

Hands-on Experiences for First- and Second-Year Veterinary Students at Colorado State University

There are many opportunities for first and second-year veterinary students to gain hands-on experience with animals and clinical procedures prior to the start of their curricular clinical rotations in the third year of the program. Experiences are available within the curriculum (classes), club wet labs and field trips, participation in clinical “teams” (see below), attendance at clinical rounds, externships, jobs, and various clinical volunteer opportunities. These opportunities give students a chance to become familiar with the clinical facilities, faculty, and staff while gaining practical experience and developing clinical skills. First and second year students have 24/7 access to the Veterinary Teaching Hospital, and they need only wear their clinical smocks and name badges to be welcomed in any section of the clinics.

Curricular Experiences First and Second Year

- **Physical exams** (1st year) – Students volunteer their animals in laboratory to practice physical exams.
- **Neuro Exams** (1st - year) – Students volunteer their animals in laboratory to practice neurological exams on both normal and abnormal neurological cases.
- **Neuroanatomical Diagnosis** (1st year) – Using patients with normal and abnormal neurological status, students diagnose the abnormalities based on the neurological exams performed.
- **Community Practice** (1st & 2nd year) – Community Practice is designed to provide the student with an opportunity to evaluate and manage typical cases seen in a bond-centered private practice. The schedule currently includes medicine appointments (preventative health appointments and any non-referred, non-emergency appointments), elective surgery and dentistry. Community Practice provides unique hands-on experience. While all plans need to be cleared with the veterinarian on the service, 4th year students are responsible for the development and implementation of all diagnostic plans and veterinary care in a timely manner. First and second year students are encouraged to volunteer as their class schedule allows and will work with 4th year students honing history taking and physical exam skills as well as learning the standard operating procedures of the James L. Voss Veterinary Teaching Hospital. Interested students should contact Rebecca Ruch-Gallie at rgallie@colostate.edu.
- **Anatomy** (1st year) – Students learn anatomical structures on both cadavers and live animals.
- **Anatomy and Neurobiology** (1st year) – DVM students conduct demos and help with labs which integrate with the PreVet undergraduate club.
- **Problem-based Learning** (2nd year) – Students work through real-life cases that have presented to the Veterinary Teaching Hospital. Small groups of 6-8 students meet weekly with a clinician to discuss possible diagnostics, diagnoses, prognoses, and treatment options.
- **Heart auscultation** (1st & 2nd year) – Students use stethoscopes with an auscultation machine to identify murmurs, arrhythmias, and normal heart sounds of dogs, cats, and horses.
- **Bovine/Equine/Canine Reproduction** (2nd year) – Students practice calving procedures with calf cadavers and mock cows with normal and abnormal presentation and orientation of the calf. They learn how to tease mares with stallions to detect which mares are in estrus, ultrasound mares for pregnancy, and practice procedures for collecting vaginal and cervical cytology.
- **Food & Fiber Animal Field Trips** (1st year) – In small groups, students visit cow/calf operations, cow dairies (conventional and organic), goat dairies, turkey farms, beef feedlots, and lambing farms.
- **Anesthesia machine use** (2nd year)- Students learn the mechanics of both Rebreathing and Non-Rebreathing circuit machines. All students must pass an Anesthesia Machine Practical Exam during their second year, including identifying the components and operation of each system.
- **Surgical Procedures** (2nd year) – Students practice knot tying, suture patterns, and surgical techniques.

Club Wet Labs and Field Trips (Student Chapters of the Following Groups)

As available, examples of club activities are listed

- **American Animal Hospital Association**

Examples of Activities:

- Canine physical exam wetlab (Students work closely with faculty and learn how to perform a thorough physical exam...an essential diagnostic tool for any veterinarian.)
- Abdominal ultrasound wetlab (Students perform abdominal ultrasound and learn proper technique using live dogs.)
- Clinical procedures wetlab (Students learn and practice common clinical procedures including bone marrow sample collection, trans-tracheal wash, and cerebrospinal fluid tap.)
- Dental radiography wetlab (Students learn and practice how to take dental radiographs at a local, specialty dental clinic.)

- **American Association of Bovine Practitioners**

- **American Association of Equine Practitioners**

Examples of Activities:

- Wetlabs: Joint Injection Labs, 2 per year: Students practice injecting joints on equine limbs. Clinicians are available to demonstrate and help assist students in finding the joints.
- Farrier Short Course: A 2-day short course focusing on what veterinarians need to know about trimming and shoeing horses. The first day is primarily lecture and the second day is a lab on equine limbs. An excellent way to learn anatomy and how to handle the tools.
- Reproduction Short Course: A 2-day short course focusing on equine reproduction. Students learn how to palpate mares, artificially inseminate mares, collect stallions, and analyze semen.
- Dental Short Course: A 2-day short course focusing on equine dentistry. Students learn how to do a physical exam on the equine oral cavity, what instruments are used in equine dentistry, and how to fix equine oral problems. The students get to use the knowledge they learn on horses and learn how to operate the instruments.
- Nasogastric intubation lab: Students learn how to pass a nasogastric tube and get to try to pass one on a horse. This lab also includes a demonstration of an abdominocentesis.
- Ophthalmology lab: Students learn how to perform an equine ophthalmic exam and learn the anatomy of the eye.

- **American Association of Feline Practitioners** (<http://www.cvmb.colostate.edu/aafp/>)

Examples of Activities:

- Feline Physical Exam Wet lab: Practice your physical exam skills on live felines!
- Procedures Wet lab: Practice techniques every veterinarian should know, including CSF sampling, esophageal tube placement, bone marrow aspiration, thoracocentesis, and cystocentesis (procedures are practiced on cadavers).
- Field Trip to Rocky Mountain Wildlife Conservation Center: See BIG cats up close and tour the facility that provides these animals with a chance to live out their lives comfortably.
- Feline Neurological Exam Wet lab: Practice your neurological exam skills.
- Cat Handling Techniques Wet lab: Learn how to handle and restrain your feline patients!

- **American Association of Small Ruminant Practitioners** (<http://www.csuaasrp.org/>)

- **American College of Veterinary Pathologists**

- -Necropsy 101 Wet lab

- **American Holistic Veterinary Medicine Association**

Examples of Activities:

- Canine massage
- Acupuncture (Canine, Feline, Equine, Bovine)
- Exotic animal acupuncture
- Acupuncture on military pets
- Organic dairy veterinary medicine
- Integrative oncology medicine
- Bach Flower Remedy therapy
- Small animal physical therapy
- Integration of western and complementary medicine in small animal and exotic practices

- **American Veterinary Society of Animal Behavior**

- **Colorado Veterinary Medical Association**

- **Pain Management Club**

- **Radiology Club**

- **Research Club**

Examples of Activities:

- Meetings involve faculty/clinicians presenting information on their scientific endeavors.
- Wet labs include a rodent dissection by one of the laboratory animal medicine residents. This offers students an opportunity to get an in depth view of small mammal anatomy which is not provided by the core courses in the veterinary program.
- Wet labs involve laboratory techniques including flow cytometry and ELISAs.
- The club is currently being restructured to include more laboratory animal medicine to allow for more hands on experience for those interested in research and laboratory animal medicine.

- **Student Association of Veterinary Surgeons**

Examples of Activities:

- Lectures in flexible endoscopy, ophthalmology, cardiology, oncology/ limb spare, Dr. Turner's sheep research, Small Animal GI emergency, Equine GI emergency, Food Animal GI emergency, neurosurgery and fracture repair in large and small animals.
- Monthly wet labs; equine intestinal resection/anastomosis, Fracture IM Pinning, SA bandaging, LA bandaging/casting, gowning/gloving, Laser Sx (continuing education), Suturing (instrument ties, hand ties, cadavers). We open these labs up typically to 25-40 people depending on the amount of equipment required and the number of residents needed.
- Mentor/mentee program specifically designed for people interested in pursuing a surgical residency.

- **Student Chapter of the Association of Shelter Veterinarians** (<http://www.cvmbs.colostate.edu/scasv>)

- **Students for Human/Animal Relationship Education**

- **Student Veterinary Emergency & Critical Care Society**

(<http://www.cvmbs.colostate.edu/sveccs/>)

Examples of Activities

- Volunteering in the Critical Care Unit
- Emergency Procedures Wet Lab
- FAST Ultrasound Wet Lab
- First Aid Day for the Community
- Clinician Lectures and Case Presentations

• Zoological Medicine

(http://www.cvmb.colostate.edu/zoo_med_soc/)

Examples of Activities:

- Behind-the-scenes tour of the Downtown Denver Aquarium (formerly Ocean Journey): Tour led by Dr. Campbell, Exotic's clinician at the VMC and veterinarian for the aquarium. Highlights include: observe training sessions of the exhibit's mammals, tour of quarantine area, learn about aquarium veterinarian job, and petting the manta rays.
- Tour of the hospital at the Denver Zoo: Dr. Knightly leads students through the hospital, explaining how she uses operant conditioning to make Veterinary procedures easier (such as giving vaccinations, weighing newborns, and anesthetizing animals) easier. She shows students the necropsy area, surgical suites, quarantine, and a nursery, where the baby and the veterinarian are on exhibit!

Clinical Teams (1st, 2nd, 3rd, and 4th year)

• Foal Care Team

On-call teams care for and observe neonates and mares in the barn. Monitoring as necessary, the 2-person foal care team will stay with the foal and notify clinicians of the status of the neonate.

• Large Animal Emergency Team

The Large Animal Emergency Team is a great chance for students to get hands on experience in the large animal barn before the 3rd and 4th years of school. Students carry a pager and are "on-call" for equine and food animal emergencies. Some of the emergencies include colics, lacerations, dystocias, septic creas and foals, etc. After-hours help is always needed and students get to do much more than just stand around. LAET is a great opportunity for students to familiarize themselves with the veterinary hospital, meet clinicians and residents, and get great hands on experience. LAET is also open to anyone regardless of experience or interests.

• Small Animal Surgery Team

There is an on-call schedule for students to observe small animal surgeries. If there are surgeries in progress, or if any surgical emergencies are admitted, students on the SAST are called to Small Animal Surgery to help with and observe surgery.

• Llama Care Team

Each group of two students is assigned to two llamas, which they are expected to visit and take on walks, trail hikes, etc. These llamas are residents of the Veterinary Medical Center.

Clinical Rounds

- **Twice-daily rounds on each service** (morning and afternoon) – Each rotation group reviews discharged patient cases, discusses ongoing cases, and prepares for incoming cases. Clinicians expect students to prepare and be able to answer questions pertaining to each case on the service. Though required of 3rd and 4th year students on the service, students from the 1st and 2nd years of the program are invited to attend rounds as time permits
- **Noon-time Food Animal and Equine Rounds** – Food Animal and Equine clinicians will present cases and various topics during the lunch hour. All students are encouraged to attend.
- **Grand Rounds** – Each 4th year student must present one case during the year to the entire veterinary school. All students and faculty are welcome and encouraged to attend. These are great learning experiences for both the student presenter and those in attendance. The case presented is a real case that the student has worked on during one of his/her rotations. There is a question/answer session following each presentation. Grand Rounds are presented each Friday morning.

Clinical Seminars

- Advances in Clinical Research Seminar Series
 - Clinical faculty and residents present cutting edge research projects
 - First Monday of each Month, VTH-ACC 120, 11:30-12:30
- Practice Management Seminars

Externships

- Click here for Links & Information – <http://www.cvmb.colostate.edu/cvmb/externinfo.htm>
- Remote Area Veterinary Services - <http://www.ruralareavet.org>
- VIDAS (International Veterinarians Dedicated to Animal Health) <http://www.vidas.org>

Jobs

- Equine Emergency Surgery Technicians
- Radiology Technicians
- Food Animal summer jobs
- Small Animal Emergency Technicians

Volunteer Opportunities

- Ride with ambulatory services (equine and food animal)
- All clinical departments eagerly want 1st and 2nd year students to observe and assist as enthusiasm and time permit
- CSU Pet Hospice – volunteer opportunity through Argus Institute at CSU, open to 1st - 3rd year students – <http://www.argusinstitute.colostate.edu/pethospice.htm>
- **Watch your email** – clinical faculty send out emails requesting 1st and 2nd year participation in various field projects.
- **Always ask** – If you have a special area of interest, just ask a faculty or staff member involved if there are volunteer opportunities.

Research Opportunities

- Merck Summer Research Program – This is a 10-week summer program funded by Merck at CSU.
- Individual lab opportunities working with clinicians on various research projects.

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