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10-22-2016

# Human Anatomy & Physiology Society ( HAPS ) Southern Regional Meeting 2016

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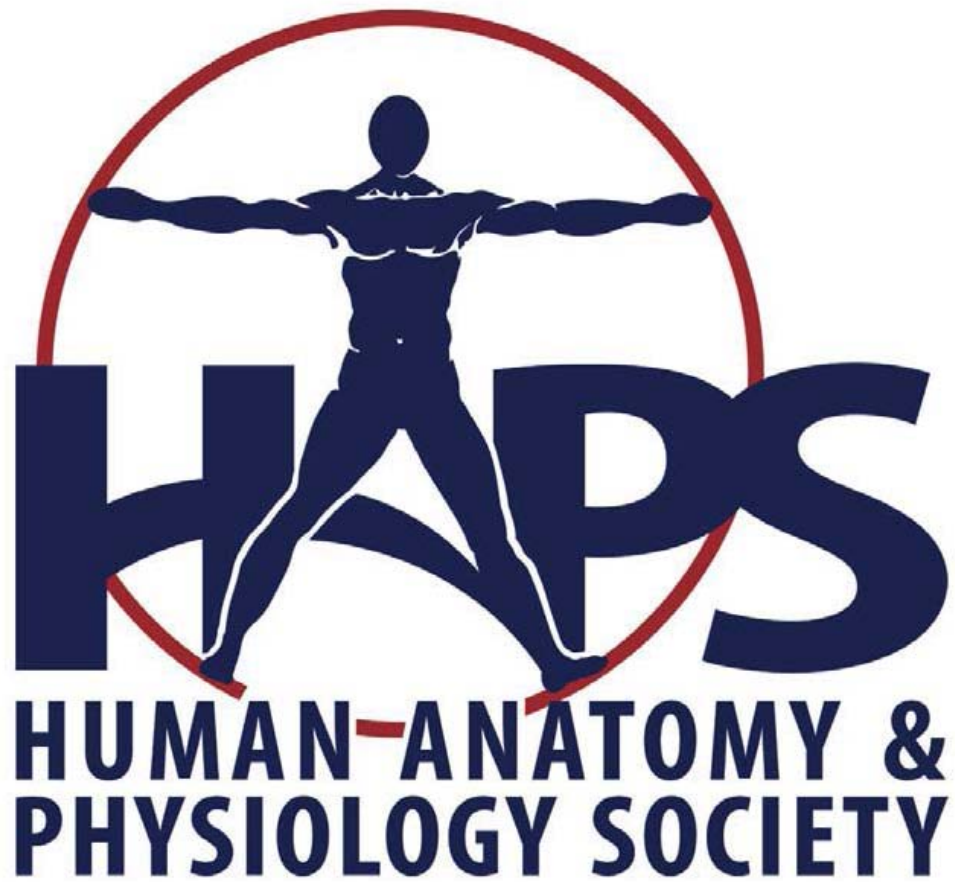
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## NSUWorks Citation

Purvis, Cheryl, "Human Anatomy & Physiology Society ( HAPS ) Southern Regional Meeting 2016" (2016). *College of Medical Sciences Faculty Proceedings, Presentations, Speeches and Lectures*. Paper 2.  
[http://nsuworks.nova.edu/hpd\\_medsci\\_presentations/2](http://nsuworks.nova.edu/hpd_medsci_presentations/2)

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**HAPS Southern Regional Meeting  
October 22, 2016**





# Human Anatomy and Physiology Society (HAPS) SOUTHERN REGIONAL CONFERENCE OCTOBER 22, 2016



The mission of HAPS is promoting excellence in the teaching of human anatomy and physiology. At our meetings, we share our successes and learn from each other to improve our teaching efforts.

[www.hapsweb.org](http://www.hapsweb.org)

FOR MORE INFORMATION, PLEASE CONTACT THE HAPS MAIN OFFICE.

Email: [info@hpsconnect.org](mailto:info@hpsconnect.org)

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NOVA SOUTHEASTERN UNIVERSITY  
Office of the Provost

**Ralph V. Rogers, Ph.D.**

*Provost and Executive Vice President for Academic Affairs*

October 22, 2016

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) Southern Regional 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 Osteopathic Medicine, 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.

In the Fall 2018, we look forward to opening our allopathic medical school here at NSU. 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,

Ralph V. Rogers  
Provost and Executive Vice President  
for Academic Affairs

**HAPS Southern Regional Conference**  
**Schedule of Events**  
**October 22, 2016**

<b>Time</b>	<b>Event</b>	<b>Location</b>
7:00 AM – 7:30 AM	Exhibitor Setup	Hull Atrium
7:30 AM – 8:30 AM	Registration & Poster Setup Breakfast with Exhibitors	Hull Atrium
8:30 AM – 9:00 AM	<b>Welcome:</b> Conference Coordinator: Dr. Cheryl Purvis <b>HAPS Presentation:</b> HAPS Southern Regional Director, Dr. Rachel Hopp	Hull Auditorium
9:00 AM – 9:50 AM	<b>Special Presentation from Dr. Rachel Hopp</b> <b>Metacognition: Maximizing Student Potential to Learn</b>	Hull Auditorium
10:00 AM – 10:45 AM	<b>Update Speaker I: Dr. Kevin Petti</b> <b>Anatomia Italiana: Art and Anatomy in the Italian Renaissance</b>	Hull Auditorium
10:00 AM – 10:45 AM	Workshop Session 1	Labs, Rm 2101-2104
10:45 AM – 11:15 AM	Break with Exhibitors Poster presentations (ODD numbers)	Hull Atrium
11:15 AM – 12:00 PM	Workshop Session 2	Hull Auditorium Labs, Rm 2101-2104
12:00 PM – 1:00 PM	Lunch	Private Dining Room in Cafeteria
1:00 PM – 1:45 PM	<b>Update Speaker II: Dr. James Munoz</b> <b>The Promise and History of Neuroscience</b>	Hull Auditorium
2:00 PM – 2:45 PM	Workshop Session 3	Hull Auditorium Labs, Rm 2101-2104
2:45 PM – 3:15 PM	Break with Exhibitors Poster presentations (EVEN numbers)	Hull Atrium
3:15 PM – 4:00 PM	Workshop Session 4	Hull Auditorium Labs, Rm 2101-2104
4:00 PM – 4:15 PM	Closing & Door Prizes	Hull Auditorium
4:30 PM	NSU Shark Shuttle Campus Tours Poster removal & Exhibitor Breakdown	In front of HPD Building

**WiFi Access Information:**

You can log into the NSU Campus WiFi by choosing the 'NSU Guest' option. No username or password is required.



## HAPS Southern Regional Meeting 2016 Exhibitors

HAPS would like to recognize and thank all of our conference exhibitors. Their generous support makes this conference possible.

### Exhibitors

ADInstruments

Holt Anatomical

M.S. in Human Anatomy & Physiology Instruction Program

McGraw Hill

Morton Publishing Company

Pearson Education

SynDaver Labs

Thieme Medical Publishers

Visible Body



**No food  
or drink**

### **Please keep in mind:**

Absolutely **NO food or beverage is allowed in the Hull Auditorium.** Please dispose of any food or beverage before entering the Auditorium during this event.



**Dr. Rachel Hopp**  
**HAPS Southern Regional Director**

**Metacognition:**  
**Maximizing Student Potential to Learn**

**9:00 – 9:50 AM**

**Hull Auditorium**

**Abstract:** Metacognition is defined as thinking about thinking. Students who progress successfully through a course often use its key elements: planning, monitoring, and evaluating. Essentially these students are aware of what they already know and what they still need to learn in order to do well on course assessments. Instructors may assist in the development of this “learning awareness” by encouraging the use of metacognitive strategies like self-quizzing and cautioning students about ineffective methods such as rereading. This talk will cover ways to introduce metacognition to your students and provide you with tools you can use in your classroom throughout the semester.

**Bio:** Rachel Hopp has been a HAPS member since 2006. She joined the HAPS Board in 2015 and serves as the Southern Regional Director. She has been teaching undergraduate Biology students for 17 years at Houston Baptist University (HBU), Bellarmine University, and the University of Louisville. Rachel has published two articles on factors related to student success in Anatomy and Physiology. She has also served as a Southern Association of Colleges Commission on Colleges (SACSCOC) Academic Assessment Officer for HBU and consults in this area.

## Learning Practices Questionnaire

This questionnaire will give you a snapshot of how YOU learn. **The questionnaire is for your own use only, so please be as honest as possible.**

### Part 1. For each question, circle the number that best applies to you.

Question	Not at all true of me	Very true of me
1. When I study, I practice saying the material to myself over and over.	1 2 3 4 5 6 7	
2. I try to relate ideas in one class to those in other classes whenever possible.	1 2 3 4 5 6 7	
3. When I study for a course, I review my notes and make an outline of important concepts.	1 2 3 4 5 6 7	
4. Even if I have trouble learning the material from a class, I try to do the work on my own, without help from anyone.	1 2 3 4 5 6 7	
5. When studying for a course, I often try to explain the material to a classmate or a friend.	1 2 3 4 5 6 7	
6. When reading for a course, I make up questions to help focus my reading.	1 2 3 4 5 6 7	
7. Before I study new course material thoroughly, I often skim it to see how it is organized.	1 2 3 4 5 6 7	
8. When I study, I read my class notes and course readings over and over again.	1 2 3 4 5 6 7	
9. When reading the textbook, I try to relate the material to what I already know.	1 2 3 4 5 6 7	
10. When I study for a course, I make simple charts, diagrams, or tables to help me organize course material.	1 2 3 4 5 6 7	
11. I ask the instructor to clarify concepts I don't understand well.	1 2 3 4 5 6 7	
12. I try to work with other students to complete class assignments.	1 2 3 4 5 6 7	
13. I ask myself questions to make sure I understand the material I have been studying.	1 2 3 4 5 6 7	
14. I often find that I have been reading for class but I don't know what it was all about.	1 2 3 4 5 6 7	
15. I memorize key words to remind me of important concepts in a class.	1 2 3 4 5 6 7	
16. When I study, I write brief summaries of the main ideas in my own words.	1 2 3 4 5 6 7	
17. When I study for a course, I go through the readings and my class notes and try to find the most important ideas.	1 2 3 4 5 6 7	
18. I ask other students for help when I can't understand course material.	1 2 3 4 5 6 7	
19. I often set aside time to discuss the course material with a group of students from the same class.	1 2 3 4 5 6 7	
20. I try to think through a topic and decide what I am supposed to learn from it rather than just reading it over when studying	1 2 3 4 5 6 7	
21. When studying for a course, I try to determine which concepts I don't understand well.	1 2 3 4 5 6 7	



**Part 2. SCORING SHEET**

1. Write the number you circled for each question in each blank. For questions 4 and 14, subtract your number from seven to get your score for that question.
2. Then, add up the three numbers in the row to get your total score for that topic.

			TOTAL SCORE	TOPIC
1. _____	8. _____	15. _____		Rehearsal
2. _____	9. _____	16. _____		Elaboration
3. _____	10. _____	17. _____		Organization
4. _____ (7 - score)	11. _____	18. _____		Help-Seeking
5. _____	12. _____	19. _____		Peer Learning
6. _____	13. _____	20. _____		Self-Regulation (1)
7. _____	14. _____ (7 - score)	21. _____		Self-Regulation (2)

**Rehearsal:** Reciting or naming items from a list to be learned. These strategies are best used for simple tasks and activation of information in working memory rather than the acquisition of new information in long-term memory.

**Elaboration:** Building internal connections between items to be learned. Examples include paraphrasing, summarizing, creating analogies. These strategies help students store information in long-term memory.

**Organization:** Strategies such as clustering, outlining, and selecting the main idea help form connections and result in better performance.

**Help-Seeking:** Peer help, peer tutoring, and individual teacher assistance (online or in person) facilitate student achievement.

**Self-Regulation.** This topic refers to use of metacognitive strategies (Know what you know, know what you don't know). Metacognition can be very simple: Step 1. **Planning.** What do I know about this topic? What don't I know? How can I learn what I need to know? Step 2.

**Learning and Monitoring.** Use good learning strategies to read, listen to a lecture.... 3.

**Evaluating.** Did I learn it? What do I still need to work on? See the Table 1 in this handout for useful strategies for each step.

**Table 1.** Sample self-questions to promote student metacognition about learning<sup>a</sup>

Activity	Planning	Monitoring	Evaluating
Class session	<ul style="list-style-type: none"> <li>• What are the goals of the class session going to be?</li> <li>• What do I already know about this topic?</li> <li>• How could I best prepare for the class session?</li> <li>• Where should I sit and what should I be doing (or not doing) to best support my learning during class?</li> <li>• What questions do I already have about this topic that I want to find out more about?</li> </ul>	<ul style="list-style-type: none"> <li>• What insights am I having as I experience this class session? What confusions?</li> <li>• What questions are arising for me during the class session? Am I writing them down somewhere?</li> <li>• Do I find this interesting? Why or why not? How could I make this material personally relevant?</li> <li>• Can I distinguish important information from details? If not, how will I figure this out?</li> </ul>	<ul style="list-style-type: none"> <li>• What was today's class session about?</li> <li>• What did I hear today that is in conflict with my prior understanding?</li> <li>• How did the ideas of today's class session relate to previous class sessions?</li> <li>• What do I need to actively go and do now to get my questions answered and my confusions clarified?</li> <li>• What did I find most interesting about class today?</li> </ul>
Active-learning task and/or homework assignment	<ul style="list-style-type: none"> <li>• What is the instructor's goal in having me do this task?</li> <li>• What are all the things I need to do to successfully accomplish this task?</li> <li>• What resources do I need to complete the task? How will I make sure I have them?</li> <li>• How much time do I need to complete the task?</li> <li>• If I have done something like this before, how could I do a better job this time?</li> </ul>	<ul style="list-style-type: none"> <li>• What strategies am I using that are working well or not working well to help me learn?</li> <li>• What other resources could I be using to complete this task? What action should I take to get these?</li> <li>• What is most challenging for me about this task? Most confusing?</li> <li>• What could I do differently midassignment to address these challenges and confusions?</li> </ul>	<ul style="list-style-type: none"> <li>• To what extent did I successfully accomplish the goals of the task?</li> <li>• To what extent did I use resources available to me?</li> <li>• If I were the instructor, what would I identify as strengths of my work and flaws in my work?</li> <li>• When I do an assignment or task like this again, what do I want to remember to do differently? What worked well for me that I should use next time?</li> </ul>
Quiz or exam	<ul style="list-style-type: none"> <li>• What strategies will I use to study (e.g., study groups, problem sets, evaluating text figures, challenging myself with practice quizzes, and/or going to office hours and review sessions)?</li> <li>• How much time do I plan on studying? Over what period of time and for how long each time I sit down do I need to study?</li> <li>• Which aspects of the course material should I spend more or less time on, based on my current understanding?</li> </ul>	<ul style="list-style-type: none"> <li>• To what extent am I being systematic in my studying of all the material for the exam?</li> <li>• To what extent am I taking advantage of all the learning supports available to me?</li> <li>• Am I struggling with my motivation to study? If so, do I remember why I am taking this course?</li> <li>• Which of my confusions have I clarified? How was I able to get them clarified?</li> <li>• Which confusions remain and how am I going to get them clarified?</li> </ul>	<ul style="list-style-type: none"> <li>• What about my exam preparation worked well that I should remember to do next time?</li> <li>• What did not work so well that I should not do next time or that I should change?</li> <li>• What questions did I not answer correctly? Why? How did my answer compare with the suggested correct answer?</li> <li>• What questions did I not answer correctly? Why? What confusions do I have that I still need to clarify?</li> </ul>
Overall course	<ul style="list-style-type: none"> <li>• Why is it important to learn the material in this course?</li> <li>• How does success in this course relate to my career goals?</li> <li>• How am I going to actively monitor my learning in this course?</li> <li>• What do I most want to learn in this course?</li> <li>• What do I want to be able to do by the end of this course?</li> </ul>	<ul style="list-style-type: none"> <li>• In what ways is the teaching in this course supportive of my learning? How could I maximize this?</li> <li>• In what ways is the teaching in this course not supportive of my learning? How could I compensate for or change this?</li> <li>• How interested am I in this course? How confident am I in my learning? What could I do to increase my interest and confidence?</li> </ul>	<ul style="list-style-type: none"> <li>• What will I still remember 5 yr from now that I learned in this course?</li> <li>• What advice would I give a friend about how to learn the most in this course?</li> <li>• If I were to teach this course, how would I change it?</li> <li>• What have I learned about how I learn in this course that I could use in my future biology/science courses? In my career?</li> </ul>

<sup>a</sup>Inspired by Ertmer and Newby (1996), Schraw (1998), and Coutinho (2007).

exam, or an entire course. While this collection of questions by no means represents the entire landscape of what metacognition could involve, it does provide starting points for faculty who wish to talk with students explicitly about metacognitive

strategies. These questions can be shared directly with students and/or embedded into particular assignments. Several examples of how these student self-questions can be explicitly used in teaching a biology course are considered below.

**Update Speaker I**  
**Dr. Kevin Petti**  
**San Diego Miramar College**



**"Anatomia Italiana"**  
**Art and Anatomy in the Italian Renaissance**

**10:00 – 10:45 AM**  
**Hull Auditorium**

**Abstract:** Italy's medieval universities established the study of human anatomy for physicians. To heighten their art, Renaissance masters clandestinely examined anatomy through human dissection. The profound connection between art and science in Italy is beautifully demonstrated by the genius of Michelangelo. Indeed, the wooden crucifix he carved in gratitude for secret access to corpses from a convent's hospital still hangs in the Basilica of Santo Spirito in Florence. This talk will examine the nexus between art and science, the history of anatomy education in the university, and how this story is distinct to the Italian peninsula.

**Bio:** Kevin Petti, Ph.D. is a dual U.S./Italian citizen, a professor in the departments of science and health at San Diego Miramar College, a textbook coauthor, and president-emeritus of the Human Anatomy and Physiology Society. Dr. Petti teaches human anatomy and physiology, human dissection, and health science. He also teaches study abroad courses to Italy that focus on the genesis of anatomy as a science and its influence on the Renaissance masters. His students range from anatomy professors pursuing continuing education, to international programs for college students. He is invited to speak about the connection between art and anatomy in medieval and Renaissance Italy at international conferences as well as universities throughout the United States. The Italian government has invited him to speak at their Cultural Institutes in Los Angeles and New York City. In the summer of 2016, The University of Palermo in Sicily, hosted Dr. Petti for a week as a guest lecturer to their medical students.

**Update Speaker II**  
**James Munoz, Ph.D.**  
**Nova Southeastern University**



**“The History and Promise of Neuroscience”**

**1:00 – 1:45 PM**  
**Hull Auditorium**

**Abstract:** Neuroscience is one of the newest of the biomedical disciplines. This talk will briefly cover how perceptions of the brain have changed over time and how these perceptions have influenced our language when discussing the brain. We will then discuss several modern experimental breakthroughs in neuroscience and how these advances may shape our future. Topics will include an introduction to neurogenesis, induced-pluripotent stem cells, the human connectome project, and optogenetics. Finally, we will discuss novel sources to promote neuroscience education.

**Bio:** Dr. Munoz earned his Ph.D. in Neuroscience at Tulane University with an emphasis in Gene Therapy. His thesis work examined neuroprotective effects of mesenchymal stem cells and their interactions with endogenous neural stem cells. He completed Postdoctoral Training at the University of Pennsylvania, where he studied how changes in intracellular calcium signaling affected the maturation of neural stem cells. He also studied the role of EphB proteins in the proliferation, migration, and differentiation of neural stem cells. His current research is examining factors that regulate the proliferation, migration, and differentiation of neural stem cells.

**Poster setup: 7:30 to 8:30 am.      Poster removal: 4:30 pm**

**Poster Session 1:      ODD NUMBERS, from 10:45 to 11:15 am**

**Poster Session 2:      EVEN NUMBERS, from 2:45- 3:15 pm**

Poster Number	Author and Affiliation	Title
1	Candice C. Darville, Bruce A. Hyma, Andrew T. Mariassy, Barry University/NSU	Bronchial Basement Membrane Carbohydrates in Asthma
2	Anastasia Mashukova, Pedro Salas, NSU/University of Miami	Gastrointestinal Barrier: Keratin Cytoskeleton and Heat Shock Proteins to the Rescue
3	Sruthi Damodar, NSU	Biomarkers and the Pathophysiology of Breast Cancer
4 Cancelled	Deepshikha Mishra, Dilip Mehta Dhulikhel Hospital Kathmandu University Hospital, Nepal	A Descriptive Study on Morphometric Analysis of Mental Foramen of Adult Human Mandibles in Central Nepal
5	Mary Tracy-Bee, Scott Barton, Ami Patel, Crystal Kallabat, Kaylee Kromrei, Martha Flores, University of Detroit Mercy	Variation of the Common Carotid Artery Diameter Related to Age
6	Beth Collier, Mercer University	A Novel Interactive Cadaver Dissection Experience to Supplement Learning Clinical Orthopedic Tests with Physical Therapy Students
7	Mary Tracy-Bee, Ami Patel, Reem Bazzi, Alaa Abu-Mahfouz, Rama Zouabi, University of Detroit Mercy	Variations in Duodenal Lengths of the Pylorus and the Major and Minor Papilla
8	Thomas P Arnold, Molly Zagoria, Korie Jackson, Yazmin Walker, NSU	Measuring student perceptions to virtual dissection in a graduate neuroanatomy course.
9	Natalie Builes, Samantha Bergoine, Dominick Casciato, Nicholas Mijares, Francisco Carrera, Robert C. Speth, NSU	Frozen Brain Atlas: Individualized Brain Mapping
10	Dominick Casciato, Natalie Builes, Barry University	Using Three-Dimensional Printing to Enhance Cross Sectional Anatomy Instruction
11	Michele S. Skelton, Stetson University	Use of 3D Printing for Teaching Unity of Form and Function in Undergraduate Anatomy and Physiology Courses
12	John M. Reynolds, Melinda Johnson, Cheryl Purvis, NSU	Custom 3D printed brainstem model for neuroanatomy instruction
13	Ryan Bennett, Vijay Bajnath, Gregory John Vitale, NSU	Depression and Behavioral Ratings of Alzheimer's and Non-Alzheimer's Dementias
14	Deanne Roopnarine, Michael Hellman, NSU	The Utilization of Current Events to Pique Students' Interest in Research
15	Deanne Roopnarine, Isabel Olivera, Tamara Gali, NSU	Physiology Understanding Week as a Tool for College Students to Recruit the Next Generation of Scientists
16	Valentina Ramirez, Ahjay Bhatia, Suhani Patel, Emily Schmitt, NSU	Mobilizing College Students in Health Professional Studies to Provide Science Outreach Activities to The Community

17	Ana M. Jimenez, Laura Mudd, Barry University	Teaching Methods to Increase Engagement of Non-Majors in Undergraduate Anatomy and Physiology Courses
18	Virginia Baker Haynes, Nicole Faison, Kara Cashwell, Ashley Higginbotham, Charleston Southern University	An Investigation of Potential Trends in A & P I Final Grades between Male versus Female Students
19	Leah Lyons, Debra McNally, NSU	Peer Based Interactive Problem Solving Improves Anatomy and Physiology Learning Outcomes in Nursing Students
20	Zachary Smith, Matthew Apicella, Jordan Best, Luis Alva, NSU	Teaching Anatomy to Health Profession Students from the Perspective of Medical Student Anatomy Fellows
21	Jeena Kar, University of Florida Arts in Medicine / NSU	Arts in Medicine -- A Literature Review Proposing Henna Art as a Healing Medium
22	Jenna Knafo, Anh Nguyen, Michelle Duddy, Veronica Cote, Julie Torruellas Garcia, NSU	Art, Microbiology and Anatomy Combined in a Unique Arts and Sciences Collaboration
23	Riti Vohra, Valentina Ramirez, Guy Merus, Emily Schmitt, NSU	Linking Protein Structure and Function to Medical Applications Through 3-D Molecular Modeling
24	Divya Pandya, Evan Haskell, Robert Smith, Christopher Blannar, NSU	Modeling and simulation of Caenorhabditis Elegans chemotaxis in response to a dynamic engineered bacteria
25	Everett Rogers, Timothy Fawcett, Summer Decker, Jonathan Ford, USF	Sensitivity of Computational Hemodynamic Models to Geometry and Viscosity Parameters: Comparison of Real and Idealized Arteries With and Without Stenosis
26	Maria Labra, Andrea Alvarez, Harvey Mayrovitz, NSU	A Method to Early Detect Lower Extremity Edema Due to Congestive Heart Failure (CHF)
27	Cheryl Purvis, NSU	The Neuroanatomy of Narcolepsy

**Poster Session 1: ODD NUMBERS, from 10:45 to 11:15 am**

**Poster Session 2: EVEN NUMBERS, from 2:45- 3:15 pm**

**Poster setup: 7:30 to 8:30 am. Poster removal: 4:30 pm**



## Poster Presentations

**Please Note: Odd number presentations will present from 10:45 – 11:15 AM.**

**Even number presentations will present from 2:45 – 3:15 PM**

### **1: Bronchial Basement Membrane Carbohydrates in Asthma**

**Candice C. Darville, Barry University, marissyt@nova.edu, Bruce A. Hyma, Miami-Dade County ME Department, Andrew T. Mariassy, Nova Southeastern University, marissyt@nova.edu**

Bronchial basement membrane (BM) alterations are the consequence of chronic airway inflammation in asthma. We assessed the BM carbohydrate composition as detected with lectin molecular probes. Bronchi were randomly taken from 12 cases of fatal asthma and from 6 control subjects (accidental death). Biotinylated lectins were applied onto serial bronchial sections. In comparison to controls, there were marked alterations of the BM lectin reactivity in asthmatics. The BM had an increased PNA, BSA, UEA, MAL and DBA reactivity. We conclude that in the examined cases of fatal asthma the degree of bronchial wall remodeling included a significant alteration of BM.

### **2: Gastrointestinal Barrier: Keratin Cytoskeleton and Heat Shock Proteins to the Rescue**

**Anastasia Mashukova, Nova Southeastern University, amashukova@nova.edu, Pedro Salas, University of Miami**

The gastrointestinal barrier separates the inside of the body from the outside environment. Tight junctions (TJs) are the most important structural component for the formation of constitutive barrier in epithelial cells. Atypical Protein Kinase C (aPKC) is a crucial regulator in the establishment of apico-basal polarity and assembly of tight junctions. Our data indicate that in the intestinal epithelium the rescue of aPKC from degradation depends on a subset of heat shock proteins that operate on a keratin cytoskeleton scaffold. This mechanism is responsible for the maintenance of normal steady-state levels of aPKC and supports TJ barrier integrity.

### **3: Biomarkers and the Pathophysiology of Breast Cancer**

**Sruthi Damodar, Nova Southeastern University, sd1607@nova.edu**

Breast cancer is one of the most common malignancies that occurs in women. Cell lines represent an important tool in the experimental studies of breast cancer. Biomarkers such as estrogen receptors ER $\alpha$  and ER $\beta$ , human epidermal growth factor receptor 2 (HER-2), and human epidermal growth factor receptor – 1 (EGFR) are involved in the development of the disease. The expressions of these biomarkers influence prognosis and therapeutic options. The goal of this project was to develop a biomarker expression profile of 14 commercially available cancer cell lines. Western blot analysis was used. Our results show unique expression patterns of these cell lines.

### **4: A Descriptive Study on Morphometric Analysis of Mental Foramen of Adult Human Mandibles in Central Nepal**

**Deepshikha Mishra, Dhulikhel Hospital Kathmandu University Hospital, deepshikha.007mishra@gmail.com, Dilip Mehta, Dhulikhel Hospital Kathmandu University Hospital, mehtadilip2002@gmail.com**

Anatomic variations of mandible vary among population. A descriptive, cross-sectional, multi-centered study was conducted in the anatomy laboratories of five medical colleges of central Nepal. A total of 197 dry adult human mandibles were studied for different variables. A total of 23 (11.67%) mandibles had accessory mental foramina (MF): 6.6 % on left and 5.08 % on right side. Average diameters of mental and accessory MF were measured as 1.55 $\pm$ 0.37mm and 1.01 $\pm$ 0.22mm, respectively. Commonest location of MF was found to be below the apex of second premolar (52.54%). The present study supplements various data of mandible among Nepalese population.

### **5: Variation of the Common Carotid Artery Diameter Related to Age**

**Mary Tracy-Bee, University of Detroit Mercy, [tracyma@udmercy.edu](mailto:tracyma@udmercy.edu), Scott Barton, University of California San Diego, [stbarton@ucsd.edu](mailto:stbarton@ucsd.edu), Ami Patel, University of Detroit Mercy, Crystal Kallabat, University of Detroit Mercy, Kaylee Kromrei, University of Detroit Mercy, Martha Flores, University of Detroit Mercy**

In multi-campus, multi-year study we investigated the relationship of the size of the common carotid artery versus age of death. A significant and positive correlation was identified bilaterally in the diameter of the common carotid arteries in relationship to age of death in human cadavers ranging from 24 to 102 years old ( $p=0.011$ ). The diameter of the common carotid artery has been associated with the occurrence and severity of strokes. This may provide insight into circulatory-related procedures in the cervical region or may be indicative of a related genetic predisposition to a higher vascular flow.

### **6: A Novel Interactive Cadaver Dissection Experience to Supplement Learning Clinical Orthopaedic Tests with Physical Therapy Students**

**Beth Collier, Mercer University, [collier\\_nb@mercer.edu](mailto:collier_nb@mercer.edu)**

As part of a clinical examination, physical therapists utilize clinical special tests that often aim to provoke symptoms. Understanding the kinematics involved in each test is imperative to determine an accurate diagnosis; however, students often lack depth in understanding these concepts due to an abstract application of gross anatomy knowledge. A novel interactive dissection experience was implemented in a professional physical therapist education program. Students dissected cadaver specimens to demonstrate all tissue structures that may be involved in a given pathology. Students then performed clinical tests on the dissected specimens to visually reinforce the mechanism of the clinical test.

### **7: Variations in Duodenal Lengths of the Pylorus and the Major and Minor Papilla**

**Mary Tracy-Bee, University of Detroit Mercy, [tracyma@udmercy.edu](mailto:tracyma@udmercy.edu), Ami Patel, University of Detroit Mercy, [patelaj@udmercy.edu](mailto:patelaj@udmercy.edu), Reem Bazzi, University of Detroit Mercy, Alaa Abu-Mahfouz, University of Detroit Mercy, Rama Zouabi, University of Detroit Mercy**

The duodenum is located in the proximal portion of the small intestine. It plays a vital role in the break down of chyme from the stomach, allowing for absorption of food in the small intestine. The duodenum is located distal to the pyloric sphincter and stomach. The purpose of our research was to measure the distance from the pylorus to the major papilla and the distance from the minor papilla to the major papilla. Having a solid understanding of these distances is of great importance to gastrointestinal (GI) doctors as they investigate the pathways through which bile and pancreatic juices pass upon their final draining into the duodenum. These measurements can be used for future medical studies in medicine and to allow for a better understanding of anatomical variations that occur within the small intestine.

### **8: Measuring Student Perceptions to Virtual Dissection in a Graduate Neuroanatomy Course**

**Thomas P Arnold, Nova Southeastern University, [tarnold1@nova.edu](mailto:tarnold1@nova.edu), Molly Zagoria, Nova Southeastern University, [mc2684@nova.edu](mailto:mc2684@nova.edu), Korie Jackson, Nova Southeastern University, [kj624@nova.edu](mailto:kj624@nova.edu), Yazmin Walker, Nova Southeastern University, [yw88@nova.edu](mailto:yw88@nova.edu)**

Integrated use of virtual dissection software was begun in medical anatomy and neuroanatomy courses in 2014 at NSU, Tampa. By 2015 all students were required to study and use virtual dissection in these studies. Cohorts where virtual dissection was less employed (class of 2016) were surveyed as well as those cohorts which required it (class of 2017). The survey was based on the psychomotor learning objectives for the course and was conducted on-line using an on-line instrument (RedCap). Students enrolled in two professional doctorate programs were asked to participate; the Occupational Therapy Doctorate as well as the Physical Therapy Doctorate. Both programs are delivered by a hybrid curricula and utilize extensive web-based resources. Results and analysis of the survey will be presented.

### **9: Frozen Brain Atlas: Individualized Brain Mapping**

**Natalie Builes, Nova Southeastern University, nb878@nova.edu, Samantha Bergoine, Nova Southeastern University, sb1603@nova.edu, Dominick J. Casciato, Barry University, dominick.casciato@mymail.barry.edu, Nicholas A. Mijares, Somerset Academy Charter High School, nmijares12@gmail.com, Francisco Carrera, Nova Southeastern University, fc414@nova.edu, Robert C. Speth, Nova Southeastern University, rs1251@nova.edu**

The Frozen Brain Atlas provides students, educators, and scientists with a tool to further explore the architecture of the brain. Current mouse and rat brain atlases allow users to navigate sectioned brain tissue using histological staining; however, they fail to capture naturally visible structures. Through immediate post sectioning image collection, the natural contrast of the brain reveals unique structural details rarely seen by traditional staining procedures. By utilizing indexing and interactive labeling, this atlas allows identification of brain regions as an educational and research tool for modalities including receptor autoradiography, immunofluorescence, and other methods.

### **10: Using Three-Dimensional Printing to Enhance Cross Sectional Anatomy Instruction**

**Dominick Casciato, Barry University, dominick.casciato@mymail.barry.edu, Natalie Builes, Nova Southeastern University, nb878@nova.edu, Bibi Singh, Barry University, bsingh@barry.edu**

The increased use of external interventions to diagnose and treat podiatric pathologies warrants a greater understanding of the lower extremity in the transverse plane. Films, prosections, and plastinated cross sections currently assist students in their anatomical studies. These costly and time intensive methodologies fail to provide the tactile component of dissection, lending themselves to the unlimited possibilities made available with three-dimensional (3D) printing. To fabricate 3D prints, lower extremity cross sections were excised from cadaveric specimen, sketched, digitized, and 3D printed. This instruction advances traditional didactic teaching by facilitating the visuospatial comprehension of lower extremity anatomy, an essential clinical skill.

### **11: Use of 3D Printing for Teaching Unity of Form and Function in Undergraduate Anatomy and Physiology Courses**

**Michele S. Skelton, Stetson University, mskelton@stetson.edu**

The use of 3D printing in medicine is ever expanding (Michalski & Ross, 2014). From dentistry to prosthetics, the use of 3D printing to teach and treat is being explored rapidly by a variety of specialties in today's medical community. The purpose of this project is to provide educational strategies for implementation of the use of 3D printing in undergraduate Anatomy & Physiology courses. Evidence of the effectiveness of the use of 3D printing of anatomical images in addressing the learning outcome of recognizing anatomical structures and the unity of this structure to physiological functions will be presented.

### **12: Custom 3D Printed Brainstem Model for Neuroanatomy Instruction**

**John M. Reynolds, Nova Southeastern University, jreynolds@nova.edu, Melinda Johnson, Nova Southeastern University, mjohnson@nova.edu, Cheryl Purvis, Nova Southeastern University**

Commercial and computer anatomical models are readily available in universities. Commercial models are expensive and computer simulations may not be as effective for learning. We attempted to create a custom model of a human brainstem using freely available medical images, open-source software, and the NSU Health Profession Division's 3D-printer. The librarian, consulting with a neuroanatomy instructor, downloaded CT images from Japan's Database Center for Life Science's "BodyParts3D/Anatomography" open repository, edited them with free software - Meshmixer, NetFabb, and Meshlab - and created physical representations of the brainstem images with the library's TAZ5 3D-printer, to be lent to students.

### **13: Depression and Behavioral Ratings of Alzheimer's and Non-Alzheimer's Dementias**

**Ryan Bennett, Nova Southeastern University, rb1934@nova.edu, Vijay Bajnath, Nova Southeastern University, vb304@nova.edu, Gregory John Vitale, Nova Southeastern University, gv203@nova.edu**

Dementia is marked by a significant loss of cognitive output and daily living skills. Although Alzheimer's disease accounts for most cases, other etiologies are just as damaging. Neuropsychological functioning is the most studied area in dementia, and less research has been made in the areas of mood and behavior. To close this gap, we investigated depression and behavioral ratings in patients with dementia caused by Alzheimer's, Lewy bodies, vascular, frontotemporal, or Parkinson's. The study endorses the need for multiple sources when performing behavioral assessment and provides valuable qualitative information about psychological symptom severity in patients with different dementia.

### **14: The Utilization of Current Events to Pique Students' Interest in Research**

**Deanne Roopnarine, Nova Southeastern University, roopnari@nova.edu, Michael Hellman, Nova Southeastern University, mh1455@nova.edu**

The Deepwater Horizon accident that occurred in 2010 spilled approximately 685,000 tons of oil into the Gulf of Mexico. The event received unprecedented news coverage with even live coverage online. Owing to the latter, students were very aware of the tragedy and it was discussed in many science classes. However, it was also used to stimulate their interest in research. In this case students were taught histological techniques and utilized them to monitor metaplasia in shellfish from 2010-2015. Later, many of the students began to ask their own research questions, and investigate how best to answer them.

### **15: Physiology Understanding Week as a Tool for College Students to Recruit the Next Generation of Scientists**

**Deanne Roopnarine, Nova Southeastern University, roopnari@nova.edu, Isabel Olivera, Nova Southeastern University, io65@nova.edu, Tamara Gali, Florida State University, tg595@nova.edu**

The American Physiological Society has been organizing Physiology Understanding Week for the past ten years. This is an effort to get high school and middle school students to participate in science. The APS has noted that this is becoming more popular among the younger students in middle schools. It is an important outreach event which allows college students to interact with, and influence the next generation. They are able to share their knowledge and realize the importance of teaching future students, and possibly affecting career choices. In addition, the middle school students gain hands-on experience with physiological activities.

### **16: Mobilizing College Students in Health Professional Studies to Provide Science Outreach Activities to the Community**

**Valentina Ramirez, Nova Southeastern University, vr378@nova.edu, Ahjay Bhatia, Nova Southeastern University, ab2476@nova.edu, Suhani Patel, Nova Southeastern University, sp1492@nova.edu, Michele Parsons, Nova Blanche Forman Elementary, m.parsons@browardschools.com, Emily Schmitt, Nova Southeastern University**

The focus of the Science Alive program is to incorporate Pre-Health students in after-school science outreach, exposing children to the science field and inspiring them to pursue a college education. This was achieved by creating a curriculum in which students from kindergarten through fifth grade were exposed to the fields of: Biology, Chemistry, Physics, Robotics, Circuitry, Navigation, Energy, and Crime Scene Investigation (CSI). The children's performance in science subjects not only improved (through greater comprehension and knowledge retention), but also advanced the college student volunteers' leadership and social experiences; acquiring skills that can be applied throughout their professional development.

**17: Teaching Methods to Increase Engagement of Non-Majors in Undergraduate Anatomy and Physiology Courses**

**Ana M. Jimenez, Barry University, amjimenez@barry.edu, Laura Mudd, Barry University, lmudd@barry.edu**

We have designed a number of strategies for our non-major students who have in the past been less engaged, and have shown less interest, in undergraduate biology courses, specifically anatomy and physiology. Our purpose is to increase student interaction with one another, student interaction with faculty, student understanding of complex biological concepts. In addition, we aim to engage them physically in the learning process and to increase their interest and recall using experiential learning. These strategies fall broadly into categories of projects outside of the classroom, in-class interactive activities, and in-laboratory exercises to enhance memory and to make the learning experience interactive. We aim to make the courses relatable to their fields and their career interests, including majors in sports science, sports management, athletic training, pre-nursing, pre-physician assistant, and pre-occupational therapy.

**18: An Investigation of Potential Trends in A & P I Final Grades Between Male versus Female Students**

**Virginia Baker Haynes, Charleston Southern University, vbaker@csuniv.edu, Nicole Faison, Charleston Southern University, NNFaison@csustudent.net, Kara Cashwell, Charleston Southern University, KNCashwell@csustudent.net, Ashley Higginbotham, Charleston Southern University, AHigginbotham@csustudent.net**

The purpose of this study was to identify potential trends in BIOL 226 (Anatomy and Physiology I) final grades between male and female students. Anatomy and Physiology I final grades from 2011 to 2016 were categorized by each student's gender. The data shows that while female students have, on average, earned a moderately higher final grade in A & P I than male students, this difference was not statistically significant. These findings contradict recent studies which claim that nationally, female college students are academically outperforming their male peers in the sciences.

**19: Peer Based Interactive Problem Solving Improves Anatomy and Physiology Learning Outcomes in Nursing Students**

**Leah Lyons, Nova Southeastern University, ll665@nova.edu, Debra McNally, Nova Southeastern University**

A deep conceptual understanding of the principles of anatomy and physiology is essential to nurses in today's health care field. The challenges associated with conveying this information, and its retention to nursing students are multifaceted. Traditional didactic methods have been shown to be less effective than more active learning processes. To this end, we sought to evaluate the use of peer assisted small group problem solving sessions consisting of case studies to solidify some of the traditionally more difficult concepts in various anatomy and physiology principles. Students attending these sessions found them to be valuable to their learning and had improved outcomes as compared to non-attendees.

**20: Teaching Anatomy to Health Profession Students from the Perspective of Medical Student Anatomy Fellows**

**Zachary Smith, Nova Southeastern University, zs130@nova.edu, Matthew Apicella, Nova Southeastern University, ma1996@nova.edu, Jordan Best, Nova Southeastern University, jb3604@nova.edu, Luis Alva, Nova Southeastern University, la968@nova.edu**

While some students are well-versed in anatomy by the time of their enrollment, other professional students complete the entirety of their pre-requisite work without any such exposure, exhibiting disproportionate preparedness for medical anatomy. As medical students and anatomy fellows, we examine the tools that were advantageous to ourselves in learning the material, as well as the methods and devices found to be most effective in teaching anatomy to their peers and students of other health professions.

### **21: Arts in Medicine -- A Literature Review Proposing Henna Art as a Healing Medium**

**Jeena Kar, University of Florida/Nova Southeastern University, Jk1011@nova.edu**

This literature review explores the medical application of henna art. There is little research on the subject, opening avenues for novel research on its therapeutic effects. There are a few documents citing the medical use of henna itself, which will be analyzed in this study. However, the majority of this paper will involve thinking deeply about the other aspects of documented arts in medicine work that could be analogically translated into the "henna crowns" pilot study proposed. We explore articles about the use of visual art (drawing, symbol creation, self-expression, support groups, etc.) on breast cancer patients. We then translate how that article is relevant to the visual art of henna tattoos and to describe the benefits of this work specifically. We explore aligned fields such as nursing and anthropology to analyze historical studies done on the importance of body art for tribal groups and healing. This research spans beyond the physical healing properties of henna and looks at its psychological and symbolic, and expressive aspects on women with breast cancer. This study lays the groundwork for further research on henna art, and presents henna as a promising medium for use in a healthcare context.

### **22: Art, Microbiology and Anatomy Combined in a Unique Arts and Sciences Collaboration**

**Jenna Knafo, Nova Southeastern University, jk1124@nova.edu, Anh Nguyen, Nova Southeastern University, hello@annienugget.com, Michelle Duddy, Nova Southeastern University, Md1764@nova.edu, Veronica Cote, Doctors Charter School Miami Shores, hello@veroniquecote.com, Julie Torruellas Garcia, Nova Southeastern University**

Collaborations between the arts and sciences create bridges into new ideas and processes that can benefit the artistic mind as well as the scientific mind. Nova Southeastern University art students participated in a microbiology laboratory workshop within the Department of Biological Sciences where they learned how to use agar as a canvas and bacteria as paint in order to create works of art. The students created colorful images of anatomical icons and were able to bridge the gap between two seemingly opposite subjects. The images were entered into the American Society for Microbiology's 2016 Agar Art contest.

### **23: Linking Protein Structure and Function to Medical Applications Through 3-D Molecular Modeling**

**Riti Vohra, Nova Southeastern University, rv359@nova.edu, Valentina Ramirez, Nova Southeastern University, vr378@nova.edu, Guy Merus, Nova Southeastern University, gm824@nova.edu, Emily Schmitt, Nova Southeastern University, eschmitt@nova.edu**

Through the use of protein visualization software, such as JMOL, it is possible to design and ultimately print 3-D structural protein models. Literary review and protein database files help shed light on the important structural components of proteins. As an example, the Angiotensin II, AT1 type receptor, known by its protein database file, 4ZUD, was selected to demonstrate this process. We observed its interaction with a well-known anti-hypertensive drug, Benicar™ (olmesartan), to better explain the structure and function of this drug and its receptor. 3-D molecular modeling is a valuable tool for visually understanding and identifying anatomical and physiological relationships.

### **24: Modeling and Simulation of Caenorhabditis Elegans Chemotaxis in Response to a Dynamic Engineered Bacteria**

**Divya Pandya, Nova Southeastern University, dp1044@nova.edu, Evan Haskell, Nova Southeastern University, haskell@nova.edu, Robert Smith, Nova Southeastern University, rsmith@nova.edu, Christopher Blonar, Nova Southeastern University, cblonar@nova.edu**

Nematodes remain important causative agents of diseases. While several studies have examined how nematodes behave in response to a chemoattractant, how the characteristics of the chemoattractant affect chemotaxis has yet to be explored. A mathematical model was created to examine how characteristics of chemoattractants affect chemotaxis in *Caenorhabditis elegans*. Specifically, toxic bacteria were engineered to express a chemoattractant. Under static conditions, the chemoattractant's diffusion rate was proportional to attraction. If the nematodes learn that the chemoattractant is associated with toxicity, attraction is counterintuitively reduced with increasing diffusion rate. Results may have implications in novel treatments of parasitic infections.



**25: Sensitivity of Computational Hemodynamic Models to Geometry and Viscosity Parameters: Comparison of Real and Idealized Arteries With and Without Stenosis**

**Everett Rogers, Nova Southeastern University, er1018@nova.edu, Timothy Fawcett, University of South Florida, tfawcett@usf.edu, Summer Decker, University of South Florida, sdecker@health.usf.edu, Jonathan Ford, University of South Florida, jford@health.usf.edu**

A comprehensive understanding of the sensitivity of hemodynamic variables within blood flow models is critical to our understanding of the pathogenesis of atherosclerosis. This study is a comparison of sensitivities of blood flow in a carotid artery to both geometric and viscosity model changes. Specifically, the results of these changes are compared in both real and idealized arteries that have no (0%), moderate (50% and 70%) and severe (90%) stenosis.

**26: A Method to Early Detect Lower Extremity Edema Due to Congestive Heart Failure (CHF)**

**Maria Labra, Nova Southeastern University, ml1820@nova.edu, Andrea Alvarez, Nova Southeastern University, aa2186@nova.edu, Harvey N. Mayrovitz, Nova Southeastern University, mayrovit@nova.edu**

In the US about 550,000 new cases of CHF occur per year often with lower extremity edema. We reasoned that if the edema were detected earlier than is possible visually, then treatment could be more properly guided. For this to occur a normal reference range is first needed. Our goal was to develop a method to provide this reference range using noninvasive measurements of skin tissue dielectric constants (TDC) as an index of localized water content. To minimize patient-to-patient variability we express the tissue water values of lower extremity sites relative to upper extremity sites not normally involved in CHF.

**27: The Neuroanatomy of Narcolepsy**

**Cheryl Purvis, Nova Southeastern University, cpurvis@nova.edu**

As basic science educators, teaching the anatomy of the brain, we can incorporate clinical correlations to maximize student interest. Narcolepsy is an often misunderstood sleep disorder. Research over the past decade has revealed the underlying cause is an autoimmune-mediated destruction of hypocretin (orexin) -producing neurons in the hypothalamus. Hypocretins are neurotransmitters involved in maintaining wakefulness. In the brains of people with narcolepsy, the number of hypocretin-producing neurons in the brain is markedly reduced.

## **Workshop Session 1**

### **10:00 AM – 10:45 AM**

#### **Session 101, Room 2102: Sympathetic Innervation of Lacrimal and Salivary Glands: Textbook Contradictions and Long Lasting Conundrum in Research Literature**

**Yuri Zagvazdin, Nova Southeastern University, [yuri@nova.edu](mailto:yuri@nova.edu)**

Information regarding the effect of sympathetic nerves on lacrimal and saliva flow is contradictory and confusing. Some authors of Anatomy and Physiology textbooks deny existence or functional role of sympathetic innervation of the lacrimal glands, while others show secretion as a response to stimuli. There is also disagreement about the effect of sympathetic stimulation on salivary glands, and either suppressive or stimulatory outcomes are listed. While evidence that sympathetic activity modulates secretion of tears and saliva became available more than a hundred years ago, the precise role of sympathetic nerves in regulation of these physiologically important fluids remains obscure.

#### **Session 102, Room 2103: Cellular Life After Death: Stories of Cells Used in Research**

**Emily Schmitt Lavin, Nova Southeastern University, [eschmitt@nova.edu](mailto:eschmitt@nova.edu)**

Cells from the human body can live on long after the person they came from has died providing essential tools for research. A famous example are cells from Henrietta Lacks' tumor. Although Henrietta died in 1950 at the age of 31 from cervical cancer her cells were able to grow in culture. Examples of how and why cells live on long after the individual they came from has died will be presented. Questions such as, "What happens to cells once they leave our bodies, especially when we have samples taken as part of medical procedures?" will also be discussed.

#### **Session 103, Room 2104: Defining Anatomy and Physiology through Sound: The Visualization of Anatomy by Ultrasound**

**Deborah Mendelsohn, Nova Southeastern University, [dm1390@nova.edu](mailto:dm1390@nova.edu)**

Ultrasound is a radiological exam used in identifying pathology. The difference between other modalities is that ultrasound is dependent upon the sonographer, which requires an in-depth knowledge of anatomy and physiology. Learning how sound travels through the human body adds another component to identifying anatomical organs. The tissue echogenicity within an organ and between organs requires a strong understanding in the physics of how sound travels. The resulting images created by sound waves are representative of the anatomical structures scanned. This presentation will demonstrate a strong connection between the identification of pathology and the skills to perform a diagnostic sonogram.

#### **Session 104, Room 3320 (Gross Anatomy), HPD Library Building: The Cadaver as the First Patient: Emphasizing the Importance of Gross Anatomy for Future Healthcare Professionals**

**Paul Greenman, Nova Southeastern University, [greenman@nova.edu](mailto:greenman@nova.edu), Adalyne Singh, Nova Southeastern University, [as1616@nova.edu](mailto:as1616@nova.edu)**

Gross Anatomy is the foundation of every future healthcare professional. At Nova Southeastern University, our Health Professions Division trains a variety of students in various programs including osteopathic medicine, dental medicine, optometry, nursing, physician assistant, anesthesia assistant, physical therapy, and occupational therapy. This workshop will give participants an opportunity to see our extensive model collection as well as our newly-renovated prosection and dissection cadaver laboratories.

**Session 105, Room 2101: The RM3A Examination**

**Marrissa Dybas, Nova Southeastern University and Smart for Life, md1729@nova.edu, Jon Ramnon, Smart for Life, jonramnon@gmail.com**

The RM3A is a ten minute long, non-invasive examination that determines an individual's risk for a myriad of life-threatening conditions such as heart disease, neuropathy, and diabetes. This is done by assessing the patient's autonomic nervous system dysfunction risk, insulin resistance, and small fiber neuropathy risk; amongst other factors. During this workshop, a brief discussion of the anatomy and physiology of the cardiovascular system and the autonomic nervous system will be discussed. We will demonstrate and define the different assessments in the exam and we will be offering free RM3A screenings for the remainder of that day of the conference.

**Workshop Session 2  
11:15 AM – 12:00 PM**

**Session 201, Hull Auditorium: The Biological Correlates of Psychological Well-Being: It's Not Just a State of Mind**

**Barry Nierenberg, Nova Southeastern University, nierenbe@nova.edu**

Recent research efforts will be reviewed that have identified both genomic and neuroimmune correlates of individuals with high and low Psychological Well-Being (PWB). Evidence based models of PWB will be presented including Ryff's 6 factor model. Implications for physical and mental health will be discussed.

**Session 202, Room 2102: The Chemistry of Anatomy**

**Gabriel Quinones-Medina, Nova Southeastern University, gq14@nova.edu, Christian Hailey Summa, Nova Southeastern University, cs2641@nova.edu**

Basic science educators have the power to mold student's minds, change lives and impact the world. Medical students in particular apply foundational knowledge to real life situations. A&P courses are the building blocks for their education. Faculty are in a unique position to kill students' dreams or inspire and empower them. Presenting from two different perspectives, as students and a former educator, our goal is to raise awareness about the power educators have to make a positive impact on students' academic success. We will discuss building a rapport with students, versatility in teaching methods, and disseminating advanced curricular material.

**Session 203, Room 2103: Anatomy 1 and 2 Online with Support of a Technology**

**Vetaley Stashenko, Palm Beach State College, stashenv@palmbeachstate.edu**

Level of the commitment from a pre nursing students is presented on example of a fully online laboratory (Anatomy 1 and 2) class. Author would like to hear an opinion and share its own experience.

**Session 204, Room 2103: Using Computer Based Exam Question Analysis for Assessing and Improving Student Learning**

**Wayne Schreier, Nova Southeastern University, schreier@nova.edu**

Many universities are now using computer based assessment systems to document the quality improvement, curriculum mapping and assessment of student learning outcomes now required by accrediting agencies. This workshop will discuss how computer based exam analysis can be used to link exam questions to both specific and general learning objectives. The presenter will discuss how he uses outcome based assessment analysis to improve teaching, student learning and the quality of exam questions.

**Session 205, Room 2104: Clinical Correlation of Cross Sectional Anatomy and Sonography**

**Daryan Garcia, Nova Southeastern University, dg1067@nova.edu, Stephanie Lorenz, Nova Southeastern University, sl1466@nova.edu, Stephanie Ranger, Nova Southeastern University, sr1860@nova.edu, Jordyn Troop, Nova Southeastern University, jt1553@nova.edu, Jorge Han, Nova Southeastern University, jh1608@nova.edu**

Anatomy and Physiology are undoubtedly the sole foundations of Sonography. Sonographers have to be very knowledgeable of all the anatomical structures, as well as the physiological concepts of each organ. Unlike any other imaging modality, sonography is quite more difficult because if these two subjects are not completely understood, sonographers can create diseases that are not there by adjusting the ultrasound machine settings incorrectly. This workshop will provide you all with a deeper insight of what role medical sonographers play in the clinical environment and what you all can do as anatomists to adequately prepare students that are interested in this field.

**\*REPEAT\* Session 104, Room 3320 (Gross Anatomy), HPD Library Building: The Cadaver as the First Patient:**

**Emphasizing the Importance of Gross Anatomy for Future Healthcare Professionals**

**Paul Greenman, Nova Southeastern University, greenman@nova.edu, Adalyne Singh, Nova Southeastern University, as1616@nova.edu**

Gross Anatomy is the foundation of every future healthcare professional. At Nova Southeastern University, our Health Professions Division trains a variety of students in various programs including osteopathic medicine, dental medicine, optometry, nursing, physician assistant, anesthesia assistant, physical therapy, and occupational therapy. This workshop will give participants an opportunity to see our extensive model collection as well as our newly-renovated prosection and dissection cadaver laboratories.

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## **Workshop Session 3**

**2:00 PM – 2:45 PM**

**Session 301, Hull Auditorium: Zika Virus in South Florida! Where to Next?**

**Bindu Mayi, Nova Southeastern University, mayi@nova.edu**

Zika virus grabs our attention now because of its potential to harm the fetus, with microcephaly being the most devastating effect. This brings a lot of focus on infected pregnant women and management of babies born with congenital Zika infection. In addition to this demographic, Zika virus can also cause rare neurological complications in the rest of the population. Zika virus spread explosively in 2015, with 49 countries in the Americas now (including Florida in the United States) showing local transmission of Zika. How do we stop this spread? How do we protect future generations?

**Session 302, Room 2102: Art, Medicine and Observation: Teaching Future Healthcare Professionals the Power of Observation**

**Dianna Silvagni, Nova Southeastern University, ds1414@nova.edu**

Using an interdisciplinary approach, this workshop will focus on the development of a course to improve students' observation skills. Through the structured analysis of works of art, attendees will learn how art appreciation skills may be applied to patient observation. As educators, we are in a unique position to foster critical thinking skills in our students.

**Session 303, Room 2103: Peel the Real Deal Without Cost and Time Constraints: Anatomy & Physiology Revealed Version 3.2**

**Greg Reeder, Broward College, Melissa.bittner@mheducation.com**

***\*Sponsored by McGraw Hill\****

You can easily incorporate Anatomy & Physiology Revealed (APR) into your Anatomy & Physiology course. Come learn new ways to provide students with opportunities to practice structures anytime, anywhere. Greg Reeder will share the many unique features, including 3D animations, interactive physiology exploration, and allowing educators to have a more focused structure list through APR's unique customization feature. This workshop will help you enhance the laboratory and lecture elements of your course. You can use these strategies for online, hybrid or face-to-face courses.

**Session 304, Sonography Lab: Recognizing Anatomy in Ultrasound: A Hands-On Clinical Correlation**

**Jordyn Troop, Nova Southeastern University, jt1553@nova.edu, Daryan Garcia, Nova Southeastern University, dg1067@nova.edu, Stephanie Lorenz, Nova Southeastern University, sl466@nova.edu, Stephanie Ranger, Nova Southeastern University**

Sonography is a key diagnostic tool for physicians, yet it is often overlooked as a career path. It can be used to visualize a variety of physiologic processes and pathology. Thorough knowledge of human anatomy is vital to the practice of sonography, as it can be difficult to recognize anatomical structures using its cross-sectional scan planes. This workshop will be a continuation of the first sonography workshop. It will provide a first-hand exploration of sonography.

**Session 305, Room 3108 (Microlab B), HPD Library Building: Welcome to the Office Brochure**

**Mark Jaffe, Nova Southeastern University, mjaffe@nova.edu**

Practice management is ever more crucial in today's competitive world to keep one's program viable. This workshop will teach participants how to create a computerized 6-panel brochure that can be used for many purposes. Although professional organizations may provide its membership prefabricated templates for brochures, creating your own brochure will help your message stand out and target the audience you want to reach. For educators, giving this computerized pamphlet assignment to your students provides them with a great motivator and showcases the future endeavors of your students in very creative ways.

***\*REPEAT\**Session 105, Room 2101: The RM3A Examination**

**Marrissa Dybas, Nova Southeastern University and Smart for Life, md1729@nova.edu, Jon Ramnon, Smart for Life, jonramnon@gmail.com**

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## **Workshop Session 4**

**3:15 PM – 4:00 PM**

### **Session 401, Hull Auditorium: Molecular Mechanisms of Altered Brain Development in Autism and Autism Spectrum Disorders**

**Stephen G. Grant, Nova Southeastern University, [grast01@nova.edu](mailto:grast01@nova.edu), Jordan A. Spaw, Nova Southeastern University, [js3285@nova.edu](mailto:js3285@nova.edu)**

Autism and autism spectrum disorders (ASD) are complex neurodevelopmental conditions whose prevalence is increasing in the United States. Numerous studies have suggested that oxidative stress is involved in the pathogenesis of autism, with deficient glutathione levels as the underlying mechanism. ASD incidence also increases with the age of the father, implying that increased incidence of mutation or accumulation of mutations at conception and early development may be involved. Several of the mutation-susceptible DNA repair deficiency diseases exhibit neurodegenerative phenotypes affecting apoptosis that will be discussed as potentially relevant to understanding both the cellular mechanism of ASD and its rising incidence.

### **Session 402, Room 2102: Learning How To Learn In A&P**

**Brian Reid, Georgia State University, [broid4@student.gsu.edu](mailto:broid4@student.gsu.edu), Shauna Cheesman, Georgia State University, [scheesman2@gsu.edu](mailto:scheesman2@gsu.edu), Timothy Copeland, Georgia State University, [tcopeland9@student.gsu.edu](mailto:tcopeland9@student.gsu.edu)**

Tired of poor student performance in A&P? If so, then come to this hands on interactive workshop designed to explore techniques to improve student success. Many A&P students are new to college or science and struggle with learning large amounts of material. We will explore methods that students can use to organize and condense material while improving study techniques. We will use concept mapping, both on paper and with technology, through the use of apps, spreadsheets, and word processing programs. We will examine the importance of eye-catching color and visual schematics as a means of leaning optimization. Join us to gain the tolls required to be proficient in optimizing student success in A&P.

### **Session 403, Room 2103: Use Cutting-edge Technology to Teach Anatomy in 3D and Teach Students the Way They Want to Learn by Visible Body**

**Robb Kneebone, Visible Body, [robb.kneebone@visiblebody.com](mailto:robb.kneebone@visiblebody.com), Emily Genaway, Visible Body, [emily.genaway@visiblebody.com](mailto:emily.genaway@visiblebody.com)**

***\*Sponsored by Visible Body\****

Visible Body will walk professors through our 2 main products for the undergraduate course: A & P and the Human Anatomy Atlas. An open conversation will be generated around challenges faced by professors and students of anatomy and physiology, how to increase student engagement, and how to improve student performance. Visible Body's learning tools are designed to get students hands-on, learning anatomy in bite-sized chunks. Student learn anatomy and improve their study skills in order to master difficult content in the course.



**Session 404, Sonography Lab: Recognizing Anatomy in Ultrasound: A Hands-On Clinical Correlation**

**Stephanie Ranger, Nova Southeastern University, sr1860@nova.edu, Jorge Han, Nova Southeastern University, jh1608@nova.edu, Daryan Garcia, Nova Southeastern University, dg1067@nova.edu, Stephanie Lorenz, Nova Southeastern University, sl1466@nova.edu, Jordyn Troop, Nova Southeastern University**

Anatomy and physiology are the study of the structure and function of different parts of the body. The only problem is that it's impossible to see through the body to view the necessary anatomy that is desired. Or is it? Diagnostic medical sonography is a form of imaging that allows for the viewing of selected organs, tissues, and blood flow. This workshop will provide you with the understanding of the relationship between sonography and anatomy and physiology, and that their relationship is intertwined. Sonography enhances anatomy and physiology tremendously. Diagnostic medical sonography gives anatomy and physiology life.

**Session 405, Dental Simulation Lab: The Art of Making a Future Dentist: Success in the Dental Simulation Laboratory**

**Jimmy Huynh, Nova Southeastern University, jh2594@nova.edu, Cheryl Purvis, Nova Southeastern University, cpurvis@nova.edu, Ahmad Ahmadi, Nova Southeastern University, aa263@nova.edu**

Fine motor skills, attention to details, and artistic ability are critical skills required in dentistry. Our Masters of Biological Sciences program lays the foundation of success for future medical and dental students. Basic science courses with a laboratory component, like gross anatomy, histology, and neuroanatomy, give students an opportunity to learn fundamental hand-eye coordination. This workshop will give participants a better understanding of the hands-on exercises required in the first year of dental school. The session will take place in our newly-renovated advanced simulation technology laboratory.

**\*REPEAT\*Session 105, Room 2101: The RM3A Examination**

**Marrissa Dybas, Nova Southeastern University and Smart for Life, md1729@nova.edu, Jon Ramnon, Smart for Life, jonramnon@gmail.com**

The RM3A is a ten minute long, non-invasive examination that determines an individual's risk for a myriad of life-threatening conditions such as heart disease, neuropathy, and diabetes. This is done by assessing the patient's autonomic nervous system dysfunction risk, insulin resistance, and small fiber neuropathy risk; amongst other factors. During this workshop, a brief discussion of the anatomy and physiology of the cardiovascular system and the autonomic nervous system will be discussed. We will demonstrate and define the different assessments in the exam and we will be offering free RM3A screenings for the remainder of that day of the conference.

*Just to thank everyone with HAPS Leadership and business team, faculty, staff and students at Nova Southeastern University, the Health Professions Division and the College of Medical Sciences office team for working together to make sure our visitors have an enjoyable, memorable and safe educational experience...*

*You have all been so kind and supportive. The time and effort essential to orchestrating these events has required monumental team spirit.*

*On behalf of HAPS Planning Committee*

### **Human Anatomy and Physiology Society**

#### **HAPS Southern Regional Planning Committee:**

##### **College of Medical Sciences**

Cheryl Purvis, Ph.D.	Committee Chair/ Professor, Department of Anatomy
Yuri Zagvazdin, Ph.D.	Committee Vice-Chair/ Professor, Department of Physiology
Wayne A. Schreier, Ph.D.,	Chair/Professor, Department of Physiology
Edwin A. Murdock, M.D., M.P.H.	Chair/Assistant Professor, Department of Pathology
Anastasia Mashukova, Ph.D.,	Department of Physiology
Annabel Villa, M.D.,	Department of Pathology

##### **College of Psychology**

James R. Munoz, Ph.D.,	Assistant Professor and HAPS Southern Regional Keynote Speaker
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##### **Halmos College of Natural Sciences and Oceanography**

Emily Schmitt Lavin, Ph.D.	Chair/Professor, Department of Biological Sciences
Deanne Roopnarine, DPM	Assistant Chair/Associate Professor, Department of Biological Sciences
Mark Jaffe, DPM	Associate Professor, Department of Biological Sciences

##### **Ex-Officio Members**

Robin Sherman, Ph.D.	Associate Dean/Professor, Halmos College of Natural Sciences and Oceanography
Gerald Conover, Ph.D.	Chair/Professor, Department of Anatomy, College of Medical Sciences
Kandy G Lopez, M.F.A.	Assistant Professor, Department of Performing and Visual Arts
Venkatesh Shanbhag, Ph.D.	Professor, Department of Chemistry and Physics

## Workshops at a Glance

**Morning:** Session 1 from 10:00 to 10:45 am; Session 2 from 11:15 am to 12:00 pm.

**Afternoon:** Session 3 from 2:00 to 2:45 pm; Session 4 from 3:15 to 4:00 pm.

**Labs\*:** Session 1&2 Room 3320 (Gross Anatomy), third floor, HPD Library building

Session Number	Hull Auditorium	Room 2102	Room 2103	Room 2104	Labs*	2101
1	<b>101</b> Anatomia Italiana. Art and Anatomy in the Italian Renaissance, <i>Kevin Petti, San Diego Miramar College</i>	<b>102</b> Sympathetic Innervation of Lacrimal and Salivary Glands: Textbook Contradictions and Long Lasting Conundrum in Research Literature. <i>Yuri Zagvazdin NSU</i>	<b>103</b> Cellular Life After Death: Stories of Cells Used in Research, <i>Emily Schmitt Lavin, NSU</i>	<b>104</b> Defining Anatomy and Physiology through Sound: The Visualization of Anatomy by Ultrasound, <i>Deborah Mendelsohn, NSU</i>	<b>105</b> The Cadaver as the First Patient: Emphasizing the Importance of Gross Anatomy for Future Healthcare Professionals, <i>Paul Greenman, NSU</i>	<b>106</b> The RM3A Examination <i>Marrissa Dybas, NSU</i>
2	<b>201</b> The Biological Correlates of Psychological Well-Being: It's Not Just a State of Mind, <i>Barry Nierenberg, NSU</i>	<b>202</b> The Chemistry of Anatomy <i>Gabriel Quinones-Medina, NSU</i>	<b>203</b> Panel Discussion. Anatomy 1 & 2 Online with Support of a Technology. <i>Vetaley Stashenko West Palm Beach College;</i> <b>204</b> ExamSoft: A Secure Computer Based Tool for Assessing Learning Outcomes <i>Wayne Schreier, NSU</i>	<b>205</b> Clinical Correlation of Cross Sectional Anatomy and Sonography, <i>Daryan Garcia, NSU</i>	<b>105 (repeat)</b> The Cadaver as the First Patient: Emphasizing the Importance of Gross Anatomy for Future Healthcare Professionals, <i>Paul Greenman, NSU</i>	<b>106 (repeat)</b> The RM3A Examination <i>Marrissa Dybas, NSU</i>

Session Number	Hull Auditorium	Room 2102	Room 2103	Sonography Lab	Labs*	2101
3	<b>301</b> Zika Virus in South Florida! Where to Next? Bindu Mayi, NSU	<b>302</b> Art, Medicine and Observation: Teaching Future Healthcare Professionals the Power of Observation <i>Dianna Silvagni, NSU</i>	<b>303</b> Peel the real deal without cost and time constraints: Anatomy & Physiology Revealed Version 3.2, <i>Greg Reeder, Broward College</i>	<b>304</b> Recognizing Anatomy in Ultrasound - A Hands-On Clinical Correlation I <i>Jordyn Troop, NSU</i>	<b>305</b> Welcome to the Office Brochure <i>Mark Jaffe, NSU</i>	<b>106</b> (repeat) The RM3A Examination <i>Marrissa Dybas, NSU</i>
4	<b>401</b> Molecular mechanisms of altered of brain development in autism and autism spectrum disorders <i>Stephen G. Grant, NSU</i>	<b>402</b> Learning How To Learn in A&P <i>Brian Reid, Georgia State University</i>	<b>403</b> Use cutting-edge technology to teach Anatomy in 3D and Teach students the way they want to learn by Visible Body <i>Robb Kneebone, Visible Body</i>	<b>404</b> Recognizing Anatomy in Ultrasound: A Hands-On Clinical Correlation II <i>Stephanie Ranger, NSU</i>	<b>405</b> The Art of Making a Future Dentist: Success in the Dental Simulation Laboratory, <i>Jimmy Huynh, Ahmad Ahmadi, NSU</i>	<b>106</b> (repeat) The RM3A Examination <i>Marrissa Dybas, NSU</i>

### Workshops at a Glance

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**Labs\*:** Session 3 Room 3108 (Microlab A with computers), first floor, HPD library building

Session 4 Dental Simulation Lab, presenters at the registration table

# Health Professions Division Building Map

