

CURRICULUM VITAE

Name: Michel C. Nussenzweig

Date of Birth: February 10, 1955

Education:

1975 B.A. - New York University College of Arts and Sciences
1981 Ph.D. - The Rockefeller University
1982 M.D. - New York University School of Medicine

Clinical Training:

1982-1985 Intern & Resident, Internal Medicine
Massachusetts General Hospital
1984-1985 Clinical Fellow, Infectious Diseases
Massachusetts General Hospital

Postdoctoral Training:

1986-1989 Harvard Medical School, Department of Genetics

Professional Appointments

1990-1996 Assistant & Associate Professor, The Rockefeller University
1990-1999 Assistant & Associate Investigator, Howard Hughes Medical Institute
1996-present Professor & Senior Physician, The Rockefeller University
1999-present Investigator, Howard Hughes Medical Institute
2000-2013 Sherman Fairchild Professor, The Rockefeller University
2013- Zanol A. Cohn & Ralph M. Steinman Professor, The Rockefeller University

Honors & Awards

Summa Cum Laude, New York University College of Arts and Sciences - 1975; Phi Beta Kappa, New York University College of Arts and Sciences - 1975; Alpha Omega Alpha, New York University Medical School - 1982; Bertram M. Gesner Memorial Research Award, New York University School of Medicine – 1982; Elected Member American Society of Clinical Investigators – 1997; Solomon A. Berson Award for Basic Science – 2003; American Association of Immunologists Huang Foundation Meritorious Career Award – 2004; Elected Fellow of the American Academy of Arts & Sciences – 2007; Benacerraf Lecture, Harvard Medical School - 2007; Heidelberger-Kabat Lecture, Columbia University - 2008; Lee C. Howley Sr. Prize for Arthritis Research - 2008; Elected Member in the Institute of Medicine of the National Academies – 2009; Elected Member of the National Academy of Sciences USA – 2011; Elected Member of the Brazilian Academy of Sciences – 2011; Nobel Award Lecture for Dr. Ralph Steinman, Nobel Foundation – 2011; Elected Member of Association of American Physicians – 2012; Elected to Practitioners Society of New York – 2014; Landsteiner Lecture, Vienna – 2014

Teaching:

Immunology, Course Organizer

Institutional:

Member Hospital GCRC Scientific Advisory Committee 1996-2002
Chair, Hospital Seminar Committee 1997-1998
Elected Senior Faculty Representative Academic Council 1999-2001
Member, Institutional Review Board for Biohazards, Radioisotopes, Toxic Chemicals, and Carcinogens 1999-2001
Member, Immunology Search Committee 2001
Member, Infectious Disease Search Committee 2001
Member, Virology Search Committee 2002
Faculty Advisory Committee for Presidential Search 2002
Chair, Animal Care and Use Committee 2000-2011
Member, Animal Care and Use Committee 2012-
Member President's Core Planning Group 2004-2005
Member Transgenic Facility Coordinating Committee 2004-
Member Rockefeller University Faculty Search Committee 2005-
Member Rockefeller University Academic Council 2009-2012
Member, Presidential Search Committee 2010
President, Rockefeller University Academic Senate 2011-2012
Director, Christopher H. Browne Center for Immunology and Immune Diseases 2012-
Mid Career Hiring Committee 2012-
Chair University Lecture Committee 2013-

National and International:

Arthritis Foundation Molecular Immunology study section 1993-1996
NIH Immunobiology Study Section Ad Hoc reviewer 1998, and 1999
NIH NIAID Council Ad Hoc 1998
Organizer, Keystone Symposium on Dendritic Cells 1998
NIH ALY Study Section Ad Hoc Reviewer, 1999
Organizer, Keystone Symposium on B Cells 1999
External Reviewer LMGD NICHD 2000
Damon Runyon Cancer Research Fund Review Committee 2000-2002
Organizer, Keystone Symposium on B Cell Biology 2003
American Association of Immunologists Program Committee 2000-2003
March of Dimes Review Committee 1999-2005
NIH ALY Study Section 2001-2006
Chair, NIH ALY Study Section 2005-2006
The Harvey Society, Council Member 2004-2007
Human Frontiers of Science Review Board 2004-2007
North Shore Hospital Scientific Advisory Board 2004
Member, AAI Awards Committee 2005-2008
NIH NIAID B Cell Immunology for Protective HIV-1 Vaccines Ad Hoc reviewer 2007
Lupus Research Institute Scientific Advisory Board, Co-chair 2008 -
Global HIV Vaccine Enterprise Science Advisory Committee 2008
Member, Pasteur Institute Scientific Council 2008-2016
NIH NIAID AIDS Vaccine Research Subcommittee Member 2009-2012

Scripps Korea Antibody Institute Scientific Advisory Board 2009
Member, Int'l. Program Committee for the 14th International Congress of Immunology (ICI) Osaka 2010
Member, Congress Committee for the 15th International Congress of Immunology (ICI) Rome 2013
The Henry Kunkel Society, Secretary 2011-2014
Harvard's Children's Hospital Boston, Scientific Advisory Committee 2012-
Organizer, Cold Spring Harbor Symposium on Quantitative Biology—Immunity & Tolerance 2013
Organizer, Keystone Symposium on B Cell Biology - 2014

Editorial:

1996-Present	Editor, The Journal of Experimental Medicine
1999-Present	Editor, The Journal of Immunological Methods
2000-Present	Transmitting Editor, International Immunology
2002-Present	Advisory Editor, Nature Reviews Immunology
2006-Present	Editorial Committee, Annual Review of Immunology

Consultant:

Abgenix, Fremont, CA	Scientific Advisory Board	1998-2003
Zycos, Lexington MA	Scientific Advisory Board	2001-2003
Trubion Seattle WA	Scientific Advisory Board	2004-2009
Celldex, NJ	Scientific Advisory Board	2005-

Professional Memberships:

American Association of Immunologists
American Medical Association
The New York Academy of Sciences
Kunkel Society
Harvey Society
American Society for Clinical Investigation
American Society for Microbiology

Invited Chapters or Reviews

1. Steinman, R.M., Witmer, M.D., **Nussenzweig, M.C.**, Chen, L.L. & Cohn, Z.A. Dendritic Cells: an important new cell type in the mixed leukocyte reaction. In: Kaplan JG, ed. Proc. of the 13th International Leukocyte Culture conference. *Elsevier/North Holland Publ. Co.* 273 (1979)
2. Steinman, R.M., & **Nussenzweig, M.C.** Dendritic cells features and functions. *Immunol. Rev.* 53:127-147 (1980)
3. **Nussenzweig, M.C.**, & Steinman, R.M. Surface of dendritic cells. *Immunol. Today* 3:65 (1982)
4. Shimizu, A., Kinashi, T., **Nussenzweig, M.C.**, Tataunobu-Ryushin, M., Leder, P., & Honjo, T. Molecular mechanism for immuno-globulin double-isotope expression. *Cold Spring Harbor Symposia on Quantitative Biology* LIV 175 (1989)

5. Papavasiliou, F., Jankovic, M., Gong, S. & **Nussenzweig, M.C.** Control of immunoglobulin gene rearrangements in developing B cells, review. *Curr. Opin. Immunol.* 9:233-244 (1997)
6. **Nussenzweig, M.C.** Immune responses: Tails to teach a B cell. *Curr. Biology.* 7(6):R355-357 (1997)
7. **Nussenzweig, M.C.** & Allison, J. Lymphocyte activation and effector functions. How signals are integrated in the immune system (Editorial Overview) *Curr. Opin. Immunol.* 9:293-295 (1997)
8. **Nussenzweig, M.C.** Immune Receptor Editing: Revise and Select. *Cell* 95:875-878 (1998)
9. Yu, W., Nagaoka, H., Misulovin, Z., Meffre, E., Suh, H., Jankovic, M., Yannoutsos, N., Casellas, R., Besmer, E., Papavasiliou, F., Qin, X., & **Nussenzweig, M.C.** RAG Expression in B Cells in Secondary Lymphoid Tissues. *Cold Spring Harbor Symposia on Quantitative Biology* Vol. LXIV:207-210, (1999)
10. Nagaoka, H., Yu, W. & **Nussenzweig, M.C.** Regulation of RAG expression in developing lymphocytes. *Curr. Opin. Immunol.* 12:187-190 (2000)
11. Meffre, E., Casellas, R. & **Nussenzweig, M.C.** Antibody regulation of B cell development. *Nat. Immunol.* 1(5):379-385 (2000)
12. **Nussenzweig, M.C.** & Golstein, P. Lymphocyte activation and effector functions (Editorial Overview). *Curr. Opin. Immunol.* 12:239-241 (2000)
13. Steinman, R.M., Hawiger, D., & **Nussenzweig, M.C.** Tolerogenic dendritic cells. *Annu. Rev. Immunol.* 21:685-711 (2003)
14. Steinman, R.M., Hawiger, D., Liu, K., Bonifaz, L., Bonnyay, D., Mahnke, K., Iyoda, T., Ravetch, J., Dhodapkar, M., Inaba, K. & **Nussenzweig, M.C.** Dendritic cell function in vivo during the steady state: a role in peripheral tolerance. *Annals NYAS.* 987:15-25 (2003)
15. Fernandez-Capetillo, O., Lee, A., **Nussenzweig, M.C.** & Nussenzweig, A. H2AX: The histone guardian of the genome. *DNA Repair* 3(8-9):959-967 (2004)
16. Berg, L.J. & **Nussenzweig, M.C.** Signals that regulate lymphocyte development and differentiation: Editorial overview. *Curr. Opin. Immunol.* 6(2) (2004)
17. Jankovic, M., Casellas, R., Yannoutsos, N., Wardemann, H., & **Nussenzweig, M.C.** RAGs and regulation of autoantibodies. *Annu. Rev. Immunol.* Apr 22:485-501 (2004)
18. von Boehmer, H. & **Nussenzweig, M.C.** The manipulation of immunity. *EMBO J.* 5(8):766-771 (2004)
19. Ramiro, A.R. & **Nussenzweig, M.C.** Immunology: aid for AID. *Nature* 430:980-981 (2004)

20. **Nussenzweig, M.C.** & Alt, F.W. Antibody diversity: one enzyme to rule them all. *Nat. Med.* 10(12):1304-1305 (2004)
21. Barreto, V.N., Ramiro, A.R. & **Nussenzweig, M.C.** Activation-induced deaminase: controversies and open questions. *Trends Immunol* 26(2):117 (2005)
22. Steinman, R.M., Bonifaz, L., Fujii, S., Liu, K., Bonnyay, D., Yamazaki, S., Pack, M., Hawiger, D., Iyoda, T., Inaba, K. & **Nussenzweig, M.C.** The innate functions of dendritic cells in peripheral lymphoid tissues. *Adv. Exp. Med. Biol.* 560:83-97 (2005)
23. Germain, R.N., Miller, M.J., Dustin, M.L. & **Nussenzweig, M.C.** Dynamic imaging of the immune system: progress, pitfalls and promise. *Nat. Rev. Immunol.* 6(7):497-507 (2006)
24. Ramiro, A.R., **Nussenzweig, M.C.** & Nussenzweig A. Switching on chromosomal translocations. *Cancer Res.* 66(16):7837-7839 (2006)
25. Ramiro, A., Reina San-Martin, B., McBride, K., Jankovic, M., Barreto, V., Nussenzweig, A. & **Nussenzweig, M.C.** The role of activation induced deaminase in antibody diversification and chromosome translocations. *Adv. Immunol.* Vol. 94:75-107 (2007)
26. Ravetch, J.V. & **Nussenzweig, M.C.** Killing some to make way for others. *Nat Immunol.* 8:337-339 (2007)
27. Wardemann, H., & **Nussenzweig, M.C.** B cell self-tolerance in humans. *Adv. Immunol.* 95:83-110 (2007)
28. Downs, J., **Nussenzweig, M.C.** & Nussenzweig, A. Chromatin dynamics and the preservation of genetic information. *Nature* 447:951-958 (2007)
29. Yurasov, S. & **Nussenzweig, M.C.** Regulation of autoreactive antibodies. *Curr Opin. Rheumato.* 19(5):421-426 (2007)
30. Nussenzweig, A. & **Nussenzweig, M.C.** A back-up DNA repair pathway moves to the forefront. *Cell* 131(2):223-225 (2007)
31. Jankovic, M., Nussenzweig, A. & **Nussenzweig, M.C.** Antigen receptor diversification and chromosome translocations. *Nat. Immunol.* 8(8):801-808 (2007)
32. Callen, E., **Nussenzweig, M.C.** & Nussenzweig, A. Breaking down cell cycle checkpoints and DNA repair during antigen receptor gene assembly. *Oncogene* 26(56):7759-7764 (2007)
33. Liu K. & **Nussenzweig, M.C.** Origin and development of dendritic cells. *Immunol. Rev.* 234(1):45-54 (2010)

34. Nussenzweig, A. & **Nussenzweig, M.C.** Origin of chromosomal translocations in lymphoid cancer. *Cell* 141(1):27-38 (2010)
35. Liu, K. & **Nussenzweig, M.C.** Development and homeostasis of Dendritic Cells. DOI: 10.1002/eji.201040501 *Eur. Jour. Of Immunol.* (2010)
36. Mouquet, H. & **Nussenzweig, M.C.** Polyreactive antibodies in adaptive immune responses to viruses. *Cell. Mol. Life Sci.* 102-112 (2011)
37. Pavri, R. & **Nussenzweig, M.C.** AID targeting in antibody diversity. *Adv. in Immunol.* Vol 110:1-26 (2011)
38. Victora, G.D., **Nussenzweig, M.C.** Germinal Centers. *Annu. Rev Immunol* [Epub ahead of print 3/24] (2012)
39. Gazumyan, A., Bothmer, Klein, I.A., **Nussenzweig, M.C.** & McBride, K.M. Activation-induced cytidine deaminase in antibody diversification and chromosome translocation. *Adv Cancer Res.* 113:167-190 (2012)
40. Robbiani, D.F. & **Nussenzweig, M.C.** Chromosome translocation, B cell lymphoma and activation-induced cytidine deaminase. *Annu. Rev. Pathol. Mech. Dis.* doi: 10.1146/annurev-pathol-020712-164004 (2012)
41. Burton, D.R., Ahmed, R., Barouch, D.H., Butera, S.T., Crotty, S., Godzik, A., Kaufmann, D.E., McElrath, M.J., **Nussenzweig, M.C.**, Pulendran, B., Scanlan, C.N., Schief, W.R., Silvestri, G., Streeck, H., Walker, B.D., Walker, L.M., Ward, A.B., Wilson, I.A. & Wyatt, R. A blueprint for HIV vaccine discovery. *Cell Host & Microbe* 12(4):396-407 (2012)
42. Liu, K. & Nussenzweig, M.C. Dendritic Cells. *Fundamental Immun.* Chapter 16 (2012)
43. Mouquet, H. & Nussenzweig, M.C. HIV: Roadmaps to a vaccine. *Nature* 496(7446):441-442 (2013)
44. Klein, F., Mouquet, H., Dosenovic, P., Scheid, J.F., Scharf, L. & **Nussenzweig, M.C.** Antibodies in HIV-1 vaccine development and therapy. *Science* 341(6151):1199-1204 (2013)
PMCID: PMC3970325
45. West, A.P., Scharf, L., Scheid, J.F., Klein, F., Bjorkman, P.J. & Nussenzweig, M.C. Structural insights on the role of antibodies in HIV-1 vaccine and therapy. *Cell* 156(4):633-648 (2014)
PMID: 24529371
46. Gitlin, A.D. & **Nussenzweig, M.C.** Immunology: Fifty years of B lymphocytes. *Nature* 517(7533):139-141 doi:10.1038/1517139a No abstract available (2015)
PMID: 25567266

Peer Reviewed Publications:

47. **Nussenzweig, M.C.** & Steinman, R.M. Contribution of dendritic cells to stimulation of the syngeneic mixed leukocyte reaction. *J. Exp. Med.* 151:1196-1212 (1980)

48. **Nussenzweig, M.C.**, Steinman, R., Gutchinov, B., & Cohn, Z.A. Dendritic cells are accessory cell for the development of anti-trinitrophenyl cytotoxic T cells. *J. Exp. Med.* 152:1070-1084 (1980)

49. Steinman, R.M., Witmer, M.D., **Nussenzweig, M.C.**, Chen, L.L., Schlesinger, S.J., & Cohn, Z.A. Dendritic cells of the mouse identification and characterization. *J. Invest. Dermatol.* 75:14-16 (1980)

50. **Nussenzweig, M.C.**, Steinman, R.M., Unkeless, J.C., Witmer, M., Gutchinov, B., & Cohn, Z.A. Studies of the cell surface of mouse dendritic cells and other leukocytes. *J. Exp. Med.* 154:168-187 (1981)

51. Steinman, R.M., Witmer, M.D., **Nussenzweig, M.C.**, Gutchinov, B., & Austyn, J.M. Studies with a monoclonal antibody to mouse dendritic cell. *Transplantation* 31:151 (1981)

52. **Nussenzweig, M.C.**, Steinman, R.M., Witmer, M.D., & Gutchinov, B. A monoclonal antibody specific for mouse dendritic cells. *Proc. Natl. Acad. Sci., USA* 79:161-165 (1982)

53. Steinman, R.M., Gutchinov, B., Witmer, M.D., & **Nussenzweig, M.C.** Dendritic cells are the principal stimulators of the primary mixed leukocyte reaction in mice. *J. Exp. Med.* 157:613-627 (1983)

54. **Nussenzweig, M.C.**, Shaw, A.C., Sinn, E., Danner, D.B., Holmes, K.L., Morse, H.C., & Leder, P. Allelic exclusion in transgenic mice that express the membrane form of immunoglobulin. *Science* 236:816-819 (1987)

55. **Nussenzweig, M.C.**, Shaw, A.C., Sinn, E., Torres, J., & Leder, P. Allelic exclusion in transgenic mice that carry human mutant human immunoglobulin genes. *J. Exp. Med.* 167:1969-1974 (1988)

56. **Nussenzweig, M.C.**, Schmidt, E.V., Shaw, A.C., Sinn, E., Torres, J., Mathey-Prevoit, B., Pattengale, P.K. & Leder, P. A human immunoglobulin gene reduces the incidence of lymphomas in c-Myc bearing transgenic mice. *Nature* 336(6198):446-450 (1989)

57. Morton, C.C., **Nussenzweig, M.C.**, Sousa, R., Sorenson, G.D., Pettengill, O.S. & Shows, T.B. Mapping and characterization of an X-linked processed gene related to MYCL1. *Genomics* 4:367-375 (1989)

58. Shimizu, A., **Nussenzweig, M.C.**, Tataunobu-Ryushin, M., Leder, P., & Honjo, T. Immunoglobulin double isotype expression by trans-mRNA in a human immunoglobulin transgenic mouse. *Proc. Natl. Acad. Sci. USA.* 86:8020-8023 (1989)
59. Friedlander, R., **Nussenzweig, M.C.**, & Leder, P. Complete nucleotide sequence of the membrane form of the human IgM heavy chain. *Nucleic Acids Res.* 18(14):4278 (1990)
60. Shimizu, A., **Nussenzweig, M.C.**, Han, H., Sanchez, M., & Honjo, T. Trans-splicing as a possible molecular mechanisms for the multiple isotope expression of the immunoglobulin gene. *J. Exp. Med.* 173:1385-1393 (1991)
61. Costa, T., Suh, H-Y., & **Nussenzweig, M.C.** Chromosomal position of rearranging gene segments influences allelic exclusion in transgenic mice. *Proc. Natl. Acad. Sci. USA* 89:2205-2208 (1992)
62. Costa, T., Franke, R.R., Sanchez, M., Misulovin, Z., & **Nussenzweig, M.C.** Functional reconstitution of an immunoglobulin antigen receptor in T cells. *J. Exp. Med.* 175:1669-1676 (1992)
63. Sanchez, M., Misulovin, Z., Burkhardt, A.L., Mahajan, S., Costa, T., Franke, R.R., Bolen, J.B. & **Nussenzweig, M.C.** Signal transduction by immunoglobulin is mediated through Ig α and Ig β . *J. Exp. Med.* 178:1049-1055 (1993)
64. Burkhardt, A.L., Costa, T., Misulovin, Z., Stealy, B., Bolen, J.B., & **Nussenzweig, M.C.** Ig α and Ig β are functionally homologous to the signaling protein of the T cell receptor. *Molec. & Cell. Biol.* 14(2):1095-1103 (1994)
65. Kurosaki, T., Muta, T., Sanchez, M., Misulovin, Z., **Nussenzweig, M.C.**, & Ravetch, J.V. A 13 amino acid motif in the cytoplasmic domain of Fc γ RIIB modulates B cell receptor signalling. *Nature* 369(6478):340 (1994)
66. Spanopoulou, E., Roman, C.A.J., Corcoran, L., Schlissel, M.S., Silver, D.P., Storb, U., Nemazee, D., **Nussenzweig, M.C.**, Shinton, S.A., Hardy, R.R., & Baltimore, D. Expression of functional immunoglobulin transgenes allows ordered B-cell differentiation to progress in Rag-1 deficient mice. *Genes Dev.* 8:1030-1042 (1994)
67. Wayne, J., Suh, H., Misulovin, Z., Sokol, K.A., Inaba, K., & **Nussenzweig, M.C.** A regulatory role for recombinase activating genes, RAG-1 and RAG-2, in T cell development. *Immunity* 1:95-107 (1994)
68. Qin, X.F., Luo, Y., Suh, H.-Y., Wayne, J., Misulovin, Z., Gerster, T., Roeder, R.G. & **Nussenzweig, M.C.** Transformation by homeobox genes can be mediated by selective transcriptional repression. *EMBO J.* 13:5967-5976 (1994)
69. Wayne, J., Suh, H.-Y., Sokol, K., Petrie, H.T., Witmer-Pack, M., Edelhoff, S., Disteche, C.M., & **Nussenzweig, M.C.** TRC selection and allelic exclusion in RAG transgenic mice that

- exhibit abnormal T cell localization in lymph nodes and lymphatics. *J. Immunol.* 153:5491-5502 (1994)
70. Mitchell, R.N., Barnes, K.A., Grupp, S.A., Sanchez, M., Misulovin, Z., **Nussenzweig, M.C.** & Abbas, A.K. Intracellular targeting of antigens by membrane immunoglobulin in B lymphocytes *J. Exp. Med.* 181:1705-1714 (1995)
 71. Heufler, C., Humborg, C., Steinman, R.M., Schuler, G. & **Nussenzweig, M.C.** A molecular strategy to identify molecules that are specific for dendritic cells and/or critical to their unique immunostimulatory function. *Adv. Exp. Med Biol.* 378:367-369 (1995)
 72. Papavasiliou, F., Misulovin, Z., Suh, H.-Y. & **Nussenzweig, M.C.** The role of Ig β in precursor B cell transition and allelic exclusion. *Science* 268:408-411 (1995)
 73. Jiang, W., Swiggard, W., Heufler, C., Peng, M., Steinman, R.M., & **Nussenzweig, M.C.** The receptor DEC-205 expressed by dendritic cells and thymic epithelial cells is involved in antigen processing. *Nature* 375(6527):151-155 (1995)
 74. Inaba, K., Swiggard, W.J., Inaba, M., Meltzer, J., Mirza, A., Sasagawa, T., **Nussenzweig, M.C.**, & Steinman, R.M. Tissue distribution of the DEC-205 protein that is detected by the monoclonal antibody NLDC-145. I. Expression on dendritic cells and other subsets of mouse leukocytes. *Cell. Immunol.* 163:148-156 (1995)
 75. Swiggard, W.J., Mirza, A., **Nussenzweig, M.C.**, & Steinman, R.M. DEC-205, a 205 kDa 3Protein abundant on mouse dendritic cells and thymic epithelium that is detected by the monoclonal antibody NLDC-145: Purification, characterization and N-terminal amino acid sequence. *Cell. Immunol.* 165:302-311 (1995)
 76. Papavasiliou, F., Jankovic, M., Suh, H.-Y. & **Nussenzweig, M.C.** The cytoplasmic domains of Ig α and Ig β can independently induce the precursor B cell transition and allelic exclusion. *J. Exp. Med.* 182(5):1389-1394 (1995)
 77. Gong, S., & **Nussenzweig, M.C.** Regulation of an early developmental checkpoint in the B cell pathway by Ig β . *Science* 272:411-414 (1996)
 78. Nussenzweig, A., Chen, C., da Costa Soares, V., Sanchez, M., Sokol, K., **Nussenzweig, M.C.**, & Li, G.C. Requirement for Ku80 in growth and V(D)J recombination. *Nature* 382(6591):551-555 (1996)
 79. Kim, U., Qin, X., Gong, S., Stevens, S., Luo, Y., **Nussenzweig, M.C.**, & Roeder, R.G. The B cell specific transcription coactivator OCA-B is essential for normal production of immunoglobulin isotypes. *Nature* 383:542-547 (1996)
 80. Papavasiliou, F., Jankovic, M., & **Nussenzweig, M.C.** Surrogate or conventional light chains are required for membrane immunoglobulin Mu to activate the precursor B cell transition. *J. Exp. Med.* 184:2025-2030 (1996)

81. Gong, S., Sanchez, M. & **Nussenzweig, M.C.** Counterselection against Du is mediated through immunoglobulin (Ig)α-Igβ. *J. Exp. Med.* 184:2079-2084 (1996)
82. Cortes, P., Weis-Garcia, F., Misulovin, Z., Nussenzweig, A., Lai, J.S., Li, G., **Nussenzweig, M.C.**, & Baltimore, D. In vitro V(D)J recombination: signal joint formation. *Proc. Natl. Acad. Sci. USA* 93: 14003-13 (1996)
83. Sawchuk, D.J. Weis-Garcia, F. Malik, S., Besmer, E. Bustin, M. **Nussenzweig, M.C.** & Cortes, P. V(D)J recombination: Modulation of RAG1 and RAG2 cleavage activity on 12/23 substrates by whole cell extract and DNA bending proteins. *J. Exp. Med.* 185:2025-2032 (1997)
84. Weis-Garcia, F., Besmer, E. Yu, W., Sawchuk, D., Hu, Y., **Nussenzweig, M.C.** & Cortes, P. V(D)J recombination: In vitro coding joint formation. *Mol. Cell. Biol.* 17:6379 6385 (1997)
85. Papavasiliou, F., Casellas, R., Suh, H., Qin, X., Besmer, E., Pelanda, R. Nemazee, D., Rajewsky, K., & **Nussenzweig, M.C.** V(D)J Recombination in Mature B cells: a Mechanism for Altering Antibody Responses. *Science* 278:298-301 (1997)
86. Honghai, O., Nussenzweig, A., Kurimasa, A., Soares, V., Li, X., Cordon-Cardo, C., Li, W., Cheong, N., **Nussenzweig, M.C.**, Iliakis, G., Chen, D.J. & Li, G.C. Ku70 is required for DNA repair but not for T cell antigen receptor gene recombination in vivo. *J. Exp. Med.* 186:921-929 (1997)
87. Lee, S.Y., Reichlin, A., Santana, A., Sokol, K.A., **Nussenzweig, M.C.** & Choi, Y. TRAF2 is essential for JNK but not NF-κB activation and regulates lymphocyte proliferation and survival. *Immunity* 7:703-713 (1997)
88. Casellas, R., Nussenzweig, A., Wuerffel, R., Pelanda, R., Reichlin, A., Suh, H., Qin, X-F., Besmer, E., Kenter, A., Rajewsky, K. & **Nussenzweig, M.C.** Ku80 is required for immunoglobulin isotype switching. *EMBO J.* Vol 17 8:2404-2411 (1998)
89. Meffre, E., Papavasiliou, F., Cohen, P., de Bouteiller, O., Bell, D., Karasuyama, H., Schiff, C., Banchereau, J., Liu, Y-J. & **Nussenzweig, M.C.** Antigen receptor engagement turns off the V(D)J recombination machinery in human tonsil B cells. *J. Exp. Med.* 188:765-772 (1998)
90. Qin, X-F., Reichlin, A., Luo, Y., Roeder, R.G. & **Nussenzweig, M.C.** OCA-B integrates B cell antigen receptor-, CD40L-, and-IL-4-mediated signals for the germinal center pathway of B cell development. *EMBO J.* 17:5066-5075 (1998)
91. Besmer, E., Mansilla-Soto, J., Cassard, S., Sawchuk, D., Brown, G., Sadofsky, M., Lewis, S., **Nussenzweig, M.C.** & Cortes, P. Hairpin coding end opening by the recombination activating genes RAG1 and RAG2. *Molec. Cell* 2:817-828 (1998)
92. Qin, X-F., Schwers, S., Yu, W., Papavasiliou, F., Suh, H., Nussenzweig, A., Rajewsky, K.,

- & **Nussenzweig, M.C.** Secondary V(D)J recombination in B-1 cells. *Nature* 397(6717):355-359 (1999)
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