USE OF THE ELNADY TECHNIQUE FOR PRESERVING SPECIMENS IN EDUCATION AND TRAINING

By

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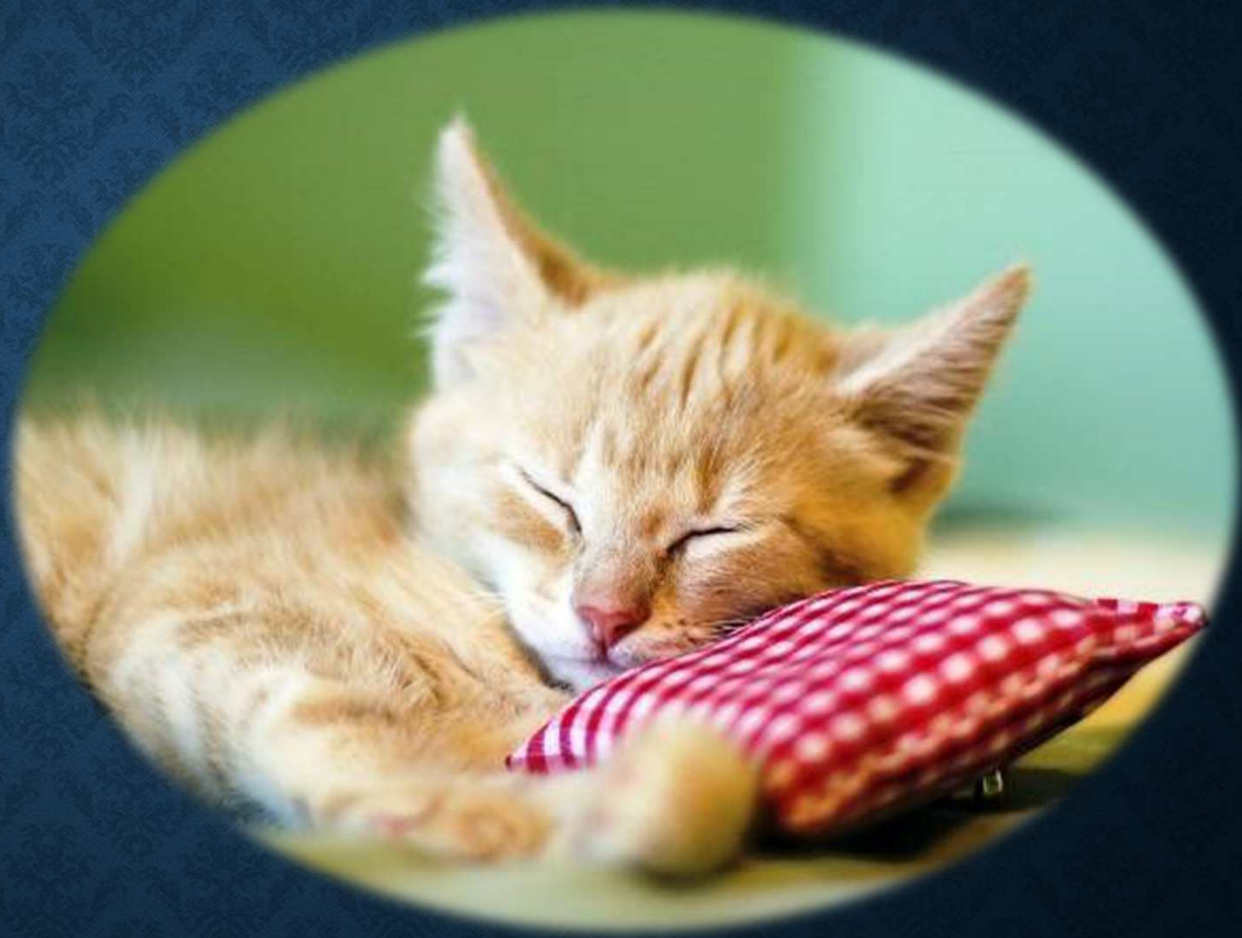
OBJECTIVES

- To identify the challenges & solutions in vet. education & training.
- To describe the “Elnady Technique”
- To present some developed models.
- To explore the technique potential in education and training

INTRO.

Seeking to avoid the harmful use of animals is a must for vet. education & training.



So we should have alternatives

ALTERNATIVES - COMPUTER SW AND VR

- All are Powerful training tools
- Expensive
- May not always provide sufficient hands-on experience.

TISSUE PRESERVATION

Ancient Egyptian embalmers used natron for human cadaver mummification

FORMALIN → HAZARDS

PLASTINATION

- High cost to construct a plastination lab.
- Chemicals need to be imported

ELNADY TECHNIQUE

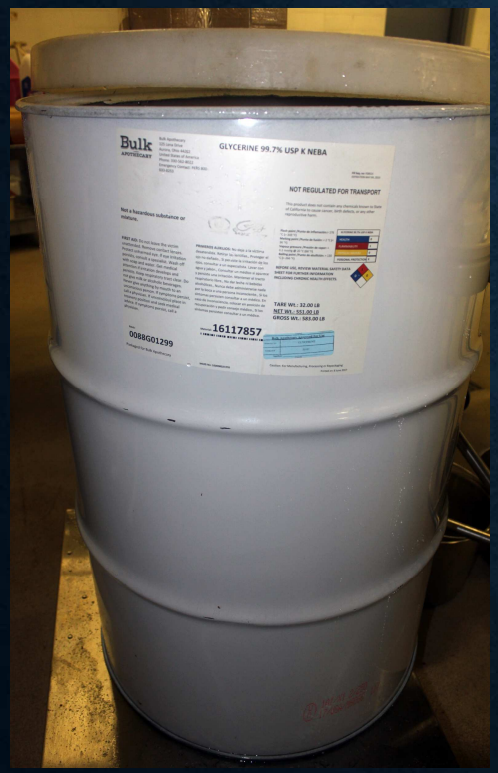
Pros of the Technique	Pros of the Developed Models
Simple and inexpensive	Soft, flexible and durable
Quick (4-8 W.)	Non toxic – safe to environment
Available chemicals	Easily stored
@ room temp	Can be colored by stains (dyes)
No specialized equipment	No offensive odor

ELNADY TECHNIQUE (5 MAIN STEPS)

1. **Fixation → Formalin**
2. **Dye injection** (Colored latex) → **dissection and bone drilling**
3. **Dehydration** → Acetone or alcohol
4. **Impregnation → Glycerin**
5. Curing → Cornstarch

DEHYDRATION IN ACETONE

IMPREGNATION IN GLYCERINE



CURING IN CORNSTARCH

CURING IN CORNSTARCH

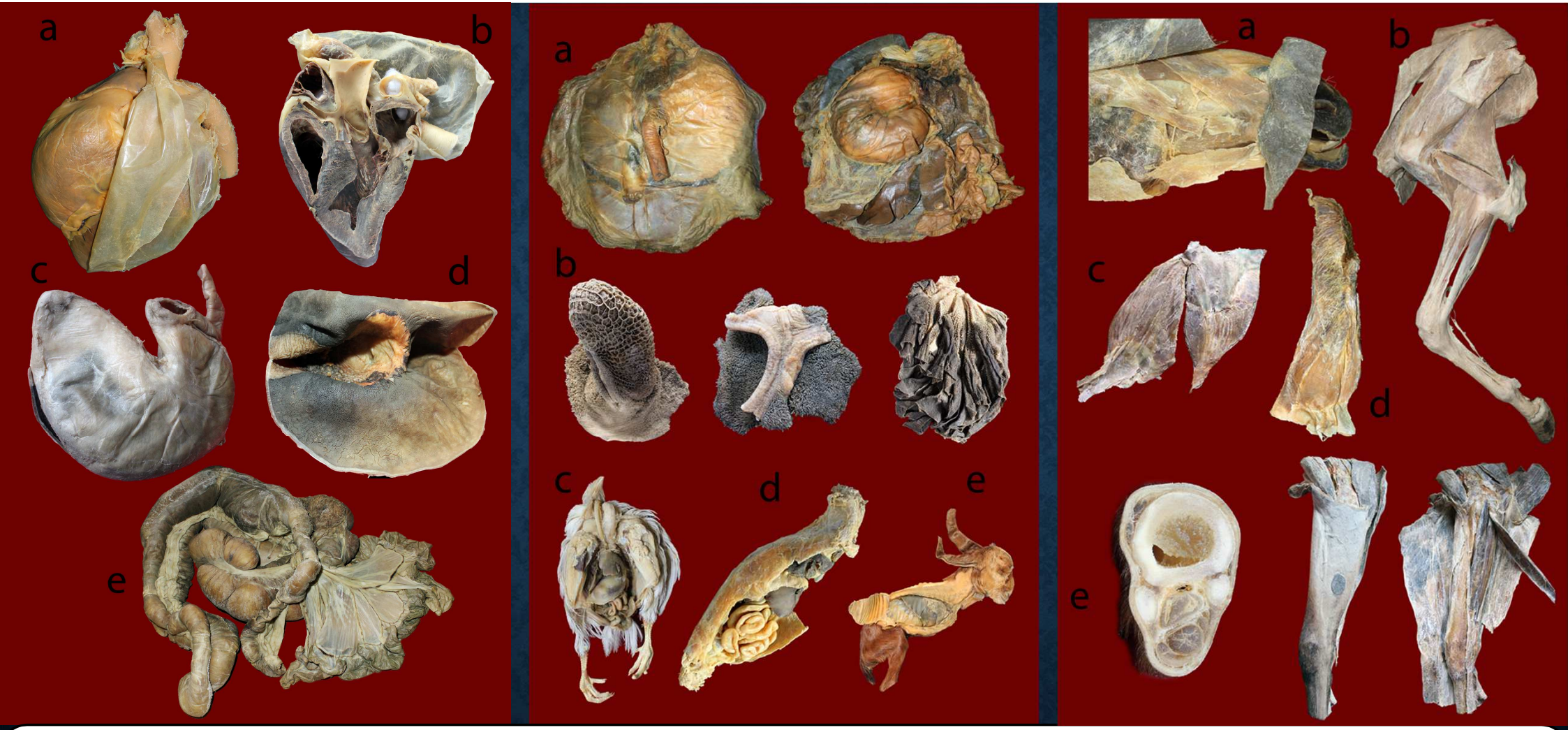
POTENTIALS OF THE TECHNIQUE

In Teaching Anatomy & Related disciplines	In Clinical Training & Simulation
• All biological tissues could be preserved including: • Organs • Body systems (nervous system, digestive, …etc) • Whole cadaver	• Dystocia training • Arthroscopy training – Nerve block • Endoscopy - Laparoscopy • Ultrasonography • Surgical skills (suture – intestinal anastomosis …etc) • Intravenous injection/sampling

SOME SPECIMENS DEVELOPED (2014-2017) AT

THE COLLEGE OF VET. MED. CAIRO UNIV.

EGYPT



HOLLOW ORGANS VISCERA MUSCULOSKELETAL

BRAIN SPECIMENS

MISCELLANEOUS

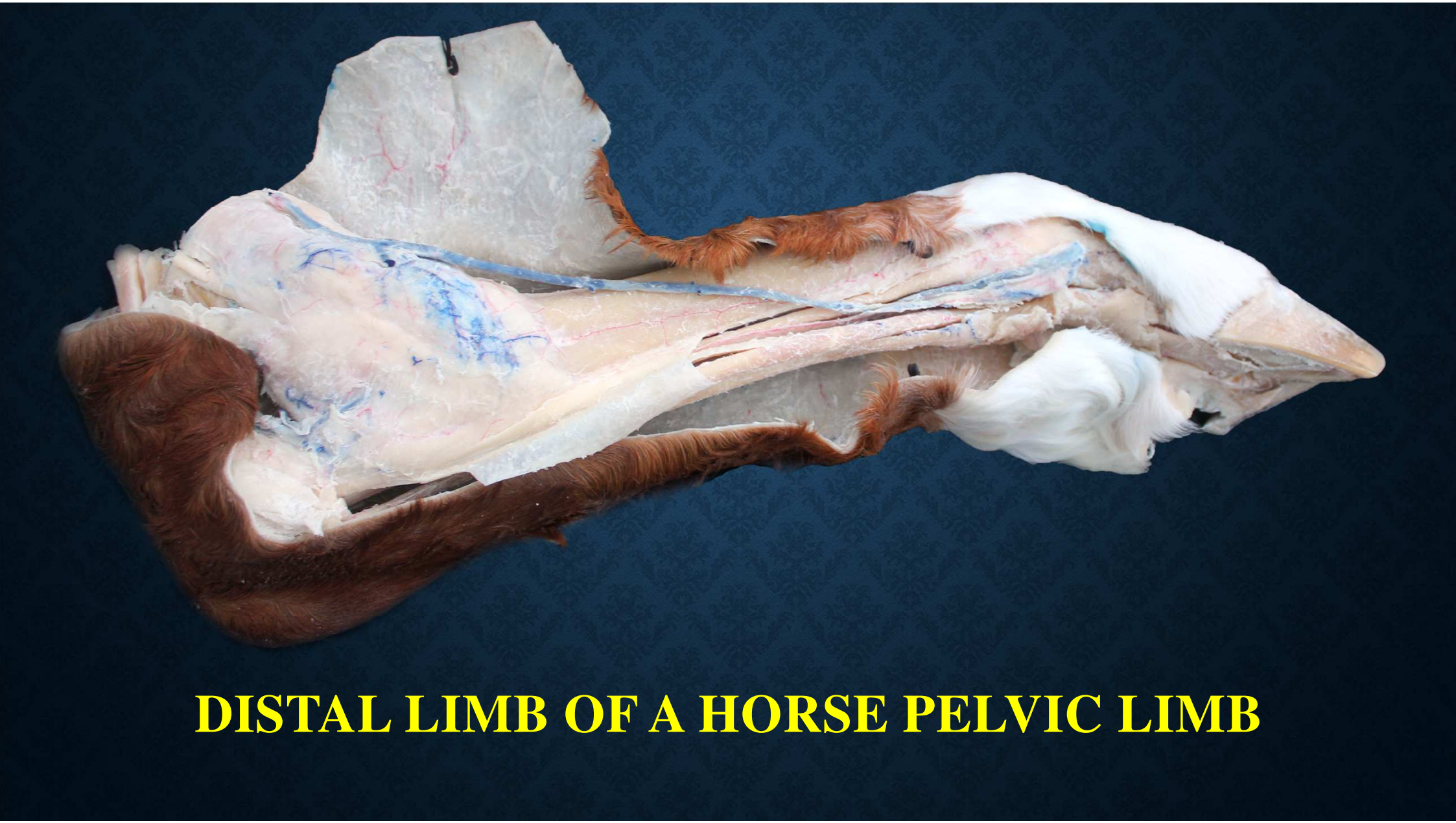
LIZARD FROM GIZA ZOO

SOME SPECIMENS DEVELOPED (2016) AT

CUMMINGS SCHOOL OF VET. MED. TUFTS UNIV.

USA


Thoracic limb of a Dog

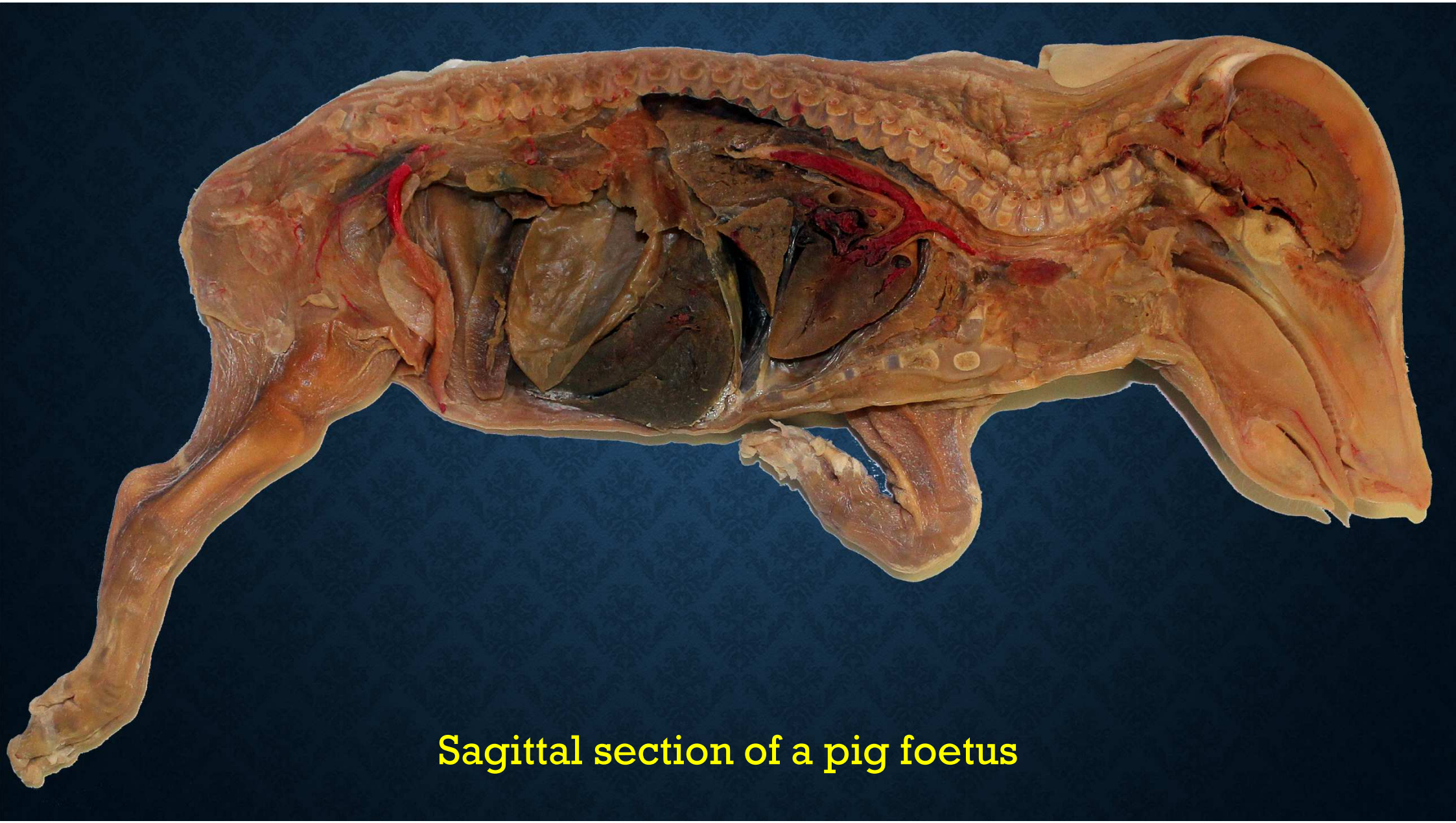


DISTAL LIMB OF A HORSE PELVIC LIMB

Thorax, abdomen and pelvis of a male dog

SOME SPECIMENS DEVELOPED (2017) AT THE

COLLEGE OF VET. MED. TUSKEGEE UNIV. USA



Sagittal section of a pig foetus

Pathological specimens

Canine Heart with heart worm

(*diroflaria immitis*)

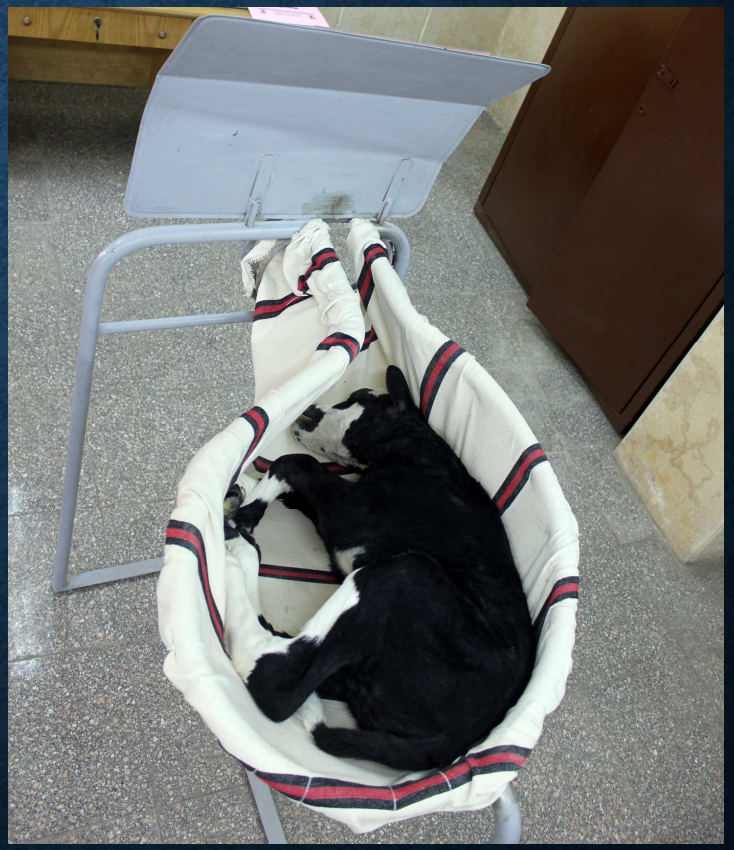
Heart ventricles of a horse

preserved & colored

Horse foot (corium)

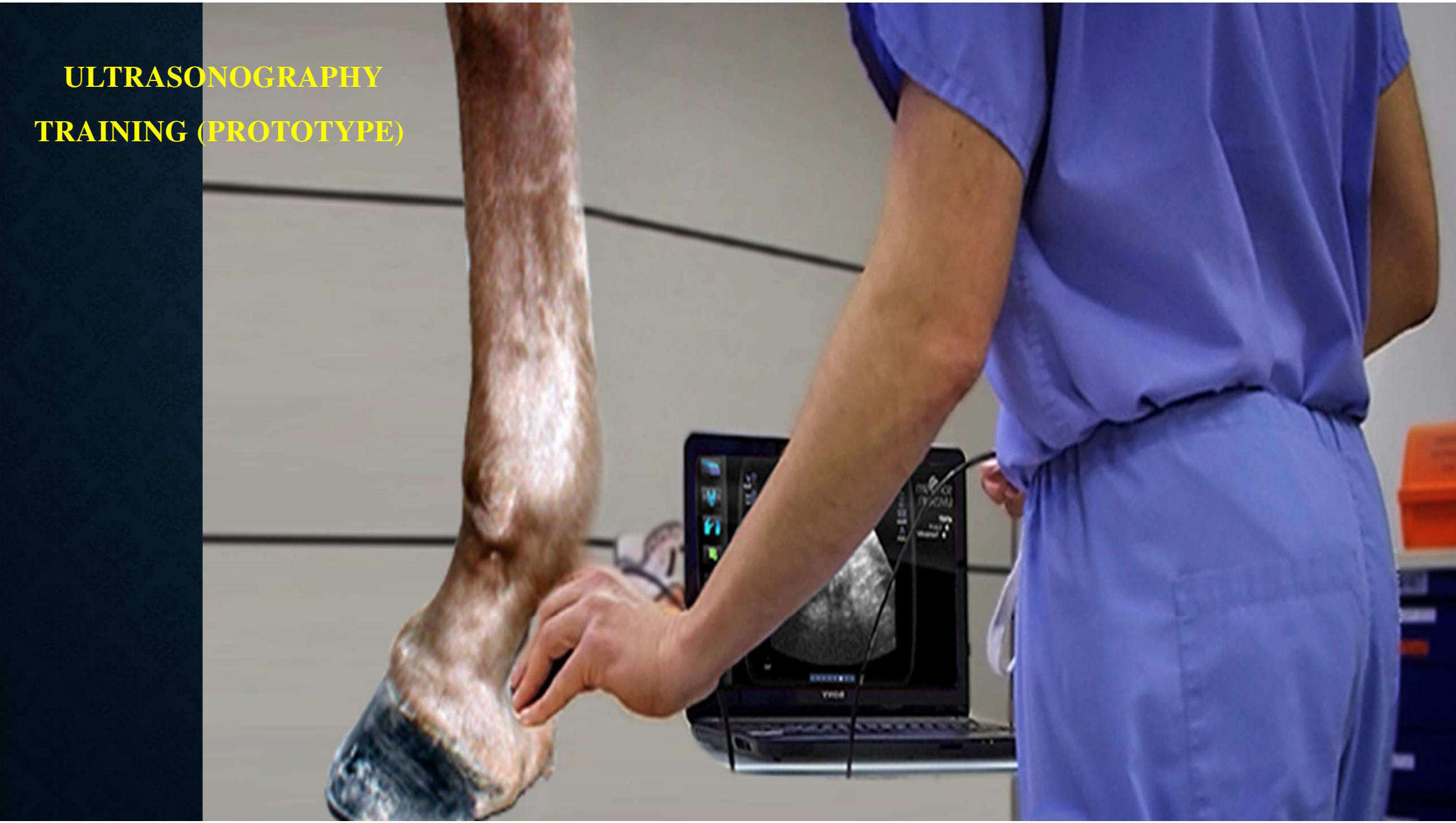
Whole dog

PRESERVED CALF ON PHANTOM FOR TRAINING ON DYSTOCIA

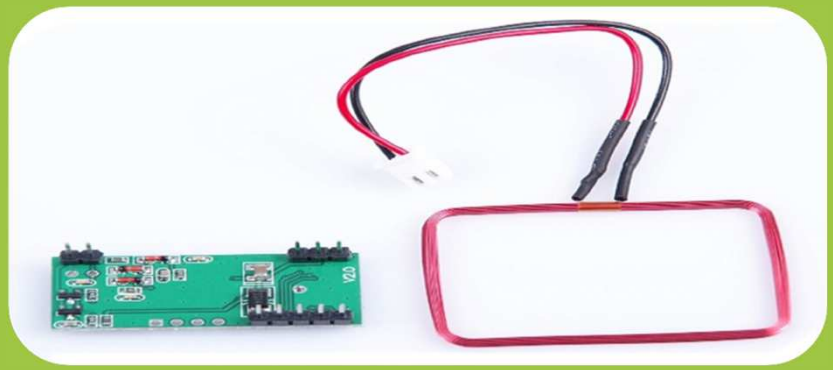
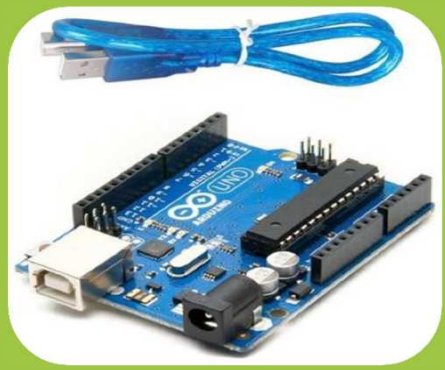


DYSTOCIA TRAINING

ULTRASONOGRAPHY TRAINING (PROTOTYPE)

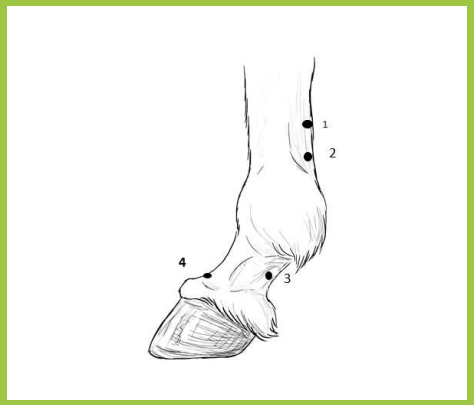
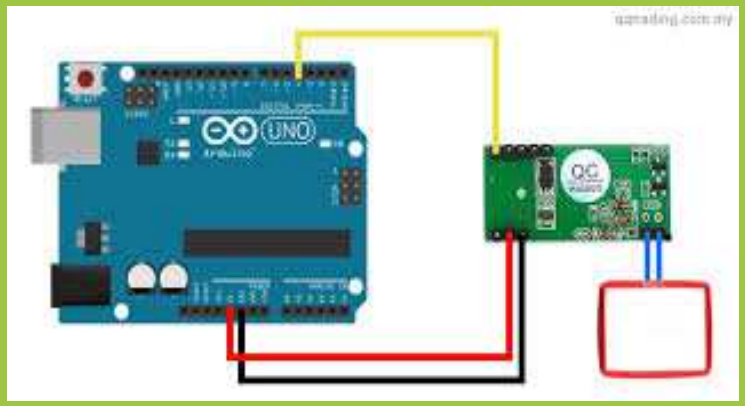


ULTRASONOGRAPHY TRAINING

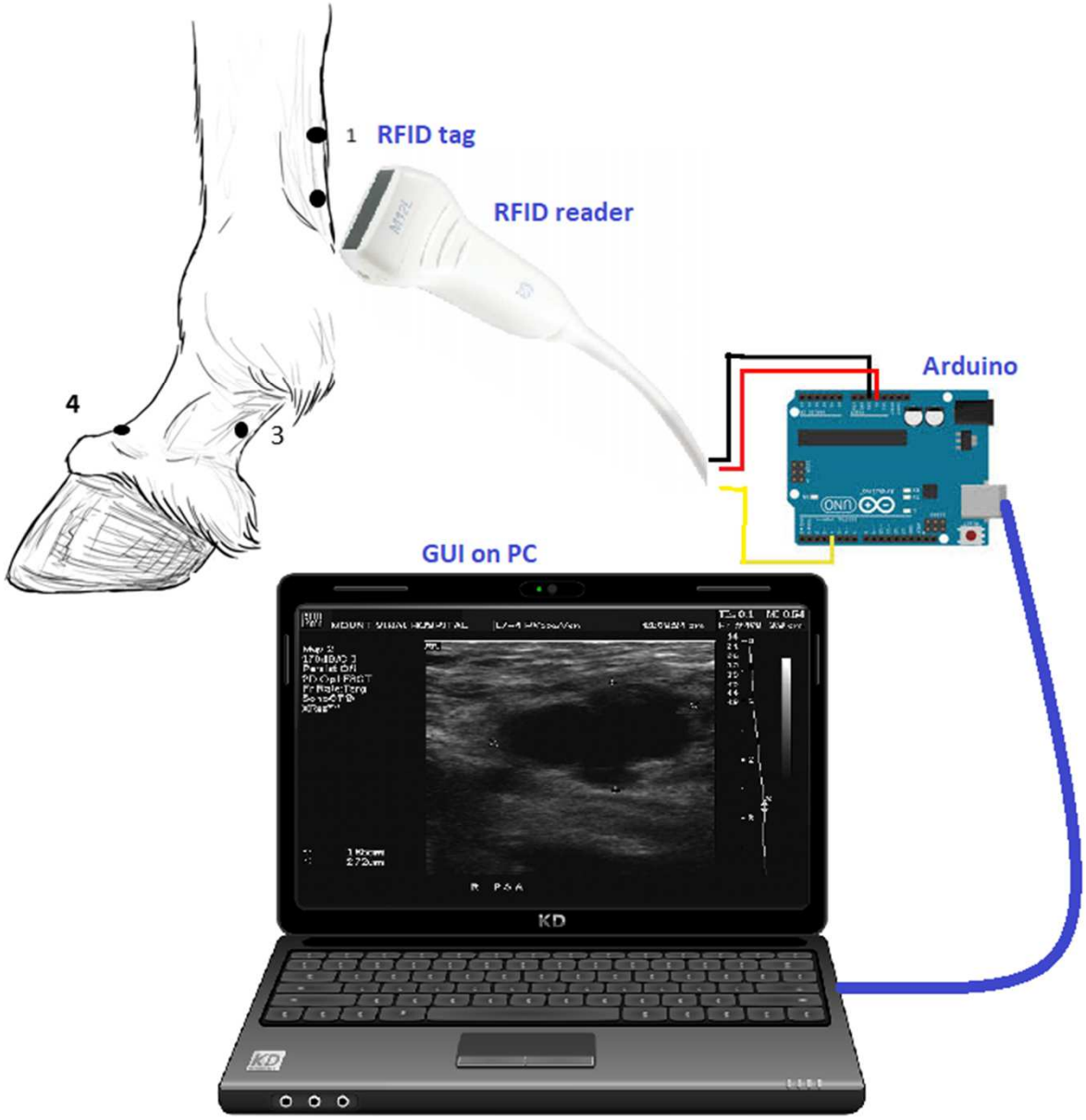
		
RFID ID Card Tag Token Key Chain, Read Only	**RFID Reader** Module UART Output Access Control System for Arduino	Arduino Uno **Microcontroller**

STEPS FOR ULTRASONOGRAPHY TRAINING

MODEL PREPARATION

		
1- Broke the RFID ID Chain and get the tag	2- Fix the chain at the correct position on the horse leg under the skin	3- Connect RFID Reader Module to Arduino as written in data sheet

Build a cover for "RFID Reader" look like ultrasound prob using 3D printer




ENDOSCOPY
training

ENDOSCOPY

CONCLUSION

- The Elnady Technique is an innovative, and inexpensive for preservation.
- Presents great help for students and teachers
- Provides opportunities for hands-on experience of a wide range of disciplines.
- It has been demonstrated and well received by faculty and students.
- Using a body donation program, animals can be preserved and contribute to minimizing the harmful use of animals.


THANK
YOU