

# Brian D. Poole, PhD

Associate Professor, Dept. of Microbiology and Molecular Biology

Brigham Young University

## EDUCATION AND TRAINING

		DEGREE YEAR(s)	FIELD OF STUDY
Brigham Young University	B.S.	1993-1999	Microbiology
Pennsylvania State University	PhD	1999-2004	Immunology/virology
Oklahoma Medical Research Foundation	(Postdoc)	2004-2008	Immunology/virology

## POSITIONS

Associate Professor, Brigham Young University, 2014-present  
Assistant Professor, Brigham Young University. 2008-2014  
Chair, Scientific Advisory committee, Lupus Foundation of America, Utah Chapter. 2016-present  
Lead Guest Editor, Journal of Biomedicine and Biotechnology, 2009-2012  
Associate Research Scientist, Oklahoma Medical Research Foundation, 2004-2008  
Research Assistant, Pennsylvania State University, 2002-2003  
Life Science Consortium Fellow, Pennsylvania State University, 1999-2001

## HONORS

Alcuin Fellow (University Honors teaching award) 2017  
Fulbright Award 2016  
Microbiology and Molecular Biology Departmental Research Award. 2013  
Microbiology and Molecular Biology Departmental Teaching Award. 2013  
Recognition for Research. Lupus Foundation of America, Utah Chapter 2010  
Faculty Affiliate, Women's Research Institute, Brigham Young University. 2009-present  
Intercollege Graduate Student Outreach Award, Pennsylvania State University, 2004  
Arthritis Foundation trainee award 2002, 2003  
Trustees Scholar, Brigham Young University 1993-1999

## PROFESSIONAL MEMBERSHIPS

American Association of Immunologists 2008-Present  
American College of Rheumatology 2008-Present  
American Association for the Advancement of Science 2015-Present

## REFEREED PUBLICATIONS

1. Cornaby, Caleb; Jafek, Jillian L.; Birrell, Cameron; Mayhew, Vera; Syndergaard, Lauren; Mella, Jeff; Cheney, Wesley; **Poole, Brian D.** EB12 expression in B lymphocytes is controlled by the Epstein-Barr virus transcription factor, BRRF1 (Na), during viral infection. *Journal of General Virology*, 2016 Nov 16. doi: 10.1099/jgv.0.000660
2. Cornaby, Caleb; Tanner, Anne; Stutz, Eric; **Poole, Brian D.**; Berges, Bradford K. Piracy on the molecular level: human herpesviruses that manipulate cellular chemotaxis. *Journal of General Virology*, December, 2015. Doi 10.1099/jgv.0.000370
3. Cornaby, Caleb; Gibbons, Lauren; Mayhew, Vera; Sloan, Chad S.; Welling, Andrew; **Poole, Brian D.** B cell epitope spreading: Mechanisms and contribution to autoimmune diseases. *Immunology Letters*. January 2015: 163(1) 56-68. doi:10.1016/j.imlet.2014.11.001
4. Clark, Daniel N.; Read, R. Daniel; Mayhew, Vera; Petersen, Stephen C; Argueta, Lissanya B.; Stutz, Lance A; Till, Rodney E; Bergsten, Sean M.; Robinson, Brandon S.; Baumann, Douglas G.; Heap, J. Casey; **Poole, Brian D.** Four promoters of IRF5 respond distinctly to stimuli and are affected by autoimmune-risk polymorphisms. *Front. Immunol.* 2013. doi: 10.3389/fimmu.2013.00360
5. Clark, Daniel N.; Lambert, Jared P.; Till, Rodney E.; Argueta, Lissanya B; Roznik Marinya G; Greenhalgh, Kathryn E.; Henrie, Brandon; Hawkey, Tyson F.; Sloan, Jason M.; Bills, Trieste; Woodland, ; Nelson, Eric P; Tsai, Meng-Hsuan; **Poole, Brian D.** Molecular effects of the rs2004640 autoimmune risk allele on mRNA translational efficiency and exon choice in interferon regulatory factor 5. *Journal of Interferon and Cytokine Research*. Dec 2013.
6. Clark, Daniel N.; Markham, Jillian L.; Sloan, Chad S.; **Poole, Brian D.** Cytokine Inhibition as a Strategy for Treating Systemic Lupus Erythematosus. *Clin Immunol.* 2012 Nov 12. doi:p11: S1521-6616(12)00276-8.
7. Guthridge, Joel M.; Clark, Daniel N.; Templeton, Amanda; Dominguez, Nicolas; Lu, Rufej; Vidal, Gabriel; Kelly, Jennifer A; Kauffman, Kenneth; Harley, John B.; Gaffney, Patrick; James, Judith A.; **Poole, Brian D.** Effects of IRF5 lupus risk haplotype on pathways predicted to influence B cell functions. *Journal of Biomedicine and Biotechnology. J Biomed Biotechnol.* 2012; 2012: 594056
8. Clark, Daniel N.; **Poole, Brian D.**; Hedman, Tyler J.; Hammond, Daniel V.; Catts, Daniel S.; Stewart, Amanda; Johnson, F. Brent. Characterization of herpes simplex virus clinical isolate Y3369 and its bearing on HSV typing. *Virology Journal* 2011. **8**:290
9. **Poole, Brian D.**; Kivovich, Violetta; Gilbert, Leona; Naides, Stanley J. Parvovirus B19 nonstructural protein-induced damage of cellular DNA and resultant apoptosis. *Int J Med Sci.* 2011 Jan 15;8(2):88-96

10. Neiwold, Timothy; Clark, Daniel; Salloum, Rafeh; **Poole Brian D.** Interferon alpha in systemic lupus erythematosus. *J Biomed Biotechnology*. 2010;2010:948364.
11. **Poole, Brian D.**; Templeton, Amanda K.; Guthridge, Joel M.; Brown, Eric J.; Harley, John B.; James, Judith A. Aberrant Epstein-Barr viral infection in systemic lupus erythematosus. *Autoimmun Rev*. 2009 8(4):337-42.
12. **Poole, Brian D.**, Schneider, Rebecca I.; Guthridge, Joel M.; Velte, Cathy; Reichlin, Morris; Harley, John B.; James, Judith A. Early Targets of nRNP Humoral Autoimmunity in Human Systemic Lupus Erythematosus. *Arthritis and Rheumatism* 2009 60(3):848-59.
13. **Poole, Brian D.**, Gross, Timothy, Maier, Shannon, Harley, John B., James, Judith A. Lupus-like Autoantibody development in rabbits and mice after immunization with EBNA-1 fragments. *Journal of Autoimmunity* 2009 (4):362-71.
14. **Poole, Brian D.**; Zhou, Jing, Grote, Amy; Schiffenbauer, Adam; and Naides, Stanley. Apoptosis of Liver-Derived Cells Induced by Parvovirus B19 Nonstructural Protein. *Journal of Virology*, 2006 April; 80(8):4114-4121.
15. **Poole, Brian D.**; Scofield, R. Hal; Harley, John B.; and James, Judith A. Epstein-Barr Virus and Molecular Mimicry in Systemic Lupus Erythematosus. *Autoimmunity* 2006 Feb;39(1):63-70.
16. McClain, Micah; **Poole, Brian D.**; Bruner, Benjamin; Kaufman, Kenneth; Harley, John, and James, Judith A. An altered immune response to Epstein-Barr virus nuclear antigen-1 (EBNA-1) in pediatric systemic lupus erythematosus. *Arthritis & Rheumatism*, 2005 Dec 29;54(1):360-368
17. **Poole, Brian D.**; Karetnyi, Yuory; and Naides, Stanley J. Parvovirus B19-Induced Apoptosis of Hepatocytes. *Journal of Virology* 2004 78(14):7775-7783.

#### **NON-REFEREED PUBLICATIONS**

1. Clark Daniel N.; **Poole, Brian D.** Interferon and apoptosis in Systemic Lupus Erythematosus. In *Systemic Lupus Erythematosus*, Hani Almoallim, editor. Intech Publishing. 2012 pp 77-96.
2. **Poole, Brian D.**; Niewold, Timothy B.; Tsokos, George C. Cytokines in Systemic Lupus Erythematosus 2011. *J. Biomed Biotechnol*. 2011. 2012:427824.
3. **Poole, Brian D.**; Niewold, Timothy B.; Tsokos, George C.; Via, Charles S. Cytokines in Systemic Lupus Erythematosus. *J. Biomed Biotechnology*. 2010:2010 735169.
4. **Poole, Brian D.** and James, Judith A. Infection and Autoimmunity. In *Systemic Lupus Erythematosus, a Companion to Rheumatology*. George C. Tsokos, Caroline Gordon, and Josef S. Smolen, Editors. Elsevier Press, Philadelphia, PA. Jan 2007 pp143-155.

#### **Presentations 2008-present**

1. Decreased B Cell Activation-Induced Apoptosis in Cells Overexpressing Interferon Regulatory Factor 5 (IRF5), a Gene Associated with Risk for Systemic Lupus Erythematosus and Other Autoimmune Diseases. **Brian Poole**, Caleb Cornaby,

Kalare Eberting, Wesley Cheney, Grant Walker, Craig Smith, Tosh Dowling and Emily Mello. American College of Rheumatology Annual Scientific Meeting. November, 2016. Washington, D.C

2. EB12 expression of B lymphocytes is controlled by Epstein-Barr virus transcription factor, BRRF1, during viral infection. Cheney, Wesley; Cornaby, Caleb; **Poole, Brian D.** Utah Conference on Undergraduate Research. Feb 2016. Salt Lake City, UT.
3. EB12 expression pattern is controlled in response to EBV infection, putatively controlling immune-evasive migration of B cells in lymph nodes. Cornaby, Caleb; Mayhew, Vera; Cheney, Wesley; **Poole, Brian D.** Utah Conference on Undergraduate Research. Feb 2016. Salt Lake City, UT
4. Lytic Genes Influence the Production of Infectious Epstein-Barr Virus. Morin, Allison, Cornaby, Caleb, **Poole, Brian D.** Utah Conference on Undergraduate Research. Feb 2016. Salt Lake City, UT.
5. Regulation of EB12 expression by the EBV BRRF1 gene in B lymphocytes. Cornaby, Caleb; Birrell, Cameron; **Poole, Brian D.** American Association of Immunologists Annual Meeting May 2015. New Orleans, LA.
6. Effects of an IRF 5 lupus risk allele on apoptosis, splicing, and promoter usage. Mella, Jeff; Sloan, Chad; Clark, Daniel; **Poole, Brian D.** 2<sup>nd</sup> International conference on Clinical and Cellular Immunology October 2013, Los Vegas, NV. Oral Presentation.
7. IRF5 promoter usage and response to toll-like receptor stimulation. Till, Rodney; Clark, Daniel; **Poole, Brian D.** 2<sup>nd</sup> International conference on Clinical and Cellular Immunology October 2013, Los Vegas, NV. Oral Presentation.
8. Characterization of a herpes simplex virus variant as a common glycoprotein G mutant and its implications on HSV detection methods. Catts, Daniel; Lambert, Jared; Argueta, Lissenyi; Pham, May; Bills, Trieste; **Poole, Brian D.** Conference of Undergraduate Research. 2012. Ogden, UT.
9. Lupus Risk Factor Decreases IL-10 Levels. Argueta, Lissenyi; Lambert, Jared; **Poole, Brian D.** Conference of Undergraduate Research. 2012. Ogden, UT.
10. Rates of Cellular Apoptosis Due to a Lupus-Risk Factor in IRF5. Reed, Richard D.; **Poole, Brian D.** Conference of Undergraduate Research. 2012. Ogden, UT.
11. SLE risk gene IRF5: a translational analysis. Till, Rodney; **Poole, Brian D.** National Conference of Undergraduate Research. 2012. Ogden, UT.
12. Effects on IRF5 First Exon Usage of an Allele Associated with Risk for Lupus. Clark, Daniel N.; **Poole, Brian D.** Kirkland Scholars Conference, 2011. Hospital for Special Surgery, New York, New York.
13. Altered IRF5 exon usage and increased expression of IRF7 targets in cells with an allele associated with risk for lupus. **Poole, Brian D.**; Clark, Daniel N.; Henrie, Brandon; Sloan, Jason; Baumann, Douglas; Heap, Casey; Bills, Trieste, Greenhalgh, Kathryn E.; Reed, Daniel; Bergsten, Sean; Roznick, Marinya; American Association of Immunologists, 2011, San Francisco, CA
14. IRF5 in Systemic Lupus Erythematosus. Greenhalgh, Kathryn; Clark, Daniel; Bills, Trieste; Read, Richard; Burns, Devin; **Poole, Brian.** Utah Conference of Undergraduate Research February 2011, Ogden, Utah.

15. The Effect of EB12 on B cell Homing in EBV Infected Cells. Sloan, Jason; Robinson, Brandon, **Poole, Brian**. Utah Conference of Undergraduate Research February 2011, Ogden, Utah.
16. Effects of an IRF5 polymorphism on IRF5/IRF7 interactions. Reed, Richard; Lambert, Jared; Henrie, Brandon; Bills, Trieste; Sloan, Jason; Baumann, Doug; Heap, Casey; Bergsten, Sean; Naylor, Brian; Clark, Daniel; **Poole, Brian D**. Utah Conference of Undergraduate Research February 2011, Ogden, Utah.
17. Characterization of a nontypable strain of Herpes simplex virus. Catts, Daniel; Hedman, Tyler; Clark, Daniel; **Poole, Brian**; Utah Conference of Undergraduate Research February 2011, Ogden, Utah.
18. Genes and the environment in lupus. **Brian D. Poole**. Invited seminar speaker, Southern Utah University. October 14, 2010
19. Loss of regulation in the Epstein Barr virus gene LMP1 by an IRF5 allele associated with risk for lupus. Daniel Clark, Brandon Henrie, and **Brian D. Poole**. American Society for Microbiology Intermountain Branch Meeting 2010
20. Characterization of a Herpes Simplex Virus Clinical Isolate (Oral Presentation). Hammond, Daniel, Clark, Daniel, Johnson F. Brent, **Poole Brian D**. American Society for Microbiology Intermountain Branch Meeting, Provo, UT 2010
21. Host B cell gene expression responses following Epstein-Barr Virus exposure differ based on IRF5 haplotype. Amanda Templeton, **B. Poole**, N Dominguez, R. Lu, G.S. Vidal, J. Levin, A.S. Sestak, J.A. Kelly, K.M. Kaufman, G.R. Bruner, P.M. Gaffney, J.B. Harley, J.A. James, J.M. Guthridge. American College of Rheumatology Annual Scientific Meeting, Philadelphia, PA 2009
22. Genes and the Environment in Lupus: Potential Pathways for Therapeutic Targets. **Brian D. Poole**. Lupus Foundation of America Utah Chapter, Annual Symposium. Salt Lake City, UT 2009.
23. RF5 Genetic Risk Haplotype Influences Host B Cell Gene Responses to Epstein-Barr Virus. Amanda Templeton, **Poole B**, , Lu R Vidal G, Levin J, Sestak A, Kelly J, Kauffman K, Bruner G, Gaffney P, Harley J, James J, Guthridge J. American Association of Immunologists, Seattle, WA 2009.

## RESEARCH SUPPORT

### Current

1. **Brian D. Poole (PI) Fulbright Scholar award 2016**. "Fatigue and Depression in Lupus"
2. **Brian D. Poole (PI) Mentoring Environment Grant (\$20,000) 2015-2016** "IRF5 in B cells in systemic lupus erythematosus"

### Completed

1. **Brian D. Poole (PI) Women's research initiative grant (\$5,000). 2015**. Epitope spreading in Systemic lupus erythematosus.
2. **Brian D. Poole (PI). American Association of Immunologists Undergraduate Faculty Travel Grant (\$2,250). 2015**
3. Bradford R. Berges, **Brian D. Poole** (Co-PI). "Use of humanized mice to develop novel human monoclonal antibodies against Dengue." 11/2012-12/2013 (\$24,254). Funded by Harmony Health.

4. **Brian D. Poole (PI)** Mentoring Environment Grant. "Role of Epstein-Barr Virus Induced Gene II (EBI2) in Epstein-Barr Virus Infection and B-cell Chemotaxis" 01/01/2012-01/31/2014. (\$20,000). This award is to provide an environment for undergraduate research at Brigham Young University. Funded by Brigham Young University
5. **Brian D. Poole (PI)** Mentoring Environment Grant. "Molecular Mechanisms of Lupus Risk Conferred by an Allele in the Gene for Interferon Response Factor 5" 01/01/2011-01/31/2013. (\$20,000). This award is to provide an environment for undergraduate research at Brigham Young University.
6. **Brian D. Poole (PI)** Women's Research Initiative Grant 2011. "Interferon Regulatory Factor 5 in Systemic Lupus Erythematosus" 01/10/2011-12/31/2011. (\$5,000) This award to carry out research on lupus, a disease which primarily affects women. Funded by Brigham Young University.
7. **Brian D. Poole (PI)** Mentoring Environment Grant. 02/01/2009-/01/31/2011 This award is to provide an environment for undergraduate research at Brigham Young University. (\$20,000)
8. **Brian D. Poole (PI)**. Functional manifestations of SLE Risk Haplotypes on EBV infection and Related Stimuli NIH 5 P20 RR020143-05.07/2008-08/2008. (\$50,000). This award is to study the role of the IRF 5 risk haplotype on Epstein-Barr virus infection and gene expression in the development of systemic lupus erythematosus. The grant was only utilized for one month because of a change in institution and position.
9. **Brian D. Poole (PI)**. Molecular Basis of Immunity NIH T32 AI007633-07. 09/2006-08/2008. (Post-doctoral stipend plus \$3,000/year over 2 years). Post-doctoral fellowship.

## **COURSES TAUGHT**

1. Advanced Cell Biology-MMBIO 430
2. Advanced Molecular Biology-MMBIO 441
3. Advanced Molecular Biology Lab-MMBIO 442
4. Molecular Biology-MMBIO 240
5. Infection and Immunity-MMBIO 261
6. Graduate Molecular Virology-MMBIO 560
7. Graduate Seminar Series-MMBIO 691
8. Graduate Topics in Microbiology and Molecular Biology-MMBIO 651R

## **TEACHING GRANT**

Scott Weber, **Brian D. Poole (Co-PI)**. **Teaching Enhancement Grant (\$2,000) 2015**. The use of molecular models as teaching aids in lecture courses.