

BIOGRAPHICAL SKETCH

Provide the following information for the key personnel in the order listed on Form Page 2.
Photocopy this page or follow this format for each person.

NAME	POSITION TITLE		
Bloom, Kerry S.	Professor		
EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)			
INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
Tulane Univ., New Orleans, LA	B.S.	1975	Biology
Purdue University, West Lafayette, IN	Ph.D.	1980	Molecular Biology
Univ. of California, Santa Barbara, CA	Post-Doc	1982	Molecular Genetics

RESEARCH AND PROFESSIONAL EXPERIENCE: Concluding with present position, list, in chronological order, previous employment, experience, and honors. Include present membership on any Federal Government public advisory committee. List, in chronological order, the titles, all authors, and complete references to all publications during the past three years and to representative earlier publications pertinent to this application. If the list of publications in the last three years exceeds two pages, select the most pertinent publications. **DO NOT EXCEED TWO PAGES.**

Employment / Experience

5/75: Graduate Tulane University Magna Cum Laude with honors in Biology, Phi Beta Kappa, βββ
5/75-5/80 The structure and function of transcribed chromatin. Purdue University
5/80: Recipient of Postdoctoral Fellowship from the Jane Coffin Childs Memorial Fund for Medical Research
5/80-6/82: Chromatin structure of yeast centromeres. University of California, Santa Barbara
6/82-6/87: Assist. Prof., 7/87-6/94 Associate Prof., 7/94-present Professor of Biology.
6/85-8/90: Invited Instructor of Physiology Course at the MBL, Woods Hole, Mass; 6/89-8/90 Assistant Director
10/86-6/91: Member NIH study section in Molecular Cytology
10/88-9/96 Editorial Board, Cell Motility and the Cytoskeleton
10/90 Editor for Current Opinion in Cell Biology Journal
6/95-8/98 Invited Instructor of Physiology Course at the MBL, Woods Hole, Mass; 6/97-8/98 Director
8/96-8/00 Member Science Council, MBL Elected position; 8/98-8/00 Chair of Science Council, MBL
7/99- 6/01: Member NIH study section in Biological Regulation 1 (BIOL-1)
6/00-6/01: Search Committee for the Director of the Marine Biological Laboratories
6/01-8/06 Invited Instructor of Science Writers Course at the MBL, Woods Hole, Mass
9/01-present Editorial Board: Mitosis domain TheScientificWorld San Diego, CA.
11/01-present: Member Strategic Planning Board, MBL; Co-Chair of the Education Task Force
02/02 Ad Hoc Member: Genomics Study Section, NIH
10/04-10/07 Member of Council for the Amer. Soc. of Cell Biology, elected position
02/04-present Member Life Science Research Fellowship Reviewers Board
06/05 Ad Hoc Member ZRG1 BST-D; 11/05 Ad Hoc Member: ZRG1 F05-J NIH
06/06 Ad Hoc Member Nuclear Dynamics Study Section NIH
08/05, 08/07, 08/09 Chair Yeast Cell Biology Meeting Cold Spring Harbor Laboratories
10/07- 10/08 Member Nuclear Dynamics (NDT) Study Section NIH
07/06, 08/09: Invited Instructor for DNA and Chromosomes, Institut d'Etudes Scientifiques de Cargese
08/07 Appointed: Editor of the Image and Video Library for the ASCB, Bruce Alberts President
08/07 Co-Chair of the Motile Systems Gordon Conference, Chair 08/09
04/08: Ad Hoc Investigator Reviewer Howard Hughes Medical Institute
04/08-06/18 Assoc. Editor Cellular and Molecular Bioengineering
10/08- 6/12 Full Member NCSD (formerly NDT) NIH Study Section
1/11-12/16: Member Education Committee for the Marine Biological Laboratory
1/1/18-present Editor, Molecular Biology of the Cell; Secretary for Amer Soc. Cell Biology, elected position
07/01/18 Chair, Department of Biology
10/31-11/01/18 Chair MIRA review panel NIH CB-Y 55 Meeting; MIRA review panel ZRG1 CB-J (55) 6/16/20-6/17/20
03/02/21-03/03/21 NIH Interdisciplinary Molecular Sciences and Training (IMST) IRG F08 2021/05

Honors

Recipient of the Philip and Ruth Hettleman Award for Scholastic Excellence UNC-CH 1989
Research Career Development Award from the NIH 1987-1992
Recipient of the Nikon Fellowship Marine Biological Laboratory, June 2007-2008
Appointed the Thad L. Beyle Distinguished Professor of Biology July 1, 2008
Elected Fellow of the American Association for the Advancement of Science Dec. 2010
Recipient of NIH MERIT Award May 2011- 2021
Elected Fellow of the American Academy of Microbiology Feb. 2012
Outstanding Alumnus Award Purdue University Department of Biological Sciences Sept 2012
Elected Member of the American Academy of Arts and Sciences 2013
Elected Secretary of the American Society of Cell Biology 2017-2020
Elected Lifetime Fellow recognition American Society of Cell Biology 2019
Elected National Academy of Sciences 2021

Publications:(~181 Peer Reviewed)

<http://www.ncbi.nlm.nih.gov/sites/myncbi/kerry.bloom.1/bibliography/40331793/public/?sort=date&direction=descending>

- Bloom KS, Anderson JN. 1978. Fractionation of hen oviduct chromatin into transcriptionally active and inactive regions after selective micrococcal nuclease digestion. Cell. 15:141-50.
- Bloom KS, Anderson JN. 1978. Fractionation and characterization of chromosomal proteins by the hydroxyapatite dissociation method. J Biol Chem. 253:4446-50
- Bloom KS, Anderson JN. 1979. A novel method for the two-dimensional analysis of proteins. Anal Biochem. 98:410-6.
- Bloom KS, Anderson JN. 1979. Conformation of ovalbumin and globin genes in chromatin during differential gene expression. J Biol Chem. 254:10532-9
- Pedersen K, Bloom KS, Anderson JN, Glover DV, Larkins BA. 1980. Analysis of the complexity and frequency of zein genes in the maize genome. Biochemistry. 19:1644-50.
- Bloom KS, Anderson JN. 1982. Hormonal regulation of the conformation of the ovalbumin gene in chick oviduct chromatin. J Biol Chem. 257:13018-27.
- Vanderbilt JN, Bloom KS, Anderson JN. 1982 Endogenous nuclease. Properties and effects on transcribed genes in chromatin. J Biol Chem. 257:13009-17.
- Bloom, K.S. and Carbon, J. 1982. Yeast centromere DNA is in a unique and highly ordered structure in chromosomes and small circular mini- chromosomes. Cell 29: 305-317.
- Bloom, K.S., Amaya, E., Carbon, J., Clarke, L., Hill, A., and Yeh, E. 1984. Chromatin Conformation of Yeast Centromeres. J. Cell Biology. 99: 1559-1568.
- Yeh, E., Carbon, J. and Bloom, K. (1986). A tightly centromere-linked gene (SPO15) essential or meiosis in the yeast Saccharomyces cerevisiae. Molec and Cell Biology. 6: 158-167.
- Hill, A., and Bloom, K. (1987). Genetic Manipulation of Centromere Function Molecular and Cellular Biology 7:2397-2405.
- Resnick, M.A., Westmoreland, J., Amaya, E. and Bloom, K. (1987) UV- induced damage and repair in centromere DNA of yeast. Molecular and General Genetics 210:16-22.
- Saunders, M.A., Fitzgerald-Hayes, M. and Bloom, K.S. (1988). Chromatin Structure of Altered Yeast Centromeres. Proc. Natl. Acad. Sci. USA 85:175-179.
- Kenna, M., Amaya, E. and Bloom K.S. (1988). Selective Excision of the Centromere Chromatin Complex from Saccharomyces cerevisiae. J. Cell Biol. 107:9-15.
- Bloom, K. S., Kenna, M. and Saunders, M. (1989). Cis and Trans Acting factors effecting the structure of yeast centromeres. Journal of Cell Science, Suppl. 12:231-242.
- Hill, A., and Bloom, K.S. (1989) The Acquisition and Processing of Dicentric Chromosomes in Yeast. Molecular and Cellular Biology 9:1368- 1370.
- Resnick, M.A., Westmoreland, J., and Bloom, K. (1990). Heterogeneity and maintenance of centromere plasmid copy number in S. cerevisiae. Chromosoma 99:281-288.
- Saunders, M.A., Grunstein, M. and Bloom, K.S. (1990). Nucleosome Depletion Alters the Chromatin Structure of a Yeast Centromere. Molec Cell. Biology 10: 5721-5727.

- Yeh, E., Driscoll, R., Coltrera, M., Olins, A. and Bloom, K. (1990). A dynamin-like protein encoded by the yeast sporulation gene SPO15. Nature 349: 713-715.
- Schulman, I. and Bloom, K. S. (1993). Genetic Dissection of Centromere Assembly. Mol. Cell Biol. 13: 3156-66.
- Heus, J.J., Bloom, K.S., Zonneveld, B.J.M., Steensma H.Y., and Van den Berg, J.A. 1993. Chromatin structure of Kluyveromyces lactis centromeres in K. lactis and Saccharomyces cerevisiae. Chromosoma 102: 660-667.
- Heus, J.J., Zonneveld, B.J.M., Bloom, K.S., Steensma, H.Y. and van den Berg, J.A. (1993). The nucleosome repeat length of Kluyveromyces lactis is 16 bp longer than that of Saccharomyces cerevisiae. Nucleic Acids Res. 21:2247-2248.
- Li, Y.-Y., Yeh, E., Hays, T., and Bloom, K. (1993). Disruption of Mitotic spindle orientation in a Yeast Dynein mutant. Proc. Natl. Acad. Sci. USA 90:10096-10100.
- Brock J. and Bloom, K. (1994) A chromosome breakage assay to monitor mitotic forces in budding yeast. J. Cell Science 107: 891-902.
- Kramer, K.M., Brock, J.A., Bloom, K.S., Moore, J.K., and Haber, J.E. (1994). Two different types of double strand breaks in S. cerevisiae are repaired by similar RAD52 non-homologous recombination events. Mol. Cell Biol. 14:1293-1301.
- Yeh, E., Skibbens, R., Cheng, J., Salmon, E.D., and Bloom, K. (1995) Spindle dynamics and cell cycle regulation of cytoplasmic dynein in the yeast, S. cerevisiae. J. Cell Biol. 130:687-700.
- Yang, S., Yeh, E., Salmon, E.D. and Bloom K.S. Identification of a Mid-Anaphase Checkpoint in Yeast. (1997). J. Cell Biol. 136:345-354.
- Shaw, S.L., Yeh, E., Bloom, K., and Salmon, E.D. (1997). Imaging GFP-fusion proteins in Saccharomyces cerevisiae. Current Biology 7:701-704..
- Shaw, S.L., Yeh, E., Maddox, P., Salmon, E.D. and Bloom, K. (1997) Astral microtubule dynamics in yeast: A microtubule-based searching mechanism for spindle orientation and nuclear migration in the bud. J. Cell Biol. 139:985-994.
- Shaw, S.L., Maddox, P., Skibbens, R.V., Yeh, E., Salmon, E.D. and Bloom, K. (1998) Nuclear and spindle dynamics in budding yeast. Mol. Biol. Cell 9:1627-1631.
- Maddox, P., Chin, E., Mallavarapu, A., Yeh, E., Salmon, E.D., Bloom, K. (1999) Microtubule dynamics from mating through the first zygotic division in the budding yeast Saccharomyces cerevisiae. J. Cell Biol. 144:977-987.
- Beach, D.L., Salmon, E.D., and Bloom, K. (1999) Localization and anchoring of mRNA in budding yeast Current Biology 9:569-578.
- Theesfeld, C., Irazoqui, J.E., Bloom, K., and Lew, D.J. (1999). The role of actin in spindle orientation changes during the S. cerevisiae cell cycle. J. Cell Biol. 146:1019-1032.
- Maddox, P.S., Bloom, K.S. and E.D. Salmon (2000) The polarity and dynamics of microtubule assembly in the budding yeast Saccharomyces cerevisiae. Nature Cell Biology 2:36-41.
- Segal, M., Maddox, P.S., Salmon, E.D., Bloom, K.S. and Reed, S.I. (2000) Establishment of spindle polarity requires Clb5-dependent kinase in budding yeast J. Cell Biol. 148:441-451.
- Yeh, E., Yang, C., Chin, E., Maddox, P., Salmon, E.D., Lew, D.J., and Bloom, K. (2000) Dynamic Positioning of Mitotic Spindles in Yeast: Role of Mitotic Motors and Asymmetric Determinants. Molecular Biology of the Cell 11:3949-3961.
- Segal, M., Bloom, K. and Reed S.I. (2000) Dual and temporal localization of Bud6 directs the program of astral mt interactions specifying spindle polarity in S. cerevisiae. Mol. Biol. Cell: 3689-3702.
- Beach, D. L., Thibodeaux, J., Maddox, P., Yeh, E., and Bloom, K. (2000) The role of Kar9p and Myo2 in orienting the mitotic spindle in budding yeast. Curr. Biol. 10:1497-1506.
- Thrower, D. and Bloom, K. (2001) Dicentric chromosome stretching during anaphase reveals roles of Sir2/Ku in chromatin compaction in budding yeast. Molecular Biology of the Cell 12:2800-2812.
- Pearson, C., Maddox, P., Salmon, E.D. and Bloom, K. (2001) Budding yeast chromosome structure and dynamics during mitosis. J. Cell Biology 152:1255-1266
- Beach, D. and Bloom, K. (2001) Ash1 mRNA localization in 3 acts. Mol. Biol. Cell 12: 2567-2577.
- Kosco, KA., Pearson, CG., Maddox, P.S., Wang, P.J., Adams, I.R., Salmon, E.D., Bloom, K. and Huffaker, T.C. (2001) Control of microtubule dynamics by Stu2p is essential for spindle orientation and metaphase chromosome alignment in yeast. Mol. Biol. Cell. 12: 2870-2880.

- Vogel, J., Drapkin, B., Oomen, J., Beach, D.L., Bloom, K., and Snyder, M. (2001) Phosphorylation of gamma-tubulin regulates microtubule organization in budding yeast. Develop. Cell 1:621-631.
- Gupta, M.L. Jr., Bode, C.J., Pearson, C.G., Thrower, D.A., Suprenant, K.A., Bloom, K.S., and Himes R.H. (2002) Tubulin C354 Mutations that Severely Decrease Microtubule Dynamics do not Prevent Nuclear Migration in Yeast. Mol. Biol. Cell. 13:2919-32
- Segal, M., Bloom, K., and Reed S.I. (2002) Kar9p-independent microtubule capture at Bud6p cortical sites primes spindle polarity prior to bud emergence in *S. cerevisiae*. Mol. Biol. Cell 13:4141-4155.
- Thrower, D., Stemple, J., Yeh, E., and Bloom, K. (2003) Nuclear oscillations and nuclear filament formation accompany single-strand annealing repair of a dicentric chromosome. J. Cell Sci 116:561-569.
- Mythreya, K., and Bloom, K.S. (2003) Differential kinetochore protein requirements for establishment versus propagation of centromere activity in *Saccharomyces cerevisiae* J. Cell. Biol. 160:833-843.
- Sprague B.L., Pearson, C.G., Maddox, P.S., Bloom, K.S., Salmon, E.D. and Odde, D.J. (2003) Mechanisms of Microtubule-Based Kinetochore Positioning in the Yeast Metaphase Spindle. Biophysical Journal 84:1-18
- Pearson, C.G., Maddox, P.S., Zarzar, T., Salmon, E.D., and Bloom, K. (2003) Yeast kinetochores do not stabilize Stu2 dependent spindle microtubule dynamics. Mol. Biol. Cell 14:4181-4195.
- Maddox, P.S., Stemple, J., Satterwhite, L., Salmon, E.D., and Bloom, K. (2003) The minus-end directed motor, Kar3, is required for coupling dynamic mt plus ends to the shmoo tip in yeast. Current Biol. 9:1423-1428.
- Molk, J., Schuyler, S., Liu, J., Evans, J., Salmon, E.D., Pellman, D., and Bloom, K. (2004) The Differential Roles of Budding Yeast Tem1p, Cdc15p, and Bub2p Dynamics in Mitotic Exit Mol. Biol. Cell 15:1519-32.
- Pearson, C.G., Yeh, E., Gardner, M., Odde, D., Salmon, E.D., Bloom, K. (2004) Stable kinetochore-mt attachment constrains centromere positioning in metaphase. Current Biology 14:1962-1967.
- Lobachev, K., Vitriol, E., Stemple, J., Resnick, M.A., and Bloom, K. (2004) Chromosome fragmentation following induction of a DSB is an active process prevented by the RMX repair complex. Current Biology 14:2107-2112.
- Jones, M.H., Huneycutt, B.J., Pearson, C.G., Zhang, C., Morgan, G., Shokat, K., Bloom, K. and Winey, M. (2005) Chemical genetics reveals a role for Mps1 in kinetochore attachment during mitosis Curr. Biol. 15:160-165.
- Bouck, D.C. and Bloom, K. (2005) The kinetochore protein Ndc10 is required for spindle stability and cytokinesis in yeast. PNAS 102:5408-5413
- Gardner, M. K., Pearson, C.G., Sprague, B., **Zarzar, T.**, Bloom, K., Salmon, E.D., and Odde, D. (2005) Tension-dependent regulation of kinetochore microtubule dynamics can explain metaphase congression in yeast. Mol. Biol. Cell 16: 3764-3775.
- Bouck, D. and Bloom, K. (2005) The Role of Centromere Binding Factor 3 (CBF3) in Spindle Stability, Cytokinesis, and Kinetochore Attachment. Biochemistry and Cell Biology 83:696-702.
- Molk, J., Salmon, E.D., and Bloom, K. (2006) Nuclear congression is driven by cytoplasmic microtubule plus end interactions in *S. cerevisiae*. J Cell Biol. 172:27-39.
- Bloom, K., Sharma, S., and Dokholyan, N.V. (2006) The path of DNA in the kinetochore Curr. Biology 16:R276-R278.
- Joglekar, A.P., Bouck, D.C., Molk, J.N., Bloom, K.S. and Salmon, E.D. (2006) Molecular architecture of a kinetochore-microtubule attachment site. Nature Cell Biology 8:581-585.
- Pearson, C.G., M. Gardner, L. Paliulis, E.D Salmon, D. Odde and Bloom, K. (2006). Measuring nanometer scale gradients in spindle microtubule dynamics using model convolution microscopy. Mol. Biol. Cell 17: 4069-79
- Fisher JK, Cribb J, Desai KV, Vicci L, Wilde B, Keller K, Taylor RM, Haase J, Bloom K, O'Brien ET, Superfine R (2006) Thin-foil magnetic force system for high-numerical-aperture microscopy. Rev Sci Instrum. 2006 Feb;77(2):nihms8302:1-21.
- Shimogawa MM, Graczyk B, Gardner MK, Francis SE, White EA, Ess M, Molk JN, Ruse C, Niessen S, Yates JR 3rd, Muller EG, Bloom K, Odde DJ, Davis TN. (2006) Mps1 phosphorylation of Dam1 couples kinetochores to microtubule plus ends at metaphase. Curr. Biology 16: 1489-1501.
- Bouck, D.C. and Bloom K. (2007) Pericentric chromatin is an elastic component of the mitotic spindle. Curr. Biology 17:1-8

- Dotiwala F, Haase J, Arbel-Eden A, Bloom K, Haber JE. (2007) The yeast DNA damage checkpoint proteins control a cytoplasmic response to DNA damage. PNAS 104:11358-63.
- Bloom, K. Beyond the code: the mechanical properties of DNA as they relate to mitosis. (2008) Chromosoma 117:103-110.
- Fisher, J.K., Vicci, L., Bloom, K., O'Brien, T., Davis, C.W., Taylor, R.M. III, Superfine, R. (2007) Magnetic manipulation for the Biomedical Sciences. In Handbook of Nanoscience, Engineering and Technology 15-1-21. Eds W.A. Goddard, III, Brenner, D.W., Lyshevski, S.E. and Iafrate, G.J. CRC Press Boca Raton FL
- Gardner, M.K., Haase, J., Myhre, K., Molk, J.N., **Anderson***, **M.B.**, O'Toole, E., Joglekar, A.P., Winey, M., Odde, D.J., Salmon, E.D., Bloom, K. (2008) The microtubule-based motor Kar3 and plus-end binding protein Bim1 provide structural support for the anaphase spindle. JCB 180:91-100.
- Yeh, E., Haase, J., Paliulis, L.V., Joglekar, A., **Bond***, **L.**, Bouck, D., Salmon E.D., and Bloom K. (2008) Pericentric chromatin is organized into an intramolecular loop in mitosis. Current Biology 18:81-90.
- Joglekar, A.P., Bouck, D., Finley, K., Liu, X., Wan, Y., Berman, J., He, X., Salmon, E. D. and Bloom K.S. (2008) Molecular architecture of kinetochore-microtubule attachment sites is conserved between point and regional centromeres. Journal of Cell Biology May 19;181(4):587-94. Epub 2008 May 12
- Quammen, C., Richardson, A.C., Haase, J., Harrison, B.D., Taylor, R.M.II., and Bloom K.S. (2008) FluoroSim: A Visual Problem-Solving Environment for Fluorescence Microscopy. In Eurographics Workshop on Visual Computing for Biomedicine pp. 151-158 DOI: 10.2312/VCBM/VCBM08/
- Gardner, M.K., Bouck, DC, Paliulis, LV, Meehl, J., O'Toole, E.T., Haase, J, Joglekar, A.P., Soubry, A., Winey, M., Salmon, E.D., Bloom, K.S., Odde, D.J. (2008) Chromosome congression by kinesin-5 motor-mediated disassembly of longer kinetochore microtubules Cell Nov 28;135(5):894-906.
- Joglekar, A., Bloom, K., Salmon, E.D. (2009) In Vivo Protein Architecture of the Eukaryotic Kinetochore with Nanometer Scale Accuracy Current Biology 19:694-699
- Fisher, J.K., **M. Ballenger**, E. Timothy O'Brien, J. Haase, R. Superfine, and K. Bloom (2009) DNA Relaxation Dynamics as a Probe for the Intracellular Environment. Proc. Natl. Acad. Sci. USA 106:9250-9255.
- Harrison, B., Hoang, M. and Bloom, K. (2009) Persistent Mechanical Linkage Between Sister Chromatids Throughout Anaphase Chromosoma 118(5):633-45.
- Anderson M, Haase J, Yeh E, Bloom K (2009) Function and Assembly of DNA looping, Clustering and Microtubule Attachment Complexes within a Eukaryotic Kinetochore. Mol Biol Cell. 19:4131-9.
- Vizeacoumar FJ, van Dyk N, Vizeacoumar FS, Cheung V, Li J, Sydorsky Y, Case N, Li Z, Datti A, Nislow C, Raught B, Zhang Z, Frey B, Bloom K, Boone C and Andrews BJ (2010) Integrating High-throughput Genetic Interaction Mapping and High-content Screening to Explore Yeast Spindle Morphogenesis JCB 188(1):69-81).
- Gardner, M.K., Sprague, B.L., Pearson, C.G., Cosgrove, B.D., Bicek, A.D., Bloom, K., Salmon, E.D., and Odde, D.J. (2010) Model Convolution: A computational approach to digital image interpretation. Cellular and Molecular Bioengineering 3:163-170.
- Nakai, W., Westmoreland, J.W., Yeh, E., Bloom, K. and Resnick, M.A. (2010) Chromosome integrity at a double-strand break requires exonuclease 1 and MRX DNA Repair Jan 2;10(1):102-10. Epub 2010 Nov 5.
- Larson, M. E.**, Harrison, B.D. and Bloom, K. (2010) Uncovering Chromatin's Contribution to the Mitotic Spindle: Applications of Computational and Polymer Models Biochimie Jun 25. [Epub ahead of print] PubMed PMID: 20600566.
- Li, Z., Vizeacoumar, F.J., Bahr, S., Li, J., Warringer, J., Vizeacoumar, F.S., VanderSluis, B., Bellay, J., DeVit, M., Fleming, J.A., Stephens, A., Haase, J., Lin, Z-Y., Baryshnikova, A., Min, R., Lu, H., Yan, Jin, K., Barker, S. Datti, A., Giaever, G., Nislow, C., Bulawa, C., Myers, C.L., Costanzo, M., Gingras, A.-C., Zhang, Z., Blomberg, A., Bloom, K., Andrews, B. and Boone, C. (2011) Systematic Exploration of Essential Yeast Gene Function with Ts Mutants Nature Biotechnology 29:361-367.
- Stephens, A.D., Haase, J., Vicci, L., Taylor, R.M.II., and Bloom, K. (2011) Cohesin, condensin, and the intramolecular centromere loop together generate the mitotic chromatin spring, J. Cell Biol. 193:1167-1180.
- Lawrimore J, Bloom KS, Salmon ED (2011) Point centromeres contain more than a single centromere-specific Cse4 (CENP-A) nucleosome. J Cell Biol. 95(4):573-82. PMID: 22084307

- Haase, J., Stephens, A., Verdaasdonk, J., Yeh, E. and Bloom, K. (2012) Bub1 kinase and Sgo1 modulate pericentric chromatin in response to altered microtubule dynamics. Curr. Biology doi:10.1016/j.cub.2012.02.006
- Jolien S. Verdaasdonk, **Ryan Gardner**, Andrew Stephens, Elaine Yeh, and Kerry Bloom (2012) Tension dependent nucleosome remodeling at the pericentromere in yeast. MBOC 13:2560-70.
- Song, W., Gawel, M., Dominska, M., Greenwell, P.W. Hazkani-Covo, E., Bloom, K., and Petes, T.D. (2013) Non-random distribution of interhomolog recombination events induced by breakage of a dicentric chromosome in *Saccharomyces cerevisiae*. Genetics 194:69-80.
- Stephens A.D., **Haggerty R.**, Vasquez, P.A., Vicci L., **Snider, C.E.**, **Shi, F.**, Quammen, C., Mullins, C., Haase, J., Taylor II, R.M., Verdaasdonk, J.S., Falvo, M.F., Jin, Y., Forest, M.G., Bloom, K. (2013) Pericentric Chromatin Loops Function as a Non-linear Spring in Mitotic Force Balance. J. Cell Biol. 200:757-772.
- Haber, J.E. et al., Bloom, K., Krogan, NJ. (2013) Systematic Triple-Mutant Analysis Uncovers Functional Connectivity between Pathways Involved in Chromosome Regulation. Cell Reports 3: June 27, 2013 <http://dx.doi.org/10.1016/j.celrep.2013.05.007>
- Haase, J., Mishra, P.K., Stephens, A., **Haggerty, R.**, Quammen, C., Taylor R.M.II, Yeh, E., Basrai, M.A. and Bloom, K. (2013) A 3D map of the yeast kinetochore reveals the presence of core and accessory centromere specific histone. Current Biology Oct 7;23(19):1939-44.
- Stephens, A.D., **Snider C.E.**, Haase, J., **Haggerty, R.A.**, Vasquez, P.A, Forest, M.G., and Bloom, K. (2013) Individual pericentromeres behave as a network in the yeast spindle. J.Cell Biol. Nov 11;203(3):407-16.
- Stephens, A.D, Quammen, C.W., **Chang, B.**, Haase, J., Taylor R.M. II, and Bloom K. (2013) The spatial segregation of pericentric cohesin and condensin in the mitotic spindle. MBOC Dec;24(24):3909-19.
- Verdaasdonk, J.S., Vasquez, P.A., **Barry, R.M.**, **Barry, T.**, **Goodwin, S.**, Forest, M.G., and Bloom K. (2013) Centromere tethering confines chromosome domains. Molecular Cell Dec 26;52(6):819-31.
- Ren J, P-C Lin C, et al., Verdaasdonk J, Bloom KS, Ortlund EA, Neiman AM, Bankaitis VA. (2014) A phosphatidylinositol transfer protein integrates phosphoinositide signaling with lipid droplet metabolism to regulate a develop program of nutrient stress-induced membrane biogenesis.MBOC 25(5):712-27.
- Vasquez, P.A. and Bloom, K. (2014) Polymer models of interphase chromosomes Nucleus 5(5):376-90.
- Snider, C.E**, Stephens, A.D, Kirkland, J.G. Hamadani, O., Kamakaka, R.T. and Bloom, K. (2014) Dyskerin, tRNA genes and condensin tether pericentric chromatin to the spindle axis J Cell Biol. 207:189-199.
- Mishra PK, **Guo J**, Dittman LE, Haase J, Yeh E, Bloom K, Basrai MA. (2015) Pat1 protects centromere-specific histone H3 variant, Cse4 from Psh1-mediated ubiquitination. Mol Biol Cell. 2015 Apr 1. pii: mbc.E14-08-1335. [Epub ahead of print]
- Stephens AD, **Snider CE**, Bloom K. (2015) The SUMO deconjugating peptidase Smt4 contributes to the mechanism required for transition from sister chromatid arm cohesion to sister chromatid pericentromere separation. Cell Cycle. May 6:0
- Lawrimore J., Vasquez, P.A., Falvo, M.R., Taylor RM II, Vicci, L., Yeh, E., Forest, MG and Bloom K. (2015) DNA loops generate intracentromere tension in mitosis JCB 210: 553-564.
- Calderon CP, Bloom K. (2015) Inferring Latent States and Refining Force Estimates via Hierarchical Dirichlet Process Modeling in Single Particle Tracking Experiments PLoS One. 2015 Sep 18;10(9):e0137633. doi: 10.1371/journal.pone.0137633. eCollection 2015
- Lawrimore, J. **Aicher, J.K.**, **Hahn, P.**, **Fulp, A.**, **Kompa, B.** Vicci, L., Falvo, M.R, Taylor RM II, and Bloom, K. (2016) ChromoShake: a chromosome dynamics simulator reveals chromatin loops stiffen centromeric chromatin. MBOC 27: 153-166.
- Ohkuni K, Takahashi Y, **Fulp A**, Lawrimore J, Au WC, Pasupala N, Levy-Myers R, Warren J, Strunnikov A, Baker RE, Kerscher O, Bloom K, Basrai MA (2016) SUMO-Targeted Ubiquitin Ligase (STUBL) Slx5 regulates proteolysis of centromeric histone H3 variant Cse4 and prevents its mislocalization to euchromatin. Mol Biol Cell. Mar 9. pii: mbc.E15-12-0827. PMID: 26960795
- Suzuki, A., **Badger, B.L.**, Haase, J., Ohashi, T., Erickson, H.P., Salmon, E.D., Bloom, K. (2016) How the kinetochore couples microtubule force and centromere stretch to move chromosomes Nature Cell Biology 18:382-392. PMID: 26974660
- Falk, J.E., Tsuchiya, D., Verdaasdonk, J., Laceyfield, S., Bloom, K. and Amon, A. (2016) Spatial signals link exit from mitosis to spindle position eLIFE. May 11;5. pii: e14036 doi: 10.7554/eLife.14036

- Tsabar, M., Haase, J., Harrison, B., **Snider, C.E., Eldridge, B., Kaminsky, L., Hine R.M.**, Haber, J.E., and Bloom, K. (2016) A cohesin-based partitioning mechanism revealed upon transcriptional inactivation of centromere *PLOS Genetics* Apr 29;12(4):e1006021.
- Mishra PK, Ciftci-Yilmaz S, Reynolds D, Au WC, Boeckmann L, Dittman LE, Jowhar ZJ, Pachpor T, Yeh E, Baker RE, Hoyt MA, D'Amours D, Bloom K, Basrai MA (2016) Polo kinase Cdc5 associates with centromeres to facilitate the removal of centromeric cohesin during mitosis *Mol Biol Cell*. May 25. pii: mbc.E16-01-0004.
- Vasquez, P.A., Hult, C., Adalsteinsson, D., Lawrimore, J., Forest, M.G., and Bloom, K. (2016) Entropy gives rise to topological associated domains *Nucleic Acids Research*, Jul 8;44(12):5540-9.
- Lawrimore, J., **Barry, T., Barry, R., York, A., Friedman, B., Cook, D., Akialis, K.**, Tyler, J., Vasquez P., Yeh, E. and Bloom, K. (2017) Microtubule dynamics drive enhanced chromatin motion and mobilize telomeres in response to DNA damage *Mol. Biol. Cell* June 15, vol. 28 no. 12 1701-1711.
- M. Takada,* W. Zhang,* A. Suzuki, T.S. Kuroda, Z. Yu, H. Inuzuka, D. Gao, L. Wan, M. Zhuang, L. Hu, B. Zhai, C.J. Fry, K. Bloom, G. Li, G.H. Karpen, W. Wei, Q. Zhang (2017) FBW7 loss promotes chromosomal instability and tumorigenesis via Cyclin E1/CDK2-mediated phosphorylation of CENP-A *Cancer Res.* doi: 10.1158/0008-5472.CAN-17-1240.
- Hult, C., Adalsteinsson, D., Vasquez, P.A., Lawrimore, J., **Bennett, M., York, A., Cook, D.**, Yeh, E., Forest, M.G., Bloom, K. (2017) Enrichment of dynamic chromosomal crosslinks drive phase separation of the nucleolus *Nucl. Acids Res* (<https://doi.org/10.1093/nar/gkx741>).
- Haase, K. Fox, J., Byrnes, A., Adikes, R. Speed, S., Haase, J., **Friedman, B., Cook, D.**, Bloom, K., Rusan, N. and Slep, K. (2017) Stu2 uses a 15 nm parallel coiled coil for kinetochore localization and concomitant regulation of the mitotic spindle *Mol. Biol. Cell* mbc.E17-01-0057. doi: 10.1091/mbc.E17-01-0057.
- Liang, N., Doré, C., Kennedy, E.K., Yeh, E., Williams, E.C., Fortinez, C.M., Wang, A., Bloom, K. and Rudner, A.D. (2018) Cdk1 phosphorylation of Separase functions with PP2A and Slk19 to regulate pericentric Cohesin localization and anaphase onset. *Plos Genetics* (Accepted 3/13/18).
- Suzuki, A., Gupta, A., Long, S.K., Evans, R., **Badger, B.L.**, Salmon E.D., Biggins, S. Bloom, K. (2018) A Kinesin-5, Cin8, Recruits Protein Phosphatase 1 to Kinetochores and Regulates Chromosome Segregation. *Current Biology* Published:August 30, <https://doi.org/10.1016/j.cub.2018.08.038>
- Lawrimore, J., **Doshi, A., Friedman, B.**, Yeh, E., and Bloom, K. (2018) Geometric partitioning of cohesin and condensin are a consequence of chromatin loops. *Mol. Biol. Cell* 29 (22):2737-2750 <https://doi.org/10.1091/mbc.E18-02-0131>
- Cook, D.M., Bennett, M., **Friedman, B.**, Lawrimore, J., Yeh, E. and Bloom, K. (2018) Fork pausing allows centromere DNA loop formation and kinetochore assembly. *Proc. Natl. Acad. Sci. USA* 115:11784-11789.
- Hamdani O, Dhillon N, Hsieh TS, Fujita T, Ocampo J, Kirkland JG, Lawrimore J, Kobayashi TJ, **Friedman B**, Fulton D, Wu KY, Chereji RV, Oki M, Bloom K, Clark DJ, Rando OJ, Kamakaka RT. (2019) tRNA Genes Affect Chromosome Structure and Function via Local Effects *Mol Cell Biol*. 2019 Apr 2;39(8).
- Lawrimore J, He Y, Forest GM, Bloom K. (2019) Three-Dimensional Thermodynamic Simulation of Condensin as a DNA-Based Translocase. *Methods Mol Biol*. 2019;2004:291-318. doi: 10.1007/978-1-4939-9520-2_21.
- Walker, B., Taylor, D., Lawrimore, J., Hult, C., Adalsteinsson, D., Bloom, K., and Forest, M.G. (2019) Transient crosslinking kinetics optimize gene cluster interactions. *PLOS Computational Biology* (PCOMPBIOL-D-19-00767R1) Aug 21;15(8):e1007124. doi: 10.1371
- Lawrimore, J., **Doshi, A.**, Walker, B., and Bloom, K. (2019). AI-Assisted Forward Modeling of Biological Structures. *Frontiers in Cell and Developmental Biology* 7:1-14 (doi: 10.3389/fcell.2019.00279)
- He, Y.; Lawrimore, J.; Cook, D.; **Van Gorder, E.E.; De Larminat, S.C.**; Adalsteinsson, D.; Forest, MG; Bloom, K. (2020) Statistical mechanics of chromosomes: In vivo and in silico approaches reveal high-level organization and structure arise exclusively through mechanical feedback between loop extruders and chromatin substrate properties *Nucleic Acids Res* Nov 18;48(20):11284-11303 NAR-01822-N-2020.R2 doi: 10.1093/nar/gkaa871
- Mishra, P., Chakraborty, A., Yeh, E., Feng, W., Bloom, K.S. and Basrai, M.A. (2021) R-loops at centromeric chromatin contribute to defects in kinetochore integrity and chromosomal instability in budding yeast *Mol Biol Cell* Jan 1;32(1):74-89. doi: 10.1091/mbc.E20-06-0379
- Kefer, P., Iqbal, F., Locatelli, M., Lawrimore, J., Zhang, M. Bloom, K., Bonin, K., Liu, J., Vidi, P-A. (2021) Performance of deep learning restoration methods for the extraction of particle dynamics in noisy microscopy image sequences. *Mol Biol Cell* Jan 27;mbcE20110689. doi: 10.1091/mbc.E20-11-0689.

Cook, D., Long, S., **Stanton, J., Cusick, P.**, Lawrimore, C., Yeh, E., Grant, S. and Bloom, K. (2021) Behavior of Dicentric Chromosomes in Budding Yeast. PLOS Genetics (accepted) PGENETICS-D-20-00674R2
 Lawrimore, J., Kolbin, D., **Stanton, J., Khan, Muznah, De Larminat, S.**, Lawrimore, C., Yeh, E., Bloom, K. (2021) The rDNA is Biomolecular Condensate Formed by Polymer-Polymer Phase Separation and is Sequestered in the Nucleolus by Transcription and R-loops. Nucl. Acids Res. (accepted).

Monographs and Invited Reviews (total of 45):

Bloom, K.S. and Hill, A., Yeh, E. (1986). Chromosome mechanics in yeast. In *Bioessays News and Reviews in Molecular, Cellular and Developmental Biology*. Cambridge University Press, 4: 100-104.
 Bloom, K. and Yeh, E. (1989). Centromeres and telomeres: structural elements of eukaryotic chromosomes. Current Opinion in Cell Biology 1:526-532.
 Bloom, K.S., Hill, A., Kenna, M. and Saunders, M. (1989). The Structure of a Primitive Kinetochores. *Trends in Biochemical Sciences*. 14:223-227.
 Schulman, I. and Bloom, K. (1991). Centromeres: An Integrated Protein/DNA Complex required for chromosome movement. Annual Review in Cell Biology Vol. 7:311-336.
 Bloom, K. and Green, M. (1991) Nucleus Gene Expression: Editorial Overview Curr. Op Cell Biol: 3:304-306.
 Rieder, C.L., and Bloom, K.S. (1991). The Ethereal web of chromosome structure and behavior. The New Biologist 3:1-6.
 Bloom, K. and Green, M. (1992) Nucleus Gene Expression: Editorial Overview Curr. Op Cell Biol. 4:377-378.
 Bloom, K. (1993). The Centromere Frontier: Kinetochores components, microtubule-based motility and the Centromere paradox. *Cell* 73: 621-624.
 Salmon, E.D., Shaw, S.L., Waters, J., Waterman-Storer, C., Maddox, P.S., Yeh, E., and Bloom, K. (1998) Multimode fluorescence microscopy. *Methods in Cell Biology* 56:186-216.
 Salmon, E.D., Yeh, E., Shaw, S.L., Skibbens, R., and Bloom, K.S. (1998) High resolution VE- and DE-DIC light microscopy of cell division in budding yeast. Methods in Enzymology 298:317-331.
 Bloom, K., Beach, D.L, Maddox, P., Shaw, S.L., Yeh, E., and Salmon, E.D. (1998). Using GFP Fusion Proteins to Quantitate Microtubule and Spindle Dynamics in Budding Yeast. Methods in Cell Biology 61:369-383.
 Bloom, K. and Beach, D.L. (1999). mRNA localization: Motile mRNA, asymmetric anchors. *Current Opinion in Microbiology: Genetics and Development* 2:604-609.
 Bloom, K. (2000) It's a kinetochore to capture microtubules. Nature Cell Biology 2:96-98.
 Segal, M., and Bloom, K. (2001) Control of Spindle Polarity and Orientation in *S. cerevisiae*. TICB 11:160-166.
 Bloom, K., (2001) Cortical Anchors for Cytoplasmic Dynein. Current Biology Curr. Biol. 11:326-329.
 Bloom, K., (2002) Yeast weighs in on the elusive spindle matrix: New filaments in the nucleus. Proc. Natl. Acad. Sci. USA 99:4757-4759.
 Bloom, K. (2003) Microtubule Cytoskeleton: Navigating the Intracellular Landscape Current Biology 13:1-3.
 Pearson, C. G. and Bloom, K. (2004) Dynamic microtubules lead the way for spindle positioning. *NRCMB* 5:481-492
 Bloom, K (2005) Chromosome segregation: seeing is believing. Curr Biol. 15:R500-3.
 Bloom, K (2006) NoCut: Cytokinesis in Check Cell 125:17-18.
 Molk, J.N. and Bloom, K. (2006) Mt dynamics in the budding yeast mating pathway. J Cell Sci. 119, 3485-90.
 Yeh, E. and Bloom, K. (2006) Hitching a ride. EMBO reports 7: 985-987
 Gardner, M., Odde, D., and Bloom, K. (2007) Hypothesis testing via integrated computer modeling and digital fluorescence microscopy. Methods 41:232-237.
 Kiehart, D.P. and Bloom, K. (2007) Cell Structure and Dynamics. Curr Opinion Cell Biol. 19:1-4
 Bloom, K. (2007) Centromere Dynamics. Curr. Opinion Genetics and Develop. 17: (Feb 21)
 Fisher, J.K., Vicci, L., Bloom, K., O'Brien, T., Davis, C.W., Taylor, R.M. III, Superfine, R. (2007) Magnetic manipulation for the Biomedical Sciences. In *Handbook of Nanoscience, Engineering and Technology* 15-1-21.
 Maher, B. (2007) Spring Theory. *Nature* 448:984-986. A profile of Kerry Bloom from Bouck and Bloom (2007)
 Joglekar, A., Salmon ED., Bloom, K. Counting kinetochore protein numbers in budding yeast using genetically encoded fluorescent proteins. Methods in Cell Biology 85:127-51.
 Bloom KS. (2008) Beyond the code: the mechanical properties of DNA as they relate to mitosis. Chromosoma 117:103-110.

- Bloom, K. Centromere and Kinetochores: A Historical Perspective. In *The Kinetochore: From Molecular Discoveries to Cancer Therapy*. Eds. P. De Wulf and W.C. Earnshaw pp.1-20. Springer Science
- Gardner MK, Odde DJ, Bloom K. Kinesin-8 molecular motors: putting the brakes on chromosome oscillations. *Trends Cell Biol.* 2008 May 28. [Epub ahead of print]
- Bouck, D.C., Joglekar, A.P., and Bloom, K.S. Design Features of a Mitotic Spindle: Balancing Tension and Compression at a Single Microtubule Kinetochore Interface in Budding Yeast. *Annu Rev Genet.* (in press, Dec. 2008).
- Bloom, K. (2008) Kinetochores and microtubules wed without a ring. *Cell* 135:211-213.
- Joglekar, A., Bloom, K. and Salmon ED (2010) Mechanisms of force generation by end-on kinetochore-microtubule attachments. *Current Opinion in Cell Biology* 22:1-11.
- Bloom, K. and Joglekar, A. (2010) Towards Building a Chromosome Segregation Machine. *Nature* 463: 446-456. doi:10.1038/nature08912
- Gatlin, J. and Bloom, K. (2010) Microtubule Motors in Eukaryotic Spindle Assembly and Maintenance. Ed. K. Vaughan *Semin Cell Dev Biol.* 2010 Jan 25. [Epub ahead of print] PMID: 20109569.
- Bloom, K. and Yeh, E. (2010) Tension Management at the Kinetochore *Current Biology* 20:R1040-1048
- Verdaasdonk, J. and Bloom, K. (2011) Centromeres: Unique Chromatin Structures that Drive Segregation. *Nature Reviews: Molecular Cell Biology* 12: 320-332.
- Taylor II, R.M. and Bloom, K. (2012) Intersecting Art and Computer Graphics. pp.102-107 In *Visual Strategies* (Eds. F.C. Frankel and A.H. DePace) Yale University Press, New Haven and London
- Winey M, Bloom K. (2012) Mitotic spindle form and function. *Genetics*. 190(4):1197-224.
- Bloom, K. Nuclear structure and function. *Mol Biol Cell.* 2013 Mar;24(6):673. doi: 10.1091/mbc.E12-12-0874. No abstract available.
- Bloom, K. (2013) Intellectual Immigration *Current Biology* 23: R221-R224
- Verdaasdonk, J., Stephens, A.D., Haase, J. and Bloom, K. Bending the Rules: Widefield Microscopy and the Abbe Limit of Resolution. *J. Cell. Phys.* 2013 Jul 24. doi: 10.1002/jcp.24439. [Epub ahead of print]
- Verdaasdonk JS, Lawrimore J, Bloom K. (2014) Determining absolute protein numbers by quantitative fluorescence microscopy. *Methods Cell Biol.* 123:347-65.
- Bloom, K.S. (2014) Centromeric heterochromatin: the primordial segregation machine. *Ann Rev. Genet.* 48:457-84.
- Scott, K. and Bloom, K. (2014) Lessons learned from counting molecules: how to lure CENP-A into the kinetochore *Open Biology* 4: 140191. DOI: 10.1098/rsob.14019.
- Bloom K (2015) Anniversary of the discovery/isolation of the yeast centromere by Clarke and Carbon. *Mol Biol Cell.* May 1;26(9):1575-7
- Salmon, E.D. and Bloom, K. (2017) Tension sensors reveal how kinetochores share the load. *Bioessays* 39: Jun 5. doi: 10.1002/bies.201600216.
- Bloom, K. and Costanzo, V. (2017) Centromere Structure and Function In *Centromeres and Kinetochores, Progress in Molecular and Subcellular Biology* (B.E. Black, ed.) DOI 10.1007/978-3-319-58592-5_21
- Lawrimore, J., Friedman, B., Doshi, A and Bloom, K. (2017) RotoStep: a chromosome dynamics simulator reveals mechanisms of loop extrusion. *Cold Spring Harbor Symp. Quant. Biology* vol. LXXXII 1-9. doi: 10.1101/sqb.2017.82.033696.
- Bloom, K. (2017) Liberating Cohesin from Cohesion. *Genes & Development* 1:2113–2114
- Bloom, K. (2018) Back to Basics: single-cell physiology reveals secrets of chromosome condensation *Curr Biol* 28:R117-R119.
- Lawrimore J., Bloom K. (2019) The regulation of chromosome segregation via centromere loops. *Crit Rev Biochem Mol Biol.* Oct 1:1-19. doi: 10.1080/10409238.2019.1670130.
- Lawrimore C.J. and Bloom K. (2019) Common Features of the Pericentromere and Nucleolus *Genes* (Basel). Dec 10;10(12). pii: E1029. doi: 10.3390/genes10121029.
- Lawrimore, C.J., Lawrimore, J., Chavez, S. and Bloom, K. (2020) Polymer perspective of genome mobilization. In *Mutation Research - Fundamental and Molecular Mechanisms of Mutagenesis* MUT_2020_20R1 May-Dec;821:111706. doi: 10.1016/j.mrfmmm.2020.111706

Noteworthy Publications (Journal Highlights)

From 2008 to present, 18 publications have been selected for Journal highlights:

Yeh E, Haase J, Paliulis LV, Joglekar A, Bond L, Bouck D, Salmon ED, Bloom KS. Pericentric chromatin is organized into an intramolecular loop in mitosis. *Curr Biol.* 2008 Jan 22;18(2):81-90.

- Dispatch: Dorn JF, Maddox PS. Chromosome segregation: centromeres get bent. *Curr Biol*. 2008 Feb 26;18(4):R159-61.*
- Research Roundup: LeBrasseur, Nicole. DNA spring in your spindle *The Journal of Cell Biology*, Vol. 180, No. 3, 446*
- Gardner MK, Haase J, Myhre K, Molk JN, Anderson M, Joglekar AP, O'Toole ET, Winey M, Salmon ED, Odde DJ, Bloom K. The microtubule-based motor Kar3 and plus end-binding protein Bim1 provide structural support for the anaphase spindle. *J Cell Biol*. 2008 Jan 14;180(1):91-100. Epub 2008 Jan 7.
- Dispatch: Janson ME, Tran PT. Chromosome segregation: organizing overlap at the midzone. *Curr Biol*. 2008 Apr 8;18(7):R308-11.*
- Bouck DC, Bloom K. Pericentric chromatin is an elastic component of the mitotic spindle. *Curr Biol*. 2007 May 1;17(9):741-8. Epub 2007 Apr 5.
- Myers LC, Compton DA. Mitosis: springtime for chromatin. *Curr Biol*. 2007 Jun 19;17(12):R460-2
- Anderson, M., Haase, J., Yeh, E., and Bloom, K. (2009) Function and Assembly of DNA looping, Clustering, and Microtubule Attachment Complexes within a Eukaryotic Kinetochore. *Molecular Biology of the Cell* 20:4131-4139
- This paper was highlighted in the ASCB's INCYTES Oct 20, 2009 p. 4267, and was considered with other INCYTES for Paper of the Year.*
- Vizeacoumar, F.J., van Dyk, N., Vizeacoumar, F.S., Cheung, V., Li, J., Sydorsky, Y., Case, N., Li, Z., Datti, A., Nislow, C., Raught, B., Zhang, Z., Frey, B., Bloom, K., Boone, C., and Andrews, B. (2010) Integrating high-throughput genetic interaction mapping and high-content screening to explore yeast spindle morphogenesis *Journal of Cell Biology* 188:69-81.
- This paper was highlighted in a JCB commentary: Systems cell biology of the mitotic spindle By Ramsey A. Saleem and John D. Aitchison*
- Proposed structure of the Yeast Mitotic Spindle Honorable Mention in the *Science and Engineering Visualization Challenge* sponsored by NSF
http://www.nsf.gov/news/special_reports/scivis/winners_2010.jsp
- Stephens, A.,D., Haase, J., Vicci, L., Taylor, R.M.II., and Bloom, K. (2011) Cohesin, condensin, and the intramolecular centromere loop together generate the mitotic chromatin spring, *J.Cell Biol*. 193:1167-1180.
- This paper was highlighted in a JCB commentary: Cohesin and condensin spring into action By Ben Short. This paper was also selected as a Must Read by Faculty of 1000*
- Lawrimore J, Bloom KS, Salmon ED (2011) Point centromeres contain more than a single centromere-specific Cse4 (CENP-A) nucleosome. *J Cell Biol*. 95(4):573-82. PMID: 22084307
- This paper was highlighted in a JCB commentary: Setting a new standard for kinetochores By Ben Short*
- Haase, J., Stephens, A., Verdaasdonk, J., Yeh, E. and Bloom, K. (2012) Bub1 kinase and Sgo1 modulate pericentric chromatin in response to altered microtubule dynamics. *Curr. Biology* doi:10.1016/j.cub.2012.02.006
- This paper was highlighted in a Nature Cell Biology commentary: Sensing Microtubule Dynamics by Christina K. Rosenthal. This paper was also selected by the Faculty of 1000 New Finding, putting it in the top 2% of their library of papers*
- Verdaasdonk, J.S., Gardner, R., Stephens, A., Yeh, E., and Bloom, K. (2012) Tension dependent nucleosome remodeling at the pericentromere in yeast. *MBOC* 13:2560-70. PMID:22593210
- This paper was highlighted in MBOC Highlights (August 2012, p. 27)*
- Song, W., Gawel, M., Dominska, M., Greenwell, P.W. Hazkani-Covo, E., Bloom, K., and Petes, T.D. Non-random distribution of interhomolog recombination events induced by breakage of a dicentric chromosome in *Saccharomyces cerevisiae*. *Genetics* 194:69-80.
- This paper was highlighted in Genetics Highlights (May 1, 2013)*
- Haase, J., Mishra, P.K., Stephens, A., Haggerty, R., Quammen, C., Taylor R.M.II, Yeh, E., Basrai, M.A. and Bloom, K. (2013) A 3D map of the yeast kinetochore reveals the presence of core and accessory centromere specific histone. *Current Biol*. 23:1939-1944.
- This paper was highlighted in a Dispatch in Curr Biol. Chromosome segregation: not to put too fine a point (centromere) on it. Maresca TJ. *Curr Biol*. 2013 Oct 7;23(19):R875-8. doi: 10.1016/j.cub.2013.08.049.*
- Stephens, A.D., Snider C.E., Haase, J., Haggerty, R.A, Vasquez, P.A, Forest, M.G., and Bloom, K. (2013) Individual pericentromeres behave as a network in the yeast spindle. *J.Cell Biol* 203:407-416

This paper was highlighted in "In this Issue" in the JCB (Nov. 4, 2013) by Ben Short Yeast centromeres coordinate their movements.

Snider, C.E., Stephens, A.D., Kirkland, J.G., Hamadani, O., Kamakaka, R.T. and Bloom, K. (2014) Dyskerin, tRNA genes and condensin tether pericentric chromatin to the spindle axis in mitosis J Cell Biol. 207:189-199.

This paper was highlighted in Biobytes Podcast in the JCB where Ben Short narrates how tRNA genes and the tRNA-binding protein dyskerin recruit condensin to pericentric chromatin (Snider et al.)
<http://jcb.rupress.org/content/207/2/189/suppl/DC2>

Lawrimore J., Vasquez, P.A., Falvo, M.R., Taylor RM II, Vicci, L., Yeh, E., Forest, MG and Bloom K. (2015) DNA loops generate intracentromere tension in mitosis JCB 210: 553-564.

This paper was highlighted in a "In Focus" essay by Ben Short The tension mounts at centromeric loops (JCB Aug 17, 2015 Vol. 210)

Lawrimore, J. **Aicher, J.K., Hahn, P., Fulp, A., Kompa, B.** Vicci, L., Falvo, M.R, Taylor RM II, and Bloom, K. (2016) ChromoShake: a chromosome dynamics simulator reveals chromatin loops stiffen centromeric chromatin. MBOC 27: 153-166.

This paper was highlighted in MBOC Highlights (Jan/Feb 16, 2016 ASCB Newsletter p.48) and featured as the Cover Image for the January 1, 2016 issue of MBoC

Lawrimore, J., **Barry, T., Barry, R., York, A., Friedman, B., Cook, D., Akialis, K.**, Tyler, J., Vasquez P., Yeh, E. and Bloom, K. (2017) Microtubule dynamics drive enhanced chromatin motion and mobilize telomeres in response to DNA damage Mol. Biol. Cell June 15, vol. 28 no. 12 1701-1711.

This paper was highlighted in MBOC Highlights (July/Aug vol. 40 No. 5 pp.23 2017 ASCB Newsletter).

Suzuki, A., Gupta, A., Long, S.K., Evans, R., **Badger, B.L.**, Salmon E.D., Biggins, S. Bloom, K. (2018) A Kinesin-5, Cin8, Recruits Protein Phosphatase 1 to Kinetochores and Regulates Chromosome Segregation. Current Biology Published:August 30, DOI:<https://doi.org/10.1016/j.cub.2018.08.038>

This paper was highlighted in Dispatches Current Biology (2018) 38:R943-R946. Audett, M.A. and Maresca T.J. Cell Division:Here Comes the Kinesin Cavalry

Publications with Undergraduates in Peer Reviewed Journals

Two undergraduates, Lisa Bond and Ben Kompa were recipients of the Churchill Scholarship

1. Bloom, K.S., **Amaya, E.**, Carbon, J., Clarke, L., Hill, A, and Yeh, E. 1984. Chromatin Conformation of Yeast Centromeres. J. Cell Biology. 99: 1559-1568.
2. Resnick, M.A., Westmoreland, J., **Amaya, E.** and Bloom, K. (1987) UV- induced damage and repair in centromere DNA of yeast. Molecular and General Genetics 210:16-22.
3. Kenna, M., **Amaya, E.** and Bloom K.S. (1988). Selective Excision of the Centromere Chromatin Complex from Saccharomyces cerevisiae. J. Cell Biol. 107:9-15.
4. Bloom, K., Hill, A. and **Jones, E.** (1989). Conditional dicentric chromosomes in Yeast. In Mechanisms of Chromosome Distribution and Aneuploidy. 149-158.
5. Yeh, E., Driscoll, R., **Coltrera, M.**, Olins, A. and Bloom, K. (1990). A dynamin -like protein encoded by the yeast sporulation gene SPO15. Nature 349: 713-715.
6. Yeh, E., Skibbens, R., **Cheng, J.**, Salmon, E.D., and Bloom, K. (1995) Spindle dynamics and cell cycle regulation of cytoplasmic dynein in the yeast, S. cerevisiae . J. Cell Biol. 130:687-700.
7. **Yang, S.**, Yeh, E., Salmon, E.D. and Bloom K.S. Identification of a Mid-Anaphase Checkpoint in Yeast. (1997). J. Cell Biol. 136:345-354.
8. Maddox, P., **Chin, E.**, Mallavarapu, A., Yeh, E., Salmon, E.D., Bloom, K. (1999) Microtubule dynamics from mating through the first zygotic division in the budding yeast Saccharomyces cerevisiae. J. Cell Biol. 144:977-987.
9. Yeh, E., **Yang, C., Chin, E.**, Maddox, P., Salmon, E.D., Lew, D.J., and Bloom, K. (2000) Dynamic Positioning of Mitotic Spindles in Yeast: Role of Mitotic Motors and Asymmetric Determinants. Molecular Biology of the Cell 11: 1-13.
10. Beach, D. L., **Thibodeaux, J.**, Maddox, P., Yeh, E., and Bloom, K. (2000) The role of Kar9p and Myo2p in spindle orientation in yeast. Curr. Biol. 10: 1497-1506.
11. Pearson, C.G., Maddox, P.S., **Zarzar, T.**, Salmon, E.D., and Bloom, K. (2003) Yeast kinetochores do not stabilize Stu2 dependent spindle microtubule dynamics. Mol. Biol. Cell 14:4181-4195.

12. Maddox, P.S., **Stemple, J.**, Satterwhite, L., Salmon, E.D., and Bloom, K. (2003) The minus-end directed motor, Kar3, is required for coupling dynamic mt plus ends to the shmoo tip in yeast. Current Biol. 9:1423-1428.
13. Lobachev, K., **Vitriol, E., Stemple, J.**, Resnick, M.A., and Bloom, K. (2004) Chromosome fragmentation following induction of a DSB is an active process prevented by the RMX repair complex. Current Biology 14:2107-2112.
14. Gardner, M. K., Pearson, C.G., Sprague, B., **Zarzar, T.**, Bloom, K., Salmon, E.D., and Odde, D. (2005) Tension-dependent regulation of kinetochore microtubule dynamics can explain metaphase congression in yeast. Mol. Biol. Cell 16: 3764-3775.
15. Gardner, M.K., Haase, J., Mythreye, K., Molk, J.N., **Anderson***, **M.B.**, O'Toole, E., Joglekar, A.P., Winey, M., Odde, D.J., Salmon, E.D., Bloom, K. (2008) The microtubule-based motor Kar3 and plus-end binding protein Bim1 provide structural support for the anaphase spindle. JCB 180:91-100.
16. Yeh, E., Haase, J., Paliulis, L.V., Joglekar, A., **Bond***, **L.**, Bouck, D., Salmon E.D., and Bloom K. (2008) Pericentric chromatin is organized into an intramolecular loop in mitosis. Current Biology 18:81-90.
17. **Anderson M***, Haase J, Yeh E, Bloom K (2009) Function and Assembly of DNA looping, Clustering and Microtubule Attachment Complexes within a Eukaryotic Kinetochore. Mol Biol Cell. 19:4131-9.
18. **Larson, M. E***, Harrison, B.D. and Bloom, K. (2010) Uncovering Chromatin's Contribution to the Mitotic Spindle: Applications of Computational and Polymer Models Biochimie Jun 25. [Epub ahead of print] PubMed PMID: 20600566.
19. Jolien S. Verdaasdonk, **Ryan Gardner**, Andrew Stephens, Elaine Yeh, and Kerry Bloom (2012) Tension dependent nucleosome remodeling at the pericentromere in yeast. MBOC 13:2560-70.
20. Stephens A.D., **Haggerty R.**, Vasquez, P.A., Vicci L., **Snider, C.E.**, Shi, F., Quammen, C., Mullins, C., Haase, J., Taylor II, R.M., Verdaasdonk, J.S., Falvo, M.F., Jin, Y., Forest, M.G., Bloom, K. (2013) Pericentric Chromatin Loops Function as a Non-linear Spring in Mitotic Force Balance. J. Cell Biol. 200:757-772.
21. Haase, J., Mishra, P.K., Stephens, A., **Haggerty, R.**, Quammen, C., Taylor R.M.II, Yeh, E., Basrai, M.A. and Bloom, K. (2013) A 3D map of the yeast kinetochore reveals the presence of core and accessory centromere specific histone Current Biology 23:1939-1944. PMID:24076245.
22. Stephens, A.D., **Snider C.E.**, Haase, J., **Haggerty, R.A.**, Vasquez, P.A, Forest, M.G., and Bloom, K. (2013) Individual pericentromeres behave as a network in the yeast spindle J.Cell Biol. 203:407-416. PMID:24189271.
23. Stephens, A.D, Quammen, C.W., **Chang, B.**, Haase, J., Taylor R.M. II, and Bloom K. (2013) The spatial segregation of pericentric cohesin and condensin in the mitotic spindle. MBOC Dec;24(24):3909-19. PMID:24152737
24. Verdaasdonk, J.S., Vasquez, P.A., **Barry, R.M., Barry, T., Goodwin, S.**, Forest, M.G., and Bloom K. (2013) Centromere tethering confines chromosome domains. Molecular Cell Dec 26;52(6):819-31. PMID:24268574
25. **Snider, C.E.**, Stephens, A.D, Kirkland, J.G. Hamadani, O., Kamakaka, R.T. and Bloom, K. (2014) Dyskerin, tRNA genes and condensin tether pericentric chromatin to the spindle axis in mitosis J Cell Biol. 207:189-199
26. Tsabar, M., Haase, J., Harrison, B., **Snider, C.E., Eldridge, B., Kaminsky, L., Hine R.M., Haber, J.E.,** and Bloom, K. (2016) A cohesin-based partitioning mechanism revealed upon transcriptional inactivation of centromere PLoS Genetics Apr 29;12(4):e1006021.
27. Lawrimore, J. **Aicher, J.K., Hahn, P., Fulp, A., Kompa, B.** Vicci, L., Falvo, M.R, Taylor RM II, and Bloom, K. (2016) ChromoShake: a chromosome dynamics simulator reveals chromatin loops stiffen centromeric chromatin. MBOC 27: 153-166.
28. Ohkuni K, Takahashi Y, **Fulp A**, Lawrimore J, Au WC, Pasupala N, Levy-Myers R, Warren J, Strunnikov A, Baker RE, Kerscher O, Bloom K, Basrai MA (2016) SUMO-Targeted Ubiquitin Ligase (STUbL) Slx5 regulates proteolysis of centromeric histone H3 variant Cse4 and prevents its mislocalization to euchromatin. Mol Biol Cell. Mar 9. pii: mbc.E15-12-0827. PMID: 26960795
29. Suzuki, A., **Badger, B.L.**, Haase, J., Ohashi, T., Erickson, H.P., Salmon, E.D., Bloom, K. (2016) How the kinetochore couples microtubule force and centromere stretch to move chromosomes Nature Cell Biology 18:382-392. PMID: 26974660

30. Suzuki, A., Gupta, A., Long, S.K., Evans, R., **Badger, B.L.**, Salmon E.D., Biggins, S. Bloom, K. (2018) A Kinesin-5, Cin8, Recruits Protein Phosphatase 1 to Kinetochores and Regulates Chromosome Segregation. Current Biology Published: August 30, DOI: <https://doi.org/10.1016/j.cub.2018.08.038>
31. Lawrimore, J., **Doshi, A., Friedman, B.**, Yeh, E., and Bloom, K. (2018) Geometric partitioning of cohesin and condensin are a consequence of chromatin loops. Mol. Biol. Cell 29. <https://doi.org/10.1091/mbc.E18-02-0131>
32. Cook, D.M., Bennett, M., **Friedman, B.**, Lawrimore, J., Yeh, E. and Bloom, K. Fork pausing allows centromere DNA loop formation and kinetochore assembly. Proc. Natl. Acad. Sci. USA (in press).

Funding (1990 – present)

Response of Centromeres to DNA Damaging Agents National Institutes of Environmental Health Sciences, \$600,000 1986-1991

Career Development Award, National Institutes of Health Structural Analysis of a Eukaryotic Chromosome \$240,000 1987-1992

Affinity Chromatography to isolate intact yeast chromosomes. 8/93 - 8/95. North Carolina Biotechnology Center \$20,000 total award.

Human genes and corresponding proteins that affect functions related to DNA repair in Yeast 1994-1997 Dept. of Energy DE-FG05-94ER61936 \$283,279 total award

Impact of Human Genes and their homologues on the dynamics of broken chromosomes in yeast. Department of Energy # DE-FG02-99ER62746 12/98- 12/03 \$816, 323 Total amount.

North Carolina Biotechnology Center Grant
How nucleosome stability influences chromatin function
Role: co-PI Percent effort 15% Annual Direct costs \$137,500

NSF MCB-0451240 Bloom (PI) 07/01/05- 06/30/08 NSF
Biomechanics of Chromosome structure and dynamics in living cells
Role: PI Annual Direct Costs \$93,487.00

NIH Chromosome and Spindle Dynamics in Yeast **GM-32238**
Chromosome and Spindle Dynamics in Yeast National Institutes of Health **GM 032238-13 to 16**
Chromosome and Spindle Dynamics in Yeast National Institutes of Health **GM 032238-17 to 20**
Priority score 4.3% Funded
Chromosome and Spindle Dynamics in Yeast National Institutes of Health **GM 032238-21 to 24**
Priority score 1.3% Funded
Chromosome and Spindle Dynamics in Yeast National Institutes of Health **GM 032238-25 to 29**
Priority score 8.0% DESIGNATED MERIT AWARD

R01 GM-71522 Odde D. (PI) 1/1/06 – 12/31/13 NIH
Project Name: Modeling Budding Yeast Mitosis
Role: Co-PI Annual Direct Costs \$37,560.00

Ongoing Research Support

R37 GM32238-30 Bloom (PI) 8/01/16-7/31/21 NIH MERIT AWARD

Chromosome and Spindle Dynamics in Yeast: The major goals of this project are to determine the mechanisms of chromosome movement. The proposal is a continuation of this grant.

Role: PI Annual Direct Costs \$495,000

Wake Forest University Health Sciences (Prime: NIH National Cancer Institute (NCI))

Chromatin mobility in response to DNA damage

Role: PI Annual Direct Costs \$53,322.00 09/19/2019 – 08/31/2020

This is a study to examine the cellular response to DNA damage. We will track multiple sites of DNA damage (7 x 7 grid) and build code for modeling chromosome movement as a function of DNA double strand breakage.

Project/Proposal Title: NSF-BSF: **Exploring the Interplay between DNA Replication Kinetics and Macromolecular Protein Assembly at the Centromere**

Source of Support: National Science Foundation

Total Award Amount: \$900,000

Total Award Period: 9/1/2019–8/31/2023

Location of Project: The University of North Carolina at Chapel Hill

Sponsored Effort: 0.45 Calendar Months

Students:

	Degree	College	Current
PAST STUDENTS			
Alison Hill	Ph.D. 1988	B.A. 1978	Antioch College
Michael Saunders	Ph.D. 1989	B.A. M.S. 1982, 1984	Antioch College
Margaret Kenna	Ph.D. 1990	B.S. 1983	St. Joseph's Coll. Brooklyn NY
Jo-Ann Brock	Ph.D. 1993	B.S. M.S. 1986, 1989	Univ. of British Columbia
Xiao-Yu Song	Ph.D. 1995	B.S. M.D. 1985	China Medical University at Shenyang
Yun-Ying Li	M.S. 1994	B.S. 1990	National Taiwan Univ.
Alain Labrique	M.S. 1997	B.S. 1996	University of North Carolina at Chapel Hill
Paul Maddox (with Ted Salmon)	Ph.D. 2004	B.S. 1995	University of North Carolina at Chapel Hill
Dale Beach	Ph.D. 2002	B.S. 1992	U.C. Davis
Chad Pearson	Ph.D. 2004	B.S. 1996	U.C. Santa Barbara
Mythreye Karthikeyan	Ph.D. 2005	B.Sc. 1996 M.Sc. 1998	Delhi University Hamdarad University
Jeffrey Molk	Ph.D. 2006	B.S. 1999	University of Maryland
David Bouck	Ph.D. 2007	B.S. 2000	University of California, Davis
Ben Harrison	Ph.D.	B.S. 2005	University of Wisconsin
Steve Nedrud	M.S. 2010	B.S. 2008	University of Florida
Jolien Verdaasdonk	Ph.D. 2013	B.S. Ph.D.	Univ. of South Florida, FL

Andrew Stephens Ph.D. B.S. Ph.D. University of Missouri, KC Assistant Prof. U Mass Amherst
2013

PAST STUDENTS

Joshua Lawrimore Ph.D. 2018 B.S. Ph.D. University of North Carolina, NC Research Assist.

HIGH SCHOOL:

**NC School of Science & Math
7 from 1989-2010**

POSTDOCTORAL FELLOWS

Lawrence Schwartz	1985-1987	University of Washington, Seattle, WA	NIH Postdoctoral Fellow	Professor, University of Massachusetts, Amherst, MA
Ira Schulman	1991-1992	Baylor University, Baylor TX	Damon-Runyon Fellow	Assist. Professor, University of Virginia, Charlottesville VA
Douglas Thrower	1998-2000	U.C. Santa Barbara	DOE Fellow	UCSB Staff Member
Leana Topper	2000-2002	University of Virginia	NIH Postdoctoral Fellow	University of Pennsylvania Research Scientist
Leocadia Paliulis	2005-2007	Duke University	PMABS postdoctoral fellow	Assist. Professor Bucknell University
Ajit Joglekar (with Ted Salmon)	2006-2010	University of Michigan	Burroughs- Wellcome CASI award	Assoc. Prof. University of Michigan, Ann Arbor
Adelheid Soubry	2006-2008	VIB-Ghent University, Ghent		Assist. Prof. Dept. of Public Health and Primary Care KU, Leuven, Belgium
Aussie Suzuki (with Ted Salmon)	2011-2018			Assist Prof. Univ. of Wisconsin Madison
Joshua Lawrimore		University of North Carolina, NC	Research Assist.	

Conferences Talks and Lectures 1997-present

* International invitations (175 from 1997-2019, ~8/year)

"Dynein-GFP and Astral Microtubule Dynamics in Yeast" University of Massachusetts Medical School, Worcester, MA Feb 21, 1997

"Real-time analysis of Yeast Mitosis" Physiology Course, MBL, Woods Hole July 1997

Dynein-GFP and Astral Microtubule Dynamics in Yeast: A Microtubule-based searching mechanism for spindle orientation and nuclear migration into the bud. Cold Spring Harbor, Aug 14, 1997.

*"Spindle Dynamics and Chromosome segregation in Yeast" Invited Participant: Genetics Society in Germany. Sept 22-25. Geissen, Germany

"Spindle Dynamics and Chromosome segregation in Yeast" Minisymposium participant: The Dance of the Chromosomes" Duke University, Durham, NC Sept 27, 1997

*"Digital time-lapsed DIC/Fluorescence imaging of dynein-gfp reveals dynamics of astral microtubules in *S. cerevisiae* throughout the cell cycle. Keynote Speaker at In vivo Imaging of Cellular Dynamics November 21, 1997 Munich, Germany

"Dynein-GFP and Astral Microtubule Dynamics in Yeast" U.of Oregon, Eugene, Feb 17, 1998

"Real-time analysis of Yeast Mitosis" Physiology Course, MBL, Woods Hole July 1998

Dynein-GFP and Astral Microtubule Dynamics in Yeast: Invited Speaker Gordon Conf. Fungal Cytoskeleton, Aug 10, 1998.

Real-time analysis of the yeast mating pathway. FASEB Conf. Chromosome Segregation, Replication and Recombination. Aug 13, Snowmass, CO.

How microtubules polarize nuclear movement in yeast. Indiana U., Bloomington, IN. Oct 22, 1998

How microtubules polarize nuclear movement in yeast. Duke University Durham, NC, Dec 4th, 1998
RNA deposition and anchoring in yeast. Invited minisymposium speaker, Annual Meeting of the American Society of Cell Biologists, Dec 15th, 1998, San Francisco, CA, with Dale Beach.

How microtubules polarize nuclear movement in yeast. Cornell University Ithaca, NY, Mar. 12, 1999
RNA deposition and anchoring in yeast. Invited symposium speaker, Green Fluorescent Protein: San Diego, CA May 22, 1999

Microtubule Assembly Dynamics in Yeast. Yeast Cell Biology Cold Spring Harbor Laboratories, Cold Spring Harbor, NY August 19, 1999

*Microtubule dynamics and Polarity in Yeast: Invited Symposium speaker Mechanisms of Cell Behaviour 2nd Symposium of SFB 446. University of Tuebingen, Germany October 15, 1999

Microtubule dynamics and Polarity in Yeast. EMBL, Heidelberg, Germany, October 17, 1999

How microtubules polarize nuclear movement in yeast. Washington U., St. Louis, MO Nov. 5, 1999

Microtubule dynamics and Polarity in Yeast. Syracuse University, Syracuse, NY, December 10, 1999

Assessing function from the Genome, Marine Biological Laboratories, February 4, 2000

Mechanisms of chromosome segregation. Brandeis University, Waltham, MA April 12, 2000.

Dynein-GFP and Astral Microtubule Dynamics in Yeast: A Microtubule-based searching mechanism for spindle orientation and nuclear migration into the bud. Gordon Conf. Fungal Cytoskeleton, Aug 15, 2000.

Real-time analysis of chromosome segregation. FASEB Conf. Chromosome Segregation, Replication and Recombination. Aug 22, 2000 Snowmass, CO.

How microtubules polarize nuclear movement in yeast. New York Society of Electron Microscopy. Columbia University, New York, New York. Oct 19., 2000

Mechanisms of chromosome segregation. University of Washington, Seattle, WA Jan. 11, 2000.

Mechanisms of chromosome segregation. University of Medicine and Dentistry at New Jersey (UMDNJ) Newark, NJ Feb 13, 2001.

Mechanisms of chromosome segregation. Columbia University, New York, New York, Feb 14, 2001

From Mendel to Medicine: Genomics in the 21st Century, College Lights Public lecture, UNC-Chapel Hill March 6, 2001.

Mechanisms of chromosome segregation. NIH, Bethesda, MD March 22, 2001

Mechanisms of Spindle Orientation: Cell Biology and the Cytoskeleton Gordon Conference June 10-14, 2001 Proctor Academy, NH

*Invited Lecture, Chromosome Dynamics in Yeast at Conference on Aneuploidy: Etiology and Mechanisms. July 7-12, 2001 Chartes, France

Mechanisms of Chromosome and RNA movement: Yeast Cell Biology Course Cold Spring Harbor July 28, 2001 CSH, NY

Chromosome Dynamics in Yeast. Symposium on the Centromere UCSB, August 10, 2001 Santa Barbara, CA

Chromosome Dynamics in Yeast Yeast Cell Biology Conference, Cold Spring Harbor, August 14, 2001 CSH, NY

Kinetochores on the Move: A dynamic protein assembly controls chromosome movement University of Boulder at Colorado, Nov. 8, 2001, Boulder, CO.

Dynamics of DNA Repair: Invited Symposium Speaker Keystone conference on Molecular Mechanisms of DNA replication and recombination Jan. 7, 2002 Snowbird Utah

Chromosome Dynamics in Yeast: Uniformed Service University for Health Sciences, Feb 27, 2002, Bethesda, MD

Dynamics of DNA Repair: Lineberger Cancer Ctr, UNC-Chapel Hill, March 6, 2002, Chapel Hill,

Chromosome Dynamics in Yeast: UC Berkely, CA. March 21, 2002, Berkeley, CA

Visualization of DNA repair Dynamics in Live Cells GRC on Mutagenesis July 28, 2002

Microtubule Plus-end binding proteins GRC on Plant and Fungal Cytoskeleton Aug 2002

Chromosome Dynamics in Yeast University of Pittsburgh, Pittsburgh, PA September 30, 2002,

Chromosome Dynamics in Yeast Yale University Oct., 30 2002, New Haven, CT
 Chromosome Dynamics in Yeast University of Chicago, Nov. 5, 2002, Chicago, IL
 Chromosome Dynamics in Yeast Emory University, Nov. 15th, Atlanta, GA.
 Mechanisms of Chromosome Segregation Invited Symposium Speaker at the Annual Meeting for the American Society of Cell Biologists (ASCB) San Francisco, CA Dec. 15, 2002
 Chromosome Dynamics UMDNJ-Rutgers, Feb 5, 2003, Piscataway, N.J
 Chromosome Dynamics and mechanisms of segregation, UC, Davis, Feb 12, 2003 Sacramento, CA
 Chromosome Dynamics and Mechanisms of Segregation, U of Pennsylvania, Feb 24th, 2003 Philadelphia, PA
 Johns Hopkins University Mar. 13 2003 Baltimore Md.
 National Cancer Institute, Mar. 20 2003 Fredricksburg, Md
 University of Texas Health Science Center at San Antonio Mar. 25 2003 San Antonio, TX
 University of Virginia, April 4th, 2003 Charlottesville, VA.
 Yeast Cell Biology, Cold Spring Harbor Aug 12-16, 2003
 Chromosome Dynamics Plasmid and Chromosome dynamics Gordon conference, Proctor Academy NH Aug 17-21, 2003
 Chromosome Dynamics Stowers Institute, Kansas City, Kansas Oct. 29, 2003
 *Invited Speaker Biomolecular Dynamics Centre Biomedical Genetics Amsterdam Nov 17-18, 2003
 Chromosome Dynamics North Carolina State November 24th, 2003
 Yeast Chromosome Segregation, Replication Recombination July 10-15th, 2004
 *Chromosome Dynamics in Yeast, Invited by Students, Zurich Switzerland October 25th, 2004
 Chromosome Dynamics Lehigh University, Pennsylvania Nov. 18th, 2004
 Minisymposium presentation, Annual meeting for American Society of Cell Biologists Dec. 4th, 2004
 Microtubule Plus-ends in Yeast Mating Keystone Polarity conference Idaho, March 4th, 2005
 *Kinetochoe Protein Dynamics Banff Conference Cellular Dynamics Banff Canada March 16th 2005
 Mechanisms of chromosome segregation: Motile Systems Gordon conference July 10-16th, 2005
 Mechanisms of chromosome segregation: Yeast Cell Biology CSH August 16, 2005
 Mechanisms of chromosome segregation: Carolina Genome Symposium Dec 2, 2005
 Mechanisms of chromosome segregation: Duke University, Durham, NCFeb 7, 2006
 Mechanisms of chromosome segregation: Princeton University, Princeton NJ April 5, 2006
 Mechanisms of chromosome segregation: University of Illinois, Chicago Ill. Nov. 29, 2005
 Mechanisms of chromosome segregation: University of Minnesota, Minneapolis, MN March 2, 2006
 * Lecturer and Invited Participant DNA and Chromosomes 2006: Physical and Biophysical Approaches June 19-July 6 Cargese, Corsica France
 Mechanisms of chromosome segregation Fungal Cytoskeleton Gordon Conf. Aug. 21st, 2006
 The Chromatin Basis for Kinetochore Bi-orientation, UMDNJ, Newark, NJ, November 21, 2006
 The Chromatin Basis for Kinetochore Bi-orientation, University of Massachusetts, Amherst, MA Dec. 5th, 2006
 The Mechanical Properties of DNA in the Mitotic Spindle Annual Meeting of the American Physical Society (Invited lecture) Denver, CO March 8th, 2007
 The Chromatin Basis for Kinetochore Bi-orientation MBL, Woods Hole July 17th, 2007
 Model Convolution Microscopy Stowers Institute Kansas City, KS Sept. 14, 2007
 The Chromatin Basis for Kinetochore Bi-orientation U of California, Santa Barbara, Nov 13, 2007
 *The Chromatin Basis for Kinetochore Bi-orientation Institute for Reseach in Immunology and Cancer, University of Montreal, Montreal Canada Feb 18th, 2008
 *The Chromatin Basis for Kinetochore Bi-orientation Univ. of Ottawa, Ottawa CA Feb 19th, 2008
 The Chromatin Basis for Kinetochore Bi-orientation Ohio State University March 26th, 2008
 Springs and Struts in the Mitotic Spindle National Institutes of Health May 28th, 2008
 The organization of Pericentric chromatin FASEB conference on Yeast Chromosome Segregation, Replication and Recombination. June 24th, 2008 Carefree Arizona

*The Chromatin Basis for Kinetochore Bi-orientation Gordon Conference Plant and Fungal Cytoskeleton Il Ciocco, Italy Aug 6th, 2008
 Springs and Struts in the Mitotic Spindle Purdue University, W. Lafayette IN September 9th, 2008
 Springs and Struts in the Mitotic Spindle University of Virginia, Charlottesville VA Oct 9th, 2008
 Springs and Struts in Mitosis Memorial Sloan Kettering Cancer Center, NY, Nov. 14th 2008
 Springs and Struts in the Mitotic Spindle Cornell University, Ithaca New York, Dec 3rd 2008
 Springs and Struts in the Mitotic Spindle University of Pittsburgh, Pittsburgh, PA Jan 20, 2009
 Centromere DNA Mechanics Fred Hutchison Cancer Ctr Seattle WA Feb. 10, 2009
 Centromere DNA Mechanics Dartmouth University, Hanover New Hampshire March 3, 2009
 Springs and Struts in Mitosis American Physical Society, Philadelphia, PA March 20, 2009
 Centromere DNA Mechanics University of Pennsylvania, Philadelphia, PA March 25, 2009
 Springs and Struts in the Mitotic Spindle University of Chicago, April 28th, 2009
 Triangle Workshop on Soft Matter NCSU Centennial Campus May 8th, 2009
 *Springs and Struts in the Mitotic Spindle Chromosome Dynamics Gordon Conference Il Ciocco, Italy May 27th, 2009
 Centromere DNA Mechanics Growth and Proliferation Gordon Conference, Maine July 7th, 2009
 Centromere DNA Mechanics Motile and Contractile Systems Gordon Conference New Hampshire July 15th, 2009
 DNA and Chromosomes 2009 Physical and Biological approaches, Corsica, France July 20th, 2009
 Springs and Struts in the Mitotic Spindle University of California Berkeley, CA Oct 28th, 2009
 Springs and Struts in the Mitotic Spindle Rockefeller University New York, NY Nov, 5th, 2009
 Springs and Struts in the Mitotic Spindle Indiana University Bloomington, IN Nov 12th, 2009
 Centromere DNA Mechanics Mid-Atlantic Centromere Workshop Bethesda MD. Nov. 17th, 2009
 Springs and Struts in the Mitotic Spindle Oklahoma Medical Research Foundation, Oklahoma City, OK, Nov. 19th, 2009
 Biophysics of Mitosis Pingree Park Cytoskeleton Conference, Fort Collins CO June 13-18, 2010
 Springs and Struts in the Mitotic spindle FASEB Research conference Yeast Chromosome Segregation, Replication and Repair. August 8-13, 2010
 Springs and Struts in the Mitotic spindle Dept. of Biology Duke U. Aug 30th, 2010
 Biophysics of Mitosis Dept of Biomedical Engineering, Duke U. November 4th, 2010
 Biophysics of Mitosis NCI National Institutes of Health, April 19th, 2011
 Springs and Struts in Mitosis KAVLI Institute UCSB, Santa Barbara, CA May 23rd, 2011
 Mitosis, Contractile and Motile Systems GRC New Hampshire Aug 1, 2011
 *Invited Speaker Current Methods in Cell Biology EMBO Practical Course, EMBL Heidelberg Germany Sept 29, 2011
 Dept of Biochemistry and Biophysics UNC-Chapel Hill Nov. 29th 2011
 Dept of Pathology and Cell Biology Columbia U. College of Physicians and Surgeons Feb. 27, 2012
 Dept. of Molecular Biology University of Colorado Anschutz Medical Campus March 8, 2012
 Dept of Molecular Genetics Rockefeller University March 28th, 2012
 *Invited Speaker Hot Topics in Biomedical Research June 29, 2012 NUI Galway Ireland
 Mitosis, FASEB Mitosis Meeting, Steamboat Springs Aug 5-10, 2012
 Keynote Speaker Mitosis, Plant and Fungal Cytosk. GRC Proctor Academy NH Aug 12-17, 2012
 Dept. of Biomedical Engineering Aug 31, 2012 NC State Centennial Campus
 DNA mechanics and Chromosome/DNA dynamics Woods Hole MA Sept 10, 2012
 Dept of Biology Brandeis University Sept 19, 2012
 *Invited speaker EMBO Meeting Centromeres and Kinetochore Barcelona, Spain Oct 1-5, 2012
 Dept of Molecular Physiology and Biophysics, Univ.of Vermont Dec 2, 2012
 Chair and Speaker Nuclear Structure and Function Minisymposium Annual Meeting ASCB 2012
 Dept of Biology Stanford University Jan. 14, 2013
 *Dept of Biochem and Molecular Biology University of Calgary April 5, 2013
 *Dept of Biology Temasek Lifesciences Laboratory (TLL) Singapore June 4, 2013

*Dept of Mechanobiology MBI NUS Singapore June 11, 2013
*Molecular and Cell Biology IMCB Biopolis A*Star, Singapore June 13, 2013
Yeast Genetics and Genomics Course Cold Spring Harbor, NY Aug 1, 2013
MIT, Biophysics Program, Cambridge MA Oct 16, 2013
Invited speaker, Special Interest Groups, ASCB Annual Meeting New Orleans, LA Dec. 12, 2013
University of North Carolina, Charlotte NC Feb. 21, 2014
University of Tennessee, Knoxville, TN March 5, 2014
Harvard University, Engineering, Physics and Biology Symposium, Invited speaker April 26, 2014
Mitosis, FASEB Yeast Chromosome structure, segregation and replication Meeting, Steamboat Springs July 13-17, 2014
Invited speaker Centromere Gordon Research Conference July 27-July 31, 2014
Dept of Molecular Biology Univ. of Wyoming Oct 17, 2014
Dept of Biology University of California, Santa Cruz Oct 20, 2014
FluoroFest Workshop: Photophysics & Life, Durham, NC November 7, 2014
*Dept of Biochemistry University of Ottawa Nov. 11 2014
Branch of Genetics NCI, NIH, Nov. 18, 2014
UNC Bioinformatics Computational Biology Mar 2, 2015
Dept of Physiology University of Pennsylvania Mar 9, 2015
Interdisciplinary Mathematics Institute, University of South Carolina Distinguished Lecturer March 23, 2015 How to build a spring from your genome
University of Arizona, Tuscon. Mitotic Springs in Cell Division April 1, 2015. Student invited speaker
*Instituto Gulbenkian DeCiencia (IGC), Oeiras, Portugal How to build a spring from your genome June 9th, 2015
Chromosome Dynamics GRC June 28- July 3, 2015 DNA loops generate intracentromere tension in mitosis
Motile and Contractile Systems GRC July 19-24 2015
Triangle Cytoskeleton Meeting Saxapahaw, NC Sept. 21, 2015
*Invited International Symposium Speaker for PiCLS “Ph.Ds in College of Life Sciences” Sept 24, 2015 Dundee UK
How to build a molecular spring “NIEHS Genome Integrity Symposium” Oct 7, 2015
*Invited speaker International symposium Chrom. replication and segregation IFOM Milan Italy April 27-28 2016.
Invited speaker Centromere Gordon Research Conference (GRS and GRC) July 23-July 29, 2016
Mitosis, FASEB Yeast Chromosome structure, segregation and replication Meeting, Snowmass CO July 31- Aug 5, 2016
DNA Reactions Workshop MBL, Woods Hole MA 9/11/16-9/16/16
Macromolecular Systems and Machines Carolina Biophysics Symp. 11/3/16-11/4/16
*How the centromere promotes chromosome segregation, University of Saskatchewan PRISM (Proteomics Res. Interactions and Struc. Of Macromolecules) Saskatoon, CA 11/17/16
*Building molecular springs that drive chromosome segregation. National University of Ireland Galway (NUIG) Feb 3rd, 2017
* Building molecular springs that drive chromosome segregation University of Cambridge, UK Mar 16, 2017
Invited speaker Keystone Meeting “Building molecular springs that drive chromosome segregation” Genomic Instability and DNA repair Santa Fe, NM April 2-6, 2017
Sculpting the chromosome landscape, Duke University May 12, 2017
*Discussion Leader Chromosome Dynamics GRC May 21-26, 2017 Il Ciocco, Italy
Invited speaker 82nd Cold Spring Harbor Symp. Quant.Biol. CSHL May 31-June 4, 2017
*Partitioning nuclear sub-domains In 2nd meeting SMC proteins Yamagata, Japan 13-16 June 2017
*Thinking about DNA in 4-dimensions Universite de Montreal, Quebec Canada Oct. 30, 2017
Minisymposium speaker 42nd SIAM Southeastern Atlantic Sectional Conf Mar 9-11, 2018

Invited speaker Mitosis, FASEB Yeast Chromosome and Cell Cycle Meeting, Steamboat Springs CO July 11-16, 2018
Invited speaker Centromere Gordon Research Conference (GRC) July 29-Aug 3, 2018
Invited seminar speaker Iowa State University Nov. 7, 2018 Des Moines Iowa
Invited Symposium Speaker Chromatin Structure in Regulation and Disease. Univ. of Virginia May 5-6, 2019
Invited speaker Chromosome Dynamics Gordon Research Conf June 23rd-Jun 28th 2019
Invited speaker Yeast Research: Origins, Insights and Breakthroughs Oct 23- Oct 26th, 2019.
Session Chair TAGC Genetics Society of America annual meeting April 25th 2020, (35) Dynamics and Regulation of Cellular Organization (Yeast)
University of Chicago Molecular Genetics and Cell Biol Oct 22nd, 2020
Rutgers New Jersey Medical School Department of Microbiology, Biochemistry and Molecular Genetics Oct 27th, 2020

Professional Service

International:

External Reviewer for Ph.D. Thesis

European School of Molecular Medicine IFOM, Milan Italy Oct 26th 2020 Frederico Zucco (Vinsintin, Rosella)

Academic Programmes Jawaharlal Nehru Centre for Advanced Scientific Research Jakkur Bangalore Aug 2017

University of Cambridge UK Mar. 2017

National University of Ireland Feb 2017

National University of Singapore Oct. 2016

Instituto Gulbenkian DeCiencia (IGC), Oeiras, Portugal June 8th, 2015

University of Ottawa, Canada Nov 10th, 2014

Leiden University, Netherlands Nov. 1994

Invited Lecturer for a Three Week Course on DNA and Chromosomes at the Institut d'Etudes Scientifiques de Cargese June 19-July 1, 2006; July 20-Aug 1, 2009

National:

Organizer: FASEB Yeast Chromosome Segregation Replication and Recombination 1994

Organizer: Yeast Cell Biology Meeting Cold Spring Harbor Laboratories 2011, 2007, 2005

Chair: Gordon Conference Contractile and Motile Systems 2009, co-chair 2007

Member: Program Committee Annual Meeting ASCB 2016

Secretary: ASCB 2018-2021, Chair of Membership Committee ASCB

Editor: Molecular Biology of the Cell 01/18- present

Marine Biological Laboratory

Physiology Cell and Molecular Biology 1985-1990 Assist. Director 1989-1990 36 students

Physiology Cell and Molecular Biology 1995-1998 Co-Director 1997-1998 36 students

Science Council Member and Chair of the Science Council (elected position) for the Marine Biological Laboratory at Woods Hole, MA 1999-2001

Member: Strategic Planning Board for the Marine Biological Laboratory, MA 2001- present
Co-Chair of the Educational Programs Task Force (Dec, 2001- April, 2002)

Member: Board of Trustees for the Marine Biological Laboratory, MA 1999-2001

Instructor: Science Writers Fellowship Program Marine Biological Laboratory, MA 6/01- 6/06

Director of Hands-On Laboratory: Science Writers Fellowship Program 2006-2010 12 Science Journalist Students

Carolina Workshop: Yeast Molecular Genetics March 2-17, 1992 25 Students

Invited Lecturer for a One Week Series on Chromosomes and Cell Cycle: University of Washington Seattle: Cell Cycle Regulation 1989 75 students

National Institutes of Health

Study Section: Member NIH study section in Molecular Cytology 10/86-6/91

Member National Institutes of Health Biological Regulation I July 1999-2001

Member National Institutes of Health Nuclear Dynamics and Transport (NDT) Oct 2007-2008

Full Member Nuclear and Cytoskeletal Structure and Dynamics NCSD (formerly NDT) Study Section Oct 2008-2012

AdHoc February, 2014 NCSD

Reviewer for 2016/05 ZRG1 CB-L (50) R

RFA-GM-16-003: Maximizing Investigators' Research Award for New and Early Stage Investigators (R35) 3/14/16-3/15/16

AdHoc reviewer for ZRG1 CB-T(03) 07/28/2016

DP5 Program: ZRG1 RPHB-W 53 R, 2017/05 (Mail reviewer Dec. 2016)

Reviewer and Chair NIH 2018/01 ZRG1 CB-C (02)

Reviewer PAR-17-094: Maximizing Investigators' Research Award (MIRA)(R35) Oct 10-11, 2018

CSR 3/18/2020; MIRA R35 Awards June 16-18, 2020.

Reviewer Special Emphasis Panel/Scientific Review Group Nov. 9,10 2020 ZRG1 CB-J (55) R meeting.

National Committees and Review Boards

Review Panel for the Department of Biology at the University of Kentucky. Chair of Committee 2005

Review Panel for the Department of Biology at the University of Virginia, Charlottesville, VA September 8th, 2007

Member of Advisory committee for the National Laboratory for X-Ray Tomography, Lawrence Berkeley Livermore Laboratories, Berkeley CA September 21st, 2007

Workshop on Nuclear Reactor to explore biological applications for a Free Electron Lase Massachusetts Institutue of Technology, September 22nd, 2007

Editor CellBase Digital Library American Society of Cell Biology 2008-2009

Review Panel for the Department of Molecular Cellular Biology at the University of Arizona, Tuscon, Chair of Committee 2010

Member Education Committee Marine Biological Laboratory, Woods Hole. Jan 2011 to Jan 2016

Review Panel Life Sciences Research Foundation (LSRF) 2007- present

External Reviewer Cell Biology Unit EMBL, Heidelberg, Germany April 2012

Program Committee ASCB 2016 Annual meeting

Program Review LRBGE, NIH Nov. 18, 2014

Program Review LBMB, NIH May 19-21, 2015

Review Panel for Molec and Cell Biology, Univ of Connecticut, Storrs Chair of Committee April 18, 2016

University:

Chair: Winston Churchill Foundation Scholarships, Undergraduate Education 1999

Executive Board and Admissions Committee, InterDisciplinary Program in the Biomedical Sciences

Member: Genetics Curriculum, Executive Board, Genetics Curriculum

Member: Appointments, Promotions and Tenure Committee, School of Dentistry, UNC-Chapel Hill
2000-2009

Principal Investigator: Training Grant in Cell and Molecular Biology 1999-2000 (NIH)

Faculty Council: elected councilor 2007- 2010

Faculty Research Committee 2008-2013, Chair 2010-2013

Member Nominating Committee for Faculty Council, 2011-2013

Faculty Council: elected councilor 2017- 2020

Teaching

Bio 202H Molecular Biology and Genetics Spring 2017 24 students

Bio 542 Intro to Light Microscopy Fall 2016 30 students

Bio 649 Seminar in Cell Biology fall 2016 4 students

Bio202H Molecular Biology and Genetics Spring 2016 24 students

Bio 542 Intro to Light Microscopy Fall 2015 6 students

Bio 649 Seminar in Cell Biology fall 2015 4 students

Bio542 Intro to Light Microscopy Spring 2015 24 students

Bio202 Molecular Biology and Genetics Fall 2014 260 students

Bio 649 Seminar in Cell Biology fall 2014 12 students

Departmental Committees: Director of Graduate Studies 1993-2002

Public Outreach

Mentorship sponsor for a student in the North Carolina School of Science and Mathematics for the year 1997-2001

Teach Science Lab at Culbreth Elementary for Science Exploration Day (1997-2001)

Teach a Microbiology Section in Culbreth Elementary for Special Topics Day (1997-2001)

Tech Talk Lecture: Raleigh Charter High School Nov. 13, 2014

Teaching

I am committed to the goal of integrating research and teaching activities. In addition to teaching duties at UNC-CH (one undergraduate course, ~200 students; one graduate course, ~25 students each year), I've taught and directed *Physiology: Cell and Molecular Biology*, a 6-week intensive course at the Marine Biological Laboratory, Woods Hole, MA for 10 years from the late 1980s to 1990s. I was Director of the *Science Writers Fellowship Program* at the MBL. This is a 10-day course for science journalists to gain a "wet-lab" experience. On a personal note, I interviewed for Chairman of a Cell Biology department in a Medical School, and a Dean of Arts and Sciences position at one of the UC system schools. I learned a great deal about myself at these interviews, and the experience was succinctly summarized by one of the interviewers. Questions were raised about undergraduates and my commitment to teaching. One interviewer commented, "My face lit up when discussing the various students and undergraduate projects". I reflected upon this comment and realized that, indeed, I find my greatest personal rewards in the undergraduate arena. I've been very lucky with having stellar undergraduates at UNC-CH. I decided that above all I must keep in touch with undergraduates in my professional activities. I taught in a three week intensive workshop "DNA and Chromosomes: Physical and Biological Approaches" in the Institut d'Etudes Scientifiques de Cargese in Cargese, Corsica France in 2006 and 2009.