Name:	Michael Joseph Lichten
Citizenship:	United States of America
Date and Place of Birth:	February 7, l954 - Chicago, Illinois

Education:

1975	B.S. - Haverford College, Haverford, Pennsylvania with honors in Biology
1982	Ph.D. - Massachusetts Institute of Technology, Cambridge, Massachusetts

Research/Employment Experience

1970-1971	Laboratory Technician, Yale University, New Haven, Connecticut, (Dr. Richard Goldsby)
1974-1975	Undergraduate research, Haverford College, Haverford, Pennsylvania, (Dr. Michael Showe)
1976-1982	Thesis research, Massachusetts Institute of Technology, Cambridge, Massachusetts (Dr. Maurice A. Fox)
1982-1987	Postdoctoral Research Associate, Brandeis University, Waltham, Massachusetts (Dr. James E. Haber)
1987-1995	Senior Staff Fellow, Microbial Genetics and Biochemistry Section, Laboratory of Biochemistry, Division of Cancer Biology, Diagnosis and Centers, National Cancer Institute, NIH, Bethesda, Maryland
1995-present	Research Microbiologist and Senior Investigator, Microbial Genetics and Biochemistry Section, Laboratory of Biochemistry, Center for Cancer Research, National Cancer Institute, NIH, Bethesda, Maryland
2000-present	Member, Senior Biomedical Research Service
2002-2006	Chief, Laboratory of Biochemistry
2006-present	Deputy Chief, Laboratory of Biochemistry and Molecular Biology

Honors and Fellowships:

1981-1982	Johnson & Johnson Foundation Graduate Fellow
1982-1985	Damon Runyon-Walter Winchell Postdoctoral Research Fellow
1986-1987	Leukemia Society of America Special Fellowship
2002-present	Fellow, American Association for the Advancement of Science

Society Memberships: American Association for the Advancement of Science
American Society for Microbiology
Genetics Society of America

Editorial Boards: Genetics, 1998-2006

PLoS Biology, 2003-present

PLoSOne, 2006-present

PLoS Genetics, 2006-present

Community service at NIH:

1996-1999	NCI Information Resource Advisory Council
1996-present	NIH Intramural AIDS Targeted Antiviral Program Review Committee
2000-2002	Tenure-track Search Committee, Laboratory of Molecular Cell Biology, CCR, NCI
2002	Tenure-track Search Committee, Laboratory of Molecular Pathology, CCR, NCI
2003-present	Tenure Review Panel, Center for Cancer Research, National Cancer Institute
2003-present	Admissions Committee, Johns Hopkins-NIH Joint Graduate Program
2008-present	Co-Director, NIH/Johns Hopkins University Graduate Partnership Program

2005-present	Steering Committee, Center for Excellence in Chromosome Biology, Center for Cancer Research, National Cancer Institute
Frequent	Reviewer for FARE travel award, reviewer for National Graduate Student Research Festival

Other community service:

1989-2004	Scientific Advisory Board, Mycology Department, American Type Culture Collection, Manasas, Virginia
1993	Chair, Workshop on Meiotic Recombination and Genetic Interference, 17th International Congress of Genetics, Birmingham, England
1995	Chair, Session on Meiotic Recombination, FASEB Conference on Recombination and Genome Rearrangements, Snowmass, Colorado
1996-2000	Organizing Committee, Yeast Genetics and Molecular Biology Meeting
1996	Genetics Study Section, NIH Division of Research Grants
1998-2000	Vice-Chair (1998) and Chair (2000), Meiosis Gordon Conference.
2000-2004	Microbial Genetics (2000) and Eucaryotic Genetics (2002-2004) Grant Review Panel, National Science Foundation
2002	Organizing Committee, RIKEN Conference "DNA repair and recombination: from molecular structures at the angstrom resolution to human diseases"
2004	Workshop Organizer, Keystone Symposium on "Mechanisms of DNA Replication and Recombination"
2005, 2006	Ad hoc panel member, Nuclear Dynamics and Trafficking Study Section, CRS, NIH
2005	Session Chair, 7th European Meiosis Meeting, El Escobar, Spain

2006, 2008	Session Chair, FASEB Conference on Yeast Chromosome Structure, Stability and Replication, Indian Wells, California and Carefree, Arizona
2007	Ad hoc panel member, Molecular Genetics C Study Section, CRS, NIH

Invited platform presentations:

Meiosis II: Contemporary Approaches to the Study of Meiosis, University of Pennsylvania, 1991.

Workshop, Aneuploidy in Germ Cells, 1995, NIEHS, Research Triangle Park, North Carolina.

NIH Director's Seminar, 1995, NIH, Bethesda, Maryland.

EMBO Conference on Lymphocyte Neoplasia and Genome Rearrangement, 1995, Basel, Switzerland.

Seventh IMP Spring Conference-"Chromosomes", 1996, Institute of Molecular Pathology, University of Vienna, Austria

13th Japanese Recombination Workshop, Osaka, Japan, 1998

71st Annual Meeting, Japanese Biochemical Society, Nagoya, Japan, 1998

10th Topoisomerase Meeting, 1999, Amsterdam, Netherlands

Analytical Genetics, Snowbird, Utah, 1999

3R (Recombination, Replication, Repair) Meeting, Kobe, Japan, 1999

Carnegie Institute of Washington Minisymposium on Meiosis, 2000, Baltimore, Maryland

Banbury Conference on DNA Recombination and Repair, 2002, Cold Spring Harbor, NY.

Nobel Conference on Chromosome Segregation and Human Disease, 2003, Stockholm, Sweden.

FASEB Conference on Recombination and Genome Rearrangements, 1993, Copper Mountain, Colorado and 1995, 1997, 1999, 2001, 2003, 2005, 2007 Snowmass, Colorado.

EMBO Conference on Genetic Recombination, 1988, 1990, 1992, 1994, 1996, 1998, 2000, 2002, 2004, 2008 Nethybridge, Scotland, Seillac, France and Il Ciocco, Italy.

Gordon Research Conference on Meiosis, 1992, 1994, 1996, Plymouth, New Hampshire; 1998, 2000, 2002, 2004, 2006, 2008 New London, New Hampshire

Keystone Symposium on Molecular Mechanisms in DNA Replication and Recombination, 1996, Taos, New Mexico, 2002, Snowbird, Utah, 2005, Keystone, Colorado.

European Meiosis Meeting, 2001, Canterbury, U.K., 2003, Obertraun, Austria, 2005, Madrid, Spain, 2007, Zushi, Japan

FASEB Conference on Yeast Chromosome Structure, Stability and Replication, 2004, Pine Mountain, Georgia, 2006 (session chair), Indian Wells, California, 2008 (session chair), Carefree, Arizona.

Jaun March Foundation Workshop on Recombinational Repair and its Link with DNA Replication and Chromosome Maintenance, 2004, Madrid, Spain.

American Society for Microbiology General Meeting, Section X Symposium, 2005, Atlanta, Georgia

International University of Andalusia workshop "Mechanisms and biological consequences of recombinational DNA repair-mediated genome instability", 2006, Baeza, Spain

Keystone Symposium on Genome Instability and Repair, 2007, Breckenridge, Colorado

British Yeast Meeting, 2007, Buxton, England

Departmental colloquia and seminars from 1990 to 2006 at the following: Brandeis University, Brown University, Cold Spring Harbor Laboratory, Columbia University, Cornell University, Emory University, Fred Hutchinson Cancer Research Center, Hebrew University of Jerusalem, Institut Curie (France), Institute for Molecular Pathology (Austria), Iowa State University, Massachusetts Institute of Technology, Memorial Sloan Kettering Institute, National Institute of Genetics (Japan), National Heart, Lung and Blood Institute, National Institute of Child Health and Development, National Institute of Diabetes and Digestive and Kidney Diseases, Oklahoma Medical Research Foundation, RIKEN (Japan), SUNY Stony Brook, Vanderbilt University, University of Bern (Switzerland), University of California at Davis, University of Chicago, University of Edinburgh, University of Iowa, University of Oregon, Université Paris-Sud (France), University of Sussex, University of Tennessee, University of Texas Health Science Center San Antonio, University of Tokyo, University of Virginia Medical School, Yale University. Details supplied upon request.

Competitive funding:

Collaborative Project Award, "Yeast Gene Microarrays for the Study of Gene Regulation, Gene Function, and Chromosome Structure, FY 2000-2002.

Past and ongoing collaborations:

Douglas Bishop, Department of Radiation Oncology, University of Chicago

Thomas D. Petes, Department of Biology, University of North Carolina Chapel Hill

Alastair Goldman, Department of Molecular Biology and Biotechnology, University of Sheffield

Valérie Borde and Alain Nicolas, Institut Curie, Paris

Takhiko Shibata and Kunihiro Ohta, Japanese Institute of Chemistry and Physics (RIKEN)

Munira Basrai, NCI

William M. Bonner, NCI

James E. Haber, Brandeis University

John Petrini, Memorial Sloan Kettering Institute

Alexander Strunnikov, NICHD
Kim Nasmyth, Research Institute for Molecular Pathology, Vienna
Harry Scherthan, Max Plank Institute for Molecular Genetics, Berlin
Carl Mann, Uniformed Services University of the Health Sciences
Beth Rockmill and Shirleen Roeder, Yale University
Nancy Hollingsworth, SUNY Stony Brook
Stephen C. West, Cancer Research UK
Eva Hoffmann, University of Sussex

Mentorship

The following have graduated from my laboratory since 1987. Their most recent known position is indicated:

Postdoctoral fellows (last known position):

Michael J. Daly	Tenured faculty, Uniformed Services University of the Health Sciences
Christophe Goyon	Research scientist, CNRS, Orsay, France
Jianhua Liu	Senior Research Scientist, Genome Institute of Singapore
Alastair Goldman	Tenured faculty, University of Sheffield
Valérie Borde	Research scientist, CNRS, Institut Curie
Thorsten Allers	Royal Society Research Fellow, University of Nottingham
Ruojie Sha	Biothechnology industry, NYC area
Robert Shroff	Staff Scientist, National Cancer Institute
David Eyre	Intellectual property consultant, London
Cyril Buhler	Biothechnology industry, Orsay, France

Postbaccalaureate fellows (last known position):

Karin Werner	Graduate school, GWU School of Public Health
Badia Albanna	Graduate school, University of Maryland
Parisha Sha	Graduate school, University of Chicago
Elizabeth Kolar	Graduate school, Johns Hopkins Medical School

Summer interns:

Jasmine Barrow (Cornell University), Somantikka Datta (PhD student, University of Maryland), Seth Hanson (master's student, University of Wisconsin, LaCross), Ayesha Johnson (Williams College), Sasha Reiders (Haverford College), Douglas Cameron (Yale University), Emily Capra (Princeton University), Anu Maharjan (Albert Einstein High School), William Perry (high school teacher)

Graduate student committees, etc.:

Edward Davis, Biology Department, University of Maryland (dissertation examiner)
Fréderic Baudat, Université Paris-Sud (dissertation examiner)

Benedict J. Kemp, Sackler School of Graduate Biomedical Studies, Tufts University (dissertation examiner)
Janell Hill, MD/PhD student, Howard University Medical Center (informal advisor)
Micah Webster, Biology Department, Johns Hopkins University (qualifying examination committee)
Margaret Hoang, Biology Department, Johns Hopkins University (annual thesis review committee)

Current trainees:

Lea Jessop	Research fellow
Tamara Goldfarb	Postdoctoral fellow
Anuradha Sourirajan	Postdoctoral fellow
Yaron Dayani	PhD student, Hebrew University of Jerusalem
Elizabeth Kolar	Postbaccalaureate fellow

Publications:

1. Lichten, M. and Fox, M.S.: Effects of non-homology on bacteriophage lambda recombination. *Genetics* **103**:5-22, 1983.

2. Lichten, M. and Fox, M.S.: Detection of non-homology containing heteroduplex molecules. *Nucleic Acids Res*. **11**:3959-3971, 1983.

3. Lichten, M. and Fox, M.S.: Evidence for the inclusion of regions of non-homology in heteroduplex products of bacteriophage lambda recombination. *Proc. Natl. Acad. Sci. USA* **81**:7180-7184, 1984.

4. Borts, R.H., Lichten, M., Hearn, M., Davidow, L.S. and Haber, J.E.: Physical monitoring of meiotic recombination in *Saccharomyces cerevisiae*. *Cold Spring Harbor Symp. Quant. Biol*. **49**:67-76, 1985.

5. Borts, R.H., Lichten, M. and Haber, J.E.: Analysis of meiosis-defective mutations in yeast by physical monitoring of recombination. *Genetics* **113**:551-567, 1986.

6. Lichten, M., Borts, R.H. and Haber, J.E.: Meiotic recombination between dispersed homologous sequences in *Saccharomyces cerevisiae*. In Klar, A. and Strathern, J. (Eds.): Current Communications in Molecular Biology: Mechanisms of Yeast Recombination, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York, pp. 123-130, 1986.

7. Lichten, M., Borts, R.H. and Haber, J.E.: Meiotic gene conversion and crossing-over between dispersed homologous sequences occurs frequently in *Saccharomyces cerevisiae*. *Genetics* **115**:233-246, 1987.

8. Haber, J.E., Borts, R.H., Connolly, B., Lichten, M., Rudin, M. and White, C.I.: Physical Monitoring of Meiotic and Mitotic Recombination in Yeast. *Progress in Nucleic Acid Research and Molecular Biology* **35**:209-259, 1988.

9. Lichten, M. and Haber, J.E.: Position effects in ectopic and allelic mitotic recombination in *Saccharomyces cerevisiae*. *Genetics* **123**:261-268, 1989.

10. Lichten, M., Goyon, C., Schultes, N.P., Treco, D., Szostak, J.W., Haber, J.E. and Nicolas, A.: Detection of heteroduplex DNA

molecules among the products of *Saccharomyces cerevisiae* meiosis. *Proc. Natl. Acad. Sci. USA* **87**:7653-7657, l990.

11. Haber, J.E., Leung, W.Y., Borts, R.H. and Lichten, M.: The frequency of meiotic recombination in yeast is independent of the number and position of homologous donor sequences: Implications for chromosome pairing. *Proc. Natl. Acad. Sci. USA* **88**:ll20-ll24, l99l.

12. Goyon, C., Lichten, M.: The timing of molecular events in meiosis in *Saccharomyces cerevisiae*: Stable heteroduplex DNA is formed late in meiotic prophase. *Mol. Cell. Biol.* **l3**:373-382, l993.

13. Rocco, V., Daly, M.J., Matre, V., Lichten, M. and Nicolas, A.: Identification of two divergently transcribed genes centromere-proximal to the *ARG4* locus on chromosome *VIII* of *Saccharomyces cerevisiae*. *Yeast* **9**:1111-1120, 1993.

14. Wu, T.C. and Lichten, M.: Position effects in meiotic recombination. In Haseltine, F.P., Heyner, S., eds. Meiosis II: Contemporary approaches to the study of meiosis. AAAS, Washington, D.C., pp. 19-36, 1993.

15. Wu, T.C. and Lichten, M.: Meiosis-induced double-strand break sites determined by yeast chromatin structure. *Science* **263**:515-518, l994.

16. Wu, T.C. and Lichten, M.: Factors that affect the location and frequency of meiosis-induced double strand breaks in *Saccharomyces cerevisiae*. *Genetics* **140:**55-66, 1995.

17. Liu, J., Wu, T.C. and Lichten, M.: The location and structure of double-strand DNA breaks induced during yeast meiosis: evidence for a covalently-linked DNA-protein intermediate. *EMBO J.* **14:**4599-4608, 1995.

18. Lichten, M. and Goldman, A.S.H.: Meiotic recombination hotspots. *Ann. Rev. Genet.* **29:**423-444, 1995.

19. Goldman, A.S.H. and Lichten M.: The efficiency of meiotic recombination between dispersed sequences in *Saccharomyces cerevisiae* depends upon their chromosomal location. *Genetics* **144:**43-55, 1996.

20. Lichten, M.: When good genomes go bad (book review). *Trends Biochem Sci.* **24**:84, 1999.

21. Ohta, K., Wu, T.-C., Lichten, M. and Shibata, T.: Competitive inactivation of a double-strand DNA break site involves parallel suppression of meiosis-induced changes in chromatin structure. *Nucl. Acids Res.***27**:2175-2180, 1999.

22. Grushcow, J.M., Holzen, T.M., Park, K.J., Weinert, T., Lichten, M. and Bishop, D.K.: *S. cerevisiae* checkpoint genes *MEC1, RAD17, and RAD24* are required for normal meiotic recombination partner choice and synapsis. *Genetics* **153**:607-620, 1999.

23. Borde, V., Wu, T.-C. and Lichten, M.: Use of a recombination-reporter insert to define meiotic recombination domains on chromosome *III* of *Saccharomyces cerevisiae*. *Mol. Cell. Biol.* **19**:4832-4842, 1999.

24. Allers, T. and Lichten, M.: A method for preparing genomic DNA that restrains branch migration of Holliday junctions. *Nucl. Acids Res.* **28**:e6, 2000.

25. Goldman, A.S.H. and Lichten, M**.**: Restriction of ectopic recombination by interhomolog interactions during *Saccharomyces cerevisiae* meiosis. *Proc. Natl. Acad. Sci. USA* **97:**9537-9542, 2000.

26. Borde, V., Goldman, A.S.H.and Lichten, M**.**: Direct coupling between meiotic DNA replication and recombination initiation. *Science*, **290**:806-809, 2000.

27. Gerton, J.L., DeRisi, J., Shroff, R., Lichten, M., Brown, P.O. and Petes, T.D.: Global mapping of meiotic recombination hotspots and coldspots in the yeast *Saccharomyces cerevisiae*. *Proc. Natl. Acad. Sci. USA*, **97**:11383-11390, 2000.

28. Hunter,N., Börner,V., Lichten, M. and Kleckner, N.: γ-H2AX illuminates meiosis. *Nature Genet.* **27**: 236-238, 2001.

29. Lichten, M.: Meiotic recombination: breaking the genome to save it. *Curr. Biol.* **11:** R253-R256, 2001.

30. Lichten, M.: Describing recombination (comment). *Trends Genet.* **17**: 135, 2001.

31. Allers, T. and Lichten, M.: Differential timing and control of noncrossover and crossover recombination during meiosis. *Cell.* **106**: 47-58, 2001

32. Allers, T. and Lichten, M.: Intermediates of yeast meiotic recombination contain heteroduplex DNA. *Mol. Cell* **8**: 225-31, 2001

33. Clyne, R.K., Katis, V.L., Jessop, L., Benjamin, K.R., Herskowitz, I., Lichten, M. and Nasmyth K. Polo-like kinase Cdc5 promotes chiasmata formation and cosegregation of sister centromeres at meiosis I. *Nature Cell Biol*. **5:** 480-485, 2003

34. Murakami, H., Borde, V., Shibata, T., Lichten, M. and Ohta K. Correlation between premeiotic DNA replication and chromatin transition at yeast recombination initiation sites. *Nucleic Acids Res*. **31:** 4085-90, 2003

35. Borde, V., Lin, W., Novikov, E., Petrini, J.H., Lichten, M. and Nicolas, A. Association of Mre11p with double strand break sites during yeast meiosis. *Mol. Cell* **13:** 389-401. 2003

36. Schlecht, H. B., Lichten, M., Goldman, A.S.H. Compartmentalization of the yeast meiotic nucleus revealed by analysis of ectopic recombination. *Genetics*, **168:** 1189-1203. 2004

37. Shroff, R., Arbel-Eden, A., Pilch, D., Ira, G., Bonner, W. M., Petrini, J. H., Haber, J. E., Lichten, M. Distribution and dynamics of chromatin modification induced by a defined DNA double-strand break. *Curr. Biol.* **14:** 1703-1711. 2004

38. Ünal, E., Arbel-Eden, A., Sattler, U., Shroff, R., Lichten, M., Haber, J.E., Koshland D. DNA damage response pathway uses histone modification to assemble a double strand break specific cohesin domain. *Mol. Cell,* **16:** 991-1002. 2004

39. Jessop, L., Allers, T., Lichten, M. Infrequent co-conversion of markers flanking a meiotic recombination initiation site in *Saccharomyces cerevisiae*. *Genetics*, **169:** 1353-1367. 2005.

40. Lichten, M. Rad50 connects by hook or by crook. *Nature Struc. Mol. Biol.,* **12:** 392-393. 2005

41. Wang, B.-D., Eyre, D., Basrai, M., Lichten, M., Strunnikov, A. Condensin binding at distinct and specific chromosomal sites in the *Saccharomyces cerevisiae* genome. *Mol. Cell. Biol.*, **25:** 7216-7225. 2005

42. Nakamura, A., Sedelnikova, O. A., Redon, C., Pilch, D. R., Sinogeeva, N.I., Shroff, R., Lichten, M., Bonner, W. M. Techniques for γ-H2AX detection. *Methods Enzymol.*, **49:** 236-50. 2006

43. Jessop, L., Rockmill, B., Roeder, G.S., Lichten, M. Meiotic chromosome synapsis-promoting proteins antagonize the anti-crossover activity of Sgs1. *PLoS Genet.* **2:** e155. 2006

44. Buhler, C., Borde, V., Lichten, M. Mapping meiotic single-strand DNA reveals a new landscape of DNA double-strand breaks in *Saccharomyces cerevisiae*. *PLoS Biol.* **5**: e324. 2007

45. Buhler, C., Shroff, R., Lichten, M. Genome-wide mapping of meiotic DNA double-strand breaks. In Keeney, S., ed. Methods in Molecular Biology: Meiosis. Humana Press, Totowa, New Jersey. In press.

46. Oh, S., Jessop, L,, Lao, J., Allers, T., Lichten, M., Hunter, N. Stabilization and electrophoretic analysis of meiotic recombination intermediates in *Saccharomyces cerevisiae*. In Keeney, S., ed. Methods in Molecular Biology: Meiosis. Humana Press, Totowa, New Jersey. In press.

47. Lichten, M. Meiotic chromatin—the substrate for recombination initiation. In Egel, R., Lankanau, D.-H., eds., Genome Dynamics and Stability, v3: Recombination and Meiosis—Models, Means and Evolution. Springer, Heidelberg. In press.

48. Mus81/Mms4 endonuclease and Sgs1 helicase collaborate to ensure proper recombination intermediate metabolism during meiosis. *Mol Cell*: in press.

49. Thoroughly modern meiosis. *Nature* in press.