

CURRICULUM VITAE

Personal Data:

Name: John H. J. Petrini
Date of Birth: May 30, 1960
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Education:

1982 BA Kalamazoo College
Kalamazoo, MI
1988 Ph. D. University of Michigan Medical School
Ann Arbor, MI

Post-doctoral training:

1988-1989 Postdoctoral Associate, Fox Chase Cancer Center.
In the laboratory of Dr. M. J. Bosma
1989-1994 Postdoctoral Associate, Dana-Farber Cancer Institute,
Harvard Medical School. In the laboratory of Dr. David
T. Weaver.

Academic Appointments:

1994 Assistant Professor, Department of Medical Genetics
University of Wisconsin Medical School
1999 Associate Professor (with tenure), Department of Medical
Genetics, University of Wisconsin Medical School.
2002 Member, Memorial Sloan Kettering Cancer Center.
2002 Professor, Weill Graduate School of Medical Sciences at
Cornell University.

Peer Review Service:

2003-Present Founding Organizer Genome Integrity Discussion Group New
York Academy of Sciences
2006-2008 Adhoc member of MGB Study Section
2009 FASEB meeting on Genetic Recombination – Co Organizer
2011 FASEB meeting on Genetic Recombination and Genome
Rearrangements - Organizer
2008-2011 Science Foundation of Ireland, Executive Panel Member
2008-2012 Cancer Etiology Study Section

Editorial Boards

1999-2003	Member of Editorial Board, Mutation Research
1999-2002	Member of Editorial Board, Molecular and Cellular Biology
2005-Present	Senior Editor, Molecular Cancer Research
2009-Present	Joint Editor-in-Chief, Genome Integrity
2010-Present	Board of Review Editors, Science

Awards and Fellowships:

1993-1996	Leukemia Society of America Special Fellowship
1995-1997	ACS Research Grant Recipient
1995-1996	Collaborative Research Award (UW Medical School)
1996-1998	Basil O'Connor Scholar of The March of Dimes Foundation
1996	HHMI New Faculty Startup
1996-2000	Milwaukee Foundation Shaw Scientist Award
1999	Human Frontiers Research Grant Awardee
2000	Radiation Research Society Michael Fry Award.
2000-2006	The Joel and Joan Smilow Initiative for Research in Genomic Integrity
2005-Present	Paul A. Marks Chair in Molecular Cell Biology

Student research preceptorships:

Debra A. Bressan	1994 to 1999	UW Graduate student in Genetics
Richard S. Maser	1994 to 2000	UW Graduate student in Genetics
Junyu Lin	1998 to 1999	UW Graduate student in Genetics
Carla F. Bender	1998 to 2002	UW Graduate student in Genetics
Bret Williams	1999 to 2005	UW CMB Graduate student
Chantal Ly	1999 to 2002	UW CMB Graduate student
Santos Franco	2001 to 2002	UW CMB Graduate student
James Flemming	2003 to 2004	Cornell MCB Graduate student
Jan Theunissen	2001 to 2005	Cornell University MCB Graduate student
Carrie Adelman	2002 to 2008	Cornell MCB Graduate student
Muge Akpınar	2008 to 2010	GSK Graduate student
Kendall Olsen	2009 to 2010	GSK Graduate student

Publications:

(⇒ Indicates shared senior authorship)

1. Szurek, P., **Petrini, J.H.**, and Dunnick W. (1985). *Complete nucleotide sequence of the murine gamma 3 switch region and analysis of switch recombination sites in two gamma 3-expressing hybridomas.* J Immunol, **135**. 620-626.
2. **Petrini, J.H.**, Shell, B., Hummel, M., and Dunnick, W. (1987). *The immunoglobulin heavy chain switch: structural features of gamma 1 recombinant switch regions.* J Immunol, **138**. 1940-1946.

3. Carroll, A.M., Hardy, R.R., **Petrini, J.H.**, and Bosma, M.J. (1989). *T cell leakiness in scid mice*. *Curr Top Microbiol Immunol*, **152**. 117-123.
4. **Petrini, J.H.**, and Dunnick W.A. (1989). *Products and implied mechanism of H chain switch recombination*. *J Immunol*, **142**. 2932-2935.
5. **Petrini, J.H.**, Carroll A.M., and Bosma M.J. (1990). *T-cell receptor gene rearrangements in functional T-cell clones from severe combined immune deficient (scid) mice: reversion of the scid phenotype in individual lymphocyte progenitors*. *Proc Natl Acad Sci U S A*, **87**. 3450-3453.
6. Schultz, C., **Petrini, J.H.**, Collins, J., Claflin, J.L., Denis, K.A., Gearhart, P., Gritzmacher, C., Manser, T., Schulman, M., and Dunnick, W. (1990). *Patterns and extent of isotype-specificity in the murine H chain switch DNA rearrangement*. *J Immunol*, **144**. 363-370.
7. **Petrini, J.H.**, Huwiler K.G., and Weaver D.T. (1991). *A wild-type DNA ligase I gene is expressed in Bloom's syndrome cells*. *Proc Natl Acad Sci U S A*, **88**. 7615-7619.
8. Vivier, E., Rochet, N., Ackerly, M., **Petrini, J.H.**, Levine H., Daley J., and Anderson, P. (1992). *Signaling function of reconstituted CD16: zeta: gamma receptor complex isoforms*. *Int Immunol*, **4**. 1313-1323.
9. **Petrini, J.H.**, Donovan, J.W., Dimare, C., and Weaver, D.T. (1994). *Normal V(D)J coding junction formation in DNA ligase I deficiency syndromes*. *J Immunol*, **152**. 176-183.
10. **Petrini, J.H.**, Walsh, M.E., DiMare C., Chen, X.N., Korenberg, J.R. and Weaver, D.T. (1995). *Isolation and characterization of the human MRE11 homologue*. *Genomics*, **29**. 80-86.
11. **Petrini, J.H.**, Y. Xiao, and Weaver, D.T. (1995). *DNA ligase I mediates essential functions in mammalian cells*. *Mol Cell Biol*, **15**. 4303-4308.
12. Dolganov, G.M., Maser, R.S., Novikov, A., Tosto, L., Chong, S., Bressan, D.A., and **Petrini, J.H.** (1996). *Human Rad50 is physically associated with human Mre11: identification of a conserved multiprotein complex implicated in recombinational DNA repair*. *Mol Cell Biol*, **16**. 4832-4841.
13. Maser, R.S., Monsen, K.J., Nelms, B.E., and **Petrini, J.H.** (1997). *Mre11 and hRad50 nuclear foci are induced during the normal cellular response to DNA double-strand breaks*. *Mol Cell Biol*, **17**. 6087-6096.
14. **Petrini, J.H.**, Bressan, D.A. and Yao, M.S. (1997). *The RAD52 epistasis group in mammalian double strand break repair*. *Semin Immunol*, **9**. 181-188.
15. Bressan, D.A., Olivares, H.A., Nelms, B.E., and **Petrini, J.H.** (1998). *Alteration of N-terminal phosphoesterase signature motifs inactivates Saccharomyces cerevisiae Mre11*. *Genetics*, **150**. 591-600.
16. Carney, J.P., Maser R.S., Olivares, H., Davis, E.M., Le Beau, M., Yates JR 3rd, Hays, L., Morgan W.F., and **Petrini, J.H.** (1998). *The hMre11/hRad50 protein complex and Nijmegen breakage syndrome: linkage of double-strand break repair to the cellular DNA damage response*. *Cell*, **93**. 477-486.
17. Nelms, B.E., Maser, R.S., MacKay, J.F., Lagally M.G., and **Petrini, J.H.** (1998). *In situ visualization of DNA double-strand break repair in human fibroblasts*. *Science*, **280**. 590-592.

18. Bressan, D.A., Baxter, B.K. and **Petrini, J.H.** (1999). *The Mre11-Rad50-Xrs2 protein complex facilitates homologous recombination-based double-strand break repair in Saccharomyces cerevisiae*. Mol Cell Biol, **19**. 7681-7687.
19. Luo, G., Yao, M.S. Bender, C.F., Mills, M., Bladl, A.R., Bradley, A. and **Petrini, J.H.**, (1999). *Disruption of mRad50 causes embryonic stem cell lethality, abnormal embryonic development, and sensitivity to ionizing radiation*. Proc Natl Acad Sci U S A, **96**. 7376-7381.
20. **Petrini, J.H.** (1999). *The mammalian Mre11-Rad50-nbs1 protein complex: integration of functions in the cellular DNA-damage response*. Am J Hum Genet, **64**. 1264-1269.
21. ⇒ Stewart, G.S., Maser, R.S., Stankovic, T., Bressan, D.A., Kaplan, M.I., Jaspers, N.G., Raams, A., Byrd, P.J., **Petrini, J.H.**, and Taylor, A.M. (1999). *The DNA double-strand break repair gene hMRE11 is mutated in individuals with an ataxia-telangiectasia-like disorder*. Cell, **99**. 577-587.
22. Girard, P.M. Foray, N., Stumm, M., Waugh, A., Riballo, E., Maser, R.S., Phillips, W.P., **Petrini, J.H.**, Arlett, C.F., and Jeggo, P.A. (2000). *Radiosensitivity in Nijmegen Breakage Syndrome cells is attributable to a repair defect and not cell cycle checkpoint defects*. Can. Res., **60**. 4881-4888.
23. Lim, D.S., Kim, S.T., Xu, B., Maser, R.S., Lin, J., **Petrini, J.H.**, and Kastan, M.B. (2000). *ATM phosphorylates p95/nbs1 in an S-phase checkpoint pathway*. Nature, **404**. 613-617.
24. **Petrini, J.H.** (2000). *When more is better*. Nat Genet, **26**. 257-258.
25. **Petrini, J.H.** (2000). *The Mre11 complex and ATM: collaborating to navigate S phase*. Curr Opin Cell Biol, **12**. 293-296.
26. Wu, X., **Petrini, J.H.**, Heine W.F., Weaver D.T., Livingston, D.M. and Chen, J. (2000). *Independence of R/M/N focus formation and the presence of intact BRCA1*. Science, **289**. 11.
27. Zhu, X.D., Kuster, B., Mann, M. **Petrini, J.H.**, and de Lange, T. (2000). *Cell-cycle-regulated association of RAD50/MRE11/NBS1 with TRF2 and human telomeres*. Nat Genet, **25**. 347-352.
28. **Petrini, J.H.** (2000). *S phase functions of the Mre11 complex*. CSHSQB, **65**: p. 405-411.
29. De Lange, T. and **Petrini, J.H.** (2001). *A new connection at human telomeres: association of the Mre11 complex with TRF2*. CSHSQB, **65**. 265-273.
30. Maser, R.S., Zinkel R., and **Petrini, J.H.** (2001). *An alternative mode of translation permits production of a variant NBS1 protein from the common Nijmegen breakage syndrome allele*. Nat Genet, **27**. 417-421.
31. Maser, R.S., Bressan D.A., and **Petrini, J.H.** (2001). *The Mre11-Rad50 Complex: Diverse Functions in the Cellular DNA Damage Response*, in *DNA Damage and Repair*, M.F. Hoekstra and J.A. Nickoloff, Editors. Humana Press: Totowa.
32. Mirzoeva, O.K. and **Petrini, J.H.** (2001). *DNA damage-dependent nuclear dynamics of the Mre11 complex*. Mol Cell Biol, **21**. 281-288.
33. ⇒ Usui, T., Ogawa H., and **Petrini, J.H.** (2001). *A DNA damage response pathway controlled by Tel1 and the Mre11 complex*. Mol Cell, **7**. 1255-1266.
34. Maser, R.S., Mirzoeva, O.K., Wells, J., Olivares, H., Williams, B.R., Zinkel, R.A., Farnham, P.J., and **Petrini, J.H.** (2001). *The MRE11 complex and DNA replication: linkage to E2F and sites of DNA synthesis*. Mol Cell Biol, **21**. 6006-6016.

35. Lee, S. E., Bressan, D. A., **Petrini, J.H.**, and Haber, J. E. (2002). *Complementation between N-terminal Saccharomyces cerevisiae mre11 alleles in DNA repair and telomere length maintenance*. DNA Repair, **1**. 27-40.
36. Bender, C. F., Sikes M. L., Sullivan R., Huye L.E., Le Beau M. M., Roth D. B., Mirzoeva, O.K., Oltz E. M., and **Petrini, J.H.** (2002). *Cancer predisposition and hematopoietic failure in Rad50S/S mice*. Genes Dev, **16**. 2237-2251.
37. Williams, B. R., Mirzoeva, O. K., Morgan, W. F., Lin, J., Dunnick, W. and **Petrini, J.H.** (2002). *A murine model of Nijmegen breakage syndrome*. Current Biology, **12**. 648-653.
38. Falck, J., **Petrini, J.H.**, Williams, B. R., Lukas, J., and Bartek, J. (2002). *The DNA damage-dependent intra-S phase checkpoint is regulated by parallel pathways*. Nat Genet, **30**. 290-294.
39. ⇒ Hopfner, K. P., Craig, L., Moncalian, G., Zinkel, R.A., Usui, T., Owen, B.A., Karcher, A., Henderson, B., Bodmer, J.L., McMurray, C.T., Carney, J. P., **Petrini, J.H.**, and Tainer, J. A. (2002). *The Rad50 molecular hook: a novel structure underlying Mre11 complex functions in DNA recombination and repair*. Nature, **418**. 562-566.
40. Mirzoeva, O. K. and **Petrini, J.H.** (2003). *DNA Replication-dependent nuclear dynamics of the Mre11 complex*. Molecular Can Res., **1**. 207-218.
41. **Petrini, J.H.**, and Stracker T. H. (2003). *The cellular response to DNA double strand breaks: defining the sensors and mediators*. Trends in Cell Biology, **13**. 458-462.
42. Theunissen, J-W. F., Kaplan, M. I., Hunt, P. A., Williams, B. R., Fergusson, D. O., Alt, F. W., and **Petrini, J.H.** (2003). *Checkpoint failure and chromosomal instability without lymphomagenesis in Mre11^{ATLD1/ATLD1} mice*. Mol Cell, **12**. 1511-23
43. Borde, V., Lin, W., Novikov, E., **Petrini, J.H.**, Lichten, M., and Nicolas, A. (2004). *Association of Mre11p with double strand break sites during yeast meiosis*. Mol Cell, **13**. 389-401.
44. **Petrini, J.H.** and Theunissen. J-W. F. (2004). *Double strand break metabolism and cancer susceptibility: Lessons from the Mre11 complex*. Cell Cycle, **3**. 541-542.
45. Stracker, T.H. Theunissen J-W. F. Morales, M. and **Petrini, J.H.** (2004). *The Mre11 complex and the metabolism of chromosome breaks: the importance of communicating and holding things together*. DNA Repair, **3**. 845-854.
46. Karlseder, J. Hoke, K. Mirzoeva, O. K. Bakkenist, C. Kastan, M. B. **Petrini, J.H.**, and de Lange T. (2004). *The telomeric protein TRF2 binds the ATM kinase and can inhibit the ATM dependent DNA damage response* PloS, **2**. 1150-1156.
47. Shroff, R. Arbel-Eden, A. Pilch, D. Ira, G. Bonner, W. M. **Petrini, J.H.**, Haber, J. E. and Lichten, M. (2004). *Distribution and dynamics of chromatin modification induced by a defined DNA double strand break*. Current Biology, **14**. 1703-1711.
48. Wiltzius. Jed J. W., Hohl. Marcel, Fleming James C., **Petrini, J.H.** (2005). *The Rad50 hook domain is required for Mre11 complex functions in DNA repair, telomere maintenance and meiotic double strand break formation*. Nat Struct Mol Biol. **12**. 403-407
49. Chiolo, I., Carotenuto, W., Maffioloetti, G., **Petrini, J.H.**, Foiani, M., and Liberi, G. (2005). *Srs2 and Sgs1 DNA helicases associate with Mre11 in different sub-complexes following checkpoint activation and CDK1-mediated Srs2 phosphorylation*. Mol Cell Biol, **25**. 5738-5751
50. Levran, O., Attwooll, C., Henry, R.T., Milton, K.L., Neveling, K., Rio, P., Batish, S.D., Kalb, R., Velleuer, E., Barral, S., Ott, J., **Petrini, J.H.**, Schindler, D., Hanenberg, H., and

- Auerbach, A.D. (2005). *The BRCA1-interacting helicase BRIP1 is deficient in Fanconi anemia*. Nat Genet, **37**. 931-933.
51. Theunissen J-W. F., **Petrini, J.H.** (2005). *Methods for studying the cellular response to DNA damage: influence of the Mre11 complex on chromosome metabolism*. Methods in Enzymology, **409**. 251-284
 52. Adelman, C., **Petrini, J.H.**, and Attwooll, C. (2005) *Modeling Disease in the Mouse: Lessons from DNA Damage Response and Cell Cycle Control Genes*. Journal of Cellular Biochemistry, **97**, 459-473.
 53. Morales, M, Theunissen, JWF, Bender Kim, CF, Kitagawa, R, Kastan, M. B., **Petrini, J.H.** (2005). *The Rad50S allele promotes ATM-dependent DNA damage responses and suppresses ATM deficiency: Implications for the Mre11 complex as a DNA damage sensor*. Genes Dev, **19**. 3043-3054
 54. **Petrini, J.H.** (2005). *At the end, remodeling leads to eviction*. Nature Structural & Molecular Biology, **12**. 1028 –1029
 55. Heikkinen K, Rapakko K, Karppinen SM, Erkkö H, Knuutila S, Lundan T, Mannermaa A, Borresen-Dale, AL, Borg A, Barkardottir RB, **Petrini, J.H.**, Winqvist R. (2006). *RAD50 and NBS1 are breast cancer susceptibility genes associated with genomic instability*. Carcinogenesis. **8**. 1593-9
 56. Usui, T., **Petrini, J.H.**, (2007) *The S. cerevisiae 14-3-3 Proteins Bmh1 and Bmh2 Directly Influence the DNA Damage-Dependent Functions of Rad53*. Proc. Natl. Acad. Sci. **104**. 2797-2802
 57. Krishna, S., Wagener, B., Liu, Hui Ping, Sterk, R., **Petrini, J.H.**, Nickoloff, J. (2007). *Mre11 and Ku regulation of double-strand break repair by gene conversion and break-induced replication* DNA Repair. **6**. 797-808
 58. Cherry, S.M., Adelman, C.A., Theunissen, J.W., Hassold, T.J., Hunt, P.A., **Petrini, J.H.** (2007) *The Mre11 Complex Influences DNA Repair, Synapsis, and Crossing Over in Murine Meiosis*. Current Biology. **17**. 373-378
 59. Stracker, T.H., Morales, M., Couto, S.S., Hussein, H., **Petrini, J.H.** (2007) *The C-terminus of Nbs1 is required for Mre11 complex dependent induction of apoptosis*. Nature, **447**. 218-223
 60. Kim, H., Vijayakumar, S., Reger, M., Harrison, J., Haber, J.E., Weil, C., **Petrini, J.H.** (2008) *Functional interactions between Sae2 and the Mre11 complex*. Genetics. **178**. 711-723
 61. Morales, M., Liu, Y., Laiakis, E. C., Morgan, W.F., Nimer, S. D., **Petrini, J.H.** (2008) *DNA damage signaling alters the behavior of primitive hematopoietic cells: A role for Mre11 complex-mediated repair of topoisomerase lesions*. Can Res. **68**. 2186-2193
 62. Adelman, C., **Petrini, J.H.** (2008) *ZIP4H (TEX11) Deficiency in the Mouse Impairs Meiotic Double Strand Break Repair and the Regulation of Crossing Over*. PLoS Genet **4**(3): e1000042. Doi: 10.1371/journal.pgen.1000042
 63. Stracker, T.H., Cuoto, S.S., Cardon-Cardo, C., Matos, T., **Petrini, J.H.** (2008) *Chk2 suppresses the oncogenic potential of DNA replication-associated DNA damage*. Mol Cell **31**. 21-32
 64. Stracker, T.H., **Petrini, J.H.** (2008) *Working together and apart: the twisted relationship of the Mre11 complex and Chk2 in apoptosis and tumor suppression*. Cell Cycle. **23**. 3618-3621
 65. Stracker, T.H., Williams, B.R., Deriano, L., Theunissen, J.W., Adelman, C.A., Roth, D.B., and **Petrini, J.H.** (2009) *Artemis and NHEJ -independent influence of DNA-PKcs on chromosome stability*. Mol. Cell. Biol. **29**. 503-514
 66. Adelman, C., De, S., **Petrini, J.H.** (2009) *Rad50 is dispensable for the maintenance and viability of post-mitotic tissues*. Mol Cell Biol. **29**. 483-492

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68. Usui, T., Foster, S. S., and **Petrini, J.H.** (2009) *Maintenance of the DNA damage checkpoint requires DNA damage-induced mediator protein oligomerization*. *Mol Cell.* **33**.147-159
69. Deriano, L., Stracker, T.H., Baker, A., **Petrini, J.H.**, Roth, D.B., (2009) *Roles for NBS1 in alternative and joining of V (D) J recombination intermediates*. *Mol Cell.* **34**. 13-25
70. Adelman, C., **Petrini, J.H.** (2009) *Division Of Labor: DNA repair and the cell cycle specific functions of the Mre11 Complex*. *Cell Cycle.* **8**. 1-5
71. Halberg, R., Waggoner, J., Rasmussen, K., White, A., Clipson, L., Prunuske, A., Bacher, J., Sullivan, R., Washington, M., Pitot, H., **Petrini, J. H.**, Albertson, D., Dove, W. (2009) *Long-lived Min Mice Develop Advanced Intestinal Cancers through a Genetically Conservative Pathway*. *Can Res.* **69**. (14) 5768-75
72. **Petrini, J.H.** (2009) *DNA Replication Reaches the Breaking Point*. *Cell.* **137**. 211-212
73. Stracker, TH, Usui, T., **Petrini, J.H.** (2009) *Taking the time to make important decisions: The checkpoint effector kinases Chk1 and Chk2 and the DNA damage response*. *DNA Repair.* **8**. (9) 1047-1054
74. Attwool, C. Akpınar, M., **Petrini, J.H.** (2009) *The Mre11 Complex and Response to Dysfunctional Telomeres*. *Mol Cell Biol.* 2009 Oct; 29 (20): 5540-51. PMID: 19667076
75. Brungmans, L., Verkaik, N., Kunen, M., Van Drunen, E., Williams, B., **Petrini, J.H.**, Kanaar, R., Essers, J., Van Gent, D. (2009) *NBS1 cooperates with homologous recombination to counteract chromosomes breakage during replication*. *DNA Repair.* **8** 1363–1370
76. Squatrito, M., Brennan, C.W., Helmey, K., Huse T., **Petrini J.H.**, Holland, E. (2010) *Loss of ATM/Chk2/p53 pathway components accelerates tumor development and contributes to radiation resistance in gliomas*. *Cancer cell.* **18**(6): 619-29
77. Stracker, T.H., **Petrini, J.H.** (2011) *The MRE11 Complex: Starting from the ends*. *Nat Rev Mol. Cell Biol.* 12:90-103 12, 90-103
78. Hohl, M., Kwon Y., Galvan M. S., Xue, X., Tous, C., Aguilera A., Sung, P., **Petrini, J.H.** (2011) *The Rad50 Coiled Coil Domain is indispensable for Mre11 complex functions*. *Nat. Struct. Mol. Biol.*, **18**(10):1124-31 PMID: 21892167
79. Foster, S., Balestrini, A., **Petrini, J.H.** (2011) *Functional interplay of the Mre11 nuclease and Ku in the response to replication-associated DNA damage*, *Mol Cell Biol.*, **31**(21): 4379-4389