

**MICHAEL R. LOKEN, Ph.D.**

**PATENTS**

1. Wardlaw SC, Levine RA, Rodriguez RR, Loken MR: Method of improving the demarcation and separation of cells in centrifuged blood samples. US Patent #4,695,553.
2. Recktenwald. DJ, Kerndt RS, Chen CH, Loken MR: Method and materials for calibrating flow cytometers and other analysis instruments. US Patent #4,704,891.
3. Evans EL, Gonchoroff NJ, Griep PR, Houck DW, Katzenbach JA, Kyle RA, Loken MR: Detection of cellular DNA. US Patent #4,885,237
4. Loken MR, Terstappen LWMM: Method for discrimination between intact and damaged cells in a sample. US Patent #5,057,413
5. Loken MR, Terstappen LWMM: Method for analysis of cellular components in a fluid. US Patent #5,047,321
6. Loken, M.R. Civin C.I., Shah V. O.: Method to determine the composition of bone marrow samples. US Patent # 5,137,809
7. Mickaels RA, Dost RK, Terstappen LWMM, Loken MR: Method for data transformation. US Patent #5,224,058
8. Loken, MR, Parks, DR, Hardy RR: Method and apparatus for distinguishing multiple subpopulations of cells in a sample. European Patent 0121262B1
9. Terstappen, LWMM, Loken MR, Huang, S, Olweus, J, Lund-Johansen, F: Phenotypic characterization of the hematopoietic stem cell. US Patent #5,840,580
10. Loken, MR Method for collecting purified cells US Patent # 7,045,295
11. Loken; Michael R. Joshi; Sanjaya N. System, method, and article for detecting abnormal cells using multi-dimensional analysis US Patent # 8,630,833
12. Loken; Michael R. Joshi; Sanjaya N. System, method, and article for detecting abnormal cells using multi-dimensional analysis European Patent # 1859377

**PUBLICATIONS**

**REVIEW ARTICLES**

1. Loken MR, Stout RD, Herzenberg LA: Lymphoid cell analysis and sorting. In: "Flow Cytometry and Sorting". McNamee MR, Mullaney PF, Mendelsohn ML, eds. John Wiley and Sons, New York, pp 505- 528, 1979.
2. Loken MR, Stall AM: Flow cytometry as an analytical and preparative tool in immunology. J. Immunological Methods, 50:85-112, 1982.
3. Horan PK, Loken MR: A practical guide for the use of flow systems in flow cytometry. In "Instrumentation and Data Analysis". MA Van Dilla, ed. Academic Press, San Diego. pp. 260-280 (1985) .
4. Loken MR: Cell surface antigen and morphological characterization of leukocyte populations by flow cytometry. Methods in Hematology, Vol 13. P. Beverly, ed. (1985) pp 132-144.

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5. Civin CI, Loken MR: Cell surface antigens on human marrow cells: Dissection of hematopoietic development using monoclonal antibodies and multiparameter flow cytometry. *Int. J. Cell Cloning.* 5:1-16, 1987
6. Loken MR, Shah VO, Hollander Z, Civin CI: Flow cytometric analysis of normal B lymphoid development. *Path and Immunopath Res.* G. Marti ed. 7:357-370, 1988
7. Loken MR: Immunofluorescence techniques, in "Flow Cytometry and Sorting, Second Edition". MR Melamed, ME Mendelsohn, T Lindmo, eds, Wiley-Liss, Inc, New York, 1990 pp 341-353.
8. Terstappen LWMM, Loken MR: Leukocyte differential counting. in *Flow Cytometry in Hematology* Laerum OD and Bjerksnes R eds. Academic Press, New York, pp 95-110, 1992
9. Loken, MR, Terstappen LWMM, Civin CI, Fackler, MJ: Flow cytometric characterization of erythroid, lymphoid and monomyeloid lineages in normal human bone marrow. in *Flow Cytometry in Hematology*. Laerum OD, Bjerksnes R. eds. Academic Press, New York, pp 31-42, 1992
10. Civin CI, Loken MR: Cell Surface Antigens on Human Marrow Cells: Dissection of Hematopoietic Development Using Monoclonal Antibodies and Multiparameter Flow cytometry. in "Concise Reviews in Clinical and Experimental Hematology" Martin J. Murphy ed. AlphaMed Press, Dayton OH, 1992, pp 149-159
11. Loken MR, Wells DA: Immunofluorescence of cell surface markers. in *Flow Cytometry- A Practical Approach*. 2nd ed. M. Omerod ed. Oxford Univ. Press, Oxford, 1994, pp 67-91.
12. Owens M, Loken MR: Flow Cytometry Principles for Clinical Laboratory Practice: Quality Assurance for Quantitative Immunophenotyping. Wylie-Liss, New York, 1995.
13. Sievers EL, Loken MR: Detection of minimal residual disease in acute myelogenous leukemia. *J. Ped Hem/Onc* 17:123-133, 1995.
14. Civin CI, Loken MR: Caveat Emptor, *Blood*, 88:2360, 1996
15. Loken MR, Green C, Wells DA: Immunofluorescence of cell surface markers. in *Flow Cytometry- A Practical Approach*. 3rd ed. M. Omerod ed. Oxford Univ. Press, Oxford, 2000, pp 61-82.
16. Loken MR, Wells DA: Normal antigen expression in hematopoiesis: Basis for interpreting leukemia phenotypes. In "Immunophenotyping", Stewart C, Nicholson J. Eds. Wiley Liss, Inc. New York, 2000, pp133-160
17. Benesch M, Deeg HJ, Wells D, Loken M. Flow cytometry for diagnosis and assessment of prognosis in patients with myelodysplastic syndromes. *Hematology*. 2004, 9(3):171-7.
18. Wells D, Loken MR. Flow cytometric mean fluorescence intensity: the biophysics behind the number. *Leuk Res.* 2008 Jun;32(6):845-6.
19. Loken MR, Wells DA. The Role of Flow Cytometry in Myelodysplastic Syndromes. *Journal of the National Comprehensive Cancer Network.* 2008 9:935-41
20. Wells DA, Loken MR. Diagnostic and Prognostic Utility of Flow Cytometry in MDS. In Steensma: Myelodysplastic Syndromes: Pathobiology and Clinical Management, 2<sup>nd</sup> Edition, Informa, New York, pp247-266, 2008.
21. Wells DA, Loken MR. Flow Cytometry: Providing additional information in diagnosis, prognosis and monitoring treatment of MDS. Guest editorial, MDS Foundation Newsletter, in press

## TECHNIQUES AND ANALYSIS OF HETEROGENEOUS POPULATIONS

### I. FLUORESCENCE TECHNIQUES

1. Loken MR, Herzenberg LA: Analysis of cell populations with a fluorescence-activated cell sorter. Ann. N.Y. Acad. of Sci. 254:163-171, 1975.
2. Loken MR, Parks DR, Herzenberg LA. Two-color immunofluorescence using a fluorescence-activated cell sorter. J Histochem Cytochem. 25:899-907, 1977
3. Loken MR: Separation of viable T and B lymphocytes using a cytochemical stain, Hoechst 33342. J. Histochem. Cytochem. 28:36-39, 1980.
4. Loken MR: Simultaneous quantitation of Hoechst 33342 and immunofluorescence on viable cells using a Fluorescence Activated Cell Sorter. Cytometry 1:136-142, 1980.
5. Loken MR: Evaluating optical filter efficiency in a flow cytometer. J. Histochem. Cytochem. 28: 1 136-1 137, 1980.
6. Loken MR, Lanier LL: Three color immunofluorescence of Leu antigens on human peripheral blood using two lasers on a fluorescence activated cell sorter. Cytometry. 5:151-158 (1984).
7. Loken MR, Lanier LL, Recktenwald R, Warner NL. Flow Cytometry Monitoring of Leukocyte Sets and Subsets in Flow Cytometry and Monoclonal Antibodies for Therapy Monitoring: Quo Vadis? Jausell FK, Pouclet P, Roncucci R. eds . Group SANOFI, Montpellier pp. 1(107-120 ( 1984) .
8. Houck DW, Loken MR: Simultaneous Analysis of Cell Surface Antigens, BrdU Incorporation and DNA Content. Cytometry. 6:531-538 (1985).
9. Gonchoroff NJ, Katzman JA, Carrie RM, Evans EJ, Houck DW, Kline BC, Greipp PR, Loken MR: S- Phase detection with an antibody to bromodeoxyuridine: Role of DNase pretreatment. J. Immunol. Methods. 93:97-101, 1986
10. Loken MR, Keij J, Kelley KA: A comparison of HeNe and dye lasers for excitation of allophycocyanin. Cytometry, 8:96-100, 1987
11. Hollander Z, Loken MR: Simultaneous analysis of DNA content and cell surface antigens in human bone marrow. Cytometry. 9:485-490. 1988.
12. Terstappen LWMM, Shah VO, Conrad MS, Recktenwald D, Loken MR: Discriminating damaged from intact cells in flow cytometric samples, Cytometry, 9:477-484, 1988.
13. Terstappen LWMM, Loken MR: Five-dimensional flow cytometry as a new approach for blood and bone marrow differentials. Cytometry, 9: 548-556, 1988
14. Terstappen, LWMM, Johnson D, Mickaels RA, Chen J, Olds G, Hawkins, JT, Loken MR, Levin J. Multidimensional Flow cytometric Blood Cell Differentiation Without Erythrocyte Lysis, Blood Cells 17:585-602, 1991
15. Loken, MR: Multidimensional Data Analysis in Immunophenotyping, in "Current Protocols in Cytometry", Robinson, PA ed. John Wiley & Sons, New York, Unit 10.4, 1997

16. Loken MR, Chu SC, Fritschle W, Kalnoski M, Wells DA. Normalization of bone marrow aspirates for hemodilution in flow cytometric analyses.. Cytometry. Part B, Clinical Cytometry 2008 (1552-4949)

## II. LIGHT SCATTERING TECHNIQUES

1. Loken MR, Parks DR, Herzenberg LA: Identification of cell asymmetry and orientation by light scattering. J. Histochem. Cytochem. 25:790, 1977.
2. Loken MR, Sweet RH, Herzenberg LA: Cell discrimination by multi-angle light scattering. J. Histochem. and Cytochem. 24:284-291, 1976.
3. Loken MR, Houck DW: Light scattered at two wavelengths can discriminate viable lymphoid cells on a Fluorescence Activated Cell Sorter. J. Histochem. Cytochem.. 29 609-615. 1981.
4. Otten GR, Loken MR: Two color light scattering identifies physical differences between lymphocyte subpopulations. Cytometry 3:182-187 (1983).
5. Houck DW, Loken MR: Two wavelength scatter detection on FACS systems. In "Instrumentation and Data Analysis". MA VanDilla, ed. Academic Press, San Diego. pp 246-248 (1985)
6. Terstappen LWMM, Mickaels R, Dost R, Loken MR: Increased light scattering resolution facilitates multidimensional flow cytometric analysis.. Cytometry 11:506-512, 1990

## III. OTHER TECHNIQUES

1. Kubitschek HL, Bendigkeit HE, Loken MR: Onset of DNA synthesis during the cell cycle in chemostat cultures. Proc. Natl. Acad. Sci. 57:1611, 1967.
2. Loken MR, Kubitschek HE: Constancy of Cell Buoyant Density for Cultured Murine Cells. J. Cell Physiol. 118:22-26 (1984).
3. Terstappen LWMM, Meiners H, Loken MR: A rapid sample preparation technique for flow cytometric analysis of immunofluorescence allowing absolute enumeration of cell subpopulations. J. Immunol. Meth. 123: 103-112 (1989)
4. Loken MR, Brosnan J, Bach BA, Ault KA: Establishing Optimal Lymphocyte Gates for Immunophenotyping. Cytometry 11:453-459, 1990.
5. Loken MR, Brosnan J, Bach BA, Ault KA: Establishing Optimal Lymphocyte Gates for Immunophenotyping. Using LeucoGATE. Monograph II, Becton Dickinson Immunocytometry Systems, San Jose, 1991
6. Sheckler VL, Loken MR: Routine quantitation of leukocytes as low as 0.001/ $\mu$ l in platelet products. Transfusion, 33:256-261, 1993.
7. Stelzer GT, Shultz KE, Loken MR: CD45 Gating for routine flow cytometric analysis of human bone marrow specimens. Ann. NY Acad Sci 677:265-280, 1993.
8. Loken, MR: Multidimensional Data Analysis in Immunophenotyping, in "Current Protocols in Cytometry", Robinson, PA ed. John Wiley & Sons, New York, Unit 10.6, 1997.

## QUANTITATIVE CELL SURFACE ANTIGENS TO STUDY HEMATOPOIESIS

### I. NORMAL DEVELOPMENT

1. Loken MR, Dessner DS, Van Zant G, Goldwasser E: Characterization of murine hematopoietic cells using rat anti-mouse monoclonal antibodies. *Hybridoma* 2:55-68 (1983).
2. Prystowsky MB, Ihle JN, Otten G, Keller J, Rich I, Naujokas M, Loken MR, Goldwasser E, Fitch FW: Two biologically distinct colony-stimulating factors are secreted by a T lymphocyte clone. In *Normal and Neoplastic hematopoiesis*. UCLA Symposium on Molecular and Cellular Biology, New Series, Vol. 9, DW Golde and PA Marks, eds., Alan R. Liss Inc., New York (1983).
3. Civin CI, Banquerigo, ML, Straus, LC. Loken MR, Antigenic Analysis of Hematopoiesis VI. Flow cytometric characterization of My-10-positive progenitor cells. *Experimental Hematology*, 15:10- 17, 1987
4. Loken MR, Shah VO, Dattilio KA, Civin CI: Flow cytometric characterization of human bone marrow: 1. Normal Erythroid Development. *Blood*. 69:255-263, 1987
5. Strauss, LC, Brovall, C, Fackler MJ, Schwartz JF, Shaper JH, Loken MR, Civin CI: Antigenic Analysis of Hematopoiesis IV. The My-11 Hematopoietic Cells surface antigen expressed by myelomonocytic and lymphoid but not erythroid progenitor cells,. *Experimental Hematology* 14:935- 945, 1986
6. Loken MR, Shah VO, Civin CI: Characterization of myeloid antigens on human bone marrow using multicolor immunofluorescence. 3rd International Workshop on Human Leukocyte Differentiation Antigens, A. McMichael. ed. Oxford University Press. 1987, p630
7. Loken MR, Civin CI, Bigbee WL, Langlois RG, Jensen RH: Coordinate glycosylation and cell surface expression of glycophorin A during normal human erythropoiesis. *Blood* 70:1959-1961. 1987
8. Loken MR, Shah VO, Terstappen LWMM: Multicolor analysis of myeloid antigens on normal human bone marrow. in "Human Leucocyte Differentiation Antigens IV" W. Knapp ed. Oxford University Press, Oxford, 1989 pp859-862
9. Terstappen LWMM, Segers-Nolten I, Safford M, Shah VO, Loken MR: Monomyeloid cell differentiation in normal bone marrow assessed by multidimensional flow cytometry. in *Advances in Analytical Cellular Pathology*, Burger G, Oberholzer M, Vooijs, GP (eds) Excerpta Medica, Amsterdam, 1990, pp211-212.
10. Terstappen LWMM, Hollander Z, Meiners H, Loken M: Quantitative comparison of myeloid antigens on five lineages of mature peripheral blood cells. *J. Leuk. Biology* 48:138-148 (1990).
11. Terstappen LWMM, Safford M, Loken MR: Flow cytometric analysis of human bone marrow III. Neutrophil Maturation. *Leukemia* 4:657-663, 1990.
12. Terstappen LWMM, Huang S, Safford M, Lansdorp PM, Loken MR: Sequential generations of hematopoietic colonies derived from single nonlineage-committed CD34+CD38- progenitor cells. *Blood* 77:1218-1227, 1991.
13. Muroi, K, Amemiya Y, Sievers EL, Miura Y, Hakomori S, Loken M: Expression of sialosyl-T and disialosyl-T antigens in erythroid cells. *Leuk Lymph* 25:403-414, 1997.
14. Voigt, AP, Brodersen, LE, Pardo, ML, Meshinchi,S, Loken, MR: Consistent Quantitative Gene Product Expression. I. Automated Identification of Regenerating Bone Marrow Cell Populations Using Support Vector Machines. *Cytometry A*, (2016) DOI: 10.1002/cyto.a.22905
15. Loken, MR Voigt, AP, Brodersen, LE, Fritschle, W, Menssen, AJ, Meshinchi,S, Wells, DA,: Consistent Quantitative Gene Product Expression. II. Antigen Intensities on Bone Marrow Cells Are Invariant between Individuals. (2016) *Cytometry Part A*. DOI: 10.1002/cyto.a.22999

16. Loken, MR Voigt, AP, Brodersen, LE, Fritschle, W, Menssen, AJ, Meshinchi,S, Wells, DA,: Consistent Quantitative Gene Product Expression. III. Invariance with Age. (2016) Cytometry A. DOI: 10.1002/cyto.a.22997

## **ANALYSIS OF B LYMPHOCYTE DEVELOPMENT AND FUNCTION**

### **I. ALLOTYPES**

1. Herzenberg LA, Black SJ, Loken MR, Okumura K, Vanderloo W, Osborne BA, Hewgill D, Goding JW, Gutman G, Warner NL: Surface markers of functional relationships of cells involved in murine B Lymphocyte differentiation. In: Origins of Lymphocyte Diversity. Proceedings of Cold Spring Harbor Symposium on Quantitative Biology XLI 2:33, 1976.
2. Warner NL, Goding J, Gutman G, Warr GW, Herzenberg LA, Osborne BA, Vanderloo WW, Black SJ, Loken MR: Allotypes of mouse IgM immunoglobulin. Nature 265:477, 1977.
3. Black SJ, Vanderloo WW, Loken MR, Herzenberg LA: Expression of IgD by murine Iymphocytes. J. Exp. Med. 147:984, 1978.
4. Warner NL, Goding JW, Gutman GA, Osborne BA, Vanderloo WW, Black SJ, Loken MR, Herzenberg LA: Immunoglobulin isoantigens (allotypes) in the mouse. V. Characterization of IgM allotypes. Immunogenetics 7:213, 1978.
5. Stall AM, Loken MR, Allotype specificities by monoclonal antibodies. J. Immunol. 132:787-795 (1984).

### **II. B LYMPHOCYTE SUBSETS**

1. Dessner D, Loken MR: DNLI.9: Monoclonal antibody which specifically detects all murine B lineage cells. Eur. J. Immunol. 11:236-241. 1981.
2. Watkins JR, Loken MR, Knight KL: Two B cell subpopulations identified by flow cytometry. Immunol. 56: 315-320, 1985.
3. Loken MR, Shah VO, Dattilio KL, Civin CI: Flow cytometric analysis of human bone marrow: II. Normal B lymphoid development. Blood 70:1316, 1987
4. Hollander Z, Shah VO, Civin CI, Loken MR: Assessment of proliferation during maturation of the B lymphoid lineage in normal human bone marrow. Blood 71:528-531, 1988
5. LeBien TW, Wormann B, Villablanca JG, Law CL, Shah VO, Loken MR: Multiparameter flow cytometric analysis of human fetal bone marrow B cells, Leukemia 4:354-358, 1990
6. Wells DA, Loken MR. More on hematogones, letter to editor. Laboratory Medicine 29, 728-729, 1998.

### **III. B LYMPHOCYTE FUNCTION**

1. Quintans J, Loken MR, Quan Z, Dick RF, Requeiro B: Alteration of clonal profile. I. Studies on the capacity of Balb/c splenic B cells to perpetuate responsiveness to phosphorylcholine and T15 idiotypic dominance. Eur. J. Immunol. 11:236-241, 1981.
2. Stall AM, Quintans J, Loken MR: T15 idiotype expression in the murine response to phosphoryl choline is actively regulated by genes linked to the IgHc locus. J. Immunol. 136:2689-2696, 1986.

## **REGULATION OF QUANTITATIVE AND QUALITATIVE DIFFERENCES IN CELL SURFACE ANTIGENS**

### **I. QUANTITATIVE CHANGES IN CELL SURFACE ANTIGEN EXPRESSION**

1. Murphy DB, Jones PP, Loken MR, Mc Devitt HO: Quantitative differences in the expression of specificity IA-7. *J. Immunol.* 121:1607-1612, 1978.
2. Leibson PJ, Loken MR, Panem S, Schreiber H: Clonal evolution of myeloma cells leads to quantitative changes in immunoglobulin secretion and surface antigen expression. *Proc. Natl. Acad. Sci.* 76:2937-2941, 1979.
3. Murphy DB, Jones PP, Loken MR, McDevitt HO: Interaction between I region loci influences the quantitative expression of an Ia antigen. *Proc. Natl. Acad. Sci.* 77:5405-5408. 1980.
4. Shah VO, Civin CI, Loken MR: Flow cytometric analysis of human bone marrow: IV. Differential quantitative expression of T200 common leukocyte antigen during normal hematopoiesis. *J. Immunol* 140:1861-1867, 1988
5. Shah VO, Safford MG, Terstappen LWMM: Loken MR: Quantitative Comparison of myeloid antigens on peripheral blood lymphocytes, monocytes, neutrophils, eosinophils and basophils. in "Human Leucocyte Differentiation Antigens IV" W. Knapp ed. Oxford University Press, Oxford 1989, p 855-858
6. Terstappen LWMM, Hollander Z, Meiners H, Loken MR: Quantitative Comparison of myeloid antigens; on five lineages of mature peripheral blood cells. *J Leuk Biol* 48:138-148, 1990.
7. Stelzer GT, Shults KE, Loken MR: CD45 gating for routine flow cytometric analysis of human bone marrow specimens Ann. NY. Acad. Sci. 677:265-280, 1993.

### **II. QUALITATIVE CHANGES IN CELL SURFACE ANTIGEN EXPRESSION**

1. Sarmiento M, Loken MR, Fitch FW: Structural differences in T lymphocyte cell surface molecules expressing Thy 1.2 antigen. *Hybridoma* 1:13-26, 1981.
2. Sarmiento M, Loken MR, Trowbridge IS, Coffman R, Fitch FW: High molecular weight lymphocyte surface proteins are structurally related and are temporally and spatially expressed during differentiation. *J. Immunology*, 128:1676-1684, (1982).
3. Willard-Gallo KE, Houck DW, Loken MR: Analysis of human lymphocyte protein expression. I. Identification of subpopulation markers by two dimensional polyacrylamide gel electrophoresis. *Eur. J. Immunol.* 18:1453-1461, (1988).

## **CELL SURFACE ANTIGENS ON TUMOR CELLS**

### **I. HERITABLE AND NON HERITABLE VARIATIONS IN PHENOTYPES**

1. Loken MR, Leibson PJ, Schreiber H: Heritable and non heritable variations in phenotype of myeloma cells as detected by a Fluorescence Activated Cell Sorter. *J. Histochem. Cytochem.* 27:1647-1648, 1979.
2. Taupier MA, Kearney JF, Leibson PJ, Loken MR, Schreiber H: Nonrandom escape of tumor cells from immune lysis due to intraclonal-nonheritable fluctuations in antigen expression. *Cancer Res.* 43:4050-4056 (1983).

## II. CHEMOTHERAPY AND IMMUNOTHERAPY

1. Leibson PJ, Schreiber H, Loken MR, Panem S, Rowley DA: Time-dependent resistance or susceptibility of tumor cells to cytotoxic antibody after exposure to a chemotherapeutic agent. Proc. Natl. Acad. Sci. USA 75:6202, 1978.
2. Leibson PJ, Loken MR, Shapiro Susan J, Schreiber H: Direct determination of the influence of the cell cycle on the survival of tumor cells exposed to cytotoxic antibodies. Cancer Res. 40:56-60, 1980.
3. Loken MR, Leibson N, Schreiber H: Cell cycle variation in sensitivity to antibody and complement. In Flow Cytometry IV. Universitets Forlaget, Oslo, pp 203-206, 1980.
4. Shapiro SJ, Leibson PJ, Loken MR, Schreiber H: Changes in susceptibility to cytotoxic antibody among tumor cells surviving exposure to chemo therapeutic agents. Cancer Res. 42:2622-2627. 1982.

## III. LEUKEMIA

### Acute Lymphoid Leukemia

1. Lorber MI, Dawson PJ, Loken MR, Ely JW, Fieldsteel AH, Fitch FW: T cell lineage of a Virus- Induced Lymphatic Leukemia in Athymic Rats. J. Nat'l. Cancer Inst. 71:1271-1280 (1983).
2. Hurwitz, CA, Loken MR, Graham ML, Karp JE, Borowitz MJ, Pullen DJ, Civin CI: Asynchronous antigen expression in B lineage Acute Lymphoblastic Leukemia, Blood, 72:299-307, 1988.
3. Wells DA, Sale GE, Shulman HE, Myerson D, Bryant E, Gooley T, Loken MR: Multidimensional flow cytometry of marrow can differentiate leukemic lymphoblasts from normal lymphoblasts and myeloblasts following chemotherapy and/or bone marrow transplant. Am. J. Clin. Path. 110:84-94 (1998).
4. Meshinchi S, Thomson B, Finn LS, Leisenring W, Green C, Radich JP, Loken M, Hawkins D. J Comparison of multidimensional flow cytometry with standard morphology for evaluation of early marrow response in pediatric acute lymphoblastic leukemia. Pediatr Hematol Oncol. 2001 Dec;23(9):585-90.
5. Thomson B, Park JR, Felgenhauer J, Meshinchi S, Holcenberg J, Geyer JR, Avramis V, Douglas JG, Loken MR, Hawkins DS. Toxicity and efficacy of intensive chemotherapy for children with acute lymphoblastic leukemia (ALL) after first bone marrow or extramedullary relapse. Am J Clin Pathol. 2004 Jul;122(1):135-40

### Plasma Cells/Myeloma/Lymphoma

1. Terstappen LWMM, Johnsen S, Segers-Nolten I, Loken MR: Identification and characterization of plasma cells in normal human bone marrow by high resolution flow cytometry. Blood, 76:1739-1747, 1990.
2. McSweeney PA, Wells DA, Shults KE, Nash RA, Bensinger WI, Buckner, CD, Loken MR: Tumor-Specific Aneuploidy not detected in CD19-Positive B-Lymphoid Cells from Myeloma Patients in a Multidimensional Flow Cytometric Analysis. Blood, 88:622-631,1996.
3. Zehentner BK, Fritschle W, Stelzer T, Ghirardelli KM, Hunter K, Wentzel C, Bennington R, Hansen CL, Myerson D, Kalnoski M, Wells DA, Loken MR. Minimal disease detection and confirmation in hematologic malignancies: combining cell sorting with clonality profiling. Clin Chem. 2006 Mar;52(3):430-7.

**Acute Myeloid Leukemia**

- 1.. Terstappen LWMM, Loken MR: Myeloid cell differentiation in normal bone marrow and acute myeloid leukemia assessed by multi-dimensional flow cytometry. *Anal Cell Path* 2:229-240 (1990).
2. Terstappen LWMM, Loken MR: Multi-dimensional flow cytometric characterization of myeloid maturation in normal bone marrow and acute myeloid leukemia. in *Advances in Analytical Cellular Pathology*, Burger G, Oberholzer M, Vooijs, GP (eds) Excerpta Medica, Amsterdam, 1990, pp209-210.
- 3.. Terstappen LWMM, Shah VO, Civin CI, Hurwitz CA, Loken MR: Multidimensional flow cytometry as a new approach for discrimination between normal and leukemic cells in peripheral blood and bone marrow. in "Progress in Cytometry II Flow and Image" A Jansen ed. Becton Dickinson, Erembodegem, Belgium, 1989, pp4-29.
4. Terstappen LWMM, Konemann S, Safford M, Loken MR, Zurlutter K, Buchner Th, Hiddemann W, Wormann B: Flow cytometric characterization of Acute Myeloid Leukemia. Part I. Significance of light scattering properties. *Leukemia*, 5: 315-321, 1991.
5. Terstappen LWMM, Konemann S, Safford M, Loken MR, Zurlutter K, Buchner Th, Hiddemann W, Wormann B: Flow cytometric characterization of Acute Myeloid Leukemia. Part II. Phenotypic heterogeneity at diagnosis. *Leukemia*, 6: 70-80, 1991
6. Loken, MR, Grenier KA, Bach BA: A Twelve Reagent Panel for Lineage Assignment of Acute Leukemia. Monograph III. Becton Dickinson Immunocytometry Systems, San Jose, 1992.
7. Sievers, EL, Lang BJ, Buckley JD, Smith FO, Wells DA, Daigneault-Creech CA, Shults KE, Bernstein ID, Loken, MR: Prediction of relapse of pediatric acute myeloid leukemia by use of multidimensional flow cytometry. *J. Nat. Can. Inst.* 88:1483-1488, 1996.
16. Cooper, LJN, Shannon KM, Loken MR, Weaver M, Stephens K, Sievers EL. Evidence that juvenile myelomonocytic leukemia can arise from a pluripotential stem cell. *Blood*, 96:2310-2313, 2000
17. Shulman H, Wells D, Gooley T, Myerson D, Bryant E, Loken M. The biologic significance of rare peripheral blasts after hematopoietic cell transplant is predicted by multidimensional flow cytometry. *Am J Clin Path* 112:513-523, 1999
18. Sievers, EL, Larson RA, Stadtmauer, EA, Estey E, Lowenberg B, Dombret H, Karanes C, Theobald M, Bennett JM, Sherman ML, Berger MS. Eten MS, Loken MR, Van Dongen JJ, Berstein ID, Appelbaum FR. Efficacy and safety of gemtuzumab ozogamicin in patients with CD33 positive acute myeloid leukemia in first relapse. *J Clin Oncol* 19:3244-3254, 2001.
19. Larson, RA, Boogaerts M, Estey E, Karanes D, Stadtmauer EA, Sievers EL, Mineur P, Bennett JM, Berger MS, Eten CB, Munteanu M, Loken MR, van Dongen JJM, Bernstein ID, Appelbaum FR. Antibody-targeted chemotherapy of older patients with acute myeloid leukemia in first relapse using Mylotarg (gemtuzumab ozogamicin) *Leukemia* 16: 1627-1636, 2002.
20. Eric L. Sievers, Beverly J. Lange, Todd A. Alonzo, Robert B. Gerbing, Irwin D. Bernstein, Franklin O. Smith, Robert J. Arceci, William G. Woods, and Michael R. Loken Immunophenotypic evidence of leukemia after induction therapy predicts relapse: results from a prospective Children's Cancer Group study of 252 patients with acute myeloid leukemia *Blood* 101: 3398-3406
21. Larson RA, Sievers EL, Stadtmauer EA, Lowenberg B, Estey EH, Dombret H, Theobald M, Voliotis D, Bennett JM, Richie M, Leopold LH, Berger MS, Sherman ML, Loken MR, van Dongen JJ, Bernstein ID, Appelbaum FR. Final report of the efficacy and safety of gemtuzumab ozogamicin (Mylotarg) in patients with CD33-positive acute myeloid leukemia in first recurrence. *Cancer* 104:1442-52 (2005).

22. Zhong R, Loken M, Lane T, Ball E. CTLA-4 blockade by a human MAb enhances the capacity of AML-derived DC to induce T-cell responses against AML cells in an autologous culture system *Cytotherapy* 8:3-12 (2006)
23. Walter, RB, Gooley, TG, van der Velden, VHJ, Loken, MR, van Dongen, JJM, Flowers, DA, Bernstein, ID, Appelbaum, FR CD33 expression and P-glycoprotein-mediated drug efflux inversely correlate and predict clinical outcome in patients with acute myeloid leukemia treated with gemtuzumab ozogamicin monotherapy *Blood*, 109:4168-4179 (2007).

### **Myelodysplastic Syndromes**

1. Wells DA, Hall MC, Shulman HE, Loken MR. Occult B cell malignancies can be detected by three-color flow cytometry in patients with cytopenias. *Leukemia* 12:2015-2023, 1998..
2. Gersuk GM, Beckham C, Loken MR, Kiener P, Anderson JE, Trout AB, Ledbetter JA, Deeg HJ: A role for tumor necrosis factor-a, Fas, and Fas-ligand in marrow failure associated with myelodysplastic syndrome. *British J. Hemat.* 103:176-188, 1998
3. Deeg HJ, Beckham C, Loken MR, Bryant E, Lesnikova M, Shulman H, Gooley T. Negative regulators of hematopoiesis and stroma function in patients with myelodysplastic syndrome. *Leukemia and Lymphoma*, 37:405-414 2000.
4. Green CL, Loken MR, Buck D. Deeg HJ. Discordant expression of AC133 and AC141 inpatients with myelodysplastic syndrome and acute myelogenous leukemia. *Leukemia* 14:770-772, 2000.
5. Mielcarck M, Bryant E, Loken MR, Torok-Storb B, Storb R: Hematopoietic reconstitution by donor-derived myelodysplastic progenitor cells after hematopoietic stem cell transplantation. *Br. J. Hemat.* 105:361-365, 1999.
6. Zang, DY, Goodwin RG, Loken, MR, Bryant E, Deeg HJ: Expression of TRAIL (tumor necrosis factor-related apoptosis-inducing ligand; Apo2L) and its receptors in myelodysplastic syndrome-Effects of in vitro hematopoiesis. *Blood* 98:3058-3065, 2001.
7. Benito AI, Bryant E, Loken MR, Sale GE, Nash RA, John Gass M, Deeg HJ. NOD/SCID mice transplanted with marrow from patients with myelodysplastic syndrome (MDS) show long-term propagation of normal but not clonal human precursors. *Leuk Res.* 2003 May;27(5):425-36.
8. Denise A. Wells, Martin Benesch, Michael R. Loken, Carlos Vallejo, David Myerson, Wendy M. Leisenring, and H. Joachim Deeg Myeloid and monocytic dyspoiesis as determined by flow cytometric scoring in myelodysplastic syndrome correlates with the IPSS and with outcome after hematopoietic stem cell transplantation *Blood* 102: 394-403; (2003)
9. Scott BL, Storer B, Loken MR, Storb R, Appelbaum FR, Deeg HJ. Pretransplantation induction chemotherapy and posttransplantation relapse in patients with advanced myelodysplastic syndrome. *Biol Blood Marrow Transplant.* 2005 Jan;11(1):65-73
10. Zehentner, BK Loken, MR, Wells, DA: JAK2<sup>V617F</sup> mutation can occur exclusively in the erythroid lineage and be absent in granulocytes and progenitor cells in classic myeloproliferative disorders. *Am J. Heme* 1:806-807 (2006).
11. Valent P, Horny HP, Bennett JM, Fonatsch C, Germing U, Greenberg P, Haferlach T, Haase D, Kolb HJ, Krieger O, Loken M, van de Loosdrecht A, Ogata K, Orfao A, Pfeilstocker M, Ruter B, Sperr WR, Stauder R, Wells DA. Definitions and standards in the diagnosis and treatment of the myelodysplastic syndromes: Consensus statements and report from a working conference. *Leuk Res.* 2007 31(6):727-36..
12. Michael R. Loken, Arjan van de Loosdrecht, Kiyoyuki Ogata, Alberto Orfao, Denise A. Wells. Flow Cytometry in Myelodysplastic Syndromes: Report from a Working Conference. *Leuk Res.* 2008 32(1):5-17.

## 11 MICHAEL R. LOKEN, PhD

13. Scott BL, Wells DA, Loken MR, Myerson D, Leisenring WM, Deeg HW. Validation of a Flow Cytometric Scoring System as a Prognostic Indicator for Post-Transplant Outcome in Patients with MDS. *Blood*, 2008, 112:2681-2686
14. Loken MR, Wells DW. The role of flow cytometry in myelodysplastic syndromes. *J Natl Comp Can Netw* 6: 935-41, 2008.
15. Wells DA, Loken MR. Diagnostic and Prognostic Utility of Flow Cytometry in MDS, in *Myelodysplastic Syndromes, Pathobiology and Clinical Management*, 2<sup>nd</sup> Edition, David P Steensma ed. Informa, New York, pp247-266, 2008.

### BONE MARROW TRANSPLANTATION

1. Noga SJ, Schwartz CL, Civin CI, Loken MR, Donnenberg AD: Rapid separation of whole human bone marrow aspirates by large scale counterflow centrifugation elutriation. *Transplantation* 43:438- 440, 1987
2. Civin CI, Strauss LC, Fackler MJ, Trischmann TM, Wiley JM, Loken MR: Positive stem cell selection: Basic science. *Leukemia*, in "Bone Marrow Purging and Processing" Liss, AR, Gee A, Worthing-White D, eds, Alan R. Liss, New York, pp 387-402.
3. Stelzer GT, Shults KE, Wormsley SB Loken MR: Detection of occult lymphoma cells in bone marrow aspirates by multi-dimensional flow cytometry. in *Prog. Clin. Biol. Res.* 337: 629-634, 1992
4. Loken MR, Civin CI: Laboratory Assessment of Lymphohematopoietic Progenitor and Stem Cells, in *Peripheral Blood Stem Cells*, Smith, DM. and Sacher RA eds, Amer. Assoc. Blood Banks, Bethesda, 1993, pp 19-29
5. Rowley SD, Loken MR, Radich J, Kunkle LA, Mills, BJ, Gooley T, Holmberg L, McSweeney, P, Beach K, MacLeod B, Appelbaum F, Bensinger WI. Isolation of CD34+ cells from blood stem cells components using the Baxter Isolex System, *Bone Marrow Transplantation* 21:1253-1262, 1998.
6. Shulman HM, Wells DA, Gooley T, Myerson D, Bryant E, Loken, MR: Biologic significance of rare peripheral blasts after hematopoietic cell transplant is predicted by multidimensional flow cytometry. *Am. J. Clin. Path.* 112:513-523, 1999
7. Loken MR, Rowley S, McSweeney P, Wells, DA: Quantification of Lymphoma in CD34+ enriched stem cell harvests: Evidence for non random, non specific contamination. *Cancer Research Therapy and Control*, 2000, Vol 1, 1-7.
8. Yunusov MY, Georges GE, Storb R, Moore P, Haggard H, Affolter V, Lesnikova M, Gass MJ, Little MT, Loken M, McKenna H, Storer B, Nash RA. FLT3 ligand promotes engraftment of allogeneic hematopoietic stem cells without significant graft-versus-host disease. *Transplantation*. 2003 15;75(7):933-40.
9. Wang L, Wells DA, Deeg HJ, Loken MR. Flow cytometric detection of nonneoplastic antigenic polymorphisms of donor origin after allogeneic marrow transplant: a report of two cases. *Am J Clin Pathol.* 2004. 122:135-40.
10. Bradfield SM, Radich JP, Loken MR. Graft-versus-leukemia effect in acute lymphoblastic leukemia: the importance of tumor burden and early detection. *Leukemia*. 2004 Jun;18(6):1156-8.
11. Sorror ML, Maris MB, Sandmaier BM, Storer BE, Stuart MJ, Hegenbart U, Agura E, Chauncey TR, Leis J, Pulsipher M, McSweeney P, Radich JP, Bredeson C, Bruno B, Langston A, Loken MR, Al-Ali H, Blume KG, Storb R, Maloney DG. Hematopoietic Cell Transplantation After Nonmyeloablative Conditioning for Advanced Chronic Lymphocytic Leukemia. *J Clin Oncol.* 23: 3819-3829, 2005
12. Mielcarek M, Bryant E, Loken M, Zaucha JM, Torok-Storb B, Storb R. Long-term engraftment and clonal dominance of donor-derived del(20q) hematopoietic cells after allogeneic stem cell transplantation. *Blood*. 107:1732-3 (2006)
13. Olga Sala-Torra, Colleen Hanna, Michael R. Loken.,, Mary E.D. Flowers., Michael Maris., Paula A. Ladne, James R. Mason., David Senitzer<sup>4</sup>, Roberto Rodriguez., Stephen J. Forman., H. Joachim Deeg. and Jerald P. Radich. Evidence of donor-Derived

## **12 MICHAEL R. LOKEN, PhD**

Hematological Malignancies Following Hematopoietic Stem Cell Transplantation. *Biology of Blood and Bone Marrow Transplantation* 12:522-527, (2006)

- 14 Burroughs LM, Storb R, Leisenring WM, Pulsipher MA, Loken MR, Torgerson TR, Ochs HD, Woolfrey AE. Intensive postgrafting immune suppression combined with nonmyeloablative conditioning for transplantation of HLA-identical hematopoietic cell grafts: Results of a pilot study for treatment of primary immunodeficiency disorders, *Bone Marrow Transplantation*.40:633-42 (2007)
- 15 Woods-Swafford W, Vnencak-Jones CL, Loken MR, Manes B, Frangoul H. Mobilization of Ph chromosome-negative peripheral blood stem cells in a child with chronic myeloid leukemia after imatinib-induced complete molecular remission. *Pediatr Blood Cancer*. 2008 Mar;50(3):639-41.
- 16 Doney K, Loken M, Bryant E, Smith A, Appelbaum F. Lack of utility of chimerism studies obtained 2-3 months after myeloablative hematopoietic cell transplantation for ALL. *Bone Marrow Transplant*. 2008 Aug;42(4):271-4. Epub 2008 May 26.

### **CELL SURFACE ANTIGENS ON T AND NK CELLS**

#### **I. T LYMPHOCYTES**

1. Dialynas DP, Loken MR, Glasebrook AL, Fitch FW: Lyt-2 /Lyt-3 variants of a cloned cytolytic T cell line lack an antigen receptor functional in cytolysis. *J. Exp. Med.* 153:595-604. 1981.
2. McNicholas JM, Raffeld M, Loken MR, Reiter H, Knight KL: Monoclonal antibodies to rabbit lymphoid cells: Preparation and characterization of a T-cell specific antibody. *Molecular Immunology* 18 :815-822, 1981.
3. Glasebrook AL, Sarmiento M, Loken MR, Dialynas D, Quintans J, Eisenberg L, Lutz C, Wilde D, Fitch FW: Murine T lymphocyte clones with distinct immunological functions. *Immunol. Rev.* 54 :225-266, 1981.
4. Lancki DW, Lorber MI, Loken MR, Fitch, FW: A clone specific monoclonal antibody which inhibits T cell-mediated cytolysis. In The Proceedings of the First International Workshop on Cell Mediated Cytolysis, P. Goldstein and W. Clark, ed., Plenum Publishing Corp., New York, 324-332 (1982).
5. Dialynas D, Loken MR, Sarmiento M, Fitch FW: Identification of Lysis-relevant molecules on the surface of CTL: Primary screening of monoclonal antibodies for the capacity to block cytolysis by cloned CTL lines. In The Proceedings of the First International Workshop on Cell Mediated Cytolysis, P. Goldstein and W. Clark, ed., Plenum Publishing Corp., New York 547-562 (1982).
6. Lorber MI, Loken MR, Stall AM, Fitch FW: I-A antigens on cloned alloreactive murine T lymphocytes are acquired passively. *J. Immunol.* 128:2798-2803 (1982).
7. Sarmiento M, Dialynas DP, Lanki DW, Wall KA, Lorber MI, Loken MR and Fitch FW: Cloned T lymphocytes and monoclonal antibodies as probes for cell surface molecules active in T cell- mediated cytolysis . *Immunol. Rev.* 68:135-167 ( 1982) .
8. Lanki DW, Lorber MI, Loken MR, Fitch FW: A clone-specific monoclonal antibody that inhibits cytolysis of a cytolytic T cell clone. *J. Exp. Med.* 157:921-935 (1983).
9. Wall KA, Lorber MI, Loken MR, Fitch FW: Inhibition of proliferation of Mls - and Ia reactive cloned T cells by a monoclonal antibody against a determinant shared by I-A and I-E. *J. Immunol.* 131: 1056- 1064 (1983) .

### **13 MICHAEL R. LOKEN, PhD**

10. Dialynas DP, Quan ZS, Wall KA, Pierres A, Quintans J, Loken MR, Pierres M, Fitch FW. Characterization of the murine T cell surface molecule designated L3T4 identified by monoclonal antibody GK1.5. Similarity of L3T4 to the human Leu-3/T4 molecule. *J. Immunol.* 131:2445-2451 (1983).
11. Dialynas DP, Wilde DB, Marrack P, Pierres A, Wall KA, Havran W, Otten G, Loken MR, Pierres M, Kappler J, Fitch FW. *Immunol. Rev.* Vol 74:29-56 (1983).
12. Lanier LL, Loken MR: Human lymphocyte subpopulations identified using three-color immunofluorescence and flow cytometry analysis: Correlation of leu 2, leu 3, leu 7, leu 8 and Leu 11 cell surface antigen expression. *J. Immunol.* 131:tS1-156 (1984).
13. Lorber MI, Wall KA, Loken MR, Fitch FW: Control of cloned alloreactive T lymphocyte proliferative responses: A possible role for cell surface bound alloantigen. *J. Immunol.* 138:361-370 (1984).
14. Watkins JR, McNicholas JM, Loken MR, Knight KL: Characterization of functional distinct subpopulations of rabbit T lymphocytes. *Immunol* 53: 659-668, 1984.
15. Ryffel B, Willard- Gallo KE, Tammi K, Loken MR: Quantitative fluorescence analysis of cyclosporine binding to human leukocytes. *Transplant.* 37: 276-80, 1984.

#### **II. NK CELLS**

1. Balch CM, Ades EW, Loken MR, Shore SL: Human ""null"" cells mediating antibody dependent cellular cytotoxicity express T-lymphocyte differentiation antigens. *J. Immunol.* 124:1845-1851, 1980.
2. Balch CM, Loken MR, Dougherty PA, Ades EW: Expression of a 16,000 MW antigen on human suppressor T lymphocytes. *Cellular Immunology* 64:84-92, 1981.
3. Tartof D, Curran JJ, Levitt D, Loken MR: The skin test antigen stimulated killer cell mediating natural killer like cell mediated cytolysis is OKM-I positive and OKT-3 negative. *Clin Exp Immunol.* 54:561-566, 1983.
4. Lanier LL, Le AM, Civin CI, Loken MR, Phillips JH: The relationship of CD16 (Leu 11) and Leu 19 (NKH-I) antigen expression on human peripheral blood NK cells and cytotoxic T lymphocytes. *J. Immunol.* 136:4480-4486, 1986.

#### **III. MONITORING CD4+ T LYMPHOCYTES IN HIV INFECTED PERSONS**

1. Loken MR, Owens MA, Stelzer GT, Lister A, Siragusa M, Morrow C: Flow Cytometric Immunophenotyping Quality Assurance and Quality Control. Procedures for CD4+ T lymphocyte Subset Determinations. Lecture Series. Centers for Disease Control and Prevention Atlanta, 1994
2. Loken MR, Owens MA, Stelzer GT, Lister A, Siragusa M, Morrow C: Flow Cytometric Immunophenotyping Quality Assurance and Quality Control. Procedures for CD4+ T lymphocyte Subset Determinations. Self Study Guide, Centers for Disease Control and Prevention, Atlanta, 1994
3. Lister A, Siragusa M, Loken MR, Owens MA, Stelzer GT, Morrow C: Procedure Manual for Quality Assurance and Quality Control in Flow Cytometric mmunophenotyping, Centers for Disease Control and Prevention, Atlanta, 1994
4. Owens MA, Loken MR Stelzer GT, Lister A, Morrow C, Siragusa M, Stelzer L: Flow Cytometric Immunophenotypin Pre-Analytical Procedures and Post-Analytical Interpretation of the Results for CD4+ T-Lymphocyte Determinations. Lecture Series Centers for Disease Control and Prevention, Atlanta, 1994
5. Owens MA, Loken MR Stelzer GT, Lister A, Morrow C, Siragusa M, Stelzer L: Flow Cytometric Immunophenotyping Pre-Analytical Procedures and Post-Analytical Interpretation of the Results for CD4+ T-Lymphocyte Determinations. Self Study Guide, Centers for Disease Control and Prevention, Atlanta, 1994

**14 MICHAEL R. LOKEN, PhD**

6. Owens MA, Loken MR Stelzer GT, Lister A, Morrow C, Siragusa M, Stelzer L: Flow Cytometric Immunophenotyping Pre-Analytical Procedures and Post-Analytical Interpretation of the Results for CD4+ T-Lymphocyte Determinations.. Procedure Manual, Centers for Disease Control and Prevention, Atlanta, 1994
7. Lister A, Siragusa M, Owens MA, Stelzer L, Morrow C, Loken MR: Setup, standardization and lymphocyte gate setting on a Becton Dickinson FACScan, a video, Centers for Disease Control and Prevention, Atlanta, 1994
8. Lister A, Siragusa M, Owens MA, Stelzer L, Morrow C, Loken MR: Setup, standardization and lymphocyte gate setting on a Coulter Profile, a video, Centers for Disease Control and Prevention, Atlanta, 1994
9. Owens MA, Loken MR Stelzer GT, Lister A, Morrow C, Siragusa M, Stelzer L: Preanalytical procedures and postanalytical interpretation of immunophenotyping results, a sound slide series. Centers for Disease Control and Prevention, Atlanta, 1994