About the Cover:

The cover image shows a three-dimensional render of a preclinical Dual Energy CT scan. The rabbit model was imaged *in vivo* with both oral (green) and vascular (red) contrast materials. These have been digitally separated, along with water (blue) and bone (white) to provide a four-color depiction of anatomy.

This study forms part of the Contrast and CT Research Laboratory’s ongoing research on novel contrast agents and associated image processing techniques. The study was funded by grants from the UCSF Department of Radiology and Biomedical Imaging, the UCSF Clinical & Translational Science Institute, the Radiological Society of North America, and the National Institutes of Health.

*The image is courtesy of Jack Lambert, PhD, an associate specialist; Yuxin Sun, MS, a staff research associate; and Benjamin Yeh, MD, director of the Contrast and CT Research Laboratory in the Department of Radiology and Biomedical Imaging.*
# Table of Contents

## letter from the chairman
2  Pride in Our Accomplishments

## clinical and research news
4  Unlocking the Full Potential of Dual-Energy CT
8  UCSF Pulsatile Tinnitus Clinic
10  Importance of Multimodal Tau PET and Amyloid PET in Alzheimer’s Disease Diagnosis

## new facilities and technology
14  Capital Projects Overview 2016: Lots of Planning
16  Zuckerberg San Francisco General Hospital and Trauma Center Opens its Doors

## department update
18  Dr. Ronald L. Arenson—Highlights from 25 Years of Extraordinary Leadership
20  Interventional Radiology: The Emergence of a New Specialty and Training Program
21  New Faculty
23  Education Leadership Advances
24  Operations Directorship Changes
25  Mary Bobel Joins Department as Chief Administrative Officer
26  Susan O’Hara, MPA, Receives Chancellor’s Award for Exceptional University Management
27  Honors and Awards
32  Excellence and Advancements Highlight Diagnostic Radiology Residency
34  PGY-2 Residents: Class of 2020
39  Diagnostic Radiology Residents: 2016–2017
40  Radiology Residency Graduates: Class of 2016
41  Clinical Fellows and Instructors: 2016–2017
42  Master of Science in Biomedical Imaging Now 5 Years Old
43  Goldberg Center
44  Radiology CME
45  2017 UCSF Radiology Continuing Medical Education Calendar
46  Margulis Society Celebrates on March 4
48  The Honor Roll of Donors
50  Alumni News 2016
52  Surbeck Young Investigators
53  Medical Staff Earn Awards
54  Radiology and Biomedical Imaging Staff Earn Awards
55  The Year in Pictures

## radiology and biomedical imaging research
58  Research Directions
74  Grants and Fellowships
Dear Friends and Colleagues,

It is with truly mixed feelings that I write to you. After 25 glorious years, I have decided to retire as chair of Radiology and Biomedical Imaging at UCSF, effective June 30, 2017. I am so very proud of the collective accomplishments in research, patient care, and education that our department has made over these decades. I am especially proud of the many talented faculty we have recruited since I arrived, and of our incredible trainees, technologists, and staff. Dean Talmadge King has launched a formal search, with a committee headed by Michael Gropper, MD, chair of Anesthesia. I am very confident the transition will be smooth and I anticipate that our great department will continue to advance and prosper under the new leadership.

This has been a spectacular year with many highlights! Kudos to Mark Wilson, MD, and his team! The new Zuckerberg San Francisco General Hospital and Trauma Center (ZSFG) building has officially opened its doors. We are most proud of the three floors incorporating Radiology (the basement, ground level, and 1st floor). The new design facilitates excellence in patient care; please read more in this issue.

Our faculty continues to receive local, national and international attention. In May, Sharmila Majumdar, PhD, received the International Society for Magnetic Resonance in Medicine 2016 Gold Medal for her innovative contributions to the development of quantitative imaging methods. In this issue you also will read about the extensive work of Jeanne Laberge, MD in establishing an integrated Interventional Radiology residency at UCSF.

On the research front, Pratik Mukherjee, MD, PhD, and his team’s groundbreaking work on Sensory Processing Disorder (SPD), published in January in *Frontiers in Neuroanatomy*, was the biggest imaging study ever done in children with the condition. His research is prompting a broader acknowledgement of SPD as a separate disorder from autism. I would also like to acknowledge Mike Weiner, MD, for having just won a major funding award for the third phase of the Alzheimer’s Disease Neuroimaging Initiative. The landmark study—focused on developing and refining biomarker tools needed to mark the progress of Alzheimer’s disease—is having a profound impact on our understanding of the causes of Alzheimer’s.

Soonmee Cha, MD, and Dave Naeger, MD, have recently been appointed vice chair and associate chair of Education. Their expertise and devotion to quality in education has been responsible for numerous accolades as we set the educational standard high for other departments across the nation. I am very proud of all of our education programs including our Continuing Medical Education, one of the largest in the country. I know that our future plans are in excellent hands.

On the operations front, this year were pleased to welcome a new administrative officer, Mary Bobel, MBA, who comes to us with a strong background in institutional academic settings, and David Sostarich, MBA, BSRT, our new operations director. Both of them have hit the ground running and are key players on our leadership team.
Please don’t forget to join us at an exciting upcoming event: The Margulis Society Gala will be held on Saturday, March 4, 2017 at the Olympic Club Lakeside in San Francisco. We hope to see you at the gathering!

Thank you for making the last 25 years such a wonderful and satisfying career for me. With your inspiration and hard work, we have built the best academic Radiology department in the country and I am deeply appreciative for the opportunity to have led this endeavor.

Sincerely,

Ronald L. Arenson, MD
Unlocking the Full Potential of Dual-Energy CT

Jack Lambert, PhD, Yuxin Sun, MS, Szhe Wang, BS, Rahi Kumar, MD, Zhixi Li, MD, Rutwik Shah, MD, Matthew Bucknor, MD, Michael Ohliger, MD, PhD, Zhen Jane Wang, MD, John Mongan, MD, PhD, Robert Gould, ScD, Benjamin Yeh, MD

Background

If an alien intelligence were to beam down to Earth and look at most of our medical computed tomography (CT) scan images from today and compare them to those obtained in 1997, the creature would probably say that our images have not changed much (Figure 1). We might object to its opinion and highlight important advances in CT. For example the speed of image acquisition has improved drastically such that the entire human body can be imaged in 10 seconds or less, compared to five minutes. Similarly, CT scan slices are thinner, allowing for slightly sharper multiplanar image reformation. The radiation dose is lower now than in the 1990s, due to innovative iterative reconstruction techniques and patient-tailored protocols.

While these technical developments have no doubt streamlined CT acquisition, the alien would be correct in saying that the images look fundamentally the same: CT scans remain black-and-white images of human anatomy. While they may be faster to obtain, their diagnostic value is little changed. Why is this? First, though CT design has gone through some permutations, the underlying operating principle has not changed since its introduction in the 1970s. Conventional CT scanners use a single X-ray spectrum to image patients, and the X-ray detectors merely record the general amount of X-rays that penetrate the body and ignore the energy of those X-rays. This arrangement limits the images to a grayscale of brightness from black to white, based on the attenuation of X-rays in the volume of interest.

Second, no substantially new contrast agents—the dyes used in the majority of CT scans to highlight anatomy of interest—have been introduced in the last 30 years. Contrast enhancement remains limited to the same grayscale of increasing brightness with increasing contrast density.

Dual-Energy CT

The potential for Dual-Energy CT (DECT) imaging was recognized at the inception of CT in the 1970s, but scan speeds were too slow for clinical implementation. Scanners capable of obtaining dual energy datasets at the same speed as regular CT were first introduced nearly a decade ago and are slowly transforming CT scanning, thanks to their capacity to generate material-specific images beyond traditional grayscale ranges. This is achieved by the use of two separate X-ray tube voltages that generate two separate sets of projection data.

Figure 1  Contrast-enhanced CT images of the same patient acquired in 1997 (left) and 2013 (right) look superficially similar, apart from the positive oral contrast present in the 1997 image. Both are axial plane, grayscale depictions of the adult abdomen, generated at an in-plane resolution of 512 x 512 pixels.
Different materials have characteristic relative brightness levels in the two projections because materials attenuate X-ray photons of different energies in characteristic ways, depending on their atomic number and physical density. By comparing the two sets of projection data, individual elements and compounds can be revealed and color-coded to highlight their presence visually. Initial applications include more accurate renal stone composition determination, liver-iron quantification, and coronary artery calcium scoring.

Although these predefined tasks are useful, the workhorse application of DECT is the qualitative confirmation or ruling out of contrast enhancement, enabling more confident diagnosis of many pathologies (Figure 2). In addition, the ability to suppress the iodine contrast signal allows for "virtual non-contrast" imaging. These virtual non-contrast images can replace true non-contrast scans, offering substantial radiation dose savings for examinations where multiple phases are traditionally required.

Despite these benefits, DECT has not yet been widely embraced by the radiological community. There are several reasons for its slow adoption, including the higher price of the DECT scanners, reduced image quality of grayscale images, slower workflow, perceived radiation dose penalties, and in some cases, a lack of compatibility with techniques such as tube current modulation and iterative reconstruction. Despite these current hurdles, DECT is used at all five UCSF campuses for standard-of-care abdominal scanning when available. Musculoskeletal and Cardiac sections also are developing dual-energy workflows.

**New Contrast Agents for New Colors**

Although DECT scanners are now available at numerous clinical sites across the country, contrast-enhanced DECT scans remain limited because there is only one "color" of contrast material currently on the market. All clinical CT contrast agents are based on iodine and barium, which have atomic numbers of 53 and 56, and therefore have very similar attenuation across the range of medically useful diagnostic X-ray energies. In other words, even with DECT, CT scans can only see that contrast material is present; they cannot differentiate between different contrast agents that have been simultaneously delivered.

This leads to ambiguity and image interpretation errors. For example, in patients given both oral (enteric) and intravenous contrast material at DECT, the source of contrast opacification cannot be distinguished except by context. Leakage of contrast material is ambiguous as to being from a bowel injury, vascular injury (bleeding), or both. Having the ability to distinguish between the different types of contrast would clearly be of benefit.

![Figure 2 Coronal CT images showing the benefits of material discrimination at Dual-Energy CT. A) Regular CT: rectal contrast (red arrow) is difficult to differentiate from unknown extralumenal densities (yellow arrow). B) DECT water map: Rectal contrast has been digitally suppressed, while the unknown density remains visible, indicating that it is not the rectal contrast: it is a calcified fibroid. C) DECT iodine map. D) Regular CT: Tumor necrosis (red arrow) is not easily identified. E) DECT water map F) DECT iodine map: the tumor necrosis is more easily seen, as are hypovascular liver metastases.](image-url)
To help realize the full potential of the technology, the Contrast and CT Research Laboratory within the Department of Radiology and Biomedical Imaging is developing new classes of DECT-specific contrast agents and software to improve their image conspicuity. At the Contrast and CT Research Laboratory and through industry collaborations with GE Global Research and Nextrast, Inc., we are testing new contrast materials based on reporter elements that are much different from iodine and barium, and which can be easily seen as a “different color” at DECT. These agents include tantalum, tungsten, and bismuth-based agents.

As well as providing additional color to CT images, such agents have many potential benefits over existing iodine- and barium-based agents, including reduced radiation dose through brighter contrast enhancement, improved image quality in large and obese patients through sustained contrast at higher X-ray energies, and compatibility for patients with iodine allergies. By utilizing a wide range of different non-iodinated reporter elements, these new agents can be distinguished not just from biological tissues, but also from one another.

This type of “multi contrast, dual-energy CT,” pioneered at UCSF over the last five years, enables different biological compartments to be distinguished from one another. In addition to our own efforts in the Contrast and CT Research Laboratory, other groups are investigating agents based on gold, hafnium, and ytterbium, among others. All such agents would offer brighter contrast at lower contrast doses due to their high atomic numbers. Currently all DECT contrast agents remain in preclinical testing and none are available for clinical trials. Nevertheless, the high potential for improved diagnostic accuracy, reduced radiation dose, and faster patient throughput has spurred research now that DECT scanners are available.

In addition to testing DECT contrast materials, we are working on new image processing techniques, including an algorithm termed Contrast Material Extraction Process (CMEP) to improve contrast material separation from DECT source images (Figure 3). A driver for the development of this tool is the current limitation of commercial software to two materials, rendering it incompatible with double-contrast studies where three separate material maps are required. Current commercial software separates materials via splitting the pixels’ grayscale values into different predefined materials that must equal the original pixel value. CMEP extracts a contrast material based directly on its attenuation difference between low and high X-ray energies. As contrast information is selectively extracted rather than allocated among two or three predefined materials, the CMEP approach is inherently conservative and can be scaled for any number of contrast materials.

**Future Outlook**

A natural progression after DECT is to consider multi-energy CT which can allow evaluation of images from more than two different X-ray energy spectra. Several CT manufacturers are developing photon-counting CT whereby the detector elements can distinguish between photons with different ranges of energy. Photon-counting CT has many theoretical benefits over DECT, including improved material discrimination, reduced radiation dose, reduced beam-hardening artifacts, and higher spatial resolution. Low energy X-ray photons which have been scattered within the patient, and therefore contribute only to image noise, can be discarded to improve image quality. In addition, energy bins can be tailored to match attenuation properties of administered contrast materials, and radiation dose can be tailored more closely to patient size with the return to a single-energy X-ray source spectrum. Photon-counting CT would also benefit greatly from novel non-iodinated contrast agents, and vice versa, to provide a powerful platform for anatomic diagnoses of patients. Currently, no FDA approved photon-counting CT...
scanners are available, but it seems a matter of time before the first machines become available.

**Conclusion**
What if the alien were to return 15 years from now? Would it be impressed with our progress? Hopefully “color CT” will become ubiquitous in the reading room, allowing radiologists to routinely diagnose previously poorly identified pathology using material-specific imaging for individual bodily compartments. We believe that new non-iodinated contrast agents, including some in development at UCSF, will have helped achieve a transformation in CT imaging from grayscale guesswork to color vision certainty. Although the barriers to entry are high, the benefits of coupling such an agent with the powerful new CT technology are becoming increasingly hard to overlook. The future for CT imaging looks not just bright, but full of color.

Jack Lambert, PhD, is an associate specialist; Yuxin Sun, MS, and Sizhe Wang, BS, are staff research associates; Rahi Kumar, MD, is a clinical fellow in Abdominal Imaging; Zhixi Li, MD, is a PGY5 chief resident in the Department of Radiology and Biomedical Imaging. Rutwik Shah, MD, is a staff research associate; Matthew Bucknor, MD, is an assistant professor in the Musculoskeletal Section; Michael Ohliger, MD, PhD, is an assistant professor in Abdominal Imaging. Zhen Jane Wang, MD, is an associate professor in Abdominal Imaging and John Morgan, MD, PhD is an assistant professor in Abdominal Imaging and Vice Chair, Informatics. Robert Gould, ScD, is a professor and Vice Chair of Radiology for Technology and Capital Projects. Benjamin Yeh, MD, is a professor in Abdominal Imaging and director of the Contrast and CT Research lab in the Department of Radiology and Biomedical Imaging at UCSF.
Background
The sensation of an internal rhythmic swooshing or whooshing sound, like a heartbeat on a fetal ultrasound, is at best a little unsettling to patients. For nearly five million Americans however, this near constant whooshing sound, better known as pulsatile tinnitus (PT), exceeds a mere annoyance and becomes completely debilitating.

The origins of PT can differ, including tumors, vascular malformations, vascular anomalies, and abnormal cerebral pressures. It can even be caused by unique blood flow patterns in the veins adjacent to the temporal bone. While some of these etiologies are clinically benign, others carry a significant risk of intracranial hemorrhage and even death. Determining, and then obtaining treatment for the correct diagnosis, can be a long and frustrating process for patients. In fact, the correct diagnosis is reached in only 45% of cases worldwide.

Our team at the University of California, San Francisco has changed this paradigm with dramatic results. Established by neurointerventional radiologist (NIR) Matthew Amans, MD, and neurologist Karl Meisel, MD, the UCSF Pulsatile Tinnitus Clinic is the first multidisciplinary clinic devoted to the diagnosis, treatment, and study of PT. The UCSF Pulsatile Tinnitus Clinic (PTC) brings together specialists from Radiology, Neurology, Psychiatry, and Head and Neck Surgery for the patient’s benefit. Through advances in imaging, physical examination, and collaboration the PTC has achieved a rate of diagnosis of 90%. This team provides care and has given hope to many who have previously thought their diagnosis—let alone treatment—was unobtainable. The clinic welcomes patients from around the world to UCSF for their diagnosis and treatment.

Imaging and Patient Evaluation
Imaging of pulsatile tinnitus can be as complex as the myriad diseases that can cause the symptom. To provide the most thorough initial imaging screening, our group customized the MRI evaluation for pulsatile tinnitus. This imaging test has become a very powerful diagnostic tool, often providing the key to understanding the source of a patient’s symptoms. This thorough imaging evaluation inspects the brain parenchyma, temporal bone, cranial nerves, cerebral veins, as well as the arteries for potential etiologies. The team discusses each case prior to seeing the patient and

Figure 1 Examination of the central core of blood flow in four different patients’ jugular veins. This image contains lateral views of four patients’ sigmoid sinus transitioning into the jugular vein. The ghosted grey is the anatomic imaging obtained from the contrast-enhanced MRA timed to the venous phase. The central colored vortex is the central core of blood flow that is measured by the 4D MR Flow study. As the jugular bulb height rises, moving from left to right in the figure, the central vortex core becomes more tightly wound. The “tightness” of the vortex is calculated from both the rotational and longitudinal components of flow, and is presented above each of the jugular veins. Image is courtesy of Sarah Kefayati, PhD, postdoctoral scholar in the Vascular Imaging Research Center.
reviews all imaging studies with world-renowned head and neck imaging expert Christine Glastonbury, MBBS.

Subsequently, each patient is seen and evaluated by each of the clinical specialists in the PTC. After thorough history and physical examinations, the specialists reconvene and discuss the working diagnosis and the next step in diagnosis or management. The specialist who will carry out the group’s recommended plan meets with the patient to review the differential diagnosis, the working diagnosis, and the group’s suggested plan.

Angiogram as Needed
Based on the history, physical examination, and imaging findings, a select number of patients are recommended to continue their evaluation in the neuro-interventional angiogram suite. The procedure that our group developed begins with a thorough diagnostic cerebral angiogram to evaluate both potential arterial and venous etiologies of pulsatile tinnitus. After the angiogram, a cerebral venogram is performed, along with venous manometry, to measure otherwise occult stenoses, or diffusely elevated cerebral venous sinus pressures that can be a sign of intracranial hypertension. Once the venogram is completed, temporary balloon test occlusion of the cerebral venous and arterial system is performed while the patient is awake and able to appreciate his or her symptoms, with the objective of further delineating which vessel may be causing the patient’s symptoms.

Assessment of Risks and Benefits
In patients who have a vascular etiology for their symptoms, including elevated intracranial pressures, we weigh the risks and benefits of the treatment against the underlying disease in a dedicated consultation with the patient. If the patient elects intervention, we perform embolization, stenting, or in some cases recommend medical therapies to treat the patient’s underlying diseases.

Research
Advances in imaging blood flow in the cerebral vasculature have helped us to define a potential cause of pulsatile tinnitus in patients with otherwise “normal” vascular anatomy. This includes 4D MR Flow, which measures the velocity field of blood flow across the cardiac cycle. We were fortunate to work in collaboration with the Vascular Imaging Research Center under the direction of David Saloner, PhD. His team has been pioneering the use of 4D flow in the brain for nearly a decade. This technique has been applied successfully to the arterial system to visualize blood flow in both normal and pathologic arteries. We applied this technique to the cerebral venous sinuses. Results suggest vortices of flow in the veins may be the sound generator in as many as 35% of patients (see Figure 1).

Our collaboration revealed that in patients with normal venous sinus vascular caliber, i.e. without a stenosis or diverticulum, a vortex component of flow is generated by the confluence of the sigmoid sinus and the jugular bulb. The “tightness” of the vortex is related to the height and volume of the jugular bulb as well as the velocity of blood flow. In the arterial system, similar vortices have been demonstrated to cause bruit. We hypothesize that these vortices may be responsible for some venous etiologies of pulsatile tinnitus.

Dr. Saloner and his team also has developed flow-models of patient’s sigmoid sinus into the jugular vein using 3D printing technology (see Figure 2). These wax silastic models are then attached to a pulsatile flow pump to simulate flow in the dural venous sinus. Now that we have a model of this type of flow, we have a bench-top tool to test various implantable devices to disrupt the flow patterns that we think may cause pulsatile tinnitus. We hope that we can develop a novel tool to treat what has previously been thought to be idiopathic pulsatile tinnitus.

Summary
UCSF’s multidisciplinary Pulsatile Tinnitus Clinic evaluates and treats patients with pulsatile tinnitus using advanced and innovative tools and modalities. Patients can be referred to the clinic by contacting UCSF Neurointerventional Radiology at 415-353-1863 or matthew.amans@ucsf.edu. For more information, please visit our website: pulsatiletinnitus.ucsf.edu.

Matthew Amans, MD, MSc is the co-director of the UCSF Pulsatile Tinnitus Clinic and an assistant professor of Clinical Radiology, NeuroInterventional Radiology, and Diagnostic Neuroradiology at UCSF.
During the past decade, molecular imaging of β-amyloid (Aβ) and tau proteins in the human brain, along with advanced magnetic resonance imaging (MRI), have revolutionized the diagnosis of Alzheimer’s disease (AD). Furthermore, these advances have greatly facilitated and accelerated clinical treatment trials leading to greater optimism that effective therapy to slow cognitive decline and prevent dementia will be achieved in the foreseeable future.

Today, more than 5.4 million Americans are living with Alzheimer’s disease, including an estimated 200,000 under the age of 65. The number of Americans with AD is projected to increase up to 16 million in 2050. Of these, 3.7 million will be in the mild stage, 4.5 million in the moderate stage, and 7.8 million in the severe stage. In 2016, the direct costs to American society of caring for those with AD will total an estimated $236 billion, with just under half of the costs borne by Medicare. In 2016, 18% of the Medicare budget will be spent on people living with AD and other dementias. Based on the current trajectory, costs are projected to increase to over $1.1 trillion in 2050, with Medicare and Medicaid costs increasing 365%. Cumulative costs to all payers for AD and other dementias from 2016 to 2050 will be $20.8 trillion. The Alzheimer’s Association estimates that an effective treatment would save more than $367 billion. A treatment that delays the onset of AD by merely five years would save an estimated $935 billion in just the first 10 years. Therefore, there is a pressing need to develop treatments and prevention strategies that slow cognitive decline and prevent dementia due to AD.

**AD Clinical Trials, Past Failures, Current and Future Trials**

The development of AD therapeutics has stalled in the efforts to move past modestly effective symptomatic drugs to disease-modifiers. Since memantine in 2003, no drug has reached the clinic. There are many reasons for this failure, including issues of target selection, off-target toxicity, and insufficient pharmacokinetic and pharmacodynamics data to support trial design. Until now, pharmaceutical companies have mostly pursued the same target: Ab proteins that form aggregates or plaques in the brain of AD patients. Lack of AD pathology phenotyping at the recruitment stage significantly contributed to the failure of various Aβ-targeted drugs in phase III trials for AD-related dementia in the past. Such disappointing results have raised concerns about whether the treatments were initiated too late in the disease, whether Aβ levels were sufficiently reduced, and/or the validity of the ‘Aβ cascade hypothesis,’ which places Aβ at the heart of AD pathology.

Despite disappointing results from clinical trials of anti-Aβ monoclonal antibodies, the research highlights of 2012 provide new support for the central role of Aβ.
in AD pathogenesis. In addition, the growing number of studies reporting cell-to-cell transmission of tau, Aβ and other misfolded proteins highlight an exciting area that will lead to improved understanding of the mechanisms by which these proteins cause neurodegeneration and lead to clinical symptoms, and could provide targets for development of new therapeutics. Timing of intervention is also critically important; while symptomatic drugs are likely to be most effective at the dementia stage, disease-modifiers may require treatment at earlier stages of disease, prior to dementia or even prior to symptoms. In particular, evidence suggests that Aβ is deposited early during the course of the disease, even before clinical symptoms appear. Targeting Aβ in patients with mild to moderate AD, as past failed clinical trials have done, may not be enough to stop the disease progressing.

**Spotting Dementia Early**

Scientists are taking two approaches that might detect AD before symptoms: imaging and biomarkers. Various fields of medicine have used biomarkers in clinical trials for many decades. Examples include measurements of blood pressure, cholesterol, serum enzymes, bone density a wide variety of imaging techniques, body fluid analyses, and electrophysiological techniques. In contrast, neurology and psychiatry, which are fields in which disorders such as AD are defined by symptoms and signs, have been relatively slow to incorporate biomarkers into diagnosis, prognosis, and treatment trials.

Since the original description by Alois Alzheimer, AD has been diagnosed by clinical criteria including cognitive impairments, especially in memory, as well as emotional disturbances. AD diagnosis is ultimately confirmed by
pathological criteria at autopsy based on the existence of extracellular Aβ plaques, phosphorylated tau protein aggregated inside neurons as paired helical filaments (PHF-tau), synapse loss, and neuronal loss.

The clinical diagnosis lacks specificity, meaning that many people with the clinical diagnosis of AD do not have AD pathology, and sensitivity such as people with AD pathology at autopsy do not get a clinical AD diagnosis. Over the past 25 years, various biomarkers, including positron emission tomography (PET), MRI, and cerebrospinal fluid (CSF), were used in research studies to investigate pathophysiology of AD. In the late 1990s, the availability of transgenic mice, which overexpressed brain Aβ, and the first demonstrations of immunotherapy in animal models led to development of treatments (immunotherapy, secretase inhibitors, etc.) aimed at slowing the progression of AD. This led those in the AD field to recognize the importance of using biomarkers for both diagnosis and to monitor the effects of treatment.

Importance of Aβ PET
The Aβ ligands that are available for research use are the 11C-Pittsburgh Compound B (PIB), 18F-flutemetamol, 11C-AZD-2184, 18F-AZD-4694, 11C-BF-227, 11C-SB, 18F-florbetaben and 18F-florbetapir, and 18F-FDDNP (see [1] for a detailed review). Of these, only 18F-florbetapir is approved by the Food and Drug Administration (FDA) and European Medicines Agency (EMA) for the clinical evaluation of cognitive deficits in patients. According to the FDA, it is “an adjunct to other diagnostic evaluations,” meaning, a tool to give physicians additional information to clarify an otherwise unclear diagnosis.

A negative scan (Figure 1a) indicates few to no Aβ plaques. If there is cognitive impairment, the cause is likely to be something other than AD. This finding may alter treatment plans or indicate the need for further testing for AD. A positive scan indicates moderate to frequent plaques. This may be found in patients with AD (Figure 1c), in patients with other types of cognitive impairment, and in older people with normal cognition (Figure 1b). Despite the new scientific information and predictive value of Aβ PET, there is poor correlation between Aβ PET and clinical/cognitive status. For example 30% of normal people have high Aβ. It is well known from pathology that intracellular tau has a higher correlation with clinical status.

Importance of Tau PET
Pathological studies have indicated that AD symptomatology is most closely associated with tau tangles, suggesting a cause-and-effect relationship between tau tangles, synaptic dysfunction/synapse loss/neurodegeneration, and cognitive function. Recently, 18F-AV1451 and other tau PET ligands have been developed to detect tau in humans [2]. The pathological findings that brain tau correlates with cognition, and preliminary results showing high correlation between tau PET agents, including 18F-AV1451 [3-5], and cognition, suggest that tau PET may be a useful biomarker for early AD pathology detection and raise the possibility that ultimately, tau PET could be used as a surrogate marker (that is a marker which might replace clinical or cognitive measures) for AD clinical trials. Consistent with autopsy studies, in cross-sectional Aβ PET versus tau PET studies, we observe the greatest tau deposition as detected by 18F-AV1451 PET in AD cases, followed by individuals with mild cognitive impairment. This relationship appears dependent on the presence of Aβ pathology (Figure 2).

Is AD an “Amyloid Facilitated Tauopathy”? Greater spread and burden of tau pathology as detected by 18F-AV1451 PET only in the presence of Aβ pathology, brings up the question of co-seeding. In a recent study, we hypothesized that in a population of older people with various degrees of cognitive impairment, greater annualized change in Aβ burden in frontal, parietal, and lateral temporal brain regions, measured by longitudinal florbetapir PET scans antecedent to 18F-AV-1451 PET scans, would be associated with greater 18F-AV-1451 PET retention in limbic areas of inferior and lateral parietal and temporal lobes, i.e., brain sites of tau tangle deposition involved in early symptomatic disease stages.

We found that increased annualized change in florbetapir PET retention, antecedent to 18F-AV-1451 PET scans in medial frontal, lateral parietal, and lateral temporal brain regions was associated with greater 18F-AV-1451 PET retention in limbic areas of medial and inferior temporal (Figure 3). This 18F-AV-1451 PET retention pattern significantly explained the variance in cognitive performance and clinical outcome measures, independent of the associated antecedent increased annualized change in florbetapir PET retention. According to the Aβ hypothesis [6, 7], the accumulation of Aβ leads to down stream events including accumulation of tau tangles, neurodegeneration, cognitive decline and dementia. Taken together these findings are consistent with a model in which increased Aβ burden facilitates tau tangle deposition, which leads to neurodegeneration resulting in clinical and cognitive deficits. Our goal is to better understand the underlying mechanism through which these new neuroimaging modalities may facilitate identification of the many gaps in our evidence-based medical knowledge of the role of the Aβ hypothesis in clinical practice.

References

Duygu Tosun, PhD, is an assistant adjunct professor in the Department of Radiology and Biomedical Imaging and co-director of the Center for Imaging of Neurodegenerative Disease, SFVAMC. Michael Weiner, MD, is a professor in residence in Radiology and Biomedical Imaging, Medicine, Psychiatry, and Neurology at the University of California, San Francisco. He is principal investigator of the Alzheimer’s Disease Neuroimaging Initiative, the world’s largest observational study concerning Alzheimer’s disease.
Parnassus
Plans for a major change to the main department at Parnassus are now under review by the California Office of Statewide Health Planning and Development with the anticipated construction start date of January 2017. This $15-million project alters the entrance by adding a patient waiting area on the north side of the main hospital corridor where patients and families can enjoy the light and view. A gowned waiting area will be separate and within the main portion of the Department. Reading rooms will be relocated.

The project includes three pieces of imaging equipment: a new body interventional angiographic unit (Philips), a replacement nuclear SPECT camera (GE), and a replacement multipurpose system (Siemens) used for ERCP procedures. All of this equipment will be installed in newly constructed rooms.

Lastly, the Department’s current boundaries on the third floor of Moffitt will expand down the main corridor into space now used by cardiology, allowing the holding area to be moved and greatly expanded. The new holding area nearly doubles the number of bays in the current, overcrowded holding room. Construction will be in phases and last 18 months.

In Long, the Philips XMR system, which is a suite of an MRI with a shared wall and door to an angiographic room, has been approved for replacement. We plan to install two magnets in the space, one a 3T widebore MR and the other a 1.5T.
China Basin
A new GE 3T MR unit is replacing one of the clinical 1.5T magnets installed when Radiology opened the imaging center at China Basin in 2004. Construction will start in early fall 2016 and be completed by the end of the year. This system will be the fourth 3T clinical, outpatient magnet in the Department’s MR fleet, and the 10th clinical 3T overall, in addition to the two whole body 3T MRI systems used for research.

We are considering an expansion of the number of imaging modalities at China Basin, adding more MRI and PET-CT equipment for both clinical and research use.

Mt Zion
The Women’s Imaging Section now has a digital breast tomosynthesis unit with the recent installation of a GE SenoClaire system that has recently been installed. This system is in a location used for screening studies and a second unit is planned for the diagnostic area.

PACS
At the beginning of the year, Radiology implemented a new viewer, Client Outlook eUnity, for enterprise-wide access to imaging studies. Prior to eUnity, studies coming into the Department’s Agfa PACS were routed to a secondary system, requiring time and causing some limitations on study size. Access to prior studies was sometimes an issue.

Extracting studies directly from Agfa storage, eUnity allows much faster access to both new and old studies. A critical link exists to the hospital’s Epic system, keeping patient context, so imaging studies are accessible as part of the patient’s electronic medical record.

The eUnity server can also be accessed directly and the viewer is web-based, working with any browser and platform. Three also are apps for viewing images on a smartphone or tablet. Implementation of this vital system went smoothly thanks to the hard work of the Department’s PACS group and of the company.

Robert G. Gould, ScD, is a professor of Radiology in residence and vice-chair for Technology and Capital Projects. He oversees the purchase of the department’s capital equipment.
The opening of the new 284-bed, 484,000-square-foot Zuckerberg San Francisco General (ZSFG) Hospital and Trauma Center in April 2016 marked a stellar achievement that will offer huge benefits to the 98,000 patients who use its 24-hour non-urgent and urgent care annually. In addition to providing outstanding patient care, ZSFG was designed as the central hub for crisis response in the event of a major disaster and is the only Level I trauma center for San Francisco and Northern San Mateo counties.

Construction
Planning for ZSFG began soon after San Francisco voters approved a bond measure to provide funding in 2008. Private donors contributed additional funding, with Facebook founder and CEO Mark Zuckerberg and his wife Priscilla Chan, MD, a pediatrician trained at UCSF and SFGH, providing the largest single donation of $75 million. San Francisco General Hospital was renamed the Zuckerberg San Francisco General Hospital and Trauma Center in their honor.

Bringing Imaging to the Patient
Annually, ZSFG provides trauma treatment for nearly 4,000 severely injured patients. The design of the Radiology Department offers these patients important advantages. While Radiology is located on three levels throughout the hospital, CT and Diagnostic X-ray are situated directly adjacent to the emergency suites. Having imaging options quickly available to ER patients removes the challenges that come with moving trauma patients from one area to another. It also allows physicians to begin surgical or other treatments as soon as patients are scanned.

Not only is ZSFG medical imaging state-of-the-art and immediate, there is 24/7 coverage in the Radiology Department for emergent exams and procedures. Radiologists are available at all times for consultation with specialists from other departments. ZSFG Radiology also offers an inpatient IR admitting service and is a certified stroke center, supporting emergency stroke care.

Interventional Radiology is located on the ground level and the basement houses CT, MRI, PET/CT, Ultrasound, Fluoro, and Diagnostic X-ray.

Broad Scope of Care
The Radiology Department at ZSFG provides a wide range of services in these subspecialties: Abdominal Imaging, Thoracic Imaging, Neuroimaging, General and OB Ultrasound, Pediatric Radiology, Breast Imaging and Tomosynthesis, Musculoskeletal Imaging, Interventional Radiology,
Neurointerventional Radiology and stroke treatment. New programs instituted since the move are Emergency Radiology, and PET/CT. ZSFG also is a training site for the fellowship programs in Abdominal Imaging, Women’s Imaging, Neuroradiology, and Thoracic Imaging.

Equipment
There are four general X-ray rooms and four trauma rooms, one dedicated to pediatric care.

Building 5 has two 1.5T MRI scanners and two 64-slice CT scanners, One IR suite features a single-plane, C-arm with CT scanner) another is a biplane IR suite. There also are eight Ultrasound bays and a portable unit, a portable X-ray unit and Fluoroscopy.

Building 25, the new hospital, has two 3T MRI scanners, one of them intra-operative, three CT scanners (two in the Emergency Department, one in the basement level), a PET/CT scanner, a single plane C-arm with CT scanner IR Suite as well as two biplane, IR suites, one of them in the Catherization Lab. It also features a hybrid OR/IR suite (the initial location of the Catherization Lab), Ultrasound (three bays and portable), general X-ray rooms, Fluoroscopy and a portable X-ray.

The Avon Breast Center at ZSFG performs more than 10,000 diagnostic and screening mammograms a year. In addition to mammography, the Avon Center offers digital breast tomosynthesis, breast US, breast biopsy and needle localization. To bring greater access to breast imaging services directly to patients, Avon Center also has a Mammography Van.

Looking Forward
I would like to acknowledge everyone who keeps things running smoothly every day in both non-urgent and emergency situations alike: our highly skilled technologists, physicians, PACS and IT personnel, nurses and staff. We are thrilled to be in a space that will promote the best for our patients with state-of-the-art imaging and interventions for a long time to come. Our accomplishments at the new ZSFG Hospital rely on the longstanding, strong collaboration between UCSF and the City and County of San Francisco.

Mark W. Wilson, MD, is the chief of the Department of Radiology at Zuckerberg San Francisco General Hospital and Trauma Center, Hideyo Minagi Professor of Radiology, and vice-chair, ZSFG of the UCSF Department of Radiology and Biomedical Imaging.
A famous quote about 25-year relationships says, “Getting together is the beginning, staying together is progress and working together is success.” By every definition, Dr. Ron Arenson’s relationship with UCSF Radiology and Biomedical Imaging can only be described as an astounding success that many of us feel proud and excited to have accomplished with him.

The technological advances in our specialty during Ron’s tenure at UCSF have been astonishing. It is a rare leader who is able to steer a department through this level of growth and change with vision, determination and a steady hand. Many would feel enormous pride in only a few of these accomplishments, but Ron’s list is extraordinary. Under his guidance the department remains internationally known as a premier academic institutional leader in innovation, technology, education and research.

When Ron became Chair of UCSF Radiology and Biomedical Imaging in 1992, radiology was at a turning point. It was the start of the transition from film-based systems to electronic systems and emerging new functional technologies. Ron was visionary in addressing the need for electronic files early on in his academic career. During his chairmanship, he assembled a team that installed one of the first picture archiving and communication systems (PACS) in the country. Upon his arrival he steered the department to sound financial footing with the installation of a radiology information system, DecRad, which by the way he had helped develop, and expanded the department’s outpatient imaging capabilities in magnetic resonance imaging and computed tomography, as well as interventional image-guided procedures. Under his leadership, the department expanded its research base to China Basin and Mission Bay, allowing growth in a number of key clinical and research advances, among them:

- Installing the first positron emission tomographic (PET) unit in the Bay Area (1993)
- Installing biomagnetic imaging (MEG) (1993)
- Establishing the Laboratory for Radiological Informatics (1994)
- Creating and installing an early PACS system (1995)
- Establishing the Surbeck Laboratory for Advanced Imaging (2000)
- Establishing the UCSF Imaging Center at China Basin, the UCSF Radiology Center for Molecular and Functional Imaging at China Basin (2003), and the UCSF Precision Spine Center at China Basin
- Supporting Dr. Bruce Hasegawa’s pioneering work on multimodality imaging, combining CT with SPECT. This technology revolutionized how we view and interpret images and led to the development of PET CT and PET MR.

“Ultimately, all radiological images and reports will be available to anyone with approved access.”

—Dr. Arenson’s 1993 Report to the Dean
• Establishing an National Institutes of Health-funded T32 research residency and fellowship training program (2005–present)
• Establishing the Center for Imaging of Neurodegenerative Diseases at the San Francisco Veterans Affairs Medical Center (2006)
• Establishing UCSF as the first site in country to be approved and awarded an NIH grant for purchase of MR-guided focused ultrasound surgery (MRg-FUS) (2010)
• Implementing the electronic medical system and new Radiology Information System Radiant (2014)
• Installing the first Northern California full-body and simultaneous time-of-flight PET/MRI available to patients at UCSF (2015).

Ron has also been a leader in organized radiology, serving as president of RSNA in 2015, The Society of Chairs of Academic Radiology Departments, The American Academy of Radiology Research, and the Association of University Radiologists, for which he received the Gold Medal in 2013. His presence has also been felt locally within UCSF on many levels. Ron serves on multiple UCSF committees and was elected the President of the Medical Staff as well as serving as chair of the credentials committee.

“We are particularly proud of our new Biomagnetic Imaging Laboratory, the rapid growth and development of our informatics program, clinical applications of magnetic resonance spectroscopy (MRS) and our positron emission tomography (PET) program.”
—Letter from the Chairman, Images, 1994

Behind the technical and academic accomplishments, the many awards and accolades and guest lectureships, and the outstanding educational and research rankings our department enjoys is a leader who—if asked—would say that his proudest accomplishments have to do with the success of his faculty and staff. Ron has championed UCSF faculty, trainees and staff with encouragement, time, energy and resources. In the last few years in particular, he has supported faculty and staff engagement, leadership development and faculty mentorship programs. It is no wonder that the Department’s staff engagement and faculty satisfaction scores on annual surveys by UCSF have been among the highest in the School of Medicine.

Ron takes pride in everyone’s collective effort to make Radiology a great place to work, and the faculty know that when he talks about an open door, he means it. Ron knew instinctively that you simply can’t build a great department without great people, and while equipment might become obsolete, the people and careers he has invested in will go on and make a difference across the country and in the world.

Now, Ron has announced he will step down as chairman of our department after 25 years. As we look back on our department’s progress and success, we feel a great sense of affection for all that we’ve shared with him and tremendous gratitude for his commitment to our department and us. We will celebrate in the coming months, and ask that you join us for a special symposium in Ron’s honor, to be held at UCSF on May 5th, 2017. We also appeal to all of our graduates to support our department and remember that we have all benefited greatly from the opportunity to work together with Ron at UCSF.

Congratulations, Ron and thank you for all you have done for our department, UCSF, and for organized radiology!

William P. Dillon, MD, is the Elizabeth A. Guillaumin Professor of Radiology in the Section of Neuroradiology and executive vice chair of Radiology and Biomedical Imaging at the University of California, San Francisco.
Interventional Radiology: The Emergence of a New Specialty and Training Program

Jeanne M. Laberge, MD

This year marks the beginning of a new era of training in Interventional Radiology (IR), in which UCSF has played a leading role. In 2016, we look forward to recruiting an exceptional medical student to enter our new five-year IR residency program.

What is This All About?

In 2012, the American Board of Medical Specialties recognized Interventional Radiology as a unique specialty in medicine, one that combines expertise in imaging, skill in image-guided procedures, and proficiency in clinical care. Over the course of the past three years, the Accreditation Council for Graduate Medical Education (ACGME) has developed a new residency program designed to train physicians in these three essential areas of practice. Last year the ACGME released the new Program Requirements for Interventional Radiology. To date, more than 60 institutions across the US have applied for IR residency accreditation. In March 2017, the National Resident Matching Program will conduct the first large-scale IR residency match.

The new residency curriculum matches the needs of the specialty. Residents will continue to receive high-quality training in diagnostic imaging, while at the same time being provided more time to develop necessary procedural skills across the broad domain of IR. Importantly, IR training will emphasize the clinical role of interventional radiologists in patient care.

UCSF and IR

UCSF has played a key role in the development of IR over the years. In 1967, Alexander R. Margulis, MD, then chair of the Department of Radiology, coined the term “interventional radiology” to describe the emerging field of image-guided interventions. At the time, Charles Dotter, MD, and his colleagues at the Oregon Health Sciences Hospitals were performing the first transluminal angioplasty procedures in the United States. This was a transformational moment in the history of modern medicine, one that would advance the boundaries of modern medical therapy.

Margulis recruited Ernest Ring, MD, to head up the new IR section at UCSF. Ring was instrumental in developing a world-class IR section at UCSF and played a key role in the development of a strong professional organization for IR, the Society of Interventional Radiology. Under the subsequent guidance of Roy Gordon, MD, and Robert Kerlan, MD, the UCSF IR section has continued a tradition of excellence. This year, Kerlan will become chief of staff for UCSF and is a role model whose overriding interest in high-quality clinical care is recognized throughout the institution.

UCSF also played a leadership role in the recognition of IR as a unique specialty and in the development of the new IR residency. In my role as a trustee of the American Board of Radiology and a member of the ACGME Radiology Residency Review Committee, I participated in the effort to recognize the clinical role of IR physicians and to champion a new training program for IR. I am honored to serve as the program director for the new IR Residency, with Soonmee Cha, MD, director of our top-ranked Diagnostic Radiology Residency, serving as associate program director.

We would not have been able to develop this new residency program without the strong support and guidance of department Chairman Ron Arenson, MD. As the immediate past president of the RSNA, he has been a strong advocate for patient-centered care in Radiology and a strong proponent of IR. In his presidential lecture at the RSNA last year, he laid out a bright vision for the future of Radiology through innovation. As we head into this new era of IR training, we anticipate that IR will be well positioned to contribute to that bright future.

Jeanne Laberge, MD, is a professor in residence at the University of California, San Francisco, and chief of Interventional Radiology at UCSF’s Mount Zion Campus.
Robert Flavell, MD, PhD  
Assistant Professor in Residence  
Nuclear Medicine  
In 2010, Robert Flavell received his medical degree from Weill Cornell Medical College in New York, and his PhD from the Rockefeller University, New York, as part of the Tri-Institutional MD-PhD program. In 2011, he completed a one-year internship at the Memorial Sloan Kettering Cancer Center in New York. He finished his four-year Diagnostic Radiology residency at UCSF in 2015. At UCSF, he received the department’s T32 research training grant, enabling him to perform research on new PET and hyperpolarized 13C tracer development. His primary areas of interest include molecular and PET imaging, prostate cancer, nuclear medicine, and radiochemistry. He completed a clinical fellowship in Nuclear Medicine in 2016. In July 2016, Flavell accepted an assistant professor in residence position in Nuclear Medicine at UCSF.

Ryan Kohlbrenner, MD  
Assistant Professor of Clinical Radiology  
Interventional Radiology, UCSF Parnassus, Mission Bay, and Mount Zion campuses  
In 2010, Ryan Kohlbrenner obtained his medical degree from the University of Chicago Pritzker School of Medicine in Illinois. He then completed a one-year internship at Washington University, St. Louis/Barnes–Jewish Hospital, Missouri. In 2015, Kohlbrenner completed his four-year Diagnostic Radiology residency at UCSF, serving as chief resident in 2014–2015. The following year, he completed an Interventional Radiology fellowship at UCSF. His primary research interests include computer-aided diagnosis, image processing, and radiation dose reduction for patients undergoing interventional procedures. His clinical interests include percutaneous liver and kidney ablations, prostate artery embolization for benign prostatic hyperplasia, and transarterial interventions for hepatocellular carcinoma and liver metastases. In June 2016, Kohlbrenner accepted an assistant professor position in Interventional Radiology at UCSF.
Jared Narvid, MD
Assistant Professor of Clinical Radiology
Neuroradiology Radiology, UCSF and ZSFG

Jared Narvid received his medical degree from UCSF in 2007, followed by a one-year internship at St. Mary’s Hospital in San Francisco the following year. He completed a four-year Diagnostic Radiology residency at Stanford University in 2012 and Diagnostic and Interventional Neuroradiology fellowships at UCSF in 2016. Narvid directs the neuroradiology spine clinic at Zuckerberg San Francisco General. His research evaluates the impact of cerebrovascular disease and neuro-HIV on cognition. In March 2016, Narvid accepted an assistant professor position in the Neuroradiology section at UCSF and ZSFG.

Ramya Srinivasan, MD
Assistant Professor of Clinical Radiology
Musculoskeletal Radiology, UCSF and VAMC

In 2010, Ramya Srinivasan obtained her medical degree from New York University School of Medicine, New York. She did a one-year internship in Internal Medicine at UCSF Fresno the following year. Srinivasan completed a four-year Diagnostic Radiology residency at the Albert Einstein College of Medicine, Jacobi Medical Center in New York in 2015. She followed that with a Musculoskeletal Imaging fellowship at UCSF. Her interests include providing first-class clinical care to the veteran and UCSF patient population, educating the next generation of radiologists, and advancing the field of musculoskeletal imaging. In July 2016, Srinivasan accepted an assistant professor of clinical radiology position in Musculoskeletal Imaging and General Radiology at UCSF and the VAMC.
Education Leadership Advances

“Congratulations to Soonmee Cha and David Naeger, our first vice-chair for Education and our new associate chair for Education, respectively” said Chairman Ron Arenson, MD, in announcing two new leadership appointments. “I am very proud of all of our education programs and know that our future plans are in excellent hands.”

Soonmee Cha, MD

“In addition to continuing as the Program Director for our residency program and overseeing fellowships, Soonmee plans to create educational programs for our technical staff, referring physicians, and patients, dovetailing nicely with our goal to strengthen our patient-centered focus,” Arenson noted.

Cha has been director of the Diagnostic Radiology residency program, ranked #1 in the country, since 2012. She received her MD from Georgetown University. She completed her Radiology residency at the North Shore University Hospital at Cornell University. She then joined the New York University School of Medicine as a Neuroradiology Fellow. She came to UCSF as an assistant professor, and became a professor in residence in 2011.

David M. Naeger, MD

“As associate chair for Education, David will oversee continuing medical education and medical student education,” said Arenson. “He will also work with Dr. Susan Wall to promote faculty development.” Naeger will continue in his role as co-director of the Henry I. Goldberg Center for Advanced Imaging Education.

Naeger received his medical degree from Duke University School of Medicine in Durham, NC. Naeger completed a diagnostic radiology residency at UCSF, serving as a chief resident, and received the department’s T32 Training grant. After completing his residency in 2010, Naeger did a fellowship in both Cardiac and Pulmonary Imaging and Nuclear Medicine. He was inducted into the Haile T. Debas Academy of Medical Educators in 2014 in recognition of his substantial contributions to medical education. In 2015, Naeger received the UCSF Academic Senate Distinction in Teaching award, given to only two UCSF faculty members per year across the entire institution. Naeger joined the UCSF faculty as an assistant professor in 2011 and is currently an associate professor.
Operations Directorship Changes

In June 2016, Kathy Knoerl, who served since 1998 as operations director for Radiology in the UCSF Medical Center, left the department to relocate to Texas. Knoerl received the UCSF Medical Center Pride Award in 2006 and was named “most effective Radiology Administrator/Manager” by Auntminnie.com in 2012. She was acknowledged by Chairman Ron Arenson, MD, for her “extraordinary dedication to exemplary patient care, positive nature and constant professionalism” during her 18 years in the department.

Knoerl was succeeded in August 2016 by David Sostarich, MBA, BSRT. “David comes to us after having served in this same capacity at Zuckerberg San Francisco General Hospital and Trauma Center since 2011,” noted Arenson. “He has more than 25 years’ experience in health care management in both academic and community settings. We are very excited to have David on board.”

Originally from Missouri, Sostarich earned a Bachelors of Science in Radiology Technology at Creighton University and a Masters in Business Administration from Baker University. Prior to serving as Radiology administrative director at ZSFG, he held management positions at El Camino Hospitals in California, UPMC in Pittsburgh, PA, and in Kansas at Lawrence Memorial Hospital, Truman Medical Centers, and the University of Kansas Medical Center.
Mary Bobel Joins Department as Chief Administrative Officer

Mary Bobel, MBA, became the chief administrative officer for the Department of Radiology and Biomedical Imaging and the Department of Otolaryngology-Head and Neck Surgery at UCSF in December 2015, following a national search for the position.

“Mary has outstanding experience in large institutional academic settings, having served as the director of finance and administration at Stanford University’s School of Medicine and as the executive director of Radiology at the University of Chicago’s Pritzker School of Medicine,” said Chair Ron Arenson, MD. “At Stanford, Mary also worked within the Office of Institutional Planning.”

Bobel earned her undergraduate, MA and MBA degrees from Stanford University. Prior to her academic experience, she worked in the tech industry in Northern California at Achieva, Genus, Adobe, and Wells Fargo among others.

“Mary has been an important addition to our leadership team as we continue our outstanding clinical, research, and educational programs and initiatives,” noted Arenson.
Susan O’Hara, MPA, Receives Chancellor’s Award for Exceptional University Management

Susan O’Hara, MPA, the chief financial officer for the Department of Radiology and Biomedical Imaging was a 2016 recipient of the UCSF Chancellor’s Award for Exceptional University Management. At the Founder’s Day Luncheon in May 2016, Mary Bobel, chief administrative officer for the Department of Radiology and Biomedical Imaging praised O’Hara’s “strong commitment to our department and to UCSF as a whole.”

O’Hara, who has been in Radiology and Biomedical Imaging for 18 years, leads a staff of 19 handling strategic financial planning, budgets, reporting, research administration, purchasing, reimbursements and audit oversight. Along with her crucial role overseeing all management aspects of the department’s finances, O’Hara has been a mentor and a supporter of development opportunities of her staff.

Prior to her current position, O’Hara served as director, Program and Budget Planning at UC Davis from 1995–98, and was responsible for a campus-wide annual operating budget of $1 billion. From 1984–95, she was the director of Budget and Human Resources in the UCSF School of Dentistry. Her career began in Washington, DC, as a Presidential Management Intern and budget analyst in the Office of Management and Budget. O’Hara received her MPA from Princeton University in New Jersey.
Honors and Awards

Ronald L. Arenson, MD
- Honorary Member, European Society of Radiology, 2016

A. James Barkovich, MD
- Named Top Doctor 2016, San Francisco Magazine

Matthew Bucknor, MD
- Chair, Diversity and Inclusion Committee, UCSF Radiology and Biomedical Imaging, 2016
- Invited Lecturer, MSK Applications of MRgHIFU, National Medical Association, August 2016
- Reviewer, Radiology

Soonmee Cha, MD
- Named Top Doctor 2016, San Francisco Magazine
- Appointed vice chair, Education, UCSF Radiology and Biomedical Imaging

Linda Chao, PhD
- Promoted to professor

Jesse Courtier, MD
- Recipient, Hideyo Minagi Teaching Award, 2016
- RSNA Certificate of Merit for educational exhibit, “Pediatric Renal Transplant Biopsies”
- RSNA Certificate of Merit for educational exhibit, “Pediatric Foreign Bodies”
- Promoted to associate professor

William P. Dillon, MD
- Lecturer, 13th Annual Robert A. Fishman Annual Visiting Professor Lecture
- Recipient, Radiology Award for Outstanding Faculty Mentoring, UCSF Department of Radiology and Biomedical Imaging, June 2016
- Named Top Doctor 2016, San Francisco Magazine

Robert Flavell, MD, PhD
- Recipient, Surbeck Scholar award, second place, May 2016
- Oral Presentation, 2016 RSNA
- Invited Speaker, Society of Nuclear Medicine and Molecular Imaging Annual Meeting, 2016

Alisa Gean, MD
- Second Place Fundraiser, AVON 39 The Walk to End Breast Cancer

Christine Glastonbury, MBBS
- Elected, Nominating Committee, American Society of Neuroradiology
- Named Top Doctor 2016, San Francisco Magazine

Thomas Hope, MD, PhD was the 2016 recipient of the Society of Nuclear Medicine and Molecular Imaging’s Marc Tetalman Memorial Award. The award honors the research accomplishments of a young investigator pursuing a career in nuclear medicine.
Jeanne M. Laberge, MD will receive the Society of Interventional Radiology's highest honor, its Gold Medal, on March 5, 2017. It is awarded not only for extraordinary service to SIR but to those who have ensured the future of interventional radiology by advancing the quality of medicine and patient care.

Ursula Heilmeier, PhD
- American Society for Bone and Mineral Research Young Investigator Award, 2016

Christopher P. Hess, MD
- Promoted to professor
- Visiting professor, Brigham and Women’s Hospital, Boston, MA, February 2016; Massachusetts General Hospital, Boston, MA, February, 2016; Case Center for Imaging Research, Cleveland, OH, April 2016; New York University, June 2016
- Editorial Board, American Journal of Neuroradiology
- Speaker, Grand Rounds, UCSF Radiology and Biomedical Imaging, “Parallel Imaging and Compressed Sensing Fast MR Imaging”, June 2016
- Neuroradiology Chair, Refresher Course Committee, Radiological Society of North America
- Chair, Diffusion Study Group, International Society for Magnetic Resonance in Medicine

Steven Hetts, MD, PhD
- Nominee, Best Medical Device Startup Company, Chemofilter, First Annual QB3 Awards Competition, 2015
- Fellow, Rosenman Institute for Medical Device Innovation, 2015

Peder Larson, PhD (left) presents the 2016 Bruce Hasegawa Award for Excellence in Biomedical Imaging to Llewelyn (Trey) Jalbert, PhD, (right) a postdoctoral fellow in the Surbeck Laboratory. Jalbert earned a BS in Astrophysics at UC Berkeley, and a PhD from the UCSF/UC Berkeley joint program in Bioengineering. Jalbert is using magnetic resonance imaging to study malignant gliomas and physics techniques to develop new imaging methods for clinical use.

- Chair, Clinical Neurophysiology, Devices, Neuroprosthetics, and Biosensors Small Business Special Emphasis Panel Study Section, Center for Scientific Review, National Institutes of Health, 2016
- Visiting Lecturer, “CT as the Modality of Choice for Workup of Acute Ischemic Stroke,” International Endovascular Stroke Conference, Gold Coast, Australia, 2015
- Excellence in Medical Student Teaching Award, UCSF Radiology and Biomedical Imaging, June 2016

Randall Higashida, MD
- Named Top Doctor 2016, San Francisco Magazine

Thomas Hope, MD
- Marc Tetalman Award, Society of Nuclear Medicine and Molecular Imaging, June 2016
ASBMR President, Douglas Kiel, MD, MPH, presents Dr. Ursula Hellmeyer with the Young Investigator Award for her research on diabetic bone disease.

Llewellyn (Trey) Jalbert, PhD
- Bruce Hasegawa Award for Excellence in Biomedical Imaging, UCSF Radiology and Biomedical Imaging

Bonnie N. Joe, MD, PhD
- Chair, University Radiation Safety Committee, May 2016
- Chair, UCSF Radioactive Drug Research Committee, May 2016
- Breast Imaging Commission Communications Committee, American College of Radiology, 2016
- Plenary Speaker, "Imaging and Management of the Axilla," SBI/ACR Breast Imaging Symposium, April 2016

Robert K. Kerlan, Jr., MD
- Elected president of UCSF Medical Staff, 2016
- Named Top Doctor 2016, San Francisco Magazine
- Reviewer for Radiology, Journal of Vascular and Interventional Radiology, Cardiovascular and Interventional Radiology

Maureen Kohi, MD
- Promoted to associate professor

Vishal Kumar, MD
- Recipient, Haile T. Debas Academy of Medical Educators Excellence in Teaching Award

Thomas F. Lang, PhD, the School of Dentistry’s associate dean for Research has been named to the Presidential Chair of Dental Research. The position was created with a generous donation to the School of Dentistry and matching funds from the UC Office of the President. Lang will hold the position in conjunction with his appointment as professor in the Department of Radiology and Biomedical Imaging in the School of Medicine. The presidential chair is responsible for funding scientific lectures and presentations, and promoting School of Dentistry scientific research for students and faculty, as well as summer fellowships for students. Lang received his BA in Chemistry from the University of Chicago in 1983 and his PhD in Chemistry from University of California, Berkeley in 1990. He joined UCSF’s Department of Radiology and Biomedical Imaging as a faculty member following his UCSF postdoctoral fellowship in Radiology Imaging in 1992. The focus of Lang’s Research is the development of quantitative analytic methods to better the understanding of osteoporosis and sarcopenia.

Jeanne M. LaBerge, MD
- Recipient, Outstanding Alumnus Award, UCSF Radiology and Biomedical Imaging
- Recipient, UCSF Excellence and Innovation in Graduate Medical Education Award
- Named Top Doctor 2016, San Francisco Magazine

Thomas F. Lang, PhD
- Named to Presidential Chair of Dental Research

Peder Larson, PhD
- Promoted to associate professor
Cindy Lee, MD
- Selected for RSNA press release highlighting her research on Current Era Screening Mammography Outcomes from the National Mammography Database, 2016
- Appointed to RSNA RadLex Breast Subcommittee 2016–2019
- Abstract Reviewer, Quality Storyboards, RSNA Annual Meeting, 2016
- Program Chair and Executive Board Member, American College of Medical Quality, 2016–2018
- Lecturer, Asian-Pacific Quality and Safety Forum on Medical Imaging, Taipei, Taiwan, November 2015
- Visiting Lecturer, Wan Fang Hospital, Taipei Medical University, Taiwan, 2015
- Editorial board member, Journal of Radiology and Imaging
- Education Exhibit, RSNA 2015
- Poster Exhibit, American College of Medical Quality 2016

Evan Lehrman, MD
- Recipient, Haile T. Debas Academy of Medical Educators Excellence in Teaching Award

Thomas M. Link, MD, PhD
- Named Distinguished Investigator, Academy of Radiology Research, 2016, RSNA
- Editor-in-Chief, Current Radiology Reports
- Associate Editor, Radiology
- Editorial Board, American Journal of Roentgenology, Osteoarthritis and Cartilage, Skeletal Radiology
- Head, Musculoskeletal section of the Scientific Editorial Board of European Radiology

Sharmila Majumdar PhD
- Gold Medal, International Society for Magnetic Resonance in Medicine, May 2016

John Mongan, MD, PhD
- Appointed vice chair for Informatics

David M. Naeger, MD
- Appointed associate vice chair, Education, UCSF Radiology and Biomedical Imaging
- Clinical Immersion Experience Pilot Awardee, UCSF Bridges Curriculum Redesign

Sujal Nanavati, MD
- Robert J. Lull MD award for Outstanding Hospital Consultant, ZSFG 2016

Liina Poder, MD
- Promoted to professor

Sharmila Majumdar, PhD, was awarded the Gold Medal of the International Society for Magnetic Resonance in Medicine in May 2016, for her innovative contributions to the development of quantitative imaging methods. “Dr. Majumdar has been a leader in MRI for 30 years and has in particular pioneered the development and applications of quantitative imaging to diagnose and understand musculoskeletal disorders,” said her nominator, John C. Gore, PhD, professor of Radiology and Radiologic Sciences and Director of the Institute for Imaging Sciences at Vanderbilt University School of Medicine. “Her work has had broad translational impact on the clinical management of common problems of joints and cartilage.”

Elissa Price, MD
- Elected Fellow, Society of Breast Imaging, April 2016

Bhavya Rehani, MD
- Presenter, UCSF Radiology and Biomedical Imaging, Grand Rounds “The Future of Global Health Imaging Utilizing Innovation and Technology,” August 16, 2016
- Founder, Radiology Interest Group, Consortium of Universities for Global Health

Sabrina Ronen, PhD
- Senior Fellow, International Society for Magnetic Resonance in Medicine, 2016

Ramin Saket, MD
- Recipient, Outstanding Clinical Faculty Award, UCSF Radiology and Biomedical Imaging

David Saloner, PhD
Sujal Nanavati, MD, received the Robert Lull Award for his excellence in teaching and dedication to providing exceptional patient care. The Lull Award is granted annually by the ZSFG Department of Internal Medicine to the hospital’s “Most Outstanding Consultant.”

Youngho Seo, PhD
- Distinguished Investigator Award, Academy of Radiology Research, RSNA, 2016

John Shepherd, PhD
- President, International Society for Clinical Densitometry
- Promoted to adjunct professor

Lynne Steinbach, MD
- Named Top Doctor 2016, San Francisco Magazine
- Lifetime Volunteer Service Award, American Board of Radiology, Fall 2015
- Arthur A DeSmet MD Visiting Professor, University of Wisconsin, Madison, WI, November 2015
- Visiting Professor Grand Rounds, September 2015, Memorial Sloan Kettering, New York, NY
- Presenter, Pitfalls in Knee MR, RSNA, November 2015
- Consulting Editor, MR Clinics

Lori Strachowski, MD
- John H. Harris Visiting Professor lecturer, University of Texas, Houston, September 2016

Jason Talbott, MD
- Recipient, Haile T. Debas Academy of Medical Educators Excellence in Teaching Award

Duygu Tosun-Turgut, PhD
- Appointed co-director, Center for Imaging of Neurodegenerative Diseases

Henry VanBrocklin, PhD
- Plenary Lecture, Korean Society of Radiopharmaceuticals and Molecular Probes, Seoul, South Korea, April 2016
- Editor in Chief, Molecular Imaging
- President, Society of Radiopharmaceutical Sciences, May 2015–May 2017

Susan Wall, MD
- Chair, UCSF Academic Senate Privilege and Tenure Committee, 2016

W. Richard Webb, MD
- Nestor Mulier Lecture and Professorship, University of British Columbia, April 2016

Duan Xu, PhD
- Distinguished Investigator, Academy of Radiology Research, RSNA, 2016

Judy Yee, MD
- President, Society of Abdominal Radiology, 2015–2016
- Chair, American College of Radiology Colon Cancer Committee
- Chair, UCSF Personalized Mentoring and Promotion Committee
- Editors Recognition Award for Reviewing with Distinction, Radiology, 2015
- Lectureships, Turkish Congress of Radiology, 2015
- Chair, SAR IEC, Radiologic Society of South Africa
- Visiting Professor, Schulich School of Medicine, London, Canada and Memorial Sloan Kettering School of Medicine, NY

Benjamin M. Yeh, MD
- Named Top Doctor 2016, San Francisco Magazine

Ronald Zagoria, MD
- Named Top Doctor 2016, San Francisco Magazine
- Appointed, Board of Directors, American Institute of Radiologic Pathology
- Editor-in-Chief and Chair of Editorial Board, Emergency Radiology

Xiaoliang Zhang, MD
- Elected President, Overseas Chinese Society for Magnetic Resonance in Medicine, 2015
- Invited Speaker, International Symposium on Frontiers of Magnetic Resonance
- Outstanding Teaching Award, Paul C. Lauterbur Research Center for Biomedical Imaging, Chinese Academy of Sciences
Excellence and Advancements Highlight Diagnostic Radiology Residency

Soonmee Cha, MD

Our residency program and residents had another year filled with great accomplishments and progress. In addition to their clinical, research and academic responsibilities, many of our residents have received recognition at a national level and continue to excel at their studies. For the fourth year in a row, our class of third-year residents passed their CORE exams with exceptional marks. We have firmly established the groundwork for preparation of the new CORE curriculum, new board system, and Milestones project—all now integrated into the residency program.

In May 2016, our new Zuckerberg San Francisco General (ZSFG) Hospital opened. With the help of many, the transition of our residents to the new hospital has been smooth and seamless. Drs. Jason Talbott and Mark Wilson have done an incredible job supporting and implementing the needs of our residents and residency program throughout the transition process. Their dedication to teaching and advocacy for residents is second to none and our residents benefited from their meticulous attention to detail in preparing the new reading rooms and call room at ZSFG.

Our two residency coordinators, Sandria Wong (program) and Cindy Flores Gaytan (education), continue to do an outstanding job overseeing the administrative aspects of our program and supporting the infrastructure and curriculum scheduling, respectively. Both work as an incredible team improving the work and training of our residents.

In September 2015, our residency program was once again ranked number one in the country by a peer review process evaluating more than 50,000 nominations submitted by board-certified physicians to U.S. News & World Report and Doximity. It takes a village to train the best and the brightest residents who will be the next leaders, innovators, and educators of our specialty. In our program, we are fortunate to have many people who take pride and ownership of this village to guide and support our outstanding residents.

In conclusion I would like to thank the three past chief residents—Eric Ehman, MD, Hriday Shah, MD, and Javier Villanueva-Meyer, MD—for their outstanding leadership and contributions. They worked tirelessly by my side to improve our program curriculum and the residency experience for our residents. Our current chiefs—Luis Gutierrez, MD, Spencer Lake, MD, and Zhixi Li, MD—have come on board enthusiastic to continue the great track record set by the graduating chief residents. I look forward to working with them in the coming year. I am truly blessed to work with and for the best radiology residents in the country.

Resident Accomplishments

Awards:

Vignesh Arasu, MD: Imaging Spectrum of Breast Cancer Metastases and Patterns of Metastatic Spread, Certificate of Merit, RSNA 2015
Lindsay Busby, MD, MPH: “Wood” You Find It?: Pearls and Pitfalls in Imaging of Common Radiolucent and “Can’t Miss” Pediatric Foreign Bodies, Certificate of Merit, RSNA 2015
Kevin Connolly, MD: UCSF Julius Krevans Award for Clinical Excellence, 2016
Adam Coy, MD: First Place, Golden Gate Half Marathon, 2016
Eric C. Ehman, MD: Roentgen Resident Research Award, 2016
Kirema Garcia-Hayes, MD: ZSFG Julias Krevans Award 2016, presented to outstanding first year resident
Kimberly G. Kallianos, MD: Margulis Society Resident Research Award, 2016; Certificate of Merit, Cardiac Imaging Applications for Electrophysiology, RSNA 2015
Yi Li, MD: Margulis Society Resident Research Award, 2016
Zhixi Li, MD: Certificate of Merit, “Wood” You Find It? Pearls and Pitfalls in Imaging of Common Radiolucent and “Can’t Miss” Pediatric Foreign Bodies, RSNA 2015
Hugh C. McGregor, MD: RSNA Resident Research Prize, 2015
Javier Villanueva-Meyer, MD, UCSF Radiology and Biomedical Imaging, Elmer Ng Award for Outstanding Resident, 2016

Service:
Lindsay Busby, MD, MPH: Member, RISE, 2015
Maureen Chapman, MD: Member, San Francisco Medical Society, 2015
Adam Coy, MD: Member, San Francisco Medical Society, 2015; Member, UCSF School of Medicine Dean’s Office Communication Advisory Board, 2016
Luis Gutierrez, MD: Chief Resident, 2016–2017; PGY5 Margulis Society Resident Representative, Department Representative, Radiology and Biomedical Imaging Booth, Bay Area Science Festival 2016
Michael Heller, MD: Resident Liaison, Medical Student Education Committee, 2016
Brandon Ishaque, MD: UCSF Radiation Protection Committee, Radiology Representative, 2016; UCSF Resident and Fellows’ Council, Radiology Representative 2016
Eric Jordan, MD: Member, RSNA Public Information Committee; ZSFG Committee of Interns and Residents, Radiology Representative
Yilun Koethe, MD: Member, San Francisco Medical Society, 2015
Russell Kelley, MD: PGY4 Margulis Society Resident Representative
Benjamin Laguna, MD: PGY3 Margulis Society Resident Representative, Scientific Volunteer, UCSF Radiology and Biomedical Imaging Exhibit, Bay Area Science Festival, 2015
Spencer Lake, MD: Chief Resident, 2016–2017; Resident Liaison, Medical Student Education Committee, 2016

Grants:
Matthew Barkovich, MD: Margulis Society Research Grant, 2016
Eric Jordon, MD: RSNA Student Travel Grant
Zhixi Li, MD: RSNA/AUR/ARRS Introduction to Academic Radiology Program Grant, 2016
Hari Trivedi, MD: NIH-T-32 Training Grant, UCSF
PGY-2 Residents: Class of 2020

Katherine Bruksch, MD
2015–2016 PGY1, MacNeal Hospital, Berwyn, IL
MD 2015 Feinberg School of Medicine, Chicago, IL
Honors and Awards:
2013 Merit Certificate for RSNA Exhibit
2011 Phi Beta Kappa
Research:
2014–2015 Society of Interventional Radiology Medical Student Council
2014–2015 Northwestern Memorial Hospital, Memory Mapping Project, Chicago, IL
2012 Rehabilitation Institute of Chicago, Bone Health Assessment Project, Chicago, IL

Mithun Diwakar, MD, PhD
2015–2016 PGY1, Harbor-UCLA Medical Center
MD 2015 University of California, San Diego
PhD 2011 University of California, San Diego
Honors and Awards:
2015 Senior Student Award, University of California, San Diego, Department of Radiology
2007 NIH Summer Training Grant, University of California, San Diego
Selected Publications:


James Frencher, MD, PhD
2015–2016 PGY1, Mount Sinai Hospital, New York, NY
MD 2015 University of Illinois College of Medicine, Chicago
PhD 2015 University of Illinois College of Medicine, Chicago
MS 2008 University of Michigan, Ann Arbor
Honors and Awards:
2015 Urban Health Program Outstanding Peer Educator Award, University of Illinois, Chicago
2014 Urban Health Program Jose Celso Barbosa Scholarship Award, University of Illinois, Chicago
2011 Gold Prize Winner, Research Day, University of Illinois, Chicago
Selected Publications:
Shen H, Wang Y, Chen CY, Frencher J, Huang D, Yang E, Ryan-Payseur B, Chen ZW. Th17-related Cytokines...


Robert Hicks, MD
2015–2016 PGY1, Scripps Mercy Hospital, San Diego, CA
MD 2015 Albert Einstein College of Medicine, Bronx, NY
Honors and Awards:
2014 Alpha Omega Alpha
Research:
2014–2016 Abdominal Radiology
VAMC, UCSF
2014–2016 Abdominal Radiology, Ronald Reagan Medical Center, ULCA
Selected Publications:

Jessica Hightower, MD
2015–2016 PGY1, Santa Clara Valley Medical Center, San Jose, CA
MD 2015 University of Pennsylvania, Perelman School of Medicine, Philadelphia
Honors and Awards:
2014–2015 Interventional Radiology, Hospital for Special Surgery, New York, NY
Selected Publications:

Selected Publications:


Jonathan Jo, MD
2015–2016 PGY1, St. Vincent’s Medical Center, Bridgeport, CT
MD 2015 Weill Cornell Medical College. New York, NY
Honors and Awards:
2008 Tau Beta Pi: National Engineering Honor Society
Research:
2013–2014 Research Fellow, Hospital for Special Surgery, New York, NY
Selected Publications:
Kathleen Kinzer, MD
2015–2016  PGY1, Presence Resurrection Medical Center, Chicago, IL
MD 2015  University of Illinois College of Medicine, Chicago
Research:
2009–2011  Islet Transplantation Lab, University of Illinois, Chicago
Selected Publications:

Ryan Navarro, MD, MS
2015–2016  PGY1, Saint Mary’s Medical Center, San Francisco, CA
MD 2015  Georgetown University School of Medicine, Washington, DC
MS 2011  Georgetown University School of Medicine, Washington, DC
Honors and Awards:
2014  Alpha Omega Alpha
Research:
2013–2015  Department of Infectious Disease, Georgetown University Medical Center, Washington, DC
Selected Publications:

Kesav Raghavan, MD
2015–2016  PGY1, Kaiser Permanente, San Francisco, CA
MD 2015  Harvard Medical School, Boston, MA
Honors and Awards:
2012  Medical Student Research Scholar, Foundation for Consortium of Multiple Sclerosis Centers
Research:
2014–2015  Stanford University School of Medicine, CA, Department of Radiology
2012-2015  Partners Multiple Sclerosis Center, Brigham and Women’s Hospital, Boston, MA
Selected Publications:
Jae Ho Sohn, MD, MS
2015–2016 PGY1, Santa Clara Valley Medical Center, San Jose, CA
MD 2015 Geisel School of Medicine at Dartmouth, Hanover, NH
MS 2010 Johns Hopkins University, Baltimore, MD
Honors and Awards:
2011 Certificate of Merit Award, Radiology Society of North America
Research:
2014–2015 Johns Hopkins Hospital, Baltimore, MD, Department of Radiology
Selected Publications:

Maya Vella, MD
2015–2016 PGY1, California Pacific Medical Center, San Francisco
MD 2015 University of California, San Francisco
Honors and Awards:
2011–2015 Regent’s Scholarship, UCSF
Research:
2012–2016 UCSF Department of Radiology and Biomedical Imaging
Selected Publications:

Daniel Treister, MD
2015–2016 PGY1, Huntington Memorial Hospital, Pasadena, CA
MD 2015 Keck School of Medicine—University of Southern California, Los Angeles
Honors and Awards:
2015 Alpha Omega Alpha
Research:
2013–2016 University of Southern California, Department of Neuroradiology
Selected Publications:

Daniel Treister, MD
2015–2016 PGY1, Huntington Memorial Hospital, Pasadena, CA
MD 2015 Keck School of Medicine—University of Southern California, Los Angeles
Honors and Awards:
2015 Alpha Omega Alpha
Research:
2013–2016 University of Southern California, Department of Neuroradiology
Selected Publications:

Maya Vella, MD
2015–2016 PGY1, California Pacific Medical Center, San Francisco
MD 2015 University of California, San Francisco
Honors and Awards:
2011–2015 Regent’s Scholarship, UCSF
Research:
2012–2016 UCSF Department of Radiology and Biomedical Imaging
Selected Publications:
Shrilakshma Vyas, MD
2015–2016 PGY1, Kaiser Permanente, Santa Clara, CA
MD 2015 Duke University School of Medicine, Durham, NC
Honors and Awards:
2014 RSNA Medical Student Grant
2007 National Merit Scholarship
Research:
2013–2016 Duke University School of Medicine, Radiology Department
2008–2011 University of California, Berkeley, Department of Molecular and Cell Biology, Neuroscience
Selected Publications:

Alexandra Wright, MD
2015–2016 PGY1, MedStar Harbor Hospital, Baltimore, MD
MD 2015 University of Maryland School of Medicine, Baltimore, MD
Honors and Awards:
2014 Alpha Omega Alpha
2014 Gold Humanism Honors Society, University of Maryland School of Medicine
Research:
2010–2011 Johns Hopkins Hospital, Department of Neurology, Movement Disorders Center, Baltimore MD
Selected Publications:
Diagnostic Radiology Residents: 2016–2017

**Second-Year Residents (PGY3)**
- Colin Burke, MD
- Andrew Callen, MD
- Maureen (Molly) Chapman, MD
- John Colby, MD, PhD
- Adam Coy, MD
- Kirema Garcia-Reyes, MD
- Yilun Koethe, MD
- Benjamin Laguna, MD
- Courtney Lawhn Heath, MD
- Aaron Losey, MD, MS
- Bryce Merritt, MD
- Ashley Oladipo, MD
- Yujie Qiao, MD
- Adam Schwertner, MD

**Third-Year Residents (PGY4)**
- Matthew Barkovich, MD
- Lindsay Busby, MD, MPH
- Kevin Connolly, MD
- Ason Curtis, MD
- Emily Edwards, MD
- Michael Heller, MD
- Neeta Kannan, MD
- Russell Kelley, MD
- Mai Le, MD
- Joseph Leach, MD, PhD
- Patrick Mulligan, MD
- Adi Price, MD
- Daniel Sonshine, MD

**Fourth-Year Residents (PGY5)**
- Deddeh Ballah, MD
- Micky Cabarrus, MD
- Billy Carson, MD
- Kavi Devulapalli, MD
- Luis Gutierrez, MD
- Daniel Hendry, MD
- Michael Holmes, MD
- Brandon Ishaque, MD
- Eric Jordan, MD
- Spencer Lake, MD
- Zhixi Li, MD
- Hari Trivedi, MD
- Vanja Varenika, MD
- Jennifer Wan, MD
Radiology Residency Graduates: Class of 2016

Congratulations to our 2016 graduates. We wish them success in their new fellowship positions.

Residents in Diagnostic Radiology

Mariam S. Aboian, MD, PhD
Fellowship, Neuroradiology, UCSF

Vignesh A. Arasu, MD
Fellowship, Abdominal Imaging/Breast Imaging, UCSF

Eric C. Ehman, MD
Fellowship, Gastrointestinal/Genitourinary Imaging, Mayo Clinic, Rochester, MN

Kimberly G. Kallianos, MD
Fellowship, Cardiac and Pulmonary Imaging, UCSF

Rahi J. Kumar, MD
Fellowship, Abdominal Imaging/Breast Imaging, UCSF

Yi Li, MD
Fellowship, Neuroradiology, UCSF

Scott R. Mahanty, MD
Fellowship, Musculoskeletal Radiology, New York University, NY

Hugh C. J. McGregor, MD
Fellowship, Vascular Interventional Radiology, UCSF

Christopher A. Mutch, MD, PhD
Fellowship, Neuroradiology, UCSF

Hriday Shah, MD
Fellowship, Vascular Interventional Radiology, UCSF

Christopher J. Starr, MD, PhD
Fellowship, Neuroradiology, UCSF

Javier Villanueva-Meyer, MD
Fellowship, Neuroradiology, UCSF

Genevieve A. Woodard, MD, PhD
Fellowship, Breast Imaging, UCSF

Melinda Jean Yeh, MD
Fellowship, Abdominal Imaging/Breast Imaging, UCSF

Resident in Nuclear Medicine

Lorenzo Nardo, MD
MD University of Brescia, Italy
Fellowship, Oncological Imaging, Memorial Sloan Kettering Cancer Center, New York, NY

(1–r) Graduating Nuclear Medicine Resident
Lorenzo Nardo, MD with graduating Nuclear Medicine Fellow Robert Flavell, MD, PhD

2016 Diagnostic Radiology Residency Graduates (l–r back row) Hriday Shah, MD, Javier Villanueva-Meyer, MD, Christopher Mutch, MD, PhD, Eric Ehman, MD, Hugh McGregor, MD, Scott Mahanty, MD, Chair, Ron Arenson, MD (l–r front row) Residency Director Soonmee Cha, MD, Jean Yeh, MD, Kimberly Kallianos, MD, Genevieve Woodard, MD, PhD, Raji Kumar, MD, Yi Li, MD, Mariam Aboian, MD, PhD, Vignesh Arasu, MD
### Clinical Fellows:

<table>
<thead>
<tr>
<th>Name</th>
<th>Specialty/Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mariam Aboian, MD, PhD</td>
<td>Neuroradiology/T32</td>
</tr>
<tr>
<td>Fouad Al Adel, MBBS</td>
<td>Abdominal Imaging</td>
</tr>
<tr>
<td>Matthew Alexander, MD</td>
<td>Neurointervention</td>
</tr>
<tr>
<td>Vignesh Arasu, MD</td>
<td>Abdominal Imaging/Breast Imaging</td>
</tr>
<tr>
<td>Jeffrey Bonham, MD</td>
<td>Musculoskeletal</td>
</tr>
<tr>
<td>Amy Chen, MD</td>
<td>Neuroradiology</td>
</tr>
<tr>
<td>Henry Chow, DO</td>
<td>Abdominal Imaging</td>
</tr>
<tr>
<td>Michael Coords, MD</td>
<td>Musculoskeletal</td>
</tr>
<tr>
<td>Naznin Daginawala, MD</td>
<td>Ultrasound/Breast Imaging</td>
</tr>
<tr>
<td>Robert Darflinger, MD</td>
<td>Neuroradiology</td>
</tr>
<tr>
<td>Elliot Dickerson, MD</td>
<td>Neuroradiology</td>
</tr>
<tr>
<td>Paul Haste, MD</td>
<td>Interventional</td>
</tr>
<tr>
<td>Nicole Hughes, MD</td>
<td>Pediatrics</td>
</tr>
<tr>
<td>Eugene Huo, MD</td>
<td>Abdominal Imaging</td>
</tr>
<tr>
<td>Kimberly Kallianos, MD</td>
<td>Cardiac and Pulmonary Imaging</td>
</tr>
<tr>
<td>Ari Kane, MD</td>
<td>Neuroradiology</td>
</tr>
<tr>
<td>Kambrle Kato, MD</td>
<td>Pediatrics</td>
</tr>
<tr>
<td>William Kerridge, MD</td>
<td>Abdominal Imaging</td>
</tr>
<tr>
<td>Clark Kholeif, MD</td>
<td>Abdominal Imaging</td>
</tr>
<tr>
<td>Donald Kim, DO</td>
<td>Abdominal Imaging/Ultrasound</td>
</tr>
<tr>
<td>Jane Kim, MD</td>
<td>Ultrasound/Breast Imaging</td>
</tr>
<tr>
<td>Anna Knobel, MD</td>
<td>Breast Imaging</td>
</tr>
<tr>
<td>Rahi Kumar, MD</td>
<td>Abdominal Imaging/Breast Imaging</td>
</tr>
<tr>
<td>Jennifer Lee, MD</td>
<td>Abdominal Imaging</td>
</tr>
<tr>
<td>Kristen Lee, MD</td>
<td>Interventional</td>
</tr>
<tr>
<td>Nicholas Leslein, MD</td>
<td>Abdominal Imaging</td>
</tr>
<tr>
<td>Yi Li, MD</td>
<td>Neuroradiology</td>
</tr>
<tr>
<td>Zachary Liner, MD</td>
<td>Neurointervention</td>
</tr>
<tr>
<td>Hugh McGregor, MD</td>
<td>Interventional</td>
</tr>
<tr>
<td>Christopher Mutch, MD, PhD</td>
<td>Neuroradiology</td>
</tr>
<tr>
<td>Andrew Nicholson, MD</td>
<td>Neurointervention</td>
</tr>
<tr>
<td>Tejas Patel, MD</td>
<td>Ultrasound/Breast Imaging</td>
</tr>
<tr>
<td>Sam Payabvash, MD</td>
<td>Neuroradiology</td>
</tr>
<tr>
<td>Cyrus Raji, MD, PhD</td>
<td>Neuroradiology/T32</td>
</tr>
<tr>
<td>Michael Redd, DO</td>
<td>Musculoskeletal</td>
</tr>
<tr>
<td>Andrew Roberts, MD</td>
<td>Musculoskeletal</td>
</tr>
<tr>
<td>Hriday Shah, MD</td>
<td>Interventional</td>
</tr>
<tr>
<td>Sujay Sheth, MD</td>
<td>Ultrasound/Breast Imaging</td>
</tr>
<tr>
<td>Christopher Starr, MD, PhD</td>
<td>Neuroradiology</td>
</tr>
<tr>
<td>Elizabeth Tong, MD</td>
<td>Neuroradiology/T32</td>
</tr>
<tr>
<td>Javier Villanueva-Meyer, MD</td>
<td>Neuroradiology</td>
</tr>
<tr>
<td>Graham Wallace, MD</td>
<td>Cardiac and Pulmonary Imaging</td>
</tr>
<tr>
<td>Genevieve Woodward, MD, PhD</td>
<td>Breast Imaging</td>
</tr>
<tr>
<td>Jean Yeh, MD</td>
<td>Abdominal Imaging/Breast Imaging</td>
</tr>
<tr>
<td>Thomas Yohannan, MD</td>
<td>Nuclear Medicine</td>
</tr>
<tr>
<td>Jeanie Zhang, MD</td>
<td>Abdominal Imaging/Ultrasound</td>
</tr>
</tbody>
</table>

### Clinical Instructors:

<table>
<thead>
<tr>
<th>Name</th>
<th>Specialty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daniel Chow, MD</td>
<td>Neuroradiology</td>
</tr>
<tr>
<td>Rahul Desikan, MD, PhD</td>
<td>Neuroradiology</td>
</tr>
<tr>
<td>Rebeca Dumont Walter, MD</td>
<td>Neuroradiology</td>
</tr>
<tr>
<td>Xin (Cynthia) Wu, MD</td>
<td>Neuroradiology</td>
</tr>
</tbody>
</table>
Master of Science in Biomedical Imaging Now 5 Years Old

Five classes, and more than 75 students have now matriculated through the Master of Science in Biomedical Imaging (MSBI) program. The 19 members of the class of 2017 are already in the classroom and the imaging suites, and applications for the 2017–18 academic year are open. The MSBI program attracts many students from University of California programs, and a healthy mix of out-of-state and international students. Their undergraduate experiences vary, but the MSBI program is designed to rapidly bring them up to speed on the scientific underpinnings of medical imaging technologies.

The MSBI faculty features 14 professors from the department, under the leadership of Program Director David Saloner, PhD, and Director of Graduate Studies Alastair Martin, PhD. Guest lectures from clinical faculty are common and give the students a much-appreciated perspective on how imaging technology is applied in the clinical setting. Program administration for the 2015–16 class was handled by Rukayah Abdolcader and Melinda Parangan-Chu, who guided the students through from the initial application process to graduation.

Classroom Learning Supports Hands-On Experiences

The MSBI program core courses deliver in-depth training in the principles of in-vivo imaging modalities. Students also choose from a wide set of electives related to imaging applications for major diseases and different organ systems. The program covers all major medical imaging technologies, as well as topics such as Image Processing and Research Study Design.

Following their coursework, students bring the various elements of their learning together in applied research projects, working with faculty supervisors or as interns with industry partners. MSBI students benefit from the department’s wide range of state-of-the-art imaging facilities. The students consistently report that the hands-on activities, where they get to operate and perform experiments using these imaging systems, are the highlight of the MSBI program.

A high percentage of MSBI students remain through the summer academic quarter to apply their newly honed skills on a wide range of research projects under the supervision of UCSF faculty. These projects culminate in an MSBI imaging symposium, held in late August, that highlights the students’ research accomplishments.

MBSI Graduates Move On

Our graduates have been exceptionally successful. Seventeen have continued on to medical school and another 12 have entered PhD programs. Others have continued the research work they began as a student in labs throughout the department or have moved on to industry opportunities. We are particularly proud of Naeim Bahrami, MSBI 13 and Yi-Shin Chang, MSBI 13, who swept the awards at the 2016 meeting of the American Society of Functional Neuroradiology.
We’ve had an especially busy year at the Goldberg Center for Advanced Imaging Education, once again full of changes and innovations.

Perhaps the biggest change is our new location. After more than a year of planning, the Goldberg Center moved into a new, expanded and modern space on the second floor of the Medical Sciences building on the Parnassus Campus. The expanded center now serves as a physical headquarters for many of the educational missions of the Department of Radiology and Biomedical Imaging. Brand new classrooms were built for the both the Diagnostic Radiology residents and the department’s medical student programs. The new Goldberg Center also brings together the administrative offices for the medical student, residency and fellowship education programs in a single physical location. The facility features a new computer lab, meeting rooms and space for career advising.

After several years of hard work, UCSF has launched an entirely new curriculum for the School of Medicine. The new Bridges curriculum, funded by a $1 million grant from the American Medical Association, is intended to fundamentally transform our approach to medical education and train “21st century physicians” able to work within complex medical systems to improve healthcare and advance science for future generations of patients. The Goldberg center Co-Directors David Naeger, MD, and Emily Webb, MD, participated in the development of a new, required radiology curriculum that will teach all medical students the fundamentals of proper imaging utilization. Read more in the news release at https://www.ucsf.edu/news/2016/08/403791/ucsf-launches-medical-school-curriculum-21st-century.

Kudos to Committee Members and Staff Members
The faculty and resident members of the Medical Student Education Committee supervise the Goldberg Center’s medical student programs. Our resident representatives include Michael Heller, MD, our new Resident Liaison for Medical Student Education, and Spencer Lake, MD, who remains on the committee after completing his liaison year as the new Resident Director for the Radiology Primer elective. In addition to Naeger and Webb, faculty members include Andrew Phelps, MD, Brett Elicker, MD, Vickie Feldstein, MD, Stefanie Weinstein, MD, Lynne Steinbach, MD, Miles Conrad, MD, Elissa Price, MD, Judy Yee, MD, and Khai Vu, MD.

Many UCSF faculty, volunteer faculty, fellows and residents give generously of their time in our programs. We, and the UCSF medical students who benefit directly from their contributions and time, truly appreciate their efforts.

For more information about the Goldberg Learning Center’s activities, please contact Bren Ahearn (Brendan.Ahearn@ucsf.edu) or visit radiology.ucsf.edu/education/medical-students.

The Henry I. Goldberg Center for Advanced Imaging Education is the headquarters for all medical student education in the Department of Radiology and Biomedical Imaging. The Center oversees radiology instruction in the pre-clinical core curriculum, provides imaging workshops during clinical clerkships, offers a variety of radiology electives spanning both clinical applications of Radiology and imaging research, and offers career advising and mentoring to UCSF medical students.
Radiology CME

Highlights
With more than 100 people attending, the December 2015 Imaging Warm-Up in the Caribbean, held at the Marriott Los Sueños in Costa Rica, was an overwhelming success. Chaired by Jesse Courtier, MD, other faculty in attendance included Ron Zagoria, MD, FACR; Andrew Phelps, MD; Maureen Kohi, MD; and Mike Hope, MD.

What to Look Forward to in 2017
In 2017 we’ll continue to offer our signature courses in Kona, Hawaii, along with many other CME opportunities in the Bay Area. Please visit our website (radiology.ucsf.edu/cme/upcoming) to see a complete listing of CME offerings or refer to the calendar published here in Images.

The Annual Review course will be held at the JW Marriott Hotel in San Francisco Union Square March 20–24, 2017. This comprehensive review course continues to attract a vast number of practicing radiologists. It offers a unique opportunity for a detailed review of all systems and modalities, presented by world-renowned UCSF Radiology faculty. You can earn more than 20 self-assessment SAM-CME credits at this course, an efficient way to satisfy your ABR continuous certification requirements with us.

Our Summer CME course in Bermuda returns to the Fairmont Southampton July 2–7, 2017. Hope to see you there.

Our newest course, designed for general radiologists, will take place in the Canadian Rockies! Mark your calendars and book your travel to the Fairmont Banff on July 30–August 4, 2017.

We’ll also return Down Under! We are planning another exciting program for practicing radiologists September 11–15, 2017 at the Four Seasons Sydney in Australia. G’day mate, we hope you’ll join us there.

In the fall, we’ll be returning to two popular destinations: Maui and Costa Rica. The first course will be held on October 22–27, 2017 at the Hyatt Regency, Maui Resort and Spa. The second one will be December 3–8, 2017 at the Marriott Los Sueños. How do you want your CME—“Aloha” or “Pura Vida” style?

Save When Attending UCSF Courses
We reward loyal customers for attending our courses. The UCSF Radiology CME Loyalty Program offers three reward levels: Silver, Gold, and Platinum. Respectively, they offer 10%, 20%, or 30% off registration fees for EVERY course attended. You may learn more about the UCSF Radiology CME Loyalty Program at radiology.ucsf.edu/cme/loyalty_program.

We hope to see you at future CME courses!
Breast Imaging & Optional Mini-Course
January 8–13, 2017
Fairmont Orchid, Kona, HI

Practical Body Imaging
January 15–20, 2017
Fairmont Orchid, Kona, HI

Thoracic Imaging
January 29–31, 2017
Omni Rancho Las Palmas Resort, Palm Springs, CA

Abdominal & Pelvic Imaging
February 1–3, 2017
Omni Rancho Las Palmas Resort, Palm Springs, CA

Neuro & Musculoskeletal Imaging
February 12–17, 2017
Fairmont Orchid, Kona, HI

Virtual Colonoscopy Workshop
February 23–25, 2017
RAD17B10
Course Director: Judy Yee, MD
UCSF China Basin Center, San Francisco, CA

Prostate Cancer Imaging with Hands-on Workshops
March 9–10, 2017
UCSF Campus, San Francisco, CA

UCSF Radiology Annual Spring Review
March 20–24, 2017
JW Marriott Hotel, San Francisco, CA

Sonography for Sonographers
April 29, 2017
UCSF Campus, San Francisco, CA

Virtual Colonoscopy Workshop
June 1–3, 2017
UCSF China Basin Center, San Francisco, CA

Imaging in Bermuda
July 2–7, 2017
Fairmont Southampton, Southampton, Bermuda

Imaging in the Canadian Rockies
July 30–August 4, 2017
Fairmont Banff Springs, Calgary, Alberta, Canada

UCSF Radiology Clinical Highlights
August 21–25, 2017
JW Marriott Hotel, San Francisco, CA

Imaging Update in Australia
(with optional Virtual Colonoscopy)
September 11–15, 2017
Four Seasons, Sydney, Australia

Virtual Colonoscopy Workshop
October 5–7, 2017
UCSF China Basin Center, San Francisco, CA

Imaging Update on Maui
October 22–27, 2017
Hyatt Regency Maui Resort & Spa, Lahaina, Maui, HI

Breast Imaging Update
November 9–11, 2017
Omni Rancho Las Palmas Resort, Palm Springs, CA

Ultrasound Update
November 12–13, 2017
Omni Rancho Las Palmas Resort, Palm Springs, CA

Imaging Warm-Up in Costa Rica
December 3–8, 2017
Marriott Los Sueños Ocean Resort, Costa Rica

FOR FURTHER INFORMATION PLEASE CONTACT:
UCSF Radiology Continuing Medical Education
Telephone: 415-476-5731  E-mail: cme@radiology.ucsf.edu  Website: radiology.ucsf.edu/cme

Course dates, locations and course titles are subject to change prior to brochure publication.
Margulis Society Celebrates on March 4

The Department of Radiology and Biomedical Imaging has a long-standing tradition of bringing together current trainees, alumni and friends at the annual Margulis Society gala. Next year, that will happen Saturday, March 4, at the Olympic Club Lakeside. The 2017 event will be special for two reasons. First, will be a wonderful opportunity for colleagues, friends, faculty and trainees to spend a fun-filled evening with retiring Department Chair Ron Arenson, MD. Second, this will be the first Margulis Society Sollitto Gala named in honor of Richard A. Sollitto, MD, longtime president of the Margulis Society who passed away in 2012. We look forward to seeing you!

2016 Activities
Alumnus Lecture
On March 23, 2016, Michael P. Federle, MD, gave the Alumnus Lecture, a biennial presentation that brings a notable graduate back to UCSF. Federle provided insight on the “Use of Decision-Support Tools in Radiology: Adding Value to Our Reports.” His lecture highlighted how clinical decision-support tools such as UpToDate, Google Scholar and STATdx can make a critical difference in arriving at a specific and clinically useful interpretation of imaging studies. He discussed what constitutes a “good radiology report” and avoiding medico-legal trouble.

Dr. Federle noted that the goal of these tools is to help radiologists at the “point of care”—the interpretation and reporting of an imaging study. When faced with a difficult case, decision-support tools such as computer-based information systems can be useful. Federle emphasized that decision-support tools are not the same thing as computer-assisted diagnosis.

Federle has been a professor and the associate chair for education at Stanford University since 2008. Prior to his current position, he was a professor at the University of Pittsburgh Medical Center, serving in several leadership positions: chief for quality and process improvement (2008), director of Abdominal Imaging (1992–2008), and department chairman (1989–1992). Previously, he served as a vice-chairman in the UCSF Department of Radiology (1984–1989) and chief of medical staff at SFGH (1987–88.) He completed his fellowship in abdominal imaging at UCSF.
Research Awards
In June, two senior residents, Yi Li, MD, and Kimberly Kallianos, MD, received the Margulis Society Outstanding Resident Research Awards for their work. The committee noted their “scientific productivity” and the high quality of their research.

Career Conference
More than 40 trainees from the Department attended the September 27 Career Conference for residents and fellows. UCSF academic speakers discussed the various academic tracks at UCSF. Speakers from Bay Area private practice groups provided insight on their practice structures, how hiring works in their groups, and non-negotiable vs. negotiable items in contracts.

Research Grants Awarded
The Margulis Society is pleased to support junior researchers with grants to fund their work. In October 2016, the Society awarded research grants to two UCSF Radiology and Biomedical Imaging trainees. Matthew Barkovich, MD, a PGY4 resident, was selected for his project on “Characterizing Ventricular Morphology, Neural Networks, and CSF Flow in Pediatric Hydrocephalus.” Eugene Huo, MD, an Abdominal Imaging fellow, was selected for his project on “Optimization and Clinical Application of Intravoxel Incoherent Motion Diffusion-Weighted MRI to Evaluate and Predict Hepatocellular Carcinoma Response to Transarterial Chemoembolization.”

Margulis Society Board of Directors

President:
Derk D. Purcell, MD

Immediate Past-President:
James S. Chen, MD, PhD
Ronald L. Arenson, MD
Soonmee Cha, MD
Nick G. Costouros, MD
Erik H.L. Gaensler, MD
Michael Gotway, MD

Christopher Hess, MD, PhD
Donna Hoghooghi, MD
Jane Kim, MD
Naveen Kumar, MD
Vincent D. McCormick, MD
Peter S. Moskowitz, MD
Gautham P. Reddy, MD
Diego E. Ruiz, MD
Christopher J. Schultz, MD
Volney F. VanDalsem, III, MD
Benjamin M. Yeh, MD

Fellow Representative:
Javier Villanueva-Meyer, MD

Resident Representatives:
Alexandra Wright, MD—PGY2
Benjamin Laguna, MD—PGY3
Phelps Kelley, MD—PGY4
Luis Gutierrez, MD—PGY5
The Honor Roll of Donors

The Margulis Society and the Department of Radiology and Biomedical Imaging gratefully acknowledge the following donors for their generous contributions. This list reflects gifts made between July 1, 2015 and June 30, 2016.

Ashley Aiken, MD
Mark D. Alson, MD
Matthew R. Amans, MD
John R. Amberg, MD
Ronald L. Arenson, MD*
David E. Avrin, MD, PhD
Irene Balcar, MD
Ramon F. Barajas, Jr, MD
Jerome A. Barakos, MD*
A. James Barkovich, MD
Robert M. Barr, MD
Susan Barrows, MD
Ben Maurice Brown, MD
Vincent D. Burke, MD
Michael A. Carducci, MD
Soonmee Cha, MD
Frank S. H. Chang, MD
James S. Chen, MD, PhD
Jing S. Chen, MD
Chloe M. Chhor, MD
David H. Chin, MD*
Iris Choo, MD
Dianna Chooljian, MD
Nathaniel A. H. Chuang, MD
Fergus V. Coakley, MD
Cirrelda Cooper, MD
Nick G. Costouros, MD
Geoffrey I. Criqui, MD
Cathy Ann Cronin-Pastrano, RT

Lawrence E. Crooks, PhD*
Abby E. Deans, MD, PhD
Roland D. DeMarco, MD
Theresa A. DeMarco, MD
Pamela R. Dickson, MD
Jeffrey D. Dieder, MD
William P. Dillon, MD
Christopher F. Dowd, MD
Arthur B. Dublin, MD, MBA
Andre J. Duerinckx, PhD
Terril A. Efird, MD
Michael P. Federle, MD, FACR
Charles E. Fiske, MD
Benjamin L. Franc, MD
Rita I. Freimanis, MD
Malcolm B. Friedman, MD
Erik H. L. Gaensler, MD
Eric A. Gerson, MD
Ruth B. Goldstein, MD
James L. Gorder, MD
Richard C. Gross, MD
Elizabeth A. Guillaumin, MD*
Stanley F. Handel, MD
Lawrence P. Harter, MD
N. Paul Herman, MD
Christopher P. Hess, MD, PhD*
Steven W. Hetts, MD*
Daniel R. Hightower, MD
Donna Hoghooghi, MD

*Donation of $1000 or more
Mark J. Popovich, MD
Derk D. Purcell, MD
Narasimhachari Raghavan, MD
Gautham P. Reddy, MD
Howard A. Rowley, MD
Diego E. Ruiz, MD
Victor Sai, MD
H. Quintus Sakai, MD*
John D. Schrumpf, MD
Christopher J. Schultz, MD
David M. Scovill, MD
Clark L. Searle, MD
Robert J. Sevick, MD, FRCPC, PhD
Michael D. Shane, MD*
Douglas J. Sheft, MD
Edward A. Sickles, MD*
Rita E. Sohlich, MD
Lori M. Strachowski, MD
Yee-li Sun, MD
Edward L. Talberth, MD
Judy K. Tam, MD
Frank R. Tamura, MD
Corito S. Tolentino, MD
Ronald Townsend, MD
Alexander S. Urioste, MD
Volney F. Van Dalsem III, MD
Antonio Westphalen, MD
S. Douglas Wing, MD
Dorota J. Wisner, MD
Alvin John Yamamoto, MD
Benjamin M. Yeh, MD

Program and Innovations Fund
Collin Ma, MD
Eugene T. Morita, MD,
in memory of Bruce Hasegawa, PhD

*Donation of $1000 or more
Alumni News 2016

1973
Gary Hungerford Baker, MD, Fortuna, Humboldt County, CA, writes that he retired in February 2014. He celebrated his 50th Anniversary with “beautiful, smart, healthy Lynn Haigler Baker” on December 20, 2015. His daughter Jennifer McKay, Hollywood, MD, is returning to the work force now that grandchildren Katie and Nathan approach adulthood. Radiologist son (and past UCSF Neuroradiology Fellow), Brent Hungerford Baker, 44, is at Straub Clinic & Hospital, Honolulu, HI, and has a fiancée, Jennifer Elfalen, MIT engineer. Baker notes that he “bikes to the gym 3 x week, in good weather, and recently backpacked Cherry Creek Basin just above the north boundary of Yosemite National Park in September 2016 and has a ski trip to Mt Bachelor coming up.” He writes that: “It is amazing what a 2015 clean coronary angio can provoke, along with a fortuitous, partially-curative, fall onto my formerly painful low-back (violent self-chiropractic).” He also notes that he is “enjoying re-acquaintance with teenage guitar playing and singing. Good family, friends and food. Lucky guy!”

1975
S. Douglas Wing, MD, FACR, Provo, UT, has “been retired for a few years, and this is a great phase of life. My wife Mary Ellen and I could not be enjoying so many things now if I had not had the marvelous opportunity to be a Radiology resident under the guidance of Dr. Margulis, and a Neuroradiology Fellow with Dr. Newton. I have very fond memories of my years at UCSF from 1972 to 1976. Mary Ellen and I lived in an apartment building near the junction of California Street and 21st Avenue, and it was easy to get to work from there. One embarrassing experience was that my favorite belt had a buckle that was the design of a marijuana leaf. Being an innocent Mormon boy, I thought it was a neat buckle, but had no idea what it really was. So naive!

“I will always consider the faculty members, residents, and fellows I worked with to be lifetime friends, and I hope they are doing well. Incidentally, I was a neuroradiology faculty member in Radiology Department at the University of Utah for five years following the San Francisco time. One of the fellows there was Bill Dillon. So, I feel like I paid UCSF back somewhat by supporting Bill’s desire to go to UCSF. Please say ‘hi’ to him for me.”

1982
Ben Maurice Brown, MD, and his wife moved to Sausalito, CA four years ago after he retired following a 26-year career as a neuroradiologist and MRI Section Chief at NW Kaiser Permanente in Portland, Oregon, where his primary professional activities focused on MRI brain spectroscopy, perfusion, fMRI, cardiac MRI and vascular CT/MRI. He also served on the OHSU Clinical Faculty in Radiology and Neurosurgery.

Now, he writes, “I have been managing a monthly car event called Biscotti and Cars and its photographic website (www.biscottiandcars) and serve on several boards of directors for the City of Sausalito and my condo association. My wife and I have a stable of seven cars that we use on driving events with the Ferrari, Mercedes and Porsche clubs. I also attend events sponsored by our local UC Alumni and Stanford Alumni associations. My wife and I take an annual September driving trip in Europe and are enthusiastic travel and automotive photographers. Our son, a second generation UC Berkeley graduate, lives in Oakland and had both a startup company analyzing climate change and a very successful band, Trails and Ways, which has gone on several national and international tours. My email is: brownbenm@gmail.com.”

1984
Shirley McCarthy, MD, PhD, New Haven, CT, writes “I retired February 1, 2016 and am joyous.” McCarthy became a faculty member at Yale School of Medicine faculty following her UCSF fellowship in 1984.
1985
David L. Steinberg, MD, FACR, FACNM, Las Vegas, NV, is the managing partner of Steinberg Diagnostic Medical Imaging (SDMI) with “seven imaging centers located throughout the Las Vegas and Henderson area with an eighth to open in 2017.”


2002
Harold Litt, MD, PhD, Philadelphia, PA, will become chief of the Cardiothoracic Radiology Division at Penn Medicine in 2017 following the June retirement of Dr. Warren Gefter. Litt completed his residency at Penn, a Cardiothoracic Radiology fellowship at UCSF, and returned to Penn in 2002 to join the faculty there.

2004
Anthony (Tony) Filly, MD, Monterey, CA, sends a recent photo with his father, UCSF Professor Emeritus Roy Filly, MD.

2009
Amita Kamath, New York, NY, sent an update: “I’ve recently returned to Mount Sinai Hospital in New York as an assistant professor of Radiology in the Abdominal Imaging Section after a year in Austin, TX, in private practice. I am happy to be back in academics and in NYC and look forward to reconnecting with UCSF radiology alumni in the area.”

2010
David M. Carlson, MD, Santa Barbara, CA sent an update: “We welcomed our third son, Sawyer, this month. We’re still in beautiful Santa Barbara and I stay busy at Santa Barbara Cottage Hospital and the Cancer Center of Santa Barbara.”

2012
Michael T. Lu, MD, Boston, MA, writes that he and spouse Susie Huang, MD, PhD “welcomed Anna and Benjamin to our family last year.” Michael and Susie are cardiovascular and neuroradiologists, respectively, at Massachusetts General Hospital. Michael is the 2015–2017 American Roentgen Ray Society Scholar.

2014
Akash Kansagra, MD, St. Louis, MO, joined the academic faculty of Mallinckrodt Institute of Radiology and Washington University School of Medicine as assistant professor of Radiology and Neuroradiology.

Anand Patel, MD, Irvine, CA, was recently promoted to chief of Interventional Radiology at the Providence Little Company of Mary Hospitals in Torrance and San Pedro, CA.

Nazima Kathiria, DO, sent an update along with a recent photo: “a lot of changes are brewing for us, as I will be leaving active duty service in the United States Navy in August 2017. At that point we will be moving to Grand Rapids, MI, where I will join the Advanced Radiology Services group as a cardiothoracic imager.”

2016
Lina Nayak, MD, Sunnyvale, CA, sent a family photo.

Brent Weinberg, MD, Atlanta, GA, accepted a new position in August 2016 as assistant professor of Neuroradiology at Emory University in Atlanta, Georgia.

Sarah Jane and Dave with Sawyer, Wyatt and Noah


Akash Kansagra (right) with Colin Derdeyn, MD, who he succeeded in the interventional neuroradiology group at MIR.

Nazima Kathiria and family

Lina Nayak with husband Paven Malhotra and one-year old daughter Ambika.
The 10th Surbeck Young Investigator awards took place at UCSF’s Mission Bay Campus on March 11. Three junior investigators, Llewellyn (Trey) Jalbert, PhD, Robert Flavell, MD, PhD, and Chloe Najac, PhD, presented their work to an audience of UCSF faculty and trainees. Sarah J. Nelson, PhD, director of the Margaret Hart Surbeck Laboratory for Advanced Imaging, Richard Gowen, PhD, president of the INDNJC Foundation, and William P. Dillon, MD, executive vice chair of Radiology and Biomedical Imaging presided over the event. An award ceremony followed the presentations.

First Place Prize Awarded for Jalbert’s Glioma Investigations
Trey Jalbert, PhD, received a first-place award for his research on “Magnetic Resonance Analysis of Malignant Transformation in Recurrent Glioma” (LE Jalbert, E Neill, JJ Phillips, JM Lupo, MP Olson, AM Molinaro, MS Berger, SM Chang, SJ Nelson).

Originally from Virginia, Jalbert has made the Bay Area his home for 10 years, receiving his PhD at UCSF/UC Berkeley. He notes that he sees “knowledge and education as powerful tools that can be put toward building healthy communities and scientific breakthroughs.” Jalbert is a postdoctoral fellow in the Surbeck Laboratory. He also is the 2016 Hasegawa award winner.

PET and 13C Tracer Development Investigations Earn Second Place Award
Robert Flavell, MD, PhD, earned a second place award for his research focused on new PET and hyperpolarized 13C tracer development for imaging acidic interstitial pH. His work has been performed in the laboratories of Drs. John Kurhanewicz and David Wilson. His award-winning research presentation described “Application of Goods Buffers to PH Imaging Using Hyperpolarized 13C MRI” (RR Flavell, C von Moreze, JE Blecha, CE Korechan, M Van Criekinge, R Sriram, JW Gordon, HY Chen, S Subramaniam, RA Bok, ZJ Wang, DB Vigneron, PE Larson, JK Kurhanewicz, DM Wilson).

In his presentation he described his “efforts toward developing hyperpolarized 13C tracers with the goal of imaging acidic interstitial pH.” Flavell was a clinical fellow in Nuclear Medicine in 2015–2016 and recently became an assistant professor in the Department of Radiology and Biomedical Imaging.

Najac Earns Third Place Award
Chloe Najac, PhD, who was awarded the third place prize, notes that her work focuses on “the development and validation of novel magnetic resonance spectroscopy methods for the study of brain tumors.” She says that she is “particularly interested in the use of hyperpolarized 13C magnetic resonance spectroscopy as a readout of the activity of tumor-associated cells and the inhibition of their activity in response to treatment.”


The Margaret Hart Surbeck Laboratory of Advanced Imaging is dedicated to advancing imaging techniques for biological and medical applications with the goal of improving the sensitivity and specificity of the data obtained for characterizing human diseases, selecting therapies and monitoring novel treatment paradigms for patients. The Surbeck Young Investigator Awards are funded through the INDNJC Foundation.
The Department of Radiology and Biomedical Imaging has two awards that honor outstanding medical support staff for their caring contributions to patient care: The Sollitto Award honors the memory of Richard A. Sollitto, MD, a faculty member who cared deeply for all of the department’s staff and patients. It is presented annually to an outstanding medical and administrative support staff member. The Lanna Lee Award honors a senior radiology technologist, Lanna Lee, who died on her way home from work in 1989 during the Loma Prieta earthquake. Lee was a role model for others, always working with a smile and delivering excellent care to her patients. Both are presented at the Department’s annual holiday party in December.

Teresita Roberts received the 2016 Sollitto Award. Roberts is an administrative assistant who works at the front desk in the Ambulatory Care Center on Parnassus Avenue. In her nomination for the award it was noted that Roberts excels in being the “first impression of our department to our patients.”

In presenting the award, Kathy Knoerl noted “Tess is a wonderful role model for great customer service. She greets and welcomes a diverse patient population to our department with friendliness and warmth and is conscientious about how our department provides our patients with a positive experience. Tess’s initial encounter with the patient makes an easy transition for the time when the technologist or sonographer calls the patient. Patients are noticeably at ease when they are called for their exam.”

Erick Byorwango, RT, who works in Diagnostic Radiology at Parnassus, was presented with the 2015 Lanna Lee Award. “Erick is a highly skilled senior radiologic technologist who promotes teamwork every day,” noted Knoerl. “He consistently displays professionalism and a caring attitude. Erick has a warm welcoming smile on his face when he interacts with patients and staff regardless of their gender, ethnicity or socioeconomic status. He always listens to the opinions of others, and genuinely values their input.” In 2015, Byorwango also received the UCSF Medical Center Pride Award, given to selected employees who consistently demonstrate the values of professionalism, respect, integrity, diversity and excellence in their work.

The American Registry of Radiologic Technologists (ARRT) established the “I am the Gold Standard” program in 2016. It recognizes registered technologists who consistently display excellence in their work and in the community.

David (Lap Kong) Poon, RT (R)(ARRT), a principal radiologic technologist and supervisor at the UCSF Medical Center, was honored with a Gold Standard award. The ARRT noted Poon’s “strong background in volunteering on behalf of his profession, serving as president of the California Society of Radiologic Technologists and speaking to incoming students in the Radiology program at City College of San Francisco.” Patient care is the top priority for Poon. He recalls walking to work when a man grabbed his hand. “I was caught completely off guard. He said, ‘David, you don’t know me, but I want to thank you for taking care of me at UCSF.’ That’s why I do what I do.”
Radiology and Biomedical Imaging Staff Earn Awards

The Department of Radiology and Biomedical Imaging now has an award to honor campus staff for outstanding service to the department. In 2015, Cindy Flores Gaytan and Melinda Parangan-Chu were co-recipients of the first Cathy Garzio Award for Outstanding Employee. The award was created in honor of long-time department administrative director Cathy Garzio, who accepted a position at Stanford in 2015. The award, presented annually at the holiday party in December, honors a campus staff member who has displayed the attributes of integrity, collaborative spirit, and has made an effort towards continuous improvement.

Inaugural Garzio Award Recipients

Cindy Flores Gaytan is an education coordinator for the diagnostic radiology residency program. “Cindy has always been more than willing to help out wherever needed, whether or not it’s a task that falls within the purview of her job description,” said Residency Director Soonmee Cha, MD, one of Flores Gaytan’s nominators. “She has taken on additional duties in order to provide more support for residents, allowing trainees to focus on learning and research instead of administrative tasks. In doing so, she demonstrates her continued concern for resident education. She is a very valued member of the department and is instrumental in the radiology residency.” Flores Gaytan received joined the department in 2011.

Melinda Parangan-Chu, is the clinical fellowship programs and credentials manager for the department’s 10 clinical fellowship programs. She is also the administrative support supervisor for six administrative support members. “Melinda has worked in just about every setting possible within our department” noted Bonnie Joe, MD, one of Parangan-Chu’s nominators. “Currently, she has the enormous task of handling our fellowship application process across the entire department, fellowship credentialing for 46 fellows, call scheduling, graduation and other department wide social events. Despite her heavy workload, she is always available to help out a colleague, faculty member, trainee or anyone who asks. She is versatile, a great problem-solver, a great team player.”

Christina Chen Recognized by School of Medicine

Christina Chen was recognized with a Great People award in 2016. “The Great People award is designed to recognize staff that serve as role models for teamwork and customer service, have a positive helpful attitude, work cooperatively with others, are devoted to the job and the team, and who inspire others to excel. This describes Christina to a tee!” noted Susan O’Hara, the department’s chief financial officer.

Chen has been a financial analyst with Radiology and Biomedical Imaging for nearly three years. Her nomination for the award noted that, “Christina approaches her job with intelligence, conscientiousness, hard work and outstanding communication skills,” and that she has “become a go-to person for the departmental staff with questions on UCSF financial procedures.” Chen has also serves as a chair of the department’s Moving On Up Learning sub-committee, which promotes learning opportunities for staff.

Prior to her UCSF position, Chen worked in finance at the Metropolitan Transportation Commission in San Francisco. She received her BS from UC Berkeley.
The Year in Pictures
Research Directions

ABDOMINAL IMAGING
Ronald Zagoria, MD, Chief

Research Directions:
- The promotion of evidence-based abdominal imaging, including systematic validation of commonly held opinions and assumptions
- Developing MRI and CT techniques to optimize assessment of hepatobiliary, GI tract, and GU diseases
- Optimizing multiparametric MRI scanning for detection and staging of prostate cancer
- High-intensity focused ultrasound of uterine fibroids and prostate cancer
- Advanced hepatic imaging, including multi-detector CT, CT cholangiography, new hepatobiliary MR contrast agents, and MR cholangiopancreatography
- Radiological evaluation of diffuse liver disease, including cirrhosis, pseudocirrhosis, and nonalcoholic steatohepatitis
- Dynamic contrast-enhanced MRI and CT for assessment of solid organs and tumors in the abdomen and pelvis
- 3D rendering of CT and MR images, including projectional and volumetric applications, and CT colonography
- Expanding image-guided percutaneous thermal ablation applications in the abdomen

ADVANCED IMAGING TECHNOLOGIES
SPECIALIZED RESOURCE GROUP
Daniel B. Vigneron, PhD, Director

Research Directions:
The Advanced Imaging technologies SRG works to advance imaging science to benefit human disease studies. This includes everything from development of new techniques, to the translation of existing techniques, to the improvement of quality, speed, information-content, and applicability of existing methods.

Basic development => Translation => Optimization => Validation

Our expertise and research focus on various areas including: basic physics, basic engineering, bioengineering, initial patient testing, clinical single and multi-site trials of new techniques, and training.

Our goal is to excel in imaging science in each of the three UCSF mission areas:
- Scholarship: publications, grants, patents, conference presentations
- Training: formal UCSF courses, informal training, CME courses, international Society educational courses
- Services: clinical patient studies support, UCSF committee service, and grant reviews for NIH and other funding agencies
The key missions of the Advanced Imaging Technologies SRG are to:
(a) be world leaders in cutting-edge imaging techniques for studying human disease,
(b) collaborate with RIGs to get these and other basic techniques into application studies for testing and optimization,
(c) work with clinical to translate the new techniques and to improve state-of-art methods, and
(d) train and educate personnel in advanced imaging techniques.

BODY IMAGING RESEARCH INTEREST GROUP
John Kurhanewicz, PhD, Director

Research Directions:
- Developing an optimized and clinically feasible multiparametric MR protocols for prostate cancer and for diseases of the kidney and liver and for metabolic studies of dietary interventions
- Rigorous histopathological correlative studies for validation of MR biomarkers
- Developing ways to analyze multiparametric imaging data
- Developing clinical predictive nomograms that incorporate imaging variables
- Image-guided biopsy and therapy (HIFU, radiation)
- Identifying, validating and implementing robust, quantitative, noninvasive magnetic-resonance-based metabolomic biomarkers of human disease and therapeutic response using ex vivo tissues, biofluids, and preclinical cell and murine models of human disease
- Developing targeted contrast agents for prostate cancer and other urogenital diseases
- Developing and implementing hyperpolarized 13C magnetic resonance imaging in patients

BRAIN RESEARCH INTEREST GROUP
Sarah Nelson, PhD, Director
Srikantan Nagarajan, PhD, Co-Director

Research Directions:
Our specific mission is to map and analyze brain structure, activity, metabolism, connectivity and function in health and disease, and to identify biochemical, physiological and anatomical correlates of behavior in health and in disease. The scope of research conducted by the Brain RIG encompasses all aspects of brain-related inquiry, including the development of state-of-the-art brain imaging techniques. The evaluation of patients with brain tumors is a major focus for applying these technologies. Key strategies that are being used to understand the underlying mechanisms of response to therapy and malignant transformation include analyzing the relationship between of ex vivo histological,
genomic and metabolic properties of image-guided tissue samples and investigation of specific hypotheses using in vivo studies of cell and pre-clinical model systems.

Other critical focus areas that form the basis for collaborative research are to understand the relationship between brain and behavior in a wide range of neurological and psychiatric diseases, to integrate information from molecules to mind, and to translate advances in neuroimaging methodology to the clinic.

BREAST CANCER RESEARCH INTEREST GROUP
Nola Hylton, PhD, Co-Director
Bonnie N. Joe, MD, Co-Director

Research Directions:
The Breast RIG’s research aims are to advance imaging-based approaches for breast cancer diagnosis, leading to earlier detection, reduction of disease recurrence, and improved survival.
Our major research areas include:
- MRI and spectroscopy to assess breast tumor response to neoadjuvant chemotherapy. UCSF is the lead institution for the national ACRIN 6657/I-SPY breast cancer clinical trial testing MRI and molecular biomarkers for the prediction of treatment response and survival for women receiving neoadjuvant chemotherapy for locally advanced breast cancer
- Computer-aided tools for real-time measurement of MRI biomarkers for breast cancer
- MRI of ductal carcinoma in situ (DCIS) for staging and assessing response to hormonal treatment
- Quantitative mammographic breast density measurement for breast cancer risk assessment
- MRI-directed tissue biopsy for radiologic-pathologic correlation of imaging and molecular biomarkers
- MRI measurement of breast density and tissue composition

**BREAST IMAGING**
Bonnie N. Joe, MD, PhD, Chief

**Research Directions:**
- MRI, optical imaging and X-ray mammography for breast cancer screening and surveillance, diagnosis and tissue characterization for risk assessment, cancer staging, and treatment response assessment
- New techniques in MRI-guided biopsy and imaging protocols
- Quantitative assessment of breast density and breast cancer risk models
- Digital breast tomosynthesis
- MRI/MRS for assessing tumor response to neo-adjuvant chemotherapy
- for patients with locally advanced breast cancer
- Biomarker development using advanced breast MR techniques
CARDIAC AND PULMONARY IMAGING
Brett M. Elicker, MD, Chief
Karen Ordovás, MD, MAS, Director of Cardiac Imaging

Research Directions:
- Cardiac CT
  - Use of cardiac CTA for emergency room evaluation of atypical chest pain
  - Evaluation of coronary atherosclerosis in patients with HIV infection
  - Evaluation of pulmonary venous anatomy in atrial fibrillation
  - Characterization of myocardial ischemic injury by contrast enhanced MRI and CT
- Chest CT/High-resolution CT
  - High-resolution CT of interstitial lung disease
  - Predictors of poor outcome in patients with acute PE diagnosed by helical CT
- Cardiac MRI
  - Use of novel cardiac MRI techniques and computational modeling for the quantitative assessment of ventricular performance in congenital heart disease
  - Use of multidimensional flow techniques for quantitative assessment of flow dynamics in congenital heart disease
  - MRI to assess cardiac function after repair of tetralogy of Fallot; correlation with clinical outcomes
  - T1 mapping techniques for assessment of pulmonary hypertension cardiomyopathy

CARDIOVASCULAR RESEARCH INTEREST GROUP
Karen Ordovás, MD, Co-Director
David Saloner, PhD, Co-Director

Research Directions:
The Cardiovascular RIG aims to provide leadership to the Radiology community in developing and implementing state-of-the-art methods for providing early diagnosis and improved outcomes for patients suffering from cardiovascular diseases.

The CVRIG works closely with physician/scientists from other disciplines to develop and evaluate methods that include numerical modeling, physical in vitro models, and animal and human models of cardiovascular disease.

The combination of these elements, together with a program for educating and training practitioners and scientists, will provide measurable benefits to patients. In summary, our mission is to:
- Use state-of-the-art imaging for understanding the etiology of multiple cardiovascular diseases
- Investigate the scientific basis for new imaging modalities and their applications
• Apply cardiovascular imaging modalities to evaluate the physiologic, pharmacologic, and molecular basis of disease
• Develop tools for early detection of cardiovascular diseases
• Assess the role of cardiac imaging to predict cardiovascular outcomes to reduce overall and cardiac-related mortality

IMAGE GUIDED SURGERY SPECIALIZED RESOURCE GROUP
Alastair Martin, PhD, Co-Director
Steven Hetts, MD, PhD, Co-Director
Mark Wilson, MD, Co-Director

Research Directions:
The mission of the Image Guided Surgery specialized resource group is serve as a world leader in developing new and improved guidance for a wide array of clinical applications. We aim to:
• Improve guidance and evaluation of therapy
• Perform interventions and deliver therapy in a more minimally invasive fashion
• Develop applications in evolving medical therapies for which there presently does not exist an acceptable delivery mechanism

• Perform pre-clinical device development in collaboration with industrial partners
• Conduct clinical trials that provide guidance to the medical community as to best practice in the therapeutic management of patients.

In line with our mission statement, the IGT SRG has projects that explore several key areas of therapy delivery, including (1) active catheter guidance and tissue ablation within an MR scanner (2) evaluation of innovative endovascular neurointerventional procedures (3) MR guidance of minimally invasive neurosurgical procedures and (4) the application of high intensity focused ultrasound to treat uterine fibroids, bone metastasis, and prostate cancer.

INTERVENTIONAL RADIOLOGY
Robert K. Kerlan, Jr., MD, Chief

Research Directions:
• Joint project with Transplant Service for implantation of pancreatic islet cells
• Joint project with Transplant Service for downstaging hepatocellular carcinoma in potential transplant candidates
• Joint project with Abdominal Imaging using MR diffusion imaging to differentiate flow abnormalities from hepatocellular carcinoma
• Joint project with Pediatric Surgery to create gastrojejunostomies and percutaneous jejunostomies using magnets
• Assessing the role of interventional radiology in managing complications related to the creation of ileal pouches following proctectomy
• Use of expandable metallic stents in the airways
• Joint project with Urology on RF ablation of small renal masses
• Assessing the safety of transdiaphragmatic drainages

MARGARET HART SURBECK LABORATORY OF ADVANCED IMAGING
Sarah J. Nelson, PhD, Director
Daniel B. Vigneron, PhD, Associate Director
The Margaret Hart Surbeck Laboratory of Advanced Imaging endeavors to stretch the limits, creating new imaging technologies that can be adapted for the broadest range of investigating disease, health and treatment. Our overall objective is to contribute to the understanding of normal physiology and to elucidate the underlying biological
mechanisms of health and disease. Critical factors that can be investigated through imaging are disease progression, the biological basis of different diseases, and response to treatment by individual patients. Translating these factors into bioengineering problems involves the integration of the underlying principles of MR physics with the design of new algorithms for reconstruction, post-processing and quantitative interpretation of the resulting multi-dimensional and multi-faceted imaging data, as well as the development of innovative RF coils and coil arrays for high-field imaging.

MUSCULOSKELETAL AND QUANTITATIVE IMAGING RESEARCH GROUP
Sharmila Majumdar, PhD, Director
Thomas M. Link, MD, PhD, Clinical Director

Research Directions:
The Mission of MQIR is to pursue research and teaching in quantitative tissue characterization focused on the musculoskeletal system by building collaborations between basic scientists, clinical scientists, and physicians, thus establishing a strong resource for musculoskeletal imaging-based research at UCSF. MQIR strengthens and nurtures partnership not only within the Department of Radiology and Biomedical Imaging, but also with the Departments of Orthopaedic Surgery, Medicine and Bioengineering at UCSF and UC Berkeley.

- Identification of biomarkers for degeneration in bone, cartilage, and inter-vertebral disc, and diseases such as osteoporosis, spinal disorders, and osteoarthritis.
- Improve musculoskeletal health by using Computed Tomography (CT), High Resolution Peripheral Quantitative CT (HR-pQCT) and Positron Emission Tomography (PET)/CT imaging to study risk factors for age-related fractures, to quantify deterioration of bone structure and strength as result of aging and disease, and to analyze the anatomy and function of skeletal muscle in relation to mobility loss.
  - Effects of reduced weight-bearing on skeletal geometry, micro-structure, and strength
  - Effects of exercise on bone quality in HIV positive individuals
  - Mechanisms of increased cortical porosity in the peripheral skeleton
  - Use of advanced image analysis techniques such as finite element modeling and voxel-based morphometry to study age-related bone loss and predict hip fracture.
  - Use of CT to study muscle mass and fat infiltration as risk factors for hip fracture.
Development of acquisition and analysis methods to standardize scanning and analytic methods for multi-center studies in osteoporosis and sarcopenia

Development of PET/CT to study protein synthesis in skeletal muscle

Mechanisms of increased cortical porosity in the peripheral skeleton

Use of advanced image analysis techniques such as finite element modeling and voxel-based morphometry to study age-related bone loss and predict hip fracture.

Use of CT to study muscle mass and fat infiltration as risk factors for hip fracture

Development of acquisition and analysis methods to standardize scanning and analytic methods for multi-center studies in osteoporosis and sarcopenia

Development of PET/CT to study protein synthesis in skeletal muscle

Magnetic Resonance (MR) Imaging and Spectroscopy methods for characterizing muscle and bone in diabetes, HIV disease, and other diseases.

Bone marrow fat quantification in the proximal femur and spine using high-resolution water-fat imaging, and the relationship of marrow adiposity to bone quantity and quality.

Fat infiltration in the rotator cuff muscles as a predictor of surgical outcome

Detection of early joint degeneration using quantitative metrics (T1r and T2), and radiological grading methods in osteoarthritis of the knee and hip and correlating them with biomechanical function, biochemical changes, clinical findings, and function.

Contact mechanics, neuromuscular control, and cartilage composition in knee OA

Changes in knee contact mechanics and cartilage composition following meniscectomy

Characterization of cartilage using MR and kinematics in hip osteoarthritis

Running biomechanics and overuse injuries of the lower extremity

Development of osteoarthritis in anterior cruciate ligament (ACL)-injured and reconstructed knees

Investigating the impact of physical activity, obesity, weight loss and gain on longitudinal development of cartilage and meniscal degeneration

In vivo MR Imaging in the presence of metal implants

MRI temperature measurements of bone during MR guided focused ultrasound

Multimodality imaging (MRI and HR-pQCT) and hyperpolarized 13C MRI of rheumatoid arthritis

Radiation dose reduction in CT

MUSCULOSKELETAL RADIOLOGY

Thomas M. Link, MD, PhD, Chief

Research Directions:

Imaging of Osteoarthritis and Cartilage

New morphological pulse sequences for cartilage imaging

Biochemical, quantitative imaging of the cartilage matrix

Analysis of the Osteoarthritis Initiative Cohort

Osteoarthritis, obesity, and physical activity

Cartilage imaging of marathoners and physically active individuals

Assessing menisci and cartilage with matrix-sensitive MRI sequences

Bone Marrow Imaging

Monitoring the progress of the treatment of Gaucher’s disease

MRI of bone marrow changes in osteoarthritis

Disuse osteopenia related bone marrow changes
Osteoporosis Imaging

- Evaluating insufficiency fractures of the pelvis, CT vs. MRI
- Contrast-enhanced, multi-slice-spiral CT for assessing bone density and structure
- Diabetic bone disease: cortical porosity and increase in fracture risk
- Imaging of the Shoulder
- Optimizing MRI for visualizing metal-on-metal surface replacements
- Evaluating fatty infiltration of muscles of the rotator cuff
- Imaging of the Spine
- Imaging at 1.5T and 3T
- Clinical implications of lumbosacral segmentation abnormalities MR Arthrography
- Evaluating the complications of MR arthrography
- High-field MRI for musculoskeletal applications
- In vitro and in vivo comparison of cartilage imaging at 1.5T, 3T, and 7T
- Comparing 1.5T with 3T MRI for the evaluation of smaller joints
- Optimizing MR protocols for the knee at 3T and 7T

New MRI Techniques

- Use of CUBE and IDEAL sequences at 3T to image the knee
- Application of metal suppression MAVRIC sequences for assessment of total joint replacements
- In vitro and in vivo assessment of metal suppression sequences at 1.5 and 3T MR neurography

Research Directions:

Advances in the field of Neuro Interventional Radiology require the constant development of new skills and techniques, and the Neuro Interventional Radiology researchers within the UCSF Department of Radiology and Biomedical Imaging have been involved in designing, conducting, and publishing research regarding current trends and techniques for patient care. In particular, we are focused on developing new and innovative techniques to treat a variety of neurovascular disorders including aneurysms, vascular malformations, tumors, and vasospasm in animal models and in active clinical practice within the interventional neurovascular radiology section at UCSF.

We work closely with the Institutional Review Board at UCSF Medical Center to oversee new products and procedures. We are working with several sponsor companies to assess the use and outcome of new intravascular stents. We have been involved in a multicenter study regarding outcomes after placement of carotid artery stents to treat carotid artery atherosclerotic disease. We conduct translational research in remote-controlled catheter guidance, percutaneous ablation, intra-arterial chemotherapy, and endovascular biopsy. We are working closely with other collaborators at UCSF in MRI modeling of unruptured cerebral
aneurysm and MRI-assisted embolization of brain tumors. In addition, we conduct long-term clinical research on pediatric neurovascular diseases.

NEURODEGENERATIVE DISEASES RESEARCH INTEREST GROUP
Pratik Mukherjee, MD, PhD, Director
Norbert Schuff, PhD, Co-Director

Research Directions:
Studying the causes and effects of neurodegenerative and psychiatric disorders, using MRI as a surrogate marker

Developing powerful, new brain MR techniques for early detection, improved diagnosis, and assessment of therapeutic interventions of neurodegenerative and psychiatric disorders

Developing more powerful multimodal brain image processing and multivariate statistical imaging analysis techniques

Highlights include:
- Ultra-high resolution structural MRI
- Diffusion spectrum imaging
- Dynamic, arterial-spin-labeling imaging
- Susceptibility-weighted imaging
- Spectroscopic imaging and j-modulated spectroscopy
- Bayesian image reconstruction
- Multivariate image analysis methods
- MRI protocols and processing pipelines for multicenter trials
- Standards for imaging neurodegenerative diseases that can be transferred into clinical practice and multi-center clinical trials

NEURORADIOLOGY
Christopher P. Hess, MD, PhD, Chief

Research Directions:
Neuropediatrics
- Cause of cerebellar hypoplasia in some prematurely born neonates and the effects of brain cooling on CNS injury in term neonates suffering hypoxic-ischemic injury
- Embryogenesis of disorders of the midbrain and hindbrain
- Normal and abnormal development of the cerebral cortex
- Fetal MR Neuroimaging: development and application of advanced MRI techniques to study normal and abnormal fetal brain development

Traumatic Brain Injury
- DTI and fiber tractography, fMRI, 3D MRSI, and deformation morphometry as imaging biomarkers for mild TBI to predict clinical outcomes in post-concussive syndrome, with correlation to neurocognitive testing and genomic analysis for TBI susceptibility genes such as ApoE
- DTI and fiber tractography processing for a multi-center consortium study of mild TBI

Cardiovascular Disease and Stroke
- Use of 64-slice CT to detect cardiovascular disease and stroke and a functional mapping and scoring system for predicting the outcome of ischemic stroke
- Use of perfusion and CTA imaging to detect ongoing hemorrhages in the brain of patients presenting with acute intracerebral hematoma
- Use of permeability image mapping to detect stroke patients at risk of subsequent hemorrhage
- Automated software for the outcome classification of patients with acute subarachnoid hemorrhage
Cardiovascular Disease and Stroke
- Use of 64-slice CT to detect cardiovascular disease and stroke and a functional mapping and scoring system for predicting the outcome of ischemic stroke
- Use of perfusion and CTA imaging to detect ongoing hemorrhages in the brain of patients presenting with acute intracerebral hematoma
- Use of permeability image mapping to detect stroke patients at risk of subsequent hemorrhage
- Automated software for the outcome classification of patients with acute subarachnoid hemorrhage

Brain Tumors
- Use of permeability and perfusion imaging to guide operative biopsy
- Correlation of genetic markers and imaging markers from tissue obtained by image-guided biopsy

Head and Neck
- The utility of PET/CT in follow-up of patients with head and neck cancer
- The use of advanced imaging techniques in the detection of recurrent head and neck cancer

Spine
- CT-guided back pain management
- Use of image guidance to improve the accuracy of injections
- Utility of gadolinium MR myelography to detect CSF leaks
- MR neurography for peripheral nerve diagnosis
- Neurodegenerative Diseases
- New imaging biomarkers for neurodegenerative diseases using 7T MRI
- 7T imaging of patients with intractable epilepsy
- Characterization of multimodal diffusion data using high-angular, resolution-diffusion imaging

NUCLEAR MEDICINE
Miguel Hernandez Pampaloni, MD, PhD, Chief

Research Directions:
Cardiac and vascular applications of clinical SPECT-CT, PET and PET-CT
- Applications of SPECT-CT for cardiac synchrony
- Dementia imaging with SPECT-CT
- Clinical PET and PET-CT studies of cancer, cardiovascular, and neurological diseases
- Feasibility of PET and MRI to characterize myocardial metabolism and flow
- Use of PET to monitor therapy for breast and ovarian cancers
- Conformal radiation treatment planning with PET-CT
- Imaging structure and function in small animals with CT/SPECT
- Molecular probe development for SPECT and PET
PEDIATRIC/FETAL RESEARCH INTEREST GROUP
A. James Barkovich, MD, Director

Research Directions:
• Developing new imaging techniques to assess normal and abnormal development, including MRSI and DTI
• Developing new technology for imaging fetuses and neonates and adapting state-of-the-art techniques for application in the developing fetus and infant
• Using imaging techniques to diagnose and study malformations of the brain
• Using imaging to assess injury in premature and term neonates
• Using imaging to assess new therapies for injured fetuses and neonates
• Using imaging to assess brain injury in neonates and infants with severe congenital heart disease

PEDIATRIC RADIOLOGY
John Mackenzie, MD, Chief

Research Directions:
The mission of the Pediatric Radiology section is to improve the health of children through advanced clinical imaging and research.

The section studies pediatric disease through the lens of imaging and is focused on the development of new imaging technologies.

Several ongoing basic science and clinical studies are underway with collaborations with MRI physics, pediatric oncology, pediatric gastroenterology, and pediatric surgery. Examples of research in the Pediatric Radiology section include:
• Study of novel diffusion weighted imaging (DWI) techniques to better identify inflammation and monitor treatment changes in children with inflammatory bowel disease (ulcerative colitis and Crohn disease).
• Testing and improving motion-resistant MRI with pulse sequences such as PROPELLER for use in infants and nonsedated children.
• Examining the strengths and limitations of high-resolution, 3D MRI sequences such as CUBE and SPACE for complex pediatric diseases in the chest, abdomen, and pelvis, including diseases of the liver, bile ducts, kidneys, and pelvic organs.
• Studying bowel motion (peristalsis) of bowel and the changes in motion that occur in disease using MRI pulse sequences such as real-time CINE FIESTA.
RADIOLOGY OUTCOMES RESEARCH LABORATORY
Rebecca Smith-Bindman, Director

Research Directions:
The main objective of Radiology Outcomes Research Laboratory (RORL) is to rigorously evaluate the benefits and the harms of medical imaging that uses ionizing radiation in order to identify ways to improve patient safety.

• Demonstrate, through high-quality clinical and observational research, the impact of medical imaging on patient health, both beneficial and harmful.
• Improve the performance of diagnostic imaging tests by conducting clinical trials that provide the evidence for appropriate and safe use.
• Identify problematic trends in imaging, their potential impacts on patient safety and the healthcare system, and propose solutions.
• Educate healthcare professionals on the current evidence-based techniques for maximizing image quality while simultaneously improving patient safety.
• Engage healthcare providers in purposeful quality initiatives that have an immediate positive impact on the healthcare system and patient safety.

The RORL is dedicated to providing rigorous evidence on the value of medical imaging that uses ionizing radiation to allow patients and their providers to engage in meaningful shared decision making around medical imaging. Our goal is to understand the impacts of diagnostic medical imaging and lessen the impacts of imaging when the costs outweigh the benefits.

ZUCKERBERG SAN FRANCISCO GENERAL HOSPITAL AND TRAUMA CENTER
Mark W. Wilson, MD, Chief
In addition to being the city’s main public hospital and Level 1 Trauma center, Zuckerberg San Francisco General Hospital and Trauma Center is an active teaching hospital, closely allied with UCSF. Faculty and residents from the Department of Radiology & Biomedical Imaging pursue a broad range of clinical and basic science research, including: outcomes of blunt and penetrating injuries treated by embolization; outcomes analysis of tomosynthesis-guided breast biopsy; evaluating the incidence of breast cancer in transgender patients; application of quantitative atlas-based MR imaging techniques in assessing spinal cord injury; virtual classroom for global radiology education; multimodality imaging of traumatic brain injury; molecular MR imaging of liver injury; molecular imaging of infection; evaluation of endothelial abnormalities in brain and pulmonary aneurysms and AVMs; improving the efficiency of stroke diagnosis and triage to therapy; and MR-guided focused ultrasound treatment of musculoskeletal tumors and facet joints.
ULTRASOUND
Ruth B. Goldstein, MD, Chief

Research Directions:
- Prenatal diagnosis of CNS anomalies with ultrasound and MRI
- Further investigation of clinical manifestations and treatment of twin transfusion syndrome
- Prospective, randomized trial of repair of fetal myelomeningocele
- Prospective, randomized trial for selective ablation of connecting vessels in twin transfusion syndrome

VETERANS AFFAIRS MEDICAL CENTER:
DIAGNOSTIC RADIOLOGY
Judy Yee, MD, Chief

Research Directions:
- Dose reduction for screening and diagnostic CT colonography
- Stereoscopic 3D imaging - clinical applications
- Spectral imaging, dual energy, and low kVp CT imaging
- CT and MR contrast timing and delivery in the abdomen and pelvis
- Eovist MR for the detection of hepatocellular carcinoma
- High-field MR imaging of the prostate
- Stroke prediction using intimal thickness on carotid ultrasound
VETERANS AFFAIRS MEDICAL CENTER: CENTER FOR IMAGING OF NEURODEGENERATIVE DISEASES
Pratik Mukherjee, MD, Director

Research Directions:
The Center for Imaging of Neurodegenerative Diseases (CIND) is a Research Center dedicated to studying the causes and effects of neurodegenerative and psychiatric disorders, using imaging such as MRI and PET. We currently have eight full-time faculty performing studies in various fields, including imaging of Alzheimer’s disease, Parkinson’s disease, Depression, Post-traumatic Stress-Disorder, Gulf War Illness, and substance abuse. We also work on the development of novel powerful methods for brain MR, including spiral imaging and new approaches for processing and multivariate statistical analysis of brain imaging. CIND is located at the San Francisco VA Medical center and has a Bruker 4T MRI scanner, a Siemens 3T Skyra that was recently placed into operation and a 7T scanner.

Aside from studies at the CIND, faculty are also involved in large international imaging trials, such as the Alzheimer’s Disease Neuroimaging Initiative (ADNI) and the Parkinson’s Progression Marker Initiative (PPMI). CIND has also been involved in the development of new strategies for the prevention of neurodegenerative diseases. In addition, we have started an initiative, directed by Dr. Michael Weiner, The Brain Health Registry. The purpose of the BHR is to promote healthy brain function through the prevention of brain diseases, disorders and injuries that affect brain function in adults. This is the first neuroscience project to leverage online possibilities in this way and on this large scale.

In the area of MRI and image processing, we work with different techniques including the following:
- Ultra-high resolution structural MRI
- Diffusion spectrum imaging
- Dynamic, arterial-spin-labeling imaging
- Resting-state functional MRI
- Susceptibility-weighted imaging
- Spectroscopic imaging and j-modulated spectroscopy
- Bayesian image reconstruction
- Multivariate image analysis methods

VETERANS AFFAIRS MEDICAL CENTER: VASCULAR IMAGING RESEARCH CENTER
David Saloner, PhD, Director

Research Directions:
- Development of methods for visualization of complex flow in intracranial aneurysms
- Assessment of novel contrast agents in MR angiography
- Development of patient-specific models for review of endovascular therapies
- Analysis of plaque vulnerability using patient-specific image based computational methods
- Development of 4-D MR velocimetry methods for determination in analyzing the impact of hemodynamics on vascular disease progression
Grants and Fellowships

Grants

Andrew J. Burghardt, Specialist
- Ultragenyx Pharmaceutical Inc; Analysis of HR-pQCT images from the UX023-CL201 and UX023T-CL201 Trials, 1/1/16–12/31/16, $36,616
- Stanford University; Patient Oriented Research in Vitamin D Deficiency in CKD, 9/1/15–7/31/16, $18,903

Julio Carballido-Gamio, PhD
- NIH National Institute on Aging; Papers Related to Shape and Density Modeling of Pixels in Hip Femur Data, 9/30/15–9/29/16, $18,900
- NIH National Institutes of Arthritis, Musculoskeletal and Skin Disease; Multi-Parametric Spatial Assessment of Bone with HR-pQ, 6/1/16–3/31/21, $1,376,905

Linda Chao, PhD
- UCSF; Exercise Program for Individuals with Dementia, 7/1/15–6/30/16, $30,000
- Veterans Affairs; Pilot Test of Telephone-Delivered Cognitive Behavioral Therapy for Insomnia for Veterans with Gulf War Illness, 7/1/16–6/30/19, $974,635

Daniel L. Cooke, MD
- American Heart Association; Bevacizumab Therapy for Brain Arteriovenous Malformation, 7/1/16–6/30/18, $154,000

Rahul Desikan, MD, PhD
- American Society of Neuroradiology; Multi-dimensional Prediction of Alzheimer’s Disease Risk, 1/1/17–12/31/18, $230,865

Rebecca A. Dumont Walter, MD
- Society of Nuclear Medicine; Exploiting Bacterial Iron Metabolism for Spinal Infection Imaging with Positron Emission Tomography, 7/1/16–6/30/17, $25,000

Michael J. Evans, PhD
- DOD, US Army Medical Research Acquisition Activity; Development of a Radioligand to Detect Glucocorticoid Receptor Expression in Enzalutamide Resistant Prostate Cancer with Positron Emission Tomography, 9/30/15–9/29/17, $280,019

Nicholas Fidelman, MD
- Sirtex Medical Inc.; Radiation-Emitting SIR-Spheres in Non-resectable (RESIN) Liver Tumor Patient Registry, 8/1/16–7/31/21, $177,555

Robert R. Flavell, MD, PhD
- DOD, US Army Medical Research Acquisition Activity; Detection of Aggressive Prostate Tumors using novel PET and Hyperpolarized 13C Probes Targeting Interstitial Acidity, 9/1/16–8/31/20, $823,901

Steven W. Hetts, MD
- Siemens Medical Solutions USA, Inc.; Siemens-AX-CBF Prototype Software Project, 2/2/16–2/2/18, $124,798

Nola M. Hylton, PhD
- University of Pennsylvania; Multi-parametric 4-D Imaging Biomarkers for Neoadjuvant Treatment Response, 4/19/16–3/31/17, $47,573

Priyanka Jha, MD
- RSNA Research & Education Foundation; Noninvasive In Vivo Hyperpolarized 1-13C Pyruvate Magnet Resonance Imaging to Detect Alterations in Placental Metabolism in Gestational Hypertensive Disorders in a Small Animal Model, 7/1/16–6/30/17, $38,187

Kanti P. Kolli, MD
- New England Research Institute, Inc.; Predicting the Safety and Effectiveness of Inferior Vena Cava Filters (PRESERVE), 10/1/15–9/30/20, $203,212

John Kurhanewicz, PhD
- DOD, US Army Medical Research Acquisition Activity; Metabolic reprogramming of cancer and Anti-Tumor Immunity by Targeting LDH-A, 9/30/15–9/29/18, $365,871

Peder E. Larson, PhD
- NIH National Institute of Neurological Disorders and Stroke; Novel Ultrashort Echo Time Sequences for Brain MRI, 4/1/16–3/31/18, $198,125

Sergey G. Magnitsky, PhD
- NIH National Institutes of Arthritis, Musculoskeletal and Skin Disease; Development of in vivo MR Imaging Technique for Monitoring Mesenchymal Stem Cell Therapy for Bone Pathologies, 4/1/16–1/31/18, $320,795
Sharmila Majumdar, PhD
- GE Healthcare; PET/MR, C13, Cyclotron Showsite Agreement, 12/1/15–12/31/17, $120,000
- GE Healthcare; Development of PET MR Imaging and Processing, 6/1/16–6/30/19, $509,575
- GE Healthcare; Quantitative and Fast MR Imaging and MR Image Processing, 6/1/16–5/31/19, $506,061
- NIH National Institutes of Arthritis, Musculoskeletal and Skin Disease; Evaluating Disease Progression in Hip Osteoarthritis, 7/14/16–4/30/21, $3,458,324

Dieter Meyerhoff, PhD
- NIH; Neuropsychobiology in Polysubstance Abusers during Abstinence, 4/1/16–1/31/21, $2,781,141

Donna Murray, PhD
- NIH, Self-Regulation and Neural Networks in Alcohol Use Disorders, 9/3/15–9/2/17, $115,636

David Newitt, PhD
- Regents of the University of Michigan; Elimination of Instrumental Bias for Quantitative Diffusion Imaging in Clinical Oncology Trials, 8/10/15–7/31/17, $748,895

Susan Noworolski, PhD
- Verity Life Sciences, LLC; Retrospective Study of Prostate MR Imaging, 1/26/16–1/26/21, $68,387

Viola R. Tognina Reike, PhD
- InSightec Ltd.; Research Projects in the Area of MR-Guided High Intensity Focused Ultrasound (MRgFUS) is a Promising Non-Invasive Technique, 6/21/16–6/20/17, $75,000

Sabrina M. Ronen, PhD
- NIH National Cancer Institute; Hyperpolarized Arginine Imaging of Inflammatory Cells and their Inhibition in GBM, 12/1/15–11/30/17, $379,212
- NIH National Cancer Institute–Metabolic Imaging of Brain Tumor Response to Therapy, 4/1/16–3/31/21, $3,233,781

David A. Saloner, PhD
- NIH Office of the Director; Combined X-ray Angiography and MRI Suite, 6/1/16–5/31/17, $1,541,250
- Medical College of Wisconsin; Image-Based Numerical Predictions of Hemodynamics following Vascular Interventions; 7/17/15–5/31/17, $125,018

Youngho Seo, PhD
- NIH Office of the Director; Combined Dual-Modality SPECT/CT for Small Animal Imaging Research at UCSF, 9/23/15–9/22/17, $1,185,177

John A. Shepherd, PhD
- California Breast Cancer Research Program; Localized Probability of Mammographic Masking, 9/1/15–2/28/17, $124,112
- Hologic, Inc.; Hologic Grant Request: Ultra-DXA, 3/11/16–3/10/17, $2,000
- NIH National Institute of Diabetes and Digestive and Kidney; Optical Body Composition and Health Assessment; 5/15/16–4/30/21, $3,154,298
- Massachusetts General Hospital; MGH Cross Cal, 4/1/15–3/31/17, $19,349
- Brigham and Women's Hospital; Environmental Chemicals and Pubertal Breast Composition in a Latino Cohort, 9/1/15–6/30/16, $15,593

Rebecca Smith-Bindman, MD
- Kaiser Foundation Research Institute; Pragmatic Trial of More Versus Less Intensive Strategies for Active Surveillance of Patients with Small Pulmonary Nodules, 8/1/15–7/31/20, $601,663

Charles J. Truillet, PhD
- DOD, US Army Medical Research Acquisition Activity; Detection and Treatment of Advanced Prostate Cancer with Radiolabeled Transferrin Molecules, 8/1/16–7/31/18, $125,000

Olga Tymofiyeva, PhD
- NIH National Center for Complementary and Integrative Health; A Network Approach to Study Brain Plasticity in Children with Cognitive Training, 12/7/15–11/30/17, $435,875

Henry F. VanBrocktlin, PhD
- BioLaurus Inc; Radiolabelling and Small Animal Testing of (TBA), 11/5/15–11/5/16, $28,990
- Iowa State University; In vivo Reporters of Gene Expression, 7/1/15–6/30/17, $71,330
- Trace-Ability, Inc.; Mitigation of Quality and Compliance Risks in Radio-Pharmaceutical Production by Implementation of an Automated Release Testing Technology, 9/1/15–8/31/19, $186,083
- University of Montana; Molecular Imaging of Chemical Threats and Countermeasure, 8/1/15–7/31/20, $583,049
- Cancer Targeted Technology, LLC; NIH Phase 2 SBIR Initial Clinical Evaluation of Prostate Cancer PET Diagnostic, 3/1/15–2/28/17, $333,497
Michael Weiner, MD
- Global Alzheimers Platform, Inc.; UCSF–GAP Collaboration: Leveraging the Brain Health Registry for GAP Clinical Trial Recruitment, 10/9/15–10/8/17, $322,474
- Monell Chemical Senses Center; Olfaction as a Biomarker for Health and Cognitive Decline, 2/12/16–2/11/17, $32,776
- California Department of Public Health; Elucidating Effects of Alzheimer’s Caregiving Using The Brain Health Registry, 7/1/16–6/30/19, $240,000
- Alzheimer’s Drug Discovery Foundation; Brain Health Registry Trial-Ready Cohort, 7/1/15–6/30/17, $100,000
- Larry L. Hillblom Foundation; Hillblom California Brain Health Registry Network, 1/1/16–12/31/19, $1,200,000
- Mayo Foundation, Mayo Clinic; Weiner Sub Mayo Alzheimer’s Disease Patient and Caregiver Powered Network, 10/1/15–9/30/16, $178,317
- Alzheimer’s Association; Using the Brain Health Registry to Facilitate the Imaging Dementia-Evidence for Amyloid Scanning (IDEAS) Study, 5/1/16–4/30/19, $700,243
- NIH and Foundation for the NIH; Alzheimer’s Disease Neuroimaging Initiative, 9/15/16–7/31/21, $60,000,000

Xiaoliang Zhang, PhD
- NIH, National Institute of Biomedical Imaging & Bioengineering, Improved Sensitivity and Safety for Endovascular MR Imaging at 3T, 2/1/16–1/31/18, $428,855

Fellowships

Rahul Desikan, MD, PhD
- Radiological Society of North America; An Automated Atlas of the Human Brainstem and Cerebellum, 7/1/16–6/30/17, $50,000

Rebecca A. Dumont Walter, MD
- RSNA Research & Education Foundation; Exploiting Bacterial Iron Metabolism for Spinal Infection Imaging with Positron Emission Tomography, 7/1/16–6/30/17, $50,000

Michael A. Samaan, PhD
- NIH National Institutes of Arthritis, Musculoskeletal and Skin Disease; Longitudinal Assessment of the Effects of Hip Arthroscopy on Articular Cartilage Biochemistry through a Novel Quantitative MRI-Based Approach, 9/1/16–8/31/18, $126,972

Leo P. Sugrue, MD, PhD
- American Roentgen Ray Society; Imaging Biomarkers of Obsessive Compulsive Disorder, 7/1/16–6/30/18, $150,000
The Department of Radiology and Biomedical Imaging is grateful to the many alumni who give back with a gift to the department.

“Alumni support of the Margulis Society is ever more important now that our residency has been recognized as the highest-ranked clinical training program among diagnostic radiology residency programs nationwide. Having benefited firsthand from the Margulis Society, I now happily support the organization’s continued efforts in promoting UCSF Radiology resident research, career outreach and educational endeavors. Without alumni support I never would have benefited from many educational experiences, including the Armed Institute of Radiologic Pathology (AIRP) in Washington, D.C. prior to taking the ABR Core Examination.

It is truly an honor to be counted a graduate of the UCSF Radiology Residency and Neuroradiology Fellowship. My time in San Francisco was truly an amazing life experience. At UCSF I was afforded every opportunity to pursue my career, learn from world-class mentors, and make lifelong friendships. In retrospect, I will forever be grateful to Hideyo Minagi for his 7 AM radiography classes. Thanks Hideyo!”
— Ramon Barajas, Jr., MD
Residency ‘14, Fellowship ‘15
Assistant Professor
Oregon Health & Science University, Portland, OR

“I donate to the Margulis Society because I believe in its mission to support travel, education and research for the radiology residents, and of course to sponsor the trainee career night and wonderful gala. I can still remember the first Margulis Gala that I attended as a resident. It was such an honor and thrill to feel apart of something with such a long tradition of excellence in radiology training. The Margulis Society makes UCSF feel even more like a family, a home away from home for residents to be mentored and supported by alumni!”
— Ashley Aiken, MD
Residency ‘06, Fellowship, ‘07
Associate Professor of Radiology and Imaging Sciences
Program Director, Neuroradiology Fellowship
Emory University, Atlanta, GA

“UCSF is an unparalleled institution of higher education, scientific discoveries, and patient care. As a native San Franciscan reflecting back on the past decades, I am most grateful and keenly aware of the impact that UCSF has had on my professional life and my community.”
— Jessica Leung, MD
Residency ’98, Fellowship ’99
Professor, Department of Diagnostic Radiology
Section Chief, Breast Imaging
Department of Diagnostic Radiology, Division of Diagnostic Imaging
The University of Texas MD Anderson Cancer Center, Houston, TX