



Veterinary Specialty of the Day:

Pathology

Some veterinarians and veterinary technicians undergo further training to specialize in a specific field of medicine. Veterinarians who specialize in Pathology are trained to perform diagnostic tests. These tests help the pathologist determine a disease or monitor a condition that a patient has. Anatomic pathologists diagnose diseases by examining and testing body tissue samples. Clinical pathologists diagnose diseases by analyzing laboratory tests, typically of bodily fluids.

Discussion Question

- Why might veterinarians need to collect samples (such as blood, urine, or body tissue) from their patients?

Veterinary pathologists are trained to analyze...



Biopsies

A biopsy is when a piece of body tissue is removed. The tissue is then examined and analyzed in a laboratory.



Necropsies

If an animal dies due to unknown circumstances, trained pathologists can perform a surgical exam called a necropsy to figure out the cause of death. In human medicine, this is called an "autopsy".



Bodily Fluids & Cells

Veterinary pathologists can run tests on bodily fluids, such as urine or blood. They can also test and examine cells, which are the building blocks that make up all of our body's organs.

Types of Diagnostic Tests

Veterinary pathologists perform diagnostic tests to determine a disease or monitor a condition that a patient has. Below are examples of different types of diagnostic tests that can be performed in a laboratory. Veterinary pathologists perform many, but not all, of the tests listed below.

Clinical Chemistry



Clinical chemistry is used to determine how well organs (such as the liver or kidney) are working by studying the chemical composition of a blood sample.

Cytology



Cytology is the study of cells. Using a microscope, pathologists can determine if cells are normal or abnormal and use their findings to diagnose infections or tumors.

Fluid Analysis



Fluid analysis is the study of all bodily fluids except for blood. Tests can be performed on body fluids such as urine or saliva.

Hematology



Hematology is the study of blood cells. A complete blood count (CBC) is a test which determines both the amount and type of blood cells currently in the bloodstream.

Histology



Histology is the study of the microscopic structure of body tissues. Pathologists examine body tissue samples to determine if they are healthy or diseased.

Microbiology



Microbiology is the study of the microorganisms that cause disease, such as bacteria, viruses, fungi, and parasites. Tests look for signs of an infection in the patient.

Serology



Serology is the study of blood serum, or the fluid that does not contain blood cells. Tests on blood serum can be used to determine if a patient has a specific disease.

Toxicology



Toxicology is the study of poisons. Tests are used to identify the type of poison a patient may have ingested or been exposed to.

Activities



PreK - 5th Grade

Build Your Own Science Lab

Materials: lidded jars, test tubes, plastic pipettes, cotton swabs, petri dishes, labels, pencils/markers, magnifying glass, water, food dye, pH test strips, vinegar or lemon juice, (optional) lab coat, clipboard, goggles

- Imagination play can be an immersive and engaging way for your child to learn. You can build your own "science lab" imagination play area in your home for your child to enjoy. Here are some ideas for what you can set up in your child's "science lab":
 - Fill jars or test tubes with water and food dye to represent different chemicals or fluid samples. For example, red can represent a blood sample and yellow can represent a urine sample. Let your child label the various jars or tubes with a sticker label and pencil/marker.
 - Pipettes can be used by young children to practice their fine motor skills. Older children can use the pipettes to make precise measurements in a "medicine" they are mixing together.
 - A magnifying glass can be used to look at different "specimens". If you have a family pet that sheds, take an opportunity to closely examine their fur, feather, or scales!
 - Have your young child practice collecting "bacteria samples" by using a cotton swab on an item and pretending to rub it into a petri dish. For older kids, you can order real petri dishes with agar (which bacteria love to eat) and actually see what grows!
 - Test strips are special pieces of paper that, when dipped into a fluid, can change color depending on what is inside. For example, test strips can be dipped in urine to quickly check for an infection. To mimic this in your "science lab", you can dip pH test strips into regular water and water with either lemon juice or vinegar mixed in to see what happens!

Activities



9th - 12th Grade

Career Exploration: Veterinary Pathology

Materials: computer/tablet/phone with internet access

- The field of veterinary medicine is huge and there are many job opportunities available to those interested in pursuing a career in the field.
- If your child is interested in a career in pathology, encourage them to research the various job opportunities and programs that exist.
- Need a place to start? Check out this article on veterinary pathologists: https://www.acvp.org/page/What_is_Vet_Path

References:

https://www.acvp.org/page/What_is_Vet_Path

<https://www.amcny.org/blog/2015/08/26/why-i-love-pathologists>

<https://www.amcny.org/pet-owners/specialties/pathology/>

<https://www.merckvetmanual.com/special-pet-topics/diagnostic-tests-and-imaging/types-of-veterinary-medical-tests>

<https://www.rcpath.org/discover-pathology/careers-in-pathology/become-a-veterinary-pathologist.html>