOPS, ECE

Neoplasia	
Recognise Intra-tracheal Dosing	CbD, DOPS, ECE
Recognise and describe the common subtypes of primary lung neoplasia	CbD, DOPS, ECE
Recognise and describe the presence of metastatic cancer in the lung	CbD, DOPS, ECE
Describe the features of non-neoplastic lung disease	CbD, DOPS, ECE
Recognise and describe inflammatory, degenerative changes	CbD, DOPS, ECE

Skin

Knowledge and skills	Assessment Methods
Demonstrate knowledge of congenital/developmental, inflammatory, infectious, degenerative, vascular, proliferative and neoplastic conditions including:	CbD, DOPS, ECE
Understand atopy, Species- specific and regional skin differences	CbD, DOPS, ECE
Demonstrate an ability to recognise and describe skin lesions	CbD, DOPS, ECE
Demonstrate the appropriate orientation of skin samples for sectioning	CbD, DOPS, ECE
Recognise and describe skin neoplasia and differentiation of tumour types	CbD, DOPS, ECE
Recognise and describe with adequate morphological description of features that may be spontaneous, acquired or associated with systemic disease	CbD, DOPS, ECE
Recognise and describe common autoimmune conditions	CbD, DOPS, ECE

Lymphoreticular pathology

Knowledge and skills	Assessment Methods
Demonstrate knowledge of congenital/developmental, inflammatory, infectious, degenerative, vascular, proliferative and neoplastic conditions including:	CbD, DOPS, ECE
Knowledge of enhanced immune system pathology testing (tier 2) and nomenclature for routine toxicology studies	
Signature xenobiotic induced changes e.g. corticosteroids	
Demonstrate recognition and sampling of Lymph node for neoplastic and non-neoplastic disease	CbD, DOPS, ECE

Demonstrate knowledge of examining bone marrow trephine biopsies, and bone marrow smears, where locally available	CbD, DOPS, ECE
Demonstrate knowledge of taking tissue for supplementary techniques (e.g. flow cytometry)Recognise and describe lymph node and marrow for lymphoma and metastatic tumour	CbD, DOPS, ECE
Recognise common reactive node patterns including follicular hyperplasia and sinus histiocytosis; distinguish from neoplasia	CbD, DOPS, ECE
Recognise and describe tonsillar hyperplasia, neoplasia and inflammation	CbD, DOPS, ECE

Ear

Knowledge and skills	Assessment Methods
Demonstrate knowledge of congenital/developmental, inflammatory, infectious, degenerative, vascular, proliferative and neoplastic conditions	CbD, DOPS, ECE
Demonstrate knowledge of how to sample and section rodent, non-human primate and dog head to view inner ear, and how to sample cochlea for auditory studies	CbD, DOPS, ECE
Recognise and describe gross lesions	CbD, DOPS, ECE
Diagnose basic skin and cartilage conditions	CbD, DOPS, ECE

Female genital tract

Knowledge and skills	Assessment Methods
Demonstrate knowledge of congenital/developmental, inflammatory, infectious, degenerative, vascular, proliferative and neoplastic conditions including species differences in reproductive cycles	CbD, DOPS, ECE
Demonstrate knowledge of ovarian follicle counts/staging	CbD, DOPS, ECE
Recognise and describe the gross and microscopic appearance of neoplasia and inflammation	CbD, DOPS, ECE
Identify changes due to normal cyclicity and pregnancy	CbD, DOPS, ECE
Recognise and describe organ specific changes and asynchrony between uterus, ovary and vaginal cycle	CbD, DOPS, ECE
Recognise changes that signify alerts for neoplastic potential	CbD, DOPS, ECE
Recognise and describe the microscopic appearance of inflammation and neoplasia	CbD, DOPS, ECE

Liver and gall bladder	
Knowledge	**Assessment Methods**
Demonstrate knowledge of congenital/developmental, inflammatory, infectious, degenerative, vascular, proliferative and neoplastic conditions including signature xenobiotic induced changes e.g. paracetamol, chloroform and PPAR's	CbD, DOPS, ECE
Recognise and describe inflammation, hypertrophy, degeneration, altered cell foci, neoplasia	CbD, DOPS, ECE
Recognise and describe the macroscopic appearance of neoplasia, degenerative changes, bacterial and parasitic infections	CbD, DOPS, ECE

Cardiovascular system	
Knowledge and skills	**Assessment Methods**
Demonstrate knowledge of: congenital/developmental, inflammatory, infectious, degenerative, vascular, proliferative and neoplastic conditions including arteritis including Beagle pain syndrome and signature xenobiotic induced changes e.g. doxorubicin, PDEIV	CbD, DOPS, ECE
Demonstrate knowledge of the correlation between histopathology changes and ECG trace readings and other functional measures	CbD, DOPS, ECE
Recognise and describe microscopic changes of inflammation, degeneration and neoplasia	CbD, DOPS, ECE
Recognise and describe the macroscopic appearance of neoplasia and inflammatory conditions of the heart and blood vessels	CbD, DOPS, ECE

Male genital tract	
Knowledge and skills	**Assessment Methods**
Demonstrate knowledge of congenital/developmental, inflammatory, infectious, degenerative, vascular, proliferative and neoplastic conditions including species differences and accessory sex organs as well as signature xenobiotic induced changes e.g. phthalates	CbD, DOPS, ECE
Demonstrate knowledge of alternative fixatives for testes	CbD, DOPS, ECE
Demonstrate staging of seminiferous tubules in the testes to understand functional changes	CbD, DOPS, ECE
Recognise and describe neoplasia and inflammatory conditions	CbD, DOPS, ECE

Recognise artefacts of different fixation in the testes	CbD, DOPS, ECE

Endocrine pathology

Knowledge and skills	Assessment Methods
Demonstrate knowledge of congenital/developmental, inflammatory, infectious, degenerative, vascular, proliferative and neoplastic conditions including the main types of endocrine tumour	CbD, DOPS, ECE
Demonstrate an understanding of the consequences of endocrine perturbation in different spp – e.g. for impact on reproductive tract and signature xenobiotic-induced changes e.g. Addison's effects of corticosteroids	CbD, DOPS, ECE
Demonstrate an understanding of how organ changes are linked e.g. pituitary tumours, mammary tumours, uterine tumours	CbD, DOPS, ECE
Recognise neoplasia and inflammatory conditions	CbD, DOPS, ECE
Recognise normal and perturbed endocrine organs	CbD, DOPS, ECE
Recognise the effects of poor tissue handling	CbD, DOPS, ECE

Soft tissue

Knowledge and skills	Assessment Methods
Demonstrate knowledge of congenital/developmental, inflammatory, infectious, degenerative, vascular, proliferative and neoplastic conditions	CbD, DOPS, ECE
Recognise and describe the morphological features suggestive of main subtypes of tumours (i.e. lipomatous, fibromatous, myxomatous, neural, vascular characteristics)	CbD, DOPS, ECE
Recognise and describe abdominal and thoracic masses	CbD, DOPS, ECE
Demonstrate knowledge of immunohistochemical techniques used for tumour differentiation	CbD, DOPS, ECE

Neuropathology

Knowledge and skills	Assessment Methods
Demonstrate knowledge of congenital/developmental, inflammatory, infectious, degenerative, vascular, proliferative and neoplastic condition including a knowledge of the classification of tumours of the central nervous system: xenobiotic induced changes e.g. OPs	CbD, DOPS, ECE

Demonstrate an awareness of specialised neuropathology techniques e.g. teased nerve preparations and resin sectioning	CbD, DOPS, ECE
Demonstrate an awareness of FOB neurotoxicity tests and correlation with observed pathological changes	CbD, DOPS, ECE
Recognise and distinguish intrinsic from metastatic tumours of the brain	CbD, DOPS, ECE
Recognise and describe benign tumours of the meninges and peripheral nerves	CbD, DOPS, ECE
Recognise and distinguish meningitis, encephalitis, myelitis, polioencephalitis, leukoencephalitis and degenerative changes of the CNS	CbD, DOPS, ECE
Show an understanding of artefactual changes	CbD, DOPS, ECE
Understand the value of immunohistochemistry in the diagnosis of CNS and PNS tumours	CbD, DOPS, ECE
Demonstrate knowledge of major sub-anatomic regions of the brain	CbD, DOPS, ECE

Urinary tract

Knowledge and skills	Assessment Methods
Demonstrate knowledge of congenital/developmental, inflammatory, infectious, degenerative, vascular, proliferative and neoplastic conditions including signature xenobiotic induced changes e.g. petroleum	CbD, DOPS, ECE
Demonstrate knowledge of the integration of histopathological changes with functional correlates	CbD, DOPS, ECE
Show understanding of the value of immunohistochemistry and electron microscopy in the diagnosis of glomerulonephritis	CbD, DOPS, ECE
Demonstrate awareness of specialised techniques e.g. hyaline droplet special stains/IHC	CbD, DOPS, ECE
Recognise and describe gross macroscopic changes including renal neoplasia, congenital disorders, pyelonephritis, bladder tumours and inflammation	CbD, DOPS, ECE
Recognise glomerular and tubular changes and differentiate between inflammatory, toxic, degenerative and immune aetiologies	CbD, DOPS, ECE
Recognise preneoplastic and neoplastic changes in the kidney and bladder	CbD, DOPS, ECE

Recognise procedural induced changes e.g. indwelling catheter irritation in the bladder, inadvertent renal cannulation when placing femoral or vena cava catheters	CbD, DOPS, ECE

Bone and joint pathology

Knowledge and skills	Assessment Methods
Demonstrate knowledge of congenital/developmental, inflammatory, infectious, degenerative, vascular, proliferative and neoplastic conditions including osteoporosis versus osteomalacia, main types of primary bone tumours, chondromucinous degeneration	CbD, DOPS, ECE
Demonstrate basic knowledge of cartilage scoring systems	CbD, DOPS, ECE
Demonstrate knowledge of special stains for different components of cartilage/joint structures	CbD, DOPS, ECE
Recognise and describe bony abnormalities including fractures, non-unions and congenital disorders	CbD, DOPS, ECE
Recognise the appearance of normal bone, joints and synovium	CbD, DOPS, ECE
Recognise the appearance and use of calcified and non-decalcified sections	CbD, DOPS, ECE
Recognise and describe inflammatory and neoplastic changes	CbD, DOPS, ECE

Appendix 2 b Small domestic animals (dogs and cats)

General

Knowledge and skills	Assessment Methods
Describe, explain and diagnose forensic cases	CbD, DOPS, ECE
Describe, explain and diagnoses neonatal cases	CbD, DOPS, ECE
Describe, explain and diagnose cases of unexpected death	CbD, DOPS, ECE
Describe, explain and diagnose cases of suspended malpractice	CbD, DOPS, ECE
Describe and explain neonatal congenital abnormalities and infectious disease	CbD, DOPS, ECE
Describe breed related predispositions especially in pedigree animals (cats and dogs)	CbD, DOPS, ECE

Upper gastrointestinal tract

Knowledge and skills	Assessment Methods
Display an understanding of the characteristics of diagnostic quality biopsies and apply the WSAVA based evaluation of gastric and duodenal endoscopic biopsies	CbD, DOPS, ECE
Show ability to distinguish physiological muscular hypertrophy vs pathological change	CbD, DOPS, ECE
Recognise gastritis vs neoplasia	CbD, DOPS, ECE
Recognise pyloric stenosis and hypertrophic pyloric gastropathy in the dog	CbD, DOPS, ECE
Demonstrate an appreciation of the importance or otherwise of Helicobacter	CbD, DOPS, ECE

Lower gastrointestinal tract

Knowledge and skills	Assessment Methods
Display an understanding of WSAVA based evaluation of colonic endoscopic biopsies	CbD, DOPS, ECE
Show ability to distinguish physiological muscular hypertrophy vs pathological change	CbD, DOPS, ECE
Understand normal distribution of mucosa-associated lymphoid tissue	CbD, DOPS, ECE
Identify mesenteric lymph nodes in young dogs and cats	CbD, DOPS, ECE

Identify presence of allergic/inflammatory bowel disease	CbD, DOPS, ECE
Differentiate lymphocytic enteritis and alimentary lymphoma, particularly in cats	CbD, DOPS, ECE
Distinguish hyperplastic (metaplastic) from adenomatous polyps	CbD, DOPS, ECE
Recognise inflammatory bowel disease. neoplasia; parasitic/bacterial infection and viral infection e.g. parvoviral lesions in puppies	CbD, DOPS, ECE

Respiratory

Knowledge and skills	Assessment Methods
Understand normal cytology of BALF/tracheal washes	CbD, DOPS, ECE
Demonstrate post mortem examination of lungs	CbD, DOPS, ECE
Understand application of lung biopsy	CbD, DOPS, ECE
Recognise presence of the common subtypes of primary lung cancer in biopsies	CbD, DOPS, ECE
Recognise the presence of metastatic cancer in the lung	CbD, DOPS, ECE
Describe the features of non-neoplastic lung disease (e.g. inflammatory, toxic and infectious)	CbD, DOPS, ECE

Skin

Knowledge and skills	Assessment Methods
Accurate gross description of skin lesions	CbD, DOPS, ECE
Show appropriate handling of orientated or complex skin specimens	CbD, DOPS, ECE
Understand applications of fine needle aspirate cytology	CbD, DOPS, ECE
Describe main patterns of Inflammation, neoplasia, atrophic dermatopathy (e.g. endocrinopathies) and autoimmune conditions	CbD, DOPS, ECE
Display an understanding of the use and implementation of epidermal and dermal neoplasia grading systems	CbD, DOPS, ECE
Demonstrate the ability to diagnose basic skin cancer types including squamous cell carcinoma, basal cell carcinoma, follicular tumours, melanoma and mast cell tumours	CbD, DOPS, ECE
Adequate morphological description of features seen in an inflammatory skin biopsy	CbD, DOPS, ECE

Lymphoreticular pathology	
Knowledge and skills	**Assessment Methods**
Understand how to evaluate lymph nodes for neoplastic and non-neoplastic disease	CbD, DOPS, ECE
Understand best practice for examining and sampling the spleen	CbD, DOPS, ECE
Gain experience of examining bone marrow trephine biopsies, where locally available	CbD, DOPS, ECE
Demonstrate taking tissue for supplementary techniques (e.g. flow cytometry)	CbD, DOPS, ECE
Recognise common reactive node patterns including follicular hyperplasia	CbD, DOPS, ECE
Recognise lymphoma versus metastatic disease	CbD, DOPS, ECE
Recognise common immunohistochemical stains in lymphoma investigations	CbD, DOPS, ECE
Display an understanding of the use and implementation of WHO classification and grading systems in lymphomas	CbD, DOPS, ECE
Understand when additional testing e.g. PARR testing are useful in investigating troublesome classes	CbD, DOPS, ECE

Head and neck	
Knowledge and skills	**Assessment Methods**
Describe common conditions affecting the oral cavity, including dental lesions	CbD, DOPS, ECE
Recognise reactive inflammatory changes and distinguish from neoplasia e.g. Gingival fibrous hyperplasia vs. Fibromatous epulis vs. Acanthomatous epulis	CbD, DOPS, ECE

Female genital tract	
Knowledge and skills	**Assessment Methods**
Analyse ovariohysterectomy specimens for malignant or benign disease	CbD, DOPS, ECE
Distinguish inflammation, neoplasia, cystic ovarian disease and hormonally induced disease	CbD, DOPS, ECE

Mammary gland

Knowledge and skills	Assessment Methods
Describe lumpectomy / mammary strip. E.g. the benefits of wide local excision for macroscopic tumour, evaluation of local lymph nodes	CbD, DOPS, ECE
Diagnose malignant vs benign mammary lesions using the WHO classification system	CbD, DOPS, ECE
Understand the concept of the 'fertile ground', hormonally induced mammary neoplasia	CbD, DOPS, ECE
Display an understanding of the use and implementation of malignant mammary gland tumour grading schemes	CbD, DOPS, ECE
Recognise increased risk of malignant mammary neoplasia in cats	CbD, DOPS, ECE

Male genital tract

Knowledge and skills	Assessment Methods
Identify testicular masses and cryptorchid testes	CbD, DOPS, ECE
Understand normal size and shape of prostate	CbD, DOPS, ECE
Recognise seminoma, interstitial cell tumour, Sertoli cell tumour vs atrophy and inflammatory lesions	CbD, DOPS, ECE
Distinguish prostatic hyperplasia vs neoplasia vs inflammatory disorder	CbD, DOPS, ECE

Liver and gall bladder

Knowledge and skills	Assessment Methods
Understand application of fine needle aspirates versus tru-cut needle core and wedge biopsies	CbD, DOPS, ECE
Recognise normal liver on needle biopsy, the characteristics of diagnostic quality biopsies, and understand value of specific special stains	CbD, DOPS, ECE
Display an understanding of the WSAVA criteria for diagnosing specific liver diseases	CbD, DOPS, ECE
Recognise chronic cholecystitis, cholesterolosis	CbD, DOPS, ECE
Distinguish nodular regeneration, vacuolar changes, chronic hepatitis/end stage liver disease, primary and metastatic neoplasia	CbD, DOPS, ECE

Identify presence of cirrhosis, hepatitis or metastatic tumour in tru-cut needle biopsies	CbD, DOPS, ECE

Pancreas

Knowledge and skills	Assessment Methods
Distinguish exocrine and endocrine lesions	CbD, DOPS, ECE
Distinguish pancreatitis from neoplasia and hyperplasia	CbD, DOPS, ECE

Cardiovascular system

Knowledge and skills	Assessment Methods
Understand routine dissection of the heart and examination of the valves	CbD, DOPS, ECE
Recognise inflammation, fibrosis and neoplastic infiltrates	CbD, DOPS, ECE

Endocrine pathology

Knowledge and skills	Assessment Methods
Understand normal structure and function of thyroid, parathyroid, adrenal and pituitary glands	CbD, DOPS, ECE
Distinguish hyperplasia vs neoplasia	CbD, DOPS, ECE

Soft tissue

Knowledge and skills	Assessment Methods
Understand principles of soft tissue tumour resection, simple (i.e. lumpectomy) versus radical (invasive soft tissue sarcoma)	CbD, DOPS, ECE
Understand how to distinguish different mesenchymal tumours (lipomatous, fibromatous, perivascular wall tumours, neural)	CbD, DOPS, ECE
Demonstrate knowledge of immunohistochemical techniques to apply to diagnosis of poorly differentiated tumours	CbD, DOPS, ECE
Recognise morphological features suggestive of main subtypes of tumours and understand importance of excision margins and likelihood of metastatic spread	CbD, DOPS, ECE
Display an understanding of the use and implementation of malignant soft tissue tumours grading schemes	CbD, DOPS, ECE

Neuropathology	
Knowledge and skills	**Assessment Methods**
Describe and explain biopsy specimens from the central or peripheral nervous system	CbD, DOPS, ECE
Demonstrate knowledge of the WHO classification of tumours of the central nervous system (CNS)	CbD, DOPS, ECE
Demonstrate an understanding of the value of immunohistochemistry in the diagnosis of CNS tumours	CbD, DOPS, ECE
Distinguish primary CNS tumours from distant metastatic CNS tumours of the brain	CbD, DOPS, ECE
Recognise benign tumours of the meninges and peripheral nerves	CbD, DOPS, ECE
Recognise and distinguish meningitis, encephalitis, myelitis, polioencephalitis, and leukoencephalitis	CbD, DOPS, ECE

Urinary tract	
Knowledge and skills	**Assessment Methods**
Understand normal structure and function of kidneys, ureters and urinary bladder	CbD, DOPS, ECE
Recognise common inflammatory, toxic, neoplastic and developmental conditions	CbD, DOPS, ECE

Osteoarticular pathology	
Knowledge and skills	**Assessment Methods**
Understand proper handling of a trephine bone-biopsy	CbD, DOPS, ECE
Understand use of calcified versus de-calcified sections	CbD, DOPS, ECE
Recognise normal bone and joint structure and function	CbD, DOPS, ECE
Distinguish primary bone tumour from other sarcomas and from reactive hyperplasia	CbD, DOPS, ECE
Demonstrate a knowledge of the biological behaviour of bone neoplasia and differences therein dependant on anatomic location and degree of malignancy	CbD, DOPS, ECE
Display an ability to correctly interpret clinical data in the subsampling of large bone biopsies	CbD, DOPS, ECE
Understand the value of adjunct diagnostic modalities, e.g. radiography/CT in the diagnoses of bone lesions and an understanding of when and how this data will refine a	CbD, DOPS, ECE

diagnosis

Appendix 2c Large domestic animals

Candidates must choose from two options Ruminants with Horse or Ruminants with Pig and should therefore study the appropriate curricula. Candidates are strongly advised to also consult the species curricula for which they are not being examined as part of their training.

HORSE

Abortion investigation

Knowledge and skills	Assessment Methods
Recognise and describe placental and fetal abnormalities	CbD, DOPS, ECE
Understand normal placental and foetal gross anatomy and histopathology	CbD, DOPS, ECE
Demonstrate ability to post mortem and sample an aborted fetus	CbD, DOPS, ECE
Identify causes of abortion, including notifiable diseases	CbD, DOPS, ECE
Collection of samples in suspect EHV1 infection	CbD, DOPS, ECE

Gastrointestinal tract

Knowledge and skills	Assessment Methods
Demonstrate knowledge of and recognise features of oesophageal ulceration, gastric ulceration, gastric parasites, small intestinal parasites, large intestinal parasites, proximal enteritis, idiopathic focal or diffuse, eosinophilic enteritis, strangulating lesions, typhlocolitis, neoplasia, (including immunohistochemical differentiation of spindle cell tumours) and grass sickness	CbD, DOPS, ECE
Recognise and describe inflammatory and neoplastic lesions	CbD, DOPS, ECE
Distinguish between viable and non-viable tissues in gut resections/biopsies	CbD, DOPS, ECE

Ocular

Knowledge and skills	Assessment Methods
Identify lesions affecting the globe and eyelids, including third eyelid	CbD, DOPS, ECE
Identify appropriate handling and processing of the globe	CbD, DOPS, ECE
Demonstrate knowledge of and recognise features of intraocular neoplasia, ocular inflammation, eyelid neoplasia, inflammation of the eyelid, including parasitic and environmental causes	CbD, DOPS, ECE

Recognise and describe inflammatory and neoplastic lesions of globe and eyelids	CbD, DOPS, ECE

Respiratory

Knowledge and skills	Assessment Methods
Understand application of tracheal washes, broncho-alveolar lavages, bronchial biopsies and core biopsies of lung	CbD, DOPS, ECE
Understand PM samples of lung and pleural biopsy	CbD, DOPS, ECE
Understand lung tumours	CbD, DOPS, ECE
Identify causes and pathogenesis of pneumonia/ pleuropneumonia and equine multinodular pulmonary fibrosis	CbD, DOPS, ECE
Recognise and describe primary lung tumours	CbD, DOPS, ECE
Recognise the presence of metastatic tumours in the lung	CbD, DOPS, ECE
Recognise and describe inflammatory disease of the airways and/or parenchyma	CbD, DOPS, ECE

Skin

Knowledge and skills	Assessment Methods
Understand gross description and orientation of skin lesions	CbD, DOPS, ECE
Recognise common skin tumours, parasitic and environmental causes of skin disease and immune-mediated skin disease	CbD, DOPS, ECE
Recognise and describe skin tumours, including squamous cell carcinoma, melanocytic tumours, lymphoma, sarcoid and other spindle cell tumours	CbD, DOPS, ECE
Recognise and describe inflammatory skin lesions, including eosinophilic granulomas and immune-mediated diseases	CbD, DOPS, ECE

Lymphoreticular pathology

Knowledge and skills	Assessment Methods
Understand how to evaluate lymph node for neoplastic and non-neoplastic disease	CbD, DOPS, ECE
Recognise and describe lymph node and marrow biopsies for lymphoma and metastatic tumour	CbD, DOPS, ECE
Recognise common reactive node patterns including follicular hyperplasia and sinus histiocytosis; distinguish from neoplasia	CbD, DOPS, ECE

Recognise and describe tonsillar hyperplasia, neoplasia and inflammation	CbD, DOPS, ECE

Head and neck

Knowledge and skills	Assessment Methods
Understand different biopsy methods used for structures of the head and neck	CbD, DOPS, ECE
Recognise and describe inflammatory, neoplastic, depositional, haemorrhagic and cystic lesions	CbD, DOPS, ECE

Female genital tract

Knowledge	Assessment Methods
Understand application of ovariectomy, endometrial and lower genital tract biopsy	CbD, DOPS, ECE
Recognise and describe neoplastic and cystic lesions of the ovary	CbD, DOPS, ECE
Recognise and describe vulval inflammation and neoplasia	CbD, DOPS, ECE
Recognise and describe inflammatory and degenerative uterine changes	CbD, DOPS, ECE

Liver

Knowledge and skills	Assessment Methods
Understand application of core versus wedge biopsy of liver	CbD, DOPS, ECE
Recognise normal liver on core biopsy	CbD, DOPS, ECE
Recognise and describe megalocytosis, hepatitis, lipidosis and metastatic tumours in core biopsies	CbD, DOPS, ECE
Understand the use of special stains	CbD, DOPS, ECE

Cardiovascular system

Knowledge and skills	Assessment Methods
Understand how to examine blood vessels and heart	CbD, DOPS, ECE
Understand common inflammatory, hyperplastic and neoplastic lesions	CbD, DOPS, ECE
Recognise and describe inflammation in vessels and in post mortem biopsies of heart	CbD, DOPS, ECE
Recognise and describe neoplasia of the cardiovascular	CbD, DOPS, ECE

system

Male genital tract

Knowledge and skills	Assessment Methods
Describe and explain appropriate handling of orchidectomy specimens, including cryptorchid specimens	CbD, DOPS, ECE
Recognise and describe the changes present in descended and cryptorchid testicles, including neoplasia	CbD, DOPS, ECE

Endocrine system

Knowledge and skills	Assessment Methods
Recognise and describe tumours of the thyroid gland, adrenal gland and pituitary	CbD, DOPS, ECE
Recognise and describe secondary changes in the adrenal glands such as hyperplasia and haemorrhage	CbD, DOPS, ECE
Understand thyroid neoplasia, including immunohistochemical differentiation of follicular cell and C- cell tumours	CbD, DOPS, ECE

Soft tissue

Knowledge and skills	Assessment Methods
Identify soft tissue tumour and inflammatory biopsies	CbD, DOPS, ECE
Recognise and describe main subtypes of tumours (i.e. lipomatous, fibromatous, myxomatous, neural and vascular tumours)	CbD, DOPS, ECE
Recognise and describe inflammatory and metaplastic changes	CbD, DOPS, ECE

Central and peripheral nervous system

Knowledge and skills	Assessment Methods
Understand how to collect PM samples of brain, including choroid plexus, and autonomic ganglia	CbD, DOPS, ECE
Understand viral, bacterial (including bacterial toxins) and protozoal diseases, hepatic encephalopathy, equine degenerative myeloencephalopathy, leukoencephalomalacia, grass sickness	CbD, DOPS, ECE
CNS and peripheral nerve tumours, including an understanding of the value of immunohistochemistry in the diagnosis of CNS and PNS tumours	CbD, DOPS, ECE

Recognise and describe inflammatory, degenerative, aging and neoplastic changes	CbD, DOPS, ECE
Recognise and describe changes within the ganglia, including grass sickness	CbD, DOPS, ECE

Urinary tract

Knowledge and skills	Assessment Methods
Understand application renal biopsies, bladder biopsies and PM renal samples	CbD, DOPS, ECE
Recognise and describe renal and bladder neoplasia and inflammation	CbD, DOPS, ECE
Recognise and describe glomerular changes that might indicate glomerulonephritis	CbD, DOPS, ECE
Recognise renal and bladder neoplasia	CbD, DOPS, ECE
Demonstrate understanding of the use special of stains in renal biopsies	CbD, DOPS, ECE

Musculoskeletal system

Knowledge and skills	Assessment Methods
Understand how to handle a trephine bone-biopsy	CbD, DOPS, ECE
Understand use of calcified versus de-calcified sections	CbD, DOPS, ECE
Understand handling and processing of muscle biopsies	CbD, DOPS, ECE
Understand handling and processing of hoof/horn samples	CbD, DOPS, ECE
Recognise osteochondrosis, exertional rhabdomyolysis, atypical myopathy, degenerative myopathies, hoof - canker keratoma, laminitis and primary bone tumours	CbD, DOPS, ECE
Recognise and describe inflammatory, degenerative, hyperplastic, dysplastic and neoplastic changes	CbD, DOPS, ECE

PIG

Abortion and still birth Investigation

Knowledge and skills	Assessment Methods
Understand normal anatomy of placenta and fetus	CbD, DOPS, ECE
Undertake gross PME and sampling of fetus	CbD, DOPS, ECE
Recognise and describe placental and fetal abnormities	CbD, DOPS, ECE

Understand normal placental and fetal histopathology	CbD, DOPS, ECE
Understand the causes of abortion including infectious, nutritional and notifiable diseases	CbD, DOPS, ECE
Demonstrate the collecting of samples and knowledge of tests to investigate all common causes of abortion	CbD, DOPS, ECE
Demonstrate knowledge and use of special stains	CbD, DOPS, ECE

Gastrointestinal tract

Knowledge and skills	Assessment Methods
Recognise and describe gross pathology and distinguish from agonal and incidental lesions	CbD, DOPS, ECE
Recognise gastrointestinal parasitism, bacterial, viral and fungal infection, neoplasia, gastric ulceration, intestinal torsion, colitis and rectal stricture	CbD, DOPS, ECE
Recognise and describe congenital, inflammatory, infectious, nutritional, neoplastic and toxic lesions	CbD, DOPS, ECE
Recognise and describe swine dysentery	CbD, DOPS, ECE
Recognise and describe proliferative enteropathy	CbD, DOPS, ECE
Recognise and describe specific syndromes of unknown cause	CbD, DOPS, ECE
Understand normal and abnormal gastrointestinal tract histopathology	CbD, DOPS, ECE
Understand causes of gastrointestinal disease including , infectious, nutritional, toxic, neoplastic and notifiable diseases	CbD, DOPS, ECE
Collection of samples and knowledge of tests to investigate all common causes of gastrointestinal disease	CbD, DOPS, ECE
Demonstrate knowledge and use of special stains	CbD, DOPS, ECE

Respiratory system

Knowledge and skills	Assessment Methods
Recognise and describe gross pathology and distinguish from agonal and incidental lesions	CbD, DOPS, ECE
Recognise atrophic rhinitis, pneumonia and pleurisy	CbD, DOPS, ECE
Recognise and describe congenital, inflammatory, infectious, neoplastic and toxic lesion	CbD, DOPS, ECE
Recognise causes of respiratory disease including infectious,	CbD, DOPS, ECE

toxic, neoplastic and notifiable diseases	
Understand appropriate collection of samples and knowledge of tests to investigate all common causes of respiratory disease	CbD, DOPS, ECE
Demonstrate knowledge and use of special stains	CbD, DOPS, ECE

Musculoskeletal system

Knowledge and skills	Assessment Methods
Recognise and describe gross pathology and distinguish from agonal and incidental lesions	CbD, DOPS, ECE
Understand use of calcified versus de-calcified sections	CbD, DOPS, ECE
Understand handling and processing of muscle and hoof samples	CbD, DOPS, ECE
Understand common causes of arthritis	CbD, DOPS, ECE
Recognise and describe congenital, inflammatory, infectious, nutritional, toxic and neoplastic lesions	CbD, DOPS, ECE
Recognise osteochondritis dissecans	CbD, DOPS, ECE
Understand normal and abnormal musculoskeletal system histopathology	CbD, DOPS, ECE
Recognise causes of musculoskeletal disease including infectious, nutritional, toxic, neoplastic and notifiable diseases	CbD, DOPS, ECE
Understand appropriate collection of samples and knowledge of tests to investigate all common causes of musculoskeletal disease	CbD, DOPS, ECE
Demonstrate knowledge and use of special stains	CbD, DOPS, ECE

Urinary tract

Knowledge and skills	Assessment Methods
Recognise and describe gross pathology and distinguish from agonal and incidental lesions	CbD, DOPS, ECE
Recognise common causes of nephritis	CbD, DOPS, ECE
Recognise and describe congenital, inflammatory, infectious, nutritional, toxic, storage and neoplastic lesions	CbD, DOPS, ECE
Distinguish normal and abnormal urinary tract histopathology	CbD, DOPS, ECE
Recognise common causes of urinary tract disease including infectious, nutritional, toxic, storage, neoplastic and notifiable	CbD, DOPS, ECE

diseases	
Recognise appropriate collection of samples and knowledge of tests to investigate all common causes of urinary tract disease	CbD, DOPS, ECE
Demonstrate knowledge and use of special stains	CbD, DOPS, ECE

Central and peripheral nervous system

Knowledge and skills	Assessment Methods
Recognise and describe gross pathology and distinguish from agonal and incidental lesions	CbD, DOPS, ECE
Recognise and describe congenital, infectious, inflammatory, nutritional, toxic, storage and neoplastic lesions	CbD, DOPS, ECE
Recognise and describe meningitis	CbD, DOPS, ECE
Identify normal and abnormal central and peripheral nervous system histopathology	CbD, DOPS, ECE
Identify causes of central and peripheral nervous disease including infectious, inflammatory, nutritional, toxic, storage neoplastic and notifiable diseases	CbD, DOPS, ECE
Construct a collection of samples and knowledge of tests to investigate all common causes of central and peripheral nervous system disease	CbD, DOPS, ECE
Demonstrate knowledge and use of special stains	CbD, DOPS, ECE

Cardiovascular system

Knowledge and skills	Assessment Methods
Recognise and describe gross pathology and distinguish from agonal and incidental lesions	CbD, DOPS, ECE
Recognise endocarditis, myocarditis and pericarditis	CbD, DOPS, ECE
Recognise and describe congenital, infectious, inflammatory, nutritional, toxic and neoplastic lesions	CbD, DOPS, ECE
Recognise and describe mulberry heart disease	CbD, DOPS, ECE
Understand normal and abnormal cardiovascular system histopathology	CbD, DOPS, ECE
Recognise common causes of cardiovascular disease including infectious, inflammatory, nutritional, toxic neoplastic and notifiable diseases	CbD, DOPS, ECE

Understand appropriate collection of samples and knowledge of tests to investigate all common causes of cardiovascular system disease	CbD, DOPS, ECE
Demonstrate knowledge and use of special stains	CbD, DOPS, ECE

Integumentary system

Knowledge and skills	Assessment Methods
Recognise and describe gross pathology and distinguish from agonal and incidental lesions	CbD, DOPS, ECE
Recognise and describe congenital, infectious, inflammatory, nutritional, toxic and neoplastic lesions	CbD, DOPS, ECE
Recognise and describe PDNS	CbD, DOPS, ECE
Recognise and describe ectoparasitic diseases	CbD, DOPS, ECE
Recognise and describe photodermatitis	CbD, DOPS, ECE
Identify normal and abnormal cardiovascular system histopathology	CbD, DOPS, ECE
Identify causes of integumentary system disease (including infectious, inflammatory, nutritional, toxic, neoplastic and notifiable)	CbD, DOPS, ECE
Demonstrate the collection of samples and knowledge of tests to investigate all common causes of integumentary system disease	CbD, DOPS, ECE
Demonstrate knowledge and use of special stains	CbD, DOPS, ECE

Ocular (globe and eyelids)

Knowledge and skills	Assessment Methods
Recognise and describe gross pathology and distinguish from agonal and incidental lesions	CbD, DOPS, ECE
Demonstrate appropriate handing and processing of the globe	CbD, DOPS, ECE
Recognise and describe congenital, infectious, inflammatory, nutritional, toxic and neoplastic lesions	CbD, DOPS, ECE
Distinguish normal and abnormal ocular histopathology	CbD, DOPS, ECE
Identify causes of ocular disease including infectious, inflammatory, nutritional, toxic and neoplastic and notifiable diseases	CbD, DOPS, ECE

Collection of samples and knowledge of tests to investigate all common causes of ocular disease	CbD, DOPS, ECE
Demonstrate knowledge and use of special stains	CbD, DOPS, ECE

Lymphoreticular system (lymph nodes, spleen, thymus and bone marrow)	
Knowledge and skills	**Assessment Methods**
Recognise and describe gross pathology and distinguish from agonal and incidental lesions	CbD, DOPS, ECE
Show appropriate handling and processing of bone marrow	CbD, DOPS, ECE
Recognise and describe congenital, infectious, inflammatory, nutritional, toxic and neoplastic lesions	CbD, DOPS, ECE
Recognise and describe lymphosarcoma, normal and abnormal lymphoreticular histopathology	CbD, DOPS, ECE
Identify causes of lymphoreticular disease including infectious, inflammatory, nutritional, toxic neoplastic and notifiable diseases	CbD, DOPS, ECE
Collection of samples and knowledge of tests to investigate all common causes of lymphoreticular disease	CbD, DOPS, ECE
Demonstrate knowledge and use of special stains	CbD, DOPS, ECE

Liver	
Knowledge and skills	**Assessment Methods**
Recognise and describe gross pathology and distinguish from agonal and incidental lesions	CbD, DOPS, ECE
Recognise and describe congenital, infectious, inflammatory, nutritional, toxic and neoplastic lesions	CbD, DOPS, ECE
Recognise and describe hepatosis dietetica	CbD, DOPS, ECE
Recognise normal and abnormal liver histopathology	CbD, DOPS, ECE
Identify causes of liver disease including infectious, inflammatory, nutritional, toxic neoplastic and notifiable diseases	CbD, DOPS, ECE
Demonstrate the collection of samples and knowledge of tests to investigate all common causes of liver disease	CbD, DOPS, ECE
Demonstrate knowledge and use of special stains	CbD, DOPS, ECE

Endocrine system	
Knowledge and skills	**Assessment Methods**
Recognise and describe gross pathology and distinguish from agonal and incidental lesions	CbD, DOPS, ECE
Recognise and describe congenital, infectious, inflammatory, nutritional, toxic and neoplastic lesions	CbD, DOPS, ECE
Distinguish normal and abnormal endocrine histopathology	CbD, DOPS, ECE
Identify causes of endocrine disease including infectious, inflammatory, nutritional, toxic neoplastic and notifiable diseases	CbD, DOPS, ECE
Collection of samples and knowledge of tests to investigate all common causes of endocrine disease	CbD, DOPS, ECE
Demonstrate knowledge and use of special stains	CbD, DOPS, ECE

Genital tract and mammary glands	
Knowledge and skills	**Assessment Methods**
Recognise and describe gross pathology and distinguish from agonal and incidental lesions	CbD, DOPS, ECE
Recognise mastitis, orchitis / epididymitis	CbD, DOPS, ECE
Recognise and describe congenital, infectious, inflammatory, nutritional, toxic and neoplastic lesions	CbD, DOPS, ECE
Demonstrate distinguishing between normal and abnormal genital tract histopathology	CbD, DOPS, ECE
Understand causes of genital tract disease including infectious, inflammatory, nutritional, toxic neoplastic and notifiable diseases	CbD, DOPS, ECE
Understand collection of samples and knowledge of tests to investigate all common causes of genital tract disease	CbD, DOPS, ECE
Demonstrate knowledge and use of special stains	CbD, DOPS, ECE

RUMINANT

Abortion and still birth Investigation	
Knowledge and skills	**Assessment Methods**
Understand normal placental anatomy and histology	CbD, DOPS, ECE
Undertake methodical gross PME of fetus	CbD, DOPS, ECE

Understand causes of abortion including infectious, nutritional and notifiable diseases	CbD, DOPS, ECE
Understand collection of samples and knowledge of tests to investigate all common causes of abortion	CbD, DOPS, ECE
Demonstrate knowledge and use of special stains	CbD, DOPS, ECE
Recognise and describe placental and fetal abnormities	CbD, DOPS, ECE

Gastrointestinal tract

Knowledge and skills	Assessment Methods
Recognise and describe gross pathology and distinguish from agonal and incidental lesions	CbD, DOPS, ECE
Recognise common causes of gastrointestinal parasitism, bacterial, viral and fungal infection, neoplasia, Johne's disease and mucosal disease	CbD, DOPS, ECE
Recognise and describe congenital, inflammatory, infectious, nutritional, neoplastic and toxic lesions	CbD, DOPS, ECE
Recognise and describe changes seen in Johne’s disease	CbD, DOPS, ECE
Recognise and describe specific syndromes of unknown cause	CbD, DOPS, ECE
Distinguish normal and abnormal gastrointestinal tract histopathology	CbD, DOPS, ECE
Identify causes of gastrointestinal disease including, infectious, nutritional, toxic, neoplastic and notifiable diseases	CbD, DOPS, ECE
Show the collection of samples and knowledge of tests to investigate all common causes of gastrointestinal disease	CbD, DOPS, ECE
Demonstrate knowledge and use of special stains	CbD, DOPS, ECE

Respiratory system

Knowledge and skills	Assessment Methods
Recognise and describe gross pathology and distinguish from agonal and incidental lesions	CbD, DOPS, ECE
Recognise and describe congenital, inflammatory, infectious, neoplastic and toxic lesions	CbD, DOPS, ECE
Recognise and describe ovine pulmonary adenocarcinoma	CbD, DOPS, ECE
Recognise and describe acute interstitial and bronchointerstitial pneumonia	CbD, DOPS, ECE

Identify normal and abnormal respiratory system histopathology	CbD, DOPS, ECE
Causes of respiratory disease including infectious, toxic, neoplastic and notifiable diseases	CbD, DOPS, ECE
Collection of samples and knowledge of tests to investigate all common causes of respiratory disease	CbD, DOPS, ECE
Demonstrate knowledge and use of special stains	CbD, DOPS, ECE

Musculoskeletal system

Knowledge and skills	Assessment Methods
Recognise and describe gross pathology and distinguish from agonal and incidental lesions	CbD, DOPS, ECE
Understand use of calcified versus de-calcified sections	CbD, DOPS, ECE
Understand handling and processing of muscle and hoof samples	CbD, DOPS, ECE
Recognise and describe congenital, inflammatory, infectious, nutritional, toxic and neoplastic lesions	CbD, DOPS, ECE
Recognise and describe nutritional myopathy	CbD, DOPS, ECE
Recognise and describe clostridial infection	CbD, DOPS, ECE
Distinguish normal and abnormal musculoskeletal system histopathology	CbD, DOPS, ECE
Identify causes of musculoskeletal disease including infectious, nutritional, toxic, neoplastic and notifiable diseases	CbD, DOPS, ECE
Demonstrate the collection of samples and knowledge of tests to investigate all common causes of musculoskeletal disease	CbD, DOPS, ECE
Demonstrate knowledge and use of special stains	CbD, DOPS, ECE

Urinary tract

Knowledge and skills	Assessment Methods
Recognise and describe gross pathology and distinguish from agonal and incidental lesions	CbD, DOPS, ECE
Recognise and describe congenital, inflammatory, infectious, nutritional, toxic, storage and neoplastic lesions	CbD, DOPS, ECE
Recognise and describe nephrosis	CbD, DOPS, ECE

Recognise and describe amyloidosis	CbD, DOPS, ECE
Distinguish normal and abnormal urinary tract histopathology	CbD, DOPS, ECE
Identify causes of urinary tract disease including infectious, nutritional, toxic, storage, neoplastic and notifiable diseases	CbD, DOPS, ECE
Understand the pathogenesis of copper poisoning	CbD, DOPS, ECE
Understand collection of samples and knowledge of tests to investigate all common causes of urinary tract disease	CbD, DOPS, ECE
Demonstrate knowledge and use of special stains	CbD, DOPS, ECE

Central and peripheral nervous system

Knowledge and skills	Assessment Methods
Recognise and describe gross pathology and distinguish from agonal and incidental lesions	CbD, DOPS, ECE
Recognise and describe congenital, infectious, inflammatory, nutritional, toxic, storage and neoplastic lesions	CbD, DOPS, ECE
Recognise and describe transmissible spongiform Encephalopathies	CbD, DOPS, ECE
Recognise and describe meningitis	CbD, DOPS, ECE
Recognise and describe listeriosis	CbD, DOPS, ECE
Distinguish normal and abnormal central and peripheral nervous system histopathology	CbD, DOPS, ECE
Identify causes of central and peripheral nervous disease including infectious, inflammatory, nutritional, toxic, storage, neoplastic and notifiable diseases including enterotoxaemia, FSC and CCN	CbD, DOPS, ECE
Demonstrate the collection of samples and knowledge of tests to investigate all common causes of central and peripheral nervous system disease	CbD, DOPS, ECE
Demonstrate knowledge and use of special stains	CbD, DOPS, ECE

Cardiovascular system

Knowledge and skills	Assessment Methods
Recognise and describe gross pathology and distinguish from agonal and incidental lesions	CbD, DOPS, ECE
Recognise and describe congenital, infectious, inflammatory,	CbD, DOPS, ECE

nutritional, toxic and neoplastic lesions	
Recognise and describe endocarditis and epicarditis	CbD, DOPS, ECE
Recognise and describe vasculitis	CbD, DOPS, ECE
Distinguish normal and abnormal cardiovascular system histopathology	CbD, DOPS, ECE
Identify causes of cardiovascular disease including infectious, inflammatory, nutritional, toxic neoplastic and notifiable disease including MCF and nutritional cardiomyopathy	CbD, DOPS, ECE
Understand collection of samples and knowledge of tests to investigate all common causes of cardiovascular system disease	CbD, DOPS, ECE
Demonstrate knowledge and use of special stains	CbD, DOPS, ECE

Integumentary system

Knowledge and skills	Assessment Methods
Recognise and describe gross pathology and distinguish from agonal and incidental lesions	CbD, DOPS, ECE
Recognise and describe congenital, infectious, inflammatory, nutritional, toxic and neoplastic lesions	CbD, DOPS, ECE
Recognise and describe ringworm	CbD, DOPS, ECE
Recognise and describe contagious pustular dermatitis	CbD, DOPS, ECE
Distinguish normal and abnormal cardiovascular system histopathology	CbD, DOPS, ECE
Identify causes of Integumentary system disease including infectious, inflammatory, nutritional, toxic, neoplastic, congenital and notifiable diseases	CbD, DOPS, ECE
Identify causes and pathogenesis of photosensitisation	CbD, DOPS, ECE
Understand appropriate collection of samples and knowledge of tests to investigate all common causes of Integumentary system disease	CbD, DOPS, ECE
Demonstrate knowledge and use of special stains	CbD, DOPS, ECE

Ocular (globe and eyelids)

Knowledge and skills	Assessment Methods
Recognise and describe gross pathology and distinguish from agonal and incidental lesions	CbD, DOPS, ECE

Demonstrate appropriate handing and processing of the globe	CbD, DOPS, ECE
Recognise and describe congenital, infectious, inflammatory, nutritional, toxic and neoplastic lesions	CbD, DOPS, ECE
Recognise and describe squamous cell carcinoma	CbD, DOPS, ECE
Recognise and describe toxic retinal degeneration	CbD, DOPS, ECE
Distinguish normal and abnormal ocular histopathology	CbD, DOPS, ECE
Identify causes of ocular disease including infectious, inflammatory, nutritional, toxic and neoplastic and notifiable diseases	CbD, DOPS, ECE
Understand collection of samples and knowledge of tests to investigate all common causes of ocular disease	CbD, DOPS, ECE
Demonstrate knowledge and use of special stains	CbD, DOPS, ECE

Lymphoreticular system (lymph nodes, spleen, thymus and bone marrow)

Knowledge and skills	Assessment Methods
Recognise and describe gross pathology and distinguish from agonal and incidental lesions	CbD, DOPS, ECE
Show appropriate handling and processing of bone marrow	CbD, DOPS, ECE
Recognise and describe congenital, infectious, inflammatory, nutritional, toxic and neoplastic lesions	CbD, DOPS, ECE
Recognise and describe normal and abnormal bone marrow	CbD, DOPS, ECE
Distinguish normal and abnormal lymphoreticular histopathology	CbD, DOPS, ECE
Identify causes of lymphoreticular disease including infectious, inflammatory, nutritional, toxic neoplastic and notifiable diseases	CbD, DOPS, ECE
Understand collection of samples and knowledge of tests to investigate all common causes of lymphoreticular disease	CbD, DOPS, ECE
Understand the use of immunohistochemistry for phenotyping	CbD, DOPS, ECE
Demonstrate knowledge and use of special stains	CbD, DOPS, ECE

Liver

Knowledge and skills	Assessment Methods
Recognise and describe gross pathology and distinguish from agonal and incidental lesions	CbD, DOPS, ECE
Recognise and describe acute fasciolosis	CbD, DOPS, ECE
Recognise and describe hepatic lipidosis	CbD, DOPS, ECE
Recognise and describe chronic venous congestion	CbD, DOPS, ECE
Recognise and describe congenital, infectious, inflammatory, nutritional, toxic and neoplastic lesions	CbD, DOPS, ECE
Recognise and describe ovine white liver disease	CbD, DOPS, ECE
Recognise and describe acute and chronic fasciolosis	CbD, DOPS, ECE
Recognise and describe black disease	CbD, DOPS, ECE
Differentiate normal and abnormal liver histopathology	CbD, DOPS, ECE
Identify causes of liver disease including infectious, inflammatory, nutritional, toxic neoplastic and notifiable diseases	CbD, DOPS, ECE
Understand the pathogenesis of black disease	CbD, DOPS, ECE
Understand the appropriate collection of samples and knowledge of tests to investigate all common causes of liver disease	CbD, DOPS, ECE
Demonstrate knowledge and use of special stains	CbD, DOPS, ECE

Endocrine system

Knowledge and skills	Assessment Methods
Recognise and describe gross pathology and distinguish from agonal and incidental lesions	CbD, DOPS, ECE
Recognise and describe goitre	CbD, DOPS, ECE
Recognise and describe congenital, infectious, inflammatory, nutritional, toxic and neoplastic lesions	CbD, DOPS, ECE
Differentiate normal and abnormal endocrine histopathology	CbD, DOPS, ECE
Identify causes of endocrine disease including infectious, inflammatory, nutritional, toxic neoplastic and notifiable diseases	CbD, DOPS, ECE

Collection of samples and knowledge of tests to investigate all common causes of endocrine disease	CbD, DOPS, ECE
Demonstrate knowledge and use of special stains	CbD, DOPS, ECE

Genital tract and mammary glands

Knowledge and skills	Assessment Methods
Recognise and describe gross pathology and distinguish from agonal and incidental lesions	CbD, DOPS, ECE
Recognise and describe congenital, infectious, inflammatory, nutritional, toxic and neoplastic lesions	CbD, DOPS, ECE
Differentiate normal and abnormal genital tract histopathology	CbD, DOPS, ECE
Identify causes of genital tract disease including infectious, inflammatory, nutritional, toxic neoplastic and notifiable diseases	CbD, DOPS, ECE
Collection of samples and knowledge of tests to investigate all common causes of genital tract disease	CbD, DOPS, ECE
Demonstrate knowledge and use of special stains	CbD, DOPS, ECE

APPENDIX 3: ACRONYMS

CBD	Case-based discussions
CNS	Central nervous system
CPD	Continuing professional development
CSF	Cerebrospinal fluid
DOPS	Directly observed practical skills
ECE	Evidence of competence
FNA	Fine needle aspiration
FRCPath	Fellowship of the Royal College of Pathologists
QC	quality control
QA	Quality assurance
SAC	Specialty Advisory Committee
SOP	Standard operating procedure
UK	United Kingdom

APPENDIX 4: DIRECTED WORKPLACE-BASED ASSESSMENTS BY STAGES OF TRAINING AND OPTIONAL PACKAGES

The following are lists of examples of workplace-based assessments, from which should be selected appropriate examples to make up the 'directed' component of assessments during each stage of training. Each item in the lists is in fact a group of possible scenarios to be used, and each group may be used more than once as long as exact circumstances are not duplicated. Additionally, it can be seen that the lists are similar for each stage, but increase in complexity and/or depth as a trainee progresses through the stages of training.

Stage A

Directly Observed Practical Skills (DOPS):

Set up and use microscope

Necropsy:

- performing a straightforward post mortem examination (of an uncomplicated case)
- dissection of single organ / system

Cut-up:

- completion of a simple cut up session (e.g. simple skins, tumours)
- macroscopic description and block taking of a major tumour resection (e.g. splenic haemangiosarcoma, mammary strip)

Microscopy:

- demonstrate ability to recognise normal histology
- demonstrate ability to recognise straightforward pathological entities (e.g. mast cell tumour, carcinoma, lymphoma in biopsies)

Cytology:

- screen a cytology or haematology slide and correctly identify various cells

Evidence of competence (ECE):

Histology/cytology:

- present a case with ancillary investigations to a training supervisor

Necropsy:

- presentation to trainer or clinicians of findings in straightforward cases (e.g. pneumonia, endocarditis)

Poster presentation:

- show a poster at a relevant meeting or similar

Teaching event for veterinary students or veterinary surgeons or demonstration of interesting case to other trainees:

- to be observed by trainer

Case-Based Discussions (CBDs):

Necropsy:

- write an appropriate post-mortem report with clinicopathological correlation and cause of death

Histology/cytology:

- present a case with ancillary investigations (e.g. additional levels, blocks or immuno- or histo-chemical stains, review of previous samples) to a consultant trainer, indicating the relevance of the ancillary investigations
- write an appropriate report for a tumour submission (with appropriate TNM staging and prognostic information)peer review a standard regulatory toxicity study and present findings to study pathologist

- write a case report from a study with clinical or induced disease, correlating all findings with macroscopic observations

Stage B and C

Directly Observed Practical Skills (DOPS):

Necropsy:

- performing a post mortem examination (to include increasing complex and le.g.al cases) dissection of single organ/system

Cut-up:

- completion of a whole dissection from post mortem examination (to include CNS)
- macroscopic description and block taking of a tumour submission (to include hollow organs e.g. intestine or uterus)

Microscopy:

- demonstrate ability to recognise pathological entities (e.g. enteritis/colitis, common neoplasias, gavage misdosing) and common artefacts

Photography:

- macro or microscopic specimens for publication or presentation

Evidence of competence (ECE)

Histology/cytology:

- present a case with ancillary investigations to a training supervisor

Necropsy:

- presentation to trainer or clinicians of findings (e.g. road traffic accident, gastrointestinal haemorrhage) – **a minimum of 2 should be monitored by an external examiner**

Poster presentation:

- Present a poster at appropriate meeting

Teaching event for veterinary students or veterinary surgeons or study directors or demonstration of interesting case to other trainees:

- to be observed by trainer

Provide advice to clinician/study director

- on appropriate sampling, use of fixative and submission of specific samples to the laboratory. To be overseen by trainer

Management

- involvement in laboratory management, decision making and study design

Case-Based Discussions (CBDs)

Necropsy:

- write an appropriate post-mortem report with clinicopathological correlation and cause of death

Histology/cytology:

- present a case with ancillary investigations (e.g. additional levels, blocks or immuno- or histo-chemical stains, review of previous samples) to a consultant trainer, indicating the relevance of the ancillary investigations
- write an appropriate report for a tumour submission (with appropriate TNM staging and prognostic information)
- write a case report from a study with clinical or induced disease, correlating all findings with macroscopic observations
- peer review a standard regulatory toxicity study and present findings to study pathologist