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

Homepage: www.columbia.edu/~djb3 *Email:* djb3@columbia.edu

Date of Birth: 9 June 1953
Place of Birth: Liverpool, England
Education:

1971-1974 Oxford University, St. Edmund Hall
Physics and Philosophy: B.A., M.A.

1975-1976 St. Bartholomew's Hospital, University of London.
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 Environmental Health Sciences, Director, Center for Radiological Research, Columbia University Medical Center,

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

1992-94 Associate Professor of Radiation Oncology (Tenure), Columbia University Medical Center

1986-92 Assistant Professor of Radiation Oncology, Columbia University Medical Center

1983-86 Associate Research Scientist, Radiological Research Laboratory, Columbia University Medical Center

1981-83 Staff Member, Los Alamos National Laboratory.

1979-81 Postdoctoral Fellow, Los Alamos Scientific Laboratory.

RESEARCH HIGHLIGHTS

- *Hypofractionated radiotherapy for prostate cancer*
- *Cancer risks associated with overuse of CT scans*
- *Radiation-associated second-cancer risk estimation*
- *High dose rate cervical brachytherapy*
- *Pulsed Dose Rate Brachytherapy*
- *Far-UVC light to reduce airborne transmission of influenza*
- *Far-UVC light to reduce drug-resistant surgical site infections*
- *Ultra high throughput radiation biodosimetry for response to a large-scale radiological event*
- *Prophylactic Mammary Irradiation as an alternative to prophylactic mastectomy.*

AWARDS

Oxford University Weldon Prize for "Development of Mathematical Methods Applied to Biology", 2015
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.
1992 NCRP Robert D. Moseley Award for Radiation Protection in Medicine.
1991 Radiation Research Society Annual Research Award.
Oxford University Undergraduate Carter Physics Prize, 1974

P.I. of NCI Grant "*Flexible Tools for Pre-Clinical Studies to Answer Key Questions Underlying Heavy-Ion Radiotherapy*" 2019-23
P.I. of NIH grant "*DNA Repair Phenotype: The Missing Link in Breast Cancer Risk Assessment*" 2018-23
P.I. of NIH Grant "*Center for Minimally-Invasive High-Throughput Radiation Biodosimetry*" 2005-20
P.I. of NIH grant "*Radiological Research Accelerator Facility*" 1996-2019
P.I. of NIH Grant "*High Throughput Technology for Assessing Global DSB Repair Capacity*" 2011-13
P.I. of NIH grant "*Cancer Risks Attributable to Radiation from Pediatric CT*" 2002-2007
P.I. of DOE grant "*A 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 exams"* 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

Member, National Academy of Sciences Nuclear and Radiation Studies Board
Member, NAS study, Research Directions in Human Biological Effects of Low Level Ionizing Radiation
Member, National Academy of Sciences BEIR VI (Radon) Committee
Director, Radiological Research Accelerator Facility, Columbia University
Member, National Council on Radiation Protection and Measurements
Member, NCRP Committee 1-6, on Linearity of Dose Response, 1995-2000
Chairperson, Columbia University Radiation Safety Committees, 1992-2010
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, *Radon, Risk and Remedy*

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

TED TALK

A New Weapon in the Fight Against Superbugs. Vancouver, 2017

https://www.ted.com/talks/david_brenner_a_new_weapon_in_the_fight_against_superbugs

US PATENTS GRANTED

US Patent 10,071,262: *Apparatus and System for Selectively Effecting and/or Killing Bacteria* (with G Randers-Pehrson et al)

US Patent 5,818,054: *Substance detection with monoenergetic neutrons* (with G Randers-Pehrson)

US Patent 7,787,681 *Systems & methods for robotic transport* (with J. Zhang et al)

US Patent 7,822,249 *Systems & methods for high-throughput radiation biodosimetry* (with G Garty et al)

US Patent 7,826,977 *Systems & methods for high-speed image scanning* (with G. Garty et al)

US Patent 7,898,673 *Systems & methods for focusing optics* (with G. Randers-Pehrson et al)

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 PUBLICATIONS

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 dosemeter 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. D*ouble 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')3α 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 c*alculations 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 Kliauga, 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 ^{32}P, ^{60}Co and ^{152}Eu 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. Opthal. 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, E.J. *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 ^{131}I 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 C3H10T½ 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-Pehson 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 C3H10T½ 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?* Gatroenterology, 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 D. 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. 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)
254. *Brenner DJ, Shuryak I, Einstein AJ. *Impact of reduced patient life expectancy on potential cancer risks from radiologic imaging*. Radiology. 261:193-8 (2011).
255. 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)
256. 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)
257. 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).
258. Shuryak I, Brenner DJ, Ullrich RL. *Radiation-induced carcinogenesis: mechanistically based differences between gamma-rays and neutrons, and interactions with DMBA*. PLoS One. 2011;6(12):e28559. Epub Dec 2011

259. 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)
260. Xu Y, Garty G, Marino SA, Massey TN, Randers-Pehrson G, Johnson GW, Brenner DJ. *Novel neutron sources at the Radiological Research Accelerator Facility.* J Instrum. 7(3). pii: C03031 (2012)
261. Chen Y, Wang H, Zhang J, Garty G, Simaan N, Yao YL, Brenner DJ. *Automated recognition of robotic manipulation failures in high-throughput biodosimetry Tool.* Expert Syst Appl. 39:9602-11 (2012)
262. Becker SJ, Elliston CD, Dewyngaert K, Jozsef G, Brenner DJ, Formenti S. *Breast radiotherapy in the prone position primarily reduces the maximum out-of-field measured dose to the ipsilateral lung.* Med Phys. 39:2417-23 (2012)
263. *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. 82:1312-4 (2012)
264. Ng J, Shuryak I, Xu Y, 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 83:1101-6. (2012)
265. *Brenner DJ, Hall EJ. *Cancer risks from CT scans: Now we have data, what next?* Radiology 265:330-1 (2012)
266. Shuryak I, Brenner DJ. *Mechanistic analysis of the contributions of DNA and protein damage to radiation-induced cell death.* Radiat Res. 178:17-24 (2012)
267. *Brenner DJ. *Exploring two two-edged swords* Radiat Res. 178:7-16 (2012)
268. Hall EJ, Brenner DJ. *Cancer risks from diagnostic radiology: The impact of new epidemiological data.* Br J Radiol. 85:e1316-7 (2012)
269. *Brenner DJ. *We can do better than effective dose for estimating or comparing low-dose radiation risks.* Ann ICRP. 41:124-8 (2012)
270. *Brenner DJ. *Minimizing medically unwarranted computed tomography scans*. Ann ICRP. 41:161-9 (2012)
271. *Brenner DJ. *Radiation and chest CT scans: are there problems? What should we do?* Chest 142:549-50 (2012)
272. Grad, M., Harken, A., Randers-Pehrson, G., Attinger, D. and Brenner, D.J. *An ultra-thin Schottky diode as a transmission particle detector for biological microbeams.* J. Instrum. 7: P12001 (2012)
273. Grad M, Bigelow AW, Garty G, Attinger D, Brenner DJ. *Optofluidic cell manipulation for a biological microbeam.* Rev Sci Instrum. 84(1):014301 (2013)
274. Grad M, Young EF, Smilenov L, Brenner DJ, Attinger D. *A simple add-on microfluidic appliance for accurately sorting small populations of cells with high fidelity.* J Micromech Microeng 23(11), 2013
275. Brown JM, Brenner DJ, Carlson DJ. *Dose escalation, not "new biology," can account for the efficacy of stereotactic body radiation therapy with non-small cell lung cancer.* Int J Radiat Oncol Biol Phy 85:1159-60 (2013)
276. Bigelow AW, Ponnaiya B, Targoff KL, Brenner DJ. *UV microspot irradiator at Columbia University*. Radiat Environ Biophys. 52:411-7 (2013)
277. Lyulko OV, Randers-Pehrson G, Brenner DJ. *Simultaneous immersion Mirau interferometry*. Rev Sci Instrum. 84 (5):053701 (2013)

278. Schissler AJ, Rozenshtein A, Kulon ME, Pearson GD, Green RA, Stetson PD, Brenner DJ, D'Souza B, Tsai WY, Schluger NW, Einstein AJ. *CT Pulmonary Angiography: Increasingly diagnosing less severe pulmonary emboli.* PLoS One. Jun 12;8(6):e65669 (2013)
279. Buonanno M, Randers-Pehrson G, Bigelow AW, Trivedi S, Lowy FD, Spotnitz HM, Hammer SM, Brenner DJ. *207-nm UV Light - A Promising Tool for Safe Low-Cost Reduction of Surgical Site Infections. I: In Vitro Studies.* PLoS One. 20;8(12):e85795 (2013)
280. Buonanno M, Garty G, Grad M, Gendrel M, Hobert O, Brenner DJ. *Microbeam irradiation of C. elegans nematode in microfluidic channels.* Radiat Environ Biophys. 52:531-7 (2013)
281. Ponnaiya B, Amundson SA, Ghandhi SA, Smilenov LB, Geard CR, Buonanno M, Brenner DJ. *Single-cell responses to ionizing radiation.* Radiat Environ Biophys. 52:523-30 (2013)
282. Shuryak I, Smilenov LB, Kleiman NJ, Brenner DJ. *Potential reduction of contralateral second breast-cancer risks by prophylactic mammary irradiation: validation in a breast-cancer-prone mouse model.* PLoS One. 2013 20;8(12):e85795.
283. *Brenner DJ, Shuryak I, Jozsef G, Dewyngaert KJ, Formenti SC. *Risk and risk reduction of major coronary events associated with contemporary breast radiotherapy.* JAMA Intern Med. 174:158-60 (2014)
284. Brenner DJ, Vazquez M, Buonanno M, Amundson SA, Bigelow AW, Garty G, Harken AD, Hei TK, Marino SA, Ponnaiya B, Randers-Pehrson G, Xu, Y, *Integrated interdisciplinary training in the radiological sciences*. Brit J Radiol. 87(1034):20130779 (2014)
285. Goudarzi M, Weber W, Mak TD, Chung J, Doyle-Eisele M, Melo D, Brenner DJ, Guilmette RA, Fornace AJ. *Development of urinary biomarkers for internal exposure by cesium-137 using a metabolomics approach in mice*. Radiat Res. 81:54-64 (2014)
286. Brown JM, Carlson DJ, Brenner DJ. *The Tumor Radiobiology of SRS and SBRT: Are More Than the 5 Rs Involved?* Int J Radiat Oncol Biol Phys. 88:254-62 (2014)
287. Brenner DJ *What we know and what we don't know about cancer risks associated with radiation doses from radiological imaging*. Br J Radiol. 87(1035):20130629 (2014)
288. Fazel R, Gerber TC, Balter S, Brenner DJ, Carr JJ, Cerqueira MD, Chen J, Einstein AJ, Krumholz HM, Mahesh M, McCollough CH, Min JK, Morin RL, Nallamothu BK, Nasir K, Redberg RF, Shaw LJ. *Approaches to enhancing radiation safety in cardiovascular imaging: a scientific statement from the American Heart Association.* Circulation. 130:1730-48 (2014)
289. Balajee AS, Bertucci A, Taveras M, Brenner DJ. *Multicolour FISH analysis of ionising radiation induced micronucleus formation in human lymphocytes*. Mutagenesis 29:447-55 (2014)
290. Goudarzi M, Mak TD, Chen C, Smilenov LB, Brenner DJ, Fornace AJ. *The effect of low dose rate on metabolomic response to radiation in mice*. Radiat Environ Biophys. 53:645-57 (2014)
291. Repin M, Turner HC, Garty G, Brenner DJ. *Next generation platforms for high-throughput biodosimetry*. Radiat Prot Dosim. 159:105-10 (2014)
292. Halm BM, Franke AA, Lai JF, Turner HC, Brenner DJ, Zohrabian VM, DiMauro R. γ-*H2AX foci are increased in lymphocytes in vivo in young children 1 h after very low-dose X-irradiation: a pilot study*. Pediatr Radiol. 44:1310-7 (2014)
293. Lyulko OV, Garty G, Randers-Pehrson G, Turner HC, Szolc B, Brenner DJ. *Fast image analysis for the micronucleus assay in a fully automated high-throughput biodosimetry system*. Radiat Res. 181:146-61 (2014)
294. Laiakis EC, Mak TD, Anizan S, Amundson SA, Barker CA, Wolden SL, Brenner DJ, Fornace AJ Jr. *Development of a metabolomic radiation signature in urine from patients undergoing total body irradiation*. Radiat Res. 181:350-61 (2014)

295. Shuryak I, Lubin JH, Brenner DJ. *Potential for adult-based epidemiological studies to characterize overall cancer risks associated with a lifetime of CT scans*. Radiat Res. 181:584-91 (2014)
296. Turner HC, Sharma P, Perrier JR, Bertucci A, Smilenov L, Johnson G, Taveras M, Brenner DJ, Garty G. *The RABiT: high-throughput technology for assessing global DSB repair.* Radiat Environ Biophys. 53:265-72 (2014)
297. Xu Y, Zhang B, Messerli M, Randers-Pehrson G, Hei TK, Brenner DJ. *Metabolic oxygen consumption measurement with a single-cell biosensor after particle microbeam irradiation*. Radiat Environ Biophys. 2015;54:137-44
298. Goudarzi M, Weber WM, Mak TD, Chung J, Doyle-Eisele M, Melo DR, Brenner DJ, Guilmette RA, Fornace AJ Jr. 162. *Metabolomic and lipidomic analysis of serum from mice exposed to an internal emitter, cesium-137, using a shotgun LC-MS(E) approach.* J Proteome Res. 2015;14(1):374-84
299. Turner HC, Shuryak I, Taveras M, Bertucci A, Perrier JR, Chen C, Elliston CD, Johnson GW, Smilenov LB, Amundson SA, Brenner DJ. *Effect of dose rate on residual γ-H2AX levels and frequency of micronuclei in X-irradiated mouse lymphocytes*. Radiat Res. 2015;183(3):315-24
300. Sharma PM, Ponnaiya B, Taveras M, Shuryak I, Turner H, Brenner DJ. *High throughput measurement of γH2AX DSB repair kinetics in a healthy human population.* PLoS One. 2015;10(3):e0121083
301. Halm BM, Franke AA, Lai JF, Li X, Custer LJ, Pagano I, Cooney RV, Turner HC, Brenner DJ. *Pilot study for the establishment of biomarkers for radiation damage after computed tomography in children.* Hawaii J Med Public Health. 2015;74(3):112-9
302. Welch D, Harken AD, Randers-Pehrson G, Brenner DJ. *Construction of mouse phantoms from segmented CT scan data for radiation dosimetry studies*. Phys Med Biol. 2015;60(9):3589-98
303. Garty G, Ehsan MU, Buonanno M, Yang Z, Sweedler JV, Brenner DJ. *Microbeam-coupled capillary electrophoresis.* Radiat Prot Dosimetry. 2015 Apr 12.
304. Sun H, Olsen T, Zhu J, Tao J, Ponnaiya B, Amundson SA, Brenner DJ, Lin Q. *A bead-based microfluidic approach to integrated single-cell gene expression analysis by quantitative RT-PCR*. RSC Adv. 2015;5:4886-4893
305. Garty G, Bigelow AW, Repin M, Turner HC, Bian D, Balajee AS, Lyulko OV, Taveras M, Yao YL, Brenner DJ. *An automated imaging system for radiation biodosimetry.* Microsc Res Tech. 2015;78:587-98
306. Xu Y, Randers-Pehrson G, Marino SA, Garty G, Harken A, Brenner DJ. *Broad energy range neutron spectroscopy using a liquid scintillator and a proportion counter: application to a neutron spectrum similar to that from an Improvised Nuclear Device*. Nucl Instrum Methods Phys Res A. 2015;794:234-239
307. Goudarzi M, Weber WM, Mak TD, Chung J, Doyle-Eisele M, Melo DR, Strawn SJ, Brenner DJ, Guilmette RA, Fornace AJ Jr. *A comprehensive metabolomic investigation in urine of mice exposed to strontium-90*. Radiat Res. 2015;183:665-74
308. Shuryak I, Carlson DJ, Brown JM, Brenner DJ *High-dose and fractionation effects in stereotactic radiation therapy: Analysis of tumor control data from 2965 patients*. Radiother Oncol. 2015;115:327-34
309. Brenner DJ, Chao NJ, Greenberger JS, Guha C, McBride WH, Swartz HM, Williams JP. *Are we ready for a radiological terrorist attack yet? Report from the Centers for Medical Countermeasures against Radiation network*. Int J Radiat Oncol Biol Phys. 2015;92:504-5

310. Buonanno M, Randers-Pehrson G, Smilenov LB, Kleiman NJ, Young E, Ponnayia B, Brenner DJ. *A mouse ear model for bystander studies induced by microbeam irradiation.* Radiat Res. 2015;184:219-25

311. Lue SW, Repin M, Mahnke R, Brenner DJ. *Development of a high-throughput and miniaturized cytokinesis-block micronucleus assay for use as a biological dosimetry population triage tool.* Radiat Res. 2015;184:134-42

312. Goudarzi M, Weber WM, Chung J, Doyle-Eisele M, Melo DR, Mak TD, Strawn SJ, Brenner DJ, Guilmette R, Fornace AJ Jr. *Serum dyslipidemia is induced by internal exposure to strontium-90 in mice, lipidomic profiling using a data-independent liquid chromatography-mass spectrometry approach.* J Proteome Res 2015;14:4039-49

313. Herr L, Shuryak I, Friedrich T, Scholz M, Durante M, Brenner DJ. *New Insight into Quantitative Modeling of DNA Double-Strand Break Rejoining.* Radiat Res. 2015;184:280-95

314. Xu Y, Randers-Pehrson G, Turner HC, Marino SA, Geard CR, Brenner DJ, Garty G *Accelerator-based biological irradiation facility simulating neutron exposure from an improvised nuclear device*. Radiat Res. 2015;184:404-10

315. Brenner DJ. *Should we worry about inherited radiation risks*? Lancet Oncol. 2015;16:1275-6

316. Sun H, Olsen T, Zhu J, Tao J, Ponnaiya B, Amundson SA, Brenner DJ, Lin Q. *A microfluidic approach to parallelized transcriptional profiling of single cells.* Microfluid Nanofluidics. 2015;19:1429-1440

317. Turner HC, Shuryak I, Weber W, Doyle-Eisele M, Melo D, Guilmette R, Amundson SA, Brenner DJ. *γ-H2AX Kinetic Profile in Mouse Lymphocytes Exposed to the Internal Emitters Cesium-137 and Strontium-90*. PLoS One. 2015;10(11):e0143815

318. Radivoyevitch T, Sachs RK, Gale RP, Molenaar RJ, Brenner DJ, Hill BT, Kalaycio ME, Carraway HE, Mukherjee S, Sekeres MA, Maciejewski JP. *Defining AML and MDS second cancer risk dynamics after diagnoses of first cancers treated or not with radiation.* Leukemia. Leukemia. 2016;30:285-94

319. Garty G, Turner HC, Salerno A, Bertucci A, Zhang J, Chen Y, Dutta A, Sharma P, Bian D, Taveras M, Wang H, Bhatla A, Balajee A, Bigelow AW, Repin M, Lyulko OV, Simaan N, Yao YL, Brenner DJ. *The decade of the RABiT (2005-15)*. Radiat Prot Dosimetry. 2016; 13. [Epub ahead of print]

320. Bertucci A, Smilenov LB, Turner HC, Amundson SA, Brenner DJ. *In vitro RABiT measurement of dose rate effects on radiation induction of micronuclei in human peripheral blood lymphocytes.* Radiat Environ Biophys. 2016;55:53-9

321. Laiakis EC, Pannkuk EL, Diaz-Rubio ME, Wang YW, Mak TD, Simbulan-Rosenthal CM, Brenner DJ, Fornace AJ Jr. *Implications of genotypic differences in the generation of a urinary metabolomics radiation signature*. Mutat Res. 2016;788:41-9

322. Goudarzi M, Chauthe S, Strawn SJ, Weber WM, Brenner DJ, Fornace AJ. *Quantitative metabolomic analysis of urinary citrulline and calcitroic acid in mice after exposure to various types of ionizing radiation*. Int J Mol Sci. 2016 May 20;17(5). pii: E782

323. Buonanno M, Stanislauskas M, Ponnaiya B, Bigelow AW, Randers-Pehrson G, Xu Y, Shuryak I, Smilenov L, Owens DM, Brenner DJ. 207-nm *UV light-a promising tool for safe low-cost reduction of surgical site infections. II. In-vivo safety studies*. PLoS One. 2016 Jun 8;11(6):e0138418

324. Laiakis EC, Strawn SJ, Brenner DJ, Fornace AJ Jr. *Assessment of saliva as a potential biofluid for biodosimetry: A pilot metabolomics study in mice*. Radiat Res. 2016;186:92-7. doi: 10.1667/RR14433.1. Epub Jun 22 2016

325. Durante M, Brenner DJ, Formenti S. *Does heavy ion therapy work through the immune system?* Int. J. Radiat. Oncol. Biol. Phys. 2016;96:934-6
326. Bian D, Tsui JC, Repin M, Garty G, Turner H, Lawrence Yao Y, Brenner DJ. *Liquid handling optimization in high-throughput biodosimetry tool*. J Med Device. 2016 Dec;10(4)
327. Goudarzi M, Mak TD, Jacobs JP, Moon BH, Strawn SJ, Braun J, Brenner DJ, Fornace AJ Jr, Li HH. *An Integrated multi-omic approach to assess radiation injury on the host-microbiome axis*. Radiat Res. 2016;18:219-34
328. Garty G, Turner HC, Salerno A, Bertucci A, Zhang J, Chen Y, Dutta A, Sharma P, Bian D, Taveras M, Wang H, Bhatla A, Balajee A, Bigelow AW, Repin M, Lyulko OV, Simaan N, Yao YL, Brenner DJ. *The decade of the RABiT (2005-15)*. Radiat Prot Dosimetry. 2016;172:201-206
329. Laiakis EC, Strawn SJ, Brenner DJ, Fornace AJ Jr. *Assessment of saliva as a potential biofluid for biodosimetry: A pilot metabolomics study in mice*. Radiat Res. 2016;186:92-7
330. Goudarzi M, Chauthe S, Strawn SJ, Weber WM, Brenner DJ, Fornace AJ. *Quantitative metabolomic analysis of urinary citrulline and calcitroic acid in mice after exposure to various types of ionizing radiation*. Int J Mol Sci. 2016;17(5)
331. Laiakis EC, Pannkuk EL, Diaz-Rubio ME, Wang YW, Mak TD, Simbulan-Rosenthal CM, Brenner DJ, Fornace AJ Jr. *Implications of genotypic differences in the generation of a urinary metabolomics radiation signature*. Mutat Res. 2016;788:41-9
332. Bertucci A, Smilenov LB, Turner HC, Amundson SA, Brenner DJ. *In vitro RABiT measurement of dose rate effects on radiation induction of micronuclei in human peripheral blood lymphocytes*. Radiat Environ Biophys. 2016;55:53-9
333. Radivoyevitch T, Sachs RK, Gale RP, Molenaar RJ, Brenner DJ, Hill BT, Kalaycio ME, Carraway HE, Mukherjee S, Sekeres MA, Maciejewski JP *Defining AML and MDS second cancer risk dynamics after diagnoses of first cancers treated or not with radiation*. Leukemia. 2016;30:285-94
334. Holmes JA, Chera BS, Brenner DJ, Shuryak I, Wilson AK, Lehman-Davis M, Fried DV, Somasundaram V, Lian J, Cullip T, Marks LB. Estimating the excess lifetime risk of radiation induced secondary malignancy (SMN) in pediatric patients treated with craniospinal irradiation (CSI): *Conventional radiation therapy versus helical intensity modulated radiation therapy*. Pract Radiat Oncol. 2017;7:35-41
335. Kramer R, Cassola VF, Andrade ME, de Araújo MW, Brenner DJ, Khoury HJ. *Mathematical modelling of scanner-specific bowtie filters for Monte Carlo CT dosimetry*. Phys Med Biol. 2017;62:781-809
336. Garty G, Xu Y, Elliston C, Marino SA, Randers-Pehrson G, Brenner DJ. *Mice and the A-Bomb: Irradiation systems for realistic exposure scenarios.* Radiat Res. 2017;187:465-475
337. Welch D, Turner L, Speiser M, Randers-Pehrson G, Brenner DJ. *Scattered dose calculations and measurements in a life-like mouse phantom*. Radiat Res. 2017;187:433-442
338. Shuryak I, Fornace AJ Jr, Datta K, Suman S, Kumar S, Sachs RK, Brenner DJ. *Scaling human cancer risks from low LET to high LET when dose-effect relationships are complex*. Radiat Res. 2017;187:476-482
339. Buonanno M, Ponnaiya B, Welch D, Stanislauskas M, Randers-Pehrson G, Smilenov L, Lowy FD, Owens DM, Brenner DJ. *Germicidal efficacy and mammalian skin safety of 222-nm UV light.* Radiat Res. 2017;187:483-491
340. Repin M, Pampou S, Karan C, Brenner DJ, Garty G. *RABiT-II: Implementation of a high-throughput micronucleus biodosimetry assay on commercial biotech robotic systems.* Radiat Res. 2017;187:492-498
341. Welch D, Randers-Pehrson G, Spotnitz HM, Brenner DJ. 162. *Unlaminated Gafchromic EBT3 film for ultraviolet radiation monitoring.* Radiat Prot Dosim. 2017;176:341-346

342. Nagel ZD, Engelward BP, Brenner DJ, Begley TJ, Sobol RW, Bielas JH, Stambrook PJ, Wei Q, Hu JJ, Terry MB, Dilworth C, McAllister KA, Reinlib L, Worth L, Shaughnessy DT. 162. *Towards precision prevention: Technologies for identifying healthy individuals with high risk of disease*. Mutat Res. 2017;800-802:14-28
343. Laiakis EC, Wang YW, Young EF, Harken AD, Xu Y, Smilenov L, Garty GY, Brenner DJ, Fornace AJ Jr. *Metabolic Dysregulation after neutron exposures expected from an improvised nuclear device*. Radiat Res. 2017;188:21-34
344. Welch D, Spotnitz HM, Brenner DJ. *Measurement of UV emission from a diffusing optical fiber using radiochromic film*. Photochem Photobiol. 2017;93:1509-1512
345. Miller AC, Gilstad J, Brenner DJ. *Military Global Health Engagement and Low-Dose Ionizing Radiation*. Mil Med. 2017;182:1677-1679
346. England MJ, Bigelow AW, Merchant MJ, Velliou E, Welch D, Brenner DJ, Kirkby KJ. *Automated microbeam observation environment for biological analysis - Custom portable environmental control applied to a vertical microbeam system*. Sens Actuators B Chem. 2017;239:1134-1143
347. Gehi AK, Shuryak I, Balter S, Vandermolen J, Meulepas JM, King R, Mehta ND, Brenner DJ, Einstein AJ. *Estimating cancer risk associated with ionizing radiation exposure during atrial fibrillation ablation*. JACC Clin Electrophysiol. 2017;3:1200-1201
348. Lee Y, Pujol Canadell M, Shuryak I, Perrier JR, Taveras M, Patel P, Koller A, Smilenov LB, Brenner DJ, Chen EI, Turner HC. *Candidate protein markers for radiation biodosimetry in the hematopoietically humanized mouse model*. Sci Rep. 2018;8:13557
349. Xu Y, Randers-Pehrson G, Marino SA, Garty G, Harken A, Brenner DJ. *A Horizontal multi-purpose microbeam system.* Nucl Instrum Methods Phys Res A. 2018;888:18-21
350. Meulepas JM, Hauptmann M, Lubin JH, Shuryak I, Brenner DJ. *Is there unmeasured indication bias in radiation-related cancer risk estimates from studies of computed tomography*? Radiat Res. 2018;189:128-135
351. Ponnaiya B, Buonanno M, Welch D, Shuryak I, Randers-Pehrson G, Brenner DJ. *Far-UVC light prevents MRSA infection of superficial wounds in vivo.* PLoS One. 2018;13(2):e0192053
352. Welch D, Buonanno M, Shuryak I, Randers-Pehrson G, Spotnitz HM, Brenner DJ. *Effect of far ultraviolet light emitted from an optical diffuser on methicillin-resistant Staphylococcus aureus in vitro*. PLoS One. 2018 Aug 10;13(8):e0202275
353. Brenner DJ, Hall EJ. *Hypofractionation in prostate cancer radiotherapy*. Transl Cancer Res 2018;7 (Suppl 6):S632-9
354. Brenner DJ, Hall EJ. *Are we now able to define guidelines for moderate hypofractionation in prostate cancer radiation therapy?* Int J Radiat Oncol Biol Phys. 2018;100:871-3
355. Lee Y, Pujol Canadell M, Shuryak I, Perrier JR, Taveras M, Patel P, Koller A, *Smilenov LB, Brenner DJ, Chen EI, Turner HC. Candidate protein markers for radiation biodosimetry in the hematopoietically humanized mouse mode*l. Sci Rep. 2018 Sep 10;8(1):13557
356. Grilj V, Brenner DJ. *LET dependent response of GafChromic films investigated with MeV ion beams.* Phys Med Biol. 2018 Dec 18;63(24):245021
357. Barbieri S, Baiocco G, Babini G, Morini J, Friedland W, Buonanno M, Grilj V, Brenner DJ, Ottolenghi A. *Modelling γ-H2AX foci induction to mimic limitations in the scoring technique*. Radiat Prot Dosim. 2019;183:121-125
358. Shuryak I, Brenner DJ. *Mechanistic modeling predicts no significant dose rate effect on heavy-ion carcinogenesis at dose rates relevant for space exploratio*n. Radiat Prot Dosim. 2019;183:203-212

359. Shuryak I, Hall EJ, Brenner DJ. *Dose dependence of accelerated repopulation in head and neck cancer: Supporting evidence and clinical implication*s. Radiother Oncol. 2018;127:20-26

360. Turner HC, Lee Y, Weber W, Melo D, Kowell A, Ghandhi SA, Amundson SA, Brenner DJ, Shuryak I. *Effect of dose and dose rate on temporal γ-H2AX kinetics in mouse blood and spleen mononuclear cells in vivo following Cesium-137 administration*. BMC Mol Cell Biol. 2019;20(1):13

361. Laiakis EC, Canadell MP, Grilj V, Harken AD, Garty GY, Astarita G, Brenner DJ, Smilenov L, Fornace AJ Jr. *Serum lipidomic analysis from mixed neutron/X-ray radiation fields reveals a hyperlipidemic and pro-inflammatory phenotype.* Sci Rep. 2019 Mar 14;9(1):4539

362. Wang Q, Rodrigues MA, Repin M, Pampou S, Beaton-Green LA, Perrier J, Garty G, Brenner DJ, Turner HC, Wilkins RC. *Automated triage radiation biodosimetry: Integrating imaging flow cytometry with high-throughput robotics to perform the cytokinesis-block micronucleus assay*. Radiat Res 2019;191:342-351

363. Buonanno M, Grilj V, Brenner DJ. *Biological effects in normal cells exposed to FLASH dose rate protons*. Radiother Oncol. 2019; S0167-8140(19)30076-3

364. Repin M, Pampou S, Garty G, Brenner DJ. *RABiT-II: A fully-automated micronucleus assay system with shortened time to result*. Radiat Res. 2019;191:232-236

365. Shuryak I, Hall EJ, Brenner DJ. *Optimized hypofractionation may markedly improve tumor control and decrease late effects for head and neck cancer*. Int J Radiat Oncol Biol Phys. 2019;104:272-278