



2019 Annual Meeting

Montana Academy of Sciences

Student Union at Montana Tech: April 5 & 6, 2019

Overview

Friday April 5, 2019

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| 4:30 – 6:00pm | Registration (Lobby) |
| 4:30 – 6:00pm | Poster Setup and Preparation (Big Butte/Highlands Room) |
| 6:00 – 7:00pm | Reception and Poster Session (Big Butte/Highlands Room) |
| 7:00 – 8:00pm | MAS Annual Banquet (Copper Lounge) |
| 8:00 – 9:00pm | Poster Session continued (Big Butte/Highlands Room) |

Saturday April 6, 2019

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| 7:30 – 9:00am | Board of Directors Meeting (Pintler Room) |
| 8:00 – 8:50 am | Breakfast Buffet (Big Butte/Highlands Room) |
| 9:00 – 10:30am | Oral Presentations, Session I (<i>Copper Lounge</i>) |
| 9:30am – 2:00pm | <i>Junior Academy Breakout Session (Kelley/Steward Room)</i> |
| 10:30 – 10:45am | Coffee Break (SUB Lobby) |
| 10:45am – 12:00pm | Oral Presentations, Session II (<i>Copper Lounge</i>) |
| 12:00 – 1:00pm | Lunch (Big Butte/Highlands Room) |
| 1:00 – 2:00pm | <i>MTJAS attendees, Tour of the Montana Tech Mineral Museum</i> |
| 1:00 – 2:15pm | Oral Presentations, Session III (<i>Copper Lounge</i>) |
| 2:15 – 2:30pm | Coffee Break (SUB Lobby) |
| 2:30 – 4:30pm | Oral Presentations, Session IV, (<i>Copper Lounge</i>) |
| 4:45pm | Adjourn |

Please Note: Abstracts of presentations can be found on the MAS web site at
http://sciencemt.org/MAS/?page_id=29

Friday, April 5, 2019: Big Butte/Highlands Room

POSTER PRESENTATIONS

(Alphabetical by Title)

**Indicates Presenting Author*

A REVIEW ON PROPHYLAXIS TREATMENTS FOR CHRONIC LYMPHOCYTIC LEUKEMIA INFECTIONS *Diana Gonzalez Vazquez **, *Biology and Chemistry, University of Providence, Great Falls*

A SMALL RNA THAT REGULATES PYRIMIDINE AND METHIONINE METABOLISM IS NECESSARY FOR ESTABLISHING COXIELLA BURNETII'S INTRACELLULAR NICHE DURING EARLY STAGES OF INFECTION

*Shaun Wachter **, *Department of Biological Sciences, The University of Montana, Missoula*

BARTONELLA BACILLIFORMIS HFQ REGULATES SMALL RNAS

*Kyle Shifflett **, *Division of Biological Sciences, The University of Montana, Missoula*

BIOINFORMATIC ANALYSIS OF THE FLATHEAD LAKE MONSTER BACTERIOPHAGE
*Jake Plagenz**, *Biochemistry, Carroll College, Helena*

CANCER RISK DUE TO CUMULATION DIAGNOSTIC RADIATION

*Abi Oliver**, *Biology, University of Providence, Great Falls*

COORDINATED REGULATION OF STEM CELL PROLIFERATION AND DIFFERENTIATION BY RNA-BINDING PROTEINS COOPERATING WITH CCR4-NOT DEADENYLASE COMPLEX IN C. ELEGANS

*Xiaobo Wang **, *DBS, University of Montana, Missoula (2018 Graduate Grant Awardee)*

DETECTION OF TETRACAPSULOIDES BRYOSALMONAE IN THE BEAVERHEAD RIVER USING ENVIRONMENTAL DNA ANALYSIS

*Colter Feuerstein**, *Biology, University of Montana Western, Dillon*

DOES AQUAPORIN 3B AFFECT THE NUMBER AND CHARACTERISTICS OF CALCIUM WAVES IN THE NEURAL PLATE OF XENOPUS LAEVIS EMBRYOS?

*Dean Ricker **, *Chemical Engineering, Montana State University, Bozeman (2018 Undergraduate Grant Awardee)*

EFFECTIVENESS OF TEETH CLEANING TREATS ON DOGS ORAL HYGIENE

*Katherine Chandler**, *Biology, University of Providence Great Falls*

EFFECTS OF FAMILIARITY ON MATE SELECTION IN POECILIA RETICULATA

*Sarah Gallup**, MSU-Billings, Billings

ENHANCED REDUCTIVE DEFLUORINATION OF 6:2 FLUOROTELOMER ALCOHOL USING BIO-ELECTROCHEMICAL SYSTEMS

*Ashton Cummings**, Environmental Engineering, Montana Technological University, Butte

EXAMINING THE RELATIONSHIP BETWEEN INJURY AND DOMINANCE IN THE ALPHA FEMALE WOLVES OF YELLOWSTONE NATIONAL PARK

*Claire Lacey**, Ecology, Montana State University, Bozeman

GRAM-POSITIVE BACTERIAL INHIBITION BY A POTENTIAL ANTIMICROBIAL SMALL MOLECULE

*Aaron Sharp **, Science, MSU-Billings, Billings

INVESTIGATING THE BINDING OF BH3I-1 DERIVATIVES TO ANTI-APOPTOTIC BCL-2 PROTEINS

*Chelsea Coons**, Biological and Physical Sciences, MSU Billings, Billings

KNOCKOUT OF ELP3 GENE IN CANDIDA ALBICANS

*David McGee **, Biological and Physical Sciences, MSU Billings, Billings

LEGACY EFFECTS OF ABANDONED INSECT ECOSYSTEM ENGINEERING STRUCTURES ON MONTANA STREAM HYDRAULICS

*Zachary Maguire**, Ecology, Montana State University, Bozeman

NATURAL INFECTION IN HONEY BEE HEMOCYTES

*Verena Lawrence **, Microbiology and Immunology, Montana State University, Bozeman

PRODUCTION OF POLY-N-ACETYLGLUCOSAMINE BY THE LYME DISEASE SPIROCHETE *Borrelia burgdorferi*

*Adam Drobish**, Biological Sciences, University of Montana, Missoula (2018 Graduate Grant Awardee)

STUDY OF AN ATOMIC COMPRESSIVE MATERIAL BEHAVIOR AT HIGH STRAIN RATE COMPRESSION IN A SIMPLE ALUMINUM SYSTEM

*Md Salah Uddin **, Material Science and Engineering Program, Montana Technological University, Butte

STUDYING CODON BIAS AND KIDNEY DYSFUNCTION IN A MOUSE MODEL FOR FAMILIAL DYSAUTONOMIA

*Sarah Gallup**, Biological and Physical Sciences, MSU Billings, Billings

“THAT’S NOT COMING OFF OF THERE”; AN EXPLORATION OF LIGAND LABILITY IN CARBON TETRACHLORIDE DECHLORINATION TECHNOLOGIES

James Unzaga and Devin Williams, Chemistry, MSU-Billings, Billings

THE EFFECTS OF SURFACTANTS IN GLYPHOSATE-BASED HERBICIDES ON THE SPOTTED SALAMANDER

*Grace Ibsen **, Chemistry, University of Providence, Great Falls

THE INFLUENCE OF ANTIMICROBIAL PEPTIDES, CUTANEOUS MICROBIAL COMMUNITIES AND WATER QUALITY ON THE SUSCEPTIBILITY OF COLUMBIA SPOTTED FROGS (LITHOBATES LUTEIVENTRIS) TO CHYTRIDIOMYCOSIS - U

*Delaney Burrows **, Carroll College, Helena

THE RELATIONSHIP BETWEEN DEUTERIUM EXCESS AND URANIUM GROUNDWATER CONCENTRATIONS IN WHITEHALL, MONTANA - U

*Daniel Wight**, Environmental Sciences, The University of Montana Western, Dillon

XFEB, A DIRECT TARGET OF ZIC1, IS INVOLVED IN NEURAL CREST DEVELOPMENT

*Lillian Ball **, Cell Biology and Neuroscience, Montana State University, Bozeman

*Haley Cox **, Cell Biology and Neuroscience, Chemistry and Biochemistry, Montana State University, Bozeman (2018 Undergraduate Grant Awardee)

ZIC TRANSCRIPTION FACTORS THAT INFLUENCE CONVERGENT EXTENSION - U

*Jocelyn Waggoner**, Cell Biology and Neuroscience, Montana State University, Bozeman

Saturday, April 6, 2019

ORAL PRESENTATIONS

Presenters have up to *12 minutes* total for both presentation and Q and A time. This allows for 3 minutes to switch between presenters. We reserve the right to skip a presenter that is not available when their time slot is up.

**Indicates Presenting Author*

Session 1 (Copper Lounge) 9:00-10:30am

PAIRING VISUAL ESTIMATES AND ACTUAL COUNTS TO IMPROVE ESTIMATION OF WILD BERRY PRODUCTION. *Aidan Duffield**, *Hellgate High School, Missoula (2018 Winner: Junior Academy, Scientific Research Paper Competition)*

COMPARING THE HABITAT CONNECTIVITY OF FISHER (PEKANIA PENNANTI) AND AMERICAN MARTEN (MARTES AMERICANA) IN THE NORTHERN ROCKY MOUNTAINS, USA. *Rex Koenig**, *Hellgate High School, Missoula (2018 Winner: Junior Academy, Scientific Research Paper Competition)*

FAILURE TO DETECT ANTI-VIRAL ACTIVITY BY PROKARYOTIC ARGONAUTE PROTEINS. *Paul B.G. van Erp **, *Microbiology and Immunology, Montana State University, Bozeman (2018 Graduate Grant Awardee)*

LIGAND-CONTROLLED CHEMODIVERGENT SUZUKI CROSS COUPLING USING PALLADIUM-N-HETEROCYCLIC CARBENE CATALYSTS. *Emily Reeves**, *Chemistry & Biochemistry, Montana State University, Bozeman. (2018 Graduate Grant Awardee)*

IDENTIFICATION OF CELLULOLYTIC HOT SPRING ORGANISMS THROUGH BIOORTHOGONAL LABELING. *Nicholas J. Reichart **, *Chemistry and Biochemistry, Montana State University, Bozeman (2018 Graduate Grant Awardee)*

ECOSYSTEM ENGINEERING BY NET-SPINNING CADDISFLIES (HYDROPSYCHIDAE) IN ROCKY MOUNTAIN STREAMS. *Benjamin Tumolo**, *Ecology, Montana State University, Bozeman (2018 Graduate Grant Awardee)*

10:30 Coffee Break, Lobby

Session II (Copper Lounge) 10:45am–12:00pm

ASSESSING THE EFFECTS OF COMPETITION AND SEASONALITY ON STRESS, IMMUNITY, AND NUMBER OF SCARS IN DEERMICE
*Andreas Eleftheriou**, *Wildlife Biology, University of Montana, Missoula*

EVALUATING THE ACCURACY OF BLOODSTAIN PATTERN ANALYSIS USING HEMODYNAMIC PROPERTIES. *Paul Yount **, Forensic Science, University of Providence, Great Falls

GENERATION OF A HIGH THROUGHPUT SCREENING SYSTEM FOR SMALL MOLECULES THAT CAN RESCUE AXONOPATHY. *Cody Walters**, Biological and Physical Sciences, MSU-Billings, Billings

A LOGISTIC REGRESSION IMPLEMENTATION OF THE “ABCD” METHOD FOR IDENTIFYING MALIGNANT MELANOMA. *Havilah Neujahr**, Biology & Mathematics, University of Providence, Great Falls

LIGAND K-EDGE STUDY OF M(PDTC)L COMPLEXES. *Alexander Fryett**, Biological and Physical Sciences, MSU-Billings, Billings

12:00 Lunch

**Indicates Presenting Author*

Session III (Copper Lounge) 1:00-2:15pm

ELECTRICAL PROPERTIES OF CARBON NANOFUIDS. *Isaac Gilfeather **, Mechanical Engineering, Montana Tech, Butte

CHICKEN TAIL VERTEBRAL FUSION SHEDS LIGHT ON A HUMAN BACKBONE DISEASE. *Kevin Surya **, Honors College, Montana State University, Bozeman

DESIGN, BUILD, AND TESTING OF RESONANT AIR COMPRESSOR. *Grace Ostermiller**, Montana Technological University, Butte

ZIC TRANSCRIPTION FACTORS THAT INFLUENCE CONVERGENT EXTENSION. *Jocelyn Waggoner **, Cell Biology and Neuroscience, Montana State University, Bozeman

IS TIME RESOLVED INFRARED RADIOMETRY AN ALTERNATIVE OF POSITRON ANNIHILATION LIFETIME SPECTROSCOPY FOR DEFECT DETECTION IN METALS: AN EXPERIMENTAL APPROACH AND A MODEL DEVELOPMENT. *Md Salah Uddin **, Material Science & Engineering Program, Montana Technological University, Butte

STUDENT ENGAGEMENT WHILE ESTABLISHING CLASSROOM MATHEMATICAL PRACTICES. *Emmanuel Barton Odro**, University of Montana, Missoula

2:45 Coffee Break, Lobby

Session IV (Copper Lounge) 3:00-4:45pm

CREATING A RECIPROCATING AIR COMPRESSOR USING A SINGLE DEGREE OF FREEDOM SPRING MASS DAMPER RESONANT SYSTEM

*Emily Maynard**, Montana Technological University, Butte

DEVELOPMENT OF A UAS-BASED ELECTROMAGNETIC INDUCTION SENSOR FOR SUBSURFACE CONDUCTIVITY MAPPING. *Andrew Wilson**, Geophysical Engineering,

Montana Technological University, Butte

SIN NOMBRE VIRUS PREVALENCE IN PEROMYSCUS MANICULATUS CAPTURED IN RANCH BUILDINGS IN SOUTHEASTERN MONTANA. *Kelsey Schmidt**, Biological

Sciences, Montana Technological University, Butte

SCIENCE EDUCATION EXPLORATION. *Terachelle Gregory **, Biological Sciences,

Montana Technological University, Butte

METAGENOMIC VS 16S DNA SEQUENCING FOR IDENTIFYING BACTERIAL

POPULATIONS. *Luke Stout**, Software Engineering, Montana Technological University, Butte

COMPARISON OF WORDS AND PHRASES USED FOR CATEGORIES IN RISK

ASSESSMENT MATRICES. *Haley Hansen **, Occupational Safety & Health, Montana Tech,
Butte

4:45 Adjourn

The Board of Directors of the Montana Academy of Sciences would like to express its thanks and appreciation to the following sponsors of the 2019 Annual Meeting

MEETING SPONSORS

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