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Arthritis Progress Report

News from the Russell/ Engleman Rheumatology Research Center

UCSF
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Photos by John Hosteen

"This is meaningful work. By partnering with local community health organizations, we're finding it is feasible and scalable to significantly improve the quality of rheumatologic care for a community that bears a disproportionate burden of rheumatologic disease. Now we need the funding to make sure this work continues."

— Jennifer Mandal, MD

On Navajo Nation

Closing A Vast Gap in Access to Rheumatologic Care

On Navajo Nation – a reservation spanning 27,000, square miles, with a population of about 180,000 – there is only one fulltime rheumatologist. This limited access to care and a prevalence of rheumatoid arthritis (RA) roughly five times that of the general population of the United States contribute to a disturbing health disparity.

"In the US, we have an enormous problem with lack of access to rheumatologists. That burden is not shared equally, leading to a huge amount of unnecessary suffering and disability," says UCSF rheumatologist Jennifer Mandal, MD. "With dozens of rheumatologists at UCSF, we wanted to become part of the solution."

That's why she and her colleagues Jinoos Yazdany, MD, MPH, chief of the Division of Rheumatology at Zuckerberg San Francisco General Hospital and Trauma Center, Mary Margaretten, MD, MAS, and Gwendolyn Grant, MD, created the Rheumatology Access Expansion (RAE) Initiative. Funded for three years by the Bristol Myers Squibb Foundation, the RAE Initiative is a collaboration among the UCSF Division of Rheumatology, the American College of Rheumatology, and Navajo Nation healthcare workers and community members. It gives local primary care practitioners (PCPs) tools to more effectively diagnose and treat RA on Navajo Nation.

Responding to the Community's Needs and Sensibilities

The project began in 2021 with a structured needs assessment, which found that on Navajo Nation, wait times to see a rheumatologist can exceed six months. People often have to be seen off reservation, which can necessitate a 2-7 hour drive each way to Albuquerque, New Mexico, frequently on dirt roads that can be inaccessible during winter. Overnight stays, childcare and other costs impose additional burdens.

"We also learned patients prefer to see their PCP, because they have trusting relationships with them," says Mandal.

In response, the team created a novel curriculum based on Project ECHO, a well-established educational model, which connects experts with on-the-ground practitioners to bridge health gaps in underserved communities. In the RAE initiative, the expert team – including UCSF and local rheumatologists, a local pharmacist and

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Also in This Issue

The Fellowship

Maintaining Excellence Demands Willingness to Change

From left: Yun-Han (Hannah) Huang, MD, PhD; Kristen Mengwasser, MD, PhD; Abimbola Fadairo-Azinge, MBBS, MPH, MMCI; Baljeet Rai, MD

Given the UCSF Division of Rheumatology's world-class reputation, it's no surprise that the four first-year fellows for 2022-2023 are among the country's most promising physician researchers and educators.

The division's stellar reputation and the unique opportunity to train at three hospitals with diverse patient populations will always be a draw for outstanding applicants, but what may be less understood is the way the fellowship program continues to benefit from rigorous self-examination and a willingness to change.

Two Tracks, Four Fellows

One important change is that new funding now enables the program to accommodate four fellows per year, as opposed to three. Two fellows enter on a two-year path to become academic clinicians; the other two enter on a three-year path to become researchers. Abimbola Fadairo-Azinge, MBBS, MPH, MMCI, and Baljeet Rai, MD, are the 2022-2023 clinical fellows; Kristen Mengwasser, MD, PhD, and Yun-Han (Hannah) Huang, MD, PhD, comprise this year's research track.

Lianne Gensler, MD

One key to attracting these applicants, says Program Director Lianne Gensler, MD, are the cutting-edge resources at UCSF and in the region. Those resources include:

- UCSF's Graduate Medical Education Pathways and opportunities to dual board certify. For example, Fadairo-Azinge is dual board certifying in Rheumatology and Clinical Informatics.
- Bakar ImmunoX, which facilitates sharing of technology and findings across fields, disciplines, and geographies.
- The UCSF CoLabs Initiative, which provides a centralized home for laboratories, experts and specialized equipment.
- Chan-Zuckerberg BioHub, where the Bay Area's leading academic institutions, including UCSF, join an internal team to enhance impact and foster partnerships.

An Emphasis on Diversity

The division is also committed to an institution-wide focus on diversity, equity and inclusion. "We perform a holistic review of applications and always seek to include someone on our selection committee who is underrepresented in medicine," says Gensler. She also successfully nominated Mengwasser and Huang for two of this year's Diversity in Bench Science awards, a UCSF Department of Medicine program that provides three years of guaranteed salary support, plus $25,000 per year of research funding.

Commitment to change is also evident in the program's response to the COVID-19 pandemic. Zoom interviews and meetings with existing fellows, videos and access to the monthly division-wide case conference – a window into the faculty's passion and broad rheumatologic expertise – help convey the many benefits of UCSF and the San Francisco Bay Area.

"We were able to move interviews online quickly because we'd already been evaluating alternatives to promote equity amongst fellowship applicants," says Gensler. "We know many people are financially strapped during their training years."

Finally, a diverse team that includes program leadership, division faculty and the fellows, continues making changes needed to maintain one of the specialty's most important pipelines for new talent. An annual SWOT analysis, anonymous feedback from fellows via a QR code and ongoing discussions all contribute.

"Every year we are grateful we recruit such outstanding individuals," says Gensler. "It only deepens our resolve to continue to improve." ■

On Navajo Nation

Continued from page 1

two Navajo cultural interpreters – trains Navajo area PCPs in the diagnosis and management of RA.

Over the twelve-week course, PCPs undergo live, online, culturally specific training once a week. Each session features a practical, relevant lecture, followed by interactive case-based discussions. After the sessions, the team holds open office hours. "We get really sophisticated questions…because these physicians see huge amounts of complex rheumatic disease," says Mandal.

Surveys have shown statistically significant improvements in PCP's knowledge of and confidence level with diagnosis and management of RA.

Building Trust

Eventually, the team would also like to gather patient outcome data, but knows they must first establish authentic trust in the community.

"That takes time, and it can't be rushed," says Mandal. "The Navajo community has experienced a great deal of trauma, and unfortunately there is also a long history of outside institutions swooping in with their projects, only to disappear soon after. Our goal is to listen much more than we speak, and to support community-driven initiatives with sustainable positive impact."

With that in mind, in 2023 the team will offer their RAE curriculum to other Native American communities in the West Coast Indian Health Service network. The team is also developing tools for community health representatives, who will help the Navajo community recognize, understand and manage joint health concerns. Finally, based on community feedback, the RAE Initiative team hopes to develop a similar course on spondyloarthritis, which is extremely prevalent among the Navajo.

"This is meaningful work," says Mandal. "By partnering with local community health organizations, we're finding it is feasible and scalable to significantly improve the quality of rheumatologic care for a community that bears a disproportionate burden of rheumatologic disease. Now we need the funding to make sure this work continues." ■

New Research

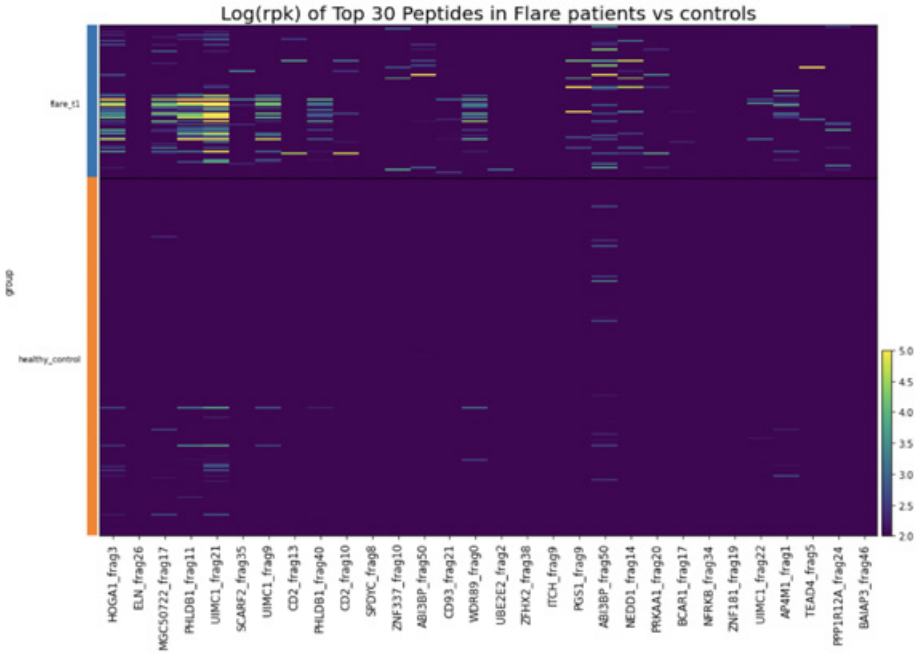
Accelerating the Search for Lupus Therapies and Cures

Because understanding the biologic drivers of rheumatologic diseases holds the key to unlocking improved therapies and, ultimately, cures, the UCSF Division of Rheumatology has aggressively supported the efforts of scientists studying those mechanisms. For more than 40 years, this support has yielded progress that has improved the lives of millions of people suffering with rheumatologic diseases.

But there is much more work to do, so the division continues seeking and nurturing the next generation of basic scientists. Previous issues of this newsletter have highlighted work by Judith Ashouri Sinha, MD, and Renuka Nayak, MD, PhD. In this issue, we highlight Charlotte Hurabielle, MD, PhD, whose work holds the promise of significant breakthroughs for the treatment of lupus and other autoimmune conditions.

"Dr. Hurabielle is one of several recent recruits to UCSF, who together comprise the most outstanding group of young investigators in rheumatology anywhere in the country," says David Wofsy, MD, director of the Russell/Engleman Rheumatology Research Center.

Figure 1: Phage Immunoprecipitation-Sequencing



Phage Immunoprecipitation-Sequencing allows for proteome-wide autoantibody discovery across a variety of disease settings. The above image depicts one of the top 30 peptides against which patients with lupus have antibodies during a flare, as compared to controls.

A Broad Perspective

After completing medical school and a dermatology residency in France, Hurabielle's interest in pathways of pathogenesis in the skin set her on a research path, which in 2016 led her to a PhD program in the NIH-sponsored lab of immunologist Yasmine Belkaid, PhD. In 2019, Hurabielle arrived at UCSF, where she completed an internal medicine residency before beginning a rheumatology fellowship. After a clinical year, she resumed her research in July 2022, in collaboration with UCSF scientists Jimmie Ye, PhD, and Joe DeRisi, PhD.

"After working primarily with mice, I wanted to do more translational work to help the people we see every day in clinic," says Hurabielle. "So I'm learning to use tools that enable me to work on human samples in a meaningful way." The Ye lab's focus on single cell RNA sequencing and genomics, and the DeRisi lab's use of Phage Immunoprecipitation-Sequencing (Figure 1) – which allows for proteome-wide autoantibody discovery across a variety of disease settings – speed and deepen how researchers understand both drivers and protective factors for many diseases.

Equally important, says Hurabielle, has been support from the division's Maria Dall'Era, MD, and Jinoos Yazdany, MD, MPH, who have recruited an unusually large, diverse and longitudinal cohort of patients and biospecimens as part of their California Lupus Epidemiology Study (CLUES).

"This includes patients enrolled at the time of an initial flare," says Hurabielle. "Not biased by any prior treatment, these patients give us a direct window into triggers and early development of lupus."

Embracing the Challenge of Tackling a Heterogeneous Disease

Lupus is particularly difficult to understand because thousands of autoantibodies may play a role, depending on the organ systems affected and individual, racial and ethnic differences. Until the types of tools in the Ye and DeRisi labs became available, scientists had only characterized about a dozen of those autoantibodies. Hurabielle's initial project seeks to identify and profile many more by rapidly sequencing the diverse CLUES biospecimens, and linking autoantibodies with different types of patients who are at different stages of the disease and who are affected in diverse ways.

"If I can characterize a patient at disease onset and then again two years later, it helps us recognize the role that autoantibody is playing, including if it is geared against a specific organ, associated with more severe course of disease, or actually protective in some way," says Hurabielle. "We can then compare this analysis with data from single cell analysis in the same patients, which will further strengthen the association between autoantibodies and disease pathways." In turn, clinicians could better understand how to treat each individual case of lupus with existing therapies, while researchers would be better positioned to develop new therapies and, perhaps, cures.

Charlotte Hurabielle, MD, PhD

"Because the work of basic and translational researchers like Dr. Hurabielle holds so much potential to improve the lives of people with rheumatologic diseases – as does the work of clinical researchers like Dr. Jennifer Mandal, highlighted in this issue's cover story – the division continues to wholeheartedly support their work and careers," says Dall'Era. ■

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Message from the Director

Acknowledging the Work of Our Unsung Heroes

On behalf of the Russell/Engleman Rheumatology Research Center (R/ERRC) Board, I want to take this opportunity to thank the UCSF Division of Rheumatology faculty, staff and trainees for their extraordinary and selfless performance throughout the COVID-19 pandemic. Not only have our existing research programs thrived, despite the pandemic's challenges, but we have also initiated important new research programs. Among the most notable is an international registry that continues to be the single most important source of real-time information and evidence-based guidance to help patients with rheumatologic diseases navigate the pandemic.

David Wofsy, MD

In ordinary times, it might be enough to emphasize research achievements, which are traditionally the primary focus for our generous donors. But these are not ordinary times. The pandemic has created new challenges in education and patient care, and it is with great pride and appreciation that I thank the many people who continue to meet these challenges.

With enthusiastic support from the R/ERRC Board, the faculty developed a series of free web-based public education programs for patients and their families who were isolated in their homes. Faculty members also created a major new clinician education program to address critical unmet needs on the underserved Navajo Nation.

Most importantly, the faculty, trainees and staff rose to the unique challenges of providing outstanding patient care during the pandemic. Many of them did so while balancing unprecedented personal issues, such as remote schooling for children or care for vulnerable relatives. Yet these challenges never compromised the work. Everyone worked even harder than usual, as they repeatedly faced the need to cover for colleagues who were isolated with COVID.

The clinicians and staff in this division are usually unsung heroes. This year, I am proud to acknowledge their work and sing their praises. ■

David Wofsy, MD
Director, Russell/Engleman Rheumatology Research Center

To support the UCSF Division of Rheumatology, you may go directly to makeagift.ucsf.edu/rheumatology. Thank you.

UCSF Rheumatology
Department of Medicine

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