

## *CURRICULUM VITAE*

Name: Mark S. Schlissel  
Birth: November 24, 1957  
Address: Brooklyn, New York  
26 Merrill Circle South  
Moraga, CA, 94556  
Phone: 510-643-2462 (lab)

### EMPLOYMENT

Dean of Biological Sciences (2008-present)  
College of Letters & Science  
Director, Berkeley Health Sciences Initiative  
Professor of Immunology (2002-present)  
Professor of Biochemistry & Molecular Biology  
Vice-Chair (2002-2007)  
Shubert Family Assoc. Professor of Biochemistry  
& Associate Professor of Immunology (1999-2002)  
Department of Molecular and Cell Biology  
University of California, Berkeley

Associate Professor (1995-1999)  
Assistant Professor (1991-1995)  
Department of Medicine  
Department of Molecular Biology and Genetics  
Department of Oncology  
The Johns Hopkins University  
School of Medicine

### EDUCATION

Undergraduate: Bachelor of Arts, 1979  
Princeton University  
Major in Biochemical Sciences

Graduate: M.D. and Ph.D. (Physiological Chemistry), 1986  
Johns Hopkins University  
Thesis Advisor-- Dr. Donald D. Brown

Postgraduate: Medical Residency, 1986-1988  
The Johns Hopkins Hospital  
Postdoctoral Research Fellow, 1988-1991  
Whitehead Institute for Biological Research  
Research Advisor-- Dr. David Baltimore

## HONORS AND AWARDS

Undergraduate:	A.B., <i>Summa cum laude</i> Elected, Phi Beta Kappa Elected, Sigma Xi Science Honor Society
Graduate:	Fellow: NIH Medical Scientist Training Program, 1979-1986 Recipient: Michael A. Shanoff Research Award, 1984
Postgraduate:	Awardee: Bristol-Myers Cancer Research Fellowship, 1988-1991 Diplomate: American Board of Internal Medicine
Faculty:	Cancer Research Institute Investigator Award, 1992 Culpeper Foundation Scholar, 1993 Leukemia Society Scholar, 1996-2001 Arthritis Foundation Investigator, 1997-2003 W.W. Smith Foundation Scholar, 1997 Associate Editor, <i>Journal of Immunology</i> (1995-1998) Elected to Membership, American Society for Clinical Investigation (1998) Graduate Student Teaching Award (1998) NIH Immunobiology (IMB). Study Section (2000-2002 member, 2002-2004 Chair) Stohlman Scholar, Leukemia & Lymphoma Society (2001) NIH MERIT Award (2005-2015)

## AD HOC REVIEWER

Cell	Immunity
Science	Molecular Cell
Nature	Journal of Immunology
J. Exp. Medicine	Molecular & Cell Biology
Nucleic Acids Res.	International Immunology
Embo Journal	Nature Immunology
Nature Genetics	Oncogene
Blood	PLOS

## INSTITUTIONAL RESPONSIBILITIES

- Teaching-- MCB 150, Molecular Immunology. (2000-2003, 2008  
teaching evaluation 6.72 / 7.0).  
MCB 250, Graduate Immunology. (2000, 2004; teaching  
evaluation 6.58 / 7.0).  
MCB 251, Regulation of Immune System Development  
and Function. (2000-present).  
Bio1A Introductory Biology (2006- present ; teaching evaluation  
5.9/7.0)
- Administrative-- Graduate Admissions Committee 1999-2001;  
(co-chair 2000, chair 2001).  
Graduate Affairs Committee (2000-2002).  
MCB Departmental Graduate Diversity Officer  
(1999-2003).  
Faculty Search Committee (Immunology; 2000-2001)  
Vice-Chair, Molecular & Cell Biology (2002 to 2007)  
Dean of Biological Sciences (2008-present)

## OUTSIDE ORGANIZATION RESPONSIBILITIES

- American Association of Immunologists (AAI) Education Committee  
(2000-2003)  
Midwinter Conference of Immunologists Organizing Committee  
(2001-2006)  
Scientific Advisory Board-- Genetastix, Inc. (2000-2006)  
Scientific Advisor—Leukemia & Lymphoma Society (2001-2003)  
Chair—Immunobiology Study Section (NIH) (2002-2004)  
HHMI Board of Scientific Advisors (2005-present)  
Organizer, Cold Spring Harbor Meeting “Signaling and Transcription in the  
Immune system (2008, 2010)  
Organizer, Keystone Meeting, B Cells in Health and Disease (2009)  
Expert Witness—Biogen Idec (Patent infringement case; 2006-2007)

## INVITED LECTURES (2000-present)

UCSF	Keystone Symposium
University of Illinois Med.	FASEB Meeting
University of Pennsylvania	Gordon Conference
Emory	AAI Meeting
University of Chicago	Stanford University
University of Washington	Harvard Medical School
University of Kentucky	Fox Chase Cancer Center
University of Virginia	Ohio State University
Duke University	Cold Spring Harbor Meetings (2004, 2006)

University of Calif. Irvine	Scripps Research Inst.
Aegean Conference	National Jewish Hospital
UCLA	NYU Medical School
RCAI Symp (Yokohama)	Tufts Medical School
Yale	Johns Hopkins Medical
USC	Erlangen Symposium (Germany)
Columbia P&S	University of Pittsburg
Washington Univ	University of Pennsylvania
University of Toronto	La Jolla Inst. Of Allergy & Immunology
University of Alabama	University of Vermont
University of Massachusetts	

## GRANT SUPPORT

- NIH HL48702-16      The Regulation of B Cell Development.  
 NIH AI 40227-14      The Biochemistry and Regulation of V(D)J Recombination  
 NIH AI 57487-05      c-Abl in B Cell Development and Leukemia

*PUBLICATIONS*  
*(peer reviewed article numbers in **boldface**)*

1. Cozzarelli, N.R., S.P. Gerrard, M. **Schlissel**, D.D. Brown, and D.F. Bogenhagen. 1983. Purified RNA polymerase III accurately and efficiently terminates transcription of 5S RNA genes. *Cell* 34:829-835.
2. Wormington, W.M., M. **Schlissel**, and D.D. Brown. 1983. Developmental regulation of Xenopus 5S RNA genes. *Cold Spring Harb Symp Quant Biol* 47:879-884.
3. **Schlissel**, M.S., and D.D. Brown. 1984. The transcriptional regulation of Xenopus 5S RNA genes in chromatin: the roles of active stable transcription complexes and histone H1. *Cell* 37:903-913.
4. Brown, D.D., and M.S. **Schlissel**. 1985. The molecular basis of differential gene expression of two 5S RNA genes. *Cold Spring Harb Symp Quant Biol* 50:549-553.
5. Brown, D.D., and M.S. **Schlissel**. 1985. A positive transcription factor controls the differential expression of two 5S RNA genes. *Cell* 42:759-767.
6. **Schlissel**, M.S., and D. Baltimore. 1989. Activation of immunoglobulin kappa gene rearrangement correlates with induction of germline kappa gene transcription. *Cell* 58:1001-1007.
7. Hendrickson, E.A., M.S. **Schlissel**, and D.T. Weaver. 1990. Wild-type V(D)J recombination in scid pre-B cells. *Mol Cell Biol* 10:5397-5407.
8. **Schlissel**, M., A. Voronova, and D. Baltimore. 1991. Helix-loop-helix transcription factor E47 activates germ-line immunoglobulin heavy-chain gene transcription and rearrangement in a pre-T-cell line. *Genes Dev* 5:1367-1376.
9. **Schlissel**, M.S., L.M. Corcoran, and D. Baltimore. 1991. Virus-transformed pre-B cells

- show ordered activation but not inactivation of immunoglobulin gene rearrangement and transcription. *J Exp Med* 173:711-720.
10. Morrow, T., and M. **Schlissel**. 1992. The purification of B-cell precursors from mouse fetal liver. *Curr Top Microbiol Immunol* 182:55-64.
  11. Schatz, D.G., M.A. Oettinger, and M.S. **Schlissel**. 1992. V(D)J recombination: molecular biology and regulation. *Annu Rev Immunol* 10:359-383.
  12. **Schlissel**, M., A. Constantinescu, T. Morrow, M. Baxter, and A. Peng. 1993. Double-strand signal sequence breaks in V(D)J recombination are blunt, 5'-phosphorylated, RAG-dependent, and cell cycle regulated. *Genes Dev* 7:2520-2532.
  13. Shapiro, A.M., M.S. **Schlissel**, D. Baltimore, and A.L. DeFranco. 1993. Stimulation of kappa light-chain gene rearrangement by the immunoglobulin mu heavy chain in a pre-B-cell line. *Mol Cell Biol* 13:5679-5690.
  14. Bain, G., E.C. Maandag, D.J. Izon, D. Amsen, A.M. Kruisbeek, B.C. Weintraub, I. Krop, M.S. **Schlissel**, A.J. Feeney, M. van Roon, and et al. 1994. E2A proteins are required for proper B cell development and initiation of immunoglobulin gene rearrangements [see comments]. *Cell* 79:885-892.
  15. **Schlissel**, M.S., and T. Morrow. 1994. Ig heavy chain protein controls B cell development by regulating germ-line transcription and retargeting V(D)J recombination. *J Immunol* 153:1645-1657.
  16. Spanopoulou, E., C.A. Roman, L.M. Corcoran, M.S. **Schlissel**, D.P. Silver, D. Nemazee, M.C. Nussenzweig, S.A. Shinton, R.R. Hardy, and D. Baltimore. 1994. Functional immunoglobulin transgenes guide ordered B-cell differentiation in Rag-1-deficient mice. *Genes Dev* 8:1030-1042.
  17. **Schlissel**, M., and T. Morrow. 1995. Broken-ended DNA and V(D)J recombination. *Curr Top Microbiol Immunol* 194:381-388.
  18. Casciola-Rosen, L., A. Rosen, M. Petri, and M. **Schlissel**. 1996. Surface blebs on apoptotic cells are sites of enhanced procoagulant activity: implications for coagulation events and antigenic spread in systemic lupus erythematosus. *Proc Natl Acad Sci U S A* 93:1624-1629.
  19. Fang, W., D.L. Mueller, C.A. Pennell, J.J. Rivard, Y.S. Li, R.R. Hardy, M.S. **Schlissel**, and T.W. Behrens. 1996. Frequent aberrant immunoglobulin gene rearrangements in pro-B cells revealed by a bcl-xL transgene. *Immunity* 4:291-299.
  20. Krop, I., A.R. de Fougerolles, R.R. Hardy, M. Allison, M.S. **Schlissel**, and D.T. Fearon. 1996. Self-renewal of B-1 lymphocytes is dependent on CD19. *Eur J Immunol* 26:238-242.
  21. Krop, I., A.L. Shaffer, D.T. Fearon, and M.S. **Schlissel**. 1996. The signaling activity of murine CD19 is regulated during cell development. *J Immunol* 157:48-56.
  22. Nacht, M., A. Strasser, Y.R. Chan, A.W. Harris, M. **Schlissel**, R.T. Bronson, and T. Jacks. 1996. Mutations in the p53 and SCID genes cooperate in tumorigenesis. *Genes Dev* 10:2055-2066.
  23. Stanhope-Baker, P., K.M. Hudson, A.L. Shaffer, A. Constantinescu, and M.S. **Schlissel**. 1996. Cell type-specific chromatin structure determines the targeting of V(D)J recombinase activity in vitro. *Cell* 85:887-897.

- 24.** Bain, G., E.C. Robanus Maandag, H.P. te Riele, A.J. Feeney, A. Sheehy, M. **Schlissel**, S.A. Shinton, R.R. Hardy, and C. Murre. 1997. Both E12 and E47 allow commitment to the B cell lineage. *Immunity* 6:145-154.
- 25.** Constantinescu, A., and M.S. **Schlissel**. 1997. Changes in locus-specific V(D)J recombinase activity induced by immunoglobulin gene products during B cell development. *J Exp Med* 185:609-620.
- 26.** Gu, Y., K.J. Seidl, G.A. Rathbun, C. Zhu, J.P. Manis, N. van der Stoep, L. Davidson, H.L. Cheng, J.M. Sekiguchi, K. Frank, P. Stanhope-Baker, M.S. **Schlissel**, D.B. Roth, and F.W. Alt. 1997. Growth retardation and leaky SCID phenotype of Ku70-deficient mice. *Immunity* 7:653-665.
- 27.** Han, S., S.R. Dillon, B. Zheng, M. Shimoda, M.S. **Schlissel**, and G. Kelsoe. 1997. V(D)J recombinase activity in a subset of germinal center B lymphocytes [see comments]. *Science* 278:301-305.
- 28.** **Schlissel**, M.S., and P. Stanhope-Baker. 1997. Accessibility and the developmental regulation of V(D)J recombination. *Semin Immunol* 9:161-170.
- 29.** Shaffer, A.L., A. Peng, and M.S. **Schlissel**. 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.
- 30.** Shaffer, A.L., and M.S. **Schlissel**. 1997. A truncated heavy chain protein relieves the requirement for surrogate light chains in early B cell development. *J Immunol* 159:1265-1275.
- 31.** Hempel, W.M., P. Stanhope-Baker, N. Mathieu, F. Huang, M.S. **Schlissel**, and P. Ferrier. 1998. Enhancer control of V(D)J recombination at the TCRbeta locus: differential effects on DNA cleavage and joining. *Genes Dev* 12:2305-2317.
- 32.** **Schlissel**, M.S. 1998. Structure of nonhairpin coding-end DNA breaks in cells undergoing V(D)J recombination. *Mol Cell Biol* 18:2029-2037.
- 33.** Golding, A., S. Chandler, E. Ballestar, A.P. Wolffe, and M.S. **Schlissel**. 1999. Nucleosome structure completely inhibits in vitro cleavage by the V(D)J recombinase. *Embo J* 18:3712-3723.
- 34.** Lauring, J., and M.S. **Schlissel**. 1999. Distinct factors regulate the murine RAG-2 promoter in B- and T-cell lines. *Mol Cell Biol* 19:2601-2612.
- 35.** Morrow, T.A., S.A. Muljo, J. Zhang, J.M. Hardwick, and M.S. **Schlissel**. 1999. Pro-B-cell-specific transcription and proapoptotic function of protein kinase ceta. *Cell Biol* 19:5608-5618.
- 36.** Sheehy, A.M., and M.S. **Schlissel**. 1999. Overexpression of RelA causes G1 arrest and apoptosis in a pro-B cell line. *J Biol Chem* 274:8708-8716.
- 37.** Dillon, S.R., M. Mancini, A. Rosen, and M.S. **Schlissel**. 2000. Annexin V binds to viable B cells and colocalizes with a marker of lipid rafts upon B cell receptor activation. *J Immunol* 164:1322-1332.
- 38.** Muljo, S.A., and M.S. **Schlissel**. 2000. Pre-B and pre-T-cell receptors: conservation of strategies in regulating early lymphocyte development. *Immunol Rev* 175:80-93.
- 39.** **Schlissel**, M.S. 2000. Perspectives: transcription. A tail of histone acetylation and DNA

- recombination. *Science* 287:438-440.
40. **Schlissel**, M.S., S.D. Durum, and K. Muegge. 2000. The interleukin 7 receptor is required for T cell receptor gamma locus accessibility to the V(D)J recombinase. *J Exp Med* 191:1045-1050.
41. Wang, Q.F., J. Lauring, and M.S. **Schlissel**. 2000. c-Myb binds to a sequence in the proximal region of the RAG-2 promoter and is essential for promoter activity in T-lineage cells. *Mol Cell Biol* 20:9203-9211.
42. Whitehurst, C.E., M.S. **Schlissel**, and J. Chen. 2000. Deletion of germline promoter PD beta 1 from the TCR beta locus causes hypermethylation that impairs D beta 1 recombination by multiple mechanisms. *Immunity* 13:703-714.
43. Cost, G.J., A. Golding, M.S. **Schlissel**, and J.D. Boeke. 2001. Target DNA chromatinization modulates nicking by L1 endonuclease. *Nucleic Acids Res* 29:573-577.
44. Dillon, S.R., A. Constantinescu, and M.S. **Schlissel**. 2001. Annexin V binds to positively selected B cells. *J Immunol* 166:58-71.
45. Lee, P.P., D.R. Fitzpatrick, C. Beard, H.K. Jessup, S. Lehar, K.W. Makar, M. Perez-Melgosa, M.T. Sweetser, M.S. **Schlissel**, S. Nguyen, S.R. Cherry, J.H. Tsai, S.M. Tucker, W.M. Weaver, A. Kelso, R. Jaenisch, and C.B. Wilson. 2001. A critical role for dnmt1 and DNA methylation in T cell development, function, and survival. *Immunity* 15:763-774.
46. Lu, L., C.A. Bonham, X. Liang, Z. Chen, W. Li, L. Wang, S.C. Watkins, M.A. Nalesnik, M.S. **Schlissel**, A.J. Demestris, J.J. Fung, and S. Qian. 2001. Liver-derived DEC205+B220+CD19- dendritic cells regulate T cell responses. *J Immunol* 166:7042-7052.
48. Dillon, S.R., and M.S. **Schlissel**. 2002. Partial restoration of B cell development in Jak-3(-/-) mice achieved by co-expression of IgH and E(mu)-myc transgenes. *Int Immunol* 14:893-904.
49. Goldmit, M., M. **Schlissel**, H. Cedar, and Y. Bergman. 2002. Differential accessibility at the kappa chain locus plays a role in allelic exclusion. *Embo J* 21:5255-5261.
50. Liang, H.E., L.Y. Hsu, D. Cado, L.G. Cowell, G. Kelsoe, and M.S. **Schlissel**. 2002. The "dispensable" portion of RAG2 is necessary for efficient V-to-DJ rearrangement during B and T cell development. *Immunity* 17:639-651.
51. Muljo, S.A., and M.S. **Schlissel**. 2002. The variable, C(H)1, C(H)2 and C(H)3 domains of Ig heavy chain are dispensable for pre-BCR function in transgenic mice. *Int Immunol* 14:577-584.
52. **Schlissel**, M. 2002. Allelic exclusion of immunoglobulin gene rearrangement and expression: why and how? *Semin Immunol* 14:207.
53. **Schlissel**, M.S. 2002. Does artemis end the hunt for the hairpin-opening activity in V(D)J recombination? *Cell* 109:1-4.
54. Hsu, L.Y., J. Lauring, H.E. Liang, S. Greenbaum, D. Cado, Y. Zhuang, and M.S. **Schlissel**. 2003. A conserved transcriptional enhancer regulates RAG gene expression in developing B cells. *Immunity* 19:105-117.
55. Muljo, S.A., and M.S. **Schlissel**. 2003. A small molecule Abl kinase inhibitor induces

- differentiation of Abelson virus-transformed pre-B cell lines. *Nat Immunol* 4:31-37.
56. Robey, E., and M. **Schlissel**. 2003. Lymphocyte development. *Curr Opin Immunol* 15:155-157.
57. **Schlissel**, M. 2003. How pre-B cells know when they have it right. *Nat Immunol* 4:817-819.
58. **Schlissel**, M.S. 2003. Regulating antigen-receptor gene assembly. *Nat Rev Immunol* 3:890-899.
59. Borghesi, L., L.Y. Hsu, J.P. Miller, M. Anderson, L. Herzenberg, M.S. **Schlissel**, D. Allman, and R.M. Gerstein. 2004. B lineage-specific regulation of V(D)J recombinase activity is established in common lymphoid progenitors. *J Exp Med* 199:491-502.
60. Hsu, L.Y., H.E. Liang, K. Johnson, C. Kang, and M.S. Schlissel. 2004. Pax5 activates immunoglobulin heavy chain V to DJ rearrangement in transgenic thymocytes. *J Exp Med* 199:825-830.
61. Liang, H.E., L.Y. Hsu, D. Cado, and M.S. Schlissel. 2004. Variegated transcriptional activation of the immunoglobulin kappa locus in pre-b cells contributes to the allelic exclusion of light-chain expression. *Cell* 118:19-29.
62. Schlissel, M. 2004. The spreading influence of chromatin modification. *Nat Genet* 36:438-440.
63. **Schlissel**, M.S. 2004. Regulation of activation and recombination of the murine Igkappa locus. *Immunol Rev* 200:215-223.
64. Amin, R.H., and M.S. **Schlissel**. 2005. NF-kappa B comes home. *Immunity* 22:401-402.
65. Curry, J.D., J.K. Geier, and M.S. **Schlissel**. 2005. Single-strand recombination signal sequence nicks in vivo: evidence for a capture model of synapsis. *Nat Immunol* 6:1272-1279.
66. Curry, J.D., L. Li, and M.S. **Schlissel**. 2005. Quantification of Jkappa signal end breaks in developing B cells by blunt-end linker ligation and qPCR. *J Immunol Methods* 296:19-30.
67. Geier, J.K., and M.S. **Schlissel**. 2005. Pre-BCR signals and the control of Ig gene rearrangements. *Semin Immunol*
68. Tze, L.E., B.R. Schram, K.P. Lam, K.A. Hogquist, K.L. Hippen, J. Liu, S.A. Shinton, K.L. Otipoby, P.R. Rodine, A.L. Vegoe, M. Kraus, R.R. Hardy, M.S. **Schlissel**, K. Rajewsky, and T.W. Behrens. 2005. Basal immunoglobulin signaling actively maintains developmental stage in immature B cells. *PLoS Biol* 3:e82.
69. Geier, J.K., and M.S. **Schlissel**. 2006. Pre-BCR signals and the control of Ig gene rearrangements. *Semin Immunol* 18:31-39.
70. Huang, F., Y. Kitaura, I. Jang, M. Naramura, H.H. Kole, L. Liu, H. Qin, M.S. **Schlissel**, and H. Gu. 2006. Establishment of the major compatibility complex-dependent development of CD4+ and CD8+ T cells by the Cbl family proteins. *Immunity* 25:571-581.
71. Lazorchak, A.S., M.S. **Schlissel**, and Y. Zhuang. 2006. E2A and IRF-4/Pip promote chromatin modification and transcription of the immunoglobulin kappa locus in pre-B cells. *Mol Cell Biol* 26:810-821.

72. Pedraza-Alva, G., M. Koulnis, C. Charland, T. Thornton, J.L. Clements, M.S. **Schlissel**, and M. Rincon. 2006. Activation of p38 MAP kinase by DNA double-strand breaks in V(D)J recombination induces a G2/M cell cycle checkpoint. *Embo J* 25:763-773.
73. **Schlissel**, M.S., C.R. Kaffer, and J.D. Curry. 2006. Leukemia and lymphoma: a cost of doing business for adaptive immunity. *Genes Dev* 20:1539-1544.
74. **Schlissel**, M.S., and T.C. Kuo. 2006. AID for innate immunity to retroviral transformation. *Immunity* 24:671-672.
75. Bates, J.G., D. Cado, H. Nolla, and M.S. **Schlissel**. 2007. Chromosomal position of a VH gene segment determines its activation and inactivation as a substrate for V(D)J recombination. *J Exp Med* 204:3247-3256.
76. Curry, J.D., D. Schulz, C.J. Guidos, J.S. Danska, L. Nutter, A. Nussenzweig, and M.S. **Schlissel**. 2007. Chromosomal reinsertion of broken RSS ends during T cell development. *J Exp Med* 204:2293-2303.
77. Kitaura, Y., I.K. Jang, Y. Wang, Y.C. Han, T. Inazu, E.J. Cadera, M. **Schlissel**, R.R. Hardy, and H. Gu. 2007. Control of the B cell-intrinsic tolerance programs by ubiquitin ligases Cbl and Cbl-b. *Immunity* 26:567-578.
78. **Schlissel**, M.S. 2007. The regulation of receptor editing. *Adv Exp Med Biol* 596:173-179.
79. Amin, R.H., and M.S. **Schlissel**. 2008. Foxo1 directly regulates the transcription of recombination-activating genes during B cell development. *Nat Immunol* 9:613-622.
80. Curry, J.D., and M.S. **Schlissel**. 2008. RAG2's non-core domain contributes to the ordered regulation of V(D)J recombination. *Nucleic Acids Res* 36:5750-5762.
81. Hewitt, S.L., D. Farmer, K. Marszalek, E. Cadera, H.E. Liang, Y. Xu, M.S. **Schlissel**, and J.A. Skok. 2008. Association between the Igk and Igh immunoglobulin loci mediated by the 3' Igk enhancer induces 'decontraction' of the Igh locus in pre-B cells. *Nat Immunol* 9:396-404.
82. Amin, R.H., D. Cado, H. Nolla, D. Huang, S.A. Shinton, Y. Zhou, R.R. Hardy, and M.S. 2009. Biallelic, ubiquitous transcription from the distal germline Ig{kappa} locus promoter during B cell development. *Proc Natl Acad Sci U S A* 106:522-527.