

\*For papers with more than one author, an asterisk follows the name of the author(s) who plans to present the paper at the meeting.

**AERONAUTICS AND SPACE SCIENCE**

Chairperson: Scott E. Tarry

NASA Nebraska Space Grant & EPSCoR, University of Nebraska at Omaha

**SESSION A**

Olin 249

- 8:00 a.m. 1. ENHANCING INTRODUCTORY COURSES WITH HANDS-ON PROJECTS. William E. Spurgeon, Division of Business and Information Technology, Western Nebraska Community College, Scottsbluff.
- 8:10 2. SIR: IMAGE ANALYSIS. Jonathan Spurgeon, Division of Math and Science, Western Nebraska Community College, Scottsbluff.
- 8:20 3. DARK MATTER ANNIHILATIONS AND THE OBSERVED POSITRON EXCESS FROM FERMI AND PAMELA. Katherine Garret\* and Gintaras Duda, Department of Physics, Creighton University, Omaha.
- 8:30 4. CONSTRAINTS ON UNIVERSAL EXTRA-DIMENSIONAL DARK MATTER FROM DIRECT DETECTION RESULTS. Trevor J. Torpin\* and Gintaras Duda, Department of Physics, Creighton University, Omaha.
- 8:40 5. PARTICLE DARK MATTER – BEYOND THE STANDARD MODEL. Gintaras K. Duda, Department of Physics, Creighton University, Omaha.
- 8:50 6. CONSTRAINING BAL QUASAR KINETIC LUMINOSITY WITH CIII\* ABSORPTION. David C. Austerberry, Department of Physics, Creighton University, Omaha.
- 9:00 7. MODELING THE TORI SURROUNDING ACTIVE GALACTIC NUCLEI WITH MASS OUTFLOWS USING NIR SPECTRA. Barbara Medvar\* and Jack Gabel, Department of Physics, Creighton University, Omaha.
- 9:10 BREAK/POSTER PRESENTATIONS
- 9:30 8. SLOSH DYNAMICS OF ORION'S SERVICE MODULE PROPELLANT TANK. Joan Yule\*, Linxia Gu, and the Microgravity Team, Department of Mechanical Engineering, University of Nebraska–Lincoln.
- 9:40 9. DEVELOPING pH CHART FOR BIODIESEL TITRATION. Amanda Smith\* and Anthony Limato, Department of Biology, College of Saint Mary, Omaha.

- 9:50 10. EFFECT OF DROPLET SIZE IN THE ROLE OF FUEL VAPOR ACCUMULATION EFFECTS IN DROPLET BURNING. Inkant Awasthi\* and George Gogos, Department of Mechanical Engineering, University of Nebraska–Lincoln.
- 10:00 11. CHEMISTRY ANALYSIS WITH VERNIER. Alex Egentowich\* and Brena Mauck, Department of Biology, College of Saint Mary, Omaha.
- 10:10 12. EXPERIMENTAL INVESTIGATION OF PERFORMANCE OF ELECTRO-CHEMICAL MACHINING BY COATED ELECTRODES FOR APPLICATIONS IN AEROSPACE AND AIRCRAFT INDUSTRY. K. P. Rajurkar\*, Department of Industrial and Management Systems Engineering, University of Nebraska–Lincoln; and A.K. Swain, Texas Tech University, Lubbock, TX.
- 10:20 13. NANOSTRUCTURED ELECTRODES FOR SUPERCAPACITOR ELECTRICAL ENERGY STORAGE DEVICES. Robert Jacobberger\*, Paul Goodman, and Chin Li Cheung, Department of Chemistry, University of Nebraska–Lincoln.
- 10:30 BREAK/POSTER PRESENTATIONS
- 10:50 14. EVALUATING THE ACCURACY OF COMMERCIALY AVAILABLE WATER TESTING METHODS. Katie James\*, and Jeremy Karr, Department of Biology, College of Saint Mary, Omaha.
- 11:00 15. POLARIZING EFFICIENCY OF THIN FILMS OF IR806. Joshua Beck\* and Liubov Kreminska, Department of Physics and Physical Science, University of Nebraska at Kearney.
- 11:10 16. IMAGE ANALYSIS OF LIQUID CRYSTAL POLARIZERS. Jeremy Stromer\* and Liubov Kreminska, Department of Physics and Physical Science, University of Nebraska at Kearney.
- 11:20 17. POSITIONAL AVERAGE STRUCTURE FROM AN INCOMMENSURATELY MODULATED CRYSTAL OF PROFILIN:ACTIN. Jason Porta, Department of Biology, University of Nebraska Medical Center, Omaha.
- 11:30 18. GAS EMBOLIC FACTORS IN CARDIOVASCULAR HEALTH. Eric Cutler\* and Linxia Gu, Department of Mechanical Engineering, University of Nebraska–Lincoln.
- 11:40 19. HYDROSTATIC INDIFFERENCE POINT MODEL OF THE HUMAN VENOUS SYSTEM. Brian Steinert, Department of Mechanical Engineering, University of Nebraska–Lincoln.
- 11:50 20. THE INTEGRATION OF PROPANE FLAMING AND MECHANICAL CULTIVATION FOR EFFECTIVE WEED CONTROL IN AGRICULTURE. Brian Neilson\*, Chris Bruening, and George Gogos, Department of Mechanical Engineering, University of Nebraska–Lincoln.

## **AERONAUTICS AND SPACE SCIENCE**

Chairperson: Michaela Lucas

NASA Nebraska Space Grant & EPSCoR, University of Nebraska at Omaha

### **SESSION B**

Olin Hall Room 224

- 8:00 a.m. 1. THE EFFECTS OF MASAI BAREFOOT TECHNOLOGY (ROCKER BOTTOM) SHOES ON JOINT KINEMATICS AND KINETICS. Neil B. Huben\*, Sara A. Myers, and Nicholas Stergiou, Nebraska Biomechanics Core Facility, University of Nebraska at Omaha.
- 8:10 2. ELASTIC BAND-BASED RESISTANCE TRAINING AS A METHOD OF MAINTAINING MUSCULAR STRENGTH AND MASS IN HEALTHY ADULTS. Jon Carey\*, Sara A. Myers and Nicholas Stergiou, Nebraska Biomechanics Core Facility, University of Nebraska at Omaha.
- 8:20 3. THE EFFECTS OF AUDITORY OSCILLATIONS THAT INCLUDE CHAOS. Nate Hunt, Nebraska Biomechanics Core Facility, University of Nebraska at Omaha.
- 8:30 4. EPISODE SIMULATION OF ASIAN DUST STORMS WITH AN AIR QUALITY MODELING SYSTEM. Cui Ge\*, Department of Earth and Atmospheric Sciences, University of Nebraska–Lincoln; and MeiGen Zhang, Institute of Atmospheric Physics, Chinese Academy of Sciences, Beijing, China.
- 8:40 5. ARCHITECTURAL STANDARDS DEVELOPMENT FOR LONG TERM PARTIAL GRAVITY HABITATS. Matthew Carper\*, and Ram Bishu, Department of Industrial Engineering, University of Nebraska–Lincoln.
- 8:50 6. ANALYSIS OF HYPERSPECTRAL IMAGERY TO MAP INVASIVE BLACK MANGROVE IN COASTAL TEXAS. Alissa C. Hart\* and John F. Schalles, Department of Biology, Creighton University, Omaha.
- 9:00 7. REMOTE SENSING OF SURFACE VISIBILITY FROM SPACE. Amy Gehring\* and Jun Wang, Department of Geosciences, University of Nebraska–Lincoln.
- 9:10 BREAK/POSTER PRESENTATIONS
- 9:30 8. IDENTIFICATION OF ALKALIPHILIC BACTERIA FROM WESTERN NEBRASKA. Luke Wright\*, Kathryn Score, and Ann Buchmann, Department of Physical and Life Sciences, Chadron State College, Chadron.

- 9:40 9. AUTOMATED, BOAT-BORNE REMOTE SENSING OF WATER QUALITY IN A GEORGIA TIDAL WATERSHED. John P.R. O'Donnell\*, Department of Environmental Science, and John F. Schalles, Department of Biology, Creighton University, Omaha.
- 9:50 10. TRACKING WHOOPING CRANES WITH WIRELESS SENSOR NETWORKS. David Anthony\*, Paul Bennett, Mehmet C. Vuran, Sebastian Elbaum, and Matthew Dwyer, Department of Computer Science and Engineering, University of Nebraska–Lincoln.
- 10:00 11. MAPPING ZONES OF GROUNDWATER DISCHARGE WITH STREAMBED TEMPERATURE MEASUREMENTS, CHADRON CREEK, NORTHWESTERN NE. Joseph J. Reedy\*, Michael B. Leite, Jennifer L. Balmat, and Kodi Young, Department of Geosciences, Chadron State College, Chadron.
- 10:10 12. PRELIMINARY CORRELATION OF REMOTELY-SENSED LINEAMENTS TO FAULTS ON THE PINE RIDGE IN NORTHWESTERN NEBRASKA. Jennifer L. Balmat\*, and Michael B. Leite, Department of Geosciences, Chadron State College, Chadron.
- 10:20 13. ESTIMATING CORN YIELD FOR NEBRASKA USING WEATHER DATA AND THE LAND SURFACE TEMPERATURE AND EVAPOTRANSPIRATION DERIVED FROM LANDSAT SATELLITE DATA. Vijendra K. Boken\*, Chelsea Martin, Nicholas Volp, and Ryan Levell, Department of Geography and Earth Science, University of Nebraska at Kearney; and Joseph D. Nigro, Department of Science Systems Applications, and Compton J. Tucker, Department of Hydrospheric and Biospheric Sciences, NASA Goddard Space Flight Center, Greenbelt, MD.
- 10:30 BREAK/POSTER PRESENTATIONS
- 10:50 14. REMOTE SENSING AND GIS AS TOOLS TO ASSIST NEBRASKA'S EMERGING GRAPE AND WINE INDUSTRY. Ting Chen\* and Donald Rundquist, School of Natural Resources, University of Nebraska–Lincoln; and Craig Romary, Nebraska Department of Agriculture, Lincoln.
- 11:00 15. INCREASING STUDENTS' AWARENESS ABOUT SCIENCE AND SUSTAINABILITY. Ganesh Naik, Department of Chemistry, College of Saint Mary, Omaha.
- 11:10 16. CRYOCOOLER VALIDATION FOR THE VASIMR ISS DEMONSTRATOR MISSION. Eldon Summerson\*, Kevin Watts, Andrew Kelley, Joe Bartles, Andrea Gilkey, Khoa Chu, Derek Fierstein, Kyrik Weidman, and Carl Nelson, Department of Mechanical Engineering, University of Nebraska–Lincoln.

- 11:20 17. CONTROL AND MECHANICAL DESIGN CONSIDERATIONS FOR A SELF-RECONFIGURABLE MODULAR ROBOT FOR SPACE APPLICATIONS. S.G.M. Hossain\*, and Carl A. Nelson, Department of Mechanical Engineering, University of Nebraska–Lincoln.
- 11:30 18. DYNAMICALLY RECONFIGURING MODULAR ROBOTS FOR EFFICIENT MANEUVERABILITY IN INITIALLY UNKNOWN TERRAINS. Zachary Ramaekers\* and Prithviraj Dasgupta, Department of Computer Science, University of Nebraska at Omaha; and Carl Nelson, Department of Mechanical Engineering, University of Nebraska–Lincoln.
- 11:40 19. INVESTIGATING THE IMPACT OF DISTRACTION ON REMOTE SURGICAL SKILLS LEARNING IN TELEMEDICINE. Irene H. Suh\*, and Ka-Chun Siu, College of Public Health, University of Nebraska Medical Center, Omaha.
- 11:50 20. CLOSE-RANGE SPECTRAL ANALYSIS OF WINE-GRAPE LEAVES. Dominic Biondo\*, and Donald Rundquist, School of Natural Resources, University of Nebraska–Lincoln.
- 12:00 ADJOURN

**AERONAUTICS AND SPACE SCIENCE**

Poster Session 9:10 – 9:30 a.m. & 10:30 – 10:50 a.m.

Olin Hall room 249

BUILDING A COMMUNITY OUTREACH PROGRAM. Carolyn Behney and Jeremy Karr, Department of Chemistry, College of Saint Mary, Omaha.

COMPARATIVE ANATOMY AND DISSECTION: PIG, RABBIT, AND HUMAN. T’Essence Bessick and Jeff Keyte, Department of Arts and Sciences, College of Saint Mary, Omaha.

CHEMICAL DEMONSTRATIONS. Emily E. Duval Carmenaty and Jeremy Karr, Department of Chemistry, College of Saint Mary, Omaha.

UNDERSTANDING AND DEVELOPING HPLC METHODS. Chelsea P. Dean and Ganesh Naik, Department of Chemistry, College of Saint Mary, Omaha.

THE INTEGRATION OF IPAD TECHNOLOGY INTO STEM EDUCATION COURSEWORK. Neal Grandgenett and Neal Topp, Department of Teacher Education; and Robert Shuster, Department of Geology; and Dana Richter-Egger, Department of Math and Science; and Michael Matthews, Department of Mathematics, University of Nebraska at Omaha.

SURGICAL ROBOTIC TOOL EXCHANGER. Anna Horst, Department of Mechanical Engineering, University of Nebraska–Lincoln.

ARTIN-SCHREIER-WITT EXTENSIONS IN CHARACTERISTIC ZERO. Alexander James, Department of Computer Engineering, University of Nebraska at Omaha.

INCORPORATING MATLAB IN CALCULUS. Samantha Marquez and Jing Chang, Department of Mathematics, College of Saint Mary, Omaha.

DESIGN AND IMPLEMENTATION OF A SIX DEGREE OF FREEDOM MINIATURE *IN VIVO* SURGICAL ROBOT FOR USE IN LONG-TERM SPACE FLIGHT. Ryan McCormick, Department of Mechanical Engineering, University of Nebraska–Lincoln.

EXPLORATIONS IN STEM: AN EDUCATIONAL SCIENCE LITERACY PROGRAM. Ryan J. Tefft, Department of Geology; and Neil B. Huben and William E. Tappich, Department of Biology, University of Nebraska at Omaha.

MINIATURE *IN VIVO* SURGICAL ROBOT FOR LONG-TERM SPACE FLIGHT. Tyler D. Wortman, Department of Mechanical Engineering, University of Nebraska–Lincoln.

GAIT ABNORMALITIES IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE. Jennifer M. Yentes and Nicholas Stergiou, Nebraska Biomechanics Core Facility, University of Nebraska at Omaha.

## ANTHROPOLOGY

Co-Chairpersons: Wayne A. Babchuk and Melissa J. Garfield

Department of Anthropology  
University of Nebraska–Lincoln  
Olin Hall 111

- 1:00 p.m. WELCOME
- 1:15 1. UNEARTHING AGRICULTURAL FACTORS, HEALTH INDICATORS, AND DEVELOPMENT CONCERNS IN SOUTH WOLLO, ETHIOPIA. Annie Cafer, Department of Anthropology, University of Nebraska–Lincoln.
- 1:30 2. DIET AND DISEASE: SUBSISTENCE CHANGE AND TUBERCULOSIS AMONG THE OMAHA AND PAWNEE. Owen O’Reilly, Department of Anthropology, University of Nebraska–Lincoln.
- 1:45 3. LOCAL FOOD ENVIRONMENTS AND OBESITY IN CHILDREN IN RELATION TO SOCIOECONOMIC STATUS. Sarah Lush, Department of Anthropology, University of Nebraska–Lincoln.
- 2:00 4. SEEKING DEEP TIME: REPORT OF THE 2010 ACTIVITIES OF UNL FIELD SCHOOL IN ARCHAEOLOGY IN THE SEARCH FOR MIDDLE HOLOCENE AGE CULTURAL DEPOSITS IN THE SALT CREEK DRAINAGE, SE NEBRASKA. LuAnn Wandsnider, Department of Anthropology, University of Nebraska–Lincoln.
- 2:15 5. SLING TECHNOLOGY: MODELING OF CAPABILITIES AND EXPERIMENTATION. Eric Skov, Department of Anthropology, University of Nebraska–Lincoln.
- 2:30 6. BEING BOTH MAN AND WOMAN: THE CULTURAL ONTOLOGY OF DIMORPHIC GENDER ROLES AMONG THE BERDACHE AND BABAYLAN. Mayo Buenafe, Department of Anthropology, University of Nebraska–Lincoln.
- 2:45 BREAK
- 3:00 7. WOMEN’S WORTH: A WESTERN MISCONCEPTION. Caroline Jones, Department of Anthropology, University of Nebraska–Lincoln.
- 3:15 8. EVOLUTIONARY SOCIAL SCIENCE AND THE ENVIRONMENTAL CRISIS: WITH A FOCUS ON POPULATION AND CONSUMPTION, GENDER ISSUES AND CRITICAL QUESTIONS FOR RESEARCH. Charles A. Flowerday, Department of Anthropology, University of Nebraska–Lincoln

- 3:30 9. A RE-EXAMINATION OF THE NATURE OF MALE PARENTAL INVESTMENT. Nathan R. Sell, Department of Anthropology, University of Nebraska–Lincoln.
- 3:45 10. FIFTH GRADE AS A RITE OF PASSAGE. Sevda Budak, Department of Teaching, Learning, and Teacher Education, University of Nebraska–Lincoln.
- 4:00 11. DUALITY OF THE KIRPAN: USING SEMANTICS TO EXAMINE THE ROLE OF FUNCTIONING IN DEFINING AN ARTICLE OF FAITH AMONGST KHALSA SIKHS. Don Arp, Jr., Department of Anthropology, University of Nebraska–Lincoln.
- 4:15 12. LOST OR REVIVED: THE PATHS OF ENDANGERED LANGUAGES. Gwyneth Talley, Department of Anthropology, University of Nebraska–Lincoln.
- 4:30 13. FIFTY YEARS OF THE CENTRAL KALAHARI GAME RESERVE (1961-2011): A HISTORY OF LAND USE, CONTESTED RESOURCES, LEGAL RIGHTS, AND JUSTICE AMONG INDIGENOUS PEOPLES. Wayne A. Babchuk, Department of Anthropology, University of Nebraska–Lincoln; and Robert K. Hitchcock, Center for Global Change and Earth Observations, Michigan State University, East Lansing, MI 48824-1034; and Maria Sapignoli, Department of Sociology, University of Essex, Colchester CO4 3SQ, United Kingdom.

**BIOLOGICAL AND MEDICAL SCIENCES**

Chairperson: Annemarie Shibata  
Department of Biology, Creighton University

**SESSION A**

Session Chairperson: Kimberly Carlson, University of Nebraska at Kearney  
Olin 112

- 8:30 1. A SURVEY OF MIDWESTERN LEOPARD FROGS (*RANA PIPIENS* AND *RANA BLAIRI*) FOR EVIDENCE OF GONADAL DYSGENESIS AMONG MALES. Katherine Lansu\*, Megan Konz, and J.E. Platz, Department of Biology; and Laura Bruce, Department of Biomedical Sciences, Creighton University, Omaha.
- 8:42 2. LIFE HISTORY OF *SPEA BOMBIFRONS*: LONGEVITY, A FIRST LOOK. Megan Konz\*, and J.E. Platz, Departments of Biology; and L. Bruce, Department of Biomedical Sciences, Creighton University, Omaha.
- 8:54 3. ADHESIVE TARSAL SETAE IN MALE TIGER BEETLES: STRUCTURE, FUNCTION, AND EVOLUTION. Mathew L Brust\*, A. Denniston, M. Nielsen, and B. Baker, Department of Physical and Life Sciences, Chadron State College, Chadron.

- 9:06 4. A TALE OF TWO PRAIRIES: REGAL FRITILLARIES AT TWO EASTERN NEBRASKA PRAIRIE PRESERVES. Michael E. Kilbride\* and Theodore Burk, Department of Biology, Creighton University, Omaha.
- 9:18 5. THE RELATIONSHIP BETWEEN 20-HYDROXYECDYSONE AND REPRODUCTIVE BEHAVIOR AND PHYSIOLOGY IN WOLF SPIDERS. Reed M. Stubbendieck\*, A.J. Zera, and E.A. Hebets, School of Biological Sciences, University of Nebraska–Lincoln.
- 9:30 BREAK
- 9:45 6. THE ROLE OF LIGHT IN *JUNIPERUS VIRGINANA* (EASTERN RED CEDAR) INVASION IN TALLGRASS PRAIRIE. Laura Rice\* and Mary Ann Vinton, Department of Biology, Creighton University, Omaha.
- 9:57 7. OUTER BARK ANNUAL GROWTH RINGS CORRELATED WITH WOOD RINGS IN HACKBERRY *CELTIS OCCIDENTALIS*. Paul K. Evans\*, Science Department, Metropolitan Community College, Omaha.
- 10:09 8. FUNGAL DIVERSITY OF A COTTONWOOD ROOT SYSTEM. Jeff Shaw\*, Mary Harner, and Dawn M. Simon, Department of Biology, University of Nebraska at Kearney.
- 10:21 9. ANTIBIOTICS FROM NATIVE PLANTS FOR USE AGAINST MRSA. Nisha Durand\*, William Tuma, Ann Buchmann, Joyce Hardy, and Ron Weedon, Department of Physical and Life Sciences, Chadron State College, Chadron.
- 10:33 10. SIDEROPHORE PRODUCTION BY ALKALINE-SALINE LAKE BACTERIA. Marcelle Strydom\* and J.J. Shaffer, Department of Biology, University of Nebraska at Kearney.
- 11:00 MAIBEN MEMORIAL LECTURE - OLIN HALL B

## **BIOLOGICAL AND MEDICAL SCIENCES**

### **SESSION B**

Session Chairperson: Karin Van Dijk, Creighton University  
Smith Callen Conference Center

- 8:30 1. STRUCTURAL CHARACTERIZATION AND ANALYSIS OF PRE-QUEUOSINE RIBOSWITCH. Christina Nguyen\*, Donald Schrack, and Juliane Soukup, Department of Chemistry, Creighton University, Omaha.
- 8:42 2. A PUTATIVE MAMMALIAN RIBOSWITCH IN THE SPERMINE BIOSYNTHETIC PATHWAY. Katie Del Vecchio\*, Molly McDevitt, Jodi Monahan, Garrett Soukup, and Juliane Soukup, Department of Chemistry, Creighton University, Omaha.
- 8:54 3. EVOLUTIONARY CONSERVATION OF A POTENTIAL MAMMALIAN RIBOSWITCH. Andrew Kavan\*, Molly McDevitt, and Juliane Soukup, Department of Chemistry, Creighton University, Omaha.
- 9:06 4. *PSEUDOMONAS SYRINGAE* INDUCES REDUCTION IN HISTONE H3 ACETYLATION IN A TYPE III SECRETION DEPENDENT MANNER. Troy Hubbard\*, Andrew Karpisek, McKenzie Jarecki, and Karin van Dijk, Department of Biology, Creighton University, Omaha; and Byeong-ryool Jeong and James Alfano, Center for Plant Science Innovation, University of Nebraska–Lincoln.
- 9:18 5. NATIVE STRUCTURE OF THE 5' NONTRANSLATED REGION OF THE *COXSACKIEVIRUS* B3 GENOME AS DETERMINED BY CHEMICAL PROBING. Brooke L. Sullivan\* and William E. Tapprich, Department of Biology, University of Nebraska at Omaha.
- 9:30 BREAK
- 9:45 6. PUTATIVE DNA MOTIF ASSOCIATED WITH *T. GONDII* BRADYZOITE INDUCTION. Sushrut D. Kamerkar\* and Paul H. Davis, Department of Biology, University of Nebraska at Omaha.
- 9:57 7. CHARACTERIZATION OF rRNA INTRONS IN FUNGI. Travis Kirchner\* and Dawn M. Simon, Department of Biology, University of Nebraska at Kearney; and Jolanta Miadlikowska, Ester Gaya, and François Lutzoni, Department of Biology, Duke University, Durham, NC.
- 10:09 8. CHARACTERIZATION OF MUTANTS DEFICIENT IN RNA INTERFERENCE IN GREEN ALGAE. Michael Stewart\*, Eun-Jeong Kim and Heriberto Cerutti, School of Biological Sciences and Plant Science Initiative, University of Nebraska–Lincoln.

- 10:21 9. THE CCR4-NOT CO-ACTIVATOR FUNCTIONS IN GCN4 REGULATED GENE EXPRESSION AFTER TRANSCRIPTION. Dhananjay Nawandar\*, Andrew Seberg, Naomi Barcomb and Mark J. Swanson, Department of Biology, University of Nebraska at Omaha.
- 10:33 10. IDENTIFYING ELEMENTS OF POST-TRANSCRIPTIONAL REGULATION IN THE GENERAL AMINO ACID CONTROL PATHWAY OF *SACCHAROMYCES CEREVISIAE*. Emily B. Harrison\* and M.J. Swanson, Department of Biology, University of Nebraska at Omaha.
- 11:00 MAIBEN MEMORIAL LECTURE - OLIN HALL B

**BIOLOGICAL AND MEDICAL SCIENCE**

**SESSION C**

Session Chairperson: Brad Ericson, University of Nebraska at Kearney  
Olin 112

- 1:00 1. OPTIMIZATION OF AN IN-CELL WESTERN ASSAY FOR HIPPOCAMPAL NEURONS IN PRIMARY CULTURE. Tobiah B. Elbert\* and Janet Whitson, Department of Natural Science, Concordia University, Seward.
- 1:12 2. OMEGA-3 TO OMEGA-6 RATIOS: LACK OF EFFECT ON LEARNING AND MEMORY. David Pattison\*, Kimberly Miller, Timothy von Behren, Mallory Hicks, Jacky Potane, Justin Boutwell, Rebecca Aldrich, and Janet Whitson, Department of Natural Science, Concordia University, Seward.
- 1:24 3. THE USE OF COARSE GRAINED NORMAL MODE ANALYSIS IN UNDERSTANDING A $\beta$  PROTOFIBRIL DYNAMICS. Curtis Scott Jordan\* and Patricia Soto, Department of Physics, Creighton University, Omaha.
- 1:36 4. ELASTICITY OF ALZHEIMER'S A $\beta$  PROTOFIBRILS STUDIED WITH FULLY ATOMISTIC NORMAL MODE ANALYSIS. Trang Doan\*, Department of Chemistry, and Patricia Soto, Department of Physics, Creighton University, Omaha.
- 1:48 5. IDENTIFICATION AND CHARACTERIZATION OF PRION INHIBITOR BINDING REGIONS FOR THE AGAAAAGA PEPTIDE. Tana Friesth\*, Department of Sociology, and Jason Bartz, Department of Medical Microbiology and Immunology, and Patricia Soto, Department of Physics, Creighton University, Omaha.
- 2:00 6. ROLE OF EGFR IN HAIR CYCLING AND INFLAMMATION IN THE SKIN. Jessica A. Gaulter\*, K.J. Bichsel, and L.A. Hansen, Department of Biomedical Sciences, Creighton University, Omaha.

- 2:12 7. CHARACTERIZATION OF THE 6Q DELETION IN FOLLICULAR LYMPHOMAS BY NEXT GENERATION DNA SEQUENCING. Katie Wichers\*, Karen Deffenbacher, Cindy Lachel, David Klinkebiel, and Wing C. Chan, Department of Pathology and Microbiology, University of Nebraska Medical Center, Omaha; and Katie Wichers, 4631 Birch Creek Drive, Lincoln.
- 2:24 8. ENVIRONMENTAL STRESS REGULATION EFFECTS ON GLUCOSE TOLERANCE IN KK-A<sub>Y</sub> MICE WITH NON-INSULIN DEPENDENT *DIABETES MELLITUS*. Mathew B. Day\* and Janet Steele, Department of Biology, University of Nebraska at Kearney.
- 2:36 BREAK
- 2:50 9. MEASURES FOR BOOLEAN PROTEIN INTERACTION NETWORKS. Karen L. Holly\* and Mark Pauley, School of Interdisciplinary Informatics, University of Nebraska at Omaha; and John Konvalina, Department of Mathematics, University of Nebraska at Omaha.
- 3:02 10. DOMAIN SPECIFIC ASSEMBLY FOR NEXT GENERATION SEQUENCING. Julia Warnke\* and Hesham Ali, College of Information Science and Technology, University of Nebraska at Omaha.
- 3:14 11. IDENTIFYING BIOLOGICALLY RELEVANT SUBSYSTEMS USING CORRELATION NETWORKS. Dylan Nielsen\*, Kate Dempsey and Hesham Ali, College of Information Science and Technology, University of Nebraska at Omaha.

### **BIOLOGICAL AND MEDICAL SCIENCES**

#### **SESSION D**

Session Chairperson: Annemarie Shibata, Creighton University  
Smith Callen Conference Center

- 1:00 1. ROLE OF PROSTANOID RECEPTORS IN THE INHIBITORY EFFECT OF SYNTHETIC ISOPROSTANE, AG113 ON POTASSIUM-INDUCED [3H]D-ASPARTATE RELEASE IN ISLOATED BOVINE RETINA. Jamal M. Jamil\*, Edem Kegey, Na'Cara Harrison, Catherine A. Opere, Pharmacy Sciences, Creighton University, Omaha; amd Thierry Durand, Jean-Marie Galano, and Alexandre Guy, Institut des Biomolécules Max Mousseron, Montpellier cedex, France.
- 1:12 2. LINKING FUMONISIN EXPOSURE TO NEURAL TUBE DEFECTS. Kathryn Score\*, Chadron State College, Chadron; and Janee Van Waes, and Joyce Maddox, Creighton University, Omaha.

- 1:24 3. EFFECT OF TIMP-2 IN TRUNK NEURAL CREST PATHFINDING. Anne E James\*, Alicia Muhleisen, and Mark V Reedy, Department of Biology; and Philip R Brauer, Department of Biomedical Sciences, Creighton University, Omaha.
- 1:36 4. DICER, DON'T LEAVE HOME WITHOUT IT. Megan Bosch\*, Amanda Hake, and Annemarie Shibata, Department of Biology; and Marsha Pierce and Garrett Soukup, Department of Biomedical Sciences, Creighton University, Omaha.
- 1:48 5. RT-PCR ANALYSIS OF MICROGLIAL NEUROTROPHIC PROPERTIES. Irsa Shoiab\* and Annemarie Shibata, Department of Biology, Creighton University, Omaha.
- 2:00 6. INNATE IMMUNE RESPONSE TO *CYTOMEGALOVIRUS* IN MACROPHAGES. Riley Machal\*, Department of Physical and Life Sciences, Chadron State College, Chadron and Thomas Jerrells, Department of Pathology and Microbiology, University of Nebraska Medical Center, Omaha.
- 2:12 7. PRODUCTION AND PURIFICATION OF NORA VIRUS ORF 3 PROTEIN. Andrew Prososki\*, Darby J. Carlson, Ethan Cordes, Brad Ericson, and Kimberly A. Carlson, Department of Biology, University of Nebraska at Kearney.
- 2:24 8. HIV-1 PROTEIN CONCENTRATION AND GENE REGULATION ALTERED UPON TREATMENT WITH ANTIRETROVIRAL NANOPARTICLES. Emily McMullen\* and Annemarie Shibata, Department of Biology, Creighton University, Omaha; and Michael Goede, Chris J Destache, School of Pharmacy and Health Professions, Creighton University, Omaha; and Alex Pham, Department of Mathematics, Creighton University, Omaha.
- 2:36 BREAK
- 2:50 9. THE DEVELOPMENT OF AN AUTOMATED PIPELINE FOR GENOME WIDE ASSOCIATION. Patrick Kwete Bokashanga\*, Ishwor Thapa, Dhundy Bastola, and Hesham Ali, College of Information Science and Technology, University of Nebraska at Omaha.
- 3:02 10. EFFECTS ON LONGEVITY OF *DROSOPHILA MELANOGASTER* AFTER USING MUTATIONAL INSERTIONS TO KNOCKOUT GENES. Rachel Hall\* and Kimberly A. Carlson, Department of Biology, University of Nebraska at Kearney.
- 3:14 11. CHARACTERIZATION AND EXPRESSION OF *SIMULIUM VITTATUM* (BLACK FLY) SILK GENES: AN EXAMINATION OF SILK GENETICS AND EVOLUTION. Angelica Woo\*, C.L. Brockhouse, and S. Cho, Department of Biology, Creighton University, Omaha.
- 3:26 12. SEQUENCING THE GAPDH GENE IN *MEDACAGO LUPULINA*. Zachary Bishop\* and Amanda Waddle, Department of Physical and Life Sciences, Chadron State College, Chadron.

## **CHEMISTRY AND PHYSICS**

Chairperson:

Andy Zhong, Department of Chemistry, University of Nebraska at Omaha

### **SECTION A, CHEMISTRY**

Olin A

8:25 a.m. WELCOME

8:30 1. DEVELOPMENT AND OPTIMIZATION OF THE ENTRAPMENT METHOD FOR USE IN THE ANALYSIS OF DRUG-PROTEIN INTERACTIONS IN HIGH PERFORMANCE AFFINITY CHROMATOGRAPHY. Abby Jackson\*, H. Xuan, and David S. Hage, Department of Chemistry, University of Nebraska–Lincoln.

8:50 2. A STUDY OF OXYGEN VACANCY DEFECTS IN NANOSTRUCTURED CERIUM OXIDES. Chin Li Cheung\*, Neil J. Lawrence, Joseph R. Brewer, Gonghua Wang, and Jamie Wells-Kingsbury, Department of Chemistry, University of Nebraska–Lincoln; and Lu Wang and Wai Ning Mei, Department of Physics, University of Nebraska at Omaha; and T.S. Wu and Yun-Liang Soo, Department of Physics, National Tsing Hua University, Taiwan.

9:10 3. CARBONYL <sup>13</sup>C CHEMICAL SHIFTS, N->PI\* INTERACTIONS, AND PROTEINS. Bradley Worley\*, Gerard S. Harbison, and Robert Powers, Department of Chemistry, University of Nebraska–Lincoln.

9:30 4. NMR METABOLOMICS AS A NOVEL TOOL TO STUDY PANCREATIC CANCER. Teklab Gebregiworgis\*, Bo Zhang, and Robert Powers, Department of Chemistry, University of Nebraska–Lincoln; and Panjak K. Singh, Salk Institute, University of Nebraska Medical Center, Omaha.

9:45 BREAK

9:50 5. CATALYST DESIGN FOR ASYMMETRIC HYDROFORMYLATION. Andrew E. Geis\* and N.C. Thacker, Department of Chemistry, University of Nebraska–Lincoln.

10:05 6. DEVELOPMENT OF PORPHYRIN-BASED METAL-ORGANIC FRAMEWORKS WITH COORDINATIVELY UNSATURATED METAL CENTERS. Haemi Chung\* and Wonyoung Choe, Department of Chemistry, University of Nebraska–Lincoln.

10:20 7. AFFINITY SORBENTS FOR EXTRACTION AND CONCENTRATION OF ENVIRONMENTAL CONTAMINANTS. Efthimia Papastavros\* and D.S. Hage, Chemistry Department, University of Nebraska–Lincoln; and D.D. Snow and D.A. Cassada, Water Center, School of Natural Resources, University of Nebraska–Lincoln.

- 10:35 8. EXPLORING COBALT AS AN ALTERNATIVE BIS-OXAZOLINE COMPLEX. Michele M. Kalal\*, Kazuya Toyama, and James M. Takacs, Department of Chemistry, University of Nebraska–Lincoln.
- 10:50 BREAK
- 11:00 MAIBEN LECTURE - OLIN HALL B
- 1:00 p.m. WELCOME
- 1:05 9. PORPHYRINIC METAL-ORGANIC FRAMEWORKS FOR DETECTION OF EXPLOSIVES. Brandon J. Burnett\* and Wonyoung Choe, Department of Chemistry, University of Nebraska–Lincoln.
- 1:25 10. ANALYSIS OF THE EFFECTS OF GLYCATION ON THE BINDING OF SULFONYLUREA DRUGS TO HUMAN SERUM ALBUMIN. Ryan E. Matsuda\* and David S. Hage, Department of Chemistry, University of Nebraska–Lincoln.
- 1:45 11. DETECTION OF MERCURY (II) USING CHELATION ENHANCED QUENCHING CHEMOSENSOR. Chen Hou\*, Yang Yang, John Blecha, and Haishi Cao, Department of Chemistry, University of Nebraska at Kearney.
- 2:05 12. DETERMINATION OF  $\beta$ -SECRETASE BINDING SITE CHARGES EMPLOYING MD SIMULATION AND MOLECULAR DOCKING. Dima A. Sabbah\* and Jonathan L. Vennerstrom, College of Pharmacy, University of Nebraska Medical Center, Omaha; and Haizhen Zhong, Department of Chemistry, University of Nebraska at Omaha.
- 2:25 13. DETECTION OF HETEROGENEOUS DRUG-PROTEIN BINDING BY FRONTAL ANALYSIS AND HIGH-PERFORMANCE AFFINITY CHROMATOGRAPHY. Zenghan Tong\*, K.S. Joseph, and David S. Hage, Department of Chemistry, University of Nebraska–Lincoln.
- 2:45 BREAK
- 2:50 14. IDENTIFICATION AND ANALYSIS OF THE PRODUCTS REMOVED FROM HUMAN FEET BY AN ELECTROLYSIS FOOTBATH. Courtney Dupper\* and Charles Freidline, Division of Science & Mathematics, Union College, Lincoln.
- 3:10 15. OPTIMIZATION OF POLYMERIZATION CONDITIONS FOR AFFINITY MONOLITH COLUMNS CONTAINING IMMOBILIZED PROTEINS. Erika Pfaunmiller\* and David S. Hage, Department of Chemistry, University of Nebraska–Lincoln.

- 3:30 16. ANALYSIS OF PROTEIN PHOSPHORYLATION IN PROTEIN DATABANK. Mengyi Zha\*, Teddy Woolman, Charlotte McGinn, and Haizhen Zhong, Department of Chemistry, University of Nebraska at Omaha.
- 3:50 17. A NOVEL ELECTROCHEMICAL PEPTIDE-BASED SENSOR FABRICATED USING IMAC CHEMISTRY FOR THE DETECTION OF ARAH2 ANTIBODIES. Anita J. Zaitouna\* and Rebecca Y. Lai, Department of Chemistry, University of Nebraska– Lincoln.
- 4:10 CLOSING COMMENTS

**CHEMISTRY AND PHYSICS**

Chairperson:

Renat Savirianov, Department of Physics, University of Nebraska at Omaha

**SECTION B, PHYSICS**

Planetarium

- 8:35 1. Keynote Address: SCANNING TUNNELING MICROSCOPES – OUR EYES AND HANDS INTO THE NANOWORLD. Axel Enders, Department of Physics and Astronomy, University of Nebraska–Lincoln.
- 9:05 2. A LABVIEW® PROGRAM IMPLEMENTED TO EXTRACT ABSOLUTE PHASE FROM AN INTERFEROGRAM OBTAINED WITH A DIGITAL HOLOGRAPHIC MICROSCOPE. Semere M. Woldemariam, Department of Physics, Creighton University, Omaha.
- 9:25 3. DYNAMIC LIGHT SCATTERING STUDIES ON ALKALI-MODIFIED BORATE LIQUIDS. S.Schnell, Department of Physics, Creighton University, Omaha.
- 9:40 4. FLUORESCENCE LIFETIME IMAGING FOR THE ASSESSMENT OF CELLULAR METABOLISM IN MULTICELLULAR TUMOR SPHEROIDS. Jorge Vergen\* and Michael G. Nichols, Department of Physics, Creighton University, Omaha.
- 9:55 5. DARK MATTER AND FIFTH FORCE. Aruna P. Wanninayake\* and Gintaras Duda, Department of Physics, Creighton University, Omaha.
- 10:10 6. ESTIMATION OF THE NUMBER OF  $\Phi \rightarrow K+K^-$  AND  $\Phi \rightarrow KSKL$  OBSERVED IN 200GEV AUAU COLLISIONS AT RHIC. Jonathan K. Bruckman, Creighton University, Omaha.

- 10.25 7. GRAPHENE/SUBSTRATE CHARGE TRANSFER CHARACTERIZED BY INVERSE PHOTOELECTRAON SPECTROSCOPY. Lingmei Kong, Department of Physics and Astronomy, University of Nebraska-Lincoln; and C. Bjelkevig, S. Gaddam, M. Zhou, and Jeffrey A. Kelber, Department of Chemistry, University of North Texas, Denton, TX; and Y. H. Lee and G. H. Han, Department of Physics, Department of Energy Science, Sungkyunkwan University, Suwon, Korea; and H. K. Jeong, Department of Physics, Daegu University, Gyeongsan , Korea.
- 10.40 8. EFFECTS ON THE ELECTRONIC BAND STRUCTURE OF EUROPIUM OXIDE FILMS UPON GADOLINIUM DOPING. Juan A. Colón Santana\*, Department of Electrical Engineering; and Joonhee An, Ning Wu, Kirill Belashchenko and P.A. Dowben, Department of Physics and Astronomy and the Nebraska Center for Materials and Nanoscience, University of Nebraska–Lincoln; and X. Wang, P. Liu and Jinke Tang, Department of Physics & Astronomy, University of Wyoming, Laramie, WY; and Yaroslav Losovyj, Center for Advanced Microstructures and Devices, Louisiana State University, Baton Rouge, LA; and I.N. Yakovkin, Institute of Physics, National Academy of Sciences of Ukraine, Prospect Nauki 46, Kiev 03028, Ukraine.
- 11:00 MAIBEN LECTURE - OLIN HALL B
- 1:05 WELCOME
- 1.10 9. THE ELECTRONIC STRUCTURE OF A LOCAL CHARGE-TRANSFER-INDUCED SPIN TRANSITION MOLECULAR ADSORBATE. Xin Zhang\*, Ning Wu, ZhengZheng Zhang, and Peter Dowben, Nebraska Center for Materials and Nanoscience, Department of Physics and Astronomy, University of Nebraska-Lincoln; and Jean-François Létard and François Guillaume, Groupe des Sciences Moléculaires ICMCB, CNRS , UPR CNRS 9048, Université Bordeaux I 87 Av. du Doc. A. Schweitzer, F-33608 Pessac, France; letard@icmcb-bordeaux.cnrs.fr, f.guillaume@ism.u-bordeaux1.fr; and Bernard Doudin, Université Louis Pasteur Strasbourg, Institut de Physique Applique de Physique et Chimie des Materiaux de Strasbourg, 23, rue du Lœss B.P. 20, 67034 Strasbourg Cedex2, FRANCE; Bernard.Doudin@ipcms.u-strasbg.fr
- 1:25 10. The LOCAL STRUCTURE OF TRANSITION METAL DOPED SEMICONDUCTING BORON CARBIDES. Jing Liu\*, P. A. Dowben, A. K. Rajapitamahuni, Andre Sokolov, Department of Physics and Astronomy; and Eric D. Shepherd and J. I. Brand, College of Engineering, University of Nebraska–Lincoln; and Guangfu Luo and Wai-Ning Mei, Department of Physics, University of Nebraska at Omaha; and Orhan Kizilkaya, Center for Advanced Microstructures and Devices, Louisiana State University , Baton Rouge, LA; and Sudarshan Karki and Anthony N. Caruso, Department of Physics, University of Missouri-Kansas City, Kansas City, MO.

- 1:40 11. ORDER-DISORDER TRANSITIONS FOR Au/Mo(112). Keisuke Fukutani\*, Ning Wu, and Peter Dowben, University of Nebraska–Lincoln; and Yaroslav Losovyj and Natalia Lozova, Center for Advanced Microstructure and Devices, Louisiana State University, Baton Rouge, LA; and Ivan Yakovkin, Institute of Physics, National Academy of Sciences of Ukraine, Prospect Nauki 46, Kiev 03028, Ukraine.
- 1:55 12. STRUCTURAL AND MAGNETIC PROPERTIES OF COBALT ATOMIC CLUSTERS ON (110) SURFACE OF TUNGSTEN. Pavel Lukashov\* and Renat F. Sabirianov  
Department of Physics, University of Nebraska at Omaha; and Axel Enders, Department of Physics and Astronomy, University of Nebraska–Lincoln.
- 2:10 13. THE TWIN PARADOX AS AN EXAMPLE OF NATIVE MATH PRESENTATION IN HTMLS. Adam N. Davis, Wayne State College, Wayne.
- 2:25 CLOSING REMARKS

**EARTH SCIENCE**

Chair: Crystal Bergman  
School of Natural Resources  
University of Nebraska–Lincoln  
Olin Hall 224

- 1:00 p.m. OPENING REMARKS
- 1:05 1. ESTIMATING GREEN LAI IN MAIZE AND SOYBEAN FROM REMOTELY SENSED DATA. Anthony L. Nguy-Robertson\*, A.A. Gitelson, Y. Peng, T.J. Arkebauer, and D.C. Rundquist, Center for Advanced Land Management Information Technologies, School of Natural Resources and Department of Agronomy and Horticulture, University of Nebraska–Lincoln.
- 1:25 2. REMOTE ESTIMATION OF CROP PRODUCTIVITY: FROM CLOSE RANGE TO SATELLITE OBSERVATIONS. Yi Peng\*, A.A. Gitelson, A.L. Nguy-Robertson, D.C. Rundquist, J.G. Masek, S.B. Verma, and A.E. Suyker, School of Natural Resources, University of Nebraska–Lincoln.
- 1:45 3. THE APPLICATION OF DIATOM BIOSTRATIGRAPHY AND PALEOECOLOGY TO RESOLVE EARLY MIOCENE PALEOCLIMATE EVENTS. Ryan K. Farmer\* and D.M. Harwood, Department of Earth and Atmospheric Sciences, University of Nebraska–Lincoln; and S.M. Bohaty, School of Ocean and Earth Science, University of Southampton, National Oceanography Centre, Southampton, United Kingdom.

- 2:00 4. LATE NEOGENE ANTARCTIC ICE SHEET HISTORY REVEALED BY ANDRILL PROGRAM DRILLHOLES IN THE WESTERN ROSS SEA, ANTARCTICA. David Harwood\* and Frank Rack, Department of Earth and Atmospheric Sciences and ANDRILL Science Management Office, University of Nebraska–Lincoln; F. Florindo, Istituto Nazionale di Geofisica e Vulcanologia, Rome, Italy; and R. Levy, GNS Science, Lower Hutt, New Zealand; and Tim Naish, Antarctic Research Centre, Victoria University of Wellington, Wellington, New Zealand; and Ross Powell, Northern Illinois University, the MIS and SMS Science Teams, c/o ANDRILL Science Management Office.
- 2:20 5. “RATTLESTONES” FROM THE DAKOTA FORMATION OF NEBRASKA AND THEIR RELEVANCE TO IRON-OXIDE-CEMENTED CONCRETIONS IN UTAH’S NAVAJO SANDSTONE. David B. Loope\*, Richard M. Kettler, Karrie A. Weber, and Nathan L. Hinrichs, Department of Earth and Atmospheric Sciences and School of Biological Sciences, University of Nebraska–Lincoln.
- 2:40 6. AQUIFER MAPPING AND RECHARGE ESTIMATIONS IN GLACIATED AREAS OF EASTERN NEBRASKA. Karen Griffin O’Connor\* and John B. Gates, Department of Earth and Atmospheric Sciences, University of Nebraska–Lincoln.
- 3:00 7. PRELIMINARY EVIDENCE FOR MIOCENE TECTONISM IN NORTHWESTERN NEBRASKA. J.L. Balmat and Michael B. Leite\*, Department of Physical and Life Sciences, Chadron State College, Chadron.
- 3:15 8. USE OF STREAM CHARACTERISTICS TO ASSESS STRUCTURAL CONTROL OF DRAINAGE ON TRIBUTARIES TO THE WHITE RIVER, NORTHWESTERN NEBRASKA, USA. Kodi L. Young\* and Michael B. Leite, Department of Physical and Life Sciences, Chadron State College, Chadron.
- 3:30 9. SPATIAL PATTERNS OF DROUGHT TRIGGERS AND INDICATORS. Joseph P. Robine\*, D.J. Bathke, M.D. Svoboda, J. Nothwehr, C.J. Bergman, N.A. Wall, T.K. Bernadt, and M.J. Hayes, National Drought Mitigation Center and the School of Natural Resources, University of Nebraska–Lincoln.
- 3:50 10. AN OVERVIEW OF WATERSHED MANAGEMENT AND BASIN-LEVEL DROUGHT PLANNING IN THE UNITED STATES. Crystal J. Bergman\*, M.J. Hayes, D.J. Bathke, and C.L. Knutson, National Drought Mitigation Center, School of Natural Resources; and Z. Tang, Community and Regional Planning, University of Nebraska–Lincoln.
- 4:05 CLOSING REMARKS and SECTION MEETING

**TEACHING OF SCIENCE AND MATH**

Chairperson: Julia Polak

Exeter-Milligan Public Schools, Exeter

Olin 325

- 9:00 1. MV OR ONE-HALF MV SQUARED? William M. Wehrbein, Department of Physics and Astronomy (Emeritis), Nebraska Wesleyan University, Lincoln.
- 9:15 2. STUDENT-CENTERED VERSUS LECTURE-BASED TEACHING IN A GENERAL STUDIES BIOLOGY COURSE. Wendy Jamison, Department of Physical and Life Sciences, Chadron State College, Chadron.
- 9:30 3. APPLIED ELECTROCHEMISTRY IN THE UNDERGRADUATE LABORATORY: ANODIZING ALUMINUM AND THE INTERCALATION OF VARIOUS DYES. Jennifer Harney\* and Mary Ettel, Department of Physical Sciences and Mathematics, Wayne State College, Wayne.
- 9:45 4. A LITERATURE-BASED, DISEASE-CENTERED MOLECULAR BIOLOGY COURSE Ann Buchmann, Department of Physical and Life Sciences, Chadron State College, Chadron.

**APPLIED SCIENCE AND TECHNOLOGY**

Chairperson: Mary Ettel

Wayne State College, Wayne

Olin 325

- 10:00 1. SIMULATION OF AMERICAN RAKU FIRING, A REDUCTION ENVIRONMENT, IN A LABORATORY SETTING. Micala Allen and M.L. Ettel, Department of Physical Sciences and Mathematics, Wayne State College, Wayne.
- 10:15 2. AN EXPLORATION OF THE EFFECTS OF SELECTED MORDANTS ON COTTON FIBERS AND NATURAL DYE. Amy Maika, T. Reichter, and M. L. Ettel, Department of Physical Sciences and Mathematics, Wayne State College, Wayne.
- 10:30 3. THE INTERACTION OF NATURAL DYES WITH SELECTED WOOL FIBERS. Tara Reichter, Amy Maika, and M. L. Ettel, Department of Physical Sciences and Mathematics, Wayne State College, Wayne.
- 11:00 MAIBEN MEMORIAL LECTURE, OLIN LH-B

**COLLEGIATE ACADEMY**

**BIOLOGY**

Chairperson: Jeff Isaacson, Department of Biology  
Nebraska Wesleyan University, Lincoln

**SESSION A**

Olin LH-B

- 8:00 a.m. 1. EFFECTS OF NALTREXONE ON ANXIETY BEHAVIORS IN C57BL/J6 MICE. Jenna Specht\*, Eric Garcia, and Frank Ferraro, Nebraska Wesleyan University, Lincoln.
- 8:12 2. OPTIMIZATION OF WESTERN BLOTTING TECHNIQUES FOR DETECTION OF PROTEIN MARKERS OF BOVINE LEUKEMIA VIRUS INFECTION. Cassandra S. Jordan\* and J. Isaacson, Department of Biology, Nebraska Wesleyan University, Lincoln.
- 8:24 3. TLR-3 EXPRESSION AND ACTIVATION OF TRANSCRIPTION FACTORS NF $\kappa$ B AND IRF3 IN HUMAN BRONCHIAL EPITHELIAL CELLS. Allee Kuska\*, B. Barent, K. Restau, and T. McGinn, Department of Biology, Nebraska Wesleyan University, Lincoln.
- 8:36 4. REGULATION OF PROTEIN MARKERS IN HUMAN BRONCHIAL SUB-MUCOSAL DENDRITIC CELLS. Chad R. Elder\* and Therese M. McGinn, Department of Biology, Nebraska Wesleyan University, Lincoln.
- 8:48 5. BIOCHEMICAL EXTRACTION OF THE QUORUM SENSING MOLECULE IN *MYCOBACTERIUM SMEGMATIS* THAT DISPLAYS INCREASED PIGMENTATION IN *STREPTOMYCES COELICOLOR*. Caroline M. Schultz\*, H. Schmidt, and A. McKinney, Department of Biology, Nebraska Wesleyan University, Lincoln.
- 9:00 6. STEPWISE CLONING AND EVALUATION OF FRAGMENTS OF THE HUMAN N-CADHERIN PROMOTER. Kelsey Bryant\*, Nicole Williams, and Kate Marley, Department of Biology, Doane College, Crete.
- 9:12 7. ENHANCING THE UMETHYLATED PRODUCT IN METHYLATION SPECIFIC PCR OF THE HUMAN N-CADHERIN GENE. Nick Lukens\* and Kate Marley, Department of Biology, Doane College, Crete.
- 9:24 BREAK

- 9:36 8. TRANSLATION OF BASIC STORZ CMAC INTUBATION USAGE VIDEO INTO FARSI FOR AFGHAN MEDICAL PERSONNEL. Ismatt R. Niazi\*, Zhan Li, and Kirsten Boedecker, Nebraska Wesleyan University, Lincoln; and Ben Boedecker, Mary Bernhagen, and Nikola Milikovic, VA Medical Center, Omaha.
- 9:48 9. THE USE OF *SAMONELLA TYPHIMURIUM* InvB/InvC AS A POSSIBLE DRUG DELIVERY SYSTEM. Bethany Hippen\* and Doug Christensen, Department of Life Sciences, Wayne State College, Wayne.
- 10:00 10. CLONING, OVER-EXPRESSION, AND PURIFICATION OF NUS-FREE InIB FROM *LISTERIA MONOCYTOGENES* AS A POSSIBLE DRUG DELIVERY VEHICLE. Ian Engebretsen\*, Shawn Percy, and Doug Christensen, Department of Physical and Life Sciences, and Gustavo Zardeneta, Department of Chemistry, Wayne State College, Wayne.
- 10:12 11. DEVELOPMENT OF THE ARABIDOPSIS G-PROTEIN SIGNALING NETWORK DATABASE. Kelsey K. Augustin\*, Wayne State College, Wayne; and Alan M. Jones, The University of North Carolina at Chapel Hill, Chapel Hill, NC; and Etsuko N. Moriyama, School of Biological Sciences and Center for Plant Science Innovation, University of Nebraska–Lincoln.
- 10:24 12. THE EFFECT OF PLASMID SIZE ON TRANSFORMATION EFFICIENCY. Neal Hahn\* and Douglas Christensen, Department of Life Sciences, Wayne State College, Wayne.
- 11:00 MAIBEN MEMORIAL LECTURE, OLIN LH-B
- 12:00 LUNCH
- 1:00 13. EFFECT OF INCLINE ON THE LOCOMOTOR COSTS OF CARRYING AN ENLARGED CLAW IN FIDDLER CRABS (*UCA PUGILATOR*). Katherine E. Thiesen\* and G. Gerald, Department of Biology, Nebraska Wesleyan University, Lincoln.
- 1:12 14. SCREENING FOR ANTIBACTERIAL ENDOPHYTIC FUNGI WITH LIVING TISSUE COLLECTED IN WYOMING AND WESTERN NEBRASKA. Van Tran\* and J. Bricker, Department of Biology, Nebraska Wesleyan University, Lincoln.
- 1:24 15. COLLECTION OF *CANNABIS SATIVA* IN LANCASTER COUNTY AND MEASUREMENT OF THC BY HIGH-PERFORMANCE LIQUID CHROMATOGRAPHY. Brock Sutton, Department of Biology, Nebraska Wesleyan University, Lincoln.
- 1:36 16. A STUDY OF ILLICIT DRUG CONTAMINATION FROM SITES UPSTREAM AND DOWNSTREAM OF WASTE WATER TREATMENT PLANTS OF LINCOLN, ASHLAND AND SEWARD, NEBRASKA. Rebecca E. Nelson, Department of Biology, Nebraska Wesleyan University, Lincoln.

- 1:48 17. CHARACTERIZATION OF ANTIBIOTIC RESISTANT BACTERIA FROM THE PLATTE RIVER. Alicia Newsome\* and B. Mauck, Department of Biology, College of Saint Mary, Omaha.
- 2:00 18. EFFECT OF DISSOLVED LEAD ON PLANT GROWTH. Carolyn Behney\* and P. Higley, Department of Biology, College of Saint Mary, Omaha, NE 68106.
- 2:12 19. A STUDY OF FLASH BEHAVIOR IN THE EASTERN COTTONTAIL RABBIT. Brian Pawloski, Department of Biology, Nebraska Wesleyan University, Lincoln.
- 2:24 BREAK
- 2:36 20. TAXONOMIC IDENTIFICATION OF MEDICINALLY IMPORTANT ENDOPHYTIC ORGANISMS USING PCR AND BIOINFORMATIC TECHNIQUES. Whitney Fuller, Department of Biology, Nebraska Wesleyan University, Lincoln.
- 2:48 21. A DESCRIPTIVE STUDY TO DETERMINE WHICH BAT SPECIES BREEDING IN LANCASTER COUNTY, *MYOTIS SEPTENTRIONALIS*, *LASIURUS NOCTIVAGANS*, *EPTESICUS FUSCUS*, *LASIURUS BOREALIS*, *LASIURUS CINEREUS*, AND *NYCTICEIUS HUMERALIS*, EMIT A PRESENCE OVER NEBRASKA WESLEYAN UNIVERSITY'S CAMPUS. Hollie Cotton, Department of Biology, Nebraska Wesleyan University, Lincoln.
- 3:00 22. TAIL-FLAGGING AS A PURSUIT DETERRENT SIGNAL IN COTTONTAIL RABBITS. Desi Jones, Department of Biology, Nebraska Wesleyan University, Lincoln.
- 3:12 23. THE REGULATION OF ARO80P IN *CANDIDA ALBICANS* AROMATIC AMINO ACID METABOLISM. Jeffrey J. Bunker\*, S. Ghosh, B. W. Kebaara, K. W. Nickerson, and A. L. Atkin, School of Biological Sciences, University of Nebraska–Lincoln.
- 3:24 24. COLLECTION AND ISOLATION OF FUNGAL ENDOPHYTES FROM CO-LOCATED TERRESTRIAL AND EPIPHYTIC ECUADORIAN BROMELIADS. Heather C. Bearnes, Department of Biology, Nebraska Wesleyan University, Lincoln.

**COLLEGIATE ACADEMY**

**BIOLOGY**

Chairperson: Jeffrey Isaacson, Biology Department

Nebraska Wesleyan University, Lincoln

**SESSION B**

Olin 249

- 1:00 1. EFFECTS OF ISOLATION ON STRESS AND BEHAVIOR IN THE GUPPY, *POECILIA RETICULATE*. Anna Kokrda, Department of Biology, Nebraska Wesleyan University, Lincoln.
- 1:12 2. IDENTIFICATION AND CHARACTERIZATION OF CELLULAR GENES EXPRESSED DURING EARLY PHASES OF REACTIVATION FROM LATENCY. Halie Bricker, Department of Veterinary and Biomedical Sciences, University of Nebraska–Lincoln.
- 1:24 3. *FRANCISELLA TULARENSIS* LIVE VIRUS STRAIN INFECTS ALVEOLAR EPITHELIAL CELLS AND INDUCES APOPTOSIS. Emily Prinz, Department of Biology, Nebraska Wesleyan University, Lincoln.
- 1:36 4. CREATING A STICKY VIRUS: PCR MUTAGENESIS TO CONFIRM *COXSACKIEVIRUS* B3 BINDING SITES. Sydney Rees, Department of Biology, Nebraska Wesleyan University, Lincoln.
- 1:48 5. OPTIMIZATION OF METHODS TO DETECT ACTIVATION OF TLR-3 AND EPITHELIAL BARRIER FUNCTION IN HUMAN BRONCHIAL EPITHELIAL CELLS. David Synhorst\* and Therese McGinn. Department of Biology, Nebraska Wesleyan University, Lincoln.
- 2:00 6. UPREGULATION OF PATTERN RECOGNITION RECEPTORS ON A MACROPHAGE RAW264.7 CELL LINE IN RESPONSE TO STIMULATION AND INFLUENZA INFECTION. Kara Maddox\*, Alex Vogel, Jenna M. Canfield, Shirley A. Condon, and Deborah M. Brown, Nebraska Center for Virology, University of Nebraska–Lincoln.
- 2:12 7. DETERMING GENES RESPONSIBLE FOR QUORUM SENSING IN *MYCOBACTERIUM SMEGMATIS* USING *STREPTOMYCES COELICOLOR*. Ashley Shurts\*, Ashley Urbach, and Angela McKinney, Department of Biology, Nebraska Wesleyan University, Lincoln; and Jeffrey Cirillo, Department of Microbial and Molecular Pathogenesis, Texas A&M University, College Station, TX 77843.
- 2:24 BREAK

- 2:36 8. FILM AND TRANSLATION OF STORZ CMAC VIDEO INTUBATION SYSTEM MAINTENANCE VIDEO FOR AFGHAN MEDICAL PERSONNEL. Zhan Li\*, Ismatt R. Niazi, and Kirsten Boedeker, Department of Biology, Nebraska Wesleyan University, Lincoln; and Ben Boedeker, Mary Bernhagen, and Nikola Milikovic, VA Medical Center, Omaha.
- 2:48 9. COLLECTION, ISOLATION, AND IDENTIFICATION OF FUNGAL ECUADORIAN BROMELIAD ENDOPHYTES. Amy C. Gerdes, Department of Biology, Nebraska Wesleyan University, Lincoln.
- 3:00 10. COSOLVENT STABILIZATION OF ALCOHOL DEHYDROGENASE. Matthew R. Kuhlenengel, Department of Chemistry, Nebraska Wesleyan University, Lincoln.

**COLLEGIATE ACADEMY**  
**CHEMISTRY AND PHYSICS**

Chairpersons: David Treichel and Nathaniel Fackler  
Nebraska Wesleyan University, Lincoln

**SESSION A**

Session Chairperson, David Treichel  
Olin 324

- 8:00 a.m. 1. DEVELOPMENT OF TRICARBOXYLATED ARENES AS FLUORESCENT CHEMOSENSORS FOR DIVALENT AND TRIVALENT CATIONS. Audrey T. Gallagher\* and James T. Fletcher, Department of Chemistry, Creighton University, Omaha.
- 8:12 2. DETECHIP: THE USE OF DIGITAL PHOTO ANALYSIS FOR A SENSING ARRAY. Jeff Hawken\*, Marcus Lyon, Mark Wilson, and Andrea Holmes, and Sharmin Sikich, Department of Chemistry, Doane College, Crete.
- 8:24 3. ANALYSIS OF METHANOL IN BIODIESEL BY NEAR INFRARED SPECTROSCOPY. B. A. Bialas\* and A. D. Gift, Department of Chemistry, Omaha.
- 8:36 4. DIAZONIUM SALTS IN MULTI-STEP ONE-POT CLICK REACTIONS: SYNTHESIS, CHARACTERIZATION AND ANTIMICROBIAL EVALUATION. Jacqueline E. Reilly\* and James T. Fletcher, Department of Chemistry, Creighton University, Omaha.
- 8:48 5. *IN-VIVO* SKIN FLUORESCENCE MEASUREMENTS TO DETERMINE EFFECTS OF SUN EXPOSURE. Cassie Reicks\*, Jordan Groathouse, Mitch Trauernicht, Sharmin Sikich, Mark Wilson, and Andrea Holmes, Department of Chemistry, Doane College, Crete.

- 9:00 6. DETERMINATION OF VARIOUS ENERGY DRINK COMPONENTS USING REVERSED PHASE CHROMATOGRAPHY. Bobbi A. Stromer\* and Annette C. Moser, Department of Chemistry, University of Nebraska at Kearney.
- 9:12 7. DEVELOPMENT OF A COLLEGE LABORATORY EXPERIMENT BASED ON pH DEPENDENCE OF PARTITION COEFFICIENTS FOR COMMON NSAIDS. Adam Mosel, Department of Chemistry, Nebraska Wesleyan University, Lincoln.
- 9:24 BREAK
- 9:36 8. FLUORESCENCE LIFETIME IMAGING FOR THE ASSESSMENT OF CELLULAR METABOLISM IN MULTICELLULAR TUMOR SPHEROIDS. Jorge Vergen\* and Michael G. Nichols, Department of Physics, Creighton University, Omaha.
- 9:48 9. STARLIGHT SIMULATIONS FOR DETECTING AND ANALYZING ULTRA PERIPHERAL COLLISIONS AT RHIC. Gleb Batakin, Department of Physics, Creighton University, Omaha.
- 10:00 10. THREE DIMENSIONAL IMAGING USING A CD-ROM DRIVE FRINGE PROJECTION INTERFEROMETER. Stephen Cannon, Department of Physics, Hastings College, Hastings.
- 10:12 11. PARTICLE IDENTIFICATION OF KAONS IN ULTRA-PERIPHERAL HEAVY ION COLLISIONS. Mark P. Ridder, Department of Physics, Creighton University, Omaha.
- 10:24 12. AERODYNAMICS OF A GOLF BALL: HOW DIMPLE DESIGN ALTERS DRAG AND LIFT. Kendall Murphy, Department Physics, Hastings College, Hastings.
- 11:00 MAIBEN MEMORIAL LECTURE, OLIN B

**COLLEGIATE ACADEMY**  
**CHEMISTRY AND PHYSICS**

Chairpersons: David Treichel and Nathaniel Fackler  
Nebraska Wesleyan University, Lincoln

**SESSION B**

Session Chairperson, Nathaniel Fackler  
Olin 324

- 1:00 p.m. 13. PREPARATION AND ANTIMICROBIAL ACTIVITY OF 1,2,3-TRIAZOLE AND TRIAZOLIUM SALTS: STRUCTURE ACTIVITY RELATIONSHIP OF BENZYL GROUP IDENTITY. Andrew C. Klick\* and James T. Fletcher, Department of Chemistry, Creighton University, Omaha.
- 1:12 14. NOVEL CIRCULAR DICHROISM SPECTROSCOPY TECHNIQUE FOR THE STUDY OF SECONDARY STRUCTURE OF PROTEINS ADSORBED TO SOLID SURFACES. Crystal Vander Zanden\*, Mark Wilson, and Erin Wilson, Department of Chemistry, Doane College, Crete.
- 1:30 15. PREPARATION AND ANTIMICROBIAL ACTIVITY OF 1,2,3-TRIAZOLE AND TRIAZOLIUM SALTS: STRUCTURE ACTIVITY RELATIONSHIP OF TRIAZOLE COUNT. Rachel N. Fickes\* and James T. Fletcher, Department of Chemistry, Creighton University, Omaha.
- 1:42 16. USE OF CHROMATOGRAPHY TO CHARACTERIZE A SUBSTRATE BINDING CONSTANT FOR A HIS-TAG IMMOBILIZED ENZYME. Benjamin White\*, A.M. Moser and F.A. Kovacs, Department of Chemistry, University of Nebraska at Kearney.
- 1:54 17. CONTRAST PHASE MICROSCOPY AND DIGITAL HOLOGRAPHY. Robert Thomen, Department of Chemistry, Creighton University, Omaha.
- 2:12 18. ABSOLUTE DETECTION EFFICIENCY OF A MICROCHANNEL PLATE DETECTOR. John E. Tiller\*, Garek A. Bebee, and D. R. Sieglaff, Department of Physics and Astronomy, Nebraska Wesleyan University, Lincoln.
- 2:24 BREAK
- 2:36 19. MEASURING THE NONERGODICITY IN GLASSES BY ENSEMBLE-AVERAGED PHOTON CORRELATION SPECTROSCOPY. Eric D. Svingen\* and David L. Sidebottom, College of Arts and Sciences, Creighton University, Omaha.

- 2:48 20. RHO MESON PRODUCTION IN ULTRA-PERIPHERAL COLLISIONS AT THE RELATIVISTIC HEAVY ION COLLIDER. Jamison Duckworth\* and Janet Seger, College of Arts and Sciences, Creighton University, Omaha.
- 3:00 21. CONSTRUCTION OF A PHOTOVOLTAIC ENERGY SYSTEM TO DETERMINE MAXIMUM EFFICIENCY. Jake Doyle, Department of Physics, Hastings College, Hastings.
- 3:12 22. DEVELOPMENT OF A FREQUENCY-DOMAIN PHASE-SENSITIVE FLUORIMETER TO QUANTIFY THE OXYGEN CONSUMPTION OF LIVING CELLS. Kristina Ward\*, Lonza Ramsey, and Michael G. Nichols, Department of Physics, Creighton University, Omaha.
- 3:24 23. SEARCH FOR OXYGEN IN CALLISTO'S ATMOSPHERE. Mitchell J. Hain\* and N. J. Cunningham, Department of Physics and Astronomy, Nebraska Wesleyan University, Lincoln; and J. R. Spencer, Planetary Science Directorate, Southwest Research Institute, Boulder, CO; and J. C. Green and C. S. Froning, Center for Astrophysics and Space Astronomy, University of Colorado, Boulder, CO.
- 3:36 24. THE RELATIVISTIC HEAVY ION COLLIDER AND ULTRA PERIPHERAL COLLISIONS. Jhenieve Enriquez, Department of Physics, Creighton University, Omaha.

**COLLEGIATE ACADEMY**  
**CHEMISTRY AND PHYSICS**

Chairpersons: David Treichel and Nathaniel Fackler  
Nebraska Wesleyan University, Lincoln

**SESSION C**

Session Chairperson, David Peitz  
Olin 325

- 1:00 p.m. 25. UNIVERSAL PATTERNS OF CLUSTER GROWTH IN AQUEOUS SUGARS OBSERVED BY DYNAMIC LIGHT SCATTERING. Tri D. Tran\* and Dave Sidebottom, College of Arts and Sciences, Creighton University, Omaha.
- 1:12 26. THEORY, EXPERIMENTATION, AND ANALYSIS OF THE DOMINO EFFECT. Chris Webber, Department of Physics, Hastings College, Hastings.
- 1:24 27. HARDWARE CONTROL SYSTEMS FOR THE STAR EXPERIMENT USING EPICS. Jordan Kellerstrass, Department of Physics, Creighton University, Omaha.

- 1:34 28. RHO PRODUCTION IN ULTRA PERIPHERAL PROTON-PROTON COLLISIONS AT RHIC. Jarrod K. Bang\* and J. Seger, Department of Physics, Creighton University, Omaha.
- 1:44 29. A COMPARISON OF TIME- AND STRAIN-DEPENDENT OPTICAL STRETCHING METHODS. Anya Burkart\* and Michael G. Nichols, Department of Physics, Creighton University, Omaha.
- 2:02 30. DETECHIP 1.2: AN IMPROVED MOLECULAR SENSING ARRAY. Marcus M. Lyon\*, S. Sikich, J. Groathouse, M.V. Wilson, and A. E. Holmes, Department of Chemistry, Doane College, Crete.
- 2:14 31. AN INVESTIGATION OF THE HYGROSCOPIC PROPERTIES OF SODIUM CHLORIDE AND SODIUM SULFATE AEROSOLS USING INFRARED SPECTROSCOPY. Yohei Kohno\* and Joshua P. Darr, Department of Chemistry, University of Nebraska at Omaha.
- 2:24 BREAK
- 2:34 32. SYNTHESIS OF PENICILLIN DERIVATIVES AND THE USE OF PLANT EXTRACTS IN THE FIGHT AGAINST ANTIBIOTIC RESISTANCE. Kassandra Connell\* and David Peitz, Department of Physical Science and Mathematics; and Doug Christensen, Department of Life Sciences, Wayne State College, Wayne.
- 2:44 33. SYNTHESIS AND CHARACTERIZATION OF ETHYNYLARENE COMPOUNDS AS SELECTIVE FLUORESCENT CHEMOSENSORS FOR DIVALENT ZINC, CADMIUM AND LEAD. Douglas E. Deever\* and James T. Fletcher, Department of Chemistry, Creighton University, Omaha.
- 3: 02 34. IMMUNOEXTRACTION OF NICOTINE FROM SERUM SAMPLES USING MAGNABIND® BEADS TO CREATE A STANDARD CURVE FOR NICOTINE QUANTIFICATION. Taylor L. Carlson\* and Annette C. Moser, University of Nebraska at Kearney.
- 3:14 35. INFLUENCE OF POLYMERIC EXCIPIENTS ON CARBAMAZEPINE HYDRATE FORMATION KINETICS IN AQUEOUS SLURRIES. Amanda L. Riesberg\* and A.D. Gift, Department of Chemistry, University of Nebraska at Omaha.
- 3:24 36. THE SYNTHESIS OF WILD PLUM. Mitchell Trauernicht\*, Jordan Groathouse, and Andrea Holmes, Department of Chemistry, Doane College, Crete.
- 3:36 37. THE USE OF ATR FT-IR AND TLC TO QUANTITATE AND IDENTIFY ORGANIC COMPOUNDS. Zach Sudbeck\* and David Peitz, Department of Physical Science and Mathematics, Wayne State College, Wayne.

## **JUNIOR ACADEMY OF SCIENCES**

Aurietha Hoesing, NJAS President, Omaha

- 8:30 – 9:00 a.m. Judges Check-In, Olin 219
- 8:30 – 9:00 Senior High Registration and Set Up Project Displays, Olin Hall Lobby
- 9:00 – 12:00 Senior High Competition (preliminary), Olin 124, Olin 131
- 12:00 – 1:00 p.m. LUNCH BREAK, Senior High, Story Student Center
- 1:00 – 1:30 Judges Check-In, Olin 219
- 1:00 – 1:30 Junior High Registration and Set Up Project Displays
- 1:00 – 4:30 Senior High Competition (Final), Olin 110
- 1:30 – 4:30 Junior High Competition, Olin 124, Olin 131
- 2:00 – 3:30 NJAS Board/Teacher Meeting, Olin 219
- 5:30 – AWARDS RECEPTION – First United Methodist Church  
2723 N 50th Street, Lincoln, NE