

Centralized Otolaryngology Research Efforts as a Stepping-Stone to Innovation and Equity in Otolaryngology – Head and Neck Surgery

Authors: Michael J. Brenner, M.D.¹, Rick F. Nelson², Tulio A. Valdez, M.D.³, Ph.D., Cherie-Anne O. Nathan, M.D.⁴, Howard Francis, MD, MBA⁵, and Maie A. St. John, M.D., Ph.D.⁶

¹Michael J. Brenner, M.D.
Department of Otolaryngology – Head & Neck Surgery
University of Michigan Medical School
Ann Arbor, MI, USA.
mbren@med.umich.edu

²Rick F. Nelson, M.D., Ph.D.
Departments of Otolaryngology-Head and Neck Surgery and Neurosurgery,
Indiana University School of Medicine
Indianapolis, Indiana, USA
ricnelso@iupui.edu

³Tulio A. Valdez, M.D., Ph.D.
Department of Otolaryngology-Head & Neck Surgery,
Stanford University School of Medicine,
Stanford, California, U.S.A.
tvaldez1@stanford.edu

⁴Cherie-Anne O. Nathan, M.D.
Department of Otolaryngology - Head and Neck Surgery,
Louisiana State University Health Sciences Center &
Feist-Weiller Cancer Center, Shreveport, Louisiana, USA.
CNatha@lsuhsc.edu

⁵Howard W. Francis, MD, MBA
Department of Head and Neck Surgery & Communication Sciences,
Duke University School of Medicine, Durham, NC, USA.
howard.francis@duke.edu

⁶Maie A. St John, M.D., Ph.D.
Department of Head and Neck Surgery,
David Geffen School of Medicine, Jonsson Comprehensive Cancer Center, University of California Los Angeles (UCLA) Head and Neck Cancer Program, & UCLA Medical Center, Los Angeles, California, USA.
MStJohn@mednet.ucla.edu

This is the author's manuscript of the article published in final edited form as:

Brenner, M. J., Nelson, R. F., Valdez, T. A., Moody-Antonio, S. A., Nathan, C.-A. O., St John, M. A., & Francis, H. W. (2022). Centralized Otolaryngology Research Efforts: Stepping-stones to Innovation and Equity in Otolaryngology-Head and Neck Surgery. *Otolaryngology--Head and Neck Surgery: Official Journal of American Academy of Otolaryngology-Head and Neck Surgery*, 166(6), 1192–1195. <https://doi.org/10.1177/01945998211065465>

Correspondence

Michael J. Brenner, M.D., F.A.C.S.
Associate Professor of Otolaryngology – Head & Neck Surgery
University of Michigan Medical School
1500 East Medical Center Drive/ 1903 Taubman Center SPC 5312
1904 Taubman Center
Ann Arbor, MI 48109-5312
mbren@med.umich.edu
(734) 936-9178

Running Head: Centralized Otolaryngology Research Efforts

Disclosures/ Conflicts of Interest: The authors have no financial disclosures relating to this manuscript

Grants/Funding: No funding was received related to this manuscript

Acknowledgements: None

Keywords: research; clinician-scientist; National Institutes of Health, NIH; funding; mentoring; sponsorship; translational; basic science; pipeline; equity; diversity; inclusion; otolaryngology; head and neck surgery; COVID-19; SARS-CoV-2; coronavirus; pandemic; grant funding; gender equity; healthcare disparities; academic medicine.

Word Count of Main Text: 892 words (900 words allowed)

ABSTRACT

The Centralized Otolaryngology Research Efforts (CORE) grants program coordinates research funding initiative across the specialties of Otolaryngology – Head and Neck Surgery. Modeled after National Institutes of Health (NIH) study sections, CORE grant review processes provide comprehensive review of scientific proposals. The organizational structure and funding awarded engender grant writing skills, data generation, and maturation of independently funded investigators – individuals capable of securing external grants from NIH or other agencies. At once a learning community and a catalyst for scientific advances, CORE evaluates clinical, translational, basic science, and health services research across subspecialties. Amid the societal reckoning around social justice and disparities, an important question is to what extent CORE engenders diversity, equity, and inclusion in otolaryngology. This review explores CORE’s track record to date as a stepping-stone for promoting equity in otolaryngology and its future potential for cultivating diverse leaders across the career continuum within the specialty.

“It is better to take many small steps in the right direction than to make a great leap forward only to stumble backward.”

— **Louis Sachar**

The Centralized Otolaryngology Research Efforts (CORE) grants program coordinates national research efforts in Otolaryngology – Head and Neck Surgery. The pooling of resources achieves efficiencies of scale, avoidance of redundancies, and consolidated grant administration. Since its inception in 1985, CORE has awarded over 600 grants totaling over \$13 million to individuals across subspecialties and career stages. The rationale for examining whether funding opportunities are equitably distributed is multifaceted. These awards may affect retention and overall diversity in academic otolaryngology and ethnic diversity in is strongly correlated with scientific impact.¹

Many academic leaders in otolaryngology with National Institutes of Health (NIH) funding can trace their success back to a proposal through CORE’s funding mechanisms.² Competing successfully for a CORE grant predicts scholarly productivity and choice of an academic career following completion of residency.³ While research-intensive institutions with well-funded laboratories have historically predominated in CORE grant awards, smaller institutions also are critical for scientific advances. Understanding the landscape of recipients and professional outcomes, can afford invaluable insights into past performance of the program and inform future directions.

The pipeline of surgeon-scientists is severely constrained for underrepresented in medicine (URiM) applicants.⁴ Research funding is an important marker of long-term academic success, and therefore CORE has the potential to mitigate or reinforce existing inequities. URiM clinicians, who are more likely to provide care to minoritized or underserved populations,⁵ represent only a very small percentage of otolaryngologists, and even fewer are retained in academic medicine⁶ – a trend likely exacerbated by

differences in external grant funding.⁷ As the demographics of otolaryngology evolves, it becomes increasingly important to understand corresponding demographic trends in grant funding.

Roy and colleagues⁸ shine a light on this question, examining demographics, bibliometric data (*h*-index), and career progression in CORE grant recipients over the past decade. The analysis studied racial/ethnic disparities, gender equity, and academic outcomes relative to the overall specialty. This score card on CORE is timely and instructive. The data suggest equitable distribution of awards and reaffirm the link between grant awards and academic success. Yet, it is necessarily an incomplete picture – limited by small numbers, finite time period, and lack of data on applicants who did not receive awards, which represents approximately 85% of applicants for most resident grants.

The data also highlight the lack of diversity in otolaryngology as a specialty.⁶ For example, Black applicants received 2.2% of grants in 2010 and 3.2% in 2019, exceeding the 0.97% expected rate, but underscoring the severe dearth of Black otolaryngologists nationally. Hispanic otolaryngologists fared worse, receiving only 2.3% of grants in 2010 and 0.0% in 2019 – below the 5.7% (2010) and 3.5% (2019) expected based on overall percentages for the specialty. In some years, there were *no* Black or Hispanic grant recipients. CORE grant funding correlates with future NIH grant application success, so relatively few URIM investigators benefited from this key toehold. NIH data show that URiM make up only 2.8% of early-stage investigators, 2.1% of new investigators, and 1.0% of senior investigators.⁹ Mentoring of clinician scientists is thus a critical step for the improving diversity within academic otolaryngology

Women remain a minority of the otolaryngology workforce, but their numbers have steadily increased comparable, and women have greater rates of success than men in securing CORE grant funding.

Furthermore, women who received CORE grants achieved swifter ascent in academic rank than male

counterparts, suggesting that CORE grants supported research productivity and academic prospects. The validation of a grant award may have special significance for women, who have been underrepresented as speakers at conferences; received fewer formal introductions on the speaker podiums; are less likely to be nominated for and receive achievement awards; are less likely to be included in journal editorial board membership; and are less likely to author original research or invited editorials.¹⁰

The data also highlighted the concentration of grant recipients at a small number of top residency programs showing that of the 310 recipients, 182 trained at 1 of these programs (58.71%). This is likely due to the established research funding within the school of medicine and/or department of Otolaryngology at those programs (**Table 2**). In addition, those top programs provide additional dedicated research opportunities through NIH funded T32 programs (**Table 2**). Thus, CORE grant applicants from these institutions have opportunities to work with NIH funded investigators and institutions that have a track record of securing grants. Having dedicated research block of at least 4-6 months is critical for resident CORE grant applicants. Establishing methods to fund residents CORE grant applicants from programs outside the top 10 is needed to expand the diversity of grant recipients.

CORE plays an important role not only in grant review and funding but also in supporting networking and growth of a learning community. This community has weathered notable challenges amid the pandemic, including the need to pivot to virtual study section. Many grant recipients go on to serve as CORE reviewers, and this experience allows them to understand NIH grant review format. The experience helps hone critical skills while growing a professional network. Looking to the future, CORE will likely continue to be an incubator for investigators and innovation in the field, promoting mentorship, critical thinking, and building of relationships. It may also help to overcome barriers that may differentially affect individuals based on gender, race/ethnicity, or socioeconomic factors.

In summary, CORE sown the seeds of many careers and will continue to serve as a bridge to the future, providing practical skills and resources for professional growth. There is, however, a need for further progress. CORE has no funding mechanisms specific to health disparities or URiM investigators, nor do specialty societies have defined strategies to promotes URiM investigators. The evidence for “what works” to ameliorate disparities in surgical specialties and patient care is limited, and more work is needed. It may reasonably be asked whether the time has arrived for a great leap forward –even at risk of stumble. Although much work lies ahead the data suggest that CORE is providing small, deliberate steps in the right direction.

Residency Program of CORE grant recipients *	Number of grants*	School of Medicine NIH Funding Ranking (2020) #	Otolaryngology Department NIH Funding Ranking (2020) #	Otolaryngology T32 Program (2021) ^
1. Washington University	35	8	6	Yes
2. University of Michigan	27	11	12	Yes
3. Johns Hopkins University	22	3	1	Yes
4. Massachusetts Eye and Ear Infirmary/Harvard Medical School	20	38	33	Yes
5. University of Pennsylvania	17	6	9	Yes
6. Stanford University	14	7	8	Yes
7. University of Iowa	13	41	11	Yes
8. Oregon Health and Science University	12	26	5	No
9. University of California Los Angeles	12	2	15	No
10. Medical University of South Carolina	10	49	10	Yes

*Data replicated from Roy SC et al., 2021 Table2.

#Data taken from Blue Ridge Institute for Medical Research.

^Data obtained from NIH Reporter

Opportunities to Advance Innovation and Equity in Otolaryngology

Increase the ranks	<ul style="list-style-type: none"> ● Institute longitudinal initiatives can support investigators across career stages ● Act as a talent scout, especially for rising investigator with limited networks ● Invest in and publicize outreach programs to attract a diverse pool of applicants
Apply a DEI Lens to Science	<ul style="list-style-type: none"> ● Incorporate DEI factors into assessment of grant impact ● Use PROGRESS-PLUS, where applicable, to contextualize relevance of SDOH ● Consider whether diverse populations are affected by the disorder
Create funding mechanisms	<ul style="list-style-type: none"> ● Develop health disparities grant mechanisms to prioritize studies of SDOH ● Invite sponsoring societies to consider URiM status or URiM-specific grants ● Offer medical student opportunities to support pipeline efforts
Develop Infrastructure	<ul style="list-style-type: none"> ● Establish communal resources for basic science and statistics/epidemiology/public health ● Offer workshops to facilitate acquisition of key skills in research, including boot camps ● Build partnerships with entities that champion equity and diversity (Harry Barnes Medical Society and Endowment; WIO, NMA, BON, LANAMA, and others.)
Cultivate investigators	<ul style="list-style-type: none"> ● Mentor with superb research experiences in translational and clinical research ● Coach individuals at all levels, especially in proposal/grant writing and research tools ● Sponsor promising young people by nominating and promoting diverse candidates
Improve representation	<ul style="list-style-type: none"> ● Track gender and URiM balance across CORE Study sections and committees ● Re-assess makeup of editorial boards, leadership roles, national presentations ● Strive for balance across all opportunities locally, regionally, and nationally
Provide visionary leadership	<ul style="list-style-type: none"> ● Champion research innovation inclusively in department, societal, and academy missions ● Create leadership roles to advance scientific careers across all investigators ● Identify opportunities to showcase/spotlight successes and initiatives

Abbreviations: DEI, diversity, equity, and inclusion; SDOH, social determinants of health; WIO, women in otolaryngology; NMA, National Medical Association; BON, Black Otolaryngology Network, LANAMA, Latin American and Native American Medical Association, CORE, Centralized Otolaryngology Research Efforts, URiM; Underrepresented in Medicine; PROGRESS PLUS, Place of residence, Race/ethnicity/culture/language, Occupation, Gender/sex, Religion, Education, Socioeconomic status, Social capital, and plus factors relating to discrimination, relationships, or time-dependent factors

Table 1: Advancing Innovation and Inclusive Excellence in Otolaryngology Research

References

1. AlShebli BK, Rahwan T, Woon WL. The preeminence of ethnic diversity in scientific collaboration. *Nat Commun*. 2018;9(1):5163.
2. Eloy JA, Svider PF, Kanumuri VV, Folbe AJ, Setzen M, Baredes S. Do AAO-HNSF CORE Grants Predict Future NIH Funding Success? *Otolaryngol Head Neck Surg*. 2014;151(2):246-252.
3. Eloy JA, Svider PF, Folbe AJ, Setzen M, Baredes S. AAO-HNSF CORE grant acquisition is associated with greater scholarly impact. *Otolaryngol Head Neck Surg*. 2014;150(1):53-60.
4. Munjal T, Nathan CA, Brenner MJ, Stankovic KM, Francis HW, Valdez TA. Re-engineering the Surgeon-Scientist Pipeline: Advancing Diversity and Equity to Fuel Scientific Innovation. *Laryngoscope*. 2021.
5. Komaromy M, Grumbach K, Drake M, et al. The role of black and Hispanic physicians in providing health care for underserved populations. *N Engl J Med*. 1996;334(20):1305-1310.
6. Truesdale CM, Baugh RF, Brenner MJ, et al. Prioritizing Diversity in Otolaryngology-Head and Neck Surgery: Starting a Conversation. *Otolaryngol Head Neck Surg*. 2021;164(2):229-233.
7. Check Hayden E. Racial bias continues to haunt NIH grants. *Nature*. 2015;527(7578):286-287.
8. Roy SC, Wassef DW, Nasser WA, et al. Landscape of Centralized Otolaryngology Research Efforts Grant Recipients Over the Past Decade. *Otolaryngol Head Neck Surg*. 2021:1945998211023114.
9. Nikaj S, Roychowdhury D, Lund PK, Matthews M, Pearson K. Examining trends in the diversity of the U.S. National Institutes of Health participating and funded workforce. *FASEB J*. 2018:fj201800639.
10. Zambare WV, Sobin L, Messner A, Levi JR, Tracy JC, Tracy LF. Gender Representation in Otolaryngology-Head and Neck Surgery Recognition Awards. *Otolaryngol Head Neck Surg*. 2021;164(6):1200-1207.