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36th Annual Conference

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Table of Contents

Welcome from Peter English, HAPS Executive Director ................................................. 5
Letter from the Mayor of Broward County ................................................................. 6
About HAPS ............................................................................................................. 7
HAPS Presidents and Conference Coordinators ......................................................... 8
HAPS Board of Directors ....................................................................................... 10
HAPS Committees and Chairs .............................................................................. 11
HAPS Programs and Leads .................................................................................... 13
Exhibitor Layout .................................................................................................... 15
Exhibitors List ......................................................................................................... 16
Sponsors ..................................................................................................................... 24
HAPS Regional Meeting ........................................................................................... 25
HAPS Institute .......................................................................................................... 26
HAPS Silent Auction and 2K & 5K Fun Run/Walk ....................................................... 28
HAPS Conference Travel Award ............................................................................. 29
HAPS Sam Drogo Technology in the Classroom Award ............................................. 34
HAPS Gail Jenkins Teaching and Mentoring Award ..................................................... 35
HAPS John Martin Second Timers Award ................................................................. 36
Marieb, Hoehn, and Haynes Award for Diversity, Equity, and Inclusion ................. 37
Schedule of Events .................................................................................................. 39
Convention Center Layout ...................................................................................... 43
Update Seminar Speakers ....................................................................................... 44
Poster Presentation Abstracts ................................................................................ 61
Letter from Nova Southeastern University ............................................................... 78
Nova Southeastern University Map ....................................................................... 79
HAPS Committee Meetings .................................................................................. 80
Workshop Shuttle Schedule ..................................................................................... 81
Workshop Schedules .............................................................................................. 82
Workshop Abstracts .................................................................................................. 86
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Welcome to HAPS 2022!

We have made it! After two long years of online meetings and conferences, we are back in person for 2022. We are lucky to have chosen Fort Lauderdale years ago for our 2022 conference – who knew back then that it would be the first host city after a pandemic?

All that aside, HAPS 2022 is going to be a wonderful conference. We have a gorgeous host hotel and a first-class convention center hosting our first two days. For the workshops portion of the annual we’ll transition to the beautiful Fort Lauderdale campus of Nova Southeastern University.

The first two days of the conference will focus on the seven update speakers and lots of networking. In the breaks between update speakers we will have over 80 poster presentations, a HAPS Annual record! Watch for the four poster sessions in the program. We will have over 30 dedicated exhibitors at HAPS 2022 who will be ready to answer all your questions about their products and introduce you to the latest technology.

The second half of the conference moves us to the Nova Southeastern University campus. This year we will have over 100 workshops to choose from in just two days. We gathered your preferences to establish what workshop goes in what spaces and the 2022 Conference Committee made the schedule work. With so many quality workshops, you will have to make hard choices about which workshops you’ll attend.

The 2022 conference app is again packed with content – it brings all of the information about the conference to your phone or tablet. Download it and give it a try. The entire schedule is there with live updates, you can search by presenter or workshop and you can even build your own personal schedule to stay organized. The ever-popular activity stream is back in the app again this year – it has been a super fun way to keep in touch during the conference and see what others are doing.

I would like to point out two opportunities that sometimes get lost in the busy schedule. First is the General Membership Meeting on Friday morning. This is a meeting of all members and we encourage everyone to attend. Second are the committee meetings scheduled for Saturday lunch. This is a good way to meet the committee chairs and continue your involvement in HAPS, so pick a committee and go check it out.

On behalf of all of the HAPS leadership and staff, I want to welcome you to HAPS 2022 in Fort Lauderdale and share our sincere hope that you have a great experience while you are here.

Sincerely,

[Signature]

Peter English, Ph.D.
Hello and welcome to Broward County for the 2022 Human Anatomy & Physiology Society Annual Conference!

I want to thank the Human Anatomy & Physiology Society for choosing the Broward County Convention Center for this year’s meeting. This newly expanded venue is designed to meet all of your needs and once you’re done with business, there’s so much to see and do.

We invite you to explore our eight distinct beaches covering 24 beautiful miles of Atlantic coastline, 300+ miles of navigable waterways, our thriving arts and culture scene, culinary delights, craft breweries, rooftop bars, outdoor adventures, and world-class shopping. You’ll find luxury hotels, boutique hotels, museums, casinos, family-friendly fun, and plenty of unique-only here specialness that makes Greater Fort Lauderdale so extraordinary.

Discover our diverse communities across 31 cities. People from over 170 countries, speaking more than 147 languages call Greater Fort Lauderdale home. Our inclusive vibe is authentic, and we truly welcome everyone together under the sun.

I know you’ll also be traveling to the Nova Southeastern University Campus. The University is a leader in professional programs such as medicine, optometry, dental medicine, psychology, and physical therapy. When you’re there you have to visit the Alan B. Levan/NSU Broward Center of Innovation. It’s where innovation, technology and entrepreneurs come together to create and succeed.

I know you’ll enjoy your stay in Broward County. We’re happy to have you here and hope you’ll return soon!

Sincerely,

Mayor Michael Udine
Broward County
The Human Anatomy & Physiology Society (HAPS) was founded in 1989, after three successful national conferences promoting communication among teachers of human anatomy and physiology at the college level. HAPS is an organization of Human Anatomy & Physiology instructors who strive for excellence in undergraduate instruction in Anatomy & Physiology. Increased growth of the Society necessitated securing an Executive Director and an organizational management firm to assist in the day-to-day administration of HAPS. However, HAPS remains primarily a volunteer organization.

The **Board of Directors** makes the final policy decisions that steer the organization, but most of the work of HAPS is accomplished by the committees. All of these people (including the Conference Planning Committee) are unpaid volunteers. We encourage you to attend the meeting of any committee that interests you so you may discover first-hand how HAPS works and how you can get involved. **Check out page 80 to see when and where the committee meetings will take place during lunch on Saturday.**

### HAPS Board of Directors 2021 - 2022

- **President:** Kyla Ross  
- **Past President:** Wendy Riggs  
- **President Elect:** Eric Sun  
- **Secretary:** Carol Britson  
- **Treasurer:** Leslie Day  
- **Central Regional Director:** Melissa Quinn  
- **Eastern Regional Director:** Nanette Tomicek  
- **Southern Regional Director:** Patrick Cafferty  
- **Western Regional Director:** Elizabeth Penenefather-O’Brien  

- **Executive Director:** Peter English  
- **Business Manager:** Caitlin Hyatt

### Standing Committees 2021-2022

- **2022 Annual Host Committee Chair:** Chasity O’Malley & Cheryl Purvis  
- **Anatomical Donor Stewardship:** Kelsey Stevens  
- **Awards & Scholarships:** Chasity O’Malley  
- **Communications:** Larry Young  
- **Conference:** Jennifer Burgoon & Tom Lehman  
- **Curriculum & Instruction:** Rachel Hopp  
- **Diversity, Equity, and Inclusion:** Kathy Burleson  
- **Fundraising:** Stacey Dunham  
- **Membership:** Jacquie Van Hoomissen  
- **Steering Committee:** Cindy Wingert

### Special Committees and Programs 2021-2022

- **Educator Editor-in-Chief:** Jackie Carnegie  
- **Exam Program Leads:** Janet Casagrand, Valerie O’Loughlin, Dee Silverthorn  
- **Executive Committee:** Kyla Ross  
- **Finance Committee:** Tracy Ediger  
- **Nominating Committee:** Eric Sun  
- ** Presidents Emeriti Advisory Committee:** Mark Nielsen

A list of contact information can be found on the governance area of the website (http://www.hapsweb.org/?page=BoardofDirectors)
HAPS Presidents & Conference Coordinators

Current President
Kyla Ross, 2021-2022

President-Elect
Eric Sun, 2022-2023

Past Presidents
Wendy Riggs, 2020-2021
Mark Nielsen, 2019-2020
Judi Nath, 2018-2019
Ron Gerrits, 2017-2018
Terry Thompson, 2016-2017
Betsy Ott, 2015-2016
Tom Lehman, 2014-2015
Valerie O’Loughlin, 2013-2014
Dee Silverthorn, 2012-2013
Don Kelly, 2011-2012
Caryl Tickner, 2010-2011
John Waters, 2009-2010
Kevin Petti, 2008-2009
Margaret Weck, 2007-2008
Joseph Griswold, 2006-2007
Frederic Martini, 2005-2006
Sandra Lewis, 2004-2005
Philip Tate, 2003-2004
Michael Glasgow, 2002-2003
William Perrotti, 2001-2002
Henry Ruschin, 2000-2001
Christine Martin, 1999-2000
Steve Trautwein, 1998-1999
Kevin Patton, 1997-1998
Karen LaFleur-Stewart, 1996-1997
Robert Antony, 1995-1996
Wayne Carley, 1994-1995
Sandra Grabowski, 1993-1994
Gary Johnson, 1992-1993
Virginia Rivers, 1991-1992
Richard Steadman, 1989-1990

This Year
2022 – Fort Lauderdale, FL
(Chasity O’Malley & Cheryl Purvis)

Coming Attractions
2023 – Albuquerque, NM (J. Mark Danley)
2024 – St. Louis, MO (Cinnamon Van Putte)

Previous HAPS Conferences
2021 – Virtual Conference (Melissa Quinn)
2020 – Virtual Conference (Jacqueline Carnegie)
2019 – Portland, OR (Jacqueline Van Hoomissen)
2018 – Columbus, OH
(Jennifer Burgoon & Melissa Quinn)
2017 – Salt Lake City, UT (Mark Nielsen)
2016 – Atlanta, GA (Kyla Ross & Adam Decker)
2015 – San Antonio, TX
(Anita Moss & Jason LaPres)
2014 – Jacksonville, FL (Lourdes Norman)
2013 – Las Vegas, NV (Kebret Kebede)
2012 – Tulsa, OK (Karen McMahon)
2011 – Victoria, BC, Canada (Peggy Hunter)
2010 – Denver, CO (Terry Harrison)
2009 – Baltimore, MD (Ellen Lathrop-Davis)
2008 – New Orleans, LA (Judy Venuti)
2007 – San Diego, CA (Kevin Petti)
2006 – Austin, TX (Mary Lou Percy)
2005 – St. Louis, MO (Margaret Weck)
2004 – Calgary, AB, Canada (Izak Paul)
2003 – Philadelphia, PA (Lakshmi Atchison)
2002 – Phoenix, AZ (Philip Tate)
2001 – Maui, HI (Frederic Martini)
2000 – Charlotte, NC (Nishi Bryska)
1999 – Baltimore, MD (Robert Smoes)
1998 – Fort Worth, TX (Theresa Page)
1997 – Toronto, ON, Canada (Henry Ruschin)
1996 – Portland, OR (John Martin)
1995 – St. Louis, MO (Kevin Patton)
1994 – Portsmouth, NN (Pam Langley)
1993 – Beaumont, TX (Wayne Carley)
1992 – San Diego, CA (Shirley Mulcahy)
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HAPS Committees
2021 - 2022 Committee Chairs

HAPS uses committees to further the goals and strategic vision of the Society. Each committee has a Chair who leads the committee, and a number of members who help make sure the work gets done. Pick a committee that interests you and come to the meeting at lunch on Saturday, or just find a Committee Chair and ask them what the committee is like. Benefits of HAPS include the welcoming nature of the Society and the inclusive nature of leadership.

2022 Annual Host Committee
Chasity O’Malley & Cheryl Purvis
Our committee oversees the coordination of the 2022 Annual Conference.

Anatomical Donor Stewardship Committee
Kelsey Stevens
We are charged with developing, reviewing, and recommending policies and procedures on the use of cadavers and human tissues and address issues pertinent to the development and maintenance of cadaver labs.

Awards & Scholarships Committee
Chasity O’Malley
We administer the HAPS Grants & Scholarships Program.

Communication Committee
Larry Young
We facilitate communication within HAPS, as well as outreach to non-members and potential members through various social media outlets.

Conference Committee
Jennifer Burgoon & Tom Lehman
We actively encourage HAPS members to host an Annual or Regional Conference. We also provide advice and assistance to members who do host a HAPS conference.

Curriculum & Instruction Committee
Rachel Hopp
We develop and/or compile resources that are useful for teaching A&P. Recent and ongoing projects include the development of learning outcomes and compilations of a list of useful software and websites. We also have subcommittees looking at A&P lab outcomes and accommodations for students with disabilities.
Diversity, Equity, and Inclusion Committee
Kathy Burleson

Fundraising Committee
Stacey Dunham

Membership Committee
Jacqueline Van Hoomissen

Steering Committee
Cindy Wingert
We provide communication among the various committees of HAPS and enhance the ability of the committees to collaborate in furthering the aims of the Society.

Many of the committees will meet during the annual conference, as well as present posters with information about their activities and projects. The annual conference is a great opportunity to learn more about this aspect of HAPS. Come see what we’re about!
HAPS Programs
2021 - 2022 Program Leads

**Executive Committee**
*Kyla Ross*
We are the top elected officials of HAPS, setting policies and governing the Society.

**Finance Committee**
*Tracy Ediger*
We review HAPS investments, disbursements, and financial strategies in all programs and accounts.

**HAPS Educator**
*Jacqueline Carnegie*
We oversee the peer-reviewed journal of HAPS, the *HAPS Educator*.

**Nominating Committee**
*Eric Sun*
We assemble a list of qualified candidates for election to the HAPS Board of Directors.

**Presidents-Emeriti**

**Advisory Board**
*Mark Nielsen*
We are here to advise the Board and add a sense of history to policy deliberations of the Board.

**Exam Program**
*Valerie O’Loughlin, Dee Silverthorn, & Janet Casagrand*
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There’s also plenty of information about HAPS Institute on the [HAPS website](http://hapsconnect.org) – look for the tab called “Graduate Credit Courses.”
At Northeast College of Health Sciences, you can combine your content expertise with pedagogy development to become an in-demand anatomy and physiology instructor. Our program gives you the advantages of:

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Join us for the
HAPS Silent Auction and
2K & 5K Fun Run/Walk

sponsored by the HAPS FUNDRAISING Committee!

The Silent Auction will open on Thursday, May 26 in the Exhibit Hall. You’ll have until 6:15 PM to bid on your favorite item. Items can be paid for at the registration desk (Floridian Pre-Function) and picked-up in the Exhibit Hall on Friday, May 27 from 8:00 AM until 3:00 PM. Any item not claimed by 3:00 PM will be forfeited and saved for a future Silent Auction event.

The Fun Run/Walk is scheduled for Friday, May 27th from 7:00 – 8:30 AM. To register, please visit the HAPS Fundraising Booth in the Exhibit Hall. Once registered, everyone will meet in the lobby of the Hilton Fort Lauderdale Marina and be given a map of the route. The run/walk will start and finish at the Hilton Fort Lauderdale Marina.

All proceeds from the Auction and Fun Run/Walk go towards supporting the education and awards programming of the Society!

Donations to HAPS help us provide scholarships to attend Annual Conferences! This year, HAPS awarded 16 scholarships totaling $22,570. These awards are funded primarily by member donations to HAPS. Make sure to visit the HAPS Fundraising Booth in the Exhibit Hall! Help us continue to support our colleagues by making a donation or pledge. No amount is too small (or too large). You can also donate at any time on the HAPS Fundraising webpage (http://www.hapsweb.org/page/HAPSFundraising).
The Human Anatomy & Physiology Society is happy to announce the following winners of the HAPS Conference Travel Award.

**Kathleen Ahles** is an anatomy & physiology professor from Fort Worth, TX. Over the last ten years, she has guided hundreds of students in Texas and Oklahoma through their discovery of “what’s there” and “how it works”. In her most recent position at Tarrant County College, Dr. Ahles spearheaded an effort to completely overhaul the laboratory curriculum used in the Anatomy & Physiology I course on the Northeast campus. By introducing transparent student learning resources and interactive LMS-based review assignments, this course revision dramatically increased overall student success in the course, and more importantly, greatly improved the parity in student success rates across racial and socioeconomic lines. In her spare time, Dr. Ahles enjoys painting, reading, and wearing skeleton-themed clothing & accessories (especially when it is NOT Halloween).

**Workshop:**
A509: ASEM 2109
Head, Shoulders, Knees & Toes – A Regional Approach to Bone Markings & Muscles
While many of the bone markings of the human body function as attachment sites for major muscles, traditional Anatomy lab curricula often fail to integrate these interrelated structures. In this session, we will explore the method that the faculty at Tarrant County College's Northeast Campus utilize to introduce students to bone markings and muscles side-by-side over the course of several weeks. In addition to providing a more unified representation of the skeletal and muscular systems, this approach is also conducive for integrating structure of the nervous system and special senses into the exploration of bone markings.

**Frederick Bauer** is a first year PhD student in anatomy and education at Indiana University - Bloomington. His research interests include metacognition, assessment design, and the effect of undergraduate anatomy coursework on graduate/medical student outcomes. In his free time, he enjoys lifting weights, long walks, and spending time with his two cats, Midnight and Meatloaf.

**Poster:**
Poster 402
What’s Happening with the HAPS Exam? Effects of Changing Study Strategies and Class Format on HAPS Exam Performance in the COVID-19 Pandemic
We began offering the HAPS Anatomy exam as an optional cumulative final to our undergraduates in the fall of 2019. Since that time, academia has been turned upside-down due to the COVID-19 pandemic. Thus, we investigated how changes to student study strategies and interaction with lecture content between the Fall 2020 and Fall 2021 semesters affected outcomes on the HAPS exam. We hypothesized that the use of in-person active learning sessions would correspond with increased HAPS exam scores compared to just recorded lectures. We further hypothesized that increased participation with online resources would also correspond with increased HAPS exam scores.
Patrick Cafferty is a Senior Lecturer at Emory University, a four-year private research university in Atlanta, Georgia, where he teaches courses in introductory biology, human physiology, and developmental neurobiology. Prior to joining Emory, Patrick was a teaching and research post-doctoral fellow at the University of British Columbia (UBC) in Vancouver, Canada studying nervous system development. Throughout his time at Emory, Patrick has sought out creative ways to promote student-faculty interactions including running and drawing with his students. Patrick has been an active member of HAPS since 2013 and currently serves on the board of directors as Southern Regional Director. In addition, Patrick serves on the Physiology Learning Outcomes group and has co-led the HAPS Book Club readings of “Patient H.M.: A Story of Memory, Madness, and Family Secrets” and “The Code Breaker” this year.

Workshop:
A511: Terry 1596
"I Really Enjoy These Annotations:" Examining Primary Literature Using Collaborative Annotation
Critically reading and evaluating claims in the primary literature are vital skills for undergraduate students. However, the formal presentation of intricate content in the primary literature presents a challenge. I introduced a Collaborative Annotation Project (CAP) into my course to help students critically read papers. During CAP, students used software to add clarifying comments, links to appropriate websites, and pose and answer questions on assigned papers. Surveys revealed students found CAP helpful for reading primary literature. During this workshop, I will describe how I used and assessed CAP in my class and I will share my CAP instructions and rubric.

Catherine B. Kirn-Safran grew up in Strasbourg (France) where she earned a Ph.D. in Developmental Biology on “The effect of growth factor on odontoblast differentiation”. Her continued interest for mineralized tissues then took her to work as a postdoctoral fellow at the University of Texas-Dental Branch in Houston and the MD Anderson Cancer Center. In 1998, she started a position as a Research Assistant Professor at the University of Delaware where she engineered mouse models of skeletal disorders and taught introductory biology and physiology to biology and pre-health profession students in a large classroom setting. Three years ago, she joined the Department of Biology at Widener University as an Assistant Teaching professor where she implements active learning techniques to promote student engagement and equity in the A&P classroom. During her scientific career, she mentored four Ph.D. student and Masters’ students, ten undergraduate researchers, and over fifteen undergraduate peer-learning assistants. She also published over 50 research and invited articles in peer-reviewed journals, obtained NIH grants to fund various projects, participated in a national education research project funded by the NSF, and holds one U.S. patent. Recently, she published the collective reflection of physiology instructors from six different institutions on the successes and challenges experienced when teaching physiology laboratories online during the COVID-19 pandemic.

Workshop:
B302: ASSEM 2102
The Presence of a Peer-Learning Assistant in the Classroom: An Opportunity to Build an Inclusive A&P Learning Community
How can a second pair of hands and eyes maximize the time spent in class and help build a more connected learning community? During this session, you will explore strategies that instructors can use with the help of a peer-learning assistant (PLA) to enhance students’ learning experiences and will hear about a PLA personal journey as A&P classes resumed face-to-face. Additionally, you will reflect and share on how the presence of a PLA in your classroom can/could help with the implementation of best teaching practices that lead to a more inclusive classroom as well as a more fulfilling teaching experience!
Thomas Lehman has been teaching various Anatomy & Physiology at community colleges in Colorado and Arizona for over a quarter-century. He earned master's degrees at the University of Nebraska and Colorado State University, applying his medical training to his classes. He has been an active leader in the Human Anatomy & Physiology Society since 1999, learning and sharing classroom strategies with his colleagues since then.

Workshop:
B210: MEDLL 3320
Hands-On Activities for Cellular Physiology: How Your Students Can Engage Each Other in Mastering These Concepts for Various Organ Systems
Cellular physiology can be a difficulty concept for students, but properly introduced, can help them develop a foundation for better understanding many of the organ systems. I have created hands-on activities that use easily obtainable items and help students to work together in mastering the concepts of nervous, muscular, and endocrine tissues. In this workshop, we will practice with these simple lab kits, showing participants how they can incorporate them into their courses (either in-person or remote) to engage students to work together and master these concepts.

Danielle Loder is a PhD candidate in the Anatomy – Education Track PhD program at Indiana University – Bloomington. Her dissertation research focuses on the relationship between standardized licensing exams and the basic science curriculum for medical students. Danielle has enjoyed teaching a variety of undergraduate medical science courses during her time at Indiana University, including having the opportunity to develop her own applied A&P medical history course. She is currently finishing her dissertation from central Florida and is planning to graduate this coming academic year. In her spare time, Danielle enjoys reading, bicycling, knitting, and jigsaw puzzles.

Workshop:
B404: ASSEM 2104
Misguided Medicine – Applying A&P to Wacky Medical History
This workshop will give an overview of an asynchronous, online, applied A&P course that utilizes the medical history podcast Sawbones. I will discuss the general structure of the course, types of assignments utilized, student feedback, and future improvements. Attendees will benefit from my lessons learned and get new ideas for integrating A&P knowledge application into their existing courses.

continued on next page
**Soma Mukhopadhyay** is a professor by profession, scientist by training and educator by passion. Born in Kolkata (also known as Calcutta), India, Soma started her career as a professor in the United States after finishing BS and MS in Zoology from University of Calcutta and Ph.D. in Nuclear Medicine from Indian Institute of Chemical Biology at Kolkata, India. Soma did her Post-Doctoral Studies at the College of Medicine of University of Cincinnati. Soma has been teaching for almost quarter of a century. She first taught at the Pennsylvania State University and subsequently taught at the University of Cincinnati, Xavier University, Cincinnati State College, Sinclair Community College, and University of South Carolina. Currently she is teaching at Augusta University. Soma has received six teaching awards including most recently the Outstanding Teaching Award from College of Math and Science of Augusta University. She authored two Lab Manuals with her peers. In her free time, she is an elocutionist, singer, poet, writer, script writer, and content creator.

**Poster:**
**Poster 312**  
**Addressing, Accepting and Accommodating for Color Vision Compromised Students: A Pilot Project**  
Color blindness is a congenital disease where people either cannot see certain colors properly or have difficulty in distinguishing between colors. Inherited deficiency in color vision is incurable. When it comes to the cardiovascular system it is highly color coded to differentiate between the structures carrying oxygen rich blood (red) vs oxygen poor blood (blue). Models of heart and blood vessels are conventionally colored in this theme. While the color theme works well for most people, those who have color deficiencies have difficulty identifying the structures colored red. The objective of this study was to develop alternate resources for students with the compromised color vision.

**Amberly Reynolds** is an Assistant Professor of Anatomical Sciences at an osteopathic medical school. She refers to her career as a clinical anatomist by trade and an educator at heart. She is a former high school teacher who has been blessed to teach at all levels. She received her MS in Clinical Anatomy from Tulane University School of Medicine and her PhD in Anatomy and Cell Biology-Education track from Indiana University (Bloomington). She is passionate about sharing knowledge of the human body and the respect we should have for it. Her research focuses on medical education and removing bias in science. She currently helps advise 8 students on various projects, serves as an advisor for multiple student organizations and serves on committees for HAPS, AAA, and AACA.

**Poster:**
**Poster 315**  
**Benefits of Tumescence in Cadaveric Dissection: A Qualitative Study**  
Tumescence involves manual infusion of wetting solution into subcutaneous and interstitial tissue planes to increase ease and efficiency in medical student dissections. A qualitative study of medical students and faculty provides that tumescence allowed for faster and higher quality dissections particularly in the feet and face. In addition, the themes of separation, spaces, and planes, were common, reflecting in the respondents, an increased appreciation of tissue planes and relationships.

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**Dana Smith** has been interested in biological science from an early age and received his Bachelor of Science in Zoology from the University of Florida in 2007. During his undergraduate education, he gained research experience in Biomedical Science and became interested in human disease. He worked for two years at a small biotechnology company in Alachua, FL, focused on kidney disease, before returning to school to obtain his graduate degree. In 2012, he graduated from the University of Cincinnati College of Medicine with a Master of Science degree in Physiology. While there he gained experience working in laboratories focused on cardiovascular disease and breast cancer research and published his work in the journal *Mechanisms of Development*. During his postgraduate work, he gained experience teaching and fell in love with the profession. His teaching experience includes over six years of science instruction at both the high school and college level. Currently, he teaches Anatomy and Physiology as a full-time Professor at St. Johns River State College in Palatka and St. Augustine, FL.

**Poster:**
**Poster 316**
CAPER (Community College Anatomy and Physiology Education Research)
Self-Efficacy, Metacognition and Anxiety of First-Generation College Students Taking an Online Synchronous Anatomy and Physiology Night Class

Studies have shown that increased student self-efficacy and metacognition correlate with improved performance, effort and perseverance, while anxiety has been shown to have a negative impact on student learning. During the 2020 COVID-19 pandemic, many in-person courses were converted to synchronous online courses to help facilitate the online transition for state college students. The MSLQ survey was used to evaluate self-efficacy, metacognition and other factors such as anxiety. Our data suggest that first-generation college students taking an online synchronous anatomy and physiology night class had higher self-efficacy and metacognition, while also exhibiting lower anxiety, compared to non-first-generation day class students.

**Stephanie Wallace** teaches the two semester A&P sequence and a one semester Human Anatomy course at Texas Christian University in Fort Worth, Texas. She also enjoys advising pre-health students and serving as the faculty mentor for the Physician Assistant Club on campus. She loves to try new teaching methods and strategies, looking for ways to help her students learn and understand anatomy and physiology. HAPS has been a major resource in that search. She is currently pursuing a Ph.D. in Science Education, and her research interests include the role of gestures in teaching and learning science. When not in the classroom, she enjoys spending time with her husband and four boys.

**Workshop:**
**B502: ASSEM 2102**
**Actions Speak Louder Than Words: Using Gestures to Teach Cranial Nerves**
It is common for teachers and students alike to “talk with your hands” and use gestures when teaching, learning, or explaining. Let’s put that natural inclination to use! In this workshop, we’ll discuss how gestures can be used to enhance your teaching and help your students learn. I’ll share some background information on gestures and how they can effectively be used in the classroom, as well as specific gestures I created to help students learn the cranial nerves. The best things about gestures is that they are free and completely adaptable!
The Human Anatomy & Physiology Society is happy to announce the following winner of the Sam Drogo Technology in the Classroom Award. This award is sponsored by ADInstruments.

Laura Kabiri earned her Bachelor of Arts from the University of Houston before attending Texas Woman’s University to earn her Master of Science, Doctor of Physical Therapy, and Doctor of Philosophy degrees. She is a licensed physical therapist in the State of Texas as well as a Certified Strength and Conditioning Specialist. She is an active member of the Human Anatomy and Physiology Society and American College of Sports Medicine and serves as the Medical Massage Captain for the Chevron Houston Marathon.

Teaching responsibilities in the Sports Medicine & Exercise Physiology program at Rice include, but are not limited to, human physiology, human anatomy, and medical terminology. She has created several novel courses at Rice and implemented a virtual cadaver dissection laboratory. Dr. Kabiri has received multiple teaching and mentoring awards including Lovett Favorite Professor, Baker Best Professor, Will Rice Favorite Professor, Rice Scholar Athlete Favorite Professor, Distinguished Faculty Associate, and Excellence in Academic Advising Award. In her spare time, she enjoys reading, woodworking, trying new restaurants, and spending time with her husband, twin boys, and their sweet puppy Margo.

Workshop:
A202: ASSEM 2102
Starting from Scratch: Creation and Implementation of a Virtual Cadaver Lab Experience
Virtual cadaver technology can be used to create a cost-effective, engaging, and versatile undergraduate cadaver lab experience. From budgets and facilities to assessments and curricula to pandemics and pivots, I will discuss the process of creating and implementing our virtual undergraduate cadaver lab now delivered in fully online, dual, and in-person formats. Benefits and limitations of the technology will be discussed along with student feedback. Workshop participants will also experience a sample lab activity as well as a “medical mystery” assignment designed to peak curiosity, enhance application, and develop diagnostic skills in STEM students.

About the Sam Drogo Technology in the Classroom Award:
In September 2010, HAPS lost a great friend. Our colleague Sam Drogo died shortly after doing one of the things he loved the most—teaching a lab full of Anatomy and Physiology students.

Sam’s death has left an empty space at Mohawk Valley Community College, his home institution for over three decades. It has also left an empty space in HAPS. Sam was a long-time, devoted HAPS member, an active participant in the development of the HAPS Comprehensive Competency Test, and a consistent proponent of the use of technology in the classroom and laboratory.

In Sam’s honor, ADInstruments established the Sam Drogo Technology in the Classroom Award. This is an annual award for a HAPS member who demonstrates the innovative use of technology to engage undergraduates in Human Anatomy and Physiology. The award is intended to encourage recipients to present a workshop at the HAPS Annual Conference on this innovative technology or on the use of technology in the classroom or laboratory.

Sam was a wonderful man. This award is a fitting tribute to him and we look forward to implementing it. Our thanks to ADInstruments for their generosity and our lasting thanks to Sam as colleague, mentor and teacher.
The Human Anatomy & Physiology Society
is happy to announce the following winner of the
Gail Jenkins Teaching and Mentoring Award.
This award is sponsored by Wiley.

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Shannon Kispert
is currently an assistant professor, teaching anatomy and physiology at Webster University in Webster Groves, Missouri. Particularly, she loves engaging students in a conversational-style teaching, with many activities embedded into each class. These activities include but are not limited to polling, think-share-pair, critical thinking questions, and skits designed to engage students actively in their learning. She also maintains social media sites to assist students in their learning and engagement of anatomy and physiology content. Beyond the classroom, she spends an extensive amount of time mentoring students in her roles as research faculty, pre-health academic advisor, club advisor for the Webster University Pre-Medical Society, Students for Biological Science, and the National Biology Honor Society. She also mentors students as teaching assistants by helping them develop their skills in teaching and anatomy and physiology content.

Workshop:
A307: ASSEM 2107
Lights, Camera…..Physiological ACTION! Creating Skits for Better Engagement and Understanding in the A&P Classroom!
This workshop will center around active learning strategies for the A&P classroom, specifically skits where students will act-it-out! During this session, you will learn how to workflow skits to implement in your classroom that are efficient and cost-effective, utilizing your students and everyday materials such as posterboard and notecards. We will work in small groups to identify the most challenging concepts in your classroom and how to create a scenario where your students can actively participate in the physiology! You will also learn some tried-and-true skits from my own classroom which you can “plug-and-play” into yours!

About the Gail Jenkins Teaching and Mentoring Award:
Gail was a dynamic and engaging instructor of anatomy & physiology and avid supporter of HAPS and its goals. Her death has left a hole in the hearts of many - her colleagues at Montgomery College, her publishing colleagues at Wiley, her HAPSter colleagues, her family and many friends. Gail loved teaching, and most of all, she loved being able to bring clarity to often difficult concepts for students to grasp. One of her favorite phrases with students was, “Let’s KISS this”. It meant - let’s “Keep it Simple, Sweetie”. When faced with a challenging concept, Gail would help her students KISS the topic by employing everyday analogies and/or props to visualize or un-pack the information. She provided a simple foundation on which the students could build and remember their newly acquired knowledge. No one got more use out of an old tube of toothpaste, a hot dog, a big red balloon, or a plate of chocolate chip cookies! Her students loved her for it.

In Gail’s honor, Wiley publishers in partnership with HAPS has established the Gail Jenkins Teaching and Mentoring Award. This is an annual award for a HAPS member who demonstrates use of engaging learning activities to help students truly understand and retain the more difficult Anatomy and Physiology concepts with kinesthetic and active learning strategies using inexpensive everyday props. The award is also designed to recognize those willing to mentor other instructors to also incorporate active learning to benefit more students.
The Human Anatomy & Physiology Society is happy to announce the following winners of the John Martin Second Timers Award.

**Ghanshyam Heda** teaches primarily Hu A&P-I and II for majors since 2008 at Mississippi University for Women. He recently prepared and started teaching “Introduction to Hu A&P” to non-science majors. Other courses taught by Ghanshyam include “Comparative Anatomy” and special topic course, “Protein Misfolding & Human Diseases”. He maintains a vibrant undergraduate research laboratory on molecular and biochemical aspects of Cystic fibrosis. With his years of teaching of Hu A&P, he is looking forward to proactively taking part in HAPS activities.

**Workshop:**
**A207: ASSEM 2107**
**An Engaging Activity for Human A&P Laboratory**
Human Anatomy & Physiology (Hu A&P) is a structure and terminology intensive course. This course is generally required by students who are planning a career in health-related sciences specifically in nursing profession. Drawing, coloring, and labeling of anatomical organs and structures can enhance the learning process of students especially at the high school and undergraduate levels. This workshop is aimed to introduce a simple learning method where students can take part either individually or in groups using traditional blackboard, transparencies, and an overhead projector under the dim light. This teaching practice can be useful in remembering anatomical structures with complex terminology.

**Staci Johnson** is an Associate Professor of Biology and Chair of the Division of Science at Southern Wesleyan University in Central, SC. She teaches anatomy & physiology, bioethics, and a number of other undergraduate biology courses. She earned an M.S. in Animal Physiology from Clemson University in 1999 and a PhD in Engineering and Science Education from Clemson University in 2019. Her research interests include student learning in biological sciences and sub-disciplines, improving team-based student experiences, and broadening participation in biological sciences. She also mentors undergraduate research students in physiology and biological sciences. She enjoys reading, hiking, and traveling to new places with her family.

**Workshop:**
**A105: ASSEM 2105**
**An Ungrading Approach to A&P Courses**
Alternative grading strategies are gaining more attention but instructors of STEM content courses often struggle to implement such a strategy. Various types of barriers may exist that prevent implementation of this innovative approach. During academic year 2021-22, I implemented an ungrading specifications grading approach to an anatomy & physiology I/II course sequence. This workshop will describe the process of implementing this alternative grading scheme, benefits that were realized by both students and instructor, and adjustments that were needed and applied between the 2 semesters of the sequence.
The Human Anatomy and Physiology Society is happy to announce the following winners of the Marieb, Hoehn, and Haynes Award for Diversity, Equity, and Inclusion. 

*This award is sponsored by Pearson.*

Cristina Benites is a first-year medical student at Nova Southeastern University. She was born in Ecuador and is half Ecuadorian half Brazilian. She moved to the United States at the age of eight and lived in Massachusetts until she was sixteen. Coming into Florida gave her the opportunity to spend time outdoors and develop many hobbies that she still loves doing today. She enjoys archery and the occasional construction project in her backyard. In her free time, she loves to volunteer at local shelters.

Workshop:
B104: ASSEM 2104

*How to Support Non-Traditional Students in Your A&P Classes*

As a first-generation college graduate, I felt like I was paving a road in untouched territory. There were many opportunities where educators could have made a real difference in my life and contributed to my success. My workshop will focus on taking you through the path of a nontraditional medical student. As I tell my story, you will get a front row seat to understand what it takes to succeed in STEM from a student’s point of view. Additionally, I will discuss the “dos and don’ts” of supporting students through challenging career paths.

Omonseigho Talton earned her doctorate in Reproductive Physiology, followed by a postdoc, at the University of Missouri. Currently, she is an Assistant Professor of Biology at Avila University, in Kansas City, MO. She joined the faculty at Avila University in 2019, and teaches Human Anatomy and Physiology with lab, and General Biology. She also serves as a Faculty Mentor as part of a Title III Grant to increase student retention and persistence. Her research explores how various maternal exposures, such as diabetes and obesity, affect offspring health. She also studies sebaceous gland activity in human populations, and she’s interested in discipline-based education research.

Workshop:
B211: Terry 1596

*Low Grades in A&P and Interventions for Better Student Outcomes*

Undergraduate Anatomy and Physiology courses have a reputation as a graveyard for student GPAs. D, F and W grades don’t only frustrate students and administrators; grading piles of failed tests also affects instructors! Considering the factors that contribute to student performance, what can an Anatomy and Physiology instructor do to meaningfully intervene and see an improvement in student performance and persistence? Join me for a collaborative workshop in which I share strategies that have failed and succeeded in improving student performance in a one-semester A&P course. BYOS (bring your own strategies) and be prepared to exchange ideas with fellow HAPSters.
Free resources for science educators and students.

www.biointeractive.org
# Schedule of Events

## Wednesday, May 25
Greater Fort Lauderdale/Broward County Convention Center

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>8:00 AM – 5:00 PM</td>
<td>Exhibitor Set up: Grand A-H</td>
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| 8:00 AM – 12:00 PM | Board of Directors and Steering Committee Meeting  
(Board of Directors and Steering Committee Chairs Only) |
| 12:00 PM – 1:00 PM | Board of Directors and Steering Committee Luncheon  
(Board of Directors and Steering Committee Chairs Only) |
| 1:00 PM – 4:30 PM | Board of Directors Meeting  
(Board of Directors Only) |
| 1:00 PM – 4:30 PM | Steering Committee Meetings  
(Steering Committee Chairs Only) |
| 1:00 PM – 5:00 PM | Registration: Floridian Prefunction |
| 4:30 PM – 5:30 PM | HAPSconnect Training  
(Board of Directors and Steering Committee Chairs Only) |
| 5:45 PM – 7:30 PM | Registration: Floridian Prefunction |
| 6:00 PM – 8:00 PM | Welcome Reception: Floridian Prefunction |

## Thursday, May 26
Greater Fort Lauderdale/Broward County Convention Center

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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| 7:00 AM – 5:00 PM | Registration: Floridian Prefunction  
(closed from 12:00 PM – 1:00 PM) |
| 7:30 AM – 8:30 AM | First Timer’s Breakfast: 303A  
Sponsored by ADInstruments & McGraw Hill|
| 7:30 AM – 8:30 AM | Second Timer’s Breakfast: 303B  
Sponsored by Pearson |
<p>| 7:30 AM – 8:30 AM | Continental Breakfast (for all other attendees): Grand A-H |
| 7:30 AM – 6:15 PM | Silent Auction Open: Grand A-H |</p>
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<tr>
<td>7:30 AM – 6:15 PM</td>
<td>Exhibits: Grand A-H (Exhibits are closed from 12:00 PM - 1:00 PM)</td>
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<tr>
<td>8:30 AM – 9:00 AM</td>
<td>Welcome and Opening Remarks: Floridian A-D</td>
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<td>9:00 AM – 10:00 AM</td>
<td>Update Seminar I: Floridian A-D</td>
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<tr>
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<td>Jennifer Brueckner-Collins, University of Louisville</td>
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<td><em>Sponsored by HAPS</em></td>
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<td>“Re-Envisioning Learning and Assessment in the Gross Anatomy Laboratory: A Competency-Based Approach”</td>
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<tr>
<td>10:00 AM – 11:00 AM</td>
<td>Break with Exhibitors: Grand A-H</td>
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<tr>
<td>10:00 AM – 11:00 AM</td>
<td>Poster Session 1: Grand A-H (Posters for session 1 should be set-up by 9:00 AM and taken down by 12:00 PM)</td>
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<tr>
<td>11:00 AM – 12:00 PM</td>
<td>Update Seminar II: Floridian A-D</td>
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<td>Steven Lewis, Florida Atlantic University</td>
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<td><em>Sponsored by the American Physiological Society</em></td>
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<td>“Systems Physiology as a Cornerstone of Education in medicine and the Health Sciences”</td>
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<tr>
<td>12:00 PM – 1:15 PM</td>
<td>Lunch on your own</td>
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<td>Registration &amp; Exhibits closed from 12:00 PM - 1:00 PM</td>
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<tr>
<td>1:15 PM – 2:15 PM</td>
<td>Update Seminar III: Floridian A-D</td>
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<td></td>
<td>Samantha Simet Chadwick, University of Nebraska Medical Center</td>
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<td>Matthew Vilburn, University of Nebraska Medical Center</td>
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<td>“Spreading Anatomy through COVID: Building the Virtual Dissection Database”</td>
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<td>2:15 PM – 3:15 PM</td>
<td>Break with Exhibitors: Grand A-H</td>
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<td>2:15 PM – 3:15 PM</td>
<td>Poster Session 2: Grand A-H (Posters for session 2 should be set-up by 1:00 PM and taken down by 4:00 PM)</td>
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<td>3:15 PM – 4:15 PM</td>
<td>Update Seminar IV: Floridian A-D</td>
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<td>Harvey Mayrovitz, Nova Southeastern University</td>
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<td>“Lymphatic Function as a Physiology Teaching Focus”</td>
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<td>4:15 PM – 5:15 PM</td>
<td>DEI Panel Discussion: Floridian A-D</td>
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<td>Kathy Burleson, Hamline University; Anya Goldina, Elizabethtown College; Arkene Levy, Nova Southeastern University; Jon Wisco, Boston University</td>
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<tr>
<td>5:15 PM – 6:15 PM</td>
<td>Drinks with Exhibitors: Grand A-H</td>
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<tr>
<td>6:15 PM</td>
<td>Silent Auction Closes: Grand A-H</td>
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<td><strong>Free Night!</strong></td>
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## Friday, May 27
### Greater Fort Lauderdale/Broward County Convention Center

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>7:00 AM – 8:30 AM</td>
<td><strong>HAPS Fundraising Run/Walk:</strong> Meet in the Hilton Fort Lauderdale Marina lobby</td>
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<tr>
<td>7:30 AM – 8:30 AM</td>
<td><strong>Continental Breakfast: Grand A-H</strong></td>
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<tr>
<td>7:30 AM – 5:00 PM</td>
<td><strong>Exhibits: Grand A-H</strong> (Exhibits are closed from 12:00 PM – 1:00 PM)</td>
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<tr>
<td>8:00 AM – 3:00 PM</td>
<td><strong>Silent Auction Item Collection &amp; Payment: Floridian Prefunction</strong></td>
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<tr>
<td>8:00 AM – 5:00 PM</td>
<td><strong>Registration: Floridian Prefunction</strong> (Closed from 12:00 PM – 1:00 PM)</td>
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<tr>
<td>8:30 AM – 9:45 AM</td>
<td><strong>HAPS Annual General Membership Meeting: Floridian A-D</strong></td>
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<tr>
<td>9:45 AM – 10:45 AM</td>
<td><strong>Break with Exhibitors: Grand A-H</strong></td>
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<tr>
<td>9:45 AM – 10:45 AM</td>
<td><strong>Poster Session 3: Grand A-H</strong> (Posters for session 3 should be set-up by 9:00 AM and taken down by 12:00 PM)</td>
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</tbody>
</table>
| 10:45 AM – 11:45 AM| **Update Seminar V: Floridian A-D**
Ernest Talarico, Tan Tao University
*Sponsored by HAPS*
“Navigating Uncharted Territory: The Empty Belly of Diversity and Inclusion” |
| 11:45 AM – 1:15 PM | **Lunch on your own**
Registration & Exhibits close for lunch from 12:00 PM-1:00 PM |
| 1:15 PM – 2:15 PM  | **Update Seminar VI: Floridian A-D**
Robert Spinner, Mayo Clinic
*Sponsored by the American Association of Clinical Anatomists*
“The Anatomy of Nerve Reconstruction: Overcoming Obstacles and Enhancing Opportunities” |
| 2:15 PM – 3:15 PM  | **Break with Exhibitors: Grand A-H**                                  |
| 2:15 PM – 3:15 PM  | **Poster Session 4: Grand A-H** (Posters for session 4 should be set-up by 1:00 PM and taken down by 4:00 PM) |
| 3:15 PM – 4:15 PM  | **Update Seminar VII: Floridian A-D**
Rolando De Leon, Nova Southeastern University
*Sponsored by HAPS*
“Blockbuster Embryology-Making Babies Fun Again!” |
| 4:15 PM – 5:00 PM  | **Door prizes: Grand A-H**                                            |
| 6:00 PM – 9:00 PM  | **HAPS Social: Hilton Fort Lauderdale Marina Pool Deck**             |
### Saturday, May 28
*Nova Southeastern University*

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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| 7:00 AM – 9:00 AM | **Transportation to Nova Southeastern University**  
Buses will load at the Hilton Fort Lauderdale Marina and drop off at the Health Professions Division at Nova Southeastern University |
| 7:30 AM – 8:30 AM | **Welcome Breakfast**  
*Sponsored by HHMI BioInteractive* |
| 8:30 AM – 12:00 PM | **Workshops**  
Session A1: 8:30 – 9:30 AM  
Session A2: 9:45 – 10:45 AM  
Session A3: 11:00 AM – 12:00 PM |
| 12:00 PM – 1:00 PM | **Lunch (lunch is provided)**  
*Committee Meetings – 12:30 PM – 1:00 PM* |
| 1:15 PM – 3:30 PM | **Workshops**  
Session A4: 1:15 – 2:15 PM  
Session A5: 2:30 – 3:30 PM |
| 3:30 PM | **Bus transportation back to the Hilton Fort Lauderdale Marina** |

### Sunday, May 29
*Nova Southeastern University*

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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| 7:00 AM – 9:00 AM | **Transportation to Nova Southeastern University**  
Buses will load at the Hilton Fort Lauderdale Marina and drop off at the Health Professions Division at Nova Southeastern University |
| 7:30 AM – 8:30 AM | **Breakfast** |
| 8:30 AM – 12:00 PM | **Workshops**  
Session B1: 8:30 – 9:30 AM  
Session B2: 9:45 – 10:45 AM  
Session B3: 11:00 AM – 12:00 PM |
| 12:00 PM – 1:00 PM | **Lunch (lunch is provided)** |
| 1:15 PM – 3:30 PM | **Workshops**  
Session B4: 1:15 – 2:15 PM  
Session B5: 2:30 – 3:30 PM |
| 3:30 PM | **Bus transportation back to the Hilton Fort Lauderdale Marina** |
**Re-Envisioning Learning and Assessment in the Gross Anatomy Laboratory: A Competency-Based Approach**

**Abstract:** The gross anatomy laboratory setting provides students with the opportunity to practice a variety of skill sets that extend far beyond the mastery of anatomical knowledge. Anatomical dissection offers the opportunity to bolster anatomical knowledge, teamwork, communication, professionalism and manual dexterity; however, these skills are often not formally taught, assessed or remediated in this setting. One pedagogical framework by which traditional academic knowledge along with other fundamental noncognitive skills can be developed and assessed is competency-based education. For more than 20 years, residency programs have used this paradigm successfully as an outcomes-based approach to design, implement and evaluate observable abilities or competencies, with the goal of ensuring all learners achieve key outcomes during their training. In this presentation, we will discuss preliminary steps taken in our anatomy curriculum at the University of Louisville School of Medicine to identify competencies and design methods by which these skills are evaluated and assessed in a timely and specific manner, where learners have the opportunity to reflect on their mastery of these skills and operationalize an action plan to improve where necessary.

**BIO:** Jennifer Brueckner-Collins serves as Distinguished Teaching Professor and Vice Chair for Educational Programs in the Department of Anatomical Sciences and Neurobiology at the University of Louisville’s School of Medicine. She has dedicated her academic career to the scholarship of teaching health science students in effective, efficient and creative ways. At University of Louisville, she redesigned both the medical and dental anatomical sciences curricula to meet contemporary instructional best practices. Dr. Brueckner-Collins has published more than 30 peer-reviewed publications and has authored and edited a variety of textbooks and ancillary learning tools, including High Yield Neuroanatomy and Sidman’s Neuroanatomy: A Programmed Text. She has served as an editor for Netter’s Human Atlas of Anatomy for the past 14 years, contributing to the past 5 editions of this renowned resource.
Update Seminar II: Floridian A-D
Thursday, May 26 from 11:00 AM – 12:00 PM

Steven Lewis
Sponsored by the American Physiological Society

Professor
Florida Atlantic University
Boca Raton, FL
steven.lewis@health.fau.edu

Systems Physiology as a Cornerstone of Education in Medicine and the Health Sciences

Abstract: In the latter part of the 20th century, new advances in molecular biology began to revolutionize medical science. Across the U.S., medical school departments of physiology were renamed and new departmental leaders with cell and molecular biology backgrounds began de-emphasis of systems physiology in research and education. As systems physiology researchers and teachers gradually retired, they were replaced by investigators using cell and molecular approaches and, correspondingly, medical school physiology education tended to be provided more by physicians and less by basic physiologists. As the turn of the century approached, the significance of systems physiology reemerged and began to morph into increased education at the undergraduate and in some cases high school levels. With the dramatic increase in readily transmissible information on biology and health provided by the Internet, systems physiology seems poised to regain stature as a means for health care workers, scientists and the general public to more effectively communicate with each other in efforts to prevent and treat disease. Related to this is the explosive recent increase in recognition of physical activity and exercise in disease prevention and treatment that has fostered the “Exercise is Medicine” movement and the fact that systems physiology is foundational to the understanding of exercise. In this lecture I will weave the above-mentioned events and trends into my career path in human exercise physiology, systems physiology and medical education that spans 50 years from the early 1970s to the present.

BIO: Steven Lewis received his Ph.D. in exercise physiology from Stanford University and completed post-doctoral fellowships at the University of Copenhagen, Denmark and afterward in the Division of Cardiology, University of Texas Southwestern Medical School, Dallas. He served on the UT Southwestern physiology faculty and later was appointed Chair of the Department of Health Sciences at Boston University where he collaborated in environmental and exercise physiology at the laboratories of the U.S. Army in Natick, MA. Dr. Lewis has been internationally recognized for his research on human muscle fatigue as well as physical performance in health and disease. In the past 12 years, he has worked in medical education at the American University of the Caribbean School of Medicine, St. Maarten, the University of Medicine and Health Sciences, St. Kitts, and the Charles E. Schmidt College of Medicine, Florida Atlantic University, Boca Raton, Florida as a professor and course director. Dr. Lewis currently serves in the Integrated Medical Science Department as Professor and Course Director, Pathophysiology and Therapeutics I (Gastrointestinal and Hepatobiliary Systems; Exercise and Nutrition Education) and Pathophysiology and Therapeutics II (Cardiovascular and Pulmonary Systems) at the Charles E. Schmidt College of Medicine, Florida Atlantic University.
Spreading Anatomy through COVID: Building the Virtual Dissection Database

Abstract: Technology has advanced to allow for full body anatomical simulations which can demonstrate tissues, diseases, and even virtual dissection. While these technologies have become valuable tools for teaching the anatomical sciences, they can be cost prohibitive to many institutions, and they will never fully replicate the experience of cadaveric dissection. However, the desire for high quality multimedia anatomical resources remains constant. The need for such resources became more evident as the COVID pandemic emerged in the spring of 2020. With little to no notice, educators found themselves scrambling to find or develop resources that would allow them to continue teaching in a remote environment. In response to this rapidly changing environment, we created the Virtual Dissection Database (VDD), a free web-based platform providing high quality laboratory videos and images. The goals of the VDD were to provide faculty with a secure platform to access anatomical multimedia content for use in various teaching platforms; provide a repository for institutions and faculty to share digital anatomical teaching materials; and to maintain the highest standards in ensuring donor integrity and anonymity. In conjunction with the American Association for Anatomy and donors from several institutions we have created a secure repository for these materials. To date the VDD has been accessed by users from 46 unique countries and 315 institutions. As we continue to grow, we are striving to build and provide content in several languages to reach a broader audience and expand our database to include more images.

BIO: Dr. Simet is an Assistant Professor at the University of Nebraska Medical Center in the Department of Genetics, Cell Biology and Anatomy where she teaches histology, embryology and gross anatomy to medical, graduate, allied health, and high school students. Dr. Simet serves as the course director for gross anatomy for the Master of Medical Anatomy; director of the Teaching Practicum for histology and gross anatomy for the Ph.D. Teaching track students in the Department. Co-director for Master of Medical Anatomy histology course; UNMC High School Alliance anatomy program; and summer anatomy program. She is the recipient of the 2018 UNMC Student Senate Distinguished Teaching Award. This past spring and summer she honed her tech skills and served as the special effects and video editor on resources created by Dr. Vilburn. Her research interests are focused on the efficacy of anatomical resources in learning and teaching anatomy.

Matthew Vilburn D.C., is an Assistant Professor in the Department of Cell Biology and Anatomy at the University of Nebraska Medical Center in Omaha, NE. He teaches gross anatomy, and neuroanatomy to medical, allied health, graduate and high school students. He is the course director for neuroanatomy for graduate students in the Master’s of Medical Anatomy program. He is the founder of the Virtual Dissection Database and has created numerous videos for use in teaching gross anatomy. Dr. Vilburn’s research interests are focused on the effectiveness of emerging technologies in classroom settings.
Update Seminar IV: Floridian A-D

Thursday, May 26 from 3:15 PM – 4:15 PM

Harvey Mayrovitz
Sponsored by HAPS

Professor
Nova Southeastern University
Fort Lauderdale, FL
mayrovit@nova.edu

Lymphatic Function as a Physiology Teaching Focus

Abstract: Teaching about the lymphatic system is often shoe-horned between the arterial and venous systems and is frequently given blunted and inadequate presentation time. Yet, the role of lymphatics is emerging as a central player in multiple health-related conditions. It is the plan of this presentation to consider and discuss several lymphatic-related aspects of current interest. These include newer concepts of the role of lymphatics in fluid exchange, dynamic aspects of lymphatic function and control and lymphatic-related physiological dysfunction and its impacts.

Bio: Dr. Mayrovitz received his graduate training at the University of Pennsylvania and did his postdoctoral work at Temple University School of Medicine and at the Graduate Hospital in Philadelphia. He also trained at the Medical Faculty and Hospital in Rotterdam and at Delft University in the Netherlands. From 1995 to 1998 he served as the Director of Research at the Miami Heart Research Institute. In 1998 he joined Nova Southeastern University where he is now a professor of physiology in the Dr. Kiran C. Patel College of Allopathic Medicine. His teaching areas include cardiovascular and pulmonary physiology. His current research areas include cardiopulmonary, lymphedema, and generally noninvasive clinical and biophysical studies for diagnosis and therapy. He has authored over 150 scientific publications in these and related areas along with multiple book chapters. He continues his research activities with the most current research focused on developing ways to assess and better understand processes associated with lymphedema progression and its treatment.
Diversity, Equity, and Inclusion Panel: Floridian A-D
Thursday, May 26 from 4:15 PM – 5:15 PM

**Kathy Burleson**
Senior Lecturer
Hamline University
kburleson@hapsconnect.org

Kathy Burleson is a Senior Lecturer of Biology and a Public Health Faculty Affiliate at Hamline University in St. Paul, Minnesota. Dr. Burleson’s teaching, service, and research explore the intersection of science and society, with a focus on inclusive pedagogy and diversifying STEM. She chairs the Diversity, Equity, and Inclusion (DEI) Committee for HAPS.

**Arkene Levy**
Director of Diversity, Equity & Inclusion and Associate Professor of Medical Education
Nova Southeastern University
alevy1@nova.edu

Arkene Levy is an Associate Professor of Medical Education and Director of Diversity, Equity and Inclusion (DEI) at NSU MD. She is a Fulbright Scholar, a 2018 AACR Minority Faculty Scholar, and a finalist in the AMA 2021 bright ideas challenge to address racism and diversity in medicine. Dr. Levy’s work currently focuses on health disparities and improving health outcomes of LGBTQ individuals and youth at risk for opioid and substance abuse in South Florida. The most rewarding part of her DEI career is developing pathway programs to help underrepresented students matriculate into health professions programs. Dr. Levy is passionately attached to the mission of DEI and community service.

**Anya Goldina**
Associate Professor of Biology
Elizabethtown College
goldinaa@etown.edu

Anya Goldina is an Associate Professor of Biology at Elizabethtown College. She teaches introductory biology courses, Human Anatomy and Physiology for science and non-science majors, Behavioral Endocrinology, Physiology, and Advanced Anatomy. Her broad research interests include animal behavior, endocrinology, and neuroscience. She is particularly interested in developing ways to integrate the arts, humanities, and social justice in science courses as a way to empower students and inspire them to see beauty and real-life applications of science in their everyday lives.

**Jon Wisco**
Associate Professor
Boston University
jjwisco@bu.edu

Jonathan J. Wisco is Associate Professor and Director of the Laboratory for Translational Anatomy of Degenerative Diseases and Developmental Disorders, Department of Anatomy and Neurobiology at Boston University School of Medicine. The lab is interested in the histological validation of innovative imaging of anatomic pathologies that help reduce access barriers to care. Dr. Wisco is also interested in the educational scholarship of teaching and learning, notably on the topics of curriculum design, faculty development, learning tools innovation, service-learning, and inclusive learning environments. He directs the non-profit organizations Better Learning Experiences, which provides underserved faculty development for K-12, community college, and undergraduate university professors; and Anatomy Academy, which teaches anatomy, physiology and nutrition concepts to underserved elementary school children as an effort to promote healthy lifestyles through educational intervention, and to inspire kids to pursue science as a career.
Navigating Uncharted Territory: The Empty Belly of Diversity and Inclusion

Abstract: The advancement of diverse populations in the global setting, demands that educators be leaders to reflect those demographics in our communities and our fields of practice. Diversity is a core value; meaning that educators (1) serve a dynamic array of people, cultures and socioeconomic groups, (2) value inclusiveness because scholars want people to feel comfortable sharing different perspectives, and (3) are open to hearing the unique needs and insights of those whom we serve and who are part of our team. Further, diversity in health care advances academic excellence, benefits patients and advances research in meaningful and measurable ways. The practice of inclusion in pre-health and medical education means not only creating greater opportunity and acceptance for students of diverse ethnic backgrounds, sexual orientations, and social or gender identities, but also ensuring that this same diversity of thought and experience is respected and reflected in faculty, in administrative groups, and in the medical and educational professions whose ranks students will one day join. This presentation will focus on issues and possible solutions for diversity and inclusion in the anatomy and physiology communities.

BIO: Ernest F. Talarico, Jr., Ph.D., currently serves as Professor of Anatomy, Embryology and Radiology, Research Adviser and Medical Student Academic Adviser at Tan Tao University School of Medicine (Long An, Việt Nam). He serves as a national and international consultant and expert in medical education, and as the director of the Anatomy Project in Việt Nam and Southeast Asia. Dr. Talarico is senior research consultant at the Cardiovascular Research Laboratories, Methodist Hospital (Merrillville, Indiana USA), and consultant and lead prosector at the Anatomical Gift Association of Illinois (Chicago, Illinois USA). Dr. Talarico is a founding member of the Medical Advisory Council at Nam Can Tho University Hospital (Can Tho City, Việt Nam), where he established the Center for Medical Education and Research. He is associate editor of the European Journal of Anatomy, and a prolific writer/publisher of scholarly, peer-reviewed manuscripts and thematic journal issues. He has served as Associate Director of Medical Education, Associate Professor of Anatomy & Cell Biology and Site Director for Human Structure at the Indiana University School of Medicine—Northwest (Gary, Indiana USA), as Step Master for Human Structure, and Course Director of Human Gross Anatomy, Embryology & Radiology. Dr. Talarico held a joint appointment as Associate Faculty in the Department of Radiologic Sciences at Indiana University Northwest. He created, and for 18 years served as director for the International Human Cadaver Prosection Program, which in 2008 received the award for most outstanding and innovative program in undergraduate and continuing medical education from the AAMC Central Group on Educational Affairs. He is creator of the “Talarico Protocol for Human Gross Anatomy” and is the 2008 recipient of the Partnership Matters Award from the Northwest Indiana Area Health Education Center. In recognition of his work and innovations in anatomical education, in October 2010, Dr. Talarico was inducted as a fellow into the Northwest Indiana Society of Innovators.
Update Seminar VI: Floridian A-D
Friday, May 27 from 1:15 PM – 2:15 PM

Robert Spinner
Sponsored by the American Association of Clinical Anatomists

The Anatomy of Nerve Reconstruction: Overcoming Obstacles and Enhancing Opportunities

Abstract: Nerve injuries may result in functional loss and debilitating pain. Reconstruction can be performed to improve patient outcomes. A variety of techniques can be considered including neurolysis, microsurgical nerve repair, nerve grafting, nerve transfer, free functioning muscle transfer and spinal cord reimplantation. Obstacles that need to be considered include time (slow rate of regeneration), distance (proximal injuries and distal targets), quality (accuracy of regeneration axons; and secondary effects on alpha motor neurons in the spinal cord and on motor endplates). Opportunities that can be enhanced can include: earlier surgery, shortening the distance for reinnervation by relocation of the reconstruction (with novel nerve transfers and free functioning muscle transfers) and technical/technological advances. This presentation will highlight clinical outcomes of patients with nerve injuries undergoing reconstruction correlating relevant nerve anatomy (macroscopic and microscopic) and physiology.

BIO: Robert J. Spinner, MD, is chair of the Department of Neurologic Surgery at Mayo Clinic in Rochester, Minnesota. He is the Burton M. Onofrio, MD Professor of Neurologic Surgery and a Professor of Orthopedics and Anatomy. He is board certified in both orthopedics and neurosurgery. His clinical practice is limited to peripheral nerve surgery. He completed full residency programs in orthopedics (Duke University) and neurosurgery (Mayo Graduate School of Medicine); a 1 year peripheral nerve fellowship with Dr. David Kline at LSUHSC; and a 6 month traveling fellowship to several international centers as a CNS Cushing Fellow. He has served as President of the American Society for Peripheral Nerve and the American Association of Clinical Anatomists.
Update Seminar VII: Floridian A-D

Friday, May 27 from 3:15 PM – 4:15 PM

Rolando De Leon

Sponsored by HAPS

BIO: Dr. Rolando De Leon joined the Kiram C. Patel College of Allopathic Medicine at NSU in early 2020 as Chair and Clinical Professor in the Division of Obstetrics and Gynecology. He developed the curriculum for the third year OBGYN Clerkship has developed several fourth-year elective opportunities in this field. He also serves as a Clinical Advisor to the students at NSU-MD. As a Board Certified OBGYN, Dr. De Leon has been in clinical practice for over 35 years and serves as Chairman of the Board of Trustees for both HCA Mercy Hospital and HCA Plantation General Hospital. He is a founding member of VitalMD, the largest multi-specialty group practice in the state, and serves as Chair of the group’s Medical Education Committee. Born in Cuba and raised in Virginia from an early age, Dr. De Leon received his BS in Biology from Virginia Tech and his MD from Eastern Virginia Medical School in 1982. He took his OBGYN residency training at UM/JMH where afterward, he remained on faculty for several years. Dr. De Leon's academic interests include clinical embryology, reproductive anatomy and physiology, and of course, clinical OBGYN. Most importantly, he cherishes his time spent mentoring and guiding medical students towards their chosen careers.

Blockbuster Embryology-Making Babies Fun Again!

Abstract: The primary reason for studying embryology is to not only know how our bodies came into being but to understand the mechanisms underlying both normal and abnormal human development. Embryology justifies its place in the pre-clinical medical school curriculum for exactly those reasons. It remains a very difficult conceptual topic to be able to teach in a few short sessions. In addition, an important question in teaching embryology is how much molecular embryology should be included in teaching our classic developmental anatomy. As a practicing OBGYN, I try to impart to my students how critical a solid fundamental knowledge of embryology has been to my clinical practice. I achieve this by constantly sprinkling clinical scenarios into each session I deliver. I have come to discover that once the clinical connection is made, the student will strive to understand the concept and not simply try to memorize it. There are currently numerous resources for accomplishing this that I hope to share in our HAPS session.

Chair, Division of Obstetrics and Gynecology
Nova Southeastern University
Fort Lauderdale, FL
rdeleon1@nova.edu
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Poster Presentation Abstracts

Session 1: Thursday, May 26 from 10:00 – 11:00 am in Grand A-H

Poster 101

**The Benefit of Using Multiple Choice Questions and Short Answer Questions in Student Assessment Using Nile University of Nigeria 200 Level as a Case Study**

Andrew Abue, University of Abuja, andrew.abue@uniabuja.edu.ng

The Nile University of Nigeria is one of the fastest growing medical schools in the world with her first set of medical graduates emerging in September 2022 after spending six years in the university. Semi-structured questionnaires and review of student performance in the multiple choice questions and the short answer questions. This shall be done using descriptive statistics.

Poster 102

**Skeletal System Coverage in Undergraduate Human Anatomy and Physiology Courses**

Asmita Aryal, Indiana University – Bloomington, layraimsa2@gmail.com

**Co-Author: Valerie O’Loughlin, Indiana University - Bloomington, vdean@indiana.edu**

While published learning outcomes provide instructional guidelines for anatomy and physiology courses, there still exists variable breadth and depth of selected organ system coverage (e.g., muscular and skeletal systems). Building on Reynolds et al.’s (2019) research about skeletal muscle coverage, we are examining skeletal element/feature coverage in undergraduate human anatomy (HA) and A&P courses. We developed, edited, and validated a survey to collect large, representative data about breadth and depth of skeletal element coverage in these courses, and will report on global trends. Our data will help inform stakeholders, such as A&P instructors and the HAPS Exam program.

Poster 103

**Pandemic Changes to an Undergraduate Gross Anatomy Course**

Emily Bradshaw, University of Central Florida, emily.bradshaw@ucf.edu

**Co-Author: Timothy Bradshaw, Polk State College, tbradshaw@polk.edu**

Studies suggest that undergraduate coursework in gross anatomy can improve medical student success in gross anatomy (Forester, et.al. 2002) and in medical school class rank (Peterson & Tucker, 2005). However, the current COVID-19 pandemic necessitates changes to the traditional paradigm of gross anatomy education, including utilizing online lecture and testing technology. This retrospective examines the components of an undergraduate gross anatomy course which incorporates both prosections and cadaver dissections, changes made during pandemic restrictions, including preparing the students for weekly dissections and the role of group dynamics.

Poster 104

**Spaced Repetition Software Increases Student Confidence and Exam Scores in an Undergraduate Histology Course**

Emily Bradshaw, University of Central Florida, emily.bradshaw@ucf.edu

**Co-Authors: Stephanie Sanchez, University of Central Florida, stephdsanchez@knights.ucf.edu, Carey Sanchez, University of Central Florida, sanchez.carey@knights.ucf.edu**

Establishing successful study habits to optimize retention in an undergraduate Histology course may be improved with online flashcards that feature spaced repetition and active recall. Students reviewed flashcards before exams, reported time/days using flashcards, number of flashcards reviewed, and anxiety levels pre/post exams. Use of the flashcards increased exam scores and students’ feelings of preparedness. By the end of the semester, >80% of students were using the flashcards as their primary means of study. This strategy appears to have a beneficial effect on student performance and confidence.
Poster 105
HAPS Lab Survey 2022
Carol Britson, University of Mississippi, cbritson@olemiss.edu
Co-Authors: Rachel Hopp, University of Louisville, rachel.hopp@louisville.edu, James Clark, Los Medanos College, jclark@losmedanos.edu, Heather Armbruster, Southern Union State Community College, harmbruster@suscc.edu, Chris Kule, Pennsylvania College of Technology, ckule@pct.edu, Chinenye Anako, Georgian Court University, ccanako@gmail.com, Julia Schmitz, Piedmont University, jschmitz@piedmont.edu, Jeff Huffman, Salt Lake Community College, jeff.huffman@slcc.edu, Marnie Chapman, University of Alaska Southeast - Sitka Campus, mdchapman@alaska.edu, Cynthia Schmaeman, Auburn University at Montgomery, cschmaem@aum.edu, Janay Dennis, Mitchell Community College, jdennis@mitchellcc.edu
Sponsored By HAPS
In early 2022 the Human Anatomy & Physiology Society (HAPS) launched its survey of instructors for introductory undergraduate-level course sequences in human anatomy and physiology for the nursing and allied health student. We present early analyses for (1) demographics of anatomy and physiology educators, (2) implementation of activities and learning outcomes in the laboratory, and (3) how laboratory instruction has evolved, and continues to evolve, due to the COVID-19 pandemic. Results are compared to those from the first and second offerings of the lab survey from 2014 and 2017.

Poster 106
Online Jigsaw Puzzle Assignments to Encourage Deeper Understanding of Physiological Concepts
Jacqueline Carnegie, University of Ottawa, jcarnegi@uottawa.ca
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Four online assignments combining 30-piece customized jigsaw puzzles with multiple choice questions were used to encourage students to look closely at diagrams and graphs related to cardiovascular and respiratory function while assembling the puzzles and answering application questions. Comparison of student outcomes on select MCQs targeting concepts represented in the puzzle assignments between cohorts who had access to the assignments and those who did not showed a slight positive trend, suggesting a need for further research. Survey data revealed that most students found that the assignments encouraged them to look more closely at the puzzle images and helped them better prepare for the exam.

Poster 107
Gross Anatomy for Teacher Education (GATE): Lessons Learned From In-Person and Online Continuing Education Courses
Danielle Edwards, University of Alabama at Birmingham, dned222@uab.edu
Continuing education courses, though short, provide opportunities for educators at all levels to gain hands-on experience, review didactic lectures, and engage in active learning strategies across all disciplines. In this study, we hosted an online continuing education course focused on radiology, a skill many anatomy educators are required to teach with little training or background. This two-day course provided background information, normal physiological examples, and case studies, and was found to be both effective in increasing knowledge of imaging modalities, while being well received. Overall, continuing education courses are a valuable resource for anatomy educators both in-person and online.

Poster 108
Impact of Exam Times on Student Performance During Undergraduate Gross Anatomy Unit Examinations
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Individuals have characterized themselves as a morning or evening person. Research has noted this preference as their chronotype, and it refers to when the individual is the most active and alert. Based on chronotype research, this study explored if the time students take their undergraduate gross anatomy exam affects their exam performance. In this study, undergraduate gross anatomy students were given the option to take their exams at 6:30PM on a Tuesday night or 6:20AM the following Wednesday morning. Exam scores were collected from students in each time option over the course of five semesters and compared for statistical difference.
Poster 109
Students Improve Performance and Perceived Understanding and Confidence with Interactive Lessons in an Undergraduate Flipped Anatomy Course
Amy Gyorkos, Albion College, agyorkos@albion.edu
Flipped classrooms improve student performance, attitude and perception across many disciplines. The flip increases active learning inside the classroom, but resorts to passive learning outside of the classroom. This study assesses performance and student perceptions when engaged in active learning outside of a flipped undergraduate Human Anatomy course. Two consecutive years were compared between out of classroom activities in control (reading) and experimental (interactive lessons) groups. The experimental group improved final exam score by 19%; final grades by 18%; and DFWI scores by 38% when compared to controls. Students perceived an increased understanding and confidence in coursework.

Poster 110
Challenges and Benefits of Designing an Interdisciplinary Course on Malaria
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A team of instructors from different academic areas designed an interdisciplinary premed capstone course focused on Malaria. The key goal was to promote collaboration and interdisciplinary learning. Coordinating the structure to fit different pedagogies was a challenge overcome by “learning from each other’s teaching style and content” and by the satisfaction gained from it. Students were organized into teams and worked on a malaria research question to be answered from an interdisciplinary approach. Collaboration was encouraged through peer evaluations and class discussions. The outcome of the students’ research was presented at the Undergraduate Research Conference at MCPHS University.

Poster 111
Development of an OER Online learning Guide for Semester 1 Human Anatomy & Physiology
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Co-Authors: Rong Zhu, Northern Virginia Community College, rzhu@nvcc.edu, Shaoyu Chi, Northern Virginia Community College, schi@nvcc.edu, Cindy Miller, Northern Virginia Community College, lmiller@nvcc.edu
Our aim was to develop an open online learning guide for 1st semester Human Anatomy & Physiology undergraduates. The learning guide includes mini lectures covering key points, interactive exercises, and concept maps. It is cloud-based, independent of a textbook, and aligned with HAPS learning outcomes. Additionally, publicly available lectures were embedded from outside sources to complement the original work. The learning guide is meant to supplement both online, hybrid, and on-campus courses. SCORM packages will be provided to instructors based on request. Here, we report the organization of the learning guide as well as student feedback from a pilot group.

Poster 112
Students’ Satisfaction, Performance, and Communication Skills with Different Engaging Presentation Formats in an Anatomy Course
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Co-Author: Jansirani Natarajan, Sultan Qaboos University, jannat@squ.edu.om
Engaging presentations styles could help students communicate effectively in anatomy and physiology. In this study, undergraduate nursing students (n=59) had to create two presentations using either the traditional PowerPoint presentation or an engaging presentation style. We aimed to assess the satisfaction, academic performance, and communication skills of students after using the two different presentation methods. Students were equally satisfied with both presentation methods. Regarding academic performance and communication skills, there was no significant difference between the two methods. Using an engaging presentation method allowed students to perform similarly to the traditional medium to communicate effectively and to be equally satisfied.
Poster 113
**Micro-Computed Tomography in Teaching Morphological Subjects – From Laboratory to Medical Students**
Jan Kremen, Charles University, jan.kremen@techplay.cz
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In this work, we explore how CT scanning and three-dimensional printed anatomical models can be incorporated into preclinical part of medical curriculum. The first step was administration of contrast agents, selected for specific tissue and/or organ. Treated specimens were scanned using a micro-CT hardware, and the images then processed with corresponding graphic software. The digital objects were exported to a 3D printer to create accurate anatomical replicas. The most yielding for the teaching purposes were regional depictions of multiple systems, such as the skull containing parts of locomotor, digestive, respiratory, vascular, nervous, and sensory one.

Poster 114
**Democratizing an Undergraduate Anatomy and Physiology Course: The Journey Toward Ungrading**
John Redden, University of Connecticut, john.redden@uconn.edu
To create more student-centered courses, many instructors are adopting the ungrading pedagogy. Ungrading aims to promote intrinsically motivated learning, individualized feedback, and a less carceral classroom dynamic. Our ability to fully implement ungrading in Enhanced Physiology and Anatomy at the University of Connecticut was confounded by several factors including a lack of instructor capacity to provide timely feedback to many students, bias toward summative assessments, and grade inflation concerns. Here we describe results from an assessment model that bridges the gap between traditional grading and ungrading, where individual students may tailor grade components and weights to their unique interests and strengths.

Poster 115
**The Effectiveness of Chatting in Remote Education**
John Roufaiel, South University, john@physiostasis.com
The necessity of remote education has increased over the last two years due to the COVID-19 pandemic. Unfortunately, this has decreased the ability to increase student understanding by limiting the ability to interact in a classroom setting face-to-face. In this study, student engagement through quantity and quality of chat engagement is compared to objective student results through online quizzes and exams. If used properly, chat rooms have been shown to have positive effects on classroom learning.

Poster 116
**Disparities in Online Learning: What an A&P Course Can Tell Us About Learning in STEM**
Megan Sherbenou, Colorado Mesa University, megansherbenou@gmail.com
Undergraduate students from minority groups, first generation college students, low SES, and female students tend to underperform academically relative to non-disadvantaged peers, with the disparity magnified in STEM fields. The pandemic forced many students online, provided a natural experiment for assessing the success of online student-learning, elucidating whether online-learning amplifies disparities or levels the playing field, giving disadvantages students space to interact with material away from judgment of peers. Through analysis of a standardized, introductory A&P course over time, we found evidence of an effect of delivery method on successful completion, as well as interaction effects with demographic variables.

Poster 117
**Flipped and Distant Multi-Section Teaching: Instructional Faculty Members’ Perspective to a Course Directors Top-Down Crisis Plan**
Nanette Tomicek, Jefferson University, nanette.tomicek@jefferson.edu
The unique choice to implement a flipped and distant mode of delivery using a top-down approach in a team-taught course was borne out of pandemic-generated necessity. Instructional faculty were polled, and shared experiences with a pre-built flipped classroom instructional model. Active learning was implemented equitably and autonomously across sections during synchronous class meetings (zoom or classroom). All sections share the same assessment types, but assignments and assessments are the purview of the individual instructor.
**Poster 118**

**Disparities in Pre-requisites Between A&P for Health Majors and Physiology for Biology Majors**

Mark Tran, University of Cincinnati Blue Ash College, tranmk@uc.edu

Learning physiology requires students to apply physical and chemical principles to the study of biological systems. Unfortunately, many undergraduate A&P students are unprepared for this due to a lack of pre-requisite knowledge in physics and chemistry, leading to high failure rates. However, undergraduate physiology courses catering to biology majors often require more stringent chemistry and physics pre-requisites that help prepare students to learn physiology. I compared pre-requisite requirements in chemistry and physics between A&P classes for health-related majors and physiology classes for biology majors across numerous four-year institutions and found significant differences in pre-requisite preparation between the two groups.

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**Session 2: Thursday, May 26 from 2:15-3:15 pm in Grand A-H**

**Poster 201**

**The Impact of COVID 19 on the Balance of the Autonomic Nervous System**

Chinenye Anako, Georgian Court University, ccanako@gmail.com

COVID19 disrupted the school system and had a negative impact on the lives of individuals. COVID19 has led to increased emotional stress on individuals. Chronic emotional stress has been found to increase the risk of mental illnesses and disrupt the balance of the autonomic nervous system (ANS). The study seeks to measure changes in the ANS with COVID19. The hypothesis is that increase in ANS dysfunction detected as a decrease in the Root mean square of successive differences, standard deviation of average normal intervals, and high frequency values as measured with heart rate variability would be detected.

**Poster 202**

**Using a 12-Lead ECG Laboratory Exercise for First Year Medical Student Teaching and Learning**

Imaan Benmerzouga, West Virginia School of Osteopathic Medicine, ibenmerzouga@osteo.wvsom.edu

The normal 12-lead ECG captures fundamental concepts covered in the teachings of cardiac electrophysiology. First year medical students at West Virginia School of Osteopathic Medicine record their own 12-lead ECG and then complete a worksheet activity with their group that includes analyzing their own ECG recording. The average performance on the subset of exam items covering ECG concepts was analyzed. Overall the data suggest that the students maybe benefiting from this exercise in the first-year cardiovascular course.

**Poster 203**

**Effect of Running on Lumbar Intervertebral Disc Morphologic Appearance on MRI**

David Bowden II, Physical Rehabilitation Services, davidbowdenii@gmail.com

Co-Author: Chasity O’Malley, Nova Southeastern University, comalle0@nova.edu

The purpose of this poster is to explore the possibility of additional research regarding the effect of running on lumbar intervertebral disc morphologic appearance on MRI. There is a paucity of available data regarding the topic. Current evidence will be reviewed. The anatomy and physiology of the lumbar intervertebral disc will be explored along with two common grading scales used to assess different morphologic changes. Prevalence of low back pain and degenerative spinal changes among athletes and the general population will be considered.

**Poster 204**

**Educational Accommodations that Support Student Success**

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Sponsored By HAPS

The HAPS C&I Accommodations subcommittee has presented a series of four town halls to discuss meaningful ways to incorporate educational accommodations into lab design and instruction. During these meetings many interesting ideas were discussed. In this poster, we will present key takeaways including: key aspects of universal educational design, different modalities of assessment, and ideas for resources which allow/promote engagement from students. We hope to offer attendees a chance to discuss and actively provide further suggestions to assist in the development of a HAPS A&P Laboratory Accommodations Guidebook.
Poster 205
Visual Evidence of Fast Antegrade Flow During Diastole and Slow Antegrade and Retrograde Flow During Systole
Chau Dang, Methodist Hospital, drchauminhdang@gmail.com
Using clinical examples can help students learn about anatomy. We used a clinical scenario in which a patient came to the hospital with right ventricular infarction secondary to an acute collision of the right coronary artery, and high pulmonary pressure. Injection of the left coronary system showed prolonged contrast transit in the myocardium. When reviewing the coronary angiogram, thanks to the delayed contrast clearing, the learners can recognize clearly the beginning and ending of each contraction of the left ventricle (LV) in systole and dilation in diastole. Based on this sharp time delineation, the learners could see the fast coronary flow above a fainted backdrop of the LV in diastole and slower flow in systole.

Poster 206
A&P I Content Retention Trends Through the Pandemic
Youlonda FitzGerald, Texas Woman's University, yfitzgerald@twu.edu
Co-Author: Karen Goodwin, Texas Women's University, kgoodwin2@twu.edu
Does university matriculation or method of instruction lead to differences in retention of core A&P I content observed during the pandemic? Preliminary Quiz Survey data indicated a significant difference in retention between university of instruction (N=179, TWU, n=151, 6.12 correct; Other University, n=28, 5.29 correct, p=.021) and a non-significant difference in mode of instruction (N=179, in person, n=105, 6 correct; online, n=74, 5.97 correct, p=.920). Further investigation into a new A&P II cohort yields new data assessing factors that contribute to the differences observed, and the development of steps to support retention deficiencies.

Poster 207
Teaching Pulmonary Physiology Using Simple Props
Juanita Jellyman, California State Polytechnic University at Pomona, jkjellyman@cpp.edu
Demonstrations that use everyday household objects as props can help make concepts in physiology more accessible to students. This poster will showcase ways that props can be used to teach students about the organization of the respiratory system and the mechanical aspects of pulmonary ventilation.

Poster 208
Evidence of Excessive Laminar Shear Stress of Newton’s Law of Viscosity Causing Non ST Segment Myocardial Infarction (NSTEMI) and Patent Coronary Arteries
Ha Le, Methodist Hospital, lephanthanhha104@gmail.com
In clinical cardiology, patients with acute coronary syndrome may have high blood viscosity, forming thick boundary layers between blood and the artery wall. Such boundary layers slow down the flow in the coronary system due to the excessive laminar shear stress according to Newton’s law of viscosity. As the intima receives oxygen and nutrition directly from the blood, this phenomenon hinders the blood renewal, resulting in asphyxia and early apoptosis of cells. Detailed images of slow moving and thick layers of stagnant blood in patients with ST segment elevation, positive troponin, and patent coronary arteries will be presented.

Poster 209
Evidence of Slow Flow Causing Ischemia Triggering Sudden Cardiac Death in Patients with Dilated Cardiomyopathy
Thoa Le, Methodist Hospital, lethibichthoa31@gmail.com
Patients with dilated cardiomyopathy (DiICM) usually die from sudden cardiac death (SCD). In our research, we apply hydraulics in questioning the progression of CAD in DiICM. The results showed that in 85% of patients of DiICM, the flow was laminar and the speed was slow. There was no progression of CAD after 3 years follow-up. The explanations were that laminar flow and slow flow did not injure the intima so they did not trigger nor aggravate the atherosclerotic process. However with slow flow, the arterial phase was prolonged, created functional ischemia and triggered SCD while the coronary arteries were patent.

Poster 210
Water Hammer Shock, a Phenomenon Seen in Pipes, Could Also be Seen in Distal Coronary Arteries
Trang Le, Methodist Hospital, trangledhyd411@gmail.com
In the field of hydraulics, in a setting of a tank and draining pipe, if the valve at the distal end of the pipe is open, the fluid flows normally. If the valve closes abruptly, the flow next to the valve stops. However, the fluid from the tank continues to flow forward and can collide with the distal stationary fluid. This is called water hammer shock. The contraction of the left ventricle (LV) is similar to the abrupt closure of a valve, stopping the coronary flow. Could the systolic LV contraction trigger water hammer shock?
Poster 211
A Comprehensive Anatomical Characterization and Radiographic Study of Stage III Testicular Cancer in a 31-Year-Old Male Patient
Jose Mas, Indiana University, jlmas@iun.edu
Co-Authors: Ernest Talarico, Indiana University, talaricojernest@gmail.com, Jonathan Jones, Union Hospital
Faculty teaching the Reproductive System incorporate clinical scenarios to increase pre-med student interest. Our case study characterizes a stage III testicular germ cell tumor (TGCT) with metastases to bone, viscera, and brain. Full cadaveric dissection showed masses through the lungs, thoracic wall, liver and spleen. Histological sections of the primary tumor were studied. Metastases were evaluated with digital radiography. Testicular parenchyma was composed of primitive germ cells. Radiography showed penetrating tumors of the ilium, thoracolumbar spine and a mid-brain tumor (38.45 mm). Understanding histology and the clinical significance of metastatic spread is essential for anatomy educators and future healthcare professionals.

Poster 212
A Multi-Year Quantitative Analysis of Duodenal Papilla Relationships
Andrew Michaels, University of Detroit Mercy, michaeam2@udmercy.edu
Co-Authors: Kathleen Clark, University of Detroit Mercy, clarkkm6@udmercy.edu, Shirin Bhagwagar, University of Detroit Mercy, bhagwass@udmercy.edu, Mary Tracy-Bee, University of Detroit Mercy, marybeeanatomy@gmail.com
The duodenum, the first part of the small intestine, aids the human body in digestion and the breakdown of food. The duodenum is located distal to the pyloric sphincter and stomach; and contains the major and minor papilla, through which secretions from nearby organs are deposited. Our research aimed to measure the distance from the pylorus to the major papilla and from the minor papilla to the major papilla. These measurements can be used for future medical studies in medicine and allow for a better understanding of anatomical variations within the small intestine.

Poster 213
How Turbulent Flow Damages the Intima and Triggers the Atheroslerotic Process
Bao Nguyen, Methodist Hospital, qbao1996@gmail.com
In general, the coronary blood moves forward fast in diastole, then slows down at the transition to systole, and eventually could reverse its direction (for a short period) as the left ventricle contracts. In case the left ventricle generates a stronger-than-usual pressure, as in severe hypertension, the retrograde and antegrade flow collide together in a violent fashion, triggering turbulence seen on angiogram as a chaotic mix between contrast (black) and blood (white). We theorize that those turbulent flows may cause damage to the intima and start the atheroslerotic process. Detailed images of turbulence in the collision site will be presented.

Poster 214
Detailed Images of Cyclic Changes from Laminar to Turbulent Flow
Nga Nguyen, Methodist Hospital, charlotte5294@gmail.com
When the blood flows from the iliac artery to the femoral artery, at the beginning, the flow is laminar, well organized with a slender and pointed tip. Then the flow hits a resistance created by distal vasoconstriction which may be caused by uncontrolled hypertension. The elements of the tip fall on themselves like an accordion folder while the antegrade blood continues to curve itself along the artery. Minute details of consecutive images of the blood flow changing from laminar to turbulent then back to laminar will be prominently shown.

Poster 215
Where’s the Intertubercular Groove?
Elizabeth Pennefather-O’Brien, Medicine Hat College, eobrien@mhc.ab.ca
Co-Author: Valerie O’Loughlin, Indiana University - Bloomington, vdean@iu.edu
Optical illusions are all the rage with social media. Is the dress black/blue or white gold? Do you see a rabbit or a bird? What the authors didn’t expect to was to encounter an optical illusion on a photo of the proximal humerus. O’Loughlin and Pennefather-O’Brien found just that as they were working together to place labels on a photograph of a humerus. Both individuals have strong backgrounds in analysis of human skeletons, but couldn’t agree on there to place the indicator for the intertubercular groove. Come see our poster to draw where you would label the groove.
**Poster 216**  
**Coronary Flow Similar to Car Racing at Daytona Beach**  
Thien Pham, Methodist Hospital, drhuuthien@gmail.com

When the fluid turns around a bend, every element must change its direction of motion. The rules of fluid dynamics dictate that every element must experience a force in that direction – acting from the outside bend towards the inside bend. In car racing at Daytona, in order for the car not to slow down, the driver needs to follow the outer curve with a wider radius. If the driver selects the inner curve, the speed has to be lower. If not, the car will be ejected. Why does the coronary blood follow all the peaks, like an experienced driver?

**Poster 217**  
**Similarities Between Recirculation Flow Above the Wings of an Airplane During Take-Off and at the Exit Shoulder of a Coronary Bifurcation: Story with a Twist**  
Thien Pham, Methodist Hospital, drhuuthien@gmail.com

In order for an aircraft to rise into the air, a force must be created that exceeds the force of gravity. This force (or lift) is created by the flow of air over an airfoil. The shape of an airfoil causes air to flow faster on top than on bottom. Because the air pressure is greater below the airfoil than above, a resulting lift force is created. Does the same phenomenon happen in coronary artery? Yes, recirculation happens on an antegrade direction at the exit shoulder of left circumflex artery and from a retrograde direction in distal right coronary artery.

**Poster 218**  
**A Look at Zonulin as a Biomarker for GI Dysbiosis**  
Michele Skelton, Stetson University, mskelton@stetson.edu  
**Co-Author:** Royce Newman, Stetson University, rdnewman@stetson.edu

The health of the human GI microbiome has become a prolific focus of research as studies examine the interactions between the GI microbiome and multiple physiological systems within the human body including the nervous system or GBA (gut-brain axis). Specific blood and stool biomarkers have been used to measure GI microbiome health including zonulin, a protein that regulates intestinal permeability through dynamic action of intestinal intercellular tight junctions. The purpose of this presentation is to review the anatomy and physiology of zonulin and examine the effectiveness of zonulin as a biomarker for GI dysbiosis in clinical and subclinical populations.

**Poster 219**  
**Jewels of Wisdom: Teaching Reproductive Anatomy Using a Clinical Case. An Unusual Case of Quadruple Polyorchidism in a Human Cadaver Mimicking Bilateral Lipoma**  
Ernest Talarico, Jr., Tan Tao University/Methodist Hospital, talaricojrernest@gmail.com  
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Anatomical variations of the reproductive system increase interest in pre-health majors. Polyorchidism is defined as having more than two testicles. This case examines a tetra-orchid individual, introduces a novel classification, and discusses mechanisms of dysgenesis. Human cadaver dissection revealed supernumerary testes (SNTs) located bilaterally and high in the inguinal region. Histological examination of four tissue samples confirmed quadruple testes. Correlating anatomical and histological findings in suspected polyorchid patients is critical to avoid misdiagnosis of SNTs as lipomas. Awareness of reproductive anatomical anomalies is essential for anatomists, clinicians, and future healthcare professionals. Our study suggests a novel anatomical-functional description for polyorchidism.

**Poster 220**  
**Images of Reversed Coronary Flow**  
Phuc Vu, Methodist Hospital, drvuquangphuc@gmail.com

During diastole, the flow is normally antegrade. At the beginning of systole, the flow stops for 0.06 second and moves forward at a lower speed. Some flows are reversed for about 0.06 - 0.18 seconds (1-3 images). This retrograde coronary blood is longer in patients with severe uncontrolled hypertension, severe aortic stenosis or with the right coronary artery originated from the left sinus and running between the aorta and pulmonary artery (or the left main artery coming from the right sinus). In many cases, the blood returns up to the ostium and spills contrast out of the coronary ostium into the aortic sinus. This is the mechanism of chest pain, syncope or sudden death in patients with significant aortic stenosis or anomalous origination of a coronary artery from the opposite sinus.
Session 3: Friday, May 27 from 9:45 – 10:45 am in Grand A-H

Poster 301
PALIA: Peer and Active Learning in Anatomy
Mary Tracy-Bee, University of Detroit Mercy, tracyma@udmercy.edu
Co-Author: Makayla Buxton, University of Guelph, mbuxton@uoguelph.ca
With the shift to online teaching in the height of COVID, there was a need to create opportunities for anatomy students to connect with each other in a meaningful, non-stressful manner. We developed Peer and Active Learning in Anatomy (PALIA) assignments, which were part of both lower (2000 level) and higher (4000 level) courses. Students were randomly placed into small groups, to collectively work together to create multi-sensory study aids to share with the class. Students found this activity to be the highlight of the course due to the social aspect during an anti-social period during their lives.

Poster 302
Identification Of An Axillary Artery Aneurysm Near The Brachial Plexus In A Cadaver And Its Use As An Educational Tool In Teaching Anatomy And Pathology
Joseph Castaneda, North Park University, jgcastaneda@northpark.edu
Co-Authors: Ernest Talarico, Jr., Tan Tao University, talaricojrernest@gmail.com, Paul Janus, North Park University, pjjanus@northpark.edu
Understanding clinical correlations alongside anatomy lessons is effective in the transition from classroom/laboratory to patient care. The aim of the present work was for students to complete a prosection with regional pathology and build an educational resource for use by learners. Brachial plexus prosection with associated axillary artery aneurysm was performed on a male cadaver. A multimedia presentation was created and evaluated for the usefulness of understanding anatomy and pathophysiology. Learners found the presentation useful in their understanding of anatomy. This work suggests that students can use cadavers to create educational tools for anatomy and medicine.

Poster 303
Infertility and Treatment: An Interdisciplinary Approach
Michelle Young, MCPHS University, michelle.young@mcphs.edu, Nalini Broadbelt, MCPHS University, nalini.broadbelt@mcphs.edu
Co-Author: Alma Chavarria, MCPHS University, achav2@stu.mcphs.edu
This case study was developed as an engaging learning tool to aid in achieving a functioning knowledge of infertility with special focus on treatment and pathophysiology. The foundation of the study relies on a patient’s authentic chart and medical results. Aspects of medical chart are analyzed with special emphasis on hormonal blood test results that contribute to the development of the case study patient. The case study is interdisciplinary by having a part dedicated to a discussion of the medicinal chemistry of clomiphene citrate and the mechanism of action to induce fertility.

Poster 304
A Faculty-Lead Undergraduate Laboratory Research: Effects of Glucose Concentrations on Inflammatory Cytokine Gene Expression in the Macrophage Cell Line RAW264.7
Chih-Chiun Chen, Aurora University, cchen@aurora.edu
Co-Authors: Alma Rodriguez-Estrada, Aurora University, arodriguezestrada@aurora.edu, William Martin, Aurora University, wmartin@aurora.edu
People with diabetes mellitus have abnormally high blood glucose and often suffer infections and inflammatory issues. We hypothesize a high glucose level alters cellular activities. If true, it helps explain the tissue inflammation and frequent infections problems. We lead undergraduate students in Biology and Health Sciences to conduct a research project to test the hypothesis. Students grew a macrophage cell line (RAW264.7) in culture media with 25 mM glucose to simulate diabetes and 5.5 mM glucose for healthy control. Gene expression analysis using quantitative polymerase chain reaction (qPCR) showed high-glucose condition alters inflammatory cytokine gene expression, supporting our hypothesis.
**Poster 305**

**Production and Distribution of 3D-Printed Skulls in a Large, Health Professional Class**
Danielle Edwards, University of Alabama at Birmingham, dned222@uab.edu
Co-Author: Bradley Barger, University of Alabama at Birmingham, jbbarger@uab.edu

Use of 3D-printed materials for classroom education has increased rapidly in recent years, but production time has limited implementation. The use of independent dual extruder 3D printers uses mirror printing, allowing for 100 skulls and detachable mandibles (at 70% scale) to be produced in four months. Once assembled, the models were distributed to 83 first-year dental gross anatomy students to use as a take-home study guide on the first day of class. Students, overall, felt models were helpful, enjoying having a tool to review lecture material at home, and felt they were beneficial for their learning.

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**Poster 306**

**Embedding Undergraduate Research Experience in Human Physiology Labs at Salt Lake Community College**
Evelyn Galvez, Salt Lake Community College, evelyn.galvez@slcc.edu
Co-Authors: Kristen Taylor, Salt Lake Community College, kristen.taylor@slcc.edu, Joanne Stosich, Salt Lake Community College, joanne.stosich@slcc.edu, Kathryn Bell, Salt Lake Community College, kathryn.bell@slcc.edu

We have completely overhauled the laboratory portion of our Human Physiology course at Salt Lake Community College. Our objective was to create a laboratory component that allows students to explore Human Physiology more deeply through iterative and connected projects that scaffold into a group Course-based Undergraduate Research Experience (CURE). We will report the results from two years of weekly student assessments. Our findings suggest that implementing this CURE increases undergraduate involvement in research and helps students achieve a deeper understanding of Human Physiology concepts.

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**Poster 307**

**Investigating Final Course Grades of Undergraduate Students With Disabilities In Anatomy and Other STEM Courses**
Michael Goodwin, Indiana University Bloomington, micegood@iu.edu

Learning analytics data from Indiana University was examined to determine if there were grade differences between students with disabilities (DSS) or without disabilities (non-DSS) in various STEM courses, including anatomy. Within anatomy, non-DSS students were more likely to earn an A or B, while DSS students were more likely to earn a C, D, or withdraw. Grade distributions for DSS students across STEM courses were variable. However, DSS students were between 1.5-4.5x more likely to withdraw compared to non-DSS students. DSS students in anatomy were the least likely to earn a B, and the most likely to earn a C.

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**Poster 309**

**The Impact of Extreme Heat on Cardiovascular Health on C**
Kebret Kebede, Nevada State College, kebret.kebede@nsc.edu
Co-Authors: Briahnna Carrera, Nevada State College, briahnna.carrera@student.nsc.edu, Aubree Tannehill, Nevada State College, aubree.tannehill@student.nsc.edu

In the US, heart disease is the leading cause of death for people of most racial and ethnic groups including African Americans, American Indians, Alaska Natives, Hispanics, and Caucasian men. The data collected for this research indicates that extreme heat exacerbates cardiovascular disease. Further analysis demonstrated that individuals exposed to higher levels of heat over time presented a 1.3% increased incidence of cardiovascular mortality. With increased heat exposure, the ability to maintain homeostasis is disrupted significantly. In individuals diagnosed with heart disease, this disruption is amplified as a result of additional cardiovascular and pulmonary stress.

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**Poster 310**

**Musculoskeletal Disorders and the Effects of Exposure to Extreme Heat**
Kebret Kebede, Nevada State College, kebret.kebede@nsc.edu
Co-Authors: Aubree Tannehill, Nevada State College, aubree.tannehill@student.nsc.edu, Briahnna Carrera, Nevada State College, briahnna.carrera@student.nsc.edu

Approximately 1.71 billion people have musculoskeletal conditions worldwide. The WHO notes that they are a leading contributor to disabilities internationally. Data was collected and analyzed from various sources, including the CDC and the National Library of Medicine. Workers at greater risk of heat stress include those who are 65 years of age or older, are overweight, have heart disease or high blood pressure or take medications that may be affected by extreme heat. During 2004–2018, an average of 702 heat-related deaths (415 with heat as the main cause and 287 as a contributing cause) occurred in the US every year.
Poster 311
Facilitating Empathy in Human Dissection Through Art Therapy
Bobbie Leeper, Seton Hill University, bleeper@setonhill.edu
Co-Author: Dana Elmendorf, Seton Hill University, elmendorf@setonhill.edu
Art therapy is an effective and integral contribution to facilitating values of empathy and humanity in human dissection courses. An art therapy workshop following a final dissection reflection lab assists in supporting emotional exploration of the dissection experience. This workshop offers a poignant closure for the students and provides a means for them to pay respects to their donors through art that can then be incorporated into a ceremony of gratitude for the donors. In addition to fostering compassion in students, this collaboration deepens understanding of creating bridges among different healing professions.

Poster 312
Addressing, Accepting and Accommodating for Color Vision Compromised Students: A Pilot Project
Soma Mukhopadhyay, Augusta University, soma.mukhopadhyay.08@gmail.com
HAPS Conference Travel Award Winner Presentation
Color blindness is a congenital disease where people either cannot see certain colors properly or have difficulty in distinguishing between colors. Inherited deficiency in color vision is incurable. When it comes to the cardiovascular system it is highly color coded to differentiate between the structures carrying oxygen rich blood (red) vs oxygen poor blood (blue). Models of heart and blood vessels are conventionally colored in this theme. While the color theme works well for most people, those who have color deficiencies have difficulty identifying the structures colored red. The objective of this study was to develop alternate resources for students with the compromised color vision.

Poster 313
Year One Cohort One Update for Community College Anatomy and Physiology Education Research (RECAPER) Project: Teaching Practices for Anatomy and Physiology
Chasity O’Malley, Nova Southeastern University, comalle0@nova.edu
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The first cohort of the expanded Community College Anatomy and Physiology Education Research (RECAPER) project is underway. Participants take part in 2 professional development courses in year one and will conduct a classroom-based research project and present their data at a professional meeting in year two. Data from all participating students on learning and anxiety will expand on these topics and the effects of various teaching interventions. Participants (instructors) will also be studied through a series of interviews aimed at assessing their approaches to education. This poster will highlight the overall CAPER project and the 2021-2023 cohort of CAPER.

Poster 314
The Foundation of Teamwork is Understanding Group Dynamics
Cheryl Purvis, Nova Southeastern University, cpurvis@nova.edu
Co-Authors: Camille Arca, Nova Southeastern University, camille.arca@gmail.com, Brandon Tan, Nova Southeastern University, bt685@mynsu.nova.edu, Yuri Zaqvazdin, Nova Southeastern University, yuri@nova.edu, Anastasia Mashukova, Nova Southeastern University, amashukova@nova.edu, Liliya Ryshchak, Nova Southeastern University, iryshchak@nova.edu, Jordyn Troop, Nova Southeastern University, jat684@gmail.com, Sarah Cushion, Nova Southeastern University, sc2917@mynsu.nova.edu, Vania Arboleda, Nova Southeastern University, vaa378@mynsu.nova.edu, Sydney Byk, Florida State University, seb201@my.fsu.edu, Amar Gill, Nova Southeastern University, ag2866@mynsu.nova.edu, Aidan Sadtler, Nova Southeastern University, as5096@mynsu.nova.edu, Brandon Edwards, Nova Southeastern University, be417@mynsu.nova.edu, Patrick DeZego, Nova Southeastern University, pd754@mynsu.nova.edu
Creating positive group dynamics and an engaging learning environment can be the key to academic and ultimately career success. As educators, we expect students to work in groups. However, personality clashes often undermine the learning environment. Everyone has a unique perspective on life and their interactions with others. To discuss various personality types, we start each semester with an icebreaker using a personal preference profile test. Our study examines various personality types drawn to different health professions programs including Optometry, Dental, Physical Therapy and Occupational Therapy, as well as our Master of Biomedical Sciences students.
Poster 315
Benefits of Tumescence in Cadaveric Dissection: A Qualitative Study
Amberly Reynolds, Sam Houston State University, amberly.reynolds@shsu.edu
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HAPS Conference Travel Award Winner Presentation
Tumescence involves manual infusion of wetting solution into subcutaneous and interstitial tissue planes to increase ease and efficiency in medical student dissections. A qualitative study of medical students and faculty provides that tumescence allowed for faster and higher quality dissections particularly in the feet and face. In addition, the themes of separation, spaces, and planes, were common, reflecting in the respondents, an increased appreciation of tissue planes and relationships.

Poster 316
CAPER (Community College Anatomy and Physiology Education Research) Self-Efficacy, Metacognition and Anxiety of First-Generation College Students Taking an Online Synchronous Anatomy and Physiology Night Class
Dana Smith, St. Johns River State College, danasmith@sjrstate.edu
Co-Authors: Rose Hyson, University of Minnesota, hyson003@umn.edu, Megan Deutschman, University of Minnesota, deuts153@umn.edu, James McCaughern-Carucci, St. John's River State College, jamesmccaugherncarucci@sjrstate.edu, Kim Van Vliet, St. Johns River State College, kimvanvliet@sjrstate.edu, Kerry Hull, Bishop's University, khull@ubishops.ca, Suzanne Hood, Bishop's University, shood@ubishops.ca, Kyla Ross, Georgia Institute of Technology, kross@hapsconnect.org, Murray Jensen, University of Minnesota, msjensen@umn.edu
HAPS Conference Travel Award Winner Presentation
Studies have shown that increased student self-efficacy and metacognition correlate with improved performance, effort and perseverance, while anxiety has been shown to have a negative impact on student learning. During the 2020 COVID-19 pandemic, many in-person courses were converted to synchronous online courses to help facilitate the online transition for state college students. The MSLQ survey was used to evaluate self-efficacy, metacognition and other factors such as anxiety. Our data suggest that first-generation college students taking an online synchronous anatomy and physiology night class had higher self-efficacy and metacognition, while also exhibiting lower anxiety, compared to non-first-generation day class students.

Poster 317
Dissection Mentorship Update
Jeremy Grachan, The Ohio State University, grachan.1@osu.edu
Co-Authors: Kelsey Stevens, Briar Cliff University, kelsey.stevens@briarcliff.edu, Bridgett Severt, Wright State University, bridgett.severt@wright.edu, Molly Ostwald, Arapahoe Community College, molly.ostwald@arapahoe.edu, Emily Halfpop, Presentation College, emily.halfpop@presentation.edu, Kjerstin Owens, Bemidji State, kjerstin.owens@bemidjistate.edu, Jonathan Wisco, Boston University, jwisco@hapsconnect.org
Sponsored by HAPS
The Dissection Mentorship Initiative led by the Anatomical Donor Stewardship Committee (ADS) has been slowly growing despite the pandemic. Members of the Mentorship Initiative have been able to assist instructors with anatomy lab coordination, human body donor maintenance, gross anatomy teaching pedagogy tips, and even dissection skills training. The intention of this poster is to provide the HAPS membership an update on this initiative, as well as to advertise upcoming mentorship opportunities.

Poster 318
Human Body Donor Ethics: A Dialog
Jeremy Grachan, The Ohio State University, grachan.1@osu.edu
Co-Authors: Kelsey Stevens, Briar Cliff University, kelsey.stevens@briarcliff.edu, Bobbie Leeper, Seton Hill University, bleep@setonhill.edu, Molly Ostwald, Arapahoe Community College, molly.ostwald@arapahoe.edu, Danielle Edwards, University of Alabama Birmingham, dned222@uab.edu
Sponsored by HAPS
Many institutions honor their anatomical donors through memorial services, which may not celebrate the donor’s and/or students’ cultural beliefs. The Anatomical Donor Stewardship Committee (ADS), previously known as the Cadaver Use Committee, is working to foster a dialog sensitive to human body donor ethics, including ways to make anatomy labs and donor services more inclusive. This poster provides background about cultural views around anatomical gifts and allows members to share their related experiences and institutional practices through a brief survey. This survey will help inform a town hall discussion of ways to create a more welcoming and respectful community.
**Session 4: Friday, May 27 from 2:15-3:15 pm in Grand A-H**

**Poster 401**  
**The Fight Against Nearsightedness: The Change in Spatial Distribution of Retina Defocus in Myopic Patients who Underwent Orthokeratology Treatment**  
Drew Baeza, Nova Southeastern University, db2612@mynsu.nova.edu  
Co-Authors: Xiaoyan Yang, NanKai University, Bin Zhang, Nova Southeastern University, bz52@nova.edu  
Axial length growth of the eyeball is strongly correlated with the progression of myopia. Orthokeratology lenses flatten the center and steepen the peripheral portion of the cornea. These alterations cause the image to form in front of the peripheral retina and provide feedback signals to slow axial growth. Detailed two-dimensional spatial distribution of retina defocus has not been directly measured. This study quantifies this distribution at baseline and how it changes after receiving orthokeratology treatment. Distributions that maximize the retardation of axial length growth of the eyeball may guide future orthokeratology lens design with the overall goal of fighting nearsightedness.

**Poster 402**  
**What’s Happening With The HAPS Exam? Effects Of Changing Study Strategies And Class Format On HAPS Exam Performance In The COVID-19 Pandemic**  
Freddie Bauer, Indiana University – Bloomington, frbauer@iu.edu  
Co-Authors: Polly Husmann, Indiana University-Bloomington, phusmann@indiana.edu, Stacey Dunham, Indiana University - Bloomington, dunhams@indiana.edu  
HAPS Conference Travel Award Winner Presentation  
We began offering the HAPS Anatomy exam as an optional cumulative final to our undergraduates in the fall of 2019. Since that time, academia has been turned upside-down due to the COVID-19 pandemic. Thus, we investigated how changes to student study strategies and interaction with lecture content between the Fall 2020 and Fall 2021 semesters affected outcomes on the HAPS exam. We hypothesized that the use of in-person active learning sessions would correspond with increased HAPS exam scores compared to just recorded lectures. We further hypothesized that increased participation with online resources would also correspond with increased HAPS exam scores.

**Poster 403**  
**Factors Influencing Common Fibular Nerve Course Variability Before Bifurcation into the Superficial Fibular Nerve and Deep Fibular Nerve: A Cadaveric Study**  
Dylon Collins, Nova Southeastern University, dylon2859@gmail.com  
Co-Authors: Nayeem Chowdhury, Nova Southeastern University, nayeemc3@gmail.com, Anika Sedani, Nova Southeastern University, anikasdn52@gmail.com, Claudia Henderson, Nova Southeastern University, claudia.henderson1313@gmail.com, Debra McNally, Nova Southeastern University, mcnallyc@nova.edu, Nicholas Lutfi, Nova Southeastern University, lutfi@nova.edu  
The common fibular nerve (CFN) has anatomic vulnerability as it transitions from the posterior thigh to the anterior leg. We compared factors that may predict distal CFN variability, including height, age, sex, point where the CFN transitions from posterior to anterior, fibular length, and sciatic variability. The CFN was exposed and identified bilaterally on twenty cadavers. We found significant correlations between height and CFN transition point, and height to fibular length. CFN transition point was also significantly correlated with fibular length. Therefore, it is important to consider individual patient factors when addressing impacts to the CFN at the fibular neck.

**Poster 404**  
**Microbiome: The Missing Link Between Fiber and Sports Enhancement?**  
Joshua Costin, Nova Southeastern University, jcostin@nova.edu  
Co-Authors: Carla Duenas, Nova Southeastern University, cd1627@mynsu.nova.edu, Luciana Perasso, Nova Southeastern University, lp1509@mynsu.nova.edu  
A variety of factors can impact the gut microbiome, including diet and exercise. Among elite adult runners, exercise alone can induce changes in distinct gut bacteria such as Veillonella atypica. In addition to exercise, fiber intake has also been positively correlated to levels of Veillonella in the gut. The purpose of this study was to observe if changes in V. atypica occur in a group of non-elite male cross-country runners, as well as to determine the influence of fiber intake on the Veillonella composition of their gut.
Poster 405
Active Learning Strategies Increase Higher Order Learning in Anatomy and Physiology
Heather Evans Anderson, Stetson University, hevansanderson@stetson.edu
Active learning strategies were compared to determine their impact on learning effectiveness. Targeted learning objectives were assessed by ranking exam questions using Blooms taxonomy on separate exams and on a cumulative final exam. The learning effectiveness and impact on higher order learning of each strategy was determined by student performance on exams. There was not a significant difference in student performance between either of the active learning strategies that were used. However, implementation of active learning strategies increased higher order learning and improved student’s perception of analytical, synthesis, and application skills.

Poster 406
Fighting the Need for Glasses: Pupil Size and Axial Length Growth in Myopic Children with Orthokeratology
Brittany Garrett, Nova Southeastern University, bg1065@mynsu.nova.edu
Co-Authors: Xiaoyan Yang, NanKai University, Bin Zhang, Nova Southeastern University, bz52@nova.edu
It has been suggested that axial length growth (ALG) in myopic children treated with orthokeratology lenses is negatively associated with their pupil sizes. However, a more recent study showed that ALG in children is significantly correlated with summed relative corneal refractive power shift (RCRPS) within the central 2mm area. Therefore, we test the hypothesis that ALG in such children is correlated with the summed RCRPS within the pupil rather than the pupil diameter itself. ALG in myopic children treated with orthokeratology was found to correlate with the summed RCRPS within the pupil rather than the pupil size itself.

Poster 407
A Clinical Correlation of Lymphatic Drainage in the Upper Extremity Following Axillary Node Dissection in Breast Cancer Patients
Skylar Harmon, Nova Southeastern University, sh2424@mynsu.nova.edu
Co-Authors: Muhammad Awan, Nova Southeastern University, ma2838@mynsu.nova.edu, Anastassia Shifchik, Nova Southeastern University, as5019@mynsu.nova.edu, Tatevik Malisetyan, Nova Southeastern University, tm1465@mynsu.nova.edu, Gary Schwartz, Nova Southeastern University, gs405@nova.edu
Knowledge of upper extremity anatomy and lymphatic drainage is critical for future health care professionals. Use of clinical examples can provide clarity on these concepts. When axillary lymph nodes are removed following breast cancer, lymphedema is a significant problem. Our study focused on whether elective hand surgery is contraindicated in these patients and whether they are provided appropriate education regarding this complication. In our study, we found no development of postoperative infection or lymphedema following elective hand surgery in these patients. Additionally, we found a need for improvements in the degree of patient counseling regarding postoperative complications such as lymphedema.

Poster 408
An English Perspective on the Tuberculous Meningitis: Peter Hennis Green and his Claim of Priority in Discovering the Disease
Brandon Kaye, Nova Southeastern University, bk694@mynsu.nova.edu
Co-Author: Yuri Zagvazdin, Nova Southeastern University, yuri@nova.edu
Peter Hennis Green (1803-1870), an Irish pediatrician, claimed to discover tuberculous meningitis (TM) in his 1836 communication to The Lancet. His claim was propagated in recent publications. We investigated Green's role in elucidating TM. He visited Paris in the 1830's where French physician L.N. Papavoine established tubercles as causal agents of TM in 1830. W. Gerhard of the USA and other French clinicians independently confirmed this discovery. Green's motives for not recognizing these physicians' prior contributions are unclear, but he did not garner rebuttal. Our study demonstrates the importance of careful historical approach to matters of priority in biomedical discoveries.
Poster 409
Turning Anatomy and Physiology I Instruction on its Head: An Attempt to Encourage a Positive Academic Mindset, Promote Student Engagement, and Increase Student Success in an Academically Underprepared Student Population
Gracie King, Nashville State Community College, gracie.king@nscc.edu
Traditional curriculum order was reversed in a combined Anatomy and Physiology I class at an open enrollment institution by teaching the nervous system first and then progressing backwards from muscles to chemistry, opposite of traditional order. The hypothesis is that teaching students about synaptic plasticity, memory, and functional brain areas first will create a positive academic mindset by providing concrete evidence to students that they can actively change synapses and memory at a cellular level by improving their study skills, and ultimately promote student engagement in the subject matter resulting in increased learning outcome mastery.

Poster 410
The Effect of Collaborative Learning Sessions on Academic Outcomes in a Graduate-Level Physiology Course
Marye Lee, Nova Southeastern University, ml2521@mynsu.nova.edu
Co-Author: Anastasia Mashukova, Nova Southeastern University, amashukova@nova.edu
This study compared entry-level physiology courses for health professions programs in (2019) traditional in person instructor-led format, (2020) online with added collaborative sessions halfway through, and (2021) BlendFlex (students attend didactic lectures online or in person) with online collaborative sessions. In the course’s first half, exam scores increased after incorporating collaborative sessions through BlendFlex (p-value <0.01). These sessions improved learning outcomes, showing increased final unit scores (p-value <0.05). Physiology understanding improved, with increased posttest scores (p-value <0.05). Results confirm utilizing collaborative sessions improved performance in physiology courses, which could be used to improve fundamental science courses in health professions programs.

Poster 411
An Assessment of How Cellular Physiology is Presented in Anatomy and Physiology Courses
Tom Lehman, Coconino Community College, tom.lehman@coconino.edu
Cellular physiology can be one of the first major hurdles for students attempting to master anatomy and physiology. I want to learn how this concept is presented to students to determine how I can assist my students in tackling this topic to build a foundation for the rest of the course. Through surveys and interviews, I want to see if there were trends in the approaches that educators use in presenting this concept in various organ systems in anatomy and physiology courses.

Poster 412
Academic Performance of Nursing Students in Anatomy and Physiology Before, During and after a Stability Period of Covid-19
Raj Narnaware, Grant MacEwan University, narnawarey@macewan.ca
Co-Author: Sarah Cuschieri, University of Malta, sarah.cuschieri@um.edu.mt
The COVID-19 has drastically disrupted nursing education globally. The present study demonstrated that the mean class average of anatomy and physiology midterms and final examinations during synchronous online teaching was significantly higher (P<0.001) compared with face-to-face teaching. However, the class average and GPA were not different between face-to-face and hybrid/flex teaching. Virtual teaching of these subjects also significantly (P<0.001) increased the students’ GPA in both courses during Covid-19 compared to before and after a stability period of Covid-19. The present study demonstrates that due to a strict lockdown and self-isolation, students either spent more time studying these subjects or took advantage of the lack of online supervision of their exams which may have increased their class average and GPA.

Poster 413
Coming to Class Will Improve Your Grade: An Examination of Lecture Attendance and Lecture Exam Scores in an Undergraduate Human Anatomy Class
Richard Nichols, Indiana University – Bloomington, ricnicho@iu.edu
Co-Author: Valerie O'Loughlin, Indiana University - Bloomington, vdean@iu.edu
Instructors of a large (~400 students) undergraduate Basic Human Anatomy course at Indiana University - Bloomington converted the lecture portion of the course to a flipped-classroom model with two components: asynchronous online course content delivery and live in-person interactive learning sessions. The in-person interactive learning sessions introduced students to active learning strategies and techniques (drawing, memory matrices, flow charts, diagrams, etc.), and the students actively participated in these sessions through the use of an online interactive learning platform. Here we sought to assess the efficacy and outcomes of the active learning sessions on student performance in the course.
Using Machine Learning Algorithms and VR Technologies to Design Anatomy-Based Learning Modules for Health Professions Students

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Pattern recognition is a critical skill that health professionals need to conduct effective diagnostic reasoning. Nevertheless, resources to teach strategies for pattern recognition are limited. The primary goal of this study is to identify the characteristics of health professions students who would benefit from learning pattern recognition in Human Anatomy and Physiology via immersive technologies. Classification trees were constructed using machine learning and classification accuracy. The generated decision tree had 61% accuracy in predicting students who are more likely to appreciate immersive technologies for learning. Machine learning and VR technology can be used to customize interactive experiences for student education.

HyFlex, Supporting Students Where They Are

Amanda Rosenzweig, Delgado Community College, arosen@dcc.edu

HyFlex - what is it? why use it? Your child is sick. Your car breaks down. You are a veteran having a tough day. These are daily occurrences in the lives of our students. Missing class and falling behind adds stress. Importantly, these events create a domino effect that prevents achieving academic goals. Imagine you can accommodate students at these times? What if you could give them options for meeting class requirements through a hybrid flexible course design and delivery? Would you? Learn how Hyflex delivery mode gives students a choice of where and when to participate.

Analyzing Utility of Cadaver Dissection as a Teaching Tool for Anatomical Education

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This paper worked to identify the utility and opinion held of cadaveric dissection among a group of medical students without previous dissection experience. It consisted of a cohort of NSU MD students dissecting a specific anatomical region of interest under the guide of NSU DO students who served as their tutors. Pre-dissection and post-dissection surveys were given to the participants in order to gauge the utility of their dissection experience. The survey data suggested that students feel more prepared for surgical rotations, expanded upon their anatomical knowledge, and are better suited to address the issue of death after this course.

Prevalence Summary for Five Aberrant Muscles of the Hand: A Literature Review

Lola Smith, The Pennsylvania State University DuBois Campus, lmd13@psu.edu

An anomalous muscle of the hand was discovered during a cadaver dissection at the University of Alabama at Birmingham’s Gross Anatomy for Teacher Education program in July 2019. Being aware of anatomical variants is important clinically and pedagogically. A literature review revealed information and prevalence data for five aberrant muscles of the hand. No one article addressed all five of these muscles. The poster provides information, prevalence data, and pictures of models for all five anomalous muscles. There is also a suggestion for a digital pedagogical resource.

Teaching Human Anatomy and Physiological Functions of Different Organs to Disadvantaged Individuals

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Understanding organ functions is a challenging concept for individuals with low health literacy and discrepancy in comprehension. To create a teaching model for students with deficits in critical thinking, individuals at local homeless shelters were offered a six-session course in health literacy. The 45-minute sessions included human organ illustrations and associated physiological functions. Participant learning was assessed using quizzes during each session. Results suggest critical thinking and comprehension can be achieved with structured, repetitive, and visual prompts. These results are essential for teaching students whose learning may be affected by similar social conditions as the participants in this study.
Poster 419
Near-Peer Mentoring in the Anatomy Lab: Utilizing Designer Dissections to Teach Future Healthcare Professionals
Emelia Watts, Nova Southeastern University, ew831@mynsu.nova.edu
Co-Authors: Drew Baeza, Nova Southeastern University, eq831@mynsu.nova.edu, Georgina Tiarks, Nova Southeastern University, gt446@mynsu.nova.edu, Seth Shoap, Nova Southeastern University, ss4891@mynsu.nova.edu, Vania Arboleda, Nova Southeastern University, va378@mynsu.nova.edu, Sarah Cushion, Nova Southeastern University, sc2917@mynsu.nova.edu, Adalyne Singh, Nova Southeastern University, as1616@nova.edu, Cheryl Purvis, Nova Southeastern University, cpurvis@nova.edu, Gary Schwartz, Nova Southeastern University, gs405@nova.edu
“Designer Dissections” is an approach which utilizes near-peer mentoring to teach anatomical sciences via regional dissection. This method was developed in 2021 at NSU and has garnered sustained interest over two classes of medical students. It is easily adaptable for use by undergraduate students taking human cadaver dissection courses. Tailoring anatomy education to a student’s specific interest will improve student engagement while increasing their enthusiasm for a related healthcare field. Additionally, the near-peer mentoring model allows for the development of mentor-mentee relationships and can provide leadership opportunities for students after participating in the program (Arboleda et al. 2021).

Poster 420
Sympathetic Regulation of Salivary Flow: A Conundrum in Physiological Textbooks
Yuri Zagvazdin, Nova Southeastern University, yuri@nova.edu
Co-Authors: Anastasia Mashukova, Nova Southeastern University, amashukova@nova.edu, Cheryl Purvis, Nova Southeastern University, cpurvis@nova.edu
We observed that our Medical and Dental students exhibit two preconceived notions about autonomic control of salivary secretion. Some of them think that parasympathetic nerves stimulate salivation and sympathetic nerves inhibit it. Yet, other students believe that activation of both autonomic divisions increases the flow of saliva. To determine the origin of this contradiction, we reviewed the descriptions of autonomic regulation of salivary glands in Anatomy and Physiology textbooks. We also investigated how the dilemma of the sympathetic excitatory/inhibitory influences on salivary flow evolved historically. Our study can help educators to resolve the confusion among their Health Professions students.
May 26, 2022

Dear HAPS Attendees:

On behalf of Nova Southeastern University, it is a pleasure to welcome you to our beautiful campus for the Human Anatomy & Physiology Society (HAPS) Annual Conference. This educational event provides a wonderful opportunity to meet other basic science educators, researchers and students. We hope this event will establish new connections and result in future collaborative projects. Understanding anatomy and physiology is crucial for the diagnosis and treatment of disease. Basic science educators provide the foundation for many careers, in particular future healthcare professionals.

Our Health Professions Division is home to various programs including Allopathic Medicine (NSU MD), Osteopathic Medicine (NSU DO), Dental, Optometry, Nursing, and a variety of careers in healthcare sciences such as medical sonography, physician assistants, audiology, sports medicine, physical therapy and occupational therapy. We offer bachelor’s, masters and doctoral degrees. The College of Psychology is home to our undergraduate Neuroscience program. Halmos College of Natural Sciences and Oceanography provides undergraduate anatomy and physiology courses through our Department of Biological Sciences.

Nova Southeastern University is honored to support HAPS mission to promote teaching excellence and encourage faculty and students to give presentations and posters. We are delighted to partner with HAPS to provide a venue to showcase research and scholarly activity.

Welcome to Fort Lauderdale, Florida, the “Venice of America”.

Sincerely,

Irving Rosenbaum. D.P.A., Ed.D.
Vice President for Operations
Health Professions Division
Don’t forget to attend the HAPS Committee Meetings!
Become more involved with HAPS by joining a committee
Saturday, May 28: Nova Southeastern University, 12:30 – 1:00 PM
Awards & Scholarship – Terry 1509
Anatomical Donor Stewardship – ASSEM 2123
Communications – ASSEM 2125
Conference – Terry 1596
Curriculum & Instruction – ASSEM 2101
Diversity, Equity, and Inclusion – ASSEM 2102
Fundraising – ASSEM 2103
Membership – ASSEM 2104

WILEY

Principles of Anatomy and Physiology, 16th Edition
By Gerard J. Tortora and Bryan Derrickson

Laboratory Manual for Anatomy & Physiology, 7th Edition
By Connie Allen and Valerie Harper

Principles of Human Anatomy, 15th Edition
By Gerard J. Tortora and Mark Neilsen

Human Physiology, 2nd Edition
By Bryan Derrickson

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# Workshop Shuttle Schedule

**SATURDAY, MAY 28:**
- **7:00 – 9:00 am**
  4 shuttles running from the Hilton Fort Lauderdale Marina and Nova Southeastern University
- **9:00 am – 3:00 pm**
  1 shuttle running between the Hilton Fort Lauderdale Marina and Nova Southeastern University
- **3:00 – 5:00 pm**
  4 shuttles running from Nova Southeastern University and Hilton Fort Lauderdale Marina

**SUNDAY, MAY 29:**
- **7:00 – 9:00 am**
  3 shuttles running from the Hilton Fort Lauderdale Marina and Nova Southeastern University
- **9:00 am – 3:00 pm**
  1 shuttle running between the Hilton Fort Lauderdale Marina and Nova Southeastern University
- **3:00 – 5:00 pm**
  3 shuttles running from Nova Southeastern University and Hilton Fort Lauderdale Marina

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Annual Conference - Ft. Lauderdale, FL | HAPS 2022 Page 81
<table>
<thead>
<tr>
<th>Session 1</th>
<th>Session 2</th>
<th>Session 3</th>
<th>Session 4</th>
<th>Session 5</th>
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<td>Sponsored by 4D Interactive Anatomy The Covid-Proof Anatomy Lab</td>
<td>Enhancing Your Supplemental Instruction Program for A&amp;P</td>
<td>Sponsored by ADInstruments Examining the Anatomy and Physiology Lab Experience</td>
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<td>Problem Based Learning: Development of a Student-Centered Facilitation Approach</td>
<td>Beyond Anatomy Content: Teaching Students How to Study in Anatomy Courses</td>
<td>The CAPER Project: Supporting Research in Community College (and Related) A&amp;P Classrooms</td>
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<td>Cadavers to Computers – Past, Present, Future: Reimagining our First Patient</td>
<td>Designer Dissections: The Second Implementation of Near-Peer Mentoring in Anatomical Sciences with a Focus on Specialties in Medicine</td>
<td>Anatomy Cruise — A Punny and Metaphorical Journey Through the Body</td>
<td>Improving Student Success Using an A&amp;P Boot Camp and a Flipped Lab Approach</td>
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<td><strong>A305 (ASSEM 2105)</strong></td>
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<td>John Martin Second Timer Award Winner An Ungrading Approach to A&amp;P Courses</td>
<td>HAPS Leadership Academy 2022 and Beyond</td>
<td>Sponsored by ElevateU Best Practices in the Use of Animations to Help Students Learn Difficult Topics in Anatomy &amp; Physiology</td>
<td>Getting Started with Discipline-Based Education Research (DBER) in your A&amp;P Classroom</td>
<td>Organizing Your Learning Management System (LMS) for Student Success in Anatomy and Physiology</td>
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<tr>
<td><strong>A106 (ASSEM 2106)</strong></td>
<td><strong>A206 (ASSEM 2106)</strong></td>
<td><strong>A306 (ASSEM 2106)</strong></td>
<td><strong>A406 (ASSEM 2106)</strong></td>
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<tr>
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| A107 (ASSEM 2107)  
Sponsored by Global Anatomix  
Use of Novel and Preservation and Contrast Agents in Anatomy and Surgery Training | A207 (ASSEM 2107)  
John Martin Second Timers Award Winner  
An Engaging Activity for Human A&P Laboratory | A307 (ASSEM 2107)  
Gail Jenkins Teaching & Mentoring Award Winner  
Lights, Camera …… Physiological ACTION! Creating Skits for Better Engagement and Understanding in the A&P Classroom! | A407 (ASSEM 2107)  
Motivating Learners Using Case Studies and Tackling Group Work | A507 (ASSEM 2107)  
Sponsored by Pearson  
Strategies for Maximizing A&P Labs Using Digital Tools |
| A108 (ASSEM 2108)  
A Closer Look at the Metabolism of Microbial Communities, with a Microbiome Focus | A208 (ASSEM 2108)  
Sponsored by Science Interactive  
The Future of Online Lab Learning: Experience the Cloud | A308 (ASSEM 2108)  
Sponsored by Codon Learning  
STOP, DROP, and ROLL with TBLs (Team Based Learning) | A508 (ASSEM 2108)  
Co-Creation of Reusable Review Material with Students |
| A109 (ASSEM 2109)  
Equitable Course Design for an Anatomy Course | A209 (ASSEM 2109)  
Academic Change: Reshaping Undergraduate Education and Overcoming Obstacles by Integrating Culture-Based Learning | A309 (ASSEM 2109)  
Take a Breath: Teaching Strategies for the Respiratory System | A409 (ASSEM 2109)  
Sponsored by HAPS  
HAPS Book Club | A509 (ASSEM 2109)  
HAPS Conference Travel Award Winner  
Head, Shoulders, Knees & Toes - A Regional Approach to Bone Markings & Muscles |
| A110 (MEDLL 3320)  
The Art of Becoming a Future Dentist: Success in the Dental Anatomy Laboratory | A210 (MEDLL 3320)  
Using Tumescence to Facilitate Dissection in the Cadaver Lab | A310 (MEDLL 3320)  
Our Amazing Skeleton | A410 (MEDLL 3320)  
Designer Dissections Demonstration: Utilizing Near-Peer Mentoring in the Anatomy Laboratory to Demonstrate Anatomical Regions Pertaining to Specialties of Interest | A510 (MEDLL 3320)  
Designer Dissections Demonstration: Utilizing Near-Peer Mentoring in the Anatomy Laboratory to Demonstrate Anatomical Regions Pertaining to Specialties of Interest |
| A111 (Terry 1596)  
Scientific Manuscript Writing, Part 1: Speaker Presentation and Quiz/ Questions & Answers | A211 (Terry 1596)  
Scientific Manuscript Writing, Part 2: Round Table Discussions | A311 (Terry 1596)  
Teaching the Teaching Assistants | A411 (MEDLL 3322)  
Surface Anatomy of the Human Brain: How to Get it Right When Most of us are Getting it Wrong | A511 (Terry 1596)  
HAPS Conference Travel Award Winner  
“I Really Enjoy These Annotations:” Examining Primary Literature Using Collaborative Annotation |
# WORKSHOPS-AT-A-GLANCE SUNDAY (B) – May 29, 2022

<table>
<thead>
<tr>
<th>Session 1</th>
<th>Session 2</th>
<th>Session 3</th>
<th>Session 4</th>
<th>Session 5</th>
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**B101 (ASSEM 2101)**  
Can We Keep Them? Yes, We Can – Motivation as an Indicator of Student Retention

**B201 (ASSEM 2101)**  
Cooperative Group Quizzes: An Easy First Step Towards Student-Centered Learning

**B301 (ASSEM 2101)**  
Sponsored by Carolina Distance Learning  
Online A&P Labs with Hands-On Lab Kits

**B401 (ASSEM 2101)**  
Structure is to Function: The Anatomy of Post-Baccalaureate Programs and the Services They Provide for URM Students

**B501 (ASSEM 2101)**  
Decolonizing A&P: Dismantling the Curriculum for the Inclusion of all Students

**B102 (ASSEM 2102)**  
Sponsored by HAPS  
Accommodations for Student Success in the A&P Lab

**B202 (ASSEM 2102)**  
Lessons Beyond Connective Tissue: Fostering Student Connections and Inspiration through an Interinstitutional Collaboration on Art and Anatomy

**B302 (ASSEM 2102)**  
Sponsored by HAPS Conference Travel Award Winner  
The Presence of a Peer-Learning Assistant in the Classroom: An Opportunity to Build an Inclusive A&P Learning Community

**B402 (ASSEM 2102)**  
The Cardiac Cycle - Five Hearts on a Whiteboard

**B502 (ASSEM 2102)**

**B103 (ASSEM 2103)**  
What Else Can I do to Improve my Grade? – On Helpful Instruction Tools that Promote Independent Learning in a Face-to-Face Anatomy and Physiology Course

**B203 (ASSEM 2103)**  
Transforming a Traditional Human Physiology Course into a Flipped Learning Environment

**B303 (ASSEM 2103)**  
Sponsored by ADInstruments  
Accidentally Prepared: How Redesigning our Lab Courses for Active Learning Allowed Seamless Transitions Between Instructional Modalities

**B403 (ASSEM 2103)**  
Creating an A&P Boot Camp Program to Encourage Transformational Learning

**B503 (ASSEM 2103)**  
Sponsored by 3D Organon  
3D Organon Anatomy

**B104 (ASSEM 2104)**  
Marieb, Hoehn, and Haynes Award for Diversity, Equity, and Inclusion Winner  
How to Support Non-Traditional Students in Your A&P Classes

**B204 (ASSEM 2104)**  
Sponsored by HAPS  
HAPS Exam Program 2022 Update: Development of the HAPS Physiology Learning Outcomes, and the Latest Information About the HAPS Comprehensive A&P and Stand-Alone Anatomy Exams

**B304 (ASSEM 2104)**  
Sponsored by HAPS  
HAPS Teaching Tips - Learn about this A&P Gold Mine  
Misguided Medicine – Applying A&P to Wacky Medical History

**B404 (ASSEM 2104)**  
HAPS Conference Travel Award Winner  
Helping Students See the Forest: An Infographic Exercise for Gross Anatomy

**B504 (ASSEM 2104)**

**B105 (ASSEM 2105)**  
Improving Adolescent Sexual Health Literacy: A Service-Learning Project

**B205 (ASSEM 2105)**  
Sponsored by McGraw Hill  
Hybrid – Online – F2F? The A&P Digital Suite Has You Covered

**B305 (ASSEM 2105)**  
Upper Extremity Lymphatic Drainage: A Clinical Correlation

**B405 (ASSEM 2105)**  
Pressures and Flow in Respiration

**B505 (ASSEM 2105)**

**B106 (ASSEM 2106)**  
Sponsored by ADInstruments  
Basics of Data Acquisition - Settings, Calculations, Common Questions and More

**B206 (ASSEM 2106)**  
Sponsored by HHMI Biointeractive  
Exploring the Immune System Using Mini Cases and HHMI Biointeractive

**B306 (ASSEM 2106)**  
Sponsored by HHMI Biointeractive  
Applying Instructional Scaffolding to Enhance Critical Thinking

**B406 (ASSEM 2106)**  
Sponsored by BIOPAC Systems  
Social Support and Stress: Teaching Students About Affect and Emotion

**B506 (ASSEM 2106)**  
continued on next page
## WORKSHOPS-AT-A-GLANCE SUNDAY (B) – May 29, 2022 (continued)

<table>
<thead>
<tr>
<th>Session 1</th>
<th>Session 2</th>
<th>Session 3</th>
<th>Session 4</th>
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</tbody>
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| B107 (ASSEM 2107) **Sponsored by Pearson**  
Concept Mapping: A Pedagogical Tool That Increases Motivation and Stimulates Active Learning | B207 (ASSEM 2107)  
Teaching Visual Literacy Skills: A Conversation | B307 (ASSEM 2107)  
Understanding Group Dynamics: The Foundation of Teamwork | B507 (ASSEM 2107)  
Meet the TWELVE Characters in the Kingdom of Academia |
| B108 (ASSEM 2108)  
The “Amazing” Anatomist – Incorporating “Marvel”-ous Superheroes into Your Anatomy Classroom | B208 (ASSEM 2108)  
Interventions in Sexual Health | B308 (ASSEM 2108)  
Demystifying Through Wonder: Teaching in Synch with the Basal Ganglia | B408 (ASSEM 2108)  
Focus on The Concept: Novel Ways to Explain Shared Concepts in Body Systems | B508 (ASSEM 2108)  
Focus on The Concept: Novel Ways to Explain Shared Concepts in Body Systems |
| B109 (ASSEM 2109)  
Physiology of Coronary Flows as Governed by Hydraulic Principles and Illustrated with Clinical Examples | B209 (ASSEM 2109)  
HAPS Conference Travel Award Winner  
Actions Speak Louder Than Words: Using Gestures to Teach Cranial Nerves | B309 (ASSEM 2109) **Sponsored by Anatomy in Clay® Learning Systems**  
Kinesthetic Anatomy: Building The Leg In Clay | B409 (ASSEM 2109)  
How to Transition from Didactic Teaching to Active Learning? | B509 (ASSEM 2109)  
The Biology of Sex: Myths and Facts REMIX! |
| B110 (Terry 1596)  
Writing Application Test Questions | B210 (MEDLL 3320)  
HAPS Conference Travel Award Winner  
Hands-On Activities for Cellular Physiology: How Your Students can Engage Each Other in Mastering these Concepts for Various Organ Systems | B310 (MEDLL 3320)  
Oh Wait, I Don’t Know This! Use Three Drawings for Self-Assessing Anatomical Knowledge | B410 (MEDLL 3320)  
A Simple (and Effective) Way to Introduce the Design and Logic of Ganglia-Based Nervous Systems | B510 (MEDLL 3320) |
| B211 (Terry 1596)  
Marieb, Hoehn, and Haynes Award for Diversity, Equity, and Inclusion Winner  
Low Grades In A&P and Interventions for Better Student Outcomes | B311 (Terry 1596)  
The Physician in the Kitchen – Leading with Nutrition in Academic Medicine | B411 (Terry 1596)  
Building an Anatomy Educational Outreach Program (AEEP) | | |

Annual Conference - Ft. Lauderdale, FL | HAPS 2022 | Page 85
### Workshop Abstracts

**Session 1: Saturday, May 28 from 8:30 – 9:30 am**

**A101 (ASSEM 2101) - Build Your Teaching Portfolio by Writing and/or Reviewing for the HAPS Educator**

Jacqueline Carnegie, University of Ottawa, jcarnegi@uottawa.ca, Brenda del Moral, Edgewood College, bdemoral@edgewood.edu, Carol Britson, University of Mississippi, cbritson@olemiss.edu, Elizabeth Granier, St. Louis Community College, egranier@stlcc.edu, Tracy Ediger, Georgia State University, tediger@gsu.edu

*Sponsored by HAPS*

Would you like to explore how your successes and challenges as an A&P instructor can be published in the HAPS Educator, be it a research project, a teaching innovation, or a short review of a current A&P topic? Join us for this workshop where we will investigate the submission and review process, both from an author’s perspective and that of a reviewer. The HAPS Educator is published 3 times annually, has a short turn-around time, provides guidance as you revise your manuscript in preparation for publication, links each article with a DOI, and is indexed with the Education Resource Information Centre (ERIC).

**A102 (ASSEM 2102) - Improving Closed-Response Assessment Items with HHMI BioInteractive**

Elizabeth Co, Boston University, elizabethcco@gmail.com

*Sponsored by HHMI BioInteractive*

Over the last three academic years, many of us have reinvented (sometimes repeatedly) aspects of our teaching. Perhaps no part of our teaching has required as much revision as assessment. Now is a fantastic time to restock or establish a new trove of high-quality assessment questions that target critical thinking (higher-level cognitive skills). We will guide participants through developing effective items and critiquing them based on outcome alignment, accessibility, and inclusive language. Participants will walk away with an item checklist and a handbook of resources to continually improve their assessment practices.

**A103 (ASSEM 2103) - Health Effects of Air Pollutant, PM2.5. A Highly Relevant Topic for Your A&P Course!**

Sandy Lewis, Pierce College, proflewis66@gmail.com

This workshop presents new research on the serious adverse health effects from exposure to air particulate matter less than 2.5 microns in diameter (PM2.5). This global health issue is a great topic to illustrate the relationship between body systems. PM2.5 is so tiny that it is not cleared by the mucociliary escalator of the upper respiratory tract, as are PM10 and larger particulates. PM2.5 contains multiple toxins and carcinogens. They are moved through the alveoli and associated vascular endothelium, and are carried everywhere blood goes. My research on PM2.5 and cancer incidences in the Alaskan interior will also be shared.

**A104 (ASSEM 2104) - Building Human Joints... On a Budget!**

Molli Crenshaw, Texas Christian University, molli.crenshaw@tcu.edu

While it is important for students to spend time learning joint anatomy in lab, models of human joints are costly and take up storage space. I have written a series of activities where students learn to assemble the components of human joints using the bones they study in the labs, and some inexpensive crafting materials. I will also demonstrate how these labs can be modified for an online course, when students do not have access to life-size bones. Attendees will have the opportunity to complete these lab activities during the workshop and will be provided with copies of the exercises I have written to go along with these labs.
A105 (ASSEM 2105) - An Ungrading Approach to A&P Courses
Staci Johnson, Southern Wesleyan University, sjohnson@swu.edu

John Martin Second Timers Award Winner

Alternative grading strategies are gaining more attention but instructors of STEM content courses often struggle to implement such a strategy. Various types of barriers may exist that prevent implementation of this innovative approach. During academic year 2021-22, I implemented an ungrading/specifications grading approach to an anatomy & physiology I/II course sequence. This workshop will describe the process of implementing this alternative grading scheme, benefits that were realized by both students and instructor, and adjustments that were needed and applied between the 2 semesters of the sequence.

A106 (ASSEM 2106) - Reimagining the Nervous System: Is it Time to Embrace and Teach Complexity?
Jacqueline Van Hoomissen, University of Portland, vanhoomi@up.edu

The purpose of the workshop is to provide examples of how instructors can help students develop a deeper understanding of the nervous system by embracing "complexity" as a framework for teaching. Complexity as a teaching framework is rooted in the recognition that the nervous system is a complex adaptable system in which a collection of "parts" interact within a specific context and adapt to each other over time. During the workshop participants will be provided with examples of how to use this framework when covering the nervous system; from the neuron doctrine, to glial cell function, to synaptic transmission, to 3D axon shape and more.

A107 (ASSEM 2107) - Use of Novel and Preservation and Contrast Agents in Anatomy and Surgery Training
Scott Echols, Scarlet Imaging, scott@scarletimaging.com

Sponsored by Global Anatomix

This presentation introduces a novel preservation process with or without the use of novel contrast agents to produce cadavers for anatomical and surgical training. The newly preserved cadavers have been shown to last over a year with simple refrigeration, can be utilized with all major forms of imaging (X-ray, CT, MRI, ultrasound, photography, histology), maintain normal tissue handling characteristics (color, mobility, surgical responsiveness, etc) and can be used for bleeding models using real or artificial blood products. Further, there is no formaldehyde used in the process making the cadavers safer for the environment and handlers compared to traditional preserved specimens.

A108 (ASSEM 2108)- A Closer Look at the Metabolism of Microbial Communities, with a Microbiome Focus
David Temme, University of Utah, temme@biology.utah.edu

Most introductions to biological communities focus on arrays of multicellular organisms that are either producers or consumers arranged into food chains/webs, with some decomposers thrown in to form loops of nutrient cycling. This model, however, does not directly translate to microbial communities. For one, microbes don't typically steal biological molecules via feeding on another organism, but instead form feeding chains/webs centered around consuming “waste products”. The focus here will be on illustrating the working nature of the various forms of waste-based interactions among microbes, and then point to how such understanding applies to a “healthy” microbiome.

A109 (ASSEM 2109) - Equitable Course Design for an Anatomy Course
Kjerstin Owens, Bemidji State University, kjerstin.owens@bemidjistate.edu

This interactive workshop will discuss the redesign of a 3000-level Human Anatomy course to be more equity-based. Practices such as a “Who’s in the Room?” survey, replacing high-stake assessments with authentic assessments, scaffolding learning, learning journals, and competency-based lab practicals were used to provide a more equitable experience that emphasized a growth mindset. This course design allowed students to learn in a more authentic way while increasing the classroom and lab experience. Come ready to share ideas!
A110 (MEDLL 3320) - The Art of Becoming a Future Dentist: Success in the Dental Anatomy Laboratory
Adalyne Singh, Nova Southeastern University, as1616@nova.edu, Amanda Friedman, Nova Southeastern University, af1863@nova.edu, Cheryl Purvis, Nova Southeastern University, cpurvis@nova.edu, Gibran Mirza, Nova Southeastern University, gm1335@nova.edu
Fine motor skills, attention to details, and artistic ability are critical skills required in dentistry. At NSU College of Dental Medicine, basic science courses with a laboratory component, like gross anatomy, histology, and neuroanatomy, give students an opportunity to learn fundamental hand-eye coordination and practice manual dexterity on cadaveric specimens. This workshop will give participants an opportunity to see our state-of-the-art anatomy laboratories. Interested participants are also welcome to tour our Dental Simulation Laboratory where students concentrate on essential skills for the field of dentistry.

A111 (Terry 1596) - Scientific Manuscript Writing, Part 1: Speaker Presentation and Quiz/Questions & Answers
Ernest Talarico, Jr., Tan Tao University/Methodist Hospitals, talaricojrernest@gmail.com
The purpose of this workshop (Part 1) is to understand how to construct a scholarly manuscript and complete the peer-review process. Participants will: (1) Define “Impact Factor” and describe how it can be used; (2) Define the types of manuscripts; (3) Describe the 16 components of a manuscript and list which are the most important; (4) Describe what “words” comprise a good cover letter addressed to the chief editor; (5) Describe how (and the format) the authors should respond to the Referee’s Comments. This will set the stage for collaborative, educational/scientific projects in Part 2 of this workshop.

Session 2: Saturday, May 28 from 9:45 – 10:45 am

A201 (ASSEM 2101) - Diversity Beyond Anatomy: Introducing Concepts Through Real-Life Disease Management Activities
Michael Alexander, Thomas Jefferson University, East Falls, michael.alexander@jefferson.edu
Undergraduate human anatomy and physiology course curricula provide educational opportunities for pre-healthcare professionals to gain insight into human disease and common treatments. However real-life disease management requires providers to recognize and consider patient diversity; failure to do so underlies inequality in health outcomes, particularly among minority and underrepresented populations. Early introduction of these concepts to A&P students is important. In this workshop, I will provide vignettes and share customizable blueprints for activities that explore diversity, equity, and inclusion through disease management, providing robust opportunities for current instructors to augment foundational topics currently covered in the classroom.

A202 (ASSEM 2102) - Starting from Scratch: Creation and Implementation of a Virtual Cadaver Lab Experience
Laura Kabiri, Rice University, laura.kabiri@rice.edu
Sam Drog Technology in the Classroom Winner
Virtual cadaver technology can be used to create a cost-effective, engaging, and versatile undergraduate cadaver lab experience. From budgets and facilities to assessments and curricula to pandemics and pivots, I will discuss the process of creating and implementing our virtual undergraduate cadaver lab now delivered in fully online, dual, and in-person formats. Benefits and limitations of the technology will be discussed along with student feedback. Workshop participants will also experience a sample lab activity as well as a “medical mystery” assignment designed to peak curiosity, enhance application, and develop diagnostic skills in STEM students.
A203 (ASSEM 2103) - An Introduction to Guided Inquiry Learning for Anatomy and Physiology Educators

Ron Gerrits, Milwaukee School of Engineering, gerrits@msoe.edu, Kerry Hull, Bishop’s University, khull@ubishops.ca, Murray Jensen, University of Minnesota, msjensen@umn.edu

The traditional lecture approach to teaching is slowly being replaced by more evidenced based instructional methods. This workshop will focus on guided inquiry learning, a teaching technique that requires students to work in groups to solve questions ranging from direct to challenging. We will examine both student and instructor roles during guided inquiry lessons and example curriculum materials will be provided. This presentation will be conducted by members of the Community College Anatomy and Physiology Education Research project who will bring first-hand experience to this workshop.

A204 (ASSEM 2104) - Cadavers to Computers – Past, Present, Future: Reimaging Our First Patient

Adalyne Singh, Nova Southeastern University, as1616@nova.edu, Maria-Teresa De Leon, Nova Southeastern University, matideleon14@gmail.com, Amanda Friedman, Nova Southeastern University, af1863@nova.edu, Cheryl Purvis, Nova Southeastern University, cpurvis@nova.edu

When students enter medical school, working with cadavers is often considered their first patient encounter and can be seen as symbolic for experience with future patients (Franchi, 2020). The pandemic required us to quickly convert from hands-on in-person teaching to online platforms for anatomy content delivery. Our workshop will emphasize strengths, weaknesses, and opportunities of both in-person and virtual learning experienced during the pandemic. We will investigate the traditions, peculiarities, and future of clinical anatomy in an attempt to alleviate ongoing challenges.

A205 (ASSEM 2105) - HAPS Leadership Academy 2022 and Beyond

Kyla Ross, Georgia Institute of Technology, kyla.ross@gatech.edu, Elizabeth Pennefather-O’Brien, Medicine Hat College, eobrien@hapsconnect.org

Sponsored by HAPS

This spring, HAPS launched a professional development program designed to support HAPS members as they transform their respective classrooms and institutions through modeling and practicing inclusive excellence. The inaugural program aimed to equip participants with the skills of self-awareness, unconscious bias mitigation, team science, and emotional intelligence. Participants engaged in reflective practices of dialogue, journaling, and storytelling. Join us for a workshop session as we review the structure of the program, listen to the stories of participants, share lessons learned, and turn our attention to future HAPS professional development programming.

A206 (ASSEM 2106) - The Lab is Always Open

Michael Koot, McGraw Hill, michael.koot@mheducation.com

Sponsored by McGraw Hill

Anatomy & Physiology Revealed (APR) has helped students for more than 18 years with virtual dissection, 3D rotatable and anatomical models, animations, histology and imaging. Instructors can now build their own customized assignments in any A&P course using all the content from APR. Paired with the new Virtual Labs, your entire course is covered. This session will show you how to build your own customized assignments; highlight the robust reporting features and discuss the flexibility of using these tools for in-person, hybrid, or online courses. Students can now access lab resources anytime, anywhere for success in your course!
A207 (ASSEM 2107) - An Engaging Activity for Human A&P Laboratory
Ghanshyam Heda, Mississippi University For Women, gdheda@muw.edu
John Martin Second Timers Award Winner
Human Anatomy & Physiology (Hu A&P) is a structure and terminology intensive course. This course is generally required by students who are planning a career in health-related sciences specifically in nursing profession. Drawing, coloring, and labeling of anatomical organs and structures can enhance the learning process of students especially at the high school and undergraduate levels. This workshop is aimed to introduce a simple learning method where students can take part either individually or in groups using traditional blackboard, transparencies, and an overhead projector under the dim light. This teaching practice can be useful in remembering anatomical structures with complex terminology.

A208 (ASSEM 2108) - The Future of Online Lab Learning: Experience the Cloud
Duane Cagle, Science Interactive, dcagle@scienceinteractive.com
Sponsored by Science Interactive
Attendees will come away from this presentation with an extensive understanding of how our award-winning learning platform, the SI Cloud, can be used to design and facilitate online lab science courses. Our SI Cloud is the only learning platform built by science instructors, for science instructors. We provide instructors with full control over their online classroom, and with our robust library of tactile and digital experiments, we can help you teach the scientists of tomorrow, no matter where they are today.

A209 (ASSEM 2109) - Academic Change: Reshaping Undergraduate Education and Overcoming Obstacles by Integrating Culture-Based Learning
Rebecca Romine, University of Hawaii - West Oahu, rromine@hawaii.edu
Students from Historically Marginalized Communities (HMC) perform more poorly in STEM than their counterparts. 89% of the UH – West O’ahu (UHWO) student body identify as from HMC, with 30% of students identifying as Native Hawaiian and Pacific Islander (NHPI). Research conducted at UHWO in an Introductory Human A&P course disaggregated student success by demographics. Classification within HMC, identifying as NHPI, and living in specific geographical locations on O’ahu had statistically significant relationships with student success. To increase success and persistence, reshaping of A&P curriculum is underway. This workshop presents reflections on advancing academic change through integrating culture-based learning in A&P.

A210 (MEDLL 3320) - Using Tumescence to Facilitate Dissection in the Cadaver Lab
Mario Loomis, Sam Houston State University, mario.loomis@shsu.edu
The word, tumescence, when used in the context of surgery or dissection technique, refers to the active introduction of fluid into interstitial spaces using a blunt-tipped cannula. We utilize this technique prior to cadaver dissection to improve the quality and speed of dissections while increasing the appreciation of natural tissue planes. In this workshop, we will go over the logistics of using tumescence during cadaver dissection and how it can help students preserve delicate structures and appreciate three-dimensional interrelationships, especially in difficult areas such as the hand and foot.

A211 (Terry 1596) - Scientific Manuscript Writing, Part 2: Round Table Discussions
Ernest Talarico, Jr., Tan Tao University/Methodist Hospitals, talaricojrernest@gmail.com
Participants will select which round table topics and a facilitator will lead topic discussion. The goal is to facilitate brain-storming of ideas for successful, scholarly collaboration and publication. Near to the end of this session, facilitators will present ideas/details of their round table to the entire group - as a wrap up activity. Round table participants will depart with the ideas and contact information of their group with the agreement of working with the group on at least one project to its successful conclusion. Project outcomes are expected to be presented at HAPS 2023.
Session 3: Saturday, May 28 from 11:00 am – 12:00 pm

A301 (ASSEM 2101) - Incorporating Think-Pair-Share into Instruction: A Review of the Literature
Anthony Edwards, Tarleton State University, aedwards@tarleton.edu
In this engaging and interactive workshop, participants will learn about think-pair-share as an evidence-based instructional practice (EBIP) and its impact on engagement, achievement, and completion. Participants will also develop a toolkit of ways to incorporate the EBIP into their instruction.

A302 (ASSEM 2102) - The Covid-Proof Anatomy Lab
Ors Adam, 4D Interactive Anatomy, ors@4danatomy.com
Sponsored by 4D Interactive Anatomy
Join our interactive workshop to dissect real specimens, scanned with 4D Interactive Anatomy's state-of-the-art technology. Explore over 30 multi-layer dissections, bones, pathologies, etc. with our help in an intuitive way. Learn how institutions all around the world use our platform to enhance their anatomy education. No formaldehyde needed. Verified pandemic-proof. Attendees can sign up for an exclusive, institution-wide free trial to try our platform at their university or college.

A303 (ASSEM 2103) - Problem Based Learning: Development of a Student-Centered Facilitation Approach
Samiksha Prasad, Nova Southeastern University, sprasad@nova.edu, Chasity O’Malley, Nova Southeastern University, comalle0@nova.edu
Problem Based Learning (PBL) involves students participating in an engaged manner in their education. Through PBL, students indulge actively in their learning, requiring critical thinking and emphasis on the students' explorations of their own attitudes and values. This workshop explores the different facilitation approaches which can be practiced by educators for an effective active learning session. Participants in this workshop will gain an understanding of the roles and facilitation styles, as well as assessment strategies for PBL. This workshop will go over details related to PBL and give tips for facilitators to encourage successful facilitation.

A304 (ASSEM 2104) - Designer Dissections: The Second Implementation of Near-Peer Mentoring in Anatomical Sciences with a Focus on Specialties in Medicine
Drew Baeza, Nova Southeastern University, db2612@mynsu.nova.edu, Georgina Tiarks, Nova Southeastern University, gt446@mynsu.nova.edu, Emilia Watts, Nova Southeastern University, ew831@mynsu.nova.edu, Adalyne Singh, Nova Southeastern University, as1616@nova.edu, Cheryl Purvis, Nova Southeastern University, cpurvis@nova.edu
“Designer Dissections” is a novel approach to teaching anatomical sciences, which was first implemented in the summer of 2021 at Nova Southeastern University. It focuses on the idea that students expressing an interest in a specific medical specialty can benefit greatly from near-peer mentoring while performing human cadaveric dissections in associated anatomical regions. Near-peer mentoring involves an upperclassman with dissection experience demonstrating and guiding their peers. This process maximizes student engagement and promotes a collegial learning environment. In our previous study, “Designer Dissections” increased student interest and enthusiasm, while providing valuable insight into a variety of medical specialties.
A305 (ASSEM 2105) - Best Practices in the Use of Animations to Help Students Learn Difficult Topics in Anatomy & Physiology
Derek Perrigo, ElevateU, derek@elevateu.io
**Sponsored by ElevateU**
It is our intention to share information about the power of animations in teaching Anatomy & Physiology. At the end of the presentation I will do a short introduction of Blausen Animations and how they can be incorporated into a classroom. We will cover: 1. Recent research findings on the use of animations to teach complex topics. 2. Examples of new state-of-the-art animations used for teaching Anatomy & Physiology. 3. Best practices in incorporating animations inside and outside of the classroom. 4. Any/all of your questions.
New animation example: https://youtu.be/Jm8vAPGWris

A306 (ASSEM 2106) - Ideas for Teaching Diversity of Sex and Gender
Juanita Jellyman, California State Polytechnic University, Pomona, jkjellyman@cpp.edu, Anya Goldina, Elizabethtown College, goldinaa@etown.edu
This workshop will discuss accurate and inclusive teaching of sex and gender in anatomy and physiology classrooms. Suggestions for active learning activities will be provided.

A307 (ASSEM 2107) - Lights, Camera…..Physiological ACTION! Creating Skits for Better Engagement and Understanding in the A&P Classroom!
Shannon Kispert, Webster University, sekispert@gmail.com
**Gail Jenkins Teaching & Mentoring Award Winner**
This workshop will center around active learning strategies for the A&P classroom, specifically skits where students can act-it-out! During this session, you will learn how to workflow skits to implement in your classroom that are efficient and cost-effective, utilizing your students and everyday materials such as posterboard and notecards. We will work in small groups to identify the most challenging concepts in your classroom and how to create a scenario where your students can actively participate in the physiology! You will also learn some tried-and-true skits from my own classroom which you can “plug-and-play” into yours!

A308 (ASSEM 2108) - Designing and Assessing High Structure A&P Courses: What, Why, and How
Justin Shaffer, Colorado School of Mines, jshaffer@mines.edu
**Sponsored by Codon Learning**
High structure courses are designed to prepare students to be actively engaged in the learning process via pre-class content acquisition and assessment, in-class active learning and problem solving, and after-class review. Significant literature has demonstrated high structure courses in a variety of STEM disciplines to be efficacious over traditional didactic courses as students show increased performance, students feel more belonging, and achievement gaps are narrowed or closed. You will leave this workshop with the knowledge, skills, and references necessary to design and assess your own high structure course from scratch or to modify existing courses into high structure courses.

A309 (ASSEM 2109) - Take a Breath: Teaching Strategies for the Respiratory System
Karen McMahon, The University of Tulsa, 16kmcm@gmail.com, Ewa Gorski, Community College of Baltimore County, egorski@ccbcmd.edu, Robin McFarland, Cabrillo College, romfarl@cabrillo.edu
Presenters share a variety of active learning exercises for the respiratory system that encourage students to interact with A&P content in ways that enhance their understanding and retention. These exercises can be used for in-class activities or online teaching in group or individual study projects. The common goal is to get students actively involved in the learning process. Join us to get some great teaching ideas for the respiratory system.
A310 (MEDLL 3320) - Our Amazing Skeleton
Mark Nielsen, University of Utah, marknielsen@bioscience.utah.edu

What do we teach our students about bone tissue? Undoubtedly, we teach them about this incredible biological composite that is both strong and resilient. It is the mobile framework of our body that also protects many delicate organs. It is a storehouse of calcium that is essential for muscle cells, neurons, and other cells to work properly. But, bone is also a major communicator with other organs. This presentation will explore the ways bone communicates with the brain, fat cells, muscles, kidneys, testes, and the gut microbiome as it is working behind the scenes in our daily activities.

A311 (Terry 1596) - Teaching the Teaching Assistants
Amberly Reynolds, Sam Houston State University, amberly.reynolds@shsu.edu

Ensuring teaching assistants are appropriately providing information to student-peers is as important as growing the teaching skills of those with interest in being a TA. This workshop will explore best practices, methods, and personal experiences for teaching the teaching assistants!

Session 4: Saturday, May 28 from 1:15 – 2:15 pm

A401 (ASSEM 2101) - New from Visible Body: Biology, 3D Flashcards, and LMS Integration — Oh My!
Krystylynn Fusaro, Visible Body, krystylynn.fusaro@visiblebody.com, Desiree Hassan, Visible Body, desiree.hassan@visiblebody.com, Mary Ness, Visible Body, mary.ness@visiblebody.com

Sponsored by Visible Body

Come and see all the exciting new content from Visible Body in 2022. Join our interactive workshop where you will learn how to use Visible Body’s homework platform, Courseware, to focus and engage your students. You will also get a first look at Visible Body’s new Introductory Biology immersive content, Canvas assignment linking and grade sync, and 3D flashcards. The best part? You’ll get hands-on with the virtual models and see how easy it is to incorporate the content into your labs, lectures, homework and/or online courses.

A402 (ASSEM 2102) - Enhancing Your Supplemental Instruction Program for A&P
Carol Britson, University of Mississippi, cbritson@olemiss.edu

Peer-led supplemental instruction sessions have been used within A&P courses at my institution since 2011. While attendance is voluntary, a vibrant selection of activities has led to attendance by up to 40% of enrolled students, and attendees experience an overall 13% increase in the course grade. HAPS Teaching Tips that are physically engaging, connect with difficult topics, and are little to no cost are prioritized. New activities that can be modified for any topic [e.g, speed dating, (A&P)ictionary, Game of (A&P)hones, Headba(p)nds, and Become the Concept Map] are regularly used. In this workshop I will show you how I develop the SI curriculum, work with SI leaders to create positive student experiences, and modify activities for in-person or remote engagement. We’ll also play a game of A&P speed dating.

A403 (ASSEM 2103) - Beyond Anatomy Content: Teaching Students How to Study in Anatomy Courses
Casey Boothe, University of Mississippi Medical Center, craborn@umc.edu

Have you heard students say, “But I studied so much for this test! I don't know how I did so poorly!” In Master’s level Gross Anatomy and Histology courses at the University of Mississippi Medical Center, students are introduced to effective study methods using self-paced online modules that provide students the opportunity to learn about and practice implementing research supported study strategies. In this workshop, participants will work through an example self-study module and then discuss the creation and implementation of self-study modules to introduce students to effective study strategies in anatomy courses.
A404 (ASSEM 2104) - Anatomy Cruise – A Pun-tastic and Metaphorical Journey Through the Body
Jeremy Grachan, The Ohio State University, grachan.1@osu.edu
Join Skipper Jeremy as he takes you on a journey through the beauties and wonders of the human body. Much like Disney Park’s ride Jungle Cruise, this adventure will be full of puns, jokes, and metaphors to help you make your classes a fun adventure for all your students. Besides your skipper sharing all of his fun approaches, the group can share their own creative ideas as we visit the various systems of the human body. The goal of the journey is to provide you with different examples that you can incorporate into your courses.

A405 (ASSEM 2105) - Getting Started with Discipline-Based Education Research (DBER) in your A&P Classroom
Justin Shaffer, Colorado School of Mines, jshaffer@mines.edu
Whether you are a novice or have experience with educational research, this workshop is designed for you to design a research study that you can carry out at your home institution. Specifically, by the end of this workshop you should be able to: • Explain the key factors to keep in mind when designing an educational research study. • Identify positive and negative components of educational research studies. • Design an educational research study that can be carried out at your home institution.

A406 (ASSEM 2106) - From Secondary Data to Randomized Control Trials: Challenges in Anatomy Educational Research
J. P. Swigart, University of Illinois at Urbana-Champaign, swigart@illinois.edu
The field of Scholarship of Teaching and Learning (SoTL) is rapidly developing, and many instructors of anatomy and physiology are eager to conduct their own projects. This workshop will explore common challenges in A&P study design and data acquisition with personal examples of success and failure. Sample topics include departmental politics, IRB process, large datasets, small datasets, and how to pivot a research project due to a global pandemic.

A407 (ASSEM 2107) - Motivating Learners Using Case Studies and Tackling Group Work
Nichole Warwick, Clatsop Community College, nwarwick@clatsopcc.edu
Helping students see relevance to material they are learning and motivating their interest impacts retention and learning. Integration of group work is challenging due to motivation and interpersonal communication skills, yet is vital to building a learning community and helping students develop a sense of belonging. Diabetes Mellitus (DM) is a metabolic condition most prevalent in China, India, and the US. This disease impacts all tissues and body systems. Therefore, it makes an excellent model for students to compare normal A&P to disease processes and by looking at DM, students can start to explore relevance of material to connect to a greater picture.

A408 (ASSEM 2108) - STOP, DROP, and ROLL with TBLs (Team Based Learning)
Lola Smith, The Pennsylvania State University DuBois Campus, lmd13@psu.edu
STOP leaving that beloved case study all alone. Incorporate it into a Team Based Learning (TBL) Exercise. TBLs are a great way to engage students and provide a little more depth to specific content. They provide student interactions with content material, engagement with members of a team, and, this method, provides an element of mystery using scratch off cards to answer the team quiz questions. DROP your students a line about the TBL in your course management system. Provide them with an outline of the TBL activity and links to the required preparatory material. Then, ROLL with the TBL in the classroom (virtual or in-person). This workshop will provide a method for implementing the roll and will provide awareness of possible misHAPS (ha ha). Participants in this workshop will learn about TBLs by participating in one.
A409 (ASSEM 2109) - HAPS Book Club
Jacqueline Van Hoomissen, University of Portland, vanhoomi@up.edu, Burhan Gharaibeh, University of Pittsburgh, bgharaibeh@hapsconnect.org, Jennifer Giuliani, Camosun College, jgiuliani@hapsconnect.org, Patrick Cafferty, Emory University, pcafferty@hapsconnect.org, Lawrence Young, lyoung@hapsconnect.org, Laurel Sloan, SUNY Delhi, lsoane@hapsconnect.org

Sponsored by HAPS

Calling all HAPS Book Club participants and those interested in joining the community! The HAPS Book Club, established in the fall of 2020, brings the HAPS community together for shared professional learning and community building. Participants meet monthly online to discuss popular press books that have relevance for our work as educators and scientists. Come join us in this workshop to learn more about the book club and connect with participants in person! Past attendees and newcomers are welcome.

A410 (MEDLL 3320) - Designer Dissections Demonstration: Utilizing Near-Peer Mentoring in the Anatomy Laboratory to Demonstrate Anatomical Regions Pertaining to Specialties of Interest
Drew Baeza, Nova Southeastern University, db2612@mynsu.nova.edu, Georgina Tiarks, Nova Southeastern University, gt446@mynsu.nova.edu, Emilia Watts, Nova Southeastern University, ew831@mynsu.nova.edu, Adalyne Singh, Nova Southeastern University, as1616@nova.edu, Maria-Terea De Leon, Nova Southeastern University, matideleon14@gmail.com, Amanda Friedman, Nova Southeastern University, af1863@nova.edu, Gibran Mirza, Nova Southeastern University, gm1335@nova.edu, Liliya Ryshchak, Nova Southeastern University, lryshchak@nova.edu, Rolando De Leon, Nova Southeastern University, rdeleon1@nova.edu, Cheryl Purvis, Nova Southeastern University, cpurvis@nova.edu

“Designer Dissections” is a novel approach to teaching anatomical sciences through peer-guided human cadaveric dissections. Near-peer mentoring offers unique opportunities for experienced upperclassmen to help their peers navigate through the process of dissection. Our workshop will emphasize the clinical significance of various regions using anatomical illustrations, corresponding sonographic images, and prosections of orbital and pelvic anatomy. Additionally, a state-of-the-art, high-fidelity maternal simulator will demonstrate the child-birth process. This clinically oriented approach to anatomical education has been shown to substantially bolster interest and enthusiasm in particular specialties of medicine.

A411 (MEDLL 3322) - Surface Anatomy of the Human Brain: How to Get it Right When Most of us are Getting it Wrong
Christine Eckel, Indiana University, ceckel@iu.edu

Accurately locating the central sulcus, pre- and post-central gyri, Broca and Wernicke areas, and major lobes of the brain is important for most A&P courses and textbooks. However, navigating the complicated sulci and gyri of a real brain can be daunting. A critical look at textbook and online images portraying the surface anatomy of the brain revealed more errors than accuracy. In this workshop we will take a hands-on approach to learning how to accurately identify surface features of the human brain using real brains and select images. Specific activities for use in the classroom will be provided for participants.
Session 5: Saturday, May 28 from 2:30 – 3:30 pm

A501 (ASSEM 2101) - Using Social Media Platforms to Increase Engagement in a Large Lecture Anatomy Classroom
Louis Baser, University of Kentucky, louisbaser3@gmail.com, Kathleen Salmeron, University of Kentucky, katie.guell@uky.edu
In this study, we analyzed how social media in a large lecture classroom environment could increase engagement and understanding. We measured baseline engagement through a metacognitive survey at the start of the semester. As the semester progressed, we incorporated different social media challenges to increase participation. Upon follow up, students reported feeling more engaged and involved with the course content. In this workshop, we will explore how social media can foster engagement through encouraging both an in person and online community centered around increasing the participation and independence of student stakeholders.

A502 (ASSEM 2102) - Examining the Anatomy and Physiology Lab Experience
Wendy Riggs, College of the Redwoods, wendyk-riggs@redwoods.edu
Sponsored by ADInstruments
In this workshop, we will discuss the virtual Anatomy and Physiology labs at College of the Redwoods and how the implementation of new technology has facilitated meaningful learning opportunities for her online students at home. We will discuss the important outcomes of laboratory experiences for Anatomy and Physiology students; examine common barriers to hands-on laboratory experiences in fully online science courses; and explore the pros and cons of common online laboratory solutions. You will also get a chance to experience the same hands-on technology used by the students at College of the Redwoods.

A503 (ASSEM 2103) - The CAPER Project: Supporting Research in Community College (and Related) A&P Classrooms
Ron Gerrits, Milwaukee School of Engineering, gerrits@msoe.edu, Chasity O’Malley, Nova Southeastern University, comalle0@nova.edu, Kathy Bell, Salt Lake Community College, kathy.bell@slcc.edu, Melanie Birdsong Farr, Salt Lake Community College, melaney.farr@slcc.edu, Kerry Hull, Bishop’s University, khull@ubishops.ca, Murray Jensen, University of Minnesota, mjsjensen@umn.edu
The majority of anatomy and physiology students are enrolled in two-year community colleges, but the bulk of science education research takes place in four-year research universities. To address this divide, the Community College Anatomy and Physiology Education Research (CAPER) project pairs a supportive team of research personnel and mentors with community college (or teaching-focused 4-year college) A&P faculty interested in conducting classroom based education research. Cohort members participate in a 2-year program that includes two professional development courses; one focused on pedagogy and one on educational research, and guides them in completing a research project from conception to publication. The program is in the midst of its first cohort with 3 additional cohorts to go. This workshop will feature a discussion about the project from project leaders and participants and will allow considerable time for questions from the audience.

A504 (ASSEM 2104) - Improving Student Success Using an A&P Boot Camp and a Flipped Lab Approach
Beth Kersten, State College of Florida, Sarasota-Manatee, kersteb@scf.edu, Carley Parkison, State College of Florida-Manatee-Sarasota, parkisc@scf.edu
Many of our A&P I students are highly underprepared for the rigors of the course. Essential student skills are often not well developed, and many students come to class without reviewing material ahead of time. Also, students in live-streamed lab courses must have the same depth and breadth of learning as in a traditional lab course. In this workshop, we will show you how we have tackled these issues and promoted the success of our students. We will introduce you to our A&P boot camp and our traditional and live-streamed flipped lab approaches, which create dynamic and engaging learning environments.
**A505 (ASSEM 2105) - Organizing Your Learning Management System (LMS) for Student Success in Anatomy and Physiology**  
Carrie Long, Anne Arundel Community College, clong9@aacc.edu

For many colleges and universities, the start of the pandemic marked the first online delivery of Anatomy and Physiology content. With online offerings continuing at many institutions, it is important to think about the design of your Learning Management System (LMS). I will give you a tour of my online, hybrid, and face-to-face courses. We will discuss organizational strategies that provide online and face-to-face students with detailed guidance for mastering the course learning outcomes.

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**A506 (ASSEM 2106) - Finding Balance**  
Shawn Macauley, Muskegon Community College, shawn.macauley@muskegoncc.edu

Often referred to as the sixth sense, balance is the integration of multiple sensory systems that significantly influence everyday activities. This presentation will review the anatomy of the vestibular apparatus as well as how vestibulopathies affect gait, posture, vision, reflexes, memory, cognition, and spatial awareness. Dr. Macauley will describe and demonstrate how he has compensated and navigated life for 23 years following a total bilateral vestibular loss caused by gentamicin ototoxicity. He will also report on regaining significant vestibular function following the recent implantation of an experimental, unilateral vestibular prothesis.

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**A507 (ASSEM 2107) - Strategies for Maximizing A&P Labs Using Digital Tools**  
Melissa Greene, Northwest Mississippi Community College, mgreene@northwestms.edu, Lisa Strong, Northwest Mississippi Community College, lstrong@northwestms.edu, Robin Robison, Northwest Mississippi Community College, rhrobison@northwestms.edu

*Sponsored by Pearson*

We will discuss and examine effective strategies to maximize the digital tools available for the A&P lab. We will be sharing innovative ways to use digital resources and incorporate media before, during, and after lab to help students be better prepared and enhance the hands-on experiences in the lab. We will also explore other effective uses of technology in the lab, including smart devices, document cameras, smart boards, teaching microscopes, and more.

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**A508 (ASSEM 2108) - Co-Creation of Reusable Review Material with Students**  
Elita Partosoedarso, Ontario Tech University, elita.partosoedarso@ontariotechu.ca

This workshop will give you ideas about involving your students in the creation of resources for their review. This strategy works for classes of all sizes and involves students creating questions and answers based on the module being studied. These assignments gave each student up to 150 unique questions for each module. Students were divided into groups of 20-30 and assigned a series of slides for each module. A specifications-based rubric was developed to facilitate rapid marking given that there were 500+ students submitting every 2 weeks. Students were also given an infographic-based instruction sheet to allow for ready reference.

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**A509 (ASSEM 2109) - Head, Shoulders, Knees & Toes - A Regional Approach to Bone Markings & Muscles**  
Kathleen Ahles, Tarrant County College, kathleen.ahles@tccd.edu

*HAPS Conference Travel Award Winner*

While many of the bone markings of the human body function as attachment sites for major muscles, traditional Anatomy lab curricula often fail to integrate these interrelated structures. In this session, we will explore the method that the faculty at Tarrant County College's Northeast Campus utilize to introduce students to bone markings and muscles side-by-side over the course of several weeks. In addition to providing a more unified representation of the skeletal and muscular systems, this approach is also conducive for integrating structure of the nervous system and special senses into the exploration of bone markings.
A510 (MEDLL 3320) - Designer Dissections Demonstration: Utilizing Near-Peer Mentoring in the Anatomy Laboratory to Demonstrate Anatomical Regions Pertaining to Specialties of Interest

Drew Baeza, Nova Southeastern University, db2612@mynsu.nova.edu, Georgina Tiarks, Nova Southeastern University, gt446@mynsu.nova.edu, Emilia Watts, Nova Southeastern University, ew831@mynsu.nova.edu, Adalyne Singh, Nova Southeastern University, as1616@nova.edu, Maria-Terea De Leon, Nova Southeastern University, matideon14@gmail.com, Amanda Friedman, Nova Southeastern University, af1863@nova.edu, Gibran Mirza, Nova Southeastern University, gm1335@nova.edu, Liliya Ryshchak, Nova Southeastern University, lryshchak@nova.edu, Rolando De Leon, Nova Southeastern University, rdeleon1@nova.edu, Cheryl Purvis, Nova Southeastern University, cpurvis@nova.edu

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A511 (Terry 1596) - “I Really Enjoy These Annotations:” Examining Primary Literature Using Collaborative Annotation

Patrick Cafferty, Emory University, pcaffer@emory.edu

HAPS Conference Travel Award Winner

Critically reading and evaluating claims in the primary literature are vital skills for undergraduate students. However, the formal presentation of intricate content in the primary literature presents a challenge. I introduced a Collaborative Annotation Project (CAP) into my course to help students critically read papers. During CAP, students used software to add clarifying comments, links to appropriate websites, and pose and answer questions on assigned papers. Surveys revealed students found CAP helpful for reading primary literature. During this workshop, I will describe how I used and assessed CAP in my class and I will share my CAP instructions and rubric.
Session 1: Sunday, May 29 from 8:30 – 9:30 am

B101 (ASSEM 2101) - Can We Keep Them? Yes, We Can - Motivation as an Indicator of Student Retention
Nichole Warwick, Clatsop Community College, nwarwick@clatsopcc.edu
It’s no secret that attrition in A&P course work is high and administrators pressure faculty to improve retention. For some students, this is beyond the instructor control, but thoughtful and artful design can increase retention. This complicated dance involves understanding types of student motivation and how that impacts learning as well as identifying and removing barriers to students coupled with designing more inclusive courses. Preliminary work began in Fall 2021 at Clatsop CC to try and link student motivators to success and retention. Ongoing work to improve course design is occurring to improve retention and to intervene.

B102 (ASSEM 2102) - Accommodations for Student Success in the A&P Lab
Abbey Breckling, University of Illinois at Chicago, abreck2@uic.edu, Rachel Hopp, University of Louisville, rachel.hopp@louisville.edu, Heather Armbruster, Southern Union State Community College, harmbruster@suscc.edu, James Clark, Los Medanos College, jclark@losmedanos.edu, Molli Crenshaw, Texas Christian University, molli.crenshaw@tcu.edu, Jennifer Ellsworth, Moorpark College, jellsworth@vccd.edu, Youlonda FitzGerald, Texas Women’s University, yfitzgerald@twu.edu, Margaret Weck, University of Health Sciences & Pharmacy, weck@uhsp.edu

Sponsored by HAPS
Join the C&I Accommodations Subcommittee members for a lively discussion of ADA Accommodations in the A&P Laboratory. We will recap and build off of the four Town Halls presented in early 2022 that discussed testing accommodations, universal design, technology to support hearing & visual accommodations, and the safety of service animals in the lab. Our goal is to continue gathering information to support the publication of a HAPS A&P Laboratory Guidebook with suggestions from our collective experiences. We hope participants will leave with an increased sense of competency in how to best serve our current and future students.

B103 (ASSEM 2103) - What Else Can I do to Improve my Grade? – On Helpful Instruction Tools that Promote Independent Learning in a Face-to-Face Anatomy and Physiology Course
Santa Makstenieks, Concordia University Wisconsin, santa.makstenieks@cuw.edu
Students had to become independent learners when online, or quarantined during the pandemic. Some adjusted quicker than others. What exactly could be done to help all of them from the start? Neuroscience researchers who study learning have answers! The presenter will share which evidence-based instruction methods were actively incorporated in a redesigned face-to-face Anatomy and Physiology lecture course. The goal was to reorganize the material into manageable pieces, and to provide a variety of assignments to enhance regular learning, and to inspire a growth mindset daily. Let’s have a meaningful exchange of ideas and leave the workshop with new tools!

B104 (ASSEM 2104) - How to Support Non-Traditional Students in Your A&P Classes
Cristina Benites, Nova Southeastern University, cb3016@mysnu.nova.edu

Marieb, Hoehn, and Haynes Award for Diversity, Equity, and Inclusion Winner
As a first-generation college graduate, I felt like I was paving a road in untouched territory. There were many opportunities where educators could have made a real difference in my life and contributed to my success. My workshop will focus on taking you through the path of a nontraditional medical student. As I tell my story, you will get a front row seat to understand what it takes to succeed in STEM from a student’s point of view. Additionally, I will discuss the “dos and don’ts” of supporting students through challenging career paths.
B105 (ASSEM 2105) - Improving Adolescent Sexual Health Literacy: A Service-Learning Project
Katlynn Kenon, Nova Southeastern University, kk1381@mynsu.nova.edu, Andrew Stewart, Nova Southeastern University, as4902@mynsu.nova.edu, Maria Pereira, Nova Southeastern University, mp3070@mynsu.nova.edu, Emelia Watts, Nova Southeastern University, ew831@mynsu.nova.edu, Diti Patel, Nova Southeastern University, dp1481@mynsu.nova.edu
The increase in unhealthy sexual behaviors among adolescents has become an area of interest for educators. Despite countywide reforms of sexual health curricula, students in Broward County (Florida) do not receive adequate sexual health education. An effective and innovative pedagogy is required to improve sexual health outcomes. Through collaboration and guidance from a faculty advisor, health professional students created an interactive sexual health seminar for a local high school, addressing gaps in sexual health knowledge. This project not only improves adolescent sexual health literacy but increases the knowledge and communication skills of the collegiate and graduate student presenters as well.

B106 (ASSEM 2106) - Basics of Data Acquisition - Settings, Calculations, Common Questions and More
Lauren Frank, ADInstruments, a.frank@adinstruments.com
Sponsored by ADInstruments
Collecting and analyzing real physiological data is an invaluable experience for students in the lab. In this workshop, we will break down the basics of data acquisition and cover software terminology, editing data files, calculations, and frequently asked questions from educators. These concepts will be reviewed within LabChart, a data analysis software. In addition, we will explore how these data files can be related back to Lt, an online learning platform that utilizes physiological data for hands-on and remote learning.

B107 (ASSEM 2107) - Concept Mapping: A Pedagogical Tool That Increases Motivation and Stimulates Active Learning
Cathy Whiting, University of North Georgia, cathy.whiting@ung.edu, Josie Ayers, University of North Georgia, jgayer4588@ung.edu, Ben Carr, University of North Georgia, jbcarr1293@ung.edu, David Dennard, University of North Georgia, djdenn0917@ung.edu, Emily Harris, University of North Georgia, elharr3935@ung.edu, Brian Le, University of North Georgia, blee3315@ung.edu, Emily Munoz, University of North Georgia, emunoo0638@ung.edu, Jessica Nix, University of North Georgia, jmnix0952@ung.edu
Sponsored by Pearson
In this workshop, we will demonstrate the use of concept mapping, an evidence-based pedagogical strategy, to create a collaborative learning environment that promotes the development of higher-order cognitive skills. First, we will summarize several key research studies supporting the use of concept mapping in anatomy and physiology education, and then we will outline an effective technique for teaching students how to construct concept maps. Finally, we will demonstrate several ways in which concept mapping can be implemented in both the lecture and lab settings to increase motivation and stimulate active learning, two key components of student engagement.

B108 (ASSEM 2108) - The “Amazing” Anatomist – Incorporating “Marvel”-ous Superheroes into Your Anatomy Classroom
Jeremy Grachan, The Ohio State University, grachan.1@osu.edu, Melissa Quinn, The Ohio State University, melissa.quinn@osumc.edu
Superheroes can be a way to increase motivation for students to want to learn and succeed in anatomy. This workshop will explore a study completed over three semesters looking at how students do in a superhero-based anatomy class compared to a traditional anatomy class. These “marvel”-ous superhero examples can also be used to connect to underrepresented populations and attract students from outside the health sciences to help increase diversity in the field of anatomy. The workshop will also provide examples, such as clinical conditions and modern scientific innovations, that can be used in your own courses and outreach sessions.
B109 (ASSEM 2109) - Physiology of Coronary Flows as Governed by Hydraulic Principles and Illustrated with Clinical Examples
Thach Nguyen, Methodist Hospital and Tan Tao University, thachnguyen2000@yahoo.com, Ernest Talarico, Methodist Hospital, talaricojrernest@gmail.com, Thoa Le, Methodist Hospital, ethibichthoa31@gmail.com
At first, the images of coronary flow will be shown: (1) the fast antegrade diastolic flow and slow systolic flow (2) the sharp demarcation between systole and diastole and (3) the systolic retrograde flow. Because of this strong retrograde flow, there was a collision with the antegrade flow, causing turbulence, damaging the intima and triggering the atherosclerotic process and event including ST segment myocardial infarction. This extreme reversed coronary flow explains the mechanism of chest pain, syncope or sudden death in patients with aortic stenosis or anomalous coronary artery originated from the opposite sinus even their coronary arteries were patent.

B110 (Terry 1596) - Writing Application Test Questions
Vicky Rands, Salt Lake Community College, vicky.rands@slcc.edu
Share tips for writing Bloom’s Taxonomy Application level questions. Give guidelines for writing a good questions and then having attendees share their application order questions.

Session 2: Sunday, May 29 from 9:45 – 10:45 am
B201 (ASSEM 2101) - Cooperative Group Quizzes: An Easy First Step Towards Student-Centered Learning
Murray Jensen, University of Minnesota, msjensen@umn.edu, Kathy Bell, Salt Lake Community College, kathryn.bell@slcc.edu, Amanda Rosenzwrig, Delgado Community College, arosen@dcc.edu
Increased student engagement is a component of all active learning classrooms. But for educators who use lecture as their primary mode of instruction, developing activities that promote student engagement can be difficult. The cooperative group quiz is a simple technique that can be quickly learned and implemented by any instructor who is interested in getting students to talk and engage in the classroom. This presentation will be conducted by members of the Community College Anatomy and Physiology Education Research (CAPER) research group who will bring first-hand experience to this workshop.

B202 (ASSEM 2102) - Lessons Beyond Connective Tissue: Fostering Student Connections and Inspiration through an Interinstitutional Collaboration on Art and Anatomy
April Hatcher, University of Kentucky, arich3@uky.edu, Kristen Platt, University of Kentucky, platt.kristen@uky.edu, Katie Salmeron, University of Kentucky, katie.guell@uky.edu
Art assignments in the anatomy curriculum challenge students to recreate didactic content in imaginative ways. As an expansion of the “Anatomy Portfolio Showcase”, this workshop focuses on efforts to join undergraduate anatomy students at a large state university with those at a rural community college using shared works of art. Art prompts featuring a nature histology challenge, comic strip drawings, and abstract art on disease states were shared with students on both campuses. This workshop highlights an interinstitutional event designed for students to view peer work, share career goals, and meet with healthcare professional students to foster connection and inspiration.
B203 (ASSEM 2103) - Transforming a Traditional Human Physiology Course into a Flipped Learning Environment
Tami Panhuis, Ohio Wesleyan University, tmpanhui@owu.edu
Have you ever wanted to flip your classroom but need some inspiration? In this workshop, I will highlight an example of how I have recently transformed my Human Physiology course into a flipped learning course. I will provide activity handouts and examples that highlight how my classroom is devoted to being an activity-based environment that allows students to work in small groups and engage more deeply in course content.

B204 (ASSEM 2104) - HAPS Exam Program 2022 Update: Development of the HAPS Physiology Learning Outcomes, and the Latest Information About the HAPS Comprehensive A&P and Stand-Alone Anatomy Exams
Valerie O’Loughlin, Indiana University - Bloomington, vdean@indiana.edu, Dee Silverthorn, University of Texas at Austin, silverthorn@utexas.edu
Sponsored by HAPS
The HAPS Physiology Learning Outcomes are nearly complete – hear about our progress and get a sneak peak of the close-to-finished product. In addition, we will update you about the HAPS Comprehensive A&P and stand-alone anatomy exams. These exams can help you compare your class performance with others across North America, assess learning gains, and/or examine equity and diversity issues in learning. In this session, we describe these validated HAPS exams, the secure online testing platform and proctoring options. We explain how to order exams and provide examples of ways to utilize and fund them at your institution.

B205 (ASSEM 2105) - Hybrid – Online – F2F? The A&P Digital Suite Has You Covered
Stephen Sullivan, Bucks County Community College and McGraw Hill, stephen.sullivan@bucks.edu
Sponsored by McGraw Hill
When it comes to digital learning resources, balancing affordability, quality, and ease-of-use has always been a challenge…until now. The NEW A&P Digital Suite Connect course organizes all the necessary key tools needed for a successful A&P course. Based on the core learning outcomes of A&P, these lab simulations, adaptive learning activities, instructional videos, and assessments are available all in one place. Use with any textbook or OER—or without a textbook. Connect for A&P earned the 2021 CODIE™ Award for Best Virtual Learning Solution. Now, it’s available to help you and your students!

B206 (ASSEM 2106) - Exploring the Immune System Using Mini Cases and HHMI BioInteractive
Melissa Haswell, Delta College, bioedmel@gmail.com
Sponsored by HHMI BioInteractive
This workshop will explore narrative mini cases alongside the HHMI Biointeractive Interactive learning module. The activity introduces the anatomy of the immune system and walks through the timeline of a typical immune response while comparing it to several real-life immune reactions. Students will identify the role of memory cells when the body responds to various common antigens while interpreting graphs and images to help them explain their understanding of the immune reactions.

B207 (ASSEM 2107) - Teaching Visual Literacy Skills: A Conversation
Tracy Ediger, Georgia State University, tediger@gsu.edu
Visual literacy is the ability to interpret illustrations and diagrams, to create meaning from what we see. Visual literacy is important for education in both anatomy and physiology disciplines. Learning anatomy requires visual inspection and identification of structures; learning physiology is aided by the ability to glean knowledge from illustrations such as flow charts and concept maps. This workshop will be a conversation between the facilitator and the audience to discuss ways that anatomy and physiology educators can teach visual literacy skills and assess whether our efforts are effective.
Sex in the 21st century is an uncomfortable topic. Many times, the burden of sexual health education falls on community leaders such as faculty or healthcare professionals to provide guidance and mentorship to a younger population. As medical students, the goal of our study is to supplement these teachings and educate the Nova Southeastern University’s (NSU) undergraduate population about the importance of practicing safe sex. Through a collaboration with NSU’s Student Medical Center, our research assessed the current state of sexual health knowledge and the effectiveness of commonly used techniques by implementing pre-surveys, Q&A, workshop, and post-surveys.

It is common for teachers and students alike to “talk with your hands” and use gestures when teaching, learning, or explaining. Let’s put that natural inclination to use! In this workshop, we’ll discuss how gestures can be used to enhance your teaching and help your students learn. I’ll share some background information on gestures and how they can effectively be used in the classroom, as well as specific gestures I created to help students learn the cranial nerves. The best things about gestures is that they are free and completely adaptable!

Cellular physiology can be a difficulty concept for students, but properly introduced, can help them develop a foundation for better understanding many of the organ systems. I have created hands-on activities that use easily obtainable items and help students to work together in mastering the concepts of nervous, muscular, and endocrine tissues. In this workshop, we will practice with these simple lab kits, showing participants how they can incorporate them into their courses (either in-person or remote) to engage students to work together and master these concepts.

Undergraduate Anatomy and Physiology courses have a reputation as a graveyard for student GPAs. D, F and W grades don’t only frustrate students and administrators; grading piles of failed tests also affects instructors! Considering the factors that contribute to student performance, what can an Anatomy and Physiology instructor do to meaningfully intervene and see an improvement in student performance and persistence? Join me for a collaborative workshop in which I share strategies that have failed and succeeded in improving student performance in a one-semester A&P course. BYOS (bring your own strategies) and be prepared to exchange ideas with fellow HAPSters.
Session 3: Sunday, May 29 from 11:00 am – 12:00 pm

B301 (ASSEM 2101) - Online A&P Labs with Hands-On Lab Kits
Traci Dougherty, Carolina Biological Distance Learning, traci.dougherty@carolina.com
Sponsored by Carolina Distance Learning
There are many ways to teach lab science courses online. Why use a hands-on approach with a lab kit? Research shows that students who only view experiments (rather than engaging in them) perform worse on conceptual knowledge exams than those who participate in physical or virtual labs (Zacharia and Olympiou, 2011). Let’s explore this together.

B302 (ASSEM 2102) - The Presence of a Peer-Learning Assistant in the Classroom: An Opportunity to Build an Inclusive A&P Learning Community
Catherine Kirn-Safran, Widener University, cbsafran@widener.edu
HAPS Conference Travel Award Winner
How can a second pair of hands and eyes maximize the time spent in class and help build a more connected learning community? During this session, you will explore strategies that instructors can use with the help of a peer-learning assistant (PLA) to enhance students’ learning experiences and will hear about a PLA personal journey as A&P classes resumed face-to-face. Additionally, you will reflect and share on how the presence of a PLA in your classroom can/could help with the implementation of best teaching practices that lead to a more inclusive classroom as well as a more fulfilling teaching experience!

B303 (ASSEM 2103) - Accidentally Prepared: How Redesigning our Lab Courses for Active Learning Allowed Seamless Transitions Between Instructional Modalities
Daniel McNabney, University of Georgia, daniel.mc nabney@uga.edu
Sponsored by ADInstruments
This workshop explores how the use of active learning and online, interactive learning tools can provide flexibility to transition between different instructional modalities (face-to-face, hybrid, and online). The first part of the workshop will summarize how the University of Georgia redesigned their large lab courses for active learning and data literacy in 2019 which has allowed quick adjustments in instructional approach in response to ongoing challenges associated with the COVID-19 pandemic. The second half of the workshop will have participants explore the online learning platform, Lt, for hands-on practice with data acquisition labs and course content creation that’s effective for any instructional approach.

B304 (ASSEM 2104) - HAPS Teaching Tips - Learn About this A&P Gold Mine
Rachel Hopp, University of Louisville, rach el.hopp@louisville.edu, Wendy Rappazzo, Harford Community College, wrappazzo@harford.edu, Abbey Breckling, University of Illinois at Chicago, abre ck2@uic.edu, Amy Gyorkos, Albion College, ag yorkos@ albion.edu, April Hatcher, University of Kentucky, april.hatcher@uky.edu, Kebret Kebede, Nevada State College, kebret. kebede@ns c.edu, Edgar Meyer, University of Mississippi Medical Center, emeyer@umc.edu
Sponsored by HAPS
Need fresh A&P teaching ideas, a lesson upgrade, or have an idea to share? We are here to help! This workshop will discuss innovative teaching tips that have been submitted by our very own creative and innovative Hapster instructors. These peer reviewed teaching tips are ready to be implemented today, including learning objectives, student handouts, instructor guides, accommodations, assessments, and answer keys. We will guide you to a repository of teaching tips and how to submit your own ideas. We look forward to growing, sharing, and sparking new ideas that help strengthen the needs of our HAPS teaching community.
B305 (ASSEM 2105) - Upper Extremity Lymphatic Drainage: A Clinical Correlation  
Skylar Harmon, Nova Southeastern University, skylar.harmon89@gmail.com, Tatevik Malisetyan, Nova Southeastern University, tm1465@mynsu.nova.edu, Anastassia Shifchik, Nova Southeastern University, as5019@mynsu.nova.edu  
Anatomy and physiology educators who teach pre-healthcare professionals often use clinically relevant scenarios to engage students. Traditionally, the lymphatic system is a very difficult concept for anatomy students to visualize. Our workshop will focus on lymphatic drainage from the breast and upper extremity. We will correlate it to the clinical complications which can arise due to blockage of the lymphatic system following axillary node dissection in patients with a history of breast cancer. A cadaver specimen will be utilized to demonstrate key lymphatic structures.

B306 (ASSEM 2106) - Applying Instructional Scaffolding to Enhance Critical Thinking  
Elaine Bohórquez, North Carolina State University, elaine_bohorquez@ncsu.edu  
Cultivating critical thinking skills is a vital part of student success. Incorporating it effectively into a course can be challenging and lead to mixed results. Instructional scaffolding takes advantage of cognitive psychology elements to guide students through developing these skills to progress toward independent critical reasoning. In this workshop, I will introduce four types of instructional scaffolding that can be applied to both face-to-face and online courses. We will discuss how to scaffold individual assignments and an entire course and show how this approach can make the learning process more efficient and less stressful for you and your students.

B307 (ASSEM 2107) - What Facts Should I Believe? Linking Anatomy & Physiology with Science & Society  
Judi Nath, Penn State University, judinath@psu.edu, Wendy Riggs, College of the Redwoods, wendyk-riggs@redwoods.edu  
One challenge of pandemic teaching has been managing the barrage of misinformation and disinformation related to health. Challenges could be solved through improved scientific literacy in general and a better understanding of human anatomy and physiology in specific. This workshop introduces concepts that cross courtrooms and classrooms showing how A&P is foundational to countering falsehoods and rhetoric in our daily lives. Our goal is to help you instill solid, long-term A&P knowledge in your students so that regardless of their careers, they will be equipped to educate others, untangle the web of confusion, and combat propaganda whenever they encounter it.

B308 (ASSEM 2108) - Demystifying Through Wonder: Teaching in Synch with the Basal Ganglia  
Mario Loomis, Sam Houston State University, mario.loomis@shsu.edu  
How the cognitive limb of the basal ganglia influences learning is not completely understood, but one might predict that it would mirror the motor limb’s facilitation and inhibition of motion. If we consider cognitive motion to be imagination, this facilitation and inhibition would fluctuate between imagination and reason, wondering and remembering, the abstract and the concrete, possibility and actuality. This natural association of learning with a flux between proposing and testing provides an effective guide to teaching. In this workshop, I’ll outline several practical ways to teach complex material through wonder, in synch with the basal ganglia’s natural learning rhythm.
B309 (ASSEM 2109) - Kinesthetic Anatomy: Building The Leg In Clay  
Tara Hamilton-Fay, Anatomy in Clay® Learning System, liz@anatomyinclay.com  
Sponsored by Anatomy in Clay® Learning Systems  
Join us for this hands-on workshop to build the muscles of the upper leg. In this kinesthetic, multi-media learning experience, each person shapes clay body systems on a specially designed human model. Develop a true three-dimensional understanding of human anatomy by building anatomical systems in clay.

B310 (MEDLL 3320) - Oh Wait, I Don’t Know This! Use Three Drawings for Self-Assessing Anatomical Knowledge  
Jany Cabezas, Indiana University, jancabez@iu.edu  
A three-drawing template not only benefits anatomy learning through engagement in active learning—it is a powerful tool for self-testing! Students can independently draw anatomical features first from memory, secondarily through observation, and lastly through strict recall of prior drawings. Join me to learn how to use this active learning technique in your small and large anatomy classrooms. I will also present student data showing real-time learning of this activity.

B311 (Terry 1596) - The Physician in the Kitchen – Leading with Nutrition in Academic Medicine  
Joshua Costin, Nova Southeastern University, jcostin@nova.edu, Stephanie Petrosky, Nova Southeastern University, spetrosky@nova.edu  
This workshop introduces Culinary Medicine as an interprofessional approach to teach medical students the interplay of human physiology, dietary patterns, and health through experiential learning. Culinary Medicine is an emerging specialty that combines theory and cooking experience to engage learners and translate critical concepts in preventative care. Participants will explore evidence-based practices that integrate foundational sciences with clinical medicine. Experiences at one university which houses two different medicine programs will be discussed to highlight challenges and strategies to implement success in the curriculum design. Practical applications are illustrated through a sample lesson plan, teaching demonstration, and shared resources.

Session 4: Sunday, May 29 from 1:15 – 2:15 pm

B401 (ASSEM 2101) - Structure is to Function: The Anatomy of Post-Baccalaureate Programs and the Services They Provide for URM Students  
Edgar Meyer, University of Mississippi Medical Center, emeyer@umc.edu  
In recent decades, there has been a proliferation of post-baccalaureate programs which can function to provide underrepresented minority (URM) students with exposure to graduate-level coursework in biomedical sciences, including anatomy. These programs can also provide URM students with professional skills development and allow URM students pipeline access to health professional programs. This workshop will describe some basic components of post-baccalaureate programs, the functions they serve, and the details of their potential anatomy curricula. Participants will discuss post-baccalaureate program formation and success at their institutions or ways they might encourage their URM students to apply to these programs at other institutions.

B402 (ASSEM 2102) - The Cardiac Cycle - Five Hearts on a Whiteboard  
Mindi Fried, University of New Haven, mindifried@gmail.com  
A lot is happening in the cardiac cycle, and the volume of events can make it difficult to grasp. This is a simplified method of teaching the events of the cardiac cycle in an interactive way, using personal whiteboards or just a blank sheet of paper for each student.
B403 (ASSEM 2103) - Creating an A&P Boot Camp Program to Encourage Transformational Learning
Jessica Nix, University of North Georgia, jmnix0952@ung.edu, Josie Ayers, University of North Georgia, jgayer4588@ung.edu, Ben Carr, University of North Georgia, jbcarr1293@ung.edu, David Dennard, University of North Georgia, djdenn0917@ung.edu, Emily Harris, University of North Georgia, elharr3935@ung.edu, Brian Le, University of North Georgia, ble3315@ung.edu, Emily Munoz, University of North Georgia, emunu0638@ung.edu, Cathy Whiting, University of North Georgia, cathy.writing@ung.edu

Many students struggle to move beyond rote memorization toward a deeper, more meaningful learning experience. In response to this growing problem we developed a collaborative, peer-based program called Anatomy and Physiology Boot Camp. The primary goal of A&P Boot Camp is to transform students into motivated, active learners. As a result of this transformation, students are able to build a stronger foundation in the principles of anatomy and physiology. In this workshop, we will first discuss the key components of our program, and then we will demonstrate several pedagogical strategies used during Boot Camp study sessions to promote higher-order thinking.

B404 (ASSEM 2104) - Misguided Medicine – Applying A&P to Wacky Medical History
Danielle Loder, Indiana University, dloder@iu.edu

HAPS Conference Travel Award Winner

This workshop will give an overview of an asynchronous, online, applied A&P course that utilizes the medical history podcast Sawbones. I will discuss the general structure of the course, types of assignments utilized, student feedback, and future improvements. Attendees will benefit from my lessons learned and get new ideas for integrating A&P knowledge application into their existing courses.

B405 (ASSEM 2105) - Pressures and Flow in Respiration
David Groh, Good Samaritan College of Nursing and Health Sciences, david.groh@email.gscollege.edu, Karen Groh, Cincinnati State Technical and Community College, karen.groh@cincinnatistate.edu

Most Anatomy and Physiology texts invoke Boyle’s Law to explain air flow in respiration. However, the Boyle’s Law explanation does not apply to open systems such as the airway. This talk will approach respiratory airflow from a physics perspective using basic principles of fluid flow including Bernoulli’s Principle, Pascal’s Principle, and the Ideal Gas Law. A simpler explanation than Boyle’s Law will be proposed for respiratory airflow. The presentation will be geared toward human anatomy and physiology instructors with biology backgrounds.

B406 (ASSEM 2106) - Social Support and Stress: Teaching Students About Affect and Emotion
Tim Cook, BIOPAC Systems Inc., timc@biopac.com

Sponsored by BIOPAC Systems

Among the various physiological signals regulated by the autonomic nervous system are heart rate and electrodermal activity (EDA). By collecting and analyzing electrocardiogram (ECG) and EDA data, students learn to assess autonomic function and evaluate the effects of social support on stress. BIOPAC will demonstrate a new lesson, Effect of Social Support, now available within the Biopac Student Lab (BSL). We will walk you through the setup of lesson equipment and software while providing tips for maximizing student engagement and active learning.
B407 (ASSEM 2107) - Understanding Group Dynamics: The Foundation of Teamwork
Cheryl Purvis, Nova Southeastern University, cpurvis@nova.edu, Yuri Zagvazdin, Nova Southeastern University, yuri@nova.edu, Anastasia Mashukova, Nova Southeastern University, amashukova@nova.edu, Liliya Ryshchak, Nova Southeastern University, lryshchak@nova.edu, Brandon Tan, bt685@mynsu.nova.edu, Yuri Zagvazdin, Nova Southeastern University, camille.arca@gmail.com, Brandon Edwards, Nova Southeastern University, be417@mynsu.nova.edu, Aidan Sadtler, Nova Southeastern University, as5096@mynsu.nova.edu

This workshop introduces faculty to the concept of Interprofessional Education with emphasis on different personality types and their strengths. After taking a personal preference profile test, we will discuss unique personality types as it relates to team building and communication. Participants will 1) learn about positive psychology. 2) identify their own individual strengths. 3) discuss how to implement their personal strengths for productive teamwork. 4) identify their potential role in the kingdom of academia. 5) discuss how learning about yourself and others can maximize team building. 6) discuss how to foster healthy group dynamics for productive teamwork.

B409 (ASSEM 2109) - How to Transition from Didactic Teaching to Active Learning?
Joshua Costin, Nova Southeastern University, jcostin@nova.edu, Michelle Demory Beckler, Nova Southeastern University, mbeckler@nova.edu

As health professions programs adapt from teaching basic sciences courses in isolation to more integrated curriculums, it is becoming increasingly important to blend clinical application with basic science concepts in an active way. For us, this means using different active learning modalities to engage large cohorts of students in-person and online. The goal of this workshop is to gather insights on how to juxtapose didactic teaching with active learning session within the context of health professions courses traditional taught a lower graduate level.

B410 (MEDLL 3320) - A Simple (and Effective) Way to Introduce the Design and Logic of Ganglia-Based Nervous Systems
David Temme, University of Utah, temme@biology.utah.edu

Your students are starting to understand the mechanisms by which “tickling” a neuron at one end can trigger release of chemical signals at the other. Next step, to guide their investigation into the design and logic of the nervous system. So, you begin to delve into the organization of the brain and spinal cord. Wow! A big step! Here I illustrate the use of a critter with four muscles (named “Irv”) to assemble, through a step-wise process, the logic of ganglia-based nervous systems. In the process, three basic nerve types, reflexive and integrative pathways, modulation, and learning are all revealed.

B411 (Terry 1596) - Building an Anatomy Educational Outreach Program (AEOP)
Tyler Redway, The Ohio State University, redway.3@buckeyemail.osu.edu

Building anything from the ground up is a daunting task, and AEOPs are no different. Where do we begin? What are other programs doing and how can you learn from them? Within the Division of Anatomy at The Ohio State University we work to continually improve accessibility to anatomical resources, draw attention to the field of anatomy education outreach, and to expand outreach capabilities for other programs and institutions. Through this discussion-based workshop we aim to share our experience and to learn from the experiences of our peers. Discussions will focus on many aspects of outreach, from getting started and common approaches to target populations and future goals for AEOPs.
Session 5: Sunday, May 29 from 2:30 – 3:30 pm

**BS01 (ASSEM 2101) - Decolonizing A&P: Dismantling the Curriculum for the Inclusion of all Students**

*Brenda Del Moral, Edgewood College, bdelmoral@edgewood.edu*

A&P content is generally standardized across institutions to serve a variety of pre-health science programs. Decolonizing a content-laden course to emphasize inclusiveness and diversity is daunting, but more accurately reflects the broad spectrum of human diversity. This workshop will focus on replacing non-inclusive content with material reflecting human diversity and including ways to show students they are valued and represented in class. A variety of examples will be presented including updating curriculum, universal design of learning, rewriting of assessments, and including anti-racist and gender-inclusive statements. Discussion will be interwoven throughout the workshop to share ideas and experience.

**BS03 (ASSEM 2103) - 3D Organon Anatomy**

*Panagiota Kordali, 3D Organon, marketing@3dorganon.com*

*Sponsored by 3D Organon*

3D Organon is the multi-award-winning medical & healthcare education platform, that facilitates accelerated teaching and learning anatomy across virtual reality, desktop, tablet, and mobile devices. The 2022 release of 3D Organon includes over 12,000 life-like anatomical structures and is compounded with an extensive knowledge base of anatomical definitions translated into 16 languages.

**BS04 (ASSEM 2104) - Helping Students See the Forest: An Infographic Exercise for Gross Anatomy**

*Kristen Platt, University of Kentucky, platt.kristen@uky.edu*

In gross anatomy, we often find ourselves as experts of teaching the “trees.” That is to say, structure by structure, our students really know the facts! However, we sometimes neglect to help them see the “forest:” how structures work together to make a functioning organism. This workshop will demonstrate the impact of an interdisciplinary assignment in which students made infographics to help them synthesize and apply anatomical concepts in new, clinically-relevant ways. Participants will leave this workshop with ideas for implementing similar exercises in their own courses.

**BS07 (ASSEM 2107) - Meet the TWELVE Characters in the Kingdom of Academia**

*Cheryl Purvis, Nova Southeastern University, cpurvis@nova.edu, Camille Arca, Nova Southeastern University, camille.arca@gmail.com, Yuri Zagvazdin, Nova Southeastern University, yuri@nova.edu, Anastasia Mashukova, Nova Southeastern University, amashukova@nova.edu, Liliya Ryshchak, Nova Southeastern University, lryshchak@nova.edu, Brandon Tan, Nova Southeastern University, bt685@mynsu.nova.edu, Brandon Edwards, Nova Southeastern University, be417@mynsu.nova.edu, Aidian Sadtler, Nova Southeastern University, as5096@mynsu.nova.edu*

In our workshop, you will meet TWELVE characters in the kingdom of academia. To highlight their distinctive qualities, we developed animal character portraits. Inspiration for Camille Arca's artistic interpretation was threefold: 1) qualities of the characters from a medieval fable 2) historical medieval arts and imagery; 3) personal experience and attachment to the animal kingdom. To appreciate characteristics of various personality types, we introduce faculty to the concept of positive psychology. Each kingdom character has a distinct role in “the kingdom” because of their unique perspective on life and interactions with others.
B508 (ASSEM 2108) - Focus on The Concept: Novel Ways to Explain Shared Concepts in Body Systems
Hisham Elbatarny, St Lawrence College and Queen’s University, helbatarny@sl.on.ca
Traditionally, anatomy and physiology courses are delivered systematically as organ systems. While this is useful, we often miss that some concepts are shared in more than one system. Teaching those concepts separately hinders effective connection and can create confusion among learners. I have identified a number of those concepts such as: circulatory variants (e.g., portal circulation) and CO2 transport process catalyzed by carbonic-anhydrase enzyme. I believe, dedicating focused sessions for these special concepts can solidify students’ understanding. In this workshop, I will discuss these concepts and share novel ways to present them in dedicated sessions inserted in course delivery plans.

B509 (ASSEM 2109) - The Biology of Sex: Myths and Facts REMIX!
Nanette Tomicek, Jefferson University, nanette.tomicek@jefferson.edu
Think you know it all? Or heard it all? Or heard this talk before? Get ready for the remix. Now with questions about natural male enhancement supplements endorsed by Joe Rogan, more sharks and bears, as well as a touch progressive inclusivity. I’ll also review of my few favorite misconceptions including: Can Mountain Dew serve as an effective birth control? What is the active ingredient in aphrodisiacs? Will hormone replacement therapy kill me? We will also take a look at some dated topics commonly appearing in textbooks. Faculty, are you still teaching the body fat and fertility hypothesis? Still presenting the referred left-arm pain as the gold standard for diagnosing a heart attack? Why aren’t there more male birth control options? Come to explore the oldies, the goodies, and what the students are asking regarding the biology of sex. Lecture based workshop with opportunity for discussion.
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