GROSS ANATOMY LAB CAPITAL CAMPAIGN

The study of anatomy is fundamental to the understanding of the structure, biomechanics, and neurology of the human body. Understandably, course work in anatomy is crucial to the success of all chiropractors. First year students at Life Chiropractic College West must master this scope of knowledge not only to succeed in subsequent classroom instruction but, to succeed as competent, knowledgeable, and empathetic chiropractors.

Currently, the Anatomy Department uses cadavers, cadaver bones, and other organic specimens to provide a "hands-on" approach offering a tactile and comprehensive educational experience. Still, the "gold standard" of anatomy instruction, there has been only incremental improvements in this form of instruction for several centuries.

The digital age has ushered in a dramatic and comprehensive new teaching tool, the **Anatomage Table**, which will enable faculty to augment instruction by offering anatomically correct 3D imaging with a vast number of interactive instructional permutations. This carefully researched and designed educational tool is a technical marvel, provides clinical care review options, is clean and safe, and results in significant cost savings.

"Anatomage has created an opportunity for us to offer our students a truly transformative learning experience in a next level, state of the art facility. The advanced abilities of the Anatomage platform allow us to customize learning to the needs of the students, be that our Doctor of Chiropractic or Post Graduate Radiology programs. There is simply nothing else like this that exists."

Dr. Monique Andrews
Anatomy Department Chair

The Anatomage Tables includes a range of features and content that provides:

- ultra-high quality rendering
- life-size full body display
- medical school level curriculum
- PACS compatibility
- uploaded and rendered medical scans
- interactive dissection and annotations
- gross anatomy content
- regional anatomy content
- a quiz mode, and

numerous other interactive, clinical, technical, and educational functions. Touch-screen features allow for a highly engaging learning experience.

This device is equipped with extensive content presets and also provides the ability for faculty and students to develop their own libraries of content for documentation and future use.

Students not able to perform in the laboratory due to chemical smell sensitivity, pregnancy, or allergenic conditions will still be able to receive the benefit of full anatomy instruction by utilizing the Anatomage Tables. Both course work and testing content can be communicated to remote locations.

The plan for the upgrading of the Anatomy Laboratories calls for acquiring two Anatomage Tables immediately. A second to be acquired in year two and a fourth table acquired in year three. The manufacturer will only warrant the software for five years so; this rolling acquisition will enable the College to have at least one table under warranty for an eight year period. The first two tables will be placed in the current anatomy labs. A third will be placed in a classroom for use by other disciplines as well as to provide a chemical free environment for pregnant students, those with chemical sensitivity, or people with allergic conditions.

The anatomy labs will be outfitted with state-of-the-art high definition cameras to record and project both live dissections and digitized representations of the dissection procedures and processes. This material will be transferred to high resolution monitors mounted in the laboratories.

Additionally, providing instruction using the Anatomage Tables integrates well with Life West's Continuing Education program. They could be used to develop curriculum not only for chiropractors but also physical therapists, nurses, physicians assistants, x-ray technicians, acupuncturists, massage therapists, and others seeking to earn CE credits. Future use could include patient education in the clinic as well as sharing this resource with visiting students pursuing STEM occupations.

Recognizing that chiropractic will always be primarily a "hands-on" interaction between clinicians and patients, it is crucial that students develop a connection to and deep respect for the human body. To supplement the vast digital representations available through Anatomage Tables, the Anatomy Department will create a video based project demonstrating the actual dissection of a human cadaver. This project will have three separate but interrelated components.

Cadaver Dissection and Recording

The Anatomy Department staff will conduct full anterior, posterior, and head dissection on human cadavers. These dissections will be performed in layers, starting with the most superficial and then moving to the deepest parts of the body. The entire process with be documented through video, so the serial images can be compiled and show the progression through the body's tissues.

Individual images will be uploaded so the various tissues, organs, and structures can be tagged and then viewed on a variety of hand-held and other electronic devices.

Dissection Training Manual

Another use of the photographic images will be to contribute significant visual content to a dissection training manual. It will be given to current and new faculty and student dissectors. Upon completion, the manual will be published and made available to other institutions.

Computer-Based Exams

The photographs can also be used to create a computer-based exam that can be given to pregnant students, students with chemical sensitivities, and other conditions that make direct contact with the anatomy laboratories problematic or unhealthy.

To update and renew the cadaver instructional experience, the project will also include the acquisition of two additional cadavers as well as five complete sets of cadaver bones. Both items provide students with exposure to the variations that occur in organic matter that cannot be duplicated through even the most advanced digitization. Use of these materials will lead to greater understanding, empathy, and treatment.

For the best educational, clinical, and preservation results, dissection of the cadavers must be performed by highly qualified individuals with sufficient training and skill to obtain the best results. To that end, the Anatomy Department Improvements Campaign requires contracting for these specialized services at a rate of $60 per hour. Each academic year calls for 400 hours of such specialized expertise. We are only seeking funding for one year of such expertise.

Accompanying this proposal are material provided by the manufacturer regarding studies of Anatomage Tables instruction at Life Chiropractic University in Atlanta. The results indicate an increase in learning anatomy content through instruction received with the use of this technology.

Anatomy Labs Improvements and Upgrades

The anatomy labs will be outfitted with state-of-the-art high definition cameras to record and project both live dissections and digitized representations of the dissection procedures and processes. This material will be transferred to high resolution monitors mounted in the laboratories. Projected lessons will ensure optimal viewing for students in any location in the labs.

Existing porous wooden cabinets and wall paneling will be replaced with more sanitary and easy to maintain stainless steel. New stainless steel tables and storage racks will also be obtained.

How You Can Make a Profound Difference on Chiropractic Education at Life West

Return to the Gross Anatomy Lab Capital Campaign Home Page and select the level of financial support that represents your investment in the next generation of chiropractors. In addition to one time tax-deductible gifts or multi-year pledges, the Office of Institutional Advancement is prepared to facilitate more complex donation such as stock transfers, bonds, IRA or Roth distributions or real property.

To learn more about the **Anatomy Department Improvements Campaign** and how you can impact chiropractic education at Life West, contact Tom Hyland in the Office of Institutional Advancement Office at (510) 780-4500, ext. 2420.

Life University Successfully Replaced Cadavers Labs With Anatomage Tables

Virtual Dissection For All Anatomy Courses

Anatomy classes at Life University officially switched from traditional cadaver labs to virtual anatomy labs with the addition of 8 Anatomage Tables. With the Tables, Life wanted to eliminate the chemical-filled classroom environment of cadaver labs. Students were able to have a hands-on dissection experience without the exposure to harsh chemicals. At the time, the university integrated more Tables into its courses than any other educational institution.

Mastering Material With Virtual Anatomy Lab Time

Life University's curriculum mainly focuses on chiropractic education. The decision to adopt 3D dissection technology was motivated by wanting to improving curriculum design and have all students partake in lessons. This had been previously more challenging with cadaver labs due to student sensitivity to chemicals. With the Table, students had 2 hours in lab to review the week's material as well as 12 hours of open lab time.

Animation & Highlighting Features For Full Body Cadaver Structures

Both educators and students benefited from the Table's curriculum-based features. One factor they took advantage of was the "undo" button which applies to any dissection feature. Resetting their work allowed for students to be more independent and explore the virtual cadaver's anatomy without losing the integrity of the structure. The goal of using virtual technology in anatomy courses was to promote exploration without fear of students losing their work.

Anatomy courses mainly utilized the labeling and animation features to highlight specific structures on the full body cadavers. Once the students highlighted the structure, they were able to see the anatomical name. From there, they were able to remove superficial to deeply embedded structures layer-by-layer to understand their physical relationships.

3D Visualization To Understand Structural Relationships

Another aspect of the Table that was integrated into each anatomy course was the ability to view computerized tomography (CT) scans. The visualization options allowed for students to have a detailed understanding of body systems.

References

Life University. (2015). *Life University Students Switch to Virtual Anatomy Tables—University Possesses Largest Collection of Anatomage Tables on the Planet* [Press release]. Retrieved from http://www.life.edu/../LifeUniversitySwitchestoVirtualAnatomyTables091015.pdf

Anatomage

Anatomage Table Proven to Elevate Chiropractic Student Gross Anatomy Scores

Comparing Student Performance Across Multiple Teaching Methologies

Faculty members at Life University worked to evaluate lecture and laboratory scores of 1st-year chiropractic anatomy students. The goal was to establish whether students learning on the Anatomage Table would meet similar assessment objectives as students learning on anatomical models or cadavers.

Evaluating Student Lecture & Laboratory Exams

Data was gathered from 3 seperate cohorts for 3 consecutive academic years. Cohort 1 included students that practiced cadaver dissection, observed prosections, and utilized anatomical models and atlases. Cohort 2 mainly worked with anatomical models and atlases. Cohort 3 students studied models and had 2 hours of laboratory time per week dedicated to working with the Table. During lab exams students were tested with either cadavers, models, or on the Table based on their cohort.

Students that tested on the Table for lab exams scored an average final score of 85.1%, higher than those who were tested solely on models (81.4%) and cadavers (76.1%). The final scores averaged at 85.3%, 10.7 percentage points higher than students tested on cadavers (74.6%). On average, they tested 3.7 percentage points above those tested on models and 9 points above those tested on cadavers. For the lecture portion of the course, no significant differences were seen in lecture exam scores between the cohorts.

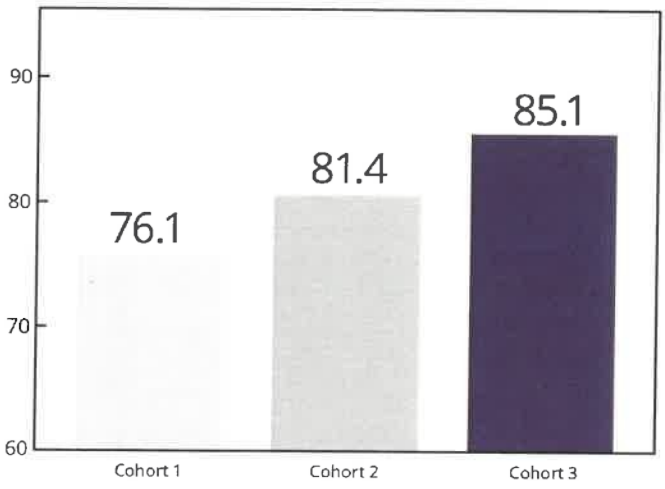

Figure 1 - Overall laboratory examination mean scores of the 3 cohorts. There was a successive increase in the score percentages of the 3 groups.

Effective Gross Anatomy Teaching Practices

Consistent lecture scoring suggests that regardless of the teaching method, students still achieved the necessary course objectives. Higher lab scores in the cohort that utilized the Table could be due to seeing more detail with topography and depth of structures. Images were clear and unable to be destroyed by dissection. With cadavers, students may have spent more time focused on getting dissection techniques accomplished and less time absorbing information. Many were reluctant to attend extra sessions because of fumes or general discomfort. Additionally, students who primarily used models had limited tactile input. Spatial relationships were more difficult to discern and spinal nerves and vessels more difficult to trace.

Gross Anatomy Visualization With Virtual Dissection

Faculty members at Life University plan to continue with a multifaceted approach to gross anatomy instruction. Chiropractic students enjoy active, engaged learning and easily adapted to the Table's functionality. Students learning and testing on the Table met and exceeded the same assessment objectives as those learning with models and cadavers.

References

Afsharpour, S., Gonsalves, A., Hosek, R.,& Partin, E., MED, DC. (2018). Analysis of immediate student outcomes following a change in gross anatomy laboratory teaching methodology*. Journal of Chiropractic Education. doi:10.7899/jce-17-7

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