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Curriculum Vitae

Arthur L. Shaffer III

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EDUCATION

Ph.D. Molecular Biology and Genetics-Immunology 1991-1996
Graduate Program in Immunology
Johns Hopkins University School of Medicine
Baltimore, MD

B.A. Biology 1985-1989
Department of Biology/University Honors Program
University of Delaware
Newark, DE

PROFESSIONAL/RESEARCH EXPERIENCE

Staff Scientist 2001-present
National Cancer Institute, National Institutes of Health
Bethesda, MD
Research Focus: Genomic analysis of normal immune system development and lymphomagenesis.
Principal Investigator: Louis M. Staudt, M.D., Ph.D.

Post-Doctoral Fellow 1996-2001
National Cancer Institute, National Institutes of Health
Bethesda, MD
Research Focus: Molecular analysis of the regulation and targets of BCL-6, a transcriptional repressor that causes human lymphoma.
Principal Investigator: Louis M. Staudt, M.D., Ph.D.

Candidate, Doctor of Philosophy 1991-1996

Graduate Program in Immunology
Johns Hopkins University School of Medicine
Baltimore, MD.
Thesis: The Role of the pre-B Cell Receptor in B Cell Development.
Advisor: Mark Schlissel, M.D., Ph.D.

Scientist I and II, GEO-CENTERS, INC. 1989-1991
Naval Medical Research Institute and Georgetown University
National Bone Marrow Registry, Washington, DC.
Project: Developing Molecular Techniques for HLA-typing.
Administrators: Carolyn Hurley, Ph.D. (Georgetown)
Robert J. Hartzman, Capt., USN (NMRI)

PUBLICATIONS

Shaffer AL, Emre NC, Romesser PB, Staudt LM (2009)
IRF4: Immunity. Malignancy! Therapy? *Clin Cancer Res*. 2009 Apr 21. [Epub ahead of print]

Lenz G, Wright GW, Emre NC, Kohlhammer H, Dave SS, Davis RE, Carty S, Lam LT, **Shaffer AL**, Xiao W, Powell J, Rosenwald A, Ott G, Muller-Hermelink HK, Gascoyne RD, Connors JM, Campo E, Jaffe ES, Delabie J, Smeland EB, Rimsza LM, Fisher RI, Weisenburger DD, Chan WC, Staudt LM (2008) Molecular subtypes of diffuse large B-cell lymphoma arise by distinct genetic pathways. *Proc Natl Acad Sci USA* Sep 9;105(36):13520-5.

Arthur L. Shaffer, N.C. Tolga Emre, Laurence Lamy, Vu N. Ngo, George Wright, Wenming Xiao, John Powell, Sandeep Dave, Xin Yu, Hong Zhao, Yuxin Zeng, Bangzheng Chen, Joshua Epstein and Louis M. Staudt (2008) IRF4 Addiction in Multiple Myeloma. *Nature* 454:226-231.

Tracy C. Kuo, **Arthur L. Shaffer**, Joseph Haddad, Jr., Yong Sung Choi, Louis M. Staudt, and Kathryn Calame (2007) Repression of BCL-6 is required for the formation of human memory B cells in vitro. *J. Exp. Med* 16;204(4):819-30.

Shaffer AL*, Sciammas R*, Schatz JH, Zhao H, Staudt LM, Singh H. (2006) Graded expression of interferon regulatory factor-4 coordinates

isotype switching with plasma cell differentiation. *Immunity*. 25(2): 225-36. *equal coauthors

Han SS, Peng L, Chung ST, Dubois W, Maeng SH, **Shaffer AL**, Sporn MB, Janz S., (2006) CDDO-Imidazolide inhibits growth and survival of c-Myc-induced mouse B cell and plasma cell neoplasms. *Molecular Cancer*, 7:22

Liu, H. , G.C. Ippolito , J. K Wall , T. Niu , L. Probst , B-S. Lee , K. Pulford , A. Banham , L. Stockwin , **A.L. Shaffer** , L. M Staudt , C. Das , M. J. Dyer and P. W. Tucker, (2006) Functional studies of BCL11A: Characterization of the conserved BCL11A-XL splice variant and its interaction with BCL6 in nuclear paraspeckles of germinal center B cells *Molecular Cancer*, 5:18

Shaffer, A.L., G. Wright, L. Yang, J. Powell, V. Ngo, L. Lamy, L. Lam, R.E. Davis, L. M. Staudt, A library of gene expression signatures to illuminate normal and pathological lymphoid biology. (2006) *Immunological Reviews* 210, 67-87.

Spence, S.L. , **Arthur L Shaffer**, Louis M. Staudt, Sewit Amde, Sutana Manney, Cheryl Terry, Keith Weisz, Peter Nissley. (2006) Transformation of Late Passage Insulin-like Growth Factor-I Receptor Null Mouse Embryo Fibroblasts by Simian Virus 40 T Antigen. *Cancer Res*, 66, 4233-4239.

Seong-Su Han**, Arthur L Shaffer**, Liangping Peng, Seung-Tae Chung, Jae-Hwan Lim, Sungho Maeng, Joong Su Kim, Nicole McNeil, Thomas Ried, Louis M Staudt and Siegfried Janz (2005) Molecular and cytological features of the mouse B-cell lymphoma line iMycEm-1. (2005) *Molecular Cancer* Nov 9;4(1):40.

Arthur L. Shaffer*, Sung Sup Park*, Joong Su Kim* , Wendy duBois , Michael Potter, Louis M. Staudt and Siegfried Janz. (2005) Insertion of *Myc* into *Igh* accelerates peritoneal plasmacytomas in mice. *Cancer Res 65 (17)*, p7644-7652. *equal coauthors

Shaffer, A.L., Miriam Shapiro-Shelef, Neal N. Iwakoshi, Ann-Hwee Lee, Shu-Bing Qian , Hong Zhao, Xin Yu, Liming Yang, Bruce K. Tan, Andreas Rosenwald,Elaine M. Hurt, Emmanuel Petroulakis, Nahum Sonenberg, Jonathan W. Yewdell , Kathryn Calame, Laurie H. Glimcher, and Louis M. Staudt (2004) XBP1, downstream of Blimp-1, expands the secretory apparatus and other organelles, and increase protein synthesis in plasma cell differentiation. *Immunity 21*, 81-93.

Chainarong Tunyaplin, **A. L. Shaffer**, Cristina D. Angelin-Duclos, Xin Yu,

Louis M. Staudt, and Kathryn L. Calame (2004) Direct Repression of *prdm1* by Bcl-6 Inhibits Plasmacytic Differentiation. *J. Immunol* 173 (2), 1158-65.

Hurt, E.M., Adrian Wiestner, Andreas Rosenwald, **A.L. Shaffer**, Elias Campo, Tom Grogan, P. Leif Bergsagel, W. Michael Kuehl, and Louis M. Staudt. (2004) Overexpression of c-maf is a frequent oncogenic event in multiple myeloma that promotes proliferation and pathological interactions with bone marrow. *Cancer Cell* 5, 191-199.

Shaffer, A.L., Rosenwald, A., and Staudt, L.M. (2002) Lymphoid Malignancies: the dark side of B cell differentiation. *Nature Reviews in Immunology 2*, 920-932.

Shaffer,A.L., Kuo–I Lin, Tracy C. Kuo, Xin Yu, Elaine M. Hurt, Andreas Rosenwald, Jena M. Giltnane, Liming Yang, Hong Zhao, Kathryn Calame, Louis M. Staudt (2002) Blimp-1 orchestrates plasma cell differentiation by extinguishing the mature B cell gene expression program. *Immunity 17*, 51-62.

Shaffer, A.L., Rosenwald, A., Hurt, E.M., Giltnane, J.M., Lam L.T., Pickeral, O.K. and Staudt, L.M. (2001) Signatures of the Immune Response. *Immunity 15*, 375-385.

Shaffer, A.L., Yu, X, He, Y.S., Chan, E.P. and Staudt L.M. (2000) BCL-6 Represses Genes That Function in Lymphocyte Differentiation, Inflammation and Cell Cycle Control. *Immunity 13*, 1-20.

Staudt, L.M., Dent A.L., **Shaffer A.L.,** Yu, X. (1999) Regulation of cell fate decisions and lymphomagenesis by BCL-6. *International Review of Immunology 18*, 381-403.

Shaffer, A.L. and Schlissel, M.S. (1997) A Truncated Heavy Chain Protein Relieves the Requirement for Surrogate Light Chains in Early B Cell Development.. *Journal of Immunolgy 159*, 1265-1275.

Dent, A.L., **Shaffer. A.L**., Yu, X. Allman, D., and Staudt, L.M. (1997) Control of inflammation, cytokine expression, and germinal center formation by BCL-6. *Science 276*, 589- 592.

Shaffer, A.L., Peng, A, and Schlissel, M.S. (1997) In vivo occupancy of the kappa light chain enhancers in primary pro- and pre-B cells: a model for kappa locus activation. *Immunity 6*, 131-143

Stanhope-Baker, P., Hudson, K., **Shaffer, A.L.**, Constantinescu, A.,

Schlissel, M.S. (1996) Cell Type-Specific Chromatin Structure Determines the Targeting of V(D)J Recombinase Activity In Vitro. *Cell 85*, 887-897.

Krop, I., **Shaffer, A.L.**, Fearon, D.T., Schlissel, M.S. (1996) The Signaling Activity of Murine CD19 is Regulated During B Cell Development. *Journal of Immunology 157*, 48-56.

Shaffer, A.L., Falk-Wade, J.A., Tortorelli, V., Cigan. A., Carter, C., Hassan, K., Hurley, C.K. (1992) HLA-DRw52-associated DRB1 alleles: Identification using polymerase chain reaction amplified DNA, sequence specific oligonucleotide probes, and a chemiluminescent detection system. *Tissue Antigens 39*, 84-90.

Francis, D., **Shaffer A.**, and Smoyer, K. (1991) Three genes which affect founding of aggregation in *Polysphondyllium pallidum*. *Genetics 128*, 563-569.

Shaffer, A.L., Wojnar, W., Nelson, W. (1990) Amplification, Detection and Automated Sequencing of Gibbon Interleukin-2 mRNA by Thermus Aquaticus DNA Polymerase Reverse Transcription and Polymerase Chain Reaction. *Analytical Biochemistry 190*, 292-296.

Francis, D. and **Shaffer, A.** (1988) A Mutant Strain of Polysphondyllium with Defects in Many Genes. Developmental *Genetics 9*: 629-638.

PAST and CURRENT(*) COLLABORATIONS

Dr. Siegfried Janz, NCI, Gene expression analysis of mouse models of human myc-driven lymphomas.

Dr. Michael Potter, NCI, Gene expression analysis of plasma cell differentiation and plasmacytomagenesis

Dr. Kathryn Calame, Columbia University, The differentiation program of normal human GC B cells to memory or plasma cells

Dr. John Monroe, University of Pennsylvania, Analysis of the development and gene expression program of transitional B cells

Dr. Harinder Singh, University of Chicago, The role of IRF4 in mature B cell differentiation

Dr. Phil Tucker, University of Texas at Austin, BCL11 isoform expression in B cell differentiation and malignancy

*Dr. Mike Teitell, UCLA, Effects of manipulating transcription factors on malignant cell mass/content

*Dr. Edward Ott, Dr. Michelle Girvan, Dr. Wolfgang Losert, University of Maryland, Using network theory to elucidate the transcriptional network of malignant cells

*Dr. Adrian Weistner, NHLBI, NIH, Studying the contribution of B cell differentiation to chemotherapy resistance in cancer.