

EDUCATION

- 2009-2014 **PhD, University of British Columbia**, Vancouver, BC
Department of Microbiology and Immunology
Supervisors: Dr. François Jean and Dr. John Pasick
Dissertation: Regulating the regulators: Emerging roles of cellular microRNAs in influenza A virus infection
- 2005-2008 **B.S. Suffolk University**, Boston, MA
Graduated Summa Cum Laude GPA 3.9
Major: Biochemistry

RESEARCH EXPERIENCE

- 2018 – Current Montana State University, Bozeman, MT
2021 – Current **Assistant Research Professor, Department of Chemical and Biological Engineering, MSU**
2018 – 2021 **Postdoctoral Researcher, Supervisor: Dr. Connie Chang**
- Develop methods for studying influenza A virus using at the single cell level using drop-based microfluidics
 - Development of SARS-CoV-2 and picornavirus projects in BSL2 and BSL3 environments
 - Establishment of multiple collaborations, both on and off campus
 - Assistance with grant writing, budgeting, maintenance and development of IBC protocols, and all other aspects of lab management
 - Mentoring of undergraduate and graduate students in basic molecular biology techniques, cell culture, and infection protocols for influenza A, SARS-CoV-2 and picornaviruses
- 2015 – 2018 Montana State University, Bozeman, MT
Postdoctoral Researcher, Supervisor: Dr. Blake Wiedenheft
- Study of host factors associated with *Chlamydia trachomatis* infection using a CRISPR-Cas9 based genome wide screen
 - Development of novel knock-out/knock-in constructs to quickly and efficiently identify CRISPR-Cas9 gene knockouts in mammalian cells
 - Mentored two undergraduate students and one master's student in basic molecular biology techniques, cell culture, and infection protocols for *C. trachomatis*
- 2009-2014 University of British Columbia, Vancouver, BC Canada
Graduate Researcher, Supervisors: Dr. Francois Jean and Dr. John Pasick
- Characterizing non-coding RNA expression during infection with high pathogenic and low pathogenic influenza A viruses (H1N1, H5N1, H7N7)
 - Acquired and currently maintain full security clearance and training to work in the BSL3 and 3+ laboratories at the National Center for Foreign Animal Disease in Winnipeg, MB
- 2007-2009 Massachusetts Institute of Technology, Cambridge, MA
Laboratory Technician/Assistant Lab Manager, Supervisor: Dr. Sangeeta Bhatia
- Focused on characterizing the sera protein ceruloplasmin and its effects on primary hepatocytes using numerous assays to investigate cellular iron levels, albumin synthesis and P450 enzyme activity
- 2007-2008 Suffolk University, Boston, MA
Senior Research Thesis, Supervisor: Dr. Melanie Berkmen
- Characterized the putative mating pore apparatus protein ConE, an ATPase encoded by the integrated conjugative element (ICEBs1) in *Bacillus subtilis* by making mutations in the ATP binding and hydrolysis motifs

- 2007-2007 Novartis Institute for Biomedical Research, Cambridge, MA
Virology Internship, Supervisor: Dr. Phil Troke
- Analyzed the ability of DMSO differentiated Huh 7 cells in cell culture to acquire hepatocyte specific functions such as the metabolism of compounds, cytochrome P450 activity, albumin synthesis and urea excretion and their permissivity to HCV infection
- 2006-2007 Harvard Medical School/BIDMC Molecular Virology Lab, Boston, MA
Laboratory Technician, Supervisor: Dr. Priscilla Schaffer
- Working with Herpes Simplex Virus I (HSV), focusing on the ICP22 and ICP0 protein
 - Experience working with HSV, included growing concentrated lab stocks of HSV-1, growing mutant ICP22 and ICP0 viruses, viral plaque assays and viral growth kinetics

AWARDS AND FELLOWSHIPS

Montana State University

2020 American Society for Virology Postdoctoral Scholar Travel Award (meeting moved online due to COVID-19 pandemic)

University of British Columbia

2010-2014 NSF Graduate Fellowship
2009-2013 Graduate Entrance Scholarship Four Year Fellowship
2009-2014 International Partial Tuition Scholarship
2014 LSI Research Day Poster Competition-2nd place
2013 Dollars for Scholars-Point Roberts Chapter
2013 University of Washington Biostatistics Summer Institute Scholarship
2012 Genome BC and SBN Poster Competition-2nd place
2012-2013 UBC Outstanding Student Leader Award
2011 CSHRF CIHR Gold Medal Recipient
2011 CSHRF CIHR Student Travel Award
2011 Keystone Symposia Scholarship for miRNA and Human Disease Keystone Symposia
2011 Robert Emmanuel and Mary Day Travel Award

Suffolk University

2005-2008 CAS Dean's High Honor List
2005-2008 Grandfather Tuition Scholarship
2008 American Chemical Society Award for Analytical Chemistry
2008 Senior Chemistry Award for Biochemistry
2008 Member of Delta Alpha Pi Honor Society
2007 Excellence in Chemistry Award for Organic Chemistry
2006 Excellence in Chemistry Award for General Chemistry

PUBLICATIONS

1. Berkmen MB, Lee CA, **Loveday EK**, Grossman AD. 2010. *Polar positioning of a conjugation protein from the integrative and conjugative element ICEBs1 of Bacillus subtilis*. J Bacteriol 192:38-45. **Cover**. Editorial Review by Grohmann, E. 2010. J Bacteriol 192:23-5.
2. Mostafa HH, Thompson TW, Kushnir AS, Haenchen SD, Bayless AM, Hilliard JG, Link MA, Pitcher LA, **Loveday EK**, Schaffer PA, Davido DJ. 2011. *Herpes simplex virus 1 ICP0 phosphorylation site mutants are attenuated for viral replication and impaired for explant-induced reactivation*. J Virol 85:12631-12637.
3. Plumb AW, Patton DT, Seo JH, **Loveday EK**, Jean F, Ziegler SF, Abraham N. 2012. *Interleukin-7, but not thymic stromal lymphopoietin, plays a key role in the T cell response to influenza A virus*. PLoS One 7:e50199.

4. **Loveday EK**, Svinti V, Diederich S, Pasick J, Jean F. 2012. *Temporal- and strain-specific host microRNA molecular signatures associated with swine-origin H1N1 and avian-origin H7N7 influenza A virus infection*. J Virol 86:6109-6122. **Cover**.
5. **Loveday EK**, Diederich S, Pasick J, Jean F. 2014. *Human microRNA-24 modulates highly pathogenic avian-origin H5N1 influenza A virus infection in A549 cells by targeting secretory pathway furin*. J Gen Virol. 2015 Jan;96: 30-9.
6. **Loveday EK**, Zath GK, Bikos DA, Jay ZJ, Chang CB. 2021. *Screening of Additive Formulations Enables Off-Chip Drop Reverse Transcription Quantitative Polymerase Chain Reaction of Single Influenza A Virus Genomes*. Anal Chem. 2021 Mar 16;93(10):4365-4373.
7. **Loveday EK**, Hain K, Kochetkova I, Hedges J, Robison A, Snyder D, Brumfield S, Young M, Jutila M, Chang CB, Taylor MP. 2021. *Effect of inactivation methods on SARS-CoV-2 virion protein and structure*. Viruses 2021, 13, 562.
8. Bikos, D. A., C. Hwang, K. A. Briley, A. Parker, **E. K. Loveday**, M. Rodriguez, T. LeFevre, et al. *SLAMP: A Rapid Fluorometric RT-LAMP Assay for Sensitive and Specific Detection of SARS-CoV-2 from Human Saliva*. MedRxiv, January 1, 2021, 2021.03.31.21254634.

PROFESSIONAL DEVELOPMENT

2020	Passed Security Risk Assessment (SRA) FBI Background check
2017	Imagestream Training Workshop Millipore EMD, Seattle WA
2014	Biology 535 –Teaching and Learning in the Life Sciences University of British Columbia, Vancouver, BC
2014	Instructional Skills Workshop University of British Columbia, Vancouver, BC
2013	Summer Institute of Statistical Genetics workshops University of Washington, Seattle WA <ul style="list-style-type: none">• Introduction to R-certificate of completion• Gene Expression Profiling• Elements of R for Genetics and Bioinformatics

RELEVANT SAFETY TRAINING

Jan 2021	Laser Safety Training
Nov 2020	N95 Fit testing and training
Oct 2020	Human Subject Training/Biomedical Research
Sept 2020	BSL-3 SOP: Coronavirus Training Certification
Aug 2020	OSHA Bloodborne Pathogens
Mar 2020	Select Agent Training – Security, Biosecurity, and Incident Response Plans
Mar 2020	Select Agent Training – Select Agent Program, Biosafety and Biocontainment
Mar 2020	JRL Laboratory Training
Jun 2018	Biosafety for BSL1 and BSL2 Laboratories
Jun 2018	NIH Recombinant DNA
Aug 2018	Hazard Communications and GHS

TEACHING EXPERIENCE AND OUTREACH

2018-2020	Guest lecturer Medical Microbiology Class Montana State University
2018	NSF Building with Biology Forum Montana State University
2018	Union of Concerned Scientists Science Policy Workshop Bozeman 500 Women Scientists
2017-19	Science Trivia Night Bozeman 500 Women Scientists
2016	Wild Virus Hunt Montana State University

2016	Peaks and Potentials Summer Enrichment Camp Montana State University
2016-19	NanoDays/MicroDays at MSU Montana State University
2010-14	Teacher Assistant Virology 306 Class University of British Columbia, Vancouver, BC
2013-14	Geneskool Instructor (Let's Talk Science) GenomeBC, Vancouver, BC
2011	Let's Talk Science Teacher Partnership Program Queen Mary Elementary, Vancouver, BC
2010	Let's Talk Science SMaRT Pod Leader Laura Secord Elementary, East Vancouver

PRESENTATIONS

1. **Loveday EK**, Grossman AD, Berkmen MB. *Polar Localization of a Conserved ATPase Required for Mating of the Conjugal Element ICEBs1 of Bacillus subtilis*. Boston Bacterial Meeting, Harvard University, Boston MA. Poster Presentation. May 2008
2. **Loveday EK**, Grossman AD, Berkmen MB. *Polar Localization of a Conserved ATPase Required for Mating of the Conjugal Element ICEBs1 of Bacillus subtilis*. Molecular Genetics of Bacteria and Phages, Cold Spring Harbor Laboratories. Poster Presentation. August 2008
3. **Loveday EK**, Svinti V, Pasick J, Jean F. *Dynamic Modulation of Host Cell microRNAs During Pandemic 2009 Influenza A Virus Infection*. American Society of Virology Meeting, Montana State University, Bozeman. Oral Presentation. July 2010
4. **Loveday EK**, Svinti V, Diederich S, Pasick J, Jean F. *Strain-specific modulation of the host cell microRNA-ome by highly pathogenic H5N1, H7N7, and swine-origin 2009 H1N1 influenza A viruses*. miRNA and Human Disease Keystone Symposia. Banff, AB. Oral Presentation and Poster. February 2011
5. **Loveday EK**, Svinti V, Diederich S, Pasick J, Jean F. *MicroRNAs-Novel regulator involved in the pathogenesis of influenza A*. Canadian Student Health Research Forum. University of Manitoba, Winnipeg, MB. Poster Presentation. June 2011
6. **Loveday EK**, Svinti V, Diederich S, Pasick J, Jean F. *Temporal and strain-specific host microRNA molecular signatures associated with swine-origin H1N1 and avian-origin H7N7 influenza A virus infection*. Cell Biology of Virus Entry, Replication and Pathogenesis, Keystone Symposia. Whistler, BC. Oral Presentation and Poster. March 2012
7. **Loveday EK**, Svinti V, Diederich S, Pasick J, Jean F. *Variability and strain specific signatures in small RNA expression during H1N1 and H7N7 influenza A virus infection*. Student Biotechnology Research and Exchange Poster Competition. University of British Columbia and Genome BC, Vancouver, BC. Poster Presentation. May 2012
8. **Loveday EK**, Svinti V, Diederich S, Pasick J, Jean F. *The role of small non-coding RNAs during influenza A infection*. Canadian Society of Microbiologists Meeting. University of British Columbia, Vancouver, BC. Oral Presentation. June 2012
9. **Loveday EK**, Svinti V, Diederich S, Pasick J, Jean F. *Towards microRNA-based therapeutics for highly pathogenic avian influenza A (H5N1) virus infection: The case of human microRNA-24*. LSI Research Day. University of British Columbia, Vancouver, BC. Poster. March 2014
10. **Loveday EK**, Wilkinson R, Grieshaber S, Wiedenheft B. *CRISPR generated human genome knock-out library for studying chlamydial pathogenesis*. Rocky Mountain Labs Metabolism and Pathogens Symposium. Hamilton, MT. Poster. August 2016
11. **Loveday EK**, Wilkinson R, Grieshaber S, Wiedenheft B. *Genome-wide CRISPR screen reveals a potential role for anterograde transport of proteins during C. trachomatis infection*. Chlamydia Basic Research Society. Charlotte, NC. Poster. April 2017
12. **Loveday EK**, Wilkinson R, Grieshaber S, Wiedenheft B. *Identifying key host genes during Chlamydia infection using a human CRISPR genome-wide knockout library*. Montana State University Microbiology and Immunology Seminar Series. Bozeman, MT. Invited Speaker. March 2018

13. **Loveday EK**, Zath GK, Bikos DA, Jay Z, Chang CB. *High-throughput quantification of influenza A virus using drop-based qRT-PCR*. Montana State University CBE Seminar Series. Bozeman, MT. Invited Speaker. January 2020
14. **Loveday EK**, Zath GK, Bikos DA, Jay Z, Chang CB. *Quantifying heterogeneity of influenza A virus production from individual cells using drop-based microfluidics*. American Society of Virology Meeting, Online Meeting due to COVID-19. Oral Presentation. June 2020

SCIENCE COMMUNICATION/MEDIA COVERAGE

1. Interview on Cool Science Radio, KPCW NPR Station, Park City UT. March 28, 2019 (<https://www.kpcw.org/post/cool-science-radio-500-women-scientists-dr-emma-loveday-dr-katie-haase#stream/0>)
2. Featured by 1 Million Women in STEM (<https://www.1mwis.com/emma-kate-loveday>)
3. **Loveday EK**, Brander S. *Science Should Be More Helpful to New Parents*. Scientific American Blog-Voices. March 20, 2019. (<https://blogs.scientificamerican.com/voices/science-should-be-more-helpful-to-new-parents/>)