

CURRICULUM VITAE

NAME: Gerassimos Mike Makrigiorgos
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HOME ADDRESS: 51 Payson Road, Brookline, MA 02467
DATE OF BIRTH: February 15, 1958
PLACE OF BIRTH: Athens, Greece

EDUCATION:

1981 B.S., Physics, University of Athens, Greece.
1984 Ph.D., Medical Physics, University of Leeds, United Kingdom.

POSTDOCTORAL TRAINING:

1987-1989 Radiation Biology, Radiology (Dr. S.J. Adelstein), Harvard Medical School, Boston, MA.

ACADEMIC APPOINTMENTS:

1987-1989 Research Fellow, Radiology, Harvard Medical School, Boston, MA.
1989-1990 Instructor, Radiology, Harvard Medical School, Boston, MA
1991-1995 Assistant Professor, Radiation Oncology, Harvard Medical School, Boston, MA.
1995- Associate Professor, Radiation Oncology, Harvard Medical School, Boston, MA.

HOSPITAL APPOINTMENTS:

1985-1987 Hospital Physicist, 401 Athens General Army Hospital, Athens, Greece (mandatory military service).
1987-1989 Research Fellow, Radiology, Brigham & Women's Hospital, Boston, MA.
1990-1998 Staff Physicist, Joint Center for Radiation Therapy, Boston, MA.
1999- Head, Dosimetry and Biophysics, Physics Division, Brigham-Dana Farber-Children's Hospitals, Longwood Center for Radiation Oncology, Boston, MA.

OTHER PROFESSIONAL POSITIONS:

1984-1985 Researcher, Medical Physics Department, University of Leeds, U.K.
1985-1987 Researcher, Medical Physics Department, University of Athens, Greece (funded by Greek Ministry of Industry, Research and Technology).

HOSPITAL AND HEALTH CARE ORGANIZATION CLINICAL RESPONSIBILITIES:

- 1990-2000 Clinical Physicist in Radiation Therapy, Joint Center for Radiation Therapy. Responsibilities: radiation machine installation, acceptance, commissioning, and data acquisition. Periodic quality assurance/checks. Electron beam treatment planning, dosimetry and maintenance of the JCRT database. Checking of daily treatment plans. Outreach: responsible for physics, quality assurance and dosimetry at Angell Memorial Hospital.
- 2000- Clinical Physicist in Radiation Therapy, Longwood Center for Radiation Oncology. Head, Dosimetry and Biophysics group. Responsible for dosimetry, machine quality assurance, compliance with State regulations.

COMMITTEE ASSIGNMENTS:

- 1997-98 Member, Scientific Program Committee, Radiation Research Society Annual Meeting, Louisville, Kentucky, April 26-30 1998.
- 1997-01 Member, Membership Selection Committee, Radiation Research Society.
- 1996-97 External Reviewer, Radiation Study Section, National Institutes of Health.
- 1994-95 Reviewer, Fellowship program, ICTTF grants, International Union Against Cancer.
- 1996-97 Member, Preliminary Advisory Committee on Dose Concepts in Nuclear Medicine, International Commission on Radiation Units and Measurements.
- 1998-99 Member, Scientific Program Committee, VI International Conference on Medical Physics, Patras, Greece, September 1-3, 1999.
- 1999-00 Member, Scientific Program Committee, Radiation Research Society Annual Meeting, San Jose, Puerto Rico, scheduled for 04/2001.
- 1999-00 Member, Scientific Program Committee, VII International Workshop, Radiation Damage to DNA, Orleans, France scheduled for 09/2001.
- 2001 Member, NIH Study Section, 'Innovative Technologies for the Molecular Analysis of Cancer', Program Announcement. July 19-21, 2000, Washington DC.
- 2001 Member, NIH Study Section, 'Innovative Technologies for the Molecular Analysis of Cancer', Program Announcement. July 18-20, 2001, Washington DC.

PROFESSIONAL SOCIETY INVOLVEMENT:

- 1984-92 Member, Hospital Physicists Association, UK.
- 1990- Member, American Association of Physicists in Medicine, USA.
- 1994-99 Member, Oxygen Society, USA.
- 1994-99 Member, The International Society for Free Radical Research.
- 1997- Member, American Association for the Advancement of Science.

HONORS/AWARDS:

- 1986 F.W. Spiers Prize in Medical Physics, University of Leeds, U.K (Ph.D work).
- 1987 Cancer Research Fellowship. The International Union Against Cancer, Switzerland.
- 1996-01 K04 Grant, National Cancer Institute (Research Career Development Award).

INVITED TALKS:

- 1995 Workshop Chairman and Speaker, *Recent developments in the detection of hydroxyl radicals in chemical, biological and macromolecular systems*. Radiation Research Society Annual Meeting, San Jose, CA, 1995.
- 1995 Selected presentation, *Molecular dosimetry of radiation-induced hydroxyl radicals using a chromatin-incorporated fluorescent molecule*. 37th Annual Meeting, American Association of Physicists in Medicine, Boston.
- 1995 Selected Presentation, *Molecular dosimetry of chromatin-associated hydroxyl radicals generated by metals*. 2nd Annual Meeting of the Oxygen Society, Pasadena, CA.
- 1997 Workshop Co-Chairman and Speaker, *New methods for detection of free radicals*. Radiation Research Society Annual Meeting, Providence, RI.
- 1998 Symposium Chairman and Speaker, *Laser microbeam-based dissection of molecular mechanisms of cell function and response to selective damage*. Radiation Research Society Annual Meeting, Louisville, Kentucky.
- 1999 Invited Speaker, *Genome-wide screening for mismatches, mutations and DNA damage*. Department of Biological Sciences & Chemistry, Biochemistry Seminar program, U-Mass Lowell, November 1999.
- 2001 Selected presentation, *Highly selective isolation of unknown mutations in diverse DNA fragments: new potential for multiplex screening in cancer*. Principal Investigators' Meeting, 'Innovative technologies for the molecular analysis of cancer', National Cancer Institute, Washington DC, July 6-8.
- 2001 Invited talk, *Single step scanning of the human genome for unknown mutations and polymorphisms using ALBUMS: a highly accelerated new approach to identifying disease genes*. Cambridge Healthtech Intitute, Molecular analysis for research and diagnostics, San Diego, February 14-15, 2001.
- 2001 Symposium Chairman and Speaker, *Single step, genome-wide screening*

for SNPs and Mutations using combined chemical and biological approaches. Radiation Research Society Annual Meeting, Puerto Rico, April 2001.

- 2001 Workshop Co-Chairman and Speaker, *Detection of free radicals/damage in biological systems.* Radiation Research Society Annual Meeting, Puerto Rico, April 2001.
- 2001 Invited talk and Session Chair: New technology for rapid identification of disease associated polymorphisms. Cambridge Healthtech Intitute, Human Genetic Variation –Fit for the race? September 17-18, 2001, Boston, MA
- 2001 Invited talk: New chemical and genomic technologies for damage detection. VIIth International Workshop, Radiation Damage to DNA, Orleans, France, September 2-7, 2001.
- 2002 Invited talk: Identification of multiple needles in a haystack: Mutation scanning at extremely high selectivities. Cambridge Healthtech Intitute, Introspection and RNA meditations, February 11-12 2002, San Diego, CA.

PATENTS

US6174680: *Method for identifying mismatch repair glycosylase-reactive sites, compounds and uses thereof.* Inventor: G. M. Makrigiorgos. Assignee: Dana Farber Cancer Institute. Issue date: Jan 16, 2001

Mutation scanning array, methods and uses thereof. Inventor: G.M. Makrigiorgos. Assignees: Dana Farber Cancer Institute and JCRT. Submitted to the US Patent Office (patent pending).

Methods for rapid screening of mutations, polymorphisms and methylation. Inventor: G.M. Makrigiorgos. Assignees: Dana Farber Cancer Institute and JCRT. Submitted to the US Patent Office (patent pending).

NARRATIVE REPORT OF RESEARCH, TEACHING AND CLINICAL CONTRIBUTIONS

My original training is in Medical Physics (Ph.D degree 1984) and my professional duties are in clinical physics and dosimetry. Following a postdoctoral training in radiation biology (1987-1989) my research interests focused in Molecular Biophysics. Since 1990 I have been applying my biophysics background to develop new technologies for addressing problems in the field of cellular damage by clastogenic and mutagenic agents, such as radiation. My principal experience has been the development and testing of novel molecular probes to characterize by optical techniques (e.g. by fluorescence, chemiluminescence) the damage to cellular components (DNA, membrane,

proteins). The development and application of molecular fluorescent probes that detect hydroxyl radicals and DNA damage are the subject of my currently NIH-funded research. In 1996 I was awarded a NIH Research Career Development Award (K04) which allowed me to expand the research in the field of DNA mutation detection. As a result I developed a molecular probe – based technology (ALBUMS) for the detection of DNA lesions, mutations and polymorphisms on a genome-wide scale. This research, which is currently NIH-funded, could impact several fields of medicine, including radiation oncology.

RESEARCH FUNDING INFORMATION

Active:

- 2001-03 NIH / **R01** CA/HG90422-01 (PI: G.M. Makrigiorgos). Institution: DFCL.
Title: Microsphere array for lung cancer mutation scanning (initiation date: June –01).
- 2001-03 Dept of Defence BC000782 Idea Award (PI: G. M. Makrigiorgos).
Insitution: DFCL. Title: Technology for identification of polymorphisms
crucial to breast cancer development. (initiation date: April –01).
- 1999-03 NIH / **R21-R33** CA83234-01 (PI: G. M. Makrigiorgos.). Institution:
DFCL. Title: Technology for mutation analysis of cancer.
- 2001-02 Genomics Coop Inc, Cambridge, MA (PI: G. M. Makrigiorgos).
Insitution: DFCL. Title: Technology for identification of polymorphisms
crucial to colon cancer development.
- 1996-00: NIH / **R01** CA72046 (PI: G. M. Makrigiorgos). Institution: DFCL.
Title: Evaluation of metal-catalyzed hydroxyl radicals in chromatin.
(Currently in no-cost extension phase).
- 1996-01: NIH / **K04** CA69296 (PI: G. M. Makrigiorgos). Institution: DFCL.
Title: Evaluation of metal-catalyzed hydroxyl radicals in chromatin
(Research Career Development Award).

Past: _

- 1994-99: NIH / **R29** CA633334 (PI: G. M. Makrigiorgos). Institution: DFCL.
Title: Chromatin dynamic conformation and radiation sensitivity.
- 1996-97: NIH / **S.B.I.R** R43 HL57150 (PI of subcontract: G. M. Makrigiorgos).
Title: Lipid Peroxidation Detection Method.
- 1991-92: Biomedical Research Support Grant (BRSG), New England Deaconess
Hospital: (Pilot grant, PI: G. M. Makrigiorgos). Title: Radiation-Induced
Fluorescence: Development of an assay to probe radiation interaction with
cells at the molecular level .

1992-93: Milton Foundation, Harvard University: (*Pilot grant, PI: G. M. Makrigiorgos*). Title: Investigation of molecular mechanisms of radiation action using radiation-induced fluorescence.

REPORT OF CURRENT RESEARCH ACTIVITIES

Current: Development of molecular techniques to elucidate inherited and acquired susceptibility to cancer. High throughput methods for DNA array-based detection of mutations and DNA damage in cancer samples. Application of genomics to radiation therapy.

Continuing: External beam therapy radiation dosimetry, neutron and photon microdosimetry and radiation protection. Radiolabeled monoclonal antibody therapy dosimetry and microdosimetry. In vitro radiobiology of radionuclides used in nuclear medicine. Molecular - probe -based approaches for dosimetry and microdistribution of DNA damage caused by radiation, metals, antibiotics and DNA-binding agents. Novel molecular probes to detect lipid peroxidation and free radicals in cells and tissues.

REPORT OF TEACHING

1990- Perceptor and Teacher, **Radiological Physics** Program for Radiation Oncology Residents and Postdoctoral Fellows, Joint Center for Radiation Therapy. Average of four radiation therapy residents, three postdoctoral fellows annually. Preparation time: two hours per teaching hour.

1995- Teacher, **Radiation Biology** Program for Radiation Oncology Residents and Postdoctoral Fellows, Joint Center for Radiation Therapy. Average four radiation therapy residents, three postdoctoral fellows annually. Preparation time: two hours per teaching hour.

1997- Teacher, **Advanced Biological Sciences Course** for Medical Students, Harvard Medical School and Joint Center for Radiation Therapy. Course title: *DNA damage, free radicals and radical defence*. Average four medical students annually. Preparation time: two hours per teaching hour.

CLINICAL ACTIVITIES

Main expertise: Radiation Therapy Dosimetry. Responsibilities: Overall responsible for annual and periodic radiation dosimetry and quality control of radiation machines. Periodic quality assurance/checks. Machine installation, acceptance, commissioning, and data acquisition. Electron beam treatment planning, dosimetry and maintenance of the JCRT database. Checking of daily treatment plans. Outreach: responsible for physics and dosimetry at Angell Memorial Hospital.

PERSONAL

Chess Master, Greek Chess Federation (since 1981).

BIBLIOGRAPHY:

A. ORIGINAL REPORTS:

1. **Makrigiorgos GM** Characterization of photon and mixed photon-neutron radiation fields encountered in Medical Practice. **PhD Thesis**, University of Leeds, United Kingdom. November 1984.
2. **Makrigiorgos GM** and Waker AJ. The measurement of dose and dose equivalent levels for in vivo neutron activation analysis. **Phys Med Biol** 1985; 30:909-919.
3. **Makrigiorgos GM** and Waker AJ. On a modification of Lea's theory for initial recombination of ions. **Int J Appl Radiat Isot** 1985; 36:509-510.
4. **Makrigiorgos GM** and Waker AJ. Initial recombination of ions in electron tracks: an experimental evaluation of Lea's model and a modified track structure model. **Int J Appl Radiat Isot** 1985; 36:813-818.
5. **Makrigiorgos GM** and Waker AJ. The measurement of the restricted LET of photon sources (5 keV-1.2 MeV) with the recombination method: Theory and practice. **Phys Med Biol** 1986; 31:543-554.
6. **Makrigiorgos GM**. A novel application of high pressure ionization chambers to measure the mean neutron energy or the gamma ray dose fraction of a neutron-gamma radiation field (*part I, theory*). **Phys Med Biol** 1986; 31:1315-1326.
7. **Makrigiorgos GM** and Waker AJ. A high pressure ionization chamber to measure the mean neutron energy or the gamma ray dose fraction of a neutron-gamma radiation field (*part II, experiment*). **Phys Med Biol** 1986; 31:1327-1338.
8. **Makrigiorgos GM** Potential of a gel-walled recombination chamber for high energy neutron dosimetry. **Nucl Instrum Meth** 1987; A265: 605-609.
9. **Makrigiorgos GM** Characteristics of an ethylene-polyethylene high pressure ionization chamber and derivation of radiation dose and quality information in mixed beam radiation fields. **Med Phys** 1988; 15:36-40
10. **Makrigiorgos GM** Calculation of the restricted dose mean LET of Auger electron emitters. **Int J Radiat Appl Instrum Part A** 1987; 38:407-408.
11. **Makrigiorgos GM** and Antonadou D. The measurement of the restricted dose mean ET outside the primary beam of a Co-60 radiotherapy unit **Radiat Res** 1987; 110:142-148.
12. Lymberis C, **Makrigiorgos GM**, Sbonias V, Polizois N, Mortzos G, Bakas T and Fountos G. Radiocesium levels in human muscle samples in Greece one year after the Chernobyl accident. **Int J Radiat Appl Instrum Part A**, 1988; 39:175-176.
13. **Makrigiorgos GM** Derivation of average radiation quality parameters in neutron-gamma radiation fields with a tissue equivalent high pressure ionization chamber: theory and practice. **Radiat Res** 1989; 118:387-400.

14. **Makrigiorgos GM**, Antonadou D, Proukakis C and Throuvalas N. Measurement of the restricted LET of stray radiation close to the treatment volume of 12 and 18 MV clinical photon beams. **Med Phys** 1989; 16:302-304.
15. Folkard M, **Makrigiorgos GM**, Roper M and Michael B. Measurements of neutron energy using a recoil proton telescope and a high pressure ionization chamber. **Radiat Res** 1989; 118:37-45.
16. **Makrigiorgos GM**, Antonadou D, Proukakis C, Throuvalas N, Michael BD, Folkard M and Roper M. Restricted LET investigations around high energy electron beams. **Phys Med Biol** 1990; 35: 139-145
17. **Makrigiorgos GM**, Smathers JB, Myers L.T and Benedict S.H Radiation quality investigations around a neutron therapy beam using a high pressure ionization chamber. **Med Phys** 1990; 17:84-86
18. **Makrigiorgos GM**, Kassis AI, Baranowska-Kortylewicz J, McElvany KD., Welch MJ., Sastry KSR. and Adelstein SJ. Radiotoxicity of ¹²³IUDR in V79 cells: A comparison to ¹²⁵IUDR. **Radiat Res** 1989; 118:532-544.
19. **Makrigiorgos GM**, Adelstein SJ and Kassis AI. Limitations of conventional internal dosimetry at the cellular level. **J Nucl Med** 1989; 30:1856-1862.
20. **Makrigiorgos GM**, Ito S, Baranowska-Kortylewicz, Vinter DW, Iqbal A, Van den Abbeele AD, Adelstein SJ, and Kassis AI. Inhomogeneous deposition of radiopharmaceuticals at the cellular level;; Experimental evidence and dosimetric implications. **J Nucl Med** 1990; 31:1358-1363.
21. **Makrigiorgos GM**, Adelstein SJ, and Kassis AI. Cellular dosimetry estimates for ^{99m}Tc-labeled microspheres and macroaggregates in humans. **J Americ Medic Assoc (JAMA)** 1990; 264:592-595.
22. Baranowska-Kortylewicz J, **Makrigiorgos GM**, Van Den Abbeele AD, Berman RM, Adelstein SJ and Kassis AI. ¹²³IUDR in the radiotherapy of an early ascites tumor model. **Int J Radiat Oncol Biol Phys** 1991; 21:1541-1551.
23. **Makrigiorgos GM** and Chin LM. Measurement of the restricted LET of orthovoltage and low energy x-rays in tissue equivalent plastic. **Phys Med Biol** 1991; 36:835-841.
24. **Makrigiorgos GM**, Berman RM, Baranowska-Kortylewicz J, Bump E, Humm JL, Adelstein SJ and Kassis AI. DNA damage produced in V79 cells by DNA-incorporated ¹²³IUDR: A comparison to ¹²⁵IUDR. **Radiat Res** 1992; 309-314.
25. **Makrigiorgos GM**, Baranowska-Kortylewicz J, Bump E, Sahu SK, Berman RM and Kassis AI. A method for detection of hydroxyl free radicals in the vicinity of biomolecules using radiation-induced fluorescence of coumarin. **Int J Radiat Biol** 1993; 63, 445-458
26. **Makrigiorgos GM**, Folkard M, Huang C, Bump E, Baranowska-Kortylewicz J, Sahu SK, Michael BD and Kassis AI. Quantification of radiation-induced hydroxyl radicals within nucleohistones using a molecular fluorescent probe. **Radiat Res** 1994; 138, 177-185.
27. Collins A, **Makrigiorgos GM** and Svensson G. Coumarin chemical dosimeter for radiation therapy. **Med Phys** 1994; 21, 1741-1747.
28. Sahu SK, Kassis AI, **Makrigiorgos GM**, Baranowska-Kortylewicz J and Adelstein SJ. The effects of

¹¹¹Inidium decay on pBr322 DNA. **Radiat Res** 1994; 141, 193-198

29. **Makrigiorgos GM**, Bump E, Huang C, and Kassis AI. The accessibility of nucleic acid-complexed biomolecules to hydroxyl radicals correlates with their conformation: A fluorescence polarization study. **Int J Radiat Biol** 1994; 66:247-256
30. **Makrigiorgos GM**, Bump E, Huang C, and Kassis AI. A fluorimetric method for the detection of copper-mediated hydroxyl-free radicals in the vicinity of DNA. **Free Radical Biol Med** 1995; 18: 669-678.
31. Chakrabarti S, **Makrigiorgos GM**, O'Brien K, Bump E, Kassis AI. Measurement of hydroxyl radicals generated in the vicinity of DNA by bleomycin-iron complexes. **Free Radical Biol Med** 1996; 20: 777-783.
32. Chakrabarti S, Mahmood A, Kassis AI, Bump E, Jones A and **Makrigiorgos GM**. Generation of hydroxyl radicals by nucleohistone-bound metal-adriamycin complexes. **Free Radical Research** 1996; 25: 207-220.
33. **Makrigiorgos GM**, Kassis AI, Mahmood A Bump EA and Savvides P. Novel fluorescein-based flow-cytometric method for detection of lipid peroxidation on individual cells. **Free Radical Biol Med** 1997; 22:93-100.
34. **Makrigiorgos GM**. Detection of lipid peroxidation on erythrocytes using the excimer-forming property of a lipophilic BODIPY fluorescent dye. **J Biochem Biophys Meth** 1997; 35:23-35.
35. Chakrabarti S, Slayter H, Kassis AI, Bump E, Sahu SK and **Makrigiorgos GM**. Continuous detection of radiation- or metal- generated hydroxyl radicals within nucleosomes. **Int J Radiat Biol** 1998; 73:53-63
36. Kassis AI, Wen PY, Van den Abbeele AD, Kortylewicz JB, **Makrigiorgos GM**, Metz KR, Matalka KC, Sahu SK, Black PMcL and Adelstein SJ. 5-¹²⁵-iododeoxyuridine in the radiotherapy of brain tumors in rats. **J Nucl Med** 1998; 39:1148-1154
37. Botchway SW, Chakrabarti S and **Makrigiorgos GM**. Novel Visible And Ultraviolet Light Photogeneration Of Hydroxyl Radicals By 2-Methyl-4-Nitro-quinoline-N-Oxide (MNO) And 4,4'-Dinitro-(2,2') Bipyridinyl-N,N'-Dioxide (DBD). **Photochem Photobiol** 1998; 67:635-640.
38. **Makrigiorgos GM**, Chakrabarti S and Mahmood S. Fluorescent labeling of abasic sites: Design of a novel methodology to detect closely-spaced damage sites in DNA. **Int J Radiat Biol**, 1998; 74:99-109
39. Maulik G, Savvides P, Kassis AI and **Makrigiorgos GM**. Fluoresceinated phosphoethanolamine as a non-exchangeable probe for flow-cytometric measurement of lipid peroxidation: application to erythrocytes from vitamin-E deficient rats. **Free Radical Biol Med** 1998; 25:645-653.
40. Chakrabarti, S, Mahmood, A, and **Makrigiorgos, GM**. Fluorescent labeling of closely-spaced aldehydes induced by bleomycin-Fe(III) in DNA. **Int J Radiat Biol**, 1999; 75:1055-1065
41. Maulik G, Botchway S, Chakrabarti S, Tetradis S, Price B and **Makrigiorgos GM** Novel non-isotopic detection of MutY-recognized mismatches in DNA via ultrasensitive detection of aldehydes. **Nucleic Acids Research**, 1999; 27:1316-1322.

42. Chakrabarti S, Price B, Tetradis S, Fox EA, Zhang Y, Maulik G, and **Makrigiorgos GM**. Highly selective isolation of unknown mutations in diverse DNA fragments: Towards new multiplex screening in cancer. **Cancer Research**, 2000; 60:3732-3737.
43. Zhang Y, Price B, Tetradis S, Chakrabarti S, Maulik G and **Makrigiorgos GM**. Reproducible and inexpensive probe preparation for oligonucleotide microarrays. **Nucleic Acids Research**, 2001, 29: e66.

B. REFEREED REPORTS OF MEETINGS

1. Waker AJ and **Makrigiorgos GM**. Radiation quality analysis of a clinical in-vivo neutron activation facility. **Proc 8th Symp Microdosim**, Julish, Germany 1982 pp 907-917.
2. **Makrigiorgos GM**, Waker AJ and Kassis AI. Microdosimetric characterization of radiation fields with a high pressure ionization chamber: a comparison with the low pressure proportional counter. **Radiat Prot Dosim** 1990; 31:161-165.
3. **Makrigiorgos GM** and Waker AJ. The measurement of the restricted dose mean LET ratios of two x-ray spectra on the basis of initial recombination theory. **Radiat Prot Dosim** 1985; 13:383-386.
4. **Makrigiorgos GM**, Waker AJ, Kassis AI, and Adelstein SJ. Use of high pressure ionization chambers and a comparison with tissue equivalent proportional counters for obtaining microdosimetric information from unspecified radiation fields. **Radiat Prot Dosim** 1989; 29: 15-19.
5. **Makrigiorgos GM**, Kassis AI and Adelstein SJ. Limitations of MIRD. (Invited paper), Proceedings of Joint Symposium on Dosimetry of Administered Radionuclides, ACNP/SNM **Frontiers in Nuclear Medicine**, Washington D.C., 1989; pp 44-57.
6. Kassis AI, **Makrigiorgos GM** and Adelstein SJ. Dosimetry of Auger electron emitters; Proceedings of Joint Symposium on Dosimetry of Administered Radionuclides, ACNP/SNM **Frontiers in Nuclear Medicine**, Washington D.C., 1989; pp 257-274.
7. Kassis AI, **Makrigiorgos GM** and Adelstein SJ. Implications of radiobiological and dosimetric studies of DNA-incorporated ¹²³I: The use of Auger effects as a biological probe at the nanometer level. **Radiat Prot Dosim** 1990; 31:333-338.
8. **Makrigiorgos GM**, Kortylewicz JB, Vinter DW, Iqbal A, Van den Abbeele AD, Adelstein SJ, and Kassis AI. Microscopic spatial inhomogeneity of radiopharmaceutical deposition in mammalian tissues: Dosimetry at the cellular level and comparison with conventional dosimetry. **Radiat Prot Dosim** 1990; 31:319-324.
9. **Makrigiorgos GM**, Bump E and Kassis AI. Molecular dosimetry of radiation-induced free radicals using a chromatin-incorporated fluorescent molecule. Published in **Proceedings of the 1st Mediterranean Congress on Radiation Protection**, Athens, Greece, April 5-7, 1994. Eds. Giakoumakis E, Anagnostakis MJ and Petropoulos NP.

C. REFEREED REVIEWS

1. **Makrigiorgos GM**, Kassis AI, Adelstein SJ. Auger electron emitters: Status, dosimetry, mechanisms and future possibilities. **Radiat Environ Biophys** 1990; 29: 75-91.
2. Maulik G, Salgia R and **Makrigiorgos GM**. Flow-cytometric determination of lipid peroxidation by using fluoresceinated phosphoethanolamine. *Methods in Enzymology*, Submitted.

D. BOOK CHAPTERS

Makrigiorgos GM, Detection of chromatin - associated hydroxyl radicals generated by DNA - bound metal compounds and antitumor antibiotics. In: 'Metal Ions in Biological Systems: Interrelations between Free Radicals and Metal Ions in Life Processes', Volume 36, Chapter 16, pp 521-541. A. Sigel, H. Sigel (Eds.); Marcel Dekker: New York, 1999.

E. REPORTS

1. Adelstein, SJ, Howell RW, Humm JL, **Makrigiorgos GM**, and Wessels BW. Report to the International Commission for Radiation Units and Measurements (ICRU): On the conceptual basis for dose quantities in nuclear medicine. International Commission for Radiation Units and Measurements Report ICRU/97/13, July 1997, ICRU, 79 Woodmont Avenue, suite 800, Bethesda, Maryland 20814-3095. Also published in ICRU News, June 1998, pp. 4-10.

F. ABSTRACTS

1. **Makrigiorgos GM**, Antonadou D, Proukakis C and Throuvalas N. Measurement of the restricted dose mean LET outside the primary beams of high energy clinical photon beams. Proc. 8th Int Conf Radiat Res. Edinburgh, UK, July 1987.
2. **Makrigiorgos GM**, Adelstein SJ and Kassis AI. Limitations of conventional dosimetry at the cellular level. Soc. Nucl. Med. 36th Annual Meeting, St. Louis, MO June 13-16, 1989.
3. **Makrigiorgos GM**, Ito S, Kortylewicz JB et al. Inhomogeneous deposition of radiopharmaceuticals at the cellular level: experimental evidence and dosimetric implications. Soc. Nucl. Med. 36th Annual Meeting, St. Louis, MO June 13-16, 1989.
4. Weadock KS, Anderson LL, Van Den Abbeele A, **Makrigiorgos GM** et al. Radiolabeled biodegradable membranes for radioimmunotherapy. Soc Nucl Med 36th Annual Meeting, St. Louis, MO June 13-16, 1989.
5. Kassis AI, **Makrigiorgos GM** et al. Radiotoxicity of ^{123}I UdR in V79 cells: A comparison with ^{125}I UdR. Radiat Res Soc 37th Ann. Meeting, Seattle, 18-23 March

- 1989.
6. **Makrigiorgos** GM, Adelstein SJ and Kassis AI. Limitations of conventional dosimetry at the cellular level. Radiat Res Soc 37th Ann Meeting, Seattle, 18-23 March 1989
 7. **Makrigiorgos** GM, Chin LM. Measurement of orthovoltage X-rays in muscle equivalent plastic. ASTRO Meeting, Miami, Florida, 15-20 October 1990.
 8. **Makrigiorgos** GM, Kassis AI, Adelstein SJ. Microdosimetric aspects of radiolabeled antibodies. 38th Ann. Meeting, Radiation Research Soc., New Orleans, 7-12 April 1990
 9. **Makrigiorgos** GM, Bump E, Adelstein SJ, Kassis AI: DNA damage produced in V79 cells by $^{123}\text{IUdR}$ and $^{125}\text{IUdR}$: A comparison with clonogenic survival. 38th Ann. Meeting, Radiation Research Soc., New Orleans, 7-12 April 1990
 10. Van den Abbeele AD, Wen PYC, Aaronson RA, **Makrigiorgos** GM, Kortylewicz JB, Lampson LA, Black PM, Adelstein SJ, Kassis AI: Autoradiographic validation of $^{5-123/125}$ -iododeoxyuridine as a potential therapeutic agent for brain tumors. 38th Ann. Meeting, Radiation Research Soc. , New Orleans, 7-12 April 1990
 11. Plunkett-Prestwich ME, **Makrigiorgos** GM. Comparison of a three dimensional electron dose algorithm with humanoid phantom measurements. American Association of Physicists in Medicine, AAPM 33rd Annual Meeting, San Francisco, California, July 21-25, 1991.
 12. Sahu SK, Kassis AI, **Makrigiorgos** GM, Barabowska-Kortylewicz J, and delstein SJ. DNA strand breaks in plasmid pBR 322 following $^{111}\text{Indium}$ decay. Radiation Research Society 40th Annual Meeting, Salt Lake City, Utah, USA, March 1992.
 13. Van Den Abbeele AD, Barclay PD, Tutrone RF, Goldstein DS, **Makrigiorgos** GM, Berman RM, Weinberg DS, Richie JP, Adelstein SJ and Kassis AI. Radioiodinated IUdR uptake in exfoliated cells obtained from patients with bladder cancer: Implications for diagnosis and therapy.
 14. Sahu SK, Kassis AI, **Makrigiorgos** GM, Barabowska-Kortylewicz J, and Adelstein SJ. Radiation Research Society 40th Annual Meeting, Salt Lake City, Utah, USA, March 1992.
 15. **Makrigiorgos** GM, Baranowska-Kortylewicz, Bump E, Berman RM, Sahu S and Kassis AI. Radiation induced fluorescence of protein and DNA solutions: An approach to molecular dosimetry. Radiation Research Society 40th Annual Meeting, Salt Lake City, Utah, USA, March 1992.
 16. **Makrigiorgos** GM, Bump E., Baranowska-Kortylewicz, Sahu S and Kassis AI. Fluorescent detection of hydroxyl radical within angstroms of DNA, nucleohistone and chromatin sites. Radiation Research Society 41st Annual Meeting, Dallas, Texas, USA,

March 1993.

17. Collins AK, **Makrigiorgos** GM and Svensson GK. Coumarin chemical dosimeter for radiation therapy. American Association of Physicists in Medicine 35th Annual Meeting, Washington DC, USA, August 1993
18. Collins AK, **Makrigiorgos** GM and Svensson GK. Dose rate dependence in the coumarin aqueous dosimeter. Radiation Research Society 41st Annual Meeting, Dallas, Texas, USA, March 1993.
19. **Makrigiorgos** GM, Bump E and Kassis AI. Simultaneous detection of hydroxyl radicals and conformation within specific chromatin sites using molecular fluorescent detectors. 18th LH Gray Conference, Bath, UK, April 1994
20. **Makrigiorgos** GM, Folkard M, Huang C, Bump E, Baranowska-Kortylewicz J, Sahu SK, Michael BD and Kassis AI. Radiation Research Society 42nd Annual Meeting, Nashville, Tennessee, USA, April 1994
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