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COVID-19 threatens faculty diversity: postdoctoral scholars call for action

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ABSTRACT **Despite substantial investment and effort by federal agencies and institutions to improve the diversity of the professoriate, progress is excruciatingly slow. One program that aims to enhance faculty diversity is the Institutional Research and Academic Career Development Award (IRACDA) funded by the National Institutes of Health/National Institute of General Medical Sciences. IRACDA supports the training of a diverse cohort of postdoctoral scholars who will seek academic research and teaching careers. The San Diego IRACDA program has trained 109 postdoctoral scholars since its inception in 2003; 59% are women and 63% are underrepresented (UR) Black/African-American, Latinx/Mexican-American, and Indigenous scientists. Sixty-four percent obtained tenure-track faculty positions, including a substantial 32% at research-intensive institutions. However, the COVID-19 pandemic crisis threatens to upend IRACDA efforts to improve faculty diversity, and academia is at risk of losing a generation of diverse, talented scholars. Here, a group of San Diego IRACDA postdoctoral scholars reflects on these issues and discusses recommendations to enhance the retention of UR scientists to avoid a "lost generation" of promising UR faculty scholars.**

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INTRODUCTION

As the COVID-19 pandemic raged across the country, the United States was forced to confront exposed systemic racism. In academia, systemic racism manifests in the form of a predominantly white male faculty that lacks the diversity represented in the student body and the U.S. population (Trejo, 2017; Bhalla, 2019; Asai, 2020). The recognition that racial equality is important and critical for the success of academic institutions in 2020 created a sense of urgency to hire a new generation of diverse faculty. However, many diverse postdoctoral scholars are considering leaving academia because of issues exacerbated by the COVID-19 pandemic. The University of California (UC), San Diego (SD), Institutional Research and Academic Career Development Award (IRACDA) is a program that aims to diversify the professoriate by preparing a cohort of postdoctoral scholars for academic careers through rigorous training in research, teaching, and mentorship. SD IRACDA is one of 21 national IRACDA programs supported by the National Institutes of Health/National Institute of General Medical Sciences with a similar mission to develop a diverse group of highly trained scientists and to facilitate their progress toward research and teaching careers in academia. The diverse backgrounds and lived experiences of IRACDA postdoctoral fellows are expected to bring new perspectives on long-standing issues of diversity and inclusion in academia and to cultivate an environment that is welcoming to all individuals. The COVID-19 pandemic threatens to upend IRACDA efforts, and academia is at risk of losing a generation of diverse postdoctoral scholars including women and underrepresented (UR) Black/African-American, Latinx/Mexican-American, and Indigenous scientists (Arnold and Woolston, 2020; Woolston, 2020a; Gewin, 2021).

While the issues are numerous and include low pay, high cost of living, and lack of affordable housing, they culminate ultimately in

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unsustainable financial hardship. In addition, the COVID-19 pandemic disrupted the SD IRACDA community, camaraderie, and social support and exacerbated preexisting financial struggles associated with pursuing an academic career, particularly for UR postdocs. The exceedingly low pay for postdocs combined with the long duration of postdoctoral training, 5 or more years, required to compete for an academic position, adds to this burden. Although UC, San Diego, is located in one of California's most expensive cities, the salary for first-year UC postdoctoral scholars is $56,712 and considered low income for a single person and very low income for a family of two living in San Diego (Housing & Community Development Service, 2021). This issue is not unique to SD IRACDA postdocs, as eight of the 21 IRACDA programs are at institutions located within the most expensive regions in the United States (Albert Einstein College of Medicine and Stonybrook University in the New York City region, UC San Francisco and UC Santa Cruz in the Bay Area, Tufts University in Boston, Johns Hopkins University in the Washington, DC, area, UCLA in Los Angeles, and UCSD in San Diego). From meager salaries, postdocs are responsible for paying off hefty student loans, raising a family, and supporting extended family. Despite these financial hardships, postdoctoral scholars are often drawn to areas with a high cost of living because training tends to be tied to a particular research mentor, program, or institution and because of their desire to be closer to family. Relocating will not solve the problem, because low pay for academic PhD scientists also exists in more affordable regions, like the Midwest, where PhD scientists can earn at least $10,000 more each year in nonacademic positions (Zolas *et al*., 2015). Given the lack of financial incentive and uncertainty associated with securing a tenure-track academic position, many postdoctoral scholars, particularly those from UR backgrounds, are being forced to consider pursuing careers outside of academia.

An informal focus group interview was conducted on a subset of seven SD IRACDA fellows to assess the impact of the COVID-19 pandemic on various facets of their work and personal lives. From the major themes identified, a broader, anonymous survey was then developed and administered to the entire cohort of 18 SD IRACDA fellows, 84% of which are UR scientists. Of the 18 fellows who participated in the survey, 94% agreed that training as a postdoctoral scholar creates financial constraints and 67% reported that the pandemic has exacerbated financial struggles. The factors identified that contribute to postdoc financial hardship and ambivalence toward pursuing academic careers intensified by the pandemic include lack of generational wealth, increased caregiving responsibilities, and uncertain academic job prospects. These contributing factors have diminished the intent and capacity of UR postdocs to pursue careers in academia. Here, we reflect on these issues and discuss recommendations that may enhance the retention of postdoctoral scholars to avoid a lost generation of promising UR faculty scholars.

GENERATIONAL WEALTH

Postdoctoral scholars earn a low salary that is often not commensurate with their education, knowledge, skill set, or cost of living. This can lead to financial hardship, especially for UR postdoctoral scholars. Among SD IRACDA fellows surveyed, 67% experienced financial struggles related to the COVID-19 pandemic and 77% reported that costs associated with work from home accommodations added to financial strain. These hardships combined with preexisting financial debt, lack of savings, and resources resulted in a high 78% of fellows reporting being frequently worried about their finances during the pandemic in the focus groups. Most UR postdocs come from families that lack generational wealth due to past and current systems and policies that have resulted in inequitable wealth distribution to people of color in the United States (Paten, 2016). This intersectionality makes pursuing a career in academia financially difficult and unattainable for UR scientists. In comparison, postdocs from non-UR backgrounds who obtain tenure-track faculty positions are 25 times more likely to have a parent with a PhD (Morgan *et al.*, 2021; O'Grady, 2021) and come from families with appreciable property and other substantial assets. This privileges non-UR postdocs by alleviating financial burden and makes it easier for them to lengthen their postdoctoral training, which enhances their competitiveness in the faculty job market.

> *"My cost of rent is 40% of my monthly salary and I have no family support." SD IRACDA fellow*

CAREGIVING RESPONSIBILITIES

Most postdoctoral scholars, especially UR postdocs, are at a stage in life with substantial caregiving responsibilities, that is, old enough to have elderly parents and relatives who need help and young enough to have a family with small children. In our survey, 57% of respondents reported increased financial struggles caused by the COVID-19 pandemic due to added costs associated with child care and/or assistance provided to family members. One respondent in the focus group reported that 50% of her salary goes to child care, while another reported that 30% of his total income goes to provide care for his aging parents, and many fellows are the primary caregivers for both their immediate and extended families. This is because most UR postdocs are first-generation students with parents who lack formal education and need to work beyond retirement age to earn enough money to live (Arnold and Woolston, 2020). Of the SD IRACDA fellows surveyed, 40% reported providing support to family or friends who were impacted by the pandemic. In addition, their family members are often low-paid "front line" workers who continue to work despite the pandemic, increasing their exposure to COVID-19 and placing their homes at greater risk for infection. Because of this, UR postdocs were reluctant to ask family members for help with child care and consequently, were left solely responsible for caring for their children around the clock. In addition to child care, many UR postdocs are often asked to provide support for extended family members. Such support included paying for parents' household expenses or providing money or housing for family or friends who became "housing insecure" due to job loss or mental health issues.

> *"Finding and coordinating outside child care is expensive, time-consuming, and more than a little stressful, but it is a necessary burden for those of us without child care help from family if we hope to pursue a successful academic research career." SD IRACDA fellow*

JOB PROSPECTS

The job market for academic faculty positions was hypercompetitive before the COVID-19 pandemic, and the pandemic made the situation worse by causing a nationwide faculty hiring freeze at academic institutions and creating a backlog of postdocs pursuing academic positions (Woolston, 2020b,c). This threatens the goal of the SD IRACDA program, which is to facilitate the transition of a diverse group of highly trained postdoctoral scholars to tenure-track faculty positions. For SD IRACDA fellows, obtaining a tenure-track faculty position will fulfill a lifetime aspiration of being a professor, enhancing the entry and retention of diverse students in science, as well as job security and financial stability. However, UR postdocs express significant concern about the impact of the pandemic on future job

prospects and cannot afford to extend their training or wait for the fallout from the nationwide faculty hiring freeze to resolve. Indeed, as the pandemic intensified in the summer of 2020, two SD IRACDA fellows—both women—decided to leave academia because of financial hardship and caregiving responsibilities. In our SD IRACDA fellow survey, 61% of the cohort reported an interest in pursuing a career outside of academia due to the significant financial strains caused by the pandemic. This is in stark contrast to the 64% of SD IRACDA alumni who have obtained tenure-track faculty positions, signifying a worrying trend. The dire job situation is further amplified by disruption and distress caused by the pandemic on postdoctoral training in general, including reduced productivity and the loss of scientific interactions and networking (Woolston, 2020c). SD IRACDA alumni have been relatively competitive on the academic job market when compared with the only 21% of biomedical postdocs who receive tenure-track positions (Kahn and Ginther, 2017). This indicates an even more dire situation for UR postdocs who do not receive training, support, and mentoring through IRACDA or other programs and are thus more likely to leave academia without this targeted intervention. Given that the COVID-19 pandemic has exacerbated these issues for most UR scientists (Arnold and Woolston, 2020; Carr *et al.*, 2021), the pursuit of nonacademic jobs from a large cohort of UR postdoctoral scholars is poised to jeopardize current and future efforts to diversify academic faculty.

> *"Prolonged academic hiring freezes mean I am training for a job that doesn't exist. I don't know how much longer I can hold out before financial reality douses the flame of intellectual idealism."* *SD IRACDA fellow*

DISCUSSION AND RECOMMENDATIONS

The COVID-19 pandemic has impacted the career progression of all postdoctoral scholars, and based on our survey, this could especially hinder UR SD IRACDA fellows' intent and capacity to pursue a career in academia. Postdoctoral training is a transformative stage that often determines whether a young investigator will continue in academia or pursue a different career. While the SD IRACDA program provides high-quality effective mentorship by engaging fellows with multiple experienced mentors and increases self-efficacy by enhancing research, grant writing, and teaching skills, the pandemic has unveiled several other contributing factors that threaten to upend IRACDA efforts to diversify the professoriate. The inability to meet in person for more than 15 months has weakened community, camaraderie, social support, and the positive influence of senior SD IRACDA fellows and the program on new scholars' beliefs about their ability to succeed in academia. We also found that significant financial struggles, increased caregiving responsibilities, and uncertain job prospects caused by the pandemic could potentially cut short UR postdocs' aspirations to pursue academic careers. Although our study focused on a small cohort of UR IRACDA fellows impacted by the COVID-19 pandemic, a study by Lambert *et al.* (2020) before COVID-19 also found job prospects, financial security, and responsibility to family as factors influencing UR postdoc decisions for pursuing careers outside of academia.

We propose the following recommendations to retain the new generation of diverse postdoctoral scholars who will pursue faculty positions at academic intuitions. Academic positions remain the most common career goal for junior and UR postdoctoral scholars (McConnell *et al.*, 2018; Lambert *et al.*, 2020). As such, we recommend postdoctoral salary increases and/or stipend supplements to help retain diverse scientists in academia for a longer period of time so they can develop the critical academic skills and self-efficacy essential for pursuing an academic career. Actionable items to alleviate the financial strain on UR postdoctoral scholars include financial supplements for caregivers, technology and software stipends, and importantly, access to affordable housing. To mitigate concerns regarding faculty job prospects, institutional faculty cluster hiring initiatives combined with structured programs that provide new faculty with guidance around promotion, effective mentorship, and integration into the fabric of the institution are also critical. A diverse biomedical workforce is crucial for enhancing scientific innovation, health equity, and inclusive excellence. However, the numbers of women and Black/African-American, Latinx/Mexican-American, and Indigenous scientists remain disproportionately low within the biomedical workforce, especially as faculty at academic institutions. Ultimately, the loss of a generation of diverse postdoctoral scholars caused by several contributing factors exacerbated by the COVID-19 pandemic will have a long-lasting impact on efforts to diversify the faculty. We must act now to prevent UR scientists from leaving the academic track by increasing postdoc compensation and support, providing affordable housing, and implementing faculty cluster hiring and structured programs to enhance academic career success of UR faculty scholars.

MEET THE AUTHORS

The authors are fellows in the San Diego IRACDA Program (http://iracda.ucsd.edu). The program is composed of a diverse group of postdoctoral scholars (pictured above) who are training for research and teaching careers in academia. Fellows work in laboratories at the UC San Diego School of Medicine, Skaggs School of Pharmacy and Pharmaceutical Sciences, Division of Biological Sciences, Chemistry and Biochemistry, Jacobs School of Engineering, and Scripps Institution of Oceanography.

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