

## Curriculum Vitae

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**Place of Birth:** Iasi, Romania

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### Education:

09/93	D.M.D.	Dentistry	University of Medicine Iasi, Romania
03/01	Ph.D.	Medical Science (Gastrointestinal Surgery) Thesis advisor: Makoto Sunamura, MD, PhD	Tohoku University Graduate School of Medicine, Japan

### Postdoctoral Training:

05/01- 06/04	Fellow	Tumor Biology (Rakesh K. Jain, PhD)	Steele Laboratories for Tumor Biology, Department of Radiation Oncology, MGH/HMS, Boston, MA
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### Faculty Academic Appointments:

09/95- 03/01	University Preparatory	Dental Prosthetics	University of Medicine Iasi, Romania
06/04- 04/07	Instructor	Radiation Oncology	HMS, Boston, MA
05/07- 09/12	Assistant Professor	Radiation Oncology	HMS, Boston, MA
10/12-	Associate Professor	Radiation Oncology	HMS, Boston, MA

**Appointments at Hospitals/Affiliated Institutions:**

02/94-01/95	Physician-in-training	Rotations in Orthodontics, Dental Prosthetics, and Oral Surgery	St. Spiridon University Hospital, Iasi, Romania
02/95-09/95	Staff Physician	Oral Surgery	Harlau Municipal Hospital, Romania
10/95-09/97	Resident in Dentistry	Department of Dental Prosthetics	University Hospital Dental Clinic, Iasi, Romania
05/01-05/04	Research Fellow	Department of Radiation Oncology	MGH, Boston, MA
06/04-06/07	Assistant in Biology	Department of Radiation Oncology	MGH, Boston, MA
07/07-02/12	Assistant Biologist	Department of Radiation Oncology	MGH, Boston, MA
03/12-09/16	Associate Investigator	Department of Radiation Oncology	MGH Research Institute, Boston, MA
09/16-	Investigator	Department of Radiation Oncology	MGH Research Institute, Boston, MA

**Other Professional Positions:**

2007	Consultant	Takeda Pharmaceuticals, Chicago, IL	N/A
2009	Consultant	Bridge Scientific Consulting LLC	N/A
2009	Think Tank Participant	Forbeck Forum “The Biology and Treatment of Primary Brain Tumors”, Hilton Head Island, SC	N/A
2012	Expert Panel Member	Renal Cell Carcinoma Expert Summit, Washington, DC (Angiogenesis Foundation)	N/A
2013	Advisory Board Member	Hexal-Sandoz (Novartis), Zurich, Switzerland	2% (5.3 days/year)
2015	Advisory Board Member	The Antibody-Drug Conjugates Conference, Boston	N/A
2015-	Secretary General	IASGO	2% (5.3 days/year)

2016	Advisory Board Member 2016–2017	Bayer Medical Affairs Oncology Advisory Board for Cancer Immunotherapy	N/A
2017	Advisory Board Member	Tilos Therapeutics, Inc., Cambridge, MA	N/A
2017	Consultant	twoXAR, Inc., San Francisco, CA	N/A
2018	Consultant	Sophia Biosciences, Inc., Atlanta, GA	N/A
2018	Meeting Chair	The 1st Scientific Data Education Steering Committee (SDESC) Meeting, Bayer, San Francisco, CA	N/A
2019	Consultant	Simcere Pharma, Inc., Nanjing, China	
2020	Advisor/KOL (unpaid)	Olink, Watertown, MA	
2021	Consultant	Innocoll Biotherapeutics, Newtown Square, PA	

**Major Administrative Leadership Positions:**

**Local**

2016	Chair of the Organizing Committee	The Special Scientific Symposium in honor of Professor Rakesh K. Jain, Laureate of the US National Medal of Science
2016–	Director of Translational Research in GI Radiation Oncology	Massachusetts General Hospital, Department of Radiation Oncology

**National**

2011	Leader, Workshop: Tumor angiogenesis as a therapeutic target	2011 Biorbis World Anti-Angiogenesis Summit, Boston, MA
2013	Chair Mini-Symposium: Novel Mediators of Tumor Angiogenesis	The 104th AACR Annual Meeting, Washington, DC
2019–	Course Co-Director	Mayo Clinic Pancreatic and Hepato-Biliary Cancer Symposium, Mayo Clinic, Las Vegas, NV

2019	Advisory Board Member 2019–2024	MD Anderson Cancer Center Hepatocellular Carcinoma SPORE, Houston, TX
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**International**

2013	Workshop Co-Director	International Workshop Translational imaging in gastroenterology and surgery, Craiova, Romania
2013	Head, Cancer Research section 2013–	IASGO
2017	ESF College of Expert Reviewers Member	European Science Foundation
2017	Conference Co-Chair	The 1st CME IASGO International Symposium, Luzhou, China
2019	Conference Director	The 1st CME IASGO International Course, Braga, Portugal
2019	Conference Do-Chair	The 2nd CME IASGO International Symposium, Luzhou, China
2020	Conference Chair	Webinar: HCC – What’s Next? Onco- Surgery Days Webinar Series, Istanbul, Turkey - IASGO
2021	Conference Co-Chair	The 2021 IASGO GI Summit, Taipei, Taiwan
2021	Conference Co-Chair	The 9th IASGO Onco-Surgery Days International Symposium, Istanbul, Turkey
2023	Chair	Forbeck Forum “The Biology and Treatment of Hepatocellular Carcinoma”

**Committee Service:**

**Local**

2016	The One Hundred Selection Committee Member 2016–2017	MGH Cancer Center
2017	Committee Member 2017–	Radiation Oncology Immuno-Oncology Working Group, MGH
2017	Organizing Committee Member and Chair of Session: Immunotherapy 2017	2017 Boston Angiogenesis Meeting

2018	Organizing Committee Member 2018	Vascular Biology Seminar Series, Harvard Medical School
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**National**

2010	RTOG 0837 / ACRIN 6689 Study Planning (weekly teleconference) 2010–2012	RTOG, USA Committee Member
2016–	NRG Oncology / NRG-GI003 Phase III Study (weekly teleconference) 2016–2021	NRG Oncology, USA Translational Co-Chair
2017–2022	NCI Pancreatic Cancer Microenvironment Network (PaCMEN) (monthly teleconference) 2017–2022	US NIH, NCI Associate member
2019–	Professorial promotion referee	MD Anderson Cancer Center (2019) Johns Hopkins University (2022)
2020–2022	NCI Hepatobiliary Task Force for Immuno- Oncology Biomarkers, 2020–2022	US NIH, NCI Member
2022–	SWOG Cancer Research Network, GI and Translational Medicine GI Committees 2022–	SWOG Member

**International**

2015	PhD Defense, Annique MMJ Pieters Duyverman, Mentor, Prof. Borel Rinkes January 2015	Assessment Committee Member and co- Mentor, University of Utrecht, The Netherlands
2015	PhD Defense, Elizabeth Kuczynski, Mentor, Prof. Robert Kerbel October 2015	Oral Examination Committee Member, School of Graduate Studies, University of Toronto, Canada
2018–	Professorial promotion referee	Hong Kong Polytechnic Univ. (2018) Duke-NUS Singapore (2021)
2020–	University of Medicine Iasi, Council of Doctoral Studies Member 2020-2024	University of Medicine Iasi, Romania
2021	PhD Defense, Lingling Zhu 2019-2021	Co-Mentor, Sichuan University, Chengdu, China
2022	PhD Defense, Zhangya Pu, Mentor, Prof. Xuegong Fan and Dan G. Duda 2019-2021	Co-Mentor, Central South University, Changsha, China
2022	PhD Defense, Rakesh R. Ramjiawan, Mentors, Prof. Arjan Griffioen and Dan G. Duda	Assessment Committee Member and Mentor, VU University, Amsterdam, The Netherlands

	2012-2018 (pending)	
2022	PhD Defense, Nisha Gupta, Mentors, Prof. Prof. Victor van Hinsbergh and Dan G. Duda	Assessment Committee Member and Co-Mentor, VU University, Amsterdam, The Netherlands
	2014-2017 (pending)	

**Professional Societies:**

2000–	American Association for Cancer Research	
	2000–2022	Active member
	2013	Organizer and Chair, Mini-Symposium: <i>Novel Mediators of Tumor Angiogenesis</i> , 104 <sup>th</sup> AACR Annual Meeting, Washington, DC
2005–	International Society for Stem Cell Research	
	2005–2008	Active member
2006–	American Society of Clinical Oncology	
	2006–2022	Active-allied member
	2010	Discussant ( <i>Developmental / Experimental Therapeutics</i> Track), 2010 ASCO Annual Meeting, Chicago, IL
2007–	North America Vascular Biology Organization	
	2007–2010	Member
2007–	International Association of the Surgeons, Gastroenterologists and Oncologists	
	2007–2022	Permanent Member
	2013–2021	Head, Research Section
	2014–2021	Coordinator, Educational Programs
	2014	Scientific Committee Member, 24 <sup>th</sup> World Congress of IASGO, Vienna, Austria
	2015	Scientific Committee Member, 4 <sup>th</sup> IASGO International Meeting, Moscow, Russia
	2015	Scientific Committee Member, the 25 <sup>th</sup> World Congress of IASGO, Fuzhou, China
	2015–	Secretary General
	2016	Organizing Committee Member, 26 <sup>th</sup> World Congress of IASGO, Seoul, Korea
	2017	Organizing Committee Member, 27 <sup>th</sup> World Congress of IASGO, Lyon, France

2017		The 1 <sup>st</sup> CME IASGO Symposium, “Current and Future Perspectives in Primary Liver Tumors”, Rotterdam, The Netherlands
2018		Organizing Committee Member, 28 <sup>th</sup> World Congress of IASGO, Moscow, Russia
2019		Organizing Committee Member, 29 <sup>th</sup> World Congress of IASGO, Bangkok, Thailand
2021		Organizing Committee Member, 32 <sup>th</sup> World Congress of IASGO, Taipei, Taiwan
2022		Organizing Committee Member, 33 <sup>rd</sup> World Congress of IASGO, Istanbul, Turkey
2009–	DF/HCC Angiogenesis Invasion and Metastasis	
	2009–2017	Member
2009–	Harvard Catalyst Tumor Microenvironment Research Group	
	2009–2022	Member
	2012	Harvard Catalyst Program Grant Reviewer
2011–	The New York Academy of Sciences	
	2011–2015	Active Member
2012–	American Association for the Study of Liver Diseases	
	2012–2022	Member
	2019–2021	Liver Fibrosis Special Interest Group (SIG), Global Outreach Subcommittee
2016–	American Gastroenterological Association	
	2016–2017	Member
2017–	American Association for the Advancement of Science	
	2017–2022	Member
	2021	Elected as 2021 AAAS Fellow
2017–	Microcirculation Society	
	2017–2021	Member
2017–	European Society for Medical Oncology	
	2017–2018	Member
2019–	American Institute for Medical and Biological Engineering	
	2019–2022	Member
	2020	Inducted in the AIMBE College of Fellows Class of 2020

2020–	Society for Immunotherapy of Cancer 2020–2022	Member
<b>Grant Review Activities:</b>		
2006–	Cancer Research Section 2006, 2018, 2021	Hong Kong Research Council Ad hoc grant reviewer
2006–	Cancer Research Section 2006	United Kingdom Research Council Ad hoc grant reviewer
2008–	Cancer Research Section  2008–2022	Italian Association for Cancer Research (AIRC) Ad-hoc grant reviewer
2008–	Cancer Research Section 2008 2016	Cancer Research UK Ad hoc grant reviewer Ad hoc grant reviewer
2009–	ARRA RC1 Challenge Grant – ZRG1 OTC-K (58) Section 2009	NIH  Ad hoc member
2009–	SBIR/STTR – Cancer Drug Development and Therapeutics (CDDT) Study Section 2009–2015	NIH  Ad hoc member
2010–	Drug Discovery and Molecular Pharmacology (DMP) Study Section 2010–2011 2012–2018 2013, 2018	NIH  Ad hoc member Permanent member Co-Chair
2010–	Biomedical Research Program 2010	Institut National du Cancer France Ad hoc reviewer
2011–	Austrian Science Fund 2011	Austria Ad hoc grant reviewer
2011–	Med4 Study Section  2011–2022 2015–2020 2019–2020	Research Foundation Flanders (FWO), Belgium Ad hoc grant reviewer Permanent member Chair
2011–	Pennsylvania Department of Health 2011–2022	State of Pennsylvania Ad hoc grant reviewer
2012–	Romanian National Development and Innovation Council 2012–2013	Romania
2012–	Membrane Biology and Protein Processing (MBPP) Study Section 2012	NIH  Ad hoc member
2012–	Grant Review Panel 2012	US-Israel Binational Science Foundation Ad hoc grant reviewer



2012–	National Institute of Social Care and Health Research 2012	Wales Ad hoc grant reviewer
2012–	Institutional grants 2012	Duke University Medical Center/VARIAN Medical Systems Ad hoc grant reviewer
2013–	SwissTransMed 2013	Switzerland Ad hoc grant reviewer
2013–	Joint Research Actions 2013 2015	Liège University, Belgium Ad hoc grant reviewer Ad hoc grant reviewer
2014–	Tumor Biology and Genomics (TBG) Section 2014–2015 2016–2020	American Cancer Society Ad hoc member Permanent member
2014–	SBIR – Small Business: Molecular Analysis Technology Study Section 2014–2015 2014–2015	NIH Ad hoc member Co-Chair
2014–	Clinical Trial Planning Grant Study Section 2014 2016	NIH Ad hoc member Ad hoc member
2014–	Special Emphasis Panel (SEP #12; R03 and R21 Omnibus) 2014–2016	NIH Ad hoc member
2014	Research Grants 2014 2018	Swiss National Science Foundation Ad hoc member Ad hoc member
2014–	Florida Bankhead-Coley Cancer Research Program 2014–2021	State of Florida Ad hoc member
2015–	Breast Cancer Now 2015	UK Ad hoc grant reviewer
2016–	National Cancer Institute Special Emphasis Panel 2016	NIH Ad hoc member
2016–	SPORE Special Emphasis Panels 2016–2021	NIH Ad hoc member Discussion Leader (2021)
2017–	Cancer Research Section 2017–2021	European Science Foundation Ad hoc grant reviewer
2017–	Merit Review Oncology Panel 2017 2020	US Department of Veterans Affairs Ad hoc member Ad hoc member
2018–	Research Competitiveness Program	American Association for the Advancement of Science

	2018–2020	Ad-hoc grant reviewer
2018–	Research Project	University of Sharjah, UAE
	2018	Ad hoc grant reviewer
2018–	Research Project	Italian Ministry for University and Research (MUR)
	2018, 2021	Ad hoc grant reviewer
2019–	Innovative Molecular and Cellular Analysis Technologies for Basic and Clinical Cancer Research (R21) Panel	NIH
	2019	Ad hoc member
2019–	US-China Program for Biomedical Collaborative Research Study Section	NIH
	2019	Ad hoc member
2019–	Interim Support Funding Program	MGH ECOR
	2018–2021	Ad hoc member
2019–	Research Grants	Dutch Cancer Society
	2019	Ad hoc reviewer
2019–	Research Council	KU Leuven, Belgium
	2019	Ad hoc reviewer
2019–	Loeffler Team Science Seed Funding Program	MGH Radiation Oncology
	2019–2022	Ad hoc member
2019–	SEP U01 Grant Review Panel	NIH
	2019	Ad hoc member
2019–	Cancer Biotherapeutics Development (CBD) Study Section	NIH
	2019–2020	Ad hoc member
	2019	Co-Chair
	2020	Chair
2019–	ACS Institutional Grant Pilot Funding Program	MGH
	2019–2020	Ad hoc member
2020–	StandUp2Cancer Pediatric Cancer Review Panel	Research Foundation Flanders (FWO), Belgium
	2020	Ad hoc reviewer
2020–	Development Research Project (DRP) Award Review Panel	MD Anderson Cancer Center SPORE
	2020	Ad hoc member
2020–	Rare Cancers Research Program (RCRP) Review Panel	Department of Defense
	2020-2021	Ad hoc member
2021–	Peer Reviewed Cancer Research Program (PRCRP) Career Development/ Translational Team Science/Liver Cancer (CTT-LivC) Peer Review Panel	Department of Defense
	2021	Ad hoc member

2019– Cancer Diagnostics and Treatments (CDT) NIH  
Study Section  
2022 Chair

**Editorial Activities:**

• **Ad hoc Reviewer**

*Angiogenesis*  
*Anticancer Therapy*  
*ASCO Annual Meeting and ASCO Educational Book*  
*BioMedCentral Cancer*  
*Blood*  
*British Journal of Cancer*  
*British Journal of Surgery*  
*Cancer Cell*  
*Cancer Drug Resistance*  
*Cancer Research*  
*Cancer Research Communications*  
*Cancers*  
*Cancer Treatment Reviews*  
*Carcinogenesis*  
*Cell Communication and Signaling*  
*Cell Cycle*  
*Cellular & Molecular Immunology*  
*Clinical Cancer Research*  
*Clinica Chimica Acta*  
*Current Opinion in Investigational Drugs*  
*CNS Drugs*  
*Cytokine*  
*EMBO*  
*EMBO Medicine*  
*EBioMedicine*  
*Endothelium*  
*European Journal of Cancer*  
*Experimental and Molecular Pathology*  
*Expert Opinion on Drug Safety*  
*Expert Review of Anticancer Therapy*  
*Gastroenterology*  
*Gut*  
*Hepatology*  
*Hepatoma Research*  
*International Journal of Cancer*  
*International Journal of Radiation Biology*  
*International Journal of Radiation Oncology Biology & Physics*  
*Investigational New Drugs*  
*Journal of Cellular and Molecular Medicine*  
*Journal of Clinical Investigation*  
*Journal of Clinical Oncology*

*Journal of Experimental & Clinical Cancer Research*  
*Journal of Hepatology*  
*Journal of Hepatology Reports*  
*Journal of Immunotherapy for Cancer*  
*Journal of Pathology*  
*Journal of Vascular Research*  
*Molecular Cancer Therapeutics*  
*Nanomedicine*  
*Nature Communications*  
*Nature Reviews Cancer*  
*Nature Reviews Clinical Gastroenterology and Hepatology*  
*Nature Reviews Clinical Oncology*  
*NPJ Breast Cancer*  
*NPJ Precision Oncology*  
*Neuro-Oncology*  
*Oncogene*  
*Oncologist*  
*Oncotarget*  
*Pharmacology and Therapeutics*  
*PLoS Genetics*  
*PLoS One*  
*Proceedings of the National Academy of Science U S A*  
*Regenerative Medicine*  
*Science*  
*Scientific Reports*  
*Surgical Oncology*  
*Trends in Endocrinology and Metabolism*

• **Other Editorial Roles**

2010–	Editorial Board Member	<i>American Journal of Cancer Research</i>
2013–2015	Editorial Board Member	<i>Hepatogastroenterology</i>
2013–	Senior Editor	<i>Discoveries</i>
2015–	Founding Editor	<i>Surgery, Gastroenterology and Oncology</i>
2015	Guest Editor Theme Issue	<i>The Cancer Journal</i>
2016–	Consultant Editor	<i>Digestive Surgery</i>
2016–	Editorial Board Member	<i>Clinical &amp; Translational Radiation Oncology</i>
2017–	Editorial Board Member	<i>Journal of Hepatocellular Carcinoma</i>
2018	Guest Editor Theme Issue	<i>Surgery, Gastroenterology and Oncology</i>
2019–	Associate Senior Editor	<i>International Journal of Radiation Oncology*Biology*Physics</i>
2020–	Editorial Board Member, Section Editor	<i>Cancers</i>

2022	Editors: M. Makuuchi, N. Kokudo, I. Popescu, J. Belghiti, H.-S. Han, K. Takaori, and <b>D. G. Duda</b>	<u>IASGO Textbook of Multi-Disciplinary Management of Hepato-Pancreato-Biliary Diseases</u> . 1 <sup>st</sup> Edition; Springer-Nature.
2023	Guest Editor for Special Issue	<i>Journal of Personalized Medicine</i>

### Honors and Prizes:

1997-2001	<i>Monbusho Fellowship</i>	Japan's Ministry of Education, Culture, Sports, Science and Technology	Research
1998	<i>Young Investigator Award</i>	International Association of Pancreatology	Research
2001	<i>Scholar-in-Training Award</i>	Ito-En and American Association for Cancer Research (AACR)	Research
2006	<i>Scholarship</i>	European Commission Marie Curie Actions Programme	Research
2007	<i>Team Science Award</i>	MGH Clinical Research	Research
2007	<i>Keynote Speaker</i>	The 5 <sup>th</sup> IBC Life Sciences Meeting on Anti-Angiogenesis, Boston	Research
2007	<i>Research Team Award</i>	Douglass Family Foundation, MA	Research
2008	<i>Junior Investigator Award Finalist</i>	North America Vascular Biology Organization	Research
2009	<i>Early Career Oncologists / Scientists (ECOS) Award</i>	EORTC-NCI-ASCO	Research
2010	<i>Lucien J. Rubinstein Team Award</i>	American Association of Pathologists	Research
2012–	<i>Honorary Member</i>	Academy of Medical Sciences of Romania	Research and service
2014	<i>Gerritsen Award</i>	The Microcirculatory Society	Research
2014	<i>Capussotti Award</i>	IASGO	Research
2014	<i>Keio University Lecture</i>	Keio University Tokyo, Japan	Research
2014-16	<i>Andrew L. Warshaw, M.D., Institute for Pancreatic Cancer Research Fellow</i>	Massachusetts General Hospital	Research
2015	<i>Keynote Speaker</i>	The 14 <sup>th</sup> International Wolfsberg/ ESTRO Radiation Biology Meeting	Research
2015	<i>Tohoku Medical Society Lecture</i>	Tohoku University Sendai, Japan	Research

2015	<i>Keynote Lecture</i>	Neuroononcology Group (NOA) Winterschool Freiburg, Germany	Research
2015	<i>Honoree of the One Hundred</i>	Mass General Cancer Center	Research and service
2016	<i>Heroes of Hope Award</i>	Granara-Skerry Trust	Research and service
2016	<i>State-of-the-art Lecture</i>	IASGO World Congress, Korea	Research
2017	<i>Plenary Lecture</i>	Hong Kong International Oncology Forum 2017 (HKIOF 2017)	Research
2017	<i>Partners HealthCare Innovator Award</i>	Partners HealthCare, Boston	Research
2017	<i>Keio Medical Society Lecture</i>	Keio University Tokyo, Japan	Research
2018	<i>IASGO Achievement Award</i>	30 <sup>th</sup> Anniversary World Congress of the IASGO	Research
2018	<i>Excellence Award</i>	Romania-USA Chamber of Commerce	Research and service
2019	<i>Partners HealthCare Innovator Award</i>	Partners HealthCare, Boston	Research
2020	<i>Induction into the College of Fellows – Class of 2020</i>	American Institute for Medical and Biological Engineering (AIMBE)	Research and service
2020	<i>2020 Excellence Award – World Ambassador of Romanian Medicine</i>	Romanian Academy and Medica Academica, Tarus Media	Research and service
2021	<i>Doctor Honoris Causa</i>	University of Medicine Iasi, Romania	Research
2022	<i>Elected as 2021 AAAS Fellow</i>	American Association for the Advancement of Science (AAAS)	Research
2022-23	<i>Andrew L. Warshaw, M.D., Institute for Pancreatic Cancer Research Fellow</i>	Massachusetts General Hospital	Research

### **Report of Funded and Unfunded Projects**

#### **Past**

- 2003–2005 *Angiogenic Profile of Rectal Cancer* (PI, Willett)  
National Cancer Institute / R21CA099237  
Co-Investigator  
The major goal of this study was to evaluate changes in tumor vasculature and in angiogenic markers after antiangiogenic therapy with bevacizumab in rectal cancer patients.
- 2005–2007 *Characterization of Circulating Endothelial Cells and Progenitor Cells as a Surrogate Marker for Progression and Treatment of Solid Tumors* (PI, Duda)

- AACR-Genentech BioOncology Career Development Award  
PI (\$102,000)  
The goal of the study was to identify the origin and phenotype of endothelial and progenitor cells in tumor-bearing mice and study their kinetics after antiangiogenic therapies.
- 2005–2009 *Identification and Validation of Surrogate Markers for Response and Vascular Normalization after VEGF Blockade in Colorectal Cancer Patients* (PI, Jain)  
National Foundation for Cancer Research / Research Award  
Co-Investigator  
The goals of the proposed studies were to determine the mechanism of action and identify biomarkers for bevacizumab in rectal cancer patients
- 2005–2007 *Phase II study of AZD2171 in patients with recurrent glioblastoma* (PI, Batchelor)  
National Cancer Institute / R21CA117079  
Co-Investigator  
The goal of this study was to assess the efficacy and safety of AZD2171 in rGBM patients.
- 2006–2008 *Phase II trial of AZD2171 monotherapy in recurrent head-and-neck cancer* (PI, Rocco)  
National Cancer Institute / R21CA099237  
Co-Investigator  
The major goal of this study was to evaluate changes in tumor vasculature and in angiogenic markers after antiangiogenic therapy with bevacizumab in rectal cancer patients
- 2006–2018 *Integrative Pathophysiology of Solid Tumors* (PI, Jain)  
National Cancer Institute / P01CA080124  
Project Co-Leader (2006-2011) and Project Leader (2012-2017) (\$767,294)  
The overall goal of this program project is to identify common and disease-specific tumor stroma-mediated pathways of resistance to standard therapies in glioma (Project 1), colorectal cancer (Project 2), HCC (Project 3), and pancreatic cancer (Project 4). Project 3 is dedicated to studies of the role of CXCR4 and ERK in HCC evasion from sorafenib.
- 2006–2011 *Role of BMDCs in Solid Tumor Growth and Relapse* (PI, Jain)  
National Cancer Institute / R01CA115767  
Co-Investigator  
The goal of this grant was to characterize the kinetics, phenotype and function of bone marrow-derived cells and the roles of VEGFR1 and CXCR4 in growing and treated tumors.
- 2007–2019 *Angiogenesis-targeting Therapy for Glioblastoma* (PI, Batchelor)  
National Cancer Institute / 2R01CA129371  
Co-Investigator  
The goal of this project is to assess biomarkers of response and escape of standard antiangiogenic therapy with bevacizumab in glioblastoma patients.
- 2008–2009 *Bone Marrow Stromal Cell Characterization for Immunotherapy for Tumors* (PI, Duda)  
National Cancer Institute / Federal Share Proton Beam Income Program Grant  
PI (\$77,220)  
The major goals of this study characterize a population of precursors cells that can be expanded, modified genetically, and then adoptively transferred to tumors to enhance anti-tumor immune responses
- 2008–2010 *A Phase II Study of Blood Circulating Cells and Plasma Angiogenic Proteins as Biomarkers of Anti-VEGF Therapy with Bevacizumab in Sarcoma Patients* (PI, Duda)  
MGH / Ira J. Spiro Translational Research Award  
PI (\$50,000)  
The goal of this study is to provide strong candidate biomarkers of response – to be evaluated in future randomized trials of antiangiogenic agents in sarcoma patients.

- 2008–2013 *Murine Circulating Endothelial Precursors (CEPs) and Lung Capillary Repair* (PI, Jones)  
NHLBI / R01 HL089252  
Co-Investigator  
The major goals of this study are to evaluate the roles of circulating precursor cells in lung capillary repair after hyperoxia-induced damage in mice. The emphasis is on detecting the CEP origin and the role of VEGF and SDF1 $\alpha$  signaling
- 2008–2013 *Probing Tumor Microenvironment Using Nanotechnology* (PI, Jain)  
National Cancer Institute / R01CA126642  
Co-Investigator (Project 3 Leader)  
This Bioengineering Research Partnership (BRP) is exploiting emerging advances in semiconductor nanocrystal-based biomedical imaging to probe the tumor microenvironment.
- 2009–2013 *Cellular and Molecular Biomarkers of GBM Resistance to Antiangiogenic Therapy* (PI, Jain)  
National Foundation for Cancer Research/Research Award  
Co-Investigator  
The goal of these clinical correlative studies is to explore in patients with glioblastoma the cellular and molecular determinants of resistance to antiangiogenic treatment
- 2009–2010 *Visualizing Immune Responses In Vivo: A Systems Biology Approach* (PI, Duda)  
MGH Executive Committee on Research (ECOR) / Formulaic Bridge Funding Grant  
PI (\$50,000)  
The goal of this study is to establish and utilize targeted nanocrystal immuno-constructs for *in vivo* cytometric analyses of immune cells in tumors during immunotherapy
- 2009–2011 *Visualizing Immune Responses In Vivo: A Systems Biology Approach* (PI, Duda)  
National Cancer Institute / R21CA139168  
PI (\$242,000)  
The goal of this study is to establish and utilize targeted nanocrystal immuno-constructs for *in vivo* cytometric and functional analyses of immune cells in tumors during immunotherapy.
- 2010–2012 *A Study of SDF1 $\alpha$ -CXCR4 as a Potential Mechanism of Distant Progression in Pancreatic Cancer after Neoadjuvant Chemoradiation* (PI, Duda)  
MGH / Ira J. Spiro Translational Research Award – NCI/Proton Beam Program  
PI (\$50,000)  
The goal of this study is to provide strong candidate for anti-metastasis therapy in neoadjuvant setting in pancreatic carcinoma patients.
- 2010–2016 *Strategies for Personalized Treatment of Metastatic Breast Cancer* (PI, Jain)  
Department of Defense / Innovator Award (Breast Cancer Program) W81XWH-10-1-0016  
Co-Investigator  
The goal of this grant is to improve antiangiogenic therapy in metastatic breast cancer by optimizing the schedule of therapy, and identifying new targets and biomarkers of response
- 2011–2014 *CXCR4 Blockade as a Sensitizer in Bone Metastatic Prostate Cancer* (PI, Duda)  
American Cancer Society / Research Grant 120733-RSG-11-073-01-TBG  
PI (\$600,000)  
The goal of this proposal is to study the effects of CXCR4 blockade combined with radiation or chemotherapy and anti-VEGF therapy in bone metastatic prostate cancer models.
- 2011–2017 *Role of SDF1 $\alpha$  in Prostate Cancer Relapse and Metastasis Post-radiotherapy* (PI, Duda)  
National Cancer Institute / R01CA159258  
PI (\$933,750)



- The aim of this R01 grant is to study the role of SDF1 $\alpha$ /CXCR4 vs /CXCR7 pathway in prostate cancer after irradiation. The hypothesis tested is that blockade of SDF1 $\alpha$  pathway in locally advanced prostate cancer will increase local control and inhibit metastasis.
- 2011–2012 *Role of PIGF, VEGF and Ang2 in Medulloblastoma and Glioblastoma* (PI, Jain)  
Roche-sponsored / Research Grant  
Co-Investigator  
The goal of this study is to provide efficacy data and further mechanistic insight for PIGF inhibition in medulloblastoma and VEGF and Ang2 blockade in glioblastoma
- 2011–2013 *Role of SDF1 $\alpha$  in Prostate Cancer Relapse and Metastasis Post-radiotherapy* (PI, Duda)  
MGH / Ira J. Spiro Translational Research Award  
PI (\$50,000)  
The aim of this grant is to explore the role of SDF1 $\alpha$  pathway and inflammatory bone marrow-derived cells in prostate cancer patients after irradiation
- 2011–2013 *An Exploratory Study of SDF1 $\alpha$ /CXCR4 Pathway as a Potential Mechanism of Disease Progression in Patients with Liver Cancer after Proton Beam Therapy* (PI, Duda)  
National Cancer Institute / Proton Beam Federal Share Individual Grant  
PI (\$112,606)  
The goal of this study is to provide further rationale for CXCR4 inhibition as a radiosensitizer for the treatment of hepatocellular carcinoma patients with proton therapy.
- 2011–2013 *Novel Approaches to Anti-metastasis Therapy in Breast Cancer* (PI, Jain)  
National Cancer Institute / Proton Beam Federal Share Umbrella Grant  
Project 1 PI (\$636,504)  
The goal of this study is to study novel mechanisms of breast cancer metastasis and identify and test new targets for therapy. Project 1 will test the role of endothelial Fak/Src.
- 2013–2015 *Targeting HGF/c-MET Pathway to Improve Outcomes in Patients with PDAC* (PI, Zhu)  
Cummings Foundation – OneWorld Boston / Research Grant  
Co-Investigator  
The aim of this pilot grant is to target HGF/c-MET pathway with small molecule inhibitors to sensitize PDA to radiation, inhibit distant metastasis and improve outcomes.
- 2014–2016 *Cellular and Molecular Biomarkers of GBM Resistance to Antiangiogenic Therapy* (PI, Jain)  
National Foundation for Cancer Research Fellow / Award  
Co-Investigator  
The goal of these clinical correlative studies is to explore in patients with glioblastoma the cellular and molecular determinants of resistance to antiangiogenic treatment
- 2014–2017 *Specific roles of KRASG12D versus KRASG12R in pancreatic ductal adenocarcinoma progression and resistance to cytotoxics* (PI, Duda)  
Andrew L. Warshaw, M.D. Institute for Pancreatic Cancer Research / Pilot Grant  
PI (\$100,000)  
The aim of this pilot grant is to study the specific roles of KRASG12D versus KRASG12R mutations in pancreatic ductal adenocarcinoma.
- 2014–2017 *Blocking HGF to Overcome Radio- and Chemo-Resistance in pancreatic ductal adenocarcinoma* (PI, Duda)  
Merrimack Pharmaceuticals, Inc. / Sponsored Research Agreement  
PI (\$330,376)  
The aim of this pilot grant is to target HGF pathway with a dual c-MET/EpCAM antibody as a strategy to sensitize pancreatic ductal adenocarcinoma to cytotoxics.
- 2015–2018 *Translational Phase I studies of DKN-01 in refractory esophageal cancer and in cholangiocarcinoma patients* (PI, Duda)  
Leap Tx / Research Support  
PI (\$212,243)

- The goal of these correlative studies is to explore biomarkers of response and mechanisms of action for DKN-01, a humanized monoclonal antibody that targets the Dickkopf-1 (DKK1).
- 2016–2017 *Using dasatinib to target tumor growth and cirrhosis in HCC* (PI, Duda)  
MGH ECOR / Deliberative Interim Research Support  
PI (\$75,000)  
The goal of these studies is to examine the mechanism of action and efficacy of dasatinib in models of hepatocellular carcinoma and liver cirrhosis in mice.
- 2016–2019 *Using anti-CXCR4 antibodies to facilitate anti-PD1 immunotherapy in HCC models* (PI, Duda)  
Bristol Myers Squibb / Sponsored Research Agreement  
PI (\$225,033)  
The focus of this grant is on the use orthotopic murine models of HCC to examine the therapeutic benefit of antibody blockade of PD-1 with or without CXCR4 blockade.
- 2017–2018 *Redirected Immunotherapy with Ra223 for Metastatic Prostate Cancer* (MPIs, Duda/Cobbold)  
MGH ECOR / Deliberative Interim Support Funding  
PI (\$75,000)  
The aim of this grant is to develop a new immunotherapy approach for bone metastatic prostate cancers using antibody-peptide conjugates (APEC) with radium treatment.
- 2017–2018 *Development, Characterization & Commercialization of a Viable Frozen Patient-Inclusive Hepatocellular Carcinoma Tumor Bank* (PI, Duda/Briggs)  
National Cancer Institute / R41CA213678  
MPI (\$60,556)  
The aim of this Phase I STTR grant is to develop in collaboration with Woodland Pharma a viable frozen patient-inclusive hepatocellular carcinoma tumor bank for in vivo and in vitro testing of new therapeutic agents.
- 2018–2019 *Biomarkers of response to cabozantinib in patients with NET* (MPIs, Chan/Duda)  
Neuroendocrine Tumor Research Foundation / Pilot Project Award  
MPI (\$100,000)  
The aims of this grant are to identify blood biomarkers that may predict efficacy of treatment with cabozantinib in neuroendocrine tumor (NET) patients.
- 2019–2020 *Vascularized tumor explants for drug testing* (MPIs, Duda/Munn)  
MGH ECOR / Formulaic Interim Support Funding  
MPI (\$75,000)  
The aim of this grant is to develop a new ex vivo tissue biomimetic methodology for drug testing for pancreatic ductal adenocarcinoma patients.
- 2019–2020 Therapeutic modulation of the immune response in IDH mutant liver cancer (MPIs, Duda/Willers)  
MGH ECOR / Deliberative Interim Support Funding  
PI (\$37,500)  
The aim of this grant is to leverage synergistic interdisciplinary expertise and complementary pre-clinical liver cancer models to deliver critically needed data that will validate the existence of increased biological effects of proton beam therapy in vivo, link increased proton RBE to a clinically relevant and testable tumor genotype, and facilitate the design of rational proton beam therapy combinations with immunotherapy.
- 2016–2021 Alpharadin with anti-PD-1 therapy in metastatic prostate carcinoma models (PI, Duda)  
Bayer / Sponsored Research Agreement  
PI (\$415,159)  
The focus of this grant is on the use orthotopic murine models of bone metastatic prostate cancer to examine the therapeutic benefit of alpharadin using antibody blockade of PD-1.

- 2018–2021      Developing Novel Approaches to Detect and Treat Early Pancreatic Cancer (PI, Ryan)  
AACR / SU2C-Lustgarten Foundation Pancreatic Cancer Interception Dream Team  
Co-Investigator  
The aim of this grant is to conduct a randomized phase II and biomarker study of an anti-fibrotic agent with or without immune checkpoint blockade to enhance the efficacy of cytotoxics for borderline and locally advanced PDAC.
- 2019–2021      Combination of p53 mRNA Nanotherapy with Immunotherapy for HCC Treatment (PI, Shi)  
DoD PRCRP / W81XWH1910482  
Subaward PI (\$148,971)  
The goal of this project is to use p53 mRNA nanotherapy to promote antitumor immunity against p53-deficient HCCs.
- 2015–2021      Dissecting pediatric brain tumor microenvironment to improve treatment (PI, Jain)  
National Cancer Institute / R35 CA197743  
Co-Investigator  
The goal of this project is to gain new insights into pediatric TME to develop a program to further explore underlying mechanisms as well as other therapeutic opportunities to improve the outcome of chemo-radiation, targeted therapies, and immunotherapies.
- 2016–2021      Combining copanlisib with anti-PD1 immunotherapy in HCC models in mice (PI, Duda)  
Bayer / Sponsored Research Agreement  
PI (\$317,618)  
The focus of this grant is on the use orthotopic (grafted and genetically engineered) murine models of HCC to examine the therapeutic benefit of copanlisib with PD-1 blockade.
- 2017–2021      Using cabozantinib to modulate anti-tumor immunity and enhance the efficacy of immunotherapy in metastatic breast cancer and HCC models in mice (PI, Duda)  
Exelixis / Sponsored Research Agreement  
PI (\$351,835 total)  
The aim of this grant is to use cabozantinib as an immuno-modulator – in addition to anti-angiogenic and anti-metastatic agent – to potentiate the efficacy of immune checkpoint-based immunotherapy for metastatic breast cancer and HCC.
- 2016–2022      Rationally combining regorafenib with anti-PD1 immunotherapy in hepatocellular carcinoma models in mice with cirrhosis (PI, Duda)  
Bayer / Sponsored Research Agreement  
PI (\$309,583)  
The aim of this grant is to use orthotopic (grafted and genetically engineered) murine of HCC to examine the therapeutic benefit of regorafenib with PD-1 blockade.

## Current

- 2014–2022      Targeted Therapy of Pancreatic Cancer (PI, Duda)  
The Samuel Singer Brown Fund for Pancreatic Ductal Adenocarcinoma Research  
PI (\$238,500)  
The aim of this pilot grant is to target the MET pathway as a strategy to sensitize PDAC to cytotoxics to inhibit distant metastasis and improve outcomes.
- 2017–2022      Reprogramming PDAC microenvironment to improve immunotherapy (MPI, Jain/Boucher)  
National Cancer Institute / U01CA224348  
Co-Investigator  
The aim of this grant is to develop anti-fibrotic agents to reprogram tumor microenvironment and enhance the efficacy of cytotoxics and immunotherapy for locally advanced PDAC.

- 2019–2023 Role and biomarker value for plasma HGF in susceptibility to high-dose radiation-induced liver dysfunction (PI, Duda)  
DoD PRCRP Impact Award / W81XWH-19-1-0284  
PI (\$1,000,000) (NCE)  
The goal of this project is to validate plasma HGF as a biomarker of susceptibility to radiation induced liver dysfunction in liver cancer patients, and to gain new insights into how HGF/Met pathway mediates liver damage after radiation using mouse models.
- 2020–2023 Enhancing the Efficacy of dual PD-1/VEGFR2 Inhibition in HCC (PI, Duda)  
Bristol Myers Squibb / Sponsored Research Agreement  
PI (\$181,743) (NCE)  
The focus of this grant is on the use orthotopic murine models of HCC to examine the therapeutic benefit of immunomodulating agents with dual anti-VEGFR/PD-1 therapy.
- 2021–2026 Dual blockade of VEGF and PD-L1 pathway in resectable HCC (MPI, Kaseb/Duda/Amin)  
NCI / 1R01CA260872-02  
MPI (\$726,250, subcontract to MDACC)  
The goal of the proposed research is to demonstrate the activity and investigate the mechanism of action of dual VEGF/PD-L1 blockade in resectable HCC patients.
- 2021–2026 Multiplexed time domain fluorescence tomography of tumor biomarkers during immunotherapy (MPI, Kumar/Duda)  
NCI / 1R01CA260857-02  
MPI (\$1,355,835)  
The goal of the proposed research is to optimize and investigate the detection of PD-L1 expression in TNBC models in mice during immunotherapy.
- 2021–2026 Reprogramming the tumor microenvironment to improve immunotherapy of glioblastoma by co-targeting VEGF and Ang2 (MPI, Fukumura/Jain)  
NINDS / 1R01NS118929-01A2  
Co-Investigator  
This R01 grant will test the hypothesis that the abnormal vasculature within the unique environment of brain tumors and the resulting immunosuppression cause resistance to the novel immunotherapies.
- 2021–2026 Vascularized tumor explants for drug testing (MPIs, Munn/Duda)  
NCI / 1R01CA247441-01A1  
MPI (\$228,750)  
The aim of this grant is to develop a new ex vivo tissue biomimetic methodology for drug testing for pancreatic ductal adenocarcinoma patients.
- 2021–2023 Radiation and CSPG4-specific CAR-T cell based combinatorial therapy for the in vivo treatment of TNBC (MPI, Ferrone/Duda)  
NCI / 1R03CA256764-01A1  
MPI (\$50,000)  
The goal of the proposed research is to demonstrate increased efficacy of novel CAR-T cells using radiotherapy and anti-PD-1 therapy in metastatic triple negative breast cancer.
- 2021–2024 Mechanisms Mediating the Immune Responses after Proton versus Photon Radiotherapy in IDH Mutant Liver Cancer (PI, Duda)  
DoD PRCRP / W81XWH-21-1-0738  
PI (\$133,333)

The aim of this grant is to use liver cancer models to validate the increased biological effects of proton therapy in vivo and link the increased efficacy with to a clinically testable tumor genotype and facilitate the design of combinations with immunotherapy.

- 2021–2026 Integrating patient-specific clinical and biological factors towards individualizing utilization of proton and photon radiation therapy (PDs, Hong/Mohan)  
NCI / 1P01CA261669  
Core 2 Director (\$73,000)  
The PPG is investigating normal tissue toxicity by proton and photon therapy (Project 1), biological susceptibility of cancers to proton therapy (Project 2), and immunomodulatory effects of proton therapy (Project 3). The three projects will be supported by four shared resource cores, the Administrative Core (Core A), the Data Management and Computational Support Core (Core 1), the Biospecimens and Imaging Biomarkers Support Core (Core 2), and the Biostatistics Core (Core 3).
- 2021–2022 Enhancing the Efficacy of dual PD-1/VEGFR2 Inhibition in Hepatocellular Carcinoma Using IL-27 Abs (PI, Duda)  
Surface Oncology / Sponsored Research Agreement  
PI (\$144,642)  
The focus of this grant is on the use orthotopic murine models of HCC to examine the therapeutic benefit of IL-27 blockade with dual anti-VEGFR/PD-1 therapy.
- 2022–2023 Establishing the Role of MET as a Predictive Biomarker and Target for Sensitization to FOLFIRINOX in Early Pancreatic Ductal Adenocarcinoma (PI, Duda)  
Andrew L. Warshaw, M.D. Institute for Pancreatic Cancer Research / Pilot Grant  
PI (\$60,000)  
The aim of this pilot grant is to uncover the causal role of HGF/MET axis in PDAC progression to liver metastasis and chemoresistance, and the mediators of MET expression.
- 2022–2027 Defining Optimal Radiotherapy Dose and Fractionation in Combination with Preoperative Immuno-Chemotherapy in Early-Stage Triple Negative Breast Cancer (Ho/Gupta/Duda)  
NCI / 1R01CA274254-01  
MPI (\$449,000, selected for funding)  
The purpose of this application is to investigate the effect of pre-operative RT boost dose (0Gy, 9Gy or 24Gy) tumor in combination with pembrolizumab, on the induction of a systemic response in node-positive TNBC patients who will subsequently receive standard-of-care pembrolizumab, chemotherapy and surgery.

### **Projects Submitted for Funding**

- 2023–2028 *Leveraging mRNA-based strategies to restore p53 expression and enhance standard therapies in hepatocellular carcinoma* (MPI, Duda/Shi)  
NCI / R01 – GRANT13658567 (submitted)  
Subaward PI (\$588,596)  
The goal of this project is to use clinically relevant p53 mRNA lipid nanotherapy to promote enhance standard anti-CTLA4/PD-1 and anti-VEGF/PD-L1 therapies for HCC in mice with liver damage.
- 2023–2028 Increasing T cell infiltration and amplifying regorafenib or sorafenib efficacy by anti-PD-1 therapy priming in hepatocellular carcinoma (PI, Duda)  
NCI / 1R01CA273657-01A1 (in preparation for submission)  
Subaward PI (\$250,000)

The goal of this project is to establish the mechanism of benefit of the combination of the standard anti-hepatocellular carcinoma (HCC) drugs regorafenib or sorafenib with experimental use of immune checkpoint therapy.

### **Training Grants and Mentored Trainee Grants**

- 2006–2007 *Role of VEGFR1 in cancer metastasis* (PI, Michelle Dawson, PhD)  
Ford Foundation Diversity Research Fellowship  
Mentor  
The aim of this grant was to dissect the role of VEGFR1 in myeloid cells during spontaneous metastasis in mouse models.
- 2006–2007 *Role of primary tumor stroma in metastasis* (PI, Annique Pieters, MD, PhD)  
Department of Defense Pre-doctoral Award  
Co-Mentor  
The aim of this grant was to dissect the role of carcinoma-associated fibroblasts from the primary tumor in spontaneous metastasis in mouse models.
- 2008–2010 *Mechanisms mediating cancer metastasis to the lungs* (PI, Sachie Hiratsuka, MD, PhD)  
Scholarship Fund to Study Abroad Fellowship, Shiseikai, Japan  
Co-Mentor  
The aim of this grant was to dissect the role of vascular permeability in spontaneous metastasis in mouse models.
- 2014–2015 *Role of VEGF blockade in HCC* (PI, Tai Hato, MD, PhD)  
Astellas Research Fellowship, Japan  
Mentor  
The aim of this grant was to dissect the mechanisms of response and resistance to VEGFR2 inhibition in hepatocellular carcinoma models.
- 2015–2017 *New combined therapy approaches for advanced prostate cancer* (PI, Daniel H. Schanne, MD)  
Humboldt Foundation Feodor Lynen Research Fellowship, Germany  
Mentor  
The aim of this grant was to test the combination of CXCR4 with radiotherapy to treat bone metastasis in mouse models.
- 2016–2017 *Project title: Combination therapy using regorafenib and immunotherapy for HCC* (PI, Kohei Shigeta, MD, PhD)  
Uehara Foundation Research Fellowship, Japan  
Mentor  
The aim of this grant was to dissect the mechanisms of response and resistance to regorafenib and PD1 blockade in hepatocellular carcinoma models.
- 2018–2019 *Role of PIGF/Nrp1 pathway in intrahepatic cholangiocarcinoma cell survival, tumor-associated fibrosis and abnormal vasculature* (PI, Shuichi Aoki, MD, PhD)  
Cholangiocarcinoma Foundation 2018 Tommy J. West Memorial Research Fellowship  
Mentor  
The aim of this grant was to dissect the role of PIGF in cholangiocarcinoma progression and treatment resistance in mouse models.
- 2018–2021 *Immunotherapy combinations for intrahepatic cholangiocarcinoma* (PI, Jiang Chen, MD, PhD)

- China Scholarship Council Project Postdoctoral Fellowship  
Mentor  
The aim of this grant is to test the mechanism and efficacy of the combination of chemotherapy with immunotherapy in cholangiocarcinoma mouse models.
- 2019–2021 *New therapy approaches to hepatocellular carcinoma* (PI, Lingling Zhu, MD)  
China Scholarship Council Project Predoctoral Scholarship  
Mentor  
The aim of this grant was to test the mechanism and efficacy of the combination of radiotherapy with immunotherapy in HCC mouse models.
- 2019–2021 *Combination therapy using an immunomodulator (NLPR3 agonist) with immune checkpoint blockade for liver cancers* (PI, Zhangya Pu, MD)  
China Scholarship Council Project Predoctoral Scholarship  
Mentor  
The aim of this grant is to test the mechanism and efficacy of the combination of an NPLR3 agonist with anti-VEGF and immune therapy in HCC mouse models.
- 2019–2021 *Combination therapy using a new oncolytic virus (VSV) with immune checkpoint blockade for liver cancers* (PI, Zhiping Ruan, MD, PhD)  
China Scholarship Council Project Fellowship  
Mentor  
The aim of this grant is to test the mechanism and efficacy of the combination of VSV therapy with immunotherapy in HCC mouse models.
- 2019–2021 *Combination therapy using an immunomodulator (STING agonist) with immune checkpoint blockade for liver cancers* (PI, Zelong Liu, MD, PhD)  
China Scholarship Council Project Fellowship  
Mentor  
The aim of this grant is to test the mechanism and efficacy of the combination of a STING agonist with anti-VEGF and immune therapy in HCC mouse models.
- 2019–2021 *Role of HGF pathway in radiation-induced liver damage* (PI, Franziska Hauth, MD)  
German Cancer Aid DAAD Fellowship  
Mentor  
The aim of this grant is to test circulating HGF as a biomarker of susceptibility to radiotherapy-induced liver damage in humans and in mouse models.
- 2020–2021 *Tomographic fluorescence lifetime multiplexing to quantify receptor expression* (PI, Rahul Pal, PhD)  
Jeane B. Kempner Scholarship  
Research mentor  
The goal of this work is to establish multiplexed imaging of PD-1 and VEGFR2 receptors during anti-angiogenic therapy in HCC models.
- 2021–2023 *Novel treatments for liver cancer* (PI, Satoru Morita, MD, PhD)  
Japan Society for the Promotion of Science Fellowship, Japan  
Mentor  
The aim of this grant was to test the mechanism and efficacy of the combination of systemic therapies with immunotherapy in HCC mouse models.
- 2021–2022 *New combination therapies for liver cancers* (PI, Hajime Taniguchi, MD, PhD)  
NextSurgery Foundation Fellowship, Japan  
Mentor

The aim of this grant was to test the mechanism and efficacy of the combination of immunotherapy with other therapies in primary and metastatic models of liver cancers.

- 2019–2021 Combination therapy using immunomodulators with immune checkpoint blockade for liver cancers (PI, Xin Liu, MD, PhD)  
Sun-Yat Sen University, Guangzhou, China Fellowship  
Mentor  
The aim of this grant is to test the mechanism and efficacy of the combination of immune modulators with immunotherapy in HCC and ICC models.

### **Unfunded Current Projects**

- 2023–2026 Leveraging experimental radiotherapy and checkpoint inhibitors to safely enhance B7-H3-specific CAR T cell-based immunotherapy efficacy in metastatic TNBC (MPI, Ferrone/Duda)  
DOD BCRP / Breakthrough Award Level 2 (in preparation for resubmission)  
Partnering  
The goal of the proposed research is to demonstrate increased efficacy of CAR-T cells using radiotherapy and anti-PD-1 therapy in metastatic triple negative breast cancer.
- 2023–2027 Combining p53 mRNA Nanotherapy with Standard Antiangiogenic/Immuno-Therapy for HCC (PI, Shi)  
DoD PRCRP Impact Award / (in preparation for resubmission)  
Subaward PI (\$332,059)  
The goal of this project is to use p53 mRNA nanotherapy to promote enhance standard anti-VEGF/PD-L1 therapy for HCCs.

### **Report of Local Teaching and Training**

#### **Teaching of Students in Courses:**

- |           |  |   |
|-----------|--|---|
| 2002–2021 | <i>Methods in Biomedical Engineering and Immunology</i> (annual)<br>10-30 postdoctoral fellows, graduate students, and technologists   | Massachusetts General Hospital, HMS<br><br>3 hours of contact time with learners (Course Director and Faculty)    |
| 2005–2021 | <i>Tumor Pathophysiology and Transport Phenomena</i> HST 525J Course (biennial)<br><br>30 graduate students and postdoctoral fellows   | HMS / Massachusetts Institute of Technology (MIT) HST Program<br><br>2 hours contact time with learners (Faculty) |
| 2011      | <i>Tumor Angiogenesis as a Therapeutic Target: Current Progress and Future Directions</i><br><br>Workshop at the 2011 Biorbis World Anti-Angiogenesis Summit, Boston, MA<br>8 MDs and PhDs | Hansonwade Life Sciences<br><br>3 hours of contact time with learners (Workshop Leader)                           |
| 2011      | <i>MGH - Chinese Oncologist Visiting Program</i> HMS Course, Boston, MA (annual)   | Massachusetts General Hospital, HMS   |



	12-15 leading Chinese surgeons / oncologists	1-2 hours of contact time with learners (Faculty)
2018–2022	<i>Mayo Clinic Pancreatic and Hepato-Biliary Cancer Symposium</i> (annual) 100+ surgeons, gastroenterologists, oncologists, and scientists	<i>Mayo Clinic</i> , Phoenix, AZ 1-2 hours of contact time with learners (Course Director and Faculty)

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

2001–2019	Project advisor for undergraduate students in the biannual HST 525J Course on Tumor Pathophysiology / HMS-MIT (27 students since 2001)	Mentorship for 1-2 days/year
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**Research Supervisory and Training Responsibilities:**

2002–2008	Co-mentor of graduate research student Josh Tam (MIT) / Steele Labs	Twice weekly mentorship for 6 years
2002–2008	Co-mentor of graduate research student Patrick Au/ (MIT) (AHA Award) / Steele Labs	Twice weekly mentorship for 6 years
2003–2005	Co-supervision of postdoctoral research fellow Mitsutomo Kohno (Keio University, Japan) / Steele Labs	Twice weekly mentorship for 2.5 years
2004	Supervision of summer research student Swaroop Vedula (HSPH) / Steele Labs	Daily mentorship for 1 month
2004	Supervision of summer research student Abraham Wei (HMS) / Steele Labs	Daily mentorship for 3 weeks
2004	Supervision of summer research student Margaret J. Kim (MIT) / Steele Labs	Daily mentorship for 3 weeks
2005–2008	Supervision of postdoctoral research fellow Michelle Dawson (Johns Hopkins University) (Ford Foundation Grant)/ Steele Labs	Daily mentorship for 3.5 years

*Michelle Dawson, PhD, Assistant Professor of Molecular Pharmacology, Physiology, and Biotechnology at Brown University, Providence, RI. She received a Ford Foundation Postdoctoral Minority Fellowship and published 4 original reports under the mentorship of Dr. Duda (1 in Nature).*

2005	Supervision of summer research student Nooshin Hosseini (Wellesley College/MIT) / Steele Labs	Daily mentorship for 4 weeks
2006–2010	Co-supervision of postdoctoral research fellow Annique Pieters Duyverman (Univ. of Utrecht, The Netherlands)/ Steele Labs	Daily mentorship for 4.5 years

*Annique Duyverman, MD, PhD, received a Predoctoral Fellowship from the US Department of Defense and Published 7 original reports (3 Nature Protocols; 1 in PNAS; Journal of Clinical Oncology; Hepatology; Scientific Reports) under the mentorship of Dr. Duda. She is currently a staff surgeon, University of Utrecht, The Netherlands.*

2007	Supervision of summer research student Rehan Quadri (University of Maryland)/Steele Labs	Daily mentorship for 2 weeks
2007	Supervision of summer research student Roberto Velazquez (MIT)/Steele Labs	Daily mentorship for 6 months

2007	Supervision of summer research student Ernst Steller (University of Utrecht, The Netherlands)/Steele Labs	Daily mentorship for 2 months
2007– 2010	Co-supervision of postdoctoral research fellow Sachie Hiratsuka (Tokyo University, Japan)/Steele Laboratories	Daily mentorship for 3 years
<i>Sachie Hiratsuka, MD, PhD, received a Research Fellowship from Scholarship Fund to Study Abroad, Shiseikai, Japan and Published 2 original reports, both in the PNAS under the mentorship of Dr. Duda. She is currently a Professor at Sinsyu University School of Medicine, Japan.</i>		
2008–	Co-supervision of postdoctoral research fellow Yuhui Huang (Vanderbilt University)/Steele Lab	Twice weekly mentorship since October 2008
2009	Supervision of research student Lotte Hiddingh (University of Utrecht, The Netherlands)/Steele Labs	Daily mentorship for 6 months
2009– 2011	Co-supervision of postdoctoral research fellow Rekha Samuel (India) (Indian Government Grant)/Steele Labs	Twice weekly mentorship for 2 years
2009– 2012	Co-mentor of graduate research student Shom Goel (University of Sydney, Australia) / Steele Laboratories	Twice weekly mentorship since July 2009
2009– 2012	Co-supervision of clinical research fellow Matija Snuderl (MGH Pathology) / Steele Labs	Twice weekly mentorship since January 2009
2010	Supervision of student Pedro Valencia (MIT) / Steele Labs	Daily mentorship for 3 months
2010– 2013	Supervision of postdoctoral research fellow Yunching Chen (University of North Carolina)/Steele Labs	Daily mentorship since June 2010
<i>Yunching Chen, PhD, published 6 original reports (2 Hepatology, PNAS; Nature Protocols; Scientific Reports; Theranostics) under the mentorship of Dr. Duda. Currently, she is a Professor / Lab Director at the Institute of Biomedical Engineering at National Tsing Hua University, Taiwan.</i>		
2010– 2013	Co-supervision of clinical research fellow Christine Lu (MGH)/Steele Labs	Twice weekly mentorship since September 2010
2012– 2013	Supervision of postdoctoral research fellow Cristina Karp (University of Cincinnati)/Steele Labs	Daily mentorship since November 2012
2012– 2014	Supervision of postdoctoral research fellow Hiroki Ochiai (Keio University, Japan)/Steele Labs	Daily mentorship since June 2012
2012– 2018	Supervision of MSc and PhD graduate research student Rakesh Ramjiawan (VU University Amsterdam, The Netherlands)/Steele Labs	Daily mentorship for 6 years since January 2012
2013– 2017	Supervision of postdoc Daniel Schanne (Freiburg University, Germany) Humboldt Fellow/Steele Labs	Daily mentorship since September 2013
2013– 2016	Supervision of postdoctoral research fellow Tai Hato (Keio University, Japan)/Steele Labs	Daily mentorship since September 2013
<i>Tai Hato, MD, PhD, received a Postdoctoral Fellowship from Astellas Foundation for Research on Metabolic Disorders, Japan, and published 9 articles (3 in Hepatology, 2 in Clinical Cancer Research, 1 in Gut, Red Journal, Scientific Reports and Immunotherapy) under the mentorship of Dr. Duda. He is currently a staff surgeon and director of translational research in the Dept. of General Thoracic Surgery, Saitama Medical Center, Saitama Medical University, Japan.</i>		
2013– 2014	Supervision of undergraduate research student Toshiya Miyauchi (Tohoku University, Japan)/Steele Labs	Daily mentorship since November 2013
2014	Supervision of postdoctoral research fellow Yoshinori Hoshino (Keio University, Japan)/Steele Labs	Daily mentorship from Feb to Aug 2014

2014– 2016	Supervision of postdoctoral fellow Sen Li (Luzhou College) (China Science Council Grant)/Steele Labs	Daily mentorship from April 2014
2014– 2015	Supervision of undergraduate research student Takuya Suematsu (Tohoku Univ., Japan)/Steele Labs	Daily mentorship since November 2014
2014– 2017	Supervision of postdoctoral fellow Shuji Kitahara (Tokyo Women’s Med Univ, Japan)/Steele Labs	Daily mentorship from July 2014
	<i>Shuji Kitahara, DDS, PhD, published 5 original reports (2 in Hepatology, 1 in Gut, Scientific Reports and Cancers) under the mentorship of Dr. Duda. He is a Senior Lecturer at the Institute of Advanced Biomedical Engineering and Science and an Associate Professor at Tokyo Women Medical University, Japan.</i>	
2014– 2015	Supervision of undergraduate research student Sebastian Klein (University of Munster, Germany) (Alex Lemonade Stand Grant)/Steele Labs	Daily mentorship for 10 months from November 2014
2014– 2017	Supervision of PhD graduate research student Nisha Gupta (VU Amsterdam, The Netherlands)/Steele Labs	Daily mentorship for 3 years since November 2014
2015	Supervision of undergraduate research student Matthew Boulanger (University of Rochester, NY)/Steele Labs	Daily mentorship for 3 months (June-Aug 2015)
2015	Supervision of MSc graduate student Monique de Beijer (VU, The Netherlands)/Steele Labs	Daily mentorship for 6 months since January 2015
2015	Supervision of undergraduate research student Paulo Moreira (University of Piauı, Brazil) Brazilian Scientific Mobility Program/Steele Labs	Daily mentorship for 3 months (June-Aug 2015)
2015– 2016	Supervision of undergraduate research student Glenn Geidel (University of Munster, Germany) (René Touraine Foundation Award)/Steele Labs	Daily mentorship for 12 months from October 2015
2016– 2018	Supervision of postdoctoral research fellow Kohei Shigeta (Keio University, Japan)/Steele Labs	Daily mentorship since April 2016
	<i>Kohei Shigeta, MD, PhD, received a Fellowship from the Uehara Foundation and published 4 original reports (Hepatology, Clinical Cancer Research, Nature Biotechnology, Gut) under the mentorship of Dr. Duda. He is an a physician-scientist and an Assistant Professor of Surgery, Keio University, Tokyo, Japan.</i>	
2016– 2019	Supervision of postdoctoral research fellow Shuichi Aoki (Tohoku University, Japan)/Steele Labs	Daily mentorship since April 2016
	<i>Shuichi Aoki, MD, PhD, received a research grant from Tohoku University and a Fellowship from the Cholangiocarcinoma Foundation and published 4 articles (2 in Hepatology and 1 in Gut and Nature Biotechnology) under the mentorship of Dr. Duda. He is currently a staff surgeon, Tohoku University, Sendai, Japan.</i>	
2016	Supervision of undergraduate research student Halil Ibrahim Corbali (Fatih University, Turkey)	Weekly mentorship for 3 months (June-Aug 2016)
2016– 2017	Postdoctoral research fellow Emilie Mamessier (University of Aix-Marseille, France)/Steele Labs	Daily mentorship Nov 2016-Oct 2017
2016– 2017	Supervision of undergraduate research student Kevin Koch (University of Munster, Germany) (Boehringer Ingelheim Fonds Foundation for Basic Research in Medicine)/Steele Labs	Daily mentorship for 12 months from Aug 2016-July 2017
2017	Supervision of undergraduate research student Sonia Radu (Boston College)	Weekly mentorship for 2 months (June-Aug 2017)
2017– 2018	Supervision of postdoctoral research fellow Mi Na Kim (CHA University, Korea)/Steele Labs	Daily mentorship from July 1, 2017-May 31, 2018
2017	Supervision of undergraduate research student Max Traeger (University of Munster, Germany) (Boehringer Ingelheim Fonds Foundation for Basic	Daily mentorship for 2 months from Aug-Oct 2017

	Research in Medicine)/Steele Labs	
2017– 2022	Supervision of postdoctoral research fellow Aya Matsui (Tokyo Women University, Japan)/Steele Labs	Daily mentorship April, 2017-April 2022
2018– 2021	Supervision of postdoctoral research fellow Hiroto Kikuchi (Keio University, Japan)/Steele Labs	Daily mentorship April 2018-March 2021
	<i>Hiroto Kikuchi, MD, PhD, published 6 articles (Hepatology, SGO, JITC, Gut, Nature, and JNCI) and has 2 manuscripts in preparation under the mentorship of Dr. Duda. He is currently a physician-scientist and a staff surgeon, Keio University, Tokyo, Japan.</i>	
2018– 2021	Supervision of postdoctoral research fellow Koetsu Inoue (Tohoku University, Japan)/Steele Labs	Daily mentorship since May 2018-February 2021
2018– 2019	Supervision of undergraduate research student Mie Yamanaka (Tohoku University, Japan)/Steele Labs	Daily mentorship since October 2018
2018– 2019	Supervision of undergraduate research student Masako Miyamoto (Tohoku Univ., Japan)/Steele Labs	Daily mentorship since October 2018
2018– 2021	Supervision of postdoctoral research fellow Jiang Chen (Zhejiang University, China)/Steele Labs	Daily mentorship Oct 2018-May 2021
2018– 2019	Supervision of research fellow Yoon-Sun Choi (Inje University Busan, Korea)/Steele Labs	Daily mentorship Oct 2018-Sept 2019
2019– 2021	Supervision of undergraduate research student Daniel Staiculescu (U Mass)/Steele Labs	Daily mentorship Mar 2019-June 2021
2019	Supervision of undergraduate research student Shiho Hirose (Univ. of Tokyo, Japan)/Steele Labs	Daily mentorship May-Aug 2019
2019– 2020	Supervision of postdoctoral research fellow Kazumichi Kawakubo (Hokkaido University, Japan)/Steele Labs	Daily mentorship June 2019-Apr 2020
2019– 2020	Supervision of undergraduate research student Masaaki Iwasaki (Tohoku University, Japan)/Steele Labs	Daily mentorship Sept 2019-Jan 2020
2019– 2020	Supervision of undergraduate research student Kanshiro Suzuki (Tohoku Univ., Japan)/Steele Labs	Daily mentorship Sept 2019-Jan 2020
2019– 2020	Supervision of undergraduate research student Tyge Schmidt (Univ. of Munster, Germany)/Steele Labs	Daily mentorship Sept 2019-Apr 2020
2019– 2021	Supervision of graduate research student Lingling Zhu (University of Sichuan, China)/Steele Labs	Daily mentorship Nov 2019-Jan 2021
2019– 2021	Supervision of postdoctoral research fellow Zhiping Ruan (X'ian University, China)/Steele Labs	Daily mentorship Oct 2019-Sept 2021
2019– 2021	Supervision of graduate research student Zhangya Pu (Central South University, China)/Steele Labs	Daily mentorship Dec 2019-Nov 2021
2019– 2022	Supervision of postdoctoral research fellow Ze-Long Liu (Sun-Yat Sen University, China)/Steele Labs	Daily mentorship from Dec 2019-June 2022
2019– 2022	Supervision of postdoctoral research fellow Franziska Hauth (Tubingen University, Germany)/Steele Labs	Daily mentorship from Mar 2020-July 2022
2021–	Supervision of postdoctoral research fellow Satoru Morita (Keio University, Japan)/Steele Labs	Daily mentorship since April 2021
2021–	Supervision of postdoctoral research fellow Hajime Taniguchi (Tohoku University, Japan)/Steele Labs	Daily mentorship since April 2021
2021– 2022	Supervision of undergraduate research student Max Meyer (Univ. of Munster, Germany)/Steele Labs	Daily mentorship from Aug 2021-July 2022

2021–	Supervision of postdoctoral research fellow Evelin Krajnc (ETH, Switzerland)/Steele Labs	Daily mentorship since Dec 2021
2022–	Supervision of postdoctoral research fellow Tatsuya Kobayashi (Tokyo Women Medical University, Japan)/Steele Labs	Daily mentorship since Jan 2022
2022–	Supervision of postdoctoral research fellow Xin Liu (Sun-Yat Sen University, China)/Steele Labs	Daily mentorship since May 2022
2022– 2023	Supervision of undergraduate research student Lennard Weide (Univ. of Munster, Germany)/Steele Labs	Daily mentorship from Aug 2022
2022– 2023	Supervision of undergraduate research student Maxence Galvan (Univ. of Munster, Germany)/Steele Labs	Daily mentorship from Aug 2022

### **Formally Mentored Harvard Medical, Dental and Graduate Students:**

2015      PhD Qualifying Exam Committee Member for Ph.D. Candidate Morad Golnaz, in the Program in Biological Sciences in Dental Medicine, Harvard University, class of 2020. Successfully defended thesis: “*The role of breast cancer-derived extracellular vesicles in brain metastasis*” in 2020.

### **Other Mentored Trainees and Faculty:**

2012–  
2019      Janet E. Murphy, MD, MPH / Instructor of Medicine, MGH, HMS.  
Career stage: junior faculty. Mentoring role: research advisor. Accomplishments: received an K12 grant from the NCI (Proton Beam Federal Share Program) and published 1 article as first author in *JAMA Oncology* (2019) (top 1% rated paper per Tomson and Altmetric).

2017–      Clemens Grassberger, PhD / Assistant Professor of Radiation Oncology, MGH, HMS.  
Career stage: junior faculty. Mentoring role: research advisor. Accomplishments: received an R21 grant from the NIH (one R01 grant pending), was promoted to Assistant Professor at MGH and HMS in 2019 and Assistant Program Director (Radiation Biology) in 2021 and published 3 articles with Dr. Duda as co-mentor (2 in *Int J Radiat Oncol Biol Phys* and 1 in *npj Precision Oncology*).

2019–      Hanny Al-Samkari, MD / Instructor of Medicine, MGH, HMS.  
Career stage: junior faculty. Mentoring role: research advisor. Accomplishments: received a grant from the CureHHT foundation (2021) and a K23 grant (2022) for his correlative studies of VEGF blockade in hereditary hemorrhagic telangiectasia (HHT) patients, and was promoted to Associate Director, Hereditary Hemorrhagic Telangiectasia Center at MGH in 2020.

2020–      Anwaar Saeed, MD / Assistant Professor of Oncology, University of Kansas Medical Center.  
Career stage: junior faculty. Mentoring role: research advisor. Accomplishments: successfully designed a clinical trial, approved by the SWOG consortium; SWOG grant pending.

2020–      Mehmet Akce, MD / Assistant Professor of Oncology, Emory University.  
Career stage: junior faculty. Mentoring role: research advisor. Accomplishments: K08 grant pending.

2020– Ali Ajdari, PhD / Instructor of Radiation Oncology, MGH, HMS.  
 Career stage: junior faculty. Mentoring role: research advisor. Accomplishments: K99/R00 grant pending; Dr. Ajdari reported 1 biomarker study as first author in *JCO Clinical Cancer Informatics* (2021).

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

- No presentations below were sponsored by 3<sup>rd</sup> parties/outside entities
- Those presentations below sponsored by outside entities are so noted and the sponsor(s) is (are) identified.

2009	“Pursuing potential biomarkers of response and resistance to antiangiogenic therapy: Which ones and why?” / Invited seminar speaker The weekly DFCI and BWH Neuro-Oncology Fellowship Conference	1 talk, Boston
2012	“Correlative Studies in Clinical Trials of Antiangiogenics” / Faculty The weekly MGH/DFCI/BWH Neuro-oncology Fellowship Conference, Pappas Center for Neuro-Oncology at MGH	1 talk, Boston
2012	"Angiogenesis and antiangiogenesis in tumors of the central nervous system"/Invited speaker The monthly MGH Pathology InterLaboratory Conference	1 talk, Boston
2013	“Targeting inflammatory pathways as a sensitization approach” / Invited seminar speaker MGH GI Group Research Meeting	1 talk, Boston
2014	“Correlative Studies in Clinical Trials of Antiangiogenics” / Faculty The weekly MGH/DFCI/BWH Neuro-oncology Fellowship Conference, Pappas Center for Neuro-Oncology at MGH	1 talk, Boston
2015	“Role of correlative studies in trials of antiangiogenics in brain tumors: What have we learned?” / Faculty The weekly DFCI/BWH Neuro-oncology Fellowship Conference, DFCI Neuro-Oncology Dept.	1 talk, Boston
2016	“The role of circulating biomarkers in improving upper GI cancer treatment” / Speaker MGH GI Multidisciplinary Research Meeting, MGH Cancer Center	1 talk, Boston
2021	“Impact of radiation on the immune TME of breast cancer and CAR-T cell efficacy” / Speaker MGH Radiation Science Tuesdays: IO Workshop Spring Series Meeting	1 talk, Boston

**Local Invited Presentations (15):**

*No presentations below were sponsored by 3<sup>rd</sup> parties/outside entities*

*Those presentations below sponsored by outside entities are so noted and the sponsor(s) is (are) identified.*

- 2009 “A phase II study of blood circulating cells and plasma angiogenic proteins as biomarkers of anti-VEGF therapy with bevacizumab in sarcoma patients” / 2008 Ira J. Spiro Translational Research Award Presentation  
The 2nd Research Retreat of the Department of Radiation Oncology at MGH
- 2009 “Potential circulating biomarkers for antiangiogenic therapy in HCC” / Invited speaker  
The DF/HCC Hepatocellular Research Day
- 2009 “On and off target with antiangiogenic therapies” / Grand Rounds in Oncology  
Department of Hematology/Oncology DF/HCC, Harvard Medical School
- 2010 "On and off target with antiangiogenic therapies" / Invited seminar speaker  
Boston Romanian Biomedical Scientists Group Seminar Series, HMS
- 2011 “Work-In-Progress Meeting” / Invited seminar speaker  
DF/HCC Angiogenesis Invasion and Metastasis (AIM): Children's Hospital Vascular Biology Program, Boston, MA
- 2011 “A study of SDF1/CXCR4 as a potential mechanism of distant progression in pancreatic cancer after neoadjuvant chemoradiation” / 2010 Ira J. Spiro Translational Research Award Presentation and Session Moderator  
The 4th Research Retreat of the Department of Radiation Oncology at MGH
- 2013 “Correlative Studies of Circulating Biomarkers in Clinical Trials” / Invited seminar speaker  
MGH QTIM Neuro-Oncology Program
- 2015 “Prevention of development of liver tumors in a pre-malignant field” / Speaker  
DF/HCC Liver Cancer Grant Incubator, DFCI
- 2017 “Cancer biology” / Invited speaker  
MIT NIH P41 Laser Biomedical Research Center Site Visit, MIT
- 2017 “Using biomarkers to understand the role of the tumor microenvironment in treatment resistance” / Speaker  
MGH Radiation Oncology Immuno-Oncology Working Group Meeting
- 2019 “Rapidly evolving strategies for liver cancer treatment” / Seminar speaker  
Vascular Biology Seminar, Children's Hospital & Harvard Medical School
- 2021 “Impact of radiation on the immune TME of breast cancer and CAR-T cell efficacy” / Invited Speaker  
MGH Radiation Oncology Immuno-Oncology Working Group Spring Meetings
- 2021 “Rad Onc Showcase” / Invited speaker and panelist  
The 2021 Research Retreat of the Department of Radiation Oncology at MGH
- 2021 “Evolving therapies for liver cancer: Combine and Conquer” / Invited speaker  
Inaugural MGH Cancer Forum
- 2022 “TBD” / Invited speaker  
The MGH Physics Seminar, Department of Radiation Oncology at MGH

### **Report of Regional, National and International Invited Teaching and Presentations**

*No presentations below were sponsored by 3<sup>rd</sup> parties/outside entities*

*Those presentations below sponsored by outside entities are so noted and the sponsor(s) is (are) identified.*

## **Regional (14)**

- 2005 “Marker specificity, cell viability, and origin of circulating endothelial cells (CECs): Implications for the use of CECs as biomarker for antiangiogenic therapy” / Speaker (abstract)  
The AACR Special Conference Anti-Angiogenesis and Drug Delivery to Tumors: Bench to Bedside and Back, Waltham, MA
- 2006 “Contribution of bone marrow-derived endothelial cells to tumor vessels and potential use of circulating endothelial cells (CECs) as a biomarker of anti-VEGF therapy” / Invited speaker  
Strategic Research Institute 4th Angiogenesis Drug Discovery and Development, Boston, MA
- 2007 “The Role of Circulating Endothelial and Progenitor Cells in Cancer” / Keynote talk  
The 5th IBC Life Sciences Meeting on Anti-Angiogenesis, Boston, MA
- 2010 “Pursuing biomarkers of response and resistance to antiangiogenic therapy” / Invited speaker  
Center of Cancer Systems Biology Seminar Series, TUFTS University, Boston, MA
- 2011 “Translational studies for angiogenesis biomarkers” / Invited speaker  
The 9th International M. Judah Folkman Conference Antiangiogenesis: New Frontiers in Therapeutic Development, Cambridge, MA
- 2011 “VEGF: Natural target” / Invited speaker  
13th Annual Boston Angiogenesis Meeting (BAM 2011), MIT, Cambridge, MA
- 2014 “Potential Circulating Biomarkers of Response to Targeted Therapy” / Invited speaker  
Annual “Circulating Cancer Biomarkers”, Boston, MA (HansonWade)
- 2015 “Circulating biomarkers to evaluate cancer response and resistance to targeted therapies” / Invited speaker  
Cambridge Biomedical Seminar Series, Cambridge, MA
- 2015 “Role of anti-angiogenesis in the immunotherapy era” / Invited speaker  
17th Annual Boston Angiogenesis Meeting (BAM 2015), Schepens Eye Institute, Boston, MA
- 2016 “Antiangiogenesis for cancer therapy” / Plenary invited talk  
World Congress of Interventional Oncology, Boston
- 2016 “Facilitating immune checkpoint blockade in HCC” / Invited speaker  
Chair of Session: GI Cancer Therapy and Chemotherapy/anti-PD-1 Combinations  
Cancer Immunotherapy and Combinations, 15th annual World Preclinical Congress, Boston
- 2020 “Rapidly evolving strategies for liver cancer treatment” / Seminar speaker  
Surface Oncology Seminar, Cambridge, MA (Surface Oncology)
- 2021 “Multiple Obstacles Need to be Overcome to Prevent Resistance to CAR T Cell Therapy of Solid Tumors” / Invited speaker  
Panelist: Combinatorial Approaches Using Radiotherapy and Immunotherapy  
Moderator: Breakout Session – Barriers in the Tumor Microenvironment  
Cambridge Healthtech Institute’s 11th Annual Antibodies for Cancer Therapy/Driving Breakthrough Therapies, PEGS Boston (virtual)
- 2022 “Using LNPs for mRNA-based therapy of liver cancer” / Invited speaker  
LNP Formulation & Process Development Summit, Boston, MA (HansonWade)



## National (41)

- 1999 “Interleukin 12 gene therapy for pancreatic cancer” / Speaker (abstract)  
The 42nd Symposium of the Japanese Microcirculation Society, Yokohama, Japan
- 1999 “In vivo analysis of IL-12 antiangiogenic gene therapy for pancreatic cancer” / Invited speaker  
The 24th Annual Meeting of Japanese College of Surgeons, Kobe, Japan
- 2001 “Effects of SMAD4 gene therapy in pancreatic adenocarcinoma” / Speaker (abstract)  
The 92nd Meeting of the American Association for Cancer Research, New Orleans, LA (Ito-En-AACR Travel award)
- 2004 “Paracrine regulation of angiogenesis and adipogenesis: A potential link with cancer” / Speaker (abstract)  
The 95th Meeting of the American Association for Cancer Research, Orlando, FL
- 2005 “Evaluation of circulating precursor cells as surrogate markers for antiangiogenic therapies of cancer” / Speaker (abstract)  
The 3rd Meeting of the International Society for Stem Cell Research, San Francisco, CA
- 2006 “Antivascular agents: Anti-VEGF therapy for cancer” / Speaker (Faculty)  
The 2nd ASTRO Annual Translational Research in Radiation Oncology: Physics and Biology Meeting, Boston (ASTRO)
- 2006 “Measurement of CECs as a biomarker for antiangiogenic therapy: Surface marker specificity, cell viability, and origin of circulating endothelial cells” / Speaker (abstract)  
The 97th Meeting of the American Association for Cancer Research, Washington, DC
- 2006 “Evidence for bone marrow-derived endothelial cells incorporation into perfused blood vessels in tumors” / Speaker (abstract)  
The 97th Meeting of the American Association for Cancer Research, Washington, DC
- 2007 “Phenotypic characterization of circulating cells” / Invited speaker  
The 1st Avastin Diagnostic Summit, Washington, DC (NCI/Genentech)
- 2007 “Antiangiogenesis for solid tumors: bench to bedside and back” / Invited speaker  
Takeda Global Experts Meeting, Chicago, IL (Takeda)
- 2008 “Circulating endothelial cells and their potential role in tumor progression and treatment” / Invited speaker  
The RTOG Translational Research Program, Stem Cell symposium, San Diego, CA (RTOG)
- 2008 “Evaluation of changes in blood angiogenic markers as biological markers for treatment” / Invited speaker  
Brain Tumor Translational Research Program, RTOG Semi-Annual Meeting, San Diego, CA
- 2008 “The Role of Circulating Progenitor Cells in Solid Tumors” / Invited seminar  
Lerner Research Institute, Cleveland Clinic, Cleveland, OH (Cleveland Clinic)
- 2008 “Phenotypic and functional characterization of pro-angiogenic monocytes / Speaker (abstract)  
The 2008 Experimental Biology Meeting (FASEB), San Diego, CA
- 2009 “Antiangiogenic therapy for cancer patients: Mechanisms of action and potential predictive biomarkers or response and resistance” / Grand rounds  
Greenebaum Cancer Center, University of Maryland, Baltimore (Univ. of Maryland)
- 2009 “Pursuing potential biomarkers of response and resistance to antiangiogenic therapy: Which ones and why?” / Invited seminar  
Division of Oncology, Cancer Biology Research Seminar, Madison (Univ. of Wisconsin)
- 2009 “A “Vascular Normalization Index” as a mechanistic biomarker to predict survival after a single dose of cediranib in recurrent glioblastoma patients” / Plenary Talk  
The 100th Meeting of the AACR, Denver, CO (AACR)

- 2009 “Role of vascular normalization in brain tumors” / Invited speaker and discussant  
The 2009 Forbeck Forum “The Biology and Treatment of Primary Brain Tumors”, Hilton Head Island, SC (Forbeck Foundation)
- 2009 “Role of circulating progenitor cells in tissue repair and tissue engineering: Lessons from tumor studies” / Invited seminar  
Cardiovascular Research Center Seminar, Madison, WI
- 2009 “Role of circulating progenitor cells in tissue repair and tissue engineering: Lessons from tumor studies” / Invited seminar  
CT Division Educational Conference, Madison, WI (University of Wisconsin)
- 2011 “Future Directions: Predictive Biomarkers of Response and Resistance to Anti-Angiogenic Therapy” / Invited speaker and discussant  
Angiogenesis: Breakthroughs in Basic Science and Therapeutic Applications Symposium, The New York Academy of Sciences, New York, NY (Johnson & Johnson)
- 2012 “Biomarkers of Antiangiogenic Therapy” / Invited speaker and panelist  
“Circulating Cancer Biomarkers: Practical Applications to Drive Drug Development and Personalized Medicine in the Clinic”, Washington, DC (HansonWade)
- 2013 “Clinical translation of mouse model data in cancer” / Invited speaker  
American Society for Clinical Pharmacology and Therapeutics, Indianapolis, IN (ASPCT)
- 2014 “Does vascular normalization improve delivery of cancer therapeutics?” / Speaker  
Chair of Session: Biomarkers for Anti-angiogenic Cancer Treatment  
“Targeting VEGF-mediated Tumor Angiogenesis in Cancer Therapy” Symposium, The New York Academy of Sciences, New York, NY (NYAS)
- 2014 “Determinants of HCC resistance to sorafenib treatment” / Invited seminar  
Department of GI Oncology, MD Anderson Cancer Center, Houston, TX (University of Texas)
- 2015 “Biomarkers of response and resistance to anti-angiogenic therapy” / Invited speaker  
The AACR Special Conference on Tumor Angiogenesis and Vascular Normalization, Orlando
- 2016 “Role of targeted therapies in hepatocellular carcinoma: Choosing the right combinations” / Invited Translational Research Conference  
Johns Hopkins University Cancer Center, Baltimore, MD
- 2016 “Finding the Right Therapeutic Combinations: Lessons from Translational Studies in Clinical Trials and Preclinical Models” / Invited Seminar  
Bristol Myers Squibb, San Francisco, CA (BMS)
- 2016 “Lessons from translational studies of targeted therapy and radiotherapy in clinical trials and preclinical models” / Invited seminar  
Department of Radiation Oncology, Duke Univ. Medical Center, Durham, NC (Duke Univ.)
- 2016 “Preclinical sorafenib immune modulation and anti-tumor activity in combination with IO in HCC models” / Invited speaker  
Bayer Cancer Immunotherapy Advisory Board Meeting, New York, NY (Bayer)
- 2017 “Angiogenesis and tumor microenvironment” / Invited speaker  
2017 Society of Interventional Radiology Annual Scientific Meeting, Washington, DC (SIR)
- 2017 “Systemic therapy for liver cancer” / Grand Rounds in Oncology  
Mayo Clinic, Scottsdale, AZ (Mayo Clinic)
- 2017 “Role of CXCR4 in Reprogramming the Tumor Microenvironment for Radiation or Immuno-therapy” / Invited Seminar  
Bristol Myers Squibb, San Francisco, CA (BMS)
- 2018 “Reprogramming the HCC Microenvironment for Immunotherapy” / Invited seminar

Department of GI Oncology, MD Anderson Cancer Center, Houston, TX (University of Texas)

- 2018 “How to take advantage of the biology of cancer?” / Invited speaker  
35th “Medical Surgical Gastroenterology: A Multidisciplinary Approach” Course, Avon, CO
- 2018 “How to take advantage of the biomarker for GI cancer treatment?” / Invited speaker  
2018 Mayo Clinic Hepato-Pancreato-Biliary Cancers Symposium, Phoenix, AZ (Mayo Clinic)
- 2019 “State of the Science in HCC” / Faculty and Chair of Session – Systemic therapy advances in HCC  
2019 Mayo Clinic Hepato-Pancreato-Biliary (HPB) Cancers Symposium, Las Vegas, NV (Mayo Clinic)
- 2020 “Rapidly evolving strategies for the treatment of liver cancer” / Grand Rounds  
Fred Hutchinson Cancer Center/University of Washington, Seattle, WA (UW)
- 2021 “Reprogramming tumor microenvironment to enhance immunotherapy for HCC” / Invited seminar  
SPORE Program, MD Anderson Cancer Center, Houston, TX (University of Texas)
- 2021 “New insights into the rapidly evolving treatment paradigms for liver cancers” / Invited Visiting Professor seminar  
Seminar at University of Michigan. Host: Dr. M. Morgan, Associate Chair for Radiation and Cancer Biology, Lawrence-Krause Research Professor of Radiation Oncology (University of Michigan Medical School)
- 2022 “Targeting tumor microenvironment in GI cancers: Rationale, current progress and future perspective” / Invited speaker  
SWOG GI Committee Spring Meeting, Seattle

### **International (154)**

- 1998 “Antiangiogenic gene therapy with IL-12 in pancreatic cancer” / Speaker (abstract)  
The 8th Meeting of the International Association of Pancreatology, Tokyo, Japan
- 2000 “Direct in vitro evidence and in vivo analysis of the anti-angiogenesis effects of Interleukin 12” / Speaker (abstract)  
The 2nd Roche International Symposium on Tumor Angiogenesis and Matrix, Tokyo, Japan
- 2004 “Effects of anti-VEGF therapy in cancer patients” / Invited special seminar  
Evidence-Based Medicine Symposium, Sendai, Japan (Chugai Pharmaceutical)
- 2004 “Restoration of SMAD4 by gene therapy reverses the invasive phenotype in pancreatic adenocarcinoma” / Speaker (abstract)  
The 11th Meeting of the Intl Association of Pancreatology, Sendai, Japan (Travel Award)
- 2005 “Effects of bevacizumab in rectal cancer patients” / Invited speaker and Chair of Session: Cancer-Basic  
The 11th Annual Taishotoyama International Symposium, Shimoda, Japan (Taishotoyama)
- 2006 “Contribution of bone marrow-derived endothelial cells to tumor neovascularization and potential use of circulating endothelial cells as a biomarker” / Speaker (abstract)  
The 6th EuroConference on Angiogenesis, Mandelieu, France (European Union Scholarship)
- 2006 “Rational basis for combination of chemotherapy and antiangiogenic drugs” / Invited speaker

- The 3rd Intl Symposium on Angiogenesis and Cancer, Malaga, Spain (University of Malaga)
- 2007 “The role of circulating endothelial and progenitor cells in disease” / Plenary talk  
The 13th Annual Meeting of the International Society for Cell Therapy (ISCT), Sydney, Australia (ISCT)
- 2007 “Antiangiogenesis for solid tumors: bench to bedside and back” / Invited speaker  
Chair: Session – Molecular Biology
- 2007 The 17th World Congress of the International Association of Surgeons, Gastroenterologists and Oncologists (IASGO), Bucharest, Romania (IASGO)  
“Potential for integration of antiangiogenic therapy with chemoradiation in solid cancers” / Invited speaker  
The 2nd Langendorff Congress for Radiobiological Research, Germany (Univ. of Freiburg)
- 2008 “Deciphering tumor patho-physiology in preclinical models: Impact on the integration of new biological agents in cancer treatment” / Invited speaker  
Chair: Session – Role of Tumor Microenvironment for Radiotherapy  
Connecting Diaspora with the Romanian Scientific Community, Bucharest (Romanian Govt)
- 2008 “The role of circulating precursor cells in adult neovascularization” / Invited speaker  
Ramon Areces Foundation’s 1st International Symposium on Angiogenesis and Cancer: From Basic Mechanisms to Therapeutic Applications, Malaga, Spain (University of Malaga)
- 2008 “Potential predictive factors for efficacy in anti-angiogenic therapy” / Invited speaker  
Chair: Session – New Concepts: New Therapeutic Strategies  
The 4th International Symposium on Angiogenesis and Cancer, Spain (University of Malaga)
- 2009 “Functional imaging of tumor vasculature after antiangiogenic therapy” / Invited speaker  
The 3rd Langendorff Symposium, Freiburg, Germany (University of Freiburg)
- 2010 “Antiangiogenic therapy for cancer: from concept confirmation towards individualized treatment” / Invited speaker  
The 5th Cajal Symposium on Translational Research, Bucharest, Romania (Cajal Foundation)
- 2010 “Visualization of tumor vasculature after antiangiogenic therapy” / Invited speaker  
Chair: Session – Potential advantages and pitfalls of anti-vascular and anti-angiogenic treatments  
The 29th European Society for Radiotherapy & Oncology (ESTRO) Annual Meeting, Barcelona, Spain (ESTRO)
- 2011 “Metastasis: Seed and soil hypothesis revisited” / Invited speaker  
Seminar at Keio University Medical School, Tokyo, Japan. Host: Dr. Makoto Suematsu, Dean of School of Medicine, Keio University
- 2011 “Antiangiogenic therapy and metastasis” / Invited speaker  
The 6th Cajal Symposium on Translational Research, Bucharest, Romania
- 2011 “Antiangiogenic therapy for cancer: How does it work and how does it fail?” / Invited speaker  
Seminar at Duke-National University of Singapore (NUS) Medical School. Host: Professor David M. Virshup, Director of the Cancer & Stem Cell Biology Program, NUS, Singapore
- 2011 “Metastasis: Seed and soil hypothesis revisited” / Invited speaker  
Seminar at Barts & the London, Queen Mary’s School of Medicine & Dentistry, London, UK
- 2012 “Antiangiogenic therapy for HCC” / Invited speaker

- The 7th Cajal Symposium on Translational Research, Bucharest, Romania (Cajal Foundation)
- 2012 “Tumor biology and metastasis” / Invited speaker  
The 7th International Symposium of Institute Network, Institute of Development, Aging and Cancer, Tohoku University, Sendai, Japan (Tohoku University)
- 2012 “Targeted therapy of colorectal and liver cancer” / Invited speaker  
Seminar at Kitakami Hospital, Department of Surgery, Kitakami, Japan (Kitakami Hospital)
- 2012 “Antiangiogenesis in liver cancer” / Invited speaker  
Queen Mary Hospital, Li Ka Shing Faculty of Medicine, Hong Kong University, China
- 2012 “On and Off-target with Antiangiogenic Therapy for Cancer” / Invited speaker  
Area of Excellence Seminar at Centre for Cancer Research, Hong Kong University (Bayer)
- 2012 “Challenges in clinical research” / Invited speaker and panelist  
Connecting Diaspora with the Romanian Scientific Community Conference, Bucharest, Romania (Romanian Government)
- 2013 “Translational imaging in animal models” / Invited speaker  
International Workshop Translational imaging in gastroenterology and surgery, Craiova, Romania (University of Medicine Craiova)
- 2013 “Translational imaging in clinical trials” / Invited speaker  
International Workshop Translational imaging in gastroenterology and surgery, Craiova, Romania (University of Medicine Craiova)
- 2013 “New directions in advanced HCC therapy with targeted agents” / Invited speaker  
Chair: Session – Cancer Genomics  
The 8th Cajal Symposium on Translational Research, Bucharest, Romania (Cajal Foundation)
- 2013 “Metastatic colonization: Evolving paradigms” / Invited speaker  
Seminar at the VU University Medical Center, Amsterdam, The Netherlands
- 2013 “The challenge of integrating molecularly targeted therapies against cancer stroma: Different degrees of treatment personalization” / Invited speaker  
Chair: Session – Novel Diagnostic and Tools for Cancer Treatment  
The 23rd Annual IASGO World Congress, Bucharest, Romania (IASGO)
- 2013 “Combining radiation with targeted therapies: Why, how and when?” / Guest speaker  
The 5th Langendorff Symposium on Personalized Medicine, Germany (University of Freiburg)
- 2013 “Combining stroma-targeted therapies with radiation to prevent resistance” / Invited speaker  
New Cancer Targets Symposium, Integrative Radiation Oncology session, Heidelberg, Germany (National Center for Tumor Disease and German Cancer Research Center)
- 2014 “Antiangiogenic strategy for colorectal cancer” / Invited speaker  
Workshop on Colorectal Cancer, IASGO Educational Program, Pordenone, Italy (IASGO)
- 2014 “Targeted immunotherapy for rectal cancer: New perspectives” / Invited speaker  
Workshop on Colorectal Cancer, IASGO Educational Program, Pordenone, Italy (IASGO)
- 2014 “Impact of the inflammatory tumor microenvironment on radiation response of cancers” / Invited speaker  
The 33th European Society for Radiotherapy & Oncology (ESTRO) Annual Meeting, Vienna, Austria (ESTRO)
- 2014 “Determinants of HCC resistance to anti-VEGF therapy” / Invited speaker  
Host: Professor Markus Peck, UniMedWien Cancer Center, Austria (University of Vienna)
- 2014 “Role of tumor microenvironment in radiation response” / Invited speaker

- Host: Professor Michael Baumann, University of Dresden, Germany (University of Dresden)
- 2014 “Mechanism-based combination therapy approaches for intractable cancers” / Invited speaker  
The 9th Cajal Symposium on Translational Research, Bucharest, Romania (Cajal Foundation)
- 2014 “Mechanism-based targeting of tumor stroma in intractable cancers” / Invited speaker  
Invited Seminar, Keio University, Tokyo, Japan (Keio University)
- 2014 “Rationally exploiting antiangiogenesis for improving HCC therapy” / Invited speaker  
International Symposium on Vascular Biology, Sendai, Japan (Tohoku University)
- 2014 “Translational Studies in Clinical Trials of Targeted Therapies for Cancer” / Invited speaker  
Workshop on GI Cancer, IASGO Educational Program of the, Moscow, Russia (IASGO)
- 2014 “GI cancer therapy with antiangiogenics: Lessons from translational studies” / Invited speaker  
The 24th Annual World Congress of the IASGO, Vienna, Austria (IASGO)
- 2014 “Role of Multidisciplinary Translational Studies of Agents Targeting the Cancer Vasculature and the Immune System” / Invited speaker  
The 24th Annual World Congress of the IASGO, Vienna, Austria (IASGO)
- 2015 “Mechanisms of Treatment Evasion for Antiangiogenic Therapy” / Visiting Professor Seminar  
University of Freiburg, Germany (University of Freiburg)
- 2015 “Rationally Combining Antiangiogenic Therapy with Checkpoint Inhibitors in Hepatocellular Carcinoma” / Plenary Speaker (Short talk)  
Keystone Symposium on Tumor Immunology: Multidisciplinary Science Driving Combination Therapy (J7), Banff, Canada
- 2015 “Antiangiogenic Therapy: Quo Vadis” / Visiting Professor Seminar  
University of Freiburg, Germany (University of Freiburg)
- 2015 “Translation of anticancer efficacy from non-clinical models to the clinic using biomarkers” / Keynote speaker  
The 14th International Wolfsberg Meeting on Molecular Radiation Biology/Oncology, Wolfsberg Castle, Lake Konstanz, Switzerland (ESTRO)
- 2015 “Personalizing targeted therapies for cancer: Current progress” / Invited speaker  
The 10th Cajal Symposium on Translational Research, Bucharest, Romania (Cajal Foundation)
- 2015 “IASGO Postgraduate Study Center Plans” / Plenary speaker  
The 6th Congress of Kazakhstan Surgeons, Almaty, Kazakhstan (IASGO)
- 2015 “Systemic therapy for hepatocellular carcinoma: Challenges and promise” / Seminar speaker  
Seminar, Tohoku University Sendai, Japan. Host: Professor Michiaki Unno (Tohoku Univ.)
- 2015 “Biomarkers of cancer response and resistance to anti-angiogenic therapy” / Invited speaker  
Workshop on GI Cancer, IASGO Educational Program, Jikei University School of Medicine, Tokyo, Japan (IASGO)
- 2015 “Translation of anticancer efficacy from non-clinical models to the clinic using biomarkers” / Seminar speaker  
Radiation Oncology Colloquium Seminar. Hosts: Professors Peter Rodemann and Daniel Zips, University of Tübingen, Germany (University of Tuebingen)
- 2015 “Development of Systemic Therapies for Liver Cancer” / Invited speaker

- Workshop on Hepatobiliary Surgery, IASGO Educational Program, Haikou, China (IASGO)
- 2015 “Development of Novel GI Cancer Therapies” / Seminar speaker  
Institute of Biomedical Engineering, NTHU, Taiwan (Tsing Hua University)
- 2015 “Development of Novel Gastrointestinal Cancer Therapies” / Seminar speaker  
Academia Sinica, Taipei, Taiwan. Host: Dr. Han-Chung Wu (Academia Sinica)
- 2015 “Translation of Targeted Agents for GI Cancer Therapy” / State-of-the-Art Lecture  
Chair: Session – Pancreatic Neoplasms  
The 25th Annual World Congress of the IASGO, Fuzhou, China (IASGO)
- 2015 “Translational Studies in Clinical Trials of Targeted Therapies for Cancer” / Invited speaker  
Workshop on GI Cancer, Educational Program of the IASGO, Moscow, Russia (IASGO)
- 2015 “Angiogenesis and immunology” / Invited speaker  
The 6th Langendorff Symposium in Radiation Oncology, Germany (University of Freiburg)
- 2015 “Biomarkers in pancreatic cancer and in hepatocellular cancer” / Invited speaker  
The 6th Langendorff Symposium Imaging in Radiation Oncology, Germany (Univ. of Freiburg)
- 2015 “Lessons from translational studies in clinical trials and preclinical models” / Seminar speaker  
Sunnybrook Research Institute, Toronto, Canada. Host: Dr. Robert Kerbel (Toronto University)
- 2015 “Lessons from translational studies in clinical trials and preclinical models” / Seminar speaker  
University of Ulm, Germany (University of Ulm) Host: Dr. Doris Henne Bruns
- 2015 “Going beyond antiangiogenesis in brain tumors” / Keynote Lecture  
Neuroononcology Group Winterschool, Freiburg, Germany (University of Freiburg)
- 2016 “Pancreatic cancer: Determinants of metastasis” / Invited speaker  
Chair: Session – GI Cancer Therapy  
The 11th Cajal Symposium on Translational Research, Bucharest, Romania (Cajal Foundation)
- 2016 “Hepatocellular carcinoma: Role of circulating biomarkers” / Invited speaker  
The 11th Cajal Symposium on Translational Research, Bucharest, Romania (Cajal Foundation)
- 2016 “Translational oncology: From increased understanding to better outcomes” / Invited speaker  
Humanitas University, School of Medicine, Milan, Italy
- 2016 “Biomarkers for optimization of novel radiotherapy-drug combinations” / Invited faculty  
ESTRO 35 Pre-Meeting Course, Turin, Italy (ESTRO)
- 2016 “Therapeutic Vascular Normalization” / Plenary speaker  
5th Metronomics and Anti-Angiogenesis Meeting in Mumbai, India (Tata Medical Center)
- 2016 “Identifying new targets and biomarkers of cancer response through correlative clinical studies” / Invited speaker  
71st Meeting of Japanese Society of Gastroenterological Surgery, Tokushima, Japan (JSGS)
- 2016 “Overcoming resistance to systemic therapies in liver cancer” / Invited seminar  
University of Nagasaki, Japan. Host: Professor Susumu Eguchi (University of Nagasaki)
- 2016 “Role of translational studies in multidisciplinary trials of anti-cancer agents” / Invited seminar  
University of Kyoto, Japan. Host: Professor Masazaku Toi
- 2016 “Exploiting biomarkers of cancer response and resistance” / Special Lecture

- Workshop on GI Cancer, IASGO Educational Program, Tohoku University School of Medicine, Sendai, Japan (Tohoku University)
- 2016 “Role of Radiotherapy in Treatment for Hepatocellular Carcinoma” / Invited speaker  
Chair: Session – Multidisciplinary Approaches in Liver Cancer  
The 26th Annual World Congress of the IASGO, Seoul, Korea (IASGO)
- 2016 “GI Cancer Therapy with Targeted Agents: Lessons from Translational Studies” / State-of-the-Art Plenary Lecture  
The 26th Annual World Congress of the IASGO, Seoul, Korea (IASGO)
- 2016 “Chemotherapy strategy for colorectal liver metastases” / Invited speaker  
The E-AHPBA/IASGO Joint Postgraduate Course, Lyon, France (University of Lyon)
- 2016 “HBP Cancer Therapy: Lessons from Translational Studies” / Invited speaker  
The 2016 HBPSurG Meeting, Lyon, France
- 2017 “Improving outcomes in oncology using biomarkers” / Invited speaker  
GI Oncology Days, Istanbul, Turkey (IASGO/University of Marmara School of Medicine)
- 2017 “New directions in liver cancer treatment” / State-of-the-Art Lecture  
GI Oncology Days, Istanbul, Turkey (IASGO/University of Marmara School of Medicine)
- 2017 “GI cancer therapy with targeted agents: Lessons from translational studies” /Keynote speaker  
IASGO Symposium “Gastrointestinal Tumors – What is New?” Rijeka, Croatia
- 2017 “New systemic therapies for hepatocellular and cholangiocarcinomas” / Invited speaker  
The 12th Cajal Symposium on Translational Research, Bucharest, Romania (Cajal Foundation)
- 2017 “HCC treatment at the intersection between antiangiogenic therapy and immunotherapy” /  
Keynote Speaker  
The 1st Hong Kong International Oncology Forum, Hong Kong (HKIOF)
- 2017 “Using biomarkers to guide antiangiogenic, radiation and immuno-therapies for liver cancers” / Visiting Professor Seminar  
University of Freiburg, Germany (University of Freiburg)
- 2017 “Role of translational studies in GI oncology” / Invited speaker  
Chair: Session – Medical intervention for GI cancer  
7th CME Course of IASGO, Seoul, Korea
- 2017 “Lessons from Translational Studies in Liver Cancers” / Invited speaker  
Chair: Session – Innovations in Liver Tumor Diagnostics  
IASGO Symposium “Current and Future Perspectives in Primary Liver Tumors”, Rotterdam, The Netherlands (Erasmus University, Rotterdam)
- 2017 “New perspectives on the treatment of intractable GI cancers: Role of combination therapies” / Invited speaker  
The Keio Medical Society Lecture, Keio University, Tokyo, Japan (Keio University)
- 2017 “New perspectives on the treatment of intractable liver cancers” / Invited speaker  
Invited Seminar, Tohoku University, Sendai, Japan (Tohoku University)
- 2017 “New perspectives on the treatment of liver cancers” / Invited speaker  
Grand Rounds, Sir Run Run Shaw Hospital, Hangzhou, China (Zhejiang University)
- 2017 “The role of translational studies in clinical trials in liver cancers” / Invited speaker  
IASGO PostGraduate Course, “Spinal and GI Surgery and Research”, Luzhou, China
- 2017 “Multidisciplinary approaches to PDAC therapy” / Invited speaker  
IASGO PostGraduate Course, “Spinal and GI Surgery and Research”, Luzhou, China
- 2017 “Updates of clinical trials of systemic treatments for PDA” / Invited speaker  
The 2017 E-AHPBA/IASGO Joint Postgraduate Course, Lyon, France (University of Lyon)



- 2017 “Developing new combination therapies for liver cancers” / Invited Speaker  
The 27th Annual World Congress of the IASGO, Lyon, France (IASGO)
- 2018 “Using phase I and II clinical studies to define mechanisms and personalize GI cancer therapy” / Invited speaker  
The 13th Cajal Symposium on Translational Research, Bucharest, Romania (Cajal Foundation)
- 2018 “Using biomarkers to guide antiangiogenic, radiation and immuno-therapies for GI cancers” /Seminar speaker  
Cologne Cancer Club, University of Cologne, Germany
- 2018 “New combination therapies for liver cancers” / Invited speaker  
University of Marmara School of Medicine Onco-Surgical Days, Istanbul, Turkey (IASGO/ University of Marmara School of Medicine)
- 2018 “Intercepting pancreatic cancer” / Invited speaker  
University of Marmara School of Medicine Onco-Surgical Days, Istanbul, Turkey (IASGO/ University of Marmara School of Medicine)
- 2018 “Biomarkers in cholangiocarcinoma therapy” / Invited speaker  
12th International “Minimal Invasive Surgery” Symposium and 8th CME Course of IASGO, Seoul, Korea (Seoul National University)
- 2018 “Lessons from translational oncology studies” / Invited Faculty  
University of Medicine Titu Maiorescu, Bucharest (Romanian Government)
- 2018 “New combination therapies for liver cancers” / Invited Speaker  
The 28th Annual World Congress of the IASGO, Moscow, Russia (IASGO)
- 2018 “New combination therapies for liver cancers” / Invited speaker  
2nd Annual Meeting of the IASGO Egyptian Chapter, Cairo, Egypt (IASGO/ University of Mansoura)
- 2019 “A New Era in the Systemic Therapy of HCC: What is the Scientific Basis?” Invited speaker  
7th International Onco-Surgical Days, Istanbul, Turkey (IASGO/ University of Marmara School of Medicine)
- 2019 “Beyond surgery and chemotherapy for PDAC treatment” / Invited speaker  
7th International Onco-Surgical Days, Istanbul, Turkey (IASGO/ University of Marmara School of Medicine)
- 2019 “Beyond surgery and cytotoxics: Targeting stromal vulnerabilities for gastrointestinal cancer treatment” / Invited speaker  
Chair: Round Table III - Colo-rectal cancers – updates  
8th Congress of the Romanian Society of Coloproctology with International Participation, Iasi, Romania (RSCP/IASGO)
- 2019 “Biomarkers in lung cancer” / Invited speaker  
8th Langendorff Symposium “Lung Cancer: Innovative Diagnosis and Treatment”  
Freiburg, Germany (University of Freiburg)
- 2019 “The Promise and Perils of Combination Therapies Involving Immunotherapy: A Liver Cancer Perspective” / Seminar speaker  
Cells-in-Motion Lecture Series, University of Münster, Germany (University of Münster)
- 2019 “Stromal vulnerabilities in liver cancers” / Keynote speaker  
Chair: Session – Hallmarks of Cancer  
3rd Stop Cancer Symposium, Bucharest, Romania
- 2019 “The role of translational studies in clinical trials in liver cancers” / Invited speaker  
2nd IASGO PostGraduate Course, “Surgery and Research: Osteoporosis, Trauma, Spinal and Hepatobiliary and Pancreatic Diseases”, Luzhou, China
- 2019 “Rapidly evolving strategies for the treatment of liver cancer” / Invited speaker  
The Keio Medical Society Lecture, Keio University, Tokyo, Japan (Keio University)

- 2019 “Targeting stromal vulnerabilities to improve chemotherapy and immunotherapy for liver cancers” / Seminar speaker  
Seminar, Tohoku University Sendai, Japan. Host: Professor Michiaki Unno (Tohoku Univ.)
- 2019 “Intercepting HBP cancers” / Invited speaker (Special Lecture)  
IASGO Postgraduate Course on Hepato-Pancreatico-Biliary Surgery and Oncology, Tokyo, Japan (IASGO/Dokkyu University of School of Medicine)
- 2019 “Rapidly evolving strategies for the treatment of primary liver cancers” / Invited speaker  
The 10th Asia-Pacific Primary Liver Cancer Expert Meeting Sapporo, Japan (APPLE)
- 2019 “New approaches to early intervention in pancreatic cancer” / Invited speaker  
IASGO Verona Expert International Meeting on Evolving Strategies in the Management of Liver Metastases, Verona, Italy (University of Verona Medical School)
- 2019 “Rapidly evolving strategies for liver cancer treatment” / Invited faculty  
1st IASGO PostGraduate Course, “Tips and Tricks in HPB surgery”, Belgrade, Serbia
- 2019 “The Role of Correlative Studies in Clinical Trials in Improving Outcomes in HBP Malignancies” / Invited faculty  
1st IASGO PostGraduate Course, “HBP Surgery and Research”, Iasi, Romania
- 2019 “Rapidly evolving strategies for liver cancer treatment” / Invited speaker  
Congress of the Romanian Association Hepato-Bilio- Pancreatic Surgery and Liver Transplantation, Iasi, Romania
- 2019 “Using translational studies to improve outcomes in liver and pancreatic cancers” / Faculty  
MiMT Program, Luohe Hospital, Louhe, China (MiMT)
- 2019 “Using biomarkers to guide antiangiogenic, radiation and immuno-therapies for intractable GI cancers” / Invited speaker  
Seminar at Simcere Pharma, Nanjing, China (Simcere)
- 2019 “Rapidly evolving strategies for liver cancer treatment” / Invited speaker  
Seminar in the Department of Liver Surgery, Sun Yat-sen University, Guangzhou, China (Sun Yat-sen University) (Host: Prof. Kuang)
- 2019 “Anticancer treatments of tomorrow in GI Oncology” / Keynote Speaker  
The 29th Annual World Congress of the IASGO, Bangkok, Thailand (IASGO)
- 2019 “New trends in systemic treatment of gastric cancer” / Faculty  
The 1st IASGO CME HBP Course, Braga, Portugal (University of Braga)
- 2019 “Liver metastases from colorectal cancer” / Faculty  
The 1st IASGO CME HBP Course, Braga, Portugal (University of Braga)
- 2019 “Using translational studies to achieve earlier interception of aggressive GI cancers” / Invited speaker  
The XXVIII Latin-American Congress on Surgery – FELAC 2019 and the LXX Uruguayan Congress on Surgery, Montevideo, Uruguay (FELAC)
- 2020 “New combination therapies for liver cancers and their scientific basis” / Invited speaker  
The 120th Meeting of the Japanese Society of Surgery, Yokohama, Japan (virtual)
- 2020 “Rapidly evolving strategies for cholangiocarcinoma treatment” / Invited speaker  
The IASGO and the Korean Society of Gastrointestinal Cancer (KSGC) Joint Symposium IK2020 (virtual)
- 2020 “Rapidly evolving therapies in liver cancers” / Invited Speaker  
4th Stop Cancer Symposium (webinar), Romania
- 2020 “How do we make progress in PDAC therapy?” / Invited faculty  
Onco-Surgical Days Webinar Series – PDAC (IASGO/ University of Marmara School of Medicine, Turkey)
- 2020 “Modelling human disease in preclinical models to improve the efficacy of immunotherapy in cancer patients” / Invited Webinar

Department of Zoology, Mar Ivanios College and Kerala State Higher Education Council, India

- 2020 “New treatments for liver cancers” / Keynote Speaker  
IASGO Egyptian Chapter “International Live Webinars - Advanced Approach”, Egypt (IASGO)
- 2020 “Rapidly evolving strategies for the treatment of liver cancer” / Invited Speaker  
CONFER 2020, Regional Institute of Oncology, Iasi, Romania (virtual)
- 2020 “Revisiting the century-old “Seed and Soil” theory on tumor metastasis” / Invited Speaker  
4th Stop Cancer Symposium, Romania (virtual)
- 2020 “The evolution of translational oncology studies in the era of molecular targeted therapies” / State-of-the-art Lecture  
10th Congress of the Romanian Society of Coloproctology with International Participation, Bucharest, Romania (RSCP/IASGO) (virtual)
- 2020 “New insights into the rapidly evolving treatment paradigms for HCC” / Invited faculty & Chair  
Onco-Surgical Days Webinar Series – HCC “What’s next?” (IASGO/ University of Marmara School of Medicine, Turkey) (webinar)
- 2021 “Rapidly evolving strategies for liver cancer treatment” / Invited faculty  
Chair: Session – Liver Cancer  
2nd IASGO Belgrade Congress, “Tips and Tricks in Multidisciplinary Management of HPB Cancers”, Belgrade, Serbia (webinar)
- 2021 “Accelerating translation of liver cancer research to clinical practice” / Invited speaker  
The 9<sup>th</sup> Onco-Surgery Days, IASGO Istanbul Congress, Turkey (online)
- 2021 “New liver cancer treatments: Rationale and Progress” / Invited speaker  
The 2021 IASGO GI Summit, Taipei, Taiwan (online meeting)
- 2021 “Leveraging Translational Studies in GI Cancer Clinical Trials to Improve Treatment Personalization and Outcome” / Invited Speaker  
The 5th Stop Cancer Symposium (hybrid meeting), Romania
- 2021 “New liver cancer treatments: Rationale and Progress” / Invited speaker  
The 2021 IASGO CME Advanced Post-Graduate Course, Nagasaki, Japan (hybrid meeting)
- 2021 “Evolving strategies for the treatment of liver cancers” / Invited speaker  
The 32rd Congress of the Romanian Society of Radiotherapy and Medical Oncology and the 7th Congress of the Romanian Federation of Cancer Societies, Cluj, Romania (hybrid meeting)
- 2021 “Current and emerging paradigms in liver cancer treatment” / Invited speaker  
The 9th Congress of the Croatian Society of Gastroenterology with International Participation (online meeting)
- 2021 “Leveraging the potential of combining existing and new therapies for liver cancers” / Invited Speaker  
The 5<sup>th</sup> Meeting of the IASGO Egyptian Chapter, Egypt (IASGO)
- 2021 “Liver cancer treatment: from translational research to clinical practice” / Invited speaker  
The 2021 HBPSurG Meeting, Lyon, France (online meeting)
- 2021 “Rapidly Evolving Treatment Paradigms in Liver Cancer – Promise and challenges” / Invited speaker  
The 2021 IASGO World Congress, Taipei, Taiwan (hybrid meeting)
- 2021 “New Approaches for HCC Therapy: Promise, Reality and Challenges” / Invited Speaker  
CONFER 2021, Regional Institute of Oncology, Iasi, Romania (virtual meeting)
- 2021 “Rapidly Evolving Treatment Paradigms in Liver Cancer” / Invited speaker

- The 14th International Congress of the Romanian Association of Hepato-Bilio-Pancreatic Surgery and Liver Transplantation (ARCHBPTH)/IASGO, Poiana Brasov, Romania (virtual meeting)
- 2021 “Rapidly Evolving Treatment Paradigms in HCC: Promise and Challenges” / Keynote speaker  
Guandong Medical Association, 6<sup>th</sup> Academic Conference on Hepatocellular Carcinoma, Guangzhou, China (hybrid meeting)
- 2022 “Promise and challenges for the rapidly changing treatment paradigms in liver cancers: The view of a scientist” / Invited speaker  
The 18<sup>th</sup> Annual Conference of Indian Chapter of IHPBA at PGIMR, Chandigarh, India (online meeting)
- 2022 “Bridging the bench to bedside chasm in GI oncology” / State-of-the-art Lecture  
The 11th Congress of the Romanian Society of Coloproctology with International Participation, Bucharest, Romania (RSCP/IASGO) (hybrid meeting)
- 2022 “Early intervention in pancreatic cancer: Theory and practice” / Invited faculty  
“*The value of resection and alternative ablative treatments in malignant pancreatic tumors*” Course at the Annual Congress of the Romanian Society of Surgery, Sinaia, Romania (online)
- 2022 “Targeting tumor microenvironment in liver cancers: Rationale, current progress, and future perspective” / Invited speaker  
Seminar at Keio University, Tokyo, Japan (Keio University)
- 2022 “Lessons learned from two decades of translational research in oncology” / Invited speaker  
Seminar at Saitama Medical University, Saitama, Japan (Saitama University)
- 2022 “Overcoming the tumor microenvironment barrier in PDAC for effective therapy: What is the target?” / State-of-the-art Lecture  
The 26<sup>th</sup> International Association of Pancreatology (IAP)/The 53rd Annual Meeting of Japan Pancreas Society (JPS) meeting, Kyoto, Japan (hybrid meeting)
- 2022 “New concepts and strategies for liver cancer treatment” / Invited speaker  
The 2022 IASGO World Congress, Istanbul, Turkey (IASGO)
- 2022 “Moving the needle in pancreatic cancer treatment” / Invited speaker  
The 2022 IASGO World Congress, Istanbul, Turkey (IASGO)
- 2022 “New liver cancer treatments: Rationale and Progress” / Invited speaker  
The 2022 IASGO CME Advanced Post-Graduate Course, Fukuoka, Japan (hybrid meeting)
- 2022 “Expanding the benefits of immunotherapy for cancer: Combine and conquer” / Invited speaker  
2022 KALC (Korean Association for Lung Cancer) Meeting (KALC)
- 2022 “Recent developments in liver cancer biology and therapy” / Visiting Professor  
The ERUDITE Scholar-in-Residence Programme, Kerala State Higher Education Council, India (KSHEC)
- 2022 “Promise and challenges for the rapidly changing treatment paradigms in liver cancers” / Invited speaker  
The 2nd Jaipur Surgical Festival (JSF), Mahatma Gandhi Medical College & Hospital (MGMCH), Jaipur, India (IASGO)

## **Report of Technological and Other Scientific Innovations**

- 2015                    *“Anti-CXCR4 As a Sensitizer to Cancer Therapeutics”*  
 US Patent No. 9,155,723, Oct 13, 2015  
 As a member of the Steele Laboratories for Tumor Biology, my colleagues and I identified and demonstrated the use of CXCR4 pathway inhibition as a sensitizer for anti-cancer treatments such as radiation, chemotherapy, and targeted therapies. This use of these agents has since been used/validated by multiple labs in the US and abroad.
- 2017                    *“Triple Negative Breast Cancer Treatment Method”*  
 US Patent WO2017184597A1  
 Dr. Tolaney and I identified cabozantinib as an immune-modulator in triple-negative breast cancer patients, as demonstrated by increased fractions of T and NK cells in the blood circulation.
- 2019                    *“Classification and Treatment of Gastric Cancer”*  
 US Patent 2019 49 453A1  
 As a member of the “Esophago-gastric Cancer Interest Group” at MGH, my colleagues and I identified and demonstrated the use of a simplified protein and mRNA-based signature to classify gastric cancers.
- 2021                    *“Combination of p53 mRNA therapy with immunotherapy for cancer treatment”*  
 Provisional filing December 2021  
 Dr. Shi and I identified and demonstrated the efficacy of mRNA to restore p53 in cancer and enhance the efficacy of immunotherapy in cancers with p53 loss.

**Report of Education of Patients and Service to the Community**

- No presentations below were sponsored by 3<sup>rd</sup> parties/outside entities*  
 *Those presentations below sponsored by outside entities are so noted and the sponsor(s) is (are) identified.*

**Activities**

- 2011                    Relay for Life Training Program / Invited Speaker  
 Training of volunteers in North Attleboro, MA, Massachusetts American Cancer Society (ACS)
- 2011                    Relay for Life of Billerica / Invited Speaker  
 Guest speaker at the Fight Back Ceremony at the Relay For Life of Billerica, Billerica, MA, Massachusetts ACS Organization
- 2013                    Bicycles Battling Cancer ride / Invited Speaker  
 Guest speaker, Fundraisers/Participants, Marlboro, MA, ACS New England Division
- 2014                    American Cancer Society Boston research Dinner / Participant  
 Fundraisers/Participants, Boston, MA, ACS New England Division
- 2015                    1<sup>st</sup> Kathy’s Gala of Hope / Participant  
 Fundraisers/Participants, Woburn, MA, Granara-Skerry Trust
- 2015                    Pancreatic Cancer Action Network (PanCan) Breakfast / Participant  
 Fundraisers/Participants, Cambridge, MA, PanCan
- 2016                    2<sup>nd</sup> Kathy’s Gala of Hope / Participant and Awardee Speaker  
 Fundraisers/Participants, Burlington, MA, Granara-Skerry Trust

## Report of Scholarship

### Peer-Reviewed Scholarship in print or other media:

#### Research Investigations

1. Motoi F, Sunamura M, Ding L, **Duda DG**, Yoshida Y, Zhang W, Matsuno S, Hamada H. Effective gene therapy for pancreatic cancer by cytokines mediated by restricted replication-competent adenovirus. *Human Gene Therapy* 2000; 11: 223-35.
2. **Duda DG**, Sunamura M, Lozonschi L, Kodama T, Egawa S, Matsumoto G, Shimamura H, Shibuya K, Takeda K, Matsuno S. Direct in vitro evidence and in vivo analysis of the anti-angiogenesis effects of Interleukin 12. *Cancer Research* 2000; 60: 1111-6.
3. Sunamura M, Son L, Lozonschi L, **Duda DG**, Kodama T, Matsumoto G, Shimamura H, Takeda K, Kobari M, Hamada H, Matsuno S. The anti-angiogenesis effect of IL-12 during the early growth of human pancreatic cancer in SCID mice. *Pancreas* 2000; 20: 227-33.
4. Ding L, Sunamura M, Kodama T, Yamauchi J, **Duda DG**, Shimamura H, Shibuya K, Takeda K, Matsuno S. In vivo evaluation of the early events associated with liver metastasis of circulating cancer cells. *British Journal of Cancer* 2001; 85: 431-8.
5. Sunamura M, **Duda DG**, Shimamura H, Motoi F, Yatsuoka T, Shibuya K, Takeda K, Matsuno S. Tumor dormancy therapy using genetically engineered drug delivery system. *Japanese Journal of Gastroenterology and Surgery* 2001; 34: 425-30.
6. **Duda DG**, Sunamura M, Lozonschi L, Yokoyama T, Yatsuoka T, Motoi F, Horii A, Tani K, Asano S, Nakamura Y, Matsuno S. Overexpression of the p53-inducible Brain Angiogenesis Inhibitor 1 suppresses efficiently tumor angiogenesis *British Journal of Cancer* 2002; 85: 490-7.
7. Lefter LP, Furukawa T, Sunamura M, **Duda DG**, Takeda K, Kotobuki N, Oshimura M, Matsuno S, Horii A. Silencing the tumorigenic phenotype by Chromosome 18 transfer into pancreatic cancer cell lines. *Genes Chromosomes Cancer* 2002; 34: 234-42.
8. Hoshida T, Sunamura M, **Duda DG**, Egawa S, Miyazaki S, Shineha R, Hamada H, Ohtani H, Satomi S, Matsuno S. Gene therapy for pancreatic cancer using an adenovirus vector encoding soluble flt-1 VEGFR. *Pancreas* 2002; 25: 111-21.
9. Sunamura M, **Duda DG**, Ghattas MH, Lozonschi L, Motoi F, Yamauchi J, Matsuno S, Shibahara S, Abraham NG. Heme Oxygenase-1 accelerates tumor angiogenesis of human pancreatic cancer. *Angiogenesis* 2003; 6: 25-30.
10. **Duda DG**, Sunamura M, Lefter LP, Furukawa T, Yokoyama T, Yatsuoka T, Abe T, Inoue H, Motoi F, Egawa S, Matsuno S, Horii A. SMAD4 restoration by gene therapy reverses the invasive phenotype in pancreatic cancer cells. *Oncogene* 2003; 22: 6855-62.
11. Fukumura D\*, Ushiyama A\*, **Duda DG\***, Xu L, Tam J, Chatterjee VKK, Garkavtsev I, Jain RK. Paracrine regulation of angiogenesis and adipocyte differentiation during in vivo adipogenesis. *Circulation Research* 2003; 93: e88-97. \* Equal first authors.
12. Sunamura M, Lefter LP, **Duda DG**, Morita R, Inoue H, Yokoyama T, Yatsuoka T, Abe T, Egawa S, Furukawa T, Fukushima S, Oshimura M, Horii A, Matsuno S. The role of chromosome 18 abnormalities in the progression of pancreatic adenocarcinoma. *Pancreas* 28, 2004; 28: 311-6.
13. Willett CG, Boucher Y\*, di Tomaso E\*, **Duda DG\***, Munn LL\*, Tong RT\*, Chung DC, Sahani DV, Kalva SP, Kozin SV, Mino M, Cohen KS, Scadden DT, Hartford AC, Fischman AJ, Clark JW, Ryan DP, Zhu AX, Blaszkowsky LS, Chen HX, Shellito PC, Lauwers GY, Jain RK. Direct evidence that the VEGF-specific antibody bevacizumab has antivasular effects in human rectal cancer. *Nature Medicine* 2004; 10: 145-7. PMID: PMC2693485. \* Equal contribution.

14. **Duda DG**, Fukumura D, Munn LL, Booth MF, Brown EB, Huang P, Seed B, Jain RK. Differential transplantability of tumor-associated stromal cells. *Cancer Research* 2004; 63, 5920-4.
15. Willett CG, Boucher Y, **Duda DG**, di Tomaso E, Munn LL, Tong RT, Chung DC, Sahani DV, Kalva SP, Kozin SV, Cohen KS, Petit L, Scadden DT, Fischman AJ, Clark JW, Ryan DP, Zhu AX, Blaszkowsky LS, Shellito PC, Mino-Kenudson M, Lauwers GY, Jain RK. Surrogate markers for antiangiogenic therapy and dose-limiting toxicities for bevacizumab with radio-chemotherapy: Continued experience of a phase I trial in rectal cancer patients. *Journal of Clinical Oncology* 2005; 23: 8136-9.
16. Stroh M, Zimmer JP, **Duda DG**, Levchenko TS, Cohen KS, Scadden DT, Torchilin VP, Bawendi MG, Fukumura D, Jain RK. Quantum Dots spectrally distinguish multiple species within the tumor milieu in vivo. *Nature Medicine* 2005; 11: 678-82.
17. Saito Y, Sunamura M, Motoi F, Abe H, Egawa S, **Duda DG**, Hoshida T, Fukuyama S, Hamada H, Matsuno S. Oncolytic replication-competent adenovirus suppresses tumor angiogenesis through preserved E1A region. *Cancer Gene Therapy* 2006; 13: 242-52.
18. Kisucka J, Butterfield CE, **Duda DG**, Eichenberger SC, Saffaripour S, Ware J, Ruggeri ZM, Jain RK, Folkman J, Wagner DD. Platelets and platelet adhesion support angiogenesis while preventing excessive hemorrhage. *Proceedings of the National Academy of Science USA* 2006; 103:855-60.
19. **Duda DG**, Cohen KS, Kozin SV, JY Perentes, Fukumura D, Scadden DT, Jain RK. Evidence for bone marrow-derived endothelial cells incorporation into perfused blood vessels in tumors. *Blood* 2006; 107: 2774-6. PMID: PMC1895376.
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**Thesis:**

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## **Narrative Report**

My area of investigation is liver cancer biology and therapy. I discovered my true passion for basic and translational research during my PhD studies in GI Surgery at Tohoku University in Japan, after completing medical training in Romania (DMD 1993, residency 1997). I chose a career path in research and pursued postdoctoral studies at Harvard. The primary focus of my current studies is overcoming treatment resistance in primary and metastatic liver cancers, a persistent unmet need in oncology. To this end, my group is studying new combinatorial approaches using immunotherapy with systemic therapies or radiotherapy in preclinical models that faithfully reproduce key features of human liver cancers. We are using genetically engineered models of primary hepatocellular carcinoma (HCC) and intrahepatic cholangiocarcinoma (ICC) and liver metastatic pancreatic ductal adenocarcinoma (PDAC) in mice. In parallel, we are conducting comprehensive correlative studies in cancer patients in collaboration with clinicians. My work in the field has led to many findings on primary and metastatic liver cancers, reported in nearly 150 original articles (more than one third as a first or senior author) and presented at 200+ local, national, and international meetings, including Grand Rounds at major US institutions (Harvard, Mayo Clinic, Yale, Fred Hutch) and plenary talks and keynote lectures at large meetings. In recognition of my leadership in translational research, I was appointed as the Director of Translational Research in GI Radiation Oncology at MGH in 2016. I am a Founding Editor of IASGO's official journal *Surgery, Gastroenterology and Oncology*, a Senior Associate Editor of ASTRO's official journal *Red Journal*, and an Editorial Board member for several other specialty journals. I have been serving as Secretary General of the IASGO since 2015. In addition, I am a member of the AASLD Global Outreach Committee, and of NCI's Hepatobiliary Task Force for Immuno-Oncology Biomarkers. I have been serving as chartered Panel Member and Chair of NCI, ACS, and Research Foundation Flanders (FWO) study sections since 2012, and ad-hoc reviewer more than 20 other agencies from 12 countries. I served in expert advisory roles for Pharma, Liver Cancer Expert meetings in Korea, Italy, and Japan, and the MD Anderson Center of Excellence Program for HCC. I chaired and co-chaired several national and international symposia on Liver Cancer topics in the US and internationally since 2007. In 2023, I will chair the Forbeck Forum on "*The Biology and Treatment of Hepatocellular Carcinoma*". For my discoveries, I received multiple professional awards and honors. Among them, I became an Honorary Member of the Academy of Medical Sciences of Romania; I was elected as a member of the 2020 College of Fellows of AIMBE, considered the top 2% of the most accomplished leaders in the fields of medical and biological engineering; and I was elected as 2021 American Association for the Advancement of Science (AAAS) Fellow.

Over the last two decades, I built a vibrant and dynamic Liver Cancer Research Program within the Steele Laboratories for Tumor Biology at MGH. True to my passion for research and to my medical training, I have enjoyed participating in multidisciplinary research efforts with my postdoctoral mentor Dr. Jain and clinician-scientists at MGH and other institutions. As an Assistant Professor since 2008, I carved out liver tumor interaction with its microenvironment and its impact on resistance to immune, antiangiogenic, and cytotoxic therapies as my main area of research. The translational goal of my program is increasing the durability of response to the most effective available molecular and cellular therapies. The research goal is to identify new cellular and molecular mechanisms of local and metastatic tumor progression and treatment resistance and validate them as new targets for treatment. For this independent research, I received grants from the NCI (R21, R01, Proton Beam Federal Share, and PPG/BRG Projects) and the ACS (Research Scholar Grant). Overall, since 2002, I received continuous funding as PI through diverse research mechanisms, including 4 active R01 grants from NIH, 2 active Department of Defense Awards and sponsored research agreements with Industry, totaling more than \$20M so far.

When I began studying liver cancer, there was no systemic therapy available for patients with advanced disease. Radiotherapy was being used rarely due to concerns of liver toxicity, of unknown mechanisms. Patients with advanced HCC, the most frequent liver cancer, received "best supportive care" and lived 6 months on average. Preclinical data were severely limited by the lack of models of cancer with underlying liver damage, the typical presentation of HCC in patients. Today, liver cancer therapy has become one of the most active and exciting areas of research, with 6 antiangiogenic drugs and 5 immune checkpoint blocking drugs approved by the US FDA for HCC treatment, and with proton radiotherapy being tested in

a pivotal phase III trial led by an MGH team. My contribution to this effort has been both in clinical translational and preclinical studies. Inspired by the studies published in the *Journal of Clinical Oncology* (2009)—the first report of biomarkers of response to standard anti-VEGF receptor therapy in HCC—I postulated that treatment-induced modulation of inflammatory factors and vascular function may be responsible for treatment resistance in HCC. These findings—along with 4 subsequent clinical reports on VEGF inhibitors published in *Clinical Cancer Research*—shaped the research direction of my lab. First, I established unique models of spontaneous HCC in mice with underlying liver damage (*Nature Protocols*) and revealed mechanisms underlying anti-VEGFR treatment response and resistance in models that reproduced hallmark of human disease. The work defined the role of myeloid cells and SDF1 $\alpha$ /CXCR4 chemokine pathway in mediating resistance to sorafenib treatment via enhanced tumor fibrosis and inflammation in HCC (*Hepatology* 2014). At that time, studies in melanoma suggested that immune checkpoint blockade may transform cancer therapy. I conducted the first study of an anti-VEGFR/anti-PD-1 combination in HCC models, which revealed that its successful implementation in HCC requires appropriate inhibition of immunosuppression in the microenvironment to allow cytotoxic T lymphocytes to infiltrate and function in the tumor (*Hepatology* 2015). Recently, in a study reported in *Hepatology* (2020), my group uncovered an unexpected mechanism of synergy for this combination therapy: PD-1 blockade led to “productive”, normal new vessel formation in the regressing tumors, and the normalized vasculature enhanced the anti-tumor immune responses. Subsequently, a pivotal randomized phase III study demonstrated the efficacy of dual VEGF/PD-L1 blockade in HCC patients by showing unprecedented benefits over the standard of care (sorafenib) (Finn *et al.*, *NEJM* 2020). The FDA approved this antibody-based combination therapy as first line of treatment for HCC in 2020. In 2021, I received an R01 grant to study the role of dual VEGF/PD-L1 blockade in early-stage HCC. Another example is the discovery that plasma HGF is a potential biomarker of susceptibility to radiation-induced liver damage. Plasma HGF is now evaluated as an integrated biomarker in the randomized phase III trial NCT03186898. In parallel, we are studying the role of HGF/MET pathway in radiation-induced toxicity with support through a DOD Impact Award. These studies led to other projects on new approaches to overcoming treatment resistance in HCC (with NIH R01, DOD and Industry support, e.g., *Science Translational Medicine* 2019, *Nature Biotechnology* 2020, *Nature* 2021, *Nature Communications* 2022, *JNCI* 2022), and other liver cancers, including cholangiocarcinoma (with DOD Idea Award support; *Nature Genetics* 2013, *Cancer Discovery* 2016, *Clinical Cancer Research* 2021, *Gut* 2022) and liver metastatic PDAC (with NIH R01 support; *Red Journal* 2014, *JAMA Oncology* 2019).

I am teaching tumor biology and translational oncology through daily supervision of postdoctoral research fellows, and graduate and undergraduate students. As an enthusiastic supporter of IASGO’s mission to globalize the best medical practice and knowledge all over the world, I have been coordinating, teaching, and directing Postgraduate Courses in 29 countries in Asia, Europe, Africa, and the Americas, since 2014. I have also taught nationally in ASTRO and RTOG translational meetings for residents and clinicians and locally in the MIT-HMS HST Program since 2005. I have been coordinating a research exchange student program with the University of Münster, Germany since 2015, and I have been directing an Annual Course titled “*Methods in Biomedical Engineering, Tumor Biology and Immunology*” for trainees at MGH since 2004. In addition to teaching students, I have continuously advocated for increased support for research in the treatment of advanced cancers and cancer awareness in the community at large. My community outreach efforts included volunteering as a speaker for several Fundraisers for the Massachusetts ACS Division and the Granara-Skerry Trust. In recognition of my achievements in research, teaching, leadership, and advocacy, I received several awards. In 2015, I was selected as an Honoree of The One Hundred, one of the highest forms of recognition awarded by Mass General Cancer Center.

I am dedicated to the pursuit of impactful translational research at the forefront of liver cancer therapy. While recent progress of immunotherapy has rapidly changed the treatment landscape, the mechanisms of benefit are incompletely characterized and achieving durability of treatment response in these dreadful diseases remains a challenge. To address these unmet needs, I remain passionate about engaging scientist and clinician collaborators and continuing my strong commitment to educate the next generation of thought leaders through mentoring and multidisciplinary training at MGH, Harvard-wide, and worldwide.