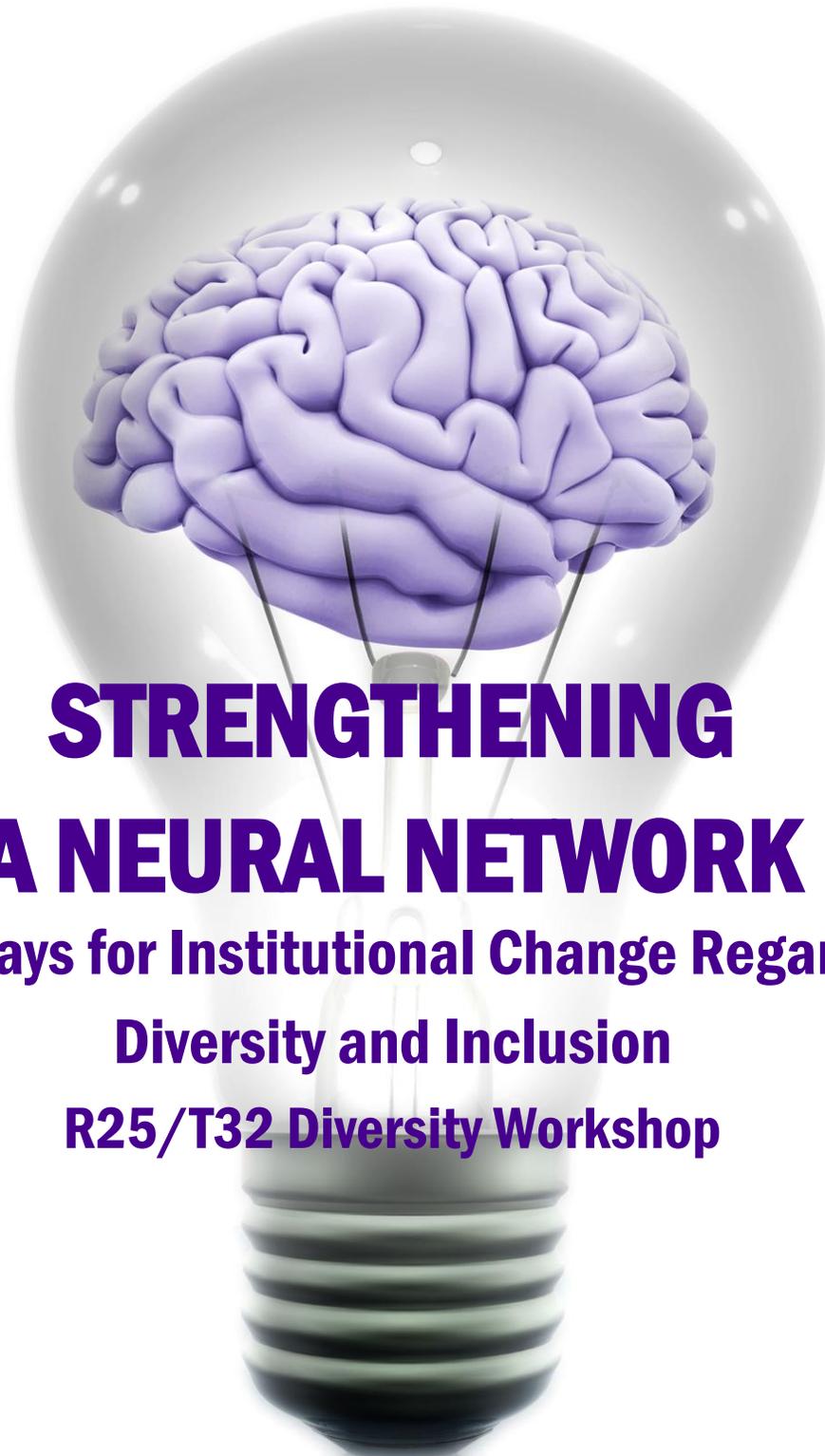




National Institute of
Neurological Disorders
and Stroke



STRENGTHENING A NEURAL NETWORK

**Pathways for Institutional Change Regarding
Diversity and Inclusion
R25/T32 Diversity Workshop**

April 29 – 30, 2019
Doubletree by Hilton Hotel Bethesda
Ballroom A/B

~

*A neural network works by creating connections between processing elements.
The organization and weights of the connections determine the output.*

~

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Welcome and Meeting Goals



It is my pleasure to welcome you to “**Strengthening a Neural Network: Pathways for Institutional Change Regarding Diversity and Inclusion R25/T32 Diversity Workshop.**” As one of 27 Institutes and Centers making up the National Institutes of Health (NIH), the National Institute of Neurological Disorders and Stroke (NINDS) has played a central role in supporting neuroscience research for more than 60 years. Our mission is to seek fundamental knowledge about the brain and nervous system and to use that knowledge to reduce the burden of neurological diseases borne by every age group, by every segment of society, and by people all over the world. To help accomplish this mission, our portfolio must include research training and career development programs to increase basic, translational, and clinical neuroscience expertise and ensure a vibrant, talented, and diverse workforce.

The goals of this meeting include: 1) building alliances between individuals who are actively engaged in addressing issues surrounding workforce diversity and individuals engaged in neuroscience training; 2) identifying opportunities and sharing successful approaches for more effective institutional change; 3) fostering dialogue around institutional approaches to interventions targeted at critical transition points along the career path, such as entry to and persistence in training programs (undergrad, grad, and postdoc) and hiring and retaining diverse faculty; 4) providing training to administrators of neuroscience R25 and T32 training programs on how to implement institutional change around diversity and inclusion at their institutions; and 5) receiving feedback on how NINDS programs and policies can catalyze institutional change around a diverse neuroscience workforce. The attendees will be neuroscience graduate program directors, directors of neuroscience undergraduate research programs, and experts in diversity and inclusion.

NINDS seeks to promote diversity in all of its training and research programs, and to increase the participation of all underrepresented groups. NINDS T32 and R25 programs have a very important role to play in expanding the diversity of the workforce by recruiting and preparing underrepresented trainees; developing meaningful mentorship relationships and connecting diverse individuals to supportive networks; and providing program support for retention while eliminating barriers for career transition. With your partnership, we at NINDS are making strides and are confident that through collective dedication, we can strengthen our efforts and further improve our workforce diversity outcomes.

We hope that you will enjoy this important meeting and take full advantage of the many opportunities to interact with colleagues, share experiences, and participate in stimulating discussions.

*Best wishes,
Walter*

Walter J. Koroshetz, M.D.
Director
National Institute of Neurological Disorders and Stroke
National Institutes of Health

Agenda

Monday, April 29, 2019

- 7:00 – 8:00 am **Registration**
- 8:00 – 8:15 am **Welcome**
Walter Koroshetz, M.D.
Director, National Institute of Neurological Disorders and Stroke (NINDS)
- 8:15 – 8:25 am **Meeting Goals**
Michelle Jones-London, Ph.D.
Chief, Office of Programs to Enhance Neuroscience Workforce Diversity (OPEN)
NINDS
- 8:25 – 9:05 am **Featured Lecture: Breaking the Bias Habit**
Molly Carnes, M.D.
Professor, Departments of Medicine, Psychiatry, and Industrial & Systems Engineering
Director, University of Wisconsin-Madison Center for Women's Health Research
- 9:05 – 9:25 am **Q & A Session**
- 9:25 – 9:45 am **BREAK**
- 9:45 – 11:15 am **Panel 1: Strategies for Institutional Change**
Moderator: Letitia Weigand, Ph.D. – NINDS
Discussants: Beth Ruedi, Ph.D. – SEA Change, American Association for the Advancement of Science
Penny Beuning, Ph.D. – ADVANCE, Northeastern University
David Asai, Ph.D. – Inclusive Excellence, HHMI
- What institutional programs and approaches have been successful in reducing isolation, increasing community building, and fostering career advancement for early-career faculty from diverse groups?
 - The institutional framework provides incentives that dictate the kinds of skills and knowledge perceived to have the maximum pay-off. How can this perception harm or help the efforts to increase workforce diversity?
 - How does your institution demonstrate or communicate how diversity relates to the educational and research mission?
- 11:15 – 12:00 pm **Discussion/Brainstorming in Small Groups**
- 12:00 – 1:00 pm **LUNCH BREAK**
- 1:00 – 2:30 pm **Panel 2: Making Data-Driven Decisions**
Moderator: Lauren Ullrich, Ph.D. – NINDS
Discussants: Elizabeth Watkins, Ph.D. – Coalition for Next Generation Life Science, University of California, San Francisco
Chris Pickett, Ph.D. – Rescuing Biomedical Research
Kenneth Gibbs, Jr., Ph.D. – Data-Based Intervention Recommendations, NIGMS
- What data on the workforce are available nationally and locally?
 - How does your program collect and use data on participants and applicants?
 - How can we ensure data collected are useful and informative?

Agenda

- 2:30 – 3:15 pm **Discussion/Brainstorming in Small Groups**
- 3:15 – 3:35 pm **BREAK**
- 3:35 – 5:05 pm **Panel 3: The Role of Societies & Associations in Institutional Change**
Moderator: Marguerite Matthews, Ph.D. – NINDS
Discussants: Rae Nishi, Ph.D. – Society for Neuroscience, Marine Biological Laboratory
Kevin Jones, Ph.D. – Society for Neuroscience, University of Michigan
Kelly Mack, Ph.D. – Association of American Colleges & Universities
Chantel Fuqua, Ph.D. – Association of American Medical Colleges
- What are the major challenges to meeting the career development needs of a diverse workforce?
 - How can institutions utilize professional societies and associations to facilitate institutional change?
 - What opportunities does your organization offer to promote diversity and inclusion in the biomedical workforce?
- 5:05 – 5:50 pm **Discussion/Brainstorming in Small Groups**
- 5:50 – 6:00 pm **Day One Wrap-up and ADJOURN**
Michelle Jones-London, Ph.D. – NINDS

Tuesday, April 30, 2019

- 7:30 – 8:00 am **Breakfast**
- 8:00 – 8:10 am **Welcome and Introduction of Activity**
- 8:10 – 9:10 am **Landis Award Winners Share Their Mentoring Philosophy**
Moderator: Stephen Korn, Ph.D. – NINDS
Discussants: Matthew Gentry, Ph.D. – University of Kentucky College of Medicine
Sarah Kucenas, Ph.D. – University of Virginia
Chris Dulla, Ph.D. – Tufts University School of Medicine
- 9:10 – 11:10 am **Interactive Mentor Training to Increase Research Self-Efficacy**
Arpita Ghosh, Ph.D.
National Research Mentoring Network
The University of Kansas
- 11:10 – 11:20 am **BREAK**
- 11:20 – 12:00 pm **NIH's Scientific Approach to Inclusive Excellence: Focus on Institutional Accountability**
Hannah Valentine, M.D.
Chief Officer for Scientific Workforce Diversity, NIH
- 12:00 – 12:30 pm **Report Out, Concluding Remarks, and ADJOURN**
Michelle Jones-London, Ph.D., and Steve Korn, Ph.D. – NINDS

Speakers and Moderators



Walter Koroshetz, M.D.
Director
National Institute of Neurological Disorders and Stroke

Walter J. Koroshetz, M.D., was selected Director of NINDS on June 11, 2015. Dr. Koroshetz joined NINDS in 2007 as Deputy Director, and he served as Acting Director from October 2014 through June 2015. Previously, he served as Deputy Director of NINDS under Dr. Story Landis. Together, they directed program planning and budgeting, and oversaw the scientific and administrative functions of the Institute.

Before coming to NIH as the NINDS Deputy Director in 2007, Dr. Koroshetz was a Harvard Professor of Neurology, Vice Chair of Neurology at Massachusetts General Hospital (MGH), Director of Stroke and Neurointensive Care, and a member of the Huntington's disease unit. He was also a Professor of Neurology at Harvard Medical School and led neurology resident training at MGH from 1990 until 2007. A native of Brooklyn, New York, Dr. Koroshetz graduated from Georgetown University and received his M.D. from the University of Chicago. He trained in internal medicine at the University of Chicago and in both internal medicine and neurology at MGH, after which he did postdoctoral studies in cellular neurophysiology at MGH and the Harvard neurobiology department.



Michelle D. Jones-London, Ph.D.
Chief, Office of Programs to Enhance Neuroscience Workforce Diversity (OPEN)
NINDS

Michelle Jones-London, Ph.D., serves as Chief, Office of Programs to Enhance Neuroscience Workforce Diversity. In this position, she plays a critical role in guiding the Institute's diversity efforts and chairs the NINDS Diversity Working Group. Dr. Jones-London joined NINDS as a Program Director in July, 2006. Dr. Jones-London earned her Ph.D. in Neuroscience from Pennsylvania State University College of Medicine. She then received postdoctoral training as a research fellow at University of Pennsylvania. Dr. Jones-London came to the NIH in July 2004 as an Emerging Leader Fellow; she performed duties across the Department of Health and Human Services. Dr. Jones-London directs the diversity training and workforce development programs at NINDS which include Diversity and Re-Entry Supplements, Predoctoral Fellowships to Promote Diversity (F31), Career Development Awards to Promote Diversity (K01 and K22) and Diversity Research Education Grants (R25). She also provides oversight for the Institute's diversity outreach initiatives at several other national scientific conferences. Her trans-NIH efforts include oversight of the NIH Blueprint ENDURE and the F99/K00 D-SPAN program. Her research interests have focused on understanding monoaminergic neurotransmitter regulation and mechanisms of behavioral psychopharmacology in animal models of disorders such as ADHD, Tourette Syndrome, and depression.

Featured Lecture



Molly Carnes, M.D.
Professor, Departments of Medicine, Psychiatry, and Industrial & Systems Engineering
Director, UW Center for Women's Health Research

Molly Carnes, M.D., is a professor of Medicine, Psychiatry and Industrial & Systems Engineering at the University of Wisconsin-Madison where she directs the Center for Women's Health Research in the School of Medicine and Public Health and co-directs the Women in Science and Engineering Leadership Institute (WISELI) in the College of

Speakers and Moderators

Engineering. Dr. Carnes received her undergraduate degree from the University of Michigan and her M.D. from the University of Buffalo. She completed Internal Medicine and Geriatrics training at the University of Wisconsin where she also received a Master's in Epidemiology. Her research treats the influence of stereotypes on cognitive processing as habits, and she mobilizes behavioral change strategies to help faculty in medicine, science, and engineering "break the bias habit." With support from the National Science Foundation and the NIH, Dr. Carnes has developed and tested interventions that changed faculty behavior, improved department climate, and increased the hiring of female faculty and the retention of male faculty. Dr. Carnes has published over 150 papers, served two terms on NIH Advisory Councils, and received a number of awards for her research.

Panel 1: Strategies for Institutional Change



Letitia Weigand, Ph.D.
Program Manager
NINDS

Letitia Weigand, PhD, joined NINDS in 2013. She earned her PhD in Physiology from the Johns Hopkins University Bloomberg School of Public Health with support from an NRSA predoctoral fellowship and received postdoctoral training at the George Washington University in the Department of Pharmacology and Physiology with diversity supplement support. Dr. Weigand's research interests have ranged from pulmonary physiology and pharmacology to neuro-immune interactions in the lungs to CNS control of heart rate. She undertook studies examining the role of calcium signaling in hypoxic pulmonary vasoconstriction in COPD. Other work focused on understanding the role of the peripheral autonomic and sensory nerves in allergic airway disease. In studies related to sleep apnea and SIDS, she conducted research on the recruitment of serotonergic responses in cardiac vagal neurons in the brainstem during hypoxia and hypercapnia.



Beth Ruedi, Ph.D.
Director of Operations, SEA Change
Senior Project Director, American Association for the Advancement of Science

Beth Ruedi, Ph.D., is a Senior Project Director at the American Association for the Advancement of Science (AAAS). She is the Director of Operations for SEA Change, an initiative promoting systemic transformation in higher education to support true equity and inclusion. She also serves as the director for Science in the Classroom, a collection of annotated research papers. Ruedi received her Ph.D. in behavior genetics from the University of Illinois at Urbana-Champaign in 2007. She has been involved in the STEM professional society sector for nearly a decade, first serving as the founding Director of Education and Professional Development at the Genetics Society of America. There, Ruedi helped cultivate an educational mission for GSA, resulting in a complex portfolio of over 20 activities, initiatives, partnerships, and awards, many of which worked to address systemic issues underlying the lack of diversity in STEM. In 2016 she joined the (now-evolving) Education and Human Resources Directorate at AAAS, serving under Shirley Malcom to direct multiple projects related to STEM literacy, education reform, and diversity & inclusion.

Speakers and Moderators



Penny Beuning, Ph.D.
Professor
Northeastern University

Penny Beuning, Ph.D., is a Professor of Chemistry and Chemical Biology at Northeastern University in Boston. She earned a B.A. in Chemistry from Macalester College in St. Paul, MN, and a Ph.D. from the University of Minnesota in the field of RNA-protein interactions and RNA biochemistry. She completed postdoctoral research at MIT focused on the protein-protein interactions that regulate cellular responses to DNA damage. Her research on DNA damage tolerance and protein engineering has been recognized with a Cottrell Scholar Award, an NSF CAREER Award, an American Cancer Society Research Scholar Grant, and a Chemical Research in Toxicology Young Investigator Award. Prof. Beuning has been active in efforts to enhance the recruitment and retention of groups traditionally underrepresented in the sciences. She is also a Councilor for the American Chemical Society, serves on the ACS Committee on Economic and Professional Affairs, and is on the Scientific Advisory Committee of Research Corporation for Science Advancement.



David J. Asai, Ph.D.
Senior Director, Science Education
Howard Hughes Medical Institute

David Asai, Ph.D., is Senior Director for Science Education at the Howard Hughes Medical Institute. David's team creates and leads grants and fellowships programs aimed at the development of students in science. Key initiatives: (i) *Inclusive Excellence* challenges colleges and universities to significantly and sustainably increase their capacity for inclusion of all students, especially students who belong to groups underrepresented among persons who are successful in science; (ii) *Gilliam* graduate program provides awards to adviser-student pairs who are committed to advancing diversity and inclusion in science, and which requires the dissertation adviser to engage in a year-long mentor training program; (iii) *HHMI Professors* provides grants to highly accomplished scientists at research universities who apply the rigorous curiosity that makes them successful in research to important challenges in science education; and (iv) *Science Education Alliance* assists faculty to develop effective course-based research experiences for beginning undergraduates. David's bachelor's degree is in chemistry from Stanford University, and his Ph.D. is in biology from Caltech. He was: a postdoc at Caltech and the University of California, Santa Barbara; a faculty member at Purdue University for 18.5 years where he was Head of Biological Sciences; and Stuart Mudd Professor and Chair of Biology at Harvey Mudd College for 5 years. His research focused on the structural and functional diversity of dyneins. David came to HHMI in 2008.

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Panel 2: Making Data-Driven Decisions



Lauren Ullrich, Ph.D.
Scientific Program Manager
NINDS

Lauren Ullrich, Ph.D., received her Ph.D. and M.S. in Neuroscience from Georgetown University, researching memory in early Alzheimer's disease for her thesis and also published on teaching, pedagogy, and professional development in science. She received her B.A. from Swarthmore College in Psychobiology. Prior to coming to NINDS as a AAAS Science & Technology Fellow in the OPEN office, Dr. Ullrich worked for the Society for Neuroscience in a range of policy and programmatic areas, including government and public affairs; scientific rigor and reproducibility; workforce and training; and animals in research. She is currently the program official for the NINDS Summer R25 program.



Elizabeth Watkins, Ph.D.
Dean, Graduate Division
Vice Chancellor, Student Academic Affairs
Professor, History of Health Sciences
University of California, San Francisco

Elizabeth Watkins, Ph.D., is Dean of the Graduate Division, Vice Chancellor of Student Academic Affairs, and Professor of History of Health Sciences at the University of California, San Francisco. She came to UCSF in 2004 and has served as dean since 2012 and as vice chancellor since 2013. As dean, she serves as the chief academic officer for UCSF's graduate students and postdoctoral scholars. As vice chancellor, she oversees career and professional development, disability services, educational technology services, financial aid, first generation to college support, institutional research, international services, learning resources, registrar, student government, student health and counseling, student information systems, student life, and veterans support. Watkins earned her B.A. in biology and her Ph.D. in history of science at Harvard. She is the author or co-editor of five books and numerous articles on the history of birth control, sex hormones, and pharmaceuticals. Her work has been funded by NIH, NSF, NEH, and the National Academy of Education. As dean, Watkins has implemented new programs to build community and to improve the graduate student experience, and she has overseen the establishment and growth of an \$80 million endowment for basic science Ph.D. students. Watkins is dedicated to broadening diversity and fostering inclusion in graduate education, and serves as PI on UCSF's NIGMS IMSD grant. She is very interested in supporting graduate students and postdocs in meaningful career exploration and development, and she co-leads the Coalition for Next Generation Life Science.



Christopher L. Pickett, Ph.D.
Director, Rescuing Biomedical Research
Visiting Scholar, American Association for the Advancement of Science

Christopher L. Pickett, Ph.D., is the director of Rescuing Biomedical Research and conducts the day-to-day work of the organization. Since 2016, Chris has been a part of every RBR project including the recent publication of a Ph.D. career trajectory taxonomy and an opinion on how to fund young scientists. Prior to joining RBR, Chris was a policy analyst with the American Society for Biochemistry and Molecular Biology

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where he headed up the society's efforts on improving the sustainability of the research enterprise. He published a paper in the Proceedings of the National Academy of Sciences on the topic and spearheaded the organization of a meeting to identify action items that would make significant reforms to the enterprise. Chris got his start in science policy in 2012 as a fellow with the ASBMB, where he worked on legislative and regulatory issues affecting a variety of areas including research funding, portfolio management and training. Before the ASBMB, Chris was a postdoctoral scholar for five years at Washington University in St. Louis, and he received his Ph.D. in Oncological Sciences from the University of Utah in 2006.



Kenneth D. Gibbs, Jr., Ph.D.
Director, Postdoctoral Research Associate Training (PRAT) Program
Program Director, NIGMS

Kenneth Gibbs, Jr., Ph.D. is director of the NIGMS Postdoctoral Research Associate Training (PRAT) Program, and is a program director in the Division of Training, Workforce Development, and Diversity, and Division of Genetics and Molecular, Cellular, and Developmental Biology. Gibbs was previously a program analyst in the Institute's Office of Program Planning, Analysis, and Evaluation. Before joining NIGMS, he was a cancer prevention fellow at the National Cancer Institute and an American Association for the Advancement of Science (AAAS) Science and Technology Policy Fellow at the National Science Foundation. Gibbs earned a B.S. in biochemistry and molecular biology from the University of Maryland, Baltimore County, a Master of Public Health from Johns Hopkins University and a Ph.D. in immunology from Stanford University.

Panel 3: The Role of Societies & Associations in Institutional Change



Marguerite Matthews, Ph.D.
Health Program Specialist
NINDS

Marguerite Matthews, Ph.D., is a Health Program Specialist in the NINDS Office of Programs to Enhance Neuroscience Workforce Diversity (OPEN) Office. Prior to working at NINDS, she was a AAAS Science and Technology Policy Fellow at NIH in the Division of Biomedical Research Workforce and Division of Loan Repayment within the Office of Extramural Programs focused on outcome-based research and portfolio analyses to inform biomedical research workforce policy and program evaluation. She has a strong interest in increasing underrepresented minorities in the biomedical research workforce. Dr. Matthews received a BS in Biochemistry from Spelman College and a Ph.D. in Neuroscience from the University of Pittsburgh. She completed her postdoctoral training in Behavioral Neuroscience at Oregon Health and Science University, where she also served as program director for the Youth Engaged in Science (YES!) outreach initiative and program director for the OHSU Fellowship for Diversity in Research Program to recruit and retain underrepresented minority postdoctoral researchers. Dr. Matthews also worked with Portland State University's NIH BUILD program, BUILD EXITO, to facilitate undergraduate research experiences for underrepresented students in OHSU labs.

Speakers and Moderators



Rae Nishi, Ph.D.
Senior Research Scholar
Marine Biological Laboratory
Woods Hole, MA

Rae Nishi, Ph.D., is Chair of the Professional Development Committee of the Society for Neuroscience and a senior research scholar at MBL. She has a B.S. from Stanford; a Ph.D. in Biology from UC San Diego; and was a postdoc in the Department of Neurobiology at Harvard Medical School. At the Oregon Health and Science University in Portland, OR, she rose through faculty ranks to full professor, then moved in 2001 to the University of Vermont (UVM) where she served as the founding director of the university-wide Neuroscience Graduate Program (NGP) as well as the Director of the Neuroscience, Behavior, and Health Transdisciplinary Research Initiative. Her research in developmental neurobiology was continuously funded by NIH for over 30 years. She became the Director of Education at MBL in 2016 and retired in 2019. Over the past 18 years, she has been actively engaged in promoting diversity and inclusion: during her tenure at UVM, 25% of the students in the UVM NGP were from underrepresented groups; she mentored participants in two NINDS grant workshops for diverse investigators; and is a member of the Advisory Committee to the Director for the Working Group on Diversity for the National Institutes of Health.



Kevin S. Jones, Ph.D.
Assistant Professor
University of Michigan

Kevin S. Jones, Ph.D. is an Assistant Professor in the Department of Pharmacology at the University of Michigan Medical School. His research interests include the neurophysiology and neuropharmacology of mental health disorders. Dr. Jones holds a Ph.D. in Neuropharmacology from Duke University. His current works focuses on discovering new medicines for the treating of post-traumatic stress disorder and major depression. Dr. Jones' work has been published in many prominent journals including *Neuron*, *Biological Psychiatry* and *The Journal of Neuroscience*. Dr. Jones' past affiliations include the Instituto Ramon y Cajal, in Madrid, Spain; Johns Hopkins University Medical School, University of Cincinnati, Pomona College and Charles Drew University Medical School. He is a member of the Society for Neuroscience and currently serves as the chair of the Diversity in Neuroscience Sub-Committee of the SfN Professional Development Committee. He is a Past-President of the DC metro chapter of the Society of Neuroscience and a former member of the Executive Committee of Neuropharmacology Division of the ASPET. In addition to managing his research team, Dr. Jones is also an award-winning instructor who enjoys teaching both undergraduate and graduate students. In his spare time, he enjoys traveling with his family and coaching his two sons' football teams.



Kelly Mack, Ph.D.
Vice President for Undergraduate STEM Education
Executive Director of Project Kaleidoscope, Office of Undergraduate STEM Education
Association of American Colleges & Universities

Kelly Mack, Ph.D., is the Vice President for Undergraduate STEM Education and Executive Director of Project Kaleidoscope at the Association of American Colleges and Universities (AAC&U). Prior to joining AAC&U, Dr. Mack was the Senior Program

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Director for the National Science Foundation ADVANCE Program while on loan from the University of Maryland Eastern Shore (UMES) where, as a Professor of Biology, she taught courses in Physiology and Endocrinology for 17 years. Dr. Mack earned the B.S. degree in Biology from UMES and, later, the Ph.D. degree from Howard University in Physiology. She has had extensive training and experience in the area of cancer research with her research efforts focusing primarily on the use of novel antitumor agents in breast tumor cells. In her current position, Dr. Mack leads a holistic approach to STEM reform that foregrounds inclusion as an immutable factor for achieving excellence in undergraduate STEM education. Since 2012, her leadership has resulted in significant increases in STEM faculty self-efficacy in implementation of culturally responsive pedagogies, major shifts in STEM faculty leadership development delivery, and expansion of both physical and virtual convening platforms for knowledge generation, exchange, and dissemination. Recognized as a national thought leader in higher education, Dr. Mack has been selected to serve as member of several important strategic committees including the National Institutes of Health Review Subcommittee for Training, Workforce Development and Diversity; the NSF Committee on Equal Opportunities in Science and Engineering, as Executive Secretary; and the National Academies Committee on Addressing the Underrepresentation of Women in STEMM. Her work has been highlighted in both *Diverse Magazine* and *U.S. News and World Report*.



Chantel F. Fuqua, Ph.D.
Director, Faculty and Educational Initiatives
Diversity Policy and Programs
Association of American Medical Colleges

Chantel F. Fuqua, Ph.D., is the Director of Faculty and Educational Initiatives at the Association of American Medical Colleges (AAMC). Currently, Dr. Fuqua manages the Minority Faculty Leadership Development Seminar, Mid-Career Faculty Leadership Development Seminar and Grant Writers Coaching Workshop for NIH Awards, along with conducting data analysis and other scholarship to promote faculty diversity. Previously, she served as a 2016-2018 American Association for the Advancement of Science (AAAS) Science and Technology Policy Fellow in the Division of Human Resource Development in the National Science Foundation's Directorate for Education and Human Resources, supporting the Louis Stokes Alliance for Minority Participation program. She also has experience providing scientific, evaluation, and technical support to the National Institutes of Health, along with the U.S. Army Medical Research and Materiel Command in the management of the Congressionally Directed Medical Research Programs and other federal scientific programs. She has a strong interest in broadening participation in STEM disciplines and educational policy. Her recent prior research investigated the work-life balance policies for faculty at historical black college and universities through extensive scientific literature reviews, focus groups and workshops. Dr. Fuqua is also an Adjunct Assistant Professor of biology at the University of Maryland University College.

Featured Landis Award Winners



Stephen J. Korn, Ph.D.
Director, Office of Training and Workforce Development
NINDS

Stephen Korn, PhD, came to NINDS as Director of the Office of Training, Career Development and Workforce Diversity in January, 2006. He received his PhD in Pharmacology from the University of North Carolina- Chapel Hill and received postdoctoral training at NIH (as a PRAT Fellow of NIGMS) and at the Roche Institute of

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Molecular Biology (with financial support from NRSA postdoctoral fellowships). He then spent 15 years on the faculty of the University of Connecticut at Storrs, where he was a Full Professor. His area of scientific specialty is the molecular basis of ion channel gating and permeation, but he has also conducted electrophysiological and imaging research on calcium and pH transport/buffering, and synaptic transmission in the hippocampal slice.



Chris Dulla, Ph.D.
Assistant Professor
Tufts University School of Medicine

The work of Chris Dulla, Ph.D., focuses on mechanisms of epilepsy, astrocyte/neuron interactions, and glutamate neurotransmission. He is passionate about mentoring the next generation of science and making biomedical research more inclusive, diverse, and creative. He was recently awarded the NINDS Landis Award for Outstanding Mentorship.



Matthew Gentry, Ph.D.
Professor, University of Kentucky College of Medicine
Director, Lafora Epilepsy Cure Initiative

Matthew Gentry, Ph.D., received his B.S. from the University of Evansville in 1996 and Ph.D. from Syracuse University in 2003. He was a postdoctoral fellow at UC-San Diego with Dr. Jack Dixon where he discovered reversible glycogen phosphorylation and its role in energy metabolism. He has been continuously funded by NIH for >14 years. He is a K99/R00 Career Development Award recipient and an NSF CAREER awardee. In 2014, he received the NIH Young Investigator IDeA Maciag Award and in 2018 the NINDS Story Landis Award. Dr. Gentry is Director of the UK Epilepsy & Brain Metabolism Alliance. He is PI of the NINDS-funded P01 grant Lafora Epilepsy: Basic Mechanisms to Therapies that established the Lafora Epilepsy Cure Initiative (LECI). The LECI is comprised of the leading Lafora disease (LD) scientists and physician-scientists from around the world with a focus to: diagnose, treat, and cure LD. LD is at the epicenter of brain metabolism, and offers a unique window into both the molecular details of brain energy metabolism and clinical sequela. Additionally, Dr. Gentry is a Journal of Biological Chemistry Editorial Board member and Chair of the American Society of Biochemistry and Molecular Biology Public Affairs Advisory Committee.



Sarah Kucenas, Ph.D.
Associate Professor of Biology, Cell Biology & Neuroscience
University of Virginia

The long-term goal of the research program of Sarah Kucenas, Ph.D., is to elucidate the mechanisms that mediate glial-glial interactions during nervous system development, maintenance and disease/injury. Using *Danio rerio* (zebrafish) as a model system, her lab combines genetic and pharmacological perturbation, single cell manipulation, laser ablation/axotomy, small molecule screening and in vivo, time-lapse imaging to directly and continuously observe glial cell origins, behaviors and interactions in an intact vertebrate. In addition to the science she pursues, she is also passionate about training the next generation of scientist. Mentoring for her is a privilege, and she feels lucky to not only have been mentored by amazing scientists, but to have trainees who trust her enough to mentor them.

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She earned a B.Sc. in Biology from Valparaiso University in 2000 and went on to earn a Ph.D. in Pharmacological & Physiological Science from Saint Louis University with Dr. Mark Voigt in 2005. After her post-doctoral work with Dr. Bruce Appel at Vanderbilt University, she joined the faculty at the University of Virginia in 2009. She is married with a 7-year-old daughter, has two dogs, and is an avid swimmer.

Interactive Mentor Training to Increase Research Self-Efficacy



Arpita Ghosh, Ph.D.
Assistant Professor, Counseling Psychology
Department of Educational Psychology
The University of Kansas

Arpita Ghosh, Ph.D., is an Assistant Professor of Counseling Psychology in the Department of Educational Psychology at the University of Kansas. She also holds a research affiliation at the Dwight D. Eisenhower VA Medical Center in Leavenworth, KS. She earned her degrees from Loyola University Chicago (B.S., 2007; M.A., 2009) and the University of Wisconsin-Milwaukee (Ph.D., 2014). She completed her predoctoral internship at the University of Akron Counseling and Testing Center (2013-2014). Prior to joining KU, Dr. Ghosh completed a clinical fellowship at Marquette University Counseling Center (2014-2015) and a research fellowship at the Madison VA Hospital and University of Wisconsin-Madison Center for Women's Health Research (2015-2018). Dr. Ghosh's Career Development in Context Lab at KU investigates how context (e.g., race/ethnicity, gender) shapes the career decisions of underrepresented groups, including women, racial/ethnic minorities, and military veterans. She is particularly interested in the academic and career development of military veterans. She has engaged in and facilitated research mentor trainings through the National Research Mentoring Network (NRMN) to implement best practices in becoming an effective mentor.

NIH's Scientific Approach to Inclusive Excellence: Focus on Institutional Accountability



Hannah Valentine, M.D., M.R.C.P., F.A.C.C.
Chief Officer for Scientific Workforce Diversity
Senior Investigator, National Heart, Lung, and Blood Institute
National Institutes of Health

Hannah Valentine, M.D., is nationally recognized for her transformative approaches to diversity and leads NIH efforts to promote inclusive excellence through scientific innovation. Her clinical research employs novel genomic tools to monitor heart- and lung-transplant rejection.

Special thank you to Diedra Prophet, Toya Rogers, and Tamiko McLaurin (NINDS), and Linda Lohneis and Sandra Sutton (Infinity Conference Group) for logistical support.

Resources

NIH REPORTS

ACD Working Group on Diversity

<https://acd.od.nih.gov/working-groups/wgd.html>

The Advisory Committee to the Director (ACD) Working Group on Diversity (WGD) was formed in response to the ACD Working Group on Diversity in the Biomedical Research Workforce (WGDBRW) recommendations. The WGD is a permanent working group of the ACD and has been charged with providing regular advice to the to the ACD and National Institutes of Health Director on effective strategies to increase the representation of diverse individuals underrepresented nationally in biomedical research and to reduce disparities in research awards from diverse applicants underrepresented nationally in biomedical research.

- [2018 Recommendations | Moving Forward](#)

Working Group on Diversity in the Biomedical Research Workforce

<https://acd.od.nih.gov/dbr.htm>

Achieving diversity in the biomedical research workforce is critical to the full realization of our national research goals and is in the best interest of our country. Despite numerous efforts over many years to develop the biomedical science workforce pipeline, encompassing efforts from K-12 education to preserving academic tenure, for underrepresented minorities, the results remain suboptimal. In response to the unacceptable status quo and given the mission-driven priorities of the NIH, the Director of the NIH has charged The Advisory Committee to the Director to form a special Diversity in Biomedical Research Working Group.

- [Executive Summary of the Draft Report of the Advisory Committee to the Director Working Group on Diversity in the Biomedical Research Workforce](#)
- [Draft Report of the Advisory Committee to the Director Working Group on Diversity in the Biomedical Research Workforce](#)

GENERAL RESEARCH

Underrepresentation by Race/Ethnicity Across Stages of U.S. Science and Engineering Education

Howard Garrison

CBE-Life Sciences Education, Fall 2013

Blacks, Hispanics, and American Indians/Alaskan Natives are underrepresented in science and engineering fields. A comparison of race-ethnic differences at key transition points was undertaken to better inform education policy. National data on high school graduation, college enrollment, choice of major, college graduation, graduate school enrollment, and doctoral degrees were used to quantify the degree of underrepresentation at each level of education and the rate of transition to the next stage. Disparities are found at every level, and their impact is cumulative. For the most part, differences in graduation rates, rather than differential matriculation rates, make the largest contribution to the underrepresentation. The size, scope, and persistence of the disparities suggest that small-scale, narrowly targeted remediation will be insufficient.

- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3763003/>

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Increasing Persistence of College Students in STEM

Mark J. Graham, Jennifer Frederick, Angela Byars-Winston, Anne-Barrie Hunter, Jo Handelsman
Science, September 2013

A 2012 report by the President's Council of Advisors on Science and Technology (PCAST) predicts that the U.S. workforce will suffer a deficit of one million college graduates in science, technology, engineering, and mathematics (STEM) over the next decade (1). The report calls for addressing the shortfall by increasing retention of college students in STEM. But many academic leaders have not responded aggressively to workforce needs by implementing measures that increase retention. Some of this nonaction is likely due to lack of knowledge about proven retention strategies.

- <http://science.sciencemag.org/content/341/6153/1455.full>

Addressing the Challenge of Diversity in the Graduate Ranks: Good Practices Yield Good Outcomes

Nancy L. Thompson and Andrew G. Campbell
CBE-Life Sciences Education, Spring 2013

In this paper, we examine the impact of implementing three systemic practices on the diversity and institutional culture in biomedical and public health Ph.D. training at Brown University. We hypothesized that these practices, designed as part of the National Institutes of Health-funded Initiative to Maximize Student Development (IMSD) program in the Division of Biology and Medicine, would have a positive effect on underrepresented minority (URM) recruitment and retention and objective measures of student success. These practices include: 1) develop strategic partnerships with selected undergraduate institutions; 2) provide a personalized education program of student support and skill-based modules to supplement discipline-based course work; and 3) transform institutional culture by engaging faculty in supporting diversity-related goals and practices. Data comparing URM numbers and key academic milestones before and after implementation of IMSD practices support the initial hypothesis and effectiveness of these practices at Brown. Program components are broadly applicable as best practices for others seeking to improve URM recruitment and achievements of graduate students traditionally underrepresented in the sciences.

- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3587852/>

Institutional Change in Higher Education: Innovation and Collaboration

Freeman A. Hrabowski

Peabody Journal of Education: Issues of Leadership, Policy, and Organizations, July 2013

To remain globally competitive and increase the number of young people completing two- and four-year college degrees, America needs to expand access to higher education and focus attention on the success of those who enroll. Expertise in Science, Technology, Engineering and Mathematics (STEM) will be particularly important for maintaining a thriving economy and in developing innovative solutions to global challenges. However, only 6 percent of 24-year-olds in the United States hold first degrees in these fields, placing the country 20th in a comparison group of 24 industrialized countries. Many American students initially interested in STEM areas select other fields after they begin college: only 33 percent of white students, 42 percent of Asian American students, and about 20 percent of black, Latino, and Native American students who aspire to complete a STEM major succeed. This paper examines strategies developed at the University of Maryland, Baltimore County (UMBC) and elsewhere that have created an atmosphere of inclusive excellence and are allowing more students of all backgrounds to succeed in STEM areas and other disciplines. Culture change at UMBC began 25 years ago with the development of the Meyerhoff Scholars Program for high-achieving minority students interested in STEM research careers.

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Lessons learned from that program have motivated University-wide changes as faculty, staff, and students have pursued broad initiatives to redesign courses, build community, and support and engage students.

- http://peabody.vanderbilt.edu/faculty/pje/pje_volume_89_issue_3_2014/freeman_hrabowski.php

Structure and Belonging: Pathways to Success for Underrepresented Minority and Women Ph.D. Students in STEM Fields

Aaron J. Fisher, Rodolfo Mendoza-Denton, Colette Patt, Ira Young, Andrew Eppig, Robin L. Garrell, Douglas C. Rees, Tenea W. Nelson, and Mark A. Richards
PLOS ONE, January 9, 2019

The advancement of underrepresented minority and women Ph.D. students to elite postdoctoral and faculty positions in the STEM fields continues to lag that of majority males, despite decades of efforts to mitigate bias and increase opportunities for students from diverse backgrounds. In 2015, the National Science Foundation Alliance for Graduate Education and the Professoriate (NSF AGEP) California Alliance (Berkeley, Caltech, Stanford, UCLA) conducted a wide-ranging survey of graduate students across the mathematical, physical, engineering, and computer sciences in order to identify levers to improve the success of Ph.D. students, and, in time, improve diversity in STEM leadership positions, especially the professoriate. The survey data were interpreted via path analysis, a method that identifies significant relationships, both direct and indirect, among various factors and outcomes of interest. We investigated two important outcomes: publication rates, which largely determine a new Ph.D. student's competitiveness in the academic marketplace, and subjective well-being. Women and minority students who perceived that they were well-prepared for their graduate courses and accepted by their colleagues (faculty and fellow students), and who experienced well-articulated and structured Ph.D. programs, were most likely to publish at rates comparable to their male majority peers. Women Ph.D. students experienced significantly higher levels of distress than their male peers, both majority and minority, while both women and minority student distress levels were mitigated by clearly-articulated expectations, perceiving that they were well-prepared for graduate level courses, and feeling accepted by their colleagues. It is unclear whether higher levels of distress in women students is related directly to their experiences in their STEM Ph.D. programs. The findings suggest that mitigating factors that negatively affect diversity should not, in principle, require the investment of large resources, but rather requires attention to the local culture and structure of individual STEM Ph.D. programs.

- <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0209279>

FEATURED LECTURE: BREAKING THE BIAS HABIT

A Gender Bias Habit-Breaking Intervention Led to Increased Hiring of Female Faculty in STEM Departments

Patricia G. Devine, Patrick S. Forscher, William T. L. Cox, Anna Kaatz, Jennifer Sheridan, and Molly Carnes
J Exp Soc Psychol, November 2017

Addressing the underrepresentation of women in science is a top priority for many institutions, but the majority of efforts to increase representation of women are neither evidence-based nor rigorously assessed. One exception is the gender bias habit-breaking intervention (Carnes et al., 2015), which, in a cluster-randomized trial involving all but two departmental clusters (N = 92) in the 6 STEM focused schools/colleges at the University of Wisconsin – Madison, led to increases in gender bias awareness and self-efficacy to promote gender equity in academic science departments. Following this initial success, the present study compares, in a preregistered analysis, hiring rates of new female faculty pre- and post-

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manipulation. Whereas the proportion of women hired by control departments remained stable over time, the proportion of women hired by intervention departments increased by an estimated 18 percentage points (OR = 2.23, dOR = 0.34). Though the preregistered analysis did not achieve conventional levels of statistical significance ($p < 0.07$), our study has a hard upper limit on statistical power, as the cluster-randomized trial has a maximum sample size of 92 departmental clusters. These patterns have undeniable practical significance for the advancement of women in science, and provide promising evidence that psychological interventions can facilitate gender equity and diversity.

- <https://www.ncbi.nlm.nih.gov/pubmed/29249837>

Women in Science & Engineering Leadership Institute

<https://wiseli.wisc.edu/>

The Women in Science & Engineering Leadership Institute (WISELI) is a research center at the University of Wisconsin–Madison. WISELI’s mission is to increase the representation, advancement, and workplace satisfaction of women faculty and members of groups currently underrepresented on the faculty and in leadership at UW–Madison. WISELI serves as a visible, campus-wide research center, endorsed by top-level administrators, that uses UW–Madison as a “living laboratory” to study gender equity, diversity, and climate; implement evidence-based solutions; and measure success.

INSTITUTIONAL CHANGE

STEM Equity Achievement (SEA) Change

<https://seachange.aaas.org/>

SEA Change’s self-assessment, metrics, and awards program advances systemic institutional and departmental reform to enable success in higher education and research missions. This success is achieved by ensuring that the full range of student and faculty talent can be recruited, retained, and advanced in science, technology, engineering, medicine, and mathematics for the value and excellence achieved by including all talent in these fields. SEA Change focuses on structural barrier removal for women, blacks, Hispanics, Native Americans, and people with disabilities, as well as others who are marginalized. Broader in scope, but inspired by the successful processes first developed for the Athena SWAN program by the Equality Challenge Unit (ECU - part of Advance HE) in the United Kingdom, SEA Change aims to be a truly transformative force for positive, sustainable change in higher education at all levels in the United States.

ADVANCE: Organizational Change for Gender Equity in STEM Academic Professions (ADVANCE)

<https://www.nsf.gov/advance>

The NSF ADVANCE program contributes to the National Science Foundation's goal of a more diverse and capable science and engineering workforce. In this solicitation, the NSF ADVANCE program seeks to build on prior NSF ADVANCE work and other research and literature concerning gender, racial, and ethnic equity. The NSF ADVANCE program goal is to broaden the implementation of evidence-based systemic change strategies that promote equity for STEM faculty in academic workplaces and the academic profession. The NSF ADVANCE program provides grants to enhance the systemic factors that support equity and inclusion and to mitigate the systemic factors that create inequities in the academic profession and workplaces. Systemic (or organizational) inequities may exist in areas such as policy and practice as well as in organizational culture and climate. For example, practices in academic departments that result in the inequitable allocation of service or teaching assignments may impede research productivity, delay

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advancement, and create a culture of differential treatment and rewards. Similarly, policies and procedures that do not mitigate implicit bias in hiring, tenure, and promotion decisions could lead to women and racial and ethnic minorities being evaluated less favorably, perpetuating historical under-participation in STEM academic careers and contributing to an academic climate that is not inclusive.

HHMI Inclusive Excellence

<https://www.hhmi.org/developing-scientists/inclusive-excellence>

Inclusive Excellence (IE) represents a new strategy for HHMI's grants to institutions. Grants help institutions build their capacity to effectively engage all students in science throughout their undergraduate years, especially those who come to college via nontraditional pathways. A total of 57 colleges and universities were awarded five-year, non-renewable \$1 million grants through the 2017 and 2018 Inclusive Excellence competitions. Faculty and staff at Inclusive Excellence schools form a national community of science education leaders and advocates to support efforts in inclusive science education. A third competition, Inclusive Excellence 3, begins in spring 2019.

MAKING DATA-DRIVEN DECISIONS

Coalition for Next Generation Life Science

<http://nglscoalition.org/>

Over the past two decades, countless reports have called on universities and research institutions to collect and make easily available information on training outcomes for their life science students and postdoctoral researchers. These calls emerge from a widespread concern that trainees do not have information on the full range of research careers in and out of academia, that institutions are not providing trainees with the training or skills for this diversity of careers, and that this is leading to hyper-competition for tenure-track positions and prolonged periods in postdoctoral research without opportunity for advancement that is harmful to the incoming generation of scientists, and the science they will produce. In December 2017, nine research universities and a major cancer institute – announced that they would join together to commit to a number of steps to improve transparency and trainee outcomes in the life sciences. Since then, membership has more than doubled.

A New Data Effort to Inform Career Choices in Biomedicine

Rebecca Blank, Ronald J. Daniels, Gary Gilliland, Amy Gutmann, Samuel Hawgood, Freeman A. Hrabowski, Martha E. Pollack, Vincent Price, L. Rafael Reif, and Mark S. Schlissel
Science Magazine, December 15, 2017

The biomedical research enterprise finds itself in a moment of intense self-reflection, with science leaders, professional organizations, and funders all working to enhance their support for the next generation of biomedical scientists. One focus of their attention has been the lack of robust and publicly available information on education and training outcomes. In the absence of such information, students are prevented from making informed choices about their pre- and postdoctoral training activities, and universities from preparing trainees for a full range of careers. Today, we presidents and chancellors of nine U.S. research universities and one research institute are announcing a new initiative, the Coalition for Next Generation Life Science (1), that responds to these challenges by adopting a series of transparency enhancing efforts, the first of which is to begin reporting data in early 2018. We have agreed to start with the biomedical research arena because of the considerable attention that workforce issues in this domain have received, but the logic of our initiative extends to other scholarly disciplines.

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- <http://science.sciencemag.org/content/358/6369/1388>

Rescuing Biomedical Research

<http://rescuingbiomedicalresearch.org/>

This website is a platform to discuss solutions to problems such as those addressed in the April 2014 PNAS article entitled Rescuing US biomedical research from its systemic flaws, as outlined here. Overseen by a Steering Committee that includes Nancy Andrews, Jeremy Berg, Daniel Colón-Ramos, Mary Sue Coleman, Ron Daniels, Kafui Dzirasa, Rush Holt, Freeman Hrabowski, Tony Hyman, Story Landis, Gary McDowell, Jessica Polka, Joan Reede, Keith Yamamoto and director Chris Pickett – in addition to ourselves, the website seeks to organize and prioritize the suggestions, data and outcomes from an ongoing series of relevant publications, workshops and experiments. Our aim is to help the United States make continual progress against the various logistical, administrative and conceptual logjams that have prevented the implementation of effective solutions to the major problems that we and many others have identified.

Becoming More Transparent: Collecting and Presenting Data on Biomedical Ph.D. Alumni

Christopher L Pickett and Shirley Tilghman

PeerJ Preprints, June 9, 2018

For more than 20 years, panels of experts have recommended that universities collect and publish data on the career outcomes of Ph.D. students. However, little progress has been made. Over the past few years, a handful of universities, including those in the National Institutes of Health's Broadening Experiences in Scientific Training consortium, and organizations, including the Association of American Universities and the Association of American Medical Colleges, launched projects to collect and publish data on biomedical Ph.D. alumni. Here, we describe the outcome of a meeting, convened by Rescuing Biomedical Research, of universities and associations working to improve the transparency of career outcomes data. We were able to achieve consensus on a set of common methods for alumni data collection and a unified taxonomy to describe the career trajectories of biomedical Ph.D.s. These materials can be used by any institution, with little or no modification, to begin data collection efforts on their Ph.D. alumni. These efforts represent an important step forward in addressing a recommendation that has been made for decades that will improve the ability of trainees to better plan for their careers and for universities to better tailor their training programs.

- <https://peerj.com/preprints/3370/>

Improving Support for Young Biomedical Scientists

Bruce Alberts, Tony Hyman, Christopher L. Pickett, Shirley Tilghman, and Harold Varmus

Science, May 18, 2018

Over the past several years, we and others in the biomedical research community have become increasingly concerned that younger scientists are not being adequately supported as independent academic investigators and that, of equal importance, these newly launched investigators are being strongly discouraged from tackling novel scientific problems. Both issues can prevent talented trainees from aspiring to careers in biomedical research, despite the extraordinary opportunities offered by new technologies and recent discoveries. We view this situation as an existential threat to our profession, demanding that we urgently confront the underlying problems. It is widely recognized that career pathways for young scientists have changed dramatically and that over 80% of those who receive biomedical Ph.D.'s

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today will be employed in positions other than academic faculty. The U.S. National Academies of Sciences, Engineering, and Medicine recently released a report that addresses many important aspects of these cultural changes. Here we focus on the problems faced by those who will renew the ranks of academic research faculty, with proposals that complement the recommendations in that report. Drawing on lessons from Europe and the United States, we propose three steps that could be taken by funding agencies, specifically the U.S. National Institutes of Health (NIH) but also others across the world, to support young investigators in more constructive and effective ways.

- <http://science.sciencemag.org/content/360/6390/716>

The GSS is an Unreliable Indicator of Biological Sciences Postdoc Population Trends

Christopher Pickett, Adriana Bankston, and Gary S. McDowell

bioRxiv, December 1, 2017

The postdoctoral research position is an essential step on the academic career track, and the biomedical research enterprise has become heavily dependent on postdoctoral scholars to conduct experimental research. Monitoring the employment trends in the postdoc population is important for crafting and evaluating policies that affect this critical population. The primary survey for understanding the trends of the biological sciences postdoc population is the Survey of Graduate Students and Postdoctorates in Science and Engineering (GSS) administered by the National Center for Science and Engineering Statistics. Here, we analyzed the yearly changes in the biological sciences postdoc population at institutions surveyed by the GSS. We find that institutional variability in reporting their biological sciences postdoc populations, which sometimes varies by more than 2-fold over consecutive years, masks larger trends in the employment of biological sciences postdocs. Universities indicated the most common cause for the changes was improving institutional policy and tracking of postdocs. We propose the adoption of a unified definition of a postdoc, consolidation of postdoc titles and the creation of an index to better assess biological sciences postdoc trends.

- <https://www.biorxiv.org/content/10.1101/171314v3>

Examining the Distribution of K99/R00 Awards by Race

Christopher Pickett

Rescuing Biomedical Research Blog, July 19, 2018

The National Institutes of Health has several programs focused on improving diversity and inclusion at all levels of the biomedical research enterprise. Diversity in the professoriate is of significant concern, and a recent analysis suggests that the lack of faculty diversity is due to university hiring biases rather than a lack of qualified candidates. This has prompted the National Institute for General Medical Sciences to release a request for information for ideas to strengthen the postdoctoral scholar to faculty transition.

- <http://rescuingbiomedicalresearch.org/blog/examining-distribution-k99r00-awards-race/>

Decoupling of the Minority Ph.D. Talent Pool and Assistant Professor Hiring in Medical School Basic Science Departments in the US

Kenneth D Gibbs, Jr., Jacob Basson, Imam M Xierali, and David A Broniatowski

eLife, November 2016

Faculty diversity is a longstanding challenge in the US. However, we lack a quantitative and systemic understanding of how the career transitions into assistant professor positions of Ph.D. scientists from underrepresented minority (URM) and well-represented (WR) racial/ethnic backgrounds compare. Between

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1980 and 2013, the number of Ph.D. graduates from URM backgrounds increased by a factor of 9.3, compared with a 2.6-fold increase in the number of Ph.D. graduates from WR groups. However, the number of scientists from URM backgrounds hired as assistant professors in medical school basic science departments was not related to the number of potential candidates ($R^2=0.12$, $p>0.07$), whereas there was a strong correlation between these two numbers for scientists from WR backgrounds ($R^2=0.48$, $p<0.0001$). We built and validated a conceptual system dynamics model based on these data that explained 79% of the variance in the hiring of assistant professors and posited no hiring discrimination. Simulations show that, given current transition rates of scientists from URM backgrounds to faculty positions, faculty diversity would not increase significantly through the year 2080 even in the context of an exponential growth in the population of Ph.D. graduates from URM backgrounds, or significant increases in the number of faculty positions. Instead, the simulations showed that diversity increased as more postdoctoral candidates from URM backgrounds transitioned onto the market and were hired.

- <https://elifesciences.org/content/5/e21393>

Biomedical Science Ph.D. Career Interest Patterns by Race/Ethnicity and Gender

Kenneth D. Gibbs, Jr., John McGready, Jessica C. Bennett, and Kimberly Griffin
PLoS ONE, December 2014

Increasing biomedical workforce diversity remains a persistent challenge. Recent reports have shown that biomedical sciences (BMS) graduate students become less interested in faculty careers as training progresses; however, it is unclear whether or how the career preferences of women and underrepresented minority (URM) scientists change in manners distinct from their better-represented peers. We report results from a survey of 1500 recent American BMS Ph.D. graduates (including 276 URMs) that examined career preferences over the course of their graduate training experiences. On average, scientists from all social backgrounds showed significantly decreased interest in faculty careers at research universities, and significantly increased interest in non-research careers at Ph.D. completion relative to entry. However, group differences emerged in overall levels of interest (at Ph.D. entry and completion), and the magnitude of change in interest in these careers. Multiple logistic regression showed that when controlling for career pathway interest at Ph.D. entry, first-author publication rate, faculty support, research self-efficacy, and graduate training experiences, differences in career pathway interest between social identity groups persisted. All groups were less likely than men from well-represented (WR) racial/ethnic backgrounds to report high interest in faculty careers at research-intensive universities (URM men: OR 0.60, 95% CI: 0.36–0.98, $p=0.04$; WR women: OR: 0.64, 95% CI: 0.47–0.89, $p=0.008$; URM women: OR: 0.46, 95% CI: 0.30–0.71, $p<0.001$), and URM women were more likely than all other groups to report high interest in non-research careers (OR: 1.93, 95% CI: 1.28–2.90, $p=0.002$). The persistence of disparities in the career interests of Ph.D. recipients suggests that a supply-side (or “pipeline”) framing of biomedical workforce diversity challenges may limit the effectiveness of efforts to attract and retain the best and most diverse workforce. We propose incorporation of an ecological perspective of career development when considering strategies to enhance the biomedical workforce and professoriate through diversity.

- <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0114736>

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THE ROLE OF SOCIETIES & ASSOCIATIONS IN INSTITUTIONAL CHANGE

Department Chair Training to Increase Women in Neuroscience

Society for Neuroscience

<http://sfn.org/iwin>

Over the last several decades, great progress has been made to increase the ranks of female scientists. Yet women remain underrepresented within STEM (science, technology, engineering and math) fields, including neuroscience. While data show that progress has been made in early-career stages, with women now comprising a majority of Ph.D.s, the problem worsens considerably at the upper ranks of academia where the number of women faculty has failed to keep up with the number of women pursuing higher education in the sciences. SfN is explicitly committed in its strategic plan to promoting greater diversity and representation of women, minorities, and young investigators in all of its activities.

- https://meetings.ninds.nih.gov/assets/NINDSR25T32Meeting/IWiN_Recruitment_and_Bias_Readings_1.pdf

Project Kaleidoscope (PKAL)

Association of American Colleges & Universities

<https://www.aacu.org/pkal>

Project Kaleidoscope (PKAL) is AAC&U's STEM higher education reform center dedicated to empowering STEM faculty, including those from underrepresented groups, to graduate more students in STEM fields who are competitively trained and liberally educated. PKAL also works to develop a scientifically literate citizenry as part of its commitment to principles and practices central to AAC&U's Liberal Education and America's Promise (LEAP) initiative. Since its founding in 1989, PKAL has been one of the leading advocates in the United States for transforming undergraduate STEM teaching and learning. It has to date empowered an extensive network of over 7,000 STEM faculty and administrators committed to the principles, practices, and partnerships that advance cutting-edge, integrative STEM higher education for all students. To that end, all PKAL undertakings are uniquely designed to foster quality, diversity, and social responsibility.

Assessing Institutional Culture and Climate

Association of American Medical Colleges

<https://www.aamc.org/initiatives/diversity/learningseries/>

Diversity Policy and Programs is pleased to bring you a set of online, on-demand video resources on a range of diversity and inclusion topics. The Diversity 3.0 Learning Series includes interviews with thought leaders and experts, faculty career development webinars, guidance on institutional strategic planning and culture and climate assessment, and presentations on innovative programs at AAMC member institutions.

- <https://www.aamc.org/initiatives/diversity/learningseries/335954/cultureclimatewebcast.html>

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MENTOR TRAINING PARTICIPANT MATERIALS Promoting Mentee Research Self-Efficacy

Introduction:

Self-efficacy is the perceived confidence people have in their ability to perform a specific task or skill. Self-efficacy has a tremendous impact on behavior; people who lack self-efficacy in relation to a certain skill are less likely to perform tasks relating to that skill set. Mentors play a critical role in shaping the research experience to increase mentees' self-efficacy and, ultimately, mentee performance. Making deliberate efforts to strengthen mentees' research self-efficacy, like being explicit about how they are making important contributions to the team or telling them you believe they can successfully pursue a research career, can increase the likelihood that they will effectively perform the tasks that lead to these outcomes. There are four factors that build self-efficacy beliefs: mastery experience, vicarious experience, social persuasion, and emotional/physiological states. These factors, or sources, provide mentors direction for strategies to enhance and sustain mentees' self-efficacy.

Learning Objectives:

Mentors will:

1. Define and articulate what self-efficacy is and its four sources
2. Articulate the mentor's role in fostering mentees' research self-efficacy
3. Identify signs of self-efficacy in relation to research related tasks
4. Practice strategies for building mentees' self-efficacy in research

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Handout #2

The Self-Efficacy Tool Box – What Can You Do?

Research Mentors Matter! You can make a difference in building your mentees' self-efficacy

From: http://psychology.about.com/od/theoriesofpersonality/a/self_efficacy.htm?p=1

Remember:

Self-efficacy: belief in one's ability to achieve a specific goal or task. Self-efficacy is situation-specific self-confidence. Simply put, "I believe I can do this."

Strong self-efficacy beliefs create interest, persistence, actual college degree completion, and career pursuits in science and research fields (Adedokun et al., 2013; Byars-Winston et al., 2010; Lent, Brown, & Larkin, 1986; Lent, Lopez, & Bieschke, 1991).

When a trainee's research self-efficacy falters, you can support them in four ways:

Mastery Experience

Ask yourself: *What are your mentees doing?* Are they doing well, but still lack self-efficacy for research? Are they taking on projects that might be too complex for them at this stage in their training?

What you can do:

- Reinforce your mentees' past successes (have them recall and highlight a personal "significant research moment", or other specific successes in other domains, to understand what contributed to their success in the past and recreate that in the present).
- Encourage mentees to reference past successes during the research experience or, if they are new to research, past successes in academics (e.g., "you did it before you can do it now"). Help mentees adopt success strategies (match strategies to situation—e.g., reinforce effective behaviors that contributed to their past success).

Vicarious Experience

Ask yourself: *What are mentees observing?* Do they have any role models in the lab or in their network of peers? Can they "see" themselves reflected in the students, faculty, staff, and policies in your STEM programs? Are students from historically underrepresented groups able to see themselves in STEM at your institution? Why or why not?

What you can do:

- Talk about your own research experience: How do you know when you are doing a good job as a researcher? What are the things that increase your confidence in your field?
- Consider who your mentees' role models are and what research skills (and attitudes) are being modeled for them by you and others.
- Be aware of what skills and behavior mentees are observing about coping with research challenges and setbacks; share strategies for what you do when you hit a wall and how you encourage yourself to get over challenges/setbacks in research.
- Offer time to practice skills that are strong as well as ones that need more development
- Encourage your department to run a session where advanced mentees or faculty talk about setbacks, challenges, and how they overcame them.

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Social Persuasion

Ask yourself: *What are they hearing?* Are they hearing that they have what it takes? Are they receiving specific feedback relating to their effort or capabilities? Is that feedback constructive? Is the message that you are sending the same as what is being received by the student?

What you can do:

- Foster a “you can do it” attitude.
- Be attuned to ways that you can acknowledge mentees’ current successes.
- Reinforce mentee’s research abilities by giving specific, credible feedback about technique and less evaluation of the outcome or general feedback.
- Let them know that they belong in research/the program.
- Be aware of signs that mentees may feel that they do not fit in research/training program (“I don’t belong here”).
- Talk about both the positive things mentees are doing while giving clear steps for how they can improve in areas that are challenging to them.

Emotional/Physiological State

Ask yourself: *What are they feeling?* How can you help students feel at home in your lab/classroom/university? What can you do regarding the environment (e.g., office hours, program policies, etc.) that can help reduce students’ stress and anxiety relating to STEM?

What you can do:

- Be aware of positive (enjoyment) or negative moods (anxiety) mentees may have related to research/training program.
- Attend to negative, anxiety-related feelings (e.g. negative self-talk that they are not as smart as other mentees).
- Acknowledge and normalize when things are difficult; “It’s supposed to be hard, new things usually are.”

Give examples of mentees who struggled but made it (successful in research).

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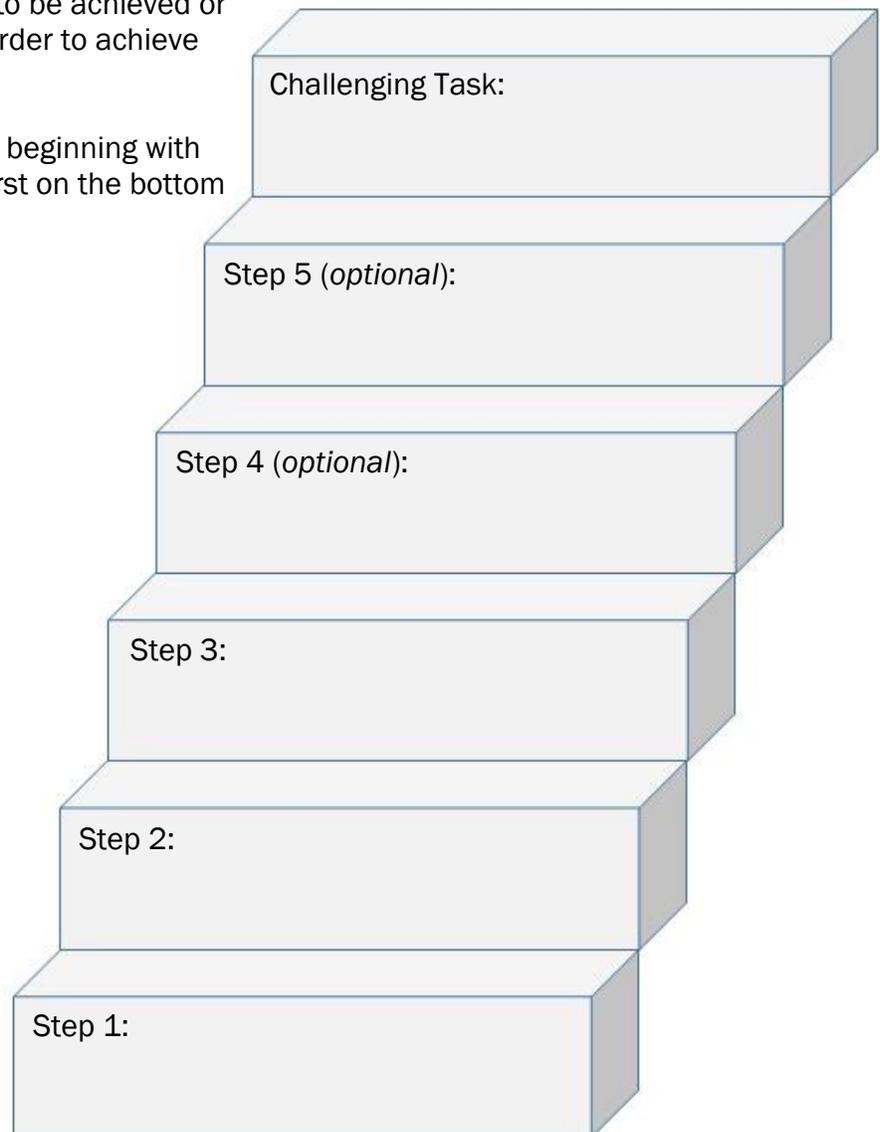
Handout #3

Stair Steps: Skill Development for Future Researchers

Instructions: Write down a challenging task or goal that you want your mentee to achieve during their research experience at the top of the stairs.

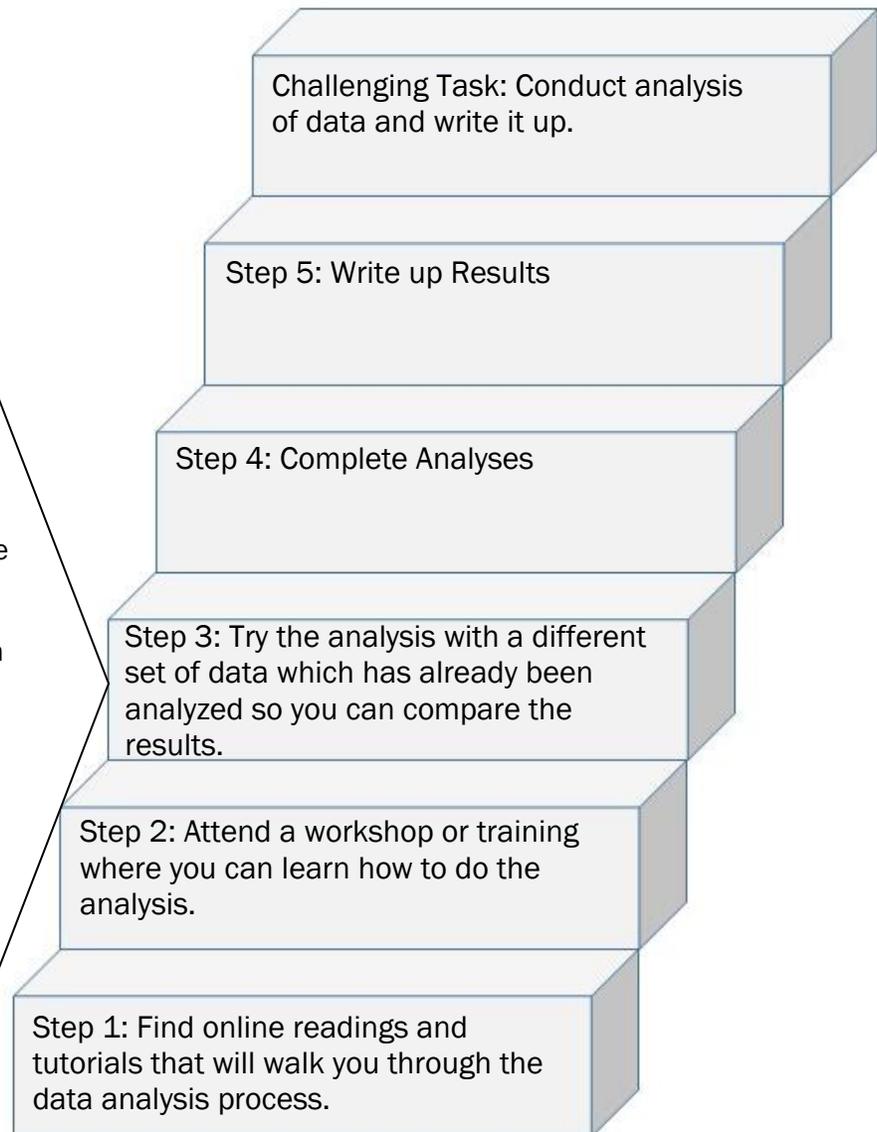
Then write down the goals that need to be achieved or the skills that need to be learned in order to achieve that goal on the steps below.

Include the steps in sequential order, beginning with the skill you believe needs to come first on the bottom step.



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Example: "I need to do an analysis of my data, but I don't feel confident in my ability to do it and write it up"



- **Mastery experience:** Having the opportunity to successfully complete the analysis with assistance.
- **Vicarious experience:** Watching other participants successfully learn and do the analysis will make you feel more confident.
- **Physiological state:** Successfully learning the analysis will make you feel less anxious about doing it on your own.

Resources

Handout #4

Activity: The Power of Social Persuasion

Directions: Your mentee has just sent you the first draft of their research proposal. Your mentee spent a lot of time working on the proposal and was really pleased with the progress they had made as a researcher and writer since joining your lab.

You reply with this feedback:

I have included some edits for grammar and clarity in the document. The proposal needs substantial work before I see it again. You have cited a lot of prior research in the introduction and literature review, but it is disorganized and difficult to follow. The method and expected results sections are okay, but I am not convinced of the importance of this research based on this draft. Once you have made these changes, let me know and I will take another look. I do not want to waste any more of my time on this until this proposal has been drastically improved.

Guiding Questions for Discussion:

1. How do you feel right now? Write down some of the emotions and/or physical responses you are feeling.
2. Think back to when you were at the same career stage as your mentee; would this feedback have landed differently on you at that time? Why or why not? How might this feedback be perceived differently if you were at an earlier stage in your career/training (e.g., a first year undergraduate/graduate student?) compared to a later stage (e.g., a full professor or senior scientist?)
3. How might this feedback influence your mentee's self-efficacy to continue to prepare this [research proposal/ manuscript] for publication?
4. How might this feedback influence your mentee's self-efficacy to write future successful research proposals [manuscripts]?
5. What other sources (i.e., individuals, messages, or experiences) could your mentee look to in order to support his/her self-efficacy to revise this research proposal/[manuscript]?

Resources

Now, consider the same feedback framed in a different way:

This is a good first draft of the research proposal. I have included some edits for grammar and clarity in the document. I can tell that you have put in a lot of time and effort into reviewing the literature. The method and expected results are clearly articulated and are explained in a way that should be accessible to a broad audience, which should leave us well-prepared to present and eventually publish this work. The implications section needs some work, particularly where you are trying to make the case for the importance of this study. I think you could also spend a little more time in the introduction setting up the study and doing a little foreshadowing for the reader. I would like to review the proposal again once you have addressed these comments, and I have every confidence that you can get this draft to where it needs to be.

Guiding Questions for Discussion

1. How do you feel after receiving this feedback compared to the previous example?
2. How would both types of feedback be received by your mentee?
3. What do you take into consideration when giving feedback to your mentees?
4. What are some strategies that you can use to promote mentee self-efficacy when giving feedback?

Resources

Handout #5

Case Study of William: To Be or Not to Be in Research?

William Oberwein has been doing research with Professor Garcia's research team for a year as part of the McNair Scholars program. The McNair program prepares high potential students from disadvantaged backgrounds for graduate school. William is the oldest of 8 children in his family and grew up on a dairy farm in northern Wisconsin. He started his undergraduate career majoring in Dairy Science, but switched to biochemistry after earning A grades in his introductory chemistry and biology courses. He is a natural in the lab, very detail oriented, productive and a team player. He seems to really enjoy doing research.

As William begins his senior year, his graduate student research mentor, Ruth, asks him how he did on the GRE and to which graduate training programs he is applying. In response, he says, "Oh, I haven't taken the GRE yet. I'm still thinking about it." She is surprised, but doesn't push the issue. Later, she asks Jorgé, a post-doc in the lab with whom William occasionally works, whether he has spoken with William about graduate school. Jorgé shares that he has overheard William say to his peers in the McNair program that graduate school is not for him and that he is planning to return to the family farm when he graduates. "I'm not sure I can cut it in graduate school," says William.

Guiding Questions for Discussion:

1. What are the main themes raised in this case study?
2. What might be some signs that the mentee is not feeling efficacious?
3. What are some questions that Ruth could ask to determine if this decision is related to his confidence or other factors (e.g., interest?)
4. What do you think is one important thing that the mentee might want to hear to keep him engaged in research?
5. How do you know when a student is feeling efficacious or confident?
6. In the research experience/lab structure, what are some potential threats to self-efficacy besides the research task itself?
7. What are three ways that you could help build the mentee's research self-efficacy? That is, what might you say or do that could help the mentee believe in his ability to successfully do research and go to graduate school?

Resources

Handout #6

Case Study: Family Ties

As part of the departmental honors program at her small liberal arts college, Professor Rebecca Temin has been mentoring a very bright and motivated undergraduate student researcher, Winona Davis. Winona's high-quality data have contributed to several projects and her results have even opened a new line of investigation, positioning Professor Temin to compete for federal funding. Winona is well suited for research and is very engaged in the lab, both when performing experiments and also when planning and discussing the experiments. Given her talent for research, Professor Temin has been encouraging her to pursue a Ph.D. and Winona has expressed great interest in doing so. However, she feels conflicted about leaving the local area where her tribe is based and her extended family lives. She is an integral contributor to the care of her aging grandparents and feels a strong sense of responsibility to her family and her tribe. Even getting her to agree to attend a 2-day undergraduate research conference to present her findings involved a difficult decision-making process. Professor Temin knows that in order for Winona to pursue a Ph.D., she must train at a university.

Guiding Questions for Discussion:

1. What are the main themes raised in this case study?
2. What are some of the potential threats to self-efficacy that Winona is experiencing here?
3. What are some of the questions that Professor Temin could ask to better understand Winona's self-efficacy and the personal/cultural factors that may be influencing her beliefs about her capability to pursue a Ph.D.?
4. What source (or sources) of self-efficacy might you use to boost Winona's self-efficacy for pursuing a Ph.D. program?
5. What story from your own academic experience (or the experiences of previous mentees) could you convey to Winona that would demonstrate empathy and provide an example of ways to adjust or cope?

Resources

Handout #7

The Case of the Slob

A graduate student mentor was frustrated because her undergraduate student mentee was not running successful experiments. While the undergraduate student had great enthusiasm for the project, each experiment failed because of some sloppy error: forgetting to pH the gel buffer, forgetting to add a reagent to a reaction, or forgetting to turn down the voltage on a gel box.

After a month of discussions, and careful attempts to teach the undergraduate student habits that would compensate for forgetfulness, the graduate student mentor was ready to give up. She spoke with her faculty adviser (the PI in the lab) and asked for advice, hoping that she could fix the problem. The adviser offered to work with the undergraduate student mentee. When the undergraduate student walked into his office the next day, the faculty adviser said, "I hear you're a slob in the lab. You gotta clean up your act if we're going to get any data out of you." Seeing the crushed and humiliated look on the student's face, he quickly added, "I'm a slob too—that's why I'm in here pushing papers around and not in the lab doing the hard stuff like you guys!"

Directions:

- Form groups of 3, with one of you being the undergraduate, one being the graduate student and one being the observer.
- Role play a meeting that takes place two days after the initial case study in which you, the graduate student mentor, are meeting with the student.
- Focus on what you, as the graduate student mentor, would do to build and strengthen the mentee's research self-efficacy using the four factors that build self-efficacy discussed in today's session.

Case taken from: Handelsman, J., Pfund, C., Miller Lauffer, S., and Pribbenow, CM. 2005. *Entering Mentoring: A Seminar to Train a New Generation of Scientists*. Madison, WI: University of Wisconsin Press

Resources

NIH'S SCIENTIFIC APPROACH TO INCLUSIVE EXCELLENCE

NIH Scientific Workforce Diversity Toolkit

NIH Office of Scientific Workforce Diversity

<https://diversity.nih.gov/toolkit>

This interactive resource is the culmination of NIH's efforts over the past few years to i) identify barriers to inclusive excellence, ii) design tools to overcome them, iii) develop and use an integrated approach in the NIH intramural research program, and iv) to disseminate this toolkit to our partners in the NIH-funded extramural community.

NIH Distinguished Scholars Program

<https://diversity.nih.gov/programs-partnerships/dsp>

The NIH Distinguished Scholars Program (DSP) aims to build a more inclusive community within the NIH Intramural Research Program by reducing the barriers to the recruitment and success of principal investigators from groups underrepresented in biomedical research. These groups include, but are not limited to, Blacks or African-Americans, Hispanics or Latinos, American Indians and Alaska Natives, Native Hawaiians and other Pacific Islanders, individuals with disabilities, individuals from disadvantaged backgrounds, and women.

Independent Research Scholar Program

<http://bit.ly/NIH-IRSP>

The focused purpose of the program will be to build the workforce diversity of independent research scientists. The expectation is that the participants will be highly competitive for Investigator (tenure-track) positions in the IRP and outside after succeeding in this position, with the goal that the majority will be retained within the IRP as Investigators (tenure-track) and will demonstrate commitment to build a diverse IRP. Eligible candidates include current NIH FTE research fellows and non-FTE postdoctoral fellows, as well as candidates from outside the NIH.

Future Research Leaders Conference

<https://diversity.nih.gov/programs-partnerships/frlc>

The Future Research Leaders Conference (FRLC) is a career-development opportunity for talented early-career biomedical and behavioral scientists from diverse backgrounds. During the FRLC, selected early-career scientists will showcase their research to the NIH scientific community and gain insights from NIH leadership and investigators about developing an independent research career. The event is most appropriate for post-doc and junior-faculty level investigators.

Resources

Request for Information (RFI): Institutional Accountability to Promote Inclusive Excellence

Notice Number: NOT-RM-19-001

Key Dates

Release Date: February 25, 2019

Response Date: May 16, 2019

Issued by

Office of Strategic Coordination ([Common Fund](#))

Purpose

The purpose of this Request for Information (RFI) is to solicit background information and guidance on the development of an NIH Common-Fund program currently in the planning stages. The NIH Office of Strategic Coordination seeks input on institutional and/or programmatic approaches to advance inclusive excellence through institutional change. Our goal is to employ a cohort model at the faculty level as a catalyst for institutions to create a route of entry and advancement for talent from diverse backgrounds, including scholars from groups [underrepresented](#) in the biomedical research enterprise. This RFI will assist NIH in identifying, developing, and implementing strategies that will work toward this goal - integral to NIH's mission to support a diverse research workforce that invites a broad variety of perspectives to address complex scientific problems, more robust learning environments, improved global competitiveness, and enhanced public trust.

Background

Promoting inclusive excellence - that is, scientific environments that can cultivate and benefit from a full range of talent - is among the greatest opportunities and challenges in biomedical research today. Given the complexity of current health problems and the enormous opportunity of 21st century biomedicine, NIH must obtain the broadest range of perspectives to find creative, effective, and sustainable solutions. The longstanding [NIH investment in research training to enhance workforce diversity](#) at early stages of the training pathway has been effective and has contributed to building a diverse pool of highly qualified biomedical doctoral recipients. However, despite the notable increase in the number of scientists from underrepresented groups (URG, including women) who have earned doctorate degrees in biological sciences, increasing evidence demonstrates [major attrition](#) of these talented scientists from the NIH-funded research workforce [from the postdoctoral training period into independent faculty positions](#). Diversifying the professoriate is thus the next logical, and achievable step for an NIH-funded extramural investment in workforce diversity. Because previous approaches that focus on individuals have only slowly "moved the needle," targeting systemic change through NIH-funded institutional transformation is necessary. To that end, the National Institute of General Medical Sciences has recently launched [Maximizing Opportunities for Scientific and Academic Independent Careers \(MOSAIC\)](#), a two-part program designed to facilitate the transition of talented postdoctoral researchers from diverse backgrounds into independent careers. The two MOSAIC components include an individual-targeted K99/R00 award and an organization-targeted UE5 award (professional societies).

Resources

The [NIH Scientific Workforce Diversity office](#) has garnered significant interest from institutions for integrated solutions to recruit and retain a diverse faculty body through inclusive excellence. Cohort models have been highly successful in enhancing diversity among trainees. NIH is now interested in understanding whether a similar approach may be applicable at the biomedical research-faculty level, mirroring a current strategy in the NIH intramural research program (IRP). The IRP [Distinguished Scholars Program](#) cohort model for tenure-track investigators involves an [integrated approach using tools](#) to address recruitment, outreach, implicit-bias education, and mentoring/career development. Its principal aim is recruitment of a critical mass of investigators with a demonstrated commitment to diversity and inclusion – thus building a self-sustaining community of scientists committed to inclusive excellence.

This RFI seeks to obtain feedback, comments, novel ideas, and strategies to inform NIH on plans institutions are developing toward achieving inclusive excellence by creating research environments that promote and value a culture of inclusion, diversity, equity, and mentoring: all key elements needed to ensure research excellence and career advancement for early-career faculty.

Information Requested

NIH seeks input from key extramural community stakeholders, including academic institutional leadership, biomedical faculty, and interested members of the public on strategies to collaborate with institutions on achieving inclusive excellence, scientific environments that can cultivate and benefit from the full range of talent, by catalyzing sustainable institutional accountability. Topics that could be addressed include, but are not limited to, the following:

- Institutional programs and approaches that have been successful in reducing isolation, increasing community building, and fostering career advancement for early-career faculty, including those from diverse backgrounds, such as groups [underrepresented](#) in biomedical research
- Institutional mentoring programs that support faculty development, retention, and career success
- Faculty-level cohort-model approaches that are institution-based or distributed across institutions
- Data-driven strategies to assess and manage institutional equity and diversity
- Capacity for institutional support of early-career scientists, including start-up packages, research, lab space/equipment, and salary
- Role of partnerships between institutions toward reducing isolation, increasing community building, and fostering career advancement for early faculty
- Any other comments or recommendations for NIH to consider with respect to programmatic efforts to collaborate with institutions on achieving inclusive excellence through a cohort-hiring/mentoring approach with an emphasis on institutional accountability

How to Submit a Response

Responses to this RFI will be accepted through May 16, 2019. All comments will be anonymous and must be submitted via email to InclusiveExcellenceRFI@nih.gov.

Responses to this RFI are voluntary. The Government is under no obligation to acknowledge receipt of the information provided and respondents will not receive individualized feedback. This RFI is for planning purposes only and should not be construed as a solicitation or as an obligation on the part of the United States Government. NIH will use the information submitted in response to this RFI at its discretion. NIH does not intend to make any type of award based on responses to this RFI or to pay for either the preparation of information submitted or the United States Government's use of such information. The information submitted will be analyzed and may be shared internally, appear in reports or be reflected

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in future solicitations, as appropriate and at the Government's discretion. Proprietary, classified, confidential, or sensitive information should not be included in your response. The Government reserves the right to use any non-proprietary technical information in any resultant solicitation(s) or other activities. No basis for claims against the U.S. Government shall arise as a result of a response to this request for information or from the Government's use of such information.

Inquiries

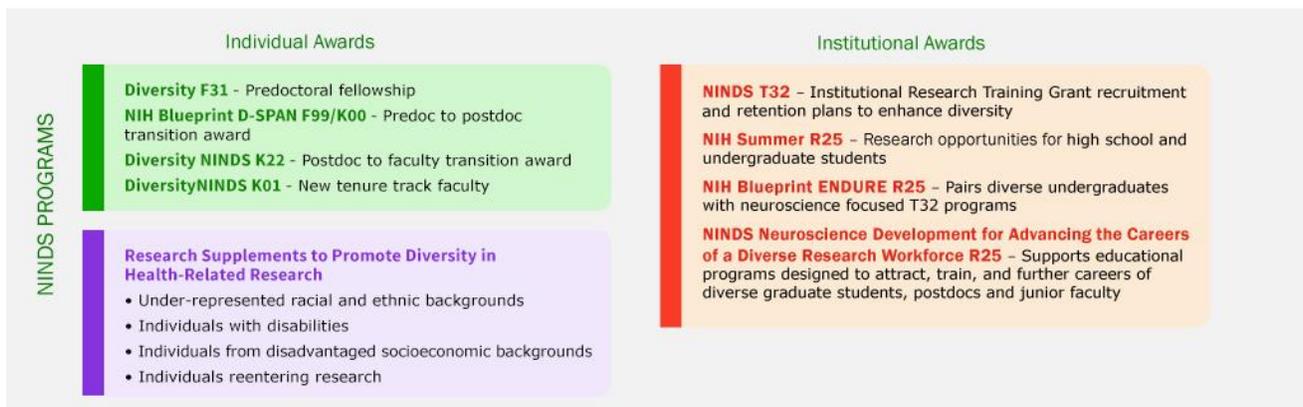
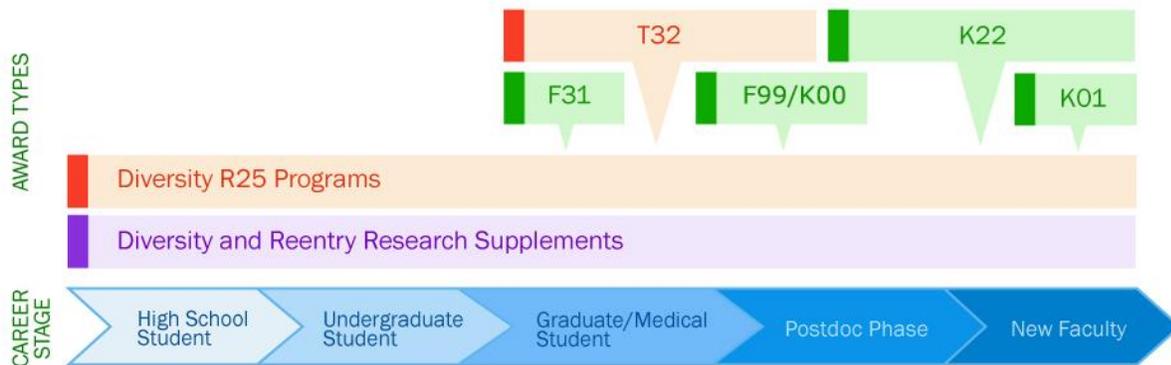
Please direct all inquiries to:

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Resources

NINDS DIVERSITY SCIENTIFIC TRAINING AND CAREER OPPORTUNITIES



DIVERSITY RESOURCES ONLINE

NINDS Diversity Funding Opportunities - Programs to enhance diversity focus on underrepresented racial/ethnic groups, individuals with disabilities, and individuals from disadvantaged backgrounds.
<https://www.ninds.nih.gov/Funding/Training-Career-Awards/Diversity-Awards>

NINDS Diversity Success Stories - Stories highlighting outstanding neuroscientists who have used NINDS diversity programs to become successful researchers in their field.
<https://www.ninds.nih.gov/About-NINDS/Workforce-Diversity/Success-Stories>

NIH Office of Extramural Research Diversity Website - Learn how diversity supports the NIH mission, find opportunities to participate in diversity programs, meet researchers, and more.
<https://extramural-diversity.nih.gov/>

Scientific Workforce Diversity Office - The Scientific Workforce Diversity (SWD) Office leads NIH's effort to diversify the national scientific workforce and expand recruitment and retention.
<https://diversity.nih.gov/>

National Research Mentoring Network (NRMN) - NRMN is a nationwide consortium established to provide trainees with evidence-based mentorship and professional development programming.
<https://nrmnet.net/>

An OPEN Conversation, Vol. I

DIVERSITY & INCLUSION

in science & academia

Diversity is not an end in itself, but a means of achieving our ideal institutions, learning environments, and communities. Evidence suggests that **diverse groups**—in age, race, ethnicity, physical ability, gender, and other attributes—are **more productive, creative, and innovative**. Diversity also brings with it challenges for cohesiveness and effective communication. Fostering an inclusive environment requires work, but the payoff is a rich and dynamic intellectual community.

This guide **summarizes the research and provides concrete steps to effect change**.

“Diversity is being invited to the party; inclusion is being asked to dance.”

- Vernã Myers

Benefits of Diversity

- ◆ Ethnically diverse groups brainstormed **higher quality ideas** than homogenous groups.¹
- ◆ Groups exposed to minority viewpoints demonstrated **greater critical analysis** and consideration of alternatives.²
- ◆ Scholars from minority groups have **enriched scholarship** through offering new perspectives and avenues of research.³
- ◆ Engagement with diverse peers and institutional policies fostering campus diversity have **positive effects** on students’ cognitive development and critical thinking.⁴⁻⁷
- ◆ Medical students reported that diversity in the student body **enhanced their educational experience**.⁸

Challenges of Diversity

- ◆ Women and underrepresented faculty and students are **less satisfied** than white men, and often feel isolated, excluded, and alienated.⁶⁻¹⁴
- ◆ These groups may experience **“stereotype threat”**—a fear that they will confirm or be judged by a negative stereotype about them—which in turns leads to anxiety and poor performance.¹⁵
- ◆ **Lack of exposure** to dissimilar individuals may cause well-represented groups to feel anxious about interactions with members of another group.¹⁶

The **Office of Programs to Enhance Neuroscience Workforce Diversity (OPEN)** promotes diversity in NINDS training and research programs and supports the participation of underrepresented groups. *Diversity & Inclusion in Science & Academia* is Volume I of “An OPEN Conversation,” an ongoing series of resources to promote diversity in neuroscience.



National Institute of
Neurological Disorders
and Stroke

Recognizing IMPLICIT BIAS

“The key isn’t to feel guilty about our biases—guilt tends toward inaction.

We all have biases. What matters is how we act upon them.”

-Neill Franklin



Everyone carries unconscious attitudes that affect their behaviors, sometimes even if we consciously want to treat everyone equally. For scientists, it can be particularly upsetting to acknowledge implicit bias because we pride ourselves on rationality and logic. Unfortunately, **even scientists display implicit bias**; it’s part of being human. The good news is that, even though implicit bias is usually below conscious awareness, **it can be countered.**

The Evidence

- ◆ Resumes with white-sounding names received **50% more interviews** than those with black-sounding names.¹⁷
- ◆ Males **underestimate academic performance** of their female peers in undergraduate biology classrooms.¹⁸
- ◆ Both male and female faculty rated male applicants to a lab manager position as **more competent** and would offer a **higher salary** and more **mentoring**.¹⁹
- ◆ Professors, regardless of race or ethnicity, were **more likely to respond to white males** when contacted by potential PhD students about research opportunities.²⁰
- ◆ Women postdoctoral candidates needed substantially **more publications** to get the same evaluation as men.²¹
- ◆ Both male and female academic psychologists gave a CV with a male name **better evaluations** and were **more likely to hire him** as faculty.²²
- ◆ Reference letters for male applicants for faculty positions used more **standout adjectives** and language implying **natural ability**.²³
- ◆ Letters for male applicants for medical school faculty positions were **longer and contained more references** to the CV, publications, and work with colleagues.³⁴
- ◆ When an ecology journal initiated double-blind review, the acceptance rate for female first-authored papers **increased significantly**.²⁴

“Diversity is not an imposition, it’s an advantage; inclusion is not a problem, it’s a solution; working together is more than a good idea, it’s essential to individual and organizational success.”

-Sondra Thiederman, PhD

Promoting INCLUSION

Countering Bias

Bias can be hard to combat because we usually aren't aware of it. However, there are many things you can do to reduce the chance that bias will affect your decisions.

The following strategies have been shown to minimize the effect of implicit bias:²⁵



Slow down. When we are busy, distracted, or under time pressure, bias is more evident



Increase intergroup contact. The more interaction with others, the less bias is held toward those groups.



Engage in perspective-taking. Imagining oneself as a member of a different group can decrease bias.



Conduct blind review. If you don't know someone's race or gender, you can't be biased by that information.



Define qualifications before starting review. Avoid the influence of initial biases on your interpretation of the information as you conduct the review.



Focus on the individual. Consciously avoid the tendency to make assumptions about others based on their group membership, or vice versa.



Promote inclusive communities. Work to ensure that everyone has a voice. Acknowledge and attribute ideas accurately. Discuss these issues as a community.

Merely adding diverse people to a homogeneous environment does not automatically create a more welcoming and intellectually stimulating campus.²⁵

Inclusion is about experiences, not demographics. It's about being confident enough in a space to share your thoughts, ideas, and concerns—and to have them heard in a meaningful way.

-Sabriya Stukes, PhD

Practicing Inclusion^{25, 33}

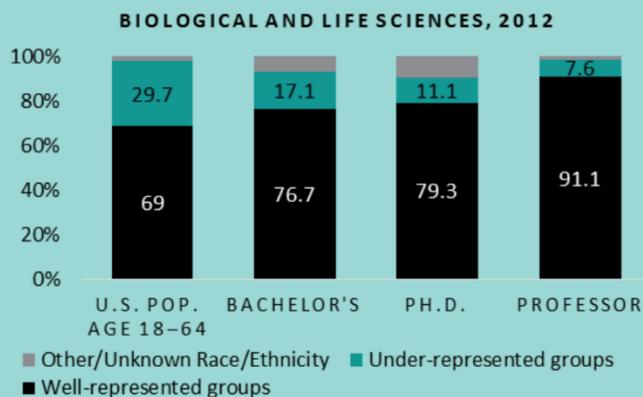
- ◆ In an inclusive environment, **everyone has a chance to be heard.** Provide space for diverse perspectives and be mindful of acknowledging and attributing ideas accurately.
- ◆ Work to ensure **all levels are diverse**, from leadership to trainees, with respect to age, gender, nationality, race, and ethnicity. Enact admissions, hiring, and promotion policies that minimize implicit bias.
- ◆ Work to ensure events such as seminar series and conferences **include diverse individuals** at the level of attendee, speaker, and organizer. It's not enough to say a certain group is not represented in the field—many resources exist on the internet for identifying diverse speakers.
- ◆ **Use inclusive language;** e.g., avoid using only male pronouns or making assumptions about marital status.
- ◆ **Welcome new members of the community** by initiating conversations and meetings. Strive for communities where all members feel valued, included, and empowered.



National Institute of
Neurological Disorders
and Stroke

CASE STUDY: Graduate Admissions

Diversity in science is vital to recruitment of the most talented researchers. However, African Americans, Hispanics, American Indians, Alaskan Natives, and Pacific Islanders are progressively more underrepresented at each step of the academic ladder.²⁶



Programs can inadvertently hinder progress by using uninformative admissions criteria. Luckily, there are many steps you can take to mitigate bias and admit students who are most likely to be successful. Holistic review, in which admissions committees consider a range of candidate qualities including personal attributes, is one effective method.²⁹

Did You Know? NIH & NSF have removed GRE and MCAT scores from fellowships and training grants.

Are your metrics filtering out future talent?

- ◆ Using GRE score as a “filter” or “cutoff” for applicants contributes to the underrepresentation of women, low income individuals, and people of color.
- ◆ GRE scores have been shown to be poorly predictive of success in or length or time to complete graduate school.²⁷
- ◆ GRE scores are highly correlated with socioeconomic status, gender, and ethnicity and can be improved with practice.²⁸

Focus on identifying the qualities of a successful scientist²⁸

- ◆ Persistence, drive, enthusiasm, motivation, and a positive attitude.
- ◆ Amount and quality of research or work experience.
- ◆ Interpersonal skills and collegiality.
- ◆ Writing and communication skills.
- ◆ Personal and professional values and character, such as integrity, fairness, openness, honesty, trustworthiness, and consistency.

Strategies to identify students with potential^{28,29}

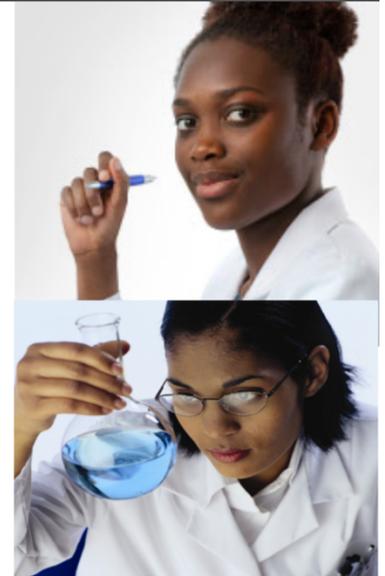
- ◆ **Build relationships** with faculty at programs that provide research experiences for diverse students. Familiarize yourself with the strengths of a variety of undergraduate institutions.
- ◆ Agree on program mission and desired student attributes **before recruitment starts**.
- ◆ Design admissions processes around **holistic indicators** that the applicant has or can develop the qualities of a successful scientist.
- ◆ Use **rubrics and standardized interview questions** to ask about college and research experiences, key relationships, leadership experience, and service to the community.
- ◆ **Adequately support students** before, during, and after recruitment (see “Promoting Inclusion”).

CASE STUDY: Faculty Hiring & Retention

Hiring a Diverse Faculty

In the field of neuroscience, underrepresented minorities represent only 5% of tenure-stream faculty members, compared to 12% of PhD students.³⁰ In addition, 40-50% of women leave before becoming tenure-track faculty.³² To increase diversity, programs should consider how to hire and retain a diverse faculty body. Many of the same strategies apply to faculty hiring as admissions. They include taking action at each step in the process:³¹

- ◆ **Form a diverse search committee and empower its members to learn about and counter implicit bias.** Begin with a conversation about what the department is looking for and ways a candidate might demonstrate those qualities.
- ◆ **Conduct a truly open search.** Where you advertise and the language used in a job advertisement can influence who applies. Broader language is more likely to attract women and underrepresented candidates. Reach out to specific candidates and ask them to apply.
- ◆ **Review applications in detail, against a rubric or evaluation matrix.** This helps members of the search committee be consistent and ensures everyone is on the same page before you start.
- ◆ **Be mindful when interviewing candidates.** Be aware of inappropriate questions, such as asking about family status, and provide information on institutional climate and policies to all applicants by default.
- ◆ **Make a high-quality offer, with attention to salary, start-up, teaching, service, and access to mentoring.** Consider cluster hiring (recruiting for several positions simultaneously) and bringing in more than one female and/or minority candidate to interview in the same search. This has been shown to increase hiring of diverse candidates.



Scientific workforce diversity is a scientific opportunity rather than an intractable problem.

-Francis Collins, MD, PhD &
Hannah Valentine, MD

Promotion and Retention^{32,33}

Faculty are more likely to succeed when they are supported by and integrated into the community of their department and institution. There are many things departments can do to set junior faculty up for success and foster an environment where they feel included, heard, and respected. These practices can mean the difference between success and failure for underrepresented scientists. They not only help diversity the faculty, but they also make the process more equitable for all.

Key steps are:

- **Build a supportive culture.**
- **Make expectations clear.**
- **Incorporate mentoring into career development.**
- **Conduct mid-career evaluations.**
- **Make tenure review practices equitable.**
- **Support promotion to full professor.**

Learn more at SfN.org/IWiN.³²

Learn More

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32. Society for Neuroscience. "Leveling the Playing Field: Improved Tenure and Promotion Practices Lead to a More Diverse Faculty" from Department Chair Training to Increase Women in Neuroscience.
33. Society for Neuroscience. "Building an Inclusive Community: What Science Departments Can Do" from Department Chair Training to Increase Women in Neuroscience.
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This guide owes an incalculable debt to the following publications:

Benefits and Challenges of Diversity in Academic Settings, Eve Fine and Jo Handelsman
Wiseli.engr.wisc.edu/docs/Benefits_Challenges.pdf

Mentor Training for Biomedical Researchers, "Addressing Equity and Inclusion," by Christine Pfund, Christopher Brace, Janet Branchaw, Jo Handelsman, Kristyn Masters, and Lillian Nanney
Mentoringresources.ictr.wisc.edu/TrainingCurriculumChoices

Department Chair Training to Increase Diversity (IWIn), Society for Neuroscience
SfN.org/IWIn

NINDS R25 Programs

SUMMER RESEARCH PROGRAMS – High School and Undergraduate Students, High School Teachers

The NIH Summer Research Experience Program is an award to provide high quality research experiences for students or high school teachers during the summer academic break.

Columbia University

Summer Program for Under Represented Students (SPURS)

PI(s): Siegelbaum, Steven A.

Career Stage Target: **Undergraduate**

Delaware State University

A Neuroscience-Focused Undergraduate Research Program at an HBCU

PI(s): Harrington, Melissa A.

Career Stage Target: **Undergraduate**

Duquesne University

Pain and Neurodegenerative Undergraduate Research Experiences: Interacting with community partners to build specialized and enhanced neurologic disease programs for undergraduates

PI(s): Kolber, Benedict

Career Stage Target: **Undergraduate**

The Jackson Laboratory

Summer Research Experience in Neurobiology

PI(s): Burgess, Robert W.

Career Stage Target: **High School** and **Undergraduate**

Massachusetts General Hospital

Neurogenetics Undergraduate Summer Research Program

PI(s): Slaughter, Susan A.

Career Stage Target: **Undergraduate**

Rutgers University Robert Wood Johnson Medical School

Summer Undergraduate Research Program (SURP) in Molecular and Developmental Neurobiology

PI(s): Rasin, Mladen-Roko

Career Stage Target: **Undergraduate**

University of Arizona

High School Student NeuroResearch Program

PI(s): Witte, Marlys Hearst and Porreca, Frank

Career Stage Target: **High School**

University of Miami

Summer Research Experience in Biological and Computational Sciences

PI(s): Vance, Jeffery M.

Career Stage Target: **High School**

University of Minnesota

University of Minnesota Summer Research in Neuroscience

PI(s): Meisel, Robert and Ebner, Timothy

Career Stage Target: **Undergraduate**

University of North Dakota

Indians Into Medicine: Native Educator University Research Opportunity in Neuroscience (INMED: NEUROscience)

PI(s): Sletten, Sarah

Career Stage Target: **High School Teacher**

University Of Texas Medical Branch Galveston

Summer Research Experiences in Neurological Dysfunction

PI(s): Tagliatela, Giulio

Career Stage Target: **Undergraduate**

University of Vermont

Summer Research Experience in Neuroscience for Undergraduates

PI(s): Scott, Rod Craig

Career Stage Target: **Undergraduate**

University of Washington

Summer Research Experience in Translational Neuroscience and Neurological Surgery

PI(s): Ellenbogen, Richard G.

Career Stage Target: **High School** and **Undergraduate**

NINDS R25 Programs

Virginia Polytechnic Institute

Virginia Tech Carilion Research Institute
Translational Neurobiology Summer
Undergraduate Research Fellowship (VTCRI
neuroSURF)
PI(s): Fox, Michael A.
Career Stage Target: **Undergraduate**

Washington University

Enhancing Undergraduate Preparation for
Research in Aging and Neurologic Diseases
PI(s): Carpenter, Brian D
Career Stage Target: **Undergraduate**

NINDS R25 Programs

BP-ENDURE – Undergraduate Research Training

The Blueprint initiative "Enhancing Neuroscience Diversity through Undergraduate Research Education Experiences (ENDURE)" aims to raise interest and opportunities in neuroscience research for individuals who are typically underrepresented in the field. These programs are funded by the NIH Blueprint for Neuroscience Research.

The goal is to provide such individuals with training at the undergraduate level, so that they are prepared to enter and successfully complete neuroscience Ph.D. programs. ENDURE provides this undergraduate training through partnerships between research-intensive institutions and institutions with a substantial enrollment of neuroscience majors from diverse groups.

ENDURE undergraduate training programs support a range of activities to increase student interest and involvement in the neurosciences, including research experiences, core and advanced neuroscience courses, seminars, and journal clubs.

Hunter College of the City University of New York

Partner Institution: New York University

BP-ENDURE at Hunter and NYU

PI(s): Quiñones-Jenab, Vanya and Miranda, Regina

Career Stage Target: **Undergraduate**

Michigan State University

Partner Institutions: St. Mary's University, Northern New Mexico College, UPR-Arecibo, UPR-Humacao

Bridge to the Ph.D. in Neuroscience

PI(s): Atchison, William D.

Career Stage Target: **Undergraduate**

Tennessee State University

Partner Institution: Vanderbilt University

Tennessee State University-Neuroscience

Education and Research Vanderbilt Experience (TSU-NERVE)

PI(s): Kelly, Kiesa G.

Career Stage Target: **Undergraduate**

University of Colorado Denver

Partner Institution: New Mexico State University
BRAiN: Building Research Achievement in Neuroscience

PI(s): Restrepo, Diego; Bland, Sondra; and Lyons, Barbara

Career Stage Target: **Undergraduate**

University of Puerto Rico – Rio Piedras

Partner Institutions: Inter-American University of Puerto Rico, Bayamon Campus and Universidad del Este

Neuroscience Research Opportunities to Increase Diversity (NeuroID)

PI(s): García-Arrarás, José and Maldonado-Vlaar, Carmen

Career Stage Target: **Undergraduate**

Washington University in St. Louis

Partner Institutions: University of Missouri St. Louis and Harris-Stowe State University

BP-ENDURE St. Louis: A Neuroscience Pipeline

PI(s): Herzog, Erik

Career Stage Target: **Undergraduate**

NINDS R25 Programs

MENTORING PROGRAMS – Undergraduate Students Through Junior Faculty

The goal of the “NINDS Neuroscience Development for Advancing the Careers of a Diverse Research Workforce” is to support NINDS mission-relevant programs to: 1) increase the pool of Ph.D.-level research scientists from diverse backgrounds underrepresented in biomedical research who are neuroscience researchers (participation is limited to undergraduate, graduate, postdoctoral and/or junior-faculty career levels only); and 2) facilitate career advancement/transition of the participants to the next step of their neuroscience careers.

Arizona State University-Tempe Campus

Workforce Inclusion in Neuroscience Through Undergraduate Research Experience
PI(s): Neisewander, Janet L.
Career Stage Target: **Undergraduate**

Johns Hopkins University

The Johns Hopkins Neuroscience Scholars Program (JHNSP)
PI(s): Brown, Amanda
Career Stage Target: **Undergraduate**

New York University School of Medicine

Congruent Mentorship to Reach Academic Diversity (COMRADE) in Neuroscience Research
PI(s): Jean-Louis, Girardin and Ogedegbe, Olugbenga
Career Stage Target: **Postdoctoral**

New York University School of Medicine

Diverse Neuroscientists: Doctoral Training Series (DeNDriTeS)
PI(s): Chao, Moses V. and Gray, Annette
Career Stage Target: **Graduate**

Northern California Institute for Research and Education, and American Academy of Neurology

Training in Research for Academic Neurologists to Sustain Careers and Enhance the Numbers of Diverse Scholars (TRANSCENDS)
PI(s): Ovbiagele, Bruce
Career Stage Target: **Clinical Fellows and Junior Faculty**

Society for Neuroscience

Next-Generation Neuroscience Scholars Program
PI(s): Ramirez, Julio and Poe, Gina
Career Stage Target: **Graduate and Postdoctoral**

University of Alabama at Birmingham

UAB Neuroscience Roadmap Scholars Program
PI(s): McMahon, Lori and Lubin, Farah
Career Stage Target: **Graduate**

University of Florida

Mentoring Institute for Neuroscience Diversity Scholars
PI(s): Torres, Gonzalo E.
Career Stage Target: **Junior Faculty**

University of Georgia

Diversity MATTERS in Neuroscience Training
PI(s): Lauderdale, James D. and Coffield, Julie A.
Career Stage Target: **Undergraduate and Graduate**

University of Michigan at Ann Arbor

Increasing URM Diversity: Targeting Transitions in the Neuroscience Education Continuum
PI(s): Stuenkel, Edward L.
Career Stage Target: **Undergraduate**

University of Washington

BRAINS: Broadening the Representation of Academic Investigators in NeuroSciences
PI(s): Mizumori, Sheri J. Y.
Career Stage Target: **Postdoctoral and Junior Faculty**

Wake Forest University

Training in Health Disparity Research for a Diverse Neuroscience Workforce
PI(s): Milligan, Carol and Bertoni, Alain Gerald
Career Stage Target: **Graduate (Master's Degree)**

NINDS and Jointly-Sponsored T32 Programs

Alabama

University of Alabama at Birmingham
Training Program in the Neurobiology of Cognition
and Cognitive Disorders
PI(s): Hablitz, John J.
Career Stage Target: [Graduate](#)

University of Alabama at Birmingham
UAB Training Program in Neurodegeneration
PI(s): Standaert, David
Career Stage Target: [Graduate](#)

California

University of California Irvine
Epilepsy Research Training Program
PI(s): Baram, Tallie Z.
Career Stage Target: [Graduate](#) and [Postdoctoral](#)

University of California Davis
Jointly Sponsored Institutional Predoc Training
Program in the Neurosciences
PI(s): Usrey, Martin
Career Stage Target: [Graduate](#)

University of California Berkeley
Jointly Sponsored Institutional Predoc Training
Program in the Neurosciences
PI(s): Feldman, Daniel
Career Stage Target: [Graduate](#)

University of California Los Angeles
Training Grant in Neurobehavioral Genetics
PI(s): Freimer, Nelson
Career Stage Target: [Graduate](#) and [Postdoctoral](#)

Stanford University
Jointly Sponsored Institutional Predoc Training
Program in the Neurosciences
PI(s): Ricci, Anthony
Career Stage Target: [Graduate](#)

Stanford University
Epilepsy Training Program
PI(s): Huguenard, John
Career Stage Target: [Postdoctoral](#)

University of Southern California
Jointly Sponsored Institutional Predoc Training
Program in the Neurosciences
PI(s): Levitt, Pat R.
Career Stage Target: [Graduate](#)

University of California Irvine
Training Program in Stem Cell Translational
Medicine for Neurological Disorders
PI(s): Thompson, Leslie
Career Stage Target: [Graduate](#)

Colorado

University of Colorado Denver
Jointly Sponsored Institutional Predoc Training
Program in the Neurosciences
PI(s): Vijayaraghavan, Sukumar and Restrepo,
Diego
Career Stage Target: [Graduate](#)

Connecticut

Yale University
Neurobiology of Cortical Systems
PI(s): Crair, Michael
Career Stage Target: [Graduate](#) and [Postdoctoral](#)

Yale University
Jointly Sponsored Institutional Predoc Training
Program in the Neurosciences
PI(s): Greer, Charles A. and Keshishian, Haig S.
Career Stage Target: [Graduate](#)

District of Columbia

Georgetown University
Training in Neural Injury and Plasticity
PI(s): Maguire-Zeiss, Kathleen
Career Stage Target: [Graduate](#)

Georgetown University
Jointly Sponsored Institutional Predoc Training
Program in the Neurosciences
PI(s): Malkova, Ludise and Rebeck, G. William
Career Stage Target: [Graduate](#)

NINDS and Jointly-Sponsored T32 Programs

Florida

University of Florida
Interdisciplinary Training in Movement Disorders
and Neurorestoration
PI(s): Bowers, Dawn and Vaillancourt, David E.
Career Stage Target: [Graduate](#)

Georgia

Emory University
Training in Translational Research in Neurology
PI(s): Levey, Allan I.
Career Stage Target: [Graduate](#) and [Postdoctoral](#)

Emory University
Jointly Sponsored Institutional Predoc Training
Program in the Neurosciences
PI(s): Smith, Yoland
Career Stage Target: [Graduate](#)

Illinois

Northwestern University
Training Program in the Neuroscience of Human
Cognition
PI(s): Paller, Ken
Career Stage Target: [Graduate](#) and [Postdoctoral](#)

Northwestern University
General Motor Control Mechanisms and Disease
Training Program
PI(s): Surmeier, Dalton James and Bevan, Mark
D.
Career Stage Target: [Graduate](#) and [Postdoctoral](#)

Iowa

University of Iowa
Interdisciplinary Training Program in Pain
Research
PI(s): Hammond, Donna
Career Stage Target: [Graduate](#) and [Postdoctoral](#)

University of Iowa
Jointly Sponsored Institutional Predoc Training
Program in the Neurosciences
PI(s): Tranel, Daniel T.
Career Stage Target: [Graduate](#)

Kentucky

University of Kentucky
Neurobiology of CNS Injury and Repair
PI(s): Hall, Edward and Geddes, James
Career Stage Target: [Graduate](#)

Maryland

Johns Hopkins University
Jointly Sponsored Institutional Predoc Training
Program in the Neurosciences
PI(s): Bergles, Dwight E.
Career Stage Target: [Graduate](#)

University of Maryland Baltimore
Jointly Sponsored Institutional Predoc Training
Program in the Neurosciences
PI(s): Mong, Jessica
Career Stage Target: [Graduate](#)

Johns Hopkins University
Interdisciplinary Training in Biobehavioral Pain
Research
PI(s): Smith, Michael and Dong, Xinzhong
Career Stage Target: [Postdoctoral](#)

Massachusetts

Harvard University School of Public Health
Training in Neurostatistics and
Neuroepidemiology
PI(s): Betensky, Rebecca
Career Stage Target: [Graduate](#) and [Postdoctoral](#)

Tufts University Boston
Synapse Neurobiology Training Program
PI(s): Biederer, Thomas
Career Stage Target: [Graduate](#)

Brandeis University
Jointly Sponsored Institutional Predoc Training
Program in the Neurosciences
PI(s): Griffith, Leslie
Career Stage Target: [Graduate](#)

Brandeis University
Neurobiology: Genes, Channels, & Behavior
PI(s): Marder, Eve E.
Career Stage Target: [Postdoctoral](#)

NINDS and Jointly-Sponsored T32 Programs

Massachusetts General Hospital
Training Program in Recovery and Restoration of
CNS Health and Function
PI(s): Rosand, Jonathan
Career Stage Target: **Postdoctoral**

Children's Hospital Boston
Developmental Neurology
PI(s): Schwarz, Thomas L.
Career Stage Target: **Postdoctoral**

Harvard University
Jointly Sponsored Institutional Predoc Training
Program in the Neurosciences
PI(s): Segal, Rosalind A.
Career Stage Target: **Graduate**

Michigan

University of Michigan Ann Arbor
Training in Clinical and Basic Neuroscience
PI(s): Feldman, Eva
Career Stage Target: **Postdoctoral**

University of Michigan Ann Arbor
Jointly Sponsored Institutional Predoc Training
Program in the Neurosciences
PI(s): Stuenkel, Edward L. and Altschuler, Richard
Career Stage Target: **Graduate**

Minnesota

University of Minnesota
Jointly Sponsored Institutional Predoc Training
Program in the Neurosciences
PI(s): Redish, David A.
Career Stage Target: **Graduate**

Nebraska

University of Nebraska
Training Program in the Immunology of
Neurodegeneration
PI(s): Gendelman, Howard and Monaghan, Daniel
Career Stage Target: **Graduate**

New York

Columbia University Health Sciences
Advanced Graduate Training Program in
Theoretical Neuroscience
PI(s): Abbott, Laurence
Career Stage Target: **Graduate**

New York University School of Medicine
Training Program in Molecular, Cellular, and
Translational Neuroscience
PI(s): Dasen, Jeremy
Career Stage Target: **Graduate**

Columbia University Health Sciences
Neuroepidemiology Training Program
PI(s): Elkind, Mitchell
Career Stage Target: **Postdoctoral**

Columbia University Health Sciences
Advanced Graduate Training Program in
Neurobiology & Behavior
PI(s): Greene, Lloyd A. and Hengst, Ulrich
Career Stage Target: **Graduate**

University of Rochester
Experimental Therapeutics in Neurological
Disease
PI(s): Griggs, Robert C.
Career Stage Target: **Postdoctoral**

Columbia University
Jointly Sponsored Institutional Predoc Training
Program in the Neurosciences
PI(s): Grueber, Wesley
Career Stage Target: **Graduate**

New York University School of Medicine
Jointly Sponsored Institutional Predoc Training
Program in the Neurosciences
PI(s): Rudy, Bernardo and Klann, Eric
Career Stage Target: **Graduate**

Mount Sinai School of Medicine
Jointly Sponsored Institutional Predoc Training
Program in the Neurosciences
PI(s): Salton, Stephen R.
Career Stage Target: **Graduate**

NINDS and Jointly-Sponsored T32 Programs

North Carolina

Wake Forest University
Training Program in Multisensory Processes
PI(s): Stein, Barry E.
Career Stage Target: [Graduate](#) and [Postdoctoral](#)

University of North Carolina Chapel Hill
Jointly Sponsored Institutional Predoc Training
Program in the Neurosciences
PI(s): Zylka, Mark
Career Stage Target: [Graduate](#)

Ohio

University of Cincinnati
Jointly Sponsored Institutional Predoc Training
Program in the Neurosciences
PI(s): Herman, James P.
Career Stage Target: [Graduate](#)

University of Cincinnati
Cerebrovascular Fellowship Training Program
PI(s): Kleindorfer, Dawn
Career Stage Target: [Postdoctoral](#)

Oregon

Oregon Health and Science University
Jointly Sponsored Institutional Predoc Training
Program in the Neurosciences
PI(s): Westbrook, Gary
Career Stage Target: [Graduate](#)

Pennsylvania

University of Pennsylvania
Remapping neurology through translation and
innovation
PI(s): Dichter, Marc A. and Jensen, Frances E.
Career Stage Target: [Postdoctoral](#)

University of Pittsburgh
Training in Mechanisms and Clinical Presentation
of Pain
PI(s): Gold, Michael
Career Stage Target: [Graduate](#) and [Postdoctoral](#)

University of Pennsylvania
Training Program in Neuroengineering and
Medicine
PI(s): Litt, Brian
Career Stage Target: [Graduate](#) and [Postdoctoral](#)

Children's Hospital of Philadelphia
Training Grant in Neurodevelopmental Disabilities
PI(s): Robinson, Michael
Career Stage Target: [Postdoctoral](#)

University of Pennsylvania
Brain Injury Training Grant
PI(s): Smith, Douglas Hamilton
Career Stage Target: [Postdoctoral](#)

University of Pittsburgh
Training in the Neurobiology of
Neurodegenerative Disease
PI(s): Strick, Peter
Career Stage Target: [Postdoctoral](#)

University of Pittsburgh
Jointly Sponsored Institutional Predoc Training
Program in the Neurosciences
PI(s): Sved, Alan F.
Career Stage Target: [Graduate](#)

University of Pennsylvania
Training in Neurovirology
PI(s): Weiss, Susan R.
Career Stage Target: [Graduate](#) and [Postdoctoral](#)

Rhode Island

Brown University
Neuroscience Advanced Predoctoral Institutional
Training Grant
PI(s): Lipscombe, Diane
Career Stage Target: [Graduate](#)

Brown University
Jointly Sponsored Institutional Predoc Training
Program in the Neurosciences
PI(s): Lipscombe, Diane and Sheinberg, David L.
Career Stage Target: [Graduate](#)

NINDS and Jointly-Sponsored T32 Programs

Tennessee

Vanderbilt University
Training Program in Ion Channel and Transporter
Biology
PI(s): Knollmann, Bjorn
Career Stage Target: **Postdoctoral**

Vanderbilt University
Jointly Sponsored Institutional Predoc Training
Program in the Neurosciences
PI(s): Winder, Danny G. and McMahon, Douglas
Career Stage Target: **Graduate**

Texas

University of Texas Austin
Jointly Sponsored Institutional Predoc Training
Program in the Neurosciences
PI(s): Harris, Robert and Harris, Kristen
Career Stage Target: **Graduate**

University of Texas Health Science Center at San
Antonio
Jointly Sponsored Institutional Predoc Training
Program in the Neurosciences
PI(s): Morilak, David A.
Career Stage Target: **Graduate**

University of Texas Health Science Center
Houston
The University of Texas Houston Stroke Training
Program
PI(s): Savitz, Sean
Career Stage Target: **Postdoctoral**

Baylor College of Medicine
Multidisciplinary Training; Brain Disorders &
Development
PI(s): Swann, John W.
Career Stage Target: **Postdoctoral**

Utah

University of Utah
Jointly Sponsored Institutional Predoc Training
Program in the Neurosciences
PI(s): Keefe, Kristen A.
Career Stage Target: **Graduate**

Washington

University of Washington
Jointly Sponsored Institutional Predoc Training
Program in the Neurosciences
PI(s): Sullivan, Jane M. and Wong, Rachel O.
Career Stage Target: **Graduate**

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