

Curriculum Vitae

DAVID JONATHAN BRENNER, Ph.D., D.Sc.

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Date of Birth: 9 June 1953
Place of Birth: Liverpool, England
Nationality: British
Status: Permanent Resident of USA
Education: 1963-1970 Merchant Taylors' School, Liverpool, England.

1971-1974 Oxford University, St. Edmund Hall,
reading Physics and Philosophy.
Awarded Carter Physics Prize, 1974.
Degrees obtained: B.A., M.A.

1975-1976 Medical College of St. Bartholomew's Hospital, University
of London.
Degree obtained: M.Sc. in Radiation Physics (Distinction)

1976-1979 University of Surrey, Physics Department
Degree obtained: Ph.D.
Thesis Title: *Pion Interactions with Light Nuclei and
Applications to Radiotherapy*

APPOINTMENTS

2008- Higgins Professor of Radiation Biophysics and Director,
Center for Radiological Research, Columbia University Medical Center,
Professor of Environmental Health Sciences.

1994- Professor of Radiation Oncology and Public Health, and Director,
Radiological Research Accelerator Facility, Center for Radiological
Research, Columbia University Medical Center.

1993-94 Tenured Associate Professor of Radiation Oncology and Public Health,
Center for Radiological Research, College of Physicians & Surgeons of
Columbia University.

1992-93 Associate Professor of Radiation Oncology (Tenure), Center for
Radiological Research, College of Physicians & Surgeons of Columbia
University.

1986-92 Assistant Professor of Radiation Oncology, College of Physicians &
Surgeons of Columbia University.

1983-86 Associate Research Scientist, Radiological Research Laboratory, College
of Physicians & Surgeons of Columbia University.

1981-83 Staff Member, Los Alamos National Laboratory.
1979-81 Postdoctoral Fellow, Los Alamos Scientific Laboratory.

AWARDS

Radiation Research Society Failla Gold Medal Award, 2011
Herbert L. Abrams Lecturer, Brigham and Women's Hospital, Boston, 2011
Douglas Lea Lecturer, UK Radiation Oncology Congress, 2009
Selby Lecturer, Memorial Sloan Kettering Cancer Center, 2009
G. William Morgan Lecturer, Health Physics Society, 2008
Jean Roy Memorial Lecturer, Canadian Association of Radiation Oncology, 2002
University of California, Berkeley, Miller Professor, 2002
Honorary Degree (Doctor of Science), Oxford University, 1996.
Winner, 1992 National Council on Radiation Protection and Measurements, Robert D. Moseley Award for Radiation Protection in Medicine.
Winner, 1991 Radiation Research Society Annual Research Award.
Oxford University Carter Physics Prize, 1974

P.I. of NIH Grant "*High Throughput Technology for Assessing Global DSB Repair Capacity*" 2011-13
P.I. of NIH Grant "*Center for Minimally-Invasive High-Throughput Radiation Biodosimetry*" 2005-15
P.I. of NIH grant "*Radiological Research Accelerator Facility*" 1996-2013
P.I. of NIH grant "*Cancer Risks Attributable to Radiation from Pediatric CT*" 2002-2007
P.I. of DOE grant "*A Validated High-LET-Radiation Specific Biomarker in the Mayak Worker Cohort*" 2001-2009
P.I. of DOE grant "*The Bystander Effect: Modeling, experiments, and More Modeling*" 2001-2007
P.I. of DOE grant: "*mFISH Measurements of Chromosomal Aberrations in Individuals Exposed In Utero to Low Doses of Gamma Rays*" 2002-2005
P.I. of Society of Pediatric Radiology grant: "*Credible risk estimates for pediatric CT examinations*" 2001-2002
P.I. of NIH grant "*Clinical mammographic imaging and cancer risks*" 1998-2001
P.I. of DOE grant "*Genetic, cytogenetic and oncogenic effects of low doses of low-energy (< 50 keV) x rays, measured at the National Synchrotron Light Source*" 1998-2002
P.I. of NIH grant "*Chromosomal Fingerprints of Exposure to Neutrons and α Particles*", 1996-2000
P.I. of NASA grant "*Dose Rate Effects with Fast Protons*", 1992-1993.
P.I. of ACS Grant "*High vs Low Dose Rate for Cervical Carcinoma*", 1991-1994.
P.I. of NIH grant "*Radon, Bronchial Morphometry and Occupational Health*", 1991-1994
P.I. of NIH Grant "*Early Effects of Radiation-Induced Radicals*", 1985-1989

MEMBERSHIPS and COMMITTEES

Director, Radiological Research Accelerator Facility, Columbia University
Member, National Council on Radiation Protection and Measurements (NCRP)
Member, National Academy of Sciences BEIR VI Committee, 1994-98
Member, NCRP Committee 1-6, on Linearity of Dose Response, 1995-2000
Chairperson, Columbia University Radiation Safety Committees, 1992-
Editorial Board, Radiation and Environmental Biophysics, 2002-
Member EPA Science Advisory Sub-Committee on Radon Research, 1993-96.
Associate Editor, International Journal of Radiation Biology, 1991-1996
Member, Columbia University Senate, 1985-1987.
Physics Councilor, Radiation Research Society Executive Council, 1993-1996.

TEACHING

Teacher, Columbia University School of Public Health *Core Course in Environmental Sciences*.
Teacher of *Radiobiology for Radiation Oncology/Radiology Residents* (Columbia-Presbyterian Medical Center).

Teacher of Columbia University School of Public Health course P6320, *Radon, Risk and Remedy*

Teacher of undergraduate course *Radiation and Life*. Columbia University, Dept. of Biology,

PATENTS GRANTED

US Patent 5,818,054: *Substance Detection with Monoenergetic Neutrons* (with G. Randers-Pehrson)

BOOKS

"*Radon, Risk and Remedy*", D. J. Brenner (W. H. Freeman, New York, 1989).

"*Making the Radiotherapy Decision*", D. J. Brenner and E. J. Hall (Lowell House, 1996)

PEER-REVIEWED PAPERS

- 1.* Brenner, D. J. and Smith, F. A. *Dose and LET distributions due to neutrons and photons emitted from stopped negative pions*. Phys. Med. Biol., 22, 451-465 (1977).
- 2.* Brenner, D. J. and Reading, D. H. *A method for measuring neutron spectra in a stopping pion field*, Nucl. Instr. Meth., 153, 137-144 (1978).
3. Jackson, D. F. and Brenner, D. J. *Nuclear interactions for medical purposes*, Prog. Part. Nucl. Phys., 5, 143-204 (1981).
- 4.* Brenner, D. J. *Monte Carlo self-shielding corrections for use with neutron spectrum unfolding codes*, Nucl. Sci. Eng., 78, 175-177 (1981).
5. Zaider, M., Dicello, J. F., Brenner, D. J., Takai, M., Raju, M. R. and Howard, J. *Microdosimetry of range-modulated beams of heavy ions I. Determination of the yield of projectile fragments from microdosimetric spectra for neon beams*. Radiat. Res., 87, 511-520 (1981).
- 6.* Brenner, D. J., Dicello, J. F. and Zaider, M. *An interpretation of some biological results obtained in range-modulated negative pion beams*, Int. J. Radiat. Oncol. Biol. Phys., 8, 121-126 (1982).
- 7.* Brenner, D. J. *Calculation of ionization distributions in a tissue-equivalent cloud chamber gas mixture*. Radiat. Res., 89, 194-202 (1982).
8. Zaider, M., Brenner, D. J., Hanson, K. and Minerbo, G. N. *An algorithm for determining the proximity distribution from dose-averaged lineal energies*. Radiat. Res., 91, 95-103 (1982).
9. Zaider, M., Brenner, D. J. and Wilson, W. E. *The application of track calculations to radiobiology. I. Monte Carlo simulation of proton tracks*. Radiat. Res., 95, 231-247 (1983).
10. Atari, N., Malik, S. R., Brenner, D. J., Hilko, R. and Bradbury, J. N. *A lyoluminescent tissue-equivalent dosimeter for pion therapy beams*. Phys. Med. Biol., 28, 493-502 (1983).
- 11.* Brenner, D. J. and Zaider, M. *Soft x-rays as a tool to investigate radiation-sensitive sites in mammalian cells*. Proc. SPIE, 47, 172-179 (1983).
12. Goodhead, D. T. and Brenner, D. J. *Estimation of a single physical property of low LET radiations which correlates with their biological effect*. Phys. Med. Biol., 28, 485-492 (1983).
13. Subramanian, T. S., Romero, J. L., Brady, F. P., Watson, J. W., Fitzgerald, D. H., Garrett, R., Needham, G. A., Ullman, J. L., Zanelli, C. I., Brenner, D. J. and Prael, R. E. *Double differential inclusive hydrogen and helium spectra from neutron induced reactions on carbon at 27.4, 39.7, and 60.7 MeV*. Phys. Rev., C28, 521-528 (1983).

- 14.* Brenner, D. J. and Zaider, M. *The application of track calculations to radiobiology.-II. Calculations of microdosimetric quantities.* Radiat. Res., 98, 14-25 (1984).
15. Zaider, M. and Brenner, D. J. *The application of track calculations to radiobiology.--III. Analysis of the molecular beam experiment results.* Radiat. Res., 100, 213-221 (1984).
16. Zaider, M. and Brenner, D. J. *On the stochastic treatment of fast chemical reactions.* Radiat. Res., 100, 245-256 (1984).
- 17.* Brenner, D. J. and Prael, R. E. *The $C(n,n')3\alpha$ cross-Section up to 60 MeV.* Nucl. Sci. Eng., 88, 97-101 (1984).
- 18.* Brenner, D. J. *Neutron kerma values above 15 MeV calculated with a nuclear model applicable to light nuclei.* Phys. Med. Biol., 29, 437-441 (1984).
- 19.* Brenner, D. J. and Zaider, M. *A computationally convenient parameterisation of experimental angular distributions of low energy electrons elastically scattered off water vapour.* Phys. Med. Biol., 29, 443-447 (1984).
20. Zaider, M. and Brenner, D. J. *Comments on 'V79 Survival following simultaneous or sequential irradiation by 15-MeV neutrons and Co photons' by Higgins et al. [Radiat. Res. 95, 45-56(1983)].* Radiat. Res., 99, 438-441 (1984).
21. Zaider, M. and Brenner, D. J. *Modification of the theory of dual radiation action for attenuated fields.--I. Basic formalism.* Radiat. Res., 99, 484-491 (1984)
- 22.* Brenner, D. J. and Zaider, M. *Modification of the theory of dual radiation action for attenuated fields.--II. Application to the analysis of soft x-ray results.* Radiat. Res. 99, 492-501 (1984).
23. Zaider, M. and Brenner, D. J. *On the microdosimetric definition of quality factors.* Radiat. Res., 103, 302-316 (1985).
- 24.* Brenner, D. J. and Zaider, M. *Stochastic and deterministic treatments of the time decay of species created by heavy-charged particle interactions.* Radiat. Prot. Dosimetry, 13, 127-131 (1985)
25. Hoshi, M., Goodhead, D. T., Brenner, D. J., Bance, D. A., Chmielewski, J. J., Paciotti, M. A. and Bradbury, J. N. *Dosimetry comparison and characterisation of an Al K ultrasoft X-ray beam from an MRC cold-cathode source.* Phys. Med. Biol., 30, 1029-1041 (1985).
26. Zaider, M. and Brenner, D. J. *Evaluation of a Specific Quality Function for mutation induction in human fibroblasts.* Rad. Prot. Dosim., 15, 79-82 (1986).
27. Subramanian, T. S., Romero, J. L., Brady, F. P., Watson, J. W., Fitzgerald, D. H., Garrett, R., Needham, G. A., Ullman, J. L., Zanelli, C. I., Brenner, D. J. and Prael, R. E. *Double differential inclusive hydrogen and helium spectra from neutron-induced reactions at 27.4, 39.7, and 60.7 MeV II. Oxygen and nitrogen.* Phys. Rev., C34, 1580-1586 (1986)
- 28.* Brenner, D. J., Zaider, M., Coyne, J. J., Menzel, H. G. and Prael, R. E. *The evaluation of non-elastic neutron cross-sections on carbon above 14 MeV.* Nucl. Sci. Eng. 95, 311-315 (1987)
- 29.* Brenner, D. J., Bird, R. P., Zaider, M., Goldhagen, P., Kliauga, P. J. and Rossi, H. H. *Inactivation of synchronized mammalian cells with low-energy X rays-- Results and significance.* Radiat. Res. 110, 413-427 (1987)
- 30.* Brenner, D. J., Geard, C. R., Zaider, M. and Georgsson, M. A. *Cell survival and plating efficiency.* Radiat. Res. 111, 572-576 (1987)
- 31.* Brenner, D. J. *Concerning the nature of the initial damage required for the production of radiation-induced exchange aberrations.* Int. J. Radiat. Biol. 52, 805-809 (1987).
32. Miller R. C., Brenner, D. J., Geard, C. R., Komatsu, K., Marino, S. A., Hall, E. J. *Oncogenic transformation by fractionated doses of neutrons.* Radiat. Res. 114, 589-598 (1988)

- 33.* Brenner, D. J. *On the probability of interaction between elementary radiation-induced chromosomal injuries*. Rad. Environ. Biophys. 27, 189-199 (1988)
- 34.* Brenner, D. J. *Stochastic calculations of the fast decay of the hydrated electron in the presence of scavengers -- Tests of model consistency*. Rad. Phys. Chem. 32, 157-162 (1988)
35. Zaider, M., Brenner, D. J., Hall, E. J. and Kiauga, P. J. *The link between physics and biology*. Am. J. Clin. Oncol. 11, 212-219 (1988).
36. Hei, T. K., Chen, D. J., Brenner, D. J. and Hall, E. J. *Mutation induction by charged particles of defined LET*. Carcinogenesis, 9, 1233-1236 (1988).
- 37.* Brenner, D. J. *Precision and accuracy in radiotherapy*. Radiotherapy & Oncology, 14 159-162 (1989)
38. Miller, R. C. , Geard, C. R., Brenner, D. J., Komatsu, K., Marino, S. A. and Hall, E. J. *Neutron-energy-dependent oncogenic transformation of C3H10T½ cells*. Radiat. Res., 117, 114-127 (1989)
- 39.* Brenner, D. J., *Comments on "It is Time to Reopen the Question of Thresholds in Radiation Exposure Responses" by J. R. Totter [Rad. Res. 114, 1-2 (1988)]*. Radiat. Res., 116, 172-174, (1988).
- 40.* Brenner, D. J. and Prael, R. E. *Calculated differential secondary-particle production cross sections after non-elastic neutron interactions with carbon and oxygen between 15 and 60 MeV*. Atomic Data Nucl. Data Tables, 41, 71-130 (1989)
- 41.* Brenner, D. J., *Appropriate uses of the proposed ICRU-40 quality factor, Q(y)*. J. Radiol. Prot. 9, 51-52 (1989)
42. Worgul, B. V., Merriam, G. R., Jr., Medvedovsky, C. and Brenner, D. J., *Accelerated heavy particles and the lens: III. Cataract enhancement by dose fractionation*. Rad. Res., 118, 93-100 (1989).
- 43.* Brenner, D. J. and Amols, H. I. *Enhanced risk from low-energy screen-film mammography X rays*. Brit. J. Radiol., 62, 910-914 (1989).
- 44.* Brenner, D. J. *The effectiveness of single alpha particles*. In Low Dose Radiation: Biological Bases of Risk Assessment (Ed. Lancashire, J.) pp 477-480, Taylor and Francis, London and New York (1989)
45. Hoshi, M. Yokoru, K., Sawada, S., Shizuma, K., Iwatani, K., Hasai, H. Oka, T., Morishima, H. and Brenner, D. J. *Europium-152 activity induced by Hiroshima atomic-bomb neutrons: Comparison with the ³²P, ⁶⁰Co and ¹⁵²Eu activities in Dosimetry System 1986 (DS86)*. Health Physics, 57, 831-837 (1989).
- 46.* Brenner, D. J., Geard, C. R. and Hall, E. J. *Mossbauer cancer therapy doubts*. Nature, 339, 185-186 (1989).
47. Hall, E. J., Brenner, D. J., Hei, T. and Miller, R. C. *The microdosimetric link between oncogenic transformation data with neutrons and with charged particles*. Radiat. Prot. Dosim., 31, 275-278 (1990).
48. Marchese M.J., Goldhagen, P.E., Zaider, M., Brenner, D.J. and Hall, E. J. *The relative biological effectiveness of encapsulated iodine-125 photon radiation in human cells. I. Normal diploid fibroblasts*. Int. J. Radiat. Oncol. Biol. Phys., 18, 1407-1413 (1990).
49. Marino, S. A., Harvey, J. R., Brenner, D. J. and Rossi, H. H. *Measurements of the distribution of the separations between paired ions after passing through mylar*. Radiat. Prot. Dosim., 31, 77-80 (1990).
- 50.* Brenner, D. J. and Quan, H. *Confidence limits for low induced frequencies of oncogenesis in the presence of a background*. Int. J. Radiat. Biol., 57, 1031-1046 (1990).

51. Geard, C. R. and Brenner, D. J. *Chromosomal changes per cell nucleus per charged particle*. Radiat. Prot. Dosim., 31, 285-290 (1990).
- 52.* Brenner, D. J. *The microdosimetry of radon daughters and its significance*. Radiat. Prot. Dosim., 31, 399-404 (1990).
- 53.* Brenner, D. J. and Hall, E. J., *The inverse dose-rate effect for oncogenic transformation by neutrons and charged particles: A plausible interpretation consistent with published data*. Int. J. Radiat. Biol., 58, 745-758 (1990).
54. Miller, R., Brenner, D. J., Randers-Pehrson, G., Marino, S.A. and Hall, E. J., *The Effects of the temporal distribution of dose on oncogenic transformation by neutrons and charged particles of intermediate LET*. Radiat. Res., 124, S62-68 (1990)
- 55.* Brenner, D. J. *Track structure, lesion development and cell survival*. Radiat. Res., 124, S29-37 (1990)
- 56.* Brenner, D. J. and Quan, H. *Exact confidence limits for binomial proportions - Pearson and Hartley revisited*. The Statistician, 39, 391-397 (1990).
- 57.* Brenner, D. J. *On the use of distributions of stopping pions as an indicator of the spatial distribution of the high-LET dose in negative pion radiotherapy*. Phys. Med. Biol., 35, 1585-1591 (1990).
58. Geard, C.R., Brenner, D. J., Randers-Pehrson, G. and Marino, S.A., *Single-particle irradiation of mammalian cells at the Radiological Research Accelerator Facility: induction of chromosomal changes*. Nucl. Instr. Meth., B54, 411-416 (1991).
- 59.* Brenner, D. J. and Hall, E. J., *Conditions for the equivalence of continuous to pulsed low dose rate brachytherapy*. Int. J. Radiat. Oncol. Biol. Phys., 20, 181-190 (1991).
- 60.* Brenner, D. J. *Significance of neutrons from the atomic bomb at Hiroshima for revised radiation risk estimates*. Health Physics, 60, 439-442 (1991).
- 61.* Brenner, D. J. and Hall, E. J. *Fractionated high dose rate versus low dose rate regimens for intracavitary brachytherapy of the cervix. I. General considerations based on radiobiology*. British Journal of Radiology, 64, 133-141 (1991).
- 62.* Brenner, D. J., Martel, M. K. and Hall, E. J. *Fractionated regimes for stereotactic radiotherapy of recurrent tumors in the brain*. International Journal of Radiation Oncology, Biology, Physics, 21, 819-824 (1991).
63. Hall, E. J., Miller, R. C. and Brenner, D. J. *Neoplastic transformation and the inverse dose rate effect for neutrons*. Radiat. Res., 127, S75-80 (1991).
64. Straume, T., McDonald, J. C., Pederson, R. A., Brenner, D. J. and Dobson, R.L., *Hiroshima-like neutrons from A-bomb replica: Physical basis for their use in biological experiments*. Radiation Research, 128, 133-142 (1991).
- 65.* Brenner, D. J., Medvedovsky, C., Huang, Y., Merriam, G. R., and Worgul, B. V. *Accelerated heavy particles and the lens VI. RBE studies at low doses*. Radiat. Res., 128, 73-81 (1991).
66. Hall, E. J. and Brenner, D. J., *The dose-rate effect revisited - Radiobiological considerations of importance in radiotherapy*. Int. J. Radiat. Oncol. Biol. Phys., 21, 1403-1413 (1991).
- 67.* Brenner, D. J. Huang, Y.P., and Hall, E. J., *Fractionated high dose-rate versus low dose-rate regimens for intracavitary brachytherapy of the cervix. II. Equivalent regimes for combined brachytherapy and external radiation*. Int. J. Radiat. Oncol. Biol. Phys., 21, 1415-1423 (1991).
68. Hall, E. J. Astor, M., and Brenner, D. J., *Biological intercomparison of neutron beams used for radiotherapy generated by p^+ -Be in hospital-based cyclotrons*. British Journal of Radiology, 65, 66-71 (1992).

- 69.* Brenner, D. J. *Radon - Current challenges in cellular radiobiology*. Int. J. Radiat. Biol., 61, 3-13 (1992)
70. Hall, E. J. and Brenner, D. J., *The dose rate effect in interstitial brachytherapy - A controversy resolved*. British Journal of Radiology, 65, 242-247 (1992).
- 71.* Brenner, D. J. and Hall, E. J., *Radiation-induced oncogenic transformation: the interplay between dose, dose protraction, and radiation quality*. Advan. Radiat. Biol., 16, 167-179 (1992).
- 72.* Brenner, D. J. and Ward, J. F., *Constraints on energy deposition and target size of multiply-damaged sites associated with DNA double-strand breaks*. International Journal of Radiation Biology, 61, 737-748 (1992).
73. Hall, E.J. and Brenner, D.J., *Needles, Wires and Chips - Advances in brachytherapy*. Clin. Oncol., 4, 249-256 (1992).
- 74.* Brenner, D. J. *Correlations between α/β and $T_{1/2}$: Implications for clinical biological modelling*. Brit. J. Radiol., 65, 1051-1054 (1992).
75. Hall, E. J. and Brenner, D. J., *The biological effectiveness of neutrons: Implications for radiation protection*. Radiat. Protec. Dosim., 44, 1-9 (1992).
- 76.* Brenner, D. J., Miller, R.C., Marino, S.A., Geard, C.R., Randers-Pehrson, G., and Hall, E. J. *Inverse dose rate effects for neutrons: General features and biophysical consequences*. Radiat. Protec. Dosim., 44, 45-48 (1992)
77. Worgul, B. V., Brenner, D. J., Medvedovsky, C., Merriam, G. R. Jr., and Huang, Y. *Accelerated heavy particles and the lens: VII The cataractogenic potential of 450 MeV/amu ^{56}Fe ions*. Invest. Ophthalm. Vis. Sci., 34, 184-193 (1993).
78. Hall, E. J. and Brenner, D. J., *The radiobiology of radiosurgery: Rationale for different treatment regimes for AVM's and malignancies*. Int. J. Radiat. Oncol. Biol. Phys., 25, 381-385 (1993).
- 79.* Brenner, D. J., Medvedovsky, C., Huang, Y., and Worgul, B. V. *Accelerated heavy particles and the lens VIII. Comparison between the effects of iron ions (190 keV/ μm) and argon ions (88 keV/ μm)*. Radiation Research, 133, 198-203 (1993).
- 80.* Brenner, D. J. *Dose, volume and tumor-control predictions in radiotherapy*. Int. J. Radiat. Oncol. Biol. Phys., 26, 171-179 (1993).
- 81.* Brenner, D. J., Hall, E. J., Randers-Pehrson, G. and Miller, R. C. *Model considerations on the dose-rate/LET dependence of oncogenic transformation by charged particles*. Radiation Research, 133, 365-369 (1993).
- 82.* Brenner, D. J. *The Influence of Cell Killing on Radiation Oncogenesis: Possible Implications for High-LET Risk Assessment at Medium Doses*. Health Physics 65, 358-366 (1993).
83. Hahnfeldt, P., Hearst, J.E., Brenner, D.J., Sachs, R.K., and Hlatky, L.R., *Polymer models for interphase chromosomes*. Proc. Nat. Acad. Sci. USA 90, 7854-7858 (1993)
84. Sachs, R.K. and Brenner, D.J., *Effect of LET on chromosomal aberration yields. I. Do long-lived, exchange-prone double strand breaks play a role?* Int. J. Radiat. Biol. 64, 677-688 (1993).
- 85.* Brenner, D. J. *Accelerated Repopulation during Radiotherapy - Evidence for Delayed Onset*. Radiat. Oncol. Invest. 1, 167-172 (1993).
- 86.* Brenner, D. J. *The significance of dose rate in assessing the hazards of domestic radon exposure*. Health Physics 67, 76-79 (1994).

- 87.* Brenner, D.J. and Sachs, R.K., *Generalized Microdosimetric Calculations of Cell-to-Cell Variance*. Radiat. Protec. Dosim. 52, 21-24 (1994).
- 88.* Brenner, D.J. and Hall, E.J. *Stereotactic radiotherapy of intra-cranial tumors - an ideal candidate for accelerated treatment*. Int. J. Radiat. Oncol. Biol. Phys. 28, 1039-1042 (1994)
- 89.* Brenner, D. J.; Hall, E.J.; Huang, Y.-P.; Sachs, R.K. *Optimizing the time course of brachytherapy and other accelerated radiotherapeutic protocols*. Int. J. Radiat. Oncol. Biol. Phys. 29, 893-901 (1994).
90. Geard, C.R., Miller, R.C., Brenner, D.J. and Hall, E.J. *Oncogenic transformation through the cell cycle and the LET dependence of the inverse dose rate effect*. Radiat. Protec. Dosim. 52, 367-371 (1994).
- 91.* Brenner, D.J. and Merriam, G.R., Jr. *Postoperative irradiation for pterygium: guidelines for optimal treatment*. Int. J. Radiat. Oncol. Biol. Phys. 30, 721-725 (1994)
- 92.* Brenner, D. J. and Hall, R.C., *One, 10, 20 or 30 fractions in stereotactic radiotherapy for brain malignancies*. Int. J. Radiat. Oncol. Biol. Phys. 30, 501 (1994).
- 93.* Brenner, D. J. and Sachs R.K. *Chromosomal 'fingerprints' of prior exposure to densely-ionizing radiation*. Radiat. Res. 140, 134-142 (1994).
94. Medvedovsky, C., Worgul, B.V., Huang, Y., Brenner, D.J., Tao, F., Miller, J., Zeitlin, C., and Ainsworth, E.J. *The influence of dose, dose rate, and particle fragmentation on cataract induction by energetic iron ions*. Advan. Space. Res., 14, 475-82 (1994).
95. Hahnfeldt, P., Hlatky, L.R., Brenner, D.J. and Sachs, R.K. *Radiation-produced chromosome aberrations: The relation between excess acentric fragments and dicentrics*. Radiat. Res. 141, 136-152 (1995).
- 96.* Brenner, D.J., Hall, E.J., Huang, Y.-P., Sachs, R.P., *Potential reduced late effects for pulsed brachytherapy compared with conventional LDR*. Int. J. Radiat. Oncol. Biol. Phys. 31, 201-202 (1995)
- 97.* Brenner, D.J., Hlatky, L.R., Hahnfeldt, P.J., Hall, E.J. and Sachs, R.K. *A convenient extension of the linear-quadratic model to include redistribution and reoxygenation*. Int. J. Radiat. Oncol. Biol. Phys. 32, 379-390 (1995).
98. Chen, P.-L., Brenner, D.J. and Sachs, R.K., *Ionizing radiation damage to cells: Effects of cell cycle redistribution*. Math. Biosci. 26, 147-170 (1995).
99. Miller, R.C., S. A. Marino, D. J. Brenner, S. G. Martin, M. Richards, G. Randers-Pehrson and E. J. Hall, *The biological effectiveness of radon-progeny alpha particles II Neoplastic transformation as a function of LET*. Radiat. Res. 142, 54-60 (1995).
- 100.* Brenner, D.J., Miller, R.C., Huang, Y. and Hall, E.J. *The biological effectiveness of radon-progeny alpha particles III Quality factors*. Radiat. Res. 142, 61-69 (1995).
101. Chen, A.M., Lucas, J.N., Hill, F.S., Brenner, D.J., and Sachs, R.K., *Chromosome aberrations produced by ionizing radiation: Monte-Carlo simulations and chromosome painting data*. Comput. Applic. Biosci. 11, 389-97 (1995).
102. Miller, R.C., Richards, M., Brenner, D.J., Hall, E.J., Jostes, R., Hui, T.E. and Brooks, A.L., *The biological effectiveness of radon-progeny alpha particles V. Oncogenic transformation from monoenergetic accelerator-produced alpha particles compared with polyenergetic alpha particles from radon progeny*. Radiat. Res. 146, 75-80 (1996).
- 103.* Brenner, D.J., Hall, E.J., Randers-Pehrson, G., Huang, Y., Johnson, G.W., Miller, R.W., Wu, B., Vazquez, M.E., Medvedovsky, C. and Worgul, B.V. *Quantitative comparisons of continuous and pulsed low dose-rate regimens in a model late-effect system*. Int. J. Radiat. Oncol. Biol. Phys 34, 905-10 (1996).
104. Worgul, B.V., Medvedovsky, C., Huang, Y., Brenner, D.J., *Quantitative assessment of the*

- cataractogenic potential of very low doses of neutrons. Radiat. Res. 145, 343-49 (1996)*
105. * Brenner, D.J. *Direct biological evidence for a significant neutron dose to survivors of the Hiroshima A Bomb. Radiation Research 145, 501-507 (1996)*
 106. Hall, E. J. and Brenner, D. J. *Pulsed dose rate brachytherapy: Can we take advantage of new technology? Int. J. Radiat. Oncol. Biol. Phys. 34, 511-512 (1996).*
 107. Chen, A.M., Lucas, J.N., Hill, F.S., Brenner, D.J., and Sachs, R.K. *Proximity effects for chromosome aberrations measured by FISH. Int. J. Radiat. Biol. 69, 411-420 (1996)*
 - 108.* Brenner, D. J. and Hall, E.J., *Alternative fractionation schemes - is the "gap" the way? Int. J. Radiat. Oncol. Biol. Phys. 35, 629-630 (1996)*
 - 109.* Brenner DJ, Sachs RK, *Comments on "Comment on the D/R (or F) ratio for track-clustered breaks versus random breaks" by Savage and Papworth. Radiat. Res. 146, 241-2 (1996).*
 - 110.* Brenner, D.J., Miller, R.C., and Hall, E.J. *The radiobiology of intravascular irradiation. Int. J. Radiat. Oncol. Biol. Phys. 36, 805-810 (1996).*
 - 111.* Brenner, D.J., Hahnfeldt, P., Amundson, S.A., and Sachs, R.K., *Interpretation of inverse dose rate effects for mutagenesis by sparsely-ionizing radiation. Int. J. Radiat. Biol. 70, 447-58 (1996)*
 112. Sachs, R.K., Heidenreich, W., and Brenner, D.J., *Dose timing in radiotherapy: considerations of cell number stochasticity. Math. Biosci. 138, 131-146 (1996).*
 113. Chen, C.-Z., Huang, Y., Hall, E.J., and Brenner, D.J. *Pulsed brachytherapy as a substitute for continuous low dose-rate: an in vitro study with human carcinoma cells. Int. J. Radiat. Oncol. Biol. Phys. 37, 137-43 (1997).*
 114. Sachs, R.K., Chen, A.M., and Brenner, D.J. *Review: Proximity effects in the production of chromosome aberrations by ionizing radiation. Int. J. Radiat. Biol. 71, 1-19 (1997).*
 - 115.*Brenner DJ, Schiff PB, Huang Y, Hall EJ *Pulsed dose-rate (PDR) brachytherapy: Design of convenient (daytime only) schedules. Int J Radiat Oncol Biol Phys 39, 809-5 (1997)*
 116. Sachs, R. K., Brenner, D. J., Chen, A. M., Hahnfeldt, P. and Hlatky, L.R. *Intra-arm and interarm chromosome interchanges: tools for probing the geometry and dynamics of chromatin. Radiat. Res. 148, 330-340 (1997)*
 117. Sachs, R.K., Hahnfeld, P, and Brenner, D.J., *The link between low-LET dose-response relations and the underlying kinetics of damage production/repair/misrepair. Int. J. Radiat. Biol. 72, 351-374 (1997)*
 - 118.*Brenner, D.J., Lubin, J.H., and Ron, E. *Moving from under the lamppost: Can epidemiologists and radiobiologists work together? Nucl. Energ. 36, 1-7 (1997)*
 - 119.*Brenner, D. J., and Herbert, D. E. *The use of the linear-quadratic model in clinical radiation oncology can be defended on the basis of empirical evidence and theoretical argument. Med. Phys. 24, 1245-1248 (1997)*
 - 120.*Brenner, D. J., *Radiation biology in brachytherapy. J. Surg. Oncol. 65, 66-70 (1997).*
 - 121.*Hall, E.J. and Brenner, D.J., *Pulsed dose-rate brachytherapy. Radiother. Oncol. 45, 1-2 (1997).*
 - 122.*Brenner, D.J., Armour, E., Corry, P. and Hall, E.J., *Sublethal damage repair times for a late-responding tissue relevant to brachytherapy (and external beam radiotherapy): implications for new brachytherapy protocols. Int. J. Radiat. Oncol. Biol. Phys. 41, 135-138 (1998).*
 123. Randers-Pehrson, G. and Brenner, D.J., *A practical target system for accelerator-based BNCT which may effectively double the dose rate. Med Phys. 25, 894-6. (1998).*

- 124.*Brenner, D.J., Hlatky, L.R., Hahnfeldt, P.J. Huang, Y., and Sachs, R.K., *The linear-quadratic and other common radiobiological models all predict similar time-dose relationships*. Radiat. Res. 150, 83-91 (1998)
- 125.*Brenner DJ, Sachs RK, *The mechanistic basis of the linear-quadratic formalism*. Med. Phys. 25:2071-3 (1998).
126. Sachs RK, Brenner DJ, Hahnfeldt P, Hlatky L, *A formalism for analysing large-scale clustering of radiation-induced breaks along chromosomes*. Int J Radiat Biol 74:185-206 (1998)
127. *Brenner DJ, Zaider M, *Estimating RBEs at clinical doses from microdosimetric spectra*. Med. Phys. 25:1055-7 (1998).
128. Hall EJ, Schiff PB, Hanks GE, Brenner DJ, Russo J, Chen J, Sawant SG, Pandita TK, *A preliminary report: frequency of A-T heterozygotes among prostate cancer patients with severe late responses to radiation therapy*. Cancer J. Sci. Am.4:385-9 (1998)
129. Miller RC, Randers-Pehrson G, Geard CR, Eric J. Hall EJ, Brenner, DJ *The oncogenic transforming potential of the passage of single alpha particles through mammalian cell nuclei*. Proc. Natl. Acad. Sci. USA 1999; 18-22 (1999).
130. *Brenner DJ, Leu C-S, Beatty JF, Shefer RE, *Clinical relative biological effectiveness of low-energy x-ray emitted by miniature x-ray devices*. Phys. Med. Biol. 44:323-33 (1999).
131. *Brenner DJ, *Does fractionation decrease the risk of breast cancer induced by low-LET radiation?* Radiat. Res. 151:225-9 (1999).
132. *Brenner DJ, *The relative effectiveness of exposure to ¹³¹I at low doses*. Hlth. Phys. 76:180-185 (1999).
133. Johnson KL, Brenner DJ, Nath J, Tucker JD, Geard CR, *Radiation-induced breakpoint misrejoining in human chromosomes: random or non-random?* Int. J. Radiat. Biol. 75:131-41 (1999).
134. Johnson KL, Brenner DJ, Geard CR, Nath J, Tucker JD, *Chromosome aberrations of clonal origin in irradiated and unexposed individuals: assessment and implications*. Radiat Res 152:1-5 (1999)
- 135.*Brenner DJ, Sachs RK, *A more robust biologically based ranking criterion for treatment plans*. Int. J. Radiat. Oncol. Biol. Phys. 43, 697 (1999).
136. Smith LG, Miller RC, Richards BS, Brenner DJ, Hall EJ, *Investigation of hypersensitivity to fractionated low-dose radiation exposure*. Int J Radiat Oncol Biol Phys 45, 187-192 (1999).
137. Hall E.J., Miller R.C., and Brenner D.J., *Radiobiological principles in intravascular therapy*. Cardiovasc. Radiat. Med. 1, 42-47 (1999).
138. *Brenner DJ and Hall EJ, *Fractionation and protraction for radiotherapy of prostate carcinoma*. Int. J. Radiat. Oncol. Biol. Phys. 43:1095-101 (1999).
139. Miller RC, S.A. Marino, J. Napoli, H. Shah, E.J. Hall, C.R. Geard, D.J. Brenner. *Oncogenic transformation in C3H10T^{1/2} cells by low-energy neutrons* Int J Radiat Biol, 76:327-34 (2000)
140. *Brenner DJ, Curtis RE, Hall EJ and Ron E. *Second Malignancies in Prostate Cancer Patients After Radiotherapy Compared to Surgery*, Cancer, 88, 398-406 (2000).
141. Ponomarev AL, Brenner DJ, Hlatky LR and Sachs RK. *DNA Fragment-Size Distributions for Large Sizes After High LET Radiation, Derived From a Polymer, Random Walk Chromatin Model*, Rad. Environ. Biophys. 39, 111-120 (2000).
142. *Brenner DJ, Schiff PB, Zablotska L, *Adjuvant radiotherapy for DCIS*. Lancet 355, 2071 (2000).

143. Dymnikov AD, Brenner DJ, Johnson G, Randers-Pehrson G. *Theoretical study of short electrostatic lens for the Columbia ion microprobe*. Rev. Sci. Instr. 71, 1646-50 (2000).
144. *Brenner DJ. *Towards optimal external-beam fractionation for prostate cancer*. Int. J. Radiat. Oncol. Biol. Phys. 48, 315-6 (2000).
145. *Brenner DJ. *Rutherford, the Curies, and radon*. Med. Phys. 27, 618 (2000).
146. Ponomarev AL, Cucinotta FA, Sachs RK, Brenner DJ *Monte Carlo predictions of DNA fragment-sized distributions for large sizes after HZE particle irradiation*. Phys. Med. 17 Suppl 1, 153-6 (2001).
147. *Brenner DJ, Elliston CD, Hall EJ and Berdon W. *The risk of fatal cancer from pediatric computed tomography*. AJR 176, 289-96 (2001).
148. Sawant S, Randers-Pehrson G, Brenner DJ, Hall EJ. *The Bystander Effect in Radiation Oncogenesis: I. Oncogenic transformation can be initiated in C3H10T1/2 cells in vitro in the unirradiated neighbors of irradiated cells*. Rad. Res. 155, 397-401 (2001).
149. *Brenner DJ, Little JB, Sachs RK, *The Bystander Effect in Radiation Oncogenesis: II. A Quantitative Model*. Rad. Res. 155, 402-8 (2001).
150. *Brenner DJ, Miller RC. *Long term efficacy of intracoronary irradiation in inhibiting in-stent restenosis*. Circulation 103, 1330-2332 (2001).
151. Randers-Pehrson G, Geard CR, Johnson G, Elliston CD, Brenner DJ. *The Columbia University single-ion microbeam*. Radiat. Res. 156, 210-4 (2001).
152. Smilenov LB, Brenner DJ, Hall EJ. *Modest Increased Sensitivity to Radiation Oncogenesis in ATM Heterozygous versus Wild-Type Mammalian Cells*. Cancer Res. 61, 5710-3 (2001).
153. *Brenner DJ and Elliston, CD, *The potential impact of the bystander effect on radiation risks in a Mars Mission*. Radiat. Res 156 (5 Pt 2), 612-7 (2001).
154. Ponomarev AL, Cucinotta FA, Sachs RK, Brenner DJ, Peterson LE, *Extrapolation of the DNA fragment-size distributions in a high-dose PFGE assay to low doses*. Radiat. Res. 156 594-7 (2001).
155. *Brenner DJ, Okladnikova N, Burak L, Geard CT, Azizova T. *Biomarkers specific to densely ionizing (high LET) radiations*. Radiat. Protec. Dosim. 97, 69-73 (2001).
156. *Brenner DJ and Hall EJ, *Dose rate does matter in endovascular brachytherapy*. Cardiovasc. Radiat. Med. 2, 245-5 (2001).
157. *Brenner DJ and Hall EJ, *Microbeams: a potent mix of physics and biology*. Radiat. Prot. Dosim. 99, 283-6 (2002).
162. Bigelow A.W., Randers-Pehrson G. and Brenner D.J. *Laser ion source development for the Columbia University microbeam*. Rev. Sci. Instrum. 73:770-772 (2002).
158. *Brenner DJ, Martinez AA, Edmundson GK, Mitchell C, Thames HD, Armour WP. *Direct evidence that prostate tumors show high sensitivity to fractionation (low α/β ratio), similar to late-responding normal tissue*. Int. J. Radiat. Oncol. Biol. Phys. 52, 6-13 (2002)
159. *Brenner DJ. *Estimating Cancer Risks from pediatric CT: Going from the qualitative to the quantitative*. Pediatric Radiology, 32, 228-31 (2002)
160. *Brenner DJ and Sachs RK, *Do low dose-rate bystander effects influence domestic radon risks?* Int. J. Radiat. Biol. 78, 593-604 (2002).
161. Worgul BV, Smilonov L, Brenner DJ, Junk A, Zhou W, Hall EJ. *ATM heterozygous mice are more sensitive to radiation-induced cataracts than their wildtype counterparts*. Proc. Natl. Acad. Sci. USA 99, 9836-9 (2002).

163. *Brenner DJ, Sawant SG, Hande P, Miller RC, Elliston CD, Fu Z, Randers-Pehrson G, Marino SA. *Routine screening mammography: how important is the radiation-risk side of the benefit-risk equation?* Int. J. Radiat. Biol. 78, 1065-7 (2002).
164. Cornforth M, Greulich K, Loucas B, Arsuaga J, Vázquez M, Sachs RK, Brückner M, Molls M, Hahnfeldt P, Hlatky L, Brenner DJ. *Chromosomes are predominantly located randomly with respect to each other in interphase human cells.* J. Cell Biol. 159, 237-44 (2002).
165. Bigelow A.W., Randers-Pehrson G. and Brenner D.J. *Proposed laser ion source for the Columbia University microbeam.* Nucl. Instr. Meth. B 210:65-69 (2003).
166. *Brenner DJ, Hall EJ. *Mortality patterns in British and US radiologists: what can we really conclude?* BJR 76, 1-2 (2003).
167. Hande MP, Azizova TV, Geard CR, Burak LE, Mitchell CR, Khokhryakov VF, Vasilenko EK, Brenner DJ. *Past exposure to densely ionizing radiation leaves a unique permanent signature in the genome.* Am. J. Hum. Genet. 72, 1162-70 (2003).
168. *Brenner DJ, Sachs RK. *Domestic radon risks may be dominated by bystander effects--but the risks are unlikely to be greater than we thought.* Health Phys. 85:103-8 (2003)
169. Fowler JF, Ritter MA, Chappell RJ, Brenner DJ. *What hypofractionated protocols should be tested for prostate cancer?* Int J Radiat Oncol Biol Phys. 56:1093-104 (2003).
170. *Brenner DJ. *Hypofractionation for prostate cancer radiotherapy - what are the issues?* Int J Radiat Oncol Biol Phys. 57:912-4 (2003).
171. Zhou H, Randers-Pehrson G, Geard CR, Brenner DJ, Hall EJ, Hei TK. *Interaction between radiation-induced adaptive response and bystander mutagenesis in mammalian cells.* Radiat Res. 160:512-6 (2003).
172. Hall EJ, Brenner DJ. *The weight of evidence does not support the suggestion that exposure to low doses of X rays increases longevity.* Radiology 229:18-9 (2003).
173. *Brenner DJ, Doll R, Goodhead DT, Hall EJ, Land CE, Little JB, Lubin JH, Preston DL, Preston RJ, Puskin JS, Ron E, Sachs RK, Samet JM, Setlow RB, Zaider M. *Cancer risks attributable to low doses of ionizing radiation: Assessing what we really know.* Proc Natl Acad Sci USA 100:13761-6 (2003).
174. *Brenner DJ, Hall EJ. *Risk of cancer from diagnostic X-rays.* Lancet 363:2192 (2004)
175. Mitchell SA, Randers-Pehrson G, Brenner DJ, Hall EJ. *The bystander response in C3H 10T1/2 cells: the influence of cell-to-cell contact.* Radiat Res. 161, 397-401 (2004)
176. Mitchell SA, Marino SA, Brenner DJ and Hall EJ. *Bystander effect and adaptive response in C3H10T^{1/2} cells.* Int. J. Radiat. Biol. 80, 465-72 (2004)
177. *Brenner DJ. *Radiation risks potentially associated with low-dose CT screening of adult smokers for lung cancer.* Radiology 231, 440-5 (2004)
178. Arsuaga J, Greulich-Bode KM, Vazquez M, Bruckner M, Hahnfeldt P, Brenner DJ, Sachs R, Hlatky L. *Chromosome spatial clustering inferred from radiogenic aberrations.* Int J Radiat Biol. 80:507-15 (2004)
179. *Brenner DJ, Elliston CD. *Estimated radiation risks potentially associated with full-body CT screening.* Radiology 232:735-8 (2004).
180. *Brenner DJ. *Fractionation and late rectal toxicity.* Int J Radiat Oncol Biol Phys. 60:1013-5 (2004).
181. Mitchell CR, Azizova TV, Hande MP, Burak LE, Tsakok JM, Khokhryakov VF, Geard CR, Brenner DJ. *Stable intrachromosomal biomarkers of past exposure to densely ionizing radiation in several chromosomes of exposed individuals.* Radiat Res. 162:257-63 (2004).

182. Hande MP, Azizova TV, Burak LE, Khokhryakov VF, Geard CR, Brenner DJ. *Complex chromosome aberrations persist in individuals many years after occupational exposure to densely ionizing radiation: An mFISH study.* Genes Chromosomes Cancer 44:1-9 (2005).
183. Worgul BV, Smilenov L, Brenner DJ, Vazquez M, Hall EJ. *Mice heterozygous for the ATM gene are more sensitive to both X-ray and heavy ion exposure than are wildtypes.* Adv Space Res. 35:254-9 (2005).
184. Hall EJ, Brenner DJ, Worgul B, Smilenov L. *Genetic susceptibility to radiation.* Adv Space Res. 35:249-53 (2005).
185. Vives S, Loucas B, Vazquez M, Brenner DJ, Sachs RK, Hlatky L, Cornforth M, Arsuaga J. *SCHIP: Statistics for chromosome interphase positioning based on interchange data.* Bioinformatics. 21:3181-2 (2005).
186. Belyakov, O, Mitchell, S, Parikh, D, Randers-Pehrson, G, Marino, S, Amundson, SA, Geard, CR, Brenner, DJ, *Biological effects in unirradiated human tissue as a response to radiation damage up to 1 mm away.* Proc. Nat. Acad. Sci. USA, 102:14203-8 (2005)
187. *Brenner DJ and Georgsson MA. *Mass Screening with CT Colonography: Should the Radiation Exposure be of Concern?* Gastroenterology, 129:328-37 (2005).
188. Sachs RK and Brenner DJ, *Solid tumor risks after high doses of ionizing radiation.* Proc. Nat. Acad. Sci. USA, 102, 13040-45 (2005)
189. Zhou H, Ivanov VN, Gillespie J, Geard CR, Amundson SA, Brenner DJ, Yu Z, Lieberman HB, Hei TK. *Mechanism of radiation-induced bystander effect: role of the cyclooxygenase-2 signaling pathway.* Proc Natl Acad Sci USA. 102:14641-6 (2005).
190. *Brenner DJ. *Is it time to retire the CTDI for CT quality assurance and dose optimization?* Med Phys. 32:3225-6 (2005).
191. Bigelow A., Ross G., Randers-Pehrson G. and Brenner DJ. *The Columbia University Microbeam II endstation for cell imaging and irradiation.* Nucl Instr Meth B 231:202-206 (2005).
192. Bigelow, A.W., Randers-Pehrson, G., Kelly, R.P. and Brenner, D.J. *Laser Ion Source for Columbia University's Microbeam.* Nucl. Instr. Meth. B 241: 874-879 (2005).
193. Garty G., Randers-Pehrson G. and Brenner D.J. *Development of a secondary-electron ion-microscope for microbeam diagnostics.* Nucl Instr Meth B 231:60-64 (2005).
194. Garty G., Ross G.J., Bigelow A., Randers-Pehrson G. and Brenner D.J. *A microbeam irradiator without an accelerator.* Nucl. Instrum. Meth. B 241:392-396 (2005).
195. Ross, G.J., Bigelow, A.W., Randers-Pehrson, G., Peng, C.C. and Brenner, D.J. *Phase-based cell imaging techniques for microbeam irradiations.* Nucl Instr Meth B241: 387-391 (2005).
196. Ross G., Garty G., Randers-Pehrson G. and Brenner D.J. *A single-particle/single-cell microbeam based on an isotopic alpha source.* Nucl Instr Meth B 231:207-211 (2005).
197. *Brenner DJ, Sachs RK. *Estimating radiation-induced cancer risks at very low doses: rationale for using a linear no-threshold approach.* Radiat Envir Biophys, 44:253-6 (2006)
198. Hall EJ, Worgul BV, Smilenov L, Elliston CD, Brenner DJ. *The relative biological effectiveness of densely ionizing heavy-ion radiation for inducing ocular cataracts in wild type versus mice heterozygous for the ATM gene.* Radiat Environ Biophys, 45:99-104 (2006)
199. *Brenner DJ. *Induced second cancers after prostate-cancer radiotherapy: No cause for concern?* Int J Radiat Oncol Biol Phys. 65:637-9 (2006)
200. Shuryak I, Sachs RK, Hlatky L, Little MP, Hahnfeldt P, Brenner DJ. *Radiation-induced leukemia at doses relevant to radiation therapy: Modeling mechanisms and estimating risks.* Journal of the National Cancer Institute 98: 1794-1806 (2006)

201. Garty G, Ross GJ, Bigelow AW, Randers-Pehrson G, Brenner DJ. *Testing the stand-alone microbeam at Columbia University*. Radiat Prot Dosimetry. 122, 292-6 (2006)
202. Koh E-S, Tran TH, Heydarian M, Sachs RK, Tsang RK, Brenner DJ, Pintilie M, Xu T, Chung J, Paul N, Hodgson DC. *A comparison of mantle versus involved-field radiotherapy for Hodgkins lymphoma: Reduction in normal tissue dose and second cancer risk*. Radiation Oncology, 2, 13-18 (2007)
203. Sedelnikova OA, Nakamura A, Kovalchuk O, Koturbash I, Mitchell SA, Marino S, Brenner DJ, Bonner WM. *DNA double-strand breaks form in bystander cells after microbeam irradiation of three-dimensional human tissue models*. Cancer Res. 67:4295-4302 (2007)
204. Kleiman NJ, David J, Elliston CD, Hopkins KM, Smilenov LB, Brenner DJ, Worgul BV, Hall EJ, Lieberman HB. *Mrad9 and ATM haploinsufficiency enhance spontaneous and x-ray-induced cataractogenesis in mice*. Radiat Res.168:567-73 (2007)
205. Hodgson DC, Koh ES, Tran TH, Heydarian M, Tsang R, Pintilie M, Xu T, Huang L, Sachs RK, Brenner DJ. *Individualized estimates of second cancer risks after contemporary radiation therapy for Hodgkin lymphoma*. Cancer 110:2576-86 (2007)
206. Sachs RK, Shuryak I, Brenner DJ, Fakir H, Hlatky L, Hahnfeldt P, *Second cancers after fractionated radiotherapy: Stochastic population dynamics effects*. J. Theoret. Biol. 249:518-31 (2007).
207. *Brenner DJ, Shuryak I, Russo S, Sachs RK. *Second breast cancers: Causes and potential strategies for reduction*. J Clin Oncol. 25:4868-72 (2007).
208. *Brenner DJ, Hall EJ. *Computed tomography: an increasing source of radiation exposure*. New England Journal of Medicine, 357:2277-84 (2007)
209. Shuryak I, Sachs RK, Brenner DJ. *Biophysical models of radiation bystander effects: 1. Spatial effects in three-dimensional tissues*. Radiat Res. 2007 168:741-9 (2007)
210. *Brenner DJ, Hall EJ. *Secondary neutrons in clinical proton radiotherapy: A charged issue*. Radiother Oncol.86:165-70 (2008).
211. *Brenner DJ. *Effective dose: a flawed concept that could and should be replaced*. Br J Radiol. 81:521-3 (2008).
212. Hall EJ, Brenner DJ. *Cancer risks from diagnostic radiology*. Br J Radiol. 81:362-78 (2008).
213. Ahuja AK, Barber RC, Hardwick RJ, Weil MM, Genik PC, Brenner DJ, Dubrova YE. *The effects of Atm haploinsufficiency on mutation rate in the mouse germ line and somatic tissue*. Mutagenesis 23:367-70 (2008)
214. Hei TK, Zhou H, Ivanov VN, Hong M, Lieberman HB, Brenner DJ, Amundson SA, Geard CR. *Mechanism of radiation-induced bystander effects: a unifying model*. J Pharm Pharmacol 60:943-50 (2008)
215. *Brenner DJ. *The linear-quadratic model is an appropriate methodology for determining isoeffective doses at large doses per fraction*. Semin Radiat Oncol. 18:234-9 (2008)
216. *Brenner DJ. *Should computed tomography be the modality of choice for imaging Crohn's disease in children? The radiation risk perspective*. Gut 57:1489-90 (2008)
217. Bigelow AW, Brenner DJ, Garty G, Randers-Pehrson G *Single-particle/single-cell ion microbeams as probes of biological mechanisms*. IEEE Trans Plasma Sci. 36:1424-31 (2008)
218. *Brenner D.J. and Huda W. *Effective dose: A useful concept in diagnostic radiology?* Radiat. Prot. Dosimetry 128:503-508 (2008).
219. Bigelow A.W., Geard C.R., Randers-Pehrson G., and Brenner D.J. *Microbeam-integrated multiphoton imaging system*. Rev. Sci. Instrum.79:123707 (2008).

220. Bigelow A.W., Garty G., Funayama T., Randers-Pehrson G., Brenner D.J. and Geard C. *Expanding the question-answering potential of single-cell microbeams at RARAF, USA.* J. Radiat. Res. 50: Suppl. A:A21-A28 (2009).
221. Kirkpatrick J, Brenner DJ *Point/Counterpoint. The linear-quadratic model is inappropriate to model high dose per fraction effects in radiosurgery.* Med Phys. 36:3381-4 (2009)
222. Chen Y, Zhang J, Wang H, Garty G, Xu Y, Lyulko OV, Turner HC, Randers-Pehrson G, Simaan N, Yao YL, Brenner DJ. *Design and preliminary validation of a rapid automated biodosimetry tool for high throughput radiological triage.* Proc ASME 3:61-67; 2009.
223. Hei T.K., Ballas L.K., Brenner D.J., Geard C.R. *Advances in radiobiological studies using a microbeam.* J. Radiat. Res. 50 Suppl. A:A7-A12 (2009).
224. Bertucci A., Pocock R.D., Randers-Pehrson G., Brenner D.J. *Microbeam irradiation of the C. elegans nematode.* J. Radiat. Res. 50 Suppl. A:A49-A54 (2009).
225. Shuryak I, Brenner DJ. *A model of interactions between radiation-induced oxidative stress, protein and DNA damage in Deinococcus radiodurans.* J Theor Biol. 261:305-17 (2009)
226. Shuryak I., Hahnfeldt P., Hlatky L., Sachs R.K. and Brenner D.J. *A new view of radiation-induced cancer: integrating short- and long-term processes. Part I: Approach.* Radiat. Environ. Biophys. 48:263-74 (2009).
227. Shuryak I., Hahnfeldt P., Hlatky L., Sachs R.K. and Brenner D.J. *A new view of radiation-induced cancer: integrating short- and long-term processes. Part II: second cancer risk estimation.* Radiat. Environ. Biophys. 48:275-86 (2009).
228. *Brenner DJ. *Extrapolating radiation-induced cancer risks from low doses to very low doses.* Health Phys. 97:505-9 (2009)
229. *Brenner DJ, Elliston CD, Hall EJ, Paganetti H. *Reduction of the secondary neutron dose in passively scattered proton radiotherapy, using an optimized pre-collimator/collimator.* Phys Med Biol. 54:6065-78 (2009)
230. Randers-Pehrson G, Johnson GW, Marino SA, Xu Y, Dymnikov AD, Brenner DJ. *The Columbia University Sub-micron Charged-Particle Beam.* Nucl Instrum Methods Phys Res A. 609:294-299 (2009)
231. Chen Y, Zhang J, Wang H, Garty G, Xu Y, Lyulko OV, Turner HC, Randers-Pehrson G, Simaan N, Yao YL and Brenner DJ. *Development of a robotically-based automated biodosimetry tool for high-throughput radiological triage.* Int. J. Biomech. Biomed. Robot. 1:115-125 (2010).
232. Coy SL, Krylov EV, Schneider BB, Covey TR, Brenner DJ, Tyburski JB, Patterson AD, Krausz KW, Fornace AJ, Nazarov EG. *Detection of Radiation-Exposure Biomarkers by Differential Mobility Prefiltered Mass Spectrometry (DMS-MS).* Int J Mass Spectrom. 291:108-117 (2010)
233. Garty G, Chen Y, Salerno A, Turner H, Zhang J, Lyulko O, Bertucci A, Xu Y, Wang H, Simaan N, Randers-Pehrson G, Yao YL, Amundson SA, Brenner DJ. *The RABIT: a rapid automated biodosimetry tool for radiological triage.* Health Phys. 98:209-17 (2010)
234. *Brenner DJ. *Medical imaging in the 21st century--getting the best bang for the rad.* New Engl J Med. 362:943-5 (2010)
235. Einstein AJ, Elliston CD, Arai AE, Chen MY, Pearson GD, Delapaz RL, Nickoloff E, Dutta A, Brenner DJ. *Radiation dose from single-heartbeat coronary CT angiography performed with a 320-detector row volume scanner.* Radiology 254:698-706 (2010)
236. *Brenner DJ. *Contralateral second breast cancers: Prediction and prevention.* J Natl Cancer Inst. 102:444-5 (2010).

237. *Brenner, DJ. *Should we be concerned about the rapid increase in CT usage?* Rev Environ Health. 25:63-8 (2010).
238. Schettino G, Johnson GW, Marino SA, Brenner DJ. *Development of a method for assessing non-targeted radiation damage in an artificial 3D human skin model.* Int J Radiat Biol. 86:593-601 (2010).
239. *Brenner DJ, Hricak H. *Radiation exposure from medical imaging: time to regulate?* JAMA. 304:208-9 (2010).
240. Shuryak I, Ullrich RL, Sachs RK, Brenner DJ. *The balance between initiation and promotion in radiation-induced murine carcinogenesis.* Radiat Res. 174:357-66 (2010).
241. Kovalchuk O, Zemp FJ, Filkowski J, Altamirano A, Dickey JS, Jenkins-Baker G, Marino SA, Brenner DJ, Bonner WM, Sedelnikova OA. *MicroRNAome changes in bystander three-dimensional human tissue models suggest priming of apoptotic pathways.* Carcinogenesis 31:1882-8 (2010).
242. *Brenner, DJ. *Slowing the increase in the population dose resulting from CT scans.* Radiat. Res. 174:809-15 (2010).
243. Shuryak I, Sachs RK, Brenner DJ. *Cancer risks after radiation exposure in middle age.* J Natl Cancer Inst. 102:1628-36 (2010).
244. Shuryak I, Brenner DJ. *Effects of radiation quality on interactions between oxidative stress, protein and DNA damage in Deinococcus radiodurans.* Radiat Environ Biophys. 49:693-703 (2010).
245. Xu Y, Randers-Pehrson G, Marino SA, Bigelow AW, Akselrod MS, Sykora JG, Brenner DJ. *An accelerator-based neutron microbeam system for studies of radiation effects.* Radiat Prot Dosim. 145:373-6 (2011)
246. Shuryak I, Sachs RK, Brenner DJ. *A new view of radiation-induced cancer.* Radiat Protec Dosim. 143: 358-64 (2011)
247. Garty G, Grad M, Jones BK, Xu Y, Xu J, Randers-Pehrson G, Attinger D, Brenner DJ. *Design of a novel flow-and-shoot microbeam.* Radiat Prot Dosim. 143: 344-8 (2011)
248. Hricak H, Brenner DJ, Adelstein SJ, Frush DP, Hall EJ, Howell RW, McCollough CH, Mettler FA, Pearce MS, Suleiman OH, Thrall JH, Wagner LK. *Managing radiation use in medical imaging: A multifaceted challenge.* Radiology 258: 889-905 (2011)
249. Turner HC, Brenner DJ, Chen Y, Bertucci A, Zhang J, Wang H, Lyulko OV, Xu Y, Shuryak I, Schaefer J, Simaan N, Randers-Pehrson G, Yao YL, Amundson SA, Garty G. *Adapting the γ -H2AX assay for automated processing in human lymphocytes. 1. Technological aspects.* Radiat. Res. 175:282-90 (2011)
250. *Brenner DJ. *Are x-ray backscatter scanners safe for airport passenger screening? For most individuals, probably yes, but a billion scans per year raises long-term public health concerns.* Radiology 259:6-10 (2011)
251. Templin T, Amundson SA, Brenner DJ, Smilenov LB. *Whole mouse blood microRNA as biomarkers for exposure to γ -rays and ^{56}Fe ions.* Int J Radiat Biol. 87:653-62 (2011).
252. Chen C, Brenner DJ, Brown TR. *Identification of urinary biomarkers from x-irradiated mice using NMR spectroscopy.* Radiat Res. 175:622-30 (2011)
253. Barcellos-Hoff MH, Brenner DJ, Brooks AL, Formenti S, Hlatky L, Locke PA, Shore R, Tenforde T, Travis EL, Williams J. *Low-dose radiation knowledge worth the cost.* Science. 332(6027):305-6.
254. Williams JP, Huser AK, Brenner DJ. *Introduction.* Int J Radiat Biol. 87(8):747.
255. Harken AD, Randers-Pehrson G, Johnson GW, Brenner DJ. *The Columbia University proton-induced soft x-ray microbeam.* Nucl Instrum Methods Phys Res B. 15;1992-6 (2011)

256. *Brenner DJ, Shuryak I, Einstein AJ. *Impact of reduced patient life expectancy on potential cancer risks from radiologic imaging*. Radiology. 261:193-8 (2011).
257. Garty G, Karam A, Brenner DJ. *Infrastructure to support ultra high throughput biodosimetry screening after a radiological event*. Int J Radiat Biol. 87:754-65 (2011)
258. Garty G, Chen Y, Turner HC, Zhang J, Lyulko OV, Bertucci A, Xu Y, Wang H, Simaan N, Randers-Pehrson G, Lawrence Yao Y, Brenner DJ. *The RABiT: a rapid automated biodosimetry tool for radiological triage. II. Technological developments*. Int J Radiat Biol. 87:776-90 (2011)
259. Marino SA, Johnson GW, Schiff PB, Brenner DJ. *Modification of shirt buttons for retrospective radiation dosimetry after a radiological event*. Health Phys. 100:542-7 (2011).
260. Brenner DJ, Shuryak I. *Ten years of follow-up is not long enough to assess lifetime cancer risks caused by computed tomography scans in a young population*. J Clin Oncol. 29(30):4062 (2011).
261. Shuryak I, Brenner DJ, Ullrich RL. *Radiation-induced carcinogenesis: mechanistically based differences between gamma-rays and neutrons, and interactions with DMBA*. PLoS One. 6(12):e28559 (2011).
262. Einstein AJ, Elliston CD, Groves DW, Cheng B, Wolff SD, Pearson GD, Robert Peters M, Johnson LL, Bokhari S, Johnson GW, Bhatia K, Pozniakoff T, Brenner DJ. *Effect of bismuth breast shielding on radiation dose and image quality in coronary CT angiography*. J Nucl Cardiol. 19:100-8 (2012)
263. Ng J, Shuryak I, Xu Y, Clifford Chao KS, Brenner DJ, Burri RJ. *Predicting the Risk of Secondary Lung Malignancies Associated with Whole-Breast Radiation Therapy*. Int J Radiat Oncol Biol Phys. Epub: Jan 13 (2012).
264. Brenner DJ, Sachs RK, Peters LJ, Withers HR, Hall EJ. *We forget at our peril the lessons built into the α/β model*. Int J Radiat Oncol Biol Phys. 82(4):1312-4 (2012).
265. Milne EN, Brenner DJ, Shuryak I, Einstein AJ. *The older, the better*. Radiology. 263(1):306-7 (2012).