Harvard Medical School
Curriculum Vitae

Date Prepared:	December 13, 2018
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Place of Birth:	Baroda, India

Education

1980	M.B.B.S.	Medicine	Maharaja Sayajirao University, Baroda, India
1984	M.D.	Internal Medicine	Maharaja Sayajirao University, Baroda, India

Postdoctoral Training

12/79-11/80	Internship	Internal Medicine	Shri Sayaji General Hospital and Maharaja Sayajirao University,
11/81-12/83	Resident	Internal Medicine	Shri Sayaji General Hospital and M.S. University
1/84-12/85	Senior Resident	Internal Medicine	Shri Sayaji General Hospital and M.S. University

1/86-1/87	Research Fellow	Oncology	Johns Hopkins Ocology Center, Baltimore, MD
7/87-6/90	Clinical Fellow	Hematology/Oncology	Indiana University Medical Center, Indianapolis, IN

Faculty Academic Appointments

07/90-06/92	Lecturer in Medicine	Division of Hematology/Oncology	Indiana University Medical Center, Indianapolis, IN
07/92-06/98	Assistant Professor ofMedicine	Department of Medicine Division of Hematology/Oncology	University of Arkansas for Medical Sciences, Little Rock, AR
07/98-06/00	Associate Professor of Medicine with tenure	Department of Medicine Division of Hematology/Oncology	University of Arkansas for Medical Sciences Little Rock AR
07/00-05/01	Professor of Medicine with tenure	Department of Medicine Division of Hematology/Oncology	University of Arkansas for Medical Sciences, Little Rock AR
05/02-6/05	Lecturer in Medicine	Department of Medicine	Harvard Medical School, Boston, MA
07/05-02/14	Associate Professor of Medicine	Department of Medicine	Harvard Medical School Boston, MA
02/14-Present	Professor of Medicine	Department of Medicine	Harvard Medical School Boston, MA

Appointments at Hospitals/Affiliated Institutions

01/82-12/84	Chief Investigator	Cytogenetic Lab	Shri Sayaji General Hospital and Maharaja Sayajirao University Baroda, India
07/90-06/92	Attending Physician	Hematology/Oncology and Bone Marrow Transplantation	Indiana University Hospitals
07/92-05/01	Attending Physician	Hematology/Oncology and Bone Marrow Transplantation	University of Arkansas Hospital
03/93-05/01	Attending Physician	Department of Medicine	John McClellen VA Medical Center, Little Rock, AR

05/01-Present	Attending Physician	Hematology/Oncology	VA Boston Healthcare System, Boston, MA
05/01-Present	Attending Physician	Medical Oncology	Dana-Farber Cancer Institute, Boston, MA
07/02-Present	Associate Physician	Hematology/Oncology	Brigham and Women's Hospital, Boston, MA

Major Administrative Leadership Positions

Local

2001-Present	Associate Director	Jerome Lipper Myeloma Center Dana-Farber Cancer Institute Harvard Medical School
2005-Present	Course Co-director	Dana-Farber Cancer Institute Multiple Myeloma Workshops (2-3 per year)
2013-Present	Director, Basic and Correlative Science	Jerome Lipper Myeloma Center Dana-Farber Cancer Institute

National

1996-2001	Chief	Molecular Oncology and Gene Therapy Arkansas Cancer Research Center
1996-2001	Director	Clinical Gene Transduction Laboratory University of Arkansas for Medical Sciences

Committee Service

Local

2003-2007	Research & Development Committee	VA Boston Healthcare System Member
2005-2007	Research & Development Committee	VA Boston Healthcare System Chair
2006-2007	Research Forms Committee, Boston VA	VA Boston Healthcare System Chair
2006-Present	Scientific Research Committee	Dana-Farber Cancer Instititue Harvard Cancer Center
2008-2009	DFHCC Human Studies Audit Committee	Dana-Farber Cancer Institute Member

2009-Present	Cancer Registry	VA Boston Healthcare System Member
2009	VA Conflict of Interest Committee	VA Boston Healthcare System Member

Regional

1993- 2001	Myeloma Subcommittee	South West Oncology Group Investigator
2002-Present	Leukemia/Myeloma Subcommittee	Cancer and Leukemia Group B Investigator

National

1999-2001	Scientific Advisory Committee	Cancer Cure 2000 Scientific Advisor
1999	Scientific Advisory Commiittee	Cure 200-Leukemia Cure Foundation Member
2001-2004	Scientific Advisory Committee	Multiple Myeloma Research Foundation Member
2005-	Expert Panel on Myeloma	National VA Healthcare System Chairman
2008	FDA/MMRF Round table Discussion	FDA/MMRF Round Panel Member
2010	Organizing and Scientific Committee	3rd International Oncogenomics and Pharmacogenomics Workshop Cape Cod MA Co-Chair
2010-2018	National Steering Committee for Multiple Myeloma	National Cancer Institute Co-Chair
2010-Present	National Steering Committee for Multiple Myeloma	National Cancer Institute Member
2010	National VA Myeloma Guidelines Committee	National VA Healthcare System Member
2011	High Risk Myeloma Study Working Group	National Cancer Institute Co-Chair
2011-2012	Multiple Myeloma Accrual Working Group	National Cancer Institute Co-Chair

2012-2018	National Clinical Trials Network (NCTN) Working Group	National Cancer Institute Representing Hematological malignancy
2013-2017	Clinical Trials and Translational Research Advisory Committee	National Cancer Institute Federal Advisory Committee Member

International

2007-2009	Organizing Committee	XIIth International Myeloma Workshop New Delhi/Washington DC Co-Chair
2008-2009	Scientific Program Committee	XIIth International Myeloma Workshop New Delhi/Washington DC Co-Chair
2008-2009	Myeloma Consensus Development Panel	XIIth International Myeloma Workshop Chair
2010-2011	Myeloma Consensus Development Panel	XIIIth International Myeloma Workshop Chair
2011	Scientific Committee	XIII International Myeloma Workshop Paris France Member
2013	Scientific Committee	XIV International Myeloma Workshop Kyoto Japan Member
2015	Scientific Committee	XX International Myeloma Workshop Rome Italy Member
2017	Scientific Committee	XVI International Myeloma Workshop New Delhi Co-chair

Professional Societies

1984-	Indian Medical Association	Member
1984-	Physician's Association of India	Member
1985-	Indian Association of Clinical Oncology	Member
1994-	American Medical Association	Member

1997-	American Society of Clinical Oncology	Member
1998-	American Association for the Advancement of Science	Member
1999-	American Society of Hematology	Member
1999	Multiple myeloma – Preclinical studies abstract review Panel	American Society of Hematology Reviewer
1999	Multiple myeloma – Preclinical studies Scientific session	American Society of Hematology New Orleans, LA Moderator
2000	Multiple myeloma – Preclinical studies abstract review Panel	American Society of Hematology Chairman
2000-	American Association of Cancer Research	Member
2001	Multiple myeloma – PreClinical studies Session	American Society of Hematology Moderator
2001- 2010	ASH Scientific Subcommittee on Growth Factor	American Society of Hematology Member
2002	Multiple myeloma – Myeloma Therapy Scientific Session	American Society of Hematology Moderator
2003	Multiple myeloma – Myeloma Therapy Scientific Session	American Society of Clinical Oncology Moderator
2004	Hematologic Malignancy Advisory Panel	American Society of Clinical Oncology Member
2004	Multiple myeloma – Myeloma Biology Scientific Session	American Society of Hematology Moderator
2009- Present	Board of Directors	International Myeloma Society Member
2010-2013	Scientific Subcommittee on Plasma cell malignancies	American Society of Hematology Chair
2011	Awards Selection Committee	American Society of Hematology Member

2015-2019	Vice-President	International Myeloma Society

Grant Review Activities

1994	National Cancer Institute (NCI) ad hoc study section for RFA grant on systemic therapies	NIH/NCI Member
1994	Program Project grant (PO-1) site visit committee for gene therapy for cancer University of California at Los Angeles, CA	NIH/NCI Member
1995	Program Project Site visit committee for gene theraphy for chronic myeloid leukemia Temple University, Philadelphia, PA	NIH Member
1996	Program Project Site visit committee for genetic approaches for cancer immunotherapy University of Michigan, Ann Arbor, MI	NIH Member
1996	Program Project Site visit committee for gene therapy for Brain tumors Massachusetts General Hospital, Harvard University, Boston, MA	NIH Member
1996	Program Project Site visit committee for novel adenoviral vector development University for Alabama, Birmingham, AL	NIH Member
1997	Site visit committee for Memorial Sloan Kettering Cancer gene therapy program	NIH Member
1997	NCI ad hoc study session for RFA on investigator grants for clinical cancer therapy	NIH Member
1997	Memorial Sloan Kettering site visit committee for cancer gene therapy program biology and genetics of marrow allograft for leukemia	NIH Member
1998	Site visit committee for immunotherapy of multiple myeloma Dana Farber Cancer Institute, Harvard Medical School, Boston, MA	NIH Member

1998	Innovative investigator ad hoc study section for grant on cooperative studies	NIH Member
1998	NCI ad hoc study section for subcommittee E	NIH Member
1999	NCI ad hoc study section for subcommittee E	NIH Member
1999	National Institute for Dental Disease ad hoc study section for innovative therapy in head and neck disorders	NIH Member
1999	Ad hoc study section on experimental therapeutics	NIH Member
1999	Ad hoc study section on subcommittee E	NCI Member
1999	Department of Defense study section	Medical Genetics Army Medical Research Member
2001	NCI Institute Ad hoc subcommittee G	NIH Member
2002	Site visit committee for bone marrow transplant program John Hopkins Oncology Center, Baltimore, MD	NIH Ad hoc Member
2002	NCI Sudy section for Specialized program for research excellence	NIH/NCI Ad hoc Member
1999-2003	NIH RO-1 Study section experimental immunology	NIH Permanent Member
2003	Program grant review at University of Southampton, Southampton, England	Leukemia Research Fund UK Member
2003	Program grant review at University of London	Leukemia Research Fund UK Member
2004	Ad hoc review panel for PO-1 cluster on growth factors	NCI Member
2005	Ad hoc review panel for cluster on growth factors	NCI Member
2005	Ad hoc review panel for cluster immunology and immunotherapy	NCI Member

2006	Ad hoc review panel for clinical studies	NCI Member
2007	Ad hoc review panel for clinical Studies Special Emphasis Panel	NCI Member
2008	Program grant review at University of Southampton, Southampton, England	Leukemia Research Fund UK Member
2008	PO-1 Ad hoc review panel for clinical studies	NCI Member
2009	Site visit committee for review of NCI Intramural program - Medical oncology branch	NCI Member
2009-2013	Study section for Specialized Centers of Research (SCOR) grants in hematologic malignancies	LLS Member
2010	NCI Therapeutic strategies for cancer PO-1 Special Emphasis Panel	NIH Ad hoc reviewer
2010	NCI Specialized Program for Research Excellence (SPORE) review Panel	NIH Ad hoc reviewer
2011	Site visit committee for review of NCI Intramural program – Genetics branch	NCI Member
2011	NCI Therapeutic strategies for cancer PO-1 Special Emphasis Panel	NIH Ad hoc reviewer
2012	NCI Therapeutic strategies for cancer PO-1 Special Emphasis Panel	NIH Ad hoc reviewer
2013	NCI Program Project II Special Emphasis Panel	NIH Ad hoc reviewer
2014-2016	NCI Program Project II Special Emphasis Panel	NIH Ad hoc reviewer

Editorial Activities

Ad hoc Reviewer

Annals of Oncology
Blood
Human Gene Therapy
Cancer Gene Therapy
Journal of Immunotherapy
Journal of Virological Methods

Leukemia
Bone Marrow Transplant
European Journal of Hematology
Hematologica
Journal of Clinical Oncology
British Journal of Hematology
Kidney International
Leukemia and Lymphoma
Clinical Cancer Research
Experimental Hematology
Leukemia Research
Cancer Research
New England Journal of Medicine
Cancer Cell
PNAS

Other Editorial Roles

2004-Present	Editorial Board	Clinical Lymphoma and Myeloma
2011-Present	Editorial Board	Personalized Medicine in Oncology
2014-2016	Editorial Board	Blood
2016-Present	Associate Editor	Blood Advances

Honors and Prizes

1977	Distinction and Gold Medal in Pathology	Maharaja Sayajirao University Medical School	Ranking First in the Subject of Pathology
1977	B.N Parekh Scholarship Final Medical Year	Maharaja Sayajirao University Medical School	Highest Ranking in the Examination
1979	Distinction and Gold Medal in Internal Medicine	Maharaja SayajiraoUniversity Medical School	Ranking First in the Subject of Internal Medicine
1979	Distinction in OB/GYN	Maharaja Sayajirao University Medical School	Highest Score in the Subject of OB/GYN
1989-1990	Training Fellowship	National Cancer Institute	Research Fellowship
1990	ASCO Travel Award	American Society of Clinical Oncology	Highest ranked abstract at the Annual meeting in the Oncology Category

1991	ASCO Young Investigator Award	American Society of Clinical Oncology	Highest ranked research proposal
1998	Scholar in Clinical Sciences	Leukemia and Lymphoma Society	Highest ranked research proposal
2011	VA Lifetime Achievement Award	Association of VA Hematologists and Oncologists	For exemplary work for VA Hematology/Oncology
2013	Waldenstrom's Award	International Myeloma Society and XIV International Myeloma Workshop Kyoto, Japan	For outstanding lifetime contribution in the filed of multiple myeloma
2016	Dr. B.C. Roy National Award	President of India	Most eminent medical personality in India, lifetime achievement award.
2017	Memebr, American Association of Physician	American Association of Physician	Scientific Contribution.

Report of Funded Projects

Past

1990-1991	American Society of Clinical Oncology Young Investigator Award Research Application Principal Investigator (PI) Role of oncogenes and antioncogenes in growth factor stimulated DNA replication
1992-1994	CD 16 Gene therapy for myeloma NIH/NCI PO1 PI Project I: Gene therapy approaches for myeloma
1991-1992	ACS Institutional Pilot Study Grant PI Role of tumor suppressor genes p53 and RB-1 in breast cancer
1991-1996	NIH/RO1 Co-Investigator Parvovirus-mediated gene transfer in human stem cells
1993-1994	ACS Institutional Pilot Study Grant PI P53 manipulations in multiple myeloma

1995-1997 Phi Beta Psi
PI
Gene therapy for cancer treatment

1995-1996 American Pharmacology Society
Co-PI
The adequacy of Ganciclovir to eliminate TK+ lymphocytes in vivo

1995-2000 NIH/RO1
PI
Graft vs Myeloma effect of TK-transduced lymphocytes

1996-1999 American Cancer Society
PI
AAV- mediated CD16 gene therapy for myeloma

1996-2000 NIH/R21
PI
Laboratory studies following Graft vs Myeloma effect of TK-transduced lymphocytes

1998-2003 Leukemia and Lymphoma Society Scholar in Clinical Research Award
PI
Immunotherapeutic approaches for multiple myeloma

1999-2003 Growth control in myeloma
NIH/PO1
PI: Project 2
Project: Experimental therapeutics

2002-2004 Targeted Therapy in Myeloma
MMRF/PO1
PI - Core 1
In vivo molecular profiling

2002-2009 MMRF/PO1 Development of Molecularly-Based Combination Therapy for Multiple Myeloma
PI Project 1
Genomic and proteomic profiles of response versus resistance to combination therapies

2003-2006 VA Merit Grant II
VA/RO1
PI
Prediction of therapeutic efficacy based on gene expression profile in multiple myeloma

2005-2008 Celgene Pharmaceutical DFCI- 05-301:
National and site PI Clinical study
Enhancement of Hepatitis B Vaccine response by Lenalidomide in patients with plasma cell disorders.

2007-2009 Geron Pharmaceutical DFCI -07-237
National and site PI Clinical study
A phase I sequential cohort, dose escalation trial to determine the safety, tolerability, and maximum tolerated dose of GRN163L in patients with refractory or relapsed multiple myeloma

2008-2012 Novartis Pharmaceutical DFCI 08-343
National and site PI Clinical study
Ph Ib multicenter dose-determining Study with an adaptive, randomized, placebo controlled double blind phase II, using various reeated IV doses of BHQ880 in combination with Zoledronic acid in relapsed or refractory Multiple Myeloma patients with prior skeletal-related events.

2008-2011 Biotest Pharmaceutical DFCI 08-143
National and site PI Clinical study
A phase I dose esacaltion study to evaluate maximum tolerated dose (MTD), pharmacokinetics (PKS), and safety of BT062 in subjects with relapsed or refractory multiple myeloma.

2009-2010 NIH, NCI/P50 CA100707
Specialized program of research excellence (SPORE)
Investigator
ARRA supplemental funding

2009-2012 Millenium Phramaceutical National VA Health Care System Phase II Study:
National and site PI
Efficacy of Once a week Velacde with dexamethsone in newly-diagnosed multiple myeloma.

Current

1998-2021 Molecular Manipulations to enhance anti-myeloma response
VA Merit Grant IO1-BX001584
PI - $650,000 ($150,000/ year)
Specific Aims of this project are 1) To determine *in vitro* immune responses generated following cytokine transduced tumor cell vaccinations in multiple myeloma patients. 2) To identify novel immune targets recognized *in vivo* during the above vaccine studies and evaluate immune responses against these antigens in myeloma patients. 3) Evaluate mechanisms to augment immune responses to vaccination in myeloma.

2002-2015 Project 2: Innate and adaptive anti-myeloma immunity
NIH/NCI/ P01 CA78378-10 - Host-tumor cell interactions in myeloma: therapeutic applications
PI - $1,640,715
The specific aims of the Project are: 1) To elucidate the role of the NKG2D pathway in MM pathogenesis; 2) To evaluate the role of TH17 pathway and associated pro-inflammatory cytokines in promoting immune dysfunction and tumour growth in MM; and 3) To evaluate the role of novel therapies targeting NKG2D and TH17 pathway in vitro and in vivo using animal models as a prelude to future phase I/II clinical trials.

2003-2018 Co-Director: DF/HCC Specialized Program of Research Excellence (SPORE) in Myeloma
NIH/P50 CA100707
Co-Director SPORE - $9,435,937
The Dana-Farber/Harvard Cancer Center (DF/HCC) multiple myeloma (MM) SPORE consists of 6 Research Projects and 3 Cores, as well as the Career Development and Developmental Research Programs. The overall theme of the DFCI/HCC myeloma SPORE is to identify and evaluate novel targeted therapies. The translational nature of the SPORE is highlighted by the fact that most of our projects have emanated from clinical studies from the outset. This Program therefore represents the integrated efforts of investigators with a unique and long track record of basic and clinical research expertise in MM, now joining together to more rapidly move rational novel targeted therapies from the laboratory to clinical protocols to improve patient outcome in MM.

2003-2018 Project 2: Targeting telomere expansion mechanisms for myeloma therapy.
NIH/P50 CA100707 - DF/HCC Specialized Program of Research Excellence (SPORE) in Myeloma
PI - $886,626
The main Specific goals of this project are 1) To investigate in clinical study telomerease directed therapy; and 2) To evaluate mechanisms maintaining telomere function in myeloma including recombination mechanisms providing the framework for targeting telomerase in novel therapeutics.

2003-2018 Administrative and Planning Core, Core A
NIH/P50 CA100707-06 – DF/HCC SPORE in Myeloma
Co-Director $820,804
The major goal of this project is to identify and target cellular and soluble factors modulating autologous anti-MM responses to develop effective antigen-specific vaccine therapies.

2006-2018 Tissue Core, Core B
NIH/P50 CA100707-06 – DF/HCC SPORE in Myeloma
Co-Director, $717,796
The SPORE Tissue Bank is responsible for processing samples to generate a multi-use resource. This consists of plasma, white blood cells from bone marrow, mononuclear cells from peropheral blood, cytospin slides from bone marrow, biopsy slides, as well as DNA, RNA, and proteins from the bone marrow and purified plasma cells.

2008-2013 Homologous Recombination Mediates Genomic Instability and Progression in Myeloma
NIH/RO1 CA 124929
PI- $1,006,375
Specific aims of this project are: 1) To test the hypothesis that an increase in HR activity is an early step in the development and progression of myeloma. In Specific Aim 1: to evaluate HR function in normal plasma cells, MGUS, and myeloma; Specifically, Aim 2 will evaluate molecular mechanisms associated with increased HR activity and its molecular consequence in multiple myeloma using loss of function and gain of function studies; 3) To develop small molecule inhibitors of HR pathway using a high-throughput, cell-based, phenotypic screen to prevent development of drug resistance and progression in myeloma.

2010-2015 Administartive Core - Core A
NIH/NCI/ P01 CA78378-10 - Host-tumor cell interactions in myeloma: therapeutic applications
Co-Director - $1,091,205
To administer the program project functuion, research and clinical integration and provide support and oversight for clnical studies.

2011-2022 PO-1: Integrative Oncogenomics in Multiple Myeloma
NCI/ P01 CA155707
Overall PO-1 PI - $10,613,863
In this program we are evaluting the combination of novel therapies with high dose therapy and transplantation in a study involvoing 1,000 patients and then using myeloma cells from these patients understand genomic and molecular correlates of clinical and biological outcomes. This program will help define the role of high dose therapy and transplantation in the era of novel therapies. Moreover, the oncogenomic studies will both identify genomic correlates of disease behavior and identify targets for novel therapeutics to develop next generation of therapies in myeloma.

2011-2022 Project 4: Targeting genomic instability and evolution in myeloma
NCI/ P01 CA155707-1
PI - $1,179,992
Specific Aims of this project are: 1) To investigate evolving genomic changes and their significance in MM patients using paired samples collected at the time of diagnosis as well as relapse to identify acquisition of new DNA changes and their clinical relevance; 2) To evaluate the role of elevated HR, a key mediator of genomic instability, as a marker of prognosis using MM samples collected at the time of diagnosis from patients enrolled in the clinical study (Project 1) and correlate it with response, TTP, and survival; and 3) To preclinically evaluate the ability of inhibitors of recombination to prevent evolution of genomic changes.

2011-2022 Administrative and Communication Core – Core A
NCI/ P01 CA155707-1 - Integrative Oncogenomics in Multiple Myeloma
PI - $946,435
The core will provide following basic functions: Core A will provide these functions: 1) To monitor the timely conduct of the clinical study and assure progress in tissue collection, processing and usage to co-ordinate interaction between the clinical and correlative science studies; 2) To provide necessary resources, fiscal oversight, and administrative support for projects and cores; 3) To co-ordinate communication, and exchange of data between investigators at various international sites; and 4) To facilitate intra-programatic interactions, meetings, travel, and Internal and External Advisory Committees.

2011-2014 Celgene Pharmaceutical National VA Healthcare System Study
National and site PI $350,000
Comparison of 2 dose regimens of Lenalidomide in relapse myeloma in the veteran population.

2011-2013 Bioteest Pharmaceutical DFCI 10-023
National and site PI $100,000
A Phase I/IIa Multi-Dose Escalation Study to Evaluate Maximum Tolerated Dose (MTD), Pharmacokinetics (PK), Safety and Efficacy of BT062 in Subjects with Relapsed or

Relapsed/Refractory Multiple Myeloma

2011-2013 Novartis Pharmaceutical DFCI 10-453
National and site PI $130,000
Phase 2 clinical trial of safety and efficacy of BHQ880 in patients with Smoldering Multiple Myeloma

2011-2013 J&J Pharmaceutical DFCI 09-350
Site PI $35,000
A randomized, Double-blind, Placebo-controlled Study to Assess the Efficacy and Safety of CNTO 328 (Anti-IL-6 Monoclonal Antibody) Plus Best Supportive Care Compared With Best Supportive Care in Subjects With Multicentric Castleman's Disease

2011-2013 Innate Pharmaceutical DFCI - 10-263
Site PI $35,000
Multicenter phase II study on the anti-tumor activity, safety and pharmacology of two dose regimens of IPH2101, a fully human monoclonal anti-KIR antibody, in patients with Smoldering Multiple Myeloma

2011-2013 Innate Pharmaceutical DFCI – 10-226.
Site PI $35,000
Multicenter phase I/II study on the anti-tumor activity, safety and pharmacology of IPH2101, a human monoclonal anti-KIR, combined with Lenalidomide in patients with Multiple Myeloma experiencing a first relapse.

Unfunded

2007- 2019 DFCI 07-150: Blood, Urine, Buccal and Bone Marrow Sample Collection for Research Studies in Patients with Plasma Cell Dyscrasias

Report of Local Teaching and Training

Teaching of Students in Courses

Maharaja Sayajiro University

1980-1984	Clinical Training in Internal Medicine 18 junior and senior medical students	Prep time: 52 hrs/year; Contact time: 52 hrs/year

Indiana University Medical Center

1990-1992	Physical Diagnosis, Department of Medicine 3 junior medical school students	Prep time: 4 hrs/week; Contact time: 3 hrs/week

	University of Arkansas for Medical Sciences	
1992-2000	Lecturer, Partners in Health Department of Medicine Physical Diagnosis 3 medical students	12 wks/year. Prep time: 3 hrs/week; Contact time: 3 hrs/week
1997-2001	Partners in Research Program for translational research 35 Junior medical students	Prep time: 4 hrs/year; Contact time: 2 hrs/year
1999	Immunology Seminar Series Graduate Studies in Microbiology and Immunology. 25 Graduate students	Prep time: 3 hrs; Contact time: 2 hrs
2000	Research Seminar Department of Microbiology and Immunology 50 faculty and students	Prep time: 3 hrs; Contact time: 1.5 hrs
	Brigham and Women's Hospital	
2003-Present	"Multiple Myeloma for Residents" 6-9 Medicine Residents and Interns	Twice a year. Prep time: 8 hrs/year; Contact time: 6 hrs/year

Formal Teaching of Residents, Clinical Fellows and Research Fellows (post-docs)

1990-1992	Indiana University Medical Center, Clinical Training 6 internal medicine Residents and 2 Hem/Onc Fellows	Department of Medicine, Indiana University Hospital Residents Prep time: 32 hrs/year; Contact time: 16 hrs/year Fellows Prep time: 13 hrs/year; Contact time: 13 hrs/year
1992-2001	University of Arkansas, Clinical Training Medical students and residents 6 internal medicine Residents and senior medical students; 3 Hem/Onc Fellows	Department of Medicine, University of Arkansas for Medical Sciences 12 weeks/year. Residents prep time: 7.5 hours/week; Contact time: 5 hrs/week; Fellows prep time: 4 hrs/week; Contact time: 4 hrs/week
1992-2001	University of Arkansas, Clinical Education 10 Hem/Onc Fellows	Department of Medicine, University of Arkansas for Medical Sciences Prep time: 6 hrs/year; Contact time: 6 hrs/year
1994-1996	Hem/Onc MKSAP Internal Medicine Board Review 50 Residents in the Internal Medicine	University of Arkansas for Medical Sciences Prep time: 4 hrs/year; Contact time: 2 hrs

1994	"Paraneoplastic syndromes – from bedside to bench" 200 Department of Internal Medicine faculty and residents.	University of Arkansas for Medical Sciences Prep time: 8 hrs/year; Contact time: 1.5 hrs
1995	"TK-transduced donor lymphocytes in allogeneic transplantation" 70 Department of Internal Medicine faculty	University of Arkansas for Medical Sciences Prep time: 4 hrs/year; Contact time: 1.5 hrs
1995	"Gene therapy in myeloma" 30 Hematologists and Oncologists	Arkansas Blood and Cancer Club Seminar Series Prep time: 4 hrs/year; Contact time: 1.5 hrs
1996	"Gene transduction – from diagnosis to therapy" 50 Department of Anatomy faculty and students	University of Arkansas for Medical Sciences Research Seminar Department of Anatomy Prep time: 4 hrs/year; Contact time: 1.5 hrs
1996	"Gene therapy for multiple myeloma" 70 Department of Internal Medicine faculty	University of Arkansas for Medical Sciences, Department of Medicine Prep time: 4 hrs/year; Contact time: 1.5 hrs
1997	"Gene therapy from bench to bedside" 40 Department of Chemistry faculty and students	Research Seminar, Department of Biochemistry, University of Arkansas for Medical Sciences Prep time: 4 hrs/year; Contact time: 1.5 hrs
1998	"Novel methods for immunotherapy in Multiple Myeloma" 100 cancer center members	Arkansas Cancer Research Center Grand Rounds Prep time: 4 hrs/year; Contact time: 1.5 hrs
1999	"Vaccination strategies for myeloma therapy" 20 College of Nursing faculty and students	Oncological Nurses Education Program Prep time: 4 hrs/year; Contact time: 1.5 hrs
2000	"Innovations in therapy of myeloma and hematological malignancies" 60 cancer center members	Arkansas Cancer Research Center Research Seminar, University of Arkansas for Medical Sciences Prep time: 4 hrs/year; Contact time: 1.5 hrs
2001	"Novel therapy in multiple myeloma" 30 Hematologists and Oncologists	Arkansas Blood and Cancer Club Prep time: 4 hrs/year; Contact time: 1.5 hrs
2001-Present	Clinical Case Conference for Hematology/ Oncology Fellows	VA Boston Healthcare System 6 times a year Prep time 12 hrs/yr; Contact time 6 hrs.
2002-Present	Hematology/Oncology teaching rounds	Brigham and Womens Hospital Preparation time 2 hrs a week. Contact time 6 hours a week, 4 weeks/year

2005- Present	Myeloma Visiting Fellows 1-4 fellows/year	Dana-Farber Cancer Institute 2-3 month rotations annually

Clinical Supervisory and Training Responsibilities

2001- Present	Hematology/Oncology Fellows Ambulatory Hematology/Oncology – Multiple Myeloma Clinic/ VA Boston Healthcare System	One half session per week
2003- Present	Medicine Residents and Intern Brigham and Women's Hospital Hematological Malignancy attending	4 weeks per year

Laboratory and Other Research Supervisory and Training Responsibilities

1992-2001	Supervision of Post-doctoral research fellows, Arkansas Cancer Research Center	Daily mentorship
2001- Present	Supervision of Post-doctoral research fellows and research Assistant and associates, VA Boston Healthcare System and Dana-Farber Cancer Institute	Daily mentorship

Formally Supervised Trainees

1993-1995	Scott Naugler, MD, Assistant Professor of Medicine, Oregon Health Science University, Portland, OR Mentored laboratory research as medical student
1995	Benton Brown, MD, Senior Director, Global Drug Safety & Risk Management at Celgene, Nutley, NJ Mentored laboratory research as medical student
1996-1997	Anandi Sheth, MD, Assistant Professor of Medicine, Emory University Medical Center, Atlanta, GA Mentored laboratory research as high school student
1995-1999	Sapan Shah, MD, JD, CEO Heath Systems Inc., Chicago IL Mentored laboratory research as high school and medical student
1997	Martina Ekechukwu, MD, Familiy Medicine, Fayetteville, AR Mentored laboratory research as medical student

1997-2005	Masood Shammas, PhD, Instructor, Harvard Medical School Mentored as Post Doctoral Fellow. Focus on Genomic instability and role of homologous recombination in barrett's esophagus related adenocarcinoma. Indepenedent RO-1 funding.
1998	Roy Hendron, Resident, University of Arkansas for Medical Sciences Mentored laboratory research as medical student
1998-2000	Samir Shah, MD, Resident, Radiology Beth Israel Deconess Medical Center Mentored laboratory research as high school and medical student
1999-2003	Sima Shah, MD, Fellow, University of California Davis, Davis, CA Mentored laboratory research as high school and medical student
2000-2002	Puneet Cheema, MD, Physician, Mineapolis, MN Mentored laboratory research as research fellow, Dana-Farber Cancer Institute
2003-2005	Pierfrancesco Tassone, MD, Professor of Medicine, University of Catanzarro, Catanzarro, Italy Mentored laboratory research as research investigator, Dana-Farber Cancer Institute, He developed a new SCIDhu model of myeloma ansd Waldenstrom's macroglobulinemia
2003-2004	Joan Ryoo, MD, Surgical Resident, Harvard Medical School Mentored laboratory research as medical student
2004-present	Rao Prabhala, MD, Instructor in Medicine, Harvard Medical School Mentored as research associate, Now focused on studying immune status in Myeloma. Has described both Treg and Th17 cells in myeloma.
2005-2007	Paola Neri, MD, Assistant Professor of Medicine, University of Catanzarro, Catanzarro, Italy Mentored as research fellow, Dana-Farber Cancer Institute, Animal models of myeloma bone disease
2005-2007	James Driscoll, MD, PhD, Assistant Professor of Medicine, University of Cincinnati School of Medicine, Cincinnati, OH Mentored as post-doctoral fellow, Dana-Farber Cancer Institute Role of sumolation in myeloma
2006-Present	Noopur Raje, MD, Associate Professor of Medicine HMS, Director Multiple myeloma Program Massachusetts General Hospital, Boston, MA Mentorship and guidance in laboratory and translational work in myeloma
2006-2009	Jooeun Bae, PhD, Instructor in Medicine, Dana-Farber Cancer Institute Mentored as research fellow, Her work on identification of immunogenic peptides in myeloma is now being translated into clinical study.

2006-Present	Mariatersa Fulciniti, PhD, Instructor in Medicine, Dana-Farber Cancer Institute Mentored as graduate student and post-doctoral research Fellow Dana-Farber Cancer Institute. She Studied role of anti-DKK1 antibody in myeloma and a clinical study in myeloma based on her data is ongoing; now identifying transcription factors as therapeutic target in myeloma
2006-2009	Simona Blotta,MD, Physician Investigator, European Institute of Oncology, Milan, Italy Mentored as post-doctoral Fellow, Identified novel immune targets in myeloma and described the role of hedgehog pathway in myeloma
2007-2009	Dheeraj Pilleru, PhD, Research Fellow, University of South Carolina School of Medicine, Columbia, SC Mentored as rsearch fellow, Dana-Farber Cancer Institute
2008-2011	Samir Amin, MD, Graduate Student, Baylor College of Medicine, Houston, TX Mentored as rsearch fellow, Dana-Farber Cancer Institute, Described the limitation of gene expression profile in predicting outcome in cancer
2007-2016	Weihua Song, MD Research Fellow, Dana-Farber Cancer Institute Mentored as research fellow. Described the role of splicing in myeloma
2008-Present	Sophia Adamia, PhD Research Fellow, Dana-Farber Cancer Institute Research mentor. Described the clnical role of microRNA in myeloma
2009-2012	Parantu Shah, PhD, Research Scientist MD Anderson Cancer Center, Houston, TX Mentoored as post-doctoral fellow, Dana-Farber Cancer Institute. Investigated the incorporation of multi level genomic data to develop integrative oncogenomic in myeloma
2009-2012	Jagannath Pal, PhD, Research Fellow Dana-Farber Cancer Institute
2009-2013	Teresa Calimari, MD, Research scientist, University of Catanzarro Mentored as research fellow, Dana-Farber Cancer Institute. Described role of non-homologous recombination in myeloma
2009-Present	Jeson Gold, MD, Assistant Professor of Surgery Brigham and Women's Hospital, Harvard Medical School, Research Mentor – Supervise and guide laboratory research focused on role of immune and inflammatory pathways in colon cancer development. Received VA Career Development Award, 2010.
2009-2011	Anuj Mahindra, MD, Instructor in Medicine Massachusetts General Hospital, Harvard Medical School Mentorship and guidance for translational work in myeloma
2010-Present	Jianhong Lin, MD, Mentoring as research fellow, Dana-Farber Cancer Institute Developing zebrafish model in myeloma.
2011-Present	Jeff Haspel, MD, Assistant Professor of Medicine Division of Pulmonary Medicine Boston VA Healthcare System and Brigham and Women's Hospital, Harvard Medical School Research Mentor, Supervise and guide laboratory research focused on role of autophagy and inflammation. Received VA VISN1 Career Development Award, 2012.

2011-2013	Maria Gkotzamanidou, MD, Research fellow, The effect of DNA repair inhibitors in myeloma
2012-2014	Jaymin Patel, MD, Research fellow, Described elevated nucleus activity in clinical spectrum of plasma cells
2013-present	Sabodh Kumar, PhD, Research fellow, DNA repair mechanisms in Multiple Myeloma
2013-present	Mehmet Samur, PhD, Instructor in Medicine Dana-Farber Cancer Institute, Mentored as a graduate student and post doctoral research fellow, He has been studying genomic alternations in myeloma
2016-present	Anil Aktas Samur, PhD, Research fellow, Genome wide alternative splicing events in myeloma
2013-2015	Alice Cleynen, PhD, Research fellow, Gene fusions in multiple myeloma
2014-2016	David Mosen Ansorena, PhD, Research fellow, Mutational profiling using RNA seq. in multiple myeloma
2014-present	Srikanth Talluri, PhD, Research fellow, APOBEC activities in multiple myeloma
2013-2015	Naim Rashid, PhD, Research fellow, Allele specific expression in myeloma
2015-2016	Annamaria Gulla, MD, Research fellow, Identification of a Novel Long Intergenic Noncoding RNA
2014-present	Raphael Szalat, MD, Research fellow, NER activities in multiple myeloma

Formal Teaching of Peers (e.g., CME and other continuing education courses)

1991	"Oncology research Update "Parvovirus mediated gene transfer," University of Arkansas for Medical Sciences Cancer Center Research Conference	Single Presentation Little Rock, AR
2005- Present	Multiple myeloma diagnosis and prognosis. Lectures to visiting international Hematologists/Oncologists from Europe, Japan, Australia, China, Japan, Korea, India, New Zealand, Taiwan and Latin America, Dana-Farber Cancer Institute	2-3 lectures a year Boston, MA
2007	Dana-Farber Harvard Cancer Center Symposium on Hematology Oncologic malignancies "Relapsed refractory myeloma"	Single Presentation Boston, MA
2008	Discussion of case records of the Massachusetts General Hospital	Single presentation Boston MA

Report of Regional, National and International Invited Teaching and Presentations

Those presentations below sponsored by outside entities are so noted and the sponsors are identified.

Invited Presentations and Courses

Local

1995	"Gene therapy for cancer," Medicine Grand Rounds, University of Arkansas for Medical Sciences, Little Rock, AR
1997	"Paraneoplastic Syndrome," Department of Medicine Grand Rounds, University of Arkansasa for Medical Sciences
2004	"Multiple myeloma – novel therapeutic options," Invited Speaker, Massachusettes General Hospital Resident lecture series, Boston, MA
2005	"Allogeneic immune modulation in myeloma," Bone marrow transplant conference Dana-Farber Cancer Institute
2006	"Novel targeted therapies in myeloma," Hematology/Oncology Grand Rounds, Massachusetts General Hospital
2008	"Induction therapy in multiple myeloma," Hematology/Oncology Seminar, VA Boston Healthcare System
2011	"It is not the same myeloma anymore," Medicine Grand Rounds, VA Boston Healthcare System
2013	"Genomic landscape in multiple myeloma" Research grand rounds. Boston VA Healthcare system West Roxbury MA

Regional

1993	"Recent advances in gene therapy," Arkansas Blood and Cancer Society, Little Rock, AR
1995	"Parvovirus – a new and exciting vector for gene therapy," National Center for Toxicologic Research, Pine Bluff, AR
2000	"Role of gene therapy in cancer," Plenary Presentation, Arkansas Medical Society Annual Conference, Little Rock, AR
2000	"Prognostic significance of increased angiogenesis in myeloma," Multiple Myeloma Research Foundation Roundtable, Boston, MA
2000	"Advances in high-dose therapy for myeloma," Myeloma update: Multiple myeloma Research Foundation and Dana-Farber Cancer Institute, Boston, MA

2001 "Role of high-dose therapy in Waldenstrom's macroglobulinemi,a" Plenary session presentation at the first International Waldenstrom's Macroglobulinemia Meeting, Boston, MA

2002 "Novel biologically-based therapy for myeloma," Institutional Symposium on Targeted therapy of Myeloma at the University of Arkanasas for Medical Sciences, Little Rock, AR

2003 "Biologically-based therapy in multiple myeloma," Hematology/Oncology Grand Rounds, Dartmouth University Medical Center, Hanover, NH

2004 "Advances in myeloma therapy," Oncology Grand Rounds, Lahey Clinic, Boston, MA

2004 "Role of bone marrow microenvironment in myeloma therapy," Hematology/Oncology Grand Rounds, Boston University Medical Center, Boston, MA

2005 "Advances in myeloma therapy," Hematology Oncology Grand Rounds, St. Elizabeth's Medical Center, Boston, MA

2006 "Advances in biology and therapy of myeloma," Tumor Conference, Baystate Medical Center, Springfield, MA

2007 "Use of novel agents for myeloma," Update on Management of Patients with Hematologic Malignancies, Dana-Farber Cancer Institute

2008 "Approaches to relapse," International Myeloma Foundation Patient and Family Seminar, Boston, MA

2009 "Role off High-dose therapy in myeloma in the era of novel agent therapies," American Transplant Congress, Boston, MA

2010 "Oncogenomics in myeloma: Bench to bedside translation," Boston University Grand Rounds

2011 "Prognosis and risk," Multiple Myeloma Research Foundation Patient and Family Seminar, Boston, MA

2011 "Diagnosis and prognosis in myeloma," Dana-Farber Partners Patient Seminar

2012 "Diagnosis, prognosis and risk assessment in myeloma," Dana-Farber Partners Patient Seminar

2012 "Understanding the Path to Personalized Cancer Care" SOLUTIONS With/In/Sight Public Program, Massachusettes Institute of Technology, Cambridge, MA

2012 "Diagnosis, prognosis, and risk assessment in Multiple Myeloma," Multiple Myeloma Research Foundation Patient and Family Seminar, New York, NY

2012 "Relapsed and refractory disease," Multiple Myeloma Research Foundation Patient and Family Seminar, St. Louis, MO.

2013 "Integrative Oncogenomics in Myeloma: Are We Cracking the Code?," Grand Rounds, Emory University School of Medcinie, Atlanta, GA

National

1989 "IL-3 dependent DNA replication." Indiana University Hematology/Oncology Research Conference, Indianapolis, IN

1989 "IL-3-dependent initiation of DNA replication in nuclei isolated from an IL-3-dependent murine myeloid cell line," Stohlman Foundation and Leukemia Society of America Symposium, Boston, MA

1997 "TK-gene therapy in myeloma," VII Interrnational Workshop on Multiple Myeloma, Boston, MA

1997 "Biology of myeloma," Medicine Grand Rounds, Marshall University, Huntington, WV

1997 "Transplantation in multiple myeloma," West Virginia Hematology Club, Huntington, WV

1997 "Management of bone metastasis," Watson Clinic Symposium on Cancer Treatment, Clearwater, FL

1997 "Bone metastasis: diagnosis and treatment," Tumor board, Presbyterian Healthcare System, Dallas, TX

1997 "Gene therapy for multiple myeloma," University Of Wisconsin, Hematology Oncology Grand Rounds, Milwaukee, WI

1997 "CD16 gene therapy for myeloma," University of Wisconsin, Bone Marrow Transplantation Grand Rounds, Milwaukee, WI

1998 "Molecular manipulation to enhance anti-myeloma response," Bone Marrow Transplant Grand Rounds, Duke University, Durham, NC

1998 "Autotransplants in multiple myeloma," Clinical Oncology Update, Pennsylvania State University, Harrisburg, PA

1999 "Role of autotransplantation in multiple myeloma," Oncology Seminar at the University of Pittsburgh, Pittsburgh, PA

1999 "TK-transduced donor lymphocyte infusion for graft versus myeloma effect," Plenary Presentation at the American Society of Aphresis annual meeting, San Antonio, TX

1999 "Research direction towards cure in myeloma," Oncology Grand Rounds, H. Lee Moffitt Cancer Center**,** Tampa, FL

1999 "Tandem Transplant in myeloma experience of first 1000 patients," American Society of Clinical Oncology, Atlanta, GA

1999 "Recent advances in Biology and therapy of multiple myeloma," Hematology Grand Rounds, Stanford University Medical Center**,** Palo Alto, CA

1999 "Role of thalidomide in myeloma management," Cancer Center Seminar at the University of Miami Cancer Center, Miami, FL

1999 "Angiogenesis in myeloma," Hematology Grand Rounds, The Scripps Clinic, La Jolla, CA

1999 "Novel therapeutic modalities for multiple myeloma," Medicine Grands Rounds, Pamona Valley Hospital, Los Angeles, CA

1999 "Novel therapies in multiple myeloma," Cancer Center Oncology Grand Rounds, Rush University Medical Center, Chicago, IL

1999 "Therapeutic strategies in multiple myeloma," Santa Fe Oncology Association Meeting, Santa Fe, NM

1999 "Myeloma therapy in the next millennium," Hematology/Oncology Grand Rounds, University of New Mexico, Albuquerque, NM

1999 "Advances in myeloma therapy," Medical Ground Rounds, University of Cincinnati, Cincinnati, OH

2000 "Therapeutic advances towards cure in myeloma," Oncology Grand Rounds, Stanford University Medical Center, Palo Alto, CA

2000 "Role of Autotransplanation in multiple myeloma," Multiple Myeloma Symposium Emory University Medical Center and Multiple Myeloma Research Foundation, Atlanta, GA

2000 " Innovative treatment strategies towards cure in myeloma," Plenary presentation at the Central Pennsylvania Oncology Group annual meeting, Hershey, PA

2000 "Treatment of myeloma in the new Millennium," Oncology Grand Rounds, Loyola University Cancer Center, Chicago, IL

2000 "Treatment strategies towards cure in myeloma," Arizona Cancer Center Tumor Board, Tucson, AZ

2000 "Novel targets for therapy of myeloma" Hematology/Oncology Grand Rounds, Washington University School of Medicine, St Louis, MO

2000 "State of the art in myeloma therapy," Leukemia and Lymphoma Society Symposium on Cancer Therapy, Napa Valley, CA

2000 "Are we near curing myeloma?," Hematology Oncology Grand Rounds, Tulane University School of Medicine, New Orleans, LA

2000 "Therapy for myeloma in the new millennium," Tumor Board, St. Vincent Medical Center, New York, NY

2000 "Advances in myeloma therapy," Hematology/Oncology Grand Rounds, Oregon Health Sciences Center, Portland, OR

2001 "Myeloma therapy in the new millennium," Tumor Board, St Mary's Hospital System, Chicago, IL

2001 "Towards curing myeloma," Hematology Seminar Series, University of Kentucky, Lexington, KY

2001 "Novel therapy in myeloma," Hematology/Oncology Grand Rounds, Washington Cancer Institute, Washington, DC

2001 "Angiogenesis in cancer," Veteran Administration National Medical Educational Seminar, Birmingham, AL

2001 "Recent advances in high-dose therapy in myeloma," Bone Marrow Transplant Grand Rounds, Fox Chase Cancer Center, Philadelphia, PA

2001 "Novel therapy in myeloma," Hematology/Oncology Grand Rounds, Hanneman University, Philadelphia, PA

2001 "Novel therapeutic approaches in myeloma," Detroit Blood and Cancer Club, Detroi,t MI

2001 "Role of high-dose therapy in myeloma," Medical Grand Rounds, Henry Ford Hospital, Detroit, MI

2002 "Immunopharmacology of novel agents," Plenary session at the American Bone Marrow Transplant Registry and International Bone Marrow Transplant Registry Annual Meeting, Orlando, FL

2002 "Novel biologically-based therapy for Myeloma," Hematology/Oncology Grand Rounds, Thomas Jefferson University Medical Center, Philadelphia, PA

2002 "Novel-biologically based therapy for myeloma," Symposium on Myeloma Therapy, Cleveland Clinic, Cleveland, OH

2002 "Role of high-dose therapy in multiple myeloma," Educational Session at the Annual Meeting of the American Society of Clinical Oncology, Orlando, FL

2002 "Novel biologically-based therapy for myeloma," Institutional Seminar on Therapeutic Advances in Myeloma, MD Anderson Cancer Center, Houston, TX

2002 "Role of bone marrow microenvironment in myeloma," Invited presentation at the Annual conference of the American Society of Bone and Mineral Research, San Antonio, TX

2002 "Novel therapeutic interventions in multiple myeloma," Hematology Grand Rounds, Cornell University School of Medicine, New York, NY

2003 "Immunotherapeutic advances in myeloma," Immunology and stem cell transplant seminar series, Johns Hopkins School of Medicine, Baltimore, MD

2003 "Biological advances in therapy of myeloma," Hematology Grand Rounds, Mt Sinai Medical School and Cancer Center, New York, NY

2003 "Biologically-based therapy in multiple myeloma," Medicine Grand Rounds, Marshall University Medical School, Huntington, WV

2003 "Advances in Myeloma therapy," Invited speaker, American Society of clinical Oncology annual meeting Myeloma/CLL session, Chicago, IL

2004 "Therapy of myeloma in 2004," Invited speaker 5th annual hematology review course University of Arizona School of Medicine, Scottsdale, AZ

2005 "Immune-based approaches in myeloma," Invited Speaker 2nd Focus on Myeloma Biology and Therapy, Las Vegas, NV

2005 "Advances in myeloma biology," Invited speaker at the Seminar on Biology And Therapy of Multiple Myeloma at the Johns Hopkins Oncology Center, Baltimore, MD

2005 "Novel biologically based therapy in myeloma," Invited Speaker at Seminar on Advances in myeloma therapy, Fred Hutchinson Cancer Center, University of Washington, Seattle, WA

2006 "Targeted therapies in myeloma," Hematology/Oncology Grand Rounds on development, Long Island Jewish Hospital, Long Island, NY

2006 "Immune-based therapy in myeloma" Medical Grand Rounds, MD Anderson Cancer Center, Houston, TX

2006 "Recent therapeutic advances in myeloma" Medical Grand Rounds, Rush University, Chicago, IL

2006 "How I treat newly-diagnosed myeloma," 3rd Symposium on Controversies and Clinical Challenges in Myeloma, Lymphoma & Leukemia, Sarasota, FL

2006 "ASH Update," American School of Oncology Regional Oncology Highlights, Tampa, FL

2006 "Immunologic considerations in myeloma and the role of vaccines," Lymphoma and Myeloma Symposium, Cornell University Medical Center, New York, NY

2006 "Telomerase as a therapeutic target in myeloma," Hematologic malignancies SPORE Winter meeting, City of Hope Medical Center, Duarte CA

2006 "Update on novel agents for myeloma," Community Oncology Research Leadership Conference, US Oncology, Dallas, TX

2007 "How do I manage older patients with MM?," 4th Symposium on Controversies and Clinical Challenges in Myeloma, Lymphoma & Leukemia

2007 Debate/Pro "Smoldering myeloma - To treat or not to treat?," 4th Symposium on Controversies and Clinical Challenges in Myeloma, Lymphoma & Leukemia

2007 "Best of ASCO," Invited speaker at the Annual meeting of the American Society of Clinical Oncology, Chicago, IL

2007 "Biological basis for therapeutic development in myelom,a" Invited speaker at the Annual meeting of the American Association of Cancer Research, Houston, TX

2007 "The mechanism of action and role of lenalidomide in multiple myeloma," Grand Rounds, Cleveland Clinic, Cleveland, OH

2007 "Multiple Myeloma," 11th Annual Internationally Distinguished Speaker Series Grand Rounds, Cleveland Clinic and Fairview Hospital

2007 "Meet the Professor Session," with the Residents, Cleveland Clinic and Fairview Hospital, Cleveland, OH

2008 "Biologically based therapies in multiple myeloma," Medical Grand Rounds, Brown University Hospital, Providence, RI

2008 "Oncogenomics to inform therapy development," Hematology/Oncology Grand Rounds, Yale University Medical Center, New Haven, CT

2008 "Development of Cyclin D/CDK-based therapy in myeloma," Invited Speaker, Annual meeting of the American Society of Clinical Oncology, Chicago, IL

2008 "Investigative tools for diagnosis and management of myeloma," Invited Speaker, Educational Session on Multiple Myeloma, San Francisco, CA

2008 "How to design and Interpret Clinical Trials: Translational/correlative Aspects," 12th Annual Fall Oncology Conference – Clinical Challenges in Cancer Medicine, Hilton Head, SC

2008 "Multiple Myeloma: Recurrent/refractory Disease," 12th Annual Fall Oncology Conference – Clinical Challenges in Cancer Medicine

2008 "50th Anniverasary of ASH – the progress in myeloma," 50th Annual Meeting of the American Society of Hematology, San Francisco, CA

2008 "Diagnosis and prognosis in myeloma," 50th Annual meeting of the American Society of Hematology

2008 "Alternate Splicing is frequent and affects prognosis in myeloma," Annual meeting of the American Society of Hematology

2008 "Practical strategies for the application of novel agents for the frontline treatment of multiple myeloma," Washington Cancer Institute Grand Rounds, Cape May, NJ

2008 "Practical strategies for the application of novel agents for the frontline treatment of multiple myeloma," Memorial Hospital of Rhode Island, Pawtucket, RI

2008 "Epidemiology of MGUS and smoldering myeloma," Invited speaker and chairman, Frontiers in Cancer Prevention Research Conference, American Association of Cancer Research, (MGUS session) Washington, DC

2009 "Augmenting clinical responses through intracellular pathways in B-cell malignancies," Friday Satellite Symposia, American Society of Hematology Annual meeting, New Orleans, LA

2009 "Plasma cell disorder," Invited Speaker, The Highlights of ASH by the American Society of Hematology, Miami, FL

2009 "Plasma cell disorders," Invited Speaker, The Highlights of ASH by the American Society of Hematology, Phoenix, AZ

2009 "Epidemiology of MGUS and smoldering myeloma," Chairmen of the symposium on Plasma cell disorders and speaker on the subject, Frontiers in Cancer Prevention Research, Americal Association of Cancer Research, Washington, DC

2009 "2009 Best of ASCO," Leukemia and Myeloma Discussion, Atlanta, GA

2009 "Multiple myeloma: treatment & management strategies," Annual meeting of American Society of Clinical Oncology, Orlando, FL

2009 "Multiple Myeloma: It is not the same disease anymore," VA Medical Center, Kansas City, MO

2010 "Therapeutic advances for relapsed multiple myeloma," MD Anderson Cancer Center and MMRF Symposium, Houston, TX

2010 "What are optimal treatment strategies for transplant-eligible candidates with multiple myeloma?," First Annual Symposium on Personalized Therapies for Hematological Malignancies, Arlington, VA

2010 "Therapy for newly diagnosed myeloma," Great Debates and Updates in Hematologic Malignancies, Imedex NMCR, New York, NY

2010 "Therapeutic advances in myeloma," Buffalo VA Medical Center, Buffalo, NY

2010 "Oncogenomics in myeloma -- Advances in laboratory driving the therapy," Hematology/Oncology Grand Rounds, Mt. Sinai University Medical Center, New York, NY

2010 "Advances in myeloma therapy," Medicine Grand Rounds, Seattle VA Medical Center, Seattle, WA

2010 "Therapeutic advances for relapsed and refractory myeloma," MMRF Clinical Insights in Multiple Myeloma, New York, NY

2011 "What are optimal treatment strategies for transplant-eligible candidates with multiple myeloma?," Second Annual Symposium on Personalized Therapies for Hematological Malignancies, Tampa, FL

2011 "Therapeutic advances for Relapsed Multiple Myeloma," Hackensack Medical Center and MMRF Symposium, Newark, NJ

2011 "Oncogenomics to target multiple myeloma: Bench to bedside translation," Oncology Grand Rounds, Memorial Sloan Kettering Cancer Center, New York, NY

2011 "Looking for rituxan for myeloma," Discussant for the myeloma plenary session, American Society of Clinical Oncology Annual meeting, Chicago, IL

2011 "Integrative Oncogenomics in myeloma: Translational applications," Hematology/Oncology Grand Rounds Indiana University School of Medicine, Indianapolis, IN

2011 "Targeted therapies in myeloma – Update from DF-HCC SPORE in myeloma," National Cancer Institute Translational Research Meeting, Bethesda, MD

2011 "Therapeutic advances in multiple myeloma; bench to bedside progress," Association of VA Hematology/Oncology, Kansas City, MO

2011 "Whole genome sequencing defines the clonal architecture and genomic evolution in myeloma: tumor heterogeneity with continued acquisition of new mutational change," American Society of Hematology Annual meeting, San Diego, CA

2012 "Oncogenomic studies define the biology and therapy of myeloma," Oncology Grand Rounds, MD Anderson Cancer Center, Houston, TX

2012 "Managing myeloma in elderly" 1st Annual Symposium on the treatment of elderly patients with cancer. Los Angeles. CA

2012 "Comparing genomic changes in myeloma versus Waldenstrom's macroglobulinemia". 7th International Workshop on Waldonstrom's Macroglobulinemia, Newport, RI

2013 "Novel targets and novel agents" 2013 Bone Marrow Transplantation Tandem Meeting. Salt Lake City, UT

2013 "Integrative Oncogenomics in Multiple Myeloma: Are we Cracking the Code?" Oncology Grant rounds Winship Cancer Center, Emory University Medical School Atlanta GA.

2013 "Current Status of Antibody and Immune-based Therapies in Multiple Myeloma" 14th Annual Chemotherapy Foundation Meeting New York NY

2014 "Unraveling the Myeloma Genome- With a View to Therapeutic Application" Invited presentation at Marilyn Fixman Clinical Cancer Conference, Siteman Cancer Center, St. Louis MO

International

1985 "Cytogenetics in medicine and oncology," Association of Physicians of India, Gujarat State (India) Conference, New Delhi, India

1992 "Gene therapy – current status and future prospects," Johannes Gutenberg University, Mainz, Germany

1994 "Bone marrow transplantation in myeloma," Invited Plenary Speaker, Mexican Society of Hematology annual meeting, Mazatlan, Mexico

1999 "Prognostic and therapeutic implication of bone marrow angiogenesis in myeloma" Experts Round Table, Stockholm, Sweden

2001 "Dendritic cell-based vaccination strategies in myeloma," Invited Presentation, VII International Myeloma Symposium, Banff, Alberta, Canada

2001 "High-dose therapy in myeloma," Seminar on Advances in myeloma therapy at the University of Toronto and Princess Margaret Hospital Toronto, Toronto, Canada

2002 "Myeloma Trialist Collaborative group meeting on prognostic factors and role of therapy in myeloma," Oxford University, Oxford, England

2002 "Immunotherapeutic applications in multiple myeloma," Plenary session presentation at the International Society of Hematology, Seoul, Korea

2003 "Therapeutic advances in multiple myeloma," Plenary presentation at the Japanese Society of Hematology annual meeting, Yokohama, Japan

2003 "Advances in immunotherapy in myeloma," 9th International Workshop in Multiple Myeloma, Salamanca, Spain

2004 "Dendritic cell-based vaccinations in multiple myeloma," 8th International Meeting on Hematological Malignancy, Whistler, Canada

2004 "Anti-angiogenic therapy in multiple myeloma," Invited speaker, 6th International Conference on Angiogenesis in Cancer, Los Angeles, CA

2004 "Therapeutic advances in multiple myeloma," 4th Kazukata Hematologic Malignancy Symposium, Morioka, Japan

2004-2005 "Pathophysiology of immunoparesis: vaccination in myeloma," Invited Speaker, International meeting on Lymphoma and Myeloma, New York, NY

2004 "Dendritic cell-based vaccinations and beyond," 1st International Symposium on Multiple Myeloma, Turino, Italy

2004 "Dendritic cell-based Vaccinations in multiple myeloma," 8th International Meeting on Hematological Malignancy, Whistler, Canada

2004 "NFKB as a novel target of proteasome inhibition in multiple myeloma," 5th International meeting on Hodgkins Disease, Cologne, Germany

2004 "Novel targeted therapies in multiple myeloma," 12th Asia pacific conference by the International Society of Hematology, Nagoya, Japan

2004 "Immune-based therapy in Waldenstrom's macroglobulinemia and multiple myeloma," 2nd International Workshop on Waldenstrom's Macroglobulinemia, Paris, France

2005 "Novel agents in myeloma," 9th International meeting on Hematological Malignancy, Whistler, Canada

2005 "Novel therapies in myeloma" European Seminar on Therapeutic Advances in Hematological Malignancies, Lisbon, Portugal

2005 "Targeted therapies for relapsed and refractory myeloma," International Myeloma Foundation Seminar, Toronto, Canada

2005 "State of the Art in immunotherapy in myeloma," 10th International Workshop on Multiple Myeloma, Sydney, Australia

2005 "Antibody targets in multiple myeloma," 4th International conference on Monoclonal Antibody in Cancer, Quebec City, Canada

2006 "Biologically-based novel therapy for multiple myeloma," Plenary speaker at Annual Meeting of the Intergroupe Francophone du Myeloma, Reims, France

2006 "Antibody-based therapies in myeloma," 10th Annual Winter Oncology Conference, Whistler, Canada

2007 "Advances in immunotherapy in myeloma," 11th International Workshop on Multiple Myeloma, Kos Island, Greece

2007 "Advances in therapy of multiple myeloma," Asian Pacific Summit, Jeju, South Korea

2007 "Hsp90 as a therapeutic target in myeloma," 11th Annual Winter Oncology Conference, Whistler, Canada

2007 "Antibody-based therapies in myeloma," 6th International Congress on Monoclonal Antibodies in Cancer, Washington, DC

2007 "Biological advances in multiple myeloma: Translational applications," Educational Symposium at the Europen Society of Hematology annual meeting, Vienna, Austria

2008 "Proteosomal therapy in multiple myeloma," Henry Kunkle Society Symposium, Santa Margharita, Italy

2008 "Immunetherapies in multiple myeloma," International Seminar on Multiple Myeloma, Lisbon, Portugal

2008 "Targeted therapy in multiple myeloma," Plenary presentation at German Myeloma Society and Clinical Group, Heidelberg, Germany

2008 "Undersatnding myeloma biology: Bench to bedside application," Austrian Myeloma Society, Graz, Vienna, Austria

2008 "Emerging therapies in the treatment of multiple myeloma," Changing Frontiers of Multiple Myeloma Symposium, Myelome Canada, Toronto, Canada

2009 "Plasma cell disorder – ASH update," Joint conference of American Society of Hematology and Latin American Society of Hematology, Sao Paolo, Brazil

2009 "Experimenal agents knocking at the door of myeloma treatment," 14th Congress of European Hematology Association, Berlin, Germany

2009 "Towards novel therapeutic approaches in multiple myeloma," Quebec Society of Hematology Annual meeting plenary presentation Sherbrooke, Quebec, Canada

2009 "Current status of antibody and immune-based therapies in multiple myeloma," Greek Society of Hematology Symposium on Advances In Multiple Myeloma, Athens, Greece

2009 "DKK-1 as a target in myeloma," 2nd International Workshop on Genomics and Pharmacogenomics in Myeloma, Edinburgh, Scotland

2010 "Managing a case of multiple myeloma," XVIth National CME in Haematology at Bombay Hospital, Mumbai, India

2010 "Th17 and associated proinflamatory cytokines in myeloma and Waldenstroms macroglobulinemia," 4th International Workshop on Waldenstrom's Macroglobulinemia Venice, Italy

2010 "Advances in myeloma," International Conference on Amyloidosis, Rome, Italy

2011 "The IFM-DFCI Collaborative Parnership in Multiple Myeloma," Forum de la recherché Clinique, Nantes, France

2011 "Recent advances in immunotherapy in multiple myeloma," Hematology/Oncology Grand Rounds, CHU, Nantes, France

2011 "Consensus on diagnostic criteria an dindication for treatment and retreatment in plasma cell disorders," 13th International Myeloma Workshop, Paris, France

2011 "Oncogenomics to target multiple myeloma: Biology to bedside translation," Cancer genomics seminar, Welcome Trust Snger Institute for Genomic research, Cambridge, England

2011 "With the technological advances – Are we close to a cure?," European Myeloma Network, Madrid, Spain

2011 "Recent advances in understanding of myeloma biology and therapy," Japan Myeloma Group, Tokyo, Japan

2011 "Integrative oncogenomics in Myeloma," 4th International meeting on Genomics and Pharmacogenomics in Myeloma, London, England

2011 "Multiple myeloma: targeted combination, tailoring patient care," Intas Biopharm Multiple Myleoma CME, Delhi, Chennai, and Mumbai, India

2011	"Where are we on the path towards a cure for multiple myeloma?," 6th European Multiple Myeloma Academy, Madrid, Spain
2011	"Oncogenomics in multiple myeloma: Understanding the basic biology to clinical translation," 36th Japanese Myeloma Study Group, Tokyo, Japan
2012	"Pathogenesis and basic science of multiple myeloma," The Future in Blood: 2012 and Beyond. Hematology Symposium, Amsterdam, The Netherlands
2012	"Therapeutic advances in multiple myeloma," Plenary presentation at the Annual Estonian Society of Hematology Annual Meeting, Tallin, Estonia
2012	"Diagnosis and prognosis in multiple myeloma," 16th International Congress of Hematological Malignancies, Salt Lake City, UT
2012	"Managing the myeloma toxicity" 7th European Myeloma Academy, Vienna, Austria
2013	"Prognostic factors in multiple myeloma" 17th Annual Internat'l Congress on Hematologic Malignancies, New York, NY
2013	"Alternate Splicing in multiple myeloma" 14th International Myeloma Workshop, Kyoto, Japan
2013	"Smoldering multiple myeloma: To treat or not to treat?" 14th International Myeloma Workshop, Kyoto, Japan
2013	"Waldenstrom's Award Lecture" 14th International Myeloma Workshop, Kyoto Japan.
2013	"Whole Genome Sequencing in Multiple Myeloma" 4th European School of Hematology meeting on multiple myeloma. Dublin Ireland
2013	"Genomic studies in Multiple Myeloma" 1st Intenational conference in Multiple Myeloma. Tianjin China.
2013	"Biology and Molecular Targets in Multiple Myeloma" Joint America Society of Hematology – Japanese society of hematology symposium at 75th Japanese Society of Hematology Meeting Sapporo Japan.
2013	"Management of Multiple Myeloma:The State of the Art" 75th Japanese Society of ematology Meeting Sapporo Japan.
2013	"Novel agents in multiple myeloma" 1st International Cancer Congress, New Delhi India.

Report of Clinical Activities and Innovations

Current Licensure and Certification

1980	E.C.F.M.G. Certification
1981	Visa Qualifying Examination

1984	Flex Certification
1987	Indiana State Medical License
1992	Arkansas State Medical License
2002	Massachusetts Medical License
2002	Diplomate, American Board of Internal Medicine
2006	Diplomate, American Board of Internal Medicine – Oncology

Practice Activities

1990-1992	Ambulatory Care	Hematology/Incology Outpatient Clinic, Indiana University Medical Center	Two sessions per week
1990-1992	Inpatient Attending	Hematologic malignancies Indian University Hopsital	Two months per year
1992-2001	Ambulatory Care	Outpatient multiple myeloma Arkansas Cancer Research Center	Two sessions per week
1992-2001	Inpatient Attending	Myeloma and Bone marrow transplant Service University of Arkansas Hospital	2-3 months per year
1992-2001	Ambulatory Care	Outpatient Hematology/ Oncology, Little Rock VA Healthcare System	One session per week
1992-2001	Inpatient Attending	Hematology/Oncology Little Rock VA Healthcare System	One month per year
2001-Present	Ambulatory Care	Outpatient multiple myeloma Boston VA Healthcare System	One session per week
2001-Present	Inpatient Consult	Hematology/Oncology Boston VA Healthcare System	One month per year
2001-Present	Ambulatory Care	Outpatient multiple myeloma Dana-Farber Cancer Institute	Two sessions per week
2002-Present	Inpatient Attending	Hematologic malignancies Brigham and Women's Hospital	One month per year

Clinical Innovations

Use of Velcade with dexamethsone	Results from our study has now provided a new option to use Velcade

in once a week doaage in newly-diagnosed elderly patients with multiple myeloma (2008-2011)	in a once a week dosage with reduced toxicity and maintained efficac/. It has allowed a major change in treatment of myeloma using Velcade, especially in Veterans with co-morbidities.
Demonstrated preclinically ability of anti-DKK-1 antibody to improve osteoblast activity in myeloma as well as to induce anti-myeloma effects. (2009-2012)	Based on the preclinical results a clinical study is investigating role of anti-DKK1 antibody BHQ880 toio improve bone strength, as well as its possible anti-myeloma effect in smoldering myeloma to prevent its progression to symptomatic myeloma
Demonstrated preclinically ability of anti-telomerease agent GRN163L to shorten telomeres and induce anti-myeloma effects. (2009-2012)	Based on the preclinical results, a clinical study is investigating role of telomerase inhibitor GRN163L in myeloma.
Ability of Lenalidomide to improve immune response (2008-2012)	This has now been utilized to combine lenalidomide with antibody-based therapy, as well as in combination with vaccination strategies.

Report of Technological and Other Scientific Innovations

Immunogenic peptides targeting Xbp-1, CD138 and CS-1 in HLA-A2 patients with myltiple myeloma	These peptides provides the opportunity to vaccinate patients with myeloma. Potentila use is both in early stage smoldering myeloma to prevent development of symptomatic myeloma or as post transplant maintenance therapy to prevent relapse. A Phase II clinical study using this peptide is expected to start December 2012. (US and International patents pending)

Report of Education of Patients and Service to the Community

Those educational materials below sponsored by outside entities are so noted and the sponsors are identified.

Activities

1999-2013	Speaker at patient education seminars sponsored by Multiple Myeloma Research Foundation two times per year with focus on therapeutic advances in multiple myeloma
2001-2013	Patient seminars sponsored by International Myeloma Foundation once a year with focus on treatment of newly-diagnosed or relapsed myeloma

Educational Material for Patients and the Lay Community

Those educational materials below sponsored by outside entities are so noted and the sponsor is identified.

Patient educational material

2010	Educational material for veterans with myeloma - for tablet PC to be used in the outpatient setting	Primary Author	Sponsored by the Department of the Veterans Affairs

Report of Scholarship

Peer reviewed publications in print or other media

Research investigations

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Books/Textbooks for the medical or scientific community

1. **Munshi NC** and Anderson KC (Editors)
Advances in biology and therapy of multiple myeloma
Volume 1: Basic Science
Springer Science and business media New York 2013

2 **Munshi NC** and Anderson KC (Editors)
Advances in biology and therapy of multiple myeloma
Volume 2: Translational and Clinical Research
Springer Science and business media New York 2013

Professional Educational Materials

2009	Interview. Bridging the gap between research and patient care" Hematologic Oncology Update, Conversations with Oncology Investigators, Research to Practice Vol 2, Issue 3. CD Series.	CD circulation

Clinical Guidelines and Reports

2009 Developed guidelines for standard of care in 3 major clinical areas in myeloma.

1) Uniform reporting of clinical results
Rajkumar SV*, Harousseau JL, Durie B, Anderson KC, Dimopoulos M, Kyle R, Blade J, Richardson P, Orlowski R, Siegel D, Jagannath S, Facon T, Avet-Loiseau H, Lonial S, Palumbo A, Zonder J, Ludwig H, Vesole D, Sezer O, **Munshi NC*,** San Miguel J* International Myeloma Workshop Consensus Panel 1. Consensus recommendations for the uniform reporting of clinical trials: report of the International Myeloma Workshop Consensus Panel 1. Blood. 2011 May 5;117(18):4691-5. (*Correponding authors).

This guideline is now utilized internationally and in protocols to uniformly define response to thaerpy.
I chaired this consensus committee.

2011 1. Developed guidelines for revised criteria for diagnosis of plasma cell disorders and for indication for treatment and retreatment. This guidelines will be utilized by all for diaghnosis of myeloma and other plasma cell disorder and the direction provided by the indication for treatment/retreatment will be utilized unifoprmly in future clnical studies. This guideline was presented and accepted at the 13th International Workshop on myeloma and presented on line. Its publication is pending.
I chaired this consensus committee.

2. Developed guidelines for supportive care in myeloma, providing consensus for management in the following 4 areas of supportive acre in myeloma.

1) Management of bone disease in multiple myeloma;
2) Management of anemia with erythropoesis stimulating agents (ESAs) in multiple myeloma;
3) Management of deep venous thrombosis (DVT) in multiple myeloma; and
4) Guidelines for Infection prophylaxis including vaccination in multiple myeloma.

These guidelines were presented and accepted at the 13th International Workshop on myeloma and presented on line. Its publication is pending.
I co-chaired this consensus committee.

2009 2) Risk stratification in myeloma;
Munshi NC*, Anderson KC, Bergsagel PL, Shaughnessy J, Palumbo A, Durie B, Fonseca R, Stewart AK, Harousseau JL, Dimopoulos M, Jagannath S, Hajek R, Sezer O, Kyle R, Sonneveld P, Cavo M, Rajkumar SV, San Miguel J, Crowley J, Avet-Loiseau H*; International Myeloma Workshop Consensus Panel 2. Consensus recommendations for risk stratification in multiple myeloma: report of the International Myeloma Workshop Consensus Panel 2. Blood. 2011 May 5;117(18):4696-700. (*Correponding authors).

This guideline is now utilized internationally for risk stratification.
I chaired this consensus committee.

3) Standard investigative work up in plasma cell disorders.
Dimopoulos M*, Kyle R, Fermand JP, Rajkumar SV, San Miguel J, Chanan-Khan A, Ludwig H, Joshua D, Mehta J, Gertz M, Avet-Loiseau H, Beksaç M, Anderson KC, Moreau P, Singhal S, Goldschmidt H, Boccadoro M, Kumar S, Giralt S, **Munshi NC*,** Jagannath S*; International Myeloma Workshop Consensus Panel 3. Consensus recommendations for standard investigative workup: report of the International Myeloma Workshop Consensus Panel 3. Blood. 2011 May 5;117(18):4701-5. (*Correponding authors)

This guideline is now utilized internationally in general clinical practice.
I chaired this consensus committee.

Thesis

Munshi NC. "Epidemiological Report on Viral Hepatitis A" M.B.B.S. thesis, Maharaja Sayajirao University, 1979.

Munshi NC. "Cytogenetic Study in Hematological Malignancies" M.D. thesis, Maharaja Sayajirao University, 1983

Abstracts, Poster Presentations and Exhibits Presented at Professional Meetings

1. Amodio, N., Martino, M. T. D., Foresta, U., Rossi, M., Leotta, M., Leone, E., Lionetti, M., Gulla, A., D'Aquila, P., Bellizzi, D., Passarino, G., Fabiani, F., Fulciniti, M., Ferrarini, M., Morabito, F., Neri, A., Munshi, N. C., Anderson, K. C., Tagliaferri, P., and Tassone, P. (2012) MiR-29b Exerts Anti-Multiple Myeloma Activity by Targeting Key Oncogenic Pathways and Modulating DNA Methylation Profile. ASH Annual Meeting Abstracts 120, 2941-
2. Bae, J., Prabhala, R. H., Song, W., Tai, Y.-T., Anderson, K. C., and Munshi, N. C. (2012) Induction of T Cell Immunity Using a Multipeptide Cocktail Containing XBP1, CD138 and CS1 Peptides in Smoldering Multiple Myeloma. ASH Annual Meeting Abstracts 120, 5039-

3. Benson, D. M., Jr., Cohen, A. D., Munshi, N. C., Jagannath, S., Spitzer, G., Hofmeister, C. C., Zerbib, R., Andre, P., Efebera, Y. A., Oxier, S., and Caligiuri, M. A. (2012) A Phase I Trial of the Anti-Inhibitory KIR Antibody, IPH2101, and Lenalidomide in Multiple Myeloma: Interim Results. ASH Annual Meeting Abstracts 120, 4058-

4. Cagnetta, A., Cea, M., Acharya, C., Calimeri, T., Tai, Y.-T., Hideshima, T., Chauhan, D., Patrone, F., Gobbi, M., Munshi, N. C., and Anderson, K. C. (2012) Intracellular NAD+ Depletion Enhances Bortezomib-Induced Myeloma Cytotoxicity. ASH Annual Meeting Abstracts 120, 330-

5. Calimeri, T., Fulciniti, M., Lin, J., Samur, M. K., Calkins, A. S., Vahia, A. V., Pal, J., Cea, M., Cagnetta, A., Cottini, F., Adamia, S., Azab, A., Minvielle, S., Avet-Loiseau, H., Li, C., Lazaro, J.-B., Anderson, K. C., Tassone, P., Shammas, M. A., and Munshi, N. C. (2012) Aberrant Non-Homologous End Joining in Multiple Myeloma: A Role in Genomic Instability and As Potential Prognostic Marker. ASH Annual Meeting Abstracts 120, 2932-

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22. Zhang, W., Lin, J., Ma, D., Kwart, A. H., Ramachandran, A., He, S., Swagata, S., Tai, Y.-T., Anderson, K. C., Handin, R. I., and Munshi, N. C. (2012) A Clinically Relevant Zebrafish in Vivo Model of Human Multiple Myeloma (MM) to Study Disease Biology and Preclinical Therapeutic Efficacy. ASH Annual Meeting Abstracts 120, 4078-

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(GSK2857916) Induces Potent and Selective Anti-Multiple Myeloma Activity Via Enhanced Effector Function and Direct Tumor Cell Killing. Blood 122, 877

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27. Bandi, R., Amodio, N., Prabhala, R. H., Munshi, M., Xu, L., Yang, G., Hunter, Z., Anderson, K. C., Treon, S. P., and Munshi, N. C. (2013) Sp1 Inhibition Affects Cell Growth and Survival In Waldenstrom's Macroglobulinemia Through a MYD88-Independent Pathway. Blood 122, 3065

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Narrative Report

My current laboratory research and clinical activities are centered at the VA Boston Healthcare System and the Jerome Lipper Multiple Myeloma Center at the Dana-Farber Cancer Institute, specializing in plasma cell disorders. My laboratory focus is on understanding oncogenomic changes in myeloma and

developing a translational research program in myeloma utilizing immunotherapeutics and targeted small molecule approaches driven by the genomic efforts in my laboratory.

As part of the effort to develop immunotherapy in myeloma, my laboratory has identified T regulatory and Th17 cell dysfunction as an important component of immunoparesis in myeloma (Funded by NIH). We havegone on to identify that Lenalidomide improves immune function in myeloma via B7-CD28 pathway and have initiated a study to investigate the enhancement of immune response to vaccination by Lenolidomide (funded by VA Merit grant). We have also developed various vaccination strategies in myeloma and are about to initiate a clinical study of multi-peptide-based vaccination in smoldering myeloma to prevent progression to symptomatic disease. My lab is continuing to identify additional vaccination targets using the oncogenomic data generated by us. My recent studies on genomic changes in myeloma, and an international collaboration I have established with the French National myeloma group, has formed the basis of my comprehensive program project grant funded in 2011. In this project we are addressing, using 1000 newly diagnosed patients, one of the most important clinically-relevant question about the role of high-dose therapy with stem cell transplantation in the era of effective novel agent-based therapies. This trial will provide clinically annotated plasma cell samples from 1000 uniformly treated patients and normal donors to comprehensively characterize the myeloma genome and epigenome using various high-throughput methods, including whole genome sequencing, to define molecular events driving development and progression of MM, as well as to identify novel therapeutic targets, biomarkers, and preventative strategies. This collaborative effort in my lab will define a new treatment paradigm for this presently incurable disease. Based on the targets we have identified and relevant agents validated, I am also continuing clinical investigation of small molecules; I have an ongoing Phase I/II study evaluating safety and efficacy of GRN-163L, a telomerase inhibitor, a phase II study of anti-DKK-1 antibody in smoldering multiple myeloma, and a phase I/II study of anti-CD138-DM1 antibody in patients with relapsed multiple myeloma.

I have mentored post-doctoral fellows, medical residents, undergraduate students, and young high school students, both in the clinical setting, but more importantly in lab research, and have been part of their professional and personal growth. A number of them are now independent scientists, physicians, and professionals.

I have also established and direct a Myeloma Initiative at Veterans Administration Hospitals (MIVA), a comprehensive program bringing together, for the first time, all major VA hospitals across the country to focus on cutting edge joint clinical studies, as well as patient and provider education all co-ordinated and administered by me. My efforts have also resulted in development of a pilot project to evaluate a tablet PC-based patient education program focused on multiple myeloma; As a result, our myeloma program at the VA has been recognized as a model for others with a disease-specific focus.