



# UCSF Department of Medicine ZUCKERBERG SAN FRANCISCO GENERAL

## DEVELOPING HUMAN CAPITAL IN RESEARCH

*K12 awards are career development awards granted to institutions by National Institutes of Health (NIH) that provide critical funding to newly-trained clinicians who are transitioning from fellowship into junior faculty awards. This is a particularly vulnerable time in career development, often when young researchers have exhausted limits on eligible years for continuing fellowship support through the NIH, but are not yet prepared to start their own labs or programs. Senior faculty in the ZSFG Department of Medicine have been successful in garnering three such awards to support young scientists at UCSF on their journey in development of independent research skills and experience in a fundamental science. Importantly, they do this within the framework of interdisciplinary research and development programs at UCSF.*

### Developing Implementation Scientists

“We spend a lot of research funding to develop new interventions for various diseases, but there’s often systemic under-adoption of evidence-based practices,” said Adithya Cattamanchi, MD, Associate Professor in the ZSFG Division of Pulmonary and Critical Care Medicine.

For example, less than half of stroke survivors who should be on aspirin to prevent another stroke actually take it. “We’ve had much greater emphasis on the development of new drugs, rather than increasing the use of ones that we know work,” said Dr. Cattamanchi. “Implementation science tries to address the gap between what should be done and what’s actually done in routine practice.”

Dr. Cattamanchi and Kirsten Bibbins-Domingo MD, now Chair of the Department of Epidemiology and Biostatistics and a ZSFG general internist, are working to bridge this gap. They co-lead a K12

program funded by the National Heart, Lung, and Blood Institute (NHLBI) which focuses on cultivating scholars who will improve the uptake of effective treatments in patients with heart and lung diseases.



**Adithya Cattamanchi**

in U.S. While there are clear guidelines for all foreign-born individuals from countries with high rates of TB to be screened, there has been limited uptake, especially in primary care settings.

Similarly, the other K12 scholar, Maria Garcia, MD, Assistant Professor in the UCSF Health Division of General Internal Medicine, focuses on patients with limited English proficiency and how to increase screening for depression, seeking to understand and overcome barriers at the patient, provider and system levels to improve screening and treatment rates.

In addition to helping cover scholars’ salaries and training expenses, the K12 award enabled Drs. Cattamanchi and Bibbins-Domingo to create embedded health care delivery experiences. These provide Drs. Shete and Garcia the opportunity to work within health systems to facilitate changes to help treatments get all the way to patients, and to develop skills in quality improvement systems

The first two scholars started in July 2018. Priya Shete, MD, Assistant Professor in the ZSFG Pulmonary and Critical Care Medicine Division, studies screening and treatment of latent tuberculosis (TB) among high-risk populations

such as Lean and A3. The award also helped to develop resources that will benefit both the scholars and the wider UCSF implementation science community, including a quarterly seminar series for sharing knowledge and networking as well as a new course on how to do interventional research in real-world settings.

“There’s a feeling that our traditional translational sciences curriculum was not sufficient for developing scholars in implementation science,” said Dr. Cattamanchi. “The K12 supplements the standard training mechanisms. Also, our program has a strong focus in understanding why certain health disparities exist, and developing a workforce that uses implementation science to reduce these disparities.”

### Training In New “Omics” Tools

In recent years, many exciting tools have emerged to better understand, prevent, diagnose and treat lung and other diseases. The field of “omics” is one. It uses biologic assays and computational biology to characterize molecules, and other phenomena, to define the structure, processes and function of biological systems in human and other organisms.



**David Erle**

David J. Erle, MD, Professor in the ZSFG Lung Biology Center, and Esteban González Burchard, MD, Professor of Pharmacy, have led a K12 career development award from the NHLBI



that helps young scholars develop expertise in “omics” approaches to lung diseases. “The idea was to offer training experiences in genomics, proteomics and metabolomics,” said Dr. Erle. Genomics involves characterizing genes, proteomics involves characterizing proteins, and metabolomics involves characterizing biologic metabolites.

“In order to get a research grant like an R01, it can take a number of years to establish a track record,” said Dr. Erle. “Typically, you need a certain number of first-author publications in high-impact journals, and a record showing that you can get funding for your research. For example, even when you submit a publication, it can take months before it’s reviewed, revised and accepted for publication.” Even landing an individual K award, provided by the NIH directly to early-career researchers, may take a year or two. The K12 award provides flexibility to support outstanding scholars as they apply for funding.

For example, Neeta Thakur, MD, Assistant Professor in the Pulmonary and Critical Care Division investigates the role of social and environmental stressors on asthma and chronic obstructive pulmonary disease in vulnerable populations. After completing her fellowship at UCSF, she received K12 support while she waited for the peer review of her individual NIH K award application. The outcome was successful. She was recruited to the ZSFG faculty and in addition to conducting cutting-edge research on the intersection of biologic, social and environmental determinants of health, serves as medical director of the ZSFG Chest Clinic.

“Our K12 grant had a substantial impact,” said Dr. Erle, who also serves as Associate Chair for Biomedical Research in the Department of Medicine. Five out of six recipients went on to garner individual K awards or other grant funding, and all have obtained research-intensive positions. The sixth recipient is finishing his training. “A program like this allows us to help terrific young trainees at a critical point, and we’ve been uniformly successful in supporting them until they’re able to get individual career development award funding, which is the essential next step towards independence.”

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**Heart, Lungs, Blood and HIV**

The discovery of lifesaving antiretroviral therapies (ART) has transformed HIV from a death sentence into a chronic illness. Now that many HIV+ patients are living longer, however, they face new challenges – including developing conditions like heart attacks and emphysema at earlier ages than their HIV- peers.

“Even when you’re on HIV medications and your viral load is undetectable, you experience very low-grade chronic immune activation, because



**Laurence Huang**

the body knows there’s a virus and is trying to get rid of it,” said Laurence Huang MD, Professor in the ZSFG Division of HIV, Infectious Diseases and Global Medicine and a pulmonary and critical care physician. This chronic inflammation affects the entire body, and likely contributes to early onset of age-associated conditions in HIV+ patients.

Dr. Huang and Priscilla Hsue, MD, Professor in the ZSFG Division of Cardiology, co-direct a K12 award from the NHLBI to train emerging researchers in cardiopulmonary, hematologic, and immunologic comorbidities of HIV. This initial year of grant funding is supporting a planning phase to strengthen existing research collaborations and catalyze new ones. “There’s a huge research community at UCSF of people focused on HIV, lung, heart and blood diseases,” said Dr. Huang. “But it’s hard to bring us all together when not everyone is in the same division or based at the same campus.”

The first scholars funded will start in July 2019 with applicants chosen through a competitive process for a maximum of three years of funding. Previously, the NHLBI limited the time for funding from any combination of K awards to

**SPOTLIGHT**

**Margot Kushel MD, Director of the UCSF Center for Vulnerable Populations**, will lead UCSF’s presence as a new partner in National Clinician Scholars Program (NCSF). The NCSF offers training for physicians and nurses (within 5 years of completing clinical training) as change agents driving policy-relevant research and partnerships to improve health and health care. The goal is to cultivate health equity, eliminate health disparities, invent new models of care, and achieve higher quality health care at lower cost. The first class is anticipated to start in July 2020.

We welcome **Ms. Brooksley “Brooks” Bigart** to our Central Administration team where she will be serving as Neil Powe’s Executive Assistant and the Central Administration’s Office Coordinator. Brooks grew up in the Bay Area and attended University of San Francisco, graduating with a B.A. double major in Politics and Communications. While there, she first discovered her interest in community action and service, which remains an important focus in her life. Most recently, Brooks has served as Executive Assistant to the Director of UCSF Institute for Neurodegenerative Diseases, located at the Mission Bay campus, for the past four years.

In her time outside the office, Brooks loves to pitch in at community-focused organizations, write fiction and poetry, attend live music and theatre shows, and cheer on the Warriors. She enjoys exploring the city’s neighborhoods with her 7-year-old daughter, Ronin, from discovering the best ramen shops and neighborhood bakeries to searching for sand dollars at Ocean Beach.

five years. This year the cap was raised to eight years. Scholars can now access three years of K12 funding and five additional years of individual K award funding.

“It’s a huge advantage for UCSF to have this institutional K funding,” said Dr. Huang. The average time between researchers’ first K award to their first R01 grant is eight to nine years. Before the extension to eight years, many early-career investigators faced a funding gap between when their K funding ended and their R01 began.

“There was a huge chasm,” said Dr. Huang. “It wasn’t a ditch – it was like the Grand Canyon! With this K12 program, young researchers who are interested in the intersections of cardiopulmonary disease and HIV have a viable career path.

And discoveries may have implications for the general population as well. “Studying diseases in people with HIV, when conditions develop earlier and may progress faster, could be a really interesting angle – both for HIV-specific aspects of disease, as well as things we could learn that could be applied more broadly,” said Dr. Huang.

*Elizabeth Chur*  
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