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CURRICULUM VITAE -- RICHARD A. ROBISON, PH.D.

CONTACT INFORMATION

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EDUCATION

B.S.	1978	Brigham Young University	Microbiology (minor - Chemistry)
M.S.	1980	Brigham Young University	Microbiology (minor - Biochemistry)
Ph.D.	1988	Brigham Young University	Microbiology (minor- Statistics/Comp. Science)

Special Technical Training:

1. Advanced training in anaerobic and capnophilic microbiology at Virginia Polytechnic Institute Anaerobe Laboratory: Blacksburg, VA, August, 1986, under the direction of Drs. Lillian Holdeman Moore and Ed Moore.
2. Training in hardware and software operation for the Microbial Identification System (MIS) -- An integrated gas chromatography/computer system for the identification of microorganisms based upon their cellular fatty acid composition; Newark, DE, April 1989.
3. Flow cell cytometry, theories and applications as well as hands-on training for the Coulter EPICS C SYSTEM, James A. Borree, Cytometry Applications Specialist, at BYU, January 6 - 10, 1992.
4. Automated DNA sequencing, Li-Cor System, Jeff Harford, at BYU, February 9-10, 1995.
5. Control of Biohazards, BioControl, Inc., Baltimore, Maryland, September 9-13, 2002.
6. Re-training on the operation of the MIDI system for the identification of microorganisms based upon their cellular fatty acid composition; Newark, DE, April 2004.

PROFESSIONAL ORGANIZATIONS

Member: American Society for Microbiology (ASM)
1993-1994 - Secretary of the Intermountain Branch of ASM
2007-2008 – Intermountain Branch Alternate Councilor to ASM

Member: American Association for Cancer Research
Member: AOAC International

PROFESSIONAL WORK EXPERIENCE

<u>Date</u>	<u>Organization</u>	<u>Title</u>
2014 - 2020	Brigham Young University Department of Microbiology and Molecular Biology	Department Chair
2012 – Present	Roseman University of Health Sciences, College of Dental Medicine, South Jordan, UT	Adjunct Professor
1998 - Present	Brigham Young University Biosafety Level-3 Laboratory	Director
2004 - Present	Brigham Young University Department of Microbiology and Molecular Biology	Professor
1997 - 2004	Brigham Young University Department of Microbiology	Associate Professor
1991 - 1997	Brigham Young University Department of Microbiology	Assistant Professor
1990 - 1991	Brigham Young University Department of Microbiology	Adjunct Professor
1982 - 1991	Clinical Research Associates Provo, UT	Associate Director-Biological Sciences
1980 - 1984	Microbiological Development and Control Inc. SLC, UT	Microbiologist
1979 - 1988	Brigham Young University Department of Microbiology	Instructor of both lecture and laboratory courses
1978 - 1980	Dr. M.M. Jensen (BYU)	Research assistant

TEACHING EXPERIENCE

I have taught more than 146 didactic courses over the past 30 years at BYU. These have ranged from freshman-level to graduate courses. BYU adopted a new Student Evaluations system (having an 8.0 maximum) fall semester of 2002, which was in place until 2015. During that time, I taught over 60 courses that were evaluated by students. I had a mean course evaluation greater than 7.0 and a mean instructor evaluation greater than 7.3. A new Student Evaluation system (having a 5.0 maximum) was initiated in 2015. I currently have a 4.66 mean Student Composite Rating. I have also received several teaching awards (see Awards and Recognition section below).

In addition, I am an adjunct Professor in the College of Dental Medicine at Roseman University of Health Sciences, South Jordan Campus. I have taught microbiology and immunology subject areas there since 2012. I now teach only pathogenic microbiology.

PEER-REVIEWED PUBLICATIONS

1. Marshall, M.S., R.A. Robison, and M.M. Jensen. 1981. Use of an Enzyme-Linked Immunosorbent Assay to Measure Antibody Responses in Turkeys Against *Pasteurella multocida*. Avian Diseases 25:964-971.
2. Robison, R.A., H.L. Bodily, D.F. Robinson, and R.P. Christensen. 1988. A Suspension Method to Determine Reuse Life of Chemical Disinfectants During Clinical Use. Applied and Environmental Microbiology 54:158-164.
3. Christensen, R.P., R.A. Robison, D.F. Robinson, B.J. Ploeger, and R.W. Leavitt. 1988. Guidelines for Complying with OSHA-Specified Asepsis Protocol. Dentistry Today 8:32-37.
4. Christensen, R.P., R.A. Robison, D.F. Robinson, B.J. Ploeger, and R.W. Leavitt. 1988. Compliance Guidelines for Asepsis Protocol II. Dentistry Today 9:24, 27-29.
5. Christensen, R.P., R.A. Robison, D.F. Robinson, B.J. Ploeger, R.W. Leavitt, and H.L. Bodily. 1989. Antimicrobial Activity of Environmental Surface Disinfectants in the Absence and Presence of Bioburden. Journal of the American Dental Association 119:493-505.
6. Christensen, R.P., R.A. Robison, D.F. Robinson, B.J. Ploeger, and R.W. Leavitt. 1991. Efficiency of 42 Brands of Face Masks and 2 Face Shields in Preventing Inhalation of Airborne Debris. General Dentistry 39:414-421.
7. Robison, R., K.S.K. Tung, N.D. Meeker, K. Livingstone, F.G. Monson, and C. Teuscher. 1994. A Murine Model of Spontaneous Aspermatogenesis: Linkage to H-2. The Journal of Reproductive Immunology 26:251-260.
8. Hall, H., Teuscher, C., Urie, P., Boden, B., and Robison. 1994. Induced Regression of Bovine Papillomas by Intralesional Immunotherapy Therapeutic Immunology 1:319-324.
9. Robison, R.A., R.J. Osguthorpe, S.J. Carroll, R.W. Leavitt, G.B. Schaalje, and J.M. Ascenzi. 1996. Culture Variability Associated with the EPA Tuberculocidal Activity Test Method Applied and Environmental Microbiology 62:2681-2686.
10. Bodily, J.M., D.J. Hoopes, B.L. Roeder, S.G. Gilbert, G.R. Pettit, C.L. Herald, D.N. Rollins, and R.A. Robison. 1999. The Inhibitory Effects of Bryostatins Administration on the Progression of Rabbit Papillomas. Cancer Letters 136:67-74.
11. Gregory, A.M., G.B. Schaalje, J.D. Smart, and R.A. Robison. 1999. The Mycobactericidal Efficacy of ortho-Phthalaldehyde and the Comparative Resistances of *M bovis*, *M terrae*, and *M chelonae* Infection Control and Hospital Epidemiology 20:1-7.
12. Rediske, A.M., B.L. Roeder, M.K. Brown, J.L. Nelson, R.L. Robison, D.O. Draper, G.B.

- Schaalje, R.A. Robison, and W.G. Pitt. 1999. Ultrasonic Enhancement of Antibiotic Action on *Escherichia coli* Biofilms: An *In Vivo* Model. Antimicrobial Agents and Chemotherapy 43:1211-1214.
13. Rediske, A.M., B.L. Roeder, J.L. Nelson, R.L. Robison, G.B. Schaalje, R.A. Robison, and W.G. Pitt. 2000. Pulsed Ultrasound Enhances the Killing of *Escherichia coli* Biofilms by Aminoglycoside Antibiotics In Vivo. Antimicrobial Agents and Chemotherapy 44:771-772.
 14. Huber, B.S., D.V. Allred, J.C. Carmen, D.D. Frame, D.G. Whiting, J.C. Cryan, T.R. Olsen, P.J. Jackson, K. Hill, M.T. Laker, and R.A. Robison. 2002. Random Amplified Polymorphic DNA and Amplified Fragment Length Polymorphism Analyses of *Pasteurella multocida* Isolates from Fatal Fowl Cholera Infections. Journal of Clinical Microbiology 40:2163-2168.
 15. Castillo, U.F., G.A. Strobel, E.J. Ford, W. M. Hess, H. Porter, J.B. Jensen, H. Albert, R. Robison, M.A.M. Condrón, D.B. Teplow, D. Stevens, and D Yaver. 2002. Munumbicins, wide-spectrum antibiotics produced by *Streptomyces* NRRL 30562, endophytic on *Kennedia nigriscans*. Microbiology 148:2675-2685.
 16. Castillo, U., J.K. Harper, G.A. Strobel, J. Sears, K. Alesi, E. Ford, J. Lin, M. Hunter, M. Maranta, H. Ge, D. Yaver, J.B. Jensen, H. Porter, R. Robison, D Millar, W. M. Hess, M. Condrón, and D. Teplow. 2003. Kakadumycins, novel antibiotics from *Streptomyces* sp. NRRL 30566, an endophyte of *Grevillea pteridifolia*. FEMS Microbiology Letters 224:183-190.
 17. Carmen, J.C., B.L. Roeder, J.L. Nelson, B.L. Beckstead, C.M. Runyan, G.B. Schaalje, R.A. Robison, and W.G. Pitt. 2004. Ultrasonically enhanced vancomycin activity against *Staphylococcus epidermidis* biofilms *in vivo*. Journal of Biomaterials Applications 18: 237-245.
 18. Carmen, J.C., J.L. Nelson, B.L. Beckstead, C.M. Runyan, R.A. Robison, G.B. Schaalje, and W.G. Pitt. 2004. Ultrasonic-enhanced gentamicin transport through colony biofilms of *Pseudomonas aeruginosa* and *Escherichia coli*. Journal of Infection and Chemotherapy 10: 193-199.
 19. Carmen, J.C., B.L. Roeder, J.L. Nelson, B.L. Beckstead, C.M. Runyan, R.A. Robison, G.B. Schaalje, and W.G. Pitt. 2005. The treatment of implanted biofilms with low-frequency ultrasound and gentamicin. American Journal of Infection Control 33(2): 78-82.
 20. M. Sasser, C. Kunitsky, G. Jackoway, J.W. Ezzell, J.D. Teska, B. Harper, S. Parker, D. Barden, H. Blair, J. Breezee, J. Carpenter, W.V. Cheek, M. Martino, B. Evans, S. Francesconi, E. Franko, W. Gardner, M. Glazier, K. Greth, T. Hart, M. Hodel, K. Holmes-Talbot, K.L. Hopkins, A. Iqbal, D. Johnson, P. Krader, A. Madonna, M. McDowell, M.L. McKee, M. Park, M. Pentella, J. Radosevic, R.A. Robison, B. Rotzoll, K. Scott, M. Smith, N. Syed, J. Tang, H. Trinh, L.I. Williams, and M. Wolcott. 2005. Identification of *Bacillus anthracis* from culture using gas chromatographic analysis of fatty acid methyl esters. Journal of AOAC International 88(1):178-181.
 21. Castillo, U.F., G.A. Strobel, K. Mullenberg, M.M. Condrón, D.B. Teplow, V. Folgiano, M. Gallo, R. Furracane, L. Mannina, S. Viel, M. Codde, R. Robison, H. Porter, and J. Jensen. 2006. Munumbicins E-4 and E-5: novel broad-spectrum antibiotics from *Streptomyces* NRRL 3052. FEMS Microbiology Letters 255(2):296-300.

22. Chandler, D.P., O. Alferov, B. Chernov, D.S. Daly, J. Golova, A. Perov, M. Protic, R. Robison, M. Schipma, A. White, and A. Willse. 2006. Diagnostic oligonucleotide microarray fingerprinting of *Bacillus* isolates. Journal of Clinical Microbiology 44(1): 244-250.
23. Runyun, C.H., J.C. Carmen, B.L. Beckstead, J.L. Nelson, R.A. Robison, and W.G. Pitt. 2006. Low-frequency ultrasound increases outer membrane permeability of *Pseudomonas aeruginosa*. Journal of General and Applied Microbiology 52(5):295-301.
24. U'Ren, J.M., J.M. Schupp, T. Pearson, H. Hornstra, C.L.C. Friedman, K.L. Smith, R.R.L. Daugherty, S.D. Rhoton, B. Leadem, S. Georgia, M. Cardon, L.Y. Huynh, D. DeShazer, S.P. Harvey, R. Robison, D. Gal, M.J. Mayo, D. Wagner, B.J. Currie, and P. Keim. 2007. Tandem repeat regions within the *Burkholderia pseudomallei* genome and their application for high resolution genotyping. BMC Microbiology 7(1):23.
25. Breakwell, D., R. Robison, C. Adams, K. Smith, and B. MacDonald. August 29, 2007. Atlas-Protocol Projects: Colony Morphology, a Visual Atlas. www.MicrobeLibrary.org.
26. Foster, J.T., R.T. Okinaka, R. Svensson, K. Shaw, B.K. De, R.A. Robison, W.S. Probert, L.J. Kenefic, W.D. Brown, and P. Keim. 2008. Real-time PCR assays of single-nucleotide polymorphisms defining the major *Brucella* clades. Journal of Clinical Microbiology 46(1):296-301.
27. Stewart, A., B. Satterfield, M. Cohen, K. O'Neill, and R. Robison. 2008. A quadruplex real-time PCR assay for the detection of *Yersinia pestis* and its plasmids. Journal of Medical Microbiology 57(3):324-331.
28. Murray, B.K., S. Ohmine, D.P. Tomer, K.J. Jensen, F.B. Johnson, J.J. Kirsi, R.A. Robison, and K.L. O'Neill. 2008. Virion disruption by ozone-mediated reactive oxygen species. Journal of Virological Methods 153:74-77.
29. Truong, T.V., A.N. Nackos, J.A. Murray, J.A. Kimball, J.E. Hawkes, D.J. Harvey, H.D. Tolley, R.A. Robison, C.H. Bartholomew, and M.L. Lee. 2009. Sample introduction in gas chromatography using a coiled wire filament. Journal of Chromatography A 1216:6852-6857.
30. Pearson, T., P. Giffard, S. Beckstrom-Sternberg, R. Auerbach, H. Hornstra, A. Tuanyok, E.P. Price, M.B. Glass, B. Leadem, J.S. Beckstrom-Sternberg, G. J. Allan, J.T. Foster, D.M. Wagner, R. T. Okinaka, S.H. Sim, O. Pearson, Z. Wu, J. Chang, R. Kaul, A.R. Hoffmaster, T.S. Bretin, R.A. Robison, M. Mayo, J.E. Gee, P. Tan, B.J. Currie, and P. Keim. 2009. Phylogeographic reconstruction of a bacterial species with high levels of lateral gene transfer. BMC Biology 7:78.
31. El-Etr, S.H., J.J. Margolis, D. Monack, R.A. Robison, M. Cohen, E. Moore, A. Rasley. 2009. Francisella tularensis type A strains cause the rapid encystment of *Acanthamoeba castellanii* and survive in amoebal cysts for three weeks post infection. Applied and Environmental Microbiology 75:7488-7500.
32. Mitchell, A.M., G.A. Strobel, E. Moore, R. Robison, and J. Sears. 2010. Volatile antimicrobials from *Muscodor crispans*, a novel endophytic fungus. Microbiology 156:270-277.
33. Satterfield, B.A., A.F. Stewart, C.S. Lew, D.O. Pickett, M.N. Cohen, E.A. Moore, P.F. Luedtke,

- K.L. O'Neill, and R.A. Robison. 2010. A quadruplexed real-time PCR assay for rapid detection and differentiation of the *Clostridium botulinum* toxin genes A, B, E and F. Journal of Medical Microbiology 59:55-64. Note: This paper was featured in the 'Highlights of Hot papers in Recent SGM Journals' section of *Microbiology Today*, February, 2010, p. 60.
34. Margolis, J.M., S. El-Etr, L.M. Joubert, E. Moore, R. Robison, A. Rasley, A.M. Spormann, and D.M. Monack. 2010. Contributions of *Francisella tularensis* subsp. *novicida* chitinases and Sec secretion system to biofilm formation on chitin. Applied and Environmental Microbiology 76:596-608. Note: The cover photo of this issue was from this article.
35. Truong, T.V., A.N. Nackos, J.R. Williams, D.N. VanDerwerken, J.A. Kimball, J.A. Murray, J.E. Hawkes, D.J. Harvey, H.D. Tolley, R.A. Robison, C.H. Bartholomew, and M.L. Lee. 2010. Differentiation of *Bacillus* endospore species from fatty acid methyl ester biomarkers. Analytical Methods 2:638-644. Note: The cover of this issue was a composite of photos taken from this article.
36. Dudleenamjil, E., C.Y. Lin, D. Dredge, B.K. Murray, R.A. Robison, and F.B. Johnson. 2010. Bovine parvovirus uses clathrin-mediated endocytosis for cell entry. Journal of General Virology 91:3032-3041.
37. Garrett, A.R., B.K. Murray, R.A. Robison, and K.L. O'Neill. 2010. Measuring antioxidant capacity using the ORAC and TOSC assays. Methods in Molecular Biology 594:251-262.
38. Gupta-Elera, G., A.R. Garrett, A. Martinez, R.A. Robison, and K.L. O'Neill. 2011. The antioxidant properties of the cherimoya (*Annona cherimola*) fruit. Food Research International 44(7):2205-2209.
39. Nackos, A.N., T.V. Truong, T.C. Pulsipher, J.A. Kimball, H.D. Tolley, R.A. Robison, C.H. Bartholomew, and M.L. Lee. 2011. One-step conversion of dipicolinic acid to its dimethyl ester using monomethyl sulfate salts for GC-MS detection of bacterial endospores. Analytical Methods 3:245-258.
40. Gupta-Elera, G., A.R. Garrett, R.A. Robison, and K.L. O'Neill. 2012. The role of oxidative stress in prostate cancer – a review. European Journal of Cancer Prevention 21(2):155-162.
41. Li, D., T.V. Truong, T.M. Bills, B.C. Holt, D.N. VanDerwerken, J.R. Williams, A. Acharya, R.A. Robison, H.D. Tolley, and M.L. Lee. 2012. GC/MS method for positive detection of *Bacillus anthracis* endospores. Analytical Chemistry 84:1637-1644.
42. Gupta-Elera, G., A. Garrett, A. Marinez, R. D. Kraus, R. Robison, and K. O'Neill. 2012. A Comparison of Antioxidant properties in Organic and Conventional Blueberries. Journal of Food Research 1(3):1-7.
43. Gunnell, M.K., C.D. Lovelace, B.A. Satterfield, E.A. Moore, K.L. O'Neill, and R.A. Robison. 2012. A multiplex real-time PCR assay for the detection and differentiation of *Francisella tularensis* subspecies. Journal of Medical Microbiology 61 (11):1525-1531.
44. March, J.K., M.N. Cohen, J.M. Lindsey, D.A. Millar, C-W Lowe, A.J. Bunnell, K.M. O'Neill, G.B. Schaalje, and R.A. Robison. 2012. The differential susceptibility of spores from virulent and

attenuated *Bacillus anthracis* strains to aldehyde- and hypochlorite-based disinfectants. MicrobiologyOpen 1-8, doi: 10.1002/mbo3.45.

45. Alegre, M.M., R.A. Robison, and K.L. O'Neill. 2012. Thymidine kinase 1 upregulation is an early event in breast tumor formation. Journal of Oncology 1-5, doi: 10.1155/2012/575647.
46. Alegre, M.M., R.A. Robison, and K.L. O'Neill. 2013. Thymidine kinase 1: a universal marker for cancer. Cancer and Clinical Oncology 2(1):159-167.
47. Li, D., A.D. Rands, S.C. Losee, B.C. Holt, J.R. Williams, S.A. Lammert, R.A. Robison, H.D. Tolley, and M.L. Lee. 2013. Automated thermochemolysis reactor for detection of *Bacillus anthracis* endospores by gas chromatography-mass spectrometry. Analytica Chimica Acta 775: 67-74.
48. Clifford, A.B., A.M. Elnaggar, R.A. Robison, and K. O'Neill. 2013. Investigating the role of macrophages in tumor formation using a MaFIA mouse model. Oncology Reports 30(2): 890-896.
49. Li, D., J.K. March, T.M. Bills, B.C. Holt, C.E. Wilson, W. Lowe, H.D. Tolley, M.L. Lee, and R.A. Robison. 2013. Gas chromatography-mass spectrometry method for rapid identification and differentiation of *Burkholderia pseudomallei*, *B. mallei*, and *B. thailandensis* from several members of the *B. cepacia* complex. Journal of Applied Microbiology 115:1159-1171.
50. Lowe, W., J.K. March, A.J. Bunnell, K.L. O'Neill, and R.A. Robison. 2013. PCR-based methodologies used to detect and differentiate the *Burkholderia pseudomallei* complex: *B. pseudomallei*, *B. mallei*, and *B. thailandensis*. Current Issues in Molecular Biology 16: 23-54.
51. Meyers, J., E. Ryndock, M.J. Conway, C. Meyers, and R. Robison. 2014. Susceptibility of high-risk human papillomavirus type 16 to clinical disinfectants. Journal of Antimicrobial Chemotherapy, 69: 1546-1550.
52. Garrett, A.R., E.G. Weagel, A.D. Marinez, M. Heaton, R.A. Robison, and K.L. O'Neill. 2014. A novel method for predicting antioxidant activity based on amino acid structure. Food Chemistry 158: 490-496.
53. Alegre, M.M., M.J. Weyant, D.T. Bennett, J.A. Yu, M.K. Ramsden, A.Elnaggar, R.A. Robison, and K.L. O'Neill. 2014. Serum detection of thymidine kinase 1 as a means of early detection of lung cancer. Anticancer Research 34: 2145-2152.
54. Xiaoa, M., Helsina, A.V., Lynch, P.M., El-Naggara, A., Alegrea, M.M., Robison, R.A., and O'Neill, K.L. 2014. DNA damage caused by inorganic particulate matter on Raji and HepG2 cell lines exposed to ultraviolet radiation. Mutation Research 771:6-14.
55. Bennallack, P.R., S.R. Burt, M.J. Heder, R.A. Robison, and J.S. Griffiths. 2014. Characterization of a novel plasmid-borne thiopeptide gene cluster in *Staphylococcus epidermidis* strain 115. Journal of Bacteriology 196: 4344-4350.
56. Castro-Nallar, E., Hasan, N.A., Cebula, T.A., Colwell, R.R., Robison, R.A., Johnson, W.E., and Crandall, K.A. 2015. Concordance and discordance of sequence survey methods for molecular epidemiology. PeerJ 3:e761 <https://doi.org/10.7717/peerj.761>.

57. Shrestha, G., Thompson, A., Robison, R., and St. Clair, L. 2015. *Letharia vulpine*, a vulpinic acid containing lichen, targets cell membrane and cell division processes in methicillin-resistant *Staphylococcus aureus*. Pharmaceutical Biology. DOI: 10.3109/13880209.2015.1038754.
58. Livingston, J.R., Peterson, J.J., Martinez, G.A., Peck, C.J., Garrett, A.R., Uhl, R.A., Thompson, B.H., Shrestha, G., Robison, R.A., and O'Neill, K.L. 2015. The antioxidant and DNA repair activities of resveratrol, Piceatannol, and pterostilbene. Journal of Food Research. 4(5): 9-18.
59. March, J.K., Pratt, M.D., Lowe, C-W., Cohen, M.N., Satterfield, B.A., Schaalje, G.B., O'Neill, K.L., and Robison, R.A. 2015. The differential effects of heat-shocking on the viability of spores from *Bacillus anthracis*, *Bacillus subtilis*, and *Clostridium sporogenes* after treatment with peracetic acid- and glutaraldehyde-based disinfectants. MicrobiologyOpen 1-10, DOI: 10.1002/mbo3.277.
60. Weigel, E., Smith, C., Liu, P.G., Robison, R., and O'Neill, K. 2015. Macrophage polarization and its role in cancer. Journal of Clinical and Cellular Immunology. 6(4): 1-8.
61. Gunnell, M.K., Adams, B.J., and Robison, R.A. 2015. The genetic diversity and evolution of *Francisella tularensis* with comments on detection by PCR. Current Issues in Molecular Biology. 18: 79-92.
62. Ryndock, E., Robison, R., and Meyers, C. 2016. Susceptibility of HPV16 and 18 to high level disinfectants indicated for semi-critical ultrasound probes. Journal of Medical Virology. 88(6):1076-1080.
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64. Dagher, D., Ungar, K., Robison, R., and Dagher, F. 2017. The wide spectrum high biocidal potency of Bioxy formulation when dissolved in water at different concentrations. PlosOne. 12(2): 1-18. <https://doi.org/10.1371/journal.pone.0172224>.
65. Fudge, J. Dunn, M., Pike, Robison, R., and Steele, F. 2016. The isolation and identification of *Pantoea dispersa* strain JFS as a non-pathogenic surrogate for *Salmonella* Typhimurium phage type 42 in flour. International Journal of Food Microbiology. 219: 1-6.
66. Gunnell, M.K., Robison, R.A., and Adams, B.J. 2016. Natural selection in virulence genes of *Francisella tularensis*. Journal of Molecular Evolution. 82(6): 264-278.
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68. Lowe, C-W, Satterfield, B.A., Nelson, D.B., Thiriot, J.D., Heder, M.J., March, J.K., Drake, D.S., Lew, C.S., Bunnell, A.J., Moore, E.S., O'Neill, K.L., and Robison, R.A. 2016. A quadruplex real-time PCR assay for the rapid detection and differentiation of the most relevant members of the *B. pseudomallei* complex: *B. mallei*, *B. pseudomallei*, and *B. thailandensis*. PLoS ONE. 11(10):

e0164006. <https://doi.org/10.1371/journal.pone.0164006>.

69. Bewley, K.D., Bennallack, P.R., Burlingame, M.A., Robison, R.A., Griffiths, J.S., and Miller, S.M. 2016. Capture of micrococcin biosynthetic intermediates reveals C-terminal processing as an obligatory step for in vivo maturation. PNAS. 113(44): 12450-12455.
70. Alizadeh, M., Wood, R.L., Buchanan, C.M., Bledsoe, C.G., Wood, M.E., McClellan, D.S., Blanco, R., Ravsten, T.V., Hussein, G.A., Hickey, C.L., Robison, R.A., and Pitt, W.G. 2017. Rapid separation of bacteria from blood – chemical aspects. Colloids and Surfaces B: Biointerfaces. 154: 365-372.
71. Townsend, M.H., Anderson, M.D., Weigel, E.G., Velazquez, E.J., Weber, K.S., Robison, R.A., and O’Neill, K.L. 2017. Non-small-cell lung cancer cell lines A549 and NCI-H460 express hypoxanthine guanine phosphoribosyltransferase on the plasma membrane. OncoTargets and Therapy. 10: 1921-1932.
72. Buchanan, C.M., Wood, R.L., Hoj, T.R., Alizadeh, M., Bledsoe, C.G., Wood, M.E., McClellan, D.S., Blanco, R., Hickey, C.L., Ravsten, T.V., Hussein, G.A., Robison, R.A., and Pitt, W.G. 2017. Rapid separation of very low concentrations of bacteria from blood. Journal of Microbiological Methods. 139: 48-53.
73. Townsend, M.H., Felsted, A.M., Piccolo, S.R., Robison, R.A., and O’Neill, K.L. 2017. Metastatic colon adenocarcinoma has a significantly elevated expression of IL-10 compared to primary colon adenocarcinoma tumors. Cancer Biology & Therapy. <http://dx.doi.org/10.1080/15384047.2017.1360453>.
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97. Meena, G.G., Hanson, R.L., Wood, R.L., Brown, O.T., Stott, M.A., Robison, R.A., Pitt, W.G., Hawkins, A.R., and Schmidt, H. 2020. 3X multiplexed detection of antibiotic resistant plasmids with single molecule sensitivity. Lab on a Chip. 20, 3763-3771. <https://doi.org/10.1039/D0LC00640H>.
98. Player, J.K., Despain, J.T., and Robison, R.A. 2020. Correlations between available primary amines, endospore coat thickness, and alkaline glutaraldehyde sensitivity for spores of select *Bacillus* species. MicrobiologyOpen. 9(11):e1117. <https://doi.org/10.1002/mbo3.1117>.
99. Meyers, C., Robison, R., Milici, J., Alam, S., Quillen, D., Goldenberg, D., and Kass, R. 2020. Rebuttal to overinterpretation of the antiviral results for human coronavirus 229E relative to severe acute respiratory syndrome coronavirus-2 by Rowpar Pharmaceuticals. Journal of Medical Virology. 93(4):1903-1904. <https://doi.org/10.1002/jmv.26762>.
100. Ogilvie, B.H., Solis-Leal, A., Lopez, J.B., Poole, B.D., Robison, R.A., and Berges, B.K. 2021. Alcohol-free hand sanitizer and other quaternary ammonium disinfectants quickly and effectively inactivate SARS-CoV-2. The Journal of Hospital Infection. 108, 142-145. <https://doi.org/10.1016/j.jhin.2020.11.023>.

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102. Guerrero-Arguero, I., Tellez-Freitas, C., Weber, K.S., Berges, B.K., Robison, R.A, and Pickett, B.E. 2021. Alphaviruses: Host pathogenesis, immune response, and vaccine & treatment updates. Journal of General Virology. 102 (8). <https://doi.org/10.1099/jgv.0.001644>.
103. Hoj, T.R., McNeely, B., Webber, K., Welling, E., Pitt, W.G., Ford, L.C., and Robison, R.A. 2021. A pentaplex real-time assay for rapid identification of major beta-lactamase genes KPC, NDM, CTX, and OXA-48 directly from bacteria in blood. Journal of Medical Microbiology. 70 (12). <https://doi.org/10.1099/jmm.0.001465>.
104. Newey, C., Olausson, A.T., Applegate, A., Reid, A.A., Robison, R.A., and Grose, J.H. 2022. Presence and Stability of SARS-CoV-2 on Environmental Currency and Money Cards Reveals a Lack of Live Virus in a Small Scale Study In Utah. Plos-Pathogens.

BOOKS

1. Cole, G., and R.A. Robison, Test Methodology for the Evaluation of Germicides, pp. 1-16, in Handbook of Disinfection, J. M. Ascenzi, Ed., Marcel Dekker Inc., New York, 1995.
2. Jensen, M.M., D.N. Wright, and R.A. Robison, Introduction to Microbiology for the Health Sciences, Fourth Ed., Prentice Hall, New Jersey, 1996.
3. Garrett, A., B.K. Murray, R.A. Robison, and K.L. O'Neill. Chapter 17, Measuring antioxidant capacity using the ORAC and TOSC assays, pp. 251-262, in Advanced Protocols in Oxidative Stress II, D. Armstrong, Ed., Methods in Molecular Biology, vol. 594, Humana Press, New York, 2010.
4. Garrett, A.R., G. Gupta-Elera, M.A. Keller, R.A. Robison, and K.L. O'Neill. Chapter 3, Bioactive foods in aging: the role in cancer prevention and treatment, pp. 33-42, in Bioactive Food as Dietary Interventions for the Aging Population, R.R. Watson and V.R. Preedy, Ed., Academic Press, Elsevier Inc., ISBN: 978-0-12-397155-5, 2013.
5. Hamilton, C., Aidukaitis, L., Lui, P., Robison, R., and O'Neill, K.L. Dietary Antioxidants in Prostate Cancer, pp. 183-191, in Cancer: Oxidative Stress and Dietary Antioxidants, Elsevier Inc., 2014.
6. Memmott, T., Weigel, E., Hamilton, C., Robison, R.A., and O'Neill, K.L. Oxidative Stress Imbalance in the Development of Prostate Cancer, pp. 233-256, in Free Radicals: The Role of Antioxidants and Pro-Oxidants in Cancer Development, Nova Publications, 2014.

OTHER PUBLICATIONS

1. R.A. Robison, and M.M. Jensen: *Corynebacterium Parvum-Mediated Immunopotiation in Poultry*. Masters Thesis, Department of Microbiology, BYU. 1980.
2. R.A. Robison, D.L. Robertson, D. Barnard, B.F. Johnson, and R.W. Leavitt. *Molecular Cloning, Expression, and Partial Sequencing of the Right 45% of the Aleutian Disease Virus Genome*. Doctoral Dissertation, Department of Microbiology, BYU. 1988.
3. R.A. Robison, Course Manual for General Microbiology, Microbiology 221, Department of Independent Study, Division of Continuing Education, BYU. 1996.
4. R.A. Robison, General Microbiology Course, Microbiology 221, Department of Independent Study, Division of Continuing Education, BYU. 2013.
5. R.A. Robison, General Microbiology Course, Microbiology 221, Department of Independent Study, Division of Continuing Education, BYU. 2018.

INVITED SEMINARS AND WORKSHOPS

1. January 26, 2001. Food Science and Nutrition Department Seminar, BYU. *Use of AFLP to Examine the Genomic Differences of Bacterial Pathogens*.
2. March 21, 2001. DNA Sequencing Center Seminar, BYU. *Genetic Relationships within Bacterial Pathogens*.
3. April 20, 2001. President's Retreat, BYU. *Faculty's Response to the Advisement Project Findings*.
4. October 19, 2001. Pharmaceutical subcommittee of the Church Missionary Health Committee, Church Offices, SLC, UT, *Biological Agents with Bio-weapon Potential*.
5. March 15, 2002. DNA Sequencing Center Seminar, BYU. *Genomic differences within Selected Frank Bacterial Pathogens*.
6. July 8, 2003. DNA Sequencing Center Seminar, BYU. *Genomic differences within Certain Bacterial Pathogens*.
7. September 3-4, 2003. Biothreat and the Biology of Burkholderia. Invited participant, sponsored by the Center for Homeland Security, Los Alamos National Laboratory, Santa Fe, New Mexico.
8. October 8, 2003. BYU Alumni Association Executive Board Meeting, Aspen Grove. *Mycobacterium ulcerans Research at BYU*.
9. April 29, 2004. Department of Microbiology and Immunology, Penn State University College of Medicine, Hershey, PA. *Biology and Genomics of the Pathogenic Burkholderia*.
10. May 21, 2004. Regional Centers of Excellence NIH grant planning meeting (Region VIII), Colorado State University, Fort Collins, CO. *Burkholderia Research at BYU*.

11. August 27, 2004. *Habits of the Mind*, Freshman Orientation Lecture, Brigham Young University.
12. May 11, 2005. Emerging Infectious Diseases and Biodefense Seminar Series, University of Utah, Salt Lake City, UT. *Pathogenic Burkholderia*.
13. January 14, 2006. BYU Women Alumni Association, BYU, *Household Microbiology*.
14. April 22, 2006. The Utah Pharmacists Association 114th Annual Convention, St. George, UT, *Bio-Terrorism: Agents and Consequences*.
15. August 23, 2007. Utah State University Center for Biotechnology Seminar, *Burkholderia pseudomallei: Nature's Perfect Pathogen*.
16. March 10, 2010. Penn State School of Medicine, Hershey, PA. Cell and Molecular Biology Department Seminar, *Characterizing Select Bacterial Pathogens*.
17. May 7, 2011. American Society of Clinical Laboratory Scientists – Utah, Spring Seminar, Salt Lake City, UT. *Characterization of Bacterial Pathogens by Real Time PCR*.
18. July 27, 2011. Burkholderia Workshop hosted by Northern Arizona University and the US Department of Homeland Security, Flagstaff, AZ. *Investigation of Potential Biomarkers of Burkholderia species by Thermochemolysis and GC-MS*.
19. July 31, 2013. Microbiology and Molecular Biology Department Faculty Research Lunch, BYU, Provo, UT, *The Susceptibility of High-Risk Human Papillomavirus Type 16 to Clinical Disinfectants*.
20. June 29, 2015. APIC 42ND ANNUAL CONFERENCE, Nashville, TN. Exhibitor Satellite Symposium. *How to Minimize Transmission Risks with Medical Devices: Lessons from the Recent CRE Outbreaks and New research on HLD Efficacy and Human Papilloma Virus (HPV)*.
21. September 17, 2015. Statistics Department Seminar, BYU, Provo, UT. *Effects of Microbial Species and Active Ingredients on Disinfectant Efficacy Testing*.
22. February 19, 2016. Chemistry Department Seminar, Colorado School of Mines, Golden, CO. *Will This Chemical Kill That? Problems and Surprises in Disinfection*.
23. October 13, 2018. Utah Air National Guard 151st Medical Unit. Salt Lake City, UT. *Characterizing Select Bacterial Pathogens*.
24. November 7, 2018. Department of Microbiology and Immunology Seminar, Louisiana State University Health Sciences Center, Shreveport, Louisiana. *Carbapenem-resistant Enterobacteriaceae: Update and Progress Towards Better Detection and Treatment*.

PATENTS

1. A QUADRAPLEXED REAL-TIME PCR ASSAY FOR RAPID DETECTION AND DIFFERENTIATION OF THE CLOSTRIDIUM BOTULINUM TOXIN GENES A, B, E, AND

F. U.S. Patent No.: 8,790,899. Date of Patent: July 29, 2014. Inventors: Richard A. Robison, David O Pickett, and Ben Satterfield.

2. TEMPERATURE SENSITIVE MULTIVALENT *BORDETELLA AVIUM* VACCINES. Patent No.: US 10,071,149 B2. Date of Patent: Sep. 11, 2018. Inventors: Marcus M. Jensen and Richard A. Robison.

RESEARCH PROPOSALS FUNDED

1. Title: RAPD Typing of *P. multocida* Isolates.
Date: August, 1997 - May, 1998
Sponsor: Moroni Feed Corporation.
Amount: \$20,000.00
2. Title: Genetic Analysis of Selected Human and Animal Pathogens.
Date: May, 1998 - December, 1999
Sponsor: Department of Energy
Amount: \$50,000.00
3. Title: Genetic Studies of *P. multocida*.
Date: June, 1998 - May, 1999
Sponsor: Moroni Feed Corporation
Amount: \$20,000.00
4. Title: Analyses of Avirulent Temperature-Sensitive Mutants of *P. multocida*.
Date: December, 1998
Sponsor: Schering-Plough Corporation
Amount: \$20,000.00
5. Title: Development of Prostratin as a Chemotherapeutic Agent for Papillomavirus Infections.
Date: November, 1998 - September, 1999
Sponsor: Technology Transfer and Creative Works Development Fund, Brigham Young University
Amount: \$25,000.00
6. Title: Genetic Studies of *P. multocida*.
Date: May, 1999 - April, 2000
Sponsor: Utah Turkey Marketing Board
Amount: \$20,000.00
7. Title: Establishment of an Archive for CDC Select Agents and their Genomes.
Date: January, 2000 - December, 2003
Sponsor: Department of Energy
Amount: \$525,000.00
8. Title: Anti-Tumor and Anti-Viral Mechanisms of Prostratin.
Date: April, 2000 - March, 2001

- Sponsor: Technology Transfer and Creative Works Development Fund, Brigham Young University
Amount: \$20,000.00
9. Title: Genetic Studies of *P. multocida*.
Date: May, 2000 - April, 2001
Sponsor: Utah Turkey Marketing Board
Amount: \$20,000.00
10. Title: Specialized Nucleic Acids and Proteins in Pathogen Co-cultures.
Date: August, 2000 - December, 2002
Sponsor: Los Alamos National Laboratory
Amount: \$175,000.00
11. Title: Genetic Studies of *P. multocida*.
Date: August, 2001 - July, 2002
Sponsor: Utah Turkey Marketing Board
Amount: \$20,000.00
12. Title: Pathogenesis of *Mycobacterium ulcerans*.
Date: January 1, 2002 - December 31, 2002
Sponsor: Environments for Mentoring Grants, Vice President's Office, BYU
Amount: \$20,000.00
13. Title: Pathogenesis and genetic studies of *Mycobacterium ulcerans*.
Date: January 1, 2003 - December 31, 2003
Sponsor: Environments for Mentoring Grants, Vice President's Office, BYU
Amount: \$17,000.00
14. Title: Development of a Handheld Detector for Biological and Chemical Agents Defense.
Co-PIs: Richard Robison and Calvin Bartholomew
Date: May, 2003 - December, 2005
Sponsor: Defense Threat Reduction Agency (DTRA)
Amount: \$4,200,000.00 (to Palmar Technologies)
15. Title: *In Vitro* Pathogenesis Models for Buruli Ulcer.
Date: January 1, 2004 - December 31, 2004
Sponsor: Environments for Mentoring Grants, Vice President's Office, BYU
Amount: \$17,000.00
16. Title: Pathogenesis studies on *Mycobacterium ulcerans*.
Date: January 1, 2005 - December 31, 2005
Sponsor: Environments for Mentoring Grants, Vice President's Office, BYU
Amount: \$20,000.00
17. Title: Development of an Archive for CDC Select Agents and their Genomes.
Date: January, 2004 - December, 2004
Sponsor: Department of Homeland Security

- Amount: \$125,000.00
18. Title: Antimicrobial Properties of PeraDox, a Novel Quick-acting Sporicide.
Date: June, 2005 - December, 2008
Sponsor: Solutions BioMed, Inc.
Amount: \$40,000.00
 19. Title: Maintenance of an Archive for CDC Select Agents and their Genomes.
Date: October, 2005 - September, 2006
Sponsor: NBFAC, Department of Homeland Security
Amount: \$160,000.00
 20. Title: Maintenance of an Archive for CDC Select Agents and their Genomes.
Date: October, 2006 - September, 2007
Sponsor: NBACC, Department of Homeland Security
Amount: \$184,000.00
 21. Title: Efficacy of Primacide in Reducing Bacterial Contamination in Chicken Processing.
Date: April, 2006 - September, 2007
Sponsor: E.A.U Technologies
Amount: \$20,000.00
 22. Title: Use of a Quadraplexed Real-Time PCR Assay to Interrogate Soil Extracts for Clostridium botulinum toxin Types A, B, E, and F.
Date: August, 2006 - February, 2007
Sponsor: Dugway Proving Grounds
Amount: \$10,000.00
 23. Title: Development of Real-Time Polymerase Chain Reaction (RT-PCR) Assays for the Specific Detection and Characterization of Select Bacterial Pathogens
Date: January 1, 2007 - December 31, 2007
Sponsor: Environments for Mentoring Grants, BYU
Amount: \$20,000.00
 24. Title: Maintenance of an Archive for CDC Select Agents and their Genomes.
Date: July, 2007 - March, 2008
Sponsor: NBACC, Department of Homeland Security
Amount: \$216,000.00
 25. Title: Development of Real-Time Polymerase Chain Reaction (RT-PCR) Assays for the Specific Detection and Characterization of Select Bacterial Pathogens - Renewal
Date: January 1, 2008 - December 31, 2008
Sponsor: Environments for Mentoring Grants, BYU
Amount: \$20,000.00
 26. Title: Curated Archive of Viable Select Bacterial Agents and Extracted Nucleic Acids for Bioforensic Casework.

- Date: March, 2008 - March, 2009
Sponsor: Battelle National Biodefense Institute (BNBI)
Amount: \$232,000.00
27. Title: Curated Archive of Viable Select Bacterial Agents and Extracted Nucleic Acids for Bioforensic Casework.
Date: April, 2009 - March, 2010
Sponsor: Battelle National Biodefense Institute (BNBI)
Amount: \$269,000.00
28. Title: DNA Preparation from Characterized Strains of Biothreat Agents *Burkholderia mallei* and *Burkholderia pseudomallei*.
Date: July, 2009 - July, 2010
Sponsor: Department of Homeland Security
Amount: \$24,900.00
29. Title: Development of Real-Time Polymerase Chain Reaction (RT-PCR) Assays for the Specific Detection and Characterization of Select Bacterial Pathogens - Renewal
Date: January 1, 2009 - December 31, 2009
Sponsor: Environments for Mentoring Grants, BYU
Amount: \$20,000.00
30. Title: Development of Real-Time Polymerase Chain Reaction (RT-PCR) Assays for the Specific Detection and Characterization of Select Bacterial Pathogens - Renewal
Date: January 1, 2010 - December 31, 2010
Sponsor: Environments for Mentoring Grants, BYU
Amount: \$20,000.00
31. Title: Curated Archive of Viable Select Bacterial Agents and Extracted Nucleic Acids for Bioforensic Casework.
Date: April, 2010 - May, 2011
Sponsor: Battelle National Biodefense Institute (BNBI)
Amount: \$312,000.00
32. Title: Differentiation of Bacterial Biothreat Agents Using Thermochemolysis Methylation and Gas Chromatography-Mass Spectrometry. Contract No. HSHQDC-10-C-00136.
Date: September 9, 2010 – September 14, 2012
Sponsor: Department of Homeland Security
Amount: \$686,560.00
33. Title: Development of Real-Time Polymerase Chain Reaction (RT-PCR) Assays for the Specific Detection and Characterization of Select Bacterial Pathogens - Renewal
Date: January 1, 2011 - December 31, 2011
Sponsor: Environments for Mentoring Grants, BYU
Amount: \$20,000.00

34. Title: Curated Archive of Viable Select Bacterial Agents and Extracted Nucleic Acids for Bioforensic Casework.
Date: June, 2011 - December, 2012
Sponsor: Battelle National Biodefense Institute (BNBI)
Amount: \$312,000.00
35. Title: Expanded Studies on *Staphylococcus epidermidis* 115, a Poultry Isolate which Produces a Novel Potent Bacteriocin.
Date: August, 2011 - July, 2012
Sponsor: College of Life Sciences - Vaccine Royalties Fund
Amount: \$25,000.00
36. Title: Expanded Studies on a Novel Potent Bacteriocin Produced by *Staphylococcus epidermidis* 115
Date: January 1, 2012 - December 31, 2012
Sponsor: Environments for Mentoring Grants, BYU
Amount: \$20,000.00
37. Title: Curated Archive of Viable Select Bacterial Agents and Extracted Nucleic Acids for Bioforensic Casework.
Date: January 1, 2013 – October 31, 2013
Sponsor: Battelle National Biodefense Institute (BNBI)
Amount: \$189,100.00
38. Title: Development of Real-Time Polymerase Chain Reaction (q-PCR) Assays for the Detection and Identification of Select Human Pathogens
Date: January 1, 2014 - December 31, 2014
Sponsor: Mentoring Environment Grants, BYU
Amount: \$20,000.00
39. Title: Steriplex Efficacy Studies.
Date: June, 2005 - December, 2015
Sponsor: Solutions BioMed, Inc.
Amount: \$106,864.00
40. Title: Biochemical and Genetic Characterization of the Antimicrobial Action of *Staphylococcus epidermidis* 115: an Avian-derived Bacterial Isolate.
Date: June, 2014 - December, 2015
Sponsor: College of Life Sciences - Vaccine Royalties Fund
Amount: \$25,000.00
41. Title: The Antimicrobial Properties of a New Peracetic Acid Powder
Date: July 21, 2014 - July 20, 2015
Sponsor: Reay Englund Law, Inc.
Amount: \$33,000.00
42. Title: Development of Real-Time Polymerase Chain Reaction (q-PCR) Assays for the Detection and Identification of Human Tick-borne Pathogens

- Date: January 1, 2015 - December 31, 2015
Sponsor: Mentoring Environment Grants, BYU
Amount: \$20,000.00
43. Title: Multiplexed, Non-Amplified, Nucleic Acid-Based Identification of Multidrug Resistant Pathogens Using an Integrated Optofluidic Platform
Date: March 1, 2015 – February 28, 2021
Sponsor: National Institute of Allergy and Infectious Diseases, Grant #: 1R01AI116989-01
Amount: \$5,426,638.00
44. Title: Microorganism Survivability in High-velocity Impacts
Date: June 15, 2015 – June 14, 2018
Sponsor: National Aeronautics and Space Administration, Grant #: NNX15AM89G, Co-PI
Amount: \$358,141.00
45. Title: Efficacy Studies of Novel Disinfectants
Date: January, 2016 - December, 2020
Sponsor: Solutions BioMed, Inc.
Amount: \$72,000.00
46. Title: Development of Real-Time Polymerase Chain Reaction (q-PCR) Assays for the Detection and Identification of Drug-resistance Genes in Carbapenem-resistant *Enterobacteriaceae* (CRE)
Date: January 1, 2017 - December 31, 2018
Sponsor: Mentoring Environment Grants, BYU
Amount: \$20,000.00
47. Title: Development of an At-home Colorimetric Assay for SARS-CoV-2 in Saliva
Date: May 19, 2020 - August 31, 2020
Sponsor: RADx Program of the National Institutes of Health through the Center for Advancing Point of Care Technologies (CAPCat) at University of Massachusetts Medical School: Prime Award Number: 87-0217280.
Amount: \$268,297.00
48. Title: The Antimicrobial Effects of Essential Oil Mixtures
Date: February 8, 2019 - July 31, 2021
Sponsor: Young Living Essential Oils
Amount: \$48,750.00
49. Title: Microbial Pathogens Involved in Tick-borne Diseases
Date: January 1, 2020 - December 31, 2022
Sponsor: Bruce Lindorf Memorial Foundation
Amount: \$174,660.00
50. Title: Evaluation of Possible Therapeutic Compounds Active Against SARS-CoV-2
Date: March 22, 2020 - September 18, 2020
Sponsor: Recursion Pharmaceuticals
Amount: \$79,301.00

51. Title: SARS-CoV-2 VOC Detection
Date: September 26, 2020 - December 31, 2020
Sponsor: Exhalent Diagnostics
Amount: \$15,000.00
52. Title: The Inactivation Kinetics of a Novel Disinfectant Formula Used in ZEHN-X Wipes on SARS-CoV-2.
Date: December 1, 2020 - August 31, 2021
Sponsor: ZEHN-X
Amount: \$20,000.00
53. Title: SARS-CoV-2 Nasal Pharyngeal and Oral Pharyngeal Wash (SNOW) Trial
Date: November 3, 2021 – September 30, 2022
Sponsor: Pennsylvania State University
Amount: \$60,000.00
54. Title: Validation of a pentaplex real-time PCR assay for rapid identification of major beta-lactamase genes.
Date: September, 2021 – September, 2023
Sponsor: College Technology Transfer Grant
Amount: \$20,000.00

GRADUATE STUDENTS MENTORED (CHAIR)

1. Heather Ann Hall, MS. August, 1994. Induced Regression of Bovine Papillomas by Intralesional Immunotherapy.
2. Sharon G. Gilbert, MS. August, 1996. The Effects of Bryostatin 1 on Experimentally Induced Rabbit Papillomas.
3. Alyssa McLaughlin Brown, MS. August, 1997. Flow Cytometric Analysis of the Effect of *Propionibacterium acnes* Administration on the Phagocytic Ability of Peripheral Blood Phagocytes.
4. Andrea Marie Pratt Rediske, MS. December, 1998. Ultrasonic Enhancement of Antibiotic Action on *Escherichia coli* Biofilms: An *In Vivo* Model.
5. William Brett Cherry, MS. December, 1999. The Ability of Prostratin to Inhibit Experimentally Induced Papillomas in New Zealand White Rabbits.
6. Weston Hymas, MS. January, 2000. The Genetic Response of *Escherichia coli* to Low Frequency, Low Intensity Ultrasound.
7. Jason Matthew Bodily, MS. August, 2000. The Effect of PKC Activation on Differentiation and Virus Replication in HPV 31-Infected Organotypic Cultures.
8. Heather Ann Hall Albert, Ph.D. March, 2001. Genomic Analysis of *Mycobacterium* Species and Clinical *Mycobacterium tuberculosis* Isolates from Utah.
9. John Cherrington Carmen, MS. August, 2001. An Investigation of the Mechanism of the Action of Ultrasound and Antibiotics on *Escherichia Coli*, *Pseudomonas aeruginosa*, and *Staphylococcus epidermidis*.
10. Joshua G. Gigger, MS. November, 2001. Molecular Diversity Present in Isolates of *Yersinia pestis* as Determined by Amplified Fragment Length Polymorphism.
11. Douglas Huber, MS. November 2001. Analysis of *Burkholderia* Isolates Using Amplified Fragment Length Polymorphism.

12. Camilla Hall Millar, MS. July, 2003. Development of an *In Vitro* Model for *Mycobacterium ulcerans* Infection.
13. David Owen Pickett, MS. June, 2005. Real Time Polymerase Chain Reaction (RTPCR) Quadraplexed for Rapid Detection of *Clostridium botulinum* Toxin Types A, B, E, and F.
14. Laura L. Dickey, MS. April, 2007. An Infection Model for Examining the Effects of Gender and Diabetic State on Proinflammatory Cytokine Secretion by Phagocytic Cells in Response to Infection with *Burkholderia pseudomallei*.
15. Virgil McIvor McCarthy, MS. August, 2007. The Stability of Virulence Plasmid Genes in *Bacillus anthracis*.
16. Michael David Pratt, MS. August, 2007. Differential Response of Various Spore Species to Sporicidal Disinfectants.
17. Emily Ann Moore, MS. July, 2010. Interactions of *Burkholderia pseudomallei* and *Acanthamoeba castellanii* and Their Effects on Virulence in Human Monocytes.
18. Annette Julie Bunnell, MS. November, 2010. Effects of Diabetic State and Gender on Pro-Inflammatory Cytokine Secretion by Human Macrophages Infected with *Burkholderia pseudomallei*.
19. Chinn-woan Lowe, MS. October, 2013. A Quadruplex Real-Time PCR Assay for the Rapid Detection and Differentiation of the *Burkholderia pseudomallei* Complex: *B. mallei*, *B. pseudomallei*, and *B. thailandensis*.
20. Mark K. Gunnell, Ph.D. November, 2015. The Detection and Molecular Evolution of *Francisella tularensis* Subspecies.
21. Justen Thalmus Despain, MS. July, 2016. The Activity of Alkaline Glutaraldehyde Against Bacterial Endospores and Select Non-Enveloped Viruses.
22. Philip Ross Bennallack, Ph.D. November, 2016. Genetic and Biochemical Analysis of the Micrococcin Biosynthetic Pathway.
23. Galen Edward Card, MS. July, 2018. The Diversity Found Among Carbapenem-Resistant Bacteria.
24. Hyrum Smith Shumway, MS. July, 2018. The Ability of Novel Phage to Infect Virulent *Bacillus anthracis* Isolates.
25. Olivia Tateoka Brown, MS. July, 2018. Methods for Detection of and Therapy for Carbapenem-Resistant *Enterobacteriaceae*.
26. Joseph D. Thiriot, MS. November, 2018. *Galleria Mellonella* as an Alternate Infection Model for *Burkholderia* Species and a Comparison of Suspension and Surface Test Methods for Evaluating Sporicidal Efficacy.
27. Shreena Himanshu Mody, MS. December, 2018. The Antimicrobial Properties of Honey and Its Effect on Pathogenic Bacteria.
28. Ann-Aubrey Kaiwilani Reid, MS. December, 2019. Susceptibility of *Borrelia burgdorferi* Morphological Forms to Chemical Antimicrobials.
29. Israel Guerrero-Arguero, Ph.D. April, 2020. A Comparison of Chikungunya Virus Infection, Dissemination, and Cytokine Induction in Human and Murine Macrophages and Characterization of RAG 2^{-/-}, γ ^{-/-} Mice as an Animal Model of Neurotropic Chikungunya Virus Replication.

AWARDS AND RECOGNITIONS

1. Excellence in Teaching Award, BYU Student Alumni Association, 1992.
2. Alcuin Fellowship, BYU Department of Honors and General Education, 1996-1999.

3. Student Award for Excellence in Teaching, BYU Student Alumni Association, 1998.
4. College Teaching Excellence Award, College of Biology and Agriculture, BYU, 1998.
5. College Professorship, College of Biology and Agriculture, BYU, 2001.
6. Alumni Professorship, Brigham Young University Alumni Association, 2003-2006
7. Thomas Martin Professorship, College of Life Sciences, BYU, 2008-2011
8. Outstanding Research Award, College of Life Sciences. BYU, 2014
9. Karl G. Maeser Research and Creative Arts Award, Brigham Young University, 2021-2022

PROFESSIONAL CONSULTING

1. Johnson & Johnson Medical, Inc., Arlington Texas
2. Advanced Sterilization Products, Irvine, California
3. Venturi Technologies, Inc., Orem, Utah
4. Bond Technology Systems, Inc., Las Vegas, Nevada
5. Nelson Laboratories, Inc., Salt Lake City, Utah
6. CHR₂ Environmental Services, Oilton, Oklahoma
7. Moroni Feed Company, Moroni, Utah
8. Schering-Plough Animal Health Corporation, Omaha, Nebraska
9. Sterilization Technical Services, Rush, New York
10. Murdock Madaus Schwabe, Springville, Utah
11. Combustion Resources, Provo, Utah
12. ImmunoVet Inc., Tampa, Florida
13. The Van Kampen Group, Inc. Ogden, Utah
14. Los Alamos National Laboratory, Los Alamos, New Mexico
15. Parr Waddoups Brown Gee and Loveless, Salt Lake City, Utah
16. Fabian & Clendenin, Salt Lake City, Utah

17. Environmental Defense Technologies, Draper, Utah
18. sBIOMED, Inc. Orem, Utah
19. Utah State Division of Solid and Hazardous Wastes, SLC, UT
20. Solatens Technology Center, Spokane Valley, WA
21. eWater Advantage, Raleigh, NC

PRESENTATIONS

1. Robison, R.A., H.L. Bodily, D.F. Robinson, and R.P. Christensen. A Quantitative Suspension Test for Clinical Evaluation of Disinfectant Use-Life. General Meeting of the American Society for Microbiology. 1985. ASM Abstract #Q94. p.273. Las Vegas, NV.
2. Robison, R.A., H. L. Bodily, M. W. Carter, and R.P. Christensen. Clinical Use-Life Comparison of Three Glutaraldehyde-Based Disinfectants. International Association of Dental Research. IADR Abstract #183. 1985. J. Dent. Res. 64:195. Las Vegas, NV.
3. Robinson, D., D. Cox, R. Robison, and R. Christensen. Comparison of 3 Compounds Used to Disinfect Laboratory Pumice. American Association of Dental Research. AADR Abstract #300. 1986. J. Dent. Res. 65:203. Chicago, IL.
4. Robison, R., K. Jepson, D. Robinson, and R. Christensen. Comparative Evaluation of 13 Handwash Preparations. American Association of Dental Research. AADR Abstract #297. 1986. J. Dent. Res. 65:202. Chicago, IL.
5. Robison, R., D. Robinson, and R. Christensen. Evaluation of Self-contained Biological Monitoring Systems for Chemical Vapor Sterilization. International Association of Dental Research. IADR Abstract #1823. 1987. J. Dent. Res. 66:334. Washington, D.C.
6. Robinson, D., R. Robison, and R. Christensen. Comparison of Four Antimicrobial Agents in Handwashes. International Association of Dental Research. IADR Abstract #1824. 1987. J. Dent. Res. 66:335. Washington, D.C.
7. Robison, R., D. Robinson, B. Ploeger, R. Christensen, and R. Leavitt. Comparison of 41 Environmental Surface Disinfectants. International Association of Dental Research. IADR Abstract #314. 1988. J. Dent. Res. 67:152. Montreal, Canada.
8. Robinson, D., R. Robison, R. Christensen, and B. Ploeger. Comparison of Handwash Preparations Containing Chlorhexidine, Iodine, PCMX, & Triclosan. International Association of Dental Research. IADR Abstract #315. 1988. J. Dent. Res. 67:152. Montreal, Canada.
9. Robinson, D., R. Robison, B. Ploeger, R. Leavitt, and R. Christensen. Dissociation of Alcohol-Treated Blood Bioburden. International Association of Dental Research. IADR Abstract #825. 1989. J. Dent. Res. 68.
10. Robison, R., D. Robinson, B. Ploeger, and R. Christensen. Tuberculocidal Activity of

Glutaraldehyde & Glutaraldehyde/Phenol Disinfectants. International Association of Dental Research. IADR Abstract #2161. 1990. J. Dent. Res. 69:379. Chicago, IL.

11. Christensen, R., R. Robison, D. Robinson, and B. Ploeger. Aerosol Penetration of Face Coverings - Peripheral Fit vs. Filterability. International Association of Dental Research. IADR Abstract #614. 1990. J. Dent. Res. 69:185. Chicago, IL.
12. Robinson, D., R. Robison, B. Ploeger, and R. Christensen. Disinfection of Dental Handpieces. International Association of Dental Research. IADR Abstract #1916. 1990. J. Dent. Res. 69:348. Chicago, IL.
13. Ploeger, B., R. Robison, D. Robinson, and R. Christensen. AOAC Use Dilution Method Collaborative Study. International Association of Dental Research. IADR Abstract #2160. 1990. J. Dent. Res. 69:378. Chicago, IL.
14. Robison, R.A., D. F. Robinson, B.J. Ploeger, and R.P. Christensen. Clinical & Lab Efficacy Tests of a New Disinfectant. International Association of Dental Research. IADR Abstract #1381. 1991. J. Dent. Res. 70:438. Acapulco, Mexico.
15. Ploeger, B.J., R.A. Robison, D.F. Robinson, and R.P. Christensen. Quantitative In-Vivo Comparison of Five Carbamide Peroxide Bleach Gels. International Association of Dental Research. 1991. J. Dent. Res. 70:376. Acapulco, Mexico.
16. Black, R., R. Robison, D. Robertson, F. B. Johnson, and R.W. Leavitt. Cloning and Expression of the Aleutian Disease Virus 85 Kilodalton (VP-1) Protein. Miami Short Reports and Proceedings of the 1992 Miami Bio/Technology Winter Symposium. 1992. 2:49. Miami, FL.
17. Hall, H., and R. Robison. Immunological Characteristics of Papilloma Regression. Intermountain Branch of the American Society for Microbiology Annual Meeting. May, 1993. Abstract #18. (Note: H. Hall won second place in the student paper competition).
18. Robison, R., H. Hall, C. Teuscher, B. Boden, and P. Urie. Regression of Rabbit and Bovine Papillomas by Intralesional Immunotherapy. 12th International Papillomavirus Conference. Abstract #88. September, 1993. Baltimore, MD.
19. Robison, R., H. Hall, C. Teuscher, and P. Urie. Characterization of Immune Cell Infiltrates in Regressing Papillomas. General Meeting of the American Society for Microbiology. ASM Abstract # E83. May, 1994. Las Vegas, NV.
20. Gilbert, S.G. and R.A. Robison. Effect of Bryostatin 1 on Experimentally-Induced Rabbit Papillomas. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract #A-3. April, 1995. Pocatello, ID. (Note: S. Gilbert won second place in the student paper competition).
21. Osguthorpe, R.J., S. Carroll, G.B. Schaalje, R.W. Leavitt, J.M. Ascenzi, and R.A. Robison. Culture Variability Associated with Tuberculocidal Efficacy Testing. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract #A-8. April, 1995. Pocatello, ID. (Note: R. Osguthorpe won third place in the student paper competition).
22. Albert, H.H., F. Beckett, S. Robbins, P. Jackson, and R. Robison. AFLP Analysis of Drug

Resistance in Clinical Isolates of *Mycobacterium tuberculosis*. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract #20. April, 1998. Twin Falls, ID. (Note: H. Albert won second place in the student paper competition).

23. Gigger, J., J.D. Smart, and R.A. Robison. The Antimicrobial Activity of a Novel Copper-Based Water Disinfectant. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract # A1. April, 1999. Ogden, UT.
24. Albert, H.H., F. Beckett, S. Robbins, P. Jackson, and R. Robison. Genomic Differences Among Various Mycobacteria, Including Drug-Resistant Isolates of *Mycobacterium tuberculosis*. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract # A2. April, 1999. Ogden, UT.
25. Robison, R.L., A.M. Rediske, J.L. Nelson, M.K. Brown, B.L. Roeder, R.A. Robison, and W.G. Pitt. Pulsed and Continuous Ultrasonic Enhancement of Antibiotic Action on *Escherichia coli* Biofilms: An *in vivo* Model. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract # A3. April, 1999. Ogden, UT. (Note: R.L. Robison won second place in the student paper competition).
26. Robison, R.A. and J. Bodily. The Inhibitory Effects of Bryostatin 1 Administration on the Growth of Rabbit Papillomas. General Meeting of the American Society for Microbiology. Session 145, Abstract # A-53. June 1, 1999. Chicago, IL.
28. A.M. Rediske, J.L. Nelson, Robison, R.L, M.K. Brown, R.A. Robison, B.L. Roeder, and W.G. Pitt. Ultrasonic Enhancement of Antibiotic Action on *Escherichia coli* Biofilms: An *In Vivo* Model. General Meeting of the American Society for Microbiology. Session 243, Abstract # Q-359, p. 223. June 2, 1999. Chicago, IL.
28. Pitt, W.G., B.L. Roeder, A.P. Rediske, and R.A. Robison. Ultrasonically Enhanced Antibiotic Delivery In Vivo. Annual Meeting of the American Institute of Chemical Engineers. Session 15b05, November 5, 1999. Dallas, TX.
29. Allred, D.V., D.D. Frame, D.G. Whiting, J.R. Cryan, T.R. Olson, P.J. Jackson, K. Hill, and R.A. Robison. Genetic and Geographical Analysis of *Pasteurella multocida* Isolates from Turkeys in Utah Using RAPD and ALFP Fingerprinting. 49th Western Poultry Diseases Conference. Abstract #3, p. 105. March 5-7, 2000. Sacramento, CA.
30. Hall, C.D., C.R. Bartholomew, and R.A. Robison. The Combined Effects of Prostratin, 1 α 25Dihydroxyvitamin D₃ and All-trans Retinoic Acid on Human Cervical Cancer Cell Lines. Annual Meeting of the American Association for Cancer Research. Abstract # 89, p. April 2, 2000. San Francisco, CA.
31. Allred, D.V., R.A.C. Yoder, and R.A. Robison. Modulation of Protein Kinase C Isoform Levels by Prostratin in Various Cell Lines. FASEB 2000 Conference. Abstract # LB105, p. April 17, 2000. San Diego, CA.
32. Bodily, J. and R.A. Robison. Morphological Changes in Organotypic HPV-Infected Cervical Epithelium Exposed to PKC-Activating Agents. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract # C6, p.5. April 22, 2000. Provo, UT.

33. Albert, H.H., A.F. Beckett, S. Robbins, P. Jackson, and R.A. Robison. Genomic Differences Among Various Mycobacteria Using AFLP. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract # A6, p.3. April 22, 2000. Provo, UT.
34. Carmen, J., R.A. Robison, and W.G. Pitt. 48 Hour Bioacoustic Therapy in a Rabbit Model. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract # A7, p.3. April 22, 2000. Provo, UT.
36. Carmen, J.C., B.L. Roeder, J.L. Nelson, R.L. Robison, G.B. Schaalje, R.A. Robison, and W.G. Pitt. Extending Bioacoustic Therapy: Forty-eight Hour Treatment in an *In Vivo* Model. ASM Conference on Biofilms 2000. Abstract # 107, p.53. July 18, 2000. Big Sky, Montana.
37. Carmen, J.C., C.M. Runyun, B.L. Beckstead, J.T. Nelson, R.A. Robison, and W.G. Pitt. Ultrasonic Enhancement of Gentamicin Diffusion. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract # A6, p.14. April 28, 2001. Pocatello, ID.
38. Huber, D. and R.A. Robison. AFLP Analysis of *Burkholderia* Strains Using *Apa* I and *Taq* I Restriction Endonucleases. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract # A8, p.15. April 28, 2001. Pocatello, ID. (Note: D. Huber won first place in the student paper competition).
39. Huber, D., T.L. Pitt, and R.A. Robison. Genetic Typing of *Burkholderia* isolates Using Amplified Fragment Length Polymorphism. General Meeting of the American Society for Microbiology. Session 30/D, Abstract # D-16, p. 51. May 21, 2001. Orlando, FL.
40. Albert, H.A., F. Beckett, S. Robbins, and R. Robison. Amplified Fragment Length Polymorphism (AFLP) Analysis of Mycobacterium Species and Clinical *Mycobacterium tuberculosis* Isolates from Utah. General Meeting of the American Society for Microbiology. Session 47/U, Abstract # U-8, p. 65. May 21, 2001. Orlando, FL.
41. Spurgiesz, S., H. Albert, K. Smith, C. Keys, R. Robison, and P. Keim. Multi-Locus VNTR Analysis (MLVA) for Identification and Epidemiological Tracking of *Mycobacterium tuberculosis*. General Meeting of the American Society for Microbiology. Session 47/U, Abstract # U-19, p. 66. May 21, 2001. Orlando, FL.
42. Turley, R., J.D. Estes, G.F. Burton, and R.A. Robison. Down-Regulation of HIV-1 receptors and Inhibition of HIV-1 Entry by Prostratin Treatment. 2001 International Meeting of the Institute of Human Virology: A Symposium on HIV-AIDS Disease & Related Viral Carcinogenesis. September 10, 2001. Baltimore, MD.
43. R.A. Robison, D.M. Huber, T.L. Pitt, K.K. Hill, L.O. Ticknor, and P.J. Jackson. Genetic Analyses of *Burkholderia* Isolates Using Amplified Fragment Length Polymorphism. World Melioidosis Congress. Molecular Epidemiology Section, Abstract # 45, p. 36. September 28, 2001. Perth, Western Australia.
44. Turley, R., J.D. Estes, N. Compton*, G.F. Burton, and R.A. Robison. Down-Regulation of HIV-1 Receptors and Inhibition of HIV-1 Entry by Prostratin Treatment. Branch of the American Society for Microbiology Annual Meeting. Abstract # 23, p.11. March 30, 2002. Logan, UT.
45. Spurgiesz, R.S., K. Smith, P. Keim, L. Steinlein, J. Crawford, T. Quitugua, R. Robison, and H.

- Albert. Correlations Among IS6110, spoligotyping, MIRU and MLVA in the molecular Epidemiology of *Mycobacterium tuberculosis*. General Meeting of the American Society for Microbiology. Session 47/U, Abstract # U-7, p. 62. May 20, 2002. Salt Lake City, UT.
46. Carmen, J.C., B.L. Beckstead, C.M. Runyon, J.L. Nelson, R.A. Robison, and W.G. Pitt. Ultrasonic Enhanced Gentamicin Transport through Colony Biofilms of *Escherichia coli* and *Pseudomonas aeruginosa*. General Meeting of the American Society for Microbiology. Session 223/Q, Abstract # Q-264, p.169. May 22, 2002. Salt Lake City, UT.
 47. Millar, C.D.H., P. Urie, and R.A. Robison. Development of an *in vitro* Model for *Mycobacterium ulcerans* Infection Using Organotypic Cultures. General Meeting of the American Society for Microbiology. Session 235/B, Abstract # B-358, p. 178. May 22, 2002. Salt Lake City, UT.
 47. Altherr, M.R., S. Wachocki, T. Brettin, R. Gottardo, R. Iyer, R.A. Robison and J.M. Ettinger. The Human Genetic Response to *Bacillus anthracis* Spores. Annual Meeting of the American Society of Human Genetics, Session 1944/F, *American Journal of Human Genetics*, 71:501. October 18, 2002. Baltimore, MD.
 48. Cardon, M.L., J.M. Schupp, L.Y. Huynh, K.L. Smith, R.A. Robison, and P. Keim. World Wide Genetic Diversity and Variable Number Tandem Repeat (VNTR) Mutation Rate in *Burkholderia pseudomallei*. Third Annual ASM and TIGR Microbial Genomes Conference, January 29 - February 1, 2003. New Orleans, LA.
 49. Blair, H.A., V.V. Thralls, M.S. Favero, J.M. Lindsey, D.A. Millar, B.C. Ricks, and R.A. Robison. Sterilization Efficacy of a Hydrogen Peroxide Gas Plasma Sterilization System against Virulent *Bacillus anthracis* Spores. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract #A-1, p.13. March 29, 2003. Tooele, UT.
 50. Lindsey, J.M., D.A. Millar, H.A. Blair, and R.A. Robison. The Susceptibility of Virulent and Avirulent Spores of *Bacillus anthracis* to Chemical Disinfectants. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract #A-3, p.13. March 29, 2003. Tooele, UT.
 51. Berdan, K., D.A. Millar, T. Hart, and R.A. Robison. Sporicidal Activity of Antimicrobial-Treated Textiles. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract #D-1, p.14. March 29, 2003. Tooele, UT.
 52. Mangold, B.L., T.I. Calvin, H.A. Blair, R.A. Robison, and W.M. Nelson, III. Rapid, Sensitive and Specific Detection of *Bacillus anthracis* by Multiplex Real-Time Fluorogenic PCR Assay. General Meeting of the American Society for Microbiology. Session 130/C, Abstract # C-165, p. 115. May 20, 2003. Washington, D.C.
 53. Cardon, M.L., J.M. Schupp, T. Pearson, L.Y. Huynh, K. Smith, C. Keys, R. Robison, and P.S. Keim. Genomic Distribution of Tandemly Repeated Regions and World-Wide Diversity of *Burkholderia pseudomallei*. General Meeting of the American Society for Microbiology. Session 165/C, Abstract # C-212, p. 139. May 20, 2003. Washington, D.C.
 54. Blair, H.A., V.V. Thralls, M.S. Favero, J.M. Lindsey, D.A. Millar, B.C. Ricks, and R.A. Robison. Sterilization Efficacy of a Hydrogen Peroxide Gas Plasma Sterilization System against Virulent *Bacillus anthracis* Spores. General Meeting of the American Society for Microbiology. Session

187/Q, Abstract # Q-288 , p. 155. May 20, 2003. Washington, D.C.

55. Lindsey, J.M., D.A. Millar, H.A. Blair, and R.A. Robison. The Susceptibility of Virulent and Avirulent Spores of *Bacillus anthracis* to Chemical Disinfectants. General Meeting of the American Society for Microbiology. Session 187/Q, Abstract # Q-293, p. 155. May 20, 2003. Washington, D.C.
56. Mangold, B.L., W.M. Nelson, J.M. Lindsey, and R.A. Robison. Evaluation of the RedLine Alert test, a clinical test for antibody-based identification of *Bacillus anthracis* colonies from culture plates. ASM Biodefense Research Meeting. Abstract # 42 (C), March 8, 2004. Baltimore, MD.
57. Pruitt, S.A., C.H. Millar, L.A. Higginbotham, P.M. Urie, and R.A. Robison. An Organotypic skin model of buruli ulcer. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract #A-8, p. 24. March 27, 2004. Idaho Falls, ID. (Note: S. Pruitt won first place in his session for the student paper competition).
58. Houtz, S., A.D. Dahle*, P.M. Urie, and R.A. Robison. Infection of organotypic skin (raft) cultures by *Listeria monocytogenes*. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract #A-9, p. 25. March 27, 2004. Idaho Falls, ID.
59. Singer, J.W. and R.A. Robison. RT-PCR detection of apoptotic responses in organotypic skin cultures exposed to *Mycobacterium ulcerans*. General Meeting of the American Society for Microbiology. Session 050/U, Abstract # U-008, p. 63. May 24, 2004. New Orleans, LA.
60. Houtz, S., P. Urie, and R.A. Robison. Infection of organotypic skin (raft) cultures by *Listeria monocytogenes*. General Meeting of the American Society for Microbiology. Session 176/D, Abstract # D-186, p. 128. May 25, 2004. New Orleans, LA.
61. Pickett, D.O., T.R. Hart, H.A. Blair, and R.A. Robison. Real time polymerase chain reaction quadruplexed for rapid detection of *Clostridium botulinum* toxin types A, B, E, and F. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract B-2, p. 15. March 12, 2005. Ogden, UT.
62. Dickey, L.L., S.A. Pruitt, and R.A. Robison. An *in vitro* macrophage infection model for determining virulence in *Burkholderia pseudomallei*. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract B-3, p. 16. March 12, 2005. Ogden, UT. (Note: Laura Dickey won first place in her session for the student paper competition).
63. Trimble, C.R., S. Ohmine, T.R. Hart, T.A. Gaufin, M.A. Viskovska, R.A. Robison, K.L. O'Neill, and B.K. Murray. Membrane fatty acid composition in cancer cells: implications for chemotherapeutic intervention. Proceedings of the American Association for Cancer Research, 46:820. Abstract 3477. April 18, 2005. Anaheim, CA.
64. Pickett, D.O., T.R. Hart, H.A. Blair, and R.A. Robison. Real time polymerase chain reaction quadruplexed for rapid detection of *Clostridium botulinum* toxin types A, B, E, and F. General Meeting of the American Society for Microbiology. Session 089/Y, Abstract # Y-019, p. 79. June 6, 2005. Atlanta, GA.
65. Dickey, L.L., S.A. Pruitt, and R.A. Robison. An *in vitro* macrophage infection model for determining virulence in *Burkholderia pseudomallei*. General Meeting of the American Society

for Microbiology. Session 089/Y, Abstract # Y-032, p. 79. June 6, 2005. Atlanta, GA.

66. Stewart, A.F., M.N. Codde, and R.A. Robison. Novel real time PCR method for Identification of a unique chromosomal sequence and virulence plasmids in *Yersinia pestis*. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract D-6, p. 11. March 18, 2006. Provo, UT.
67. U'Ren, J., T. Pearson, J. Schupp, B. Leadem, S. Georgia, B. Currie, R. Robison, and P. Keim. A comparison of molecular sub-typing systems using *Burkholderia pseudomallei*: multiple-locus sequence typing (MLST) versus multiple-locus variable number tandem repeat (MLVA). General Meeting of the American Society for Microbiology, Session 163/D, Abstract # D-129, p. 122. May 23, 2006. Orlando, FL.
68. Stewart, A.F., M. Codde, and R. Robison. Novel real-time PCR Assays for the identification of a unique chromosomal sequence and three virulence plasmids in *Yersinia pestis*. General Meeting of the American Society for Microbiology, Session 246/Y, Abstract # Y-012, p. 165. May 24, 2006. Orlando, FL.
69. Clement, A.M., A.B. Clifford, A. Hamblin, D.G. Fuja, B.K. Murray, R.A. Robison, and K.L. O'Neill. Macrophages and metastasis: ties to the MaFIA. Midwinter Conference of Immunologists, January 27-30, 2007. Pacific Grove, CA.
70. Hamblin, A.M., A.M. Clement, D.G. Fuja, B.S. Poe, M.J. Smith, D.W. Fairbairn, R.A. Robison, and K.L. O'Neill. Critical parameters for apoptosis in cells of the lymphoid lineage. Midwinter Conference of Immunologists, January 27-30, 2007. Pacific Grove, CA.
71. Nackos, A.N., T.V. Truong, T. C. Pulsipher, J.A. Kimball, H.D. Tolley, R.A. Robison, C.H. Bartholomew, and M.L. Lee. Homogenous acid catalyst-assisted detection of *Bacillus anthracis* and other gram-positive endospores. Annual Meeting of the Western States Catalysis Club, February 23, 2007. Provo, UT.
72. Tolley, H.D., E. Barry, C.H. Bartholomew, J.A. Kimball, M.L. Lee, A.N. Nackos, T.C. Pulsipher, R.A. Robison, and T.T. Tai. Chemical biomarker approach to differentiating biological agents. 58th Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy (Pittcon), February 25 – March 2, 2007. New Orleans, LA.
73. Cohen, M.N., G.B. Moffitt, K.L. O'Neill, and R.A. Robison. Evaluation of a novel disinfectant with rapid sporicidal and tuberculocidal activity. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract A-5, p. 5. March 10, 2007. Pocatello, ID.
74. Welch, A.D., K.R. Wells, D.G. Fuja, B.A. Bertola, A.B. Clifford, B.K. Murray, K.L. O'Neill, and R.A. Robison. Metastatic activity and macrophages in a MaFIA mouse model. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract A-2, p. 2. March 10, 2007. Pocatello, ID.
75. Georgia, S, H. Hornstra, T. Pearson, J. Schupp, J. U'Ren, B. leadem, J.E. Gee, R. Robison, S. Harvey, D. DeShazer, M. Saqib, and P. Keim. Multiple locus variable number tandem repeat analysis reveals fine-scale genetic diversity within the previously indistinguishable organism *Burkholderia mallei*. 46th Annual Meeting of the Arizona-Nevada Branch of the American

Society for Microbiology. April 14, 2007. Flagstaff, AZ. (Note: Shalamar Georgia won an award for the best student presentation.)

76. Miller, T.D., C.R. Ellingson, C.C. Ellingson, M. Lee-Hin, M.T. Larson, B.K. Murray, R.A. Robison, and K.L. O'Neill. Genetic expression of macrophages after exposure to MDA-BA-435 and MCF-7 breast cells may determine mechanism for immune system evasion. 98th Annual Meeting of the American Association for Cancer Research. April 14-18, 2007. Los Angeles, CA.
77. Bertola, B., A.M. Clement, A.B. Clifford, K.R. Wells, M.L. Webb, A.M. Hamblin, D.G. Fuja, B.K. Murray, R.A. Robison, and K.L. O'Neill. Melanoma/Macrophage fusion in transgenic MaFIA mouse: first step to metastasis. Rocky Mountain Branch of the American Society for Microbiology Annual Meeting. April 21, 2007. Grand Junction, CO.
78. Dickey, L.L., J.D. Hoopes, G.B. Schaalje, K.L. O'Neill, and R. Robison. Effect of gender and diabetic state on levels of proinflammatory cytokines secreted by peripheral blood monocytes in response to infection with *Burkholderia pseudomallei*. General Meeting of the American Society for Microbiology, Session 281/B, Abstract # B-431, p. 193. May 24, 2007. Toronto, Canada.
79. O'Neill, K.L., D.G. Fuja, A.M. Hamblin, R.A. Robison, and B.K. Murray. Thymidine kinase 1: a molecular marker for possible cancer therapy. Beatson International Cancer Conference. June 17-20, 2007. Glasgow, Scotland.
80. Murray, B.K., A.M. Hamblin, D.G. Fuja, R.A. Robison, and K.L. O'Neill. The therapeutic potential of thymidine kinase 1. Beatson International Cancer Conference. June 17-20, 2007. Glasgow, Scotland.
81. Tovar, M., R. Robison, B.K. Murray, and K.L. O'Neill. A novel antibody approach to breast cancer diagnosis and prognosis. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract B-3, 56:13. March 1, 2008. Logan, UT. (Note: M. Tovar won first place in the student oral presentation competition.)
82. Hopson, N., A. Welch, B. Bertola, B. Murray, R. Robison, and K. O'Neill. Are cancer metastasis caused by macrophages? Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract B-4, 56:13. March 1, 2008. Logan, UT.
83. Satterfield, B.A., M.N. Cohen, K.L. O'Neill, and R.A. Robison. Differentiation of *Mycobacterium ulcerans* and *Mycobacterium marinum* by a duplex real-time PCR assay. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract A-3, 56:11. March 1, 2008. Logan, UT.
84. Pratt, M.D., M.N. Cohen, **G.B. Moffitt**, K.L. O'Neill, and R.A. Robison. Differential response of various spore species to sporicidal disinfectants. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract A-4, 56:11. March 1, 2008. Logan, UT. (Note: G.B. Moffitt won second place in the student oral presentation competition.)
85. Nackos, A.N., T.V. Truong, T.C. Pulsipher, J.A. Kimball, H.D. Tolley, R.A. Robison, C.H. Bartholomew, and M.L. Lee. Chemometric analysis of a simple method for detection of dipicolinic acid and other biomarkers from bacterial endospores. 59th Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy (Pittcon), March 1-7, 2008. New Orleans, LA.

86. Kimball, J.A., T.V. Truong, A.N. Nackos, C.H. Bartholomew, M.L. Lee, H.D. Tolley, and R.A. Robison. Biomarker-based differentiation of *Bacillus* endospores using gas chromatography-mass spectrometry. 59th Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy (Pittcon), March 1-7, 2008. New Orleans, LA.
87. Truong, T.V., J.A. Kimball, A.N. Nackos, C.H. Bartholomew, R.A. Robison, H.D. Tolley, and M.L. Lee. A wire filament sample introduction device for gas chromatography. 59th Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy (Pittcon), March 1-7, 2008. New Orleans, LA.
88. Nackos, A.N., T.V. Truong, J.A. Kimball, H.D. Tolley, M.L. Lee, R.A. Robison, and C.H. Bartholomew. Kinetics of the acid-catalyzed methylation of dipicolinic acid (a bacterial endospore biomarker) in methanol. Annual Meeting of the Western States Catalysis Club, March 14, 2008. Albuquerque, NM.
89. El-Etr, S.H., R. Robison, and A. Rasley. Environmental amoebae as potential reservoirs for *Francisella tularensis*. General Meeting of the American Society for Microbiology, Session 024/B, Abstract # B-037, p. 62. June 12, 2008. Boston, MA.
90. Satterfield, B.A., A. Stewart, M. Cohen, K.L. O'Neill, and R. Robison. A real-time PCR assay for rapid identification and differentiation of *Mycobacterium ulcerans* and *Mycobacterium marinum*. General Meeting of the American Society for Microbiology, Session 345/U, Abstract # U-081, p. 247. June 12, 2008. Boston, MA.
91. Satterfield, B.A., A.F. Stewart, D.O. Pickett, K.L. O'Neill, and R.A. Robison. A quadruplexed real-time PCR assay for rapid detection and differentiation of the *Clostridium botulinum* toxin genes A, B, E, and F in pure culture and environmental samples. qPCR 2009 Annual Meeting. Abstract #232. March 9-13, 2009. Munich, Germany.
92. Enz, R.A., A. Clement, R.A. Robison, and K.L. O'Neill. Could macrophages be helping tumors to metastasize? Intermountain Branch of the American Society for Microbiology Annual Meeting. Oral Abstract #1, p.3, March 21, 2009. Salt Lake City, UT. (Note: R.A. Enz won first place in the competition for best oral student presentation).
93. Collins, J.W., A.R. Garrett, J.M. Handy, J.A. Chauca, R.A. Robison, and K.L. O'Neill. A model for predicting antioxidant capacity from a chemist's point of view. Intermountain Branch of the American Society for Microbiology Annual Meeting. Oral Abstract #2, p.3, March 21, 2009. Salt Lake City, UT.
94. Holm, J. J.D. Evans, M. Tovar, F.B. Johnson, R.A. Robison, and K.L. O'Neill. A possible immunotherapeutic avenue for treating lymphoma using thymidine kinase 1. Intermountain Branch of the American Society for Microbiology Annual Meeting. Oral Abstract #3, p.4, March 21, 2009. Salt Lake City, UT.
95. Gunnell, M., C. Carter, W.S. Jonas, B. Satterfield, E. Moore, K.L. O'Neill, and R.A. Robison. A triplex real-time PCR assay for the detection and differentiation of *Francisella tularensis* subspecies *tularensis* Type A.I, subspecies *tularensis* Type A.II, subspecies *holarctica*, and subspecies *novicida*. Intermountain Branch of the American Society for Microbiology Annual Meeting. Oral Abstract #4, p.4, March 21, 2009. Salt Lake City, UT.

96. Meyers, J.M., M.J. Conway, C.M. Meyers, and R.A. Robison. Chemical inactivation of native high-risk human papilloma virions as measured by a novel qRT-PCR infectivity assay. Intermountain Branch of the American Society for Microbiology Annual Meeting. Oral Abstract #5, p.5, March 21, 2009. Salt Lake City, UT. (Note: J.M. Meyers won second place in the competition for best oral student presentation).
97. McDonald, J.G., J. McBride, J. Handy, P. Gawu, R.A. Enz, R.A. Robison, and K.L. O'Neill. Green tea: friend or foe? Intermountain Branch of the American Society for Microbiology Annual Meeting. Oral Abstract #8, p.6, March 21, 2009. Salt Lake City, UT.
98. Bingham, M.M., B. Loosle, M. Tovar, R.A. Robison, and K.L. O'Neill. Is there a relationship between caffeine and p53? Intermountain Branch of the American Society for Microbiology Annual Meeting. Oral Abstract #12, p.8, March 21, 2009. Salt Lake City, UT.
99. Wilson, W.M., M. Tovar, B. Loosle, M. Weyant, R.A. Robison, and K.L. O'Neill. Prognostic detection of lung cancer using a monoclonal antibody to thymidine kinase 1. Intermountain Branch of the American Society for Microbiology Annual Meeting. Oral Abstract #13, p.8, March 21, 2009. Salt Lake City, UT.
100. Bowen, B.J., R.A. Robison, and K.L. O'Neill. Thymidine kinase 1 as a biomarker for diagnosis and prognosis in leukemia patients. Intermountain Branch of the American Society for Microbiology Annual Meeting. Oral Abstract #14, p.9, March 21, 2009. Salt Lake City, UT.
101. Satterfield, B.A., A.F. Stewart, D.O. Pickett, K.L. O'Neill, and R.A. Robison. A quadruplexed real-time PCR assay for rapid detection and differentiation of the *Clostridium botulinum* toxin genes A, B, E, and F in pure culture and environmental samples. Intermountain Branch of the American Society for Microbiology Annual Meeting. Poster Abstract #2, p.11, March 21, 2009. Salt Lake City, UT. (Note: B. A. Satterfield won third place in the competition for best poster student presentation).
102. El-Etr, S.H., R.A. Robison, M. Cohen, and A. Rasley. *Francisella tularensis* Type A clinical isolates preferentially replicate and survive in human monocytes and induce marked secretion of inflammatory cytokines. General Meeting of the American Society for Microbiology, Session 064/D, Abstract # D-048, p. 70. May 18, 2009. Philadelphia, PA.
103. Gunnell, M.K., C.D. Carter, W.S. Jonas, B.A. Satterfield, E.A. Moore, K.L. O'Neill, and R.A. Robison. A multiplex real-time PCR assay for the detection and differentiation of *Francisella tularensis* subspecies. 8th Annual ASM Biodefense and Emerging Disease Research Meeting. February 21-24, 2010. Baltimore, MD.
104. Truong, T.V., M.L. Lee, A.N. Nackos, D. Li, H.D. Tolley, R.A. Robison, J.R. Williams, and C.W. Taylor. Differentiation of bacterial endospores using diverse biomarker types produced by thermochemolysis methylation and GC-MS. Pittcon 2010, February 28 – March 5, 2010. Orlando, FL.
105. Gunnell, M.K., C.D. Carter, W.S. Jonas, B.A. Satterfield, E.A. Moore, K.L. O'Neill, and R.A. Robison. A multiplex real-time PCR assay for the detection and differentiation of *Francisella tularensis* subspecies. 3rd Annual Biothreat Agent Workshop. March 15, 2010. Charlotte, NC.
106. Bills, T.M., Q.C. Shepherd, A.J. Blam, E.A. Moore, J. Gardner, B. Schaalje, K.L. O'Neill, and

- R.A. Robison. Improved recovery of spores from coated carriers used in the AOAC Sporidical Activity of Disinfectants (Method II) spore enumeration method, by the addition of a surfactant to the rinse solution. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract #39, p.12, April 10, 2010. Provo, UT. (Note: T.M. Bills won first place in the student poster presentation competition.)
107. Hendriksen, B.S., R.A. Enz, R.A. Robison, and K.L. O'Neill. Migration and polarization of macrophages may be simultaneously affected by macrophage migration inhibition factor (MIF). Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract #40, p.12, April 10, 2010. Provo, UT.
 108. Estevez, D., R. Whitehurst, J.D. Evans, L.T. Peavler, M. Tovar, R.A. Robison, and K.L. O'Neill. The potential of TK1 as a molecular target for cancer treatment. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract #41, p.13, April 10, 2010. Provo, UT.
 109. Griffin, D., B. Hansen, B.R. Hendricks, R.A. Robison, and K.L. O'Neill. Could macrophage phagocytosis be regulated by the tumor microenvironment? Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract #42, p.13, April 10, 2010. Provo, UT.
 110. Chauca, J.A., A.R. Garrett, A.D. Martinez, E. Giraldez, J. Loong, J. Whitaker, J.M. Pena, R. A. Robison, and K.L. O'Neill. Oxidative stress promotes increased antioxidant uptake in a cellular model. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract #43, p.13, April 10, 2010. Provo, UT.
 111. Hardy, M., M. Tovar, M. Standing, R.A. Robison, and K.L. O'Neill. Immunolabeling transmission electron microscopy: and effective method for examining location of thymidine kinase 1 in human lymphoma cells. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract #44, p.14, April 10, 2010. Provo, UT.
 112. Loong, J.K., E. Giraldez, J. Whitaker, R.A. Robison, and K. L. O'Neill. Can drinking tea prevent cancer? 101st Annual Meeting of the American Association for Cancer Research. April 17, 2010. Washington, DC.
 113. Elera, G.G., J. Whitaker, J. Chauca, R. Robison, and K. O'Neill. Antioxidant studies on the Peruvian cherimoya fruit give an insight into the healthy lifestyle of the Incas. 101st Annual Meeting of the American Association for Cancer Research. April 17, 2010. Washington, DC.
 114. Whitaker, J., E. Giraldez, J. Loong, J. Wagstaff, R. Robison, and K.L. O'Neill. Changes in Antioxidant capacities of isolated radish components during growth. 101st Annual Meeting of the American Association for Cancer Research. April 17, 2010. Washington, DC.
 115. Enz, R.A., C. Knechtel, A.D. Enz, B. Swanson, E. Grialdez, R. Robison, and K.L. O'Neill. Inhibition of M1 macrophages may aid the conversion process to M2, which may aid tumor survival. 101st Annual Meeting of the American Association for Cancer Research. April 17, 2010. Washington, DC.
 116. Hendriksen, B.S., R.A. Enz, C. Knechtel, A.D. Enz, B. Swanson, R. Robison, and K.L. O'Neill. Release of MIF by aggressive adenocarcinoma cell lines may be an initial step in the polarization

- of macrophages. 35th Annual Biological Sciences Undergraduate Research Conference. April 24, 2010. Santa Clara, CA.
117. Estevez, D.E., R. Whitehurst, J.D. Evans, M. Tovar, R.A. Robison, and K.L. O'Neill. A novel target for cancer immunotherapy. 35th Annual Biological Sciences Undergraduate Research Conference. April 24, 2010. Santa Clara, CA.
 118. Bills, T.M., Q.C. Shepherd, A.J. Blam, E.A. Moore, J. Gardner, B. Schaalje, K.L. O'Neill, and R.A. Robison. Improved recovery of spores from coated carriers used in the AOAC Sporidical Activity of Disinfectants (Method II) spore enumeration method, by addition of a surfactant to the rinse solution. General Meeting of the American Society for Microbiology, Session 329/Q, Abstract # Q-3097/176, p. 218. May 27, 2010. San Diego, CA.
 119. Meyers, J.M., E. Ryndock, M.J. Conway, K.L. O'Neill, C.M. Meyers, and R.A. Robison. Susceptibility of native and synthetic HPV16 virions to clinical disinfectants. General Meeting of the American Society for Microbiology, Session 329/Q, Abstract # Q-3111/190, p. 218. May 27, 2010. San Diego, CA.
 120. Meyers, J., E. Ryndock, M.J. Conway, C. Meyers, and R. Robison. The susceptibility of HPV16 native and quasivirus particles to clinically relevant disinfectants. 26th International Papillomavirus Conference, Poster P-109, p.115. July 3-8, 2010. Montreal, Qc, Canada.
 121. Truong, T.V., D. Li, D.N. VanDerwerken, J.R. Williams, C.W. Taylor, R.A. Robison, H.D. Tolley, A.D. Rands, C.R. Bowerbanks, S.A. Lammert, and M.L. Lee. Sampling and sample treatment methods for on-site analysis of bacteria using gas chromatography-mass spectrometry. The International Chemical Congress of Pacific Basin Societies. December 15-20, 2010. Honolulu, Hawaii.
 122. Lammert, S.A., T.V. Truong, D. Li, D.N. VanDerwerken, J.R. Williams, C.W. Taylor, R.A. Robison, H.D. Tolley, A.D. Rands, E.D. Lee, M.L. Lee. An automated sample preparation system combined with SPME-GC/MS for the differentiation of *Bacillus* endospores. Pittcon 2011, March 14-17, 2011. Atlanta, GA.
 123. Jensen, N.R, K.L. O'Neill, and R.A. Robison. CRISPR loci and bacteriophage: a mutually exclusive relationship in pathogenic bacteria. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract #A-1, p.4, April 9, 2011. Ogden, UT.
 124. Engle, J.M. and R.A. Robison. Phenotypic analysis of *M. smegmatis* strains resistant to infection by C1 mycobacteriophage "Charlie Brown" provides evidence for identification of glycopeptidolipids as phage receptors. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract #P-1, p.12, April 9, 2011. Ogden, UT.
 125. Grooms, A.J., T.S. Bluemel, M.Q. Sanderson, J.R. Jensen, A.R. Garrett, R.A. Robison, and K.L. O'Neill. Cancer patients possess lower serum antioxidant levels than age matched healthy subjects. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract #B-1, p.7, April 9, 2011. Ogden, UT.
 126. Michaelis, T.C., A.D. Marinez, A.R. Garrett, J.M. Pena, R.A. Robison, and K.L. O'Neill. Power juices: the role of exotic anti-oxidant fruit juices in preventing cancer. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract #B-2, p.7, April 9, 2011.

Ogden, UT.

127. Kraus, R.D., J. Jensen, A.R. Garrett, R.A. Robison, and K.L. O'Neill. Antioxidant levels in blueberries: are organic better than conventional? Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract #B-3, p.8, April 9, 2011. Ogden, UT. (Note: R. D. Kraus won the award for the best student oral presentation in his session.)
128. Quinton, R.J., D. Griffin, B. Hendricks, B. Hansen, A. El Naggar, M. Alegre, R.A. Robison, and K.L. O'Neill. Macrophage phagocytic activity in the tumor microenvironment of multiple cancer cell lines. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract #B-4, p.9, April 9, 2011. Ogden, UT.
129. Li, D., T.V. Truong, D.N. VanDerwerken, J.R. Williams, T.M. Bills, A. Acharya, R.A. Robison, H.D. Tolley, and M.L. Lee. Differentiation of closely related virulent bacteria by thermochemolysis/methylation and GC-MS. 35th International Symposium on Capillary Chromatography (ISCC). May 1-4, 2011, San Diego, CA,
130. Robison, R.A., T.M. Bills, D. Li, B. Holt, H.D. Tolley, and M.L. Lee. Investigation of potential biomarkers of Burkholderia species by thermochemolysis and GC-MS. *Burkholderia* Workshop hosted by Northern Arizona University and the US Department of Homeland Security, July 27, 2011. Flagstaff, AZ.
131. Lee, M.L., D. Li, T.M. Bills, R.A. Robison, B.C. Holt, R.A. Richardson, and H.D. Tolley. Differentiation of bacterial biothreat agents using thermochemolysis methylation and gas chromatography-mass spectrometry. Chemical and Biological Defense Division Annual Conference, U.S. Department of Homeland Security, August 23-25, 2011, Washington, DC.
132. Li, D., T.M. Bills, B.C. Holt, R.A. Robison, H.D. Tolley, and M.L. Lee. Differentiation of closely related virulent bacteria by thermochemolysis/methylation and GC-MS. 14th Beijing Conference and Exhibition on Instrumental analysis. October 13-16, 2011. Beijing, China.
133. Kraus, R.D., A. Martinez, K. Measom, M. Gill, G. Gupta, A. Garrett, R. Robison, and Kim L. O'Neill. Blueberries: conventional cancer prevention. Annual Meeting of the American Association for Cancer Research. March 31 – April 4, 2012. Chicago, IL.
134. El-Naggar, A., A.M. Chavez, E.C. Peterson, R. Kuttub, R.A. Robison, and K.L. O'Neill. S2AMN: A potential non-toxic anti-cancer therapy. Annual Meeting of the American Association for Cancer Research. March 31 – April 4, 2012. Chicago, IL.
135. Drake, D., C. Grandela, K.L. O'Neill, and R.A. Robison. Comparative analysis of established DNA quantification methods. Intermountain Branch of the American Society for Microbiology Annual Meeting. Oral Session 1, Abstract #3, p.4, April 7, 2012. Pocatello, ID.
136. Lowe, C-W., B.A. Satterfield, J.K. March, A.B. Bunnell, K.L. O'Neill, and R.A. Robison. Quantitative real-time multiplex PCR assay for rapid detection and discrimination of *Burkholderia pseudomallei* and *Burkholderia thailandensis*. Intermountain Branch of the American Society for Microbiology Annual Meeting. Oral Session 2, Abstract #6, p.7, April 7, 2012. Pocatello, ID.
137. March, J.K., M.D. Pratt, G.B. Schaalje, C-W. Lowe, A.B. Bunnell, K.L. O'Neill, and R.A.

- Robison. The susceptibility of *Bacillus subtilis*, *Clostridium sporogenes*, and virulent *Bacillus anthracis* spores to peracetic acid- and glutaraldehyde-based disinfectants. Intermountain Branch of the American Society for Microbiology Annual Meeting. Oral Session 2, Abstract #7, p.7, April 7, 2012. Pocatello, ID.
138. O'Neill, K.L., A. Clement, A. El-Naggar, and R. Robison. A tumor microenvironment rich in macrophages could be aiding metastasis. Keystone Symposium, Molecular and Cellular Biology: The Role of Inflammation during Carcinogenesis. May 20-25, 2012. Dublin, Ireland.
139. Li, D., B.C. Holt, C.E. Wilson, R.A. Robison, H.D. Tolley, and M.L. Lee. Differentiation of closely related virulent bacteria by thermochemolysis/methylation and GC/MS, 36th International Symposium on Capillary Chromatography, Riva del Garda, Italy, May 27 - June 1, 2012.
140. March, J.K., M.D. Pratt, G. B. Schaalje, CW Lowe, A.B. Bunnell, K.L. O'Neill, and R.A. Robison. Differential effects of heat-shocking *Bacillus subtilis*, *Clostridium sporogenes*, and virulent *Bacillus anthracis* spores following disinfectant treatment. General Meeting of the American Society for Microbiology, Session 114/Q, Abstract # 1510, p. 160. June 18, 2012. San Francisco, CA.
141. Lowe, C-W, B.A. Satterfield, J.K. March, A.B. Bunnell, K.L. O'Neill, and R.A. Robison. A real-time multiplex PCR assay for rapid identification and differentiation of *Burkholderia pseudomallei* and *Burkholderia thailandensis*. General Meeting of the American Society for Microbiology, Session 126/C, Abstract # 1721, p. 170. June 18, 2012. San Francisco, CA.
142. Bennallack P.R., J.K. March, R.A. Robison, and J.S. Griffiths. Genetic and structural analysis of a broad host range bacteriocin produced by *Staphylococcus epidermidis*. Annual Bacteria, Archaea and Phages Meeting, August 21-25, 2012. Cold Spring Harbor Laboratory, NY.
143. Robison, R.A., R.H. Schwarting, N. Ellison, and G.B. Schaalje. Measuring the fidelity and stability of denture resin injection systems, Annual Meeting of the Academy of Dental Materials, September 20-23, 2012. Orlando, FL.
144. Hamilton, C.A., J.J. Bell, S.R. Burton, C.R. Madsen, M.K. Ramsden, S.C. Derenthal, P.Liu, R. Robison, and K.L. O'Neill. Thymidine kinase 1 as a possible therapeutic target in Burkitt's lymphoma. The 8th Annual Undergraduate Student Caucus and Poster Competition at the Annual Meeting of the American Association for Cancer Research (AACR), April 5 - 10, 2013. Washington D.C.
145. Barlow, S., A.M. El-Naggar, E. Weigel, P.G. Liu, J. Livingston, R. Robison, and K.L. O'Neill. Apoptotic and necrotic signals may modulate macrophage polarization. The 8th Annual Undergraduate Student Caucus and Poster Competition at the Annual Meeting of the American Association for Cancer Research (AACR), April 5 - 10, 2013. Washington D.C.
146. Aidukaitis, L., E. Weigel, R. Robison, and K.L. O'Neill. A qPCR and engulfment study of cytokine expression with macrophages and tumors. The 8th Annual Undergraduate Student Caucus and Poster Competition at the Annual Meeting of the American Association for Cancer Research (AACR), April 5 - 10, 2013. Washington D.C.
147. Ramsden, M., A. Helsing, M. Xiao, J. Holloway, R. Robison, and K.L. O'Neill. The effect of caffeine on DNA repair. The 8th Annual Undergraduate Student Caucus and Poster Competition

at the Annual Meeting of the American Association for Cancer Research (AACR), April 5 - 10, 2013. Washington D.C.

148. Helsing, A.V., A. Elnaggar, P. Lynch, M. Xiao, M. Ramsden, M.M. Alegre, E. Weigel, J.N. McCoy, R.A. Robison, and K.L. O'Neill. The potential of resveratrol and *Nagami Kumquat* extracts in facilitating DNA repair in Raji cells. Annual Meeting of the American Association for Cancer Research (AACR), April 5 - 10, 2013. Washington D.C.
149. Shrestha, G., A.M. El-Naggar, M.R. Boswel, S.C. Derenthal, E. Weigel, L.L. St. Clair, R. Robison, and K.L. O'Neill. Cytotoxicity and mode of action of two lichen extracts, *Tuckermannopsis ciliaris* and *Xanthoparmelia chlorochroa* against Burkitt's lymphoma (Raji) cell and human colon cancer cell line (HT-29). Annual Meeting of the American Association for Cancer Research (AACR), April 5 - 10, 2013. Washington D.C.
150. M. Xiao, A. El-Naggar, A.V. Helsing, P.M. Lynch, M.M. Alegre, R.A. Robison, and K.L. O'Neill. Mutagenic effects of inorganic particulate matter on Raji and HepG2 cell lines exposed to ultraviolet radiation. Annual Meeting of the American Association for Cancer Research (AACR), April 5 - 10, 2013. Washington D.C.
151. E.G. Weigel, A. Martinez, A. ElNaggar, S. Ellis, P.G. Liu, R.A. Robison, and K.L. O'Neill. Differences in cellular antioxidant activity in Burkitt's lymphoma and normal human lymphocytes. Annual Meeting of the American Association for Cancer Research (AACR), April 5 - 10, 2013. Washington D.C.
152. March, J.K., D. Li, B.C. Holt, C.E. Wilson, W. Lowe, H.D. Tolley, M.L. Lee, and R.A. Robison. GC/MS method for rapid identification and differentiation of *Burkholderia pseudomallei*, *Burkholderia mallei*, *Burkholderia thailandensis*, and several members of the *Burkholderia cepacia* complex. General Meeting of the American Society for Microbiology, Session 16, Abstract # 118, p. 105. May 18-21, 2013. Denver, CO.
153. Lowe, W., B.A. Satterfield, D.B. Nelson, M.J. Heder, J.K. March, A.J. Bunnell, K.L. O'Neill, and R.A. Robison. Quadruplex real-time qPCR assay for the rapid detection and differentiation of the *B. pseudomallei* complex: *B. mallei*, *B. pseudomallei*, and *B. thailandensis*. ASM Biodefense and Emerging Diseases Research Meeting, Abstract # 080, p. 46. January 27-29, 2014. Washington, D.C.
154. Shrestha, G., Weigel, E., Livingston, J., St. Clair, L., Robison, R., and O'Neill, K. Metastatic Breast Cancer Polarizes Macrophages to an M2 Phenotype. Midwinter Conference of Immunologists Annual Meeting. January, 2014. Pacific Grove, CA.
155. Steck, R., Hill, S., Robison, R., and O'Neill, K.L. Pharmacoregulation of inflammation in monocyte-derived macrophages. Midwinter Conference of Immunologists Annual Meeting. January, 2014. Pacific Grove, CA.
156. Despain, J.T., J.M. Engle, K. Mostert, W. Lowe, K.L. O'Neill, and R.A. Robison. Method for killing *M. ulcerans* by mycobacteriophage using avirulent *Mycobacterium smegmatis* as a delivery vector. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract #17, March 8, 2014. Provo, UT.
157. Meng, W., C.D. Smith, R.A. Robison, and K.L. O'Neill. How does the tumor microenvironment

- affect macrophage aggressiveness? Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract #44, March 8, 2014. Provo, UT.
158. Hill, S., E. Weigel, R. Steck, J. Livingston, M. Larson, R. Robison, and K.L. O'Neill. Macrophage aggressiveness in cancer patients. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract #45, March 8, 2014. Provo, UT.
 159. Peterson, J., J. Livingston, B. Graham, L. Camberos, G. Martinez, G. Shrestha, A. Martinez, E. Weigel, R. Robison, and K.L. O'Neill. Piceatannol and pterostilbene: resveratrol analogs, potent antioxidants. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract #46, March 8, 2014. Provo, UT.
 160. Bennallack, P.R., R.A. Robison, and J.S. Griffiths. Genetic insights into the mechanism of host immunity in *Staphylococcus epidermidis* strain 115: a novel micrococcin P1 producing strain. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract #49, March 8, 2014. Provo, UT.
 161. Meng, W., Smith, C., Robison, R. and O'Neill, K.L. How does the tumor microenvironment affect macrophage aggressiveness? Intermountain Branch of the American Society for Microbiology Annual Meeting. March 8, 2014. Provo, UT.
 162. Hill, S., Weigel, E., Steck, R., Livingstone, J., Larsen, M., Robison, R., and O'Neill, K.L. Macrophage aggressiveness in cancer patients. Intermountain Branch of the American Society for Microbiology Annual Meeting. March 8, 2014. Provo, UT.
 163. Peterson, J., Livingstone, J., Graham, B., Camberos, L., Martinez, G., Shrestha, G., Martinez, A., Weigel, E., Robison, R., and O'Neill, K.L. Piceatannol and pterostilbene: resveratrol analogs, potent antioxidants. Intermountain Branch of the American Society for Microbiology Annual Meeting. March 8, 2014. Provo, UT.
 164. Bishop, B., Weigel, E., Shrestha, G., Robison, R., and O'Neill, K.L. Antioxidant studies on cliantro show possible benefits in cancer prevention. AACR 9th Annual Student Caucus and Poster Competition. April, 2014. San Diego, CA.
 165. Ramsden, M.K., Alegre, M.M., Weyant, M.J., Bennett, D.T., Yu, J.A., Elnaggar, A., Robison, R.A., and O'Neill, K.L. Detection of stage one lung cancer using a novel ELISA for thymidine kinase 1. American Association for Cancer Research Annual Meeting and 9th Annual Student Caucus and Poster Competition. April, 2014. San Diego, CA.
 166. Xiao, M., Yeung, I., Shrestha, G., Camberos, L., Robison, R.A., and O'Neill, K.L. Effects of resveratrol on chemotherapeutic agent 5-fluorouracil induced DNA damage in prostate and breast cancer cells. American Association for Cancer Research Annual Meeting and 9th Annual Student Caucus and Poster Competition. April, 2014. San Diego, CA.
 167. Shrestha, G., Xiao, M., Robison, R., St. Clair, L.L., and O'Neill, K.L. Lichen-derived polyphenols as a potential source of anticancer drugs. American Association for Cancer Research Annual Meeting and 9th Annual Student Caucus and Poster Competition. April, 2014. San Diego, CA.
 168. Steck, R., Hill, S., Robison, R.A., and O'Neill, K.L. Pharmacological reversal of caffeine-

- mediated phagocytic suppression. American Association for Cancer Research Annual Meeting and 9th Annual Student Caucus and Poster Competition. April, 2014. San Diego, CA.
169. Weigel, E.G., Liu, P.G., Meng, W., Smith, C.D., Robison, R.A., and O'Neill, K.L. How does the tumor microenvironment affect macrophage aggressiveness? American Association for Cancer Research Annual Meeting. April, 2014. San Diego, CA.
 170. Bennallack, P.R., Burt, S.R., Robison, R.A., and Griffiths, J.S. Offense and Defense: Antimicrobial thiopeptide production and resistance in *Staphylococcus epidermidis*. Gordon Conference: Microbial Stress Response. July, 2014. South Hadley, MA.
 171. Shrestha, G., Thompson, G.A., Leavitt, S.D., Robison, R.A., and St Clair, L.L. Lichens, Man's New Best Friend: How the Lichen Mycobiont Might Defeat Bacterial Pathogens. Botanical Society of America Annual Meeting. July, 2014. Boise, ID.
 172. Weigel, E.G., Liu, P.G., Meng, W., Smith, C.D., Robison, R.A., and O'Neill, K.L. How does the tumor microenvironment affect macrophage aggressiveness? American Association for Cancer Research Annual Meeting. April, 2015. Philadelphia, PA.
 173. Brog, R., Townsend, M., Monroe, J., Pagaduan, J., Weigel, E., Robison, R., and O'Neill, K. Thymidine kinase 1, a possible target for immunotherapy. American Association for Cancer Research Annual Meeting. April, 2015. Philadelphia, PA.
 174. Jaco, E.I., Weigel, E., Anderson, N., Meng, W., Davis, J., Robison, R., and O'Neill, K. Are cancer cells redefining macrophages' aggressiveness? American Association for Cancer Research Annual Meeting. April, 2015. Philadelphia, PA.
 175. Weigel, E., Anderson, N., Meng, W., Davis, J., Robison, R., and O'Neill, K. Prostate cancer microenvironment modulates macrophage phagocytosis. American Association for Cancer Research Annual Meeting. April, 2015. Philadelphia, PA.
 176. Weigel, E., Martinez, A., El Naggar, A., Liu, P.G., Robison, R., and O'Neill, K. Differences in cellular antioxidant activity in Burkitt's lymphoma and normal human lymphocytes. American Association for Cancer Research Annual Meeting. April, 2015. Philadelphia, PA.
 177. Abbott, D., Shrestha, G., St Clair, L., Robison, R., and O'Neill, K. Usnic and vulpinic acids, lichen-derived metabolites, induce apoptosis in SW620 colon cancer cell line independent of caspase-3. American Association for Cancer Research Annual Meeting and 10th Annual Student Caucus and Poster Competition. April, 2015. Philadelphia, PA.
 178. Ryndock, E., Burdach, J., Weinberger, R., Robison, R., and Meyers, C. The efficacy of an automated ultrasound probe disinfectant against high-risk human papillomavirus type 16 and 18. 30th International Papillomavirus Conference. September 17-21, 2015. Lisbon, Portugal.
 179. Weigel, E.G., Meng, W., Robison, R.A., and O'Neill, K.L. Prostate cancer exosomes affect macrophage polarization and phagocytosis. Midwinter Conference of Immunologists Annual Meeting. January, 2016. Pacific Grove, California.
 180. Townsend, M.H., Weigel, E.G., Meng, W., Brog, R.A., Valezquez, E.J., Robison, R.A., and O'Neill, K.L. Macrophage polarization in the colon cancer tumor microenvironment. Midwinter

Conference of Immunologists Annual Meeting. January, 2016. Pacific Grove, California.

181. Brog, R.A., Weigel, E.G., Meng, W., Townsend, M.H., Valezquez, E.J., Robison, R.A., and O'Neill, K.L. Breast cancer cells cause decrease in macrophage aggressiveness. Midwinter Conference of Immunologists Annual Meeting. January, 2016. Pacific Grove, California.
182. Meng, W., Weigel, E.G., Brog, R.A., Townsend, M.H., Valezquez, E.J., Robison, R.A., and O'Neill, K.L. The effect of prostate tumor microenvironment on macrophage aggressiveness. Midwinter Conference of Immunologists Annual Meeting. January, 2016. Pacific Grove, California.
183. Valezquez, E.J., Weigel, E.G., Meng, W., Townsend, M.H., Brog, R.A., Robison, R.A., and O'Neill, K.L. Burkitt's lymphoma cells affect macrophage polarization. Midwinter Conference of Immunologists Annual Meeting. January, 2016. Pacific Grove, California.
184. Valezquez, E.J., Weigel, E.G., Meng, W., Townsend, M.H., Commonck, A., Chandler, C., Downey, M.R., Robison, R., and O'Neill, K.L. A novel molecular target for lung cancer. American Association for Cancer Research Annual Meeting. April, 2016. New Orleans, LA.
185. Xiao, M., Chu, R., Pagaduan, J., Robison, R.A., and O'Neill, K.L. Killing cancer one cell at a time: Development and characterization of a novel antibody drug conjugate. American Association for Cancer Research Annual Meeting. April, 2016. New Orleans, LA.
186. Weigel, E.G., Meng, W., Robison, R.A., and O'Neill, K.L. Prostate cancer exosomes and their effects on macrophage engulfment and polarization. American Association for Cancer Research Annual Meeting. April, 2016. New Orleans, LA.
187. Weigel, E.G., Brog, R.A., Townsend, M.H., Valezquez, E.J., Becker, T.A., Mejia, C.A., Downey, M.R., Arroyo, J.A., Robison, R.A., and O'Neill, K.L. Breast cancer cells expose thymidine kinase 1 as a new immunotherapy target. American Association for Cancer Research Annual Meeting. April, 2016. New Orleans, LA.
188. Townsend, M.H., Weigel, E.G., Meng, W., Chandler, C., Robison, R., and O'Neill, K.L. Cancer immunotherapy: Could TK1 be used as a target for colon cancer? American Association for Cancer Research Annual Meeting. April, 2016. New Orleans, LA.
189. Dunn, A.R., Townsend, M.H., Peck, C., Nichols, T., Meng, W., Heaton, M., Robison, R.A., and O'Neill, K.L. A study of glyphosate carcinogenicity. Eleventh Annual Undergraduate Student Caucus and Poster Competition at the American Association for Cancer Research Annual Meeting. April, 2016. New Orleans, LA.
190. Peck, C., Weigel, E.G., Robison, R.A., and O'Neill, K.L. The impact of prostate cancer exosomes on macrophage phagocytosis and polarization. Eleventh Annual Undergraduate Student Caucus and Poster Competition at the American Association for Cancer Research Annual Meeting. April, 2016. New Orleans, LA.
191. Weigel, E.G., Chu, R.P., Meng, W., Brog, R.A., Robison, R.A., and O'Neill, K.L. Thymidine kinase 1 is on the cell surface of prostate cancer cells. Eleventh Annual Undergraduate Student Caucus and Poster Competition at the American Association for Cancer Research Annual Meeting. April, 2016. New Orleans, LA.

192. Weagel, E.G., Brog, R.A., Meng, W., Townsend, M.H., Valezquez, E.J., Becker, T.A., Mejia, C.A., Downey, M.R., Arroyo, J.A., Robison, R.A., and O'Neill, K.L. Breast cancer cells expose thymidine kinase 1 as a new immunotherapy target. Eleventh Annual Undergraduate Student Caucus and Poster Competition at the American Association for Cancer Research Annual Meeting. April, 2016. New Orleans, LA.
193. Xiao, M., Chu, R., Pagaduan, J., Robison, R.A., and O'Neill, K.L. Development and characterization of a novel antibody drug conjugate. Eleventh Annual Undergraduate Student Caucus and Poster Competition at the American Association for Cancer Research Annual Meeting. April, 2016. New Orleans, LA.
194. Weagel, E.G., Meng, W., Robison, R.A., and O'Neill, K.L. The effects of prostate cancer exosomes in macrophage polarization and phagocytosis. 19th Beatson International Cancer Conference. July, 2016. Glasgow, Scotland, UK.
195. Velasquez, E., Vaden, K., Townsend, M., Weagel, E., Weber, S., Robison, R., and O'Neill, K. Chimeric Antigen Receptor (CARs) for Thymidine Kinase 1 (TK1): A novel immunotherapy approach to fight cancer. Biomedical Engineering West Regional Conference. January, 2017. Provo, UT.
196. Buchanan, C., Wood, R.L., Hoj, T.R., Alizadeh, M., McClellan, D.S., Bledsoe, C.G., Wood, M., Blanco, R., Hickey, C.L., Ravesten, T., Robison, R., and Pitt, W.G. Rapid Separation of Very Low Concentrations of Bacteria from Blood. Biomedical Engineering West Regional Conference. January, 2017. Provo, UT.
197. Townsend, M.H., Burrup, W., Weagel, E.G., Felsted, A., Anderson, M.D., Valezquez, E.J., Weber, K.S., Robison, R.A., and O'Neill, K.L. HPRT: Could it be used as a biomarker for future immunotherapies? Undergraduate student caucus and poster competition, American Association for Cancer Research Annual Meeting. April, 2017. Washington, D.C.
198. Weagel, E.G., Townsend, M.H., Anderson, M.D., Valezquez, E.J., Weber, K.S., Robison, R.A., and O'Neill, K.L. Unusual expression of HPRT on the surface of the colorectal cancer cell lines HT29 and SW620. American Association for Cancer Research Annual Meeting. April, 2017. Washington, D.C.
199. Valezquez, E.J., Vaden, K., Townsend, M.H., Weagel, E.G., Weber, K.S., Robison, R.A., and O'Neill, K.L. Development of a TK1 specific chimeric antigen receptor T cell for the treatment of non-small-cell lung cancer. American Association for Cancer Research Annual Meeting. April, 2017. Washington, D.C.
200. Townsend, M., Olsen, E., Felsted, A., Robison, R., and O'Neill, K. Metastatic colorectal cancer tumors express higher levels of IL-10 than primary colorectal tumors. Intermountain Branch of the American Society for Microbiology Annual Meeting. April 15, 2017. Ogden, UT.
201. Olsen, E., Townsend, M., Felsted, A., Velasquez, E., Weagel, E., Robison, R., and O'Neill, K. Is interleukin-10 a key factor in colon cancer metastasis? Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract #11, April 15, 2017. Ogden, UT.
202. Velasquez, E., Weagel, E., Townsend, M., Burrup, W., Lattin, J., Robison, R., and O'Neill, K.

- Thymidine kinase 1 and its potential as an immunotherapeutic target for the treatment of multiple malignancies. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract #23, April 15, 2017. Ogden, UT.
203. Townsend, M., Brindley, T., Felsted, A., Weagel, E., Velasquez, E., Robison, R., and O'Neill, K. Evaluation of hypoxanthine guanine phosphoribosyltransferase expression in prostate cancer and its implication on therapy. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract #28, April 15, 2017. Ogden, UT.
 204. Velasquez, E., Ewell, Z., Lattin, J., Vaden, K., Townsend, M., Weagel, E., Weber, S., Robison, R., and O'Neill, K. A pre-clinical study of chimeric antigen receptor (CAR) T-cells targeting thymidine kinase 1 (TK1) in lung cancer cell lines. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract #30, April 15, 2017. Ogden, UT.
 205. Guerrero, I., Hoj, T.R., Berges, B., and Robison, R. Effects and differences between human and mouse cell lines during chikungunya virus infection. Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract #32, April 15, 2017. Ogden, UT. Note: This presentation won 2nd place in the student poster competition.
 206. Thiriot, J., Hoj, T.R., and Robison, R. *Galleria mellonella* as a virulence model for *Burkholderia pseudomallei*: does it really work? Intermountain Branch of the American Society for Microbiology Annual Meeting. Abstract #36, April 15, 2017. Ogden, UT.
 207. Gao, J., Ettinger, A., Robison, R.A., and Austin, D.E. Opposite polarity electrical charge on electrosprayed bacterial spores: implications for electrospray mechanism. 65th Conference on Mass Spectrometry and Allied Topics. June, 2017. Indianapolis, IN.
 208. Townsend, M.H., Felsted, A.M., Cox, T.P., Ence, Z.E., Lattin, J.E., Boyer, M.K., Piccolo, S.R., Robison, R.A., and O'Neill, K.L. Surface Localization of HPRT and its implication as an immunotherapy target for B cell malignancies. Simmons Center for Cancer Research Annual Donor Appreciation Dinner. March, 2018. Provo, UT.
 209. Townsend, M.H., Brindley, T.D., Uhl, R.A., Felsted, A.M., Piccolo, S.R., Robison, R.A., and O'Neill, K.L. Evaluation of TGF- β and IL-10 as potential prognostic biomarkers in primary and metastatic colorectal adenocarcinoma. The American Society for Microbiology TriBranch Meeting. Abstract #102, April 6-7, 2018. Durango, CO.
 210. Brown, O., Grose, J.H., and Robison, R.A. Evaluation of bacteriophages against extended-spectrum β -lactamase producing *Enterobacteriaceae*. The American Society for Microbiology TriBranch Meeting. April 6-7, 2018. Durango, CO.
 211. Mitton, J., Ogilvie, B., Tucker, J., and Robison, R. Providone-iodine vapor kills MRSA. The American Society for Microbiology TriBranch Meeting. Oral Presentation. April 6-7, 2018. Durango, CO.
 212. O'Neill, K.L., Weagel, E., Burrup, W., Townsend, M.H., and Robison, R.A. Suppression of macrophage phagocytosis with low frequency electromagnetic field. American Association for Cancer Research Annual Meeting. April, 2018. Chicago, IL.

213. Townsend, M.H., Olsen, E., Weigel, E.G., Velazquez, E.J., Felsted, A.M., Burrup, W., Weber, K.S., Robison, R.A., and O'Neill, K.L. HPRT: A biomarker and potential target for detection and treatment of colorectal cancers. American Association for Cancer Research Annual Meeting. April, 2018. Chicago, IL.
214. Townsend, M.H., Brindley, T.D., Uhl, R.A., Felsted, A.M., Piccolo, S.R., Robison, R.A., and O'Neill, K.L. Expression of IL-10 and TGF-B in Primary and Metastatic Colorectal Adenocarcinoma Tumors. American Association for Cancer Research Annual Meeting. April, 2018. Chicago, IL.
215. Townsend, M.H., Cox, T.P., Felsted, A.M., Lattin, J.E., Ence, Z.E., Robison, R.A., Piccolo, S.R., and O'Neill, K.L. Determining the Molecular Mechanism of HPRT Surface Expression in Prostate Cancer. American Association for Cancer Research Annual Meeting. April, 2018. Chicago, IL.
216. Townsend, M.H., Ewell, Z.D., Ence, Z.E., Burrup, W., Velazquez, E.J., Robison, R.A., Piccolo, S.R., and O'Neill, K.L. Evaluation of Potential Protein Biomarkers for Burkitt's Lymphoma. American Association for Cancer Research Annual Meeting. April, 2018. Chicago, IL.
217. Townsend, M.H., Felsted, A.M., Cox, T.P., Ence, Z.E., Piccolo, S.R., Robison, R.A., and O'Neill, K.L. HPRT surface localization on prostate cancer cells as a biomarker for immunotherapy. American Association for Cancer Research Annual Meeting. April, 2018. Chicago, IL.
218. Townsend, M.H., Cox, T.P., Felsted, A.M., Piccolo, S.R., Robison, R.A., and O'Neill, K.L. IL-10 as an indicator of metastatic potential in colorectal carcinoma. American Association for Cancer Research Annual Meeting. April, 2018. Chicago, IL.
219. Townsend, M.H., Felsted, A.M., Ence, Z.E., Piccolo, S.R., Robison, R.A., and O'Neill, K.L. Unique HPRT1 upregulation in malignant tissue: Potential use as a diagnostic biomarker. American Association for Cancer Research Annual Meeting. April, 2018. Chicago, IL.
220. Townsend, M.H., Felsted, A.M., Ence, Z.E., Piccolo, S.R., Robison, R.A., and O'Neill, K.L. Unusual HPRT1 upregulation in malignant tissue and potential use as a diagnostic biomarker. American Association for Cancer Research Annual Meeting. April, 2018. Chicago, IL.
221. Townsend, M.H., Brindley, T.D., Felsted, A.M., Ence, Z.E., Piccolo, S.R., Robison, R.A., and O'Neill, K.L. Evaluation of TGF- β and IL-10 as potential prognostic biomarkers in primary and metastatic colorectal adenocarcinoma. American Association for Cancer Research Annual Meeting. April, 2018. Chicago, IL.
222. Townsend, M.H., Clay, T.B., Felsted, A.M., Burrup, W., Weigel, E.G., Velazquez, E.J., Robison, R.A., and O'Neill, K.L. Evaluation of the upregulation and surface presentation of HPRT as an immunotherapy target for the treatment of B cell malignancies. Cancer and Immunotherapy Symposium, American Association for Cancer Research Annual Meeting. April, 2018. Chicago, IL.
223. Burrup, W., Townsend, M.H., Weigel, E.G., Robison, R.A., and O'Neill, K.L. Differential polarization of macrophages after varying lengths of EMF exposure. Undergraduate Student

Caucus and Poster competition, American Association for Cancer Research Annual Meeting. April, 2018. Chicago, IL.

224. Velazquez, E.J., Lattin, J.E., Ewell, Z., Brindley, T., Reinstein, Z., Townsend, M.H., Robison, R.A., and O'Neill, K.L. Chimeric antigen receptor modified macrophages harnessing toll/IL-1 receptor signaling for the treatment of solid tumors. Undergraduate Student Caucus and Poster competition, American Association for Cancer Research Annual Meeting. April, 2018. Chicago, IL.
225. Townsend, M.H., Ence, Z.E., Cox, T.P., Lattin, J.E., Burrup, W., Piccolo, S.R., Weber, K.S., Robison, R.A., and O'Neill, K.L. Evaluating HPRT as a potential Immunotherapeutic target in colon cancer cells. BYU Biomedical Symposium. May, 2018. Provo, UT.
226. Townsend, M.H., Felsted, A.M., Ence, Z.E., Piccolo, S.R., Robison, R.A., and O'Neill, K.L. HPRT Upregulation in cancer and its potential use as a diagnostic and prognostic biomarker. BYU Biomedical Symposium. May, 2018. Provo, UT.
227. Townsend, M.H., Cox, T.P., Felsted, A.M., Lattin, J.E., Ence, Z.E., Robison, R.A., Piccolo, S.R., and O'Neill, K.L. HPRT's surface expression and biochemical connection tp53 in prostate cancer. BYU Biomedical Symposium. May, 2018. Provo, UT.
228. Townsend, M.H., Bennion, E., Felsted, A.M., Cox, T.P., Ence, Z.E., Lattin, J.E., Boyer, M.K., Piccolo, S.R., Robison, R.A., and O'Neill, K.L. Potential B cell malignancy biomarker: the upregulation and surface expression of hypoxanthine guanine phosphoribosyltransferase. BYU Biomedical Symposium. May, 2018. Provo, UT.
229. Brindley, T., Uhl, R.H., Robison, R.A., and O'Neill, K.L. Development of a predictive, diagnostic sandwich ELISA against Thymidine Kinase I. National Symposium for Undergraduate Research, St. Jude Children's Research Hospital. June, 2018. Memphis, TN.
230. Townsend, M.H., Bitter, E.K., Larsen, D., Freitas, C.M.T., Piccolo, S.R., Weber, K.S., Robison, R.A., and O'Neill, K.L. HPRT impact on immune regulation influences the tumor microenvironment. Midwinter Immunology Conference. January, 2019. Asilomar, CA.
231. Townsend, M.H., Bennion, K., Ence, Z.E., Suh, E., Felsted, A.M., Lattin, J.E., Piccolo, S.R., Robison, R.A., and O'Neill, K.L. Stepping into the ring of cancer immunotherapy: HPRT as a therapeutic target. Midwinter Immunology Conference. January, 2019. Asilomar, CA.
232. Townsend, M.H., Felsted, A.M., Ence, Z.E., Piccolo, S.R., Robison, R.A., and O'Neill, K.L. Upregulation of housekeeping HPRT1 gene in malignancies hinders subsequent use as an endogenous control. BYU Presidents Leadership Council. March, 2019. Provo, UT.
233. Woolley, A.T., Hanson, R.L., Harris, D.H., Pitt, W.G., Robison, R.A., Brown, O.T., and Wood, R. Integrating Sequence-Specific DNA Hybridization with Single-Molecule Detection to Diagnose Drug Resistance for Treating Sepsis. Pittcon 2019. March, 2019. Philadelphia, PA.
234. Velazquez, E.J., Cress, J., Smith, K., Skidmore, J., Humphreys, T., Townsend, M.H., Ewell, Z., Robison, R.A., and O'Neill, K.L. Selection and Evaluation of Human Nanobodies against the Tumor Biomarker Thymidine Kinase 1 with Phage Display Technology. Intermountain Biological Engineering Conference. March, 2019. Logan, UT.

235. Townsend, M.H., Ewell, Z., Freitas, C.M.T., Larsen, D., Bitter, E.K., Bennion, K.A., Weber, K.S., Robison, R.A., and O'Neill, K.L. The immunosuppressive tumor microenvironment may be affected by HPRT overexpression. BYU Cancer Symposium. March, 2019. Provo, UT.
236. Townsend, M.H., Bennion, K., Ence, Z.E., Suh, E., Felsted, A.M., Lattin, J.E., Piccolo, S.R., Robison, R.A., and O'Neill, K.L. Potential prostate cancer therapeutic target: Hypoxanthine Guanine phosphoribosyltransferase. BYU Cancer Symposium. March, 2019. Provo, UT.
237. Townsend, M.H., Cox, T.P., Felsted, A.M., Lattin, J.E., Ence, Z.E., Robison, R.A., Piccolo, S.R., and O'Neill, K.L. HPRT's surface expression and biochemical connection to p53 in prostate cancer. BYU Biomedical Symposium. March, 2019. Provo, UT.
238. Townsend, M.H., Ewell, Z., Freitas, C.M.T., Larsen, D., Bitter, E.K., Bennion, K.A., Piccolo, S.R., Weber, K.S., Robison, R.A., and O'Neill, K.L. HPRT overexpression may contribute to the immunosuppressive tumor microenvironment. American Association for Cancer Research Annual Meeting. April, 2019. Atlanta, GA.
239. Velazquez, E.J., Brindley, T.D., Shrestha, G., Skabelund, R.A., Lee, C.M., Ewell, Z.D., Bitter, E.E., Townsend, M.H., Bennion, K.B., Ong, K.L., Whitley, K.V., Weber, K.S., Robison, R.A., and O'Neill, K.L. Generation and characterization of a panel of monoclonal antibodies against the tumor biomarker thymidine kinase 1 for research, clinical and therapeutic applications. American Association for Cancer Research Annual Meeting. April, 2019. Atlanta, GA.
240. Townsend, M.H., Bennion, K., Ence, Z.E., Suh, E., Felsted, A.M., Parker, A.C., Piccolo, S.R., Robison, R.A., and O'Neill, K.L. Exploring the use of hypoxanthine-guanine phosphoribosyltransferase (HPRT) antibodies for immunotherapeutic application in prostate cancer. AACR Undergraduate Student Caucus Poster Competition. April, 2019. Atlanta, GA.
241. Townsend, M.H., Palmer, R.C., Ence, Z.E., Felsted, A.M., Lattin, J.E., Piccolo, S.R., Robison, R.A., and O'Neill, K.L. Prospective biomarkers for endometrial cancer. AACR Undergraduate Student Caucus Poster Competition. April, 2019. Atlanta, GA.
242. Thurgood, T., Robison, R.A., and Grose, J.H. First Bacteriophages Reported to Infect Pathogenic *Bacillus anthracis*. American Society for Microbiology Intermountain Branch Annual Meeting. April, 2019. Provo, UT.
243. Moe, B.M., Michael, C., Hanis, T.F., Stoker, T.A., Elton, D., Flor, S.A., Divis, T., Uricoechea, L., Thurgood, T., Breakwell, D.P., Robison, R.A., and Grose, J.H. Discovering antibiotic resistance genes in bacteriophages. American Society for Microbiology Intermountain Branch Annual Meeting. April, 2019. Provo, UT.
244. Thurgood, T., Grose, J.H., and Robison, R.A. A case study of phage therapy in response to antibiotic resistant bacterial infections. American Society for Microbiology Intermountain Branch Annual Meeting. April, 2019. Provo, UT.
245. Guerrero, I., Villalva, C.J., Berges, B., and Robison, R.A. A humanized mouse model alternative for chikungunya virus infection. American Society for Microbiology Intermountain Branch Annual Meeting. April, 2019. Provo, UT.

246. Woolley, A.T., Hanson, R.L., Harris, D.H., Knob, R., Brown, O.T., Wood, R.,L., Robison, R.A., and Pitt. W.G. Development of a miniaturized system for DNA-based sepsis diagnosis. 257th ACS National Meeting, Division of Analytical Chemistry 2019. April, 2019. Orlando, FL.
247. Velazquez, E.J., Cress, J.D., Smith, K.A., Skismore, J.R., Humphreys, T.B., Bellini, D.M., Ewell, Z.D., Robison, R.A., and O'Neill, K.L. Exploring the potential of human nanobodies against thymidine kinase 1 for the targeting of lung cancer cells. American Association for Cancer Research Annual Meeting. June, 2020. Virtual.
248. Guerrero, I., Villalva, C.J., Berges, B., and Robison, R.A. Characterization of RAG 2^{-/-}, γ c^{-/-} Mice as an Animal Model to Study Neurotropic Chikungunya Disease. American Society for Microbiology Intermountain Branch Annual Meeting. December, 2020. Ogden, UT.
249. Ogilvie, B., Lopez, B., Berges, B., and Robison, R.A. Alcohol-free hand sanitizer kills SARS-CoV-2. American Society for Microbiology Intermountain Branch Annual Meeting. December, 2020. Ogden, UT.
250. Gray, M., Guerrero, I, Solis Leal, A., Robison, R.A., Berges, B., Pickett, B. Chikungunya virus time course infection of human macrophages. World Society for Virology Annual Conference. June, 2021. Oral, Virtual.
251. Ogilvie, B., Solis Leal, A., Lopez, J.B., Poole, B.D., Robison, R.A., Berges, B.K. Alcohol-free hand sanitizer and other quaternary ammonium disinfectants quickly and effectively inactivate SARS-CoV-2. COVID in Africa. June, 2021. Oral, Virtual.
252. Gray, M., Guerrero, I, Solis Leal, A., Robison, R.A., Berges, B., Pickett, B. Chikungunya virus time course infection of human macrophages. American Society for Virology Annual Meeting. July, 2021. Oral, Virtual.