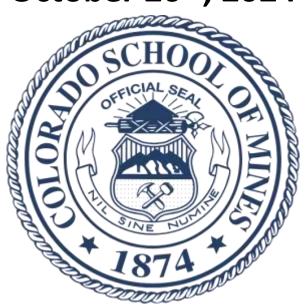


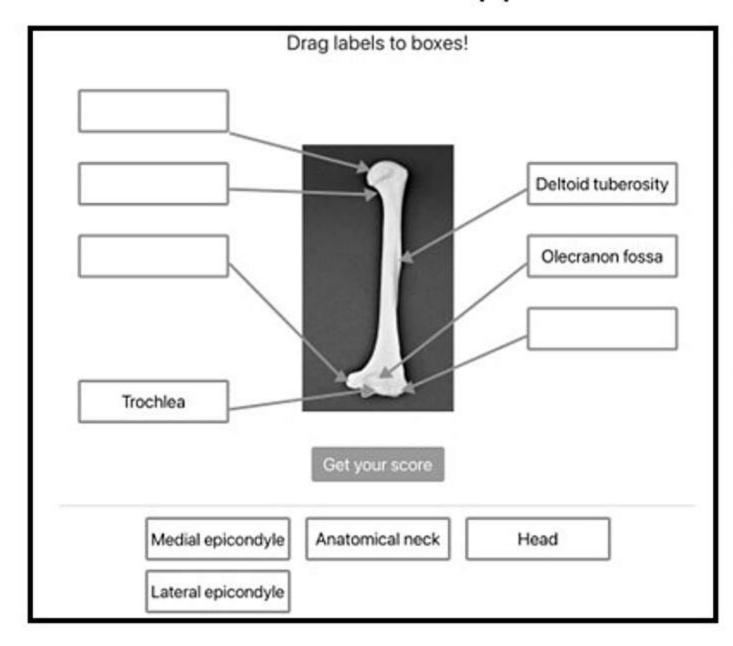
HAPS Western Regional Meeting October 26th, 2024



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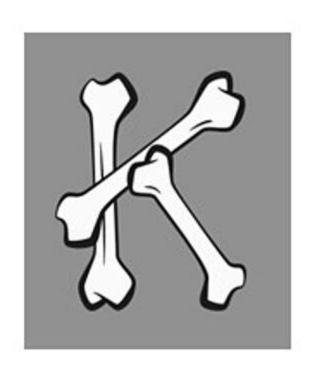


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Office of the Provost

1500 Illinois Street Golden, Colorado 80401 mines.edu

October 26, 2024

Welcome to the Colorado School of Mines!

All of us here at the Colorado School of Mines are very happy to welcome the Human Anatomy and Physiology Society to our beautiful campus here in Golden, CO. As we are celebrating our 150th year of student-centered higher education (founded in 1874), we are especially glad to welcome science educators who are committed to best practices and excellence in teaching of science.

In addition to exploring our campus and nearby downtown Golden, I hope you will have an opportunity to take advantage of some of the many attractions and activities offered here in Golden. Take a stroll along Clear Creek, visit the Mines Museum which is free to explore, and check out Red Rocks Amphitheater and the countless miles of hiking trails in the nearby foothills. And of course, the City of Golden has many excellent restaurants and shops bordering campus on Washington Street.

I hope you find your days here productive and rewarding. Thank you for your dedication to excellence in science education and have a great conference.

Sincerely,

Rick C, Holz, PhD Provost and Professor Colorado School of Mines

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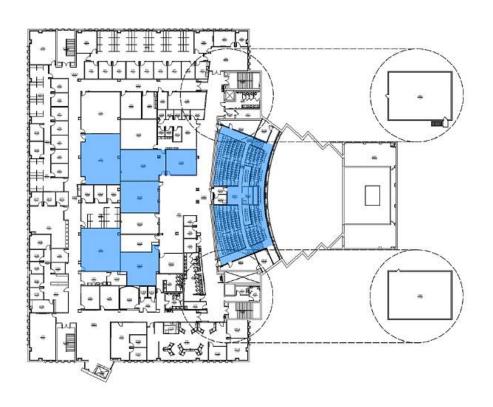
HAPS Western Regional Conference

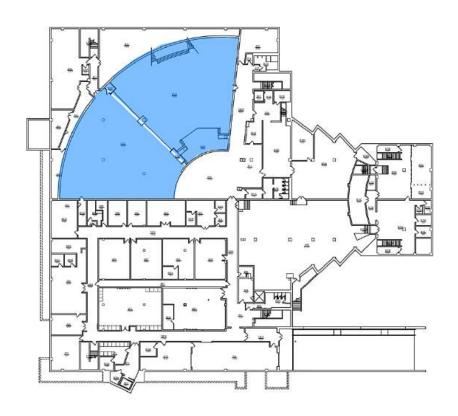
Colorado School of Mines, Golden, CO

Schedule of Events Saturday, October 26, 2024

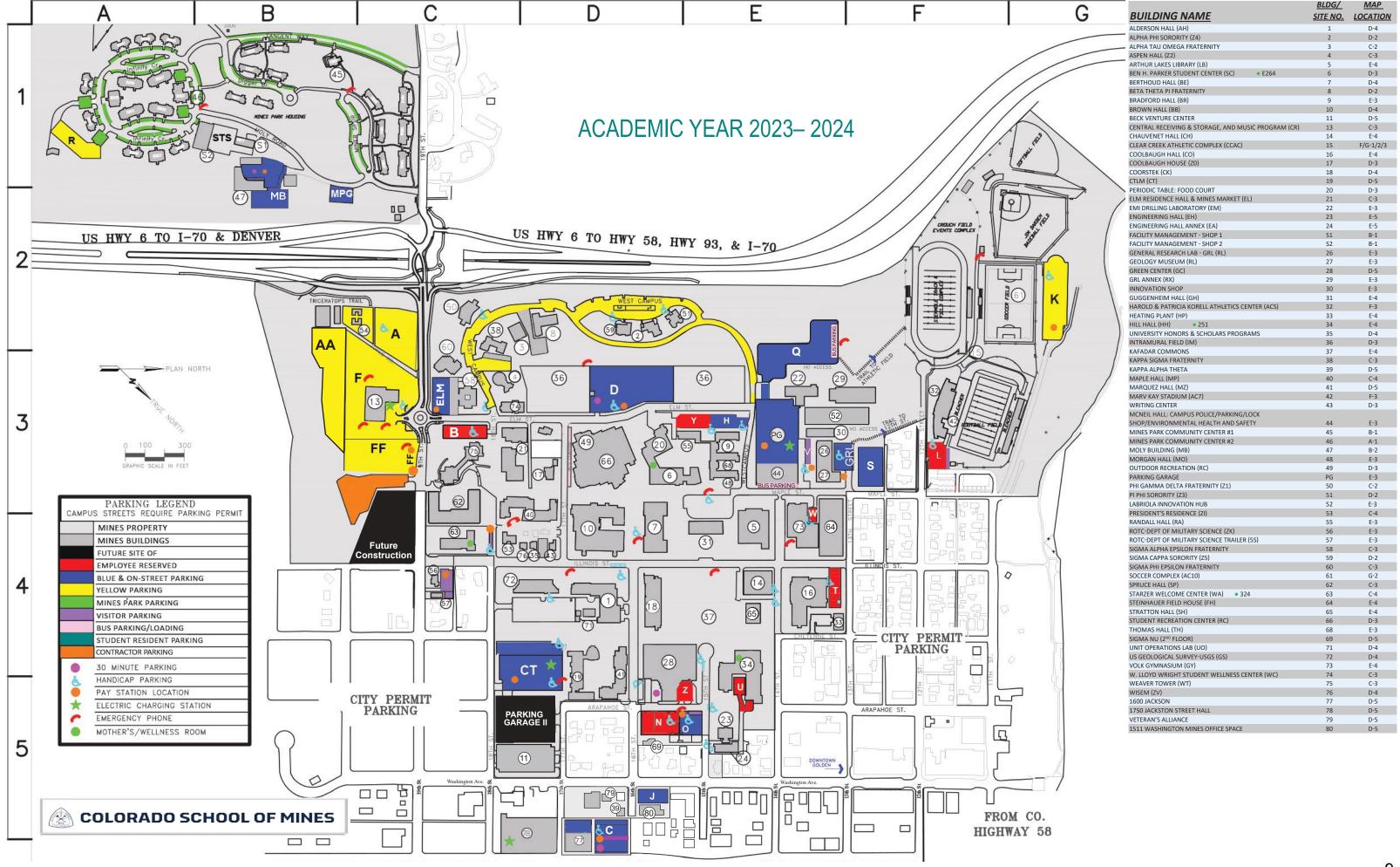
Time	Event	Location
7:00 – 7:30 AM	Exhibitor & Poster Setup	Green Center Lobby
7:30 – 8:45 AM	Registration, Breakfast, and Exhibitor Visits	Friedhoff 1
8:45 – 9:00 AM	Welcome from the Colorado School of Mines and Regional Hosts, Dr. Justin Shaffer and Molly Ostwald	Green Center, Petroleum Hall
9:00 – 10:00 AM	Keynote Speaker 1: Nikki L. Farnsworth, Ph.D. "The Role of the Pancreas Microenvironment in Regulating Islet Function and Survival in Type 1 Diabetes"	Petroleum Hall
10:00 – 11:00 AM	Morning Break with Exhibitor Visits Poster Session (14 posters)	Green Center Lobby
11:00 – 12:00 PM	Morning Workshops - 6 Breakout Sessions - "Making Real Anatomy Surreal" - "Leverage Custom AI to Promote self-directed learners" - "How OER transforms teaching practice" - "High Structure Course Design" - "Tissue Trivia: Boosting Histology Mastering Through Play" - "Assessing Faculty Expectations of Undergrad A&P"	Green Center, second floor
12:00 PM – 1:15 PM	Boxed Lunch and Exhibitor Visits	Friedhoff 1
1:15 – 2:15 PM	Afternoon Workshops - 5 Breakout Sessions	Green Center, second floor
	- <u>"Strategies for Effective Teaching and</u> <u>Learning using Technology"</u>	
	- <u>"Open Access 3-D printed Organs"</u>	

	- "Faculty Experiences with Emergency Remote Teaching" - "Respiratory Lab: Spirometry" - "Anatomy Bingo"	
2:15 PM – 2:45 PM	Afternoon Break and Exhibitor Visits	Green Center Lobby
2:45 – 3:45 PM	Keynote Speaker 2: Leslie Stone-Roy, Ph.D. "Experiential Activities to Increase Student Engagement"	Petroleum Hall
3:45 – 4:00 PM	Closing Remarks	Green Center, Petroleum Hall





Campus Map 2024 **COLORADO SCHOOL OF MINES** 10 Clear Creek Tr. 10th St. LOT Information Jim Darden Baseball Field **Emergency Phones** M Dining Pedestrian Plaza CLEAR CREEK ATHLETICS **COMPLEX GOLDEN** C C 12th St. 6 Pedestrian Walkway D D LOT LOT LOT Е Ε Lab McNeil Hall LOT Q Arthur LOT Green ¢enter CoorsTek Center for Applied Science LOT Sigma Nu LOT G G LOT Bookstore Kappa Alpha Theta Sorority OT C Unit Operati **GREEK** IOT HOUSING 1750 Jackson CTLM EMRF Street construction Fraternity VISITOR **(**) ROTC/ Military Science 19th St. LOT FF Jones Rd. 1920 Jones Rd. SOUTH MINES PARK CAMPUS (see inset below) LOT AA10 6 **Destinations** Unit Operations Lab University Honors and Scholars U.S. Geological Survey Wellness Center, W. Lloyd Wright Student Women in Science, Engineering and Mathematics (WISEM) 1600 Jackson Street Admissions (in Starzer Welcome Center) Grounds Shop Guggenheim Hall Hill Hall H7 H6 Alderson Hall Alumni Office (in Starzer Welcome Center) Beck Venture Center 17 14 16 Human Resources (in Guggenheim Hall) Infrastructure and Operations Early Childhood Jucation Center & Mines Park Redevelopment AQWATEC International Programs (in Green Center, 2nd floor) Intramural Fields Kafadar Commons Berthoud Hall Blaster Card Office (in Elm Hall) Bookstore (in Student Center) LOT Athletics Harold M. & Patricia M. Korell Athletic Center (under construction) C4-5 Harold M. & Patricia M. Korell Athletic Center Jim Darden Baseball Field Lockridge Arena (in Student Recreation Center) Marv Kay Stadium at Harry D. Campbell Field Softball Field Steinhauer Fieldhouse Stermole Soccer Stadium Stermole Track & Field Complex/Crouch Field Events Complex Volk Gymnasium Katadar Commons Library, Arthur Lakes Labriola Innovation Hub Lock Shop Marquez Hall McNeil Hall and Parking Garage Mines Market Dining (in Elm Residence Hall) Bookstore (in Student Center) Brown Hall Center for Academic Services & Advising/CASA Center for Technology and Learning Media/CTLM Central Storage and Receiving Chauvenet Hall Colorado Geological Survey (In Moly Building) B2 H5 B-C4-5 MINES PARK LOT Moly Bldg. MB Colorado Geological Survey B3 Coolbadd Geological Salvey (ITMO) Building) Coolbadgh Hall CoorsTek Center for Applied Science and Engineering Early Childhood Development Center (under construction) Earth Mechanics Institute/Drilling Lab (EMI) Engineering Hall Engineering Hall Annex Environmental Health & Safety Moly Building Multicultural Engineering Program (in Coolbaugh House) 1907 1911 Music Program K4 Outdoor Recreation (in Student Recreation Center) H5 Parking Services E-F-5 Periodic Table Food Court (in Student Center) G5 Public Safety/Police E-F-5 ROTC/Military Science Starzer Welcome Center - Campus Tours and Information J6 Stratton Hall (SH)/Stratton Commons F7 Student Activities Office (in Student Center) G5 Student Center, Ben H. Parker G5 Student Outreach and Support (includes Disability Support Services) I5 Student Recreation Center H5 Title IX I6 2000 Maintenance Shops inset Residence Life 1750 Jackson Street Aspen Hall Advising Center Facilities Management (FM) (In Moly Building) Foundation (in Starzer Welcome Center) Bradford Hall Elm Residence Hall and Mines Market Dining Maple Hall 6 inset F5 G5 I-J6 F5 I-J5 General Research Laboratory (GRL) General Research Laboratory Annex Geology Museum Mines Park Morgan Hall Randall Hall Geophysics Green Center: Bunker Auditorium and Friedhoff, Metals and Petroleum Halls Spruce Hall Thomas Hall LOT Weaver Towers *under construction



HAPS Western Regional Meeting Exhibitors

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

Exhibitors
ADInstruments
Anatomage
Anatomy in Clay
Codon Learning
Toltech
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The HAPS 39th Annual Conference will be held in Pittsburgh, Pennsylvania on May 21 through May 25, 2025. The Update Seminar portion of the meeting (May 21-23) will be held at the Wyndham Grand and the Workshop portion of the meeting (May 24-25) will be held at the University of Pittsburgh.

Registration will be available in November!

Update Speaker I



Nikki Farnsworth

"The Role of the Pancreas
Microenvironment in Regulating
Islet Function and Survival in Type 1
Diabetes"

Saturday, October 26th, 2024 9:00 AM – 10:00 AM

Petroleum Hall

Abstract: Currently, 1.25 million people in the United States have type 1 diabetes (T1D), where the prevalence of T1D has increased by ~21% in the last decade. T1D is characterized by the progressive destruction of the insulin producing β -cells in the pancreatic islets of Langerhans. This leads to loss of blood glucose homeostasis which can be deadly if left uncontrolled. The mechanisms underlying disease onset and progression are not well understood, limiting the targets for potential therapeutics which could prevent the onset or progression of T1D. The research goals of my lab are to utilize biomaterials as a tool to determine the role of the islet micro-environment in the onset and progression of T1D. To achieve these goals, my lab uses a combination of engineering and biomolecular tools including advanced optical imaging techniques, quantitative image analysis, and 3D biomimetic hydrogel scaffolds with both mouse and human tissues.

Bio: Dr. Nikki Farnsworth is an Assistant Professor of Chemical and Biological Engineering at the Colorado School of Mines. She is also Affiliate Member and Adjunct Assistant Professor at the Barbara Davis Center for Diabetes at the Anschutz Medical Campus. Prior to joining the Mines faculty, she completed her postdoctoral training at the Barbara Davis Center for Diabetes in the Bioengineering and Pediatrics department under Dr. Richard Benninger, working at the

intersection of cell biology, diabetes, and biophysics. Dr. Farnsworth completed her Ph.D. and M.S. degrees in Chemical and Biological Engineering at the University of Colorado Boulder, under Dr. Stephanie Bryant working on cartilage tissue engineering. She completed her B.S. in Chemical Engineering at Rensselaer Polytechnic Institute. The Juvenile Diabetes Research Foundation, the American Diabetes Association, the NIH NIDDK, the NIH Diabetes Research Center, and the Helmsley Charitable Trust George Eisenbarth Award from nPOD currently fund her lab.

Update Speaker II

Leslie Stone-Roy



"Experiential activities to increase student engagement"

Saturday, October 26th, 2024 2:30 – 3:30 PM

Petroleum Hall

Abstract: Engaged students learn and retain information better. In addition, universities and colleges strive to provide opportunities for students to learn more than academic content. For example, development of communication and organizational skills, as well as problem solving skills are important for college students to develop. Experiential activities can be used to help engage students with content and enhance learning. At Colorado State University, our experiential learning opportunities include a research-based course for undergraduates, and an annual community outreach program. The hands-on research course enables students to work in a laboratory setting for a semester. The students become involved in real research projects, develop and test hypotheses, work with peers, and strengthen communication skills. Students report a variety of benefits from taking the course. In addition, some students extend their experience through undergraduate thesis or independent study projects, which has led to student presentations at meetings and further learning and skill development. We also run a large outreach program associated with the global Brain Awareness Week effort. Participation in this program allows students to learn more about neuroscience and teach middle and high school students about specific topics through interactive stations. Students perceive multiple benefits from this program as well, including enhanced confidence with science communication and a better understanding of whether they want to incorporate teaching into their careers. Both the research course and outreach program can be developed around a variety of projects or topics, and the presentation will discuss how these experiential activities were developed and evidence that students find them rewarding.

Bio: Dr. Stone-Roy is an Associate Professor in the Department of Biomedical Sciences and in Molecular, Cellular and Integrative Neuroscience at Colorado State University (CSU). In addition, she is the university director for Brain Awareness Week activities and has led multiple neuroscience outreach activities for K-12 students and the general public. Her PhD and postdoctoral work focused on the gustatory system, and she has publications in a variety of fields including gustatory, olfactory, and somatosensory systems, sensory substitution, and pedagogy. Currently, Dr. Stone-Roy teaches multiple neuroscience courses including neuroanatomy, systems neurobiology, and a research course for undergraduate students. She also advises undergraduate thesis projects and mentors graduate students and postdoctoral fellows in teaching effectiveness.

Active Learning for Tricky Topics!

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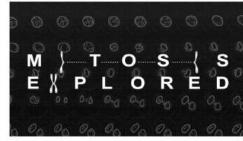












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Poster Presentations

<u>10:00 AM - 11:00 AM - Green Center Lobby</u>

<u>Poster: Incidence of Cruciate Ligament Injuries in Saudi Professional Soccer League</u> in the Past 20 Years

KHALEEL ALYAHYA, King Saud University, ALKHALEEL@KSU.EDU.SA

Background: Injuries are common incidents in professional sports, especially those kind of sports with physical contact between competitors.

Purpose: The study aims to evaluate the incidence of CL injury reported in Saudi professional soccer league from 2000 to 2020.

Study Design: Descriptive study combined with published information online.

Method: This descriptive study combines published information online about players in Saudi Arabia from the year 2000 to 2020. Data were analyzed with graphs and tables of CL injury incidence by club type, frequency of matches, position of players, age, and causes of injury.

Result: Our results revealed that CL injury is common among players of Saudi professional soccer league. Contact with other player or opponent is the leading cause of injury. The center midfielder are more susceptible than players in other positions. Young players between 20 - <25yr and 25 - 30 years of Soccer age sustains more injury than older players.

Conclusions: We found that CL injury is established among players in Saudi professional league most of which was due to contact with another player. Findings can serve as a valuable reference to understand how frequency of participation, pressure from media could affect performance and contribute to cause of injury.

<u>Poster: Appending MyD88 to CD3ζ of the TCR improves telomere length maintenance</u> in T-cells

Ethan Arends, Colorado University Anschutz Medical Campus, <u>earends@mines.edu</u> Co-Presenters: Eduaro Davila, CU Anschutz, <u>eduaro.davila@cuanschutz.edu</u>, Pearl Wilcock, CU Anschutz, <u>pearl.wilcock@cuanschutz.edu</u>

Tumor infiltrating lymphocyte (TIL) therapy has improved the outcomes for patients with advanced melanoma resistant to standard therapies. TIL therapy consists of surgically removing a tumor fragment, isolating TILs, expanding them ex-vivo, and then re-infusing them into the patient. Reaching the therapeutic cell number requires that TILs undergo extraordinary levels of cell division. This is especially challenging for some tumor types that have a low TIL infiltration. During expansion the TILs reach their replicative limit before reaching the therapeutic cell number. To address these issues, the Davila lab has developed a novel synthetic T-cell construct composed of the CD3ζ-chain fused to MyD88, which allows NF-κB downstream of TCR activation. Genetically engineered TILs with CD3ζ:MyD88 have increased fold expansion per stimulation and can sustain more stimulations compared to control TILs.

<u>Poster: Incorporating Ultrasound and Virtual Anatomy in the Classroom</u> Julie Becker, Colorado State University, julie.becker@colostate.edu

There is a shift in teaching anatomy in human medical schools and veterinary schools. Less time is being dedicated to dissecting and learning anatomy in professional programs for several reasons. Virtual reality (VR) anatomy programs are innovative and are replacing cadaveric dissection in many graduate schools. Ultrasound technology is a widely used non-invasive and safe diagnostic imaging technique. Ultrasound phantoms and live dogs were used teaching high school students and veterinary students. Incorporating VR with abdominal ultrasound is a useful approach to introduce innovative technologies for teaching anatomy for high school students to professional medical students.

<u>Poster: Islet survival under cytokine stress is mediated by laminin interactions in a 3D reverse thermal gel scaffold</u>

Christine El-Dirani, Colorado School of Mines, celdirani@mines.edu
Co-Presenters: Meghana Shivananda Murthy, Colorado School of Mines, Daewon Park, University of Colorado at Anschutz, daewon.park@cuanschutz.edu, Nikki Farnsworth, Colorado School of Mines, nfarnsworth@mines.edu

During type 1 diabetes (T1D), laminin in the extracellular matrix surrounding islets is degraded. In order to investigate the importance of laminin on islet health during conditions mimicking T1D, we have encapsulated mouse islets in a 3D biomaterial functionalized with laminin. Our results show that laminin interacts with cell-surface integrin receptors and protects against cytokine-mediated death by modulating the function of intracellular pro-apoptotic enzymes protein kinase C δ (PKC δ) and c-Jun N-terminal kinase. Overall, our results indicate that laminin interactions with the islet are essential for islet survival under cytokine stress, which is mediated by PKC δ and downstream apoptotic signaling.

<u>Poster: 3D-Printed Brain Cross-Sections for Learning Neuroanatomy in 2D and 3D</u> Aubrianna Gholar, University of Colorado Anschutz Medical Campus, aubrianna.gholar@cuanschutz.edu

Co-Presenters: Maureen Stabio, University of Colorado Anschutz, <u>maureen.stabio@cuanschutz.edu</u>, Andrew Cale, Indiana University School of Medicine, ascale@iu.edu

Students often struggle with translating neuroanatomical structures from two-dimensional (2D) cross-sections to three-dimensions (3D). Our goal was to create a 3D-printed model that helps students learn these multidimensional relationships. Thirteen plastinated brain sections were scanned using the Polycam-LiDAR 3D scanner and edited to form a complete brain using Maya 3D software. Each 3D-printed section featured a blank, writeable side and a labeled side. Since the model can be disassembled into cross-sections and reassembled into a complete brain, it can aid students in correlating neuroanatomical structures from 2D to 3D. However, further study is required to evaluate the model's effectiveness.

<u>Poster: Liver morphometry as a predictive factor in cholecystectomy</u> Diana Hamdan, Kansas City University, diana.hamdan@kansascity.edu

Calot's Triangle (CTr) serves as a landmark for surgeons during cholecystectomies. Anatomical variations in the region can contribute to intraoperative damage. The relationship between CTr structures and liver parameters has not been reported previously. The CTr regions of 30 cadavers were dissected, measured, and statistically analyzed. We found significant correlations between dimensions of the liver lobes and the common hepatic artery, common bile duct, and cystic duct. These findings suggest that determining liver size prior to surgery can serve as a tool to gain insight into hepatobiliary structures and minimize iatrogenic complications.

<u>Poster: Enhancing Anatomy Learning with Virtual Reality: Evidence Based Strategies</u> <u>for College Courses and Community Engagement</u>

Kenneth Ivie, Colorado State University, Kenneth.ivie@colostate.edu
Co-Presenters: Carolyn Meyer, Colorado State University,
Carolyn.Meyer@colostate.edu Tod Clapp, Colorado State University,
Tod.Clapp@colostate.edu Heather Hall, Colorado State University,
Heather.Hall@colostate.edu Becky Wiltgen, Colorado State University,
Becky.Wiltgen@colostate.edu Chad Eitel, Colorado State University,
Chad.Eitel@colostate.edu Brian Kelly, Colorado State University,
Brian.Kelly@colostate.edu Brandon Lowry, Colorado State University,
Brandon.Lowry@colostate.edu Sam McGrath, Colorado State University,
smcgrath@perspectustech.com Jordan Nelson, Colorado State University,
jordan.c.nelson@cuanschutz.edu

Virtual reality (VR) is an emerging technology that captivates students, but evidence-based integration is essential to transform it from entertainment into an effective educational tool. We developed an immersive multiplayer VR anatomy software, enabling its incorporation into undergraduate, graduate, and medical courses. Furthermore, this software has enabled us to create a sustainable distance outreach initiative with rural high school students and SPUR in Denver. This poster will discuss strategies and supporting evidence for meaningful implementation in diverse educational contexts. Virtual reality represents a valuable resource that can enhance teaching and learning in the anatomical sciences.

<u>Poster: Implementation of Retrieval Practice Activities Enhances Student Learning and Promotes Effective Study Techniques</u>

Kimberly Jeckel, Colorado State University, kimberly.jeckel@colostate.edu Co-Presenters: Thomas Rausch, Colorado State University, kimberly.jeckel@colostate.edu, Olivia Perez, Colorado State University, olivia.perez@colostate.edu

Freshman entering college often struggle with the utilization of effective study techniques when learning course material. This is especially prevalent in science courses such as

biology, where a vast amount of material is discussed during the semester. Retrieval Practice Activities (RPAs) were implemented in a Freshman biology course to enhance the student learning experience by providing a tool for increasing retention of material and promoting efficient study methods. The goal of these RPA quizzes was to support student learning by fostering development of effective study techniques, improve critical thinking skills, and provide grading opportunities that align with inclusive teaching practices.

<u>Poster: Evidence Based Instructional Practices in Community College Settings:</u>
<u>Increasing Student-Centered Learning Approaches in Anatomy and Physiology</u>
Chasity O'Malley, Wright State University Boonshoft School of Medicine,
<u>chasity.omalley@wright.edu</u>

Co-Presenters: Ron Gerrits, Milwaukee School of Engineering, gerrits@msoe.edu Suzanne Hood, Bishops University, shood@ubishops.ca Kerry Hull, Bishops University, khull@ubishops.ca Kamie Stack, University of Minnesota, stack180@umn.edu Murray Jensen, University of Minnesota, msjensen@umn.edu Evidence-Based Instructional Practices (EBIPs) are effective methods for teaching human anatomy and physiology (A&P). However, most college A&P courses are delivered through lecture-based formats. The Community College Anatomy and Physiology Education Research (CAPER) project was designed to provide a transformative experience for community college A&P instructors to change their perceptions and practices related to teaching and learning to facilitate the adoption of EBIPs in their classrooms. Preliminary data indicates that instructor participants increased student-focused activities, which was positively correlated with instructors' confidence in pedagogical skills and content knowledge. This poster will highlight preliminary findings of the first three cohorts of CAPER.

<u>Poster: Hair Cortisol, Sensory Processing Variability, and Executive Function in Children.</u>

Brit Pearce, Colorado State University, brittany.pearce@colostate.edu
Co-Presenters: Jordan Strack, Colorado State University,
Jordan.Strack@colostate.edu, Patricia Davies, Colorado State University,
Patricia.Davies@colostate.edu, Gavin Williams, Colorado State University,
Gavin.Williams@colostate.edu, Emily Merz, Colorado State University,

Emily.Merz@colostate.edu

This study aimed to investigate the relationship between cortisol levels, sensory processing variability, and executive function in typically developing children. Both chronic childhood adversity and specific sensory processing patterns have been associated with persistent executive dysfunction. We hypothesized finding a positive association between increased childhood stress and specific correlations between sensory processing patterns and executive functioning challenges. Controlling for age, sex, and race, significant correlations were observed between sensory seeking and self-regulation, as well as sensory sensitivity and working memory. Correlations were found between sensory

sensitivity and cognitive flexibility, however this relationship lost significance when controlling for race.

Poster: A Novel Relationship Between Subcostal Angle, BMI, and Calot's Triangle
Phil Sheridan, Kansas City University, phil.sheridan@kansascity.edu
Co-Presenters: Diana Hamdan, Kansas City University,
diana.hamdan@kansascity.edu Farida Mehrhoff, Kansas City University,
f.mehrhoff@kansascity.edu Cameron Smith, Kansas City University,
cameron.smith@kansascity.edu Alla Barry, Missouri Southern State University, barry-a@mssu.edu

Calot's Triangle (CT) serves as a landmark for surgeons during cholecystectomies. Anatomical variations in the region can contribute to intraoperative damage. No studies have correlated dimensions of CT structures with liver and gross body parameters. We found significant correlations between subcostal angle, body mass index, liver width, and lengths of the common hepatic artery and cystic duct. Analysis subgrouped by BMI showed significant differences in subcostal angle and cystic duct length. These preliminary findings suggest that pre-operative estimation of the subcostal angle is a quick way to gain insight into the hepatobiliary anatomy without the need for additional medical imaging.

<u>Poster: When should we use AI in the classroom and in science?</u> Andrew Smith, University of Washington, Smith.AndrewAlan@gmail.com

The integration of AI in education and science offers both opportunities and challenges. This poster examines when AI should be used, balancing its benefits—such as personalized learning and accelerated research—with risks like diminished skills, ethical concerns, and unequal access. By analyzing the pros and cons, the poster provides guidelines for effectively harnessing AI's potential while maintaining the integrity of education and research. As AI reshapes science and learning, our responsibility is to guide this shift to enhance higher-order understanding and equity in science education.

Poster: Would you use the Pupil Pro in your classes?

Leslie Stone-Roy, Colorado State University, <u>Leslie.Stone-Roy@Colostate.edu</u>
Co-Presenters: Devan Hayden, Colorado State University, haydendevan@gmail.com
Bailee Jones, Colorado State University, baileej65@gmail.com Hassan Mahmoud,
Colorado State University, hassan.samer.mahmoud@gmail.com Garret Snyder,
Colorado State University, garretsnyder00@gmail.com Leslie Stone-Roy, Colorado
State University, leslie.stone-roy@colostate.edu

To help neurobiology students understand the neuronal circuits controlling pupil size, I worked with a team of Biomedical Engineering students to develop a hands-on teaching device. Together we created the Pupil Pro, a physical device that demonstrates the pupillary reflex, autonomic circuits controlling pupil size, and what happens to pupil constriction if specific neurons are damaged. It is light sensitive and has a working

representative iris. We are requesting help to determine if the device would be useful in anatomy and physiology courses. Please come by to try it out and give your opinion!

<u>Poster: Implementing and Assessing CT-Guided Gross Human Anatomy Dissection in First-Year Medical Students</u>

Alex VanBennekom, University of Central Florida College of Medicine, al654726@ucf.edu

Co-Presenters: Emily Bradshaw, UCF College of Medicine, emily.bradshaw@ucf.edu Computed tomography (CT) imaging aids in understanding patient anatomy before invasive procedures, but interpreting CTs can be challenging. Introducing CTs earlier in the anatomy curriculum might enhance students' skills. This study tests whether first-year medical students trained with video tutorials on CTs perform better on quizzes matching CT images to cadaver pictures compared to untrained students, and if it reduces cognitive load. Pilot data from untrained students has been collected, with future data expected from students using video training. These findings could guide teaching interventions for first-year medical students to improve clinical imaging interpretation.

Workshop Presentations

Session 1: 11:00 AM - 12:00 PM

Workshop: Metals Hall

<u>Tissue Trivia: Boosting Histology Mastering Through Play</u>

Tanoya Harris, University of Texas at San Antonio, tanoya.harris@utsa.edu
Histology can be a challenging topic for undergraduate A&P students. This workshop

Histology can be a challenging topic for undergraduate A&P students. This workshop introduces "Who Am I?", an interactive, team-based activity where students work together to identify tissues using descriptive clues. By transforming a lecture-based topic into a dynamic experience, the game solidifies students' understanding of histological structures, functions, and locations. It also promotes participation, collaborative problem-solving, retention, and critical thinking. The session will outline the game's structure, demonstrate its impact on student comprehension, and provide insights on adapting it for various learning environments. Key data and student feedback will highlight the game's effectiveness in enhancing learning outcomes.

Workshop: Green Center 200A

How OER transforms teaching practice

Jim Hutchins, Weber State, jimhutchins@weber.edu

Co-Presenters: Jordan West, Weber State University, jordanwest@weber.edu

The Department of Health Sciences at Weber State University is one of the largest programs of its type in the country, with over 2000 students per year enrolled in our Medical Terminology, Anatomy & Physiology, Case Studies, Pharmacology, and Pathophysiology courses. We train students to be successful in professional programs in Nursing, Radiation Technology, and Medical Lab Sciences, among others. We are now an all open educational resource (free textbook) department. We will explain how this has transformed our teaching practice and what students think about our efforts.

Workshop: Petroleum Hall

<u>Leverage Custom AI to Promote self-directed learners</u> Brandon Lowry, CSU, brandon.lowry@colostate.edu

This workshop presents findings from a study utilizing a customized large-language model (LLM) to enhance metacognitive processes and self-directed learning among graduate students. Over eight weeks, participants engaged with the model, which facilitated reflection on their learning strategies. Results showed significant improvements in metacognitive awareness and self-directed learning readiness, as measured by pre- and post-intervention assessments. Attendees will explore AI's role within similar contexts of higher education, particularly how it may support personalized learning experiences for students. The session will include model demonstrations and active discussion, as well as insights for integrating AI tools in various educational domains.

Workshop: Green Center 200E Making Real Anatomy Surreal

Edgar Meyer, Univ of Mississipi, emeyer@umc.edu

Have you ever wanted to create virtual anatomical models but lacked the time and resources to do so expeditiously? In this workshop, participants will discover quick and easy methods for generating such models. This session will begin with exploratory uses of virtual generative apps and their functions to create anatomical models of human hearts with pathological features. The models will be incorporated into an anatomy course to replace cremated prosected heart specimens. Participants can download such apps using smartphones and practice creating virtual models of plastic physical anatomical models to experience the ease of incorporating such learning resources into courses.

Workshop: Green Center 200D

Assessing Faculty Expectations of Undergrad A&P

Cat Sartin, ACC, Catherine.Sartin@acc.edu

The purpose of this workshop is to determine the expectations Anatomy and Physiology faculty have of students in their course with respect to knowledge of anatomy. This is part of a larger project that is aimed at realigning undergraduate A&P course material with nursing career outcomes, in order to increase student success in the course. Participants will be asked to work in small groups and discuss the specific content they choose to include and their reasons for including that material, as well as evaluate proposed changes.

Workshop: Green Center 200F - Sponsored by Codon Learning

<u>High Structure Course Design</u>

Justin Shaffer, Mines, jshaffer@mines.edu

This workshop will provide an overview of high structure course design for A&P courses. High structure courses are those that scaffold students through the learning process via pre-class content acquisition and formative assessment, in-class active learning and practice, after-class review and formative assessment, and frequent summative assessment.

Session 2: 1:15 PM - 2:15 PM

Workshop: Green Center 200E

Anatomy Bingo

Katie Curry, Montana State University City College, katie.curry2@msubillings.edu Bingo cards are custom made for Anatomy and Physiology to engage students to interact in large classrooms. Included are questions outside the scope of the course to encourage students to connect and build a team cohort relationship. The game protocols and rules will be explained. Bring on your best smile and get to know your workshop members and review your Anatomy and Physiology.

Workshop: Green Center 200F

Faculty Experiences with Emergency Remote Teaching

Rahul Kane, Century College, rahul.kane@century.edu

This talk shares the results of a study of faculty experiences with Emergency Remote Teaching (ERT) at the community college level following intensive course redesign during the COVID-19 pandemic. Using transcendental phenomenology and the TPACK model, the study identified key factors in technological development and effective online teaching methods that can be further employed in teaching Human Anatomy and Physiology (HAP). The findings provide insights into faculty development for technology-enhanced and online teaching and strategies for teaching HAP. This research aims to support educators and instructional designers in developing high-quality online education practices for teaching Human Anatomy and Physiology.

Workshop: Green Center 200A

<u>Strategies for Effective Teaching and Learning using Technology</u> Laylonda Maines, ACC, laylonda.maines@arapahoe.edu

Join me for an enlightening workshop where I'll share invaluable tips and tools that have transformed the way I teach Anatomy & Physiology. By leveraging Universal Design for Learning (UDL) as my guiding framework, I've been able to create a more manageable and engaging learning environment for both me and my students. In this interactive session, we'll explore creating clearer online courses, implement effective formative assessments, and an AI activity that enhances student understanding. This workshop is designed as a collaborative discussion, welcoming participants of all technological skill levels. Let's come together to share insights and revolutionize our teaching practices!

Workshop: Green Center 200D Respiratory Lab: Spirometry

Jessica Nguyen, ADInstruments, j.nguyen@adinstruments.com

At ADInstruments, we're just as passionate about excellent physiology education as you are! As part of our mission to make science easier, we've designed an easy-to-use, powerful spirometer for teaching, to ensure that you can run effective, hassle-free labs. In this workshop, we will introduce our NEW Lt Sensors Spirometer, which integrates in our adaptable online software Lt for a user friendly experience. A laptop with USB connection is all your students will need to be immersed in active learning. The workshop will allow you to get hands-on time with the hardware and experiment just as your students would in the lab!

Workshop: Petroleum Hall

Open Access 3-D printed Organs

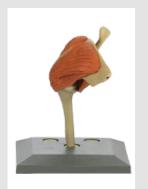
Maureen Stabio, CU Anschutz, <u>maureen.stabio@cuanschutz.edu</u>

Co-Presenters: Zach Stetter, University of Colorado Anschutz Medical Campus, zachary.stetter@cuanschutz.edu, Hannah Anchordoquy, University of Colorado Denver Campus, hannah.anchordoquy@ucdenver.edu, Dan Miska, Colorado College, dmiska@coloradocollege.edu, Duncan Davis-Hall, Colorado School of Mines, duncan.davis-hall@mines.edu, Hollis Morgoine, University of Colorado Colorado Springs, hhowery@uccs.edu, Andrew Cale, Indiana University School of Medicine, ascale@iu.edu

Hands-on 3D models are one of the most important tools in the anatomy educator's toolbox. However, the cost of commercial plastic models or donor organs can be prohibitive for many institutions. The recent explosion of 3D-printing technology, combined with surface scanning and digital 3D-modeling, can reduce the cost and thereby improve student access to resources. The Modern Human Anatomy Program at University of Colorado Anschutz has recently launched an open access repository of 3D-printable anatomical teaching models. Workshop participants will learn the steps to create 3D-printed models and have an opportunity to participate in hands-on demonstrations with these tools.



The most effective, informative and relevant anatomy education through the power of hands-on learning.



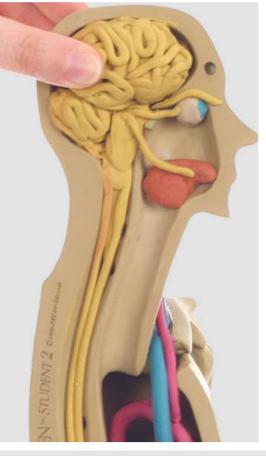
SuperMANIKEN™ Shoulder



SuperMANIKEN™ Knee



Human TORZIKEN™ Model



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Dear HAPSters,

We, the hosting committee for the Human Anatomy and Physiology Society (HAPS) Western Regional Meeting 2024, thank you for attending and participating in this conference. We extend this gratitude to you on behalf of the HAPS society as well. We are so grateful to have such wonderful colleagues, teaching scholars, and dedicated educators come to the Colorado School of Mines to share your talent and exchange ideas at this conference.

Despite the hard work of our hosting committee, none of this conference would be possible without the unwavering assistance and knowledge of Caitlin Hyatt, HAPS Executive Director, and Will Johnson, HAPS Member Services Coordinator, and Randee Formby, HAPS Conference Services Coordinator. Their talent and ability to troubleshoot whatever arises appears never-ending and is always handled with grace. We are truly grateful.

We thank the Colorado School of Mines event coordinating staff, facilities, and administrators for their efforts in making our campus an enjoyable experience for all. The hosting committee hopes that you experienced the welcome that we appreciate about our campus.

It often feels like a privilege to be a part of such a delightful society. Your HAPS memberships fees and registration fees makes this meeting possible and we are honored to be able to host this meeting so that we can continue the great efforts of HAPS: to collaborate, share experience and wisdom, and motivate us to continue the tradition of excellence in teaching anatomy and physiology.

We hope you enjoyed your time at this conference and that it motivates you to attend the <u>annual and virtual conferences</u> that HAPS hosts. We will see you in Pittsburgh, PA for the 2025 HAPS Annual Conference on May 21-25, 2024!

Sincerely,

Molly Ostwald, Arapahoe Community College

Justin Shaffer, Colorado School of Mines

CODONLEARNING

As fellow A&P educators, we know how challenging it can be to help every student succeed, especially with the diverse levels of preparation they bring to the classroom. That's why we developed Codon Learning, the first teaching and learning platform that implements backward design, high-structure course design, and insights from the cognitive science literature on metacognition and self-regulated learning. We've gathered exciting data showing that the platform is helping to close gaps in learning outcomes.

If you're curious to see how it works in practice, we're hosting a hands-on tools workshop with Justin Shaffer at Green Center (200F) at 11:00 AM.

www.codonlearning.com



