

CURRICULUM VITAE

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EMPLOYMENT AND POST-DOCTORAL EXPERIENCE

I am currently a full Teaching Professor with CFS as a Professional faculty member. For the first 19.5 years at BYU, I served as Director of the Research Instrumentation Core (RIC) for the College of Life Sciences.

2016-	Professor, CFS, Microbiology and Molecular Biology Department Brigham Young University
2004-2023	Director, Research Instrumentation Core (RIC) Facility, College of Life Sciences Brigham Young University
2010-2016	Associate Professor, CFS, Microbiology and Molecular Biology Department Brigham Young University
2004-2010	Assistant Professor, CFS Track, Microbiology and Molecular Biology Department Brigham Young University
2003-2004	Research Associate, Microbiology, Immunology and Molecular Genetics Department University of Kentucky Medical School
2000-2003	Post-Doctoral Fellow, Microbiology, Immunology and Molecular Genetics Department University of Kentucky Medical School
1995-2000	Instructor, Adjunct Faculty, Division of Biological Sciences and Nursing Lexington Community College, University of Kentucky affiliate

EDUCATION

2022	M.B.A., <i>Executive Program</i> , Marriott School of Business Brigham Young University Specialization: Advanced Operations, Human Resources, Experience Design
2000	Ph.D., Veterinary Science; <i>Virology & Immunology</i> , Veterinary Science Department University of Kentucky College of Agriculture, Gluck Equine Research Center Dissertation: Development of a competitive reverse transcription PCR assay to quantify equine IFN- γ , IL-2, IL-4 and G3PDH. Preliminary study of equine arteritis virus (EAV) and cytokine responses in horses.
1993	M.S., BioVeterinary Science; <i>Virology & Biochemistry</i> , Animal, Dairy & Vet. Sci. Dept. Utah State University Thesis: Inhibitors of equine arteritis virus replication.
1992	B.A., German; Chemistry minor; pre-veterinary medicine coursework. Utah State University

PROFESSIONAL AFFILIATIONS

2003-	Member, American Association of Immunologists
1997-	Member, American Society for Microbiology
2010-2018	Member, International Society for Transgenic Technology
2009-2016	Cohort 2, Science Education Alliance (SEA-PHAGES), Howard Hughes Medical Institute
2007-2015	Executive Committee Member, Autumn Immunology Conference, Chicago
1993-2006	Associate Member, American Society for Virology

RIC FACILITY DIRECTOR – Professional Faculty Member

2004-2023	Directed all operations: oversee services, lab technicians, financials, and quality control of high-end research equipment. Collaborate and support research endeavors of student and faculty researchers across BYU campus. Maintain records for equipment usage, billing, audits, and propose and implement changes. Train and provide consulting for flow cytometry and other equipment, protocols, and data interpretation for grants and papers.
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SCHOLARSHIPS, HONORS & AWARDS

2024	University Accessibility Center Faculty Recognition Award, Brigham Young University
2022	Karl G. Maeser Professional Faculty Excellence Award, Brigham Young University
2016	Outstanding Achievement in Technology Transfer, Brigham Young University
2014	Outstanding Teaching Award, College of Life Sciences, Brigham Young University
2012	Most Publication in ISI-listed Journals, Department of Microbiol. & Mol. Biol., BYU
2012	Highest Student Ratings in a 300-level Course, Department of Microbiol. & Mol. Biol., BYU
2010	Wiki Spirit and Phage Spirit Awards, Science Education Alliance, Howard Hughes Medical Institute
2002-2003	NIH Research Training Grant in Microbial Pathogenesis, Univ. of Kentucky Medical School
2001-2002	NIH Research Training Grant in Microbial Pathogenesis, Univ. of Kentucky Medical School
2000-2001	NIH Research Training Grant in Cancer Etiology and Treatment, Univ. of KY Medical School

LEADERSHIP & SERVICE

2025-	President Elect, American Society for Microbiology Intermountain Branch
2019-	Chair, University Vivarium Advisory Board, BYU
2019-	Biosafety Consultant, Local Affiliate Voting Member, Clinical Biosafety Services
2012-	Faculty Development Committee Member, Microbiology & Molecular Biology Dept., BYU
2023	Faculty Development Workshops Chair, Gospel Methodology; Teach with Active Learning, BYU
2020-2023	Associate Chair, Microbiology & Molecular Biology Dept., BYU
2022	Undergraduate Experience Input Gathering Committee, College of Life Sciences, BYU
2021-2022	Member, University Faculty Council on Rank and Status-Professional, BYU
2021	Chair, Strategic Planning Committee, Microbiology & Molecular Biology Dept., BYU
2018-2019	Member, University Vivarium Advisory Board, BYU
2015	Chair, Autumn Immunology Conference (early withdrawal from this position, served 3 months)
2014	Secretary, Autumn Immunology Conference
2013	Workshop Coordinator, Autumn Immunology Conference
2008-2012	Undergraduate Curriculum Committee Chair, Microbiology & Molecular Biology Dept., BYU
2008-2012	College Curriculum Committee Member, College of Life Sciences, BYU
2007-2015	Executive Committee Member, Autumn Immunology Conference
2007-2012	Undergraduate Program Coordinator, Autumn Immunology Conference
2007-2011	Computer Resources Committee Member, College of Life Sciences, BYU
2005-2017	Specific Pathogen-Free Animal Facility Advisory Committee Member, College of Life Sci., BYU
2004-2017	Core Facility Directors Committee Member, College of Life Sciences, BYU
2004-2007	Resource Committee Member, Microbiology & Molecular Biology Dept., BYU
2005, 2006	Workshop Chair, Innate Immunity, Autumn Immunology Conference, Chicago, IL
2004	SuperVision Certificate, Human Resources Supervisor Training Program, Univ. of Kentucky

UNIVERSITY NEW FACULTY DEVELOPMENT WORKSHOPS

Aug 2024	New Faculty Series Kickoff Event, Guest Speaker, University Conference, BYU
2023-2024	New faculty series Fall & Spring workshops, Workshop Chair / Co-Chair
Aug 2023	New Faculty Series Kickoff Event, Guest Speaker, University Conference, BYU

TEACHING PUBLICATIONS

MMBio261	<i>Our Immune System and the Pathogens that Challenge Us: Foundations in Immunology, Virology, and Bacteriology.</i> (2019) Sandra Hope, Brian Poole, Great River Technol., online textbook, ISBN: 9781644961407
MMBio151	<i>Relevant Microbiology.</i> (2010) Don Breakwell, Sandra Hope, Rich Robison, Paul Farnsworth. Great River Technol., online lab, ISBN: 9781615491537
MMBio466	<i>Laboratory Exercises in Virology.</i> (2007) F. Brent Johnson, Sandra H Burnett
MMBio241	31 Video Tutorials for Molecular and Cellular Biology Lab. (2006) Sandra Burnett
MMBio467	<i>Immunology Lab Manual.</i> (2007) Sandra H Burnett
MMBio241	<i>Molecular and Cellular Biology Lab Manual.</i> (2005) Sandra Burnett

PROFESSIONAL DEVELOPMENT ACTIVITIES

'06, '07, '13, '24	Publish and Flourish Writing Group, BYU Faculty Center
Jul 2019-2021	Executive MBA program, Marriot School of Business, Brigham Young University
Jun 2014	SEA-PHAGES Advanced Phage Genomics Workshop, Howard Hughes Medical Institute
'06, '12, '13, '11, '12	Writing Matters Faculty Workshops, BYU University Writing Learning Suite Workshops, BYU Center for Teaching and Learning
Jun, Dec '09	SEA-PHAGES In-situ and In-silico training sessions, Howard Hughes Medical Institute
Oct. 2005	Certified Operator, BD Biosciences FacsCanto Fluorescence Activated Cell Analyzer
Feb. 2005	Certified Operator, BD Biosciences digital FacsVantage SE Fluorescence Activated Cell Sorter
Jan. 2005	Certified Operator, MIDI, Inc. Gas Chromatography identification of bacterial cultures
2004-2005	BYU Faculty Development Seminar Series
Nov. 2004	Reinvention Center Meeting, Integrating Research into Undergraduate Education
Oct. 2004	Certified Operator, BD Biosciences analog FacsVantage SE Fluorescence Activated Cell Sorter
Feb. 2004	Univ. of Kentucky SuperVision, Human Resources Supervisor Training Program

INTELLECTUAL PROPERTIES

U.S. Patent	"Methods and Devices for Charged Molecule Manipulation," Aten, Q.T., Burnett, S.H., Howell, L.L., Jensen, B.D., assigned to BYU.
Provisional Patents	"Inactivation of Bacterial Spores Using Phages That Bind" Hope, S., assigned to BYU
Pending or Invention	"System and Method for Treating a Disease or Bacterial Infection – Bystander Phage Therapy" Hope, S., assigned to BYU.
Disclosures Filed (8 of ~18)	"System and Method for Treating a Disease or Bacterial Infection" Hope, S., assigned to BYU. "Blood dopamine D2 receptors as biomarkers for brain dopamine" Hope, S., Burton GF, Steffensen SC, Assigned to BYU. "Cytoplasm-to-Organelle Macromolecule Transport via Nanolance-Generated Localized Intracellular Electric Field," Quentin T. Aten, Regis A. David, Sandra H. Burnett, Brian D. Jensen and Larry L. Howell, assigned to BYU. "Pronuclear DNA Transfer via Nano-Featured Lance and Metamorphic Microelectromechanical System," Quentin T. Aten, Sandra H. Burnett, Brian D. Jensen and Larry L. Howell, assigned to BYU. "Cell corrals designed to store cells during the cell manipulation processes," Easter, M., Fazio, W., Aten, Q. Jensen, B., Howell, L., Burnett, S., assigned to BYU.
Transgenic Mouse Development	Transgenic mouse strain for immune system studies; developed and donated to Jackson Laboratories: Macrophage Fas-Induced Apoptosis (Mafia) mice. Jackson stock number 005070. Strain: C57BL/6J-Tg(Csflr-EGFP-NGFR/FKBP1A/TNFRSF6)2Bck/J

RESEARCH SUPPORT (\$80,900 internal + \$735,218 external = \$816,118 total)

2016-2017	\$ 10,000	PI. Phage binding to <i>Paenibacillus larvae</i> spores, North American Pollinator Protection Campaign (NAPPC) Honey Bee Health Improvement Project Grant.
2014-2016	\$200,000	Co-PI with J. Grose, D. Breakwell. Funding to perpetuate the "Phage Hunters" research program, private donation.
2012-2013	\$ 16,000	Co-PI with J. Grose, D. Breakwell. A phage-based treatment for Fireblight and American Foulbrood. BYU Technology Transfer.
2012	\$ 1,500	PI. Transgenic mouse rederivation project. NIH-University of Utah.
2011-2012	\$ 49,950	} Co-PI with L.Howell, B.Jensen (PI). Cytoplasm-to-Pronucleus and YAC
2011	\$132,668	
2010-2011	\$ 97,500	} Nanoinjection. Nanoinjection and Cell Restraint Technologies. NanoInjection Technologies, LLC.
2010	\$116,214	
2009-2010	\$127,386	} Co-PI with L.Howell, B.Jensen (PI). Development of Nanoinjection Prototypes and Protocols, Phases I, II, and III. NanoInjection Technologies, LLC.
2009-2012		
		Co-PI with D. Breakwell to join Science Education Alliance, National Research Genomics Initiative Cohort 2, for "Phage Hunters" research program, Howard Hughes Medical Institute.
2008-2009	\$15,000	Office of Research and Creative Activity Mentoring Grant, Brigham Young Univ.
2006-2007	\$30,000	Office of Research and Creative Activity Mentoring Grant, Brigham Young Univ.
2005-2006	\$19,900	College of Biology and Agriculture Mentoring Grant, Brigham Young Univ.

TEACHING EXPERIENCE

2004-	Brigham Young University, Provo, Utah		Credits	Hrs/wk	# semesters	# sections
	Univ101	Univ101	2	2	1	1
	MMBio194	Phage Hunters (team taught)	2	6	6	6
	Bio241/MMBio241	Molecular & Cell Biol. Lab	1	3	15	68+37evening
	MMBio121	General Biology: Health & Disease	3	3	8	8
	MMBio240	Molecular Biology	3	3	6	6
	MMBio261	Infection & Immunity	3	3	8	8
	MMBio365	Advanced Lab Techniques	1	3	5	13
	MMBio390R	Reading in Molecular Biol.	1	1	3	3
	MMBio361	Infection & Immunity	4	4	6	6
	MMBio463/551R	Immunology	3	3	17	17
	MMBio466	Virology Lab (team taught)	1	3	2	2
	MMBio467/551R	Immunology Lab	1	3	15	15
	MMBio490R/691R	Molecular Biology Seminar	1	1	1	1
	MMBio494R	Mentored Research	Var.			42
	Evening Classes	MCAT/DAT Exam Prep Class	0	3	6	10
1995-2000	Lexington Community College (LCC), Lexington, KY, Midway College Extension, Danville KY Instructor in the Division of Biological Sciences and Nursing, LCC was affiliated with Univ. of KY					
	BSL 100	Human Anatomy & Physiology	3	3	14	14
	BSL 100L/Bio 195	Human Anatomy & Physiology Lab	5	3	8	12
	Bio 102	Human Ecology (non-sci. maj.)	3	3	1	1
	Bio 103	Introductory Biology (non-sci. maj.)	3	3	1	1

STUDENT EVALUATIONS – most recent 5 years			Cr	# of	Average	My	Dept.	University
Semester	Course		Hrs	students	Grade of 4.0	Student Ratings of 5	Student Ratings	Student Ratings
2024	Fall	MMBio467 Immunology Lab	1	22	3.97	4.8	4.6	4.5
	Fall	MMBio463 Immunology	3	42	3.63	4.8	4.6	4.5
	Fall	UNIV101 University 101	2	25	-	4.7	4.6	4.5
	Spring	MMBio261 Infection & Immunity	3	17	3.75	4.7	4.5	4.5
	Winter	MMBio121 Biology Health & Disease (GE)	3	85	3.66	4.6	4.5	4.5
	Winter	MMBio240 Molecular Biology	3	122	3.50	4.7	4.5	4.5
	Winter	MMBio240 Molecular Biology	3	150	3.41	4.4	4.5	4.5
	Winter	MMBio390R Molecular Biology Readings	1	18	3.82	4.7	4.6	4.6
2024	Fall	MMBio467 Immunology Lab	1	15	4.00	4.8	4.3	4.5
	Fall	MMBio463 Immunology	3	63	3.75	4.8	4.7	4.6
	Fall	MMBio467 Immunology Lab	1	22	4.00	5.0	4.7	4.6
	Spring	MMBio261 Infection & Immunity	3	23	3.77	4.7	4.4	4.6
	Spring	MMBio240 Molecular Biology	3	68	3.47	4.4	4.4	4.6
	Winter	MMBio121 Biology Health & Disease (GE)	3	80	3.46	4.6	4.5	4.6
	Winter	MMBio240 Molecular Biology	3	233	3.20	4.1	4.5	4.6
	2023	Fall	MMBio463 Immunology	3	62	3.70	4.9	4.5
Spring		MMBio261 Infection & Immunity	3	19	3.42	4.8	4.5	4.6
Winter		MMBio121 Biology Health & Disease (GE)	3	69	3.29	4.5	4.4	4.5
2022	Fall	MMBio463 Immunology	3	53	3.34	4.9	4.6	4.5
	Winter	MMBio121 Biology Health & Disease (GE)	3	92	2.80	4.7	4.4	4.5
2021	Fall	MMBio463 Immunology	3	42	3.48	4.9	4.6	4.5
	Spring	MMBio261 Infection & Immunity	3	34	3.82	4.7	4.5	4.5
	Winter	MMBio121 Biology Health & Disease (GE)	3	112	3.39	4.7	4.4	4.5
Overall Averages:				66	3.55	4.7	4.5	4.5

	Evaluation Question	Representative comments from Student Evaluations
Instructor Effectiveness	Explained concepts effectively	She simplifies the insanely complex parts of the immune system. When things are really tricky, I also appreciated that she would encourage us to talk it over with our group and then also ask the TAs for help. She explains concepts well, but also encourages us to teach each other.
	Well organized	The course organization was clear and built on itself.
	Opportunities to get help	Dr. Hope would always take questions as students had them. She also would refer to TA's and made sure they were available to help students as they needed it.
	Opportunities for student involvement	We did super fun group presentations in the class. I've never had so much fun presenting and listening to group presentations.
	Responded to students respectfully	She is loving, compassionate, and understanding of her students. Her lectures always felt like a good safe place. She loved questions, and she wanted to hear what we thought about things.

STUDENT EVALUATIONS – BYU AIMS				Spiritually Strengthening		Intellectually Enlarging		Character Building		Lifelong Learning	
	Semester	Course	# students	Hope	Dept	Hope	Dept	Hope	Dept	Hope	Dept
2025	Fall	MMBio463 Immunology	42	94	82	100	88	100	86	100	85
	Fall	MMBio467 Immunology Lab	22	100	82	100	88	88	86	88	85
	Fall	Univ101 University 101	25	100	82	80	82	90	88	90	95
	Spring	MMBio261 Infection & Immunity	17	100	45	100	44	83	42	100	44
	Winter	MMBio121 Biology Health & Disease	85	88	72	90	84	80	77	95	80
	Winter	MMBio240 Molecular Biology	122	92	72	95	84	89	77	87	80
	Winter	MMBio240 Molecular Biology	150	87	72	96	84	82	77	85	80
	Winter	MMBio390R Molecular Biology	18	100	86	100	87	100	85	100	84
2024	Fall	MMBio110R Extremophiles	15	100	67	100	83	100	75	100	74
	Fall	MMBio463 Immunology	63	100	86	100	93	94	89	96	89
	Fall	MMBio467 Immunology Lab	22	100	86	100	93	100	89	100	89
	Spring	MMBio261 Infection & Immunity	23	100	70	100	74	100	70	100	72
	Spring	MMBio240 Molecular Biology	68	85	70	91	74	85	70	85	72
	Winter	MMBio121 Biology Health & Disease	80	91	63	100	81	91	72	93	71
	Winter	MMBio240 Molecular Biology	233	86	64	82	81	79	72	79	71
2023	Fall	MMBio463 Immunology	62	100	81	100	90	100	87	96	86
	Spring	MMBio261 Infection & Immunity	19	83	72	100	80	83	75	83	77
	Winter	MMBio121 Biology Health & Disease	69	89	64	97	85	81	76	83	78
2022	Fall	MMBio463 Immunology	53	92	70	100	86	85	81	92	82
	Winter	MMBio121 Biology Health & Disease	92	82	59	91	84	83	73	87	73
2021	Fall	MMBio463 Immunology	42	94	75	94	88	94	82	94	86
	Spring	MMBio261 Infection & Immunity	34	79	58	96	78	84	68	88	64
	Winter	MMBio121 Biology Health & Disease	112	85	59	97	83	85	68	86	71
Overall Averages:				92	71	96	82	89	77	91	77

	Evaluation Question	Representative comments from Student Evaluations for BYU Aims
Helped students achieve the Aims of a BYU Education	Spiritually strengthening	I absolutely love when my teachers share spiritual insights and testimony that they have gained through the study of our field, and Dr. Hope does a great job at that. You can tell that she has a testimony of the gospel and that her scientific knowledge contributes to her spiritual knowledge
	Intellectually enlarging	This class has a TON of material, but she makes it doable to learn it all. I learned so much in this class. I learned SO much in Dr. Hope's class. She does such a great job at connecting everything that we learned to things that are relevant to everyone's lives.
	Character building	She is an amazing person and made me want to be one too. You can just tell from the way she talks and acts that she's a great persona and expects the same from each of us.
	Leading to lifelong learning and service	She inspires me to be better in my schoolwork, my interactions with others, and my peers. She made a point in reminding us that we have the potential to go out and do great things in the world.

CURRENT RESEARCH PROJECTS

Macrophage regulation in hematopoiesis and tissue damage/repair

My lab currently studies bone marrow expression of the *cfms*-promotor which regulates production of Colony Stimulating Factor 1 Receptor (CSF-1R). CSF-1R is expressed in mature mononuclear phagocytic cells (macrophages and dendritic cells) in peripheral tissues and is expressed briefly during differentiation of various progenitor cells in bone marrow. I previously developed a transgenic mouse model with *cfms*-GFP expression. My students are mapping expression of *cfms* in relation to lineage markers that typify hematopoietic progenitors. A manuscript is currently in progress. We also have bone marrow transplant data from these transgenic mice to further investigate the role of *cfms*-expressing cells in hematopoiesis. Data from the transplant study is partially analyzed and will generate a second manuscript. I have six prior publications with this transgenic mouse model.

I also work with Dr. Pam VanRy in BYU's Chemistry and Biochemistry Department. We study the role of macrophage subsets in tissue repair. Dr. VanRy's research includes two disease models: 1) muscular dystrophy in a transgenic mouse, and 2) pulmonary fibrosis in human lungs. Dr. VanRy has extensive

experience with these two disease models and works toward translational research. I bring immunology expertise to our team and plan to shift some aspects of my lab's research to utilize her disease models.

Insect Nano-injection for Transgenesis with an application toward control of Malaria transmission

I collaborate with Dr. Brian Jensen in BYU's Mechanical Engineering Department and Dr. Colin Dale in the Biology Department at the University of Utah. We are working to produce transgenic insects using nano-injection delivery of transformed symbiotic bacteria. Symbiotic bacteria provide a potential universal method for insect transgenesis. Nano-injection (which I helped develop at BYU) provides a method of delivery with advantages over micro-injection. I have 21 prior publications on nano-injection research for development of the technology, use in mice for transgenics, and use in tissue culture for gene transfer with gene therapy application in wound healing. Our current project will be the first use of nano-injection in insects. My collaborators at the U are interested in a gene product that symbiotic bacteria can secrete to yield a mosquito uninhabitable to *Plasmodium*. Production of *Plasmodium*-averse mosquitos can reduce the spread of Malaria without having to destroy the mosquito population. We currently use Bean Beetles (*Callosobruchus maculatus*) for our insect model.

Flow cytometry detection of phosphatidylethanol in erythrocytes

I collaborate with Dr. Richard Watt in the BYU Chemistry & Biochemistry Department. We are working to develop a flow cytometry-based detection method of Phosphatidylethanol (PEth) in a sample of human blood. PEth is an alcohol biomarker and has several potential medical applications. My collaborator and a Utah-based start-up company have a newly generated antibody that has proved valuable in western blot detection of PEth. This antibody has not yet been used for flow cytometry and its use is further hampered by the location of PEth on the inner leaflet of the cell membrane and the delicate nature of erythrocytes. I bring 25 years of flow cytometry experience to the team and have 20 publications that utilized flow. The start-up company hopes to translate a flow cytometry-based assay into a useful tool for medical clinicians.

JOURNAL PUBLICATIONS (61 academic publications, all but 16 have undergraduate student authors)

1. Nelson CA, Obray JD, Clarke TJ, Brundage JN, Folsom RJ, Moreno CM, Williams PE, Ford LH, Hope S, Weber KS, Bills KB, Yorgason JT, Steffensen SC (2025) Monocyte-Derived Macrophages Expressing Dopamine D2-Subtype Receptors Drive Alcohol Effects on Mesolimbic Neurons and Microglia. *Biomedicines*. 13(10) 2327. <https://doi.org/10.3390/biomedicines13102327>
2. Bowden LC, Wells JG, Miller KM, Bowden AE, Jensen BD, **Hope S**, Berges BK (2024) Bacterial Biofilm Resistance of Carbon-Infiltrated Carbon Nanotubes. *Proceedings of ASME 2019 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*. IDETC2024-148462
3. Hyde J, Armond T, Herring J, **Hope S**, Grose J, Breakwell D, Pickett B (2024) Diversity and Conservation of Genome Architecture of Phages infecting the Alphaproteobacteria. *Microbiology Spectrum*. 12(1): e02827-23. <https://doi.org/10.1128/spectrum.02827-23>
4. Bowden LC, Wells JG, Miller KM, Bowden AE, Jensen BD, **Hope S**, Berges BK (2023) Carbon-Infiltrated Carbon Nanotubes Inhibit the Development of *Staphylococcus aureus* Biofilms. *Scientific Reports*. 13:19398. <https://doi.org/10.1038/s41598-023-46748-y>
5. Rollins J, Worthington T, Dransfield A, Whitney J, Stanford J, Hooke E, Hobson J, Wengler J, **Hope S**, Mizrahi D (2023) Expression of cell-adhesion molecules in E. coli: a high-throughput method to identify paracellular modulators. *International Journal of Molecular Sciences*. (24):9784. <https://doi.org/10.3390/ijms24129784>
6. Brady TS, Roll CR, Walker JK, Fajardo CP, Breakwell DP, Eggett DL, **Hope S** (2021) Phages Bind to Vegetative and Spore Forms of *Paenibacillus larvae* and to Vegetative *Brevibacillus laterosporus*. *Frontiers in Microbiology*. Jan 26(12):588035. <https://doi.org/10.3389/fmicb.2021.588035>

7. Brown T, **Hope S**, Jensen B (2019) Fabrication and testing of a MEMS system for injection of DNA into plant cells. *Proceedings of ASME 2019 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*. IDETC2019-98019, 1-10.
8. Berg J, Merrill B, Breakwell D, **Hope S**, Grose J (2018) A PCR-based method for distinguishing between two common beehive bacteria, *Paenibacillus larvae* and *Brevibacillus laterosporus*. *Applied and Environmental Microbiology*. 84(22): e01886-18. doi: 10.1128/AEM.01886-18
9. Brady TS, Merrill BD, Hilton JA, Graves KA, Fajardo CP, **Hope S** (2018) Bystander Phage Therapy: Inducing Host-associated Bacteria to Produce Antimicrobial Toxins Against the Pathogen using Phages. *Antibiotics*. 7(4) 105. <https://doi.org/10.3390/antibiotics7040105>.
10. Merrill BD, Fajardo CP, Hilton JA, Payne AM, Ward AT, Walker AK, Dhalai A, Imahara C, Mangohig J, Monk J, Pascacio C, Rai P, Salisbury A, Velez K, Bloomfield TJ, Buhler B, Duncan SG, Furiman DA, George J, Graves K, Heaton K, Hill HL, Kim K, Knabe BK, Ririe DB, Rogers SL, Stamereilers C, Stevenson MB, Ward CS, Wright CK, Withers JM, Usher BK, Breakwell DP, Grose JH, **Hope S**, Tsourkas PK(2018) Complete genome sequences of eighteen *Paenibacillus larvae* phages from the Western United States. *Microbiology Resource Announcements*. 7 (13): e00966-18. doi: 10.1128/MRA.00966-18
11. Sharma R, Berg J, Choi M, Cowger A, Cozzens B, Duncan S, Fajardo C, Ferguson H, Galbraith T, Herring J, Hoj T, Durrant J, Hyde J, Jensen G, Ke SY, Killpack S, Kruger J, Lawrence E, Nwosu I, Tam T, Thompson D, Tueller J, Ward M, Webb C, Wood M, Wynne H, Yeates E, Baltrus D, Breakwell D, **Hope S**, Julianne Grose. (2018) Genome Sequences of Nine *Erwinia amylovora* Bacteriophages" *Microbiology Resource Announcements*. 7(14): e00944-18. doi: 10.1128/MRA.00944-18.
12. Stamereilers C, Fajardo C, Walker J, Mendez K, Castro-Nallar E, Grose J, **Hope S**, Tsourkas P (2018) Genomic analysis of 48 *Paenibacillus larvae* bacteriophages. *Viruses*. 10(7) 337. <https://doi.org/10.3390/v10070377>
13. Mitchell UH, O Bray DJ, Hunsaker E, Garcia B, Clarke T, **Hope S** and Steffensen SC (2018) Peripheral Dopamine In Restless Legs Syndrome. *Frontiers in Neurology-Movement Disorders*. Mar. 15 <https://doi.org/10.3389/fneur.2018.00155>.
14. Walker J, Merrill B, Berg J, Dhalai A, Dingman D, Fajardo C, Graves K, Hill H, Hilton J, Imahara C, Knabe B, Mangohig J, Monk J, Mun H, Payne A, Salisbury A, Stamereilers C, Velez C, Ward A, Breakwell D, Grose J, **Hope S**, and Tsourkas P (2018) Complete genome sequences of *Paenibacillus larvae* phages BN12, Dragolir, Kiel007, Leyra, Likha, Pagassa, PBL1c, and Tadhana. *GenomeA*. Jun; 6: doi:10.1128/genomeA.01602-17.
15. Hanauera DI, Grahamb MJ, **SEA-PHAGES**, Betancur L, Bobrownickib A, Cresawn SG, Garlenae RA, Jacobs-Sera D, Kaufmanne N, Pope WH, Russell DA, Jacobs Jr. WR, Sivanathang V, Asaig DJ, and Hatfull GF (2017) An inclusive Research Education Community (iREC): Impact of the SEA-PHAGES program on research outcomes and student learning. *PNAS*, www.pnas.org/cgi/doi/10.1073/pnas.1718188115.
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17. Sessions JW, Armstrong DG, **Hope S**, Jensen BD (2017) A review of genetic engineering biotechnologies for enhanced chronic wound healing. *Exp. Dermatol.* (26) 179-185.
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GENBANK PUBLICATIONS (82 full genome sequences published, all but 1 have undergraduate student authors)

Don Breakwell (BYU MMBio) and I founded the Phage Hunters program in 2019 with a grant from Howard Hughes Medical Institute (HHMI). The following are GenBank publications of complete phage genomes which are outcomes of the Phage Hunter program and from phage research in my lab. All genomes include full genomes (not genome fragments) with complete annotation of all genes and identification of any present tRNAs. Genomes were peer reviewed by GenBank prior to acceptance and publication.

Year	Phage	Accession #	Authors
1 2018	SunLIRen (E. amylovora phage)	MH426725	Sharma,R., Ke,K., Breakwell,D.P., Hope,S. and Grose,J.H.
2 2018	Pavtok (E. amylovora phage)	MH426726	Sharma,R., Hughes,J., Breakwell,D.P., Hope,S. and Grose,J.H.
3 2018	DevRi (P. larvae phage)	MH431933	Ririe,D.B., Buhler,B., Salisbury,A., Pascacio,C., Stamereilers,C., Ward,A.T., Fajardo,C.P., Breakwell,D.P., Grose,J.H., Hope,S. and Tsourkas,P.K.
4 2018	Arcticfreeze (P. larvae phage)	MH431932	Wright,C.K., Walker,J.K., Withers,J.M., Monk,J.R., Ward,A.T., Fajardo,C.P., Breakwell,D.P., Grose,J.H., Hope,S. and Tsourkas,P.K.
5 2018	Wellington (E. amylovora phage)	MH426724	Sharma,R., James,B., Berg,J.A., Breakwell,D.P., Hope,S. and Grose,J.H.
6 2018	Gryphonian (P. larvae phage)	MH431934	Usher,B.K., George,J., Ward,A.T., Fajardo,C.P., Breakwell,D.P., Grose,J.H., Hope,S. and Tsourkas,P.K.
7 2018	Toothless (P. larvae phage)	MH454084	Heaton,K.E., Velez,K., Merrill,B.D., Ward,A.T., Breakwell,D.P., Grose,J.H., Hope,S. and Tsourkas,P.K.
8 2018	Saudage (P. larvae phage)	MH454083	Duncan,S.G., Pascacio,C., Ward,A.T., Fajardo,C.P., Breakwell,D.P., Grose,J.H., Hope,S. and Tsourkas,P.K.
9 2018	Genki (P. larvae phage)	MH454082	Stevenson,M.B., Imahara,C., Ward,A.T., Fajardo,C.P., Breakwell,D.P., Grose,J.H., Hope,S. and Tsourkas,P.K.
10 2018	LincolnB (P. larvae phage)	MH454081	Merrill,B.D., Payne,A.M., Hilton,J.A., Ward,A.T., Fajardo,C.P., Dhalai,A., Mangohig,J., Hope,S. and Tsourkas,P.K.
11 2018	Jacopo (P. larvae phage)	MH454079	Ward,C.S., Monk,J.R., Kim,M., Walker,J.K., Fajardo,C.P., Breakwell,D.P., Grose,J.H., Hope,S. and Tsourkas,P.K.
12 2018	Eltigre (P. larvae phage)	MH454078	Merrill,B.D., Payne,A.M., Hilton,J.A., Ward,A.T., Fajardo,C.P., Rai,P., Hope,S. and Tsourkas,P.K.
13 2018	Bloom (P. larvae phage)	MH454077	Bloomfield,T.J., Dhalai,A., Ward,A.T., Fajardo,C.P., Breakwell,D.P., Grose,J.H., Hope,S. and Tsourkas,P.K.
14 2018	Lucielle (P. larvae phage)	MH431937	Rogers,S.L., Monk,J.R., Ward,A.T., Fajardo,C.P., Breakwell,D.P., Grose,J.H., Hope,S. and Tsourkas,P.K.
15 2018	Kawika (P. larvae phage)	MH431936	Furiman,D.A., Rai,P., Ward,A.T., Fajardo,C.P., Breakwell,D.P., Grose,J.H., Hope,S. and Tsourkas,P.K.
16 2018	Honeybear (P. larvae phage)	MH431935	Hilton,J.A., Merrill,B.D., Payne,A.M., Ward,A.T., Fajardo,C.P., Dhalai,A., Hope,S. and Tsourkas,P.K.
17 2018	Yerffej (P. larvae phage)	MH431931	Merrill,B.D., Payne,A.M., Hilton,J.A., Ward,A.T., Fajardo,C.P., Imahara,C., Hope,S. and Tsourkas,P.K.
18 2018	Wanderer (P. larvae phage)	MH431930	Merrill,B.D., Payne,A.M., Hilton,J.A., Ward,A.T., Fajardo,C.P., Velez,K., Hope,S. and Tsourkas,P.K.
19 2018	Likha (P. larvae phage)	MG727702	Hill,H.L., Walker,J.K., Mun,H., Merrill,B.D., Ward,A.T., Berg,J.A., Hilton,J.A., Fajardo,C.P., Breakwell,D.P., Grose,J.H., Hope,S. and Tsourkas,P.K.

20	2018	Leyra (P. larvae phage)	MG727701	Knabe,B.K., Walker,J.K., George,J., Merrill,B.D., Ward,A.T., Berg,J.A., Hilton,J.A., Fajardo,C.P., Breakwell,D.P., Grose,J.H., Hope,S. and Tsourkas,P.K.
21	2018	Tadhana (P. larvae phage)	MG727700	Payne,A.M., Merrill,B.D., Graves,K., Velez,K., Ward,A.T., Berg,J.A., Hilton,J.A., Fajardo,C.P., Walker,J.K., Breakwell,D.P., Grose,J.H., Hope,S. and Tsourkas,P.K.
22	2018	Pagassa (P. larvae phage)	MG727699	Merrill,B.D., Graves,K., Salisbury,A., Ward,A.T., Berg,J.A., Hilton,J.A., Fajardo,C.P., Walker,J.K., Breakwell,D.P., Grose,J.H., Hope,S. and Tsourkas,P.K.
23	2018	Kiel007 (P. larvae phage)	MG727696	Graves,K., Dhalai,A., Stamereilers,C., Merrill,B.D., Ward,A.T., Berg,J.A., Hilton,J.A., Fajardo,C.P., Walker,J.K., Breakwell,D.P., Grose,J.H., Hope,S. and Tsourkas,P.K.
24	2018	BN12 (P. larvae phage)	MG727695	Payne,A.M., Imahara,C., Merrill,B.D., Ward,A.T., Berg,J.A., Hilton,J.A., Fajardo,C.P., Walker,J.K., Breakwell,D.P., Grose,J.H., Hope,S. and Tsourkas,P.K.
25	2018	PBL1c (P. larvae phage)	MG727698	Dingman,D., Mangohig,J., Merrill,B.D., Ward,A.T., Berg,J.A., Hilton,J.A., Fajardo,C.P., Walker,J.K., Bakhiet,N., Field,C., Stahly,D.P., Breakwell,D.P., Grose,J.H., Hope,S. and Tsourkas,P.K.
26	2018	Dragolir (P. larvae phage)	MG727697	Merrill,B.D., Monk,J., Ward,A.T., Berg,J.A., Hilton,J.A., Fajardo,C.P., Walker,J.K., Breakwell,D.P., Grose,J.H., Hope,S. and Tsourkas,P.K.
27	2018	Ley (P. larvae phage)	MH454080	Merrill,B.D., Payne,A.M., Hilton,J.A., Ward,A.T., Fajardo,C.P., Salisbury,A., Hope,S. and Tsourkas,P.K.
28	2018	Ash (P. larvae phage)	MH454076	Payne,A.M., Merrill,B.D., Hilton,J.A., Ward,A.T., Fajardo,C.P., Dhalai,A., Stamereilers,C., Hope,S. and Tsourkas,P.K.
29	2018	C7Cdelta (P. larvae phage)	MH431938	Merrill,B.D., Payne,A.M., Hilton,J.A., Ward,A.T., Fajardo,C.P., Mangohig,J., Hope,S. and Tsourkas,P.K.
30	2018	Alexandra (E. amylovora phage)	MH248138	Cowger,A.E., Thompson,D.W., Sharma,R., Herring,J.A., Hoj,T.R., Killpack,S., Lawrence,E., Nwosu,I., Roark,B.J., Tueller,J.A., Choi,M.C., Ferguson,H.P., Kruger,J.L., Hope,S., Breakwell,D.P. and Grose,J.H.
31	2018	Yoloswag (E. amylovora phage)	KY448244	Pollock,S.V., Berg,J.A., Esplin,I.N.D., Hurst,E., Kruger,J.L., Sharma,R., Grose,J.H., Breakwell,D.P. and Hope,S.
32	2018	Asesino (Erwinia phage)	KX397364	Berg JA, Hyde JR, Breakwell DP, Hope S, Grose JH.
33	2017	RisingSun (E. amylovora phage)	MF459646	Putnam,M.J., Sharma,R., Kruger,J.L., Berg,J.A., Payne,A.M., Fajardo,C.P., Breakwell,D.P., Hope,S. and Grose,J.H.
34	2017	Joad (E. amylovora phage)	MF459647	Bickmore,M.X., Vaden,K., Brady,T.S., Arens,D.K., Tateoka,O.B., Carter,J.L., Pape,J.A., Robinson,D.M., Russell,K.A., Staley,L.A., Stettler,J.M., Townsend,M.H., Wienclaw,T., Williamson,T.L., Kruger,J.L., Berg,J.A., Sharma,R., Payne,A.M., Fajardo,C.P., Breakwell,D.P., Hope,S. and Grose,J.H.
35	2017	Mortimer (E. amylovora phage)	MG655270	Sharma,R., Ferguson,H.P., Berg,J.A., Jensen,G.L., Keele,B.R., Ward,M.E.H., Breakwell,D.P., Hope,S. and Grose,J.H.
36	2017	Special G (E. amylovora phage)	KU886222	Sharma,R., Grossarth,S.E., Foy,B., Harbaugh,K., Ingersoll,K., Berg,J.A., Jarvis,T.M., Esplin,I.N.D., Merrill,B.D., Schoenhals,J., Breakwell,D.P., Hope,S. and Grose,J.H.
37	2017	Ray (E. amylovora phage)	KU886224	Sharma,R., Esplin,I.N.D., Berg,J.A., Jensen,G.L., Keele,B.R., Ward,M.E.H., Breakwell,D.P., Hope,S. and Grose,J.H.
38	2017	Simmy50 (E. amylovora phage)	KU886223	Sharma,R., Simister,A.R., Berg,J.A., Jensen,G.L., Keele,B.R., Ward,M.E.H., Breakwell,D.P., Hope,S. and Grose,J.H.
39	2017	Smairt (Mycobacteriophage)	MF668283	Tso,M.S., Paredes,A., Zierold,M.E., Delesalle,V.A., Grose,J., Hope,S., Breakwell,D., Delesalle,V.A., Garlena,R.A., Russell,D.A., Pope,W.H., Jacobs-Sera,D., Hendrix,R.W. and Hatfull,G.F.
40	2017	Apocalypse (Mycobacteriophage)	MF668267	Loney,R.E., Wentworth,H.A., Hanna,I.R., Delesalle,V.A., Grose,J., Hope,S., Breakwell,D., Garlena,R.A., Russell,D.A., Pope,W.H., Jacobs-Sera,D., Hendrix,R.W. and Hatfull,G.F.
41	2016	Petruchio (Mycobacteriophage)	KY213952	King,R.D., Delesalle,V.A., Grose,J., Hope,S., Breakwell,D., Garlena,R.A., Russell,D.A., Pope,W.H., Jacobs-Sera,D., Hendrix,R.W. and Hatfull,G.F.
42	2016	Sabinator (Mycobacteriophage)	KX808129	Wagner,J.D., Albritton,V.D., Beach,M.O., Bonner,C.T., Green,C.T., Harrell,M.L., Holder,G.D., Juneau,A.C., Labat,G.M., Lawrence,S.M., McCurry,A.D., Mouawad,M.A., Myers,D.S., Nowell,A.J., Palowsky,Z.R., Peoples,M.D., Peterson-Gross,L.E., Rizzo,E.R., Rybicki,S.K., Thomas,C., Vu,J.V., West,N., Williams,D.A., Morgan,G.B., Alonzo,F.L., Allison,W.D., Gissendanner,C.R., Findley,A.M., Sabin,D.S., Fisher,J.N., Lunt,B.L., Payne,D.E., Breakwell,D.P., Burnett,S.H., Klyczek,K., Garlena,R.A., Russell,D.A., Pope,W.H., Jacobs-Sera,D., Hendrix,R.W. and Hatfull,G.F.
43	2015	phiN3 (Sinorhizobium phage)	NC_028945	Hodson,T.S., Hyde,J.R., Schouten,J.T., Crockett,J.T., Smith,T.A., Merrill,B.D., Crook,M.B., Griffiths,J.S., Burnett,S.H., Grose,J.H. and Breakwell,D.P.
44	2015	phiM19	KR052481	Crockett,J.T., Hodson,T.S., Hyde,J.R., Schouten,J.T., Smith,T.A., Merrill,B.D., Crook,M.B.,

		(Sinorhizobium phage)		Griffitts,J.S., Burnett,S.H., Grose,J.H. and Breakwell,D.P.
45	2015	phiM7 (Sinorhizobium phage)	KR052480	Schouten,J.T., Crockett,J.T., Hodson,T.S., Hyde,J.R., Smith,T.A., Merrill,B.D., Crook,M.B., Griffitts,J.S., Burnett,S.H., Grose,J.H. and Breakwell,D.P.
46	2015	Jenst (B. laterosporus phage)	KT151955	Taylor, A.S., Wienclaw, T.M., Schoenhals, J. E., Graves, K.A., Merrill, B.D., Ward, A.T., Esplin, I.D., Breakwell, D.P., Grose J.H. and Burnett, S.H.
47	2015	Osiris (B. laterosporus phage)	KT151956	Newey, E.N., Schouten, J., McBride, M.S., Hilton J.A., Heaton, K.E., Crockett, J.T., Esplin, K.P., Hyde, J.R., Brundage, B.M., Thurgood, T.L., Evans, M.R., Simister, A.R., Merrill, B.D., Ward, A.T., Burg, J.A., Schoenhals, J. E., Graves, K.A., Breakwell, D.P., Grose J.H. and Burnett, S.H.
49	2015	SecTim467 (B. laterosporus phage)	KT151957	Beckstead, A.P., Schouten, J., McBride, M.S., Hilton J.A., Heaton, K.E., Crockett, J.T., Esplin, K.P., Hyde, J.R., Brundage, B.M., Thurgood, T.L., Evans, M.R., Simister, A.R., Merrill, B.D., Ward, A.T., Burg, J.A., Schoenhals, J. E., Gardner, A.V., Graves, Breakwell, D.P., Grose J.H. and Burnett, S.H.
50	2015	Powder (B. laterosporus phage)	KT151958	Wienclaw, T.M., Kruger, J.L., Bairett, S.R., Ingersoll, K., Grossarth, S.E., Ransom, E.K., Berg, J.A. Harbaugh, K., Jensen, G.L., Ashcroft, C.R., Taylor, A.S., Graves, K.A., Schoenhals, J. E., Esplin, I.D., Merrill, B.D., Ward, A.T., Breakwell, D.P., Grose J.H. and Burnett, S.H., Bradley, K.W., Clarke, D.Q., Lewis, M.F., Barker, L.P., Bailey, C., Asai, D.J., Garber, M.L., Bowman, C.A., Russell, D.A., Pope, W.H., Jacobs-Sera, D., Hendrix, R.W., and Hatfull, G.F.
51	2015	Sundance (B. laterosporus phage)	KT151959	Wienclaw, T.M., Burg, J.L., Graves, K.A., Hilton, J.A., Buckley, A.L., Ward, A.T., Merrill, B.D., Grose J.H., Breakwell, D.P., and Burnett, S.H., Bradley, K.W., Clarke, D.Q., Lewis, M.F., Barker, L.P., Bailey, C., Asai, D.J., Garber, M.L., Bowman, C.A., Russell, D.A., Pope, W.H., Jacobs-Sera, D., Hendrix, R.W., and Hatfull, G.F.
52	2014	Phantastic (Mycobacteriophage)	KJ510415	Meadows,H.N., Fisher,J.N.B., Gardner,A.V., Merrill,B.D., Hartmann,K.A., Bailey,M.E., Beckstead,A.P., Deus,L.M., Earl,A.S., Easter,R.A., Gibby,P.D., Graves,K.A., Ayer,P.A., Heiner,M.E., Herring,J.A., Jaen,A.D., Liu,J.E., Mancini,A.M., Nielsen,D.A., Paz,H.C., Sabin,N.R., Solomon,M.B., Sutter,R.A., Wake,B.N., Willyerd,H.J., Zimmerman,L.J., Breakwell,D.P., Burnett,S.H., Grose,J.H., Bradley,K.W., Clarke,D.Q., Lewis,M.F., Barker,L.P., Bailey,C., Asai,D.J., Garber,M.L., Bowman,C.A., Russell,D.A., Pope,W.H., Jacobs-Sera,D., Hendrix,R.W. and Hatfull,G.F.
53	2013	Jimmer1 (B. laterosporus phage)	KC595515	Sheffo,M.A., Gardner,A.V., Merrill,B.D., Fisher,J.N., Lunt,B.L., Breakwell,D.P., Grose,J.H. and Burnett,S.H.
54	2013	Jimmer2 (B. laterosporus phage)	KC595514	Sheffo,M.A., Gardner,A.V., Merrill,B.D., Fisher,J.N., Lunt,B.L., Breakwell,D.P., Grose,J.H. and Burnett,S.H.
55	2013	Abouo (B. laterosporus phage)	KC595517	Sheffo,M.A., Gardner,A.V., Merrill,B.D., Fisher,J.N., Lunt,B.L., Breakwell,D.P., Grose,J.H. and Burnett,S.H.
56	2013	Davies (B. laterosporus phage)	KC595518	Sheffo,M.A., Gardner,A.V., Merrill,B.D., Fisher,J.N., Lunt,B.L., Breakwell,D.P., Grose,J.H. and Burnett,S.H.
57	2013	Emery (B. laterosporus phage)	KC595516	Sheffo,M.A., Gardner,A.V., Merrill,B.D., Fisher,J.N., Lunt,B.L., Breakwell,D.P., Grose,J.H. and Burnett,S.H.
58	2013	JL (B. cereus phage)	KC595512	Lloyd,J., Fisher,J.N.B., Gardner,A.V., Hallam,S.J., Jensen,J.D., Pettersson,S.M., Smith,C., Sullivan,S., Brighton,A.K., Sheffo,M.A., Burnett,S.H., Breakwell,D.P. and Grose,J.H.
59	2013	Basilisk (B. cereus phage)	KC595511	Jensen,J.D., Fisher,J.N.B., Gardner,A.V., Irons,D.L., Lloyd,J., Pettersson,S.M., Smith,C., Sullivan,S., Brighton,A.K., Sheffo,M.A., Burnett,S.H., Breakwell,D.P. and Grose,J.H.
60	2013	Shanette (B. cereus phage)	KC595513	Pettersson,S.M., Fisher,J.N.B., Gardner,A.V., Hallam,S.J., Jensen,J.D., Lloyd,J., Smith,C., Sullivan,S., Brighton,A.K., Sheffo,M.A., Burnett,S.H., Breakwell,D.P. and Grose,J.H.
61	2013	Adawi (Mycobacteriophage)	KF279411	Adawi,E.C., Merrill,C.A., Sargent,C.J., Fisher,J.N., Gardner,A.V., Lunt,B.L., Merrill,B.D., Breakwell,D.P., Burnett,S.H. and Grose,J.H.
62	2013	Bane1 (Mycobacteriophage)	KF279412	Marlow,S., Merrill,C.A., Sargent,C.J., Fisher,J.N., Gardner,A.V., Lunt,B.L., Merrill,B.D., Burnett,S.H., Grose,J.H. and Breakwell,D.P.
63	2013	Bane2 (Mycobacteriophage)	KF279413	Gardner,A.V., Merrill,C.A., Sargent,C.J., Fisher,J.N., Lunt,B.L., Merrill,B.D., Burnett,S.H., Grose,J.H. and Breakwell,D.P.
64	2013	Fredward (Mycobacteriophage)	KF279414	Ladle,K.C., Fisher,J.N.B., Gardner,A.V., Lunt,B.L., Breakwell,D.P., Grose,J.H. and Burnett,S.H.
65	2013	Quink (Mycobacteriophage)	KF279417	Vance,K.S., Kiser,C.D., Earl,A.S., Hansen,A.W., Merrill,C.A., Sargent,C.J., Fisher,J.N., Gardner,A.V., Lunt,B.L., Merrill,B.D., Breakwell,D.P., Burnett,S.H. and Grose,J.H.
66	2013	PhrostyMug (Mycobacteriophage)	KF279415	Hansen,A.W., Irons,D.L., Sargent,C.J., Fisher,J.N., Gardner,A.V., Lunt,B.L., Merrill,B.D., Payne,I.D.A.V.I.D., Breakwell,D.P., Grose,J.H. and Burnett,S.H.

67	2013	SargentShorty9 (Mycobacteriophage)	KF279416	Sargent,C.J., Merrill,C.A., Fisher,J.N., Gardner,A.V., Lunt,B.L., Merrill,B.D., Payne,I.D., Breakwell,D.P., Grose,J.H. and Burnett,S.H.
68	2013	Anubis (Mycobacteriophage)	NC_029018	Jackson, KR, Lunt, BL, Fisher, JN, Garner, AV, Bailey, ME, Deus, LM, Earl, AS, Gibby, PD, Hartmann, KA, Liu, JE, Mancini, AM, Nielsen, DA, Solomon, MB, Breakwell, DP, Burnett, SH, and Grose, JH.
69	2013	Alex (Mycobacteriophage)	JX649100	Benedict,A.B., Fisher,J.N.B., Gardner,A.V., Lunt,B.L., Payne,D.E., Burnett,S.H., Breakwell,D.P. and Grose,J.H.
70	2013	Gyarad (Mycobacteriophage)	JX649099	Ladle,K.C., Fisher,J.N.B., Gardner,A.V., Lunt,B.L., Breakwell,D.P., Grose,J.H. and Burnett,S.H.
71	2013	Nacho (Mycobacteriophage)	JX649098	Kartchner,B.J., Fisher,J.N.B., Gardner,A.V., Lunt,B.L., Grose,J.H., Burnett,S.H. and Breakwell,D.P.
72	2013	Piglet (Mycobacteriophage)	JX649097	Barrus,E.Z., Adawi,E.C., Kennedy,A.K., Poe,D.E., Williams,K.R., Fisher,J.N.B., Gardner,A.V., Merrill,B.D., Grose,J.H., Burnett,S.H. and Breakwell,D.P.
73	2013	Serpentine (Mycobacteriophage)	JX649096	Brighton,A.K., Fisher,J.N.B., Gardner,A.V., Lunt,B.L., Breakwell,D.P., Burnett,S.H. and Grose,J.H. Morrell,J.D., Brighton,A.K., Fisher,J.N.B., Sheflo,M.A., Adawi,E.C., Christiansen,M.R., Ferguson,N.C., Gardner,A.V., Irons,D.L., Jensen,J.D., Kennedy,A.K., Lloyd,J.S., Marlow,S.C., Mason,S.J., McCord,T.M., Merrill,B.D., Nelson,E.P., Norton,C.S., Pettersson,S.M., Poe,D.E., Russell,R.C., Smith,T.C., Sullivan,S., Williams,K.R., Breakwell,D.P., Grose,J.H., Burnett,S.H., Wang,X., Crowell,R., Bostrom,M.A., Burke,M., Wright,G.M., Gregory,S.G., Colman,S.D., Bradley,K.W., Khaja,R., Lewis,M.F., Barker,L.P., Asai,D.J., Bowman,C.A., Russell,D.A., Pope,W.H., Jacobs-Sera,D., Hendrix,R.W. and Hatfull,G.F.
74	2012	Aeneas (Mycobacteriophage)	JQ809703	Woodward,T.J., Daetwyler,M.E., Fisher,J.N.B., Lunt,B.L., Sheflo,M.A., Payne,D.E. II, Breakwell,D.P., Burnett,S.H. and Grose,J.H.
75	2012	Fezzik (Mycobacteriophage)	JN600672	Haskell,K.J., Giri,I., Issac,T.F., Liechty,Z.S., Daetwyler,M.E., Bull,L.A., Payne,D.E. II, Lunt,B.L., Argueta,L.B., Baigain,P., Benedict,A.B., Earley,B.J., Engle,J.M., Fisher,J.N., Greenhalgh,E., Hansen,A.W., Ladle,K.C., Petersen,S.K., Sabin,D.S., Sargent,C.J., Severson,M.C., Smith,K.C., Taylor,M.A., Woodward,T.J., Wright,B.A., Burnett,S.H., Breakwell,D.P., Zhang,X., Meincke,L.J., Goodwin,L.A., Detter,J.C., Han,S., Green,L.D., Bradley,K.W., Khaja,R., Lewis,M.F., Barker,L.P., Jordan,T.C., Russell,D.A., Leuba,K.D., Fritz,M.J., Bowman,C.A., Pope,W.H., Jacobs-Sera,D., Hendrix,R.W. and Hatfull,G.F.
76	2012	KLucky39 (Mycobacteriophage)	JF704099	Baigain,P., Fisher,J.N.B., Lunt,B.L., Sheflo,M.A., Brighton,A.K., Adawi,E.C., Christiansen,M.R., Ferguson,N.C., Gardner,A.V., Irons,D.L., Jensen,J., Kennedy,A., Lloyd,J.S., Marlow,S., Mason,S.J., McCord,T.M., Merrill,B.D., Nelson,E.P., Norton,C.S., Pettersson,S.M., Poe,D.E., Russell,R.C., Smith,T.C., Sullivan,S., Williams,K.R., Burnett,S.H., Breakwell,D.P. and Grose,J.H.
77	2012	Nepal (Mycobacteriophage)	JQ698665	Sheide,M.G., Fisher,J.N., Lunt,B.L., Smith,K.C., Taylor,M.A., Baker,B., Barrus,E.Z., Brighton,A.K., Chapman,K.M., Drake,E.A., Jackson,K.R., Kartchner,B.J., Kiser,C.D., Kiser,J.T., Kitchen,J.C., McDaniel,S.W., Ormsby,W.R., Parker,M., Steck,R.P., Vance,K.S., Breakwell,D.P., Burnett,S.H., Grose,J.H., Wang,X., Crowell,R., Burke,M., Wright,G.M., Gregory,S.G., Colman,S.D., Bradley,K.W., Khaja,R., Lewis,M.F., Barker,L.P., Jordan,T.C., Russell,D.A., Pope,W.H., Jacobs-Sera,D., Hendrix,R.W. and Hatfull,G.F.
78	2012	Shauna1 (Mycobacteriophage)	JN020141	Lunt,B.L., Payne,D.E., Fisher,J.N.B., Smith,K.C.B., Taylor,M.R., Baker,B., Barrus,E.Z., Brighton,A.K., Chapman,K.M., Drake,E.A., Jackson,K.R., Kartchner,B.J., Kiser,C.D., Kiser,J.T., Kitchen,J.C.B., Mcdaniel,S.W., Ormsby,W.R., Parker,M., Sheide,M.G., Steck,R.P., Vance,K.S., Breakwell,D.P., Burnett,S.H. and Grose,J.H.
79	2012	TA17A (Mycobacteriophage)	JN400277	Lunt,B.L., Sheflo,M.A., Fisher,J.N.B., Breakwell,D.P., Burnett,S.H. and Grose,J.H.
80	2011	AnnaL29 (Mycobacteriophage)	JN572060	Earley,B.J., Engle,J.M., Smith,K.C., Lunt,B.L., Fisher,J.N.B., Payne,D.E. II, Breakwell,D.P., Burnett,S.H. and Grose,J.H.
81	2011	JEBEKS (Mycobacteriophage)	JN572061	Jacobs-Sera,D., Zellars,M., Wells,M.E., Webb,J.L., Ware,V.C., Vazquez,E., TamarapuParthasarathy,P., Smith,I.A., Simon,S.E., Shaffer,C.D., Rubin,M.R., Rosenzweig,R.F., Rinehart,C.A., Qin,H., Pillay,I., Payne,D.E. II, Padolina,J.M., Novick,P.A., Miller,E.S., Mayer,E.S., Marzillier,J.Y., Mageeney,C.M., MacGibeny,M.A., Li,W., Lee,J.Y., Kinnersley,M.A., King-Smith,C., King,R.A., Kenna,M.A., Kearsse,M.G., Johnson,B.K., Johnson,A.A., Johnson,C.M., Hughes,L.E., Harrison,M., Guild,N.A., Gilbert,J.L., Fillman,C.L., Felton,C.M., Dunbar,D.A., Dennehy,J.J., DeJong,R.J., Carson,S., Burnett,S.H., Breakwell,D.P., Berrios,J.E., Benjamin,R.C., Anderson,J.J., Bradley,K.W., Khaja,R., Lee,E., Barker,L.P., Lewis,M.F., Jordan,T.C., Cresawn,S.G., Grace,M.A., Pope,W.H., Ko,C., Russell,D.A., Peebles,C.L., Lawrence,J.L., Hendrix,R.W. and Hatfull,G.F.
82	2010	Redrock (Mycobacteriophage)	GU339467	

INVITED PRESENTATIONS (23 guest speaker presentations)

1. *Paenibacillus larvae* Phages for the Prevention of American Foulbrood in Honeybees. (2025) Pradhan Mantri-Uchchatar Shiksha Abhiyan, International Symposium, Merging Frontiers: Innovations in Plant Biotechnology and Phage Therapy for Human Health. Jiwaji University, Gwalior, India.
2. *Integrating Gospel Methodology into your Teaching*. (2025) Adjunct Faculty Workshops, Brigham Young University, Provo, UT.
3. *Integrating Gospel Methodology into your Teaching*. (2024) New Faculty Series Kickoff Event, University Conference, Brigham Young University, Provo, UT.
4. *For the Love of Science: Lessons from our DNA*. (2023) Aspen Grove Fireside Speaker, Aspen Grove, UT.
5. *Integrating Gospel Methodology into your Teaching*. (2023) New Faculty Series Kickoff Event, University Conference, Brigham Young University, Provo, UT.
6. *The Next Generation in Disease Control*. (2019) Interview by Gerry Hayes and written presentation for *Beculture* magazine.
7. *Phage Treatment for American Foulbrood* (2019) Wasatch Beekeepers' Association, Salt Lake City, UT
8. *American Foul Brood; a cure on the horizon, no more bonfires*. (2018) Keynote speaker, Wyoming Bee College Conference, Cheyenne, WY.
9. *Bee Safe Phage Therapy for the Control of American Foulbrood (Paenibacillus larvae) in Honeybees* (2017) United States Food and Drug Administration, Washington, D.C.
10. *Phage Treatment for American Foulbrood* (2017) Utah Beekeepers' Association Convention, Lehi, UT
11. *Phage Treatment for American Foulbrood* (2016) Wyoming Beekeepers Association, Casper, WY.
12. *Finding Phages to Fight American Foulbrood*. (2016) Virus Structure and Assembly Conference, Federation of American Societies for Experimental Biology, Steamboat, CO.
13. *Microfabricated Lance Array Nanoinjection system delivers CRISPR-Cas9 to hundreds of thousands of cells simultaneously*. (2016) Intl. Transgenic Technologies Society 13th Conf., Prague, Czech Republic.
14. *Research on the use of Phages to Prevent and Treat American Foulbrood*. (2016) American Honey Producers Association Annual Convention. Albuquerque, NM.
15. *A Pollinators Buzz, The state of the Bee Hive State*. (2015) Horticulture Inspection Society, Western Chapter Conference, Salt Lake City, UT.
16. *BYU Phage Therapy for American and European Foulbrood Update*. (2015) Annual Utah Bee Inspector Meeting, Utah Department of Agriculture and Food, Salt Lake City, UT.
17. *Finding Phages to Treat American Foulbrood*. (2015) American Honey Producers Association Annual Convention. Manhattan Beach, CA.
18. *Studies from the Beehive: Phages, Phamerator, and Phashionable Genes*. (2014) School of Life Science, Seminar Series speaker, University of Nevada, Las Vegas, NV.
19. *BYU Phage Therapy for American and European Foulbrood Update*. (2014) Annual Utah Bee Inspector Meeting, Utah Department of Agriculture and Food, Salt Lake City, UT.

20. *The buzz about Paenibacillus larvae phages*. (2014) 6th Annual SEA-Phages Symposium, Symposium speaker, Ashburn, VA.
21. *Phage Therapy for American Foulbrood in Honeybees*. (2013) Annual Utah Bee Inspector Training Meeting, Utah Department of Agriculture and Food, Salt Lake City, UT.
22. *Regulation of hematopoiesis by macrophages in a transgenic mouse model*. (2007) Biology Department Seminar Series speaker, Utah Valley State College, Orem, UT.
23. *iLecture: Make your Own PodCast Lecture for Class*. (2008) Conference workshop, American Society for Microbiology Conference for Undergraduate Educators, Beverley, MA

RESEARCH PRESENTATIONS (presenters in bold, 103 presentations, all but 18 have undergraduate student authors)

1. **Hope S**, Jensen BD (2025) Use of nanoinjection and symbiotic bacteria to prevent the transmission of malaria. For the Benefit of the World Conference, Provo, UT
2. **Jex J, Dauk N, McCombs C, Petersen E**, Dale C, Jensen BD, Hope S (2025) Nanoinjection of symbiotic bacteria yields paratransgenic founders in *Callosobruchus maculatus*: an emerging model system for insect transgenics. Life Sciences Research Conference, Provo, UT
3. **Goodman T**, Walker RD, Campo LDU, **Hanks C, Howard M**, Hope S, Watt R, Neilsen P (2025) Development of a lateral flow immunoassay for phosphatidylethanol detection to ameliorate alcohol misuse. Life Sciences Research Conference, Provo, UT.
4. Lundgren J, **Amsden K, Boesl E, Hall V, Shakespeare E**, VanRy P, Hope S (2025) *c-fms* expresses in early progenitor cells & myeloid-lineage leukocytes based on analyzing lineage markers and mapping on Ly6C $\times$ CD31 plots in bone marrow. Life Sciences Research Conference, Provo, UT.
5. **Jex J, Coffman T, McCombs C**, Daley C, Jensen BD, Hope S (2025) Wet Injections prove more effective than Dry Injections using Bacterial Delivery for Insect Transgenics. ASM Intermountain Branch Meeting, Idaho State University, Pocatello, ID.
6. Daley C, McCombs C, **Jex J, Coffman T**, Jensen BD, Hope S (2025) Research process towards creation of transgenic beetles. Undergraduate Research Poster Competition, (1st place winner), Brigham Young University, Provo, UT.
7. Wallace A, Nagareda E, **Jex J**, Daley C, **Coffman T**, Jensen BD, Hope S (2024) Transgenic Beetle Modification via Nanoinjection. Life Sciences Research Conference, Provo, UT.
8. **Wallace A, Alston AB**, Lundgren J, Ransom M, Teh M, Jeffery K, Rasmussen N, Rolfson A, Jensen BD, Dale C, Hope S. (2024) Transgenic Beetle Modification via Nanoinjection. Research Expo, Provo, UT.
9. **Bowden LC**, Evans JC, Miller K, Bowden AE, Jensen BD, Hope S, Berges BK (2024) Bacterial Biofilm Resistance of Carbon-Infiltrated Carbon Nanotubes. International Design Engineering Conferences and Computers and Information in Engineering Conference, Washington, D.C.
10. **Bowden LC**, DeMordaunt N, Solorio A, Arias M, Jensen BD, Bowden AE, Hope S (2022) Osteocyte Growth on Carbon-Infiltrated Carbon Nanotubes Versus Medical Grade Titanium Alloy. Orthopaedic Research Society, Tampa, FL.

11. **DeMordaunt NL, Solorio A**, Bowden LC, Hope S (2022) Attachment of human osteoblasts and methicillin-resistant *Staphylococcus aureus* is affected by the surface type used for human implants. Utah Conference on Undergraduate Research. St. George, UT.
12. **Obray JD**, Brundage J, Clarke T, Stockard A, Richmond B, Hope S, Yorgason JT, Steffensen SC (2019) Acute ethanol influences monocyte infiltration of CNS and alters microglia phenotype. Abstract in *Alcoholism: Clinical and Experimental Research*
13. **Monroe JA**, Bowden L, Hope S, Jensen BD, Bowden AE (2019) Carbon-infiltrated carbon nanotube surface enhancement of stainless steel stimulates adhesion in human osteoblasts. Orthopaedic Research Society, Phoenix, AZ.
14. **Roll CR**, Arnold C, Obray JD, Steffensen SC, Mitchell UH, Hope S (2019) Effect of Parkinson's Disease on expression of dopamine D2 receptors in peripheral blood leukocytes. ASM Intermountain Branch Meeting, Brigham Young University, Provo, UT.
15. **Roll CR**, Arnold C, Obray JD, Steffensen SC, Mitchell UH, Hope S (2018) Effect of Parkinson's Disease on expression of dopamine D2 receptors in peripheral blood leukocytes. Autumn Immunology Conference, Chicago, IL.
16. **Obray JD**, Parsons M, Lattin J, Clarke T, Jang EY, Hope S, Yang CH, Yorgason JT and Steffensen SC. (2018) Ethanol enhancement of dopamine release in the nucleus accumbens and ethanol reward is mediated by peripheral neuroimmune interactions. *Alcoholism: Clin. Exp. Res.* 42(S1) 032.
17. **Clarke T**, Obray JD, Brundage J, Lattin J, Williams S, Yorgason JT, Hope S and Steffensen SC (2018) Acute ethanol increases monocyte infiltration of CNS and influences microglia phenotype. *Alcoholism: Clin. Exp. Res.* 42(S1) 021.
18. **Fajardo C**, Meredith S, Roll C, Griffiths JS, Hope S, Grose JH, and Breakwell DP. (2018) Proof of Concept: Determining Phage Adsorption Using Flow Cytometry. ASM Tri-Branch Mtg, Durango, CO.
19. **Whitlock T**, Greene N, Creaser I, Knowles A, Karlinsey D, Nelson N, Barton K, Bateman J, Quist N, Hendrickson J, Ellis K, Chamberlain N, Jenkins J, Fajardo C, Fuhrman DA, Griffiths JS, Hope S, Grose JH, and Breakwell DP. (2018) The genomes of CW76, a unique phage, and XTREME, a T4-like phage infecting *Sinorhizobium meliloti*. ASM Tri-Branch Meeting, Fort Lewis College, Durango, CO.
20. **Creaser I**, Knowles A, Karlinsey D, Nelson N, Barton K, Bateman J, Quist N, Hendrickson J, Ellis K, Chamberlain N, Fajardo C, Fuhrman DA, Griffiths JS, Hope S, Grose JH, and Breakwell DP (2018) Host Range and Receptor Binding of 13 Newly-Isolated Phages Infecting *Sinorhizobium meliloti*. ASM Tri-Branch Meeting, Fort Lewis College, Durango, CO.
21. **Anderson K**, Barker A, Carroll M, Hogan T, Nieman T, Parsons M, Simister A, Steffensen A, Todd J, Breakwell DP, Hope S and Grose JH (2018) Screening for antibiotic-resistance genes in a sewage phage population. ASM Tri-Branch Meeting, Fort Lewis College, Durango, CO.
22. **Melhado E**, Chow J, Wiley M, Sarabia R, Standing N, Breakwell DP, Hope S and Grose JH (2018) Isolation and Characterization of Sewage Phages. ASM Tri-Branch Meeting, Fort Lewis College, Durango, CO.
23. **Hyer MG**, Call JJ, Dawson DD, Chronis JD, Ayala MA, Finnegan Z, Fox A, Hielscher T, Yeates EL, Breakwell DP, Hope S and Grose JH (2018) Identification of promiscuous sewage phage. ASM Tri-Branch Meeting, Fort Lewis College, Durango, CO.

24. **Potts E**, Sirrine M, Meeks T, Rodriguez W, Wilkey A, Tovar K, Porter M, Lambert A, Yeates E, Breakwell DP, Hope S and Grose JH (2018) Safe and effective phage therapy. ASM Tri-Branch Meeting, Fort Lewis College, Durango, CO.
25. **Brady S**, Hope S (2017) *Phage binding to Paenibacillus larvae spores*. Oral Presentation. North American Pollinator Protection Campaign, Washington, D.C.
26. **Gregory N**, Warner N, Hanks B, Jensen B, Hope S (2017) *Measurement of Nanoinjection Delivery Through Radiotagged DNA and Enucleation*. Oral Presentation. ASME Design Engineering Technical Conference, Cleveland, OH.
27. **Williams SB**, Pistorius SS, Anderson EQ, Clarke DR, Clarke TJ, Hope S, Steffensen SC (2017) *Acute ethanol activates microglia and affects the excitability of ventral tegmental area neurons*. Society of Neuroscience, Washington D.C.
28. Obray D, **Clarke T**, Jang EY, Garcia B, Klomp A, Richardson AI, Payne A, Hope S, Yang CH, Yorgason J, Steffensen SC (2017) *Ethanol enhancement of dopamine release in the nucleus accumbens and ethanol reward are mediated by peripheral neuroimmune interactions*. Society of Neuroscience, Washington D.C.
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Public School Service

5. Keynote speaker: *Math in Microbiology*. Nebo School District Junior High and Middle School Math Tournament, Diamond Fork, UT. Dec. 11, 2021.
6. Guest Lecturer. *ACT Prep Class – Science Section*. Westlake High School, Saratoga Springs, UT. Nov. 30-Dec. 3, 2021.
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REFERENCES

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