

CURRICULUM VITAE

PART I: GENERAL INFORMATION

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Education:

1968	B.S.	American University of Beirut, Lebanon
1971	M.S.	American University of Beirut; Biochemistry/Parasitology
1976	Ph.D.	McGill University, Montreal, Canada; Immunology/ Parasitology

Postdoctoral Training:

1976-1978	Research Fellow in Immunoparasitology, University Hospitals, Case Western Reserve University, Cleveland, OH
1978-1980	Research Fellow in Radiation Biology, Harvard Medical School, Boston, MA

Academic Appointments:

1969-1971	Research Associate, American University of Beirut, Lebanon
1973-1976	Research Associate, McGill University, Montreal, Canada
1980-1981	Research Associate in Radiology (Nuclear Medicine), Harvard Medical School, Boston, MA
1981-	Research Member, Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, Cambridge, MA
1981-1983	Principal Research Associate in Radiology (Nuclear Medicine), Harvard Medical School, Boston, MA
1983-1985	Member of the Faculty of Medicine, Harvard Medical School, Boston, MA
1985-1989	Assistant Professor of Radiology (Nuclear Medicine), Harvard Medical School, Boston, MA
1989-2003	Associate Professor of Radiology (Nuclear Medicine), Harvard Medical School, Boston, MA
2003-	Professor of Radiology (Nuclear Medicine), Harvard Medical

School, Boston, MA

Hospital Appointments:

1979- Research Associate in Radiology (Nuclear Medicine), Brigham and Women's Hospital, Boston, MA

1987-2004 Director, Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA

1987-1988 Director, Gynecologic Oncology Research, Dana-Farber Cancer Institute, Boston, MA

1988-1989 Director, Laboratory for Radionuclide Gynecologic Oncology, Dana-Farber Cancer Institute, Boston, MA

2004- Director, Radiobiology and Experimental Radionuclide Therapy Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA

Other Professional Positions:

1980-1990 Research Collaborator in Chemistry, Brookhaven National Laboratory, Upton, NY

1983-1987 Lecturer in the Department of Dental Care Management, Henry M. Goldman School of Graduate Dentistry, Boston University, Boston, MA

1987-1989 Clinical Lecturer in Oral and Maxillofacial Surgery, Henry M. Goldman School of Graduate Dentistry, Boston University, Boston, MA

1989-1992 Clinical Lecturer in the Department of Diagnostic Sciences and Patient Services, Division of Oral Diagnosis and Radiology, Henry M. Goldman School of Graduate Dentistry, Boston University, Boston, MA

1999- CEO and President, Global Medical Technologies, Incorporated, Boston, MA

Major Administrative Responsibilities:

1987-1988 Director, Gynecologic Oncology Research, Dana-Farber Cancer Institute, Boston, MA

1987-2004 Director, Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA

1988-1989 Director, Laboratory for Radionuclide Gynecologic Oncology, Dana-Farber Cancer Institute, Boston, MA

2004- Associate Program Director, NIH, 5 T32 CA09078, Radiation Biology Training Program

2004- Director, Radiobiology and Experimental Radionuclide Therapy Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA

Major Committee Assignments:

Harvard Medical School

1989-1990 Member of Radioactive Waste Reduction Committee
 1993 Reviewer of research proposals for internal funding

National

1987-1988 Member of program project grant review committees and site visit teams for the Department of Energy, Office of Energy Research
 1987-1991 Medical Internal Radiation Dose (MIRD) Committee Member, The Society of Nuclear Medicine
 1987-1991 Chairman of Task Force on Dosimetry of Radiolabeled Antibodies, Medical Internal Radiation Dose (MIRD) Committee, The Society of Nuclear Medicine
 1989 Reviewer of grant proposals for the Medical Research Council of Canada
 1989 Reviewer of grant proposals for the American Cancer Society
 1989 Reviewer of grant proposals for the University of Southern California, Los Angeles
 1989-1990 Reviewer of grant proposals for the Dutch Cancer Society
 1989- Reviewer of grant proposals and member of site visit teams for the National Institutes of Health, including the National Cancer Institute and the Small Business Innovative Research program
 1990 Member of program project grant review committees and site visit teams for the Department of Energy, Office of Energy Research
 1992-1993 Reviewer of research grant proposals for the National Cancer Institute of Canada
 1995 Member of peer review committee for United States Army Medical Research and Materiel Command
 1999- Reviewer of grant proposals for the Department of Energy, Office of Energy Research
 2000-2002 Member of the Board of Directors, Therapy Council, The Society of Nuclear Medicine
 2001-2002 Member of the Grading and Examination Committee, American Board of Science in Nuclear Medicine
 2001-2004 Representative from The Society of Nuclear Medicine to the American Board of Science in Nuclear Medicine
 2001-2004 Member of the Committee on Reactor Safeguard, Massachusetts Institute of Technology, Cambridge
 2002-2003 Secretary/Treasurer, American Board of Science in Nuclear Medicine
 2003-2004 President, American Board of Science in Nuclear Medicine
 2004-2005 Member of the Grading and Examination Committee, American Board of Science in Nuclear Medicine
 2007 Member, American Board of Science in Nuclear Medicine Application Committee

Professional Societies:

1977-1978	The Royal Society of Tropical Medicine, member
1977-1978	The American Society of Tropical Medicine and Hygiene, member
1980-	Radiation Research Society, member
1987-	Society of Nuclear Medicine, member
1987-1991	Society of Nuclear Medicine, Medical Internal Radiation Dose (MIRD) Committee, member
1987-1991	Society of Nuclear Medicine, Medical Internal Radiation Dose (MIRD) Committee, Task Force on Dosimetry of Radiolabeled Antibodies, chairman
1992	Society of Nuclear Medicine, Scientific Program Committee for the Thirty-ninth Annual Meeting, member
1994-	American Association for Cancer Research, Incorporated, member

Editorial Boards:

1985-	Ad hoc reviewer, <i>Bioconjugate Chemistry</i> Ad hoc reviewer, <i>Cancer Research</i> Ad hoc reviewer, <i>Clinical Cancer Research</i> Ad hoc reviewer, <i>International Journal of Radiation Biology</i> Ad hoc reviewer, <i>Medical Physics</i> Ad hoc reviewer, <i>The Quarterly Journal of Nuclear Medicine</i> (formerly <i>Journal of Nuclear Biology and Medicine</i>) Ad hoc reviewer, <i>Radiation Research</i> Ad hoc reviewer, <i>Nuclear Medicine and Biology</i> Ad hoc reviewer, <i>The Journal of Nuclear Medicine</i>
1992-1993	Co-editor, special supplement of <i>Medical Physics</i> , Radiolabeled Antibody Tumor Dosimetry
1992-1998	Member of editorial board, <i>The Quarterly Journal of Nuclear Medicine</i> (formerly <i>Journal of Nuclear Biology and Medicine</i>)
1996	Co-editor, Radiolabeled IUdr, a special supplement of <i>The Journal of Nuclear Medicine</i> , proceedings of an international conference on clinical applications of radiolabeled IUdR, Harvard Medical School, Boston, MA, October 4, 1994
1998-	Managing editor, <i>Frontiers in Bioscience</i>
1999-	Ad hoc reviewer, <i>Proceedings of the National Academy of Sciences of the United States of America</i>
2000-	Ad hoc reviewer, <i>Journal of Medicinal Chemistry</i>
2001-	Ad hoc reviewer, <i>Journal of Immunological Methods</i>
2002-	Ad hoc reviewer, <i>Molecular Cancer Therapeutics</i>
2002-	Ad hoc reviewer, <i>Cancer Biotherapy and Radiopharmaceuticals</i>
2004-	Member of editorial board, <i>Medical Science Monitor</i>
2008-2010	Member of editorial board, <i>Journal of Clinical Oncology</i>

PART II: RESEARCH, TEACHING, AND CLINICAL CONTRIBUTIONS

Report of Research:Narrative Report

The first major objective of my research has been an understanding of the implications of densely ionizing radiations (Auger electrons and alpha particles) emitted by diagnostic and therapeutic radionuclides. To this end, I have been (i) examining the microscopic distribution of damage in well-characterized systems (naked plasmid DNA, nucleosomes, mammalian cell chromatin) in response to spatial positioning of the decaying nuclide, (ii) determining the quantitative relationships between microscopic dose distribution and detrimental biologic effects by exploring the molecular consequences of the decay of Auger electron emitters as expressed by DNA strand breaks and by elucidating the cytotoxicity of diagnostic radionuclides when these are concentrated by cells in the presence or absence of radical scavengers; and (iii) studying the cytotoxicity of α -particle emitters localized extracellularly or intranuclearly. I have:

- Defined and established the biophysical relationship between the intracellular localization of low-energy-electron-emitting radionuclides and the biologic consequences of the resulting microdistribution of energy. This work has led to an accurate delineation of the risks associated with the use of Auger-electron-emitting radiopharmaceuticals in the field of nuclear medicine.
- Assessed the dosimetric implications of the inhomogeneous deposition of radiopharmaceuticals at the tissue level and demonstrated the limitations of conventional MIRD dosimetry in estimating radiation risks to the patient.
- Determined the nature of the radiobiologic effects of Auger electron irradiation showing that in naked DNA these effects are entirely direct in nature, whereas in chromatin they are substantially indirect.
- Established the radiotherapeutic potential of α -particle-emitting radionuclides.

A second major objective has been the development of radionuclide carrier systems suitable for the precise delivery of diagnostic and therapeutic radioactive moieties to cancerous cells. The goal is to maximize the effectiveness of radiotherapeutic agents while minimizing their toxicity to normal tissues. I have:

- Synthesized proprietary radiolabeled thymidine analogs and documented their radiodiagnostic and radiotherapeutic potential following locoregional administration in tumor-bearing animals. These results represent promising observations on a novel approach to cancer treatment with unsealed radioactive sources. Preliminary biodistribution studies in cancer patients have shown the approach to be equally effective.
- Developed proprietary monoclonal antibody-based approaches that aim to amplify the antigenic signal in tumor-bearing animals and to lead to the enhanced localization of diagnostic and therapeutic radioisotopes at the targeted tumor.
- Developed a proprietary procedure for the *in vivo* precipitation of radioactive molecules specifically within solid tumors. When labeled with gamma- or positron-

emitting radionuclides, these molecules will enable imaging (SPECT and PET) of solid tumors and their metastases. When labeled with energetic beta- or alpha-particle emitters, these prodrug molecules will deposit therapeutic doses within solid tumors.

A third major objective has been the development of blood tests that can unequivocally differentiate blood samples obtained from tumor-bearing and nontumor-bearing animals. Specifically, these methods will enable the facile detection of (i) tumor (primary and metastatic lesions) present in an individual prior to the manifestation of pathologic signs and symptoms, (ii) tumor (primary and metastatic lesions) in an individual suspected of having cancer, and (iii) tumor (primary and metastatic lesions) recurrence in an individual undergoing/following various treatments (radiation/chemo/etc.).

Funding Information

1980-1983	NIH, 5 R01 CA15523; Co-principal Investigator; Therapeutic/Toxic Action of Electron Emitting Nuclides (bench research)
1983-1984	Radiology Foundation, Brigham and Women's Hospital, Principal Investigator; Radiolabeled Cationized Ferritin: A Cellular Radiolabel for the Diagnosis of Disease (bench research)
1983-1984	Radiology Foundation, Brigham and Women's Hospital, Principal Investigator; Enhanced Tumor Detection with Angiotensin II (Bench research)
1983-1986	NIH, 5 R01 CA15523; Co-principal Investigator; Therapeutic/Toxic Action of Electron Emitting Nuclides (bench research)
1984-1985	William F. Milton Fund, Harvard Medical School, Principal Investigator; Radiolabeling Monoclonal Antibodies for Cancer Detection and Therapy (bench research)
1985-1988	NIH, 1 RO1 CA14343; Co-principal Investigator; Radiotherapy Using Monoclonal Antibodies and Astatine (bench research)
1985-1990	NIH, 5 T32 CA09078, Investigator; Radiation Biology Training Program (education)
1986-1989	DOE, DE-FG02-86ER60460, Principal Investigator; Harvard-MIT Research Program in Short-Lived Radiopharmaceuticals: Labeling Antibodies for the Radioimmunodiagnosis and Radioimmunotherapy of Cancer (bench research)
1986-1989	NIH, 5 R01 CA15523, Co-principal Investigator; Therapeutic/Toxic Action of Electron Emitting Nuclides (bench research)
1987-1988	Mallinckrodt, Incorporated, Principal Investigator; Radiolabeled Dihydrorhodamines as Tumor Imaging Agents (bench research)
1987-1988	Centocor, Incorporated, Co-principal Investigator; Ovarian Cancer Research (clinical application)
1987-1989	ACS, CH-4, Principal Investigator; Tumoricidal Potential of ¹²⁵ IUdR(TP)-Antibody Conjugates (bench research)

- 1988-1989 Centocor, Incorporated, Co-principal Investigator; Diagnostic Accuracy of CA125 in Endometriosis (clinical application)
- 1988-1989 Centocor, Incorporated, Co-principal Investigator; Ovarian Cancer Research (clinical application)
- 1988-1989 Centocor, Incorporated, Co-principal Investigator; Lympho-immunoscintigraphy of Aortic and Iliac Nodes in Metastatic Ovarian Carcinoma (clinical application)
- 1989-1992 DOE, DE-FG02-86ER60460, Principal Investigator; Harvard-MIT Research Program in Short-Lived Radiopharmaceuticals: Labeling Antibodies for the Radioimmunodiagnosis and Radioimmunotherapy of Cancer (bench research)
- 1989-1994 NIH, 5 T32 CA09536, Investigator; Research Training in Imaging Methods for Cancer (education)
- 1990-1991 Medical Science Partners, Incorporated, Principal Investigator; Scintigraphic and Therapeutic Potential of ^{123}I UdR and ^{125}I UdR in Bladder Cancer (clinical application)
- 1990-1994 Medical Science Partners, Incorporated, Principal Investigator; Distribution of the Thymidine Analog $^{123}\text{I}/^{125}\text{I}$ UdR in Patients with Primary Brain Tumor (clinical application)
- 1990-1995 NIH, 5 T32 CA09078, Investigator; Radiation Biology Training Program (education)
- 1991-1992 William F. Milton Fund, Harvard Medical School, Co-principal Investigator; A Novel Diagnostic and Therapeutic Approach to Bladder Cancer: Preferential Stimulation of Radioiodinated 5-Iodo-2'-Deoxyuridine Uptake In Vivo (bench research)
- 1991-1992 Radiology Foundation, Brigham and Women's Hospital, Co-principal Investigator; Optimization of 5- ^{125}I Iodo-2'-deoxyuridine Administration in Bladder Cancer (bench research)
- 1992-1993 DOE, DE-FG02-86ER60460, Principal Investigator; Harvard-MIT Research Program in Short-lived Radiopharmaceuticals: Labeling Antibodies for the Radioimmunodiagnosis and Radioimmunotherapy of Cancer (bench research)
- 1992-1996 Acumed Pharmaceuticals, Incorporated, Principal Investigator; Monoclonal Antibody Based Target Signal Enhancement Systems (bench research)
- 1994-1999 NIH, R29 CA63334, Co-principal Investigator; Chromatin Dynamic Conformation and Radiation Sensitivity (bench research)
- 1994-1999 NIH, 5 T32 CA09536, Investigator; Research Training in Imaging Methods for Cancer (education)
- 1994-2005 NCI, 5 T32 CA59367, Investigator; The BIDMC Research Training in Cancer Radiology (education)
- 1995-1997 NIH, 5 R01 CA15523, Co-principal Investigator; Therapeutic/ Toxic Effects of Electron Emitting Nuclides (bench research)
- 1995-2000 NIH, 5 T32 CA09078, Investigator; Radiation Biology Training Program (education)

1996-1999	DOE, DE-FG02-96ER62176, Principal Investigator; Treatment of Neoplastic Meningitis with [¹³¹ I/ ¹²⁵ I]IUDR (bench research)
1998-2002	NIH, 5 R01 CA15523, Co-principal Investigator; Therapeutic/ Toxic Effects of Electron Emitting Nuclides (bench research)
1999-2004	DOE, DE-FG02-96ER62176, Principal Investigator; Treatment of Neoplasms with Radiolabeled IUDR (bench research)
1999-2005	NIH, 5 T32 CA59367, Investigator; The BIDMC Research Training Grant in Cancer Radiology (education)
2001-2005	NIH, 1 R01 CA89648, Principal Investigator; Radiodiagnosis and Radiotherapy of Lung Cancer Metastases (bench research)
2001-2006	NIH, 5 T32 CA09078, Investigator (2001-2004), Associate Program Director (2004-2005); Radiation Biology Training Program (education)
2001-2007	NIH, 5 T32 EB002177, Investigator; Research Training in Imaging Methods for Cancer (education)
2002-2004	NIH, 1 S10 RR017224-01, Investigator, SPECT Scanner for Molecular Biology and Imaging Research (bench research)
2002-2007	NHLBI, HL007718, Investigator, Proctor Summer Student Training Program Fund (education)
2003-2007	NIH, 5 R01 CA15523, Principal Investigator; Therapeutic/Toxic Effects of Electron Emitting Nuclides (bench research)
2003-2008	NIH, 5 T32 EB001632, Investigator; Research Training in Nuclear Molecular Imaging (education)
2004-2007	DOD, W81XWH-04-1-0499, Principal Investigator; Radiodetection and Radiotherapy of Breast Cancer (bench research)
2005-2008	DOD, W81XWH-06-1-0043, Principal Investigator; Radioimaging and Radiotherapy of Prostate Cancer (bench research)
2005-2010	NIH, 5 T32 CA59367, Investigator; The BIDMC Research Training Grant in Cancer Radiology (education)
2006-2007	DOD, W81XWH-06-1-0204, Principal Investigator; Radiodiagnosis and Radiotherapy of Ovarian Cancer (bench research)
2006-2010	NIH, 5 T32 CA09078, Investigator; Associate Program Director; Radiation Biology Training Program (education)

Report of Current Research Activities

2003-2007	NIH, 5 R01 CA15523, Principal Investigator; Therapeutic/Toxic Effects of Electron Emitting Nuclides (bench research)
2005-2008	DOD, W81XWH-06-1-0043, Principal Investigator; Radioimaging and Radiotherapy of Prostate Cancer (bench research)
2003-2008	NIH, 5 T32 EB001632, Investigator; Research Training in Nuclear Molecular Imaging (education)
2005-2010	NIH, 5 T32 CA59367, Investigator; The BIDMC Research Training Grant in Cancer Radiology (education)

2006-2010 NIH, 5 T32 CA09078, Investigator; Associate Program Director; Radiation Biology Training Program (education)

Report of Teaching:

Local Contributions

Hospital courses

1983- Lecturer in radiation biology and experimental radionuclide therapy for residents in nuclear medicine, Brigham and Women's Hospital, Harvard Medical School, Boston, MA; 12 hours/year, 1-4 residents/year

1983-1986 Lecturer in radiation biology for second year dental students, Boston University, Boston, MA; 11 hours/year, 100 students/year

1988 Lecturer in radiation biology for residents in radiology, Brigham and Women's Hospital, Harvard Medical School, Boston, MA; 12 hours, 15-20 residents

1988-1991 Lecturer and laboratory supervisor in a course (didactic and laboratory) on the uses of radiolabeled antibodies in nuclear medicine for residents in nuclear medicine, Brigham and Women's Hospital, Harvard Medical School, Boston, MA; 12 hours/year, 6 residents/year

1990-1992 Lecturer in radiation biology for residents in radiology, Brigham and Women's Hospital, Harvard Medical School, Boston, MA; 12 hours/year, 15-20 residents/year

1993 Lecturer in course organized by the Joint Program in Nuclear Medicine for nuclear medicine, radiology, and radiation oncology residents on topic of using unsealed sources for therapy; 12 hours, 20 residents and staff

1999 Presenter at the Department of Radiology, Brigham and Women's Hospital, research retreat, April 1999, poster entitled "Combination Chemo (MTX) and Radio (^{125}I UdR) Therapy of Intrathecal Tumors"

2000 Presenter at the Department of Radiology, Brigham and Women's Hospital, research retreat, April 2000, poster entitled "RadioIUdR for the Diagnoses and Therapy of Lung Cancer"

Leadership roles

1983- Co-organizer of and participant in course on radiation biology for residents in nuclear medicine, including lectures, discussion periods, and examinations

1983-1986 Organizer of and lecturer in a course on radiation biology for second year dental students, Boston University, Boston, MA

1988-1991 Organizer of and participant in a course (didactic and laboratory) on the uses of radiolabeled antibodies in nuclear medicine for residents in nuclear medicine, Brigham and Women's Hospital,

- Harvard Medical School, Boston, MA
- 1988, 1990-1992 Organizer of and lecturer in a course on radiation biology for residents in radiology, Brigham and Women's Hospital, Harvard Medical School, Boston, MA
- 1993 Lecturer in course organized by the Joint Program in Nuclear Medicine for nuclear medicine, radiology, and radiation oncology residents; organized material on topic of using unsealed sources for therapy

Advisory and supervisory responsibilities (approximately 4–8 hours/week/supervisee)

- 1983-1984 Postdoctoral-fellow supervisor for R.A. Millius, Ph.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: Director of Technical Marketing, Sigma-Aldrich-Research Biochemicals International, Natick, MA
- 1983-1985 Postdoctoral-fellow supervisor for W.W. Layne, Ph.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: Toxicologist, US Environmental Protection Agency, Dallas, TX
- 1983-1987 Postdoctoral-fellow supervisor for B.M. Kinsey, Ph.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: Assistant Professor, Department of Medicine, Baylor College of Medicine, Houston, TX
- 1985-1987 Postdoctoral-fellow supervisor for F. Fayad, M.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: Attending Physician, University of Miami Medical School, Miami, FL
- 1985-1987 Postdoctoral-fellow supervisor for A.D. Van den Abbeele, M.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA, current status: Associate Professor of Radiology, Dana–Farber Cancer Institute, Harvard Medical School, Boston, MA
- 1985-1987 Postdoctoral-fellow supervisor for C.N. Venkateshan, Ph.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: Research Associate, National Cancer Institute, Washington, DC
- 1985-1987 Ph.D.-thesis supervisor for R.W. Howell, University of Massachusetts, Amherst, MA; current status: Associate Professor, New Jersey Medical School, Newark, NJ
- 1986-1988 Postdoctoral-fellow supervisor for J. Baranowska-Kortylewicz, Ph.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: Associate Professor of Radiation Oncology, University of Nebraska Medical Center, Omaha, NE

- 1986-1988 Postdoctoral-fellow supervisor for L.A. Khawli, Ph.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: Associate Professor, Department of Pathology, UCLA School of Medicine, Los Angeles, CA
- 1986-1989 Postdoctoral-fellow supervisor for G. Mariani, M.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: Director, Regional Center of Nuclear Medicine, University of Pisa Medical School, Pisa, Italy
- 1987-1988 M.S.-thesis supervisor for A. Iqbal, Massachusetts Institute of Technology, Cambridge, MA; current status: unknown
- 1987-1989 Postdoctoral-fellow supervisor for P.K. Nikolaou, M.D., Gynecologic Oncology Research, Dana-Farber Cancer Institute, Boston, MA; current status: unknown
- 1987-1989 Postdoctoral-fellow supervisor for M.G. Muto, M.D., Gynecologic Oncology Research, Dana-Farber Cancer Institute, Boston, MA; current status: Associate Professor of Obstetrics, Gynecology and Reproductive Biology, Harvard Medical School, Boston, MA
- 1987-1989 Postdoctoral-fellow supervisor for K. Weadock, Ph.D., Gynecologic Oncology Research, Dana-Farber Cancer Institute, Boston, MA; current status: unknown
- 1987-1989 Postdoctoral-fellow supervisor for L.L. Anderson, M.D., Gynecologic Oncology Research, Dana-Farber Cancer Institute, Boston, MA; current status: Assistant Professor, Hahnemann School of Medicine, Philadelphia, PA
- 1987-1989 Postdoctoral-fellow supervisor for G. Boras-Boneu, M.D., Gynecologic Oncology Research, Dana-Farber Cancer Institute, Boston, MA; current status: unknown
- 1987-1989 Postdoctoral-fellow supervisor for G.M. Makrigiorgos, Ph.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: Associate Professor of Radiation Oncology, Harvard Medical School, Boston, MA
- 1989-1990 Postdoctoral-fellow supervisor for T. El-Shourbagy, Ph.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: unknown
- 1989-1992 Postdoctoral-fellow supervisor for Z.P. Kortylewicz, Ph.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: Adjunct Professor of Radiation Oncology, University of Nebraska Medical Center, Omaha, NE
- 1990 Postdoctoral-fellow supervisor for G. Alajaji, M.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and

- 1990-1992 Women's Hospital, Boston, MA; current status: unknown
Postdoctoral-fellow supervisor for A. Gangopadhyay, Ph.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: Assistant Professor of Surgery, Harvard Medical School, Boston, MA
- 1990-1994 Postdoctoral-fellow supervisor for S.K. Sahu, Ph.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: Research Fellow, Department of Neurosurgery, University of Iowa, Iowa City, IA
- 1991 Postdoctoral-fellow supervisor for E. Loutfi, M.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: Assistant Professor, Department of Nuclear Medicine, Kuwait University, Safat, Kuwait
- 1991 Postdoctoral-fellow supervisor for J. White, M.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: unknown
- 1992 Postdoctoral-fellow supervisor for S.V. Smith, Ph.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; Research Scientist, ANSTO, New South Wales, Australia
- 1992-1993 Postdoctoral-fellow supervisor for K.Z. Matalka, Ph.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: Associate Professor, Jordan University for Women, Amman, Jordan
- 1993 Postdoctoral-fellow supervisor for Y. Dou, M.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: unknown
- 1993 Postdoctoral-fellow supervisor for Y.Z. Zhang, Ph.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: Staff Scientist, Oncor, Incorporated, Gaithersburg, MD
- 1993-1994 Postdoctoral-fellow supervisor for E.L. Berman, Ph.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: unknown
- 1993-1995 Postdoctoral-fellow supervisor for C.F. Foulon, Ph.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: Research Chemist, Biostream, Incorporated, Cambridge, MA
- 1994 Postdoctoral-fellow supervisor for E. Azrak, M.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: Attending Physician, Department of Internal Medicine, Saint Louis University Hospital, St. Louis, MO

1994-1997	Postdoctoral-fellow supervisor for R.S. Harapanhalli, Ph.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: Chemistry Reviewer, Medical Imaging and Radiopharmaceutical Drug Products, US Food and Drug Administration, Rockville, MD
1995	Postdoctoral-fellow supervisor for K.J. Fordon, Ph.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: Adjunct Assistant Professor, SUNY Maritime College, Throggs Neck, NY
1995	Postdoctoral-fellow supervisor for F.A. Matthies, M.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: unknown
1995-1998	Postdoctoral-fellow supervisor for M.A. Walicka, Ph.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: Patent Examiner, US Government Patent Office, Washington, DC
1995-2001	Postdoctoral-fellow supervisor for V. Kundra, M.D., Ph.D., Department of Radiology, Brigham and Women's Hospital, Boston, MA; current status: Assistant Professor, Department of Diagnostic Radiology, MD Anderson Cancer Center, University of Texas, Houston, TX
1996-1997	Postdoctoral-fellow supervisor for C. Terzian, M.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: unknown
1996-1998	Postdoctoral-fellow supervisor for A.M. Roy, Ph.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: unknown
1996-1998	Postdoctoral-fellow supervisor for Y. Ding, M.D., Ph.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: Research Fellow, Department of Experimental Medicine, Beth Israel–Deaconess Medical Center, Boston, MA
1997-2001	Postdoctoral-fellow supervisor for N. Ho, Ph.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: Research Chemist, Massachusetts General Hospital, Boston, MA
1998	Postdoctoral-fellow supervisor for L. Rose, M.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: unknown
1998-1999, 2001	Predoctoral student supervisor for P.C. Tume, College of William and Mary, Williamsburg, VA; current status: Medical Resident
1998-2000	Postdoctoral-fellow supervisor for S.H. Britz-Cunningham, M.D., Ph.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: Instructor in Radiology, Harvard Medical School, Boston, MA

1999-2001	Postdoctoral-fellow supervisor for L.Y. Xue, M.D., Ph.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: Resident, Department of Neurology, Albany Medical Center, Albany, NY
2000	Undergraduate-student supervisor for E. Kong, University of Notre Dame, Notre Dame, IN; current status: unknown
2001-2003	Postdoctoral-fellow supervisor for A.M. Kirichian, M.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: Medical Resident
2001-2003	Postdoctoral-fellow supervisor for T. Urashima, M.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: Staff, Department of Surgery (II), Chiba University School of Medicine, Chiba, Japan
2001-2005	Postdoctoral-fellow supervisor for K. Chen, Ph.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: Research Staff, Siemens Medical Solutions Diagnostics, Los Angeles, CA
2001-	Postdoctoral-fellow supervisor for K. Wang, Ph.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA
2002-2005	Postdoctoral-fellow supervisor for E. Safaie Semnani, M.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: Resident, Department of Radiology, Harvard Medical School, Boston, MA
2002-2005	Postdoctoral-fellow supervisor for A.F. Al Aowad, M.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: unknown
2003	Undergraduate-student supervisor for C.H. Villa, Tulane University, New Orleans, LA; current status: unknown
2003-	Postdoctoral-fellow supervisor for P. Balagurumorthy, Ph.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA
2004-2005	Postdoctoral-fellow supervisor for A.A.M. Zaza, M.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: Physician, Truxtun Radiology Medical Group, Bakersfield, CA
2004-2007	Postdoctoral-fellow supervisor for H. Korideck, M.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: Research Staff, VizEn Corporation, Woburn, MA

2004-2007	Postdoctoral-fellow supervisor for P. Pospisil, Ph.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA; current status: Research Fellow, Department of Radiology, Harvard Medical School, Boston, MA
2004-	Postdoctoral-fellow supervisor for A. Singh, Ph.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA
2004-	Postdoctoral-fellow supervisor for S.M. Stribbling, Ph.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA
2006-	Postdoctoral-fellow supervisor for Y. Yang, Ph.D., Radiation Biology Section, Division of Nuclear Medicine, Brigham and Women's Hospital, Boston, MA

Regional, National and International Contributions

Invited presentations

1986	Speaker at the Thirty-fourth Annual Meeting of the Radiation Research Society, Las Vegas, Nevada, April 12-17; talk entitled "Radiolabeled Monoclonal Antibodies in Tumor Therapy: Physical, Chemical, and Dosimetric Considerations"
1990	Speaker on IUdR therapy, the University of Chicago
1990	Speaker on IUdR therapy, Brookhaven National Laboratory
1990	Speaker on IUdR therapy, the University of Pisa, Italy
1991	Speaker on the diagnostic and therapeutic potential of radiolabeled IUdR in cancer, the University of Pittsburgh, Presbyterian Hospital
1992	Speaker on the diagnostic and therapeutic potential of radiolabeled IUdR in cancer, Ohio State University Hospital, Cancer Hospitals
1993	Speaker at the Radiopharmaceutical Science Council Categorical Seminar, Fortieth Annual Meeting of the Society of Nuclear Medicine, Ontario, Canada, June 8-11; talk entitled "Subcellular Targets and Targeting of Radiopharmaceuticals in Malignant Tissue"
1993	Speaker at the Sixteenth Conference on X-Ray and Inner-shell Processes, Debrecen, Hungary, July 12-16; talk entitled "Toxicity and Therapeutic Effects of Low Energy Electrons"
1994	Speaker at CIS Bio International, Paris, France, June 24; talk entitled "Monoclonal-antibody-based Target Signal Enhancement System"
1994	Speaker at the Brockton/West Roxbury Veterans Administration Hospital, West Roxbury, MA, October 12; talk entitled "Preclinical Studies with Radiolabeled IUdR for Diagnosis and Therapy in Bladder Cancer"
1994	Speaker at Amersham International, Little Chalfont Buckinghamshire, UK, November 28; talk entitled "Monoclonal-antibody-based Target Signal Enhancement System"

- 1994 Speaker at Celltech, Limited, Slough, Berkshire, UK, November 29; talk entitled "Monoclonal-antibody-based Target Signal Enhancement System"
- 1996 Invited participant in workshop on alpha emitters for medical therapy sponsored by the Department of Energy, Denver, CO, May 30-31
- 1996 Speaker at the annual general meeting of TRIUMF, Vancouver, BC, Canada, December 4; talk entitled "Radiolabeled 5-Iodo-2'-deoxyuridine in the Diagnosis of Infection and the Therapy of Cancer"
- 1997 Speaker at the Forty-fifth Annual Meeting of the Radiation Research Society, Providence, RI, May 3-7; talk entitled "Are Auger Electron Emitters Ready for Cancer Therapy Trials in Humans?"
- 1997 Speaker at the conference, From DNA Damage to Cell Death: the Role of Nuclear Structure in the Response to Cancer Therapy, Montreal, Canada, June 6-7; talk entitled "DMSO Protects Higher Order V79 Cell Chromatin But Not Naked Plasmid DNA from ^{125}I Decay"
- 1998 Speaker at Radiochemistry – Basic and Applied – Contributions of A. P. Wolf – A Celebration of his Seventy-fifth Birthday, Two-hundred-fifteenth National Meeting of the American Chemical Society, Dallas, TX, March 29-April 2; talk entitled "DMSO Protects Higher Order Chromatin But Not DNA from ^{125}I Decay"
- 1999 Speaker at the Department of Radiation Therapy, Massachusetts General Hospital, Boston, MA; talk entitled "Combination Chemo (MTX) and Radio (^{125}I UdR) Therapy of Tumors "
- 1999 Speaker at the Radiation Research Society DNA Workshop, Montreal, Canada, November 4; talk entitled "DNA Conformation Influences the Radiobiologic Effects of ^{125}I "
- 2000 Speaker at the Fourth International Symposium on Radiohalogens, Whistler, BC, Canada, September 9-13; talk entitled "Tumor Therapy with Low-energy-electron-emitting Radionuclides: An Overview"
- 2000 Speaker at the Department of Energy Williamsburg Workshop, Williamsburg, VA, October 17-20; talk entitled "Therapy of Neoplastic Meningitis with Methotrexate and 5- ^{125}I iodo-2'-deoxyuridine"
- 2000 Speaker at the Division of Radiological Sciences, Department of Radiology, Washington University School of Medicine, St. Louis, MO, November 7; talk entitled "Auger Electron Emitters: Radiobiology and Therapy"
- 2000 Speaker at the American Chemical Society Pacificchem Symposium, Honolulu, HI, December 14-19; talk entitled "Therapy of Neoplastic Meningitis with Methotrexate and 5-

- [¹²⁵I]iodo-2'-deoxyuridine”
- 2001 Speaker at the Department of Pathology, Harvard Medical School, Boston, MA, March 3; talk entitled ”Therapeutic Potential of ¹²⁵I-Labeled Iododeoxyuridine”
- 2001 Speaker at the Principles of Radiation Interactions course, Department of Nuclear Engineering, Massachusetts Institute of Technology, Cambridge, MA, April 27; talk entitled “Therapeutic Potential of Radionuclides”
- 2001 Speaker at the International Conference on Technology in Cancer Research and Treatment in the New Millennium, Albany, NY, June 27-30; talk entitled “Novel Prodrug Approach for Targeting Radionuclides to Tumors”
- 2002 Speaker at the Alpha Therapy Workshop, TRIUMF, Vancouver, BC, April 29; talk entitled “Toxicity and Therapeutic Potential of Alpha Particle Emitters”
- 2002 Speaker at the Society of Nuclear Medicine Workshop, Modern Imaging Technology: Basic Science in Medical Applications, Los Angeles, CA, June 14-15; talk entitled “Targeted Radionuclide Therapy: Ideal Nuclide Characteristics”
- 2002 Speaker at the Second International Symposium on Tumor Targeted Delivery Systems of the National Cancer Institute and the Controlled Release Society, Washington, DC, September 22-25; talk entitled “Enzyme Mediated Insolubilization Therapy”
- 2003 Speaker at the Department of Energy Medical Sciences Targeted Radionuclide Therapy meeting, Washington, DC, July 14; talk entitled “Targeted Radionuclide Therapy: Basic Biophysical Principles”
- 2003 Speaker at the Thirteenth L. H. Gray Workshop and the Fifth Auger Symposium, Melbourne, Australia, August 13-16; talk entitled “The Amazing World of Auger Electrons”
- 2004 Speaker at the Fifth International Symposium on Radiohalogens, Whistler, BC, Canada, September 11-15; talk entitled "Radiohalogen-based Targeted Therapies"
- 2004 Speaker at the McMaster Institute of Applied Radiation Sciences, US Department of Energy, and Association of Radiation Research Workshop, Radiation-induced Genomic Instability and Bystander Effects; Implications for Evolutionary Biology, Hamilton, Ontario, Canada, October 28-November 1; talk entitled “The Ups and Downs of the Bystander Effect”
- 2005 Speaker at the Era of Hope 2005 DoD Breast Cancer Research Program Meeting, Philadelphia, PA, June 8-11; talk entitled “Identifying Uncharacterized Breast Cancer-specific Targets by Data Mining of Literature and Gene/Protein Databases”
- 2005 Speaker at the American Association for Cancer Research conference, Cancer, Proteases, and Tumor Microenvironment,

- Bonita Springs, FL, November 30-December 4; talk entitled “Combined Data Mining of Literature and Protein Databases Identifies Cancer-specific Proteases”
- 2005 Speaker at the 14th International Symposium on Microdosimetry, Venice, Italy, November 13-18; talk entitled “Inhibitory (^{125}I) and Stimulatory (^{123}I) Bystander Effects Are Differentially Produced by Radiolabeled Tumor Cells: *In Vitro* and *In Vivo* Studies”
- 2006 Speaker at the IXth International Workshop on Radiation Damage to DNA, Antalya, Turkey, May 14-17; talk entitled “DNA Compaction Affects Double-Strand Break Induction by Auger Electrons”

Leadership roles

- 1989 Co-chairman of the American College of Nuclear Physicians, Society of Nuclear Medicine, Department of Energy, Joint Symposium on Dosimetry of Administered Radionuclides, Washington, DC, September 21-22
- 1994 Organizer of and participant in an international conference on Clinical Applications of Radiolabeled IUdR, Harvard Medical School, Boston, MA, October 4
- 1998 Chairman, session on safety of compounds and alpha emitters, Second Bi-annual Workshop on Alpha-emitters for Medical Therapy, sponsored by the Department of Energy, Toronto, Canada, June 4-5
- 2006-2007 Head of the organizing committee for the 6th International Symposium on the Physical, Molecular, Cellular, and Medical Aspects of Auger Processes, Boston, MA, July 6-7, 2007

PART III: BIBLIOGRAPHY

Original Articles:

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3. Kassis AI, Goh SL, Tanner CE. Lesions induced by complement *in vitro* on the protoscoleces of *Echinococcus multilocularis*: a study by electron microscopy. *Int J Parasitol* 1976;6:199-211.
4. Kassis AI, Tanner CE. Novel approach to the treatment of hydatid disease. *Nature* 1976;262:588-9.
5. Kassis AI, Tanner CE. Host serum proteins in *Echinococcus multilocularis*: activation via the classical complement pathway. *Immunology* 1977;33:1-9.
6. Kassis AI, Tanner CE. *Echinococcus multilocularis*: complement's role *in vivo* in hydatid disease. *Exp Parasitol* 1977;43:390-5.
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9. Kassis AI, Warren KS, Mahmoud AAF. Antibody-dependent complement-mediated killing of schistosomula in intraperitoneal diffusion chambers in mice. *J Immunol* 1979;123:1659-62.
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11. Kassis AI, Adelstein SJ, Haydock C, Sastry KSR. Radiotoxicity of ⁷⁵Se and ³⁵S: theory and application to a cellular model. *Radiat Res* 1980;84:407-25.
12. Kassis AI, Adelstein SJ, Haydock C, Sastry KSR, McElvany KD, Welch MJ. Lethality of Auger electrons from the decay of bromine-77 in the DNA of mammalian cells. *Radiat Res* 1982;90:362-73.
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16. Kassis AI, Sastry KSR, Adelstein SJ. Intracellular distribution and radiotoxicity of chromium-51 in mammalian cells: Auger-electron dosimetry. *J Nucl Med* 1985;26:59-67.
17. Kassis AI, Adelstein SJ. Chemotoxicity of indium-111 oxine in mammalian cells. *J Nucl Med* 1985;26:187-90.
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- carcinoembryonic antigen antibody infusion in patients with metastatic adenocarcinoma: a phase I study. *Cancer Immunol Immunother* 1986;23:137-42.
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