

ACVP Phase II Clinical Pathology Examination Blueprint

The following categories and weighting represent the products of the 2024-2025 ACVP Job Task Analysis. The blueprint below delineates the percentage of test items on the ACVP Phase II Clinical Pathology examination (beginning in 2026) specific to each category, represented as an approximation and/or range.

Type	Description	
Task 1	Identify and interpret microscopic features of blood, bone marrow, fluids (including urine), and tissues (i.e. cytology and histology) from domestic and non-domestic animals.	~33%
Knowledge	Normal tissue or fluid components, including species variations (e.g. leukocyte proportions, bone marrow lineages, elements in body cavity fluids and tissue aspirates, histopathology architecture for commonly aspirated tissue such as liver and lymph nodes)	
Knowledge	Normal cell morphology, including species and stain variations (e.g. rapid stain versus Wright-Giemsa, canine versus feline RBCs, heterophils versus eosinophils in avian and reptilian blood smears)	
Knowledge	Artifactual and non-pathologic findings (e.g. stain precipitate, formalin artifact, urinalysis contaminants, cell changes in aged blood samples)	
Knowledge	Infectious organism morphology, and those most likely to occur in a particular cell or tissue (e.g. rickettsial morulae in neutrophils, <i>Pythium</i> spp. in gastrointestinal aspirate, blastomycosis in cutaneous biopsy)	
Knowledge	Most likely causes of inflammatory patterns in particular tissues (e.g. eosinophilic pleocytosis in CSF, pyogranulomatous dermatitis, neutrophilic arthritis, lymphocytosis on blood smears)	
Knowledge	Neoplastic cell and tissue morphology (e.g. features of malignancy, architecture patterns)	

Knowledge	Most likely diagnosis(es) associated with specific morphologic abnormalities (e.g. Melamed-Wolinska bodies and urothelial carcinoma, calcareous corpuscles and trematode infections)	
Knowledge	Most likely diagnosis(es) associated with cytochemical, histochemical, and immunostain results (e.g. <i>Mycobacterium</i> and acid fast, osteosarcoma and ALP staining, CD3 and CD79a and lymphoma, reticulin and trichrome in bone marrow)	
Skill	Identifying abnormal microscopic features in images (e.g. etiologic agents, cellular inclusions, blood cell morphology, criteria of malignancy)	
Skill	Identifying multiple disease processes and the likely primary versus secondary process (e.g. fluid with lymphoma and secondary septic inflammation from gastrointestinal rupture)	
Skill	Differentiating artifactual changes from non-pathologic and pathologic abnormalities (e.g. Pelger-Huet abnormality (needs to be anomaly, not abnormality) versus true inflammatory leukogram, lysosomal storage disease inclusions versus Doehle bodies, stain precipitate versus hemoparasite)	
Skill	Differentiating inflammatory from hyperplastic/reactive from neoplastic conditions (e.g. myeloid hyperplasia with left shift in bone marrow versus acute leukemia, reactive mesothelial cells from carcinoma in peritoneal fluid)	
Skill	Formulating a diagnosis using image findings and clinical information	
Task 2	Interpret static visual test results of healthy and diseased domestic and non-domestic animals.	~15%
Knowledge	Routine and advanced hematology instrumentation methodology (e.g. Advia, Sysmex, TEG, point-of-care devices)	
Knowledge	Routine and advanced hematology data	
Knowledge	Macroscopic hematology test methodology (e.g. cross match, blood typing)	
Knowledge	Microscopic hematology test methodology (e.g. cross-match, Coomb's test, saline dispersion)	
Knowledge	Marker selection for liquid and solid tissue sample immunophenotyping (e.g. CD3 for T cell, cytokeratin for epithelial)	

Knowledge	Cytochemical and histochemical stains (e.g. Congo red for amyloid, alcian blue for mucin, GMS)	
Knowledge	How sample attributes (i.e. gross appearance) impact test results	
Knowledge	Standard QA/QC data acquisition, presentation, validation, and relevance (e.g. Levy-Jennings, Bland-Altman plots)	
Knowledge	Clonality test plots (e.g. electrophoresis, PCR)	
Knowledge	Relevant visual tests included within the recent veterinary literature	
Skill	Interpreting routine hematology cytograms	
Skill	Interpreting advanced microscopic and macroscopic hematology test results	
Skill	Interpreting platelet and hemostasis testing results	
Skill	Interpreting flow cytometry plots	
Skill	Interpreting cytochemical, histochemical, and immunochemical stains	
Skill	Interpreting quality assurance and quality control graphical data	
Skill	Interpreting protein electrophoretograms and immunofixation reactions	
Skill	Interpreting PCR clonality traces	
Task 3	Evaluate and interpret clinicopathologic data of healthy and diseased domestic and non-domestic animals.	~25%
Knowledge	Expected physiology for species, breed, age, and sex and reproductive differences	
Knowledge	Pathophysiology in organ systems (e.g. kidney, liver) and associated biomarkers (e.g. urea nitrogen, creatinine, bilirubin)	
Knowledge	Pathophysiology in systemic processes (e.g. acid-base, lipid metabolism, proteins) and associated biomarkers (e.g. pH, HCO ₃ , triglycerides, CRP, SAA)	
Knowledge	Enzymology (e.g. isoenzymes, half-lives, tissue specificity, species differences)	

Knowledge	Ancillary (e.g. disease specific or advanced) tests to confirm diagnosis (e.g. endocrine disease)	
Knowledge	Biologic variability in standard laboratory animals including use of control and pretreatment data	
Knowledge	Current language pertaining to clinicopathologic data and diagnoses (e.g. normal versus healthy, range versus interval, specific current clinicopathologic terms)	
Skill	Interpretation of individual and population-based laboratory data	
Skill	Integrating laboratory abnormalities into a diagnosis or a refined list of differentials	
Skill	Selection and interpretation of appropriate ancillary tests	
Task 4	Understand the principles of commonly used laboratory instrumentation and methods.	~10%
Knowledge	Analyzer and test procedure methodologies (e.g. flow versus impedance, direct versus indirect measurements)	
Knowledge	Sample types and collection methods, errors and interferences on test results (e.g. pre-analytical, analytical, post-analytical)	
Knowledge	Procedures for reference interval determination and validation (e.g. index of individuality, sample size)	
Knowledge	The principles of microscopy (e.g. parts of microscope, fundamentals of digital scanning)	
Knowledge	Quality control and quality assurance including relevant statistics (e.g. six sigma, total allowable error)	
Knowledge	Test properties and selection (e.g. sensitivity, specificity, predictive values, ROC)	
Knowledge	Procedures for method validation (e.g. imprecision, species specificity, bias determination)	
Knowledge	Procedures for and uses of routine, cytochemical, histochemical, and immunochemical stains (e.g. New methylene blue, ALP, Wright-Giemsa)	
Skill	Identifying erroneous test results and the associated cause	
Task 5	Apply the pathophysiology of disease in domestic and non-domestic animals to manifestations in clinicopathologic test results.	~17%
Knowledge	Normal physiologic mechanisms (e.g. renal handling of water, electrolytes, and waste products; hepatic uptake, conjugation, and excretion of metabolites; thyroid and adrenal hormone production)	
Knowledge	Neoplastic disease pathogenesis (e.g. paraneoplastic hypercalcemia, acute tumor lysis syndrome)	

Knowledge	Metabolic disease pathogenesis (e.g. corticosteroid leukograms and hyperglycemia, diabetic ketoacidosis, negative energy balance and hepatic lipidosis)	
Knowledge	Infectious disease pathogenesis (e.g. babesiosis and anemia, fungal infections and hypercalcemia)	
Knowledge	Inflammatory disease pathogenesis (e.g. immune mediated polyarthritis, pancreatitis)	
Knowledge	Pathogenesis of toxicity (e.g. Heinz bodies/eccentrocytes and oxidative injury)	
Knowledge	Hemodynamic disease pathogenesis (e.g. effusion formation, congenital and acquired hemostatic deficiencies, disseminated intravascular coagulation)	
Knowledge	Degenerative disease pathogenesis (e.g. hepatic insufficiency and biochemical changes, renal disease and biomarkers)	
Knowledge	Genetic disease pathogenesis (e.g. RBC enzymopathies, leukocyte adhesion deficiency)	
Knowledge	Species variations in physiology and pathogenesis (e.g. hepatocellular and cholestatic liver enzymes, major acute phase proteins, likely causes of oxidative injury)	
Skill	Integrating mechanisms of disease with clinicopathologic test results	

Distribution by species	% of questions on examination
Domestic	75-85%
Laboratory animal	8-18%
Non-domestic	2-12%

Distribution by organ system	% of questions on examination
Hematopoietic	17-27%
Integument	5-15%
Cardiovascular	1-6%
Alimentary	1-10%
Pancreas, exocrine	1-8%
Hepatobiliary	5-15%
Endocrine	1-10%
Urinary	5-15%
Respiratory	1-10%
Nervous and special senses	1-10%
Musculoskeletal	1-10%

Reproductive	1-7%
Multisystemic/Other	3-13%
Non-organ based	3-13%

Distribution by topic	% of questions on examination
Immunity/Inflammation	15-25%
Disturbance of Growth/Neoplasia	20-30%
Cell Aging/Degeneration/Injury/Death	5-15%
Infection	10-20%
Hemodynamics	3-13%
Genetic	1-7%
Metabolic/Nutritional	5-15%
Laboratory Technology	5-15%

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