INTRODUCTION
The anatomy laboratory has been a rich environment for learning core clinical skills such as teamwork, communication, empathy, professionalism, and knowledge, yet there is a resistance from some students to appreciate the importance of anatomy laboratory content and its application to clinical practice. As the time spent in the anatomy laboratory decreases, the need for novel and effective strategies emerge. Although much effort has been made to make anatomy clinically relevant, without taking adult learning theory into consideration these interventions may not be as effective.

CONCLUSIONS
The stark contrast of the basic science learning environment to clinical rotations has been somewhat alleviated by early clinical experiences. To facilitate the ability for students to manage the change in environments from a content perspective, we sought to make their anatomy knowledge more adaptable by using adult learning theories and implementing case-based problem solving with clinical dissection. This practice hopes to create a self-directed and engaged learner and, ultimately, to lead to a resilience of both learner and anatomical knowledge that will persist throughout their training.

INNOVATIVE APPROACH
There are numerous adult learning theories and models that can be applied to medical education. We utilized the Knowles’ andragogical model to create cases and clinical problem solving exercises in the medical anatomy laboratory. These cases invite students to work in teams and take a clinical approach to their dissections as well as consider the broader applications of anatomy in medicine. Integration was achieved by incorporating radiology, physical diagnosis, procedural skills, surgical approaches and pathology while keeping the emphasis on the anatomy.

CLINICAL ANATOMY CASE EXAMPLE
A patient presents with an axillary artery injury due to a motorcycle accident. During surgery, the axillary artery is ligated to allow repair. The surgeon looks to you, the resident osteopathic medical student, and asks the following questions:

What are the three parts of the axillary artery and how are they related to the pectoralis minor muscle?

What are the typical branches of the axillary artery?

Describe the path of the axillary artery.

Sketch the branches of YOUR cadaver’s axillary artery.

The surgeon further challenges your anatomical knowledge by asking you to name the branches of the axillary artery. She reminds you that there is variation in the branching pattern of the axillary artery and that the branches are named according to their region of distribution rather than their pattern of origin.

What is an anastomosis?

Why is this important for collateral circulation?

What arteries form these scapular anastomoses?

The images below demonstrate collateral circulation when the axillary artery is ligated.

Describe the path of blood flow shown in the images. In which arteries is blood flow reversed?

Need to know
The first task of the “facilitator of learning” is to help learners become aware of the “need to know”. Cases highlight the importance of anatomy in the clinical setting.

Andragogy:
Core adult learning principles
1. Learner’s need to know
2. Self-concept of the learner
3. Prior experience of the learner
4. Readiness to learn
5. Orientation to learning
6. Motivation to learn

Motivation
To foster internal motivation, clinical cases were designed as formative assessments. Once submitted to the anatomy faculty, the answer guides were released to the students.

Self concept
To facilitate the transition from dependent to self-directed learners, cases were completed by teams in conjunction with dissection directly involving the lab group’s cadaver.

Prior Experience
Clinical cases provide a forum to tap into team members’ life and academic experiences. For example, some members may have experience in gross anatomy dissection, as an EMT, a radiology technician, etc.

Readiness
Participating in clinical cases could influence the development of students’ readiness to learn through their interaction with team members and/or by appreciating how clinical anatomy applies to the practice of medicine.

Orientation
Problem-centered learners can be motivated to learn when provided the context of application. Cases demonstrate the relevance of anatomical concepts in the clinical setting.

REFERENCES