

ACLAM Role Delineation Document
March, 2008

Overview of this Document

The Role Delineation Document is comprised of six Domains. Each Domain is composed of Tasks and Knowledge topics. As a result of the Role Delineation study, most of the tasks have been identified as those performed by an ACLAM Diplomate at the time of certification. Some of the tasks were identified as being performed predominantly after certification has been earned.

The knowledge topics were identified in one of three categories:

- Acquired predominantly during a DVM/VMD program

- Required at time of certification

- Acquired predominantly either on the job or in a continuing education setting after certification

NOTE: The tasks and knowledge statements are cumulative, i.e., tasks performed at the time of certification continue to be performed post certification and knowledge required at time of certification builds on prerequisite knowledge acquired during a DVM/VMD program. In addition, listing task and knowledge statements as predominantly acquired either during a DVM/VMD program or post certification does not preclude inclusion of these items in recognized training program curricula or on the ACLAM certification examination. The fundamental basis for all knowledge and task statements is expected of all minimally competent diplomats regardless of when the knowledge is predominantly acquired or the task predominantly performed.

Domain 1: Management of Spontaneous and Experimentally Induced Diseases and Conditions

Tasks performed at time of certification

- T1. Prevent spontaneous or unintended disease or condition
- T2. Control spontaneous or unintended disease or condition
- T3. Diagnose disease or condition as appropriate
- T4. Treat disease or condition as appropriate

Knowledge required to perform these tasks acquired predominantly during a DVM/VMD program

- K1. diagnostic procedures
 - a. conduct of a physical examination
 - b. clinical pathology (e.g., hematology [CBC]; clinical chemistries and urinalysis)
 - c. other diagnostic procedures (e.g., imaging techniques; EKG)
- K2. surgical techniques associated with diagnostic (e.g., exploratory; biopsy) and therapeutic (e.g., tumor removal) surgeries
- K3. immunobiology (e.g., antibody responses; cellular immunity; species-specific immune responses)
- K4. nutrition with emphasis on effects of deficiency or toxicity

Knowledge required to perform these tasks at time of certification as a Diplomate

- K1. anatomy with emphasis on features which have significance with regard to clinical medicine (e.g., rat Harderian gland) or experimental medicine (e.g., coronary artery anatomy of the pig, which allows use for induced infarcts; Circle of Willis anatomy in gerbils, which allows use in stroke models)
- K2. physiology with emphasis on normative data and characteristics (e.g., seasonal changes in squirrel monkeys; coprophagia in rabbits), metabolic differences (e.g., hypoglycemia in squirrel monkeys) or metabolism of induced disease (e.g., streptozotocin-induced diabetes mellitus), reproductive physiology, and clinically significant physiological features
- K3. parasitology with emphasis on parasitic diseases that can become established in a colony and zoonotic parasitic diseases
- K4. microbiology with emphasis on organisms of clinical significance; subclinical infections that cause physiologic, biochemical, and/or immunologic alterations; zoonotic disease organisms; organisms used experimentally to induce infection and unintended infections (e.g., infections associated with chronic vascular cannulation); and sampling and culture techniques for such organisms
- K5. anatomic pathology including pathogenesis of significant naturally occurring (e.g. tuberculosis) and experimentally induced (e.g. collagen

induced arthritis) diseases; typical gross and histopathologic lesions (e.g., age-related changes, or pathologic changes of adverse phenotypes associated with genetically modified rodents); and pertinent anatomic pathology techniques (e.g., Steiner's stain)

K6. pharmacology with emphasis on drugs used to treat spontaneous or induced disease (e.g., indications, use and contraindications of drugs; adverse reactions; adverse interactions; mechanisms of action; species-specific toxicity), and drugs used to induce disease (e.g., azoxymethane to induce neoplasia, or DSS to induce colitis)

K7. epidemiology including species-specific susceptibility to induced disease (e.g., modes of disease transmission; latency; persistence; prevalence; incidence)

K8. preventive medicine (e.g., immunization; quarantine; prescreening tests)

K9. diagnostic procedures

a. species-specific behavioral assessment

b. serologic, cytologic, and molecular diagnostic tests (e.g., PCR; ELISA; IFA; HAI; MAP) and proper sampling techniques

K10. genetics with emphasis on control and treatment of naturally occurring and experimentally induced disease, predisposition to disease, and modes of inheritance

Domain 2: Management of Pain and Distress

Tasks performed at time of certification

T1. Recognize pain and/or distress

T2. Minimize or eliminate pain and/or distress

T3. Euthanatize (Euthanize)

Knowledge required to perform these tasks acquired predominantly during a DVM/VMD program

K1. anatomy and physiology of pain and distress

K2. patient monitoring

K3. critical and post-procedural care techniques

Knowledge required to perform these tasks at time of certification as a Diplomate

K1. assessment of pain and distress (e.g., behavior which is a sign of pain and/or distress; physiologic changes; pain and distress scoring systems)

K2. causes of pain

K3. causes of distress

K4. effects of pain and distress on normative physiology and on research studies

K5. pharmacological interventions for pain and distress and their effects on physiology, including age and species differences for such interventions, and depth and duration of analgesia provided by such interventions

K6. nonpharmacological interventions for pain and distress and their effects on physiology, including age and species differences for such interventions

K7. euthanasia

K8. humane endpoint criteria

Domain 3: Research

Tasks performed at time of certification

T1. Facilitate or provide research support

T2. Advise and consult with investigators on matters related to their research

T3. Design and conduct research

Knowledge required to perform these tasks at time of certification as a Diplomate

K1. bi methodology techniques (e.g., collection of blood and other body fluids and tissues; handling and restraint; administration of compounds and treatments)

K2. research methods and equipment (e.g., antibody production; adjuvants; tumor induction; imaging; data collection techniques such as telemetry; observation; behavioral assessment methods)

K3. animal models (spontaneous and induced) including normative biology relevant to the research (e.g., background lesions of common strains)

K4. genetics and nomenclature

K5. genetic modification/engineering technology including application of molecular biology techniques

K6. characterization of animal models (e.g., phenotyping, behavioral assessment)

K7. gnotobiotics

K8. experimental surgical techniques and instrumentation

K9. principles of experimental design and statistics including scientific method

K10. information resources (e.g., National Agricultural Library; National Library of Medicine)

K11. scientific writing

K12. Replacement, Reduction and Refinement techniques

K13. Effective methods for communicating research-related concerns

K14. Aseptic requirements for performing surgery

Tasks performed predominantly post-certification as a Diplomate

T1. Collaborate with other scientists on research projects

Knowledge required to perform the tasks in the Domain acquired predominantly post-certification

K1. genomics, metabolomics, and proteomics

K2. grant application, review and funding mechanisms

Domain 4: Animal Care

Tasks performed at time of certification

T1. Develop animal husbandry programs

T2. Manage or provide indirect management/oversight of animal husbandry programs

T3. Manage or provide indirect management/oversight of laboratory animal facilities

Knowledge required to perform these tasks at time of certification as a Diplomate

K1. species-specific husbandry (e.g., nutrition, housing, exercise)

K2. environmental enrichment

K3. methods of sterilization, sanitation, and decontamination

K4. quality assurance techniques for animal care-related equipment (e.g., verification of effective cage sanitation) and supplies (e.g., water, food, bedding)

K5. animal procurement considerations (including sources, vendor surveillance, genetic monitoring, transportation)

K6. breeding colony management (e.g., systems and records, genetic monitoring)

K7. animal identification systems

K8. pest control (e.g., methods, hazards and toxicity)

K9. pathogen-free barriers (exclusion)

K10. containment facilities (inclusion)

K11. environmental causes of physiological alterations in animals and their effects on research (e.g., sound, light, temperature, humidity, housing systems)

K12. environmental monitoring

K13. watering and feeding (e.g., automated watering, liquid diets, ad lib or restricted diets)

Tasks performed predominantly post-certification as a Diplomate

T1. Design laboratory animal facilities

Knowledge required to perform the tasks in the Domain acquired predominantly post-certification

- K1. selection criteria for animal care-related equipment and supplies
- K2. fiscal management as it relates to budgetary and financial issues associated with animal facility management (e.g., per diem rate setting; equipment cost comparisons)
- K3. human resource management as it relates to operation of animal care and use programs
- K4. disaster planning
- K5. facility planning, design, and construction (e.g., programming, commissioning, master planning, material selection, security)
- K6. mechanical, electrical and plumbing systems
- K7. waste management

Domain 5: Regulatory Responsibilities

Tasks performed at time of certification

- T1. Perform direct or delegated Attending Veterinarian responsibilities
- T2. Advocate for humane care and use of animals
- T3. Provide advice to occupational health and safety programs
- T4. Provide advice on biological, chemical and radiation hazards in an animal research program
- T5. Serve as a member of an IACUC
- T6. Review protocols and provide advice to investigators and the IACUC

Knowledge required to perform these tasks acquired predominantly during a DVM/VMD program

- K1. laws, regulations, policies and standards
 - a. Controlled Substances Act/DEA Regulations

Knowledge required to perform these tasks at time of certification as a Diplomate

- K1. laws, regulations, policies and standards
 - a. Animal Welfare Act, USDA regulations, Animal Care policies
 - b. Health Research Extension Act, Public Health Service Policy on Humane Care and Use of Laboratory Animals, OLAW interpretive guidance
 - c. Guide for the Care and Use of Laboratory Animals (ILAR/NRC)
 - d. Report of the AVMA Panel on Euthanasia
 - e. Biosafety in Microbiological and Biomedical Laboratories (CDC/NIH)
 - f. Good Laboratory Practices (FDA/EPA)
 - g. Endangered Species Act/CITES

- h. Guide for the Care and Use of Agricultural Animals in Agricultural Research and Teaching (FASS)
- i. Live Animals Regulations (IATA – International Air Transportation Association)
- j. USDA and CDC animal importation regulations
- k. NIH Recombinant DNA Guidelines
- l. Occupational Health and Safety in the Care and Use of Research Animals (ILAR/NRC)
- m. Occupational Health and Safety in the Care and Use of Nonhuman Primates
- K2. role and function of the IACUC
- K3. protocol review
- K4. facility inspection and program review
- K5. occupational health and safety (e.g., ergonomics; OSHA; allergens; blood-borne pathogens; radiation and chemical hazards; MSDS)
- K6. role and function of the Institutional Biosafety Committee (IBC)
- K7. role and function of the Association for Assessment and Accreditation of Laboratory Animal Care – International (AAALAC)
- K8. responsible conduct of research

Knowledge required to perform the tasks in the Domain acquired predominantly post-certification

- K1. international laws, policies, and standards (e.g., Canadian Council on Animal Care; EU Directives)

Domain 6: Education

Tasks performed at time of certification

- T1. Train personnel in animal care and use
- T2. Maintain current knowledge and continued competence in laboratory animal medicine

Knowledge required to perform these tasks at time of certification as a Diplomate

- K1. educational resources (e.g., publications, inanimate models, computer applications, conferences)
- K2. certification programs (e.g., AALAS technician certification program, ACLAM certification)
- K3. societal issues involving use of animals:
 - a. organizations related to and/or supportive of laboratory animal medicine and animal research (e.g., AALAS, ASLAP, ILAR, NABR, AMP)
 - b. organizations opposed to animal research (e.g., PETA, HSUS) including their philosophy and opposition strategies

- c. philosophy and ethics of animal use
- d. history and value of animal research

Tasks performed predominantly post-certification as a Diplomate

- T1. Provide education in academic and/or laboratory animal residency programs
- T2. Outside of formal training programs, mentor those interested in or involved in laboratory animal medicine
- T3. Provide community outreach on animal care and use

Species Categories

Based on mean importance ratings from the Role Delineation Study, the suggested species were classified as primary, secondary and tertiary. Below is the list by category.

Category	Species
Primary	Mouse (<i>Mus musculus</i>)
Primary	Rat (<i>Rattus norvegicus</i>)
Primary	Rabbit (<i>Oryctolagus cuniculus</i>)
Primary	Macaques (<i>Macaca</i> spp.)
Primary	Dog (<i>Canis familiaris</i>)
Primary	Pig (<i>Sus scrofa</i>)
Secondary	Zebrafish (<i>Danio rerio</i>)
Secondary	African clawed frog (<i>Xenopus</i> spp.)
Secondary	Cat (<i>Felis domestica</i>)
Secondary	Guinea pig (<i>Cavia porcellus</i>)
Secondary	Ferret (<i>Mustela putorius furo</i>)
Secondary	Squirrel monkey (<i>Saimiri sciureus</i>)
Secondary	Sheep (<i>Ovis aries</i>)
Secondary	Syrian hamster (<i>Mesocricetus auratus</i>)
Secondary	Baboon (<i>Papio</i> spp.)
Secondary	Marmoset/tamarins (<i>Callitrichidae</i>)
Secondary	Gerbil (<i>Meriones</i> spp.)
Secondary	Goat (<i>Capra hircus</i>)
Tertiary	Other rodents
Tertiary	Chicken (<i>Gallus domestica</i>)
Tertiary	Other nonhuman primates
Tertiary	Other mammals
Tertiary	Pigeon (<i>Columba livia</i>)
Tertiary	Other amphibians
Tertiary	Other livestock species including cattle and horses
Tertiary	Other Fish
Tertiary	Reptiles
Tertiary	Other birds
Tertiary	Invertebrates