

2017

## Program for the Annual Meeting of the Georgia Academy of Science, 2017

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## GEORGIA ACADEMY OF SCIENCE

ANNUAL MEETING  
March 24th–25th, 2017  
Young Harris College  
Program



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Top right image by Yolanda Evans



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NORTH GEORGIA™

## **GAS President's Welcome and Report of the Academy Council**

Greetings Academy Members and Guests,

Welcome to the 2017 Annual Meeting of the Georgia Academy of Science!

The Academy is most grateful to President Cox for inviting our organization to Young Harris College. We are also thankful to Jennifer Schroeder, members of the local arrangements committee, and the faculty, staff and students of Young Harris College for their hard work and hospitality. We are lucky to have 70 oral presentations and 41 posters at this year's meeting.

The Academy has had another productive year. The Council has overseen the continuation of poster awards and student travel awards (more than twice as many applicants this year as last). We have now transitioned the meeting issue, like the rest of the GA J. of Science, to an open, electronic format that is indexed and globally available. We have also accepted invitations from the University of West Georgia to host the 2018 annual meeting and from the University of North Georgia-Gainesville to host the 2019 annual meeting. Additional work of the Council can be found on our web page.

With the conclusion of this year's meeting I step down as your President and leave you in the very capable hands of Paul Arnold. It has been a pleasure to serve the Academy, and I look forward to many more years as a member of this great community.

I hope you enjoy the meeting and your time in Young Harris.

Sincerely yours,

Shane A. Webb, President  
Georgia Academy of Science  
and  
Professor of Biology  
University of North Georgia  
Dahlonega, GA

Cumming   Dahlonega   Gainesville   Oconee

*The University of North Georgia is designated as The Military College of Georgia and as a State Leadership Institution.*



## GREETINGS, GAS!

**Welcome**, members of the Georgia Academy of Science, to Young Harris College for your 2017 annual meeting!

We have been looking forward to hosting your conference and have been busy making preparations for some time now, and I would specifically like to thank the local arrangements committee and our faculty and staff for making this meeting possible.

Science is a vitally important component of the liberal arts environment, and Young Harris College is committed to nurture its development in any way that it can. The Georgia Academy of Science is not only an important organization that fosters scientific research, exchange and collegiality in this great State of ours, but it is also an important part of the learning experience for many undergraduate and graduate students as they go down the road to becoming top-notch practitioners in the art of Science. In addition, GAS is a strong advocate for championing the sciences to the public and political sector of the state of Georgia. Thank you for upholding scientific literacy in a political and media climate where facts and research sometimes take a backseat to more sensationalized, but unfounded conclusions.

Founded in 1886 by a circuit-riding Methodist minister, Young Harris College has a long history of training students, including scientists, in the context of a liberal arts environment. In 2009, YHC made the transition from a 2-year to a 4-year college, with the hopes of having even a greater impact on the academic culture of the state of Georgia. Since that transition, the College has nearly doubled its enrollment and more than doubled the size of its faculty.

The sciences have been a big part of that growth, and our graduates can now be found in a multitude of quality graduate programs and careers. The emphasis of undergraduate research has been a large part of YHC's increasing success, and the faculty of Young Harris College work tirelessly with students in order to make sure that they have the necessary skills to navigate the rigors of the scientific world. In addition to their superb teaching, our faculty also are actively engaged in their disciplines through their own professional endeavors and scientific contributions.

It is my wish that you have a rewarding and productive conference here in the "Enchanted Valley," and that you enjoy the majestic scenery surrounding our campus while you are here. Best wishes from all of us at YHC!

Sincerely,

Cathy Cox, JD  
President, Young Harris College

#### OFFICE OF THE PRESIDENT

1 College Street • PO Box 98 • Young Harris, Georgia 30582  
**phone** 706.379.5137 • 800.241.3754 • **fax** 706.379.4319 • [www.yhc.edu](http://www.yhc.edu)

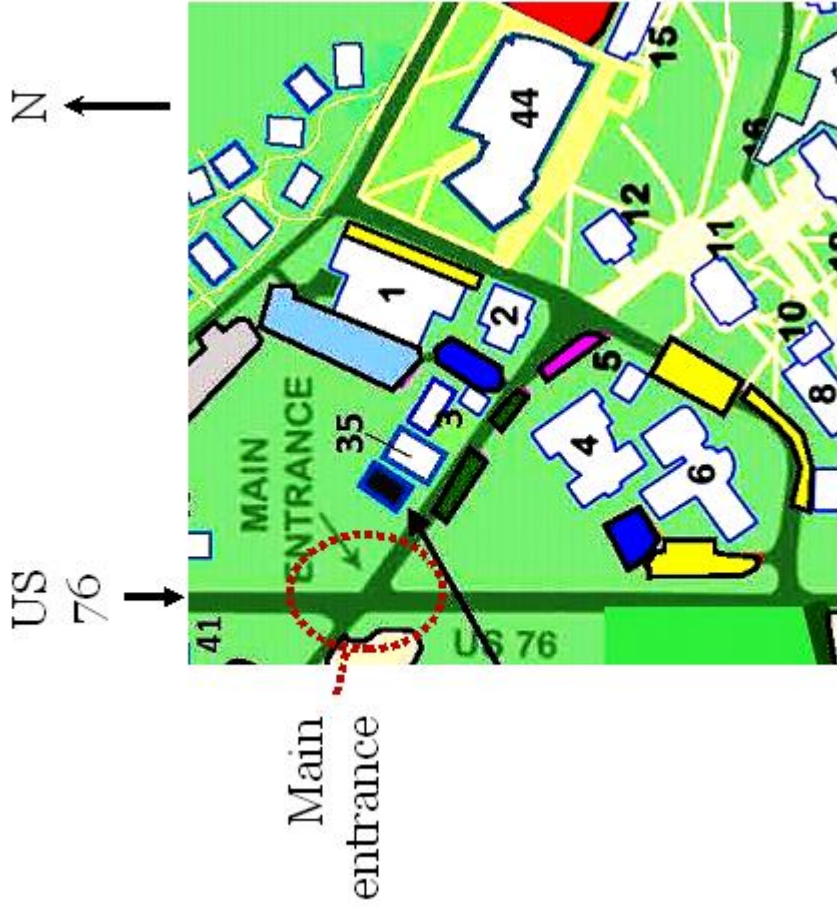


Image courtesy of  
Young Harris College

1. Maxwell Center

44. Rollins Campus Center

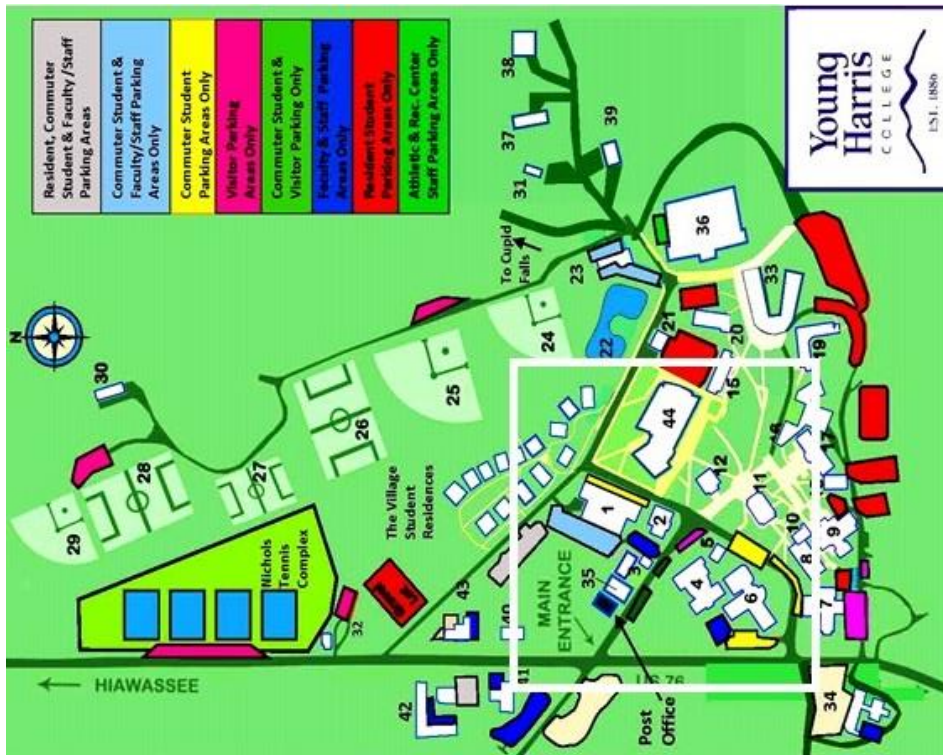


Image courtesy of  
Young Harris College

1. Maxwell Center

44. Rollins Campus Center

## **GAS 2017 PROGRAM**

**Friday, March 24, 2017**

- 11:30 am to 1:00 pm: Georgia Academy of Science Board of Directors business meeting closed to the public .....Room 258, 2<sup>nd</sup> Floor RCC
- 12:00 pm to 6:00 pm: On-site Registration.....Main Lobby, Rollins Conference Center (RCC)
- 1:30 pm to 5:00 pm: Section IV: PHYSICS, MATHEMATICS, COMPUTER SCIENCE, ENGINEERING AND TECHNOLOGY.....Room 107 Maxwell
- 2:00 pm to 5:00 pm: Section I: BIOLOGICAL SCIENCES.....Hatcher Room (1<sup>st</sup> Floor RCC)
- 5:00 pm to 6:00 pm: Poster presentations, refreshments served.....Suber Banquet Hall, Rollins Conference Center
- 5:45 pm to 6:00 pm: Opening remarks, Dr. Shane Webb and YHC President Cathy Cox Suber Banquet Hall, Rollins Conference Center
- 6:00 pm to 6:15 pm: Break
- 6:15 pm to 7:15 pm: Keynote lecture by Dr. William T. Newsome.....Suber Banquet Hall, Rollins Conference Center

### **Understanding the Brain: The Path Forward**

How can a brain understand itself? Get the low-down from the frontiers of neuroscience research from Bill Newsome, Director of the Stanford Neurosciences Institute and Co-Chair of the United States BRAIN Initiative planning group.

**Bill Newsome** is an Investigator of the Howard Hughes Medical Institute and Professor of Neurobiology at the Stanford University School of Medicine. He received a B.S. degree in physics from Stetson University and a Ph.D. in biology from the California Institute of Technology. Dr. Newsome is a leading investigator in systems and cognitive neuroscience. He has made fundamental contributions to our understanding of the neural mechanisms underlying visual perception and simple forms of decision making. He has received numerous awards of distinction and was elected to membership in both the National Academy of Sciences (2000) and the American Philosophical Society (2011). Dr. Newsome recently cochaired the NIH BRAIN working group, charged with forming a national plan for the coming decade of neuroscience research in the United States.

7:30 pm and 8:15 pm: Planetarium Showings.....Rollins Planetarium, Maxwell  
*(Tickets required, one per attendee provided with registration.)*

**Saturday, March 25, 2017**

- 7:30 am to 8:30 am: Light breakfast.....Maxwell Lobby
- 7:30 am to 9:30 am: On-site Registration.....Main Lobby,  
Rollins Conference Center (RCC)
- 8:00 am to 12:00 pm: Oral presentations/Section Business Meetings
- Section I: BIOLOGICAL SCIENCES.....Hatcher Room (1<sup>st</sup> Floor RCC)
- Section II: CHEMISTRY.....Room 106 Maxwell
- Section III: EARTH AND ATMOSPHERIC SCIENCES.....Room 116 Maxwell
- Section IV: PHYSICS, MATHEMATICS, COMPUTER SCIENCE,  
ENGINEERING AND TECHNOLOGY.....Room 107 Maxwell
- Section V: BIOMEDICAL SCIENCES.....Room 257 RCC
- Section VI: PHILOSOPHY AND HISTORY OF SCIENCE.....Room 117 Maxwell
- Section VII: SCIENCE EDUCATION.....Room 258 RCC
- Section VIII: ANTHROPOLOGY.....Room 113 Maxwell
- 12:00 pm to 1:00 pm: Lunch.....Suber Banquet Hall,  
Rollins Conference Center
- 1:15 pm to 1:45 pm: Student awards and Academy Business  
Meeting.....Suber Banquet Hall,  
Rollins Conference Center
- 2:00 pm: Hike at Track Rock led by Dr. Paul Arnold .....Meet at Maxwell Lobby  
*(Carpool or caravan to the trail head.)*

## FRIDAY PAPER PRESENTATIONS

**\*Denotes student presenter**

**\*\*Denotes student research in progress**

### Section I: Biological Sciences

**Rollins Conference Center, Hatcher Room, 1<sup>st</sup> Floor RCC**

**Johnathan G. Davis, Presiding**

- 2:00 EFFECTS OF RESVERATROL ON AHR ACTIVITY IN CELLS TREATED WITH BENZO[A]PYRENE OR INDIGO, Abigail L. Griffiths\*, and Jennifer C. Schroeder
- 2:15 A PRELIMINARY ASSESSMENT OF THE MACROINVERTEBRATE BIODIVERSITY OF CORN CREEK\*\*, J.B. Rowe\*, B.H. Donaldson\*, J. Schrader\*, and K.P. Miller
- 2:30 FACTORS AFFECTING MORTALITY OF LARGEMOUTH BASS *MICROPTERUS SALMOIDES* IN COMPETITIVE TOURNAMENTS, Parker Moon\*, Zoelle Reinke\* and Johnathan G. Davis
- 2:45 AN EXAMINATION OF SELECTIVE FEEDING AND MOLECULAR RECOGNITION IN THE CILIATE, *TETRAHYMENA PYRIFORMIS* EHRENBERG, 1830, Blaise W. Menta\*, Ashley E. Kirby, and Frank S. Corotto
- 3:00 EVALUATION OF FACTORS INFLUENCING SPOTTED BASS *MICROPTERUS PUNCTATUS* USE OF INTRODUCED STRUCTURES IN A GEORGIA HIGHLAND RESERVOIR, Ethan Barrett\* and Johnathan G. Davis
- 3:15 **Break**
- 3:30 ASSESSMENT OF HABITAT PREFERENCES OF THE HIWASSEE CRAYFISH *CAMBARUS HIWASSEENSIS*\*\*, Samuel Flagg\*, William Moon and Johnathan G. Davis
- 3:45 ECOSYSTEM ASSESSMENT OF AN AQUATIC RESOURCE FOR K12 EDUCATION AND RECREATION\*\*, Joleishia N. Cooper\*, B. Bellflower, C. Calhoun, A. Thompson, K. Warren and B. L. Simmons
- 4:00 EVALUATION OF AGE AND GROWTH OF REDHORSES IN BRASSTOWN CREEK, GEORGIA, Joshua Goeltz\*, Kaylyn Crossley\* and Johnathan G. Davis
- 4:15 DETERMINATION OF THE BINDING SITE OF ADENOVIRUS E4 11K ON THE CELLULAR PROTEIN DDX6\*\*, Clint Edmunds, Michael Hammond and Kasey Karen
- 4:30 A DRIFT FENCE SURVEY OF THE SMALL VERTEBRATES IN A MIXED HARDWOOD HABITAT IN LAMAR COUNTY, GEORGIA, \*\* Kori Ogletree\* and M.J. Bender
- 4:45 IDENTIFICATION OF NEW MICRORNAs IN *DUNALIELLA SALINA*\*\*, Alicia Winfrey, Glen Borchert and David Chevalier

**Posters (will be displayed Friday 5:00–6:00 pm)**

**Section IV: Physics, Mathematics, Computer Science and Technology**



**Maxwell Center, Room 107**

**L. Ajith DeSilva, Presiding**

- 1:30 ELEMENTAL ABUNDANCES IN 16 PLANETARY NEBULAE FROM DEEP, HIGH-RESOLUTION OPTICAL SPECTROSCOPY\*\*, Cameroun G. Sherrard\*, N. C. Sterling, Simone Madonna, Courteney L. Spencer and A. L. Mashburn
- 1:45 INVESTIGATING THE EFFECTS OF MAGNETIC INTERACTION ON THE INDIRECT RIXS PEAK LOCATION, Kenny Stiwinter\* and Trinanjan Datta
- 2:00 R-MATRIX PHOTOIONIZATION CROSS-SECTION CALCULATIONS FOR BROMINE AND RUBIDIUM IONS\*\*, John E. Harrison\*, N. C. Sterling, Manuel A. Bautista, Austin B. Kerlin and A. L. Mashburn
- 2:15 DEVELOPMENT OF AN INEXPENSIVE LOW-POWER SONDE USING THE TEENSYTM MICROCONTROLLER\*\*, C. Morrison\*, J. A. Hauger, J. Reichmuth and M. Roeber
- 2:30
- 2:45 **Break**
- 3:00 THERMODYNAMIC PROPERTIES OF PROTEIN FOLDING PROCESS\*\*, Vattika Sivised\* and Theja De Silva
- 3:15 AN INVESTIGATION OF TITANIUM DIOXIDE NANOPARTICLES FOR PHOTOCATALYTIC PROPERTIES\*\*, Christian A. Ozburn\* and L. Ajith DeSilva
- 3:30 AN INVESTIGATION ON TRANSPARENT CONDUCTIVE P-TYPE COPPER (I) IODIDE THIN FILMS, J. Harwell\*, L. Ajith DeSilva, T. M.W.J. Bandara, G.R.A. Kumara, A.G.U. Perera, K. Tennekone and Neal Chesnut
- 3:45 STUDENT LED SUPPLEMENTAL INSTRUCTION TO IMPROVE STUDENT SUCCESS IN CLASSICAL MECHANICS, Joshua S. Buth\* and Javier E. Hasbun
- 4:00 NUMERICAL MODELING OF BROMINE, RUBIDIUM, AND XENON IN ASTROPHYSICAL NEBULAE\*\*, Courteney L. Spencer\*, N. C. Sterling, R. L. Porter, and Cameroun G. Sherrard
- 4:15 OBSERVATION OF RESONANCE REPULSION IN A COUPLED TORSION OSCILLATOR SYSTEM, William Reeves\* and Tom Colbert
- 4:30 THE EFFECT OF TEMPERATURE ON THE ELECTRICAL RESISTANCE OF CARBON NANOTUBES\*\*, Hannah Watkins\* and Ben deMayo,
- 4:45 THE MICROCONTROLLER MEETS WATER SCIENCE: DEVELOPMENT OF INEXPENSIVE ENVIRONMENTAL SENSORS USING ARDUINO<sup>TM</sup>\*\*, M. Roeber\*, J. A. Hauger, J. Reichmuth, W. Byne and O. Flite

**Posters (will be displayed Friday 5:00–6:00 pm)**

## SATURDAY PAPER PRESENTATIONS

**\*Denotes student presenter**

**\*\*Denotes student research in progress**

### Section I: Biological Sciences

**Hatcher Room, 1<sup>st</sup> Floor RCC**

**Johnathan G. Davis, Presiding**

- 9:15 TRILLED SONG TYPES ARE MORE SALIENT THAN NON-TRILLED SONG TYPES IN AGONISTIC INTERACTIONS BETWEEN MALE SONG SPARROWS (*MELOSPIZA MELODIA*)\*\*, Cameron B. Duke\* and Barbara B. Ballentine
- 9:30 ANALYSIS OF SEQUENCE CHARACTERISTICS OF TYPE I CD PROTEINS USING MULTIVARIATE STATISTICS IN ORDER TO DETERMINE THEIR FUNCTIONAL CLASS\*\*, K.C. Pramir\* and Janghoon Kang
- 9:45 EFFECTS OF NEST BUILDING BEHAVIOR ON INCUBATION AND REPRODUCTIVE SUCCESS IN CAROLINA CHICKADEES *POECILE CAROLINENSIS*\*\*, Traci E. Ballance\* and Barbara B. Ballentine
- 10:00 **Break and Section Business Meeting**
- 10:30 ARE HERP ENCLOSURES HOT SPOTS OF SALMONELLA COLONIZATION?\*\*, Sarah E. Rosario, C.R. Phipps and Amanda L.J. Duffus
- 10:45 LANDSCAPE FEATURES ASSOCIATED WITH BEHAVIORAL CHANGES ALONG AN URBAN-RURAL GRADIENT IN SONG SPARROWS, Kaley Wisher and Jeremy Hyman
- 11:00 GENETIC CHARACTERIZATION OF MUTANTS OF *SACCHAROMYCES CEREVISIAE* THAT GROW BROWN IN THE PRESENCE OF COPPER, Brian W. Schwartz, Michael E. Rohly, Nathaniel J. Moore, Christopher L. Resch, and Joshua D. May
- 11:15 INVESTIGATING BEHAVIORAL VARIATION IN URBAN AND RURAL POPULATIONS OF EASTERN BLUEBIRDS (*Sialia sialis*), Barbara Ballentine and Meghan Graham

**Posters (will be displayed Friday 5:00–6:00 pm)**

### POSTERS

- ASSESSMENT OF DIATOM MOVEMENT AND SPECIES COMPOSITION IN RELATION TO VARIOUS TIDE LEVELS ON ST. SIMONS ISLAND, GA\*\*, Merry Zohn\* and K.M. Manoylov
- BINDING OF ADENOVIRUS EARLY PROTEIN E411K TO RNA HELICASE DDX6\*\*, Emilee Friedman and Kasey Karen
- THE ROLE OF LEPTIN IN TRIPLE NEGATIVE BREAST CANCER TREATED WITH CHEMOTHERAPEUTICS, Ann A. Kurian\* and Ruben Rene Gonzalez-Perez
- QUANTITATIVE PCR VALIDATION OF COPPER-REGULATED GENE EXPRESSION IN *SACCHAROMYCES CEREVISIAE*, Brooks E. Arnold\* and Brian W. Schwartz

- FACTORS CONTRIBUTING TO REINTRODUCTION SUCCESS OF NATIVE FRESHWATER FISHES IN SOUTHERN APPALACHIA\*\*, Rachel Benson\*, Harrison Barton\* and Johnathan G. Davis
- AN ANALYSIS OF ANTERIOR HOX GENE EXPRESSION PATTERNS IN THE PHARYNGEAL ARCHES OF ZEBRAFISH (*DANIO RERIO*)\*\*, Jeremy M. Brown\* and A. Davis
- FIELD SURVEYS FOR DETECTION OF *BATRACHOCHYTRIUM DENDROBATIDIS* IN NORTH GEORGIA AMPHIBIAN POPULATIONS, Spencer L. Cruz\*, Jason Nations\*, J.M. Morgan and N.L. Hyslop
- POTENT LETHAL EFFECT OF SALICYLALDEHYDE AND CINNAMALDEHYDE ON THE ARGENTINE ANT (HYMENOPTERA: FORMICIDAE)\*\* Benjamin Curry\*, Amy Droegmiller\*, Emiliano Sanchez, Chul Hee Kang, and Cathy Lee
- DNA BARCODING, NCBI DATA TOOL AND MEGA AS A TEACHING AND RESEARCH TOOL FOR UNDERGRADUATE BIOLOGY LABORATORY ACTIVITIES\*\*, Charlsey D. Dodgen\*, Lucas Newman, and Cathy Lee
- EFFECTS OF TEMPERATURE AND HUMIDITY ON CAPTURE RATES OF BATS IN FLAT CREEK NATURE AREA, FAYETTE COUNTY, GEORGIA, Raquel I. Gonzalez\* and M.J. Bender
- EXPLORING ALTERNATE GENES FOR *RANAVIRUS* PHYLOGENETICS.\*\* Abigail Heiney\*, Mason Patten\*, and Amanda L.J. Duffus
- IDENTIFICATION OF NEW MICRORNAS IN *CHLAMYDOMONAS REINHARDTII*, Lindsey Howell\*, Glen Borchert, David Chevalier
- PARTIAL CHARACTERIZATION OF THE *PITX1* GENE OF EMPETRICHTHYINE FISHES (GOODEIDAE). A.L. Lacey\*, J.L. Tolbert\* and S.A. Webb
- BIONFORMATICS ANALYSIS OF THE STRIPED (*MORONE SAXATILIS*) BASS *HOXA2A* AND *HOXA2B* GENOMIC DNA SUGGESTS EVOLUTIONARY CONSERVATION OF GENE REGULATION\*\*, Amanda D. Mileham\*, J. Scemama, A.L.J. Duffus, and A. Davis
- AN ASSESSMENT OF ALGAL COMMUNITIES IN WETLANDS LOCATED ABOVE AND BELOW THE GEORGIA FALL LINE, Sofia E. Sifnaios\* and Kalina Manoylov
- SURVEY OF UNMANAGED PINE FOREST FOR THREATENED REPTILE SPECIES\*\*, Derick R. Thompson\*, R. Phillips, K. Warren and B. L. Simmons
- IMPACTS OF COLD STRATIFICATION AND MOISTURE PRETREATMENT ON SEED GERMINATION OF THREE MILKWEED SPECIES NATIVE TO GEORGIA, Andrew M. Wright\*, Zachary W. Izen\*, Gretchen M. Ionta and Kalina M. Manoylov
- WHOLE GENOME RANAVIRUS PHYLOGENIES: AN IN-DEPTH LOOK\*\*, Cori M. Harding\*, Bridget Piatt\*, W. Culpepper\*, C. D. Dodgen\*, S. E. Rosario, and Amanda L. J. Duffus

THE OCCURRENCE OF ATHLETE'S FOOT (TINEA PEDIS), CAUSED BY THE DERMATOPHYTIC FUNGUS, *TRICHOPHYTON RUBRUM* MALMSTEN 1845, AMONGST ATHLETES AT BREWTON-PARKER COLLEGE. Natalia Adams and Helene Peters

AN INVESTIGATION INTO THE EFFECT OF THE ENERGY DRINK, MONSTER ENERGY® BRAND ON ATHLETE PERFORMANCE AMONGST BASKETBALL ATHLETES AT BREWTON-PARKER COLLEGE. Tajamian Foster and Helene Peters

A COMPARISON OF THE LEAF-LITTER INVERTEBRATE COMMUNITY ASSOCIATED WITH GOLDEN BAMBOO STANDS VERSUS ADJACENT AREAS, Katherine Odegard, Lara Jones and M.J. Bender

### **Section II: Chemistry**

**Maxwell Center, Room 106**

**Daniel W. Holley Presiding**

8:30 DISSOLUTION TESTING AND ANALYSIS OF VITAMIN C TABLETS\*\*, Dorcas Ugbo\*, M.C. Koether

8:45 COMPARISON OF HEMATITE NANOCRYSTALLINE FILMS FOR USE IN PHOTOELECTROCHEMICAL CELLS\*\*, Allison B. Taylor\* and Linda de la Garza

9:00 A PRELIMINARY ANALYSIS OF WASTE OIL AND GREASE FROM THE CAMPUS CHICK-FIL-A FOR USE AS BIOFUEL\*\*, Syed A. Hyder\*, Blake Lindner\*, Ahla Ko\*, Uchechi Egejuru\*, Neelam Khan, Sang H. Park, Kathryn Zimmermann, and David P. Pursell

9:15 EVALUATING TWO MODELS FOR THE EFFECTS OF OSMOLYTES ON PROTEIN STABILITY AND FUNCTION: MEASURING THE INTERACTIONS OF GLYCINE BETAINE WITH CARBOXYLIC ACIDS, Grace Terry\*, Fergus King, Casey Wiltsek\*, Red Chu\*, Jonathan G. Cannon

9:30 GREEN SYNTHESIS OF SOAPS: UNDERGRADUATE CHEMISTRY LAB PROJECT, Jillian Mary V. Amurao\*, Tyler S. Brack, Sara G. Peacock and Renat. R. Khatmullin

9:45 INTERLOCKING TOY BUILDING BLOCKS AS HANDS-ON LEARNING MODULES FOR BLIND AND VISUALLY IMPAIRED CHEMISTRY STUDENTS, Samuel Melaku, James O. Schreck, Kameron Griffin, and Rajeev B. Dabke

10:00 **Break and Section Business Meeting**

**Posters (will be displayed Friday 5:00–6:00 pm)**

### **POSTERS**

SYNTHESIS OF CHIRAL IMINES and AMINES ON SILICA SURFACES\*\*, Alexander J. Burch\* and John T. Barbas

NANO-BIOMATERIALS FOR THERAPEUTIC APPLICATIONS: SYNTHESIS OF AN ENCAPSULATED SULFANILAMIDE ANTIBIOTIC\*\*, ZeAndra D. Whitfield\* and Ghislain Mandouma

TOWARD METAL-ORGANIC FRAMEWORKS CONTAINING NONBENZENOID ISOCYANOARENES AND HALF-SANDWICH IRIDIUM (III)-BASED BUILDING BLOCKS\*\*, Farrah M. Bakr\*, John J. Meyers

DETERMINATION OF TOXIC HEAVY METALS IN PEANUTS, Sydney Brown\* and Samuel M. Abegaz

IMPROVED MEASUREMENTS OF THE EFFECTS OF GLYCINE BETAINE AND PH ON GLUTAMIC ACID SOLUBILITY\*\* Red Chu\*, Casey Wiltsek\*, Grace Terry, Fergus King, Jonathan G. Cannon

INVESTIGATION OF TOXIC HEAVY METALS IN PERSONAL CARE PRODUCTS \*\*, Brittney N. Menefee\* and Samuel M. Abegaz

ICING BEHAVIORS OF SUPERHYDROPHOBIC ZINC OXIDATE\*\*, Kelly English\* and Liqiu Zheng

EFFECT OF ACID STRENGTH AND TEMPERATURE ON ACTIVATION ENERGY FOR MUTAROTATION OF SUCROSE USING POLARIMETRY\*\*, Andrew Duitsman\*, Sean Carrigan\*

SYNTHESIS OF CONJUGATED STYRENE-ALT-MALEIC ANHYDRIDE\*\*, N.M Sikes, D.W. Holley

### **Section III: Earth and Atmospheric Sciences**

**Maxwell Center, Room 116**

**Mark Groszos, Presiding**

9:00 THE ABILITY OF WATER TREATMENT RESIDUALS TO FILTER RHODAMINE-COATED MICROPARTICLES AS PATHOGEN PROXIES AT DIFFERENT IONIC STRENGTH AND PH LEVELS\*\*, C. Lever, A. VandeVoort, and S. Mutiti

9:15 AN ASSESSMENT OF CARBON DIOXIDE EMISSIONS AMONG CONTRASTING URBAN DEVELOPMENT PATTERNS IN POPULATED AREAS\*\*, Evan M. Rentz and Weimin Feng

9:30 A PETROLOGIC AND PETROGRAPHIC ANALYSIS OF SANDSTONES FROM THE BROXTON ROCKS EXPOSURE, BROXTON, GA\*\*, Eric L. Parrish

9:45 HISTORIC DEMISE OF SELECTED GLACIERS IN THE BEARTOOTH MOUNTAINS OF MONTANA: AN UPDATE UTILIZING OVER 120 YEARS OF PHOTGRAPHIC AND CLIMATIC DATA, Edward E. Chatelain

10:00 **Break and Section Business Meeting**

## **Section IV: Physics, Mathematics, Computer Science and Technology**

**Maxwell Center, Room 107**

**L. Ajith DeSilva, Presiding**

- 8:00 EXPERIENTIAL LEARNING IN ENGINEERING: BUILDING A ROBOT AND ELECTRONIC CONTROL SYSTEM, S.M. Remington, R.T. Atnip\*, T.H. Zeigler\*, T.G. Lebsekal\*, G. Mellors and B. Hojjatie
- 8:15 A MODIFIED HUBBERT MODEL FOR RESOURCE RECOVERY, Ronald E. Mickens
- 8:30 A MATHEMATICAL MODEL OF THE WAY MICROORGANISMS REPRODUCE AT THE EXPENSE OF NUTRIENT CONSUMPTION IN THE CHEMOSTAT, 'Kale Oyedeji
- 8:45 THE NORTH POLAR REGION OF MARS DURING 2016, Richard W. Schmude, Jr.
- 9:00 THE NORTH POLAR HOOD DURING NORTHERN AUTUMN, Richard W. Schmude, Jr.
- 9:15 THREADED DISCUSSION OPTIONS BEYOND THE TEXT FOR COLLEGE ALGEBRA COURSES, Debra M. Kean
- 9:30 SOLAR ECLIPSE ON AUGUST 21, 2017, Bob Powell and Ben Jenkins
- 9:45 EFFECT OF GAMMA IRRADIATION ON CdTe/ZnTe BILAYER THIN FILMS, Madhavi Thakurdesai and L. Ajith DeSilva
- 10:00 **Break and Section Business Meeting**
- 10:30 UMBRELLA PHYSICS — NEW WINE IN AN OLD BOTTLE, K. C. Chan and Arun Saha
- 10:45 DYNAMICS OF A SQUARE MECHANICAL METAMATERIAL SYSTEM, K. C. Chan
- 11:00 ON CALCULATING THE OPTICAL PATH LENGTH IN SIMPLE SYSTEMS PART II, Javier E. Hasbun
- 11:15 A CONTINUUM MODEL OF PHONONS IN TWO-DIMENSIONAL MATERIALS, L. C. Lew Yan Voon and M. Willatzen
- 11:30 DESIGN AND TESTING OF MICROSTRIP RESONATOR-BASED BAND PASS FILTER, Arun K Saha and Ervin Mccarroll III
- 11:45 EMISSION MODES IN ELECTRO CO-FLOW, J. Guerrero, A. J. Hijano, M. A. Lobato, I. G. Loscertales and A. Fernandez-Nieves

**Posters (will be displayed Friday 5:00–6:00 pm)**

## POSTERS

USING MODELING AND SIMULATION FOR A DEEPER UNDERSTANDING OF INTRODUCTORY PHYSICS CONCEPTS\*\*, M Puerta\*, J.H. Lawson\*, B. Ray, and A. Roy

A STUDY OF OPTICAL BAND GAP ON TITANIUM DIOXIDE NANOPARTICLES LAYERS\*\*, J. Preston\*, W. Johnson\* and L. Ajith DeSilva

HOMEMADE DIODE FOR PHYSICS AND ELECTRONICS LABS\*\*, T. King\*, L. Ajith DeSilva and J. E. Hasbun

PREPARATION OF TITANIUM DIOXIDE NANOPARTICLE LAYERS FOR DYE-SENSITIZED SOLAR CELLS\*\*, W. Johnson\*, J. Preston\* and L. Ajith DeSilva

### Section V: Biomedical Sciences

Rollins Conference Center, Room 257

Seyed H. Hosseini, Presiding

10:00 **Break and Section Business Meeting**

**Posters (will be displayed Friday 5:00–6:00 pm)**

#### POSTERS

THE ROLE OF LEPTIN IN TRIPLE NEGATIVE BREAST CANCER TREATED WITH CHEMOTHERAPEUTICS, Ann A Kurian\* and Ruben Rene Gonzalez-Perez

EFFECTS OF NICOTINE USE IN CIGARETTES AND VAPORIZERS ON THE ORAL MICROBIOTA, Sazma Al-Rashid\*, and A. L. Kwiatkowski

EXPRESSION OF MITOCHONDRIAL GENOME ALTERATION AS A POTENTIAL BIOMARKER FOR COLORECTAL ADENOPOLYPS IN RELATIVE TO AGE AND RACE, Anju Mary Cherian, L. Wallace, and F.O. Aikhionbare

THE ROLE OF RBP-JK IN LEPTIN-INDUCTION OF BREAST CANCER PROGRESSION AND CHEMORESISTANCE\*\*, Sha'Kayla Nunez\*, Ruben R Gonzalez-Perez\*

THE ROLE OF BODY HABITUS ON AEROBIC FITNESS IN NCAA BASKETBALL PLAYERS \*\*, Sarah N. Garner\* and Linda G. Jones

### Section VI: Philosophy and History of Science

Maxwell Center, Room 117

Charmayne E. Patterson, Presiding

9:00 RACIAL HISTORIES, PAST AND PRESENT, Tom McMullen

9:30 COUNTERFACTUAL HISTORIES OCCUR IN CLASSICAL PHYSICS, Ronald E. Mickens and Charmayne Patterson

10:00 **Break and Section Business Meeting**

- 10:30 OUT OF HIDING: HOW THE BOOK AND FILM 'HIDDEN FIGURES' HAVE RAISED THE VISIBILITY OF AFRICAN AMERICAN WOMEN IN THE SCIENCES, Charmayne E. Patterson and Ronald Mickens
- 11:00 DEVELOPMENTS IN SCIENCE EDUCATION: PAST, PRESENT, AND FUTURE\*\*, Ozden Sengul

**Section VII: Science Education**  
**Rollins Conference Center, Room 258**  
**Peter Roessle, Presiding**

- 9:30 A REVIEW OF THE BENEFITS OF ARGUMENTATION IN THE SCIENCE CLASSROOM, Amy F. Salter\*<sup>1</sup>, Maggie D. Renken
- 10:00 **Break and Section Business Meeting**

**Section VIII: Anthropology**  
**Maxwell Center, Room 113**  
**Teresa P. Raczek, Presiding**

- 8:45 HOW ONE SKELETON OPENS THE WINDOW INTO THE DAILY LIVES OF ROMANIZED CRETANS\*\*, Eden J. C. Ryan\* and Susan Kirkpatrick Smith
- 9:00 THE ANALYSIS OF INTEROBSERVER ERROR TO TEST THE LIMITATIONS OF AVAILABLE METHODS IN ANCESTRY AND SEX ESTIMATION OF TEACHING SKULLS\*\*, Vivien N. Kibble
- 9:15 LINEAR ENAMEL HYPOPLASIA IN ROMAN IERAPETRA, Morgan E. McKenna\* and Susan K. Smith
- 9:30 PERIOSTEAL REACTION AND SIGNS OF STRESS FOUND IN SKELETAL REMAINS FROM IERAPETRA, CRETE, Logan Howard and Susan Kirkpatrick Smith.
- 9:45 TESTING THE MANIFESTATION OF THE MEDICAL GAZE IN THE USE OF HUMAN SKELETAL REMAINS IN A UNIVERSITY SETTING, Caitlin N Olsen
- 10:00 **Break and Section Business Meeting**
- 10:30 ARCHAEOLOGICAL INVESTIGATIONS OF ANTEBELLUM SLAVE QUARTERS AT A PLANTATION SITE IN NORTH GEORGIA\*\*, Ethan M. Williams
- 10:45 FIVE THOUSAND IN THE PINES: BLACKSHEAR'S CONFEDERATE PRISON CAMP, M. Jared Wood, Lance Greene, and Inger Wood
- 11:00 AN ANALYSIS OF MIDDLE WOODLAND PERIOD POTTERY FROM THE LOWER DABBS SITE IN NORTH GEORGIA\*\*, Briana K. Johnston, Savana Deems
- 11:15 A PRELIMINARY COMPOSITIONAL ASSESSMENT OF MUD BRICK AND CLAYS FROM THE PHOENICIAN *EMPORIUM* OF MOZIA, SICILY, William M. Balco



**Posters (will be displayed Friday 5:00–6:00 pm)**

**POSTERS**

THE GOOD, THE BAD, THE DEVIANT: NON-NORMATIVE GRAVES AT TUMILACA LA CHIMBA (AD 950-1300), MOQUEGUA, PERU,\*\* Danielle E. Carmody,\* and Nicola Sharratt

**History and Description of the Georgia Academy of Science**

Organized in 1922 and incorporated as a nonprofit organization in 1953, the Georgia Academy of Science continues to grow in size and academic strength. The interests of Academy members encompass all aspects of science and that interest is expressed through participation in one or more of eight sections: I Biological Sciences, II Chemistry, III Earth & Atmospheric Sciences, IV Physics, Math, Computer Science, Engineering & Technology, V Biomedical Sciences, VI Philosophy & History of Science, VII Science Education, VIII Anthropology.

The Academy is dedicated to the promotion of science education and the fostering of scientific research in the state of Georgia. To that end we publish the Georgia Journal of Science and hold annual scientific meetings that emphasize the presentation of undergraduate and graduate research.

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