Kansas State University Research Foundation
TECHNOLOGY LICENSING PROFILE

Veterinary Educational Teaching Models

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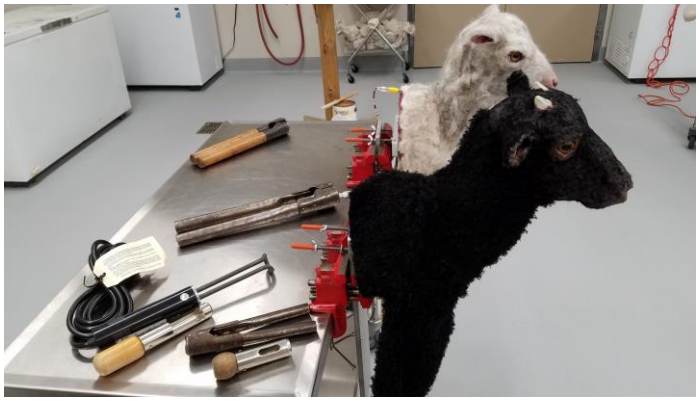
Overview: Educators within the College of Veterinary Medicine (CVM) at Kansas State University are prototyping new veterinary teaching models to allow their students to hone their skills on true-to-life models before moving on to live animals. Based on the limited number of models on the market to train the next generation of veterinarians, there is an unmet need and opportunity for new veterinary teaching models to be developed.

We are seeking a reputable company partner to collaborate on the development and commercialization of new models for the veterinary educational market. In addition to identifying unmet needs and creating solutions, KSU can provide a testing ground for new model development to refine prototypes before larger scale manufacturing commences.

Current Prototypes:

Small Ruminant Model A unique challenge to veterinary medicine is that students need to learn a basic set of skills on a variety of species. Each species has their own unique procedures and challenges. Currently, the veterinary teaching simulator market is meeting the need for some of the more common species (dog, cat and horse). Small ruminants (sheep/goat) represent species that have some of these unique aspects. The models below allow students to practice common procedures such as:

- Intramuscular injections
- One-handed jugular vein blood draw or injection
- Nerve block injection for dehorning & enucleation
- Ear tag and placement



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Bovine Epidural and Nerve Block Training Simulator For livestock veterinarians, performing "standing" surgery, utilizing regional nerve blocks in place of general anesthesia is common practice. This skill has only been learned and practiced in live animals; no simulation model is available commercially. This model was developed to provide true-to-life landmarks to help teach students how to palpate for and administer specific regional blocks and a caudal epidural. It allows the student & instructor to visualize and correct needle placement.

3-D printer technology was used to replicate an anatomically accurate skeleton model, based on an actual animal's digitized scan; soft tissue and skin layers and an articulating tail were also created with a variety of foam, fabric and silicone products. Important to this learning process is the ability to check and verify the student's accuracy in needle placement. This is easily accomplished by "lifting" the skin and muscle layers, with the needle still in place, to reveal its location. There is currently no veterinary simulator for this skill on the market.

(An enhancement of this product would be the addition of an artificial vessel to practice venipuncture of the tail vein; a unique species technique.)

Canine and Feline Direct Ophthalmoscopy Models Live animals quickly become intolerant of the handling and practice that is needed for veterinary students to gain proficiency in the eye exam. Veterinary students would benefit from practicing direct ophthalmoscopy on a non-animal model first to gain comfort and confidence in their technique. These eye models allow them to understand the limitations of direct ophthalmoscopy and appreciate what to look for when evaluating the fundus. Features of this prototype include a line of feline-specific and canine-specific eye models that demonstrate normal vs abnormal fundic examinations. Further refinement would provide an opportunity to create a real-to-life sized model using 3-D printing and opportunities to design a line of equine, bovine, and exotic animal-specific eye models

In this early prototype, Dr. Englar used an 8mm punch biopsy to create a hole in one-half of the tennis ball to create a full thickness "pupil." Then a fundic image is inserted into one-half of the eye model and both halves are sealed back together. Through additional refinement, a 3-D printer could be used to create models that are more lifelike and various sizes could be created so that a student could work with smaller sizes as their skills progress.

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