



CREATE
SHARE
INSPIRE.

Lt Veterinary Physiology: Animal Case Studies

Provide clinical context and boost problem-solving skills

Label this illustration to summarize the respiration activities of a horse.

Cellular respiration
Gas transport
Pulmonary gas exchange
Pulmonary ventilation
Respiratory exchange

Match each type of ligature with its illustration.

Monosynaptic

Monosynaptic reflex arcs involve a single synapse. Only the most simple reflexes are monosynaptic reflex.

To elicit this reflex, the animal is placed in lateral recumbency and the patellar ligament is tapped with a plexor (hammer). This stretches a sensory stretch receptor in the muscle, which fires an action potential along a sensory neuron. The sensory neuron synapses in the grey matter of the spinal cord with a motor neuron. As a result, a signal passes out of the spinal cord along the motor neuron and is carried to the quadriceps muscle, eliciting reflex contraction and extension of the stifle joint. Watch the video to see a demonstration.

Patellar reflex testing in a normal dog

Saffron's oestrous cycle

Saffron had been bred on 3 oestrous cycles over the last 2 years, but had not come pregnant. Her owner consulted her veterinarian about how best to manage Saffron. The veterinarian took vaginal smears to assess the vaginal cytology every second day from when Saffron first showed signs of proestrus.

What signs would the owner see as Saffron comes into proestrus?

Enter your answer here

Check Answer

In dogs, changes in the epithelial lining of the vagina during proestrus, oestrus, and diestrus can be used as an indicator of the stage of the oestrous cycle.

Once Saffron's vaginal cells showed she was in oestrus, her veterinarian switched to taking blood samples every second day to monitor Saffron's oestrogen levels. The concentration of oestrogen gradually decreased.

Lt is a cloud-based learning platform that engages students in active learning through interactive veterinary physiology lessons with a clinical focus.

The Lt Veterinary Physiology Collection contains 11 animal case studies. These case studies promote problem-solving skills, and highlight the physiological variation students will encounter when they begin to practice in the clinic.

Modules in the Collection begin with a case study that focuses on an animal with a certain condition. As students work through the lessons, they are asked to relate new physiological concepts back to the case study. The case concludes in the last lesson of the module, where the original presentation is revisited, along with a summary of diagnoses, treatment, and outcomes.



Improved efficiency



Increased student engagement



Improved results in theory and clinical practice



Increased student pass rates*

*Results of using Lt at the Otago Polytechnic School of Nursing, 2017

Case study

Sally, a 5-year-old terrier mix, was attacked by another dog. On presentation to the veterinary clinic, two open site wounds were evident on the dorsal aspect of her head. There were no other obvious external injuries. On CT imaging, multiple fractures of the skull were seen, with a fragment of bone that appeared to be penetrating through the gray matter of Sally's brain (see the image below).

Saffron's oestrous cycle

Saffron had been bred on 3 oestrous cycles over the last 2 years, but had not come pregnant. Her owner consulted her veterinarian about how best to manage Saffron. The veterinarian took vaginal smears to assess the vaginal cytology every second day from when Saffron first showed signs of proestrus.

What signs would the owner see as Saffron comes into proestrus?

Enter your answer here

Check Answer

In dogs, changes in the epithelial lining of the vagina during proestrus, oestrus, and diestrus can be used as an indicator of the stage of the oestrous cycle.

Once Saffron's vaginal cells showed she was in oestrus, her veterinarian switched to taking blood samples every second day to monitor Saffron's oestrogen levels. The concentration of oestrogen gradually decreased.



TE KUNENGA
KI PUREHURUA
MASSEY
UNIVERSITY
UNIVERSITY OF NEW ZEALAND

Developed in collaboration with Massey University, whose School of Veterinary Science is highly-ranked globally and widely accredited.

ADINSTRUMENTS



What's in an Animal Case Study?

Each animal's medical story is different, so each case has different content to support your teaching. The case studies available in the Lt Veterinary Physiology Collection may include a range of clinical resources: for example, the case of Sally the dog in the Nervous System module includes x-rays to show a skull fracture, while the case of Lucky the cat in the Digestive System module includes histological images of the intestine.

Lt Veterinary Physiology Collection

11 ANIMAL CASE STUDIES

Cardiovascular System

Dilated cardiomyopathy

Students learn about the structure and function of the cardiovascular system in the context of Benny, an older dog with dilated cardiomyopathy.

Communication

Hypothyroidism

Students learn about chemical and electrical signaling in the context of Opal, an 8-year-old dog with hypothyroidism.

Digestive System

Abdominal cancer

Lucky is a 12-year-old cat who has abdominal cancer that causes weight loss, vomiting, and loss of body condition. Students learn how absorption and processing of different foods and drugs are affected by her cancer.

Lymphatic and Immune Systems

Feline immunodeficiency virus

Students learn about the body's immune response and lymphatic system in the context of Luna, an adopted stray cat who has feline immunodeficiency virus. This causes swelling and lameness in her hind legs.

Metabolism and Endocrine Control

Diabetes mellitus

Sugar is a 6-year-old Burmese cat with diabetes who gets stuck in a shed, missing his insulin injections and becoming hyperglycemic and dehydrated. Students learn how diabetes affects his metabolism and endocrine control.

Musculoskeletal System

Glycogen storage disease type V

Students learn about the structure and function of the musculoskeletal system in the context of two five-week-old Charolais calves with glycogen storage disease type V (a genetic deficiency of the muscle enzyme glycogen phosphorylase) diagnosed after euthanasia.



Use case studies to:

- Provide clinical context for students
- Prepare students for veterinary practice by promoting problem-solving skills

The Lt Veterinary Physiology Collection has been reviewed by veterinary lecturers and clinicians.

Reviewers include:

- Registered specialist in veterinary neurology
- Registered specialist in equine medicine
- Registered specialist in veterinary theriogenology
- 4 lecturers in veterinary education, with a range of postgraduate education and experience, including zoo medicine, small animal emergency and critical care, mixed-species practice, and equine practice

Lt Veterinary Physiology Collection

11 ANIMAL CASE STUDIES

Somatic and Special Senses

Congenital bilateral sensorineural deafness

Spot is a 12-week-old Dalmatian puppy who has inherited congenital bilateral sensorineural deafness. Students learn about the special senses in relation to Spot, and what care she will need as she develops.

Nervous System

Skull fracture

Sally, a five-year-old terrier mix, has been bitten in the head by another dog. Students learn about the structures affected and symptoms this causes.

Reproductive System

Difficulties with conception

Students learn about the male and female reproductive systems in the context of Saffron, a 4-year-old Golden Retriever owned by a breeder, and Chilli, a stud dog. Saffron is struggling to conceive, so her owner is closely tracking signs of Saffron's reproductive cycle.

Respiratory System

Recurrent airway obstruction

Fliss is an 18-year-old horse who has difficulty breathing due to recurrent airway obstruction caused by inflammation, probably due to barn dust and moldy hay. Students learn about the structure and function of the respiratory system and relate these to the symptoms reported.

Urinary System and Fluid Balance

Diabetes mellitus

Students revisit the case of Sugar the Burmese cat with diabetes mellitus, this time addressing issues of fluid, electrolyte, and acid-base balance in relation to Sugar's disease.



"The case material has been designed to deliver the core concepts of physiology, demonstrate clinical significance, and introduce students to the clinical reasoning process used by professional veterinarians."

Nicola Smith, Senior Lecturer,
School of Veterinary Science



How can Lt help?

Educators

Authoring and customization

Easily edit, share, and update our content or create your own in real-time, wherever and whenever you need. Drag-and-drop a range of content types including video, audio, images, quizzes, and text directly into your lessons.

Collaborative

Share content and workload with your fellow educators and teaching assistants. Set varying levels of access to allow others to review content, add content, or publish revisions online.

Flexible grading

Automatically grade quizzes while keeping the flexibility to add feedback and positive reinforcement, and manually grade written assessments.



**90-DAY
FREE TRIAL**

Sign up now: adi.to/try_lt

Students

Learn anywhere, anytime

Lt's cloud-based platform means students can learn on almost any device that connects to the internet. Whether they use iOS or Android, tablet, mobile, or laptop, lessons will be resized to suit.

PowerLab and Lt Sensor integration

In the lab, students can record and view their own physiological signals live on screen with PowerLab or Lt Sensors. Sampling panels in Lt can record Pulse, ECG, Respiratory Rate, Blood Pressure, and more.

Learn from real patients

For future health professionals, our patient cases allow students to follow a real patient from initial presentation to diagnosis and management. Expert health-care professionals provide their views throughout the journey and students can practice note-taking and reflection.

Administration

Simple setup

Lt needs only an internet browser to allow course administration, authoring, and publishing. Our data acquisition app, used for sampling, installs in 30 seconds.

Analytics

Our analytics allow you to view class progress in each lesson and section in your course, and provide valuable insights about where and how students are interacting with course material.

Secure and scalable

Totally secure, Lt is hosted on Amazon Web Service's encrypted servers with guaranteed 99% uptime and the ability to maintain speed as more students login to Lt.

Future-proof

Lt is automatically updated with new features by our team of engineers, developers, and education specialists.

Visit adstruments.com or contact your local ADInstruments representative for more information

Australia | Brazil | Europe | India | Japan | China | Middle East | New Zealand | North America | Pakistan | South America | South East Asia | United Kingdom

adstruments.com



ADINSTRUMENTS