

CURRICULUM VITAE

DEMOGRAPHIC AND PERSONAL INFORMATION



1/4/2019

Current Appointments:

7/1/2013-Present: Professor of Pathology and Oncology, The Johns Hopkins University School of Medicine, Baltimore MD

Personal Data:

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Education and Training:

Undergraduate

1987 BA, University of Colorado at Boulder, Molecular, Cellular & Developmental Biology and Psychology

Doctoral/graduate

1994 MD PhD, University of Colorado Health Sciences Center, Denver CO. PhD in Experimental Pathology (Dean P. Edwards, PhD Research Mentor)

Postdoctoral

1994-1995 Intern in Anatomic Pathology, The Johns Hopkins University School of Medicine
1995-1996 Resident in Anatomic Pathology, The Johns Hopkins University School of Medicine
1996-1997 Chief Resident in Pathology, The Johns Hopkins University School of Medicine
1997-1998 Research Fellow in The [Brady Urological Institute](#), The Johns Hopkins University School of Medicine (Donald S. Coffey PhD Research Mentor)

Professional Experience:

1998-1999 Instructor of Pathology, the Johns Hopkins University School of Medicine
1999-2011 Hospital Privileges in Genitourinary Surgical Pathology, and Autopsy Pathology, The Johns Hopkins Hospital
1999-2002 Assistant Professor of Pathology, Oncology and Urology, The Johns Hopkins University School of Medicine
2004-2011 Director: [Tissue Microarray Core Facility](#)
2002-2008 Associate Professor of Pathology, Oncology and Urology, The Johns Hopkins University School of Medicine
2005-2011 Associate Director of Cancer Research Pathology, The Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins
2008-2011 Professor of Pathology, Urology and Oncology, The Johns Hopkins University School of Medicine

2012-2013 Chief Medical Officer, [Predictive Biosciences Inc.](#), Lexington MA.
2013-Present Hospital Privileges in Genitourinary Surgical Pathology, and Autopsy Pathology, The Johns Hopkins Hospital

RESEARCH ACTIVITIES

Primary Peer Reviewed Publications with Pubmed-Links:

Link to all [pubmed publications](#):

1. Miller GJ, and **De Marzo AM**. Ultrastructural localization of alkaline phosphatase and matrix vesicles in the swarm rat chondrosarcoma: their role in cartilage calcification. [Bone](#), **9**:235-241, 1988.
2. Christensen K, Estes PA, Oñate SA, Beck CA, **DeMarzo A**, Altmann M, Lieberman BA, St-John J, Nordeen SK, and Edwards DP. Characterization and functional properties of the A and B forms of human progesterone receptors synthesized in a baculovirus system. [Mol Endocrinol](#), **5**:1755-1770, 1991.
3. **DeMarzo AM**, Beck CA, Oñate SA, and Edwards DP. Dimerization of mammalian progesterone receptors occurs in the absence of DNA and is related to the release of the 90-kDa heat shock protein. [Proc. Natl. Acad. Sci. USA](#), **88**:72-76, 1991.
4. **DeMarzo AM**, Oñate SA, Nordeen SK, and Edwards DP. Effects of the steroid antagonist RU486 on dimerization of the human progesterone receptor. [Biochemistry](#), **31**: 10491-10501, 1992.
5. Ferreira R, Moon B, Humphries J, Sussman A, Saltz J, Miller R, and **De Marzo AM**. The Virtual Microscope. [Proc. AMIA Annu. Fall. Symp.](#) 449-53, 1997. PMID: PMC2233368.
6. Afework A, Beynon MD, Bustamante F, Cho S, De Marzo AM, Ferreira R, Miller R, Silberman M, Saltz J, Sussman A, and Tsang H. Digital dynamic telepathology--the Virtual Microscope. [Proc AMIA Symp.](#) 912-916, 1998.
7. **De Marzo AM**, Bradshaw C, Sauvageot J, Epstein JI, and Miller GJ. CD44 and CD44v6 downregulation in clinical prostatic carcinoma: relation to Gleason grade and cytoarchitecture. [Prostate](#), **34**: 162-168, 1998.
8. **De Marzo AM**, Meeker AK, Epstein JI, and Coffey DS. Prostate stem cell compartments: Expression of the cell cycle inhibitor P27^{Kip1} in normal, hyperplastic, and cancer cells. [Am J Pathol](#), **153**:911-917, 1998.
9. **De Marzo AM**, Chan-Tack K, Knudson B, and Epstein JI. E-cadherin expression as a marker of tumor aggressiveness in routinely processed radical prostatectomy specimens. [Urology](#), **53**: 707-713, 1999.
10. **De Marzo AM**, Marchi VL, Yang E, Veeraswamy R, Lin X, and Nelson WG. Abnormal regulation of DNA methyltransferase expression during colorectal carcinogenesis. [Cancer Res](#), **59**:3855-3860, 1999.
11. Simons JW, Mikhak B, Chang J-F, **De Marzo AM**, Carducci MA, Lim M, Weber CB, Baccala AA, Goemann MA, Clift SM, Ando DG, Livitsky HI, Cohen LK, Sanda MG, Mulligan RC, Partin AW, Carter HB, Piantadosi S, Marshall FF, and Nelson WG. Induction of immunity to prostate cancer antigens: results of a clinical trial of vaccination with irradiated autologous prostate tumor cells engineered to secrete GM-CSF using ex-vivo gene transfer. [Cancer Res](#), **59**:5160-5168, 1999.
12. **De Marzo AM**, Marchi VL, Epstein JI, and Nelson WG. Proliferative inflammatory atrophy of the prostate: implications for prostatic carcinogenesis. [Am J Pathol](#), **155**: 1985-1992, 1999.
13. Zhong H, **De Marzo AM**, Laughner E, Lim M, Hilton DA, Zagzag D, Buechler P, Isaacs WB, Semenza GL, and Simons JW. Overexpression of hypoxia-inducible factor 1 alpha in common human cancers and their metastases. [Cancer Res](#), **59**:5830-5835, 1999.

14. Tchou JC, Lin X, Freije D, Isaacs WB, Brooks JD, Rashid A, **De Marzo AM**, Kanai Y, Hirohashi S, and Nelson WG. GSTP1 CpG island DNA hypermethylation in hepatocellular carcinomas. [Int J Oncol, 16:663-676, 2000.](#)
15. Halachmi S, **De Marzo¹ AM**, Chow N, Halachmi N, Smith AE, Linn JF, Epstein JI, Schoenberg M, and Sidransky D. Genetic alterations in bladder carcinosarcoma: evidence of a common clonal origin. [Eur Urol, 37: 350-357, 2000.](#)
16. Weeraratna AT, Arnold JT, George DJ, **De Marzo AM**, and Isaacs JT. Rational basis for Trk inhibition therapy for prostate cancer. [Prostate, 45:140-8, 2000.](#)
17. David-Beabes GL, Overman MJ, Petrofski JA, Campbell PA, **De Marzo AM**, and Nelson WG. Doxorubicin-resistant variants of human prostate cancer cell lines DU 145, PC3 and TSU-PR1: characterization of biochemical determinants of antineoplastic sensitivity. [Int J Oncol, 17:1077-1086, 2000.](#)
18. Putzi MP, and **De Marzo AM**. Morphological transitions between proliferative inflammatory atrophy and high-grade prostatic intraepithelial neoplasia. [Urology, 56:828-832, 2000.](#)
19. Nelson CP, Kidd LC, Sauvageot J, Isaacs WB, **De Marzo AM**, Groopman JD, Nelson WG, and Kensler TW. Protection against 2-hydroxyamino-1-methyl-6-phenylimidazo[4,5-b]pyridine cytotoxicity and DNA adduct formation in human prostate by glutathione S-transferase P1. [Cancer Res, 61:103-109, 2001.](#)
20. Parsons JK, Nelson CP, Gage WR, Nelson WG, Kensler, TW and **De Marzo AM**. GSTA1 expression in normal, pre-neoplastic, and neoplastic human prostate tissue. [The Prostate, 49:30-37, 2001.](#)
21. Parsons JK, Gage WR, Nelson WG, and **De Marzo AM**. p63 protein expression is rare in prostate adenocarcinoma: implications for cancer diagnosis and carcinogenesis. [Urology, 58:619-624, 2001.](#)
22. DeWeese TL, van der Poel H, Li S, Mikhak B, Drew R, Goemann M, Hamper U, DeJong R, Detorie N, Rodriguez R, Haulk T, **DeMarzo AM**, Piantadosi S, Yu DC, Chen Y, Henderson DR, Carducci MA, Nelson WG, and Simons JW. A phase I trial of CV706, a replication-competent, PSA selective oncolytic adenovirus, for the treatment of locally recurrent prostate cancer following radiation therapy. [Cancer Res, 61:7464-72, 2001.](#)
23. Manley S, Mucci NR, **De Marzo AM**, and Rubin MA. Relational database structure to manage high-density tissue microarray data and images for pathology studies focusing on clinical outcome: the prostate specialized program of research excellence model. [Am J Pathol, 159:837-43, 2001.](#)
24. Zha S, Gage WR, Sauvageot J, Saria EA, Putzi MJ, Ewing CM, Faith DA, Nelson WG, **De Marzo² AM**, and Isaacs WB. Cyclooxygenase-2 is up-regulated in proliferative inflammatory atrophy of the prostate, but not in prostate carcinoma, [Cancer Res, 61: 8617-23, 2001.](#)
25. Lin X, Asgari K, Putzi MJ, Gage WR, Yu X, Cornblatt BS, Kumar A, Piantadosi S, DeWeese TL, **De Marzo AM**, and Nelson WG. Reversal of GSTP1 CpG island hypermethylation and reactivation of pi- class glutathione S-transferase (GSTP1) expression in human prostate cancer cells by treatment with procainamide. [Cancer Res, 61: 8611-6, 2001.](#)
26. Lin X, Tascilar M, Lee WH, Vles WJ, Lee BH, Veeraswamy R, Asgari K, Freije D, van Rees B, Gage WR, Bova GS, Isaacs WB, Brooks JD, DeWeese TL. **De Marzo AM**, and Nelson WG. GSTP1 CpG island hypermethylation is responsible for the absence of GSTP1 expression in human prostate cancer cells. [Am J Pathol, 159:1815-1826, 2001.](#)
27. J, Nupponen N, Isaacs S, Sood R, Robbins C, Xu J, Faruque M, Moses T, Ewing C, Gillanders E, Hu P, Bujnovszky P, Makalowska I, Baffoe-Bonnie A, Faith D, Smith J, Stephan D, Wiley K, Brownstein M, Gildea D, Kelly B, Jenkins R, Hostetter G, Matikainen M, Schleutker J, Klinger K, Connors T, Xiang Y, Wang Z, **De Marzo A**, Papadopoulos N, Kallioniemi OP, Burk R, Meyers D, Gronberg H, Meltzer P, Silverman R, Bailey-Wilson J, Walsh P, Isaacs W, and Trent J. Germline

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- mutations in the ribonuclease L gene in families showing linkage with HPC1. [Nat Genet, 30:181-184, 2002.](#)
28. Meeker AK, Gage WR, Hicks JL, Simon I, Coffman JR, Platz EA, March GE, and **De Marzo AM**. Telomere length assessment in human archival tissues: combined telomere fluorescent in situ hybridization and immunostaining. [Am J Pathol, 160:1259-1268, 2002.](#)
 29. Luo J, Gage WR, Hicks JL, Wanders RJ, Trent JM, Isaacs WB, and **De Marzo AM**. Alpha-methylacyl-CoA racemase: a new molecular marker for prostate cancer. [Cancer Res, 62:2220-2226, 2002.](#)
 30. **De Marzo AM**, Fedor H, Gage WR, and Rubin MA. Inadequate formalin fixation reduces reliability of p27^{Kip1} immunohistochemical staining: probing optimal fixation time using high-density tissue microarrays. [Human Path, 33:756-60, 2002.](#)
 31. Xu J, Zheng SL, Komiya A, Mychaleckyj J, Isaacs SD, Hu JJ, Sterling D, Lange E.M., Hawkins, G.A., Turner, A., Ewing, C.M., Faith, D.A., Johnson, J.R., Suzuki, H, Bujnovszky P, Wiley KE, **De Marzo AM**, Bova GS, Chang B, Hall MC, McCullough DL, Partin AW, Kassabian VS, Carpten JD, Baily-Wilson JE, Trent JM, Ohar J, Bleecker ER, Walsh PC, Isaacs WB, and Meyers DA. Germline mutations and sequence variants of the macrophage scavenger receptor 1 gene are associated with prostate cancer risk. [Nat Genet, 32:321-5, 2002.](#)
 32. Meeker AK, Hicks JL, Platz EA, March GE, Bennett CJ, Delannoy MJ, and **De Marzo AM**. Telomere shortening is an early somatic DNA alteration in human prostate tumorigenesis. [Cancer Res, 62:6405-9, 2002.](#)
 33. Yang G, Ayala G, **De Marzo AM**, Tian W, Frolov A, Wheeler TM, Thompson TC, and Harper JW. Elevated Skp2 protein expression in human prostate cancer: association with loss of the cyclin-dependent kinase inhibitor p27 and PTEN and with reduced recurrence-free survival. [Clin Cancer Res, 8:3419-26, 2002.](#)
 34. van Heek NT, Meeker AK, Kern SE, Yeo CJ, Lillemoe KD, Cameron JL, Offerhaus GJ, Hicks JL, Wilentz RE, Goggins MG, **De Marzo AM**, Hruban RH, and Maitra A. Telomere shortening is nearly universal in pancreatic intraepithelial neoplasia. [Am J Pathol, 161:1541-7, 2002.](#)
 35. Sachs MD, Rauen KA, Ramamurthy M, Dodson JL, **De Marzo AM**, Putzi MJ, Schoenberg MP, and Rodriguez R. Integrin alpha (v) and coxsackie adenovirus receptor expression in clinical bladder cancer. [Urology, 60:531-6, 2002.](#)
 36. Heath EI, DeWeese TL, Partin AW, **De Marzo AM**, Groopman JD, Nelson WG, Piantadosi SA, Lieberman R, and Carducci MA. The design of a randomized, placebo-controlled trial of celecoxib in preprostatectomy men with clinically localized adenocarcinoma of the prostate. [Clin Prostate Cancer, 1:182-7, 2002.](#)
 37. Collis SJ, Ketner GW, Hicks JL, Nelson WG, **De Marzo AM**, and Deweese TL. Expression of the DNA-PK binding protein E4-34K fails to confer radiation sensitivity to mammalian cells. [Int J Radiat Biol, 79:53-60, 2003.](#)
 38. Van Leenders GJ, Gage WR, Hicks JL, Van Balken B, Aalders TW, Schalken JA, and **De Marzo AM**. Intermediate cells in human prostate epithelium are enriched in proliferative inflammatory atrophy. [Am J Pathol, 162:1529-37, 2003.](#)
 39. Magi-Galluzzi C, Luo J, Isaacs WB, Hicks JL, **De Marzo AM**, and Epstein JI. Alpha-Methylacyl-CoA racemase: a variably sensitive immunohistochemical marker for the diagnosis of small prostate cancer foci on needle biopsy. [Am J Surg Pathol, 8:1128-33, 2003.](#)
 40. Nakayama M, Bennett CJ, Hicks JL, Epstein JI, Platz EA, Nelson WG, and **De Marzo AM**. Hypermethylation of the human glutathione S-transferase-pi gene (GSTP1) CpG island is present in a subset of proliferative inflammatory atrophy lesions but not in normal or hyperplastic epithelium of the prostate: a detailed study using laser-capture microdissection. [Am J Pathol, 163:923-933, 2003.](#)
 41. Maitra A, Adsay NV, Argani P, Iacobuzio-Donahue C, **De Marzo A**, Cameron JL, Yeo CJ, and Hruban RH. Multicomponent analysis of the pancreatic adenocarcinoma progression model using a pancreatic intraepithelial neoplasia tissue microarray. [Mod Pathol, 9:902-12, 2003.](#)

42. Volmar KE, Chan TY, **De Marzo AM**, and Epstein JI. Florid von Brunn nests mimicking urothelial carcinoma: a morphologic and immunohistochemical comparison to the nested variant of urothelial carcinoma. [Am J Surg Pathol, 9:1243-52, 2003.](#)
43. Zha S, Ferdinandusse S, Denis S, Wanders RJ, Ewing CM, Luo J, **De Marzo AM**, and Isaacs WB. Alpha-methylacyl-Coa racemase as an androgen-independent growth modifier in prostate cancer. [Cancer Res, 63:7365-7376, 2003.](#)
44. Lapointe J, Li C, Higgins JP, Van De Rijn M, Bair E, Montgomery K, Ferrari M, Egevad L, Rayford W, Bergerheim U, Ekman P, **DeMarzo AM**, Tibshirani R, Botstein D, Brown PO, Brooks JD, and Pollack JR. Gene expression profiling identifies clinically relevant subtypes of prostate cancer. [Proc Natl Acad Sci USA, 101:811-6, 2004.](#)
45. Bachman KE, Blair BG, Brenner K, Bardelli A, Arena S, Zhou S, Hicks J, **De Marzo AM**, Argani P, and Park BH. p21(WAF1/CIP1) Mediates the Growth Response to TGF-beta in Human Epithelial Cells. [Cancer Biol Ther, 3:221-225, 2004.](#)
46. Platz EA, **De Marzo AM**, and Giovannucci E. Failure to detect prostate cancer in the PSA era: comments on N Engl J Med 2003. 349: 215-224 and N Engl J Med. 349: 335-342. 2003. [Cancer Causes Control, 15:91-4, 2004.](#)
47. Gonzalgo ML, Nakayama M, Lee SM, **De Marzo AM**, and Nelson WG. Detection of GSTP1 methylation in prostatic secretions using combinatorial MSP analysis. [Urology, 63:414-8, 2004.](#)
48. Meeker AK, Hicks JL, Gabrielson E, Strauss WM, **De Marzo AM**, and Argani P. Telomere shortening occurs in subsets of normal breast epithelium as well as in situ and invasive carcinoma. [Am J Pathol, 164:925-35, 2004.](#)
49. Yegnasubramanian S, Kowalski J, Gonzalgo ML, Zahurak M, Piantadosi S, Walsh PC, Bova GS, **De Marzo AM**, Isaacs WB, and Nelson WG. Hypermethylation of CpG islands in primary and metastatic human prostate cancer. [Cancer Res, 64:1975-86, 2004.](#)
50. David GL, Yegnasubramanian S, Kumar A, Marchi VL, **De Marzo AM**, Lin X, and Nelson WG. MDR1 promoter hypermethylation in MCF-7 human breast cancer cells: changes in chromatin structure induced by treatment with 5-Aza-Cytidine. [Cancer Biol Ther, 3:e1-e9, 2004.](#)
51. Platz EA, **De Marzo AM**, Erlinger TP, Rifai N, Visvanathan K, Hoffman SC, and Helzlsouer KJ. No association between pre-diagnostic plasma C-reactive protein concentration and subsequent prostate cancer. [Prostate, 59:393-400, 2004.](#)
52. Zhong H, Semenza GL, Simons JW, and **De Marzo AM**. Up-regulation of hypoxia-inducible factor 1 alpha is an early event in prostate carcinogenesis. [Cancer Detect Prev, 28:88-93, 2004.](#)
53. Montgomery E, Argani P, Hicks JL, **DeMarzo AM**, and Meeker AK. Telomere lengths of translocation-associated and nontranslocation-associated sarcomas differ dramatically. [Am J Pathol, 164:1523-9, 2004.](#)
54. Meeker AK, Hicks JL, Iacobuzio-Donahue CA, Montgomery EA, Westra WH, Chan TY, Ronnett BM, and **De Marzo AM**. Telomere length abnormalities occur early in the initiation of epithelial carcinogenesis. [Clin Cancer Res, 10:3317-26, 2004.](#)
55. Rogers CG, Yan G, Zha S, Gonzalgo ML, Isaacs WB, Luo J, **De Marzo AM**, Nelson WG, and Pavlovich CP. Prostate cancer detection on urinalysis for [alpha] methylacyl coenzyme a racemase protein. [J Urol, 172:1501-1503, 2004.](#)
56. Faith DA, Isaacs WB, Morgan JD, Fedor HL, Hicks JL, Mangold LA, Walsh PC, Partin AW, Platz EA, Luo J, and **De Marzo AM**. Trefoil factor 3 overexpression in prostatic carcinoma: Prognostic importance using tissue microarrays. [The Prostate, 61:215-227, 2004.](#)
57. Marks LS, Kojima M, **De Marzo AM**, Heber D, Bostwick DG, Qian J, Dorey FJ, Veltri RW, Mohler JL, and Partin AW. Prostate cancer in native Japanese and Japanese-American men: effects of differences on prostatic tissue. [Urology, 64:765-71, 2004.](#)
58. Agoston AT, Argani P, Yegnasubramanian S, **De Marzo AM**, Ansari-Lari MA, Hicks JL, Davidson NE, Nelson WG. Increased protein stability causes DNA methyltransferase 1 dysregulation in breast cancer. [J Biol Chem, 280:18302-10, 2005.](#)

59. Platz EA, Rohrmann S, Pearson JD, Corrada MM, Watson DJ, **De Marzo AM**, Landis PK, Metter EJ, Carter HB. Nonsteroidal anti-inflammatory drugs and risk of prostate cancer in the Baltimore Longitudinal Study of Aging. [Cancer Epidemiol Biomarkers Prev, 14:390-6, 2005.](#)
60. Faith D, Han S, Lee DK, Friedl A, Hicks JL, **De Marzo AM**, Jarrard DF. p16 Is upregulated in proliferative inflammatory atrophy of the prostate. [Prostate, 65:73-82, 2005.](#)
61. van der Heijden MS, Brody JR, Dezentje DA, Gallmeier E, Cunningham SC, Swartz MJ, **De Marzo AM**, Offerhaus GJ, Isacoff WH, Hruban RH, Kern SE. In vivo therapeutic responses contingent on Fanconi anemia/BRCA2 status of the tumor. [Clin Cancer Res., 11:7508-15, 2005.](#)
62. Dalrymple S, Antony L, Xu Y, Uzgaré AR, Arnold JT, Savaugéot J, Sokoll LJ, **De Marzo AM**, Isaacs JT. Role of notch-1 and E-cadherin in the differential response to calcium in culturing normal versus malignant prostate cells. [Cancer Res., 65:9269-79, 2005.](#)
63. Sutcliffe S, Giovannucci E, **De Marzo AM**, Willett WC, Platz EA. Sexually transmitted infections, prostatitis, ejaculation frequency, and the odds of lower urinary tract symptoms. [Am J Epidemiol, 162:898-906, 2005.](#)
64. Rohrmann S, **De Marzo AM**, Smit E, Giovannucci E, Platz EA. Serum C-reactive protein concentration and lower urinary tract symptoms in older men in the Third National Health and Nutrition Examination Survey (NHANES III). [Prostate, 62:27-33, 2005.](#)
65. Zha S, Ferdinandusse S, Hicks JL, Denis S, Dunn TA, Wanders RJ, Luo J, **De Marzo AM**, Isaacs WB. Peroxisomal branched chain fatty acid beta-oxidation pathway is upregulated in prostate cancer. [Prostate, 63:316-23, 2005.](#)
66. Yegnasubramanian S, Lin X, Haffner MC, **DeMarzo AM**, Nelson WG. Combination of methylated-DNA precipitation and methylation-sensitive restriction enzymes (COMPARE-MS) for the rapid, sensitive and quantitative detection of DNA methylation. [Nucleic Acids Res, 34:e19, 2006.](#)
67. Sutcliffe S, Zenilman JM, Ghanem KG, Jadack RA, Sokoll LJ, Elliott DJ, Nelson WG, **De Marzo AM**, Cole SR, Isaacs WB, Platz EA. Sexually transmitted infections and prostatic inflammation/cell damage as measured by serum prostate specific antigen concentration. [J Urol, 175:1937-42, 2006.](#)
68. Sutcliffe S, Giovannucci E, Alderete JF, Chang TH, Gaydos CA, Zenilman JM, **De Marzo AM**, Willett WC, Platz EA. Plasma antibodies against Trichomonas vaginalis and subsequent risk of prostate cancer. [Cancer Epidemiol Biomarkers Prev, 15:939-45, 2006.](#)
69. Karakas B, Weeraratna A, Abukhdeir A, Blair BG, Konishi H, Arena S, Becker K, Wood W, Argani P, **De Marzo AM**, Bachman KE, Park BH. Interleukin-1 alpha mediates the growth proliferative effects of transforming growth factor-beta in p21 null MCF-10A human mammary epithelial cells. [Oncogene, 25:5561-9, 2006.](#)
70. Hansel DE, Meeker AK, Hicks J, **De Marzo AM**, Lillemoe KD, Schulick R, Hruban RH, Maitra A, Argani P. Telomere length variation in biliary tract metaplasia, dysplasia, and carcinoma. [Mod Pathol, 19:772-9, 2006.](#)
71. Palapattu GS, Meeker A, Harris T, Collector MI, Sharkis SJ, **De Marzo AM**, Warlick C, Drake CG, Nelson WG. Epithelial architectural destruction is necessary for bone marrow derived cell contribution to regenerating prostate epithelium. [J Urol, 176:813-8, 2006.](#)
72. **De Marzo AM**, Platz E A Epstein JI, Ali T, Billis A, Chan TY, Cheng L, Datta M, Egevad L, Ertoy-Baydar D, Farre X, Fine S, Iczkowski KA, Ittmann M, Knudsen BS, Loda M, Lopez-Beltran A, Magi-Galluzzi C, Mikuz G, Montironi R, Pikarsky E, Pizov G, Rubin MA, Samaratunga H, Sebo T, Sesterhenn IA, Shah RB, Signoretti S, Simko J, Thomas G, Troncoso P, Tsuzuki T, van Leenders GJLH, Yang X, Zhou M, Figg WD, Hoque A, Lucia MS. A Working Group Classification of focal prostate atrophy lesions. [Am J Surg Pathol, 30:281-91, 2006.](#)
73. Litvinov IV, Vander Griend DJ, Antony L, Dalrymple S, **De Marzo AM**, Drake CG, Isaacs JT. Androgen receptor as a licensing factor for DNA replication in androgen-sensitive prostate cancer cells. [Proc Natl Acad Sci U S A, 103:15085-90, 2006.](#)

74. Fine SW, Argani P, **De Marzo AM**, Delahunt B, Sebo TJ, Reuter VE, Epstein JI. Expanding the Histologic Spectrum of Mucinous Tubular and Spindle Cell Carcinoma of the Kidney. [Am J Surg Pathol, 30:1554-1560, 2006.](#)
75. Parwani AV, Marlow C, **De Marzo AM**, Mikolajczyk SD, Rittenhouse HG, Veltri RW, Chan TY. Immunohistochemical staining of precursor forms of prostate-specific antigen (proPSA) in metastatic prostate cancer. [Am J Surg Pathol, 30:1231-6, 2006.](#)
76. Sutcliffe S, Giovannucci E, **De Marzo AM**, Leitzmann MF, Willett WC, Platz EA. Gonorrhea, syphilis, clinical prostatitis, and the risk of prostate cancer. [Cancer Epidemiol Biomarkers Prev, 15:2160-6, 2006](#)
77. Bethel CR, Faith D, Li X, Guan B, Hicks JL, Lan F, Jenkins RB, Bieberich CJ, **De Marzo AM**. Decreased NKX3.1 protein expression in focal prostatic atrophy, prostatic intraepithelial neoplasia, and adenocarcinoma: association with Gleason score and chromosome 8p deletion. [Cancer Res, 66:10683-90, 2006.](#)
78. Dunn TA, Chen S, Faith DA, Hicks JL, Platz EA, Chen Y, Ewing CM, Sauvageot J, Isaacs WB, **De Marzo AM**, Luo J. A Novel Role of Myosin VI in Human Prostate Cancer. [Am J Pathol, 169:1843-54, 2006.](#)
79. Nakai Y, Nelson WG, and **De Marzo AM**. The dietary charred meat carcinogen 2-amino-1-methyl-6-phenylimidazo[4,5-b]pyridine acts as both a tumor initiator and promoter in the rat ventral prostate. [Cancer Res, 67:1378-84, 2007.](#)
80. Herawi M, **De Marzo AM**, Kristiansen G, Epstein JI. Expression of CDX2 in benign tissue and adenocarcinoma of the prostate. [Hum Pathol., 38:72-8, 2007.](#)
81. Perner S, Mosquera JM, Demichelis F, Hofer MD, Paris PL, Simko J, Collins C, Bismar TA, Chinnaiyan AM, **De Marzo AM**, Rubin MA. TMPRSS2-ERG fusion prostate cancer: an early molecular event associated with invasion. [Am J Surg Pathol, 31:882-888, 2007.](#)
82. Agoston AT, Argani P, **De Marzo AM**, Hicks JL, Nelson WG. Retinoblastoma pathway dysregulation causes DNA methyltransferase 1 overexpression in cancer via MAD2-mediated inhibition of the anaphase-promoting complex. [Am J Pathol, 170:1585-93, 2007.](#)
83. Hansel DE, **De Marzo AM**, Platz EA, Jadallah S, Hicks J, Epstein JI, Partin AW, Netto GJ. Early prostate cancer antigen expression in predicting presence of prostate cancer in men with histologically negative biopsies. [J Urol, 177:1736-40, 2007.](#)
84. Sutcliffe S, Giovannucci E, Gaydos CA, Viscidi RP, Jenkins FJ, Zenilman JM, Jacobson LP, **De Marzo AM**, Willett WC, Platz EA. Plasma antibodies against Chlamydia trachomatis, human papillomavirus, and human herpesvirus type 8 in relation to prostate cancer: a prospective study. [Cancer Epidemiol Biomarkers Prev, 16:1573-80, 2007.](#)
85. Chuang AY, **De Marzo AM**, Veltri RW, Sharma RB, Bieberich CJ, Epstein JI. Immunohistochemical differentiation of high-grade prostate carcinoma from urothelial carcinoma. [Am J Surg Pathol, 31:1246-1255, 2007.](#)
86. Argani P, Olgac S, Tickoo SK, Goldfischer M, Moch H, Chan DY, Eble JN, Bonsib SM, Jimeno M, Lloreta J, Billis A, Hicks J, **De Marzo AM**, Reuter VE, Ladanyi M. Xp11 Translocation Renal Cell Carcinoma in Adults: Expanded Clinical, Pathologic, and Genetic Spectrum. [Am J Surg Pathol, 31:1149-1160, 2007.](#)
87. Grosso JF, Kelleher CC, Harris TJ, Maris CH, Hipkiss EL, De Marzo A, Anders R, Netto G, Getnet D, Bruno TC, Goldberg MV, Pardoll DM, Drake CG. LAG-3 regulates CD8 T cell accumulation and effector function in murine self- and tumor-tolerance systems. [J Clin Invest, 117:3383-92, 2007.](#)
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TMAJ: A Johns Hopkins Set of Open Source Software Tools to Manage a Multi-Organ, Scalable, Secure, Multi-User Tissue MicroArray Database. <http://tmaj.pathology.jhmi.edu/>. Copyright, 2002-2007.

Telomere Counter: An Open Source Plugin Tool for ImageJ Software. Improved extraction of quantitative data from fluorescence in situ hybridization (FISH) images.

Patents:

1. Methods of predicting behavior of cancers

Elevated Hedgehog (Hh) pathway activity, including ligand stimulated Hh pathway activity, was detected in prostate tumors, and determined to be associated with growth and proliferation of the cancer cells. Accordingly, methods are provided for treating a prostate cancer associated with elevated Hh pathway activity by reducing or inhibiting the Hh pathway activity. Also provided are methods of identifying a prostate tumor of a subject as, or as capable of becoming lethal and/or metastatic.

Inventors: Philip A. Beachy, David M. Berman, Sunil S. Karhadkar, Edward Schaeffer, Angelo DeMarzo
Assignee: Johns Hopkins University
Application number: 11/594,281
Publication number: US 2007/0231828 A1
Filing date: Nov 7, 2006

2. Compare-MS: Method Rapid, Sensitive and Accurate Detection of DNA Methylation

The present invention provides methods and kits useful for enriching, identifying and quantifying methylated DNA3 particularly hypermethylated CpG islands by digesting a sample with a methylation-sensitive restriction endonuclease and capturing methylated restriction fragments with a methyl-binding capture reagent. The methods of the invention may be used in the detection of cancer, particularly detection of prostate cancer.

Inventors: William G. Nelson, Xiaohui S. Lin, Angelo M. Demarzo, Srinivasan Yegnasubramanian

Application number: 12/159,081
Publication number: US 2009/0197263 A1
Filing date: Jan 4, 2007
Issued patent: US7906288 (Issue date Mar 15, 2011)

Research Focus

Contributions to Science

Contribution 1: Defining a new model of human prostatic carcinogenesis

We have proposed a potentially new prostate cancer precursor lesion, proliferative inflammatory atrophy (PIA), whereby inflammation drives prostate cancer formation. Our contributions included the initial histopathological description of PIA, how it relates to known subtypes of prostate atrophy and inflammation and how inflammation in benign prostatic tissue correlates with cancer (the latter in collaboration with Elizabeth Platz ScD MPH et al). We also described the detailed phenotype of PIA including high levels of epithelial cell proliferation, and overexpression of a number of stress response genes. Our group showed morphological transitions between these atrophic lesions and high grade PIN and, at times, with small cancer lesions. With Bill Nelson, we showed similar somatic epigenetic changes to that found in PIN and cancer in a subset of PIA lesions. Related work showed that the charred meat carcinogen, PhIP, leads to an influx of mast cells and macrophages to the rat prostate prior to development of early cancer lesions, and that PhIP acts as both a tumor initiator and promoter in the rodent prostate. Together, these studies led us to propose a new model for the molecular pathology of prostate cancer formation outlined in the two reviews listed. The model predicts that a luminal-like cell is the target cell of origin for PIN and prostate cancer development. This work stimulated new scientific approaches, such as the use of rodent models to study the role of infectious agents and inflammation in prostatic carcinogenesis, as well as pathology/epidemiology studies in humans. The implications are that if prostate cancer is driven by inflammation, infectious agents and/or diet, then novel strategies for prostate cancer prevention can be developed for translation into humans.

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Contribution 2: Discovery of telomere shortening as a frequent somatic genomic alteration in high grade PIN and other cancer precursor lesions

Our laboratory has focused on understanding the molecular aberrations that occur in prostate cancer precursor lesions and in early prostate cancer that may help explain “how” prostate cancer occurs at the molecular level. Many types of cancer, including prostate cancer, show chromosomal instability reflected by aberrations in both number and structure of chromosomes. One route to chromosomal instability is through defective telomeres. Our lab, in conjunction with Alan K. Meeker PhD, developed a quantitative technique to measure telomere lengths directly in archival tissues and reported that high grade prostatic intraepithelial neoplasia (PIN), the presumed precursor to most prostate cancers, contains abnormally short telomeres similar to that found in invasive prostatic adenocarcinoma. These frequent somatic genome abnormalities may help explain how genetic instability begins during prostate carcinogenesis. With Dr. Meeker et al., we found similar telomere shortening in the precursor lesions in multiple other organ systems including the pancreas, breast, colon, head and neck, esophagus, cervix, urinary bladder, and gall bladder. Showing that telomere shortening occurs at the earliest phases of cancer formation in this large number of organ systems is a key discovery that it is one of the most common somatic DNA alterations seen in all of human cancers and their precursors. These studies have implications for cancer pathogenesis, early diagnosis, and monitoring of cancer prevention clinical trials.

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Contribution 3: The role of MYC in the initiation of prostate cancer: alterations in nucleolar structure and gene expression programs in prostatic neoplasia are driven by the MYC oncogene

Nucleolar enlargement is a key hallmark change present in prostate cancer and its precursor lesion (PIN), and has been used by histopathologists for ~100 years as a critical diagnostic marker for prostate cancer. However, what drives nucleolar enlargement and if enhanced nucleolar function is part of the pathogenesis of the disease had remained elusive. The *MYC* gene locus undergoes frequent copy number gains in a subset of aggressive localized prostate cancers and commonly in late stage metastatic disease. However, *MYC* mRNA is elevated frequently at all stages of prostate cancer. Using a genetically validated immunohistochemical assay our group showed that the *MYC* oncoprotein is highly overexpressed in most prostate cancers (>80%), and this overexpression first occurs in high grade PIN often with no underlying 8q24 copy number gain. Using cell culture systems, prostate cancer mouse models, our group showed that nucleolar enlargement is driven largely by *MYC* overexpression. This work showed for the first time that *MYC* is essential for driving a nucleolar transcriptional program of gene expression in prostate cancer cells and is strictly required for cell proliferation in the prostate, nominating *MYC* as a key biomarker and therapeutic target in prostate cancer.

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1. Hubbard GK, Mutton LN, Khalili M, McMullin RP, Hicks JL, Bianchi-Frias D, Horn LA, Kulac I, Moubarek MS, Nelson PS, Yegnasubramanian S, **De Marzo AM**⁸, Bieberich CJ. Combined *MYC* Activation and *Pten* Loss Are Sufficient to Create Genomic Instability and Lethal Metastatic Prostate Cancer. *Cancer Res*. 2016 Jan 15;76(2):283-92 PMID in process.

Contribution 4: Development of a validated PTEN immunohistochemical stain and scoring protocol with high performance as a surrogate for underlying genomic alterations and a prognostic marker in human prostate cancer

Our group was instrumental in the development of *PTEN* as an IHC marker of underlying *PTEN* genomic alterations and as a potentially clinically useful prognostic marker in prostate cancer. We performed vigorous analytical validation of the assay, using controls consisting of >60 human cell lines with known

⁸ Co-Senior Author

PTEN allele status. After the initial analytic validation, we worked extensively as a team with Tamara Lotan, MD, to perform a number of studies to show clinical validity. Further, with Dr. Lotan's leadership the IHC assay has been ported from the research lab to CLIA-certified laboratories on fully automated systems, and further validated in relation to a number of pre-analytic variables. Such automated staining has been implemented in the Johns Hopkins Department of Pathology and is currently used by urologists as an aid in the decision between definitive treatment and active surveillance for patients with low to intermediate risk disease at Johns Hopkins. Our group, along with Dr. Lotan, also developed a simple visual scoring system for PTEN IHC, with high inter-observer reproducibility that robustly correlates with underlying genomic alterations as well as patient outcome. Thus, we played a key role in developing and translating a biomarker from analytical validation in the research laboratory to present day clinical implementation.

1. Lotan T, Gurel B, Sutcliffe S, Esopi D, Liu W, Xu J, Hicks J, Park B, Humphreys E, Partin A, Han M, Netto GJ, Isaacs WB, **De Marzo AM**. PTEN protein loss by immunostaining: analytic validation and prognostic indicator for a high risk surgical cohort of prostate cancer patients. *Clin Cancer Res*. 2011;(17):6563-73. PMID: PMC3195839.
2. Lotan TL, Gumuskaya B, Rahimi H, Hicks JL, Iwata T, Robinson BD, Epstein JI, **De Marzo AM**. Cytoplasmic PTEN protein loss distinguishes intraductal carcinoma of the prostate from high-grade prostatic intraepithelial neoplasia. *Mod Pathol*. 2013;(26):587-603. PMID: PMC3610824.
3. Gumuskaya B, Gurel B, Fedor H, Tan HL, Weier CA, Hicks JL, Haffner MC, Lotan TL, **De Marzo AM**. Assessing the order of critical alterations in prostate cancer development and progression by IHC: further evidence that PTEN loss occurs subsequent to ERG gene fusion. *Prostate Cancer Prostatic Dis*. 2013;(16):209-15. PMID: PMC3774596
4. Lotan TL, Carvalho FL, Peskoe SB, Hicks JL, Good J, Fedor HL, Humphreys E, Han M, Platz EA, Squire JA, **De Marzo AM**, Berman DM. PTEN loss is associated with upgrading of prostate cancer from biopsy to radical prostatectomy. *Mod Pathol*. 2015;128-37. PMID: PMC4282985.

EDUCATIONAL ACTIVITIES

Peer Reviewed Publications

Invited Reviews

1. Edwards DP, **De Marzo AM**, Oñate SA, Beck CA, Estes PA, and Nordeen SK. Mechanisms controlling steroid receptor binding to specific DNA sequences. [Steroids 56:271-278, 1991.](#)
2. Edwards DP, Altman M, **De Marzo AM**, and Beck CA. Progesterone receptor and the mechanism of action of progesterone antagonists. [J Steroid Biochem and Molecular Bio, 53: 449, 1995.](#)
3. **De Marzo AM**, Nelson WG, Meeker AK, and Coffey DS. Stem cell features of benign and malignant prostate epithelial cells. [J Urol, 160\(6 Pt 2\):2381-2392, 1998.](#)
4. **De Marzo AM**, Coffey DS, and Nelson WG. New concepts in tissue specificity of prostate cancer and benign prostatic hyperplasia. [Urology, 53 \(Suppl 3A\):29-39, 1999.](#)
5. Nelson WG, Simons JW, Mikhak B, Chang JF, **De Marzo AM**, Carducci MA, Kim M, Weber CE, Baccala AA, Goemann MA, Clift SM, Ando DG, Levitsky HI, Cohen LK, Sanda MG, Mulligan RC, Partin AW, Carter H, Piantadosi S, and Marshall FF. Cancer cells engineered to secrete granulocyte-macrophage colony stimulating factor using ex vivo gene transfer as vaccines for the treatment of genitourinary malignancies. [Cancer Chemother Pharmacol, 46 Suppl:S67-72, 2000.](#)
6. Nelson WG, **De Marzo AM**, and DeWeese TL. The molecular pathogenesis of prostate cancer: Implications for prostate cancer prevention. [Urology, 57\(4 Suppl 1\):39-45, 2001.](#)
7. Nelson WG, **De Marzo AM**, and DeWeese TL. The molecular pathogenesis of prostate cancer: focus on the earliest steps. [Eur Urol, 39\(suppl 4\):8-11, 2001.](#)

8. **De Marzo AM**, Putzi MP, and Nelson WG. New concepts in the pathology of prostate epithelial carcinogenesis. [Urology, 57 \(Suppl 4A\):103-114, 2001.](#)
9. Nelson WG, **De Marzo AM**, Deweese TL, Lin X, Brooks JD, Putzi MJ, Nelson CP, Groopman JD, and Kensler TW. Preneoplastic prostate lesions: an opportunity for prostate cancer prevention. [Ann N Y Acad Sci, 952: 135-144, 2001.](#)
10. Putzi MP, and **De Marzo AM**. Prostate pathology: histologic and molecular perspectives. [Hematology/Oncology Clinics of North America, 3:407-421, 2001.](#)
11. Nelson WG, DeWeese TL, and **De Marzo AM**. The diet, prostate inflammation, and the development of prostate cancer. [Cancer Metastasis Rev, 21:3-16, 2002.](#)
12. Isaacs WB, **De Marzo AM**, and Nelson WG. Focus on prostate cancer. [Cancer Cell, 2:113, 2002.](#)
13. **De Marzo AM**, Nelson WG, Isaacs WB, and Epstein JI. Pathological and molecular aspects of prostate cancer. [Lancet, 361:955-64, 2003.](#)
14. Nelson WG, **De Marzo AM**, and Isaacs WB. Mechanisms of disease. The molecular pathogenesis of prostate cancer: a new role for inflammation? [New Eng. J. Med, 349:366-81, 2003.](#)
15. Litvinov IV, **De Marzo AM**, and Isaacs JT. Is the Achilles' heel for prostate cancer therapy a gain of function in androgen receptor signaling? [J Clin Endocrinol Metab, 88:2972-82, 2003.](#)
16. **De Marzo AM**, Meeker AK, Zha S, Luo J, Nakayama M, Platz EA, Isaacs WB, and Nelson WG. Human prostate cancer precursors and pathobiology. [Urology, 62 \(5 Suppl 1\):55-62, 2003.](#)
17. Rubin MA and **De Marzo AM**. Molecular genetics of human prostate cancer. [Mod Pathol, 17:380-388, 2004.](#)
18. Bastian PJ, Nakayama M, **De Marzo AM**, and Nelson WG. GSTP1 CpG island hypermethylation as a molecular marker in the carcinogenesis of prostate cancer. [Urologe A, 43:573-9, 2004](#) (in german).
19. Bastian PJ, Yegnasubramanian S, Palapattu GS, Rogers CG, Lin X, **DeMarzo AM**, Nelson WG. Molecular biomarker in prostate cancer: the role of CpG island hypermethylation. [Eur Urol, 46:698-708, 2004.](#)
20. **De Marzo AM**, DeWeese TL, Platz EA, Meeker AK, Nakayama M, Epstein JI, Isaacs WB, and Nelson WG. Pathological and molecular mechanisms of prostate carcinogenesis: implications for diagnosis, detection, prevention, and treatment. [J Cell Biochem, 91:459-77, 2004.](#)
21. Nakayama M, Gonzalgo ML, Yegnasubramanian S, Lin X, **De Marzo AM**, and Nelson WG. GSTP1 CpG island hypermethylation as a molecular biomarker for prostate cancer. [J Cell Biochem, 91:540-52, 2004.](#)
22. Platz EA, **De Marzo AM**, and Giovannucci E. Prostate cancer association studies: pitfalls and solutions to cancer misclassification in the PSA era. [J Cell Biochem, 91:553-71, 2004.](#)
23. Zha S, Yegnasubramanian V, Nelson WG, Isaacs WB, and **De Marzo AM**. Cyclooxygenases in cancer: progress and perspective. [Cancer Lett, 215:1-20, 2004.](#)
24. Meeker AK and **De Marzo AM**. Recent advances in telomere biology: implications for human cancer. [Curr Opin Oncol, 16:32-8, 2004.](#)
25. Platz E and **De Marzo AM**. Epidemiology of inflammation and prostate cancer. [J Urol, 171:S36-S40, 2004.](#)
26. Nelson WG, **De Marzo AM**, DeWeese TL, Isaacs WB. The role of inflammation in the pathogenesis of prostate cancer. [J Urol, 172\(5 Pt 2\):S6-11; discussion S11-2, 2004.](#)
27. Palapattu GS, Sutcliffe S, Bastian PJ, Platz EA, **De Marzo AM**, Isaacs WB, and Nelson WG. Prostate carcinogenesis and inflammation: emerging insights. [Carcinogenesis, 26:1170-81, 2005.](#)
28. **De Marzo AM**, Platz EA, Sutcliffe S, Xu J, Gronberg H, Drake CG, Nakai Y, Isaacs WB, and Nelson WG. Inflammation in prostate carcinogenesis. [Nat Rev Can, 7:256-269, 2007.](#)
29. Nelson WG, Yegnasubramanian S, Agoston AT, Bastian PJ, Lee BH, Nakayama M, **De Marzo AM**. Abnormal DNA methylation, epigenetics, and prostate cancer. [Front Biosci, 12: 4254-66, 2007.](#)
30. **De Marzo AM**, Nakai Y, Nelson WG. Inflammation, atrophy, and prostate carcinogenesis. [Urol Oncol, 25:398-400, 2007.](#)

31. Gurel B, Iwata T, Koh CM, Yegnasubramanian S, Nelson WG, **De Marzo AM**. Molecular alterations in prostate cancer as diagnostic, prognostic, and therapeutic targets. [Adv Anat Pathol. 15:319-31, 2008.](#)
32. Nelson WG, **De Marzo AM**, Yegnasubramanian S. Minireview: Epigenetic Alterations in Human Prostate Cancers. [Endocrinology, 150:3991-4002, 2009](#)
33. Bardia A, Platz EA, Yegnasubramanian S, **De Marzo AM**, Nelson WG. Anti-inflammatory drugs, antioxidants, and prostate cancer prevention. [Curr Opin Pharmacol, 9:419-26, 2009.](#)
34. Koh CM, Bieberich CJ, Dang CV, Nelson WG, Yegnasubramanian S, **De Marzo AM**. MYC and prostate cancer. *Genes & Cancer*, 1:617-628, 2010
35. **De Marzo AM**, Nelson WG, Bieberich CJ, Yegnasubramanian S. Prostate cancer: New answers prompt new questions regarding cell of origin. [Nat Rev Urol. 7:650-2, 2010.](#)
36. Haffner M, **De Marzo AM**, Meeker AK, Nelson WG, Yegnasubramanian S. Transcription-induced DNA double strand breaks: both an oncogenic force and potential therapeutic target? [Clin Cancer Res. 2011 Jun 15;17\(12\):3858-64. doi: 10.1158/1078-0432.CCR-10-2044. Epub 2011 Mar 8. PubMed PMID: 21385925; PubMed Central PMCID: PMC3117909.](#)
37. Sfanos KS, Aloia AL, **De Marzo AM**, Rein A. XMRV and prostate cancer—a ‘final’ perspective. [Nat Rev Urol. 9:111-8, 2012.](#)
38. Sfanos KS, **De Marzo AM**. Prostate cancer and inflammation: the evidence. [Histopathology. 2012 Jan;60\(1\):199-215. doi: 10.1111/j.1365-2559.2011.04033.x.](#)
39. Dunn TA, Fedor HL, **De Marzo AM**, Luo J. Molecular profiling of indolent human prostate cancer: tackling technical challenges to achieve high-fidelity genome-wide data. [Asian J Androl. 14:385-92, 2012.](#)
40. Nelson WG, **De Marzo AM**, Yegnasubramanian S. USP2a activation of MYC in prostate cancer. [Cancer Discov.2:206-7, 2012.](#)
41. Hempel HA, Burns KH, **De Marzo AM**, Sfanos KS. Infection of Xenotransplanted Human Cell Lines by Murine Retroviruses: A Lesson Brought Back to Light by XMRV. *Front Oncol*. 2013 Jun 17;3:156. doi: 10.3389/fonc.2013.00156. [Print 2013. PubMed PMID: 23785669.](#)
42. Sfanos KS, Isaacs WB, De Marzo AM. Infections and inflammation in prostate cancer. *Am J Clin Exp Urol*. 2013 Dec 25;1(1):3-11. PubMed PMID: 25110720; PubMed Central PMCID: PMC4219279.
43. Kulac I, Haffner MC, Yegnasubramanian S, Epstein JI, **De Marzo AM**. Should Gleason 6 be labeled as cancer? [Curr Opin Urol. 2015 Feb 27.](#) [Epub ahead of print] PubMed PMID: 25730327.
44. Padmanabhan A, Rao V, **De Marzo AM**, Bieberich CJ. Regulating NKX3.1 stability and function: Post-translational modifications and structural determinants. *Prostate*. 2016 May;76(6):523-33. doi: 10.1002/pros.23144. Epub 2016 Feb 4.
45. **De Marzo AM**, Haffner MC, Lotan TL, Yegnasubramanian S, Nelson WG. Premalignancy in Prostate Cancer: Rethinking What we Know. [Cancer Prev Res \(Phila\). 2016 Jan 26. pii: can prev res.0431.2015.](#)
46. Puhr M, **De Marzo A**, Isaacs W, Lucia MS, Sfanos K, Yegnasubramanian S, Culig Z. Inflammation, Microbiota, and Prostate Cancer. [Eur Urol Focus. 2016 Oct;2\(4\):374-382. doi: 10.1016/j.euf.2016.08.010. Epub 2016 Aug 28. Review. PMID: 28723469](#)
47. Markowski MC, **De Marzo AM**, Antonarakis ES. BET inhibitors in metastatic prostate cancer: therapeutic implications and rational drug combinations. [Expert Opin Investig Drugs. 2017 Dec;26\(12\):1391-1397. doi: 10.1080/13543784.2017.1393518. Epub 2017 Oct 27. Review. PubMed PMID: 29032717.](#)
48. Sfanos KS, Yegnasubramanian S, Nelson WG, De Marzo AM. The inflammatory microenvironment and microbiome in prostate cancer development. [Nat Rev Urol. 2017 Oct 31. doi: 10.1038/nrurol.2017.167. \[Epub ahead of print\] Review. PubMed PMID: 29089606.](#)
49. Jamaspishvili T, Berman DM, Ross AE, Scher HI, **De Marzo AM**, Squire JA, Lotan TL. Clinical implications of PTEN loss in prostate cancer. *Nat Rev Urol*. 2018 Apr;15(4):222-234. doi: 10.1038/nrurol.2018.9. Epub 2018 Feb 20. Review. PubMed

PMID: 29460925.

Case Reports

1. Halachmi S, **De Marzo AM**, Epstein JI, and Schoenberg M. Extensive squamous cell carcinoma in situ masking deeply invasive disease. [J Urol, 159:203, 1998.](#)
2. Gonzalgo ML, de Lacerda DA, **De Marzo AM**, and Chan DY. Persistent purulent drainage from the glans penis: atypical presentation of pyoderma gangrenosum. [J. Urol, 169:1793-4, 2003.](#)
3. Suzigan S, Drut R, Faria P, Argani P, **De Marzo AM**, Barbosa RN, Mello Denadai ER, Martins-Filho J, Martucci RC, Bauab T Jr. Xp11 translocation carcinoma of the kidney presenting with multilocular cystic renal cell carcinoma-like features. [Int J Surg Pathol, 15:199-203, 2007.](#)
4. Rais-Bahrami S, Drabick JJ, **De Marzo AM**, Hicks J, Ho C, Caroe AE, Argani P. Xp11 translocation renal cell carcinoma: delayed but massive and lethal metastases of a chemotherapy-associated secondary malignancy. [Urology, 70:178.e3-6, 2007.](#)
5. Ertoy Baydar D, Kulac I, Gurel B, **De Marzo AM**. A Case of Prostatic Adenocarcinoma With Aberrant p63 Expression: Presentation With Detailed Immunohistochemical Study and FISH Analysis. [Int J Surg Pathol. 2010 Aug 18.](#)
6. Haffner MC, **De Marzo AM**, Yegnasubramanian S, Epstein JI, Carter HB. Diagnostic Challenges of Clonal Heterogeneity in Prostate Cancer. [J Clin Oncol. 2014 Mar 17. PMID: 24638011](#)

Book Chapters

1. Edwards DP, Estes PA, Oñate SA, Beck CA, **De Marzo AM**, and Nordeen SK. Mechanisms controlling steroid receptor binding to specific DNA sequences. Breast Epithelial Antigens, Plenum Press (Ed. R. L. Ceriami) 1991.
2. Nelson WG, DeWeese TL, **De Marzo AM**, and Brooks JD. Prostate cancer prevention. [Prostate Cancer, Lippincott Williams & Wilkins \(Ed. P.W. Kantoff, P. Carroll, and A.D'Amico\) 2002, pp103-114.](#)
3. Fedor HL, **De Marzo AM**. Practical methods for tissue microarray construction. [Methods Mol Med. 103:89-102, 2005.](#)
4. **De Marzo, AM (Guest Editor)**. Inflammatory links to bladder and prostate cancer. [Urol. Oncol. 25: 240-1, 2007.](#)
5. Meeker, A.K., Gage, W.R., **De Marzo, A.M.**, and Maitra, A. Direct, in situ Assessment of Telomere Length Variation in Human Cancers and Preneoplastic Lesions. In Handbook of Immunochemistry and In Situ Hybridization of Human Carcinomas: Hayat, M.A., editor. In press.
6. **De Marzo, AM**. The Pathology of Human Prostatic Atrophy and Inflammation. In "Prostate Cancer: Novel Biology, Genetics and Therapy", Second Edition, Editors, JW Simmons, L Chung, WB Isaacs, The Humana Press, Totowa NJ. In press.
7. Valdman, A, Jenkins RB, Lan F, **De Marzo AM**. Histopathology and Molecular Biology of Prostate Atrophy: A Lesion Associated with Inflammation, Prostate Intraepithelial Neoplasia, and Prostate Cancer. [Prostate Cancer, The Humana Press \(Ed. R.G. Pestell, M.T. Nevalainen. 2008, pp1-16.](#)
8. Cornish T, and **De Marzo, AM**. Tissue Microarrays in Cancer Research. In: Modern Molecular Biology. Springer, Ed. S Yegnasubramanian 2010.
9. Nelson WG, **Demarzo AM**, Yegnasubramanian S. The diet as a cause of human prostate cancer. [Cancer Treat Res. 2014;159:51-68.](#)
10. Sfanos KS, Hempel HA, **De Marzo AM**. The role of inflammation in prostate cancer. Adv Exp Med Biol. 2014;816:153-81. doi: 10.1007/978-3-0348-0837-8_7. PubMed PMID: 24818723.

11. Gleason 6 Tumors Should Still Be Labeled as Cancer. Active Surveillance for Localized Prostate Cancer pp 41-52 **Angelo M. De Marzo**, Jonathan I. Epstein in Chapter, First Online: 30 September 2017.
12. Molecular Pathobiology of High Grade Prostatic Intraepithelial Neoplasia. Cold Spring Harbor Press; book chapter. Levent Trabzonlu, Ibrahim Kulac, Qizhi Zheng, Jessica L. Hicks, Michael C. Haffner, William G. Nelson, Karen S. Sfanos, Onur Ertunc, Tamara L. Lotan, Christopher M. Heaphy, Alan K. Meeker, Srinivasan Yegnasubramanian, **Angelo M. De Marzo**. Accepted in press
13. Prostate Cancer Epigenetics: From Basic Mechanisms to Clinical Implications. Cold Spring Harbor Perspect; book chapter. Yegnasubramanian S, **De Marzo AM**, Nelson WG. Med. 2018 Jun 29. PubMed PMID: 29959132.

Other

1. **De Marzo AM**. In memoriam: Gary J. Miller, MD, PhD. [Prostate 48:128-130, 2001.](#)
2. Kelloff GJ, Sullivan DC, Baker H, Clarke LP, Nordstrom R, Tatum JL, Dorfman GS, Jacobs P, Berg CD, Pomper MG, Birrer MJ, Tempero M, Higley HR, Petty BG, Sigman CC, Maley C, Sharma P, Wax A, Ginsberg GG, Dannenberg AJ, Hawk ET, Messing EM, Grossman HB, Harisinghani M, Bigio IJ, Griebel D, Henson DE, Fabian CJ, Ferrara K, Fantini S, Schnall MD, Zujewski JA, Hayes W, Klein EA, **DeMarzo A**, Ocak I, Ketterling JA, Tempany C, Shtern F, Parnes HL, Gomez J, Srivastava S, Szabo E, Lam S, Seibel EJ, Massion P, McLennan G, Cleary K, Suh R, Burt RW, Pfeiffer RM, Hoffman JM, Roy HK, Wang T, Limburg PJ, El-Deiry WS, Papadimitrakopoulou V, Hittelman WN, MacAulay C, Veltri RW, Solomon D, Jeronimo J, Richards-Kortum R, Johnson KA, Viner JL, Stratton SP, Rajadhyaksha M, Dhawan A; Workshop Program Committee. Workshop on imaging science development for cancer prevention and preemption. [Cancer Biomark, 3:1-33. 2007.](#)
3. Failure to detect prostate cancer in the PSA era: comments on N Engl J Med 2003; 349: 215-224 and N Engl J Med 2003; 349: 335-342. Platz EA, **De Marzo AM**, Giovannucci E. Cancer Causes Control. 2004 Feb;15(1):91-4.

Teaching

Classroom Instruction

Medical Students:

1. Primary Instructor, first 4 small group sessions on inflammation and cell injury, the Second Year Pathology Course for medical students, 1997-2010.
2. Primary Instructor, 2 small group sessions on leukemia/lymphoma, the Second Year Pathology Course for medical students, 2001.

Graduate Students:

1. Lecture to Pathobiology Graduate Students on Molecular Biology of Prostate Cancer, 4/11/2000.
2. Lecture to Graduate Students in Comparative Medicine on Molecular Pathology of Prostate Cancer in the Models of Disease Course. Once per year since 2001-2005.
3. Director of Pathobiology Journal Club, 9/1/2005-2011.
4. Lecture to Pathobiology Graduate Students in Pathobiology and Disease Mechanisms Course. "Cellular Injury and Death", 9/13/2006; 9/24/2007, 9/19/2008;8/18/2009; 9/2010;9/2011;9/2012; 8/2013; 8/2014; 8/2015; 8/2016; 8/2017; 8/2018..
5. Classroom Instructor for "Classic Papers" Course, 4/4/2007; 4/2/2008; 4/1/2009; 3/31/10; 4/2011; 4/2012; 4;2013; 4/2014; 4/2015;4/2016;4/2017;4/2018.

6. Lecture to Pathobiology Graduate Students in Pathobiology and Disease Mechanisms Course. "Pathobiology of Prostate Cancer", 4/4/2007; 4/2/2008; 4/3/2009; 4/2/2010; 4/2011; 4/2012; 4/2013;4/2014; 4/2015; 4/2016; 4/2017; 4/2018.
7. Lecture in Graduate Course on Stem Cells and The Biology of Aging and Disease, Johns Hopkins Bloomberg School of Public Health: "Solid tumors: stem cell etiology or genome reprogramming/oncogene activation in more differentiated cells?" 2/18/2010; 2/22/2011.
8. Course director: Pathobiology of Cancer; Spring 2015, 2016, 2017, 2017

Mixed Graduate Students, Research and Clinical Fellows:

1. Principles of Immunostaining, Urology Summer Lecture Series, 8/27/07.
2. Immunostaining and Tissue Microarray Overview and Practical Uses, Urology Summer Lecture Series, July 29, 2008.

Clinical Instruction

Surgical Pathology

Teaching of Pathology Residents and Medical Students during weekly sign-out of surgical pathology material: Topics include prostate pathology, physiology, and carcinogenesis, 7/1/98-10/2011.

Autopsy Pathology

Teaching of Pathology Residents and Medical Students during autopsy gross conference and sign-out, 1/2000-1/2004.

CME Instruction

Short Course Instructor: "Gene Arrays and Tissue Arrays for Pathologists. 91st-94th Annual Meeting of the United States and Canadian Academy of Pathology". Sheraton Chicago Hotel, Chicago, Illinois, 2002-2004

Professional Society Course Teaching

Faculty Member, American Association of Cancer Research (AACR)/American Society of Clinical Oncology (ASCO) - NIH Sponsored Workshop: Methods in Clinical Cancer Research, Vail, Colorado: A combination of didactic presentations, career-development mentoring, and intensive protocol development to train the next generation of dedicated clinical researchers in oncology. Summer 2009-2015 (7 years; 1 week per year).

Annual Meeting of the American Association of Cancer Research (AACR), Education Session Chair and Speaker, 2017 Annual Meeting, Washington DC.

Faculty Member, The ECCO-AACR-EORTC-ESMO Workshop on Methods in Clinical Cancer Research is an educational programme similar to the Vail Course above that introduces junior clinical oncologists in any oncology subspecialty to the principles of good clinical trial design. June 17-23, 2017, Zeist The Netherlands

2018 AACR Annual Meeting Program Committee Co-Chair

Mentoring:

Pre-doctoral Advisees

- 2000-2003 Masashi Nakayama, MD., PhD. Assistant Professor of Urology, Osaka Medical Center for Cancer and Cardiovascular Disease. Dr. Nakayama completed research in our lab as part of his PhD program.
- 2003- 2006 Yatsutomo Nakai, MD., PhD. Urologist-in-Training, Osaka University. Dr. Nakai completed research in our lab as part of his PhD.
- 2007- 2011 Cheryl Mei-Yi Koh, PhD. Post-doctoral fellowship, Senior Research Scientist at AstraZeneca Pharmaceuticals. Cheryl was a Pathobiology Graduate Student who performed and completed her PhD thesis work in our laboratory.
- 2009- 2013 Laxmi Pellakuru, PhD. Johns Hopkins University SOM. Senior Medical Writer | Medical Communications ETHOS Health Communications. Laxmi was a Pathobiology Graduate Student. Laxmi completed her PhD thesis in the lab and has taken a job in industry.
- 2011- 2015 Shu-Han Yu, BS., MS., PhD. Shu-Han is currently employed at Meridigen Biotech. She completed her PhD in the Pathobiology Graduate program and was co-advised with Dr. Karen Sfanos.

Post-doctoral Advisees

- 1999- 2002 Matthew Putzi, MD. Dr. Putzi was a fellow in Molecular Urological Pathology. Staff Pathologists, Urology Austin, Austin TX.
- 2000- 2002 Elizabeth A. Saria, M.D. Instructor of Math and Science, Oakwood Friends School, Poughkeepsie, NY. Dr. Saria finished 2 years on the AEGON fellowship.
- 2000-2001 J. Kellogg Parsons, MD FACS. Professor of Urology, University of California, San Diego. Dr. Parsons was a research fellow in Molecular Urological Pathology/.
- 2001- 2002 Christina Samathanam, MD, PhD. Assistant Professor of Pathology, Texas Tech University Health Sciences Center School of Medicine. Dr. Samathanam spent approximately 8 months in our lab working on in situ hybridization protocols.
- 2002-2004 Alan K. Meeker, PhD. Associate Professor of Pathology, Johns Hopkins University, School of Medicine. Dr. Meeker completed a post-doctoral fellowship in our laboratory.
- 2001-2003 Cristina Magi-Galluzzi MD., PhD. Director and Associate Professor, Genitourinary Pathology Department of Anatomic Pathology. Cleveland Clinic Lerner College of Medicine of Case Western Reserve University. Dr. Magi-Galluzzi spent one year in our lab as a post-doctoral fellow.
- 2005-2008 Hitoshi Inoue, MD., PhD. Postdoctoral Fellow, Urologic Pathology, Johns Hopkins University. Dr. Inoue completed a post-doctoral fellowship in our laboratory. He is currently a practicing urologists in Japan.
- 2005-2009 Tsuyoshi Iwata, MD., PhD. Urologist-in-Training, Department of Urology, Kyoto Prefectural University, Osaka Japan. Dr. Iwata completed a post-doctoral fellowship in our lab.

- 2006-2007 Alexander Valdman, MD., PhD. Alex is currently a resident in Pathology at the Karolinska Institute in Stockholm, Sweden. Alex worked as a post doctoral fellow in our laboratory.
- 2006-2007 Christopher Warlick, MD., PhD. Associate Professor of Urology, University of Minnesota Medical Center. Dr. Warlick spent 1 year in our lab during residency in Urology performing his basic science research year.
- 2006-2007 Zsolt Jobbagy, MD. Staff Pathologist in The Department of Laboratory Medicine and Molecular Genetic Pathology, Newark Beth Israel Medical Center, Newark New Jersey. Dr. Jobbagy spent one year in our lab as a post-doctoral fellow.
- 2007-2011 Bora Gurel, MD. Postdoctoral Research Fellow Urological Pathology, The Johns Hopkins University SOM. Bora is pathologist from Turkey who is worked as a post-doc in our laboratory and is now back in Turkey.
- 2007-2011 Kirstie Adams, PhD. Assistant Professor, Nutrition and Foods Program, Texas State University, San Marcos. Kirstie worked as a post-doctoral fellow in the laboratory.
- 2008- 2010 Karen Sfanos, PhD. Associate Professor of Pathology, The Johns Hopkins University SOM. Karen worked as a post-doctoral fellow in the laboratory.
- 2008-2011 Motohide Uemura MD., PhD. Assistant Professor of Urology, Department of Urology, Osaka University, Japan. Dr. Uemura is a Urologist from Osaka University who worked as a post-doctoral fellow in the laboratory.
- 2008- 2012 Carlise Douglas Bethel, PhD. Educator at Prince George's County Public Schools. Carlise worked as a post-doctoral fellowship in our lab. Carlise earned her PhD at the University of Maryland and worked on part of her PhD thesis project in our lab. She is currently teaching high school students.
- 2011-2013 Berrak Gumaskaya-Ocal, MD. Associate Professor at Yildirim Beyazit University, Yildirim Beyazit University Department of Pathology. Berrak worked as a post-doc in the laboratory. She is currently an Associate Professor at Yildirim Beyazit University Yildirim Beyazit University Department of Pathology.
- 2013-2016 Ibrahim Kulac, MD. Postdoctoral Research Fellow. Ibrahim is a trained pathologist from Turkey and performed translational molecular pathology research.
- 2014-2016 Javier A. Baena Del Valle, MD. Postdoctoral Research Fellow. Javier is a trained pathologist from Columbia who performed translational molecular pathology research. Javier is a currently working as a pathologist and Hospital Member at Fundacion Santa Fe de Bogota.
- 2014-2016 Mark Markowski, MD, PhD. JHU Medical Oncology Fellow and Post-Doctoral Research Fellow. Mark has recently joined the faculty as an Assistant Professor at Johns Hopkins in Medical Oncology.
- 2015-2016 Gunes Guner, MD. Postdoctoral Research Fellow. Gunes is a trained pathologist from Turkey and performed translational molecular pathology research.
- 2016- Present Igor Vidal, MD. Igor is a pathologist from Brazil who is performing molecular pathology research.

- 2016-Present Onur Urtunc, MD. Onur is a pathologist from Turkey who is performing molecular pathology research.
- 2017-Present Levent Trabzonlu, MD. Onur is a pathologist from Turkey who is performing molecular pathology research.
- 2018-Present Busra Osbek, MD. is a pathologist from Turkey who is performing molecular pathology research.

Thesis Committees

- 2001-2002 Jila Bakker. GSTP1 in Liver Cancer - Committee Member
- 2001-2002 Jonathan Brody. PP32 in Cancer - Committee Member
- 2001- Carlise Douglas Bethel. NKX3.1 in Prostate - Committee Member and Thesis Reader
- 2002- Jessa Jones. Pancreas Cancer: Genetics and Gene Expression - Committee Member
- 2002-2003 Dennis Chesire. Beta Catenin Signaling in Prostate Cancer - Committee Member
- 2002- May Khalili. Conditional Gene Expression in the Prostate - Committee Member
- 2003-2005 Siobhan Sutcliffe, PhD. Sexually Transmitted Disease and Prostate Cancer – Committee Member
- 2004- Anthony Agoston MD., PhD. Abnormal Regulation of DNMT1 Protein in Cancer - Committee Member and Thesis Reader
- 2005-2008 Matthew Vaughn, PhD. Glutathione S-Transferase π Regulation and Expression in Liver – Committee Member
- 2005-2006 Vasan Yegnasubramanian MD., PhD. Aberrant methylation in Prostate Cancer – Committee Member
- 2005-2006 Jung Whan Kim DVM. Oncogenic & Hypoxic Alterations of Cellular Metabolism – Committee Member
- 2006-2008 Karen Sandell Sfanos, M.S., PhD. Characterization of Inflammatory Stimuli and Lymphocyte Populations in the Prostates of Patients Undergoing Radical Retropubic Prostatectomy - Committee Member
- 2006- Jinchun Yan, B.S. Benign prostate hyperplasia in the rat - Committee Member
- 2008- 2009 Barry Chestnut BS. - Committee Member
- 2007-2011 Tracy Speed, MD., PhD. - Committee Member

2011-Present	Ann McGregor, BS. - Committee Member
2010-2012	Heather Pressler, Johns Hopkins University and NIH Graduate Partnership Program, Committee Member
2111-2014	David Walker, Johns Hopkins University, Department of Pharmacology and the Molecular Sciences
2013-2018	Heidi Hempel, Johns Hopkins Pathobiology Graduate Program, Committee Member
2014-2018	Corey Porter, Johns Hopkins Pathobiology Graduate Program, Committee Member
2014-2018	Walter Barry, Johns Hopkins Cellular and Molecular Medicine Graduate Program, Committee Member

CLINICAL ACTIVITIES

Certification:

National Board of Medical Examiners, Part I: 6/89, passed.
 National Board of Medical Examiners, Part II: 3/94, passed.
 United States Medical Licensing Exam, Part III: 6/95, passed.
[Maryland Board of Physician Quality Assurance, Active License.](#)
 Diplomate, American Board of Pathology, Anatomic Pathology: 5/98.

Service Responsibilities:

Specialty: Genitourinary Surgical Pathology

Sign out of in house genitourinary pathology specimens and prostate needle biopsies – 10-15 % time. 1998-Present (except for 18 months during 2012-2013).

ORGANIZATIONAL ACTIVITIES

Institutional Administrative Appointments:

1. Associate Director of Pathology Cancer Research in Oncology, Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins
2. Member, Research Advisory Committee, Department of Pathology
3. Emeritus Director, Tissue Microarray Core Facility, Department of Pathology and Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins
4. Director, Prostate Specimen Repository, Brady Urological Research Institute
5. Member, Executive Committee, Pathology Training Program, Department of Pathology
6. Member, Program Leader's Council, Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins
7. Agenda/Awards committee Member for Research Council
8. Co-Leader, Task force on Personalized Medicine, Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins

Study Section/ Review Groups:

1. Ad Hoc Reviewer: U01 Application – NIH/NCI – 10/2003.
2. Ad Hoc Reviewer: Special Emphasis Panel R21 Application – NIH/NCI – 3/2005.

3. Study Section Initial Review Group Member: Bioengineering Sciences and Technology IRG, Center for Scientific NIH. 10/2005- Present.
4. Integration Panel Committee Member – Department of Defense, Congressionally directed Medical Research Prostate Cancer Research Program (10/2006 - 2009)
5. Member of Special Emphasis Panel/Scientific Review Group, the Specialized Program of Research Excellence (SPORE), National Cancer Institute, 2/2007 and 6/2007.
6. Ad Hoc Reviewer: Chemo/Dietary Prevention Study Section [CDP], R01 and R21 Grants, 2/2008.
7. 2008 Prostate Cancer Foundation Challenge Awards Standing Peer Review Committee, 4/2008.
8. Study Section Member ARRA RC1 Challenge Grant applications. Mail reviewer for ZRG1 OTC-K (58) in the Oncology-2 Translational Clinical IRG (OTC). July 20-21, 2009.
9. Member of Special Emphasis Panel/Scientific Review Group, the Specialized Program of Research Excellence (SPORE), National Cancer Institute, SPORE in Brain, Prostate, Kidney, Breast Cancers and Melanoma, February 11-12, 2009.
10. Grant Reviewer, Prostate Cancer Foundation, Young Investigator Awards and Challenge Awards, 2010, 2011, 2012, 2013.
11. Study Section Member: Research Projects to Enhance Applicability of Mouse Models for Translational Research. NIH R01 Grants, 10/2014.
12. Grant Reviewer, Prostate Cancer Foundation, Young Investigator Awards and Challenge Awards, 2017.
13. Grant Reviewer, The Brady Urological Research Institute at Johns Hopkins, Patrick C. Walsh Prostate Cancer Research fund grants (2015, 2016)
14. Grant Reviewer, The Johns Hopkins Cigarette Restitution Fund Grants, 2017.

Editorial Activities:

Editorial Board Member: Journal of Clinical Investigation (2017), [The Prostate](#), [Cancer Prevention Research](#)

AD Hoc Reviewer: New England Journal of Medicine, Nature, Nature Medicine, Urology, American Journal of Pathology, Cancer Research, Clinical Cancer Research, Journal of Clinical Oncology, Journal of Molecular Diagnostics, European Urology, Nature Reviews Cancer

Professional Societies:

[American Association for the Advancement of Science \(AAAS\)](#) - member since 1987.
 American Medical Association (AMA) - member 1987-1994.
 American Society of Clinical Pathologists - member since 1995.
 College of American Pathologists - member since 1995.
 Alpha Omega Alpha - elected 1993.
 American Urological Association – associate member since 1998.
 American Association for Cancer Research – member since 2001.

Conference Organization:

1. Co-Organizer, The first Joint Meeting of the Mouse Models of Human Cancer (MMHC) and the Prostate, Pooks Hill Marriott, Bethesda Nov 20-21, 2002.
2. Specialized Program in Cancer Research (SPORE), Bethesda, MD, November 20-21, 2002.
3. Annual Meeting of the American Association of Cancer Research, Program Committee Member for 2018 Meeting.

RECOGNITION

Invited Reviews: See References section.

Awards and Honors:

- 1982-1987 Dean's List - Six Semesters at University of Colorado, Boulder.
- 1993 Elected to Alpha Omega Alpha (AOA) Society
- 1997-1998 Research and Clinical Fellowship, NIH Training Grant in Pathobiology of Cancer.
- 1998 Stowell-Orbison Award for Research by a Pathologist-In-Training, International Academy of Pathology.
- 1998 [Mentored Clinician Scientist Development Award \(K08\), National Institutes of Health, National Cancer Institute.](#)
- 1998 & 1999 Harvey/Burroughs Welcome Clinician Scientist Award, The Johns Hopkins Medical Institutions.
- 2000 Aegon Fellowship in Breast and Prostate Cancer Research
- 2002 Achievement Award in Scientific Session: [TMAJ, A Johns Hopkins Set of Open Source Software Tools to Manage a Multi-Organ, Scalable, Secure, Multi-User Tissue MicroArray Database. 2002 Meeting: Advancing Pathology Informatics, Imaging and the Internet, Pittsburgh, PA.](#)
- 2004 [Donald S. Coffey Prostate Cancer Foundation Physician/Scientist Award 2004.](#)
- 2007 National Institute of Diabetes and Digestive and Kidney Diseases: 2007 STEP-UP Undergraduate Summer Research Program
- 2008 Pathobiology Graduate Program, Teaching Award, 2008.
- 2009 Department of Urology, Faculty Teaching Award for 2008-2009.
- 2011 Pathobiology Graduate Program, Teaching Award, 2011.
- 2016 Pathobiology Graduate Program, First Annual Nancy Nath Graduate Student Teaching Award, 2016.
- 2017 Elected Member of American Association of Physicians (AAP)

Awards to Trainees During Training:

Alan K. Meeker PhD

- 2002 Young Investigator's Award, Department of Pathology, The Johns Hopkins University School of Medicine
- 2002 AACR-AFLAC Scholar-in-Training Awards. December and August, 2002.
- 2002 Honorable mention, The Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins: Fellows Research Day Poster Session.
- 2001-2004 Research Fellowship, NIH Training Grant in Urology.
- 2004 American Society for Investigative Pathology, ASIP Merit Award

Masashi Nakayama MD PhD

- 2003 Stowell Orbison Award at the 2003 International Academy of Pathology Meeting.
- 2003 International Society of Genitourinary Pathology, Award for one of top 3 Abstracts at 2003 International Academy of Pathology Meeting.

Bora Gurel MD PhD

- 2008 International Society of Genitourinary Pathology, Award for one of top 3 Abstracts International Academy of Pathology Meeting.
- 2008 Best Poster Award (for one of top 3 posters), The Johns Hopkins University, Annual Prostate Cancer Research Day, Baltimore MD.
- 2010 American Association for Cancer Research 2010 Scholar-in-Training Award, 101st Annual Meeting of the AACR, Washington DC.

Cheryl M. Koh BS

- 2009 Honorable Mention for Best Posters Award, 2009 Inter-institutional Prostate Cancer Meeting (Harvard, Johns Hopkins, Memorial Sloan Kettering, U. Michigan) Baltimore MD.
- 2009 Honorable Mention, Fellow Research Day, Basic Research Award, The Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins.
- 2010 First Place, for Best Posters Award, 2010 Inter-institutional Prostate Cancer Meeting (Harvard, Johns Hopkins, Memorial Sloan Kettering, U. Michigan), Ft. Lauderdale FL.
- 2010 Honorable Mention, for Best Posters Award, The Johns Hopkins University, Annual Prostate Cancer Research Day, Baltimore MD.
- 2010 The Johns Hopkins University, Department of Pathology, Young Investigators Day Award in Basic Research.
- 2011 The Johns Hopkins University, Department of Pathology, Young Investigators Day Award in Basic Research.

Karen S. Sfanos PhD

- 2009 Honorable Mention, Best Poster Award, The Johns Hopkins University, Annual Prostate Cancer Research Day, Baltimore MD.
- 2009 The Johns Hopkins University, Department of Pathology, Young Investigators Day Award in Basic Research.
- 2009 1st Prize, Fellow Research Day, Basic Research Award, The Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins.
- 2010 The Johns Hopkins University, Department of Pathology, Young Investigators Day Award in Translational Research.

Kirstie Canane Adams, PhD

- Feb. 2011 Johns Hopkins Prostate Cancer Annual Research Day - Honorable Mention
- March 2011 Johns Hopkins Post Doctoral Association Poster Session - Honorable Mention
- April 2011 American Society for Nutrition, Experimental Biology Conference, Dietary Bioactives Research Interest Group Post Doctoral Poster Winner
- April 2011 American Society for Nutrition, Experimental Biology Conference, Diet and Cancer Research Interest Group Post Doctoral Poster Winner

Laxmi Pellakuru

- March 2011 2nd place for best poster at the 4th Annual Prostate Cancer Program Retreat
- Feb. 2012 Johns Hopkins Prostate Cancer Annual Research Day - Honorable Mention

Berrak Gumaskaya-Ocal

- Feb. 2012 1st Place John Willey Award at the Johns Hopkins Prostate Cancer Annual Research Day
- Apr. 2013 The Johns Hopkins University, Department of Pathology, Young Investigators Day Award in Translational Research.

Invited Talks, Panels:

1. Invited Speaker and Panelist, Innovative Solutions for Prostate Cancer Care. Crystal Gateway Marriott, Washington, DC, June 4-6, 1999.
2. Invited Speaker, The Henry Ford Hospital, Depts. of Urology and Pathology, June 28, 1999.
3. Invited Speaker and Panelist, National Cancer Institute Workshop on "Prevention of Prostate Cancer," Baltimore, MD, August 8-9, 1999.

4. Invited Speaker, The American Association of Investigative Pathology Companion Meeting to the United States and Canadian Academy of Pathology, Annual Meeting, New Orleans, LA, March 30, 2000.
5. Invited Speaker, 2000 Keystone Symposium on Advances in Breast and Prostate Cancer, Lake Tahoe, NV, April 30-May 4, 2000.
6. Invited Speaker, LCM Symposium at the NIH: Laser Capture Microdissection and Macromolecular Analysis of Normal Development and Pathology, National Institutes of Health, June 16, 2000.
7. Invited Speaker and Panelist, Molecular Targets for Dietary Prevention of Prostate Cancer, National Cancer Institute, June 16, 2000.
8. Invited Speaker, Pathology Grand Rounds, University of Pittsburgh Medical Center, January 24, 2001.
9. Invited Speaker and Panelist, 2nd International Conference on Innovative Solutions for Prostate Cancer Care. San Diego, CA, February 9-11, 2001.
10. Invited Speaker, Symposium: 92nd Annual Meeting of the American Association for Cancer Research, New Orleans, LA, March 27, 2001.
11. Invited Speaker, the Society for Basic Urological Research (SBUR) at the 96th Annual Meeting of the American Urological Association (AUA), Anaheim, CA, June 2001.
12. Invited Speaker, 9th Annual Coastal Oncology Symposium. Wilmington, NC, October 20, 2001.
13. Invited Speaker and Panelist, Presented at Research Matters: A Conference On Cigarette Restitution Fund Initiatives, at The John Hopkins Sidney Kimmel Comprehensive Cancer Center, November 29, 2001.
14. Invited Speaker, New Discoveries in Prostate Cancer Biology and Treatment, American Association for Cancer Research, Special Conference, Naples, FL, December 5, 2001.
15. Course Instructor, Gene Arrays and Tissue Arrays for Pathologists, The United States-Canadian Division of the International Academy of Pathology 91st Annual Meeting, Chicago, IL, March 1, 2002.
16. Invited Speaker, Prostate Cancer, The Dean & Betty Gallo Prostate Cancer Center Symposium at The Annual Retreat on Cancer Research, New Brunswick, NJ, April 24, 2002.
17. Invited Speaker, Tissue Microarray (TMA) Infrastructure and Standards, Full Day Workshop at The 20th Annual Symposium on Automated Information Management in the Clinical Laboratory, Ann Arbor, MI, May 22, 2002.
18. Invited Speaker, National Cancer Institute Conference on Prostate Cancer, Prouts Neck, ME, November 8, 2002.
19. Invited Speaker and Co-Organizer, The first Joint Meeting of the Mouse Models of Human Cancer (MMHC) and the Prostate Specialized Program in Cancer Research (SPORE), Bethesda, MD, November 20-21, 2002.
20. Invited Speaker, Workshop on Specimen Processing for Molecular Epidemiology Studies, Tissue microarrays: Principles of tissue selection, construction, and data handling, NIH Neuroscience Center, February 24, 2003.
21. Invited Speaker, Department of Pathology, Biennial Meeting Grand Rounds, The Johns Hopkins University School of Medicine, May 2, 2003.
22. Visiting Professor, Memorial Sloan Kettering, Department of Pathology, New York, NY, May 29-30, 2003.
23. Invited Speaker, Free Standing Symposium of International Urologists "Shaping the Future of Medical Management of Prostate Diseases", Rome Italy April 4-5.
24. Invited Speaker, President's Symposium, American Society for Investigative Pathology, Annual Meeting, San Diego Convention Center, San Diego CA, April 14, 2003.
25. Invited Speaker, Ninth Annual SPORE Investigators Workshop, Baltimore MD, Session on markers of diagnosis, early detection and risk assessment July, 11, 2003.
26. Invited Speaker 29th National Society Histotechnology Symposium/Convention Louisville, Kentucky, October 18 - October 23, 2003.
27. Visiting Professor, Northwestern University School of Medicine, Department of Pathology, Dec. 8, 2003.
28. Invited Speaker, Translational Research Conference, The Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins, Dec. 3, 2003.
29. Invited Speaker, Think Tank in Molecular Imaging of Prostate Cancer, Bethesda MD, Feb. 2, 2004.
30. Invited Speaker, The Lank Center for Genitourinary Oncology at The Dana-Farber Cancer Institute, Boston, MA, February 4, 2004.
31. Invited Speaker, Talks on Pathogenesis of Prostate Cancer and Prostate Needle Biopsy, The Japanese Urological Association Meeting, Osaka, Japan, April 12, 2004.

32. Invited Speaker, The Italian Society of Urological Pathology Annual Congress, Milan, Italy, April 24, 2004.
33. Invited Speaker, Symposium, on Inflammation and Cancer, AACR Annual Meeting, Orlando, FL, March 30, 2004
34. Invited Speaker, with Elizabeth Platz, The Division of Cancer Epidemiology and Genetics (DCEG) Seminar Series, June 18, 2004.
35. Invited Speaker, The 12th International Congress of Histochemistry and Cytochemistry, San Diego, CA, July 25, 2004.
36. Invited Speaker, The University Of California San Francisco, Department of Pathology, July 27, 2004.
37. Invited Speaker, Symposium IX: Oncogenesis, Angiogenesis and Disease Progression, The Society for Molecular Imaging 3rd Annual Meeting, September 12, 2004.
38. Invited Speaker, IBC's 11th Annual International Microarray and Microtechnology Course, Boston, MA, September 21, 2004.
39. Invited Speaker, National Society For Histotechnology Symposium/Convention, Toronto, Ontario Canada, September 22, 2004.
40. Invited Speaker and Discussion Panel Leader, The Eleventh Annual Scientific Retreat of the Prostate Cancer Foundation (Formally CapCure), Lake Tahoe, NV, October 24, 2004.
41. Invited Speaker, American Association for Cancer Research - Basic, Translational and Clinical Advances in Prostate Cancer, Bonita Springs, FL, Nov. 18, 2004
42. Visiting Professor and Invited Speaker, Venetian Institute of Medicine, Padova, Italy, Nov. 22, 2004.
43. Invited Speaker, "Takeda Genome Urology 2004", Tokyo, Japan, Nov. 27, 2004.
44. Invited Speaker, "Prostate Cancer The Extreme Points, Prevention and Hormone Refractory Disease, Rome Ital, Dec. 3, 2004.
45. Invited Speaker National Biospecimen Network (NBN) Pilot: Second Prostate Cancer SPORE Task Force Informatics Meeting, Jan. 30, 2005, Houston, TX.
46. Invited Speaker for Pathology Grand Rounds, Yale University School of Medicine, March 31, 2005.
47. Invited Speaker for Urology Grand Rounds, Johns Hopkins University School of Medicine, April 28, 2005.
48. Invited Speaker for SBUR/AUA Summer Conference, Baltimore, MD, August 20, 2005.
49. Invited Speaker for National Cancer Research Institute (NCRI Cancer Conference), Birmingham, UK, October 5, 2005.
50. Invited Speaker for Pathology Grand Rounds, Johns Hopkins University School of Medicine, October 24, 2005.
51. Invited Speaker, 3rd International Conference, Innovative Solutions for Cancer Care: Image-Guided, Minimally Invasive Diagnosis and Treatment of Prostate Cancer. The AdMeTech Foundation, Oct. 29, 2005, Washington D.C.
52. Invited Speaker for Separate Basic Science and Clinical Lectures (Prostate Biopsy): 12th Annual Paul C Peters CME Symposium, Dallas TX, Jan. 21, 2006.
53. Invited Speaker: First annual Prostate Cancer Day on Saturday, Baltimore Waterfront Marriott, February 11, 2006.
54. Invited Speaker, Plenary Session, American Society of Clinical Oncology, Prostate Cancer Symposium, San Francisco CA, Feb 25 2006.
55. Invited Speaker: Molecular Targets for Cancer Prevention, Keystone Symposia, Tahoe City, California, March 7, 2006.
56. Invited Speaker: Society for Urological Oncology Annual Meeting, Atlanta Georgia, May 20, 2006.
57. Invited Speaker: First Joint Japanese Urological Association-American Urological Association Meeting, Atlanta Georgia, May 21, 2006
58. Invited Speaker: State of the Art Lecture, Plenary Session: American Urological Association Annual Meeting, Atlanta Georgia, May 24th, 2006.
59. Invited Speaker: Workshop on Imaging Science Development for Cancer Prevention and Preemption, Hilton Hotel, Gaithersburg, Maryland, July 10-11, 2006.
60. Invited Speaker: International Research Conference on Food, Nutrition and Cancer, Washington D.C. American Institute for Cancer Research. July 13-14, 2006.

61. Invited Speaker: International Academy of Pathology Centennial Congress. Montreal, Québec, Canada, September 16-21, 2006.
62. Invited Speaker: Fred Hutchinson Cancer Center, University of Washington, Seattle Washington, September 21, 2006.
63. Invited Speaker: George O'Brien Urology Seminar Series Harvard Urological Diseases Research Center at Children's Hospital, Boston MA, September 25, 2006.
64. Invited Speaker, UW O'Brien Urology Research Center, University of Wisconsin SOM, October 13, 2006.
65. Invited Speaker: Advancement in Prostate Cancer Congress, Hilton Metropole Hotel, Nov. 10-11, Florence, Italy 2006.
66. Invited speaking Joint Society for Urological Oncology/ American Society for Clinical Oncology Prostate Cancer Symposium, Orlando FL, Feb 22, 2007.
67. Betty and Melbourne Lent Visiting Professor of Urology, State University of New York, University at Buffalo, March 8-9, 2007.
68. Invited Speaker: Dana-Farber Cancer Institute, Harvard Medical School. Special Seminars. May 2, 2007.
69. Invited Speaker Vanderbilt-Ingram Cancer Center's Seminar Series, Aug. 30, 2007.
70. Invited Speaker, Plenary Session, Innovative Minds in Prostate Cancer (IMPACT) Meeting, Hyatt Regency, Atlanta, Sept. 5-8, 2007.
71. Invited Speaker, 7th World Basic Urological Research Congress, Dublin Ireland Sept 28, 2007.
72. Invited Speaker, Prostate Cancer Foundation Annual Retreat Incline Village, Lake Tahoe Oct. 13, 2007
73. Invited Speaker, University of Massachusetts Cancer Center, October 23, 2007.
74. Invited Speaker, International Society of Urological Pathology USCAP Companion Symposium, March 1, 2008.
75. Invited Speaker, American Society of Andrology, Albuquerque, NM, April 15, 2008.
76. Invited Speaker, IV International Conference Urology in the Future, Madrid, Spain, April 26, 2008.
77. Invited Speaker, CPDR Saturday Distinguished Professor Seminar, Rockville, MD, May 10, 2008.
78. Invited Speaker, Department of Cancer Biology, the Thomas Jefferson University, September 25, 2008.
79. Invited Speaker, the Garvan Institute, Sydney Australia, November 13, 2008.
80. Invited Speaker, the Australian Prostate Cancer Council Annual Symposium, Brisbane Australia, November 19, 2008.
81. Invited Speaker, Monash Institute of Medical Research, Melbourne Australia, November 21, 2008.
82. Invited Speaker, Admetech, Consensus Conference on Prostate Imaging, Bethesda MD, Jan. 12-13, 2009.
83. Invited Speaker, The Cancer Institute of New Jersey Comprehensive Cancer Center, February 4, 2009.
84. Invited Speaker, Department of Pharmacology, Howard University College of Medicine, Washington D.C., March 4, 2009.
85. Invited Speaker, Grand Rounds, The Department of Pathology, The Johns Hopkins University SOM, April 13, 2009.
86. Invited Speaker, Plenary Session, International Society for Magnetic Resonance Imaging, Honolulu HI, April 24, 2009.
87. Invited Speaker, ASCO/AACR Workshop: Methods in Clinical Cancer Research, Vail CO, August 3, 2009.
88. Invited Speaker, American Society of Cytopathology Annual Meeting, Denver CO, Nov 15, 2009.
89. Invited Speaker, Annual Course on Cytopathology, Panel on Bladder Cancer, The Johns Hopkins University School of Medicine, April 16, 2010.
90. Invited Symposium Speaker, AACR 101st Annual Meeting, Washington D.C. April, 17-21, 2010.
91. Visiting Professor, Invited Speaker for Pathology Grand Rounds, Stony Brook University School of Medicine, Department of Pathology, June 17, 2010.
92. Invited Speaker, Surgical Pathology Seminar Series, Brigham and Women's Hospital, Department of Pathology, Nov 12, 2010.
93. Invited Plenary Speaker, ASCO 2011 Genitourinary Cancers Symposium Marriott World Center, Orlando FL February 17, 2011.
94. Invited Speaker, Androgen receptor signaling in prostate cancer: Translating biology into clinical practice, Hilton Crystal City, Arlington VA, Dec 6th-7th, 2010.
95. Invited Speaker, Max Planck Institute for Infection Biology, Berlin German, March 25, 2011.

96. Invited Speaker and Panelist, The 18th Annual Prostate Cancer Foundation Scientific Retreat, Lake Tahoe NV, September, 2011.
97. Invited Speaker, Joint 10th International Prostate Cancer Forum, 2011 and Japanese Urological Association Central Section Meeting Hotel Ganvia, Kyoto Japan, Nov. 18th, 2011
98. Invited Speaker, 5th International Symposium on Focal Therapy and Imaging in Prostate & Kidney Cancer. Durham, NC. June 7th, 2012.
99. Invited Speaker, The Endocrine Society's 95th Annual Meeting Symposia: Cell Microenvironment in Prostate Cancer. San Francisco, CA. June 18th, 2013.
100. Invited Speaker, The Johns Hopkins University School of Medicine, Sidney Kimmel Comprehensive Cancer Center Translational Research Conference, Jan. 7th, 2014
101. Invited Speaker, AACR-Prostate Cancer Foundation Conference: Advances in Prostate Cancer Research January 18-21, 2014 Manchester Grand Hyatt, San Diego, CA.
102. Invited Speaker, Annual Meeting of the Society for Urological Oncology (SUO)/Society for Basic Urological Research (SBUR), Orange County Convention Center, May 17, 2014.
103. Invited Speaker, 11th Biennial Prostate Cancer Forum Prostate Cancer, UK Embassy Suites Hotel, Baltimore MD June 11, 2014.
104. Invited Speaker, Prostate Cancer Foundation, Coffey-Holden Prostate Cancer Academy, La Jolla CA, June 26-29, 2014.
105. Invited Speaker, Clinical Trials Design Workshop, Part 2: Insights in the Era of Personalized Cancer Therapy and Targeted Therapies: How to Progress Through Well-Conducted Phase I and II Clinical Trials, The 105th Annual Meeting of the American Association for Cancer Research, San Diego, Calif, April 5, 2014
106. Invited Speaker, Prostate Cancer Foundation, Annual Meeting, Carlsbad CA, Oct. 24, 2014.
107. Invited Speaker, 9th Asia-Pacific International Academy of Pathology 2015, June 5th, 2015 Brisbane Convention & Exhibition Centre, Brisbane, Queensland, Australia.
108. Invited Speaker, Norwegian Prostate Cancer Symposium, KS Agenda Meeting Centre (Haakon VII's gate 9) 12 June 2015, Oslo Norway; 2 lectures.
109. Visiting Professor, Cleveland Clinic Foundation. Guest Lecturer for Prostate Cancer Seminar Series. Molecular Pathology in Prostate Cancer Development and Progression. Cleveland Ohio, 11/12/2015.
110. Invited Speaker, 2016 Annual Meeting of the American Association for Cancer Research, New Orleans; Educational Session Speaker, April 16, 2016.
111. Invited Speaker, 2016 Annual Meeting of the American Association for Cancer Research, New Orleans; Meet the Expert Session; April 17, 2016.
112. Invited Speaker, Pathology Grand Rounds, The Johns Hopkins University SOM, Department of Pathology, Baltimore MD, 5/2/2016.
113. Invited Panelist Speaker, Plenary Session of the 2016 Annual Meeting of the American Urological Association, San Diego CA, May 9, 2016.
114. Invited Speaker, 2016 Annual Coffey-Holden Academy, San Diego CA, June 25, 2016.
115. Deans Distinguished Visiting Professor Grand Rounds, Johns Hopkins Aramco Healthcare Hospital, Dhahran Saudi Arabia, 10/9/2016.
116. Invited Speaker, 2016 Society for Basic Urological Research Fall Meeting, Scottsdale AZ, 11/11/2016.
117. Invited Discussant for Oral Abstract Session on Prostate Cancer at the 2017 Genitourinary Cancers Symposium, Orland, Florida, Feb 17, 2017.
118. Invited Speaker, Columbia University Medical Center, Department of Pathology and Cell Biology Visiting Chair Seminar Series, 5/11/2017.
119. Invited Speaker: September 12, 2017; The Johns Hopkins University School of Medicine The Responsible Handling of Biospecimens: Policy and Practice; Dean's Research Integrity Colloquium
120. Invited Speaker: Towson University course on Globalization: Globalization and Cancer (fall 2017, Spring 2018)
121. Invited Speaker, Second Global Summit on Precision Diagnosis for Prostate Cancer Care, Boston MA. 10/13/2017.
122. Keynote Address: Antibody Therapeutics Conference 2017, Oncology, Immunology, and Infectious Diseases, The Center of Academic Activities, Academia Sinica, Taipei, Taiwan, November 3rd, 2017.

123. Invited Speaker: 12th Annual Johns Hopkins Prostate Research Day; Johns Hopkins School of Medicine December 7, 2017
124. Invited Speaker: Joint EDRN-MCL-U01 Meeting, Bethesda, MD; 3/8/2018
125. Invited Speaker: International Symposium of Animal Models for Translational Research. Botucatu SP Brazil; 5/11/2018.
126. Invited Speaker: 2018 TMU-Johns Hopkins Joint Symposium on Advances in Cancer Prevention and Treatment; Taipei Medical University, October 23, 2018.
127. Invited Speaker: The Johns Hopkins University School of Medicine, Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins Translational Research Conference, Dec. 5th, 2018.
128. Invited Speaker: Medical College of Wisconsin, Cancer Center Grand Rounds, Dec. 7th, 2018.