

15. **Listeria cross contamination levels and the associated risk in ice cream mix.** *Neha Neha¹, Sanjeev Anand¹, and Gemechis Djira².* ¹Dairy and Food Science Department, ²Department of Mathematics and Statistics, South Dakota State University

17. **Environment influences gluten accumulation in bread wheat (*Triticum aestivum*).** *Stacy Dreis¹, Padmanaban Krishnan², William Berzonsky¹, and Karl Glover¹.* ¹South Dakota State University Dept. of Agronomy, Horticulture, and Plant Science, ²South Dakota State University, Dept. of Dairy and Food Science

19. **Variation in Hydrogen Sulfide concentration around a dairy operation.** *Suraiya Akter¹, Erin Cortus¹.* ¹South Dakota State University

22. **Stress in the Brain: Novel Neurobiological Mechanisms that Link Stress to Reward Value and Drug Relapse.** *Brenna Bray^{1,2}, Matthew Weber^{1,2}, Gina Forster, PhD^{1,2}.* ¹University of South Dakota, ²Center for Brain and Behavior Research (CBBRe)

24. **Myristoylated alanine-rich C Kinase Substrate (MARCKS) facilitates forebrain commissure formation through interactions with axon guidance ligands and receptors.** *Jon Brudvig^{1,2}, Gabriella Schmidt-Grimminger³, Jill Weimer^{2,4}.* ¹University of South Dakota Basic Biomedical Sciences, ² Sanford Research Children's Health Research Center, ³Augustana University, ⁴University of South Dakota Department of Pediatrics

26. **Computational study of CTFM on biomaterial microenvironment: application on macrophages characterization.** *Prerana Sharma¹, Eagappanath Thirupathi¹, Mark Block¹, Erin Harmon¹, Daniel Engebretson¹, and Etienne Gnimpieba¹.* ¹The University of South Dakota, Biomedical Engineering Department

27. **Extraction of piperine from Piper nigrum using hydrophobic deep eutectic solvents (DES).** *Amos K. Dwamena¹ and Douglas Raynie¹.* ¹South Dakota State University

29. **Evaluation of a Vacuum Dough Expansion System (VDES) and a simplified flour test to predict bread loaf volume.** *Bipin Rajpurohit¹, Dr. Padmanaban Krishnan¹, Dr. Sunish Sehgal¹, Dr Karl Glover¹, William Berzonsky², and Daniel Brabec³.* ¹South Dakota State University, ²Bayer Research Station, Beaver Crossing, NE, ³USDA ARS

30. **Cellular and Molecular Effects of a Direct Contact Co-Culture on Vascular Cells: An In Vitro Post-Implant Model.** *Thomas Vierhout¹, Jordan Anderson¹, Mark Larson², Daniel Engebretson¹, and Sujan Lamichhane¹.* ¹University of South Dakota, ²Augustana University

33. **Diversity of Free Living Nitrogen Bacteria in Soil a Native South Dakota Prairie.** *Nabilah Alshibli¹, Volker S. Brozel¹.* ¹South Dakota State University

34. **Differences in Osteoblastic and Bacterial Cell Behavior on Titanium Surfaces within Single- and Co-Culturing Systems.** *Taylor Hoekstra¹, Niranjan Ghimire¹, Yuyu Sun², and Ying Deng¹.* ¹Department of Biomedical Engineering, University of South Dakota, ²Department of Chemistry, The University of Massachusetts

35. **Diversity, Antimicrobial Resistance and Pathogenicity of Escherichia coli Isolated from a Peri-Urban Pond.** *Gitanjali Nandakafle¹ and Volker S. Brozel^{1,2}.* ¹Department of Biology and Microbiology, South Dakota State University, Brookings, SD-57007, ²Department of Microbiology and Plant Pathology, University of Pretoria, South Africa

36. **Differential gene expression in two nodule zones of soybean.** *Sunita Pathak¹, and Senthil Subramanian¹.* ¹South Dakota State University

37. **SUSD2 expression in high-grade serous ovarian cancer correlates with defective mesothelial clearance, decreased metastasis and increased patient survival.** *Jordan N. Sheets¹, Rick Evans², Kyung Eun You³, Hyeun Joon Yoon³, and Kristi Eglund¹.* ¹Cancer Biology Research Center, Sanford Research, Sanford School of Medicine of The University of South Dakota, ²Cancer Biology Research Center, Sanford Research, ³Department of Electrical Engineering and Computer Science, South Dakota State University

39. **Comparison of commercial and laser deposited WE43 magnesium alloy.** *Leila Sorkhi¹, and Grant A Crawford¹.* ¹Department of Materials and Metallurgical Engineering, South Dakota School of Mines and Technology

40. **Lactate induces the expression of immune checkpoint inhibitors in a murine model of HPV-positive head and neck squamous cell carcinoma.** *Alex Verma^{1,2}, and W.Keith Miskimins².* ¹Sanford School of Medicine at the University of South Dakota ²Cancer Biology Research Core, Sanford Research

42. **Use of Microbial Processing to Enhance Various Feed By-Products.** *Jacob Zahler¹, Bishnu Karki¹, Isabel Isaac¹, and William Gibbons¹.* ¹Department of Biology and Microbiology, South Dakota State University

45. **Game Based Learning in Chemistry.** *Supriya Jadhav¹, Akash Suryavanshi¹, Sanmati Jain¹, Josh K. Rosenbaum¹, and Dr.Tanya Gupta¹.* ¹South Dakota State University

47. **Nodule zone-specific gene expression in Soybean.** *Sadikshya Aryal¹ and Senthil Subramania¹.* ¹South Dakota State University, Brookings, SD



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SCIENCE FAIR PROJECTS

Concussions: School of Hard Knocks. *Shantel Mack*¹. ¹Waverly-South Shore School, 8th Grade

Comparing Water Quality Indicators Among Bodies of Water. *Erica Juntunen*¹. ¹Hamlin Middle School, 8th Grade

Breaking Down Starch. *Katya Surendran*¹ and *Brooklyn Verwey*¹. ¹Robert Frost Elementary, 4th Grade

Fastest Shot. *Ben Vermeer*¹. ¹John Harris Elementary, 3rd Grade

Blow up a balloon. *Luke Atnip*¹. ¹Gertie Belle Rogers, Kindergarten

HIGH SCHOOL STUDENTS

18. Constructing a Solar Graphene-Based Supercapacitor. *Hannah Hetland*¹, *Madison Hetland*¹. ¹Mitchell High School

38. The Effects of E-Cigarettes on *Tenebrio molitor* and Their Offspring. *Haley Rust*¹. ¹Mitchell High School

48. The Relationship Between Artificial Sugars and Increased Lipid Levels. *Alexander Rodriguez*¹. ¹Mitchell High School

UNDERGRADUATE STUDENTS

12. Isolation of Native Microbes for Use In Commercial Brewing. *Daniel C. Schmidtman*¹, Blake M. Thompson², Derek J. Fernholz², and Paul G. Eglund¹. ¹Augustana University, ²Fernson Brewing Company

16. T-cell Controlled Disseminated Breast Cancer Cells: Prospects for Immune-therapy. *Jessica Roetman*¹, Alvaro Peñã¹, Abdulrahman Saadalla¹, Kevin Pavelko¹, Zahra Mojtahedi¹, Hai Dong Dong¹, Larry Pease¹, Khashayarsha Khazaie^{1,2}. ¹Department of Immunology, ²Department of Surgery, Mayo Clinic

20. Time Resolved IRMS Study of Staurosporine Induced Apoptosis in Murine Astrocyte Cells. *Kayla N. Weber*¹, Sara C. Husher¹, and Paula A. Mazzer¹. ¹Dakota Wesleyan University

21. Relationship between egg size and terminal filaments in artificially selected lines of *Drosophila melanogaster*. *Caden Quintanilla*¹, Deeksha Mohan¹, Taylor Siewert¹, Dr. Cecelia Miles¹. ¹Augustana University

23. Platelet Ovarian Cancer Interactions: Implications in Immune Response and Metastasis. *Brianna Grandprey*¹, Jacob Kunkel¹, and Stephanie Jahnz¹. ¹Augustana University, Sioux Falls, SD

25. MicroRNA-34a induces mitotic catastrophe. *J. Dosch*¹, T. Fortuna¹, E. Hadley¹, T. Houwman¹, S. Husher¹, P. Kinley¹, K. Kniffen¹, K. Lopez¹, B. Oehlerking¹, D. Paulson¹, A. Schwader¹, M. Soderberg¹, N. Stadem¹, M. Travis¹, M. Weidenbach¹, C. Wiese¹, N. Woslum¹, J. Sutherland¹, C. Anderson², M. Larson³, P. Mazzer¹, T. Mullican¹, M. Catalano¹, E. Paryiskaya⁴, A. D. Kharazova⁴, A. Lyshev⁴, B. Martynov⁴, A. Ullitin⁵, Y. Bao⁶, A. Dolby⁷, X. Wu⁸, K. Ding⁸, J. L. Collins⁹, A. V. Kofman¹. ¹Dakota Wesleyan University, other schools.

28. The Use of Complex Models to Determine the Effects of Omega-3 Fatty Acids on Platelet-Mediated Clot Formation. *Kaitlynn N. Foss*¹, Luke J. Hurlay¹, Amber J. Veldman¹, Reheman Adili², Michael Holinstat², and Mark K. Larson¹. ¹Augustana University, Sioux Falls, SD ²University of Michigan, Ann Arbor, MI

31. The Role of Endocannabinoids during Generalization of Habituation between Non-Noiceptive and Noiceptive Pathways. *Alex Hanson*^{1,2,3}, and Brian Burrell^{1,3,4}. ¹University of South Dakota, Vermillion, SD ²Summer Program for Undergraduate Research and Addiction (SPURA) ³Center for Brain and Behavior Research, ⁴University of South Dakota Sanford School of Medicine

32. Systems thinking for complexity: Managing the Missouri National Recreational River. *Shaylyn Austin*¹, Ethan Jennings², Shelley Kosola³, Rebecca Krasky⁴, Aleisa LaBelle³, Geoffrey Gray-Lobe⁵, Kriston Lynn², Selena Olvera², Sebastian Ruiz⁶, Tyler Seidel², and Bethany Vazquez⁷. University of South Dakota ¹University of Michigan, ²University of South Dakota, ³Nebraska Indian Community College, ⁴Macalester College, ⁵Augustana University, ⁶Florida International University, ⁷University of Puerto Rico-Rio Piedras

41. Crystal Structure and Magnetism in Mn₂FeSb Heusler Compound. *Jace Waybright*¹, Yung Huh¹, and Parashu Kharel¹. ¹South Dakota State University

43. A Comparison Between the Perception of Teacher Candidates Preschooler Tablet Abilities and Their Actual Abilities. *Haoyu Lin*¹, Julia Torgersen¹, Cylie L. Hanson¹, Daniel J. Mourlam¹, Lisa A. Newland¹, and Gabrielle A. Strouse¹. ¹University of South Dakota

46. Cytotoxicity of Urban Dust and Diesel Exhaust Particulate in Murine Astrocyte Cells. *Tyler R. Fortuna*¹, Peyton C. Price¹, Kevin J. Lopez², Andrew J. Schwader¹ and Paula A. Mazzer¹. ¹Dakota Wesleyan University

EDUCATORS

6. Coumaric Acid from Citric Acid. *Darwin Daugaard*^{1,2}, William Bradley², and Eric Cochran². ¹Dell Rapids Public High, ²Iowa State University

44. HPV16-E5's Role in Mouse HPV Positive Tumor Model. *Julie A. Olson*¹, Colleen Hannum², Elizabeth Balstad², and William C. Spanos^{2,3}. ¹Mitchell Senior High SERF Fellow, Mitchell, SD, ²Sanford Research, Sioux Falls, SD, ³Division of Basic Biomedical Sciences, Sanford School of Medicine, University of South Dakota

GRADUATE STUDENTS/ POST-DOCS

1. Novel Host Materials for Bioactive Compounds. *Aliza Sigdel*¹, *Joshua Jacob vonWinckelmann-Belrose*¹, *Srinivas Janaswamy*¹. ¹Department of Dairy and Food Science, South Dakota State University

2. Addressing Multimapping Uncertainty in RNA Sequencing Alignment. *Adam McDermaid*^{1,2}. ¹Bioinformatics & Mathematical Biosciences Lab, Brookings, SD; ²South Dakota State University

3. Optimization of Glutathione Disulfide Liposomes for the Treatment of Cancer Metastasis. *Asim Najmi*¹, Shenggang Wang¹, Abdulaziz Alasmari¹, and Xiangming Guan¹. ¹Department of Pharmaceutical Sciences, College of Pharmacy and Allied Health Professions, South Dakota State University

4. Multifunctional Biodegradable Porous Microspheres to Act as Stem Cell Delivery Vehicles and Local Drug Delivery Platform for Bone Tissue Regeneration. *Eric Sandhurst*¹, and Hongli Sun¹. ¹University of South Dakota, Sioux Falls, SD

5. Co-crystallization of CL-20 and TATB. *Christopher Lomatayo*¹ and Lori Groven, PhD¹. ¹South Dakota School of Mines & Technology

7. Using System Dynamics to Estimate Erosion, Water Quantity and Quality Changes in Response to South Dakota Grassland Conversion. *Hector Menendez*¹, Melissa Wuellner¹, Roger Gates², Ben Turner³, and Barry Dunn¹. ¹South Dakota State University, ²University of Georgia, ³Texas A&M University-Kingsville

8. The Role of BVDV Virulence on Macrophage Inflammatory Function and Lymphocyte Apoptosis. *Karim Abdelsalam*^{1,2}, Gamal Elmowalid², Jacob Sobraske¹, Lyle Braun¹, and Christopher Chase¹. ¹South Dakota State University, ²Zagazig University, Egypt

9. Design, Synthesis, and Biological Screening of Novel Cucurbituril-Inspired Estrone Analogues Toward Treatment Of Pancreatic Cancer. *Khaled Alsedd*¹ and Fathi Halaweish¹. ¹Chemistry and Biochemistry Department, South Dakota State University

10. Long Acting Intraductal Injection for Breast Cancer. *Mibin Kuruvilla Joseph*¹ and Omathanu Perumal¹. ¹South Dakota State University

11. Energy absorption of friction stir welded 1050 aluminum sheets through wedge tearing. *M. Amiri*¹, *M. Kazeminezhad*², and A.H. Kokabi². ¹SDSM&T, ²Sharif University of Technology

13. Green approach: Synthesis of nutritive sweeteners from lactose. *Maryam Enteshari*¹. ¹Dairy and Food Science Department, South Dakota State University, Alfred Dairy Science Hall

14. Study of duckweed drying for use in animal feed. *Mustafa Alsowij*¹, Erin Cortus¹, Tom Moureau², Julie Walker³, Roger Foote⁴, Shouyun Cheng³, and Lin Wei¹. ¹Department of Agricultural & Biosystems Engineering, South Dakota State University, Brookings, SD 57007, USA, ²CESI engineering school, Rouen, Mont Saint Aignan, 76130, France, ³Department of Animal Science, South Dakota State University, Brookings, SD 57007, USA, ⁴Upper Big Sioux River Watershed Project