**RECRUITMENT PLAN TO ENHANCE DIVERSITY**

**Diversity Efforts for Underrepresented (UR) Groups and Students from Disadvantaged Backgrounds.** *The University of North Carolina at Chapel Hill is committed to a diverse scientific workforce that is representative of the US population and that every student with the motivation for a research career has the opportunity and resources to thrive as a scientist.* In her role as Associate Dean for Graduate Education, Dr. Donita Robinson serves as the head of the Office of Graduate Education (OGE). In addition to overseeing recruitment to the umbrella PhD first-year program, Biological and Biomedical Sciences Program (BBSP), the OGE is responsible for coordinating recruitment and retention efforts for individuals from underrepresented groups (URs). These groups are defined by NIH (race, ethnicity, and disability); individuals from disadvantaged backgrounds were included at the graduate student level starting in 2019.

Dr. Ashalla Freeman (full-time Director of Diversity Initiatives and the Director of the UNC Initiative for Maximizing Student Development (IMSD)) provides leadership for the recruitment and support of UR students in the biomedical and biological sciences. She is joined by Drs. Donita Robinson and Jose Rodriguez-Romaguera, Directors of UNC’s post-baccalaureate program, and OGE staff in both student recruitment and retention activities. Their efforts are supported by generous institutional resources from the School of Medicine, the UNC Lineberger Comprehensive Cancer Center, and other UNC schools that participate in the BBSP program (the College of Arts and Sciences, the Eshelman School of Pharmacy, and the UNC School of Dentistry), plus NIH educational grants.

**History of Achievements.** Before 2008 when the OGE was created, individual program efforts sustained much smaller numbers of UR students (~6%), whereas the combined efforts have led to substantial increases (Figure 1). *Notably, the 2017 thru 2021 BBSP classes are >22% UR students, and this number meets or exceeds the percentages of URs in the BBSP applicant pool for these years.* The entire UNC research training community engages in outreach and recruiting to ensure a diverse BBSP applicant pool (detailed below); in the last 5 years UR applicants constitute 14-16% of total applicants and 21-24% of domestic applicants (training-grant eligible). BBSP admissions monitors interview offers and offers of admissions for proportional representation of UR vs WR candidates. Since the introduction of implicit bias discussions in 2015, our analysis of predictors of PhD student success (Hall et al., 2017), and training in holistic review, committees have extended offers to UR applicants in percentages that match their representation in the candidate pool using the same criteria for all application scoring.

**Figure 1. Biomedical PhD student recruiting.** The plot in blue shows the percent of each matriculating BBSP class from groups under-represented in the sciences based on NIH criteria from 2011-2019; disadvantaged background is tracked but not plotted here. The plot in orange shows the number of UR students in each entering class from 2011-2021. (2019 recruiting was impacted by the peak of national news about removing the Confederate monument from the UNC campus.)

**Proposed Plans for Recruitment**

The philosophy at UNC is that outstanding UR recruitment is built from the ground up through multi-faceted development of individual, community, and outreach relationships. Notably, many of the training faculty in “**XXXXX”** and their students are involved in these activities. The programs include OGE-coordinated outreach by graduate students to high school students and the community, summer research programs, a Postbaccalaureate (PREP) Program, and the SPIRE fellowship program which places UNC postdoctoral fellows in North Carolina Minority Serving Institutions (MSIs). A few examples of these programs are the following.

* North Carolina DNA Day. This science outreach program is held annually in April to coincide with National DNA Day. UNC graduate students and postdoctoral scholars visit high schools across the state of North Carolina to conduct engaging, hands-on scientific activities highlighting genetics and genomics and sharing their passion for science and information about science careers. In 2019, approximately 9,000 high school students in 137 high schools were reached by over 160 graduate students and postdoc scientist “ambassadors". Since the program was established in 2007, NC DNA Day has reached 502 unique high schools and >100,000 high school students. For most of the high school participants, it was their first interaction with a career scientist. Students in the laboratories of our training faculty are regular participants in this important event. In addition, as part of UNC’s DNA Day CONNECT initiative, a subset of trainees are paired with NC high school science teachers at the start of the school year to be available as a “guest scientist” by video conference throughout the year. This culminates with the scientist visiting the classroom in person on DNA Day.
* SURE and SOLAR. These summer research programs host visiting undergraduates from other institutions where there are few opportunities to participate in internationally-competitive research. Over the years, many of these students have been hosted by faculty in our training program. Typically, >50% of the NSF-funded SURE participants are URs. SOLAR is a program exclusively for URs that is organized and directed by the OGE (funded by intramural sources). BBSP has a high rate of recruitment from these programs.
* Postbaccalaureate Research Education Program (PREP). The OGE has administered an NIH-funded Postbaccalaureate Research Education Program (PREP) for UR scholars since 2010 (R25 Co-PIs, Dr. Donita Robinson and Dr. Jose Rodriguez-Romaguera). UNC PREP provides one year of salary/tuition support for UR scholars who plan to apply to biomedical Ph.D. programs. Besides working full-time in research labs during their year in the program, UNC PREP scholars receive extensive professional development in areas important to their growth as scientists such as scientific writing, presentation skills, critical analysis, and time management. Since 2010, UNC PREP has transitioned 102 UR scholars (93%) into top-tier biomedical doctoral programs. OGE published UNC PREP outcomes and a detailed program description that have been used as a blueprint for other post-baccalaureate training programs across the country (Hall et al., 2016). BBSP has a high rate of recruitment from this UR pool, with 41% (42/102) of PREP scholars transitioning directly to BBSP.
* UNC SPIRE Program. The SPIRE program is a NIH-funded program for postdoctoral training in research and education. SPIRE postdoctoral fellows teach at North Carolina MSIs, and they work with the OGE to identify candidate UR undergraduates for research opportunities at UNC. Nine previous SPIRE fellows are now faculty at NC MSIs
* OGE-sponsored Visits. The OGE hosts campus visits for undergraduates from MSIs. This program is being extended to include North Carolina undergraduates from schools with high percentages of 1st generation college students. The OGE has developed strong relationships with the University of Puerto Rico at Cayey and the University of the Virgin Islands, two MSIs outside the continental US with very limited research infrastructure and few research opportunities for students. Each year, the OGE sends graduate students to these universities to lead laboratory skills workshops and present their research. As evidence for interconnections between UNC recruitment programs is that several undergraduates from UPR Cayey and UVI have participated in the OGE SOLAR and PREP programs, and successfully matriculated through BBSP.
* Faculty Participation at Conferences. The OGE sponsors faculty and student attendance at conferences for UR students interested in biomedical research careers including SACNAS (Society for the Advancement of Chicanos and Native Americans in Science) and ABRCMS (Annual Biomedical Research Conference for Minority Students). Additionally, the OGE provides recruitment materials and training for faculty attending targeted UR recruitment events at society meetings including the ENDURE session at the Society for Neuroscience National Meeting and the Society for Toxicology Annual Meeting.
* BBSP Preview Weekend. Beginning in 2014, UNC has annually hosted 15-20 prospective BBSP applicants from underrepresented groups for an all-expenses-paid two-day campus visit each Fall. Participants receive individual guidance from faculty about crafting competitive graduate school applications and the interview and admissions process at UNC. Participants meet faculty, and current PhD students to learn more about the research opportunities and diverse community at UNC.
* Recruitment Ambassadors. IMSD students serve as ambassadors who are points-of-contact for UR BBSP applicants, and they reach-out to recruits to share a student perspective about IMSD, BBSP and Chapel Hill. Ambassadors attend a Meet-and-Greet event hosted by IMSD leadership and BBSP at the start of each interview weekend to introduce recruits to the IMSD community.

**Specific efforts of the “XXXXX” program.** You should highlight here how your faculty, students, etc have participated in the above programs/events. If you have other events or programs that you do on your own you should describe them here. This is extremely important. The review committee is looking for specific involvement by your training faculty rather than simply leaving these activities to OGE to take care of.

**Plan for Predoctoral Students with Disabilities.** While UNC is prohibited from asking about disabilities in our admission process, we do not discriminate against students with disabilities for admissions, and active recruitment of students with disabilities is an integral part of the BBSP recruitment strategy. The OGE reaches out to accessibility services offices at all major undergraduate institutions in North Carolina and many others in the Southeast. This effort involves yearly emails and letters to the heads of accessibility services offices at the 16 UNC system schools, 17 private liberal arts colleges and 6 private universities in NC, as well as a dozen other regional colleges and universities in the Southeast. These communications emphasize our commitment to enrolling and actively supporting students with disabilities in the 15 PhD-granting programs associated with the BBSP, summer undergraduate research programs, and the Postbaccalaureate Research Experience Program (PREP). Faculty and students also recruit at undergraduate research conferences for students from under-represented groups, e.g. the annual ABRCMS and SACNAS events, where many students living with disabilities present their research. We make a concerted effort at these events to demonstrate UNC’s commitment to inclusion and diversity for students of all ability levels.

The OGE also extends our outreach efforts to the high school level. Dr. Patrick Brandt, Director of Career Development and Training in the OGE, serves on the planning committee for an annual STEM diversity event sponsored by the local statistics software development company, SAS. This annual STEM Career Showcase is a joint effort between SAS, the NC Museum of Natural Sciences, UNC, and Duke University. Over 100 middle and high school children with a variety of mobility and cognitive disabilities meet at the NC Museum of Natural Sciences to hear an encouraging and practical keynote address by a nationally recognized scientist, engineer, or mathematician who is living with disability. Each year, UNC graduate students living with disabilities have participated as panelists and mentors to the attendees. The event has served as motivation and affirmation to over 200 students with disabilities that their skills and abilities can and should be applied to STEM careers such as life science research.

Literature Cited

Hall, J.D., J.R. Harrell, K.W. Cohen, V.L. Miller, P.V. Phelps, and J.G. Cook. 2016. Preparing Postbaccalaureates for Entry and Success in Biomedical PhD Programs. *CBE Life Sci Educ*. 15.

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