CURRICULUM VITAE

Alexander D. Borowsky, MD HCLD

Personal Information

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Education

2010-2011 ***Lawrence Berkeley National Laboratory***, Berkeley, CA, **Sabbatical**, Tumor Microenvironment (Mina Bissell, PhD)

1998-2001 ***Harvard Medical School***, Pathology Department, Boston, MA, **Research Fellow**, Molecular Oncology: Cloning of the translocation breakpoint in “Mucosa Associated B-cell Lymphoma” (Jeffrey Sklar, M.D., Ph.D.)

1997-1998 ***Vanderbilt University School of Medicine*** Pathology and Urology Departments, Nashville, TN, **Instructor and Research Fellow**, Molecular Oncology: Transgenic mouse models of prostatic carcinoma. (Robert J. Matusik, Ph.D)

1996-1997 ***Vanderbilt Medical Center***, Nashville, TN, **Fellow, Surgical Pathology**, Advanced training in Breast Pathology, Surgical Pathology, and Cytology/FNA (David L. Page, M.D.)

1995-1995 ***Seattle Children's Hospital***, University of Washington, Seattle, WA, **Pediatric Pathology Visiting Fellow** (Joe Rutledge, MD and Raj Kapur MD PhD)

1994-1996 ***Vanderbilt Medical Center***, Nashville, TN, Resident, **Anatomic Pathology**

1993-1993 ***University of Washington School of Medicine***, Seattle, WA, **Gastrointestinal Pathology and Immunopathology Visiting Fellow** (Roger Haggitt, MD and Alan Gown, MD)

1992-1993 ***Vanderbilt University School of Medicine***, Nashville, TN, *Applies to Residency Training*, **"Post-Sophomore/Junior" Fellow in Pathology** (Roy A. Jensen, M.D.)

1989-1994 ***Vanderbilt University School of Medicine***, Nashville, TN, **Doctor of Medicine** (M.D.)

1985-1989 ***Pomona College***, Claremont, CA, **Bachelor of Arts** degree**, Physics**

Employment

July 2014-current	UC Davis School of Medicine and School of Veterinary Medicine, Davis, CA, **Professor (Regular/In-Residence)** with tenure; Accelerated Merits awarded 2017 and 2020, Department of Pathology and Laboratory Medicine. Director of Molecular Diagnostics 2020-2022, UC Davis Comprehensive Cancer Center Core Faculty and Co-Director Women's Cancer Care Program; Center for Immunology and Infectious Diseases (*previously Center for Comparative Medicine)* Core Faculty 2001-2022.
March 2014-November 2022	Center for Genomic Pathology, Davis, California, **Scientific Director and Chair of Board of Directors**, 501(c)(3) Not for profit with a mission of education and quality improvement in biomedical research particularly in the areas of animal models of disease and genotype and phenotype analyses.
March 2021-current	Histolix Slide-free Pathology, Sacramento, **Chief Medical Officer and Co-Founder**, Start-up technology company developing methods of direct to digital tissue imaging for pathology.
July 2008-June 2014	UC Davis School of Medicine, Davis, CA, **Associate Professor**, Department of Pathology and Laboratory Medicine. Center for Comparative Medicine. UC Davis Comprehensive Cancer Center
September 2010-August 2014	Lawrence Berkeley National Laboratory, Berkeley, CA, **Visiting Scientist**, Biosciences Division.
October 2001-June 2008	UC Davis School of Medicine, Davis, CA, **Assistant Professor**, Department of Pathology and Laboratory Medicine. Center for Comparative Medicine. UC Davis Comprehensive Cancer Center
July 1998-October 2001	Harvard Medical School, Boston, MA, **Associate Pathologist and Research Fellow**, Breast team specialty diagnostic sign-out. Fellow in molecular oncology.
July 1997-June 1998	Vanderbilt University School of Medicine; Departments of Urology and Pathology, Nashville, TN, **Instructor**

Licenses and Certifications

American Board of Bioanalysis, *Certified High-complexity Laboratory Director (**HCLD**), and Director of Molecular Diagnostics,* 2022-***Current***.

Medical Board of California, *Physician and Surgeon License*, A77194, 11/28/2001 *to **Current.***

Board of Registration in Medicine, Commonwealth of Massachusetts, *Medical License*, 157464, 5/20/98- 6/4/2003 *(Retired in good standing).*

Board of Medical Examiners, Tennessee, *Medical License*, 28548, 8/1/1996 - 6/30/1999 *(Retired in good standing).*

American Board of Pathology, *Diplomate in Anatomic Pathology,* 6/11/1997 – ***Current.***

Extending Knowledge

Broadcast, Print or Electronic Media

1. Cancer a more elusive enemy than terror, Newspaper Article, September 11, 2011, Sacramento Bee.

2. Wisdom Breast Cancer Study, Radio Interview, October 10, 2017, Capital Public Radio.
3. "All of Us" Health Study, Television Interview, July 26, 2018, DCTV.
4. UC Davis Study Seeks to Improve Breast Cancer Screening, Television Interview, October 17, 2018, KCRA NBC.
5. Responding to the COVID Pandemic at UC Davis, Video, June 27, 2020, Portals Global.
6. Taste for the Cure: A Taste of Science, Website, October 17, 2020, UCSF Breast Oncology Program.
7. Breast cancer genes and genetic testing, Television Interview, October 8, 2021, ABC10 Sacramento ABC10 This Morning.
8. Personalized Breast Cancer Screening and the Wisdom Study, Television Interview, October 22, 2021, ABC10 Sacramento ABC10 This Morning.

Workshops, Conferences, Presentations and Short Courses

1. Imaging Technology Multidisciplinary Research Project Brainstorming Workshop, Organizer, Investigators and physicians attending the UC Davis Imaging symposium, Sacramento, CA, 2006, 65 Attendees.
2. MMHCC Steering Committee Meeting, Organizer, Consortium PIs and Co-Is; NCI Program Directors; Invited Speakers, NCI Shady Grove Campus, January 23-24, 2014, 75 Attendees.
3. The doctor you never see, Invited Speaker, National Breast Cancer Coalition, Davis, CA, February 9, 2015.
4. All breast cancers are not the same, some are even harmless, Invited Speaker, National Breast Cancer Coalition Monthly Meeting, Davis, CA, February 8, 2016.
5. Understanding your personal risk of breast cancer, Invited Speaker, National Breast Cancer Coalition Monthly Meeting, Davis, CA, August 14, 2017.
6. Tumor Immune Microenvironment Microscopy Methods and Image Analysis Workshop, Organizer, NCI Molecular Characteriation (MCL) Consortium pathology and immunology experts and lab personnel, Houston, TX, 2017 March, 45 Attendees.
7. Image Analysis Methods for Mutiplex Immunoflourescence and Immuno-Oncology, Organizer, NCI MCL Consortium, Academic and Industry partners, JHMU; Baltiomore, MD, 2018 November, 50 Attendees.
8. Advanced Multispectral Image Analysis and High Density Database Solutions, Organizer, Cancer scientists focused on tissue analytics including the tumor immune microenviornment, Nashville, TN, April 24, 2019, 60 Attendees.
9. Advanced Multispectral Imaging Database and Analysis Solutions, Organizer, Industry and Academic, La Jolla, CA, October 2, 2019, 50 Attendees.
10. Update on TME Profiling: What are the New Targets for Next Marker Panels and Technologies to Consider?, Organizer, National Cancer Institute MCL Consortium and Industry Partners, Virtual, April 29, 2020, 75 Attendees.
11. It's Time for TIME (Tumor Immune MicroEnvironment), Invited Speaker, Academic and Industry Scientists, Labroots Online Consortium, June 3, 2020, 1298 Attendees.
12. Update on Image Analysis Tools, Whole Slide Data Handling and Database, Organizer, MCL Consortium and Partners, Virtual, October 14, 2020, 63 Attendees.
13. PITUITARY ADENOMA NOMENCLATURE (PANOMEN) WORKSHOP, Invited Speaker, Workshop of Neurosurgeons, Endrinologists, Oncologists, Radiologist and Pathologists, Dallas, TX, November 2022, 40 Attendees.

14. AACR SPECIAL CONFERENCE: RETHINKING DCIS: AN OPPORTUNITY FOR PREVENTION?, Invited Speaker, Cancer Researchers and Clinicians, Philadelphia, PA, September 8-11, 2022, 350 Attendees.

Grants and Contracts

Grants Active

01/01/2022 - 12/31/2027	Grant #13338397, $14,278,000, Principal Investigator, 1UG1HD107711-01 California Partnership for Personalized Nutrition: All of US Nutrition for Precision Health Clinical Center, NIH Common Fund, Percentage Effort=20%
09/01/2021 - 08/31/2026	$668,000, Co-Investigator, I-SPY2 Clinical Trials Network, Aurora, M (Site) (Principal Investigator), Quantum Leap Healthcare Collaborative, Percentage Effort=5%
05/01/2021 - 04/30/2026	Grant #K01OD030518-01, $839,798, Other - Primary Mentor, Identifying Microenvironmental Factors Regulating Melanoma Promotion and Immune Evasion, Hyeongsun Moon, DVM (Principal Investigator)
05/19/2019 - 05/18/2024	Grant #1U19AI144184-01, $10,100,000, Co-Investigator, Cooperative Research Center for NanoScaffold- Based Chlamydia trachomatis Vaccines, Coleman (Principal Investigator), NIH-NIAID
04/01/2018 - 03/31/2023	Grant #1OT2OD026552-01, $14,948,269, Co-Principal Investigator, California Precision Medicine Research Program Consortium - All of Us, Ohno-Machado and Anton-Culver (Principal Investigator), National Institutes of Health (NIH) -Flow Through UCSD, Percentage Effort=35%
08/01/2015 - 07/31/2023	$19,009,010, Co-Principal Investigator, Enabling a Paradigm Shift: A Preference-Tolerant RCT of Personalized vs. Annual Screening for Breast Cancer, Borowsky (PI: UCD Subcontract) Laura Esserman (Principal Investigator), PCORI, Percentage Effort=10%
04/01/2019 - 03/31/2024	Grant #R01 CA215332, $1,784,250, Collaborator, Planar cell polarity contribution to breast cancer metastasis, Kermit Carraway (Principal Investigator), NCI/NIH, Percentage Effort=wos%
06/01/2021 - 05/31/2023	Grant #D161127, $325,000, Principal Investigator, A Multi-Center, Non-Inferiority Study for Roche Digital Pathology Dx (VENTANA DP 200) as Compared to Manual Microscopy for Primary Diagnosis in Surgical Pathology
03/08/2021 - 02/28/2026	Grant #R37, $346,099, Co-Investigator, Engrailed-1 and Epigenetic Vulnerabilities in Metastatic Pancreatic Cancer, Hwang, Chang (Principal Investigator)

7/1/2023 - 6/30/2026	Grant #PC220004, $1,404,000, Co-Investigator, Targeting CD200/CD200R signaling as a novel strategy for the treatment of therapy resistant prostate cancer, Liu (Principal Investigator), CDMRP/DOD, Percentage Effort=2%
1/23/2023 - 3/22/2023	Grant # DSI2202, $27,429, Principal Investigator, Global Ring Study for HER2 IHC Testing in Breast Cancer, Diaceutics/Daiichi Sankyo, Inc., Percentage Effort=10%

Grants Submitted

09/01/2021 - 08/31/2024	Grant ##BC200957, $2,344,967, Co-Principal Investigator, Big Data-Oriented Multimodality Biomarker Discovery for Distinguishing Deadly From Indolent Breast Cancers, Chang (Principal Investigator), CDMRP, Percentage Effort=5%
4/1/2023 - 3/31/2026	Grant #BC201243P1, $2,355,000, Co-Principal Investigator, Bispecific Programable Nano-immuno-engagers Against Breast Cancer, Borowsky/Lam (Principal Investigator), CDMRP, Percentage Effort=10%
05/05/2022	Grant #P01 NCI, $1,098,396, Co-Principal Investigator, I-SPY2 UC Davis Subcontract, Esserman, L and Hylton, N (Principal Investigator), NIH/NCI, Percentage Effort=5%
7/01/2023 - 06/30/2028	Grant #1P01CA WISDOM 2, $7,800,000, Co-Principal Investigator, WISDOM 2.0: A Precision Medicine Platform to Improve Personalization of Screening and Support Targeted Risk Reduction: Who is at risk for what kind of cancer: Analyzing the WISDOM study data, ESSERMAN, LAURA (Principal Investigator), NIH, Percentage Effort=10%
7/1/2023 - 6/30/2028	Grant #R01 CA277527-01, $3,863,419, Co-Investigator, GigaFIBI: rapid, large-format histology-resolution imaging for intraoperative assessment of breast lumpectomy margins, Fereidouni (Principal Investigator), NIH/NCI, Percentage Effort=10%

Grants Completed

07/01/2015 - 06/30/2022	Grant #U01 CA196406, $3,823,970, Principal Investigator, Elucidating the Molecular and Contextual Basis for IDLE Ultralow Risk Lesions and the Tumor Immune Microenvironment of High Risk in Situ and Invasive Breast Cancers (Active in NCE), NCI: RFA U01 Molecular and Cellular Characterization of Screen-Detected Lesions, Percentage Effort=10%
08/01/2020 - 07/31/2021	$50,000, Principal Investigator, Defining cellular subsets responsible for CXCL12-mediated melanoma promotion, UC Davis Cancer Center (internal pilot), Percentage Effort=wos%

07/01/2019 - 06/30/2022	Grant #R15CA235430 , $63,685, Co-Investigator, Stratifying brain tumors by structural subtyping and heterogeneity, Bahram Parvin (UNR) (Principal Investigator), NIH/NCI, Percentage Effort=2%
07/01/2020 - 12/31/2021	Grant #C21CR2153, $75,000, Co-Investigator, Precision medicine: modeling liver metastases using patient-derived tumors on a microfluid device, Gholami (Principal Investigator), UCOP Cancer Coordinating Committee, Percentage Effort=wos%
09/01/2018 - 08/31/2019	Grant #A18-1652-15, $75,654, Principal Investigator, CHECKPOINT SCREEN ASSAY FOR A PILOT IMMUNO-M.A.T.C.H. TRIAL, Bristol Meyers Squibb, Percentage Effort=10%
03/17/2017 - 03/15/2019	$214,000, Principal Investigator, Genesis Study: Multi-Center Study to Evaluate the Accuracy and Prcision of the Aperio ePathology System for Primary Diagnosis fo Formalin -Fixed Paraffin Embedded Tissue Sections, Danaher/Leica/Aperio, Percentage Effort=n/a%
02/01/2017 - 01/31/2020	Grant #U01 CA196406-set aside, $150,000, Co-Principal Investigator, Development of Common Immuno-Oncology Tools for Studying Microenvironmental Interactions Across Tumor Types, DeMarzo and Borowsky (Principal Investigator), NIH/NCI, Percentage Effort=3%
11/01/2017 - 10/31/2020	Grant #U01 CA196406-supplement, $4,200,000, Co-Investigator, PreCancer Genomic Atlas Pilot Project, Avi Spira (Boston University) (Principal Investigator), NIH/NCI, Percentage Effort=3%
07/01/2016 - 06/30/2020	Grant #1R01CA210553-01, $2,026,965, Co-Investigator, IMAGE-GUIDED ULTRASOUND THERAPY AND DRUG DELIVERY IN PANCREATIC CANCER, Katherine Ferrara (Principal Investigator), NCI/NIH, Percentage Effort=5%
09/27/2016 - 02/15/18	Grant #1OT2OD024611-01, $1,128,184, Co-Principal Investigator, CALIFORNIA PRECISION MEDICINE CONSORTIUM; All of US, OHNO-MACHADO, LUCILLA (Principal Investigator), NIH/PMI, Percentage Effort=10%
07/01/2016 - 06/30/2018	Grant #1R21CA199631-01A1, $217,500, Co-Investigator, Dissecting gastric cancer clonality with genomic analyses and patient xenografts, Carvahal-Carmona (Principal Investigator), NIH/NCI, Percentage Effort=5%
04/01/2016 - 03/31/2018	Grant #P30 ES023513, $29,602, Co-Investigator, In vitro model of developmental endocrine disruption, Michelle LaMerril (Principal Investigator), NIH Environmental Health Sciences Core Center Pilot Project Program, Percentage Effort=wos%
03/09/2016 - 02/28/2021	Grant #1R01CA206222-01, $1,143,750, Co-Investigator, TARGETING KEY ORPHAN NUCLEAR RECEPTOR IN LETHAL PROSTATE CANCER, CHEN, HONGWU (Principal Investigator), NCI/NIH, Percentage Effort=5%

01/01/2010 - 12/31/2012	Grant #BC093366, $93,400, Trainer, Epigenetic Mechanisms of Folate Nutrition in Breast Cancer, R. Lobo - Graduate Student Fellow (Principal Investigator), CDMRP/DOD
10/15/2015 - 10/14/2016	$20,000, Co-Investigator, A new animal model for breast cancer., Russel Hovey (Principal Investigator), Collaborative Institutional Research Grant Pilot, Percentage Effort=5%
08/01/2015 - 07/31/2018	$375,000, Collaborator, Targeting peripheral-derived regulatory T cells as a means of enhancing immune responses directed against prostate cancer, Eric Sebzda (Principal Investigator), CDMRP Prostate Cancer Research Program, Percentage Effort=na%
07/01/2015 - 06/30/2020	Grant #R01 EB000194, $1,125,000, Co-Investigator, Optimizing PET Imaging, Jinyi Qi (Principal Investigator), NIH, Percentage Effort=10%
03/01/2015 - 02/28/2018	Grant #R01 CA PAR14-240, $1,816,000, Co-Investigator, Interdisciplinary collaboratory for enhancing translational therapeutics utilizing biologically, immunologically and metabolically relevant models of breast cancer, WIlliam Murphy (Principal Investigator), NCI/NIH
08/01/2014 - 07/31/2018	Grant #R33 CA183654, $1,235,400, Co-Principal Investigator, Highly Multiplexed Ion-beam Tissue Molecular Imaging with Sub-micron Resolution, PIs: Nolan (Stanford); Levenson/Borowsky (UCD) (Principal Investigator), NCI IMAT, Percentage Effort=10%
08/01/2014 - 07/31/2017	Grant #R21 CA183660, $634,900, Principal Investigator, Highly multiplexed ion-beam tissue RNA in situ imaging with sub-micron resolution, NCI IMAT, Percentage Effort=10%
04/01/2014 - 03/31/2018	Grant #BC132309, $1,120,126, Principal Investigator, Next generation molecular histology using highly multiplexed ion-beam imaging (MIBI) of breast cancer tissue specimens for enhanced clinical guidance, CDMRP (DOD) Breast Cancer Research Program, Percentage Effort=10%
07/01/2013 - 12/31/2016	$675,437, Principal Investigator, Athena Breast Health Network: Trans-UC Breast Cancer Clinical Care and Research: UC Davis Site, Safeway Foundation, Percentage Effort=10%
07/01/2013 - 12/31/2014	Grant #180B-0065, $165,000, Co-Principal Investigator, Predicting Breast Cancer Recurrence to Improve Care, UCD Subcontract with UCSF; Esserman (Principal Investigator), California Breast Cancer Research Program, Percentage Effort=2%
01/01/2013 - 12/31/2014	$80,000, Principal Investigator, UCOP/Athena, Athena Pathology Central Coordination
08/11/2012 - 01/31/2014	$149,944 , Co-Principal Investigator, UCOP Award, Miller (Principal Investigator), California Breast Cancer Research Program

811/12-1131/14

08/01/2012 - 01/31/2014	Grant #181B-0016, $275,333, Principal Investigator, Establishing Cell Lifetimes in Breast Cancer and Normal Stem Cells, California Breast Cancer Research Program, Percentage Effort=10%
01/01/2012 - 07/31/2016	Grant #U24 CA143799, Co-Principal Investigator, TCGA Data Analysis Center at Berkeley, Spellman (Principal Investigator), NIH/NCI
04/08/2011 - 05/31/2016	Grant #R01CA112356, $1,995,500, Co-Investigator, Specific and high resolution ultrasound cancer imaging, Katherine Ferrara (Principal Investigator), NCI/NIH, Percentage Effort=2%
07/01/11 - 06/30/16	Grant #R01 CA152313, $2,438,552, Co-Investigator, Target MKP-1 for Therapy-Resistant Breast Cancer Stem Cells, Jianjian LI (Principal Investigator), NIH/NCI
09/01/11 - 08/31/16	Grant #R01 AG040081-01, $2,380,077, Co-Investigator, Age-related Shifts in the Epithelial Lineages and Tissue Homeostasis in the Mammary Gland, Borowsky - UCD sub-contract (Principal Investigator), NIH/NIA
07/01/2009 - 06/30/2014	Grant #U01 CA141541, $712,710, Co-Investigator, Translational Insights into Estrogen Receptor Alpha Positive Luminal Breast Cancers, PI: Schreiber, Washington Univ./UCD Subcontract PI: Cardiff (Principal Investigator), NIH/NCI
07/01/2009 - 01/31/2014	Grant #U01 CA14582, $3,608,580, Co-Principal Investigator, Center for Genomic Pathology, Cardiff (Principal Investigator), NIH/NCI
09/01/2009 - 08/31/2013	Grant #2R01EB000194-06A210, $1,100,000, Co-Investigator, Optimization of PET Imagaing, Jinyi Qi (Principal Investigator), NIBIB/NIH
09/01/2009 - 08/31/2013	Grant #2R01EB000194-06A210, Assistant Researcher, Optimization of PET Imaging, Jinyi Qi, BME (Principal Investigator), NIBIB/NIH
09/01/2009 - 08/31/2011	Grant #U01HG004080-01, $2,435,000, Co-Investigator, Supplement to: High-throughput Targeted Mutagenesis of Mouse Stem Cell Lines, De Jong; Kent Lloyd- UCD component (Principal Investigator), NIH/NHGRI KOMP 312 Phenotyping
09/01/08 - 06/30/2014	Grant #R01 CA129561-01A2, $2,098,985, Co-Investigator, Develop and test a high resolution breast imaging system, Badawi (Principal Investigator), NIH/NCI
07/01/2008 - 06/31/2011	Grant #CBCRP 14FB-0135, $135,000, Trainer, Folate, DNA Methylation and Breast Cancer Metastasis, Marple (fellow) (Principal Investigator), State of California

09/01/2008 - 08/31/2013	Grant #R01 CA129561-01A2, $2,098,985, Assistant Researcher, Biomedical Engineering Radiology, Badawi (Principal Investigator), NIH/NCI
12/01/2007 - 08/31/2010	Grant #R01CA 129438, $190,000, Co-Principal Investigator, S1P Lyase in Colon Cancer (R01), Julie Saba (Principal Investigator), NIH/NCI
07/01/2007 - 06/30/2009	Grant #R21 CA116409-1A2, $220,000, Co-Investigator, Folate, DNA Methylation and Breast Tumorigenesis (UCD Subcontract) (R21), Miller (Principal Investigator), NIH/NCI
09/01/2007 - 08/31/2012	Grant #R01CA, $190,000, Co-Principal Investigator, Borowsky PI UC Davis Subcontract, Julie Saba (Principal Investigator), NIH/NCI
09/01/2007 - 08/30/2010	Grant #W81XWH-071-0650, $377,174, Co-Investigator, Folate and DNA Methylation in a Mouse Model of Breast Cancer, Joshua Miller (Principal Investigator), CMBCRP/DOD Synergy Award
08/26/2007 - 08/25/2012	Grant #K26 RR0243037-01, $703,339/yr, Principal Investigator, UCD Mouse Bology Program: Pathology Resource, Training and Cancer Modeling (K26), NIH/NCRR
09/01/2007 - 02/28/2009	Grant #RC1 AI078516, $29,100, Co-Principal Investigator, Endogenous sphingosine-1 phosphate as a radioprotector of intestinal tissues (RC1), Julie Saba (Principal Investigator), NIH/NIAID
04/01/2006 - 03/31/2009	Grant #BC051055, $300,000, Co-Investigator, Ablation of Normal Mammary and Tumor Stem Cells as a Means for Decreasing Breast Cancer Risk, Erickson (Principal Investigator), CMBCRP/Department of Defense (DOD) IDEA award
09/07/2006 - 08/31/2011	Grant #U01HG004080-01, $4,254,000, Co-Investigator, High-throughput targeted mutagenesis of mouse stem cell lines, K. Loyd (UCD) P. De Jong (Principal Investigator), NIH/NHGRI KOMP
07/01/2006 - 05/31/2011	Grant #R01CA118384-01A1, $200,000, Collaborator, Mechanisms of Receptor Tyrosine Kinase Inhibition. (R01), Sweeney (Principal Investigator), NIH/NCI
07/01/2005 - 12/31/2006	Grant #CABCRP, $150,000, Principal Investigator, Mammary Precancer Origins and Behavior, California Breast Cancer Research Program
09/27/2004 - 03/31/2009	Grant #U01 CA105490-01, $50,000, Co-Investigator, Analysis of Tumor Dynamics in Progression and Metastasis (U01), Chodosh and Cardiff (Principal Investigator), NIH
03/01/2004 - 02/28/2007	Grant #R21/R33, Co-Investigator, Integrin Binding Peptides for Imaging in Cancer (R21/R33), Sutcliffe (Principal Investigator), NIH/NCI

04/01/2004 - 03/30/2009	Grant #U01 CA084294, $60,606, Co-Investigator, A Mouse Model for Prostate Cancer (U01), Abate-Shen (Principal Investigator), NIH
09/01/2004 - 08/31/2010	Grant #R24 CA 1108-04, $3,232,000, Co-Investigator, UC Davis Mouse Center Imaging Program (R24), Cherry (Principal Investigator), NIH/NCI
08/01/2003 - 07/31/2005	Grant #R21 CA CA102733-01, $250,000, Co-Investigator, Quantitative Assessment of Murine Tumors with MicroPET (R21), Abbey (Principal Investigator), NIH: National Cancer Institute
06/30/2002 - 06/30/2004	Grant #UCDHSRA02, $150,000, Principal Investigator, The Next Generation Mouse Model of Prostate Cancer, UC Davis, HSRA Program
12/01/2002 - 11/30/2006	Grant #R01 CA 89409-04, $250,000, Co-Investigator, Micro CT/PET Scanner for in Vivo Screening in Mice (R01), Cherry (Principal Investigator), NIH/ NCI
07/01/2002 - 06/30/2003	Grant #UCCRCC02, $50,000, Principal Investigator, Adenocarcinoma of the Prostate in a Mouse: Rapid Tumorigenesis, and Molecular Relevance with Polyoma Virus Middle T Antigen, UC, Cancer Research Coord. Committee
01/01/2001 - 12/31/2005	Grant #R01 CA 89140, $211,250, Co-Investigator, Biology of Neoplastic Progression in Breast Cancer (R01), Cardiff (Principal Investigator), NIH/NCI
09/30/1999 - 09/29/2014	Grant #U42 RR14905, $4,321,450, Co-Investigator, UCD Mutant Mouse Regional Resource Center (U42), Barthold (Principal Investigator), NIH/NCRR
10/01/1999 - 09/30/2004	Grant #U01 CA84294, $124,989, Co-Investigator, Mouse Models of Human Cancers Consortium (U01), Abate-Shen (Principal Investigator), NIH/NCI
07/01/2016 - 06/30/2021	$2,200,000, Principal Investigator, Prospective Validation of Combined Phenotype, Gene Expression, and Tumor Immune Microenvironment Definitions of IDLE and Ultralow Risk in Screen Detected v. Interval Breast Cancers from the WISDOM Cohort., CDMRP, Percentage Effort=10%
04/01/2015 - 04/01/2020	Grant #U24 CA195859, $5,854,000, Principal Investigator, Cancer Models Communities Forum, NIH/NCI, Percentage Effort=10%
04/01/2015 - 03/31/2018	$57,356, Co-Investigator, Pathology-Genomic (PG) Workbench for Integration of Whole Slide Imaging of Histology Sections with Genomics and Clinical Data, Parvin (Principal Investigator), NIH: RFP14-155

04/01/2015 - 03/31/2020	Grant #R01 CA 189984, Co-Investigator, Reducing over-treatment of DCIS using CE-breast CT, John Boone (Principal Investigator), NIH/NCI
07/01/2019 - 06/01/2021	Grant #W81XWH-17-BRCP, $1,056,968, Co-Investigator, Induction of BRCA2 Insufficiency, Genome Instability and Tumorigenesis by the Cancer/Testis Antigen SYCP3, Wolf Heyer and Neil Hunter, Co-PIs (Principal Investigator), CDMRP/DOD Breast Cancer Research Program, Percentage Effort=5%
09/01/2019 - 08/31/2024	Grant #RFA-CA-19-013, $7,000,000, Co-Investigator, Immuno-Oncology Translation Network (IOTN): Immuno-engineering to Improve Immunotherapy (i3) Centers: Synergistic focal/agonist strategies, Levy and Graves (Stanford) (Principal Investigator), NIH/NCI, Percentage Effort=5%
12/01/2019 - 11/30/2024	Grant #R01CA244027, $2,217,915, Principal Investigator, Metabolism and Lysosomal Activity Implications for Tumor Microenvironment Initiation and Cancer Invasion, NIH/NCI, Percentage Effort=10%
12/01/2019 - 11/30/2022	Grant #BC190229P1, $2,340,000, Co-Principal Investigator, Targeting ZNF217 in aggressive ER+ breast cancer to promote differentiation and block aggressive progression., Krig (CNS) (Principal Investigator), CDMRP DOD, Percentage Effort=5%
12/01/2019 - 11/30/2022	Grant #BC190688, $2,340,000, Co-Investigator, Induction of BRCA2 Insufficiency, Genome Instability, and Tumorigenesis by the Cancer/Testis Antigen SYCP3, Heyer (Principal Investigator), CDMRP DOD, Percentage Effort=5%
12/01/2019 - 11/30/2022	Grant #BC190902P1, $2,340,000, Co-Principal Investigator, Metabolic Acid Phenotyping of DCIS for Stratifying Progression Risk., Damaghi (Moffit) (Principal Investigator), CDMRP DOD, Percentage Effort=5%

Honors & Awards

May 1994	**School of Medicine Award of Distinction**. Vanderbilt School of Medicine.
May 1994	**John Shapiro Award for Excellence in Pathology**. Vanderbilt School of Medicine.
March 1997	**Stowell-Orbison Prize**. Awarded to the outstanding paper presented by a pathologist-in-training. United States and Canadian Academy of Pathology meeting.
July 2002	**University of California Cancer Research Coordinating Committee Award**. Awarded for proposed research in mouse models of prostate cancer.
July 2002	**UC Davis Health Science Research Award**. Awarded for proposed research in mouse models of prostate cancer.

July 2005	**State of California, Breast Cancer Research Program Award**. - Peer-reviewed research award, international caliber research proposals with an emphasis on communication with lay breast cancer advocacy groups.
Sept 2007	**Mid Career Investigator Award in Mouse Pathobiology Research** NIH/NCRR Award for excellence in mentoring comparative pathologists and in comparative mouse pathobiology research.
2009 - 2010	**Mid-Career Leadership Program (MCLP)** - UC Davis School of Medicine, Selected faculty leadership training at UC Davis Health involving weekly (Saturday) all day training sessions, and a practical mentored project with results presentation.
2012-2019	Co-Lead **UC Athena: Breast Health-Initiative** Diagnosis and Treatment Clinical Care and Research Team. UC wide effort to improve breast care, coordinate-improved clinical practice, develop infrastructure and conduct tran lational research.
2015	**Dean's Team Award for Excellence in Research**, UC Davis School of Medicine. Awarded to multidisciplinary team of Pathology, Radiology, Physics and Computer Science for efforts in improved breast imaging.
2015- 2019	Pathology Working Group Leader: NCI Molecular and Cellular Characterization of Screen Detected Cancers Consortium
2015	External Advisory Board Member: Genentech/Roche Companion Diagnostic Testing for PDL-1 Inhibitor Therapy in Lung Cancer
2014-2015	**UC Davis IRB Accreditation Application Team**: Association for the Accreditation of Human Research Protection Programs, Inc. (AAHRPP)
2016	**Prostate Cancer Foundation Movember Challenge Award**, HongWu Chen (Project Lead): Targeting RORg with Novel Therapeutics for Lethal Prostate Cancer
2018-2021	**Selection Committee for the AACR Distinguished Lecture** in Breast Cancer Research Annual Award
2020 June	**Josie King "Hero" Award,** Awarded to the Molecular Diagnostics Laboratory for outstanding service in bringing up COVID testing.
2020 May	**Thriving Pink Community Service Award**, Davis and Sacramento breast cancer research advocacy and community support group.

Publications

Journals

1995	Borowsky AD, Stein SM, Tulipan NB, Dermody TS. ***Meningitis caused by mixed anaerobic species complicating tethered cord syndrome***. **Clin Infect Dis**, 21(3): 706-7.
1996	Meyerowitz CB, Fleischer AC, Pickens DR, Thurman GB, Borowsky

AD, Thirsk G, Hellerqvist CG. ***Quantification of tumor vascularity and flow with amplitude color Doppler sonography in an experimental model: preliminary results***. **J Ultrasound Med**, 15(12): 827-33.

1998 Kasper S, Sheppard PC, Yan Y, Pettigrew N, Borowsky AD, Prins GS, Dodd JG, Duckworth ML, Matusik RJ. ***Development, progression, and androgen-dependence of prostate tumors in probasin-large T antigen transgenic mice: a model for prostate cancer***. **Lab Invest**, 78(3): 319-33.

1999 Gobbi H, Simpson J, Borowsky A, Jensen R, Page D. ***Metaplastic breast tumors with a dominant fibromatosis-like phenotype have a high risk of local recurrence***. **Cancer**, 85(10): 2170-82.

1999 Borowsky A, Gobbi H. ***Metaplastic carcinoma of the breast, grading and behavior of predominantly spindle cell lesions***. **Pathology Case Reviews**, 4 (5)(Sep/Oct): 808-813.

1999 Morgan JA, Yin Y, Borowsky AD, Kuo F, Nourmand N, Koontz JI, Reynolds C, Soreng L, Griffin CA, Graeme-Cook F, Harris NL, Weisenburger D, Pinkus GS, Fletcher JA, Sklar J. ***Breakpoints of the t(11;18)(q21;q21) in mucosa-associated lymphoid tissue (MALT) lymphoma lie within or near the previously undescribed gene MALT1 in chromosome 18***. **Cancer Res**, 59(24): 6205-13.

2002 Chang WL, Tarantal AF, Zhou SS, Borowsky AD, Barry PA. ***A recombinant rhesus cytomegalovirus expressing enhanced green fluorescent protein retains the wild-type phenotype and pathogenicity in fetal macaques***. **J Virol**, 76(18): 9493-504.

2003 Borowsky AD. ***Genetically engineering a mouse***. **Comp Med**, 53(3): 249-50.

2003 Borowsky AD. ***Mouse models of prostate cancer***. **Comp Med**, 53(3): 253-6.

2003 Abate-Shen C, Banach-Petrosky WA, Sun X, Economides KD, Desai N, Gregg JP, Borowsky AD, Cardiff RD, Shen MM. ***Nkx3.1; Pten mutant mice develop invasive prostate adenocarcinoma and lymph node metastases***. **Cancer Res**, 63(14): 3886-90.

2003 Fan Y, Borowsky AD, Weiss RH. ***An antisense oligodeoxynucleotide to p21(Waf1/Cip1) causes apoptosis in human breast cancer cells***. **Mol Cancer Ther**, 2(8): 773-82.

2003 McDaniel LD, Chester N, Watson M, Borowsky AD, Leder P, Schultz RA. ***Chromosome instability and tumor predisposition inversely correlate with BLM protein levels***. **DNA Repair (Amst)**, 2(12): 1387-404.

2004 Dong Y, Chi SL, Borowsky AD, Fan Y, Weiss RH. ***Cytosolic p21Waf1/Cip1 increases cell cycle transit in vascular smooth muscle cells***. **Cell Signal**, 16(2): 263-9.

2004 Galvez JJ, Cardiff RD, Munn RJ, Borowsky AD. ***Mouse models of human cancers (Part 2)***. **Comp Med**, 54(1): 13-5.

2004 Jessen KA, Liu SY, Tepper CG, Karrim J, McGoldrick ET, Rosner A, Munn RJ, Young LJ, Borowsky AD, Cardiff RD, Gregg JP. ***Molecular analysis of metastasis in a polyomavirus middle T mouse model: the role of osteopontin***. **Breast Cancer Res**, 6(3): R157-69.

2004 Cardiff RD, Rosner A, Hogarth MA, Galvez JJ, Borowsky AD, Gregg JP. ***Validation: the new challenge for pathology***. **Toxicol Pathol**, 32 Suppl 1: 31-9.

2004 Stemmer-Rachamimov AO, Louis DN, Nielsen GP, Antonescu CR, Borowsky AD, Bronson RT, Burns DK, Cervera P, McLaughlin ME, Reifenberger G, Schmale MC, MacCollin M, Chao RC, Cichowski K, Kalamarides M, Messerli SM, McClatchey AI, Niwa-Kawakita M, Ratner N, Reilly KM, Zhu Y, Giovannini M. ***Comparative pathology of nerve sheath tumors in mouse models and humans***. **Cancer Res**, 64(10): 3718-24.

2004 Borowsky AD, Munn RJ, Galvez JJ, Cardiff RD, Ward JM, Morse HC, Kogan SC, Aldape KD, Louis DN, Bosenberg MW. ***Mouse models of human cancers (part 3)***. **Comp Med**, 54(3): 258-70.

2004 Abbey CK, Borowsky AD, McGoldrick ET, Gregg JP, Maglione JE, Cardiff RD, Cherry SR. ***In vivo positron-emission tomography imaging of progression and transformation in a mouse model of mammary neoplasia***. **Proc Natl Acad Sci U S A**, 101(31): 11438-43.

2004 Maglione JE, McGoldrick ET, Young LJ, Namba R, Gregg JP, Liu L, Moghanaki D, Ellies LG, Borowsky AD, Cardiff RD, MacLeod CL. ***Polyomavirus middle T-induced mammary intraepithelial neoplasia outgrowths: single origin, divergent evolution, and multiple outcomes***. **Mol Cancer Ther**, 3(8): 941-53.

2004 Namba R, Maglione JE, Young LJ, Borowsky AD, Cardiff RD, MacLeod CL, Gregg JP. ***Molecular characterization of the transition to malignancy in a genetically engineered mouse-based model of ductal carcinoma in situ***. **Mol Cancer Res**, 2(8): 453-63.

2004 Shachaf CM, Kopelman AM, Arvanitis C, Karlsson A, Beer S, Mandl S, Bachmann MH, Borowsky AD, Ruebner B, Cardiff RD, Yang Q, Bishop JM, Contag CH, Felsher DW. ***MYC inactivation uncovers pluripotent differentiation and tumour dormancy in hepatocellular cancer***. **Nature**, 431(7012): 1112-7.

2004 Gao H, Ouyang X, Banach-Petrosky W, Borowsky AD, Lin Y, Kim M, Lee H, Shih WJ, Cardiff RD, Shen MM, Abate-Shen C. ***A critical role for p27kip1 gene dosage in a mouse model of prostate carcinogenesis***. **Proc Natl Acad Sci U S A**, 101(49): 17204-9.

2004 Gum JR, Hicks JW, Crawley SC, Yang SC, Borowsky AD, Dahl CM, Kakar S, Kim DH, Cardiff RD, Kim YS. ***Mice expressing SV40 T antigen directed by the intestinal trefoil factor promoter develop tumors resembling human small cell carcinoma of the colon***. **Mol Cancer Res**, 2(9): 504-13.

2005 Namba R, Young LJ, Maglione JE, McGoldrick ET, Liu S, Wurz GT, DeGregorio MW, Borowsky AD, MacLeod CL, Cardiff RD, Gregg JP. ***Selective estrogen receptor modulators inhibit growth and progression of premalignant lesions in a mouse model of ductal carcinoma in situ***. **Breast Cancer Res**, 7(6): R881-9.

2005 Borowsky AD, Namba R, Young LJ, Hunter KW, Hodgson JG, Tepper CG, McGoldrick ET, Muller WJ, Cardiff RD, Gregg JP. ***Syngeneic mouse mammary carcinoma cell lines: two closely related cell lines with divergent metastatic behavior***. **Clin Exp Metastasis**, 22(1): 47-59.

2005 Chao RC, Pyzel U, Fridlyand J, Kuo YM, Teel L, Haaga J, Borowsky A, Horvai A, Kogan SC, Bonifas J, Huey B, Jacks TE, Albertson DG, Shannon KM. ***Therapy-induced malignant neoplasms in Nf1 mutant mice***. **Cancer Cell**, 8(4): 337-48.

2006 DeRossi C, Bode L, Eklund EA, Zhang F, Davis JA, Westphal V, Wang L, Borowsky AD, Freeze HH. ***Ablation of mouse phosphomannose isomerase (Mpi) causes mannose 6-phosphate accumulation, toxicity, and embryonic lethality***. **J Biol Chem**, 281(9): 5916-27.

2006 Namba R, Young LJ, Abbey CK, Kim L, Damonte P, Borowsky AD, Qi J, Tepper CG, MacLeod CL, Cardiff RD, Gregg JP. ***Rapamycin inhibits growth of premalignant and malignant mammary lesions in a mouse model of ductal carcinoma in situ***. **Clin Cancer Res**, 12(8): 2613-21.

2006 Dai B, Kim O, Xie Y, Guo Z, Xu K, Wang B, Kong X, Melamed J, Chen H, Bieberich CJ, Borowsky AD, Kung HJ, Wei G, Ostrowski MC, Brodie A, Qiu Y. ***Tyrosine Kinase Etk/BMX Is Up-regulated in Human Prostate Cancer and Its Overexpression Induces Prostate Intraepithelial Neoplasia in Mouse***. **Cancer Research**, 66(16): 8058-8064.

2006 Kirmiz C, Li B, An HJ, Clowers BH, Chew HK, Lam KS, Ferrige A, Alecio R, Borowsky AD, Sulaimon S, Lebrilla CB, Miyamoto S. ***A serum glycomics approach to breast cancer biomarkers***. **Mol Cell Proteomics**, (Jul 17).

2006 Cardiff RD, Gregg JP, Miller JW, Axelrod DE, Borowsky AD. ***Histopathology as a predictive biomarker: strengths and limitations***. **J Nutr.**, 136(10): 2673-2675.

2006 Borowsky AD, Dingley KH, Ubick E, Turteltaub KW, Cardiff RD, Devere-White R. ***Inflammation and atrophy precede prostatic neoplasia in a PhIP-induced rat model***. **Neoplasia**, 8(9): 708-715.

2006 Abbey CK, Borowsky AD, Gregg JP, Cardiff RD, Cherry SR. ***Preclinical Imaging of Mammary Intraepithelial Neoplasia with Positron Emission Tomography***. **Journal of Mammary Gland Biology and Neoplasia**, 11(2): 137-49.

2006 Oskouian B, Sooriyakumaran P, Borowsky AD, Crans A, Dillard-Telm L, Tam YY, Bandhuvula P, Sada JD. ***Sphingosine-1-Phosphate Lyase Potentiates Apoptosis via p53- and p38- Dependent Pathways and is Downregulated in Colon Cancer***. **Proceedings of the National Academy of Science (USA)**, 103(46): 17384-9.

2006 Yen L, Cao Z, Wu X, Ingalla ER, Baron C, Young LJ, Gregg JP, Cardiff RD, Borowsky AD, Sweeney C, Carraway KL 3rd. ***Loss of Nrdp I enhances ErbB2/ErbB3-dependent breast tumor cell growth***. **Cancer Res**, 66(23): 1279-86.

2006 Namba R, Maglione JE, Davis RR, Baron CA, Liu S, Carmack CE, Young LJ, Borowsky AD, Cardiff RD, Gregg JP. ***Heterogeneity of mammary lesions represented molecular differences***. **BMC Cancer**, 6: 275.

2007 Borowsky AD, Weiss RH, Seligson D, Lin PY, Dillard-Telm L, Belldegrun AS, Figlin RA, Pantuck AD. ***p21 is a Prognostic Marker in Renal Cell Carcinoma: Implications for Novel Therapeutic Approaches***. **The Journal of Urology**, 177(1): 63-8.

2007 Stephensen CB, Borowsky AD, Lloyd KC. ***Disruption of Rxra gene in thymocytes and T lymphocytes modestly alters lymphocyte frequencies, proliferation, survival and T helper type 1/type 2 balance***. **Immunology**, 121(4): 484-98.

2007 Damonte P, Gregg JP, Borowsky AD, Keister BA, Cardiff RD. ***EMT tumorigenesis in the mouse mammary gland***. **Lab Invest**, 87(12): 1218-26.

2007 Borowsky AD. ***Special considerations in mouse models of breast cancer***. **Breast Dis**, 28: 29-38.

2008 Farrington-Rock C, Kirilova V, Dillard-Telm L, Borowsky AD, Chalk S, Rock MJ, Cohn DH, Krakow D. ***Disruption of the Flnb gene in mice phenocopies the human disease spondylocarpotarsal synostosis syndrome***. **Hum Mol Genet**, 17(5): 631-41.

2008 Rizki A, Weaver VM, Lee SY, Rozenberg GI, Chin K, Myers CA, Bascom JL, Mott JD, Semeiks JR, Grate LR, Mian IS, Borowsky AD, Jensen RA, Idowu MO, Chen F, Chen DJ, Petersen OW, Gray JW, Bissell MJ. ***A human breast cell model of preinvasive to invasive transition***. **Cancer Res**, 68(5): 1378-87.

2008 Choi MS, Catana AM, Wu J, Kim YS, Yoon SJ, Borowsky AD, Gambhir SS, Gupta S, Zern MA. ***Use of bioluminescent imaging to assay the transplantation of immortalized human fetal hepatocytes into mice***. **Cell Transplant**, 17(8): 899-909.

2008 Miller JK, Shattuck DL, Ingalla EQ, Yen L, Borowsky AD, Young LJ, Cardiff RD, Carraway KL, Sweeney C. ***Suppression of the negative regulator LRIG1 contributes to ErbB2 overexpression in breast cancer***. **Cancer Res**, 68(20): 8286-94.

2008 Miller JW, Borowsky AD, Marple TC, McGoldrick ET, Dillard-Telm L, Young LJ, Green R. ***Folate, DNA methylation, and mouse models of breast tumorigenesis***. **Nutr Rev**, 66 Suppl 1: S59-64.

2008 Damonte P, Hodgson JG, Chen JQ, Young LJ, Cardiff RD, Borowsky AD. ***Mammary carcinoma behavior is programmed in the precancer stem cell***. **Breast Cancer Res**, 10(3): R50.

2009 Bowen SL, Wu Y, Chaudhari AJ, Fu L, Packard NJ, Burkett GW, Yang K, Lindfors KK, Shelton DK, Hagge R, Borowsky AD, Martinez SR, Qi J, Boone JM, Cherry SR, Badawi RD. ***Initial characterization of a dedicated breast PET/CT scanner during human imaging***. **J Nucl Med**, 50(9): 1401-8.

2009 Perroud B, Ishimaru T, Borowsky AD, Weiss RH. ***Grade-dependent proteomics characterization of kidney cancer***. **Mol Cell Proteomics**, 8(5): 971-85.

2009 Workman HC, Miller JK, Ingalla EQ, Kaur RP, Yamamoto DI, Beckett LA, Young LJ, Cardiff RD, Borowsky AD, Carraway KL, Sweeney C, Carraway KL. ***The membrane mucin MUC4 is elevated in breast tumor lymph node metastases relative to matched primary tumors and confers aggressive properties to breast cancer cells***. **Breast Cancer Res**, 11(5): R70.

2009 Yang JC, Ok JH, Busby JE, Borowsky AD, Kung HJ, Evans CP. ***Aberrant activation of androgen receptor in a new neuropeptide-autocrine model of androgen-insensitive prostate cancer***. **Cancer Res**, 69(1): 151-60.

2010 Cardiff RD, Borowsky AD. ***Precancer: Sequentially Acquired or Predetermined?*** **Toxicol Pathol**, (38) 171-179.

2010 Hsia EY, Kalashnikova EV, Revenko AS, Zou JX, Borowsky AD, Chen

HW. ***Deregulated E2F and the AAA+ coregulator ANCCA drive proto-oncogene ACTR/AIB1 overexpression in breast cancer***. **Cancer Research**, 8(2): 183-93.

2010 Nair R, Junankar S, O'Toole S, Shah J, Borowsky AD, Bishop JM, Swarbrick A. ***Redefining the expression and function of the inhibitor of differentiation 1 in mammary gland development***. **PLoS One**, 5(8): e11947.

2010 Ingalla EQ, Miller JK, Wald JH, Workman HC, Kaur RP, Yen L, Fry WH, Borowsky AD, Young LJ, Sweeney C, Carraway KL. ***Post-transcriptional mechanisms contribute to the suppression of the ErbB3 negative regulator protein Nrdp1 in mammary tumors***. **J Biol Chem**, 285(37): 28691-97.

2010 Qi J, Nakayama K, Cardiff RD, Borowsky AD, Kaul K, Williams R, Krajewski S, Mercola D, Carpenter PM, Bowtell D, Ronai ZA. ***Siah2-dependent concerted activity of HIF and FoxA2 regulates formation of neuroendocrine phenotype and neuroendocrine prostate tumors***. **Cancer Cell**, 18(1): 23-38.

2010 Flowers M, Schroeder JA, Borowsky AD, Besselsen DG, Thomson CA, Pandey R, Thompson PA. ***Pilot study on the effects of dietary conjugated linoleic acid on tumorigenesis and gene expression in PyMT transgenic mice***. **Carcinogenesis**, 31(9): 1642-49.

2010 Kheirolomoom A, Mahakian LM, Lai CY, Lindfors HA, Seo JW, Paoli EE, Watson KD, Haynam EM, Ingham ES, Xing L, Cheng RH, Borowsky AD, Cardiff RD, Ferrara KW. ***Copper-doxorubicin as a nanoparticle cargo retains efficacy with minimal toxicity***. **Mol Pharm**, 7(6): 1948-58.

2010 Kalashnikova EV, Revenko AS, Gemo AT, Andrews NP, Tepper CG, Zou JX, Cardiff RD, Borowsky AD (co-corresponding senior author), Chen HW. ***ANCCA/ATAD2 overexpression identifies breast cancer patients with poor prognosis, acting to drive proliferation and survival of triple-negative cells through control of B-Myb and EZH2***. **Cancer Res**, 70(22): 9402-12.

2010 Adamson TW, Kendall LV, Goss S, Grayson K, Touma C, Palme R, Chen JQ, Borowsky AD. ***Assessment of carprofen and buprenorphine on recovery of mice after surgical removal of the mammary fat pad***. **J Am Assoc Lab Anim Sci**, 49(5): 610-6.

2011 Kuil J, Buckle T, Oldenburg J, Yuan H, Borowsky AD, Josephson L, van Leeuwen FW. ***Hybrid peptide dendrimers for imaging of chemokine receptor 4 (CXCR4) expression***. **Mol Pharm**, 8(6): 2444-53.

2011 Nguyen DH, Oketch-Rabah HA, Illa-Bochaca I, Geyer FC, Reis-Filho JS, Mao JH, Ravani SA, Zavadil J, Borowsky AD, Jerry DJ, Dunphy

KA, Seo JH, Haslam S, Medina D, Barcellos-Hoff MH. ***Radiation acts on the microenvironment to affect breast carcinogenesis by distinct mechanisms that decrease cancer latency and affect tumor type***. **Cancer Cell**, 19(5): 640-51.

2011 Bandhuvula P, Honbo N, Wang GY, Jin ZQ, Fyrst H, Zhang M, Borowsky AD, Dillard L, Karliner JS, Saba JD. ***S1P lyase: a novel therapeutic target for ischemia-reperfusion injury of the heart***. **Am J Physiol Heart Circ Physiol**, 300(5): H1753-61.

2011 Rygh CB, Qin S, Seo JW, Mahakian LM, Zhang H, Adamson R, Chen JQ, Borowsky AD, Cardiff RD, Reed RK, Curry FR, Ferrara KW. ***Longitudinal investigation of permeability and distribution of macromolecules in mouse malignant transformation using PET***. **Clin Cancer Res**, 17(3): 550-9.

2011 de Leoz ML, Young LJ, An HJ, Kronewitter SR, Kim J, Miyamoto S, Borowsky AD, Chew HK, Lebrilla CB. ***High-mannose glycans are elevated during breast cancer progression.*** **Mol Cell Proteomics**, 10(1): 1-17.

2012 Chang H, Han J, Borowsky A, Loss L, Gray J, Spellman P, Parvin B. ***Invariant Delineation of Nulclear Architecture in Glioblastoma Multiforme from The Cancer Genome Atlas Cohort***. **IEEE Trans Med Imaging**, 32(4): 670-82.

2012 D'Amato NC, Ostrander JH,.Bowie ML, Sistrunk C, Borowsky A, Cardiff RD, Bell K, Young LJ, Simin K, Bachelder RE, Delrow J, Dawson A, Yee LD, Mrozek K, Clay TM, Osada T, Seewaldt VL. ***Evidence for phenotypic plasticity in aggressive triple-negative breast cancer: human biology is recapitulated by a novel model system***. **PLoS ONE**, 7(9): 45684.

2012 Duan Z, Zou JX, Yang P, WangY, Borowsky AD, Gao AC, Chen-HW. ***Developmental and androgenic regulation of chromatin regulators EZH2 and ANCCA/ATAD2 in the prostate via MLL histone methylase complex***. 73(5): 455-66.

2012 Borowsky AD, Bandhuvula P,Kumar A, Yoshinaga Y, Nefedov M, Fang LG, Zharig M, Baridon B, Dillard L, de Jong P, Young SG, West DB, Saba JD. ***Sphingosine-1-phosphate lyase expression in embryonic and adult marine tissues***. **Epub**, 53(9): 1920-31.

2012 Boucher DL, Chen JQ, Cherry SR, Borowsky AD. ***Establishment of Clonal MIN-O Transplant Lines for Molecular Imaging via Lentiviral Transduction & In Vitro Culture***. **Plos ONE**, 7(6): e39350.

2012 Vinall RL, Chen JQ, Hubbard NE, Sulaimon SS, Shen MM, Devere White RW, Borowsky AD. ***Initiation of prostate cancer in mice by Tp53 evidence for an alternate molecular progression***. **Dis Model Mech**, 5(6): 914-920.

2012 Garbe JC, Pepin F, Pelissier F, Sputova K, Fridriksdottir AJ, Quo DE, Villadsen R, Park M, Petersen OW, Borowsky AD, Stampfer MR, Labarge MA. ***Accumulation of multipotent progenitors with a basal differentiation bias during aging of human mammary epithelia***. **Cancer Res**, 72(14): 3687-701.

2012 Mori H, Borowsky AD, Bhat R; Ghajar CM, Seiki M, Bissell MJ. ***Laser Scanning-Based Tissue Autofluorescence/Fluorescence Imaging, a New Technique for Analysis of Micro anatomy in Whole-Mount Tissues***. **Am J Pathol**, 180(6): 2249-56.

2012 Dusek RL, Bascom JL, Vogel H, Baron S, Borowsky AD, Bissell MJ, Attardi LD. ***Deficiency of the p53/p63 target Perp alters mammary glands homeostasis and promotes cancer***. **Breast Cancer Research**, 8(6): 2444-53.

2012 Buckle T, van Berg NS, Kuil J, Bunschoten A, Oldenburg J, Borowsky AD, Wesseling J, Masada R, Oishi S, Fujii N, van Leeuwen FW. ***Non-invasive longitudinal imaging of tumor progression using an (111) indium labeled CXCR4 peptide antagonist***. **Am J Nucl Med Mol Imaging**, 2(1): 99-109.

2013 Lehoczky JA, Thomas PE, Patrie KM, Owens KM, Villarreal LM, Galbraith K, Washburn J, Johnson CN, Gavino B, Borowsky AD, Millen KJ, Wakenight P, Law W, Van Keuren ML, Gavrilina G, Hughe ED, Saunders TL, Brihn L, Nadeau JH, Innis JW. ***A novel intergenic ETnII-β insertion mutation causes multiple malformations in polypodia mice.*** **PLoS genetics**, 9(12): e1003967.

2013 Ittmann M, Htiarig J, Radaelli E, Martin P, Signoretti S, Sullivan R, Simons BW, Ward JM, Robinson BD, Chu GC, Loda M, Thomas G, Borowsky A, Cardiff RD. ***Animal Models of Human Prostate Cancer: The Consensus Report of the New York Meeting of the Mouse Models of Human Cancers Consortium***. **Cancer Research**, 73(9): 2718-36.

2013 Cardiff RD, Hubbard NE, Engelberg JA, Munn RJ, Miller CH, Walls JE, Chen JQ, Velasquez Garcia HA, Galvez JJ, Bell KJ, Beckett LA, Li YJ, Borowsky AD. ***Quantitation of fixative-induced morphologic and antigenic variation in mouse and human breast cancers.*** **Laboratory Investigation**, 93(4): 480-97.

2013 Buckle T, Kuil J, Van den Berg NS, Bunschoten A, Lamb HJ, Yuan H, Josephson L, Jonkers J, Borowsky AD, 'van' Leeuwen FW. ***Use of a single hybrid imaging agent for integration of target validation with in vivo and ex vivo imaging of mouse tumor lesions resembling human DCIS***. **PLoS One**, 8(1): e48324.

2013 Hubbard NE, Chen JQ, Sickafoose L, Wood MB, Gregg JP, Abrahamsson NM, Engleberg JA, Walls JE, Borowsky AD.

Transgenic Mammary Epithelial Osteopontin (Sppl) Expression Induces Proliferation and Alveologenesis. **Genes and Cancer**, 4(5-6): 201-12.

2013 Fujita M, Ieguchi K, Cedano-Prieto DM, Fong A, Wilkerson C, Chen JQ, Wu M, Lo SH, Cheung AT, Wilson MD, Cardiff RD, Borowsky AD, Takada YK, Takada Y. ***An integrin binding-defective mutant of insulin-like growth factor-1 (R36E/R37E IGF1) acts as a dominant-negative antagonist of the IGF1 receptor (IGF1R) and suppresses tumorigenesis but still binds to IGF1R.*** **J Biol Chem.**, 288(27): 19593-603.

2013 Sun Feng,Chen He-ge, Li Wei, Yang Xi, Wang Xin, Jiang Richen, Guo Zhiyong, Chen Hegang, Huang Jiaoti, Borowsky A, Qiu Yun. ***Androgen receptor splice vairant AR3 promotes prostate cancer via modulating expression of autocrine/paracrine factors***. **Journal of Biological Chem**, 17(289(3)): 1529-39.

2014 Angelo M, Bendall SC, Finck R, Hale MB, Hitzman C, Borowsky AD, Levenson RM, Lowe JB, Liu SD, Zhao S, Natkunam Y, Nolan GP. ***Multiplexed ion beam imaging of human breast tumors.*** **Nature medicine**, 20(4): 436-42.

2014 Grabowska MM, DeGraff DJ, Yu X, Jin RJ, Zhenbang C, Borowsky AD, Matusik RJ. ***Mouse Models of prostate cancer: picking the best model for the question***. **Cancer Metastasis Rev**, 33(2-3): 377-97.

2014 Veiseh M, Kwon DH, Borowsky AD, Tolg C, Leong HS, Lewis JD, Turley EA, Bissell MJ. ***Cellular heterogeneity profiling by hyaluronan probes reveals an invasive but slow-growing breast tumor subset.*** **Proc Natl Acad Sci U S A.**, 111(17): E1731-9.

2014 Candas D, Lu CL, Fan M, Chuang FY, Sweeney C, Borowsky AD, Li JJ. ***Mitochondrial MKP1 Is a Target for Therapy-Resistant HER2-Positive Breast Cancer Cells***. **Cancer Res.**, 74(24): 7498-509.

2014 Chang H., Zhou Y., Borowsky A., Barner K., Spellman P., & Parvin B. ***Stacked Predictive Sparse Decomposition for Classification of Histology Sections***. 113(1): 3-18.

2015 Levenson RM, Borowsky AD, Angelo M. ***Immunohistochemistry and mass spectrometry for highly multiplexed cellular molecular imaging.*** **Lab Invest.**, 95(4): 397-405.

2015 Fite BZ, Wong A, Liu Y, Mahakian LM, Tam SM, Aina O, Hubbard NE, Borowsky A, Cardiff RD, Dumont E, Ferrara KW. ***Magnetic resonance imaging assessment of effective ablated volume following high intensity focused ultrasound.*** **PLoS One**, 10(3): e0120037.

2015 Zhang H, Tam S, Ingham ES, Mahakian LM, Lai CY, Tumbale SK, Teesalu T, Hubbard NE, Borowsky AD, Ferrara KW. ***Ultrasound molecular imaging of tumor angiogenesis with a neuropilin-1-targeted microbubble.*** **Biomaterials.**, 56: 104-13.

2015 Chen JQ, Mori H, Cardiff RD, Trott JF, Hovey RC, Hubbard NE, Engelberg JA, Tepper CG, Willis BJ, Khan IH, Ravindran RK, Chan SR, Schreiber RD, Borowsky AD. ***Abnormal Mammary Development in 129:STAT1-Null Mice is Stroma-Dependent.*** **PLoS One**, 10(6): e0129895..

2015 Mori H, Soonsawad P, Schuetter L, Chen Q, Hubbard NE, Cardiff RD, Borowsky AD. ***Introduction of Zinc-salt Fixation for Effective Detection of Immune Cell-related Markers by Immunohistochemistry.*** **Toxicol Pathol.**, Epub ahead of print(Jul 7).

2015 Kheirolomoom A, Ingham ES, Mahakian LM, Tam SM, Silvestrini MT, Tumbale SK, Foiret J, Hubbard NE, Borowsky AD, Murphy WJ, Ferrara KW. ***CpG expedites regression of local and systemic tumors when combined with activatable nanodelivery.*** **J Control Release, Dec 28**, 220((0 0)): 253-264.

2015 Engelberg JA, Retallack H, Balassanian R, Dowsett M, Zabaglo L, Ram AA, Apple SK, Bishop JW, Borowsky AD, Carpenter PM, Chen YY, Datnow B, Elson S, Hasteh F, Lin F, Moatamed NA, Zhang Y, Cardiff RD. ***"Score the Core" Web-based pathologist training tool improves the accuracy of breast cancer IHC4 scoring.*** **Hum Pathol.**, Jul 29: S0046-8177.

2015 Rowson-Hodel AR, Manjarin R, Trott JF, Cardiff RD, Borowsky AD, Hovey RC. ***Neoplastic transformation of porcine mammary epithelial cells in vitro and tumor formation in vivo.*** **BMC Cancer**, Jul 31(15): 562.

2015 Hines WC, Kuhn I, Thi K, Chu B, Stanford-Moore G, Sampayo R, Garbe JC, Stampfer M, Borowsky AD, Bissell MJ. ***184AA3: a xenograft model of ER(+) breast adenocarcinoma.*** **Breast Cancer Res Treat.**, 155(1): 37-52.

2015 Wong AW, Fite BZ, Liu Y, Kheirolomoom A, Seo JW, Watson KD, Mahakian LM, Tam SM, Zhang H, Foiret J, Borowsky AD, Ferrara KW. ***Ultrasound ablation enhances drug accumulation and survival in mammary carcinoma models.*** **J Clin Invest**, 126(1): 99-111.

2016 Goldstein J, Borowsky AD, Goyal R, Roland JT, Arnold S, Gellert LL, Clark PE, Hameed O, Giannico GA. ***MAGI-2 in prostate cancer: an immunohistochemical study.*** **Hum Pathol.**, S0046-8177(16): 00035-6.

2016 Wang J, Zou JX, Xue X, Cai D, Zhang Y, Duan Z, Xiang Q, Yang JC,

Louie MC, Borowsky AD, Gao AC, Evans CP, Lam KS, Xu J, Kung HJ, Evans RM, Xu Y, Chen HW. ***ROR-γ drives androgen receptor expression and represents a therapeutic target in castration-resistant prostate cancer.*** **Nat Med.**, 22(5): 488-96.

2016 Mori H, Bhat R, Bruni-Cardoso A, Chen EI, Jorgens DM, Coutinho K, Louie K, Bowen BB, Inman JL, Tecca V, Lee SJ, Becker-Weimann S, Northen T, Seiki M, Borowsky AD, Auer M, Bissell MJ. ***New insight into the role of MMP14 in metabolic balance***. **PeerJ**, 4:e2(142): 2142.

2016 Schmitz J, Schwab J, Schwenck J, Chen Q, Quintanilla-Martinez L, Hahn M, Wietek B, Schwenzer N, Staebler A, Kohlhofer U, Aina OH, Hubbard NE, Reischl G, Borowsky AD, Brucker S, Nikolaou K, la Fougère C, Cardiff RD, Pichler BJ, Schmid AM. ***Decoding intratumoral heterogeneity of breast cancer by multiparametric in vivo imaging: A translational study***. **Cancer Res.**, epub(July 27): 0642.

2016 Wang J, Duan Z, Nugent Z, Zou JX, Borowsky AD, Zhang Y, Tepper CG, Li JJ, Fiehn O, Xu J, Kung HJ, Murphy LC, Chen HW. ***Reprogramming metabolism by histone methyltransferase NSD2 drives endocrine resistance via coordinated activation of pentose phosphate pathway enzymes***. **Cancer Lett.**, 378(2): 69-79.

2016 Lobo RC, Pénzváltó Z, H. Mori, NE Hubbard, P. Damonte, C Pham, A. Koehne, AC Go, SE Anderson, PM Cala, Borowsky AD. ***Glucose Uptake and Intracellular pH in a Mouse Model of Ductal Carcinoma In situ (DCIS) Suggests Metabolic Heterogeneity***. **Frontiers in Cell and Dev. Biol.**

2016 Zhong, C, Han J, Borowsky A, Parvin B, Wang Y, Chang H. ***When machine vision meets histology: A comparative evaluation of model architecture for classification of histology sections. EPub***. **Med Image Analysis**, 35: 530-543.

2016 Han J., Wang Y., Cai w., Borowsky A., Parvin B., and Chang H. ***Integrative Analysis of Cellular Morphometric Context Reveals Clinically Relevant Signatures in Lower Grade Glioma***. **Med Image Comput Comput Assit Interv**, 9900(Oct): 72-82.

2016 Sahasrabudhe R, Lott P, Bohorquez M, Toal T, Estrada AP, Suarez JJ, Brea-Fernández A, Cameselle-Teijeiro J, Pinto C, Ramos I, Mantilla A, Prieto R, Corvalan A, Norero E, Alvarez C, Tapia T, Carvallo P, Gonzalez LM, Cock-Rada A, Solano A, Neffa F, Della Valle A, Yau C, Soares G, Borowsky A, Hu N, He LJ, Han XY; Latin American Gastric Cancer Genetics Collaborative Group., Taylor PR, Goldstein AM, Torres J, Echeverry M, Ruiz-Ponte C, Teixeira MR, Carvajal-Carmona LG. ***Germline Mutations in PALB2, BRCA1, and RAD51C, Which Regulate DNA Recombination Repair, in Patients With Gastric Cancer***. **Gastroenterology**, 152(5): 983-986.

2017 Fite BZ, Kheirolomoom A, Foiret JL, Seo JW, Mahakian LM, Ingham ES, Tam SM, Borowsky AD, Curry FE, Ferrara, KW. ***Dynamic contrast enhanced MRI detects changes in vascular transport rate constants following treatment with thermally-sensitive liposomal doxorubicin.*** **Journal of controlled release : official journal of the Controlled Release Society**, 256: 203-213.

2017 Sckisel, GD, Mirsoian, A, Minnar, CM, Crittenden, M, Curti, B, Chen, JQ, Blazar, BR, Borowsky AD, Monjazeb, AM, Murphy, WJ. ***Differential phenotypes of memory CD4 and CD8 T cells in the spleen and peripheral tissues following immunostimulatory therapy.*** **Journal for Immunotherapy of Cancer**, 5(33): 1-11.

2017 Mori H, Chen JQ, Cardiff RD, Penzvalto Z, Hubbard NE, Schuetter L, Hovey RC, Trott JF, Borowsky AD. ***Pathobiology of the 129:Stat1-/-mouse model of human age-related ER-positive breast cancer with an immune infiltrate-excluded phenotype.*** **Breast cancer research : BCR**, 19(1): 102.

2017 Esserman LJ, Yau C, Thompson CK, van 't Veer LJ, Borowsky AD, Hoadley KA, Tobin NP, Nordenskjold B, Fornander T, Stål O, Benz CC, Lindström LS. ***Use of Molecular Tools to Identify Patients With Indolent Breast Cancers With Ultralow Risk Over 2 Decades.*** **JAMA Oncology**, 3(11): 1503-1510.

2017 Silvestrini MT, Ingham ES, Mahakian LM, Kheirolomoom A, Liu Y, Fite BZ, Tam SM, Tucci ST, Watson KD, Wong AW, Monjazeb AM, Hubbard NE, Murphy WJ, Borowsky AD, Ferrara KW. ***Priming is key to effective incorporation of image-guided thermal ablation into immunotherapy protocols.*** **JCI insight**, 2(6): e90521.

2018 Lindström LS, Yau C, Czene K, Thompson CK, Hoadley KA, Van't Veer LJ, Balassanian R, Bishop JW, Carpenter PM, Chen YY, Datnow B, Hasteh F, Krings G, Lin F, Zhang Y, Nordenskjold B, Stål O, Benz CC, Fornander T, Borowsky AD, Esserman LJ. ***Intratumor Heterogeneity of the Estrogen Receptor and the Long-term Risk of Fatal Breast Cancer.*** **Journal of the National Cancer Institute**, 110(7): 726-733.

2018 Gonzalez VD, Samusik N, Chen TJ, Savig ES, Aghaeepour N, Quigley DA, Huang YW, Giangarrà V, Borowsky AD, Hubbard NE, Chen SY, Han G, Ashworth A, Kipps TJ, Berek JS, Nolan GP, Fantl WJ. ***Commonly Occurring Cell Subsets in High-Grade Serous Ovarian Tumors Identified by Single-Cell Mass Cytometry.*** **Cell Reports**, 22(7): 1875-1888.

2018 Rowson-Hodel AR, Wald JH, Hatakeyama J, O'Neal WK, Stonebraker JR, VanderVorst K, Saldana MJ, Borowsky AD, Sweeney C, Carraway KL. ***Membrane Mucin Muc4 promotes blood cell association with tumor cells and mediates efficient metastasis in a mouse model***

of breast cancer. **Oncogene**, 37(2): 197-207.

2018 Khoshdeli M, Borowsky A, Parvin B. ***Deep Learning Models Differentiate Tumor Grades from H&E Stained Histology Sections.*** **Proc IEEE Eng Med Biol Soc.**, July: 620-623.

2018 Chavez M, Silvestrini MT, Ingham ES, Fite BZ, Mahakian LM, Tam SM, Ilovitsh A, Monjazeb AM, Murphy WJ, Hubbard NE, Davis RR, Tepper CG, Borowsky AD, Ferrara KW. ***Distinct immune signatures in directly treated and distant tumors result from TLR adjuvants and focal ablation.*** **Theranostics**, 8(13): 3611-28.

2018 Seo JW, Tavaré R, Mahakian LM, Silvestrini MT, Tam S, Ingham ES, Salazar FB, Borowsky AD, Wu AM, Ferrara KW. . ***CD8+ T-Cell Density Imaging with 64Cu-Labeled Cys-Diabody Informs Immunotherapy Protocols.*** . **Clin Cancer Res.**, 24(20): 4976-4987.

2018 Suh JH, Degagné É, Gleghorn EE, Setty M, Rodriguez A, Park KT, Verstraete SG, Heyman MB, Patel AS, Irek M, Gildengorin GL, Hubbard NE, Borowsky AD, Saba JD. ***Sphingosine-1-Phosphate Signaling and Metabolism Gene Signature in Pediatric Inflammatory Bowel Disease: A Matched-case Control Pilot Study.*** **Inflamm Bowel Dis.**, 24(6): 1321-1334.

2018 Pelissier Vatter FA, Schapiro D, Chang H, Borowsky AD, Lee JK, Parvin B, Stampfer MR, LaBarge MA, Bodenmiller B, Lorens JB. ***High-Dimensional Phenotyping Identifies Age-Emergent Cells in Human Mammary Epithelia.*** **Cell Rep**, 23(4): 1205-19.

2018 Mori H, Cardiff RD, Borowsky AD. ***Aging Mouse Models Reveal Complex Tumor-Microenvironment Interactions in Cancer Progression. Review.*** **Front Cell Dev Biol.**, 6(35).

2019 Pénzváltó Z, Chen JQ. Tepper CG , Davis R , Silvestrini M, Umeh-Garcia M , Sweeney C , Borowsky AD. ***A Syngeneic ErbB2 Mammary Cancer Model for Preclinical Immunotherapy Trials***. **J Mam Gland Biol and Neop**, Feb 27. doi: 10.1007.

2019 Srivastava S, Koay EJ, Borowsky AD, De Marzo AM, Ghosh S, Wagner PD, Kramer BS. ***Cancer overdiagnosis: a biological challenge and clinical dilemma [review]***. **Nat Rev Cancer**, 19(6): 349-58.

2019 Jones AD, Graff JP, Darrow M, Borowsky A, Olson KA, Gandour-Edwards R, Datta Mitra A, Wei D, Gao G, Durbin-Johnson B, Rashidi HH. ***Impact of pre-analytical variables on deep learning accuracy in histopathology***. **Histopathology.**, Feb 22. doi: 10.1111.

2019 Kheirolomoom A, Silvestrini MT, Ingham ES, Mahakian LM, Tam SM, Tumbale SK, Foiret J, Hubbard NE, Borowsky AD, Ferrara KW. ***Combining activatable nanodelivery with immunotherapy in a***

murine breast cancer model. **J Control Release**, Apr 9;303:42-54.

2019 Tucci ST, Kheirolomoom A, Ingham ES, Mahakian LM, Tam SM, Foiret J, Hubbard NE, Borowsky AD, Baikoghli M, Cheng RH, Ferrara KW. ***Tumor-specific delivery of gemcitabine with activatable liposomes.*** . **J Control Release.**, Sep10(309): 277-288.

2019 All of Us Research Program Investigators, Denny JC, Rutter JL, Goldstein DB, Philippakis A, Smoller JW, Jenkins G, Dishman E. ***The "All of Us" Research Program.*** **N Engl J Med**, Aug 381(7): 668-676.

2019 Cai D, Wang J, Gao B, Li J, Wu F, Zou JX, Xu J, Jiang Y, Zou H, Huang Z, Borowsky AD, Bold RJ, Lara PN, Li JJ, Chen X, Lam KS, To KF, Kung HJ, Fiehn O, Zhao R, Evans RM, Chen HW. ***RORγ is a targetable master regulator of cholesterol biosynthesis in a cancer subtype.*** **Nat Commun**, Oct 11; 10(1): 4621.

2019 Fereidouni F, Todd A, Li Y, Chang CW, Luong K, Rosenberg A, Lee YJ, Chan JW, Borowsky A, Matsukuma K, Jen KY, Levenson R. ***Dual-mode emission and transmission microscopy for virtual histochemistry using hematoxylin- and eosin-stained tissue sections***. **Biomedical Optics Express**, 10(12): 6516.

2019 Boone PG, Rochelle LK, Ginzel JD, Lubkov V, Roberts WL, Nicholls PJ, Bock C, Flowers ML, von Furstenberg RJ, Stripp BR, Agarwal P, Borowsky AD, Cardiff RD, Barak LS, Caron MG, Lyerly HK, Snyder JC. ***A cancer rainbow mouse for visualizing the functional genomics of oncogenic clonal expansion.*** **Nature Commun**, 10(1): 5490.

2020 Barnholtz-Sloan JS, Rollison DE, Basu A, Borowsky AD, Bui A, DiGiovanna J, Garcia-Closas M, Genkinger JM, Gerke T, Induni M, Lacey JV Jr, Mirel L, Permuth JB, Saltz J, Shenkman EA, Ulrich CM, Zheng WJ, Nadaf S, Kibbe WA. ***Cancer Informatics for Cancer Centers (CI4CC): Building a community focused on sharing ideas and best practices to improve cancer care and patient outcomes***. **JCO Clin Cancer Inform. 2020 Feb;4:108-116. doi: 10.1200/CCI.19.00166. PMID: 32078367; PMCID: PMC7186581.**

2020 Borowsky AD, Glassy EF, Wallace WD, Kallichanda NS, Behling CA, Miller DV, Oswal HN, Feddersen RM, Bakhtar OR, Mendoza AE, Molden DP, Saffer HL, Wixom CR, Albro JE, Cessna MH, Hall BJ, Lloyd IE, Bishop JW, Darrow MA, Gui D, Jen KY, Walby JAS, Bauer SM, Cortez DA, Gandhi P, Rodgers MM, Rodriguez RA, Martin DR, McConnell TG, Reynolds SJ, Spigel JH, Stepenaskie SA, Viktorova E, Magari R, Wharton KA Jr, Qiu J, Bauer TW. ***Digital Whole Slide Imaging Compared to Light Microscopy for Primary Diagnosis in Surgical Pathology: A Multicenter, Double-Blinded, Randomized Study of 2045 Cases***. **Archives of Pathology & Laboratory Medicine**, 144(10): 1245-1253.

2020 Esserman LJ, Hewitt K, Son J, Glencer A, Borowsky AD, Cooperberg MR. ***The Evolution of Our Understanding of the Biology of Cancer Is the Key to Avoiding Overdiagnosis and Overtreatment***. **Cancer Epidemiol Biomarkers Prev, Oct 8:cebp.0110.2020**.

2020 Miszewski SG, Trott JF, Berryhill GE, Tat L, Green R, Borowsky AD, Miller JW, Hovey RC. ***Folate Deficiency Inhibits Development of the Mammary Gland and its Associated Lymphatics in FVB Mice***. **J Nutr.**, 150(8): 2120-2130.

2020 Siddiqui S, Libertini SJ, Lucas CA, Lombard AP, Baek HB, Nakagawa RM, Nishida KS, Steele TM, Melgoza FU, Borowsky AD, Durbin-Johnson BP, Qi L, Ghosh PM, Mudryj M. ***The p14ARF tumor suppressor restrains androgen receptor activity and prevents apoptosis in prostate cancer cells***. **Cancer Lett**, 483(Jul 28): 12-21.

2020 Rozenblatt-Rosen O, Regev A, Oberdoerffer P, Nawy T, Hupalowska A, Rood JE, Ashenberg O, Cerami E, Coffey RJ, Demir E, Ding L, Esplin ED, Ford JM, Goecks J, Ghosh S, Gray JW, Guinney J, Hanlon SE, Hughes SK, Hwang ES, Iacobuzio-Donahue CA, Jané-Valbuena J, Johnson BE, Lau KS, Lively T, Mazzilli SA, Pe'er D, Santagata S, Shalek AK, Schapiro D, Snyder MP, Sorger PK, Spira AE, Srivastava S, Tan K, West RB, Williams EH (Borowsky AD as part of the Human Tumor Atlas Network). ***The Human Tumor Atlas Network: Charting Tumor Transitions across Space and Time at Single-Cell Resolution***. **Cell**, 181(2): 236-249.

2020 Moon H, White AC, Borowsky AD. ***New insights into the functions of Cox-2 in skin and esophageal malignancies***. **Experimental & Molecular Medicine volume 52, pages538–547**, 52(4): 538-547.

2020 McNamara G, Lucas J, Beeler JF, Basavanhally A, Lee G, Hedvat CV, Baxi VA, Locke D, Borowsky A, Levenson R. ***New Technologies to Image Tumors***. **Cancer Treat Res**, 180: 51-94.

2020 Damaghi M, Mori H, Byrne S, Xu L, Chen T, Johnson J, Gallant ND, Marusyk A, Borowsky AD, Gillies RJ. ***Collagen production and niche engineering: A novel strategy for cancer cells to survive acidosis in DCIS and evolve*** . **Evol Appl. 2020 Nov 4;13(10):2689-2703. doi: 10.1111/eva.13075. PMID: 33294017; PMCID: PMC7691473**.

2020 Bacorn C, Kim E, Borowsky AD, Lin LK. ***Previously undiagnosed neuroendocrine tumour mimicking breast cancer metastasis to the orbit.*** **BMJ Case Rep.** 2020 May 20;13(5):e234629**. doi: 10.1136/bcr-2020-234629.**

2020 Nachmanson D, Steward J, Yao H, Officer A, Jeong E, O'Keefe TJ, Hasteh F, Jepsen K, Hirst GL, Esserman LJ, Borowsky AD, Harismendy O. ***Mutational profiling of micro-dissected pre-malignant lesions from archived specimens***. **BMC Med**

Genomics. Nov 18;13(1):173**. doi: 10.1186/s12920-020-00820-y**.

2021 Ginzel JD, Acharya CR, Lubkov V, Mori H, Boone PG, Rochelle LK, Roberts WL, Everitt JI, Hartman ZC, Crosby EJ, Barak LS, Caron MG, Chen JQ, Hubbard NE, Cardiff RD, Borowsky AD, Lyerly HK, Snyder JC. ***HER2 Isoforms Uniquely Program Intratumor Heterogeneity and Predetermine Breast Cancer Trajectories During the Occult Tumorigenic Phase.*** **Molecular cancer research : MCR**, 19(10): 1699-1711.

2021 Esserman L, Eklund M, Veer LV, Shieh Y, Tice J, Ziv E, Blanco A, Kaplan C, Hiatt R, Fiscalini AS, Yau C, Scheuner M, Naeim A, Wenger N, Lee V, Heditsian D, Brain S, Parker BA, LaCroix AZ, Madlensky L, Hogarth M, Borowsky A, Anton-Culver H, Kaster A, Olopade OI, Sheth D, Garcia A, Lancaster R, Plaza M. ***The WISDOM study: a new approach to screening can and should be tested.*** **Breast cancer research and treatment**, 189(3): 593-598.

2021 Fite BZ, Wang J, Kare AJ, Ilovitsh A, Chavez M, Ilovitsh T, Zhang N, Chen W, Robinson E, Zhang H, Kheirolomoom A, Silvestrini MT, Ingham ES, Mahakian LM, Tam SM, Davis RR, Tepper CG, Borowsky AD, Ferrara KW. ***Immune modulation resulting from MR-guided high intensity focused ultrasound in a model of murine breast cancer***. Sci Rep. 2021 Jan 13;11(1):927**. doi:10.1038/s41598-020-80135-1**.

2021 Zhang H, Tang WL, Kheirolomoom A, Fite BZ, Wu B, Lau K, Baikoghli M, Raie MN, Tumbale SK, Foiret J, Ingham ES, Mahakian LM, Tam SM, Cheng RH, Borowsky AD, Ferrara KW. ***Development of thermosensitive resiquimod-loaded liposomes for enhanced cancer immunotherapy***. **J Control Release.** Feb 10;330:1080-1094**.** doi: 10.1016/j.jconrel.2020.11.013.

2021 Mori H, Bolen J, Schuetter L, Massion P, Hoyt CC, VandenBerg S, Esserman L, Borowsky AD, Campbell MJ. ***Characterizing the Tumor Immune Microenvironment with Tyramide-Based Multiplex Immunofluorescence*** . **J Mammary Gland Biol Neoplasia.** 25(4):417-432. doi: 10.1007/s10911-021-09479-2.

2021 Vogel CFA, Lazennec G, Kado SY, Dahlem C, He Y, Castaneda A, Ishihara Y, Vogeley C, Rossi A, Haarmann-Stemmann T, Jugan J, Mori H, Borowsky AD, La Merrill MA, Sweeney C. ***Targeting the Aryl Hydrocarbon Receptor Signaling Pathway in Breast Cancer Development***. **Front Immunol;12:625346.** doi: 10.3389/fimmu.2021.625346**.**

2021 Ginzel JD, Acharya CR, Lubkov V, Mori H, Boone PG, Rochelle LK, Roberts W, Everitt JI, Hartman ZC, Crosby EJ, Barak LS, Caron MG, Chen JQ, Hubbard NE, Cardiff RD, Borowsky AD, Lyerly HK, Snyder JC. ***HER2 isoforms uniquely program intratumor heterogeneity and predetermine breast cancer trajectories during the occult tumorigenic phase***. **Mol Cancer Res.** doi: 10.1158/1541-7786**.**

2021 Laura Esserman, Yash Huilgol, Holly Keane, Yiwey Shieh, Robert Hiatt, Jeffrey Tice, Lisa Madlensky, Leah Sabacan, Allison Stover Fiscalini, Elad Ziv, Irene Acerbi, Mandy Che, Hoda Anton-Culver, Alexander Borowsky, Sharon Hunt, Arash Naeim, Barbara Parker, Laura Van 'T Veer, and Athena Breast Health Network Investigators and Advocate Partners. ***Elevated Risk Thresholds Predict Endocrine Risk Reducing Medication Use in the Athena Screening Registry***. **NPJ Breast Cancer. 2021 Aug 3;7(1):102.** doi: 10.1038/s41523-021-00306-9

2021 Esserman L, Eklund M, Veer LV, Shieh Y, Tice J, Ziv E, Blanco A, Kaplan C, Hiatt R, Fiscalini AS, Yau C, Scheuner M, Naeim A, Wenger N, Lee V, Heditsian D, Brain S, Parker BA, LaCroix AZ, Madlensky L, Hogarth M, Borowsky A, Anton-Culver H, Kaster A, Olopade OI, Sheth D, Garcia A, Lancaster R, Plaza M. . ***The WISDOM study: a new approach to screening can and should be tested.*** **Breast Cancer Res Treat.**, Oct;189((3)): 593-598.

2022 Nesteryuk V, Hamdani O, Gong R, Almog N, Alexander BM, Soosman S, Yoneda K, Ali SM, Borowsky AD, Riess JW. ***A Common Cell of Origin for Inflammatory Myofibroblastic Tumor and Lung Adenocarcinoma with ALK rearrangement.*** **Clinical lung cancer**, 23(8): e550-e555.

2022 Zhou J, Meli VS, Yu-Tin Chen E, Kapre R, Nagalla R, Xiao W, Borowsky AD, Lam KS, Liu WF, Louie AY. ***Magnetic resonance imaging of tumor-associated-macrophages (TAMs) with a nanoparticle contrast agent.*** **RSC advances**, 12(13): 7742-7756.

2022 Griessinger J, Schwab J, Chen Q, Kühn A, Cotton J, Bowden G, Preibsch H, Reischl G, Quintanilla-Martinez L, Mori H, Dang AN, Kohlhofer U, Aina OH, Borowsky AD, Pichler BJ, Cardiff RD, Schmid AM. ***Intratumoral in vivo staging of breast cancer by multi-tracer PET and advanced analysis.*** **NPJ Breast Cancer**, Mar 24;8(1): 41.

2022 Vinall R, Chen Q, Talbott G, Ramsamooj R, Dang A, Tepper CG, Borowsky A. ***Use of RNA-Seq and a Transgenic Mouse Model to Identify Genes Which May Contribute to Mutant p53-Driven Prostate Cancer Initiation.*** **Biology (Basel)**, Jan 29;11(2): 218.

2022 Heirolomoom A, Kare AJ, Ingham ES, Paulmurugan R, Robinson ER, Baikoghli M, Inayathullah M, Seo JW, Wang J, Fite BZ, Wu B, Tumbale SK, Raie MN, Cheng RH, Nichols L, Borowsky AD, Ferrara KW. ***In situ T-cell transfection by anti-CD3-conjugated lipid nanoparticles leads to T-cell activation, migration, and phenotypic shift.*** **Biomaterials**, Feb;281: 121339.

2022 Nachmanson D, Officer A, Mori H, Gordon J, Evans MF, Steward J, Yao H, O'Keefe T, Hasteh F, Stein GS, Jepsen K, Weaver DL, Hirst GL, Sprague BL, Esserman LJ, Borowsky AD, Stein JL, Harismendy

O. ***The breast pre-cancer atlas illustrates the molecular and micro-environmental diversity of ductal carcinoma in situ.*** **NPJ Breast Cancer**, Jan 13, 8((1)): 6.

2022 Sahoo S Krings G Chen YY Carter JM Chen B Guo H Hibshoosh H Reisenbichler E Fan F Wei S Khazai L Balassanian R Klein ME Shad S Venters SJ Borowsky AD Symmans WF Ocal IT. ***Standardizing Pathologic Evaluation of Breast Carcinoma After Neoadjuvant Chemotherapy.*** **Arch Pathol Lab Med.**, Aug 17.

2022 Murrow LM, Weber RJ, Caruso JA, McGinnis CS, Phong K, Gascard P, Rabadam G, Borowsky AD, Desai TA, Thomson M, Tlsty T, Gartner ZJ. ***Mapping hormone-regulated cell-cell interaction networks in the human breast at single-cell resolution.*** **Cell Syst.**, 13(8): 644-664.

2022 Wang H, Wang Q, Cai G, Duan Z, Nugent Z, Huang J, Zheng J, Borowsky AD, Li JJ, Liu P, Kung HJ, Murphy L, Chen HW, Wang J. ***Nuclear TIGAR mediates an epigenetic and metabolic autoregulatory loop via NRF2 in cancer therapeutic resistance.*** **Acta Pharm Sin B.**, 12(4): 1871-1884.

2022 Mema E, Spain ES, Martin CK, Hill JO, Sayer RD, McInvale HD, Evans LA, Gist NH, Borowsky AD, Thomas DM. ***Social influences on physical activity for establishing criteria leading to exercise persistence.*** **PLoS One**, 17(10).

2023 Tong JH, Elmore S, Huang SS, Tachachartvanich P, Manz K, Pennell K, Wilson MD, Borowsky A, La Merrill MA. ***Chronic exposure to low levels of parabens increases mammary cancer growth and metastasis in mice.*** **Endocrinology**.

Book Chapters

1999 Borowsky A, Nicholson B, Page D, Johnson D: ***Metaplastic Carcinoma of the Breast***, **Textbook of Uncommon Cancer, 2nd Edition**, Wiley, Ney York.

2011 Borowsky AD: ***Choosing a mouse model: experimental biology in context--the utility and limitations of mouse models of breast cancer***, **Cold Spring Harb Perspect Biol**, Vol. 3(9), pp. a009670.

2014 Chang H, Fontenay GV, Han J, Nayak N, Borowsky A, Spellman P, Parvin B: ***Computational Systems Biology: From Molecular Mechanisms to Disease (Chapter 18: Molecular Correlates of Morphometric Subtypes in Glioblastoma Multiforme)***, Rowland Elis, Andres Kriete, (ed), **Elsevier**, 424-451.

Editorials, Commentaries and Letters to the Editor

2007 Barthold SW, Borowsky AD, Brayton C, Bronson R, Cardiff RD, Griffey

SM, Ince TA, Nikitin AY, Sundberg J, Valli VE, Ward JM. ***From whence will they come? - A perspective on the acute shortage of pathologists in biomedical research***. **J Vet Diagn Invest**, 19(4): 455-6.

2007 Valli T, Barthold SW, Ward JE, Brayton C, Nikitin A, Borowsky AD, Bronson RT, Cardiff RD, Sundberg J, Ince T. ***Over 60% of NIH extramural funding involves animal-related research***. **Vet Pathol**, 44(6): 962-3, author reply 963-4.

2008 Chan IH, Borowsky AD, Privalsky ML. ***A Cautionary Note as to the Use of pBi-L and Related Luciferase=Transgenic Vectors in the Study of Thyroid Endocrinology (Peer-Reviewed Letter to Editor)***. **Thyroid**, 18(6): 665-6.

2014 Cardiff RD, Borowsky AD. ***At last: classification of human mammary cells elucidates breast cancer origins.*** **J Clin Invest**, 124(2): 478-80.

2016 Borowsky A, Esserman L. ***When the Gold Standard Loses Its Luster, Perhaps It Is Time to Change Nomenclature.*** **Ann Intern Med.**, 10.7326/M16-0526..

2019 Antoniou A, Anton-Culver H, Borowsky A, Broeders M, Brooks J, Chiarelli A, Chiquette J, Cuzick J, Delaloge S, Devilee P, Dorval M, Easton D, Eisen A, Eklund M, Eloy L, Esserman L, Garcia-Closas M, Goldgar D, Hall P, Knoppers BM, Kraft P, La Croix A, Madalensky L, Mavaddat N, Mittman N, Nabi H, Olopade O, Pashayan N, Schmidt M, Shieh Y, Simard J, Stover-Fiscallini A, Tice JA, Van't Veer L, Wenger N, Wolfson M, Yau C, Ziv E. ***A response to "Personalised medicine and population health: breast and ovarian cancer".*** **Hum Genet.**, 138(3): 287-9.

Books Authored

2021 Davis-Patterson, S, Kwong, S, Miguelino-Keasling, V, Surani, Z, Cancer Plan Contributors: ***California's Comprehensive Cancer Control Plan, 2021-2025. Sacramento, CA: California Department of Public Health, Comprehensive Cancer Control Program, California Dialogue on Cancer, April 2021***.

Abstracts (incomplete list)

1994 Borowsky AD, Dupont WD, Sakakura T, Page DL, Jensen RA. ***Tenascin Distribution in Infiltrating Breast-Carcinoma-Implications for Prognosis***. **Laboratory Investigation**, 70(1): A13.

1994 Sightler HE, Borowsky AD, Dupont WE, Page DL, Jensen RA. ***Evaluation of Tumor Angiogenesis as a Prognostic Marker in Breast Cancer***. **Laboratory Investigation**, 70(1): A22.

1997 Borowsky AD, Wingard H, Bock J, Shappell S. ***Inflammatory Pseutotumor of the Spermatic Cord/Paratesticular Region in a One Year Old Boy: Distinction from Spindle Cell Rhabdomyosarcoma***. **Paper presented: Society for Pediatric Pathology Interim meeting, Minneapolis, MN**.

1997 Murry T, Borowsky AD, Page D, Johnson J. ***Fine Needle Aspiration Cytology of Ductal Carcinoma in situ***. **Paper presented: American Society for Cytopathology, Boston, MA**.

1997 Fleischer AC, Wojcicki WE, Pickens DR, Meyerowitz CB, Thurman GB, Borowsky AD. ***Quantification of tumor vascularity with 2-D and 3-D color Doppler sonography in an experimental model***. **Radiology**, 205: 958.

1997 Borowsky AD, Kasper S, Sheppard PC, Pettigrew N, Dodd JG, Duckworth ML, Matusik RJ. ***Development and progression of prostate tumors in transgenic mice by probasin targeted SV40 large T-antigen***. **Laboratory Investigation**, 76(1): 399.

1999 Gobbi H, Simpson JF, Borowsky A, Jensen RA, Page DL. ***Fibromatosis as the major mesenchymal element in metaplastic breast tumors: Risk of local recurrence***. **Laboratory Investigation**, 79(1): 21A.

2000 Borowsky AD, Morgan J, Koontz J, Skylar J. ***The MALT1 gene at the t(11:18) breakpoint in MALT lymphoma***. **USCAP, Atlanta, GA**.

2001 Borowsky A, Gao WW, Morgan J, Sklar J. ***MALT1 and the IAP2/MALT1 fusion in lymphoma of mucosa associated lymphoid tissue***. **United States and Canadian Academy of Pathology, Atlanta, GA**, (March).

2001 Borowsky AD, Gao WW, Sklar J. ***MALT1 and the MALT1/API2 fusion gene in MALT lymphoma***. **Modern Pathology**, 14(1): 156A.

2003 Tepper CG, Ryan RE, Nesslinger NJ, Shi XB, Evans CP, Borowsky AD, Baron CA, Gregg JP, Kung HJ, White RWD. ***Overexpression of Id-1 in hormone refractory prostate cancer***. **Journal of Urology**, 169(4): 80.

2004 Namba R, Borowsky AD, Maglione JE, Young LJ, Wurz GT, DeGregorio MW, MacLeod CL, Cardiff RD, Gregg JP. ***Effects of selective estrogen receptor modulators on progression of premalignant lesions in a genetically engineered mouse derived model of DCIS***. **Cancer Epidemiology Biomarkers & Prevention**, 13(11): 1860S.

2004 Catana AM, Catana C, Yamamoto N, Wu J, Borowsky AD, Zern MA. ***Novel approches to image liver cell transplantation***. **Hepatology**,

40(4): 381A.

2005 Borowsky AD, Damonte P, Hodgson JG, Gregg JP, Young LJT, Chen QJ, Cardiff RD. ***The MIN-O Model of DCIS Reveals a Genetically Stable Pre-Cancer Origin with "Stem"-like Properties***. **AACR Breast Cancer Mechansims Specialty Conference, San Diego**.

2005 Miller JW, Borowsky AD, McGoldrick ET, Green R. ***Methyl deficiency slows the proliferation of breast tumors in FVB polyomavirus middle T (PyV-mT) transgenic mice***. **Society for Experimental Biology, San Diego**.

2005 Borowsky AD, Chen QJ, Sulaimon S, Cardiff RD. ***Prostate adenocarcinoma with a unique phenotype via transgenic composite probasin driven polyoma virus middle T antigen (PyV-mT) expression in the mouse***. **AACR Annual Meeting, Anaheim, CA**.

2005 Pichler BJ, Braumuller H, Kneilling M, Sutcliff-Goulden J, Borowsky AD, Bodenstein CH, Hanahan D, Cardiff RD, Cherry SR, Rocken M. ***Trafficking of adoptively transferred Th1 cells in a mouse model of pancreatic carcinoma***. **Journal of Investigative Dermatology**, 125(3): A60.

2005 Abbey C, Borowsky A, Gregg J, McGoldrick E, Cardiff R, Cherry S. ***Longitudinal correlations in a small-animal PET studies***. **Medical Physics**, 32(6): 1901.

2005 Sulaimon SS, Rosner A, Namba R, Gregg JP, Young LJT, Cardiff RD, Borowsky AD. ***Metastatic syngeneic mouse mammary carcinoma bearing a luciferase GFP reporter***. **FASEB Journal**, 19(5): A1517.

2005 Miller JW, Borowsky AD, McGoldrick ET, Green R. ***Methyl deficiency slows the proliferation of breast tumors in FVB polyomavirus middle T (PyV-mT) transgenic mice***. **FASEB Journal**, 19(4): A219.

2005 Gregg JP, Namba R, Maglione J, Young L, MacLeod CL, Borowsky A, Cardiff R. ***Mammary hyperplasias from transgenic polyomavirus middle T mice as a model for human DCIS***. **FASEB Journal**, 19(5): A1516-A1517.

2005 Gobbi H, Simpson JF, Jensen RA, Olson SJ, Borowsky AD, Page DL. ***Grading and behavior of predominantly spindle cell metaplastic breast tumors***. **Modern Pathology**, 18: 34A.

2005 Dai B, Xie Y, Wang B, Jiang T, Chen H, Biebereich C, Brodie A, Borowsky AD, Cardiff RD, Kung H, Qiu Y. ***Tyrosine kinase Etk/Bmx is upregulated in prostate cells in response to androgen ablation and involved in the development of hormone refractory prostate cancer (972/Board #11)***. **AACR, Anaheim, CA**, (April 16-20).

2005 Shachaf CM, Bendapudi PV, Bradon NJ, Yang Q, Borowsky AD, Reubner B, Felsher DW. ***Characterization of tumor dormancy and the liver cancer stem cell, uncovered upon MYC inactivation in hepatocellular cancer (2056/Board #18)***. **AACR, Anaheim, CA**, (April 16-20).

2005 Borowsky AD, Chen QJ, Sulaimon SS, Cardiff RD. ***Prostate adenocarcinoma with a unique phenotype via transgenic composite probasin driven polyoma virus middle T antigen (PyV-mT) expression in the mouse (1967/Board #8)***. **AACR, Anaheim, CA**, (April 16-20).

2005 Gregg JP, Namba R, Maglione J, Young L, McLeod C, Borowsky A, Cardiff RD. ***Mammary hyperplasias from transgenic polyomavirus middle T mice as a platform for development of chemoprevention strategies (6073/Board #10)***. **AACR, Anaheim, CA**, (April 16-20).

2005 Miller, J.W., Borowsky, A.D., McGoldrick, E.T., Green, R. ***Methyl deficiency slows the proliferation of breast tumors in FVB polyoma middle T (PyV-mT) transgenic mice***. **FASEB J**, 19: A420-A421.

2006 Sickafoose LK, Chen QJ, Wood MB, Cardiff RD, Gregg JP, Borowsky AD. ***Osteopontin Overexpression in the Mouse Mammary Epithelium Induces Proliferation, and Potentiates Mammary Carcinogenesis***. **AACR Annual Meeting, Washington, D. C.**

2006 Braumuller H, Pichler B, Kneilling M, Sutcliff-Goulden J, Borowsky A, Bodenstein C, Hanahan D, Cardiff R, Cherry S, Rocken M. ***Lymphocytes do not necessarily need to home into tumors to elicit efficient antitumor-immune responses***. **Experiments Dermatology**, 15(3): 207-208.

2006 Dai B, Xie Y, Guo Z, Kim O, Xu K, Wang B, Chen H, Biebereich C, Brodie A, Borowsky AD, Cardiff RD, Kung H, Qiu Y. ***Tyrosine kinase Etk/Bmx is upregulated in human prostate cancer and its overexpression induces prostate intraepithelial neoplasia in mouse prostate (#1650)***. **AACR, Washington, DC**, (April 1-5).

2006 Namba R, Liu S, Davis R, Baron C, Borowsky AD, Cardiff RD, Young LJ, Carmack CE, Gregg JP. ***Molecular changes associated with mammary tumor progression in a PyVmT-based mouse model (#1767)***. **AACR, Washington, DC**, (April 1-5).

2006 Sickafoose LK, Chen QJ, Wood MB, Cardiff RD, Gregg JP, Borowsky AD. ***Osteopontin overexpression in the mouse mammary epithelium induces proliferation and potentiates mammary carcinogenesis (#1776)***. **AACR, Washington, DC**, (April 1-5).

2006 Namba R, Borowsky A, Liu S, Enriquez R, Le L, Abbey CK, Qi J, Young LJT, Cardiff RD, Gregg JP. ***Preclinical testing of***

chemopreventive agents in a mouse model of DCIS (#677). **AACR, Washington, DC**, (April 1-5).

2006 Young L, Damonte P, Namba R, Chen Q, Gregg J, Cardiff R, Borowsky A. ***Early response of mouse breast mino model of human DCIS to Rapamycin***. **Breast Disease: An International Journal - 25th Congress of the International Association for Breast Cancer Research**, 25: 14.

2006 Namba R, Liu S, Davis R, Baron C, Borowsky A, Cardiff R, Young L, Carmack K, Gregg J. ***Molecular changes associated with mammary tumor progression in a PYVMT-based mouse model of DCIS***. **Breast Disease: An International Journal - 25th Congress of the International Association for Breast Cancer Research**, 25: 14-15.

2006 Damonte P, Young L, Chen Q, Dillard-Telm L, Cardiff R, Borowsky A. ***Minospheres-premalignant mammary tissue culture from the mino mouse model of human DCIS***. **Breast Disease: An International Journal - 25th Congress of the International Association for Breast Cancer Research**, 25: 65.

2006 Cardiff R, Damonte P, Anderson S, Young L, Borowsky A, Gregg J, Yen L, Carraway K, Sweeney C, Cherry S, Cala P. ***Metabolic microenvironment in mouse mammary precancers***. **Breast Disease: An International Journal - 25th Congress of the International Association for Breast Cancer Research**, 25: 66-67.

2007 Borowsky AD, Damonte P, Hodgson JG, Chen QA, Young LJT, and Gregg JP. ***The "MINO" mouse model of DCIS***. **Keystone Symposia, Stem Cells and Cancer. Keystone, CO**.

2007 Erickson KL, Borowsky AD, Hubbard NE, Damonte P, Lam KS. ***Small molecule combinatorial libraries to identify new mammary stem cell markers***. **Keystone Symposia, Stem Cells and Cancer. Keystone, CO**.

2007 Damonte P, Hodgson JG, Chen QA, Young LJT, Gregg JP, and Borowsky AD. ***Mammary carcinoma behavior is programmed in the precancer stem cells***. **AACR Special Conference: Advances in Breast Cancer Research: Genetics, Biology, and Clinical Applications**, 10: R50.

2007 Marple T, Miller JW, Chen QA, Borowsky AD. ***Mice treated with 5-Azadeoxycytidine develop breast tumors with a higher rate of growth and more aggressive histologic phenotype***. **AACR Special Conference**.

2007 Miller JW, Borowsky AD, Marple TC, McGoldrick ET, Dillard-Telm L, Young LJT, Green R. ***Folate, DNA methylation, and breast tumorigenesis***. **Epub**, 1: 59-64.

2012 Chang H., Loss L., Spellman P., Borowsky A., & Parvin B. ***Batch-invariant nuclear segmentation in whole mount histology sections. 2-5 May 2012***. 856-859.

2012 Duan, Z., Zou, J.X., Yang, P., Wang, Y., Borowsky, A.D., Gao, A.C., Chen, H.W. ***Developmental and androgenic regulation of chromatin regulators EZH2 and ANCCA/ATAD2 in the prostate Via MLL histone methylase complex***. **The Prostate**.

2012 Bishop, J.W., Engelberg, J., Apple, S., Balassanian, R., Borowsky, A.D., Cardiff, R.D. ***Raising the bar: Breast cancer biomarkers IHC4 harmonization from University of California-Athena pathology collaboration***. **J Clin Oncol**, 30.

2013 Chang H., Borowsky A., Spellman P., Parvin B. ***Classification of Tumor Histology via Morphometric Context. 2013 IEEE Conference on Computer Vision and Pattern Recognition, 23-28 June, 2013***. 2203-2210.

2013 Nayak N., Chang H., Borowsky A., Spellman P., & Parvin B. ***CLASSIFICATION OF TUMOR HISTOPATHOLOGY VIA SPARSE FEATURE LEARNING. 10th Int'l Conf. on Biomed Imaging in San Fran, CA, 7-11 Apr., 2013***.

2013 Balassanian, R., Engelberg, J.A., Bishop, J.W., Borowsky, A.D., Cardiff, R.D., Carpenter, P.M. ***Harmonization of immunohistochemical stains for breast cancer biomarkers-an athena pathology collaboration***. **Lab Invest**, 93.

2013 Nayak, N., Chang, H., Borowsky, A., Spellman, P., Parvin, B. ***Classification of tumor histopathology via sparse feature learning***.

2014 Miszewski, S.G., Berryhill, G.E., Green, R., Borowsky, A., Miller, J.W., Hovey, R.C. ***Folate deficiency affects mammary gland development in pre-and peri-pubescent mice***. **FASEB J,**, 827: 12.

2015 Borowsky AD, Dwoskin L, Carvajal-Carmona L, Fenton J (in collaboration with UCSF: Esserman L and Van'tVee Lr; UCSD: Parker B; UCLA: Naiem A; and UCI: Anton-Culver H). ***Women Informed to Screen Depending on Measures of Risk (WISDOM): A Patient Center Outcomes Research Institute Funded, Universities of California Study***.

2015 Chen J, Cardiff R, Willis B, Hubbard N, Piersigilli A, Borowsky AD. ***Controls Tumoral Oncogene Addiction, Hormone Sensitivity and Epithelial Mesenchymal Transition***.

2015 Hidetoshi M, Levenson R, Borowsky AD. ***Next generation molecular histology of breast cancer tissue specimens using multiplexed***

imaging techniques for enhanced clinical guidance.

2015 Mudryj M, Siddiqui S, Libertini SJ, Lombard AP, Mooso B, D'Abronzo L, Melgoza F, Borowsky A, Drake C, Qi LH, Ghosh PM. ***Androgen receptor-mediated regulation of p14ARF transcription in prostate tumor cells***. **Cancer Research**, 75((15)): Abstract 5051.

2016 Borowsky AD, Thompson CK, Balassanian R, Yau C, Chen YY, Krings, G. ***Phenotype and immunophenotype analysis of gene expression defined 'indolent risk' breast cancers***. **Lab Invest**, 96.

2016 Borowsky AD, Balassanian R, Yau C, Engelberg JA, Thompson CK, Retallack HE. ***Interobserver agreement of breast cancer IHC4 after 'score the core' training***. **Lab Invest**, 96.

2016 Esserman LJ, Thompson CK, Yau C, van 't Veer LJ, Borowsky, AD, Tobin NP. ***Identification of tumors with an indolent disease course: MammaPrint ultralow signature validation in a retrospective analysis of a Swedish randomized tamoxifen trial***. **Cancer Res**, 76.

2016 Goldstein J, Borowsky AD, Goyal R, Roland JT, Arnold S, Gellert, LL, Clark PE, Hameed O, Giannico GA. ***Membrane-associated guanylate kinase, Ww and Pdz domain-containing protein 2 (magi-2) in prostate cancer: An immunohistochemical study***. **Hum. Pathol**, 36: A8.

2018 Campbell M, Yau C, Borowsky AD. ***Analysis of immune infiltrates (assessed via multiplex fluorescence immunohistochemistry) and immune gene expression signatures as predictors of response to the checkpoint inhibitor pembrolizumab in the neoadjuvant I-SPY 2 trial*** . **Cancer Res**, 78((4)).

2018 Campbell M, Yau C, Borowsky AD, Vandenberg S, Wolf D, Rimm D. ***Analysis of immune infiltrates (assessed via multiplex fluorescence immunohistochemistry) and immune gene expression signatures as predictors of response to the checkpoint inhibitor pembrolizumab in the neoadjuvant I-SPY 2 trial***. **Canc Res**, 78: PD6-08.

2001 March, ***MALT1 and the IAP2/MALT1 fusion in lymphoma of mucosa associated lymphoid tissue. Borowsky A, Gao WW, Morgan J, Sklar J***, United States and Canadian Academy of Pathology, Atlanta, GA.

2001 March, ***IAP-MALT fusion at the t11;18 Breakpoint in MALT Lymphoma***, University of Colorado Medical School, Pathology Grand Rounds, Denver, CO..

2001 April, ***IAP-MALT fusion at the t11;18 Breakpoint in MALT Lymphoma***, UCDavis Cancer Center Seminar Series, Sacramento,

CA..

2003 July, ***Pathology of Models of Human Cancer—Lessons Learned from the Mouse July 2003, Short Course on Pathobiology of the Modern Laboratory Mouse, Jackson Laboratories.***, Bar Harbor, ME..

2003 July, ***Imaging Approaches Short Course on Pathobiology of the Modern Laboratory Mouse, Jackson Laboratories,***, Bar Harbor, ME..

2003 November, ***Mouse MINOs and Human DCIS***, International Breast Cancer Research meeting, Sacramento, CA..

2003 November, ***Mammary Pathology of Genetically Engineered Mice***, International Breast Cancer Research meeting, Sacramento, CA..

2004 April, ***Mouse MINOs, Human DCIS, and other acronyms***, Mouse Club Seminar Series, Burnham Institute, La Jolla, CA. Host: Robert Oshima..

2005 November, ***Pathology Phenotyping***, EUMORPHIA International Course on Introduction to Pathology. Netherlands Cancer Intstitute, Amsterdam, NETHERLANDS..

2005 November, ***Models of Cancer***, EUMORPHIA International Course on Introduction to Pathology. Netherlands Cancer Intstitute, Amsterdam, NETHERLANDS..

2006 February, ***Modeling Precancer in Mice***, EUMORPHIA Annual Meeting, Barcelona, SPAIN..

2006 June, ***The MINO Mouse Model of Precancer: Programmed Progression and Stem Cells***, Lawrence-Berkeley Laboratories, Berkeley, CA. Host: Mina Bissel..

2006 October, ***Inflammation and Atrophy Precede Prostatic Neoplasia in a PhIP-Induced Rat Model***, UC Davis Cancer Center Research Symposium, Sacramento, CA..

2006 October, ***Mammary Precancer Cell Types: Mechanisms of Biologic Potential and Therapeutic Evasion***, UC Davis Cancer Center Research Symposium, Sacramento, CA..

2007 March, ***Mammary Precancer Stem Cells***, Canada-California Cancer Stem Cell Initiative Workgroup, Burnham Institute, La Jolla, CA..

2007 March, ***The MINO Mouse Model of DCIS Reveals a Genetically Stable Precancer Stem Cell with a Programmed Malignant Potential Co-authors: P Damonte, JP Gregg, QA Chen, LJT Young, JG Hodgson***, United States and Canadian Academy of

Pathology Annual Meeting, San Diego, CA.

2007 September, ***"The MINO Mouse Reveals a Renewable Population as the Origin of Mammary Cancer." UC Davis Annual Cancer Center Symposium, Sacramento, CA***.

2007 October, ***"Osteopontin (OPN) Overexpression in the Mouse Mammary Epithelium Induces Proliferation, and Potentiates Mammary Carcinogenesis and Metastasis." UC Davis Breast Cancer Symposium, Sacramento, CA***.

2008 January, ***"Breast Cancer Stem Cells—Hype or Hypothesis" Medical Microbiology and Immunology Seminars in "Emerging Challenges", Davis, CA***.

2008 May, ***"Mouse Models of CNS and Peripheral Nervous System Tumors" UC Davis Cancer Center Inaugural Brain Cancer Symposium, Sacramento, CA***.

2008 May, ***"Anatomy of the Breast and Breast Cancer Pathobiology" UC Davis Cancer Center, Breast Cancer Program, Breast Cancer Translational Workshop, Sacaramento, CA.***

2008 September, ***"Basic biology of breast cancer, comparison with animal models" Radiation Effects Research Foundation, Breast Cancer Workshop, Hiroshima, Japan***.

2008 September, ***"In vitro Sphere Formation and Other Culture Methods, Breast Cancer Assays" UC Davis Cancer Center—Cancer Stem Cells Workshop, Sacramento, CA***.

2008 October, ***"Ghost Busters Meet Dr. Franken-Cell: How to Create a Unique Resource for Imaging and Cancer Stem Cell Research." UC Davis Cancer Center—Breast Cancer Research Symposium, Sacramento, CA***.

2008 November, ***"Breast Cancer Stem Cells—Hype or Hypothesis" Beatson Cancer Institute, University of Glasgow, Scotland, UK***.

2009 July, ***"Microenvironmental conditioning and progression of mammary precancer stem cells." UC Davis Cancer Center—Inflammation and Cancer Symposium. Sacramento, CA***.

2009 November, ***"Stem Cell Dialogs: Focusing on Cancer." Public lecture and panel discussion, MIND Institute, UC Davis Medical Center, Sacramento, CA***.

2010 May, ***Little Fish in the Ocean; Tile MINO Model of DCIS, Lawrence Berkeley National Laboratory, Berkeley, CA***.

2010 August, ***DCIS, SCIDs, ACIDs and ASICS; a year in pictures, Center***

for Comparative Medicine, UC Davis, Davis, CA.

2010 November, ***MINOs for Mina: Challenging Assumptions about Breast Cancer Progression, California Pacific Medical Research Institute, San Francisco, CA***.

2011 June 16, ***Pathology Training Program in Disease Modeling (60cr)***, Hanko, Finland.

2012 June 20, ***You Don't Know Jack about Cancer Stem Cells, Stem Cell Research and Regenerative Medicine Retreat***, Sacramento, CA.

2012 August, ***Challenging the Assumptions about Cancer Progression, Biology Seminar Series, Lawrence Livermore National Laboratories***.

2012 November, ***State of the Science: Pathologic Diagnosis of Breast Cancer and Comparative Pathology ofCancer Models, Breast Cancer Models Summit, National Cancer Institute, University of Pennsylvania***.

2013 February, ***Mouse Models of Immune Cell Cancer Interaction, MMHCC Steering Committee Meeting, San Francisco, CA***.

2013 February, ***Review of the Breast Cancer Models Summit, MMHCC Steering Committee Meeting, San Francisco, CA***.

2013 April 7, ***CLASSIFICATION OF TUMOR HISTOPATHOLOGY VIA SPARSE FEATURE LEARNING. 10th Int'l Conf on Biomed Imaging***, San Francisco, CA.

2014 January 14, ***Models of Breast Cancer for Pre-Clinical Therapeutic and Prevention Trials***, Laboratory Animal Pathology Course at the Institute of Animal Pathology, Vetsuisse Faculty, Bern, Switzerland.

2014 February 11, ***The Quest for a Universal Fixative: Measuring fixative-induced morphologic and antigenic variation.***, Digital Pathology/Molecular Medicine Tri-conference, San Francisco, CA.

2014 May 12, ***Next Generation Mouse Models of Human Breast Cancers***, 6th Annual Course in vivo Preclinical Assays in Cancer Therapy; Institut Curie, Paris, France.

2015 May 20, ***DCIS progression mechanisms: evolution, aptitude, opportunity, or environment? Genentech***, South San Francisco, CA.

2016 June 6, ***Linkages of Biorepositories to Hospital Pathology Laboratories, Challenges and Opportunities***, The UC Irvine Biorepository Symposium entitled, “Advancing Precision Medicine

Research through Biospecimen Science".

2016 October 17, ***Integrative Analysis of Cellular Morphometric Context Reveals Clinically Relevant Signatures in Lower Grade Glioma. Int'l Conf. on Medical Image Computing and Computer-Assisted Intervention.***, Athens, Greece.

2017 March 3, ***Wisdom, Athena and Breast Cancer Risks at Screening and Diagnosis***, Edith Sanford Breast Center Symposium.

2018 March, ***EDRN and MCL Joint Meeting; Breast Cancer Session Chair***, 10th EDRN Scientific Workshop Bethesda, MD.

2018 March 8, ***Technology for Pathology Imaging***, EDRN and MCL Informatics Sessions Bethesda, MD.

2018 May, ***The Precancer Problem in Breast Cancer***, UCSF Breast Oncology Program.

2018 August, ***15 Years of Digital Pathology; Building a Better Database***, Leica/Aperio, Vista, CA.

2019 July 11, ***Coffee Talk Series, WIMHS event speaker***, Women in Medicine and Health Sciences, UC Davis.

2021 May 12, ***NCI MCL Consortium Workshop on AI and Image Analysis Tools***, Virtual Meeting, Invited Speaker, Moderator and Workshop Organizer.

2021 May 21, ***Considering Quantitative Histologic Approaches to Premalignancy and Spatial and Temporal Heterogeneity of the TME***, AACR Annual Meeting, Invited Speaker and Panelist .

2021 June 3, ***Keynote Speaker, Immuno-Oncology 2020***, https://www.labroots.com/virtual-event/immuno-oncology-2020.

Service

Committees

Department/Section

2003-2004 Ad hoc Member - Basic Research Committee - Medical Pathology and Center for Comparative Medicine.
2004-2014 Member - Advisory Research Committee.
2010 Member - Breast Pathologist Search Committee.
2011 Panelist - Athena UC Breast Health Initiative: Pathology Committee; Training Faculty for Breast Health Specialist; Stakeholders Meeting Panelist.
2013 Search Committee Member - Pathology Imaging Faculty Search.

2014/2015	Search Committee - Academic Surgical and Breast Oncologist.
2016	Chair Search Committee: Academic Pediatric Pathologist - Faculty search.
2018-2019	Member Search Committee - Surgical Pathologist Positions, specialties in Breast, Lung, and Soft Tissue.
2020	Member Search Committee - Clinical Informatics and Clinical Chemistry.
2020	Member Search Committee - Academic Neuropathologist.

School/College/Division

2004	Search Committee Member Neuropatholoigy and Alzheimers Tumor Bank - Neurosciences recruitment with focus on tissue resources for the Alzheimers research program.
2008	Workshop Co-Director - Cancer Stem Cells Workshop - Oranizer and Session moderator for inaugural cancer stem cell workshop and symposium, UCD Cancer Center.
2008-2009	Member - Cancer Center Breast Cancer Research Program: Ad hoc developmental award grant review committee.
2009-Current	Scientific (Affiliated) Reviewer/ Committee Member - Internal Review Board (IRB) Committee A. Protocol review and approval committee for UC Davis Medical Center and UC Davis Human Subjects Research proposals.
2020	Co-leader - Women's Cancer Care program; UC Davis Comprehensive Cancer Center.
2020	Co-Director - Center for Diagnostic Innovation (CDxI).

Campus

2002-2012	Co-Director - Mouse Biology Program - Mutant Mouse Pathology Laboratory.
2002-2014	Director - Mouse Biology Program - Mouse Molecular Constructs Laboratory.
2010-2020	Member - Biochemistry and Molecular Biology Graduate Group.
2010-2020	Member - Cell and Developmental Biology Graduate Group.
2013-2019	Human Genetics and Genomics Interest Group.
2013-current	Member - Breast Cancer Innovation Group.
2022	Research Advisory Committee Member - Primary Senate faculty advisory committee reporting to the Chair of the Senate and the Chancellor. (on leave till July 1, 2023).
2022	School of Medicine Faculty Executive Committee (FEC) - Elected representative of the School of Medicine Faculty (on leave until July, 2023).

Systemwide

2009-2020	Site PI for UC Davis; Pathology and Diagnosis and Treatment Group Leader - ATHENA Breast Health Network. University of California Multi-campus) initiative for research and clinical service in breast cancer screening, detection, patient education, and evidence based medicine.

2015-2017	Study Section - Cancer Research Coordinating Committee: University of California Systemwide Grant Program.
2016-2017	External Advisor - UC Irvine Committee on Biorepositories.
2019-2024	Member - External Advisory Board for the UCSF Breast Oncology Program.
2020	Committee Member - University of California Covid19 Testing Utilization and Capacity.

Other University

1991 -1992	Development team - "The Virgil Project," an interactive computer-based Pathology Course tutorial system. Vanderbilt University School of Medicine.
1996-1997	Acting Director - "The Virgil Project," an interactive computer-based Pathology Course tutorial system. Vanderbilt University School of Medicine.
1998-2001	Boston area regional interviewer for medical school applicants - Vanderbilt University School of Medicine Admissions Committee.

Other Non-University

2018-2021	Member - Selection Committee for the AACR Distinguished Lecture in Breast Cancer Research annual award.
06/2021-Present	Associate Editor - Board of Molecular Medicine and Cancer Treatment (specialty section of Frontiers in Molecular Medicine.
1995-2020	Member - United States and Canadian Academy of Pathology.
1995-2020	Member - College of American Pathologists.
1997-2007	Member - American Association for the Advancement of Science.
2002-2020	Member - American Association for Cancer Research.
2003	Scientific Reviewer - NIH Special Study Section: RFA-CA-03-003 "Molecular Targets for Nutrients in Prostate Cancer Prevention".
2003-2020	Speaker - Network of Strength Foundation (Previously the Y-Me Foundation)- Davis, CA chapter, Breast Cancer Support Group.
2006-2019	Study Section, Scientific Peer Reviewer - CDMRP (DOD) Breast Cancer Research Program.
2007	Scientific Reviewer/Clinical Protocols - CDMRP (DOD) Neurofibromatosis Clinical Research Program.
2007 April	Invited Meeting Participant - California-Canada Cancer Stem Cell Initiative: Standford Center for Regenerative Medicine, 2007. Invited workshop participant, Toronto, Canada.
2007-2019	Scientific Peer Reviewer/Clinical Protocols and Basic Science - CDMRP (DOD) Prostate Cancer Program.
2009 September	Invited Meeting Participant - NIH State of the Science Meeting: Ductal Carcinoma In Situ Participant. NIH Natcher Conference Center.
2014-2016	USCAP Abstract Review - Abstract review panelist for invitations to present at the annual meeting.
2017	Special Study Section; Scientific Peer Review - RFA-CA-17-003, PDX Development and Trial Centers (PDTCs)(U54) and RFA-CA-17-004, PDX Data Commons and Coordinating Center (PDCCC) for the PDX Development and Trial Centers Research Network (PDXNet) (U24).
2017 August	Chair Study Section - Congressionally Directed Medical Research

	Programs (CDMRP) Breast Cancer Research Program Breakthrough Awards.
2017 November	Chair Study Section - Congressionally Directed Medical Research Programs (CDMRP) Ad Hoc Breast Cancer Research Program Committee.
2018 December	Chair Study Section - Congressionally Directed Medical Research Programs (CDMRP) peer review process for the Impact 1 Panel for the Prostate Cancer Research Program.
2018 May	Scientific Peer Review - RFA-CA-17-035 https://grants.nih.gov/grants/guide/rfa-files/RFA-CA-17-035.html for the development of Pre-Cancer Atlas (PCA) Research Centers (U2C). This Funding Opportunity Announcement is associated with the Beau Biden Cancer MoonshotSM Initiative that is intended to promote research that results in a comprehensive view of the dynamic, multidimensional tumor ecosystem.
2018 May-June	Scientific Peer Review - RFA-CA-17-032 (Minority-Patient Derived Xenograft (PDX) Development and Trial Center (M-PDTC) Network).
2018-2019	Member - External Advisory Board for the Center for Integrative Research on Childhood Leukemia and the Environment.

Editorial and Advisory Boards

2009, 2010	Tier Ia and Ib: Contributor and editor. Online UCD Extension course in Mouse Pathology. Online with weekly Webinars: Pathobiology of the Mouse, Tier II A: Mouse as a Model for Mammary Gland Cancer Extension course National Award Winners iv. 2011 UPCEA Community of Practica Award- Distance Learning (Part IB); 2010 UPCEA Community of Practice Award distance learning (Part IA); 2009 UCEA best online course award (Part IA).
2011-CURRENT	**Editorial Board**: Journal of Mammary Gland Biology and Neoplasia; https://www.springer.com/journal/10911/editors.
2013-CURRENT	**Editorial Board**: Frontiers in Oncology: https://www.frontiersin.org/journals/cell-and-developmental-biology#editorial-board.
2020- CURRENT	**Editorial Board**: Life (Open Access Journal) https://www.mdpi.com/journal/life/editors.
2022- CURRENT	**Editorial Board** Cancer Biomarkers. , https://www.iospress.com/catalog/journals/cancer-biomarkers

Teaching

Courses

2002	Spring Quarter, Course Number=HON 420, Oncology, Undergraduate Count=0, Graduate Count=0
2002	Spring Quarter, Course Number=PMD 410A, General Pathology, Undergraduate Count=0, Graduate Count=0
2002	Fall Quarter, Course Number=PMD 410 B & E, Systemic Pathology, Undergraduate Count=0, Graduate Count=0
2003	Spring Quarter, Course Number=VM: PMI 298, Experimental Mouse Biology I, Undergraduate Count=0, Graduate Count=0

2003 Spring Quarter, Course Number=PMD 410A, General Pathology, Undergraduate Count=0, Graduate Count=0

2003 Spring Quarter, Course Number=HON 420, Oncology, Undergraduate Count=0, Graduate Count=0

2003 Summer Quarter, Course Number=PMD 410B, Systemic Pathology, Undergraduate Count=0, Graduate Count=0

2003 Fall Quarter, Course Number=VM: PMI 298, Experimental Mouse Biology Course, Undergraduate Count=0, Graduate Count=0

2004 Spring Quarter, Course Number=PMD 410A, General Pathology, Undergraduate Count=0, Graduate Count=0

2004 Spring Quarter, Course Number=HON 420, Oncology, Undergraduate Count=0, Graduate Count=0

2004 Summer Quarter, Course Number=PMD 410C, Systemic Pathology, Undergraduate Count=0, Graduate Count=0

2004 Fall Quarter, Course Number=VM: PMI 280B, Experimental Mouse Biology I, Undergraduate Count=0, Graduate Count=0

2005 Spring Quarter, Course Number=HON 420, Oncology, Undergraduate Count=0, Graduate Count=0

2005 Summer Quarter, Course Number=PMD 410C, Systemic Pathology, Undergraduate Count=0, Graduate Count=0

2005 Fall Quarter, Course Number=VM: PMI 298, Experimental Mouse Biology Course, Undergraduate Count=0, Graduate Count=0

2006 Spring Quarter, Course Number=PMD 410A, General Pathology, Undergraduate Count=0, Graduate Count=0

2006 Spring Quarter, Course Number=IMM 294, Clinical Immunology, Undergraduate Count=0, Graduate Count=10

2006 Summer Quarter, Course Number=HON 420, Oncology, Undergraduate Count=0, Graduate Count=0

2006 Fall Quarter, Course Number=PMD 410D, Systemic Pathology, Undergraduate Count=0, Graduate Count=0

2006 Fall Quarter, Course Number=VM: PMI 298, Experimental Mouse Biology Course, Undergraduate Count=0, Graduate Count=0

2006 Fall Quarter, Course Number=IMM 294, Clinical Immunology: Neoplasia, Undergraduate Count=0, Graduate Count=0

2007 Spring Quarter, Course Number=PMD 410A, Systemic Pathology - Neoplasia, Undergraduate Count=0, Graduate Count=0

2007 Fall Quarter, Experimental Mouse Biology Course, Undergraduate Count=0, Graduate Count=0

2007 Fall Quarter, Course Number=PMD 410 B & E, Systemic Pathology, Undergraduate Count=0, Graduate Count=0

2007 Fall Quarter, Course Number=HON 420, Lung Cancer Pathology, Undergraduate Count=0, Graduate Count=0

2007 Fall Quarter, Course Number=IMM 294, Clinical Immunology: Neoplasia, Undergraduate Count=0, Graduate Count=0

2010 Spring Quarter, Course Number=NUT 298, Advanced Nutrition in Health and Disease, Undergraduate Count=0, Graduate Count=28

2011 Spring Quarter, Course Number=NUT 298, Advanced Nutrition in Health and Disease, Undergraduate Count=0, Graduate Count=28

2011 Spring Quarter, Course Number=PTX 277, Pre-Cancer: Acquired or Predetermined?, Undergraduate Count=0, Graduate Count=32

2012	Winter Quarter, Course Number=PMD 410A/B, General/Systemic Pathology, Units=7.5, Undergraduate Count=0, Graduate Count=105
2012	Spring Quarter, Course Number=NUT 298, Advanced Nutrition in Health and Disease, Undergraduate Count=10, Graduate Count=18
2013	Winter Quarter, Course Number=PMD 410A/B, General/Systemic Pathology, Units=7.5, Undergraduate Count=0, Graduate Count=30
2013	Spring Quarter, Course Number=NUT 298, Advanced Nutrition in Health and Disease, Undergraduate Count=0, Graduate Count=24
2013	Spring Quarter, Course Number=PMI298, Core Course in Integrative Pathobiology General Pathology, Units=2, Undergraduate Count=0, Graduate Count=45
2018	Spring Quarter, Course Number=PMD475, Acting Internship in Anatomic Pathology, Undergraduate Count=0, Graduate Count=0
2018	Spring Quarter, Course Number=PMD435, Clinical Patient Care in Pathology, Undergraduate Count=0, Graduate Count=0
2018	Summer Quarter, Course Number=PMD435, Clinical Patient Care in Pathology, Undergraduate Count=0, Graduate Count=0
2018	Summer Quarter, Course Number=PMD475, Anatomic and Clinical Pathology AI (IOR), Undergraduate Count=0, Graduate Count=3
2018	Fall Quarter, Course Number=PMD435, Clinical Patient Care in Pathology, Undergraduate Count=0, Graduate Count=0
2018	Fall Quarter, Course Number=PMD475, Anatomic and Clinical Pathology AI, Undergraduate Count=0, Graduate Count=0
2019	Winter Quarter, Course Number=PMD475, Anatomic and Clinical Pathology AI (IOR), Undergraduate Count=0, Graduate Count=3
2019	Winter Quarter, Course Number=PMD435, Clinical Patient Care in Pathology (Co-IOR), Undergraduate Count=0, Graduate Count=5
2019	Spring Quarter, Course Number=PMD475, Anatomic and Clinical Pathology AI (IOR), Undergraduate Count=0, Graduate Count=4
2019	Spring Quarter, Course Number=PMD435, Clinical Patient Care in Pathology (Co-IOR), Undergraduate Count=0, Graduate Count=6
2020	Extra Session, Course Number=PMD475, Acting Internship in Anatomic/Surgical Pathology (Instructor of Record), Undergraduate Count=0, Graduate Count=11
2020	Extra Session, Course Number=PMD435, Clinical and Anatomic Pathology (Co-Instructor of Record), Undergraduate Count=0, Graduate Count=15

Student Advising

2008 - 2009	Number of undergraduate advisees: (1), Number of graduate advisees: (2)
2009 - 2010	Number of undergraduate advisees: (1), Number of graduate advisees: (2)
2011 - 2012	Number of undergraduate advisees: (0), Number of graduate advisees: (4)
2012 - 2013	Number of undergraduate advisees: (0), Number of graduate advisees (Post-Doctoral Fellows)): (2)
2013 - 2014	Number of undergraduate advisees (Edmonson Fellow:) (1), Number of graduate advisees: (0)
2014 - 2015	Number of undergraduate advisees: (2), Number of graduate advisees: (2), Graduate Student (1), Postdoctoral Fellow (1)

2015 - 2016 Number of undergraduate advisees: (2), Number of graduate advisees: (2), Graduate Student (1), Postdoctoral Fellow (1)

Thesis Committees

2005-2006 Geoffrey Wood, Associate Professor, University of Ontario
2006-2007 Jennifer Stickel
2006-2007 Tyler Gibson, Incomplete Effort Toward PhD
2006-2007 Ciprian Catana, Associate Professor in Radiology, Harvard Medical
2006-2009 Oded Foreman, Genentech Scientist
2006-2011 Cathy Stanecki
2008-2013 Rebecca Lobo, Fellow UC Davis
2011-2016 Aiza Cathe Go, deceased
2015-2018 Matthew Silvestrini
2018-2020 Carmen Banks
2019-2022 Peter Sariano

Trainees

2009-2013 Rebecca Lobo, PhD, Nutrition, Graduate Student, Post-doctoral Fellow in Proteomics and Obesity Research
2007-Pres Teresa Marple, Post-doctoral Fellow, Statt Scientist UTHSC San Antonio
2008 Amanda Ferguson, Undergraduate Edmondson Fellow in Pathology
2009 Eric Przybyszewski, Undergraduate Edmondson Fellow in Pathology
2011 Aris Alexandrous, Graduate Student
2013 Louis Schuetter, Edmonson Fellow: Undergraduate Researcher
2011-2016 Aiza Cathe Go, PhD (posthumous), Graduate Student, deceased
2015-2016 Brett Monji, Undergraduate Research Intern
2016 Yue Chen, MD, Postgraduate Fellow
2015-2019 Zsofia Penzvalto, PhD, Postdoctoral Fellow
2017 Leonard Chen, Undergraduate Edmonson Fellow in Pathology
2017 Katiana Bennet, Undergraduate Edmonson Fellow in Pathology
2018-2020 Burhan Hamim, Undergraduate, CSUS Student
2019-2020 Michael Hsieh, Edmonson fellow, undergrad UCD
2018-2023 Ayswarya Sundaram, Graduate Student, Biochemistry, Molecular, Cellular and Developmental Biology
2022-2023 Anna-Lee Clarke, Breast/Gyn Surgical Pathology Fellow

University Extension

2013 X420.15, Pathobiology of the Mouse 1A, 3 Units, One Semester, Online
2013 X420.16, Pathobiology of the Mouse, 1b, 3 Units, n/a, Online
2013 X420.30, Pathobiology of the Mouse, Tier II A: Mouse as a Model for Mammary Gland Cancer, 4 Units, One Semester, Online
2014 Pathobiology of the Mouse, Tier II A: Mouse as a Model for Prostate Cancer, 4 Units, One Semester, Online Course