

University of California, San Francisco
CURRICULUM VITAE

Name: Ronald Balassanian, MD
Position: HS Clinical Professor, Step 2
 Pathology
 School of Medicine

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EDUCATION

1984 - 1989	University of Washington, Seattle, WA	BS	Cell and Molecular Biology
1984 - 1989	University of Washington, Seattle, WA	BA	English Literature
1991 - 1996	University of Vermont, College of Medicine, Burlington, VT	MD	Surgery major
1994 - 1994	University of Vermont, Pathology, Burlington, VT	Student fellow	Pathology
1996 - 1997	New York University, New York, NY	PGY1 Resident	Pathology
1997 - 1998	University of California San Francisco, San Francisco, CA	Resident	Pathology
1998 - 1999	University of California San Francisco, San Francisco, CA	Resident	Pathology and Laboratory Medicine
1999 - 2000	University of California San Francisco, San Francisco, CA	Fellow	Surgical Pathology
2000 - 2000	University of California San Francisco,	Chief Resident	Pathology

	San Francisco, CA		
2000 - 2001	University of California San Francisco, San Francisco, CA	Fellow	Cytopathology
2001 - 2002	University of California San Francisco, San Francisco, CA	Resident	Laboratory Medicine

LICENSES, CERTIFICATION

1998	California Physician and Surgeon Medical License #A066054
2002	New York State Medical License #225972-1
2003	American Board of Pathology, Anatomic and Clinical Pathology
2004	Pennsylvania Medical Board Physician and Surgeon License #MD425251
2005	American Board of Pathology, subspecialty certification in Cytopathology
2007	Commonwealth of Massachusetts, Board of Registration in Medicine #231336
2010	Certificate of Special Expertise in Ultrasound-Guided Fine Needle Aspiration, College of American Pathologists

PRINCIPAL POSITIONS HELD

2002 - 2003	Joan and Sanford I. Weill Medical College of Cornell University, New York, NY	Assistant Professor	Pathology and Laboratory Medicine
2002 - 2003	New York-Presbyterian Hospital, Weill-Cornell Medical Center, New York, NY	Assistant Attending	Pathology and Laboratory Medicine
2003 - 2004	Continuum Health Partners, Beth Israel Medical Center, Phillips Ambulatory Cancer Center, Fine Needle Aspiration Biopsy Clinic, New York, NY	Attending Pathologist	Pathology and Laboratory Medicine
2004 - 2007	University of Pittsburgh Medical Center, UPMC Presbyterian-Shadyside, Pittsburgh PA	Attending Pathologist	Pathology and Laboratory Medicine
2004 - 2007	University of Pittsburgh, School of Medicine, Pittsburgh PA	Assistant Professor	Pathology
2006 - 2007	University of Pittsburgh Medical Center, UPMC Shadyside, Pittsburgh PA	Director, FNA Biopsy Clinic	Pathology
2007 - 2010	Harvard Medical School, Boston, MA	Instructor	Pathology
2007 - 2010	Massachusetts General Hospital, Boston, MA	Assistant Attending	Pathology

2011 - 2014	University of California San Francisco, San Francisco, CA	Assistant Clinical Professor	Pathology
2014 - 2019	University of California San Francisco, San Francisco, CA	Associate Clinical Professor	Pathology
2015 - 2017	University of California San Francisco, San Francisco CA	Site Director, UCSF Mission Bay Hospital	Pathology
2016 - present	UCSF Helen Diller Family Comprehensive Cancer Center, San Francisco, CA	Member	Comprehensive Cancer Center
2019 - present	University of California San Francisco, San Francisco CA	Clinical Professor	Pathology

OTHER POSITIONS HELD CONCURRENTLY

2003 - 2004	Continuum Health Partners, Saint Luke's-Roosevelt Hospital, New York, NY	Attending Pathologist	Pathology and Laboratory Medicine
2005 - 2007	University of Pittsburgh Medical Center, UPMC Magee Women's Hospital, Pittsburgh, PA	Attending Pathologist	Pathology and Laboratory Medicine

HONORS AND AWARDS

1991	Honorary Technical Consultant, Cancer Information Service of the Pacific, National Cancer Institute	Fred Hutchinson Cancer Research Center, Seattle, Washington
1995	Robert Larner, M.D. Medical Student Loan Fund Award, College of Medicine	University of Vermont, Burlington VT
1996	James E. Demeules Surgical Research Prize, Surgery, College of Medicine	University of Vermont, Burlington VT
1998	Medical Student Teaching Award, Pathology	University of California, San Francisco, San Francisco CA
2007	Outstanding Teaching in Anatomic Pathology, Residents and Fellows in Pathology	University of Pittsburgh, Pittsburgh PA
2010	Excellence in Teaching Award in Anatomic Pathology, Residents and Fellows in Pathology	Massachusetts General Hospital, Boston MA
2015	Faculty Award of Excellence, Department of Pathology	University of California San Francisco
2017	UCSF Medical Center Exceptional Physician Award, honorable mention	University of California San Francisco, UCSF Health
2018	UCSF Medical Center Exceptional Physician Award, honorable mention	University of California San Francisco, UCSF Health

2019	Award for best poster Epidemiology and Population Science	UCSF Breast Oncology Program Scientific Retreat 2019
2021	Faculty Teaching Award, Department of Pathology, Residents and Fellows in Pathology	UCSF Department of Pathology
2021	Quality Improvement in Cytology Abstract Award	American Society of Cytopathology, 69th Annual Scientific Meeting.
2022	The Yolanda Oertel Interventional Cytopathologist Award	Papanicolaou Society of Cytopathology
2022	Commencement Guest Hooder for Patrick Martin-Tuite, MD	University of California San Francisco, School of Medicine
2022	Commencement Guest Hooder for Adam Ross, MD	University of Vermont, Robert Larner College of Medicine

KEYWORDS/AREAS OF INTEREST

Pathology, Cytopathology, fine needle aspiration (FNA) biopsy, breast cancer, patient-physician communication, patient-pathologist communication, image analysis, informatics

PROFESSIONAL ACTIVITIES

CLINICAL

2014 - present: Associate Clinical Professor, UCSF

Mission Bay Hospital: Site Director, FNA biopsy clinic, ultrasound guided FNA biopsy, general cytopathology, breast surgical pathology

2011- 2014: Assistant Clinical Professor, UCSF

Mt Zion Hospital: FNA biopsy clinic, ultrasound guided FNA biopsy, general cytopathology.

Moffitt-Long Hospital: FNA biopsy service, breast surgical pathology.

I instituted and oversee the monthly Hematology-Cytology Correlation Conference, a QI and teaching conference with Laboratory Medicine, presenting cytology fluid with concurrent hematology specimens.

I currently oversee the Breast Radiology-Pathology conference with Dr. Bonnie Joe, Director of Women's Imaging. I also present at the weekly Breast Care Center Tumor Board.

2007-2010 Assistant Attending in Pathology, Massachusetts General Hospital, Boston MA. FNA biopsy clinic, general cytopathology, breast pathology.

2006-2007 Director, UPMC FNA Clinic and Service. Assistant Professor, UPMC, Pittsburgh PA

SUMMARY OF CLINICAL ACTIVITIES

My primary clinical focus has been the FNA biopsy service, general cytology and breast surgical pathology. On the FNA service I successfully led an effort to incorporate Evaluation and Management (E&M) notes into the FNA reports. This effort, which required substantial changes to accepted practices at UCSF, has brought us into better compliance with JAHCO regulations, led to better documentation of the FNA procedures, and allows for more accurate and appropriate billing for the FNA service. In 2016, I worked with IT support services to upgrade our CoPath pathology reporting system to incorporate Microsoft Word functionality. From 2014 to 2017, I served as the Mission Bay Site Director for FNA service. In this role, I helped set up a new FNA clinic for outpatients as well as an FNA service for radiology guided biopsies. In June of 2009, I underwent training and certification by the College of American Pathologists for using ultrasound guidance for FNA biopsy. At UCSF, I have focused on expanding ultrasound guidance for FNA biopsy in the UCSF FNA Clinic. I present at the weekly UCSF Breast Tumor Board and the UCSF Sarcoma Tumor Board conferences.

During the Covid-19 pandemic, The FNA biopsy clinic at Mission Bay remained open and seeing patients. I took on additional clinical service work as needed to cover for staff who were unable to come in to work, either because they were in self-quarantine or because of child care issues.

Prior to joining UCSF in 2011, I was an Assistant Attending at Massachusetts General Hospital on the FNA/Cytology service and breast surgical pathology. Prior to working at MGH, I was the director of the UPMC Fine Needle Aspiration Biopsy Clinic and Service at UPMC Shadyside, from Jan 2006 to May 2007.

PROFESSIONAL ORGANIZATIONS

Memberships

- 1997 - present College of American Pathologists, member
- 1998 - present American Society for Clinical Pathology, member
- 2000 - present United States and Canadian Academy of Pathology, member
- 2004 - present American Society of Cytopathology, member, Scientific Program Committee member
- 2009 - present Papanicolaou Society of Cytopathology, member
- 2016 - present Consortium of Universities for Global Health, member
- 2014 - 2019 National Comprehensive Cancer Network, member, Breast Cancer Panel

Service to Professional Organizations

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| 2014 - 2017 | College of American Pathologists. Ultrasound Guided Fine Needle Aspiration AP3 course. Biannual educational program. | Faculty |
| 2014 - 2019 | National Comprehensive Cancer Network, Breast Cancer Panel | Institutional Representative |
| 2015 - 2018 | American Society of Cytopathology, Scientific Program Committee | Committee Member |
| 2015 - 2016 | American Society of Cytopathology, 63rd Annual | Moderator, Platform |

	Scientific Meeting, Chicago IL	Presentations
2015 - 2016	United States and Canadian Academy of Pathology, Immersive Cytopathology Experience (ICE)	Faculty
2017 - 2019	Papanicolaou Society of Cytopathology, Standards Member of Practice Task Force	
2018 - 2018	Tanzania National Treatment Guidelines in Oncology	Breast and Lymphoma panel representative
2018 - present	American Society of Cytopathology, Clinical Practice Committee	Member
2019 - present	American Society of Cytopathology Foundation Board	Member
2019 - present	American Society of Cytopathology Task Force to the American Institute of Ultrasound Medicine Practice Parameters for the Performance of Selected Ultrasound Guided Procedures	ASC Representative
2020 - present	American Society of Cytopathology, Diversity, Equity and Inclusion Committee	Member
2021 - present	American Society of Cytopathology, Diversity Equity and Inclusion Committee, Sub-committee for Outreach	Co-Chair
2021 - present	American Society of Cytopathology, Reimagine Cytology Task Force	Vice-Chair

SERVICE TO PROFESSIONAL PUBLICATIONS

- 2007 - present Ad-hoc referee for Archives of Pathology and Laboratory Medicine
- 2011 - present Ad-hoc referee for Diagnostic Cytopathology
- 2014 - present Ad-hoc referee for Journal of the American Society of Cytopathology
- 2015 - present Ad-hoc referee for Journal of the National Comprehensive Cancer Network
- 2015 - present Ad-hoc referee for Cancer Cytopathology
- 2107 - present Ad-hoc referee for PLOS ONE
- 2018 - present Ad-hoc referee for Acta Cytologica
- 2019 - present Editorial Board, Journal of the American Society of Cytopathology
- 2019 - present Editorial Board, Cancer Cytopathology
- 2021 - present Editorial Board, Cytopathology

INVITED PRESENTATIONS

INTERNATIONAL

- 2004 "Criteria for Malignancy in Fine Needle Aspiration Biopsy Speaker

	of Mass Lesions in the Setting of Lactation" Platform presentation United States and Canadian Academy of Pathology 93rd Annual Meeting. Vancouver, BC, Canada	
2011	"Improving FNA technique with an Introduction to US guidance - A Practical Hands-on Workshop". Workshop presentation. 59th Annual Scientific Meeting, American Society Cytopathology. Baltimore, MD	Lead faculty
2012	"Optimizing FNA Technique With an Introduction to US Guidance- Practical Hands-on Workshop". Workshop presentation. 60th Annual Scientific Meeting, American Society of Cytopathology. Las Vegas, NV	Lead faculty
2013	"A Superior Technique for Cell Block Preparation for Fine Needle Aspiration" Platform presentation, United States and Canadian Academy of Pathology 102nd Annual Meeting. Baltimore, MD	Speaker
2013	"Improving FNA technique with an Introduction to US guidance - A Practical Hands-on Workshop". Workshop presentation. 61st Annual Scientific Meeting, American Society Cytopathology. Orlando, FL	Lead faculty
2013	"Dealing with Emotional Patients in the FNA Clinic". Roundtable Discussion. 61st Annual Scientific Meeting, American Society Cytopathology. Orlando, FL	Roundtable leader
2014	"Improving FNA technique with an Introduction to US guidance - A Practical Hands-on Workshop". Diagnostic Cytopathology Update 2014. United States and Canadian Academy of Pathology. Del Mar, CA	Lead faculty
2014	"Cell Block Techniques and Other Ancillary Tests in Cytology". Diagnostic Cytopathology Update 2014. United States and Canadian Academy of Pathology. Del Mar, CA	Faculty speaker
2014	"Optimizing FNA Technique With an Introduction to US Guidance- Practical Hands-on Workshop" Diagnostic Cytopathology Update 2014. United States and Canadian Academy of Pathology. Del Mar, CA	Lead faculty
2014	"Improving FNA technique with an Introduction to US guidance - A Practical Hands-on Workshop". Workshop presentation. 62nd Annual Scientific Meeting, American Society Cytopathology. Dallas, TX	Lead faculty
2014	"Practical and Proactive Techniques for Working With Patients in the FNA Clinic". Roundtable Discussion. 62nd Annual Scientific Meeting, American Society Cytopathology. Dallas, TX	Roundtable Leader
2015	"Developing a Breast FNA Biopsy Service in Peru". Papanicolaou Society of Cytopathology, Companion Society Meeting, United States and Canadian Academy of Pathology (USCAP), 104th Annual Meeting. Boston, MA	Faculty

2015	"Improving FNA technique- A Practical Hands-on Workshop. Workshop Presentation. 63rd Annual Scientific Meeting, 63rd Annual Scientific Meeting, American Society of Cytopathology. Chicago IL	Lead faculty
2016	"New and Recent Developments in Cytopathology: A Case Based Approach". Evening Cytopathology Specialty Conference. United States and Canadian Academy of Pathology, 105th Annual Meeting. Seattle, WA	Panelist/presenter
2016	"Immersive Cytopathology Experience: The Patient-Centered Ultrasound-Guided Fine Needle Aspiration Biopsy Practice. United States and Canadian Academy of Pathology Interactive Center, Palm Springs CA	Faculty
2016	"Improving FNA technique with an introduction to US guidance - A Practical Hands-on Workshop". Workshop presentation. 64th Annual Scientific Meeting, American Society Cytopathology. New Orleans, LA	Lead faculty
2016	"Ask Your Pathologist- How To Communicate With Your Patients In The Era Of Personal Medicine". Workshop presentation. 64th Annual Scientific Meeting, American Society Cytopathology. New Orleans, LA	Lead faculty
2016	"Breast FNA Biopsy with a Focus on Papillary Lesions". Virtual Slide Seminar. 64th Annual Scientific Meeting, American Society of Cytopathology. New Orleans LA	Faculty
2017	"FNA Biopsy Workshop" Robert Sofferman, MD Memorial Advanced Thyroid Ultrasound Course, 3rd World Congress on Thyroid Cancer. Boston MA	Faculty
2017	"Slide Preparation and FNA Technique". Robert Sofferman MD Memorial Advanced Thyroid Ultrasound Course. World Congress on Thyroid Cancer. Boston MA	Faculty
2017	"Breast Pathology" Ultrasound Guided Fine Needle Aspiration Workshop. Muhimbili University of Health and Allied Sciences, Dar es Salaam, Tanzania	Faculty
2017	"Lymph Node Cytology" Ultrasound Guided Fine Needle Aspiration Workshop. Muhimbili University of Health and Allied Sciences, Dar es Salaam, Tanzania	Faculty
2017	Ultrasound Guided Fine Needle Aspiration Workshop. Muhimbili University of Health and Allied Sciences, Dar es Salaam, Tanzania	Faculty
2017	"Cell Block Preparation Techniques" Cyto e-Conference. American Society of Cytopathology. On-line webinar.	Faculty
2017	"Breast FNA Biopsy with a Focus on Papillary Lesions". Video Microscopy Session. 65th Annual Scientific Meeting, American Society of Cytopathology. Phoenix AZ	Lead faculty speaker
2017	"Current Issues in Cytology: Rapid On-Site Evaluation (ROSE) - Live! In Action!"	Faculty/moderator

	Panel Discussion. 65th Annual Scientific Meeting, American Society of Cytopathology. Phoenix AZ	
2017	"Ultrasound FNA Biopsy". Workshop Presentation. 65th Annual Scientific Meeting, American Society of Cytopathology. Phoenix AZ	Lead faculty
2018	"Ask Your Pathologist: A Pilot Program for Patient Communication in Pathology. United States and Canadian Academy of Pathology, 107th Annual Meeting. Vancouver BC.	Faculty/senior author
2018	"Rapid On-Site Evaluation; Live in Action!" Video Microscopy Tutorial. 66th Annual Scientific Meeting, American Society of Cytopathology. Washington DC	Lead faculty
2018	"Ultrasound FNA Biopsy" Workshop. 66th Annual Scientific Meeting, American Society of Cytopathology. Washington DC	Lead faculty
2018	"Fine Needle Aspiration is an Effective Method for Cell Surface Proteomics: Towards a Personalized Cancer Surfaceome." Platform Presentation, 66th Annual Scientific Meeting, American Society of Cytopathology. Washington DC	2nd Senior Author
2018	"Cytology Shark Tank; ASC Foundation Young Investigator Grant".66th Annual Scientific Meeting, American Society of Cytopathology. Washington DC	Co-Investigator
2019	"Ultrasound Guided Fine Needle Aspiration Biopsy Workshop" 20th International Congress of Cytology, International Academy of Cytology, Sydney. Australia	Lead faculty
2019	"FNA Biopsy of the Breast with a Focus on Papillary Lesions" 20th International Congress of Cytology, International Academy of Cytology. Sydney, Australia	Faculty
2019	"Breast FNA biopsy in Low Resource Settings" 5th International Medical Congress of Armenia. Pathology companion session. Yerevan Armenia	Faculty
2019	"FNA biopsy of lymph nodes" 5th International Medical Congress of Armenia. Hematology companion session. Yerevan Armenia	Faculty
2019	"First Fine Needle Aspiration Biopsy Cytology Tutorial: performing and interpreting FNAB Cytology in the setting of endemic HIV infection." University of Botswana and Princess Marina Hospital, Gaborone, Botswana. Department of Health, Botswana and under the Auspices of the International Academy of Cytology.	Faculty
2019	"FNAB and Gynaecological Cytology Tutorial". Aga Khan Hospital, Nairobi, Kenya, Under the Auspices of the International Academy of Cytology	Faculty
2019	"Ultrasound FNA Biopsy" Workshop. 67th Annual	Lead faculty

Scientific Meeting, American Society of Cytopathology.
Salt Lake City, UT

2021	"Fine Needle Aspiration Biopsy Techniques". RAD-AID Ethiopia, RAD-AID International. On-line live presentation, hosted by Tatiana Kelil, MD	Faculty
2021	"Deteccion de Cancer de Mama en Entornos de Bajo Recursos/Breast Cancer Detection in Low-Resource Areas". Virtual Seminar, hosted by PATH, Seattle WA	Invited faculty
2021	"Deteccion De Cancer De Mama En Paises De Ingresos Bajos Y Medianos/Detection of Breast Cancer in Low and Middle Income Countries". Virtual Seminar hosted by Gobierno Consultores and PATH, Lima Peru	Invited faculty
2021	"Ultrasound Guided Fine Needle Aspiration Biopsy- Bridging the Gap". CYTOCON 2020-2021, 50th Annual Conference of the Indian Academy of Cytologists, on-line meeting, postponed from 2020. Mumbai, India	Faculty
2021	"Ultrasound Fine Needle Aspiration Biopsy" Workshop. 68th Annual Scientific Meeting, American Society of Cytopathology. Las Vegas, NV	Lead Faculty

NATIONAL

2000	"Fine Needle Aspiration Biopsy in Diagnosing Breast Cancer" and "Second Opinions in Pathology: How to get one and when are they indicated" Cancer Information Service for the Pacific, National Cancer Institute, Fred Hutchinson Cancer Research Center. Seattle, WA	Faculty
2005	"Decision Making Analysis in Pathology Diagnosis and Reporting" Seminar, Risk Center, Department of Social and Decision Science, Carnegie Mellon University. Pittsburgh, PA	Faculty moderator
2005	"Fine Needle Aspiration Biopsy of the Breast" Department of Pathology, Brigham and Women's Hospital. Boston, MA	Invited faculty
2005	"Fine Needle Aspiration Biopsy of the Breast" Department of Pathology, University of Rochester. Rochester, NY	Invited faculty
2007	"Fine Needle Aspiration Biopsy of the Breast" Department of Pathology, Massachusetts General Hospital. Boston, MA	Invited faculty
2008	"Fine Needle Aspiration Biopsy of the Lung" American Society for Clinical Pathology ASCP- Teleconference	Faculty
2009	"Cytopathology Seminar: Selected Areas with Special Problems" Current Concepts in Surgical Pathology, Harvard Medical School, Massachusetts General	Faculty

	Hospital. Boston, MA	
2009	"Fine Needle Aspiration Biopsy of Lymph Nodes with Ancillary Testing Including Stains, Flow Cytometry, and FISH". Cytopathology for the Practicing Pathologist: Videomicroscopy Tutorials on Selected Topics, Harvard Medical School, Massachusetts General Hospital. Boston, MA	Faculty
2009	"Cytologic Diagnosis of Breast Biopsies" Department of Pathology, University of California San Francisco. San Francisco, CA	Invited faculty
2010	"Fine Needle Aspiration Biopsy: Small Group Slide Review". Current Concepts in Surgical Pathology, Harvard Medical School, Massachusetts General Hospital. Boston, MA	Faculty
2012	"Athena Breast Health Network: Pathology Harmonization Project". 2012 UCSF Breast Oncology Program Scientific Retreat. San Francisco, CA	Faculty
2012	"Breast Cytology". 2012 28th Annual UCSF Current Issues in Anatomic Pathology, Cytology Seminar. San Francisco, CA	Faculty
2013	"Pathology Heterogeneity" 2013 UCSF Breast Oncology Program Scientific Retreat. San Francisco, CA	Faculty
2013	"Diagnosis of Lymphomas by Fine Needle Aspiration". 2013 29th Annual UCSF Current Issues in Anatomic Pathology. UCSF, San Francisco, CA	Faculty
2013	"Interpreting FNA and Core Biopsies of the Breast: The Truth and Its Many Complexities". Women's Imaging in the Wine Country, UCSF Department of Radiology. San Francisco, CA	Faculty
2013	"Lymph Node Fine Needle Aspiration Biopsy with Ancillary Studies Including Flow Cytometry and Molecular Diagnostics". The 66th Annual Meeting, California Society of Pathologists. San Francisco, CA	Faculty
2013	"Expert Roundtable: Skeptical About Cell Phones and Health?" Commonwealth Club of California. San Francisco, CA	Panel speaker
2014	"FNA biopsy of the Breast" 2014 30th Annual UCSF Current Issues in Anatomic Pathology. UCSF. San Francisco, CA	Faculty
2014	"HER2 Blood Test" and "Quantitative HER2 Determinations in Breast Cancer Guidelines". National Comprehensive Cancer Network Breast Cancer Panel Guidelines Meeting. Philadelphia PA.	Panel speaker
2014	"Ultrasound Guided Fine Needle Aspiration" Advanced Practical Pathology Program, College of American	Faculty

	Pathologists. Chicago IL	
2015	"Breast FNA Cytology" 2015 31st Annual UCSF Current Issues in Anatomic Pathology Cytology Seminar. San Francisco CA	Faculty
2015	"Tubular and Mucinous Carcinomas and Breast Metastasis" and "Are TIL ready to be Incorporated into Practice" and "Testing Recurrent Breast Cancer for ESR Mutation". National Comprehensive Cancer Network Breast Cancer Panel Guidelines Meeting. Philadelphia PA.	Panel speaker
2015	"Ultrasound Guided Fine Needle Aspiration" Advanced Practical Pathology Program, College of American Pathologists. Englewood NJ	Faculty
2016	"Ultrasound Guided Fine Needle Aspiration" Advanced Practical Pathology Program, College of American Pathologists. Chicago IL	Faculty
2016	"The Spectrum of Breast FNA with a Focus on Papillary Lesions". Lunch Tutorial 2016 32nd Annual UCSF Current Issues in Anatomic Pathology. San Francisco, CA	Faculty
2016	"Cancer Patients and Pathology" Cancer Information Service for the National Cancer Institute, Fred Hutchinson Cancer Research Center. Seattle, WA	Invited faculty
2016	"Fine Needle Aspiration Biopsy of the Breast", Grand Rounds, Department of Pathology, University of Washington, Seattle Washington	Invited faculty
2016	"Breast Fine Needle Aspiration Biopsy with a focus on Papillary Lesions", Department of Pathology, University of California San Diego, San Diego CA	Invited faculty
2017	"Breast Fine Needle Aspiration Biopsy" Department of Pathology, University of California Davis, Sacramento CA	Invited faculty
2017	"Lymph Node FNA Node Cytology". 33rd Annual UCSF Current Issues in Anatomic Pathology, Cytology Seminar. San Francisco, CA	Faculty
2017	"Defining Favorable Histology in Breast Cancer" and "Defining Mucinous Breast Carcinoma on Core Biopsy and Excision". National Comprehensive Cancer Network Breast Cancer Panel Guidelines Meeting. Philadelphia PA.	Panel speaker
2019	"Fine Needle Aspiration Biopsy of the Breast, Focus on Papillary Lesions" 34th Annual UCSF Current Issues Cytology Seminar. UCSF. San Francisco, CA	Faculty
2019	"Breast FNA Cytology" 2019 35th Annual UCSF Current Issues in Anatomic Pathology Cytology Seminar. San Francisco CA	Faculty

2022	"FNA Biopsy of Soft Tissue " 2022 36th Annual UCSF Current Issues in Anatomic Pathology Cytology Seminar (postponed from 2020).	Faculty
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REGIONAL AND OTHER INVITED PRESENTATIONS

2011	"Breast Cytopathology" UCSF Pathology Resident's Teaching Conference, Annual Lecture	Faculty
2012	"Breast Cytopathology" Resident's Lecture, UCSF Department of Radiation Oncology. San Francisco, CA	Faculty
2012	"Breast Cytopathology" UCSF Pathology Resident's Teaching Conference, Annual Lecture	Faculty
2013	"Interpreting FNA and Core Biopsies of the Breast" Residents and Fellows Lecture, UCSF Department of Radiology and Bioimaging, Women's Imaging	Faculty
2013	"Breast Cytopathology" UCSF Pathology Resident's Teaching Conference, Annual Lecture	Faculty
2013	"Interpreting FNA and Core biopsy of the Breast" UCSF Breast Imaging Fellows Teaching Conference	Faculty
2014	"Breast Cytopathology" Resident's Lecture, UCSF Department of Radiation Oncology. San Francisco, CA	Faculty
2014	"Breast Cytopathology" UCSF Pathology Resident's Teaching Conference, Annual Lecture	Faculty
2014	"Introduction to Pathology" UCSF Carol Franc Buck Breast Care Center Pre-med Intern Program. San Francisco CA	Faculty
2015	"Introduction to Pathology" UCSF Carol Franc Buck Breast Care Center Intern Program. San Francisco CA	Faculty
2015	"Breast Cytopathology" UCSF Pathology Resident's Teaching Conference, Annual Lecture	Faculty
2015	"Ask Your Pathologist- Everything you ever wanted to know about breast pathology" Taste for the Cure: A Taste of Science. UCSF Carol Franc Buck Breast Care Center. San Francisco CA	Faculty
2015	"Ask Your Pathologist" Multi-Headed Microscope Science Demonstration. Taste for the Cure: A Taste of Science. UCSF Carol Franc Buck Breast Care Center. San Francisco CA	Faculty
2016	"Ask Your Pathologist" Multi-Headed Microscope Science Demonstration. Taste for the Cure: A Taste of Science. UCSF Carol Franck Breast Care Center. San Francisco CA	Faculty
2016	University of California Berkeley, College of Chemistry pre-med panel	Panel faculty speaker

2016	"Breast FNA biopsy". Muhimbili University of Health and Allied Sciences, Dar es Salaam, Tanzania	Faculty
2016	"The Spectrum of Breast FNA Cytology: Challenging and Not So Challenging Lesions. Grand Rounds. CellNetix. Seattle WA	Faculty
2016	"Fine Needle Aspiration Biopsy of the Breast". Department of Pathology Grand Rounds. University of Washington. Seattle WA	Faculty
2016	"Ask Your Pathologist; Everything You Always Wanted to Know About Pathology But Never Got a Chance to Ask" Fred Hutchinson Cancer Research Center, Cancer Information Service. Seattle WA	Faculty r
2017	"Introduction to Breast Pathology" UCSF Breast Care Center, Pre-med student Intern Program.	Faculty
2017	"Breast Pathology" Resident and Fellows Lecture. UCSF Department of Radiation Oncology. San Francisco CA	Faculty
2017	"Developing a Breast FNA Biopsy Service in Peru" UCSF Department of Pathology, San Francisco CA	Faculty
2017	"Fine Needle Aspiration Biopsy of the Breast" Department of Pathology Grand Rounds, UCSD, San Diego CA	Faculty
2018	"Fine Needle Aspiration Biopsy of the Breast" Department of Pathology Grand Rounds UC Davis, Sacramento CA	Faculty
2018	"Breast Pathology" Resident and Fellows Lecture. UCSF Department of Radiation Oncology, San Francisco CA	Faculty
2018	"Implementation of a Breast FNA Biopsy Service in Peru" PATH. Seattle WA	Faculty
2018	"Ask Your Pathologist" Multi-Headed Microscope Science Demonstration. Taste for the Cure: A Taste of Science. UCSF Carol Franck Breast Care Center. San Francisco CA	Faculty
2018	"Introduction to Breast Pathology" Residents and Fellows Lecture, UCSF Department of Radiology and Bioimaging, Women's Imaging	Faculty
2019	"Breast Pathology and Cytopathology" Resident and Fellows Lecture. UCSF Department of Radiation Oncology, San Francisco CA	Faculty
2019	"Breast Pathology" UCSF Breast Care Center, Pre-med Student Intern Program, San Francisco CA	Faculty
2019	"Breast Pathology" Resident and Fellows Lecture. UCSF Department of Radiation Oncology, San Francisco CA	Faculty
2020	"Breast Pathology" Radiation Oncology Grand Rounds,	Faculty

	UCSF Department of Radiation Oncology, San Francisco CA	
2020	"Introduction to Breast Pathology" UCSF Carol Franc Buck Breast Care Center, Nursing and Allied Health Staff	Faculty
2020	"Covid update" University of Washington, Phi Kappa Sigma fraternity, Seattle WA	Faculty
2021	"Introduction to Breast Pathology" UCSF Breast Care Center, Pre-med Student Intern Program, San Francisco CA	Faculty

CONTINUING EDUCATION COURSES ATTENDED

2007	American Society of Cytopathology, 55th Annual Scientific Meeting, Houston, TX
2007	United States and Canadian Academy of Pathology, 96th Annual Meeting, San Diego, CA
2008	American Society of Cytopathology, 56th Annual Scientific Meeting, Orlando, FL
2008	United States and Canadian Academy of Pathology, 97th Annual Meeting, Denver, CO
2009	American Society of Cytopathology, 57th Annual Scientific Meeting, Denver, CO
2009	United States and Canadian Academy of Pathology, 98th Annual Meeting, Boston, MA
2009	CAP USFNA certification workshop, Chicago, IL
2010	United States and Canadian Academy of Pathology, 99th Annual Meeting, Washington, DC
2011	United States and Canadian Academy of Pathology, 100th Annual Meeting, San Antonio, TX
2012	"Medical Philanthropy 20/20: Vision and Practice for Funding the Future", Advancement Resources & UCSF. Fundraising training for UCSF Faculty and Staff. San Francisco CA
2012	2012 UCSF Breast Oncology Program Scientific Retreat, San Francisco, CA
2012	United States and Canadian Academy of Pathology, 101th Annual Meeting, Vancouver, BC
2012	American Society of Cytopathology, 60th Annual Scientific Meeting, Las Vegas, NV
2013	2013 UCSF Breast Oncology Program Scientific Retreat, San Francisco, CA
2013	American Society of Cytopathology, 61st Annual Scientific Meeting, Orlando, FL
2013	United States and Canadian Academy of Pathology, 102nd Annual Meetingg, Baltimore, MD
2014	2014 UCSF Breast Oncology Program Scientific Retreat, San Francisco, CA
2014	United States and Canadian Academy of Pathology, 103rd Annual Meeting, San Diego, CA
2014	American Society of Cytopathology, 62nd Annual Scientific Meeting, Dallas, TX
2015	United States and Canadian Academy of Pathology, 104th Annual Meeting, Boston,

MA

- 2015 American Society of Cytopathology, 63rd Annual Scientific Meeting, Chicago IL
- 2016 United States and Canadian Academy of Pathology, 105th Annual Meeting, Seattle, WA
- 2016 Symposium on Global Cancer Research, 4th Annual, San Francisco CA
- 2016 Consortium of Universities for Global Health, 7th Annual Global Health Conference
- 2016 United States and Canadian Academy of Pathology, Immersive Cytopathology Experience, Palm Springs CA
- 2016 American Society of Cytopathology, 64th Annual Scientific Meeting, New Orleans LA
- 2017 United States and Canadian Academy of Pathology, 106th Annual Meeting, San Antonio, TX
- 2017 American Society of Cytopathology, 65th Annual Scientific Meeting, Phoenix, AZ
- 2018 United States and Canadian Academy of Pathology, 107th Annual Meeting, Vancouver BC
- 2018 American Society of Cytopathology, 66th Annual Scientific Meeting, Baltimore, MD
- 2019 United States and Canadian Academy of Pathology, 108th Annual Meeting, Washington, DC
- 2019 American Society of Cytopathology, 67th Annual Scientific Meeting, Salt Lake City, Utah
- 2020 American Society of Cytopathology, 68th Annual Scientific Meeting, on-line virtual meeting
- 2021 United States and Canadian Academy of Pathology, 109th Annual Meeting, on-line virtual meeting
- 2021 American Society of Cytopathology 69th Annual Scientific Meeting, Las Vegas, NV

GOVERNMENT AND OTHER PROFESSIONAL SERVICE

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| 2007 - 2007 | National Cancer Institute, Thyroid Fine Needle Aspiration State of the Science Conference. Bethesda, MD. | Participant |
| 2011 - present | Breast FNA Biopsy, Train the Trainers Program, Community-based Program for Breast Health, Peru. A collaboration with PATH (Seattle WA), Peru National Cancer Institute (Lima, Peru), the Regional Cancer Institute in Trujillo (Trujillo, Peru), and the Ministry of Health (Lima, Peru) | Faculty |
| 2018 - 2019 | Tanzania National Treatment Guidelines in Oncology. Breast Panel & Lymphoma Panel | Committee Member |

UNIVERSITY AND PUBLIC SERVICE

UNIVERSITY SERVICE

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UCSF CAMPUS-WIDE

2011 - 2015	Tissue Oversight Committee, UCSF	Committee member
2015 - 2018	University of California San Francisco, Global Cancer Program, Steering Committee	Committee member
2019 - 2021	LGBTQ+ Committee, Office of Diversity and Outreach, UCSF	Committee member
2020 - 2021	UCSF Health Community Engagement Work-group for LGBTQ Organizations	Committee member

SCHOOL OF MEDICINE

1992 - 1995	Medical Student Admissions Committee, University of Vermont, College of Medicine Burlington, VT	Member
1998 - 2000	UCSF School of Medicine, Residency Advisory Committee, Pathology and Laboratory Medicine	Member
2000 - 2001	UCSF Medical Staff Training Committee	Member
2000 - 2001	UCSF Chief Resident's Committee	Member
2004 - 2007	Patient Safety & Total Quality Council, UPMC Shadyside, Pittsburgh, PA	Member
2006 - 2007	Residency Committee, Department of Pathology, University of Pittsburgh, Pittsburgh, PA	Member
2009 - 2010	Resident Pathology Training Committee, Department of Pathology, Massachusetts General Hospital, Boston, MA	Member
2012 - 2013	Faculty Search Committee, Breast Pathology, Department of Pathology, UCSF	Member
2013 - 2014	Faculty Search Committee, Breast Imaging, Department of Radiology, UCSF	Member
2014 - 2016	Faculty Search Committee, Director of Cytology, Department of Pathology, UCSF	Member
2017 - 2018	Faculty Search Committee, Breast Imaging, Department of Radiology, UCSF	Member
2020 - 2020	Faculty Search Committee, Breast Imaging, Department of Radiology, UCSF	Member
2014 - present	Admissions Committee, Interview Committee,	Member

UCSF School of Medicine, San Francisco CA

2016 - present	Confidential Career Advisor for Pathology, UCSF School of Medicine, San Francisco CA	Advisor, UCSF Medical Students
2022 - 2023	Faculty Search Committee, Cytopathology/Molecular Pathology, Department of Pathology, UCSF	Chair
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DEPARTMENTAL SERVICE

2012 - 2012	Pathology, CoPath upgrade to Word	Planning and implementation
2014 - present	Clinical Competency Committee, UCSF Cytopathology Fellowship program	Member
2016 - present	Pathology and Laboratory Medicine, Grand Rounds Mechanism of Disease faculty feedback group	Faculty mentor
2019 - present	APEX superuser representative for the department of Pathology	Representative
2021 - present	Global Pathology, Strategic Planning Committee, UCSF Pathology	Chair
2021 - present	Operations and Finance, Strategic Planning Committee, UCSF Pathology	Member

PUBLIC SERVICE

2011 - 2011	UCSF Mt Zion Health Fair. FNA Clinic and Pathology Department Booth	Organizer/Representative
2013 - present	Breast FNA biopsy implementation in Peru, a collaboration with PATH and the Community Based Program for Breast Health, Peru.	Faculty
2015 - 2019	"Ask Your Pathologist: Everything you ever wanted to know about breast pathology" Lecture. Taste for the Cure: A Taste of Science. UCSF Carol Franc Buck Breast Care Center, San Francisco CA	Faculty speaker
2015 - 2019	"Ask Your Pathologist" Annual Multi-Headed Microscope Science Demonstration. Taste for the Cure: A Taste of Science. UCSF Carol Franc Buck Breast Care Center, San Francisco CA	Faculty speaker
2014 - 2022	Tri-Valley Stepping Out for Cancer Kures (SOCKS), Bras for the Cause, Breast Cancer Walk	UCSF participant and fundraiser

SUMMARY OF SERVICE ACTIVITIES

At the university level, my service includes membership on the UCSF LGBTQ+ committee reporting to Vice Chancellor Renee Navarro and the Office of Diversity and Outreach. The committee meets monthly and is charged with addressing campus wide issues for the underrepresented members of the LGBTQ+ community. I was chair of the sub-committee for PRIDE, organizing and advising UCSF representation at the annual San Francisco LGBTQ Pride Parade. I also served as chair of the Community Outreach sub-committee developing strategies for engaging community organizations with UCSF. Separately, I also a member of the Community Engagement Work-group for LGBTQ organizations at UCSF Health, working with the hospital system to develop policies for the LGBTQ patient population. We advised on developing a system for identifying LGBTQ providers and allies for patients as well as a UCSF Health website to connect patients with UCSF and community based resources (www.ucsfhealth.org/about/lgbtq).

For the school of medicine, I have served on multiple faculty search committee in the departments of Pathology and Radiology, Breast Imaging. Since 2014, I have served on the UCSF School of Medicine Admissions Interview Committee with the expectation of 12 hour long interviews each season. In 2016, I became the Confidential Career Advisor for Pathology for the UCSF School of Medicine. In this role I serve as a trusted source of information for medical students at all levels who are considering Pathology as a career. The advising sessions, which can be quite detailed and intense, are meant to support the students as they consider pathology and when they are going through interview selections and residency matching. The position has allowed me to support and advise students from under-represented minorities in the School of Medicine, many of whom have proceeded with successful careers in Pathology.

In the Department of Pathology, I have worked to update and expand informational technology resources for reporting pathology results. This includes detailed planning and implementing a change in CoPath™, our pathology reporting software, to include Microsoft Word™ functions to increase efficiency in writing reports. Additionally, I serve as the APEX super-user representative for the department, testing out new functions in the Electronic Medical Record system. I was able to implement a major change in how we report FNA biopsies at UCSF by developing an easy to use template for Evaluation and Management (E&M) notes for FNA clinic patients and UCSF inpatients. These E&M notes are entered into APEX and copied into the final FNA report in CoPath. Incorporating E&M reports into our FNA service has allowed us to improve procedure documentation, be in better compliance with hospital regulations, and bill for our services more appropriately and accurately. In 2021, Dr. Jay Debnath, the new Chair of the department, developed Strategic Planning Committees to organize and plan for various issues facing the department. I serve as the Chair of the Global Pathology Committee, charged with developing a plan to expand the clinical service, teaching and research missions of the department internationally. I am also a member of the Operations and Finance Committee tasked with improving efficiency across the different facets of the department.

My community and public service work is focused on patient education and breast cancer awareness. The “Taste for the Cure” event is a community awareness and educational program hosted by the UCSF Breast Oncology Program. I have been a regular presenter at this event with an “Ask Your Pathologist” session reviewing glass slides at a microscope with patients to show them examples of common findings such as lymph node metastasis and ductal carcinoma in-situ. In 2020 and 2021, the event was switched to an online format and I have not been able to participate. I expect to return when in person sessions resume. I also participate in the Tri-Valley SOCKS breast cancer fundraiser with a large team from UCSF.

TEACHING AND MENTORING

TEACHING

FORMAL SCHEDULED CLASSES FOR UCSF STUDENTS

Qtr	Academic Yr	Course Number and Title	Teaching Contribution	Units	Class Size
	2011 - present	"Breast Cytopathology" UCSF Pathology Resident's Teaching Conference, Annual Lecture	Faculty presenter		15
	2013 - 2018	Cytology-Hematology Correlation Conference. Quarterly review of interesting cytology and correlating hematology cases. UCSF Laboratory Medicine Residents and Fellows	Faculty presenter		10
	2013 - 2016	"Interpreting FNA and Core biopsy of the Breast" UCSF Breast Imaging Fellows Teaching Conference	Faculty presenter		10
	2016 - 2018	"Classification of Neoplasms" MS1 USCF Bridges Medical Curriculum.	Faculty		12
	2016 - 2016	University of California Berkeley, College of Chemistry pre- med panel (Invited)	Faculty		46
	2017 - 2018	MS1 Medical Student ABC Block Myocardial Pathology; Obstructive & Restrictive Lung Disease; Lung Cancer.	Faculty		10
	2017 - present	MS2 Medical Student Bridges Curriculum Life Stages.Placenta, Prostate, Breast, Ovary, Uterus	Faculty		10
	2017 - 2021	"Breast Pathology" UCSF Radiation Oncology Residents and Fellows Teaching conference	Faculty		12
	2018 - 2019	MS1,2 Demystifying Pathology	Faculty		2
	2018 - 2019	MS2 Pathology observership	Faculty		1
	2021 - 2022	MS4 Bridges SPAN longitudinal preceptor Heidi Vaughan.	Faculty		1
	2022 - 2023	MS4 Bridges SPAN longitudinal preceptor (scheduled).	Faculty		2

POSTGRADUATE AND OTHER COURSES

2011 - present	"Breast Cytopathology" UCSF Pathology Resident's Teaching Conference, Annual Lecture	Faculty presenter
2012 - present	"Breast Pathology" UCSF Radiation Oncology Residents and Fellows Teaching conference	Faculty presenter
2013 - present	Cytology-Hematology Correlation Conference. Monthly review of interesting cytology and correlating	Faculty presenter

	hematology cases. UCSF Laboratory Medicine Residents and Fellows	
2013 - present	"Interpreting FNA and Core biopsy of the Breast" UCSF Breast Imaging Fellows Teaching Conference	Faculty presenter
2013 - present	"Dealing with emotional patients in the FNA clinic" UCSF Pathology Residents Teaching Conference	Faulty presenter

INFORMAL TEACHING

1994 - 1994	Second Year Medical Student Pathology Course, University of Vermont, College of Medicine, Department of Pathology, Laboratory Assistant, 90 medical students, 2-6 hours per week.
1996 - 1997	Second Year Medical Student Pathology Course, New York University, Department of Pathology, Laboratory Assistant, 30 medical students, 2-6 hours per week.
1997 - 1998	Second Year Medical Student Pathology Course, University of California San Francisco, Department of Pathology, Laboratory Assistant, 30-60 medical students, 2-6 hours per week.
1999 - 2000	Fellow, Surgical Pathology, Responsible for supervising junior residents in pathology, Estimate of hours per year: 1560 hours per year (30-60 hours per week).
2000 - 2001	Fellow, Cytopathology, Responsible for supervising junior residents in cytopathology, Estimate of hours per year: 520 hours per year (10 hours per week).
2002 - 2003	Assistant Professor, Weill Medical College of Cornell University/NY Presbyterian Hospital, Responsible for training residents and fellows in cytopathology, Estimate of hours per year: 1040 hours per year (20 hours per week).
2003 - 2004	Attending Pathologist, Beth Israel Medical Center, Continuum Health Partners, Responsible for training visiting residents in cytopathology, Estimate of hours per year: 104 hours per year (2 hours per week).
2004 - 2007	Assistant Professor, University of Pittsburgh/UPMC, Responsible for training residents and fellows in cytopathology, Estimate of hours per year: 1560 hours per year (30-60 hours per week).
2006 - 2007	Cytology Rotation Director, University of Pittsburgh/UPMC Shadyside, Responsible for overseeing resident rotations through the UPMC FNA biopsy clinic and general cytology service.
2007 - 2010	Instructor in Pathology, Harvard Medical School/Massachusetts General Hospital, Responsible for training residents and fellows in pathology, Estimate of hours per year 1560 hours per year (30 hours per week).
2011 - 2014	Assistant Clinical Professor, UCSF, Responsible for training and supervising residents and fellows on the cytology service and breast pathology service. Estimate of hours per year 1560 hours per year (30 hours per week).
2014 - 2019	Associate Clinical Professor, UCSF, Responsible for training and supervising

residents and fellows on the cytology service and breast pathology service.
Estimate of hours per year 1560 hours per year (30 hours per week).

2019 - 2020 Clinical Professor, UCSF, Responsible for training and supervising residents and fellows on the cytology service and breast pathology service. Estimate of hours per year 1560 hours per year (30 hours per week).

TEACHING NARRATIVE

I teach pathology residents and cytology fellows during their rotations in the FNA clinic and on the cytology and breast services. In cytology I conduct one-on-one FNA biopsy practice sessions, called "FNA Boot Camp" with residents and fellows at the beginning of their cytology rotation and throughout the year. I also instruct them on ultrasound guidance techniques using phantoms. For the Resident's Teaching Conference (RTC), I present a didactic lecture on breast cytology with a breast FNA unknowns session annually. In 2015, I instituted a weekly RTC cytology conference reviewing interesting FNA cases at Mission Bay at a multi-headed scope. During the pandemic, this conference switched to an online format and allowed for greater participation by residents at all the training sites. In 2021, I received the Faculty Teaching Award for Excellence in Teaching from the UCSF Pathology Residents and Fellows.

Since 2016 I have taught the UCSF Medical Students through the Bridges curriculum in the Life Stages sections on Placenta, Prostate, Breast, Uterus and Ovary. In the 2021-22 academic year, I started as a Specialty Practice Ambulatory sub-iNtership (SPAN) preceptor through the UCSF Bridges Curriculum. Students develop clinical exam skills in the ambulatory setting working with me in the FNA clinic at least 12 half days throughout their 4th year. One student, Heidi Vaughan has been working with me in 2021. Two students have enrolled for the 2022-23 academic year.

I provide an annual lecture on "Introduction to Breast Pathology" for a group of approximately 20 pre-med interns in the UCSF Carol Franc Buck Breast Care Center at the beginning of their internship. I also serve as an advisor for the students as they go through the medical school application process.

At the international level, I developed and run a workshop for the American Society of Cytopathology (ASC) on ultrasound guided FNA biopsy. The workshop has been renewed for 10 consecutive years at the ASC Annual Scientific Meeting since 2011. In 2020 the conference postponed due to the Covid-19 pandemic. However, we returned to an in-person session in 2021. I served as faculty for the United States and Canadian Academy of Pathology at the Immersive Cytopathology Experience course in 2016 as well as the Diagnostic Pathology Update in 2014. At the national level, I served as faculty for the College of American Pathologists Advanced Practical Pathology Program on US-FNA biopsy from 2014 to 2017. In 2017, working with the Muhimbili University of Allied Health Sciences (MUHAS), the UCSF Global Cancer Program, Dianna Ng, MD and Amie Lee, MD, we developed a training course at MUHAS training pathologists and radiologists jointly in performing and interpreting ultrasound guided FNA biopsy. We were invited to return to MUHAS in January 2019 to teach the course again. Working with the national and regional cancer centers in Peru (INEN and IREN) as well as PATH in Seattle we developed a training program for breast FNA biopsy in Trujillo Peru, training Pathologists, Gynecologists in performing and interpreting breast FNA biopsy as part of the Community Based Program for Breast Health, Peru. The goal of the program is to train pathologists, gynecologists and mid-wives to deliver effective breast cancer screening in low resource settings. We continue to assess and refine the program. In 2019, I was faculty for intensive cytopathology tutorials organized by Dr. Andrew Field, MBBS and the International Academy of Cytopathology at the University of Botswana in Gabarone Botswana, and at the Agha Khan Hospital, Nairobi Kenya. The program was intended to be on-going but halted during the pandemic.

MENTORING**PREDOCTORAL STUDENTS SUPERVISED OR MENTORED**

Dates	Name	Program or School	Role	Current Position
2014 - 2015	Abhi Jairam	UCSF Carol Franc Buck Breast Care Center	Pre-med Intern	Medical Student, University of California Davis
2013 - 2014	Timothy Henderson	UCSF Carol Franc Buck Breast Care Center	Pre-med Intern	Medical Student, University of Vermont College of Medicine
2012 - 2013	Katherine Serrurier	UCSF Carol Franc Buck Breast Care Center	Pre-med advisor	Medical Student, Drexel University College of Medicine
2015 - 2018	Sarah Bowman	UC Berkeley Extension	Pre-med advisor	Pre-med student
2015 - 2020	Patrick Martin-Tuite	UCSF Carol Franc Buck Breast Care Center	Pre-med advisor/ Mentor	UCSF Medical School
2015 - 2020	Adam Ross	University of Vermont, Larner College of Medicine, Medical Student	Pre-med advisor/Mentor	UVM Larner College of Medicine MS4
2016 - 2017	Nicole Croom	UCSF Medical Student	Confidential Career Advisor	UCSF Pathology Resident
2017 - 2018	Nebil Mohammed	UCSF Medical Student	Confidential Career Advisor	UCSF Pathology Resident
2017 - 2018	Calixto-Hope Lucas	UCSF Medical Student	Confidential Career Advisor	UCSF Pathology Resident
2018 - 2019	Aaron Chin	UCSF Medical Student	Confidential Career Advisor	UCSF Medical Student
2018 - 2019	Roxana Garcia	UCSF Medical Student	Confidential Career Advisor	UCSF Medical Student
2019 - 2020	Alex Craig	UCSF Medical Student	Confidential Career Advisor	UCSF Pathology Resident
2019 - 2020	Kara Tanaka	UCSF Medical Student	Confidential Career Advisor	UCSF Pathology Resident
2020 - 2020	Carol Tran	UCSF Medical Student	Confidential Career Advisor	UCSF Radiology Resident
2020 - 2021	Jon Zhang	UCSF Biophysics PhD Student	Career Advisor	UCSF Graduate Student
2021 - 2022	Heidi Vaughan	UCSF Medical Student	Confidential Career Advisor	UCSF Medical Student

POSTDOCTORAL FELLOWS AND RESIDENTS DIRECTLY SUPERVISED OR MENTORED

Dates	Name	Fellow	Faculty Role	Current Position
2005 - 2006	Olga Navolotskaia,	Fellow	Attending	UPMC faculty

Dates	Name	Fellow	Faculty Role	Current Position
	MD			
2006 - 2007	Sara Monaco, MD	PGY4	Attending	UPMC faculty
2007 - 2008	Stewart Knoepp, MD PhD	Fellow	Attending	Private practice
2007 - 2011	Jill Ono, MD	Fellow	Attending/research collaborator	Private practice, Las Vegas, NV
2007 - 2008	Kenan Sauder, MD	Fellow	Attending, research collaborator	Private practice NWH, Newton, MA
2007 - 2011	Johanna Baran, MD	Resident	Attending/research collaborator	Private practice, San Luis Obispo, CA
2011 - 2014	Sara Barcia, MD	Fellow	Attending	Private practice, Boston MA
2011 - 2014	Brandie Firetag	Fellow	Attending	Clinical Instructor, UCSF/SFGH
2012 - 2014	Sarah Calkins	Fellow	Research collaborator	UCSF Faculty
2012 - 2017	Dianna Ng	Fellow	Research collaborator	UCSF Faculty
2012 - 2017	Josh Menke	Fellow	Research collaborator	UCSF Faculty
2017 - 2019	Marie-Claire Ndayisaba	Resident	Research Project Mentor	University Teaching Hospital of Kigali, Rwanda
2017 - 2020	Rachel Daffolyn Fels Elliott	Resident, Fellow	Research Project Mentor	University of Michigan, Pathology Fellow

FACULTY MENTORING

Dates	Name	Position While Mentored	Mentoring Role	Current Position
2014 - 2016	Sarah Calkins, MD	Faculty	Research collaborator	UCSF Faculty
2017 - 2019	Dianna Ng, MD	Faculty	Research collaborator	Memorial Sloan Kettering Faculty
2019 - 2020	Tatiana Kelil, MD	Faculty	Research collaborator	UCSF Faculty
2016 - present	Poonam Vohra, MD	Faculty	Research collaborator/career advisor	UCSF Faculty

OTHER VISITING FACULTY SUPERVISED

2017 - present Edda Vuhahula, DDS Muhimbili University for Allied Health Sciences
PhD, Chief of Pathology

MENTORING NARRATIVE

I have closely trained and advised a number of residents and fellows through collaboration on research projects as well as direct supervision of their clinical work as the attending on service. Several trainees have progressed on to faculty positions; some are continuing their training, and some are in private practice.

I am a member of the faculty feedback group for the UCSF Pathology and Laboratory Medicine resident conference "Mechanism of Disease".

I serve as the Confidential Career Advisor for UCSF medical students interested in Pathology residency and mentor them through the application process.

TEACHING AND MENTORING AWARDS AND NOMINATIONS

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| 1998 | "Medical Student Teaching Award", University of California San Francisco, Department of Pathology |
| 2007 | "Outstanding Teaching in Anatomic Pathology", University of Pittsburgh, Department of Pathology, Residents and Fellows |
| 2010 | "Excellence in Teaching Award- Anatomic Pathology", Massachusetts General Hospital, Department of Pathology, Residents and Fellows |

SUMMARY OF TEACHING AND MENTORING HOURS

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|-------------|--|
| 2007 - 2010 | ~600 total hours of teaching (including preparation)
Formal class or course teaching hours: 0 hours
Informal class or course teaching hours: 0 hours
Mentoring hours: 0 hours
Other hours: |
| 2008 - 2010 | ~600 total hours of teaching (including preparation)
Formal class or course teaching hours: 0 hours
Informal class or course teaching hours: 0 hours
Mentoring hours: 0 hours
Other hours: |
| 2011 - 2012 | ~600 total hours of teaching (including preparation)
Formal class or course teaching hours: hours
Informal class or course teaching hours: hours
Mentoring hours: hours
Other hours: |
| 2012 - 2013 | ~600 total hours of teaching (including preparation) |

Formal class or course teaching hours: hours
Informal class or course teaching hours: hours
Mentoring hours: hours
Other hours:

2013 - 2014 ~600 total hours of teaching (including preparation)
Formal class or course teaching hours: hours
Informal class or course teaching hours: hours
Mentoring hours: hours
Other hours:

2014 - 2015 600 total hours of teaching (including preparation)
Formal class or course teaching hours: 80 hours
Informal class or course teaching hours: 200 hours
Mentoring hours: 200 hours
Other hours: 120 hours

2015 - 2016 600 total hours of teaching (including preparation)
Formal class or course teaching hours: 80 hours
Informal class or course teaching hours: 200 hours
Mentoring hours: 200 hours
Other hours: 120 hours

2016 - 2017 Total anticipated hours of teaching: 600 hours

RESEARCH AND CREATIVE ACTIVITIES

RESEARCH AWARDS

CURRENT

P0555707 (Lead Site investigator)	09/21/21 - 09/01/23
National Institutes of Health	\$50,000 direct/yr1
Point-of-care Cellular and Molecular pathology of Breast Tumors	\$100,000 total

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PAST

R01-HS13321 (expired) 01/01/05 - 01/01/07

Project: Improving Patient Safety by Examining Pathology Errors. Ongoing projects examining efficacy of FNA biopsy of the thyroid, lung lymph nodes and breast. Role: Co-investigator.

(Recipient) 07/01/07 - 06/30/09

National Institutes of Health \$35,000 direct/yr1

Loan Repayment Program \$70,000 total

MGH Vickery Fund () 09/01/08 - 12/01/10

Project: Optimizing cell block assays from FNA biopsy samples. Role: Project Investigator

R43 CA114896 () 04/01/09 - 03/01/11

NIH/NCI (STTR through Physical Sciences Inc) \$39,047 direct/yr1

High Resolution Smart Probe for Breast Biopsy Guidance.

PI: Nick Iftima. Role: Co-investigator

(Principle Investigator) 01/01/13 - 12/31/14

Direct Cytologic Smears Are An Accurate And Reliable Substrate For Fluorescence In Situ Hybridization Testing In Synovial Sarcoma

11-PIR-11 (Co-Investigator/Pathologist) 05/01/12 - 06/30/15

Nektar Therapeutics \$5% salary support direct/yr1

Nektar Beason TAP Study \$5% salary support total

DPA 404939 01/01/14 - 06/30/20

DepCode 400961 (Principle Investigator)

Foundation.

Directed donation to UCSF in support of research activities of Dr. Balassanian

Balassanian Research Fund \$20,000 total

(Coinvestigator) 08/01/18 - 08/01/19
 Cepheid \$450,000 direct/yr1
 GeneXpert Breast Cancer STRAT4

(Co-investigator /Lead author on current manuscript in draft 01/01/10 - present
)
 University of California Office of the President \$5.3M direct/yr1
 Athena Breast Health Network

(Co-Investigator) 01/01/13 - present
 PATH- A catalyst for global health
 Implementing FNA biopsy in Peru

1R01CA204797-01 (Co-investigator) 09/01/16 - 09/01/21
 National Institutes of Health
 Biological implications of breast cancer protective variants
 in Latin American women with high Indigenous American
 ancestry

1. **Baehner R, Magrane G, Balassanian R, Chang C, Millward C, Wakil AE, Osorio RW, Waldman FM. Donor origin of neuroendocrine carcinoma in 2 transplant patients determined by molecular cytogenetics. Hum Pathol. 2000 Nov; 31(11):1425-9. PMID: 11112220 [View in Pubmed]**
2. **Chou SH, Chawla A, Lee TH, Zhou Y, Busch MP, Balassanian R, Ferrell L, Cowan MJ. Increased engraftment and GVHD after in utero transplantation of MHC-mismatched bone marrow cells and CD80low, CD86(-) dendritic cells in a fetal mouse model. Transplantation. 2001 Dec 15; 72(11):1768-76. PMID: 11740386 [View in Pubmed]**
3. **Gendler LS, Feldman SM, Balassanian R, Riker MA, Frencher SK, Whelan DB, Anne S, Gross JD, Cohen JM, Boolbol SK. Association of breast cancer with papillary lesions identified at percutaneous image-guided breast biopsy. Am J Surg. 2004 Oct; 188(4):365-70. PMID: 15474427 [View in Pubmed]**
4. **Valdes EK, Feldman SM, Balassanian R, Cohen JM, Boolbol SK. Diagnosis of recurrent breast cancer by ductoscopy. Breast J. 2005 Nov-Dec; 11(6):506. PMID: 16297117 [View in Pubmed]**
5. **Nodit L, Balassanian R, Sudilovsky D, Raab SS. Improving the quality of cytology diagnosis: root cause analysis for errors in bronchial washing and brushing specimens. Am J Clin Pathol. 2005 Dec; 124(6):883-92. PMID: 16416738 [View in Pubmed]**
6. **Raab SS, Vrbin CM, Grzybicki DM, Sudilovsky D, Balassanian R, Zarbo RJ, Meier FA. Errors in thyroid gland fine-needle aspiration. Am J Clin Pathol. 2006 Jun; 125(6):873-82. PMID: 16690487 [View in Pubmed]**

7. Raab SS, Grzybicki DM, Sudilovsky D, Balassanian R, Janosky JE, Vrbin CM. Effectiveness of Toyota process redesign in reducing thyroid gland fine-needle aspiration error. *Am J Clin Pathol.* 2006 Oct; 126(4):585-92. PMID: 16938657 [[View in Pubmed](#)]
8. Owonikoko T, Agha M, Balassanian R, Smith R, Raptis A. Gemtuzumab therapy for isolated extramedullary AML relapse following allogeneic stem-cell transplant. *Nat Clin Pract Oncol.* 2007 Aug; 4(8):491-5. PMID: 17657254 [[View in Pubmed](#)]
9. Pazarentzos E, Giannikopoulos P, Hrustanovic G, St John J, Olivas VR, Gubens MA, Balassanian R, Weissman J, Polkinghorn W, Bivona TG. Oncogenic activation of the PI3-kinase p110 β isoform via the tumor-derived PIK3CB(D1067V) kinase domain mutation. *Oncogene.* 2015 May 18. PMID: 25982275 [[View in Pubmed](#)]
10. 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.* 2015 Nov;46(11):1694-704. doi: 10.1016/j.humpath.2015.07.008. Epub 2015 Jul 29. PMID: 26410019 [[View in Pubmed](#)]
11. Gradishar WJ, Anderson BO, Balassanian R, Blair SL, Burstein HJ, Cyr A, Elias AD, Farrar WB, Forero A, Giordano SH, Goetz M, Goldstein LJ, Hudis CA, Isakoff SJ, Marcom PK, Mayer IA, McCormick B, Moran M, Patel SA, Pierce LJ, Reed EC, Salerno KE, Schwartzberg LS, Smith KL, Smith ML, Soliman H, Somlo G, Telli M, Ward JH, Shead DA, Kumar R. Breast cancer version 2.2015. *J Natl Compr Canc Netw.* 2015 Apr; 13(4):448-75. PMID: 25870381 [[View in Pubmed](#)]
12. Gradishar WJ, Anderson BO, Balassanian R, Blair SL, Burstein HJ, Cyr A, Elias AD, Farrar WB, Forero A, Giordano SH, Goetz M, Goldstein LJ, Hudis CA, Isakoff SJ, Marcom PK, Mayer IA, McCormick B, Moran M, Patel SA, Pierce LJ, Reed EC, Salerno KE, Schwartzberg LS, Smith KL, Smith ML, Soliman H, Somlo G, Telli M, Ward JH, Shead DA, Kumar R. NCCN Guidelines Insights Breast Cancer, Version 1.2016. *J Natl Compr Canc Netw.* 2015 Dec; 13(12):1475-85. PMID: 26656517 [[View in Pubmed](#)]
13. Valdes EK, Boolbol SK, Cohen JM, Balassanian R, Feldman SM. Clinical Experience With Mammary Ductoscopy. *Ann Surg Oncol.* 2016 Dec; 23(Suppl 5):9015-9019. PMID: 16897273 [[View in Pubmed](#)]
14. Gradishar WJ, Anderson BO, Balassanian R, Blair SL, Burstein HJ, Cyr A, Elias AD, Farrar WB, Forero A, Giordano SH, Goetz M, Goldstein LJ, Hudis CA, Isakoff SJ, Marcom PK, Mayer IA, McCormick B, Moran M, Patel SA, Pierce LJ, Reed EC, Salerno KE, Schwartzberg LS, Smith KL, Smith ML, Soliman H, Somlo G, Telli M, Ward JH, Shead DA, Kumar R. Invasive Breast Cancer Version 1.2016, NCCN Clinical Practice Guidelines in Oncology. *J Natl Compr Canc Netw.* 2016 Mar; 14(3):324-54. PMID: 26957618 [[View in Pubmed](#)]
15. Ly A, Ono JC, Hughes KS, Pitman MB, Balassanian R. Fine-Needle Aspiration Biopsy of Palpable Breast Masses: Patterns of Clinical Use and Patient Experience. *J Natl Compr Canc Netw.* 2016 May; 14(5):527-36. PMID: 27160231 [[View in Pubmed](#)]
16. Balassanian R, Wool GD, Ono JC, Olejnik-Nave J, Mah MM, Sweeney BJ, Ljung B-M, Pitman MB. A Superior Method for Cell Block Preparation for Fine Needle Aspiration Biopsies. *Cancer Cyto* 2016. Apr 124(15). PMID:27105161
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 - 36. ABSTRACTS**

RESEARCH PROGRAM

As an academic cytopathologist, my career mission statement is: To bridge pathology and clinical practice and improve patient care and communication. My research is mainly focused on two areas, FNA biopsy and breast pathology. My research in breast cancer is often patient centered. I explore ways to expand the diagnostic utility of FNA biopsy, particularly through ancillary molecular testing and empower patients to understand the basis of their pathology diagnosis.

Ask Your Pathologist is a project I initiated which allows patients to gain a visual understanding of their diagnoses by reviewing their slides with a pathologist at a multi-headed microscope. Working with the Breast Care Center pre-med intern program, we identify patients who have questions about their breast pathology diagnoses and how it relates to their treatment options. These patients are invited to review their slides at a multi-headed microscope with me and to discuss the findings in their reports. Following the session, the patients receive a written summary, an audio recording of the session and are surveyed about their experience. At the close of the study, we will measure outcomes in patient satisfaction and understanding of their diagnosis. The project is currently funded through the Athena Program, the UCSF Breast Care Center, and through an unrestricted gift to the Pathology department from an individual UCSF donor in my name. Our findings were presented as a platform presentation at the United States and Canadian Academy of Pathology (USCAP) Annual Meeting in 2018. During the Covid-19 pandemic, we initially deferred patient requests for the Ask Your Pathologist program. However, we have recently incorporated digital pathology as a tool to allow patients to review their pathology with me remotely via Zoom conferencing. We also plan to study the efficacy of switching to this modality.

I am co-investigator on a project sponsored by Cepheid working with Drs. Dianna Ng (Memorial Sloan Kettering Pathology and Edda Vuhahula (Muhimbili University of Allied Health Sciences (MUHAS) Pathology), in Dar es Salaam, Tanzania. We are developing FNA biopsy with point-of-care testing for estrogen receptor (ER), progesterone receptor (PR) and Her2 neu expression using a GeneXpert PCR based assay with a 2 hour turn-around time. This will allow for rapid on-site diagnosis for breast cancer patients in Tanzania. The goal is to have patients diagnosed by FNA biopsy with ER, PR and Her2 assays performed at the bed side, so they can be sent home

with a prescription for anti-estrogen therapy as appropriate. The project is a validation study funded by Cepheid and the UCSF Global Cancer Program.

My work in Tanzania also includes implementation of an FNA biopsy service at MUHAS. Working with Drs. Amie Lee and Tatiana Kelil in the UCSF Department of Radiology, we conducted US FNA training workshops at MUHAS to train residents, pathologists and radiologists. We measured the efficacy of our training program with pre and post assessment and published our findings in the Journal of Global Oncology. A follow up study is currently underway.

PATH is a non-governmental organization based in Seattle, with a mission to improve global health. Working with PATH, we developed a program for community based breast health, using ultrasound and FNA biopsy to screen and triage women s in rural and under-served areas of Peru. Our initial work was based at the northern regional cancer center IREN, in Trujillo, Peru. We trained pathologists, gynecologists and mid-wives on performing and interpreting FNA biopsy of the breast and then followed up with on-site visits to IREN-Norte to perform quality assessment and measure outcomes by reviewing FNA biopsies performed before and after training. Our long-term goal is to work with PATH to expand this program to other low and middle income countries around the world.

While in Peru, as a co-investigator for a project in Laura Fejerman's lab (formerly UCSF now UC Davis) and Dr. Ruiz Cordero (UCSF Pathology) and I reviewed immunohistochemical staining for breast biomarkers ER, PR, Her2 for breast cancer patients at the national cancer center (INEN) in Lima Peru, to validate genetic testing performed on samples sent to UCSF. We were able to demonstrate Her2 positive breast cancer is associated with Indigenous American ancestry in Peru. Our findings were published in Cancer Research in 2020.

Fine Needle Aspiration is an Effective Method for Cell Surface Proteomics is the title for a project developed in collaboration with Arun Wiita's laboratory. We are collecting FNA biopsy samples from surgical pathology bench specimens to determine the feasibility of using mass spectroscopy to characterize the cell surface proteins. Our initial findings were presented as a platform presentation at the American Society of Cytopathology (ASC) Annual Scientific Meeting. We were also selected as one of the top 3 finalists for grant funding from the ASC foundation. The goal of the project is to amplify the diagnostic utility of minimally invasive FNA biopsy, particularly from sites like the pancreas which are difficult to sample.

I am the principle investigator for a multiinstitutional project working with Miguel Sanchez MD (Englewood, New Jersey) and Celeste Powers MD, PhD (Virginia Commonwealth University), examining the long-term outcome of breast biopsy techniques, comparing FNA biopsy with core biopsy. The project will examine the rate of lymph node and distant metastasis in women diagnosed with breast cancer by either FNA or core biopsy. The project is a follow up to a smaller study done at the Karolinska Institute in Stockholm Sweden, which demonstrated a higher rate of lymph node metastasis in women who were diagnosed with breast cancer by core biopsy rather than by FNA. Our goal is to repeat the study with a larger cohort of patients across different institutions in a more controlled and statistically rigorous manner.

I-SPY2 is a prospective study for women who present with advanced breast cancer. I am a coinvestigator for the study, a lead member of the Pathology Working Group and involved with pathology reviews and developing protocols. Using MRI and core biopsies of the breast, along with molecular profiling, breast cancer patients are screened for potential response to neo-adjuvant therapy with various investigational drugs. My role is to assist with reviewing core biopsies to determine adequacy for molecular profiling. I also review mastectomy specimens following neo-adjuvant therapy to record the residual cancer burden for the patient following treatment. In 2020, I helped to develop protocols for performing core biopsies of the tumor bed

after 12 weeks of neoadjuvant therapy to identify women who may be able to forgo further therapy.

The Athena Breast Health Network is a multiinstitutional collaboration involving all five University of California medical centers. The project seeks to enroll 150,000 breast cancer patients and standardize all aspects of their breast care including prevention, diagnosis, pathology, imaging, treatment and prognosis. I am one of the UCSF site pathologists. I took a lead role in a breast biomarker harmonization project standardizing assays for ER, PR, Her-2 and Ki-67 across all sites. I was a coinvestigator for a web based training tool to help harmonize pathology interpretation called Score the Core, to train participating pathologists to interpret various breast core biopsies in a uniform fashion. In collaboration with the Karolinska Institute, we examined a cohort of 700 cases of archival breast cancer tissue from women and determined the effect on long term survival of estrogen receptor heterogeneity in breast cancer. Our findings were published in the Journal of the National Cancer Institute. Additional collaborative efforts with the Athena group are ongoing.

I am a coinvestigator for a project with investigators at Duke University including Drs. Shelly Hwang (breast surgery) and Ashutosh Chilkoti (Biomedical Engineering) developing a hand-held point of care test using artificial intelligence for cellular and molecular pathology of breast tumors. The goal of the project is to develop a module that can be used in underserved low resource settings in Tanzania to screen patients for referral to the main cancer center in Dar es Salaam. I am the site PI for the study and my role is to develop the artificial intelligence with digital imaging of the breast FNA study sets at UCSF. As a coinvestigator with Drs. Catherine Park (UCSF Radiation Oncology) and Valerie Weaver (UCSF Center for Bioengineering and Tissue Regeneration) we are developing protocols for using artificial intelligence and digital imaging "histiomics" of stromal collagen to predict the risk of recurrence in breast ductal carcinoma in-situ.

SIGNIFICANT PUBLICATIONS

1. Baehner R, Magrane G, **Balassanian R**, Chang C, Millward C, Wakil AE, Osorio RW, Waldman FM. Donor origin of neuroendocrine carcinoma in 2 transplant patients determined by molecular cytogenetics. *Hum Pathol.* 2000 Nov; 31(11):1425-9. PMID: 11112220

Working in Fred Waldman's laboratory at UCSF, we performed fluorescence in-situ hybridization (FISH), polymerase chain reaction (PCR) and comparative genomic hybridization (CGH) to identify donor-derived tumors in FNA biopsies of transplant patients. My role included performing the molecular diagnostic assays and writing and editing the final paper.

2. Gendler LS, Feldman SM, **Balassanian R**, Riker MA, Frencher SK, Whelan DB, Anne S, Gross JD, Cohen JM, Boolbol SK. Association of breast cancer with papillary lesions identified at percutaneous image-guided breast biopsy. *Am J Surg.* 2004 Oct; 188(4):365-70. PMID: 15474427

I assisted with an institutional review of 9310 papillary lesions of the breast, diagnosed by FNA or core needle biopsy, and correlated the results with surgical outcome. My role included reviewing the pathology and writing and editing the final paper. This study was completed at Beth Israel Medical Center, New York, NY.

3. Nodit L, **Balassanian R**, Sudilovsky D, Raab SS. Improving the quality of cytology diagnosis: root cause analysis for errors in bronchial washing and brushing specimens. *Am J Clin Pathol.* 2005 Dec; 124(6):883-92. PMID: 16416738

See #5 below.

4. Raab SS, Vrbin CM, Grzybicki DM, Sudilovsky D, **Balassanian R**, Zarbo RJ, Meier FA. Errors in thyroid gland fine-needle aspiration. *Am J Clin Pathol*. 2006 Jun; 125(6):873-82. PMID: 16690487

See #5 below.

5. Raab SS, Grzybicki DM, Sudilovsky D, **Balassanian R**, Janosky JE, Vrbin CM. Effectiveness of Toyota process redesign in reducing thyroid gland fine-needle aspiration error. *Am J Clin Pathol*. 2006 Oct;126(4):585-92.

These 3 papers were a result of working with Dr. Stephen Raab, the principle investigator for a grant titled Improving Patient Safety by Examining Pathology Errors (R01 HS13321). We studied ways to reduce medical errors through immediate cytologic diagnosis with direct communication to the clinician and patient. We developed an intervention for thyroid FNA biopsies, with immediate diagnosis and standardization of criteria, which resulted in a significant reduction in false negative and non-diagnostic biopsies. My role included developing new protocols for improving the quality of FNA samples, reviewing the pathology, as well as writing and editing the final papers. This work was completed at UPMC, Pittsburgh PA.

6. 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*. 2015 Nov;46(11):1694-704. doi: 10.1016/j.humphath.2015.07.008. Epub 2015 Jul 29. PMID: 26410019.

This paper is the first in a series of papers we are publishing from the Athena project, a collaboration between 5 UC hospitals. We developed an on-line training tool for pathologists for pathologists to improve the accuracy of IHC-4 stain interpretation. My role in this project included designing the study, collecting data, writing the manuscript and editing the drafts following reviews at the journal.

7. Ly A, Ono JC, Hughes KS, Pitman MB, **Balassanian R**, Fine Needle Aspiration Biopsy of Palpable Breast Masses: Patterns of Clinical Utilization and Patient Experience. *JNCCN* 2016; *JNCCN* 2016; 14(5):527-536. PMID: 27160231

This project involved a comparative review of breast biopsy performed by FNA versus core biopsy at two academic medical centers with comparable patient populations. We found patients who were offered FNA biopsy had a shorter wait time for diagnosis, had smaller tumors at initial presentation and following treatment, and had a higher rate of benign lesions that did not need follow up imaging. As principle investigator my role was to design the study, obtain IRB approval, review data collection and analysis, and write the final paper. We presented our findings as a poster at the USCAP meeting in 2012. The paper was published in *Journal of the National Comprehensive Cancer Network* and with an invited commentary.

8. **Balassanian R**, Wool GD, Ono JC, Olejnik-Nave J, Mah MM, Sweeney BJ, Ljung B-M, Pitman MB. A Superior Method for Cell Block Preparation for Fine Needle Aspiration Biopsies. *Cancer Cyto* 2016. Apr 124(15). PMID:27105161

This project was a statistically validated comparative review of 3 different techniques for preparing cell block samples from FNA biopsies. This is the first controlled study of its kind in the cytology literature to address the differences between cell block procedures at different cytology laboratories. As the principle investigator, I oversaw all aspects of this project, including designing the project, securing funding and IRB approval, overseeing data collection and analysis, statistical interpretation and writing all sections of the manuscript. The findings were presented as a platform presentation at the USCAP 2014 annual meeting. We also produced a YouTube video demonstrating our findings which has been viewed greater than 2400 times (<https://youtu.be/nfR17d5-bol>). In 2018, we were notified that our paper was among the top 20 most downloaded articles in Cancer Cytopathology.

9. Chan, E, **Balassanian R**, Tabatabai L, Lou H, Vohra P. Improved diagnostic precision of urine cytology by the Paris system and the use of cell blocks. Cancer Cyto 2018. Sept. Vol 127 [In Press]

This project was an application of the new Paris classification system and our published cell block techniques to urine cytology. My role was reviewing the urine samples and collecting data for statistical analysis. Our paper is featured on the cover of the September 2018 issue of Cancer Cytopathology.

10. Maglione, KD, Lee AY, Ray, KM, Joe, BN, **Balassanian, R**. Radiologic-Pathologic Correlation for Benign Results after MRI-guided Breast Biopsy. Am J Roent 2016 [In Press]

This project involved direct comparison of benign breast pathology with corresponding lesions identified using breast MRI. My role was to help develop the project and perform the pathology review as well as the radiology-pathology correlation. I also helped write and edit the manuscript. Our findings were presented at the American Roentgen Ray Society in 2016. A manuscript of our findings was accepted for publication by the American Journal of Roentgenology in 2016 and the paper is in press.

ADDITIONAL RELEVANT INFORMATION:

In 2012 I underwent training in fundraising through a workshop titled "Medical Philanthropy 20/20: Vision and Practice for Funding the Future", conducted by Advancement Resources and UCSF. I was invited to participate in this workshop through the UCSF Breast Oncology Program.

In 2014 following a presentation on breast pathology at the BOP Retreat, I received a donation from a UCSF donor, as an unrestricted donation of \$20,000 to support my work through the department of Pathology. This generous gift has supported my project "Ask Your Pathologist" as well as some travel expenses for work in Peru and Tanzania.

In 2015, I helped secure an unrestricted \$15,000 grant from Genetech/Roche to support the National Cancer Institute Symposium on Global Cancer Research which was hosted at UCSF by the Global Cancer Program.

In 2018, I hosted a fundraiser at my home for the UCSF Global Cancer Program highlighting the work we have done in Tanzania, Peru and other low and middle income countries. We hosted Dr. Russell White, Chief of Surgery at Tenwek Hospital in Kenya, as well as a number of local and international industry leaders, including United Nations representatives and development staff from UCSF.

In 2019, I organized and coordinated a large donation of surplus computer equipment including 28 laptop computers, 12 desktop computers and 19 high definition monitors from DSIQ corporation in Seattle Washington to Muhimbili University in Dar es Salaam, Tanzania.

The UCSF Foundation has received donations made in my honor by several FNA Clinic patients to "The Fund for UCSF", a major fundraising effort initiated in 2017.

I plan to continue my work in philanthropy development with UCSF and the Global Cancer Program, as well as national and international organizations such as the American Society of Cytopathology Foundation and the United States and Canadian Academy of Pathology Foundation. I will draw on my experience and training to seek out industry, private donors and non-governmental organizations who wish to support our work.