AACA Regional Meeting

Saturday, October 6, 2018

Washington, D.C.

Georgetown University

GEORGETOWN UNIVERSITY
Georgetown University Medical Center



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American Association of Clinical Anatomists

www.clinical-anatomy.org

Welcome to the AACA Regional Conference

Welcome to Georgetown University Medical Center, located in the historic Georgetown neighborhood of the Nation's Capital. We are the oldest Jesuit University in the world and home of the Hoyas. On behalf of the planning committee representing the four medical schools in the area, we welcome you to this great city of wonderful people.

Given the ever-increasing change to medical curricula in most medical schools in the U.S., the current speakers were selected to address the role of the foundational science of medicine, gross anatomy, in the present drive to integrate the various basic science disciplines. In addition, the role of how to assess medical students in the formation of ideal professionals will be presented. Finally, the unique perspective of training physicians to serve our armed forces will be the topic of a faculty member from the sole medical school to serve this purpose, University Services University of the Health Sciences (USUHS) here in the D.C. area,

Sincerely,

Carlos A. Suárez-Quian, Ph.D.
Georgetown University Medical Center

Jon Wisco, Ph.D.
Brigham Young University

Kirsten Brown, Pd.D.
The George Washington University

Shiloh Jones, Ph.D
Georgetown University School of Medicine

D.D. Rigamonti, PhD, EC
Howard University

Stephen Rothwell, Ph.D
Uniformed Services University School of Medicine

Post your tweets to #AACARegional

AACA Regional Conference
Schedule for Saturday, October 6

Time	Session	Presenter	Location
8:00 – 9:00 AM	Breakfast		SW107
8:00 – 1:30 PM	Silent Auction		SW107
9:00 – 10:00 AM	Plenary	Dr. Peter J. Ward	C104
10:00 – 11:00 AM	Plenary	Dr. Kirsten Brown	C104
11:00 – 12:00 PM	**Breakout Session** 1. A Possible Association between the Brachioradial Artery and Axillary Artery Branching Variation 2. Chondroepitrochlearis and its Association with the Panniculus Carnosus: a Review of Dermal Muscles 3. Gross Anatomy as an Interprofessional Education Tool 4. Knowledge retention across curricular models: An international collaboration 5. The Soft-Embalmed Cadaver	 Olutayo Ariyo Melissa Carroll Andew Crofton Rosalyn Jurjus Mark Zavoyna	C104
12:00 – 2:00 PM	Lunch and Poster Sessions		SW107
2:00 – 3:00 PM	Plenary	Dr. Aaron Saguil	C104
3:00 – 4:00 PM	Plenary	Dr. Carrie Chen	C104

2018 AACA Regional Conference

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Speakers

Saturday, October 6

9:00am
C104
Anatomy in a longitudinal curriculum – the punctuated approach

Dr. Peter J. Ward
Associate Professor of Anatomy
West Virginia School of Osteopathic Medicine



ABSTRACT: Dr. Ward will elaborate on the steps that were taken to integrate anatomy into a longitudinal, patient-presentation curriculum at the West Virginia School of Osteopathic Medicine. We moved from a stand-alone, beginning of the 1st year format to spread anatomy content and labs throughout years 1 and 2.

BIO: Dr. Peter Ward grew up in Casper, Wyoming before attending Carnegie Mellon University in Pittsburgh, Pennsylvania, graduating in 1996 with a B.S. degree in Biology. In 1998, he began graduate school at Purdue University in West Lafayette, Indiana. During his M.S. and Ph.D. years, Dr. Ward served as a graduate teaching assistant in human gross anatomy, medical histology, medical neuroscience, veterinary anatomy, veterinary histology and veterinary neuroscience. He was recognized as the department's outstanding teaching assistant, received the Purdue University distinguished teaching assistant award, the Purdue graduate school excellence in teaching award, and was inducted into the Purdue Teaching Academy as an associate fellow. Dr. Ward's doctoral research investigated the approaches to study used by students in a veterinary anatomy class, and how those approaches affected their academic success and recall.

In 2005, Dr. Ward graduated and accepted a position as assistant professor of anatomy at the West Virginia School of Osteopathic Medicine in Lewisburg, West Virginia. At WVSOM, Dr. Ward has contributed to teaching gross anatomy, histology, embryology, neuroscience, history of medicine, and musculoskeletal courses. He also developed a 4th year anatomy elective that allows students to return to the anatomy laboratory and conduct a focused research project prior to starting their residency. Dr. Ward also served as course director for gross anatomy before the school moved to a longitudinal, presentation-based curriculum in 2012. From 2011-2017, he was chair of the WVSOM curriculum committee, which oversaw the transition to the new curriculum. At WVSOM he has received the Atlas Club Golden Key Award, the Osteopathic Principles and Practices Integration Faculty Teaching Award, and the President's Award of Faculty Excellence. Dr. Ward also teaches anatomy to Physician Assistant students at the

University of Charleston and was selected as the University of Charleston PA program adjunct faculty member of the year four times. In 2016, Dr. Ward was selected as the winner of the Basmajian award from our sister society, the American Association of Anatomists. In 2017, Dr. Ward had the honor of being selected as one of the five finalists for the West Virginia Professor of the Year.

Dr. Ward's educational research program uses qualitative and quantitative methods to characterize how student approaches to study affect their achievement and recall of basic science course material. He has published his findings in *Clinical Anatomy*, *Anatomical Sciences Education*, and other journals dedicated to anatomy and education. Dr. Ward also mentors students in developing and researching topics related to clinical anatomy, leading to publications in the *Journal of Anatomy*, The *Journal of the American Osteopathic Association*, and *Clinical Anatomy*. He recently contributed anatomy, histology, embryology, and neuroanatomy content to the three volumes of *The Netter Collection: The Digestive System, 2nd Ed.*

In addition to service on institutional committees at WVSOM, Dr. Ward coordinates dissection-based anatomy retreats for faculty and students from Japanese Osteopathic schools, and is the director of the WVSOM plastination laboratory. Dr. Ward has also served the AACA as an at-large member of the AACA council, chair and member of the Educational Affairs Committee, member of the Brand Promotion and Outreach committee, chair of the *ad hoc* strategic planning committee, and is currently AACA association secretary.

Outside of work, Dr. Ward is extremely lucky to be the husband of Sarah Koressel, D.V.M. and the father of two wonderful but exhausting 5-year-old sons.

10:00am
C104
Making it up as I go along: Gross anatomy in an integrated medical curriculum

Dr. Kirsten Brown
Assistant Professor
The George Washington University



ABSTRACT: Dr. Brown will discuss the steps and missteps that she took while integrating anatomy into a longitudinally-based (with a shortened preclinical phase!) at the George Washington University School of Medicine (GWSMHS). Over the past few years, she has supervised the modification of medical gross anatomy and neuroanatomy content from stand-alone, disciplined-based courses to integrated clinically-oriented blocks. In addition to issues of determining appropriate content for the clinically-focused blocks, other unexpected challenges presented themselves. These challenges include issues related to logistics, changes to assessments, staffing/faculty

limitations, and an overall paradigm shift for the university. Currently in their fifth iteration of the revised medical curriculum, Kirsten will highlight the unending process of curricular revision and the next steps for anatomy at GWSMHS.

BIO: Dr. Kirsten Brown (@DrKirtyBrown) is an Assistant Professor of Anatomy & Regenerative Biology and has been a faculty member since 2011. She received her PhD from the Johns Hopkins School of Medicine and Health Sciences in 2011, and her MEd from the George Washington School of Medicine in 2018. Kirsten is the Director of Gross Anatomy, overseeing all of the anatomy-related educational programs for various student populations at the medical school. She is medical education researcher and collaborates on projects that involve analyzing student performance and learning in the anatomical sciences. She has published on a variety of anatomy education-focused topics, including several meta-analyses on anatomy pedagogies and on anatomy knowledge retention. In the past few years, Kirsten has become a strong advocate for social media use as a means to promoting one's academic brand an engage with students. She serves as one of the Social Media Representatives for the AAA meetings and is a regular contributor to the @AskAnatomist Twitter chat. She's currently exploring the efficacy of social media-based instructional approaches in medical gross anatomy. In addition to her research interests, she teaches in the anatomical sciences, including human gross anatomy and neuroanatomy. She is the co-block director for the Musculoskeletal (MSK) block of the GWSMHS medical curriculum. She also oversees the longitudinal incorporation of gross anatomy through the other premedical blocks, and serves as the anatomy content lead for several other blocks. Her passion for medical education and efforts for anatomy have not gone unnoticed by peers, colleagues, and students, as she is the past recipient of the Distinguished Teacher Award and two Golden Apple Teaching Awards.

2:00pm
C104



Dr. Aaron Saguil
Dean of Admissions
Uniformed Services University

Dr. Aaron Saguil will speak on military medicine, training methods and preparing students for real-world situations in the military theater.

BIO: Aaron Saguil, MD, MPH, FAAFP serves as the Associate Dean for Recruitment and Admissions at the Uniformed Services University of the Health Sciences F. Edward Hébert School of Medicine - America's Medical School - in Bethesda, Maryland. Dr. Saguil is an Associate Professor of Family Medicine and is on the faculty of the Fort Belvoir Community Hospital Family Medicine Residency. He is the Vice Chair of the AAMC's MCAT Validity Committee, a contributing editor to the American Family Physician, and immediate past chair of the AAFP's Commission on Continuing Professional Development.

Dr. Saguil received his BA in Chemistry from Duke University, his MD from the University of Florida College Of Medicine, and his MPH from the University of Washington. He has deployed to Afghanistan and served as the Chief of Primary Care for the NATO Role 3 Multinational Medical Unit in Kandahar, Afghanistan; his actions in theater were recognized with the Bronze Star and the Canadian Chief of Defense Staff Commendation. His other awards include the Meritorious Service Medal with Oak Leaf Cluster (OLC), Army Commendation Medal with OLC, and the Army Achievement Medal with 4 OLC.

3:00pm
C104
Assessment in Health Professions Education: Where are we Headed?

Dr. Carrie Chen
Associate Dean of Assessment and Educational Sponsorship
Georgetown University School of Medicine



ABSTRACT: Increasing demands for public accountability and quality improvement in clinical practice has resulted in a shift in focus from the content and process of health professions training to the outcomes of training. Three key concepts have gained momentum over the last decade in the national and international conversations about approaches to assessment. These include competency based time variable (CBTV) education, entrustable professional activities (EPAs), and programmatic assessment. While their implications for assessments in the clinical workplace can be more obvious, they also have implications for we might approach assessments in the preclinical curriculum/classroom. Considerations include the continuum of training, conditions required for safe patient care, assessment *for* learning vs *of* learning, and the separation of assessment and decision-making. Clarification of one's goals for assessment and alignment of one's approach with emerging conceptions and principles of assessment can help optimize student learning while ensuring public safety.

BIO: As associate dean for assessment and educational scholarship, Carrie Chen, MD, PhD, is working to ensure that students have had a positive experience during their time at Georgetown University School of Medicine.

Inspired by her experiences in medical education, Carrie Chen, MD, PhD, has studied learning experiences and the assessment of learning. As associate dean for assessment and educational scholarship, Chen is helping the School of Medicine continue developing a medical school experience that both supports and educates students.

As a medical student, Chen sought a residency program known for its teaching. After becoming chief resident, one of the things that Chen was able to influence was the absence policy. Recalling an incident where a fellow resident was told that she couldn't take a day off to be with her husband when he was

having surgery, “my co-chief residents and I decided that is not who we want to be and that is not how medicine should be,” she said. Chen and the other co-chief residents created a coverage system with a cushion in case residents needed time off.

One of the reasons Chen came to Georgetown was the opportunity to support the growth of medical education research among students and faculty. Medical students who are interested in learning more about academic medicine can pursue the Medical Education Research Scholar track, which exposes them to the scholarship of teaching and learning in a medical/clinical setting.

In her medical education research, Chen has studied entrustable professional activities (EPAs), which are one way to assess medical trainees’ ability to integrate the different skills and knowledge. Under an EPA framework, those assessing learners focus on what tasks a learner should be able to do and whether they would entrust a learner to accomplish those tasks.

The new School of Medicine curriculum supports medical students through their professional identity formation, something very few medical schools are doing, Chen said.

Part of professional identity formation involves helping medical students become more comfortable making mistakes and asking questions, which can be very difficult for medical students, many of whom are high achievers, Chen said.

AACA Regional Meeting Breakout Session
11:00am – 12:00pm

A Possible Association between the Brachioradial Artery and Axillary Artery Branching Variation – C104

INTRODUCTION. We analyzed axillary artery in 5 of 34 dissected upper limbs with a coexisting brachioradial artery to verify their branching pattern as compared with its usual 6 standard branches. We report that all limbs with a coexisting brachioradial artery, none had the usual branching pattern, but each had a coexisting but dissimilar aberrant branching pattern. We propose a possible association between the brachioradial artery and axillary artery branching variation.
During routine academic dissection of 34 upper limbs in 17 embalmed cadavers, we found 5 of these with existing brachioradial artery. We then studied the branching pattern of the axillary artery such limbs with brachioradial artery. These were documented and then photographed by a medical media staff. SUMMARY. Our analysis revealed that in all the limbs with the brachioradial artery, either arising from the axillary, brachial or superficial brachial origins, all exhibited aberrant but dissimilar axillary artery branching patterns. Axillary artery branching patterns in the 5 limbs with brachioradial artery were as follows;

1.) A thoracoacromial trunk that gave rise to the brachioradial, and a TDAl/ LTA common trunk (Fig.1).

2) An absent lateral thoracic, and an APCHT trunk (Fig.2)

3.) 2 PCHA, one arising from the subscapular artery trunk, the other low arising (Fig.3)

4.) A common trunk for the APCHA and profundal brachii (Fig 4)

5.) 2 LTA, one from thoracodorsal artery, the other normally arising. (Fig.5)

CONCLUSIONS. We propose a possible association between the brachioradial artery and branching variation in the axillary artery, knowledge which is of importance to vascular and orthopedic surgeons especially in the selection of appropriate surgical procedures in the axilla and to neuroradiologists in the interpretation of images. Our hypothesis will be confirmed when further analysis are carried out with

Olutayo Ariyo
Clinical Instructor
Thomas Jefferson University, Philadelphia, PA

Chondroepitrochlearis and its Association with the Panniculus Carnosus: a Review of Dermal Muscles – C104

INTRODUCTION. The chondroepitrochlearis (CE) is a muscle variant of the thorax and upper limb in man. Reports usually describe an origin from the 5-7th costal bones parallel to the inferior border of the pectoralis major, inserting on the medial epicondyle, brachial fascia or intermuscular septum. Specific embryologic origin, innervation and vascular supply of the CE is unclear. Some researchers have speculated a developmental relationship with the panniculus carnosus (PC), a sheet of dermal musculature. The purpose of this study was to examine the association between the chondroepitrochlearis and the panniculus carnosus. METHODS. Relevant articles were searched in MEDLINE (PubMed), ScienceDirect, and Google Scholar in addition to manual searches of the references and relevant textbooks. Data was collected regarding myology, morphology, embryology and investigative history. Articles were assessed with the Anatomical Quality Assessment (AQUA) Tool, specifically Domain 4 (Descriptive Anatomy) for case reports. SUMMARY. Inconsistency regarding the origin and insertion of the CE exist, contributing to debate in nomenclature (chondrofascialis, thoracoepicondylaris, chondrohumeralis, pectoroepicondylaris). Comparative anatomy and published evidence supports that the CE is a remnant of the PC - a dermal muscle. Often the CE neurovascular supply has been attributed to the pectoral nerves and the lateral thoracic artery, which supports a developmental relationship to the PC. Dermal muscles are considered superficial muscle fibers that may attach to skin or fascia and are generally vestigial structures in man (sternalis, platysma, palmaris brevis). CONCLUSIONS. The presence of the CE should be considered within the context of a regressing sheet of dermal musculature, specifically the PC. Further research should investigate the functional role, if any, and development of these muscles in man.

Melissa Carroll
Assistant Professor
Doctor of Physical Therapy
DeSales University, Center Valley, PA

Gross Anatomy as an Interprofessional Education Tool – C104

INTRODUCTION: Gross anatomy is a core subject for all health professions programs early in the curriculum, is typically clinially-oriented, and provides ample opportunity for significant interaction between students. These interactions help students improve teamwork and communication skills, professionalism, and respect. In sum, anatomy is an ideal course for implementing interprofessional education (IPE). Early interactive IPE promotes a reduction in perceived division between students and improves student attitudes toward IPE, which contributes to the teamwork needed to optimize patient care. However, anatomy is typically taught to each health profession separately despite this opportunity. In the present study, multiple approaches to integrating students from different health professions in a gross anatomy course were tested. METHODS: This study compared the perceptions of instructors and students in a graduate-level gross anatomy course for PA and PT students offered in three subsequent years. The course was first structured in a multi-disciplinary manner with minimal integration and interaction between students from the two programs. The second year, interprofessional dissection teams consisted of both PA and PT students. Lectures were delivered together, but students did not interact during lectures. In the third year, dissection teams were comprised of both PA and PT students, but lecture groups consisting of students from both professions engaged in interactive activities as well. Student and faculty perceptions were gathered from course evaluations, free-response questions, and the Interdisciplinary Education Perception Scale. SUMMARY: In the first year, students reported positive relationships with other students within their respective program, yet developed negative views of the students in the other program overall. This divide was also perceived by the instructors. Students from the second year reported positive views of students from their own program and the other program, but felt lectures should be separated. Students from the third year reported positive views of students from both programs, did not recommend separate lectures and were very interested in having additional courses with IPE components. CONCLUSIONS: Gross anatomy is an excellent course for IPE and the more integrated students are in the course, the better their perceptions of the experience and of the students from the other profession.

Andrew Crofton
Assistant Professor
Physical Therapy
AdventHealth, Orlando, FL

Knowledge retention across curricular models: An international collaboration – C104

INTRODUCTION. Anatomy is one of the first subjects taught in medical school, and its retention over time has been strongly debated. Physicians have commented on medical students'; poor anatomical knowledge in surgically oriented clerkships. Literature also shows that correlating clinical and anatomical sciences throughout early medical education may improve anatomical knowledge retention. With major medical school curricular changes happening globally, more quantitative data confirming this correlation is needed. METHODS. The medical curriculum at The George Washington University (GWU) School of Medicine recently transitioned from a discipline-based curriculum to an integrated system-based one, and an evaluation of anatomical knowledge retention between classes in the different curricula was conducted. Students from the last class of the discipline-based curriculum and those from the first and second classes of the new, integrated curriculum completed a 27-question test before starting their clinical rotations. Scores were then analyzed and compared between classes. SUMMARY. The results demonstrated a significant increase in retention (p=0.012), with a mean score based on the old curriculum of 56.28% (SD=24.6%), as compared to a mean score of 63.98% (SD=23.48%) based on the new curriculum. CONCLUSIONS. The results show that integration enhances retention in the anatomical discipline. To strengthen these findings, we are conducting an international multicenter study, in collaboration with four other medical schools that have very different curricula: The American University of Beirut (Lebanon), Balamand University (Lebanon), Palermo University (Italy), and University College Cork (Ireland).

Rosalyn Jurjus
Assistant Professor
The George Washington University, Washington, D.C.

The Soft-Embalmed Cadaver – C104

INTRODUCTION. Nearly 30 years have passed since Thiel introduced the soft-embalmed cadaveric model. In Europe, soft-embalming is frequently employed in surgical training, but enthusiasm for a similar model is lacking in the U.S. METHODS. The Georgetown Anatomical Donor Program provided a cadaver to perfuse fixed via carotid exposure: EDTA solution was pre-injected to remove clots and dilate vessels. Next, fixation was accomplished using Surgical Reality Fluid (Trinity Fluids, LLC.) at a ratio of 1 gallon per 30 pounds of cadaver weight. Cadaver was tilted, head upwards, to drain for approximately 14 days, followed by removal of external skin layers. SUMMARY. Cadaveric models can provide life-like, surgical environments for the learner. Traditionally-embalmed cadaveric models, however, are of limited use because of unrealistic tissue quality, while the quality of the tissue in fresh donor models often degrades quickly. The latest soft embalming technique mitigates these barriers. The soft embalming cadaveric preservation method is used in Europe for its realistic tissue elasticity, color preservation, ease of storage, longevity and low toxicity, significant benefits to use in surgical training. We demonstrate in a video how using the soft-embalmed cadaver compares to available cadaveric surgical models using live cases, traditionally embalmed cadavers, fresh donors, and soft-embalmed specimens. CONCLUSION. The soft embalming cadaveric model provides an ideal laparoscopic surgical simulation model with high fidelity. As the embalming solution is now accessible in the United States, it can be employed as part of routine surgical simulation training at most academic institutions. The model can last for years, be reused for anatomic and laparoscopic training, and be cost-shared by multiple surgical specialties. We will have a soft-embalmed cadaver available for inspection at the meeting.

Mark Zavoyna
Operations Manager
Anatomical Donor Program
Georgetown University Medical Center, Washington, D.C.

Posters
12:00 – 2:00 PM

DeVaul, Nicole, Lindsay Friedman, Husayn Tavangar, and Rosalyn A. Jurjus

Graduate students in a hybrid histology and cell biology course

INTRODUCTION. In a world that is becoming increasingly dependent on technology, the implementation of online and computer resources has been permeating graduate medical education. These technological advances have necessitated the evolution of curricula and reformatting of class structure. In particular, Histology and cell biology teaching have been highly influenced and are in a state of flux in various graduate and medical curricula. A growing trend is that many institutions are now offering an online resource of digitized histological images as opposed to the traditional glass light microscope preparations. Previous studies have reported equal if not improved performance and benefits of these online histology and cell biology resources such as slide consistency, flexibility, ease of use, and efficiency of faculty time. An online, interactive histology atlas has been developed for undergraduate, graduate, and medical students at George Washington University in Washington, D.C. This online resource offers numerous digital preparations at both light and electron microscope levels in reference to the in-class teaching syllabus of the clinically relevant organ, tissue and cell systems. The atlas both teaches structure and proper identification techniques, but also offers accompanying texts containing background information and image clarification. Furthermore, the online resource offers testing and labeling practice to enhance the learning process. This study looks into the efficiency, perception, and helpfulness of the online resource in a new course format. METHODS. We evaluated such measures by anonymously surveying the 2016 fall cohort of graduate students in George Washington University's Graduate Certificate of Anatomical and Translational Sciences (GCATS) and Masters of Anatomical and Translational Sciences (MATS) programs. Practical exam grades were also looked at to assess learning of the material. SUMMARY. A preliminary survey found that 66% of students thought the atlas very useful, 75% stated the online laboratory exercised to be an effective use of time, and 100% mentioned the online component enhanced their learning of the material. Students scored very well on the final practical exam in the course. CONCLUSION. Given the feedback from our survey, combined with other studies' findings, we hope to implement changes to make the online laboratory more effective for student use and to enhance the overall learning dynamic for cell biology and histology.

Lierly M, Gilbert KK, Allen B, Kearns G, James CR, Sizer PS. Texas Tech University Health Sciences Center Department of Rehabilitation Sciences; Lubbock, TX.

The anatomical relationship of structures in the gluteal region: a cadaveric investigation.

INTRODUCTION. The ability to locate anatomical structures of the gluteal region through palpation is important for clinicians across different fields of healthcare to identify anatomical structures during examination, evaluation, and intervention. To date, the anatomical relationships underlying the current guidelines for locating landmarks in the gluteal region and proximal posterior thigh have not been reported. The aims of this study were to: 1) evaluate the anatomical relationships of structures located in the gluteal region and proximal posterior thigh; and 2) to determine if the anatomical relationships are significantly different between males and females. METHODS. A sample of 27 cadaveric specimens (14 females and 13 males, mean age 77.3±10.9 years) was obtained through the Texas Tech University Health Sciences Center (TTUHSC) Willed Body Program. Specimens were positioned in prone with bony and soft tissue markers fixed into the target anatomical structures. Digital images were captured and marker positions were digitized for anatomical relationship mapping. Target anatomical soft tissue structure locations were determined as a measurement range in centimeters and percent (%) distance from the palpable bony landmark(s) used to localize each structure. Differences in anatomical relationships between males and females were evaluated by comparing group means. The author hypothesized that there is not a significant difference in anatomical relationships of structures in the gluteal region between men and women. SUMMARY. The current study determined the sciatic nerve is located at 32% (SD = 1.4%) of the distance between the midpoint of the ischial tuberosity and the greater trochanter, at a mean distance of 2.4cm (SD = 0.4cm) lateral to the midpoint of the ischial tuberosity. In addition, the superior border of the piriformis muscle, as it exits the pelvis, is located at 53% (SD = 1.5%) of the distance between the posterior superior iliac spine and the ipsilateral sacral horn while the inferior border of the piriformis muscle, as it exits the pelvis, is located at 86% (SD = 1.9%) of the distance between the posterior superior iliac spine and the ipsilateral sacral horn. The mean width of piriformis is 2.8 cm (SD = 0.7cm). There was no difference in anatomical relationships between men and women. CONCLUSIONS. Clinically important findings are that the sciatic nerve is found one-third of the distance between the midpoint of the ischial tuberosity and the greater trochanter, and the piriformis muscle is located in the third quarter of a line from PSIS to the ipsilateral sacral horn. The anatomical relationships established in this study are applicable to males and females and can be used to improve specificity of intervention and decrease the risk of injury to adjacent structures when managing gluteal region pathology.

Timothy Leif Helland[1], Jickssa Gemechu, Ph.D.[1], Brent J. Thompson, Ph.D.[1, 2]
[1]Oakland William Beaumont School of Medicine
[2]Lincoln Memorial University DeBusk College of Osteopathic Medicine

Diversity of Whole-Body Donors in Medical School Programs

INTRODUCTION: Within anatomy departments, it has been observed that there appears to be a disproportionately large number of white donor bodies compared to other minority groups. However, there are few demographic studies to back up this impression. The primary goal of this research project is to collect data on the demographics of race, sex and age of donor's bodies in body donation programs in the United States of America. METHODS: We contacted body donation programs located in the United States and requested information on the demographics of whole-body donations over the past 3-5 years. We then compared the collected donor demographics to the 2010 US census data of the surrounding city, county and state of each program both individually and then all programs pooled together, to determine whether the donor demographics agreed with the local population demographics. SUMMARY: White donors accounted for 94.8 percent of the pooled donor cadaver data while being 83.6% of the state-level populations ($p<0.0001$). Black donors represented 4.7% of the cadavers but 10.2% of the state-level population ($p<0.0001$). Asian donors composed 0.3% of the cadavers and 2.3% of the population at the state level ($p<0.0001$). Native Hawaiian donors were 0.1% of the donors and composed 2.3% of the population at the state level ($p<0.0112$). The American Indian donors were the only racial group that did not differ significantly between the donor and state-level populations; they comprised 0.4% of donor cadavers and 0.4% of the state-level populations ($p<0.9846$). CONCLUSION: Collecting donor information from the whole-body donation programs, and comparing the donor demographics at each program with the surrounding city, county and states has allowed us to determine that the perceived overrepresentation of white donors and underrepresentation of minority donors in body donation programs is accurate. Utilizing this data, we hope to open dialogues to better understand the impact that a lack of minority donors may have on the student's experience in the anatomy lab, as well as gaining a better understanding of the social/cultural underpinnings for this underrepresentation of minority donors.

Shiloh Jones, Ph.D., Carlos A. Suárez-Quian, Ph.D
Department of Biochemistry and Molecular & Cellular Biology; Georgetown University Medical Center

Maintaining Focus in Gross Anatomy in the Integrated, Basic Science Curriculum

INTRODUCTION. The recent tide altering the teaching of the basic sciences at numerous medical schools during the past decade disproportionally impacts gross anatomy as the foundational science of medicine. For the most part, the teaching of gross anatomy has been altered from a disciplined-based, beginning of year one curricular stalwart course to one that is diluted among the first two years of medical education. There are no data demonstrating the benefits of this approach to the teaching and retention of gross anatomy information by students relative to the classic approach. Here, we analyze the results of the new and old approaches using identical exams. METHODS. One way to continue focus on gross anatomy principles is to repeatedly deploy formative assessment during the basic science curriculum. We subjected medical students to formative assessment for both the didactic and practical components of the curriculum. Each week, students are required to formally meet and discuss 2-3 questions in writing per lecture hour to reach a conclusion. Similarly, after every laboratory session, students must answer five practical, image-based questions before exiting the laboratory. Prior to summative examinations, students are encouraged to attend just-in-time, formative assessment of the dissection material (attendance is universally 100%, albeit not required). Finally summative assessment in gross anatomy is three-fold: 1) Table-quiz at the student cadaver, a 10 question identification examination in which students must identify 10 structures they previously were assigned to dissect; 2) A written exam consisting of 4 questions per lecture hour of gross anatomy; and 3) an image-based, first and higher order, multiple choice, imaged-based exam. SUMMARY and CONCLUSION. Student performance in gross anatomy exams did not diminish after one year in the integrated curriculum.

Jill KRAPF MD MEd, Department of Obstetrics and Gynecology, University of Texas Health Science Center San Antonio
Rosalyn JURJUS MD PhD, Department of Anatomy and and Regenerative Biology, The George Washington University School of Medicine and Health Sciences

Medical student experiences on clinical rotations

INTRODUCTION. The average age of matriculation to medical school was 24 years over the past four years. This indicates that many students are taking a few years to pursue other opportunities prior to entering medical school. Students with increased life experience have reported a better transition to clinical years compared to their younger counterparts. METHODS. An anonymous online quantitative survey was sent to medical students enrolled in clinical rotations at The George Washington University School of Medicine and Health Sciences, Yale School of Medicine, Case Western Reserve University School of Medicine, and University of Texas Health Science Center at San Antonio from June 2017 through March 2018. Non-traditional students were defined as students that were 25 years old or older when entering medical school. Traditional students were defines as students below the age of 25 when entering medical school. A statistical t-test analysis was conducted to determine any significant differences in responses between the two groups. SUMMARY. The majority (66.6%) of the respondents were classified as traditional. Non-traditional students felt that life experience ($p<0.000$), previous work experience ($p<0.000$), and age ($p<0.001$) all had a greater impact on their clinical rotations in comparison to traditional students. Additionally, non-traditional students felt that previous work experience ($p<0.004$) and age ($p<0.000$) had a stronger influence on specialty choice than younger students. Both groups of students felt preparedness and interactions with attendings were the attributes that allowed their peers to perform well on clinical rotations. CONCLUSION. These finding support the idea that non-traditional students gain valuable experience before starting medical. As a result, non-traditional students find these experiences allow them to succeed during their clinical rotations, which is a significant factor in determining specialty choice and residency locations.

MABRY, Tanner D, Shaina GORDON, William Rathell, Bonnie Brenseke[1], and Maxx Toler[2]. [1]Department of Pathology and [2]Department of Anatomy Campbell University Jerry M. Wallace School of Osteopathic Medicine, Lillington, NC 27546.

Investigation of an anomalous muscle in the hand

INTRODUCTION. Anomalous extensor muscles of the forearm and hand are not an uncommon occurrence. Extensor indicis brevis muscle is an example of such an anomaly. This report presents the discovery of an extensor indicis brevis muscle, discusses current literature, and reviews treatment options for a pathological extensor indicis brevis. RESOURCES. During a cadaveric dissection of a 74-year old Caucasian male, an anomalous extensor indicis muscle was found on the dorsum of the right hand. After removing the skin of the hand, bisecting the extensor retinaculum, and retracting the tendons, the anomaly became apparent. DESCRIPTION. The muscle originated from the carpal bones with its most proximal fibers arising from the lunate and coursed along the dorsum of the hand. The tendon inserted into the extensor hood of the second digit. The tendinous insertion into the extensor hood of the second digit adjacent to the tendon of extensor digitorum along with the absence of a normal extensor indicis muscle leads us to believe this is a variant of the extensor indicis muscle. Because of its origin, insertion, and absence of the extensor indicis proprius, this is an example of extensor indicis brevis. SIGNIFICANCE. The extensor indicis brevis muscle bears clinical relevance for several reasons. The anomalous origin of the extensor indicis brevis muscle can elicit pain and inflammation similar to that of a synovial or ganglion cyst, as well as a soft tissue tumor. Such cases could lead to potential misdiagnosis and treatment. Therefore, the presence of an extensor indicis brevis muscle should be included within the differential diagnosis for pain on the dorsal hand or wrist.

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ANATOMY-ADD (Animated Drawings for Dissection)

INTRODUCTION. We developed a bilingual tool (English and Spanish) based on cadaveric dissections movies, illustrations and text to teach Medical and Fine Arts students. METHODS. Previously produced movies of thoracic dissections were used and converted to animated videos principally using Rotoscopia technique along with traditional animation frame to frame (without video reference) and Motion Graphic methods to elucidate anatomical elements masked in the original dissection videos, e.g., areas concealed by tools such as forceps or scalpels. Rotoscopia technique allows for the true fealty of transcription of the audio-visual to videographic language. Adobe Photoshop CS6 and a Wacon Cintiq 13HD tablet were used to render the animation videos. We also surveyed a sample of our target population (specifically medical and fine art students) to obtain opinion data on potential use of the animations for the study of human gross anatomy. Our preliminary results allowed us to measure general likes of these users with respect to the originality of the tool, and these results will have decisive consequences on the final version of the animation product. CONCLUSIONS. Graphic artists are the natural collaborators of gross anatomists. At present, the use of digital imaging by students in both the natural sciences and fine arts facilitates the visualization and understanding of the anatomical concepts required during their academic training. The animation renditions of dissection videos presented in this study are unique in their ability to illustrate dissection processes in the absence of instrumentation masking the dissection field. The animations present a step further of digital resources than original dissection videos. Survey results present evidence that students favour the animation technology as part of their learning experiences. Work funded by the VI Plan for Research and Transfer of the University of Seville (Reference: VIPPIT-2018-IV.9).

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Stereoscopic pelvic model informs novice medical students' actual and perceptual long-term retention

INTRODUCTION: While studies have explored the impact of virtual 3D models on students' anatomy learning, few studies have explored their effects on long-term retention. This pilot study which was implemented in the fall of 2016 examined the effects of a virtual 3D stereoscopic pelvis and upper thigh model on first-year medical students' short- and long-term retention. METHODS: The participating students (n=22) were administered a series of tests pertaining to the pelvis before and after their 3D learning experience: a pre-3D test, mental rotation test (MRT), and short-term post-3D test. The students took an exam and one-month and six-month long-term post-3D tests to measure their long-term retention of the information related to the pelvis and upper thigh model. These students completed a survey regarding their perceptions of 3D imaging and of the effectiveness of its use in teaching anatomical material and answered follow-up quiz questions on the long-term assessments to gauge their own perception of the effectiveness of 3D imaging in improving their long-term retention of pelvis and upper thigh anatomy. SUMMARY: This project compared the six-month long-term performance outcomes to the other assessment scores and to the qualitative data collected from the students' survey responses and follow-up questions. While students perceived the model as beneficial, final results showed no significant difference in the impact 3D pelvis models on first-year medical students' short-term retention. There was a significantly lower difference in students' long-term retention both one month and six months after the 3D learning experience. CONCLUSIONS: The small sample size warrants further research in the effectiveness of stereoscopic model visualizations of pelvic anatomy and other complex regions of the body on first-year medical students' short- and long-term retention. Medical students' perceptions of what they retain may also not necessarily explain what they actually retain.

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Multiple peritoneal variations with renal peritoneal sac and agenesis of vermiform appendix

Peritoneal variations are of great importance during the diagnostic monitoring as well as the surgical approaches, when necessary. Extensive peritoneal variations in a patient may cause different clinical manifestation and some critical complications during procedures such as peritoneal dialysis or laparoscopic approaches/surgeries. We are presenting this case report to draw attention to the clinical complications that may result from ignoring such an anatomical variation.

During routine abdominal dissection in our anatomy laboratory, we encountered an extensive peritoneal variation in a 72 years old male cadaver. His accompanying medical report showed no surgical information or any incisional scar on his abdominal wall.

Case Report: Unusual root of mesentery located behind head of pancreas and duodenum (altogether they were intraperitoneal); Peritoneal fibers from fourth part of duodenum attaching to the neighboring transverse mesocolon; Jejunal mesentery that has a distinct attachment to the parietal peritoneum in front of the sacral promontory; Agenesis of vermiform appendix; Intraperitoneal ascending colon; Constricted part of transvers colon with no haustra or taenia coli at its 1/4th distal portion; Renal peritoneal sac that was formed by the parietal peritoneum in front of the right kidney attaching to its anterior surface.

Clinical manifestations arising from these variant structures form a wide spectrum all the way from midgut volvulus to idiopathic abdominal pain. This case strongly emphasizes the importance of being aware of these variations as each one of them may cause a serious consequence during surgical interventions such as pancreaticoduodenectomy and distal/total pancreatectomy for an extensive tumor involvement throughout the entire pancreas/kidney or laparoscopic abdominal interventions. Additionally, atypical location of the root of mesentery may affect the way of cancer metastasis on related organ.

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Comparing anatomical hands-on-dissection versus prosections in understanding musculoskeletal anatomy

INTRODUCTION. Traditionally, anatomy has been taught via anatomical dissections, but over the years, Texas Tech-Paul L. Foster School of Medicine (PLFSOM) has transitioned from solely anatomical dissections to peer-taught prosections. This newer approach allows for accommodation of growing medical school class sizes by continuing to utilize cadavers as a mode of anatomical education. This study identifies any difference in performance between traditional dissections versus peer-taught prosections using PLFSOM administered Musculoskeletal (MSK) anatomical-based question exam. METHODS. Approximately 200 medical students from the classes of 2019, and 2020 were assessed. The students were divided into two groups where each group was responsible for dissecting and peer teaching half of the anatomy labs. Their anatomical knowledge over the specific labs performed and peer taught were assessed via multiple choice exams. The groups were stratified into their respective dissecting labs. Any student that was repeating the year was removed due to multiple exposures of the material. A paired t-test was used to identify a difference between dissected and peer-taught labs based on exam performance. SUMMARY. There was no statistical significance over the MSK upper and lower limb performance between the dissecting and prosection groups [$p = 0.20$]. CONCLUSION. Peer-taught prosections were non-inferior to the more traditional dissection approach in teaching medical students anatomical concepts of the MSK upper and lower limb anatomy.