

UCSF Institute for Global Health Sciences





Letter from our Leadership

In 2020, we faced a crisis in the San Francisco Bay Area and around the world, and we used our expertise to address it. Having built a body of expertise through addressing the AIDS crisis of the 1980s, we knew what to do next. In 2021, we expanded and formalized the infrastructure we put in place in 2020. To take two examples (with many more in what follows), we turned the networks through which we train HIV and maternal health care providers into COVID-19 care training networks, and the ad-hoc public health training courses we had offered virtually into a broader set of courses and a custom learning management system. Building better health infrastructure is an essential task for the years to come.

Over the past two years, all of us at the Institute for Global Health Sciences (IGHS) have seen clearly, from our richly diverse positions, how one person's health depends on the community's, and community health cannot thrive when there is inequity. We have taken this to heart internally, undertaking major diversity, equity and inclusion and workplace wellness efforts.

We have also found in the current crisis renewed passion for our mission, and we hope you will, too.

Sincerely,

Jaime Sepulveda, MD, DSc, MPH Haile T. Debas Distinguished

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Professor

Executive Director

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George Rutherford, MD Acting Executive Director September 1, 2021– August 31, 2022



Empowering local leaders

All communities have the inherent ability to handle their own healthcare challenges with appropriate resources. However, medical resources and expertise are not evenly distributed according to need. Major academic medical centers based in higher-income countries, like UCSF, can devote more resources to developing new methods, drugs and highly specialized doctors and nurses. But to realize their potential benefits, those drugs, equipment and expertise must be shared with public health agencies and medical facilities around the

world and adapted to their unique circumstances.

IGHS is the main driver of UCSF's mission to advance health worldwide. We share our resources and expertise to empower communities to develop and implement solutions to their unique healthcare challenges.

IGHS provides on-site professional training for doctors, nurses, policy-makers, epidemiologists and other health professionals. Sometimes we bring leaders from lesser-resourced countries to UCSF to experience the full scope of learning that a top-tier medical school can provide.

As Sierra Leone faced an outbreak of Ebola, IGHS initially provided specialized infectious disease training for one of our own doctors, Dan Kelly, MD. Kelly then went to Sierra Leone to share what he had learned with other providers and to help overwhelmed clinics.

Kelly met a local doctor, Bailor Barrie, who was already thinking more broadly about how to improve healthcare in Sierra Leone. The two opened an innovative clinic in the Sierra Leonian capital, Freetown. Eventually, IGHS recruited Barrie to our PhD program with donor-supported tuition offsets.

In May 2021, Barrie was chosen to be executive director of the Sierra Leone office of the international nonprofit Partners in Health. He is also completing his PhD on using rigorous ethnographic and epidemiological data to evaluate and strengthen health systems in low-resource settings. With his skills and experience, Barrie is poised to effect meaningful change in his country for decades to come.

With your support, we can continue to empower leaders like Barrie.

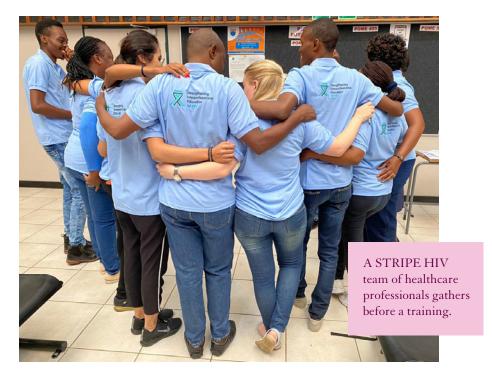


Team-centered solutions

As medicine has become more complex, care in the developed world has shifted to a team-based approach. Low- and middle-income countries have not been able to adopt the new model as quickly. IGHS is supporting African care providers to adopt team-based approaches.

Since 2019, Strengthening Inter-Professional Education to Improve HIV Care Across Africa, or STRIPE HIV, has been supporting African care providers as they adopt team-based approaches. STRIPE HIV is now active in 14 countries. It has reached 12,160 learners and 900 new learning facilitators at 28 medical and nursing institutions and more than 600 clinical sites, affecting 80 academic and government partnerships. 30% of STRIPE HIV learners have been doctors, 37% nurses and midwives, 13% pharmacists, and 9% laboratory technicians.

Last year, STRIPE HIV launched the Professor James Hakim Leadership Development Program, named in honor of the widely admired Zimbabwean HIV researcher who died of COVID, to



empower mid-career healthcare professionals at sub-Saharan medical and nursing training institutions to build out the next generation of leaders. The threemonth program provides participants with instruction, training and mentorship to empower them to carry out effective team and project management, organizational development and cross-culture work. Led by Michael Reid, MD, MPH, the program benefits from the buy-in of AFREhealth and funding from the U.S. Health Resources and Services Administration.



The course was excellently structured. It forced the different sectors to work together to solve issues, which also exposed various knowledge gaps within those sectors.

-MEDICAL STUDENT, SOUTH AFRICA

A Virtual Mentor can save lives

In high-income countries, health-care researchers and providers are exploring how artificial intelligence (or AI) can make care more efficient and more precise. But what about regions with bigger barriers to quality healthcare?

Dilys Walker, MD, and Tiffany Lundeen, RN, wondered whether Al could be adapted to help midwives in underserved areas perform better in emergency situations.

Working with midwives in Kenya, the two developed Virtual Mentor, a voiceactivated Al system that talks providers through best practices when they're facing crisis situations, such as a postpartum hemorrhage. Virtual Mentor helps keep the provider calm and focused on the patient, removing the stress of having to remember rarely used medications and techniques.

"Sometimes we don't have time to read the algorithms displayed on the walls," a nurse midwife told IGHS researchers.

Last year, the Virtual Mentor was beta tested in two remote regions in Madagascar, using simulated cases of postpartum hemorrhage. A midwife who delivers one baby every day, as many do, will see a serious postpartum hemorrhage once every three years, but this catastrophic complication causes more than a third of maternal deaths around the world.

Virtual Mentor's hemorrhage module is widely available, and midwives love it. The next step is to develop a module to coach providers through preeclampsia, sepsis and other life-threatening complications.

To work well in the global health context, the app has been designed to work on a computer or a phone with or without Internet connection.

"Global health sees too many solutions, many of them technology-focused, that sound good on paper but don't address the real challenges on the ground. We see our job as listening to what local providers tell us they need, and then working with them to develop high- and low-tech solutions that help them save lives," Walker explained.





Supporting nurse midwives and patients

Qualified nurses are a powerful lever with which to ensure that the best care reaches everyone who needs it. Nurses aren't merely front-line providers; in many places, they are the sole providers. Four out of five patients seeking healthcare see a nurse or midwife.

Kimberly Baltzell, RN, MS, PhD, is a passionate advocate for nursing. During one research trip to sub-Saharan Africa, she and some colleagues were invited to discuss nursing in a remote district in Malawi, where nurse midwives care for birthing women. Malawi has among the worst birth outcomes for mothers and babies in the world.

The nurse midwives, often working in under-staffed clinics, longed for formal support from more experienced colleagues to handle rare complications. While physicians have a residency or internship after medical school, structured on-the-job learning is often not provided for nurses in sub-Saharan Africa.

GAIN PI Kimberly Baltzell and CHOICES Reproductive Health Center Clinical Director, Dr. Nikia Grayson, participate in a nurses day celebration parade with partners in Neno District, Malawi. Baltzell returned to San Francisco and got a few small grants and charitable contributions to provide mentored practical training – akin to residencies for new MDs – for nurses. This project would become Global Action in Nursing (GAIN), which is housed in IGHS's Center for Global Maternal, Newborn and Child Health.

GAIN launched in Malawi in 2017. In 2019, thanks to a foundation grant, it expanded to Liberia and Sierra Leone. Like Malawi, these countries have among the highest rates of maternal and infant morbidity and mortality in the world.

Some of the approaches that have been developed to address epidemic levels of preterm birth and maternal mortality in Africa can be applied to the United States, where pregnancy outcomes among Black women and infants are as dire as in many low-income countries. In this country, it's not geography and low GDP that cut off access to quality healthcare; it's structural racism.

Realizing the importance of experienced nurses, last year, GAIN expanded again to Memphis, Tennessee, where Black women face nearly four times the risk of dying during pregnancy as white women. GAIN is partnering with a reproductive health center called CHOICES to provide yearlong fellowships with the goal of expanding the number of Black nurse midwives available for Black patients. Medical racism is a documented driver of health disparities, and patients with providers of the same race or ethnicity have better outcomes.

Through its substantive connections with nurse training programs in Africa, GAIN was also able to step in as the pandemic hit to train more than 180 nurses and support staff in COVID-19 infection prevention and control.



Patience Afulani and person-centered care

If birthing people received better care in low- and middle-income countries, would more of them give birth in hospitals? Could adverse maternal and child outcomes be reduced? Patience Afulani, MD, PhD, MPH, is exploring these questions. She first developed and validated a survey to accurately reflect the degree of person-centered care women receive during pregnancy and labor. Research based on the survey confirmed existing evidence that when women receives o-called

"person-centered care" (which a layperson might call respectful care), both their outcomes and their newborns' improve. Afulani has also examined the causes of poor person-centered care, developing a survey for providers to self-assess. Afulani has recently adapted the survey for Black women and other people of color in the United States. The risks in low-income countries and in the U.S. are quite different, but with relatively minor adjustments, the survey captures the big picture for women in both settings.



Responding to pandemics—then and now

Since 2020, we have referred to COVID-19 as "the pandemic," but both malaria and HIV/AIDS have taken far more lives. The AIDS crisis was the crucible in which IGHS was formed: UCSF was first to provide humane care for AIDS patients and went on to play an important role in developing each of the increasingly effective antiretroviral medications that have made HIV/AIDS practically curable in higher-income countries.

"The onset of HIV/AIDS in San Francisco was horrible for us to witness," said George Rutherford, MD, acting director of IGHS. "As health care providers, we worked fast and hard to try to limit its damage, and we've never forgotten some of the lessons we learned."

It was an all-hands-on-deck moment, and those who stepped up – including Rutherford and Eric Goosby, MD – became experts. As the crisis waned in the United States, these experts fielded requests from colleagues and governments abroad to help them manage the AIDS pandemic. Those global efforts formed the backbone of IGHS.

In 2020, we were again faced with a pandemic. IGHS stepped up to help, bringing the skills we had gained working around the world back to the San Francisco Bay Area, which was more successful than any other U.S. metropolitan area in containing COVID-19.

UCSF's Pandemic Initiative for Equity and Action (UPIEA) was formed early, in partnership with the San Francisco and California Departments of Public Health, to help create a workforce, leveraging public employees whose work had been idled by social distancing orders, to investigate new COVID-19 cases and avert more through contact tracing. They also worked with schools to develop policies that promoted safety while continuing education.

In 2021 in San Francisco, UPIEA trained more than 450 contact tracers and case investigators, including the clinically trained leads who were available during every shift. UPIEA managed a workforce of more than 230 individuals working 7 days a week. The teams made more than 14,000 referrals for isolation and quarantine between October 2020 and June 2021.

State-wide, UPIEA trained more than 10,000 contact tracers and more than 850 school specialists. They have trained more than 3,000 public health professionals to communicate effectively about vaccine safety. UCSF led work to find the right online learning management system to support ongoing trainings for adult learners, ultimately developing and open-sourcing a custom product.

With the initial urgency of the crisis fading, IGHS has again worked to ensure the stability of our projects and to share what we have learned to help other regions – from lower-resource counties in California to lower-resource countries in Africa, Latin America and the Middle East – successfully manage COVID-19.

Led by IGHS executive director Jaime Sepulveda and written in part by IGHS staff, the World Health Organization (WHO) Independent Panel for Pandemic Preparedness and Response released case studies evaluating the United States' and Mexico's responses to the COVID-19 pandemic in its first year. The team consulted 50 experts and nearly a thousand publications. The Mexican case study has garnered widespread media coverage and endorsement from the public health community.

IGHS's Pandemic Response Initiative (PRI), a project focused on pandemic preparedness and response in low-

and middle-income countries, supported development of the Mexican WHO panel case study and created a framework of lessons learned for pandemic response in the Americas and around the world.

PRI also provided technical assistance to Secretariat of Health, Baja California, Mexico to launch the first contact tracing program in Mexico. They shared lessons learned from the pilot project at the American Public Health Association Conference. Working with UCLA collaborators, PRI is now laying the groundwork for a Latin American Pandemic Coalition that would develop partnerships in Latin America. This work is funded through a UC Global Health Institute incubator grant.

As it became clear that misinformation about the vaccine was impeding uptake, PRI undertook two social media interventions with funding from the Vaccine Confidence Fund. One study evaluated a social media campaign to dispel misinformation and increase vaccine uptake in indigenous communities in Guatemala, engaging more than 9 million people on social media. The second study evaluated whether WhatsApp groups of pregnant and breastfeeding mothers in northern India would react positively to a COVID-19 vaccine chatbot. This effort reached more than 1,000 women and their families.

A team of Wuqu' Kawoq data collectors administer surveys in indigenous communities in Guatemala to learn more about vaccine concerns.



HIV work today

HIV is no longer a front-page pandemic, but it continues to take nearly 700,000 lives every year. The fight against it now consists of identifying high-risk populations for prevention efforts and moving all newly diagnosed patients quickly and effectively through the 95-95-95 HIV/AIDS cascade (95% of those infected know their status; 95% of those take medication; 95% of those are successfully virally suppressed). IGHS is at the cutting edge in each of the three sections of that work.

Measuring success

None of the interventions to slow the spread of HIV can succeed without quality data. To ensure progress towards each of the 95/95/95 targets, ministries of health and international health bodies must have an accurate count of how many people are infected with HIV. But, due to outdated and inconsistent medical records-keeping systems, many people in Africa test positive more than once and subsequently have multiple health records. To bring more clarity, the Global Strategic Information (GSI) group led by George Rutherford, MD, is drawing on years of experience with information systems improvement to help the CDC build an open-source electronic medical record system specifically for HIV care. The system features a user-friendly interface and integrated data elements to reduce duplicate records and lost insights. It is expected to improve patient care and targeted public health efforts.

Viral suppression

In May 2021, UCSF began a study in Namibia that aims to use a point-of-care urine test developed at UCSF to identify people who are not consistently taking tenofovir, the frontline HIV medication, in hopes of working with them through targeted counseling and improved care to find a regimen to which they can adhere. UCSF is supporting the Ministry of Health as it collects, analyzes and interprets study data and helps clinics use the data to improve patient care. These efforts will point to gaps in care and treatment to help ensure that at least 95% of people on HIV treatment become virally suppressed.

Modernizing disease hunting

In 2020, GSI received an award to modernize the CDC's Field Epidemiology Training Program (FETP), which trains local epidemiologists in low- and middle-income countries. Since FETP began in 1980, nearly everything about epidemiology has changed. The work now relies heavily on data science and machine learning, often to support molecular-level surveillance. The team is researching ways to provide more relevant training to epidemiologists around the world. One exciting prospect is that IGHS developed its own platform for delivering remote learning modules – called a learning management system – to support its public health Virtual Training Academy (VTA). The VTA and other projects moving forward will be able to use that system to create a complete remote learning environment that is as modern as the course content.



Without good data we won't know when we succeed or how close we are to success.

-SUSIE WELTY, MPH, PROJECT DIRECTOR FOR HIV RECENT INFECTION SURVEILLANCE

Developing tools to eliminate malaria

Viewed across human history as the pandemic illness, malaria has taken more than 80 million lives in this century alone. The Malaria Elimination Initiative (MEI) continues to develop and make available powerful tools and systems for affected countries to adapt and use to eliminate malaria, even in troublesome pockets. MEI continues to shrink the map over which this disease reigns.

- The MEI launched a toolkit for ministries of health and partners focused on five technical areas: Surveillance and Response; Vector Control and Surveillance; Chemoprevention; Program Management; and Advocacy, Financing and Sustainability. The toolkit has been used in over 17 countries, and some aspects of the toolkit have been incorporated into global guidance.
- The MEI received a large grant from the Bill & Melinda Gates Foundation to provide technical assistance and capacity strengthening to ministries of health on data-driven targeting and tailoring of malaria strategies and to generate further

- evidence on malaria molecular surveillance as a programmatic decision-making tool.
- The MEI received a major grant from the Bill & Melinda Gates
 Foundation to mobilize domestic financing in the Asia Pacific
 region to ensure that malaria control and treatment can
 continue when externally funded projects end.
- The MEI launched two new research trials in 2021 in collaboration with ministries of health and partners: Project BITE in Cambodia is evaluating bite prevention tools (topical repellents, spatial repellents, and insecticide treated clothing) among high-risk populations who live and/or work in the forest. Another trial in Senegal is evaluating village-wide mass drug administration with dihydroartemisinin-piperaquine and low-dose primaquine for malaria prevention.
- Evidence from MEI-led research on reactive strategies for malaria elimination (e.g. reactive surveillance, reactive focal drug administration, and reactive focal vector control in response to local malaria cases) was used to inform updated WHO malaria elimination guidance, under development in 2021 and for release in 2022.



Making surgery accessible to all

Global health has traditionally focused on infectious diseases, but some 17 million people die every year from conditions that require surgical care – a burden five times larger than the total burden of HIV/AIDS, malaria and tuberculosis combined. Five billion people, including 1.7 billion children, lack access to surgical, anesthesia and perioperative care.

Haile Debas, MD, who founded IGHS, is known worldwide for making access to surgery and anesthesia a key component of the global health agenda to ensure that medical resources reach the people who need them. In 2020, the Center for Health Equity in Surgery and Anesthesia (CHESA) launched under the leadership of Doruk Ozgediz, MD, extending Debas's legacy. Debas is serving as the founding chair of CHESA's Advisory Board.

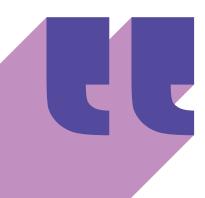
Health equity is a challenge everywhere, including the Bay Area, and CHESA is working with local partners in the U.S. and all over the world to expand equitable access to surgery, anesthesia and perioperative care through research, education, advocacy and policy programs.

The USAID-supported Open Critical Care project, which began as a response to the COVID-19 pandemic, continues to create tools – such as new oxygen calculators – to help clinicians in under-resourced areas provide the best possible care for critically ill patients. Some of the project's tools and resources have been adopted and published by the World Health Organization.

One factor driving health disparities in surgery and anesthesia is that pulse oximetry does not work as well for people with darker skin. With the UCSF Hypoxia Lab, CHESA is implementing the Open Oximetry Project, publishing data to help consumers, device manufacturers and aid agencies expand access to devices that are safe for patients with more pigmented skin. With support from the FDA's Centers of Excellence in Regulatory Science and Innovation funds, the project will also mount a clinical trial.

CHESA supports health equity research at UCSF and collaborating institutions by offering incentivized collaboration seed awards. Recipients in 2021 included Drs. David Robinowitz and Nichole Starr, who developed an ultraviolet-C cabinet to disinfect up to 5,000 masks per day, thus saving money and reducing waste during COVID-19. Over half of CHESA seed funding grant recipients have gone on to receive additional funding to continue their work.

Through a collaboration across 8 UC campuses – including UCLA, Berkeley, Davis, Irvine, Merced, Riverside and San Diego – CHESA received incubator awards from the UC Global Health Institute to develop and implement a proposal for a UC-wide center for perioperative and surgical health equity. The center will unite the UC system, international universities and non-governmental organization partners to facilitate skills and resource sharing and collaborative research.



Dr. Debas has been at the forefront of global surgery from its inception. His work has led to enduring and significant advances in the field, and we are grateful to be guided and inspired by his experience, influence and thought leadership.

-DORUK OZGEDIZ, MD, DIRECTOR OF CHESA

Reimagining Global Health speaker series

The disparate effects of COVID-19 and reinvigorated calls for racial justice also redoubled efforts to disentangle global health from Western colonialism. What does that mean, exactly, and how should we start? IGHS invited leaders in the field to speak to that. View their recorded talks at: youtube.com/user/GlobalHealthSciences.



Dr. Kui Maraya Based in Kenya



Dr. Renzo Guinto Based in the Philippines



Desmond Jumbam Based in Ghana



Professor Address Mauakowa Malata Based in Malawi



Seye Abimbola Based in Australia





Lance Lyle Louskieter Based in South Africa

"More and more people from every corner of the world are adding their voices to calls to decolonize global health; to redress persisting injustices in how we use and produce knowledge in global health...We cannot live together without justice. We cannot work together without justice. We cannot love each other without justice."

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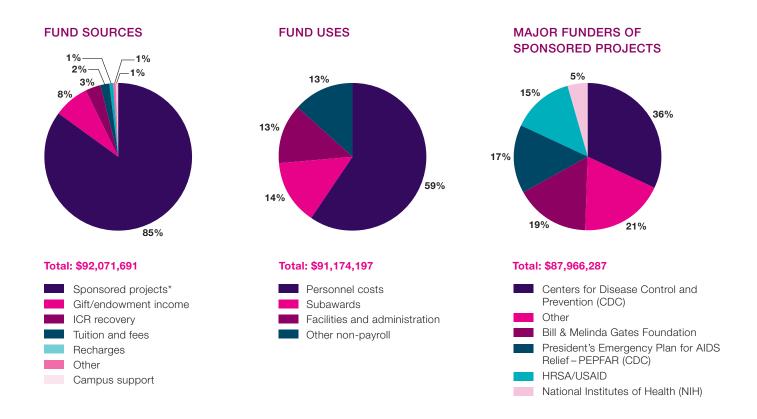
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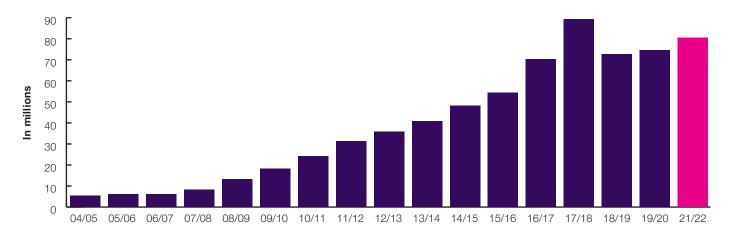
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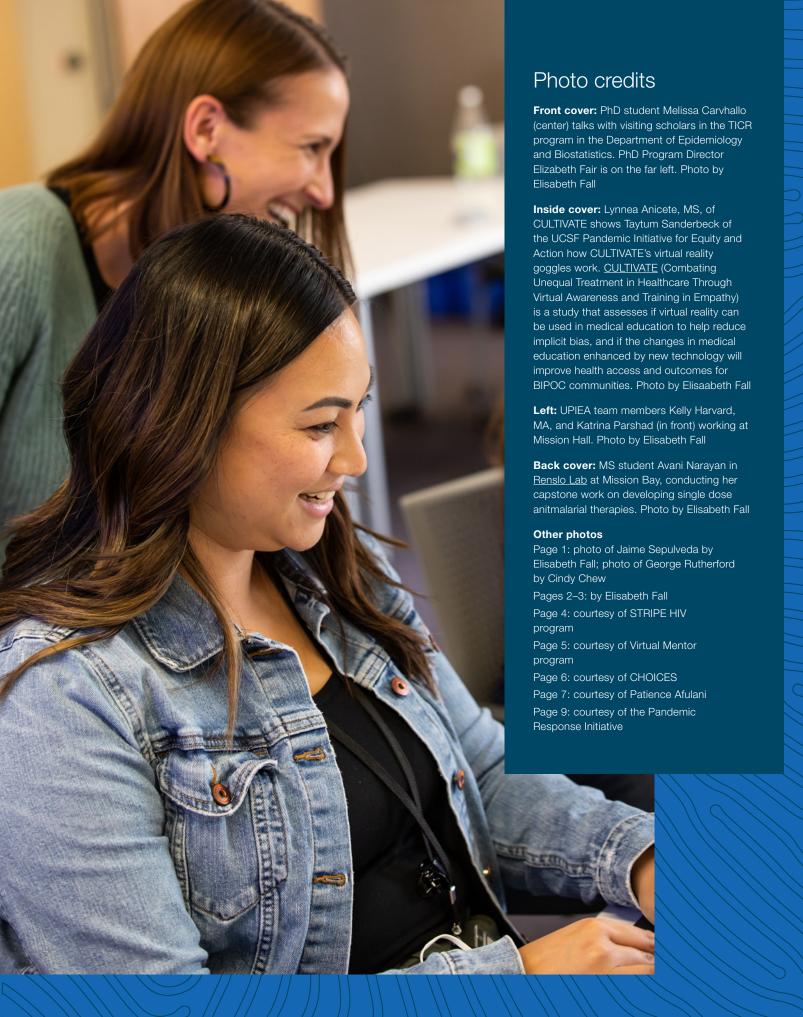
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Senior Writer

Graphic DesignerKerstin Svendsen

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