**University of California, San Francisco**

# CURRICULUM VITAE

**Name:** Rageshree Ramachandran, MD, PhD

**Position:** Associate Professor of Clinical Pathology, Step 2
Pathology
School of Medicine

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## EDUCATION

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|---|---|---|---|---|
| 1991 - 1995 | Stanford University, (Supervisor: Howard Schulman, Neuroscience) | B.S. | Biological Sciences, Honors & Distinction | |
| 1995 - 1995 | Stanford University | M.S. | Biological Sciences | |
| 1995 - 2003 | University of Pennsylvania, (Medical Scientist Training Program, NIH) | M.D. | | |
| 1997 - 2002 | University of Pennsylvania | Ph.D. | Cell & Molecular Biology | (Supervisor: David J. Goldhamer, Developmental Biology) |
| 2004 - 2010 | University of California, San Francisco | Resident | Anatomic Pathology; Laboratory Medicine | |
| 2007 - 2008 | University of California, San Francisco (Director: Linda Ferrell) | Fellow & Chief Resident | Surgical Pathology | |
| 2008 - 2009 | University of California, San Francisco (Director: Linda Ferrell) | Fellow | GI & Liver Pathology | |

## LICENSES, CERTIFICATION

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| 2006 | Medical Licensure, California |
| 2009 | Board Certification, Anatomic Pathology |
| 2010 | Board Certification, Clinical Pathology |

## PRINCIPAL POSITIONS HELD

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|---|---|---|---|
| 2010 - 2016 | University of California, San Francisco | Assistant Professor | Pathology |
| 2016 - present | University of California, San Francisco | Associate Professor | Pathology |

## OTHER POSITIONS HELD CONCURRENTLY

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|---|---|---|---|
| 2010 - present | University of California, San Francisco | Director of Medical Education | Pathology |

## HONORS AND AWARDS

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|---|---|---|
| 1988 | National Spelling Bee Champion | |
| 1991 | National Merit Scholar | |
| 1991 | Tenth place nationally, Westinghouse Science Talent Search | |
| 1991 | USA Today All-American Academic Team | |
| 1991 | David Starr Jordan Scholar, Stanford University | |
| 2010 | Bronze prize educational award, UCSF First Annual Pancreas Research Program retreat | |
| 2012 | Nominee, UCSF Kaiser Award for Excellence in Teaching (medical student-nominated) | |
| 2013 | UCSF Essential Core Teaching Award for Commitment to Teaching | |
| 2013 | UCSF Essential Core Teaching Award for Commitment to Teaching (selected by second-year medical students) | |
| 2013 | Nominee, UCSF MS1 Essential Core Teaching Award (first-year medical student-nominated) | |
| 2014 | Nominee, UCSF Kaiser Award for Excellence in Teaching (medical student-nominated) | |
| 2015 | Excellence in Teaching Award | Haile T. Debas/UCSF Academy of Medical Educators |
| 2015 | Nominee, UCSF Kaiser Award for Excellence in Teaching (medical student-nominated) | |

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|---|---|---|
| 2017 | Nominee, UCSF Bridges Curriculum Foundations 1 Teaching Awards (MS1-nominated in categories of Inspirational Teaching and Excellence in Small Group Instruction by Faculty) | |
| 2017 | Endowed Chair in Pathology Medical Student Education (5-year term) | Haile T. Debas/UCSF Academy of Medical Educators |
| 2018 | Excellence in Teaching Award (1 of 5 clinical faculty recipients) | UCSF School of Medicine Class of 2018 (graduating class) |

**KEYWORDS/AREAS OF INTEREST**

Surgical pathology, gastrointestinal and liver pathology, medical education, curriculum development

# PROFESSIONAL ACTIVITIES

## CLINICAL

I have completed general residency training in anatomic pathology and fellowships in general surgical pathology as well as GI/liver pathology. I am board-certified in anatomic pathology and in clinical pathology/laboratory medicine.

SUMMARY OF CLINICAL ACTIVITIES

My clinical service (25% time) includes signout of general in-house surgical pathology cases, biopsies, and confirmatory consultation cases from other institutions for patients undergoing surgery at UCSF. In addition, I review intraoperative frozen sections, post-transplant liver biopsies, and am one of six attendings reviewing cases through our gastrointestinal/liver pathology consultation service. Consultation service involves supervising the UCSF Anatomic Pathology specialty fellows in liver and gastrointestinal pathology. Fellows on this service have diagnostic responsibilities in adult and pediatric hepatobiliary and gastrointestinal pathology, liver and small bowel transplant pathology, and pancreatic pathology. I also teach and supervise fellows presenting at multidisciplinary clinical conferences, including liver transplant, hepatology and gastroenterology conferences, pediatric gastroenterology service conference, and other ad hoc conferences pertinent to the GI/liver cases. I review research requests from physicians in other departments to release tissue blocks and slides for ongoing research studies. I am the site pathologist for San Francisco for the national Hepatitis B Research Network, and I review all local patient biopsies for this research consortium, including biopsies performed at UCSF, San Francisco General Hospital, and California Pacific Medical Center.

In my role as Director of Medical Education for the department of Pathology (50% time), I develop and supervise the pathology curriculum for MS1s through MS4s. I have a leadership role in the Bridges medical curriculum implemented in August 2016 (UCSF was one of 11 medical schools to receive AMA Accelerating Change in Medical Education funding in 2013 for curricular innovation). I am block co-director for Ground School, the first block of MS1, involving direct teaching and administrative oversight for approximately 150 new medical students per year. I also supervise the Pathology 150.03 senior medical student elective courses for third- and fourth-year medical students, geared toward UCSF and visiting students interested in pursuing residency training in anatomic pathology and laboratory medicine (4-week option) and toward UCSF MS4s seeking a survey experience in pathology (2-week option). I am the faculty

advisor for the Pathology Student Interest Group, and I served as chair of the Learning Resources Committee (Bridges governance) from 2016-17. I also interview residency applicants and participate in our residency admissions meetings.

In addition, I have 25% time for creative work. Two ongoing collaborative research projects are: (1) work with Dr. Sara Bakhtary, UCSF Laboratory Medicine, on the impact of transfusion medicine teaching on fourth-year medical students, and (2) a qualitative research project through the UCSF Academy of Educators on the impact of the endowed chair program on former chairholders.

## PROFESSIONAL ORGANIZATIONS

Memberships

2003 - present United States and Canadian Academy of Pathology

2003 - present College of American Pathologists

2010 - present Undergraduate Medical Educators Section (UMEDS), overseen by Association of Pathology Chairs (APC)

2010 - present Group for Research in Pathology Education (GRIPE)

2012 - present Rodger C. Haggitt Gastrointestinal Pathology Society (GIPS)

Service to Professional Organizations

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|---|---|---|
| 2009 - 2015 | Market Research Panels, College of American Pathologists | Participant |
| 2011 - 2016 | Group for Research in Pathology Education (GRIPE) | Strategic Action Committee member |
| 2012 - present | Rodger C. Haggitt Gastrointestinal Pathology Society (GIPS) | Journal Watch contributor (abstract summaries from current literature) |
| 2012 - present | United States Hepatitis B Research Network | San Francisco site pathologist |
| 2015 - 2018 | United States and Canadian Academy of Pathology (USCAP) | Lead reviewer, Abstract Subcommittee, Education category |

## SERVICE TO PROFESSIONAL PUBLICATIONS

2010 - present Reviewer, Journal of Clinical Pathology

2011 - present Reviewer, Archives of Pathology and Laboratory Medicine

2012 - present Reviewer, Inflammatory Bowel Diseases

2016 - present Reviewer, Journal of Pediatric Gastroenterology and Nutrition

## INVITED PRESENTATIONS

INTERNATIONAL

| | | |
|---|---|---|
| 2018 | Group for Research in Pathology Education Winter Meeting. Las Vegas, Nevada. Topic: Creating an | Workshop leader |

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|---|---|---|
| | Educator's Portfolio for Academic Success. | |
| 2019 | Group for Research in Pathology Education Winter Meeting. New Orleans, Louisiana. Topic: Best Practices for Incorporating Pathology into Integrated Medical School Curricula. | Workshop co-leader |

NATIONAL

| | | |
|---|---|---|
| 2015 | University of Chicago, Department of Pathology seminar series and slide conference | Speaker |
| 2018 | Association of Pathology Chairs annual meeting - Undergraduate Medical Educators section. "Pathology Education in an Integrated Medical School Curriculum: the UCSF Bridges Experience" | Platform presentation and poster |

REGIONAL AND OTHER INVITED PRESENTATIONS

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|---|---|---|
| 2011 | Kaiser Permanente San Francisco, Departments of Internal Medicine and Cardiology. Drug-induced liver injury. | Continuing medical education lecture |
| 2011 | Philippine Association of Medical Technologists - USA, Northern California chapter. Malaria diagnosis, treatment, and transfusion-related issues. | Continuing medical education lecture |
| 2012 | Annual Current Issues in Anatomic Pathology. Drug-induced acute liver failure. San Francisco, California. | Continuing medical education lecture |
| 2013 | Annual Current Issues in Anatomic Pathology. Variants of hepatocellular carcinoma. San Francisco, California. | Continuing medical education lecture |
| 2015 | Annual Current Issues in Anatomic Pathology. Challenging cases in gastrointestinal and liver pathology. San Francisco, California. | Continuing medical education slide tutorial |
| 2018 | Annual Current Issues in Anatomic Pathology. Drug-inducd liver injury: problem patterns. San Francisco, California. | Continuing medical education lecture |

**CONTINUING EDUCATION COURSES ATTENDED**

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| 2010 | Key Educational Skills and Special Topics Workshop Series, UCSF Office of Medical Education. |
| 2010 | Online CME through JAMA and Archives of Pathology and Laboratory Medicine. |
| 2010 | Mechanisms of Disease Conference series, UCSF Departments of Pathology and Laboratory Medicine. |
| 2011 | Group for Research in Pathology Education Winter Meeting. Huntington, West Virginia. |
| 2011 | Association of Pathology Chairs – Undergraduate Medical Educators Section Annual Meeting. Monterey, California. |
| 2011 | Mechanisms of Disease Conference series, UCSF Departments of Pathology and Laboratory Medicine. |

2012 Group for Research in Pathology Education Winter Meeting. Tampa, Florida.

2012 United States and Canadian Academy of Pathology annual meeting. Vancouver, BC.

2012 Association of Pathology Chairs - Undergraduate Medical Educators Section Annual Meeting. Monterey, California.

2012 South Bay Pathology Society Spring Conference. Monterey, California.

2012 Mechanisms of Disease Conference series, UCSF Departments of Pathology and Laboratory Medicine.

2013 Group for Research in Pathology Education Winter Meeting. Augusta, Georgia.

2013 Association of Pathology Chairs - Undergraduate Medical Educators Section Annual Meeting. Boston, Massachusetts.

2013 Mechanisms of Disease Conference series, UCSF Departments of Pathology and Laboratory Medicine.

2014 Harvard Macy Institute Program for Educators in the Health Professions. Boston and Cambridge, Massachusetts. (competitive application process)

2014 Association of Pathology Chairs - Undergraduate Medical Educators Section Annual Meeting. Boston, Massachusetts.

2014 Mechanisms of Disease Conference series, UCSF Departments of Pathology and Laboratory Medicine.

2015 Group for Research in Pathology Education Winter Meeting. Tallahassee, Florida.

2015 Mechanisms of Disease Conference series, UCSF Departments of Pathology and Laboratory Medicine.

2015 Association of Pathology Chairs - Undergraduate Medical Educators Section Annual Meeting. San Diego, California.

2015 Longitudinal Clinical Experience, UCSF School of Medicine.

2016 Group for Research in Pathology Education Winter Meeting. San Diego, California.

2016 Mechanisms of Disease Conference series, UCSF Departments of Pathology and Laboratory Medicine.

2016 California Tumor Tissue Registry, case study sets (self-study).

2017 Mechanisms of Disease Conference series, UCSF Departments of Pathology and Laboratory Medicine

2017 California Tumor Tissue Registry, case study sets (self-study).

2017 California Tumor Tissue Registry semi-annual cancer seminar. Santa Ana, California.

2018 Group for Research in Pathology Education Winter Meeting. Las Vegas, Nevada.

2018 California Tumor Tissue Registry, case study sets (self-study).

2018 United States and Canadian Academy of Pathology annual meeting. Vancouver, BC.

2018 Association of Pathology Chairs - Undergraduate Medical Educators Section Annual Meeting. Coronado, California

### GOVERNMENT AND OTHER PROFESSIONAL SERVICE

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|---|---|---|
| 1990 - 1991 | California State Board of Education. I was appointed by Governor George Deukmejian to this body governing K-12 public education statewide. I had full voting rights on public education mandates. | Student member |
| 2003 - 2003 | Study of Exceptional Talent (SET) at Johns Hopkins University. I was identified as a participant in SET, formerly the Study of Mathematically Precocious Youth, based on my SAT score of 1440 at age 12 in 1988, the highest combined score in this age group in the Western United States. Former participants are now recruited as academic mentors for young students. | Mentor for students |
| 2011 - present | Group for Research in Pathology Education. | Multiple Choice Question committee member (intermittent) |

## UNIVERSITY AND PUBLIC SERVICE

### UNIVERSITY SERVICE

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UCSF CAMPUS-WIDE

| | | |
|---|---|---|
| 2012 - 2015 | Academic Senate Committee on Library and Scholarly Communication (completed 3-year term) | Member |
| 2016 - present | UCSF Academy of Medical Educators | Member (competitive application process) |
| 2016 - present | UCSF Academy of Medical Educators, Scholarship Committee | Member |
| 2017 - 2018 | UCSF Academy of Medical Educators, Search Committee, Sexton Sutherland Endowed Chair in Human Anatomy | Member |

SCHOOL OF MEDICINE

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|---|---|---|
| 2005 - 2006 | Graduate Medical Education Council (GMEC) | Resident representative |
| 2009 - 2015 | Essential Core Course Committee (ECCC) | Member |
| 2011 - 2016 | Integrated Curriculum Steering Committee (ICSC) | Member |
| 2012 - 2014 | Custom Comprehensive Exam Working Group | Member |
| 2014 - 2014 | Bridges Institute Steering Committee | Member |
| 2014 - present | Bridges Design Team Lead - Ground School (first block of new MS1 year) | Co-lead for curricular oversight and block planning |
| 2015 - present | Bridges Design Team - Renal Endocrine GI | Team member (curriculum |

| | | |
|---|---|---|
| | Nutrition (REGN) MS1 block | planning) |
| 2015 - 2015 | Evaluations Review Task Force | Chair (assessing role and utility of instructor evaluations by students) |
| 2015 - 2016 | Essential Core Course Committee (ECCC) | Chair |
| 2015 - 2016 | Committee on Curriculum and Educational Policy (CCEP) | Member (ex officio) |
| 2015 - 2016 | Medical Knowledge Assessment Working Group & Assessment Procedures Working Group | Member |
| 2016 - 2016 | Bridges Evaluation Policies and Procedures Working Group | Member |
| 2016 - present | Medical Knowledge Categories faculty | Category co-representative (Pathology, Multi-System) |
| 2016 - 2017 | Bridges Governance, Learning Resources committee | Chair |
| 2016 - 2017 | Search Committee, Associate Dean for Curriculum | Member |
| 2017 - 2018 | Search Committee, Chair of Pathology | Member |
| 2017 - present | Bridges Design Team - Life Stages MS2 block | Team member (curriculum planning) |
| 2017 - 2018 | Liaison Committee on Medical Education (LCME) Educational Programs Subcommittee | Member |
| 2017 - present | Bridges Governance, Mapping and Integration committee | Member |
| 2017 - present | Bridges Governance, F1 Operations committee | Member |

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DEPARTMENTAL SERVICE

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| 2007 - 2008 | UCSF Department of Pathology | Chief Resident |
| 2012 - present | UCSF Department of Pathology | Research Request Specialty Physician, Gastrointestinal Pathology |
| 2012 - present | UCSF Department of Pathology Quality Improvement Committee | Member |
| 2013 - 2016 | UCSF Department of Pathology Mechanisms of Disease Conference series | Co-director (responsible for scheduling, oversight of speaker mentoring program, and speaker feedback) |
| 2016 - present | UCSF Department of Pathology Grand Rounds | Speaker feedback |

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| | (formerly Mechanisms of Disease Conference series) | (Anatomic Pathology representative) |

**PUBLIC SERVICE**

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|---|---|---|
| 1992 - 1992 | Research Science Institute (RSI), Massachusetts Institute of Technology (MIT). I was a participant in RSI at the University of California, San Diego, in 1990. My research at the San Diego Supercomputer Center and the Scripps Institute of Oceanography was the basis of my paper for the Westinghouse Science Talent Search. Former RSI participants serve as counselors to supervise current students in an academic residential setting. | Counselor |
| 1995 - 1995 | Philadelphia Special Olympics | Volunteer |
| 2011 - 2011 | UCSF/Dar es Salaam collaboration (Drs. Katherine Van Loon and Michael Orest) to rebuild a population-based cancer registry in Tanzania | Collaborator |
| 2012 - 2014 | UCSF Pathology advising group designing a modern pathology curriculum for the new Koc University Medical School in Turkey | Advisor |
| 2013 - 2015 | UCSF Kirkham Child Development Center, helped organize and participated on a panel discussing the kindergarten application process | Parent volunteer |
| 2013 - present | The Hamlin School, a K-8 independent school in San Francisco, CA | Parent volunteer |
| 2015 - 2015 | Lowell High School, San Francisco, CA. UCSF-Lowell Science Research Program. | Invited speaker (career paths in science and medicine) |
| 2017 - 2018 | Capital Campaign, Center for Excellence in Education (www.cee.org), a group that runs high school and university enrichment programs in STEM fields. I am an alum of their Research Science Institute high school summer program. | Class Co-captain |

<u>SUMMARY OF SERVICE ACTIVITIES</u>

Through leadership roles in my department and in the Bridges medical school curriculum, I focus on curriculum development, oversight, and shared governance for my internal university service. I participated in numerous working groups as a result of Essential Core and Bridges leadership roles. In June 2015, I finished a 3-year term on the Academic Senate Committee on Library and Scholarly Communications. I served on the Custom Comprehensive Exam Working Group (CCE) to plan and design the USMLE boards-style exam taken by UCSF first-year medical students to assess their cumulative progress in the preclinical curriculum. I oversaw Prepilogue, a course run in parallel with our last preclinical block for second-year medical students in the prior medical curriculum (the Essential Core); the goal of Prepilogue was to review key concepts from years 1 and 2 and prepare the students for USMLE Step 1. I chaired the Essential Core Course Committee for one year prior to the initiation of Bridges. I then chaired the Learning

Resources Committee for one year as part of Bridges governance. This committee was dissolved due to larger-scale changes in governance structure. I am now a member of the Mapping and Integration Committee in my role as topic steward for Pathology.

# TEACHING AND MENTORING

## TEACHING

FORMAL SCHEDULED CLASSES FOR UCSF STUDENTS

| Qtr | Academic Yr | Course Number and Title | Teaching Contribution | Units | Class Size |
|---|---|---|---|---|---|
| | 2005 - 2006 | UCSF Laboratory Medicine Rotations, Tech Talks given to laboratory technical staff. Topics included: heavy metal toxicity, Wiskott-Aldrich syndrome, celiac disease, malaria detection in peripheral blood smears | Multiple CME lectures | | |
| | 2009 - 2010 | UCSF Laboratory Medicine Rotations, Tech Talks given to laboratory technical staff. Topics included: heavy metal toxicity, Wiskott-Aldrich syndrome, celiac disease, malaria detection in peripheral blood smears | Multiple CME lectures | | |
| | 2010 - present | Pathology 150.03 (electives in Surgical and Autopsy Pathology) | course director | | 2-3 medical students per month |
| | 2010 - 2015 | Interdepartmental Studies 101 (Prologue block) | 2 lectures (live and/or online), 1 lab session | | ~150 medical students |
| | 2010 - present | UCSF Gastroenterology/Transplant fellowship Core Conference | One yearly lecture on liver histopathology | | |
| | 2011 - 2015 | Interdepartmental Studies 102 (Organs block) | multiple lab sessions | | ~150 medical students |
| | 2011 - 2016 | Interdepartmental Studies 103 (Metabolism & Nutrition block) | 4-5 lab sessions including content design | | ~150 medical students |
| | 2011 - 2016 | Interdepartmental Studies 106 (Methods, Mechanisms, & Malignancies block) | 5 lab sessions, 1 small group | | ~150 medical stud |

| Qtr | Academic Yr | Course Number and Title | Teaching Contribution | Units | Class Size |
|---|---|---|---|---|---|
| | | | | | ents |
| | 2011 - 2016 | Teaching, Learning, and Communication Skills (TLCS) | small group leader for first- and second-year medical students | | ~12-15 medical students |
| | 2012 - 2016 | Interprofessional Education seminar | small group leader for first-year medical, dental, nursing, pharmacy, and physical therapy students | | ~12-15 students |
| | 2013 - 2017 | Prepilogue (ran in parallel with Life Cycle, Interdepartmental Studies 107) | block director | | ~150 medical students |
| | 2013 - 2013 | Med 170.03, Medical research interest elective (first-year medical student noontime elective) | Faculty advisor | | |
| Fall | 2015 - 2016 | Pathology 170.01 (Introduction to Pathology) | Advisor and speaker (MS1 elective through Pathology Student Interest Group) | 1 | ~25 students annually (more auditing) |
| | 2015 - 2016 | Foundations of Patient Care (FPC) selective | 1 of 2 Pathology attendings scheduling and mentoring students in a clinical elective for value-added care (50 hours of service) | | 4 first-year medical students |
| | 2016 - present | Interdepartmental Studies 121A (Ground School block and Inquiry element) | block co-director, lecturer, small group facilitator | | ~150 medical students |
| | 2016 - present | Interdepartmental Studies 121B (Airways, Blood, and Circulation block) | small group facilitator | | ~13 small group stud |

| Qtr | Academic Yr | Course Number and Title | Teaching Contribution | Units | Class Size |
|---|---|---|---|---|---|
| | | | | | ents |
| | 2017 - present | Interdepartmental Studies 121C (Renal, Endocrine, GI, and Nutrition block) | small group facilitator, lecturer for 2019, and block team member | | ~13 small group students |
| | 2017 - present | Interdepartmental Studies 121D (Pathogens and Host Defenses block) | small group facilitator | | ~13 small group students |
| | 2017 - present | Interdepartmental Studies 122A (Life Stages block) | small group facilitator, review session leader, and block team member | | ~13 small group students |

POSTGRADUATE AND OTHER COURSES

| | | |
|---|---|---|
| 2005 - 2006 | UCSF Laboratory Medicine Rotations, Tech Talks given to laboratory technical staff. Topics included: heavy metal toxicity, Wiskott-Aldrich syndrome, celiac disease, malaria detection in peripheral blood smears | Multiple CME lectures |
| 2009 - 2010 | UCSF Laboratory Medicine Rotations, Tech Talks given to laboratory technical staff. Topics included: heavy metal toxicity, Wiskott-Aldrich syndrome, celiac disease, malaria detection in peripheral blood smears | Multiple CME lectures |
| 2010 - present | UCSF Gastroenterology/Transplant fellowship Core Conference | One yearly lecture on liver histopathology |
| 2013 - 2013 | Med 170.03, Medical research interest elective (first-year medical student noontime elective) | Faculty advisor |

INFORMAL TEACHING

2004 - 2010 Multiple opportunities during residency, including blood smear reviews (daily with rotating medical students) and Microbiology rotations, Plate Rounds, SFGH and San Francisco VAMC (weekly with infectious diseases team, pharmacy staff).

2008 - 2009 Gastrointestinal case conference at San Francisco VAMC (weekly with clinical team), Liver case conference at Moffitt Hospital (monthly with clinical team), Liver transplant biopsy conference (twice monthly with transplant surgeons and post-transplant coordinators).

2010 - present Regular teaching at the microscope during signout of clinical cases (general surgical pathology, GI/liver consults). Audience includes fellows, residents, and UCSF and visiting medical students.

2012 - present Pathology Student Interest Group, UCSF School of Medicine, Faculty Advisor. I support event planning by the students and speak on the career panel we host each year. As of Fall 2015, I am faculty advisor for a student-created MS1 elective through the Interest Group called Introduction to Pathology.

2015 - present Career Advisor, Dept. of Pathology. I have counseled medical students and some visiting undergraduate students on an ad hoc basis since 2010, and in 2015 I became our department's official Career Advisor.

2017 - 2017 Training workshop co-facilitator. The UCSF Bridges Curriculum, F1 small group leader orientation. August 3, 2017.

2018 - 2018 Coordinated and taught in a 1-hour Pathology career panel and hands-on lab demo for 21 rising high school juniors through UCSF PITCH (Program for Investigation and Training for Careers in Health). PITCH students may be the first in their family to attend college and include underrepresented minorities.

TEACHING NARRATIVE

My formal interest in education policy began in 1990, when I was appointed by Governor George Deukmejian to be the student member of the California State Board of Education. As a high school senior, I had full voting rights on mandates regarding K-12 public education statewide. Our first meeting in Sacramento culminated in a heated public forum on the adoption of new history textbooks. This role underscored to me the importance of a strong and inclusive educational curriculum.

I graduated from Stanford University in 1995, with a B.S. with highest honors and an M.S. in biological sciences. I voluntarily served as a teaching assistant for four quarters in the biology core lab courses. I learned how to teach in a team with my colleagues, and run an hours-long lab session smoothly. I also helped prepare the written curriculum for the plant germination section of the labs.

After graduating from California public schools, I trained at private universities on the West and East coasts as an undergraduate, medical, and PhD student. I bring this multidimensional perspective to my current position as Director of Medical Education for the Department of Pathology at UCSF, the flagship medical campus of the University of California system. I enjoy providing clinical service to the department and taking a leading role in developing and implementing pathology curriculum in the medical school. I find it particularly rewarding to work with my talented and bright junior colleagues, residents, and medical students to enhance the UCSF educational experience.

**MENTORING**

PREDOCTORAL STUDENTS SUPERVISED OR MENTORED

| Dates | Name | Program or School | Role | Current Position |
|---|---|---|---|---|

| Dates | Name | Program or School | Role | Current Position |
|---|---|---|---|---|
| 1998 - 1999 | Robyn Friedman Wetter | UPenn undergraduate | Supervised undergraduate research | Practicing dermatologic surgeon, Park Nicollet Health Services, St. Louis Park, MN |
| 2001 - 2002 | Sameem Abedin | UPenn undergraduate | Trained and supervised laboratory assistant | Assistant professor, Medical College of Wisconsin, Milwaukee, WI |
| 2001 - 2002 | Leonid Cherkassky | UPenn undergraduate | Trained and supervised laboratory assistant | Practicing surgeon, Providence, RI |
| 2011 - 2014 | (Names kept confidential.) Two students each summer in Option B study program for additional USMLE Step 1 preparation. | UC San Francisco School of Medicine | Mentor for USMLE Step 1 preparation | Advanced to 3rd-year standing |
| 2012 - 2013 | Jaclyn Watkins | UC San Francisco School of Medicine | Pathways research supervisor and career advisor | Assistant professor, Vanderbilt University, Nashville, TN |
| 2013 - present | Julia Ye | UC San Francisco School of Medicine, Medical Scientist Training Program | Supervisor, longitudinal clinical elective in Pathology and curriculum development | M.D.-Ph.D. student on senior electives |
| 2017 - 2017 | (Name kept confidential.) One student in summer Option B study program for additional USMLE Step 1 preparation | UC San Francisco School of Medicine | Mentor for USMLE Step 1 preparation | Advanced to 3rd-year standing |
| 2018 - 2018 | Marco Troiani | Des Moines University | Supervisor, curriculum development | 2nd year DO student |

## POSTDOCTORAL FELLOWS AND RESIDENTS DIRECTLY SUPERVISED OR MENTORED

| Dates | Name | Fellow | Faculty Role | Current Position |
|---|---|---|---|---|
| 2010 - 2012 | Soo-Jin Cho | UCSF GI/liver fellowship | Supervision of signout, conference preparation | Assistant professor, UCSF Pathology |
| 2010 - 2011 | Amanda | UCSF GI/liver | Supervision of | Private practice, Kaiser |

| Dates | Name | Fellow | Faculty Role | Current Position |
|---|---|---|---|---|
| | Doherty | fellowship | signout, conference preparation | Permanente, Santa Clara, CA |
| 2010 - 2011 | Ryan Gill | UCSF GI/liver fellowship | Supervision of signout, conference preparation | Associate professor, UCSF Pathology |
| 2011 - 2012 | Gregor Krings | UCSF GI/liver fellowship | Supervision of signout, conference preparation | Assistant professor, UCSF Pathology |
| 2011 - 2012 | Daniel Phillips | UCSF GI/liver fellowship | Supervision of signout, conference preparation | Private practice, Pathology Associates, Clovis, CA |
| 2012 - 2013 | Thuy Nguyen | UCSF GI/liver fellowship | Supervision of signout, conference preparation | Private practice, Peninsula Pathology Medical Group, Burlingame, CA |
| 2012 - 2013 | Samip Patel | UCSF GI/liver fellowship | Supervision of signout, conference preparation | Staff physician, VA Medical Center, Atlanta, GA |
| 2013 - 2014 | Mojgan Hosseini-Varnamkhasti | UCSF GI/liver fellowship | Supervision of signout, conference preparation | Assistant professor, UC San Diego Pathology |
| 2013 - 2014 | Menaka Raju | UCSF GI/liver fellowship | Supervision of signout, conference preparation | Private practice, Kaiser Permanente, San Jose, CA |
| 2014 - 2015 | Gillian Hale | UCSF GI/liver fellowship | Supervision of signout, conference preparation | Staff scientist, Centers for Disease Control, Atlanta, GA |
| 2014 - 2015 | Carolyn Sangokoya | UCSF GI/liver fellowship | Supervision of signout, conference preparation | Clinical instructor and postdoctoral scholar, UCSF |
| 2014 - 2015 | Sarah Umetsu | UCSF GI/liver fellowship | Supervision of signout, conference preparation | Assistant professor, UCSF Pathology |
| 2015 - 2016 | Rock Adams | UCSF GI/liver fellowship | Supervision of signout, conference preparation | Private practice, Greenville, SC |
| 2015 - 2016 | Won-Tak Choi | UCSF GI/liver fellowship | Supervision of signout, conference preparation | Assistant professor, UCSF Pathology |
| 2015 - 2016 | Christos Tsokos | UCSF Surgical Pathology/GI fellowship | Supervision of signout | Postdoctoral scholar, Massachusetts General Hospital |
| 2015 - 2017 | Zhen Yan | UCSF Surgical Pathology/GI fellowship | Supervision of signout | Private practice, Sacramento, CA |
| 2016 - 2017 | Su-Yang Liu | UCSF GI/liver fellowship | Supervision of signout | Postdoctoral scholar, UCSF |
| 2017 - 2018 | Daniel Roberts | UCSF GI/liver fellowship | Supervision of signout | Attending physician, Cleveland Clinic, OH |
| 2017 - 2018 | Kwun Wah Wen | UCSF GI/liver fellowship | Supervision of signout | Attending physician, UCSF Pathology |

| Dates | Name | Fellow | Faculty Role | Current Position |
|---|---|---|---|---|
| 2017 - present | Daniel Martig | AP/CP resident | Education research and leadership | AP/CP resident |
| 2018 - present | Kester Haye | UCSF GI/liver fellowship | Supervision of signout | Fellow |
| 2018 - present | Dana Balitzer | UCSF GI/liver fellowship | Supervision of signout | Fellow |
| 2018 - present | Calixto-Hope (CJ) Lucas | AP/NP resident | Supervision of medical education, instructional approach | AP/NP PGY-1 (supervised as a UCSF medical student also) |

FACULTY MENTORING

| Dates | Name | Position While Mentored | Mentoring Role | Current Position |
|---|---|---|---|---|
| 2012 - 2016 | Kuang-Yu Jen | Assistant Professor | Curriculum development for School of Medicine, clinical case discussion | Associate Professor, UC Davis Pathology |
| 2013 - 2015 | Kimberley Evason | Clinical Instructor, Assistant Adjunct Professor | School of Medicine teaching, clinical case discussion | Assistant Professor, University of Utah School of Medicine |
| 2015 - 2017 | Aras Mattis | Clinical Instructor, Assistant Adjunct Professor | School of Medicine teaching, clinical case discussion | Assistant Professor, UCSF |
| 2015 - 2016 | Tara Saunders | Clinical Instructor | Clinical case proctoring | Assistant Professor, UCSF |
| 2017 - present | Rebecca Wolsky | Assistant Professor | School of Medicine teaching and curriculum development | Assistant Professor |

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MENTORING NARRATIVE

I mentor students, residents, and faculty colleagues with whom I have overlapping interest in medical education and/or subspecialty expertise in GI/liver disease. Our discussion includes general career mentoring, discussion of difficult clinical cases, and discussion and planning of pathology curriculum for the School of Medicine.

**TEACHING AND MENTORING AWARDS AND NOMINATIONS**

2012 Nominee, UCSF Kaiser Award for Excellence in Teaching (medical student-nominated)

2013 Essential Core Teaching Award for Commitment to Teaching (selected by second-year medical students)

| | |
|---|---|
| 2013 | Nominee, MS1 Essential Core Teaching Award (first-year medical student-nominated) |
| 2014 | Nominee, UCSF Kaiser Award for Excellence in Teaching (medical student-nominated) |
| 2015 | Nominee, UCSF Kaiser Award for Excellence in Teaching (medical student-nominated) |

### SUMMARY OF TEACHING AND MENTORING HOURS

| | |
|---|---|
| 2010 - present | Annually more than 500 total hours of teaching (including preparation) |
| | Formal class or course teaching hours: Approximately 50 annually including lab and lecture hours |
| | Informal class or course teaching hours: Approximately 250 annually including signout hours |
| | Mentoring hours: Approximately 100 annually hours |
| | Other hours: Greater than 200 for preparation and committee work hours |
| - | Total anticipated hours of teaching: hours |

## RESEARCH AND CREATIVE ACTIVITIES

### RESEARCH AWARDS

CURRENT

| | |
|---|---|
| U01DK082944 (Site pathologist) | 06/01/18 - 05/31/19 |
| National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) | |
| Hepatitis B Research Network (HBRN): Natural History and Treatment Studies | $975,626 total |

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PAST

| | |
|---|---|
| (Key personnel) | 07/01/11 - 06/30/13 |
| National Academies Keck Futures Initiative Imaging Science | |
| Multiscale biomedical imaging for autoimmune disease. | $50,000 total |

(Co-investigator) 07/01/14 - 06/30/15

UCSF Haile T. Debas Academy

Paper-Mounted Organ Sections for Medical Education, Education Innovations Funding Seed Grant ($3992.60 awarded)


1. **Chen JC, Ramachandran R, Goldhamer DJ. Essential and redundant functions of the MyoD distal regulatory region revealed by targeted mutagenesis. Dev Biol. 2002 May 1;245(1):213-223.**
2. **Ramachandran R, Lee HS, Matthews B, Shatzel A, Tihan T. Intradural extramedullary leptomeningeal hemangioblastomatosis and paraneoplastic limbic encephalitis diagnosed at autopsy: an unlikely pair. Arch Pathol Lab Med. 2008 Jan;132(1):104-108.**
3. **Lounev VY, Ramachandran R, Wosczyna MN, Yamamoto M, Maidment DA, Shore EM, Glaser DL, Goldhamer DJ, Kaplan FS. Identification of progenitor cells that contribute to heterotopic skeletogenesis. J Bone Joint Surg Am. 2009 Mar 1;91(3):652-663.**
4. **Schafer AL, Vittinghoff E, Ramachandran R, Mahmoudi N, Bauer DC. Laboratory reproducibility of biochemical markers of bone turnover in clinical practice. Osteoporosis Int. 2010 Mar;21(30):439-445. (Appeared in Research Highlights of Nature Reviews Endocrinology, 2009 Nov;5:587.)**
5. **Behrends M, Martinez-Palli G, Niemann CU, Cohen S, Ramachandran R Hirose R. Acute hyperglycemia worsens hepatic ischemia/reperfusion injury in rats. Journal of Gastrointestinal Surgery. J Gastrointest Surg. 2010 Mar;14(3):528-535.**
6. **Xiao TZ, Singh K, Dunn E, Ramachandran R, Cowan MJ. T and B cell immunity can be reconstituted with mismatched hematopoietic stem cell transplantation without alkylator therapy in Artemis-deficient mice using anti-NK antibody and photochemically-treated sensitized donor T Cells. Biol Blood Marrow Transplant. 2012 Feb;18(2):200-209.**
7. **Ashouri J, Davis J, Farkas A, Durack J, Ramachandran R, Dall'Era M. A young woman with systemic lupus erythematosus and extensive mesenteric vasculitis involving small and medium vessels. Arthritis Care and Research. 2012 Dec;64(12):1928-1933.**
8. **Singh A, Mahadevan U, Ramachandran R, Velayos F. Heterotopic gastric mucosa mimicking rectal neoplasm on colonoscopy (Image of the month). Am J Gastroenterology 2013;108:476.**
9. **Krings G, Ramachandran R, Jain D, Wu TT, Yeh MM, Torbenson M, Kakar S. Immunohistochemical pitfalls and the importance of glypican 3 and arginase in the diagnosis of scirrhous hepatocellular carcinoma. Mod Pathol. 2013 Jun;26(6):782-91.**
10. **Wang J, MacKenzie JD, Ramachandran R, Chen DZ. Identifying neutrophils in H&E staining histology tissue images. Med Image Comput Comput Assist Interv. 2014;17(Pt 1):73-80.**
11. **Wang J, MacKenzie JD, Ramachandran R, Chen DZ. A Deep Learning Approach for Semantic Segmentation in Histology Tissue Images. In: Ourselin S., Joskowicz L., Sabuncu M., Unal G., Wells W. (eds) Medical Image Computing and Computer-Assisted Intervention – MICCAI 2016. MICCAI 2016. Lecture Notes in Computer Science, vol 9901. Springer, Cham.**
12. **Zhang Y, Yang L, MacKenzie JD, Ramachandran R, Chen DZ. A seeding-searching-ensemble method for gland segmentation in H&E-stained images. BMC Med Inform Decis Mak. 2016 Jul 21;16 Suppl 2:80. doi: 10.1186/s12911-016-0312-5.**

13. **Phelps A, Ramachandran R, Courtier J, Perito E, Rosenthal P, MacKenzie JD. Ultrasound elastography: is there a shear wave speed cutoff for pediatric liver fibrosis and inflammation? Clin Imaging. 2016 Oct 17; 41:95-100. PMID: 27840268** [View in Pubmed ]
14. **Perito E, Vase T, Ramachandran R, Phelps A, Jen KY, Lustig R, Feldstein V, Rosenthal P. Hepatic steatosis after pediatric liver transplant. Liver Transpl. 2017 Jul;23(7):957-967.**
15. **PEER REVIEWED PUBLICATIONS**

1. **Ramachandran R and Kakar S. Histological patterns in drug-induced liver disease. J Clin Pathol. 2009 Jun;62(6):481-492.**
2. **Ramachandran R and Kakar S. Fibrolamellar hepatocellular carcinoma. Diagn Histopathol. 2010 Aug;16(8):388-396.**
3. **Ramachandran R and Kakar S. Budd-Chiari syndrome mimicking chronic biliary disease. Pathology Case Reviews 2010 May/June;15(3):96-99.**
4. **Choi WT, Ramachandran R, Kakar S. Immunohistochemical approach for the diagnosis of a liver mass on small biopsy specimens. Hum Pathol. 2017 Jan 10. pii: S0046-8177(17)30014-X.**
5. **Review Articles**

1. **Ramachandran R and Kakar S. Consultant Pathology Series: Liver Pathology (textbook). Acute Liver Failure (chapter). Demos Medical Publishing, LLC. New York, NY. This textbook focuses on diagnostic problems in liver pathology through examples of challenging cases.**
2. **Ramachandran R and Kakar S. Consultant Pathology Series: Liver Pathology (textbook). Metastatic Tumors: Illustration of Immunohistochemical Workup (chapter). Demos Medical Publishing, LLC. New York, NY. This textbook focuses on diagnostic problems in liver pathology through examples of challenging cases.**
3. **Ramachandran R. Bone and Soft Tissue Pathology: High-Yield Pathology (textbook). Myofibroblastic Tumors (chapter). Elsevier. This is a review and photographic atlas of key disease entities in bone and soft tissue pathology.**
4. **Books and Chapters**

1. **Ramachandran R and Kakar S. Fibrolamellar hepatocellular carcinoma. Performance Improvement Program in Surgical Pathology (PIP) study set case 2010-27. College of American Pathologists.**
2. **Ramachandran R. Role of residents in medical student teaching (letter to the editor). Archives of Pathology & Laboratory Medicine. 2013 Oct;137(10):1325**
3. **Other Publications**

1. **Chen D, Wang J, MacKenzie J, Ramachandran R. Identification of inflammation in tissue images. US20170076448 A1. March 16, 2017.**

**2. PATENTS ISSUED OR PENDING (ALLOWED)**

1. **Research Science Institute, University of California, San Diego, CA. Project at San Diego Supercomputer Center and Scripps Institute of Oceanography under the supervision of Drs. Reagan Moore and Hassan Aref. Research topic: Computer Modeling of the El Niño-Southern Oscillation. Research submitted to the 1991 Westinghouse Science Talent Search.**
2. **Brigham and Women's Hospital, Boston, MA. Developed immunostaining protocols in the Laboratory of Biologic Cancer Therapy, Division of Surgical Oncology, Department of Surgery, under the supervision of Drs. Timothy Eberlein and Peter Goedegebuure.**
3. **Contributed original photomicrographs to latest edition of Zakim and Boyer's Hepatology: A Textbook of Liver Disease (Saunders, 6th ed., 2011), Recurrent viral diseases after liver transplantation (chapter). Authors of chapter: Jennifer C. Lai and Norah A. Terrault.**
4. **Interviewed for Smithsonian Indian American Heritage Project. The Washington, DC exhibit ran from February 2014 to August 2015 and the exhibit is now touring the United States. Curators: Dr. Pawan Dhingra and Dr. Masum Momaya.**
5. **Began ongoing creation of organ-specific normal histology interactive lessons for Bridges curriculum use. These are archived within UCSF iRocket with the goal of publishing to an online repository in the future.**
6. **OTHER CREATIVE ACTIVITIES**

1. **Chen JC, Love CM, Ramachandran R, Goldhamer DJ. The core enhancer and distal regulatory region are essential for MyoD expression. Poster, 2000 Molecular Biology of Muscle Development and Disease meeting. Asilomar, CA.**
2. **Ramachandran R, Love CM, Goldhamer DJ. Contribution of myoblasts to BMP-induced ectopic bone formation in mice. Poster, 2000 International Symposium on Fibrodysplasia Ossificans Progressiva. Philadelphia, PA.**
3. **Glaser DL, Ramachandran R, Shore EM, Lin TW, Yeh PC, Beredjiklian P, Kaplan FS, Goldhamer DJ, Soslowsky LJ. The origin of cells within a healing tendon. Abstract, 2003 Orthopaedic Research Society Annual Meeting. New Orleans, LA.**
4. **Ramachandran R, Leong S, Bracci P, Florero M, Esserman L, Ewing C, Hwang E, Treseler P. Sentinel lymph node factors predicting disease recurrence in breast cancer patients. Poster, 2006 International Association of Pathology Congress. Montreal, Canada.**
5. **Ramachandran R, Pang J, Tabatabai L. Pancreatic Intraductal Papillary Mucinous Tumor (IPMT): A Cytomorphologic Study with Histopathological Correlation. Poster, 2007 United States and Canadian Academy of Pathology annual meeting. San Diego, CA.**
6. **Ramachandran R, Browne LW, Kakar S. Advantages and pitfalls of glypican-3 immunohistochemistry in the distinction of hepatocellular carcinoma and metastatic carcinomas. Poster, 2009 United States and Canadian Academy of Pathology annual meeting. Boston, MA.**
7. **Ramachandran R, Pang J, Tabatabai L. Pancreatic Intraductal Papillary Mucinous Tumor (IPMT): A Cytomorphologic Study with Histopathological Correlation.**

**Poster, 2010 First Annual Pancreas Research Program Retreat. San Francisco, CA.**

8. **Ramachandran R, Browne LW, Mehdi I, Chen YY, Kakar S. Evidence-based immunohistochemical panel for the distinction of hepatocellular carcinoma and metastatic carcinoma. Poster, 2010 United States and Canadian Academy of Pathology annual meeting. Washington, DC.**
9. **Singh A, Mahadevan U, Ramachandran R, Velayos F. Heterotopic gastric mucosa (HGM) mimicking rectal neoplasm on colonoscopy. Poster, 2011 American College of Gastroenterology annual meeting. Washington, DC.**
10. **Wang J, MacKenzie JD, Ramachandran R, Wang H, Chen DZ. Segmenting and classifying plasma cells and lymphocytes in histology images. Paper, 2013 Medical Image Computing and Computer Assisted Intervention Society (MICCAI) meeting. Nagoya, Japan.**
11. **Sangokoya C, Mattis A, Ramachandran R, Haron J. Expression of the iron-regulating microRNA miR-485-3p in hepatic cirrhosis. Poster, 2014 United States and Canadian Academy of Pathology annual meeting. San Diego, CA.**
12. **Vase T, Perito E, Ramachandran R, Rosenthal P. Hepatic steatosis in pediatric liver transplant recipients: single-center review of post-transplant liver biopsies. Poster, 2014 Digestive Disease Week meeting (American Association for the Study of Liver Disease). Boston, MA.**
13. **Sangokoya C, Mattis A, Ramachandran R, Baron J. Hepatic iron homeostasis: immunolocalization of iron regulatory factors in human liver. Poster, 2015 United States and Canadian Academy of Pathology annual meeting. Boston, MA.**
14. **Sangokoya C, Mattis A, Ramachandran R, Baron J. MicroRNA in situ hybridization analysis of MIR-485-3p and MiR-122 expression in human liver development and disease. Poster, 2015 United States and Canadian Academy of Pathology annual meeting. Boston, MA.**
15. **Phelps A, Ramachandran R, Courtier J, Perito E, Rosenthal P, MacKenzie J. Quantitative Ultrasound Elastography for Pediatric Liver Disease: Can shear wave speed be estimated from a single image? Oral Presentation, 2015 Society for Pediatric Radiology National Meeting. Seattle, WA.**
16. **Wang J, MacKenzie J, Ramachandran R, Zhang Y, Wang H, Chen D. Segmenting subcellular structures in histology tissue images. Paper, 2015 IEEE International Symposium on Biomedical Imaging. New York, NY.**
17. **Wang J, MacKenzie JD, Ramachandran R, Chen DZ. Neutrophils identification by deep learning and Voronoi diagram of clusters. Paper, 2015 Medical Image Computing and Computer Assisted Intervention Society (MICCAI) meeting. Munich, Germany.**
18. **Wang J, MacKenzie JD, Ramachandran R, Chen DZ. Detection of glands and villi by collaboration of domain knowledge and deep learning. Paper, 2015 Medical Image Computing and Computer Assisted Intervention Society (MICCAI) meeting. Munich, Germany.**
19. **Zhang Y, Yang L, MacKenzie JD, Ramachandran R, Chen DZ. A seeding-searching-ensemble method for gland segmentation and detection. Paper, 2015 IEEE International Symposium on Bioinformatics and Biomedicine. New York, NY. (Subsequently invited for publication in the BMC Medical Informatics and Decision Making special issue.)**
20. **Sangokoya C, Evason K, Krings G, Ramachandran R. Tissue microarray and microRNA in situ hybridization analysis in human liver development and disease 2016 United States and Canadian Academy of Pathology annual meeting. Seattle, WA. (Submitted)**
21. **Wang J, MacKenzie JD, Ramachandran R, Chen DZ. A deep learning approach for semantic segmentation in histology tissue images. Paper, 2016 Medical Image**

**Computing and Computer Assistant Intervention Society (MICCAI) meeting. Athens, Greece.**

22. **Kruidering-Hall M, Gindi J, Burch H, Crawford J, Wlodarczyk S, Ramachandran R, Fulton T, Hauer K. Checkpoints: assessment for learning in action. Poster, 2017 Western Group on Educational Affairs (WGEA) meeting. Salt Lake City, UT.**
23. **Sewell J, Rolon L, Ramachandran R, Mitrovic I, Fulton T. Spaced- versus massed-content approaches to curricular design in multi-organ-system courses: which better for learning? Focus session, 2018 International Association of Medical Science Educators (IAMSE) meeting. Las Vegas, NV. (non-presenting author)**
24. **ABSTRACTS**

## RESEARCH PROGRAM

I am collaborating with UCSF colleagues Drs. Helen Loeser, Pat O'Sullivan, Peter Chin-Hong, and Alissa Peterson on a qualitative research project on the impact of the endowed chair program run by the Academy of Medical Educators. I helped edit the interview guide and am interviewing former chairholders about the impact of the program on themselves and their academic colleagues. A separate group is analyzing the impact of the the program on the institution.

I am working with Dr. Sara Bakhtary, UCSF Laboratory Medicine, to assess the impact of a transfusion medicine didactic session and bench training session on the understanding of key transfusion-related topics. The learners are UCSF and visiting MS4s, some of whom are applying for Pathology residency. Transfusion medicine is not taught consistently in medical school curricula, and this is an area in which education-related research is lacking.

I collaborated with Dr. Emily Perito, UCSF Pediatric Gastroenterology and Hepatology, on a retrospective review of pediatric post-transplant non-alcoholic fatty liver disease/metabolic syndrome (Liver Transpl. 2017). In addition, I am the study pathologist for UCSF (adult and pediatric) and California Pacific Medical Center for the United States Hepatitis B Research Network, which includes two meetings annually in Silver Spring, MD, at which study pathologists review biopsies together at the microscope for assessment and standardization of study criteria.

I collaborated with Dr. John MacKenzie, UCSF Radiology, on a multi-center effort to develop a computer algorithm for identification of inflammatory cells in a rat model of autoimmune disease and in human tissue biopsies from patients with inflammatory bowel disease. I was responsible for biopsy analysis, and I provided guidance to his computer science colleagues at Notre Dame on the morphology of various inflammatory cell populations in tissue samples. We generated multiple manuscripts and published abstracts in collaboration, and the work formed/forms a significant component of the Ph.D. research for two Notre Dame graduate students in computer science. My work gave me insight into the evolving field of digital pathology, which has been helpful as we bring digital methods into our work flow at UCSF.

My research with Dr. Sanjay Kakar, UCSF Pathology, examined the utility of glypican-3 expression in distinguishing hepatocellular carcinoma from tumors metastatic to the liver. We prepared tissue microarrays to determine the optimal immunohistochemical approach to distinguish these entities. This project resulted in two abstracts presented as posters at national pathology meetings (USCAP 2009 and 2010) and was partially reported in a 2013 paper on scirrhous hepatocellular carcinoma.

I worked with Dr. Linda Ferrell, UCSF Pathology, to study cavernous hemangioma (CH) cases of the liver with rare features of similar CH lesions documented outside the liver, as well as very large CH lesions that involve essentially the entire liver. These are relatively rare entities, and we are collecting cases from our national and international collaborators for publication.

**SIGNIFICANT PUBLICATIONS**

1. Lounev VY, **Ramachandran R**, Wosczyna MN, Yamamoto M, Maidment DA, Shore EM, Glaser DL, Goldhamer DJ, Kaplan FS. Identification of progenitor cells that contribute to heterotopic skeletogenesis. J Bone Joint Surg Am. 2009 Mar 1;91(3):652-663.

This project involved a mouse model for the human disease fibrodysplasia ossificans progressiva, and it was a significant component of my Ph.D. thesis research at the University of Pennsylvania. The research was extended after I graduated, and my initial data are included in the paper.

2. **Ramachandran R** and Kakar S. Histological patterns in drug-induced liver disease. J Clin Pathol. 2009 Jun;62(6):481-492.

I worked with one of my fellowship mentors, Dr. Sanjay Kakar, to write a comprehensive review of patterns seen in drug-related liver damage; such drugs include prescription medications, chemotherapy, and self-prescribed herbal and supplemental agents. This material also formed the basis of a CME lecture I gave for the Department of Internal Medicine and Cardiology fellowship at Kaiser San Francisco in March 2011.

3. Schafer AL, Vittinghoff E, **Ramachandran R**, Mahmoudi N, Bauer DC. Laboratory reproducibility of biochemical markers of bone turnover in clinical practice. Osteoporosis Int. 2010 Mar;21(3):439-445. (Appeared in Research Highlights of Nature Reviews Endocrinology. 2009 Nov;5:587.)

In this collaboration with the Department of Internal Medicine, I coordinated laboratory processing of study specimens and aided in specimen collection, pooling, and initial processing. I also wrote a portion of the manuscript.

4. Behrends M, Martinez-Palli G, Niemann CU, Cohen S, **Ramachandran R**, Hirose R. Acute hyperglycemia worsens hepatic ischemia/reperfusion injury in rats. J Gastrointest Surg. 2010 Mar;14(3):528-535.

In this collaboration with UCSF Anesthesiology and Surgery, I analyzed rat liver biopsies and provided quantitative data on the extent of liver injury using a published clinical scale. I was able to use my fellowship training in liver pathology and apply this knowledge to a mammalian model system for liver injury.

5. Krings G, **Ramachandran R**, Jain D, Wu TT, Yeh MM, Torbenson M, Kakar S. Immunohistochemical pitfalls and the importance of glypican 3 and arginase in the diagnosis of scirrhous hepatocellular carcinoma Mod Pathol. 2013 Jun;26(6):782-91.

My research with Dr. Sanjay Kakar, UCSF and VAMC Pathology, examined the utility of glypican-3 expression in distinguishing hepatocellular carcinoma from tumors metastatic to the liver. We prepared tissue microarrays to determine the optimal immunohistochemical approach to distinguish these entities. This project resulted in two abstracts presented as posters at national pathology meetings (USCAP 2009 and 2010). I contributed data to this paper and was involved in writing and editing the manuscript.

**ADDITIONAL RELEVANT INFORMATION:**

I was selected through a competitive application process to participate in the 2014 Harvard-Macy program for Medical Educators, a residential professional development program held in

Cambridge and Boston, MA. I was one of approximately 80 participants from an international application pool of approximately 160 health professionals with academic affiliations. My project proposal outlined systems-based areas of improvement in pathology education primarily related to a new campus site at Mission Bay in San Francisco, CA. The skills I learned at Harvard-Macy have been invaluable in Bridges curriculum leadership. I also mentor a current UCSF resident who participated in a Harvard-Macy program in December 2017.