From Idea to Implementation

The Digital Health Revolution

UCSF has long been a trailblazer in life sciences innovation – for example, faculty members founded Genentech, Chiron, and many other biotechnology companies. Now the UCSF Department of Medicine is poised to lead the way in digital health – a rapidly evolving field that harnesses the latest developments in health information systems, genomics, wireless devices, and other technologies to improve health care.

Rather than merely converting analog data into bits and bytes, the digital revolution is an opportunity for medicine to transform research, patient care and education. Following are a few highlights:

Center for Digital Health Innovation

To foster achievements in digital health, UCSF created the Center for Digital Health Innovation (CDHI) – a one-stop shop for faculty, staff, and students interested in advancing digital health concepts and prototypes, proving them in the clinical environment and commercially scaling them. Moreover, CDHI provides a front-door to Silicon Valley innovators who seek relationships with UCSF faculty for advice, research, and collaborations.
From the Interim Chair

Leading the Digital Transformation of Medicine

The practice of medicine is all about information: information collected and deployed to help patients become and stay healthy. Remarkably, until about a decade ago, most of this information was written on pieces of paper, stored in three-ring binders, supplemented by Post-it notes, and transmitted through fax machines.

In the past five years, medicine has transformed from a paper-based industry to a digital one. UCSF, of course, has been part of this trend, with electronic records, e-prescribing, and the like at all of our clinical sites. This digital transformation is making care safer and better.

But UCSF, and our department of medicine, can’t rest after simply adopting digital tools to improve care. Instead, it is in our DNA to be leaders, and leading in digital health requires a lot of new activities and competencies. It means becoming expert in analyzing so-called big data. Led by Atul Butte MD, PhD, director of UCSF’s Institute for Computational Health Sciences, we have developed a world-class program in big data and precision medicine, not just data collected at UCSF but across all five UC medical campuses. Leadership means promoting innovation in technology, and we are doing this, through the unique Center for Digital Health Innovation (our window to Silicon Valley) and our superb Clinical and Translational Science Institute (CTSI). It means integrating technology into our educational programs, as we are doing in myriad ways.

It also means celebrating the potential of technology without being blind to its dark sides. In fact, after witnessing a serious medical error at UCSF due to the complex interactions between people and computers, I devoted a year to writing a book entitled, “The Digital Doctor: Hope, Hype, and Harm at the Dawn of Medicine’s Computer Age.” One reader was the Secretary of Health of the United Kingdom, who has asked me to advise England’s National Health Service on its digital journey. Similar examples of leadership are emerging across our department – many of them described in these pages.

Technology is a tool – an immensely powerful one, but still just a tool. Our goal is to harness this tool toward the ends that we all seek: care that is safer, higher quality, more satisfying, more engaging, and less expensive. Education that is more tailored to the needs of students. Research that is more innovative and impactful. Increasingly, the ability of any academic health system to achieve its goals will depend on having world-class digital capabilities. Luckily, at UCSF, we do.

Sincerely,
Robert M. Wachter, MD
Professor and Interim Chair, Department of Medicine
Lynne and Marc Benioff Endowed Chair in Hospital Medicine
Donor Profile: Dr. Robert L. Kroc

A Legacy of Discovery

Robert L. Kroc, PhD, had a long, distinguished career in private industry as an investigator in endocrinology and therapeutics. He also served as president of the foundation established by his brother, Ray A. Kroc, founder of the McDonald’s Corporation. The Kroc Chair was created in 1985 with a gift from the Kroc Foundation to honor Dr. Kroc, and to support research focused on rheumatic and connective tissue diseases and the related study of immunologic abnormalities. The first holder of the chair was Edward Goetzl, MD, who retired in 2011.

The Kroc Chair grew to have the highest market value of any endowed chair in the Department of Medicine. In 2014, it was decided that dividing the income among multiple faculty members pursuing research in these fields would magnify the impact of this gift. In October 2015, five faculty members were appointed to the Robert L. Kroc Endowed Chairs in Rheumatic and Connective Tissue Diseases I-V:

■ Rheumatologist Francesco Boin, MD, directs the UCSF Scleroderma Center. Boin received his medical degree from the University of Padova Medical School in Italy, completed his internal medicine residency at the Mayo Clinic, and a postdoctoral fellowship in rheumatology at Johns Hopkins University. He directed the Johns Hopkins Scleroderma Center’s Translational Research Program before his recruitment to UCSF. His research focuses on the genetic basis and biology of immune cells involved with mechanisms of autoimmunity in scleroderma. His goal is to identify novel tools to investigate the causes of scleroderma, effectively measure disease activity, monitor treatments, and predict clinical outcomes.

“The leading principle I inherited from my mentors is that patients hold the answer to their disease, which means that coupling refined clinical phenotyping with cutting-edge research is the best way to solve this illness,” said Boin. “The support from the Kroc Chair will allow us to establish the UCSF Scleroderma Center of Excellence, which will provide outstanding clinical care and build the translational research infrastructure that will allow us to find a cure.”

■ Pulmonologist Laura Koth, MD, established the UCSF Sarcoidosis Research Program. She earned her medical degree from Harvard Medical School, then completed internal medicine residency at Massachusetts General Hospital and pulmonary fellowship at UCSF. Koth initiated a longitudinal study of sarcoidosis patients and healthy controls that now includes 200+ patients and is in its fifth year. This study includes studies in genomics, biomarker discoveries, and identification that TH17 largely drives the cells that produce interferon-gamma. Many of these discoveries have challenged traditional thought and are creating new avenues of investigation.

“I want to thank the Kroc family for this generous opportunity to be a physician-scientist,” said Koth. “Sarcoidosis can affect adults of any gender, age, and race, though it disproportionately affects African-Americans. Many patients live with physical or mental disabilities, usually for the rest of their lives, and they are very motivated to participate in our research. …This award is very meaningful to me, and provides validation that the research direction I’m focused on is significant.”

■ Pulmonologist Anthony Shum, MD, is a physician-scientist with a particular interest in understanding how genetically linked autoimmune diseases contribute to interstitial lung disease. Shum directs a translational research lab that intensively studies patients and their families, sequencing their genomes to identify genetic mutations and the molecular pathways underlying disease, and modeling their disease in mice. He earned his medical degree from the University of Chicago, and completed internal residency at Boston University and pulmonary fellowship at UCSF. Shum hopes to discover diagnostic and interventional targets that will ultimately lead to biomarkers and therapies that directly impact patient care.

“I’m grateful and honored to be named to this chair,” said Shum. “As a physician-scientist fighting for ever-shrinking NIH dollars, it’s really meaningful to have support. Having this chair will let us continue the work we’ve been doing at the intersection of pulmonary disease and autoimmunity, particularly working closely with families with rare disorders that affect the lung, figuring out how to solve these disorders, and coming up with new treatments.”

■ Rheumatologist Jinoos Yazdany, MD, MPH, co-directs the UCSF Lupus Clinic. She received her medical degree from UCLA, her MPH from Harvard University, and completed her internal medicine residency and rheumatology fellowship at UCSF. Her research

“Endowments bring donors, a vision, and leading physicians, scientists and educators together to carry out that vision. This synergy of generosity, purpose, and leadership generates a force that ripples out in multiple directions for many years.”

— Talmadge E. King, Jr., MD, dean of the UCSF School of Medicine
Established in 2013, CDHI welcomes everyone from expert coders to clinicians just looking for apps to help improve care, and serves as a matchmaker for all things digital. “People might need funding, technology support, or commercial connections to scale up their idea, or introductions to licensing, contracting, and intellectual property resources on campus,” said Michael Blum, MD, the center’s director, who is also associate vice chancellor for informatics for UCSF Health. “We have all these capabilities, and want to collaborate with UCSF faculty, staff, and students so they don’t have to figure these things out on their own.”

The CDHI has four pillars:

- **Innovation**: In addition to connecting people with expertise, CDHI provides seed funding, cuts through red tape, and vets outside companies wanting to partner with UCSF. “External innovators are marching up from Silicon Valley, saying ‘We have this great idea that’s going to revolutionize health care,’” said Blum. However, most of these concepts and companies are unproven in the health care space, requiring vetting and validation. Hospitalist Priyanka Agarwal, MD, MBA, leads CDHI’s start-up partnership efforts and has assessed the feasibility of more than 150 startups, matching the best with potential faculty partners and protecting UCSF’s intellectual contributions. Also, Alvin Rajkomar, MD, is developing several partnerships scheduled to launch this year (see story on page 9).

- **Integration**: “If you’re going to have an impact on health care, you can’t just stand outside and say you’ll disrupt it,” said Blum. “There needs to be coordination with existing processes.” Russ Cucina, MD, MS, associate chief medical information officer for the UCSF Health System, and Aaron Neinstein, MD, an assistant professor in endocrinology, lead efforts to help new digital tools interface with UCSF Health’s electronic health record, APeX.

- **Validation**: The tech world is full of new devices claiming to track everything from heart rate and blood pressure to sleep patterns and stress. “Unfortunately, many devices are completely unproven, and some don’t work as expected under real-world conditions,” said Blum. “We need to know whether they measure things accurately, reliably, and in a way that improves health.” Andy Auerbach, MD, MPH, a professor in hospital medicine, spearheads these efforts, partnering with organizations including the UCSF-Samsung Digital Health Innovation Lab, the UCSF Clinical and Translational Science Institute (CTSI), and the Clinical Innovation Center.

- **Education**: Chandler Mayfield, executive director, technology enhanced education, from the School of Medicine Dean’s Office leads work to educate medical students about digital health and optimize ways to teach them the skills they will need, leveraging these powerful new tools. CDHI incubates several projects, including CareWeb, the brainchild of Raman Khanna, MD, assistant professor of hospital medicine. CareWeb interfaces with APeX, allowing a patient’s entire care team to securely share communications via computer or mobile device using an interface that combines aspects of Facebook and Twitter. “Health care has moved beyond a point-to-point communication, such as a nurse paging a doctor, where no one else knows what is going on,” said Blum. “This is a team-based, collaborative communications platform that is social and mobile.”

CDHI helped develop CareWeb and integrate it with APeX. CareWeb has been piloted on the medicine and cardiology services for over a year, and was recently licensed to Voalte, a commercial software vendor, which will incorporate it into its technology platforms and bring the application to scale across the country. Khanna, with Blum and Department of Medicine Interim Chair Robert M. Wachter, MD, recently authored a piece in *JAMA* on the importance of reimagining communication technology in the post-pager era.

Led by Neinstein, CDHI also launched a collaboration with Cisco, the world’s leader in networking technology, to build a platform allowing patients to have centralized access to all their health-related data, including information from hospital stays, clinic visits, and devices like Fitbits and Apple watches. “This will allow an individual’s data to move
around the health care system much more freely, rather than being locked up in a hospital's electronic health record," said Blum. "It will also let developers write apps that access health care data, which is currently inaccessible. In five years, we'll look back with amazement at the 'Dark Ages,' when patients couldn't access their own health care data."

"There is a lot of activity in digital innovation at UCSF, and many people in the Department of Medicine are national leaders in this space," said Blum. "Our portfolio currently has a dozen projects, but we eventually want to have hundreds. We encourage anyone with an idea to come talk to us at CDHI." cdhi.ucsf.edu

Tideswell, Improving Care for Elders

"Oftentimes we ask older adults, 'How does that medication affect your chronic pain? How does it impact your ability to think clearly?' said Christine Ritchie, MD, MSPH, Harris Fishbon Distinguished Professor in Clinical Translational Research and Aging and director of Tideswell at UCSF, an incubator in the Division of Geriatrics for geriatrics research, care models, and leadership training. "But these are very gross estimates. We wanted to do a more real-time assessment of people's cognition and function, with much more granular data."

With support from the National Palliative Care Research Center, Ritchie and her colleagues are developing an app – called the Cognition-activity Assessment in Response to Rx Interventions (CARRI) tool – to accomplish this. Patients use an iPad to record their pain level and follow-up tests. Davoren’s group spent months demo-ing the application for end users and tweaking it in response to comments.

“It’s essential for clinical staff to articulate their needs and provide meaningful feedback to [software] developers,” said Davoren. “Health care processes are complex, and require a lot of stakeholder input. It can’t be a technology-based strategy; it has to be about how technology might be useful in improving the work that’s being done.”

At the SFVAMC, Davoren also led the introduction of tablets; among other uses, clinicians can now show patients their CT scans at the bedside. "The patient has been quite isolated from his or her own information," said Davoren. "They get it later, if at all. Having it available to them for decision-making is really useful, and you get questions from the patient and family members that they might not have otherwise asked."

For decades, he has led “Ten with Ben” sessions with clinicians and trainees, teaching them IT tips and tricks. He also champions developing contingency plans for when – not if – the computer systems go down. Davoren is excited about a new version of the EHR the VA is scheduled to roll out in the near future, which will better support systems improvement rather than just a one-patient-at-a-time approach.

“There’s very little in IT implementation that’s related to technology,” said Davoren. “It’s almost all about relationships. Informatics is a contact sport – people don’t want to change what they’re doing unless it’s their idea, so you have to get out there, press the flesh, and say, ‘Let’s figure out how to make this the best it can be for you.’"
when they take their medication throughout the day.

Using tools developed by Kate Possin, PhD, assistant professor of neuropsychology, and colleagues at the UCSF Memory and Aging Center, the app also incorporates computer games to assess patients’ short-term memory, response time, and attention span. For example, with the Stargazer cognitive assessment tool, the screen may show nine blue stars and one green star, which then disappears; the patient is asked to touch the screen where the green star was. Instead of asking patients to self-assess their concentration and focus levels weeks later during a clinic visit, these tests measure those abilities several times a day and track whether a pain medication appears to impact their thinking.

Patients also wear a wristband accelerometer to track activity. “If someone says, ‘I don’t think that pain medication is helping me at all,’ but you look on their graph and see that their functional status improved profoundly, the provider might say, ‘Gosh, it looks like you are walking a lot more – could that be from your new medication?’” said Ritchie. “On the other hand, you could also see if their physical activity dropped or their sleep patterns changed, which also could be side effects from medicines used to treat pain.”

“I’m always on the hunt for ways to utilize technology to help us live better lives,” said Ritchie. “If I knew of someone else doing this, I would just use their assessment tool – but I haven’t found someone else who is, so we had to create our own. The development process has shown both how much promise there is, and also how challenging it is to create technology-supported tools that are relevant to the population we’re trying to help.”

For example, her team originally thought they could design the app for a smartphone, which could combine the computer games, medication tracking, and accelerometer all in one device. “We realized that the phone is too small, and requires better eyesight and more manual dexterity than the iPad,” said Ritchie.

“My hope is that we’ll be able to learn from the wearable technology and ‘quantified self’ community,” said Ritchie, referring to the trend of self-tracking through technology. “We hope to creatively apply their innovation to clinical practice and research to help people who might not otherwise have access to these tools.”

Redesigning Care through Telemedicine

George Su, MD, a pulmonologist at Zuckerberg San Francisco General Hospital and Trauma Center (ZSFG), spent years studying lung cell biology in the laboratory of Dean Sheppard, MD. But after completing a biosdesign externship at Stanford University, he began using design skills to improve care for vulnerable populations. In 2012, Su became medical director of telehealth for the San Francisco Health Network (SFHN) – the comprehensive health delivery system of the San Francisco Department of Public Health (SFDPH), which includes ZSFG and 26 community primary care clinics.

Telehealth is the practice of leveraging technology to provide care and medical expertise in ways that do not require face-to-face visits. “This was an incredible opportunity to apply design thinking to large health care problems,” said Su, who also credits his experience studying complex molecular systems with helping him understand equally complex safety net care delivery systems. Rather than just inserting the latest gadget into clinics, Su and his colleague, Bruce Occena, MPH, MBA, take a user-centered and needs-based approach – talking with stakeholders, understanding needs and capacities, mapping out existing processes, and thinking about how technology could help. Some examples include:

- **Teledermatology:** Until recently, patients with a puzzling skin problem had to wait several months for a ZSFG dermatology appointment. Now, primary care practitioners securely transmit photos to Toby Maurer, MD, chief of dermatology at ZSFG, and her colleagues, who review the images and provide recommendations within four days. More than 60 percent of the time, cases can be solved through images alone, eliminating the need for a face-to-face appointment. For cases requiring an
Lesbian, gay, bisexual, and transgender people are vulnerable to poor health, yet are largely invisible: the US Census and most national health studies collect no information about sexual and gender minorities. The PRIDE Study (pridestudy.org) hopes to change this, using iPhones and other technology to study LGBT health. Nephrologist Mitchell Lunn, MD, and obstetrics and gynecology fellow Juno Obedin-Maliver, MD, MPH, co-direct the study, which has enrolled over 16,500 participants nationally – likely the largest LGBT study cohort ever.

Lunn and Obedin-Maliver met in medical school, discovering a shared passion for improving LGBT health and health care. One challenge is the lack of population-based data; as a 2011 Institute of Medicine report noted, current knowledge is spotty, studying small groups over limited timeframes.

“We thought, maybe we should start a longitudinal cohort study of LGBT people of all sexualities and gender minorities, taking advantage of new technologies,” said Lunn. The PRIDE Study uses a mobile app powered by ResearchKit, Apple’s open-source framework, and partners with 45 LGBT health clinics, community centers and advocacy groups nationally to recruit participants. The study launched in June 2015, one day before the US Supreme Court’s ruling on same-sex marriage, and received coverage in the San Francisco Chronicle, Washington Post and BuzzFeed. Enrollment is ongoing, and the co-directors plan to continue the study for decades.

The study’s initial phase asks about participants’ health history and invites them to suggest research questions. “By engaging the community very early in the process, we hope to study meaningful topics,” said Lunn, emphasizing the need to earn respect from people who have often experienced discrimination from the medical establishment.

The next phase will include an annual health questionnaire and topic-specific studies. Later this year, the study will add a web-based portal for those without iPhones, access in other languages, and the option to contribute data from electronic health records and physical activity trackers like Fitbits.

Some of the team’s research questions include:

- **Cancer:** LGBT people smoke more than the straight population; what are successful cessation strategies? Do transgender people on testosterone or estrogen experience increased cancer risk? How frequently do lesbians get Pap smears?
- **HIV prevention:** Pre-exposure prophylaxis (PrEP) is an effective way to prevent HIV transmission. What are barriers to more widespread adoption?
- **Mental health:** What are risk factors for depression and anxiety in the LGBT community? What are protective factors for mental illness and suicide?

“My goal is to apply technology in creative ways that will best meet the needs of our patients, providers, and health care delivery system.” — George Su, MD

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**In-person visit, appointment wait times have dropped to less than 30 days, largely because straightforward cases can now be handled without clinic visits.**

**Teleretinopathy:** The SFHN cares for over 8,000 diabetics, most of whom require screening for retinal eye disease at least every two years. Overwhelming demand and limited specialty access have resulted in poor screening rates. The SFHN Telehealth Program and ZSFG ophthalmologists Cynthia Chiu, MD, Jay Stewart, MD, and Jim Larson have designed a program that includes a walk-in service at ZSFG, embedded retinal imaging cameras at clinics with the staffing to operate them, and even a mobile camera on a van that visits clinics without dedicated cameras.

“Our primary care colleagues convinced us that rather than placing a high-maintenance camera in every clinic, a multipronged approach would be best,” said Su. “We can leverage patients’ comfort level at their home clinics, while limiting the burden on clinics to maintain their own local eye imaging programs.”

**Telespirometry:** Spirometry is required to diagnose lung diseases such as asthma and emphysema. Unfortunately, wait times at the ZSFG Pulmonary Function Testing Laboratory have continued on page 8
Yet it can be hard for medical students to know where they need to improve, since they receive test scores and teacher evaluations in bits and pieces. A new tool developed by the UCSF School of Medicine called the iROCKET Student Dashboard pulls together many sources of feedback to provide a real-time, one-stop summary of each student’s strengths and growth opportunities.

“We are interested in promoting lifelong learning skills, and providing assessment information to students so that they can do evidence-based, data-driven self-assessment,” said Karen Hauer, MD, PhD, associate dean for assessment for the UCSF School of Medicine.

Like a car dashboard, which shows drivers their speed, number of miles driven, and whether the gas tank is almost empty, the student dashboard presents a snapshot of performance, updated daily. Students can see how they are doing in each area compared to the class average, and can drill down for more detailed information. For example, they might see they excel in most areas of medical knowledge — indicated by green bars — but need to beef up their knowledge of the nervous system, pathology, and radiology, represented by yellow bars. The dashboard includes links to online resources and tutorials to help students identify early the areas where they are at risk, rather than having them fail and remediate.

Beginning this fall as part of the new School of Medicine Bridges Curriculum, each student will have a coach who teaches foundational clinical skills and systems improvement, and works intensively with them through all four years of medical school. “Students and faculty feel like advising is richer when they have shared information,” said Hauer. “Lifelong learning requires good evidence and coaching, and we’re getting all the pieces in place.”

The iROCKET Student Dashboard is still in its initial phase; next steps include expanding it from two to seven core competencies, training coaches how to use the dashboard, and enabling students to contribute narrative feedback.

Karen Hauer, MD, PhD, uses the new iROCKET Student Dashboard to discuss strengths and growth opportunities with medical student Kadia Wormley.

A Student Dashboard to Guide Improvement

Future doctors need to learn a dizzying array of skills during medical school — everything from how to do a physical exam to the latest advances in molecular biology and quality improvement.


“**Faculty to Watch: Dr. Alvin Rajkomar**

Teaching Computers to Learn

Digital native Alvin Rajkomar, MD, grew up in San Jose and started programming in sixth grade. In 2012, when UCSF Medical Center adopted its electronic health record (EHR) system, APeX, technology was already woven into his life. He ordered a constant stream of Clif Bars from Amazon, and relaxed by watching Netflix on his iPad.

“I assumed that APeX would similarly enhance our clinical life,” said Rajkomar, imagining, for example that it would automatically suggest prescribing a laxative if he ordered a constipation-causing medication. “Instead, I realized that the EHR oftentimes made the work harder.” He was also disappointed that it took months to get data for a simple research query.

Frustrated, he received training to access the APeX database himself and took software engineering courses online. One tool is leveraging the power of huge data sets to counterbalance the messiness of real-world data – the way a Google search suggests appropriate links even if the query is misspelled. “I’m focusing on a type of machine learning that analyzes large amounts of really messy data to find ways to improve health care,” said Rajkomar.

He is working on just that, developing a computer program that reviews millions of X-rays to learn which features are associated with urgent conditions. “The goal is not to replace the radiologist, but to flag worrisome images for them,” said Rajkomar.

■ **Using big data to guide care:** A computer algorithm identifies risk factors by analyzing thousands of records over time. “If your credit card account has purchases from China and Europe in the same day, that’s a strange pattern of activity – there may be fraud,” said Rajkomar.

He is using a similar approach to search for hidden patterns in thousands of patient records. “If you call the clinic with a fever, shouldn’t we be able to predict your risk of coming to the emergency room, and dispatch additional resources if your risk is elevated?” he asked.

“I’m very interested in collaborating with people with technical expertise and resources, particularly those in Silicon Valley,” said Rajkomar. “It’s amazing to work at UCSF, because its entire mission is to help people.”

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“We are moving toward a model of assessment for learning, rather than assessment of learning.”

– Karen Hauer, MD, PhD

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Hauer partnered with Bonnie Hellevig, Sandy Ng, MSN, RN-BC, and other colleagues at the School of Medicine and UCSF Health to model the iROCKET Student Dashboard on physician dashboards recently created by UCSF Health. The physician dashboards help clinicians track their care of patients and compare their performance to expected benchmarks and peer performance.

Part of creating the student dashboard included defining key performance indicators, as well as identifying milestones along the way. “We know what we want students to look like at the end of medical school, but it’s helpful for them to know what they should be like by the end of the first or second phase of the curriculum – and what to do if they need to make adjustments,” said Hauer. “Helping people figure out, ‘What should I be working on?’ is part of cultivating a growth mindset, and how you’re going to get better.”

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Throughout his career, Roni Zeiger, MD, MS, has sought ways to combine his love of science with his passion for helping others. As an undergraduate, he found lab research lonely, but enjoyed working as a medical interpreter. “From day one, patients were telling me things,” he said. “I saw that medicine was a way to do science and people at the same time.”

As a UCSF Primary Care Internal Medicine resident, one of his mentors was Stephen McPhee, MD. “He has a special blend of humility and wisdom,” said Zeiger. “The best leaders make their team think it all comes from the team.”

Residency provided superb leadership training. “One of the most difficult but important aspects is delegating thoughtfully – knowing when you can completely depend on someone, when you need to check up on them, and what to do when things aren’t going well,” he said. “It’s a delicate balance of maximizing individual learning, the team’s success and patient care.”

Zeiger started building software in medical school, and developed a digital compendium of symptoms and corresponding diseases. In partnership with McGraw-Hill, Zeiger built this into Diagnosaurus, a mobile app that reminds clinicians of possible diagnoses.

“In a stellar group of UC Primary Care Internal Medicine residents, Roni was clearly one of the best of the best!” said McPhee. “A terrific doctor, he has spent much of his career focused on the relatively new field of medical informatics. Diagnosaurus is an extremely useful tool. I use it when presenting a case where the diagnosis is puzzling. Invariably, it helps.”

Patient-Centered Design

After residency, Zeiger worked as a primary care physician but missed his “nerdy side projects.” He enrolled in the biomedical informatics master’s program at Stanford, studying how patients use the Internet. He became chief health strategist at Google, overseeing projects that included Google Flu Trends and Google Body. “Google is where I learned user-centered design, which has beautiful parallels with patient-centered medicine,” said Zeiger, who continues practicing medicine part-time. “I’ll often ask patients, ‘What do you think is going on?’ which elicits a thoughtful response that sets the tone for collaborative work. With software products, the user is the expert at understanding the problem, and the developer can build possible solutions.”

For example, in response to user feedback, Zeiger’s team enhanced the search results page so that people Googling “suicide” now see a hotline number at the top. “In a week, that probably touches more people than I’ll ever interact with in my whole career,” he said.

He also oversaw Google Health, which sought to make users’ health information accessible online. However, it fizzled – perhaps a venture ahead of its time. “People couldn’t easily refill a prescription or get a high-quality second opinion,” said Zeiger. “Big ideas that don’t solve tangible problems might not succeed.”

Smart Patients

In 2011, Zeiger developed a brain hemorrhage, but made a full recovery. “While lying in the neuro-ICU, I realized I just got a free pass, and wondered what I should do with it,” he recalled. He and Gilles Frydman – a pioneer of medical online communities – then co-founded an online peer support network for patients and families called Smart Patients (smartpatients.com), which allows patients and caregivers to support and learn from each other.

Smart Patients also aims to improve health care by enabling patients to participate in quality improvement work with partnering medical centers. “Instead of thinking about patients as passive recipients of our care, let’s think of them as collaborators in generating hypotheses and redesigning how care is delivered,” said Zeiger.

Zeiger continues to work a few urgent care shifts per month at Santa Clara Valley Medical Center. He and his wife, Leslie, have two young children, Lev and Ana.

His advice to residents: “Find out what you really care about, and figure out how to do it. There won’t necessarily be a paved path. I think each of us has a responsibility to help our families, our local community, or the global community in a way that best matches our skills and passion.”
foci on developing tools that increase the quality and safety of health care delivered to patients with rheumatic diseases. She has co-chaired the American College of Rheumatology’s (ACR) Quality Measures Subcommittee, chaired the ACR’s Rheumatoid Arthritis Quality Measures Development Work Group, and currently chairs the Research Committee for the ACR national registry.

“I’m so grateful for this unexpected honor, and appreciate the generosity of the Kroc family,” said Yazdany. “Rheumatic diseases are extremely complex, and are difficult to diagnose and manage. I’m interested in ways we can use information science and new tools to make health care safer, deliver it in a more standardized and evidence-based way, and reduce the striking health disparities we see in these conditions. I’m especially excited by the opportunities this endowment will permit – allowing me to pursue this research agenda more aggressively both at UCSF and nationally, and to mentor the increasing number of trainees interested in improving the quality and safety of health care in rheumatology.”

- Rheumatologist and molecular immunologist: Julie Zikherman, MD, cares for patients at the UCSF Arthritis Center and runs a basic immunology laboratory. She earned a medical degree at Cornell Medical College and completed internal medicine residency at Brigham and Women’s Hospital, where she began a rheumatology fellowship that she completed at UCSF. Antibodies are a crucial part of our defense against infection. Zikherman’s lab delves into the origin of autoantibodies, which mistakenly target the body’s own tissues with often devastating results. Autoantibodies are characteristic of rheumatic and connective tissue diseases such as lupus, and arise from a type of white blood cell called the B cell. Interestingly, many normal B cells in healthy patients can recognize the body’s own tissues. Zikherman’s group is trying to understand what prevents normal B cells from mounting inappropriate immune responses, what goes wrong in the context of autoimmune disease, and which subsets of B cells are at greatest risk for producing dangerous autoantibodies.

“I’m so very grateful to have been selected for this honor, and even more grateful to have trained and stayed at such a generous and welcoming institution,” said Zikherman. “The support from this chair will be invaluable for pursuing some of our lab’s questions, and I’m excited to do that.”

“Dr. Robert Kroc, the founder of this chair, was a visionary,” said Talmadge E. King, Jr., MD, dean of the UCSF School of Medicine. Addressing the newly inducted honorees, King said, “As an endocrinologist, he was in this business, and I think he would not be surprised that we have such wonderful people to be supported by his gift. This is an exciting time in medicine, and you are our future – it’s in really good hands, and I am proud of you.”

Appointments & Promotions

UCSF Health includes UCSF Medical Center, UCSF Benioff Children’s Hospital San Francisco, UCSF Benioff Children’s Hospital Oakland, Langley Porter Psychiatric Hospital and Clinics, and the UCSF faculty practice group, as well as new partnerships and joint ventures with several other organizations. The transformation of the clinical enterprise from a standalone medical center into an integrated health care network aims to capitalize on UCSF’s traditional strengths while simultaneously embracing new ways of organizing and delivering care in a rapidly evolving health care industry.

Three UCSF Department of Medicine faculty have been appointed to leadership positions at UCSF Health:

- **Joshua Adler, MD**, executive vice president for physician services, the top physician position at UCSF Health. He completed his medical degree at UC San Diego, internal medicine residency at UCSF and chief residency at the San Francisco Veterans Affairs Medical Center (SFVAMC). In the VA system, he served as assistant chief of medicine, assistant chief of staff and chief medical officer of the six hospital Sierra Pacific VA Network. Adler directed implementation of an electronic medical information system at SFVAMC, and later served as chief medical officer for UCSF Medical Center.

- **Adrienne Green, MD**, chief medical officer and vice president, patient safety and regulatory affairs. She previously served as associate chief medical officer at UCSF Medical Center and has been physician lead for UCSF’s Patient Safety and Care Transitions programs. Green earned her medical degree at Hahnemann University College of Medicine, and completed internal medicine residency and chief residency at Stanford University.

- **Niraj Sehgal, MD, MPH**, vice president and chief quality officer. He previously served as associate chair for quality improvement and patient safety for the Department of Medicine. Sehgal earned his medical degree at Rush University, completed internal medicine residency and chief residency at Stanford University, a master’s of public health from UC Berkeley, and a health services research fellowship in prevention from Stanford.

Other Appointments Include:

- **Gregory Marcus, MD**, has been appointed the inaugural holder of the Endowed Professorship in Atrial Fibrillation Research, funded by Robert A. Naify to support better ways to predict, prevent and cure the most common abnormal heart rhythm. Marcus co-directs the Health e-Heart Study, is the director of clinical research for the Division of Cardiology, and oversees multiple interventional and observational studies focused primarily on arrhythmias, particularly atrial fibrillation. He also mentors medical students and fellows in their research. He earned his medical degree from George Washington University in Washington, DC, completed internal medicine residency and chief residency at Stanford University, then completed cardiology and cardiac electrophysiology fellowships and a master’s degree in clinical research at UCSF.

- **Zian H. Tseng, MD, MAS**, has been appointed the inaugural holder of the Murray Davis Endowed Professorship, created through a gift from Charles Schwab in memory of his son-in-law, Murray R. Davis, to support research and treatments to prevent sudden cardiac death. Tseng leads the San Francisco POstmortem Systematic InveStigation of Sudden Cardiac Death (POST SCD) Study, which conducts comprehensive investigations, including autopsies, of every adult and child who experience sudden death in San Francisco. Tseng completed his medical degree, internal medicine residency, cardiology and cardiac electrophysiology fellowships, and a master’s degree in clinical research, all at UCSF.
In Memoriam

Dr. Ephraim P. Engleman

Ephraim P. Engleman, MD, a pioneer in rheumatology and founding director of the Rosalind Russell/Ephraim P. Engleman Rheumatology Research Center at UCSF, died on September 2, 2015 at age 104.

Born in San Jose in 1911, Engleman was a violin prodigy and played background music at silent movie theaters as a teenager. The introduction of talking pictures helped motivate his decision to pursue medicine rather than music. He graduated from Stanford University, earned his medical degree at Columbia University, completed residencies at UCSF and Tufts University in Boston, then completed a research fellowship with renowned Harvard rheumatologist Walter Bauer, MD.

In the mid-1940s, Engleman opened a private practice as the Bay Area’s only formally trained rheumatologist. He joined the UCSF faculty in 1947, where he remained until the last day of his life. In the mid-1970s, he chaired the National Commission on Arthritis, a congressionally mandated task force convened to address the lack of arthritis research and education. Rosalind Russell, a prominent actress afflicted with rheumatoid arthritis, co-chaired the Commission. Among other important achievements, the commission’s recommendations resulted in the establishment of the National Institute of Arthritis and Musculoskeletal and Skin Diseases. After Russell’s death in 1976, Congress established the Rosalind Russell Medical Research Center for Arthritis, selecting UCSF to house it and Engleman to be its founding director. He raised more than $50 million in private support for the Center, which was renamed in his honor in 2014.

Engleman also created a new award within the American College of Rheumatology (ACR) Research Foundation to attract residents into the field. He provided full funding for the program for its first five years, and subsequently endowed the award to ensure its continuation. Among his many honors, he received the ACR Presidential Gold Medal and the Columbia University College of Physicians and Surgeons’ Gold Medal.

Engleman maintained a lifelong love for music, practicing violin almost daily and playing chamber music each week with the San Andreas Quartet. He was also an active member of the Family Club. Engleman published an autobiography, My Century, in 2013.

His survivors include his wife of 74 years, Jean; three children, Philip, Edgar and Jill; six grandchildren, and three great-grandchildren.

To contribute in memory of Dr. Engleman to the Jean S. and Ephraim P. Engleman Endowment, please contact Jacqui Lang at (415) 476-3341 or Jacqui.Lang@ucsf.edu.