



AUGUSTA UNIVERSITY
**MEDICAL COLLEGE
OF GEORGIA**



8th Annual

Igniting the Dream of Medicine

High School and Undergraduate Conference

Saturday, February 23, 2019

J. Harold Harrison, MD Education Commons



Office of Student and Multicultural Affairs
Student National Medical Association

Welcome:

Welcome to the Medical College of Georgia at Augusta University. Our Office of Student and Multicultural Affairs and the Student National Medical Association are pleased to host you for this incredible conference. Started in 2011, Igniting the Dream of Medicine began as a small conference with about 100 attendees. Today, we are over 500! This conference reflects our commitment to diversifying the health professions in an effort to mirror the population of the state of Georgia and to eradicate health disparities. Further, Igniting the Dream of Medicine represents our long-standing commitment to educating, mentoring, and advising students who are underrepresented in medicine.

MCG has a storied history of operating pipeline of programs for students across various ages and stages in their professional development. We reach elementary and middle school students through our outreach and service programs. High school students have the opportunity to attend this conference as well as our Summer Educational Enrichment Program (SEEP), established in 1970. College students can go on to participate in intermediate and advanced SEEP, garnering different knowledge at each level. Once students are admitted to medicine or dentistry, they may be selected for the Pre-matriculation program which has operated since 1980! We literally serve students from elementary through medical school graduation.

We are pleased you've chosen to attend the Igniting the Dream of Medicine. I'm certain that today's activities and research posters will provide you with the opportunity to expand your network and skillset. I wish you the best in your professional endeavors.

Sincerely,



Kimberly Vess Loomer, EdD
*Associate Dean for Student and Multicultural Affairs
Associate Professor, Psychiatry and Health Behavior
Medical College of Georgia at Augusta University*

Greetings:

We are elated that you have joined us for our 8th Annual Igniting the Dream of Medicine Conference at the Medical College of Georgia - Augusta University (AU)! The Office of Student and Multicultural Affairs (OSMA) and the Student National Medical Association (SNMA) have worked collaboratively and tirelessly to offer you a day filled with educational sessions coupled with hands-on clinical simulated activities. Students will hear from numerous experts today, including those from the Association of American Medical Colleges (AAMC) headquarters in addition to many of our Augusta University and Medical College of Georgia deans, faculty, residents and students. Moreover, students will have opportunity to spend time in AU's state of the art interdisciplinary simulation center, where our enrolled health professional students are taught and trained. A key feature of today's conference is the Undergraduate Research Poster session, which provides students an opportunity to present their scholarly research work. Additionally, special sessions are offered to high school and college advisors and parents that provide important information useful in advising and helping students navigate their pre-health educational pathway. Students will also have the opportunity to visit with conference exhibitors. Again, thanks for being here today. Enjoy the conference and be inspired!



Linda Strong James, MS
Assistant Dean, Student Diversity and Inclusion-OSMA
Office of Student and Multicultural Affairs

Dear Students:

On behalf of the Student National Medical Association (SNMA) at the Medical College of Georgia, it is with great pleasure that we welcome you to the 8th Annual Igniting the Dream Conference. Established in 1964, SNMA is an organization which works tirelessly towards the diversifying physician workforce while also addressing the needs of underserved communities. As the incoming and outgoing Presidents of SNMA, we are excited that you have taken the leap to explore the wonderful career that is medicine and see the many ways in which this profession may lead you. This event is an opportunity for you to engage in a number of dynamic activities and informational sessions, explore the facilities and interact with students, faculty and administration. So be a sponge and absorb as much as possible! If you have any questions at all, we are here along with many other medical students and our undergraduate sister chapter, the Minority Association of Pre-Health Students (MAPS) to help you. We hope that you leave this conference inspired to continue your climb to greatness and ignite your very own dream of medicine!



JaBreia James, Class of 2022
2019-2020 SNMA President



Bria K. Carrithers, Class of 2021
Immediate SNMA President

Keynote Presenters

Norma Iris Poll-Hunter, PhD

Keynote Address

Dr. Poll-Hunter is Senior Director of Human Capital Initiatives in Diversity Policy and Programs at the Association of American Medical Colleges (AAMC). AAMC is a not-for-profit association dedicated to transforming health care through innovative medical education, cutting-edge patient care, and groundbreaking medical research and represents all 152 accredited U.S. and 17 accredited Canadian medical schools; nearly 400 major teaching hospitals and health systems, including 51 Department of Veterans Affairs' medical centers; and more than 80 academic societies.



Dr. Poll-Hunter leads a portfolio of career development programs and initiatives to advance diversity and inclusion across the medical education continuum from the premedical pipeline to faculty and leadership development. As part of the portfolio, she leads efforts focused on racial and ethnic minorities underrepresented in medicine. This includes addressing the representation of Black men and American Indians and Alaska Natives in medicine, including serving as the lead author for AAMC's report, *Altering the Course: Black Males in Medicine*, and a recent collaborative report with the Association of American Indian Physicians, *Reshaping the Journey: American Indians and Alaska Natives in Medicine*. She works closely in collaboration with physician organizations, higher education partners and local and national groups to improve access to information and resources to underserved communities. Dr. Poll-Hunter also serves as the Deputy Director for the Robert Wood Johnson Foundations Summer Health Professions Education Program (SHPEP), a national program to increase diversity in the health professions. She is also engaged in scholarly activities focused on diversity in medical education and the health care workforce. Her research interests include career development of racial and ethnic minorities, culturally responsive health care, and diversity in the health professions.

Prior to the AAMC, Dr. Poll-Hunter practiced as a bilingual psychologist in New York. Following receipt of her B.A. from Lehman College, CUNY, she attended the University of Albany, SUNY, where she earned her Ph.D. in counseling psychology. She is a Bronx native of Puerto Rican heritage and passionate about diversity and equity.

Yannik McKie, MA
Motivational Message

Overcoming adversity and turning obstacles into stepping stones is the expertise of author, speaker, and life coach, Yannik McKie.

Yannik's personal story of turning pain into purpose has been featured on numerous media outlets including *ESPN*, *FOX*, *The 700 club*, *The Huffington Post*, and many more. Yannik is the founder and executive director of the McKie Foundation through which, he donates his time and resources to young adults. Currently, he supports the Sisters Informing, Healing, Living, and Empowering (SIHLE) organization at the Medical College of Georgia, Augusta University by providing empowering workshops and other mentoring activities to high school participants.



For his efforts in business and the community, Yannik was awarded the Change Maker of the year award from the National Leadership Council and was inducted into his alma mater, Georgia Southern University's, top 40 under 40 alumni class.

Yannik is a certified life coach, has a degree in marketing from Georgia Southern University and a Master's Degree in Christian Ministry from Liberty University. Yannik's diverse leadership experiences make him a highly sought after speaker for universities, businesses and nonprofit organizations across the country. Yannik currently serves as the Lead Pastor of CHOSEN in Augusta, GA and is the proud husband to his beautiful & supportive wife, Linda and the loving father to Jahlyn & Elyse McKie.

Opening Session

WELCOME

Kimberly Vess Loomer, EdD, MA

*Associate Dean for Student and Multicultural Affairs
Associate Professor, Psychiatry & Health Behavior*

GREETINGS

David C. Hess, MD

*Dean, Medical College of Georgia
Executive Vice President for Medical Affairs and Integration, Augusta University
Presidential Distinguished Chair*

D. Douglas Miller, MD, CM, MBA

*Senior Associate Dean, Medical Education
Medical College of Georgia*

INTRODUCTION OF KEYNOTE SPEAKER

LaShon Sturgis, MD, PhD

*Director, Clinical Skills Program, Medical College of Georgia
Assistant Professor, Department of Emergency Medicine
Assistant Professor, Department of Physiology
AAMC Herbert Nickens Scholar*

KEYNOTE ADDRESS

Norma Iris Poll-Hunter, PhD

*Senior Director of Human Capital Initiatives in Diversity Policy and Programs
Association of American Medical Colleges (AAMC)*

REMARKS

Linda S. James, MS

*Assistant Dean, Student Diversity and Inclusion
Office of Student and Multicultural Affairs*

College Workshops

9:35 am – 10:15 am	Concurrent Sessions (Select One)
Hall B	<u>Session A: Preparing for and Applying to Medical School: The AMCAS Application, Fee Assistance Program, and Other AAMC Resources</u> <i>Mr. Tony Mancuso, American Association of Medical Colleges (AAMC)</i>
Hall A	<u>Session B: Health Professions Career Options – Find Your Fit!</u> <i>College of Allied Health Sciences – Dr. Lester Pretlow</i> <i>Medical College of Georgia – Ms. Jessica Lawler</i> <i>College of Nursing – Dr. Pamela Cook</i> <i>Dental College of Georgia – Ms. Stephanie Perry, Facilitator</i> <i>(Designed for students who are undecided on a health profession career path)</i>
10:25 am – 11:20 am	Concurrent Sessions (Select One)
Hall A	<u>Session A: The MCAT® Exam: What to Expect</u> <i>Ms. Lauren Siegel, American Association of Medical Colleges (AAMC)</i>
Hall B	<u>Session B: In-Depth View of the Medical School Application Process</u> AMCAS Closer Look (Step I) Secondary Application (Step II) <i>Ms. Jenny Crouch, Medical College of Georgia Admissions</i> <i>Mr. Tony Mancuso, American Association of Medical Colleges (AAMC)</i>
Hall C	<u>Session C: Assess Yourself! Identifying Your Personality Traits and Interpersonal Skills</u> <i>Ms. Amanda Boland, Augusta University Career Services</i> *Students Only*
11:20 am- 11:55 am GB Lobby	Group A – Research Poster Session, Exhibits, and Recruiters Group B – Lunch (college students only)
11:55 am – 12:30 pm GB Lobby	Group A – Lunch (college students only) Group B – Research Poster Session
12:35 pm – 1:25 pm Hall B	Medical College of Georgia Admissions Panel Presentation MCG Admissions Overview – <i>Dr. Scott Barman</i> Admissions Committee Members Panel Q & A – <i>Moderated by Ms. Jenny Crouch and Ms. Charmaine James</i> <i>(Instructions given at the end for afternoon interactive sessions – Remain seated)</i>
1:40 pm – 3:50 pm	Interactive Sessions*
3:50 pm – 4:15 pm Hall B	Program Closing – Research Awards Presentation, Door Prizes Closing Remarks

*Advisors and parents, please do not attend sessions indicated for students only.

High School Workshops

<p>9:35 am – 10:15 am Hall A</p>	<p>Health Professions Career Options – Find Your Fit! <i>College of Allied Health Sciences – Dr. Lester Pretlow</i> <i>Medical College of Georgia – Ms. Jessica Lawler</i> <i>College of Nursing – Dr. Pamela Cook</i> <i>Dental College of Georgia – Ms. Stephanie Perry, Facilitator</i></p>
<p>10:25 am – 12:20 pm</p>	<p>Interactive Sessions*</p>
<p>12:20 am- 12:50 pm GB Lobby</p>	<p>Group C – Lunch with MAPS Students (high school students only) Group D – Research Poster Session and Exhibits <i>(Students must stay in assigned lunch and poster session group)</i></p>
<p>12:50 pm – 1:20 pm GB Lobby</p>	<p>Group C – Lunch with MAPS students (high school students only) Group D – Research Poster Session and Exhibits <i>(Students must stay in assigned lunch and poster session group)</i></p>
<p>1:30 pm – 2:25 pm Hall B</p>	<p>College – The Next Step <i>Ms. Ashley White, Augusta University Academic Admissions</i></p> <p>Medical Scholars Program – BS/MD Program <i>Mr. Sharn Vericella, Augusta University College of Science and Mathematics</i></p> <p>Learning Communities Program <i>Ms. Jennifer Bateman, Augusta University College of Science and Mathematics</i></p>
<p>2:30 pm – 3:00 pm Hall B</p>	<p>Real Talk – Advice from Medical Students and MAPS Students* <i>Facilitators: Jeunice Owens-Walton and Chinedum Onyeka,</i> <i>Second-year Medical College of Georgia students</i> *Students Only*</p>
<p>3:00 pm – 3:50 pm Hall B</p>	<p>Maximizing Your Purpose <i>Mr. Yannik McKie, Motivational Speaker and Author-McKie Foundation</i></p>
<p>3:50 pm – 4:15 pm Hall B</p>	<p>Program Closing – Research Awards Presentation, Door Prizes Closing Remarks</p>

*Advisors and parents please do not attend sessions indicated for students only.

Advisors and Parents Workshops

(High School and College)

9:35 am – 10:15 am	Concurrent Sessions (Select One)
Hall B	Session A: Preparing for and Applying to Medical School: The AMCAS Application, Fee Assistance Program, and Other AAMC Resources <i>Mr. Tony Mancuso, American Association of Medical Colleges (AAMC)</i> *Q & A – Students Only*
Hall A	Session B: Health Professions Career Options – Find Your Fit! <i>College of Allied Health Sciences – Dr. Lester Pretlow</i> <i>Medical College of Georgia – Ms. Jessica Lawler</i> <i>College of Nursing – Dr. Pamela Cook</i> <i>Dental College of Georgia – Ms. Stephanie Perry, Facilitator</i> *Q & A – Students Only*
10:00 am – 11:15 am GB 3301	Cultivating a Diverse Pre-Health Pipeline – Roundtable Discussion <i>Facilitator: Dr. Norma Poll-Hunter, Association of American Medical Colleges(AAMC)</i> *High School and College Advisors*
11:20 am- 11:40 am GB Lobby	Tour of Education Commons Building: Academic Houses, Simulation Center <i>Report to registration desk.</i>
11:45 – 12:25 pm GB 3300 Academic Affairs Suite	Lunch Networking lunch with Association of American Medical Colleges (AAMC) and Augusta University Representatives
Optional Sessions	Medical College of Georgia Admissions Panel Presentation <i>MCG Admissions Overview – Dr. Scott Barman</i> <i>Admissions Committee Members Panel Q & A – Moderated by Ms. Jenny Crouch and Ms. Charmaine T. James</i>
12:35 – 1:25 pm Hall B	
1:30 – 2:25 pm Hall B	College – The Next Step <i>Ms. Ashley White, Augusta University Academic Admissions</i> Medical Scholars Program – BS/MD Program <i>Mr. Sharn Vericella, Augusta University College of Science and Mathematics</i> Learning Communities Program <i>Ms. Jennifer Bateman, Augusta University College of Science and Mathematics</i>
3:00 pm – 3:30 pm GB Lobby	Residence Hall Tour Oak Hall and Elm Hall On-campus housing for undergraduate and graduate students <i>Meet in GB Lobby near registration area.</i>
3:50 pm – 4:15 pm Hall B	Program Closing – Research Awards Presentation, Door Prizes Closing Remarks

Special Notes for Advisors and Parents:

Please do not attend sessions that are indicated for **students only**. Q & A is for students only. Advisors and parents have Q&A with representative during lunch roundtable.

Igniting the Dream of Medicine

Interactive Sessions

High School Students 10:25 am – 12:20 pm	College Students 1:40 pm – 3:50 pm
<p>Each student will rotate through four of the following sessions (randomly placed). Times are listed below.</p> <ul style="list-style-type: none"> ▪ CPR/AED – Bleed Control ▪ Cranial Nerve ▪ Investigational Diagnosis ▪ Physical Diagnosis ▪ High Definition Simulations ▪ IV Skills ▪ Suturing <p>Rotations</p> <ol style="list-style-type: none"> 1. 10:25 am - 10:50 am 2. 10:55 am - 11:20 am 3. 11:25 am - 11:50 am 4. 11:55 am - 12:20 pm 	<p>Each student will rotate through four of the following sessions (randomly placed except Mock Interviews). Times are listed below.</p> <ul style="list-style-type: none"> ▪ CPR & AED – Bleed Control ▪ Wilderness Medicine ▪ Cranial Nerve ▪ Investigational Diagnosis ▪ Physical Diagnosis ▪ Ultrasound ▪ IV Skills ▪ Suturing ▪ MD/PhD Demonstrations ▪ Mock Interviews <p>Rotations</p> <ol style="list-style-type: none"> 1. 1:40 pm - 2:05 pm 2. 2:15 pm - 2:40 pm 3. 2:50 pm - 3:15 pm 4. 3:20 pm - 3:50 pm

Students must remain in pre-assigned sessions as indicated on name conference badge (NO EXCEPTIONS!)

Conference Objectives

- To help students develop or refine an individual action plan with realistic, achievable goals for becoming a doctor or other health professional
- To help students develop a specific action plan for becoming a competitive health profession school applicant and develop contingency plans for unforeseen outcomes
- To help students gain useful pre-medical and pre-health tips and strategies from the Association of American Medical Colleges representatives, Augusta University/MCG Admissions representatives and professional students
- To encourage and motivate high school students to set goals for pursuing rigorous pre-health college majors that lead to competitive health profession school entry
- To introduce participants to our state of the art medical simulations that are used in interdisciplinary healthcare training at the Augusta University Health Sciences campus
- To engage in scholarly activities
- To establish networking and mentoring opportunities

Educational Workshops and Sessions Descriptions

AMCAS Workshop - Let the American Medical College Application Service (AMCAS®) help you make applying to medical school as smooth as possible! Have your questions answered and learn insider tips for a stronger application.

Health Profession Programs and Opportunities at Augusta University – Learn about programs and opportunities at Augusta University Medical College of Georgia and College of Allied Health Sciences from deans, faculty and admissions representatives

The Health Professions Career Puzzle - Find Your Fit! - This session will introduce students to the variety of medical career options available. Students will have the opportunity to hear from a panel of professionals from Nursing and Allied Health programs and learn more about these program offerings. This session will also cover the importance of early career planning and goal setting.

Assess Yourself! Identifying Your Personality Traits and Interpersonal Skills - This session will be an interactive activity aimed at helping students self-identify their personality types. Students will team up with peers to discuss communication strategies among groups and individuals.

The MCAT Exam: What You Need to Know – Hear the latest MCAT updates from an AAMC representative.

In-Depth View of the AMCAS Application Process and Medical School Secondary Application- For advanced college and post-baccalaureate students who have immediate plans for applying to medical school, this session takes students steps further through the medical school application process.

Medical Scholars Program –BS/MD Program - The Medical Scholars Program Coordinators will discuss the application process and benefits of the Medical Scholars Program at Augusta University. This highly competitive, seven-year BS/MD program is unique within the state of Georgia and provides a noteworthy foundation and opportunity to matriculate into the Medical College of Georgia at Augusta University.

Mentoring and motivational presentation: This session connects participants with medical students and residents with potential for participation in an ongoing SNMA mentoring program.

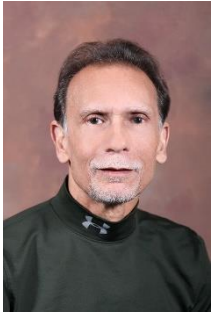
Medical College of Georgia Admissions Presentation and Panel - The medical school application process is one of the most competitive of any profession. In a Q & A format, the MCG Admissions Committee provides information that will help students better understand the competitive medical school admissions process.

Interactive Clinical Skills Activities – These activities demonstrate how medical students make decisions applicable to common clinical scenarios encountered in the clinical setting. Conference attendees introduced to some basic skills essential for performing a medical history and physical examination and engage in hands-on high fidelity simulation that mimics real clinical practice. In addition, students learn suturing and IV-skills.

Poster Session - The scientific poster presentations give students the opportunity to showcase their scholarship and network with faculty and other students involved in research.

Exhibits – Student spend time engaging with representatives from organizations for pre-health preparation information and to learn about pre-medical and future medical career opportunities.

Workshop Presenters



Scott Barman, PhD, currently holds the rank of Professor and Vice Chair of Education in the Department of Pharmacology and Toxicology and is the Administrative Director of the Office of Admissions for the Medical College of Georgia at Augusta University. His research area involves studying mechanisms of Pulmonary Arterial Hypertension (PAH). He received his Ph.D., from the University of North Dakota in Physiology and completed a Post-doctoral Fellowship at the University of South Alabama in the area of pulmonary pathophysiology. He is the recipient of a Parker B. Francis Pulmonary Fellowship Award, American Heart Training Fellowship, and an NIH Training Fellowship as well as numerous extramural grants from the NIH and AHA. His professional memberships include the North Dakota Academy of Science, Sigma Xi Scientific Research Society, American Physiological Society, New York Academy of Sciences, and the American Heart Association Council for Blood Pressure Research. He has served on American Heart Association, NIH, and Department of Defense American Institute of Biological Sciences (AIBS) study sections. He has also served on the Editorial Board of the Journal of Applied Physiology and the Open Nitric Oxide Journal, and currently is an Associate Editor of Frontiers in Systems and Integrative Pharmacology. He reviews manuscripts for 18 scientific journals and has published 60 articles and 14 book chapters.



Jennifer Bateman, BS, is the Learning Communities Program Coordinator in the College of Science and Mathematics at Augusta University. Mrs. Bateman is an Augusta transplant, originally from Southeastern Virginia. She has an undergraduate degree in Biology from Longwood University in Farmville, Va. Mrs. Bateman taught all levels of high school biology for 5 years before migrating south. Since living in Augusta, Mrs. Bateman has been active with several local nonprofit agencies. She is a proud graduate of the Leadership Augusta class of 2018. Mrs. Bateman enjoys finding service opportunities for students to become more involved in the Augusta River Region. A true educator at heart, Mrs. Bateman wants the best for the learning community students and supports their success.



Amanda J. Boland, MS, LPC, is a Senior Career Consultant at Augusta University. After completing her Master of Clinical Psychology degree at Augusta State University in 2007, Amanda joined Career Services as a Career Advisor. Following her passion for working with students in transition, she incorporates her counseling and interpersonal strengths to guide all students in choosing a major, finding employment or gaining acceptance in medical, dental, law or other graduate and allied health programs. Additionally, she continues to build strong relationships with academic departments, local employers and professional representatives from various graduate schools. Her role as Senior Career Consultant at Augusta University allows her to focus on all students on the Health Science campus. Certified as a Career Development and Transitions Coach, Amanda is also licensed as a Professional Counselor in Georgia.



Pamela Cook, DNP, RN, NE-BC is the Interim Associate Dean of Academic and Student Services in the College of Nursing. She has been with the College for 23 years teaching in all of their academic programs. She earned her Bachelor of Science from the University of South Carolina, her Master of Science in Nursing from the Medical University of South Carolina, and her Doctor of Nursing Practice from Augusta University. She is passionate about nursing and student success.

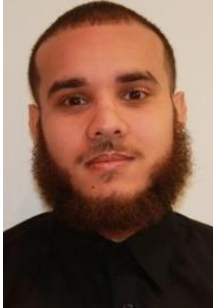
Workshop Presenters



Jenny Crouch, MS, MA, is Director of Admissions and Recruitment Operations at the Medical College of Georgia. Over the past eight years, Ms. Crouch has worked in various aspects of student services, including Career Counseling, Admissions and Financial Aid. Prior to her time in education, she worked in both syndicated television and broadcast news, serving as a Segment Producer and Production Assistant for FOX News and 20th Century FOX in New York City. She holds a Bachelor of Arts in English from Baruch College CUNY, where she was deemed the sole recipient of the 2007 Excellence in English award, as well as a Master of Science in Organizational Leadership from Brenau University where she earned the 2015 Outstanding Graduate in Organizational Leadership award. Jenny is a 2018 graduate of The Johns Hopkins University, where she earned a Master of Arts degree in Communication, with dual specializations in both Public and Media Relations and Health Communication. Jenny is set to graduate with a Doctorate of Education in Leadership and Learning in Organizations from Vanderbilt University in 2021. She currently serves on the Executive Board of the National Association of Medical Minority Educators (NAMME) as the Co-Communications chair for the Southern Region.



Jessica Gore Lawler, MEd, serves as an Admissions Counselor at the Medical College of Georgia at Augusta University. She holds a Bachelor of Arts in Mass Communication with a concentration in Public Relations from Georgia College, where she also minored in English and dance. In 2015, Ms. Lawler graduated from Georgia Southern University where she earned a Master of Education in Higher Education Administration. Before joining the MCG family in 2018, Ms. Lawler worked for nine years in various aspects of Enrollment Management including Admissions and Academic Advising. In addition to her work in higher education, Ms. Lawler also taught dance lessons (ballet, tap and jazz) for the Georgia College Community Dance Program and served as president of the Milledgeville Zeta Tau Alpha Alumnae Chapter. Through her work and involvement in higher education and teaching, Ms. Lawler found a passion for helping students to navigate the ever changing admissions process. As a native of Augusta, GA, Ms. Lawler looks forward to bringing her knowledge and passion for academic admissions to MCG.



Tony Mancuso, MEd, is the AMCAS Outreach Specialist at the Association of American Medical Colleges. The quote Tony lives by is “If great is achievable, then good enough is no longer acceptable.” This became clear as he has grown professionally at the Association of American Medical Colleges. He started his career at the association in March 2016 as a temporary associate and has worked his way to his current position of AMCAS Outreach Specialist. Tony is responsible for all the communications for AMCAS and the Fee Assistance Program. This includes communications to medical schools, pre-health advisors, and applicants. He created the Fee Assistance Program Essentials to provide clarity to applicants during this process. Applicants are asked to certify that they have read and understood the policies and procedures contained in Fee Assistance Program Essentials for Calendar Year 2019 when submitting a Fee Assistance Program application. He also created the Guidelines for Writing a Letter of Evaluation to assist letter writers as they compose content for their letters. He manages the @AMCASinfo Twitter page and the website content for the Fee Assistance Program and AMCAS. He is currently working on the 2020 AMCAS Applicant Guide.



Stephanie L. Perry, MEd, is the Director of Student Admissions and Diversity at the Dental College of Georgia. Ms. Perry joined the Dental College of Georgia at Augusta University family in July 2001 as the dental school minority recruiter and the AHEC Dental Coordinator. She was instrumental in developing and maintaining several pipeline programs for prospective dental students throughout the state of Georgia. In a few years Ms. Perry took on the multi-tasking role and title of Director of Student Admissions and Diversity. Since 2001, Ms. Perry has served on DCG’s admission committee where she serves in various capacities to include as an interviewer and voting member. She is the sole recruiter of all prospective students for the Dental College with a high emphasis on students from under represented and disadvantaged backgrounds. Her countless service requires a great deal traveling to colleges and universities throughout Georgia and surrounding states. Ms. Perry, also the advisor for the DCG Chapter of the Student National Dental Association, serves/has served on various committees with American Dental Association, American Dental Education Association, and the National Association of Medical Minority Educators, Inc. Ms. Perry received a Bachelor’s degree from Troy University, in Troy, AL in Journalism and previously worked as a reporter/writer before venturing into counseling in an educational environment. She also earned a Masters of Education in Higher Education Administration.

Workshop Presenters



Lester G. Pretlow, PhD, is the Dean of the College of Allied Health Sciences at Augusta University. A Virginia native, Dr. Lester Pretlow is one of the very few medical laboratory professionals with a research doctorate in biomedical science. He is also, along with several of his family members, a licensed funeral director and embalmer in Virginia. Prior to joining Augusta University in 2001, he served as Captain in the U.S. Army and was Officer in Charge of Chemistry and Hematology for the Department of Pathology at Eisenhower Army Medical Center at Fort Gordon. At Augusta University he has served as Professor and Department Chair for Medical Laboratory, Imaging and Radiologic Sciences. He designed and developed the Translational Research Laboratory, which provided clinical support for researchers across the enterprise until 2014 when the lab officially closed. In 2013, he assumed the role of Associate Dean of Academic Affairs. He has received numerous awards including being the recipient of the *Student's Faculty Choice Award for Outstanding Teaching* two times over for the Summer Enrichment Education Program at MCG. In June of 2017, he graciously accepted the role of Interim Dean of the College of Allied Health Sciences and was formally appointed as Dean in April 2018. Dr. Pretlow holds a BA in Chemistry from the University of Virginia and a PhD in Biomedical Sciences from Old Dominion University/Eastern Virginia Medical School.



Charmaine James, MS, is Senior Admissions Counselor for the Medical College of Georgia at Augusta University. She joined the MCG family in 2014 after graduating from Mercer University. Prior to working in the Office of Admissions, she worked in the Office of Student and Multicultural Affairs. Ms. James enjoys advising students as they embark on their journey to medical school and seeks to support them along their way as best she can.



Lauren Siegel, BA, is the Senior Communications Specialist for the MCAT Program at the Association of American Medical Colleges (AAMC). Lauren specializes in social media, online communications, and presentations to provide information and support to premed students as they prepare for and take the MCAT exam. In a similar capacity, Lauren is also part of the AAMC's Services Outreach Team dedicated to helping students navigate the process of applying to medical school. For more information about premed resources and information, follow Lauren and the AAMC PreMed Team on Twitter and Facebook (@AAMCPreMed). For questions about the exam itself, follow her on Twitter @AAMC_MCAT.



Sharn Vericella, MBA, is the manager for the Professional Scholars Program at Augusta University. Sharn joined Augusta University in July of 2017. He earned his BBA and a minor in Communication Arts at Georgia Southern University. He went to earn his MBA at Embry-Riddle Aeronautical University. He is currently a candidate for an Ed.S. in Educational Leadership and will graduate this June.



Ashley White, BA, is an Admissions Counselor at Augusta University. She received her Bachelor of Arts degree with a major in Communication from Augusta University in August 2016. During her undergraduate years, she was heavily involved on campus by serving as the President of her sorority, serving as a member of the Public Relations Club, and was a member of Lambda Pi Eta, the Communication Honor Society. Ashley also participated in two different Study Abroad programs during the summers of 2015 and 2016. Ashley is currently in Augusta University's Master of Public Administration program with an expected graduation date of Spring 2020. As a college admissions counselor, Ashley works with the northern CSRA, northeast Georgia area, and dual enrollment students to help navigate the undergraduate admissions process and to share with them her love of Augusta University.

Poster Presentation Abstracts

AN ALTERNATIVE DETECTION SYSTEM KIT USING RECOMBINANT HUMAN CHORIONIC GONADOTROPIN

Rehmat Babar, Matthew Brewer. PhD

Department of Biology, Georgia State University, Atlanta, Georgia

The goal of our research is to design and synthesize a recombinant version of hCG that will trigger a positive response on a pregnancy test strip. Once we have verified the synthesized our desired protein we will design and create a protein expression optimized plasmid that will allow the insertion of any coding sequence and will code for an hCG tagged protein. Detection is used in all aspects of biology and is essential in providing an illustration of the chemical world around us. Currently, fluorescent protein and protein tags are used as reporters but they require additional analysis with expensive and immobile equipment. We propose to create an alternative detection system using recombinant Human Chorionic Gonadotropin (hCG) as a reporter by proving its functionality as a protein tag. We designed two recombinant versions of hCG: the beta subunit with codon optimization and a beta 3 loop epitope using a computer software called SnapGene. Simultaneously, we prepared the two vectors we would be using: pGEX and pSB1C3. The recombinant hCG beta subunit and the Beta 3 loop epitope coding sequences were ligated into each of the vectors. Once verified and sequenced, we performed several transformations: pGEX vector containing recombinant hCG beta subunit coding sequence was transformed into E. Coli dH5a cells and Rosetta Gami cells. Similarly, the pGEX vector containing the hCG beta 3 loop epitope coding sequence was transformed into E. Coli dH5a cells and Rosetta Gami cells. Protein expression was induced and the synthesized protein (tagged with GST) were isolated, purified, and recognized using anti-GST and anti-hCG. Our results indicate that hCG has great potential to be a successful tag, however folding and aggregation play a key part in recognition from the test strip. This research is ongoing, and it has the potential to revolutionize protein verification.

BENZALKONIUM CHLORIDE AND BETULINIC ACID INDUCED APOPTOSIS ON HUMAN CANCER AND TRANSFORMED CELLS

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Benzalkonium chloride (BKC) is an organic salt classified as a quaternary ammonium compound. BKC shows antimicrobial activities against bacteria and some viruses, fungi, and protozoa, and the mechanism of the microbiocidal action of BKC is thought to be due to disruption of the cell membranes of microorganisms. Although BKC has been reported to enhance drug penetration and improve topical bioavailability of ophthalmia drugs, effect of BKC on proliferation of cancer cells are not well understood. Betulinic acid (BA) is a natural compound with potent in vitro cytotoxicity toward many cancer cells. A major obstacle in releasing the biological potency of BA is its poor solubility in aqueous solutions and common organic solutions (such as esters, alcohols, and ethers). Some derivatives of BA had shown improved water solubility, as well as enhanced biological activities when compared with BA itself. Previously, we developed new ionic derivatives of BA containing benzalkonium ion, and they exhibited a higher water solubility and stronger antiviral and anticancer activities. We here examined anti-cancer effects of BKC and an ionic derivative of Betulinic acid, BA-Gly with human tumor cells and transformed cells, HeLa, PC-3, MIA PaCa-2, and 293T cells, and found that cytotoxic effects of BKC varied among the cell lines. Interestingly, the cell viability assay demonstrated that combination of Benzalkonium and BA-Gly showed synergistic effects in 293T cells, but not in the other cell lines, implying that this synergistic effect might be against SV-40 large T antigen. To assess the effect of BKC and BA on apoptosis, the cells treated with compounds were fixed with 4% formaldehyde and stained with DAPI. It has been concluded that single treatment of each BKC and derivatives of BA did not induce apoptosis in 293T and HEK293 cells. The combination of BKC and a derivative of BA showed high amount of apoptotic phenotype in 293T cells, but not in HEK293 cells, which seems to contribute to cytotoxicity in 293T cells measured by AlamarBlue Cell Viability Assay.

COMBINING HIGH-DIMENSIONAL MASS CYTOMETRY AND DATA DRIVEN ANALYSIS FOR PRECISION MEDICINE IN CANCER THERAPY

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In the last decade it became evident that the immune system can be harnessed to fight cancer. Recent advances in the field revealed that each cancer and more importantly each individual patient develops anti-cancer immunity in his own context. Given the ever growing portfolio of immune targeted therapeutics, precision medicine tools are necessary to stratify patients to the right therapeutic and to monitor long term anti-cancer immunity, while also supporting clinical trials. To this aim we developed mass cytometry (CyTOF), which allows us to truly multiplex by running 30 samples at once while measuring 40+ parameters on a single cell over millions of immune cells by using metal labeled probes. The subsequent analysis is data driven, can be adapted to high throughput approaches and can model arbitrary trial designs such as batch effects, paired designs and is truly quantitative. We demonstrate feasibility of mass cytometry to precision medicine by two clinical setups: We used mass cytometry combined with machine-learning bioinformatics to perform high-dimensional in-depth characterization of immune responses before and during anti-programmed cell death-1 (PD-1) immunotherapy. By using CyTOF and our bioinformatics approach, we could predict clinical response to anti-PD-1 therapy using blood liquid biopsies. Peripheral blood mononuclear cells (PBMCs) from patients with stage IV melanoma and healthy donors were analyzed. A clear T-cell response was observed, but the most striking difference between responders before therapy was an enhanced frequency of CD14+ CD16+HLA-DRhi classical monocytes. We validated our results using conventional flow cytometry and found a clear correlation of enhanced monocyte frequencies before therapy initiation with clinical response such as lower hazard, extended progression-free, and overall survival. In a second study, we used CyTOF to monitor immune responses in 21 patients receiving a novel combination of anti-PD-1 and IL-15 super-agonist (ALT-803) after initially failing on anti-PD-1 therapy. In this clinical trial study, a response in the CD8+ T-cell compartment was observed. Unexpectedly, through our high dimensional unbiased analysis, we were able to detect a strong expansion of innate tumor-reactive natural killer (NK) cells at Day 4 of therapy. Given our recent body of work, there is potential in using our data-driven artificial intelligence workflow and CyTOF as a precision medicine tool. While the application of CyTOF has been used to reveal immune responses in cancer therapy, the expansion into other human diseases provides further opportunity to integrate our approach to the bedside.

ROLE OF RNF216/TRIAD3 ON NEURON DEVELOPMENT AND DEGENERATION

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The balance between the production of proteins and their breakdown is acknowledged as protein turnover. E3 ubiquitin ligases are a group of enzymes that directly participate in protein turnover by covalently attaching ubiquitin to target substrates. Obstructions in this pathway can lead to a multitude of neurological disorders that span the spectrum from neurodevelopment to neurodegeneration. RNF216/TRIAD3 is an E3 ubiquitin ligase that is disrupted in individuals with Gordon Holmes syndrome (GHS). GHS is characterized by dysarthria, underdevelopment of secondary sex organs, and neurodegeneration in the hippocampus, cerebrum and cerebellar regions. There are no effective therapeutic interventions for GHS. Scientific studies have pinpointed disruption in the ubiquitin pathway as a cause of these symptoms, but it remains unclear how this disruption affects neural development and neurodegeneration in select regions of the brain. To determine how RNF216/TRIAD3 alters neuronal morphology and survival, we used a Rnf216/Triad3 conditional mouse to selectively delete the Rnf216/Triad3 gene in cultured hippocampal neurons using Cre-Lox Recombination. After determining Cre-Lox Recombination was an efficient method in depleting RNF216/TRIAD3, we assessed its effects on neural development using Sholl analysis to compare dendritic complexity in three experimental conditions. Results from our studies will provide insight into how alterations in neural development may contribute to neurodegeneration in GHS patients.

INCREASE IN MEDIAL PREFRONTAL CORTEX FUNCTIONALITY LEADING TO INCREASE OF MENTAL ILLNESSES OF HUMAN TRAFFICKING VICTIMS

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Research studies have recently explored the vast role of the medial prefrontal cortex in the human, its decisions, and its state of mind. Previously concluded that it had no function for the Human, the mpFC has expanded from decision making, to adaptive reasoning, cognitive behavior, and even social & personality expression. Part of the focus of this research is to understand, analyze & connect the ways the mpFC influences several areas of the brain & body (hippocampus, adrenal cortex, etc) through secretion of hormones and how proper functionality affects its individuals. The rest of the focus will be brought to this thesis in addressing stressors that affect mpFC proper functioning, including but not limited to, all parts of Human Trafficking, and its relation to the victims' mental illnesses that result from this unfortunate international issue. This will be done by testing the hypothesis that mental illnesses stem from the result of decreased neurotransmitters (such as Dopamine) leading to mpFC dysfunctionality and, if triggered by certain stressors, the mpFC will be damaged amongst victims of Human Trafficking. The aim of research will be to bridge the gap between mpFC functionality experiments to the resulting mpFC damage and mental illnesses of Human Trafficking victim reports world-wide. By examining the role and the accountability the mpFC plays in the human system, as well as addressing if there is(are)/isn't(aren't) any other ways to compensate for a damaged mpFC, then there will be a way to address another cause to the mental illnesses. Reasons of dysfunctionality of mpFC will also be looked at, and a cause such as a stressor will be addressed.

HVAC RETURN FILTER SETTLED DUST'S EFFECT ON BIOAEROSOL CONCENTRATIONS

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Central air-conditioning systems utilize ducts that discharge a diverse range of particles. These systems can potentially contribute to the resuspension of settled dust, which houses a broad range of microbial species emanating from unmaintained return filters. The objective of this pilot study was to discover ties between the amount of dust accumulation on unmaintained return filters and the concentration of bioaerosols inside of the HVAC chambers, as well as near the ceiling vent in the living rooms. To our knowledge, there has been little research conducted to assess whether bioaerosol concentrations are influenced by settled dust on filters. Within Statesboro, we sampled the air inside of two apartments to assess for microbial composition. The apartment containing the filter with more dust accumulation had not received proper ventilation maintenance for a three-month period. Inside of the HVAC chambers, a BioStage Impactor was utilized to collect air samples for a five-minute period. We also cultivated swab bacterial samples of settled dust in 1 cm² regions on the surface of the filter. All samples were inoculated and incubated on TSA agar for 72 hours. Then, we assessed for air quality in the living rooms of these apartments. The pump effectively collected air samples at an airflow rate of 28.3L/min. After incubation of all agars, total colonies were quantified and CFU/m³ was calculated. At each site, the temperature, moisture, and humidity were measured. The occupants of the homes were asked to give a brief history of any allergic symptoms they have experienced in the last 6 months, a record of any pets in the home, and the month and year of their last filter change. Colony analysis showed a mean gram-negative bacteria concentration of 89.4 CFU/m³ for the maintained return filter and 542 CFU/m³ for the unmaintained return filter. The total bacteria concentrations for the maintained and unmaintained filters were 156 CFU/m³ and 438 CFU/m³, respectively. The colony count of the settled dust swab samples showed a significant increase between the maintained and unmaintained filters. These findings strengthen speculations that improper maintenance of return filters play a part in the dissemination of pathogenic particles in these homes, raising concerns for blue-collar workers, occupants of homes with unmaintained filters, and others who handle these filters. Our data also revealed that the occupants of the home with the maintained filter experienced allergic symptoms, while, conversely, occupants of the home with the unmaintained filter did not. Participants were shown test results, findings, and given tips on how to remediate their air quality.

REGULATION OF TOLL-LIKE RECEPTOR 4 ACTIVATION BY DANGER-ASSOCIATED MOLECULAR PATTERNS

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Psoriasis is a common skin disorder that affects a person's self-esteem and confidence. Psoriasis is characterized as a sterile inflammation or inflammation in the absence of infection. In previous studies, phosphatidylglycerol (PG) located in lung surfactant was shown to alleviate inflammation induced by microbial components, or pathogen-associated molecular patterns (PAMPs), by inhibiting PAMP-induced activation of toll-like receptors (TLRs). Due to the evidence provided in the previous study, the Bollag Laboratory team investigated the effects of PG and its ability to regulate the activation of TLR2 and TLR4 in response to danger-associated molecular patterns (DAMPs). Danger-associated molecular patterns are proteins expressed by the cell and released by cells upon injury or stress and include several anti-microbial peptides that are upregulated in psoriatic patients. Specifically, in psoriatic patients, S100A9 is a common DAMP elevated in this skin disorder, and because of its increased presence in psoriatic patients, S100A9 was the DAMP chosen for the team's experiments. PG was shown to suppress the activation of TLR2 and the downstream production of inflammatory mediators induced by recombinant S100A9. Currently, studies are being conducted to identify how TLR4 activated by DAMPs reacts to PG. If PG inhibits TLR4 activation by DAMPs, as previously shown for PAMP-induced TLR4 activation, identifying a mechanism of PG's regulation would be the next focus. An understanding of the mechanism by which PG inhibits TLR activation by DAMPs may allow its development as a treatment for inflammation in various tissues. Besides focusing on the TLR response to S100A9, the Bollag laboratory team plans to study the effects of PG on TLR4 activation by heat shock protein B4 (HSPB4) and high mobility group box B1 (HMGB1). HSPB4 is a DAMP that is produced in the eye upon corneal inflammation. In people with diabetes, the protein HMGB1 is upregulated and may be responsible for why inflammation tends to be worse in patients with diabetes. An ability of PG to inhibit inflammation in response to these DAMPs would also support its use for the treatment of corneal disease and diabetes.

INVESTIGATION OF VINCULIN FROM *MONOSIGA BREVICOLLIS* IN RESPECT TO MULTICELLULARITY

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Multicellularity occurs with the aid of cellular adhesion molecules - linkages between cell-cell and cell-extracellular matrix interactions. Cellular adhesions arise with the assembly of cytoskeletal actin-binding proteins- talin and vinculin. Vinculin is a crucial regulator of cellular adhesions by interconnecting talin and actin. Vinculin is composed of a globular head linked to a tail domain by a proline-rich region; the open conformation of vinculin directs the ligand-binding sites in the protein to other cells performing distinctive functions. Due to vinculin's vital involvement in cellular adhesions, it could be hypothesized that vinculin may have played a fundamental role in the origin of multicellularity. In light of this, the eukaryotic choanoflagellate model organism, *Monosiga brevicollis*, will be used to analyze vinculin's involvements in cellular adhesions. *Monosiga brevicollis* is an ideal model organism because it has a significant free-living single-celled stage and can also form colonies. Adhesion roles of vinculin in *M. brevicollis* will be assessed by mutating key amino acids to examine how a loss or gain of function affects vinculin's adhesion capacity. Considering the importance of vinculin in stabilizing cellular adhesions can provide a deeper understanding of various protein functions which contribute to principles of multicellularity. Ultimately, vinculin's adhesion activity relating to multicellularity may contribute to the progression of diseases involving cytoskeletal proteins and cellular movement.

IMPROVING ORAL CANCER OUTCOMES THROUGH A SMARTPHONE-BASE AI APPROACH: ESTABLISHING A BASIS

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The long-term goal of this project is to develop a simple low-cost, smartphone-based tool specifically designed for low-non-specialist use that will improve oral and oropharyngeal cancer outcomes through early detection and early specialist referral. Current non-specialist screening approaches typically have little or no effect on oropharyngeal cancer outcomes. Yet early diagnosis is the most important determinant of oropharyngeal cancer outcomes. Our objective is to improve oropharyngeal cancer outcomes by melding smartphone technology with artificial intelligence convolutional neural networks and deep learning (AI) to develop a smartphone Application linked to a cloud-based AI-powered screening algorithm that provides triage and management guidance based on smartphone photos and individual risk factor analysis.

PARALLEL VS. SERIAL SEARCH

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Visual search is the process of looking for an object of interest. It is used in all aspects of everyday life. There are even special implications for medicine, diagnostic imaging, and the military, trained snipers. The project was a pilot study to evaluate the tradeoffs between accuracy and speed in visual search. The study was designed based on previous research on feature integration theory, by the late Dr. Anne Treisman. The subject pool was random, participants enrolled via contacting the lab from flyers placed around the university. Data was measured using experiments that evaluated time for a subject to respond to the stimuli, combined with eye tracking data. The studies were conducted using the vision lab and equipment. Subject localization information was collected to determine overall accuracy. Data analysis was done using R*. During this experiment, there was difficulty enrolling subjects and keeping them involved in the study. With no computer science background, there was a sharp learning curve to understand the mechanics behind designing the experiments and analyzing the complex results. The results were as anticipated, based on previous data. In serial search, as the set size increased there was a significant increase in subject reaction time. In parallel search, there was not a significant variation in subject reaction time with the same set size increase. However, it was interesting to see that across the board none of the subjects were good at accurately locating the targets. This project demonstrated one important theme. There is still more work to be done in the field of visual search, because the implications reach across many disciplines. By having a better understanding of how visual search occurs, more research can be conducted for improving efficiency and performance across all disciplines where visual search is utilized.

THE SUBLETHAL EFFECTS AND BIOACCUMULATION OF 17 α -ETHINYL ESTRADIOL IN *LUMBRICULUS VARIEGATUS*

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The threat of freshwater scarcity is a global concern. With less than 1% of Earth's total water available for human consumption, there has been concern about toxic contaminants affecting available freshwater sources. Ethinyl estradiol, a synthetic drug present in multiple water sources, was analyzed for its effect on freshwater invertebrates. Freshwater sources are subject to contamination from toxic compounds and other harmful materials through improper sewage cleanup and pollution. Ethinyl estradiol (EE), a synthetic, steroidal estrogen used in contraception, is present in varying concentrations across freshwater sources worldwide. EE is also classified as an endocrine disruptor that is known to interfere with the endocrine system. Endocrine disruptors can create adverse effects on bodily systems and have been found to affect behavioral patterns, enzymatic activity levels, and estrogen receptor levels. Preceding data has found that EE exposure leads to an increase in mortality, a decrease in offspring, and changes in reproductive morphology among other freshwater invertebrates. The objective of this study was to observe the sublethal effects and bioaccumulation of ethinyl estradiol in *Lumbriculus variegatus*. Data collection on experimental endpoints, including reproduction rate, segment regrowth of *L. variegatus*, have been collected. The bioaccumulation of EE within *L. variegatus* was observed through sediment testing and an ethinyl estradiol ELISA. The data collected from this experiment contributes to information available on the effects

of low-dosage endocrine disruptor concentrations on freshwater organisms. The effects of EE and its bioaccumulation could be extrapolated to include bioaccumulation of EE in organisms of higher trophic levels, including vertebrates.

MIRNA AND THEIR EFFECTS ON BONE LOSS IN TRAUMATIC BRAIN INJURY MOUSE MODEL

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MicroRNAs (miRNAs) have been known to play a key role in bone regulation. Some miRNAs have been observed to increase bone formation via osteoblast formation and others seem to be involved in bone resorption via osteoclast formation. In this study, we aim to observe which miRNA of those secreted by cells during a traumatic brain injury (TBI) are involved in bone formation or bone resorption. Our focus miRNAs were: miRNA-151, miRNA-6991, miRNA-27a, miRNA-92, and miRNA-1224. Using mouse bone marrow monocytes (BMCs), we have induced osteoclast formation by feeding media containing macrophage colony stimulating factor (M-CSF) as well as receptor activator of nuclear factor kappa-B ligand (RANK-L). After osteoclastogenesis, it has been observed via tartrate resistant acid phosphatase (TRAP) staining that miRNA-151 and miRNA-6991 have been up-regulated during osteoclast differentiation. Of the ones examined in our study, miRNA-27a, miRNA-92, and miRNA-1224 have shown an increase during osteoblast differentiation. The observations from this study can contribute insight for creating possible therapeutic methods for osteoporosis related diseases

EXAMINING WATER QUALITY VARIABLES IN THE PING AND MEKONG RIVERS

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This research was conducted through a series of testable parameters in different bodies of water is essential to the Southeast Asian population and culture. Water samples from each location will be taken three times for replication to produce sufficient results. Equipment used to measure independent variables (bodies of water locations) and dependent variables (temperature, pH, salinity, and nitrites) included, a Pancelement TDS&EC temperature meter, a Pancelement water quality pH meter, a Magnum Media Salinity spectrometer and, a fresh water kit for nitrite tests. All measurements and data collected was analyzed with the Program Statdisk 13. Our findings resulted in the Mekong river and Sukhothai canal consisting of the lowest pH values. The lowest temperature readings were found in the Cloud Forest possibly due to altitude, which was 2500m above sea level. Every location tested had a zero average for salinity. Most locations tested along the Mekong river were inclusive of zero for nitrite values except Bangkok (Chao Praya location) which had an average of 0.25ppm. Our results suggested that the water quality throughout the tested locations along the Ping and Mekong rivers that flow throughout the entirety of Thailand are not extremely polluted. Both rivers have healthy ecosystems with maintained water quality that is able to support and benefit the Southeast Asian population as well as the wide range of species. Being able to maintain water quality in the rivers is essential for ecology, biodiversity, and human consumption.

VACCINE PROLIFERATION IN THE FACE OF PUBLIC SCRUTINY

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Each newly conceptualized vaccine has faced the same arguments over the last two centuries. A detailed examination of these several vaccines and their influences on the public will hopefully provide a better understanding of why the same arguments against vaccines continuously come up, even though each vaccine becomes widely used and celebrated. To support our analysis, we examined modern vaccine case studies and how those results may or may not skew the public reaction. By focusing on these two areas of research, we tried to understand the reasons behind persisted vaccine apprehension, even though there have been multiple and well-supported conclusions that vaccines are essential to a healthy human population. Perhaps by understanding the public's fear, we can one day suggest alternate methods of vaccine "roll out" and introduction to the public.

ENHANCING BASIC LIFE SUPPORT TRAINING: DEVELOPMENT OF A REAL-TIME FEEDBACK MANIKIN

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Cardiopulmonary Resuscitation (CPR) is a life-saving technique used when a person stops breathing or a heart stops beating. Immediate CPR can double or triple survival rates after cardiac arrest. While many CPR training courses use non-electronic CPR manikins, recent literature has shown that training on a real-time feedback CPR manikin improves functional outcomes such as chest compression rate and mean tidal volume. However, current commercially available real-time feedback manikins either only measure metrics on chest compressions or are expensive, making training a class on such manikins infeasible. Accordingly, we have designed, constructed, and tested a low-cost Arduino microcontroller-based CPR manikin that provides real-time feedback to trainees on six critical metrics including force of compressions, rate of compressions, hands-off time, percentage of full chest recoils, angle of neck tilt, and ventilation volume. Visual and auditory feedback on these metrics is delivered to trainees, allowing them to adjust their performance in real time. Additionally, data from each training session is saved and assigned to a user profile, so that multiple trainees can review their progress throughout their training. Future research will be conducted on the efficacy of training on this manikin compared to commercially available manikins

SERUM C-TERMINAL CROSSLINKING TELOPEPTIDE (CTX) AS A PREDICTIVE BIOMARKER OF BISPHOSPHONATE-RELATED OSTEONECROSIS OF JAW (BRONJ): SYSTEMATIC REVIEW AND META-ANALYSIS

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The aim of this systematic review was to evaluate the validity of using preoperative serum C-terminal crosslinking telopeptide (CTX) levels as predictive factor of increased risk of developing medication-related osteonecrosis of the jaw (MRONJ) in patients on bisphosphonate (BP) therapy who undergo invasive dental procedures. A search was conducted through PubMed, MEDLINE, and Web of Science, following PRISMA guidelines and the Cochrane Handbook for Systematic Reviews of Interventions. Meta-analysis was conducted on the risk ratio. The methodological index for nonrandomized studies (MINORS) and Quality Appraisal of Reliability Studies (QAREL) checklist were used to assess quality. Eighteen clinical trials, involving 2301 patients were included. Most patients received Alendronate or Risedronate for an average of 62.14 months. The average serum CTX level in BP-treated patients before surgery was 217.67 pg/ml. Meta-analysis demonstrated that the cutoff in CTX level (150 pg/ml) was not predictive of BRONJ risk. The sensitivity of CTX value <150 pg/ml was 34.26% and the specificity was 77.08%. The use of CTX to diagnose BRONJ risk following dental procedures in bisphosphonate-treated patients is not justified. Further studies are needed to develop other reliable biomarkers.

KING OF ALL FRUIT: ASSESSMENT OF DURIAN ANTIOXIDANT AND CYTOPROTECTIVE PROPERTIES

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Durio zibethinus (durian) is a thorny shelled, podded pulp bearing fruit indigenous to Southeast Asia. Durian shell and rind have been shown to have antioxidant activity; however, the antioxidant activity of durian pulp has not been examined. In this study, the durian pulp antioxidant activity was evaluated as well as a closely related fruit, Artocarpus heterophyllus (jackfruit). First, TEAC assays were conducted to determine durian and jackfruit antioxidant activity. Next, durian and jackfruit were introduced to PtK-2 cells at a 2.0% concentration (in DMSO) and to determine if these dosages could “rescue” cell death caused by hydrogen peroxide. Initial data supports the hypothesis that both species possess enough antioxidant properties to prevent total cell death cause during the “rescue”. However, the quantitative data suggests that jackfruit is a stronger antioxidant than durian because the population of viable cells treated with jackfruit was higher compared to the durian treatment.

ASSOCIATIONS OF AGE AND GENDER WITH DOMAINS OF PHYSICAL FUNCTIONING IN HEMODIALYSIS PATIENTS

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To bridge the gaps in patient-provider communication for ESRD patients, the INFORMED pilot study has collected the physical functioning data of dialysis patients. The end goal of the study is to initiate patient-provider conversations on the individualized physical functioning reports. The present study utilizes the preliminary data to examine the associations between age and gender with domains of physical functioning. Physical functioning was measured across multiple domains in 41 hemodialysis patients at two clinics. Measures included: Short Physical Performance Battery (SPPB; incorporating balance, gait speed, and lower-body strength; range, 0-12; higher scores=better performance); perceived physical functioning (range, 0-100; higher scores=higher perceived functioning); and any impairment in the Basic and Instrumental Activities of Daily Living (ADLs; %). Paired t-tests and Fisher's exact tests were performed to compare functioning by age group (dichotomized <60, ≥60) and gender. In this population (mean age, 56.9; 53.7% female, 91.9% black), apart from transferring (17.4% vs. 50.0%, ≥60 vs. <60; $p = 0.043$), both age groups reported negligible differences in their ADLs; no statistically significant differences were seen in perceived physical functioning. However, their actual physical performance on the SPPB showed demonstrable age-dependent differences (mean score, 8.08 vs. 5.07, $p < 0.01$). No statistically significant differences by gender were seen for any measure. Results suggest that, while functioning is generally lower than in the general population, differences across domains of perceived physical functioning are primarily age- and not gender-dependent. Therefore, interventions to improve functioning and gauge physical performance in hemodialysis patients must be targeted to age group.

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