

**Advisory Committee to the Director (ACD) Working Group  
on Diversity in the Biomedical Research Workforce**

**Public Meeting**

**Tuesday, February 14, 2012  
10:00 a.m. to 3:45 p.m. EST**

**National Institutes of Health  
Building 31, C Wing, 6<sup>th</sup> Floor, Room 6C6**

**Members Present:**

Reed Tuckson, M.D., *Co-Chair*  
John Ruffin, Ph.D., *Co-Chair*  
Lawrence Tabak, D.D.S., Ph.D., *Co-Chair*  
Ann Bonham, Ph.D.  
Jordan Cohen, M.D.  
Jose Florez, M.D., Ph.D.  
Gary Gibbons, M.D.  
Renee Jenkins, M.D.  
M. Roy Wilson, M.D., M.S.  
Clyde Yancy, M.D.

**Invited Speakers:**

Karen Chaves  
Glorimar Maldonado  
William Mendoza  
John Silvanus Wilson, Jr.

**Welcome and Opening Remarks**

The Co-Chairs of the Advisory Committee to the Director (ACD) Working Group on Diversity in the Biomedical Research Workforce, Drs. Reed Tuckson, John Ruffin, and Lawrence Tabak, welcomed the committee members and guests in attendance and presented opening remarks to the committee. Dr. Tuckson said that some members are attending by phone and webcast, and noted that the day's public meeting/hearing will be in the public record.

Dr. Tuckson said that the committee is in the process of data review, hypothesis formulation, and hypothesis testing in an attempt to better understand and address their charge. The day's meeting will provide the committee with input to assist in its understanding of critical and pertinent issues. The committee had not reached a decision on its position regarding any recommendations, he said, and the purpose of the meeting was not to discuss the perspective of the committee, but rather to inform the committee.

**Presentation by the White House Initiative on Historically Black Colleges and Universities (HBCUs)**

The committee welcomed the first speaker, Dr. John Silvanus Wilson, Jr., Executive Director of the White House Initiative on Historically Black Colleges and Universities (HBCUs). Dr. J. Wilson presented an overview of the initiative, including the work, ideas, perspectives, recommendations, and key problems and challenges the initiative has identified.

Dr. J. Wilson said that the work of the White House Initiative on HBCUs is under Executive Order (EO) 13532 (Promoting Excellence, Innovation, and Sustainability at Historically Black Colleges and Universities). The three factors of the EO include capital enlargement (permits work with agencies and the private sector), strategy development, and campus enrichment. These factors are united by perception enhancement, such as through messaging and informing, he said.

Dr. J. Wilson said the baseline problem that needs to be addressed is that African Americans are underrepresented in the biomedical research workforce. He said that key challenge areas that need to be addressed include pluralism versus diversity; institutional infrastructure disadvantages that may lead to individual disadvantages; and bias, including both review bias and perceptions of bias by applicants. He proposed a competitive grant program “Race to the Biomedical Top (RTTBT),” with considerations that parallel the U.S. Department of Education (DOE)’s “Race to the Top (RTTT).” RTTBT would lead to several benefits: the NIH would obtain innovative ideas from a wide-variety of applicants; less research intense institutions would receive the direct benefits; and a clear opportunity to shift student and faculty lifestyles to research..

Dr. J. Wilson said that in order to improve ideas and perspectives, some important areas of concern include potential bias on review panels, increasing HBCU faculty on review committees, and reexamining resubmission policies to ensure similarity among grant application resubmission requirements of HBCUs and non-HBCUs. He finally noted that the problems of diversity in the biomedical workforce cannot be solved quickly and will require vigilance in order to develop permanent solutions.

Dr. Jose Florez asked whether Dr. J. Wilson envisioned the competitive grant program that he proposed to be limited to HBCUs, or a parallel expansion to institutions that are not HCBUs, but that show the same level of commitment to improve their infrastructure, support, and training of minorities. Dr. J. Wilson said that the competitive preferences under the program he proposed would not be limited to HBCUs, and this could in fact help drive competition among grant applicants.

Dr. Ann Bonham asked whether Dr. J. Wilson had any thoughts on a national strategy to address the disparities in the biomedical research workforce, so that funding would be shared by several organizations. Dr. J. Wilson said that this type of program could certainly have shared funding. He noted that not only would a program to attract applications from a more diverse population stimulate competition, it could also drive applications from unexpected applicants.

Dr. M. Roy Wilson asked Dr. J. Wilson to expand on his comment about bridging funding programs to the private sector, so that the private sector is involved in funding. Dr. J. Wilson said that a lot of individuals in the private sector have been waiting for game-changing ideas. He said, perhaps due to the Department of Education’s (DOE) revised approaches, the private sector has

been much more willing to invest in the DOE's initiatives. Dr. Renee Jenkins asked if there was a study from the perspective of the DOE of strategies that lead to the strongest positive impact on the DOE's RTTT grant program. Dr. J. Wilson said that the DOE is prepared to gather this type of data, but they have not yet. There is evidence, he said, that the RTTT program is working and morale has improved. Excitement has built up within communities and, as an added benefit, the states have been able to engage communities that they have not engaged previously, so a wider population became involved, he said.

Dr. Jordan Cohen asked which department would provide budgetary support to the proposed RTTBT program—would it be the DOE or did Dr. J. Wilson see it as some type of collaborative effort? Dr. J. Wilson said that he had two responses. The first response, he said, is that a number of agencies are investing in science, technology, engineering, and math (STEM) education. He proposed that the committee inform potential stakeholders of the workforce diversity goals of the NIH and seek out a multi-agency approach to support the RTTBT grant program. The second response, he said, is that HBCUs get roughly \$225 million per year from the NIH approximately 1 percent of the money that the NIH invests in biomedical research. He said that another 1 percent contributed to HBCUs would be another \$225 million per year. The competitive grant that he proposed would provide funding of \$100 million per year a 50 percent increase in funding to HBCUs by the NIH alone. In other words, this would actually be a much smaller increase (0.5 percent) than what DOE is doing in terms of higher education programs.

Dr. Gary Gibbons wondered if Dr. J. Wilson's office could assist the committee by providing an evaluation or assessment of the NIH's existing investments of 1 percent, and whether there is a misalignment with what is needed and what is being provided. It would also be helpful, he said, for the committee to know more about the strategic plan of HBCUs as a consortium, and whether they are already doing planning such that if they received part of the funding, this would help reach preexisting targets. He also thought it was critical to involve the private sector from the beginning and asked Dr. J. Wilson for clarification on the point in time when he thought the private sector would become engaged. Dr. J. Wilson said he thought the private sector should be involved immediately so that they have sufficient time for preparation; he said the agencies could provide the initial support with funding from the private sector coming later.

Dr. Tuckson said that the committee is trying to determine the appropriate emphasis on the pipeline versus once an R01 grant application comes to the NIH. He said that while he cannot share where the committee stands at this time on the grant review process, it would be useful for Dr. J. Wilson to provide the committee with a specific assessment of what is currently known and not known on necessary steps to prepare young African Americans to engage in a career in STEM. He said the committee would like to be able to reference the work of Dr. J. Wilson and others familiar with the topic, not just to save some time, but also to lend additional credibility to the committee and their decisions. Dr. J. Wilson agreed and said that he would also like to involve other people that he works closely with on these issues. Dr. Tuckson said he would like Dr. J. Wilson to review the summary of the meeting, in order to ensure accuracy and precision regarding his discussions and recommendations.

### **Presentation by the White House Initiative on Educational Excellence for Hispanics**

The committee welcomed the next speaker, Ms. Glorimar Maldonado, Chief of Staff of the White House Initiative on Educational Excellence for Hispanics. Ms. Maldonado said that her initiative's office has recently begun to address workforce issues, although her office was not historically involved in these issues. She said the nature of the office's work was not strictly focused on Hispanic-Serving Institutions (HSIs), but also covers the entire educational spectrum, from cradle to career. This wide coverage makes the initiative unique from some of the other initiatives (e.g., HBCUs).

The work of the office, she said, is focused on engaging the community, and it is particularly interested in early learning. Using the most recent census data, the office examined communities with the highest concentrations of Latinos and solicited feedback on educational needs, she said. The majority of the feedback indicated that communities did not know what resources are available to them, particularly for kindergarten through high school (K–12). The initiative's office works to engage communities, strengthen the infrastructure of educational facilities, and gain trust.

Ms. Maldonado said that there are 70 to 80 DOE designated HSIs, but some Web sites, such as that of the Hispanic Association of Colleges and Universities (HACU), list several hundred. The reason for the disparity is that the DOE's HSI list is a grantee list of institutions that have met HSI criteria and receive federal funding. The work of her office focuses on a longer list, she said, which incorporates all universities that have self-identified as emerging HSIs. The office reaches out to the universities through visiting the campuses and recruiting interns. Some programs, such as the Viva Technology Program, she said, reach out and interact with students in high schools to teach them about STEM. The office invites community members to participate in the initiative's meetings, she said, and several members on the President's Advisory Commission come from HSIs and have provided valuable feedback. She said her office recommends that the committee engage HSIs that are already focused on STEM education and are already utilizing STEM-focused educational approaches.

Dr. Yancy said that what he originally expected to hear from the White House Initiative speakers was that efforts should cast a broad net, be inclusive, and attempt to re-engineer culture, but these directions are low-yield from his perspective. He said it is important to consider the number of HSIs that have the "academic scaffolding" for increasing diversity in the biomedical sciences and STEM, which will narrow down the field and may provide better returns on investment. He would prefer to use those with existing infrastructures and ramp up what is already there rather than introduce a new construction in a culture that has not been receptive to STEM in the past. He said it would be useful to have a list of institutions with existing infrastructure for addressing diversity issues, along with a list of the mentors at the institutions and the history of the investigators that have come from the institutions.

Dr. R. Wilson asked Ms. Maldonado to expand on the DOE's definition of HSIs. He asked whether the DOE's definition of HSIs gets around some of the legal constraints, such as how many Latino students are served by the university. She said that there are three criteria that the schools must meet to be an HSI, including (1) being a not-for-profit university/college, (2) having two-year programs leading to a degree, and (3) having at least 25 percent of full-time students that are Hispanic. Once institutions meet these three criteria, they are eligible to apply

for accreditation status to be designated as an HSI by the DOE, she said. Once an institution passes the accreditation, it can apply for funding. Institutions that actually receive funding are considered HSIs. The Department of Education website describes HSI funding for the past few fiscal years: <http://www2.ed.gov/programs/idueshsi/funding.html> Dr. Florez asked how many are considered HSIs but do not receive funding, but Ms. Maldonado did not know the answer to this question.

Dr. J. Wilson said that there are trust issues with many of these institutions and he suggested that the committee identify these institutions and speak with them one-on-one. With regard to the educational pipeline for biomedical research careers, Dr. J. Wilson said that the 2020 goal of once again being the most educated, competitive, and diverse workforce will require 8 million more Americans, with 2 million of these being African American, graduating from college. HBCUs need to graduate another 167,000 graduates over the current pace to meet this goal. HBCUs currently graduate 35,500 per year now, and this rate needs to increase to 57,000 per year to meet the 2020 goal. He said that only 40 percent of those that enter undergraduate college programs intending to major in STEM actually finish in a STEM program at HBCUs. This data points to a major problem in the low numbers of African Americans in the biomedical research workforce: retention in the STEM educational pipeline.

Ms. Maldonado said that assistance to institutions during the application process will help tremendously. When grant applications submitted by HSIs/HBCUs are rejected, many of the applicants do not resubmit because they do not believe that they have a chance for funding. When assistance or encouragement for reapplication is provided to HSIs by her office, she said, many will reapply; reapplication assistance is one way to foster the reapplication process.

Dr. Gibbons asked which HSIs are awarding the highest percentage of graduates with Ph.D. degrees, to provide a sense of the HSIs with a proven track record. With this information, the committee might have an idea of HSIs with a proven track record that they could contact and ask for feedback on how they are successful. Ms. Maldonado said that she did not know, but that the percentage with advanced degrees in those institutions is about 4 percent.

Dr. Florez said that the focus of the presentations during the day's meeting was on education, from K-12, undergraduate, and graduate students. He asked what is known about Hispanic representation of faculty at HSIs and their ability to serve as role models to STEM students. Ms. Maldonado said that her office does not currently know, and the only way to find out is to ask the HSIs themselves.

Dr. R. Wilson said heterogeneity is vast in HSIs, from two-year schools up to research institutions. The entire set of HSIs should not be considered, but rather representation for each set (e.g., two-year institutions; four-year institutions), and this would correspond to the denominator. Dr. Yancy said that the denominator informs about the landscape, but he would like information on the numerator, which are those institutions are already serving as successful pipelines and sources of STEM graduates.

Dr. Tuckson said that selectivity is important because everyone cannot be experts in all areas, so there will be some segmentation in expertise. He said the solution to this problem could be

directing resources to areas of competence. He asked Dr. J. Wilson for his views beyond HBCUs. Dr. J. Wilson said that he serves under an EO, and so does not have the liberty to go beyond fulfillment of the EO. He said a different EO will be coming out addressing issues dealing with African American education beyond HBCU topics. The Hispanic, Tribal, and Asian American Pacific Islander Initiatives cover the entire educational pipeline for these populations. He said that there is a subset of HBCUs that drive graduation of African Americans with STEM degrees and it is important to identify such biomedical hotspots, which can be areas of focus for funding.

Dr. Tuckson said that retention is a key consideration for the committee. The pedagogy of how these programs work and what are the best practices should be considered by the committee—for example, reaching out to students in middle school, and later in high school, and whether this is enough for stimulating their interest in pursuing a college degree.

Dr. J. Wilson said that the White House initiatives do not provide funds. He said when he spoke of “winners,” he meant winners in the sense that institutions are selected for funding by the private sector. He said that his office works with the private sector to help them decide which institutions and potential grantees are good investments.

Dr. Tuckson said that if you are going to make recommendations, particularly to the private sector, in order to gain trust, you must be credible, and have clear, ample evidence that certain programs work and are good investments. He said the more information and support that is provided from experts in these areas and initiatives, the more success the committee will have in gaining trust with the private sector.

Dr. Bonham said that the definition of biomedical hotspots may not be clear-cut, and asked whether the committee would be missing the “unusual suspects” by looking primarily at institutions with a proven record of success. She wondered whether this would be adding institutional bias on top of institutional bias. She asked whether Dr. J. Wilson and his office have considered these issues in their RTT plan. He said that he has considered, but not as exhaustively as the committee will need to consider. He said the competitive preferences do not cordon off the competition in any way because there needs to be room for anyone to apply, either the usual suspects or the unusual suspects. He said the reason that a competition is good is that you can hear from institutions that will speak in their own terms of why they are doing a good job. This approach is better, he said, than outlining criteria and having people come to the criteria.

### **Presentation by the White House Initiative on Asian American and Pacific Islanders**

The committee welcomed the next speaker, Ms. Karen Chaves from the White House Initiative on Asian American and Pacific Islanders (AAPIs). Ms. Chaves said that the focus of the initiative is on several areas, including healthy communities, economic and community development, educational opportunities, and immigrant and civil rights; the office’s work is much broader than purely educational initiatives. She said the focus of the initiative has been on community engagement, including efforts to reach overlooked and underserved AAPIs, work to support post-secondary institutions that serve AAPIs, and outreach to increase opportunities for

AAPI-relevant research. AAPIs are very diverse, she said, but are often lumped together, so their true diversity is not realized. Many AAPIs are enrolled in community colleges but retention is problematic and a high percentage of them (30 percent to 55 percent depending on the group) do not receive a college degree. She said it is also important to ensure that freshman-bridging programs and new student programs are in place to improve retention.

Compared with HSIs, AAPI institutions are still in early development, she said, and many institutions are not even aware that funding is available for minority institutions. There has also been some confusion as to whether an institution that is an HSI can also be an AAPI. She said that it is important to partner with communities to help develop the research agenda, engage the community in the research areas of interest, and ensure that the research meets the needs of the specific populations.

Ms. Chaves also relayed concerns that one of the initiative's commissioners from the University of California, San Francisco (UCSF) asked her to pass on to the committee. The commissioner said that the Ginther et al., 2011, article from the journal *Science* reported evidence of disparities for African American researchers, but there is also evidence for disparities for Asian American researchers. The commissioner noted that a very high percentage of the Asian scientists in the paper were foreign-born: 16 percent of the researchers were Asian and 87 percent of these were noncitizens. The commissioner said that these findings raised questions of whether U.S.-born Asians are adequately represented in the biomedical workforce. Another concern was that there may have been too few Asians in the category to give adequate power to detect statistical significance.

Dr. Tuckson said that Ms. Chaves brought up an important issue and a potential new line of inquiry. The committee should start considering research priorities, he said, and identify ways that research can be relevant to solving problems within communities of minority populations.

Dr. R. Wilson was curious about the definition of an Asian American Native American Pacific Islander Serving Institution (AANAPISI). He said that the percentage of Asians at certain AANAPISIs should take into account the different proportions of the subpopulations (e.g., Japanese, Korean, and Chinese) because educational backgrounds can be very different. Ms. Chaves said that the percentage is not just the percentage of students that are AAPIs, but also the proportion that meet the poverty threshold. Socioeconomic status is, therefore, also included in criteria that define AANAPISIs.

Dr. Florez said that one point to remember about the Ginther paper is that only researchers holding Ph.D. degrees were included; it is an easier process for a foreign-born Ph.D. to take a position in the United States than a foreign-born medical doctor.

Dr. Yancy asked if there was a consistent theme as to why many AANAPISIs do not receive federally supported assistance. She said that some of the reasons include confusion by the institutions as to whether or not they are eligible.

Dr. Gibbons asked whether any risk prediction models have been developed to evaluate the low retention rates at AANAPISIs. Ms. Chaves said that she will take this question to her colleagues

and will get back to the committee with an answer. Ms. Chaves agreed to have the letter regarding her colleague's concerns about the Ginther paper introduced into the meeting's deliverables.

### **Presentation by the White House Initiative on American Indian and Alaska Native Education**

The committee welcomed the next speaker, Mr. William Mendoza, from the White House Initiative on American Indian and Alaska Native Education. The role of their initiative, he said, is to be the voice for American Indian and Alaska Native populations. The initiative would like to work with the committee to seek ways to best interact with the communities to address educational disparities. Twenty-five percent of degrees, he said, are life sciences and biological degrees at tribal colleges and universities (TCUs), most of which are two-year schools. When students attend TCUs and later attend four-year schools, their experiences at the four-year schools are greatly improved, he said. The initiative would like institutions to expand their degree offerings and restructure STEM courses. Faculty development (e.g., exchange programs, sabbaticals, and professional development steps) is also an important focus of the. EO 13592 is involved with increasing the percentage of American Indian and Alaska Native students that are engaged in STEM curricula, he said. Dr. Tuckson asked Mr. Mendoza to provide the committee with a summary of his organization's view of the educational pipeline and its recommendations for improving the pipeline for American Indian and Alaska Native students and communities.

Dr. Florez said that when he presented the results of the Ginther (2011) paper at a workshop in Boston a participant asked about Native American success rate. The paper did not address Native Americans since only 41 grant applications were submitted by Native Americans. He said that there is an imbalance in the body of work due to lack of information for Native American and Alaska Native groups. Dr. Florez said that filling in this knowledge gap will help ensure that Native Americans and Alaska Natives are not neglected due to lack of data. Even knowing where data gaps are and then calling for information to fill the data gaps is important, said Dr. Tuckson. Dr. Cohen asked whether any TCUs have graduate degree programs. There are 11 or 12 graduate degree programs and these are concentrated at two or three universities. Dr. Cohen said that these are examples of institutions that may have existing infrastructures to support biomedical education initiatives.

Dr. Ruffin said that the Department of Health and Human Services developed a tribal consultation policy, which could help in terms of filling the data gaps. The NIH also has a robust loan repayment program, he said, and a number of Native Americans have had their loans repaid through that program. The success of those individuals must be considered by the committee and the committee must determine if steps need to be taken by the NIH to ensure that these individuals remain successful. Dr. Bonham said the committee also needs to learn about the retention of students that enter TCUs as a stepping stone prior to matriculation at four-year institutions. She would also like the committee to find out about the usefulness of cross-cultural mentors to these students.

Dr. Jenkins said that an area that helped in getting the STEM educational pipeline moving for HBCUs was private sector support. She asked Mr. Mendoza to expand on whether there have

been any similar successes in engaging the private sector for American Indian and Alaska Native efforts in the educational pipeline. He said the American Indian Higher Education Consortium leads the way for private, non-profit funding of TCUs, but private funding through the initiative's efforts has been largely absent. He said now the initiative would like to take a more active role in working with private funding and TCUs, and develop a national network of groups that are involved with TCUs.

Dr. Florez asked to what extent AANAPISIs overlap with the American Indian and Alaska Native communities. Mr. Mendoza said there is some overlap with respect to the Native Hawaiian community, and he works with Karen Chaves of the AAPI initiative to address this; however, there no overlap in funding in terms of the initiative's efforts.

Dr. Tuckson asked what role the TCUs serve primarily: is the role of TCUs to prepare students in the biomedical sciences, or is it to prepare them for subsequent matriculation at major research institutions and to thrive in those environments, after having been trained locally at TCUs? These considerations, he said, are important for deciding where NIH should concentrate training of students for careers in the biomedical sciences. The closer that these efforts are to the communities and reservations, said Mr. Mendoza, the more benefit the students from these communities will have. The TCUs seek to train students in the biomedical sciences, although they also serve as preparatory centers for the students. Dr. Tuckson asked whether there is any information on the barriers that block movement of students from TCUs to state-based universities, and whether there are any initiatives to motivate locally trained students to attend state universities. Mr. Mendoza said studies through the National Science Foundation have been done to answer some of these questions, but he does not currently have the information to answer Dr. Tuckson. Generally speaking, however, he said, these students are 60 percent more likely to complete their undergraduate program at a state-based university if they first attended a TCU than if they did not.

Dr. Tuckson asked Mr. Mendoza to send the committee information on barriers that exist in the pipeline, retention, and the success of efforts to bridge from TCUs to state-based universities. Dr. Ruffin suggested that Mr. Mendoza look at some of the programs that are based in the National Institute of General Medical Sciences, including the Bridges to the Future Program, which will provide some of the information that Dr. Tuckson requested.

## **Public Comments**

The committee next welcomed comments from the public.

The first presenter for the public comments session was Dr. Alike Maunakea, a post-doctoral fellow with the National Heart, Lung, and Blood Institute. He is a Native Hawaiian and felt there is an underrepresentation of Native Hawaiians in the biomedical workforce. He said he was speaking at the meeting in order to demonstrate the successes of his education and career, and as an example of a success story of recruitment and training by the NIH. After completion of his training, Dr. Maunakea plans to return to his Native community, enter academia, and guide STEM students to training for careers in the biomedical sciences. He said that he noticed in his training the importance of having effective training and retention programs that take into account

the culture of the target communities. He said he first received training from the NIH as an undergraduate at Creighton University and was able to attend summer research training sessions at the NIH. He said that he learned of the NIH summer training programs on his own, without the guidance of a mentor or career center, through a Web site resource (fastweb.com). Dr. Maunakea said that he wanted to become an independent researcher and the NIH training program helped guide him on this path.

Dr. Bonham said that many of the themes discussed during the day's meeting involved engaging communities, engaging the youth in the communities, and performing culturally relevant research in the communities. She said the committee needs to prioritize efforts to ensure that research in the communities is relevant to the populations in the communities.

While Dr. Maunakea said that he would have benefited from a more culturally-sensitive program, he agreed that the classical lab training that he received at Creighton University was essential to his biomedical research training and education. He said that he would have benefited from having a biomedical science-based mentor in his community at a young age, but he ended up finding his own way to research from Hawaii to a position now with the NIH. Dr. Tuckson said that there is no real system that allows a researcher to capture the ability to be a mentor, and asked Dr. Maunakea whether he thought that there was an adequate support system at the NIH that could lead a post-doctoral researcher to becoming an independent researcher. Dr. Maunakea said that the answer to this is both yes and no. He said that while the NIH did provide him with many training opportunities and collaborations immediately, there was very little guidance in terms of seeking out and planning for a future career path after one's time as a post-doctoral researcher at the NIH.

Dr. Ruffin asked how the committee might help to ensure that more underrepresented young people get the opportunities as he did early on that helped to guide him to a successful education and employment opportunities in biomedical research. Dr. Ruffin wondered what programs in the communities might be developed to help assist in a successful trajectory from education to career.

The next presenter for the public comments session was Ms. Marcela Gaitan, a senior policy advisor for the National Alliance for Hispanic Health. The organization she represents is a non-profit, public health organization. Her team works with a network of other community-based organizations around the country to provide services to Hispanic populations and find community-based solutions. A goal of the organization, she said, is to improve retention of Hispanics in biomedical professions and address health disparities. Hispanics currently comprise just over 3 percent of tenure-track investigators and are disproportionately represented in research. She said Hispanic investigators receive fewer federal grants, even after accounting for their underrepresentation in the biomedical workforce. A way to increase their proportion in the biomedical workforce, she said, is to provide incentives and to increase the number of R01 grants that go to established and junior investigators. Hispanic researchers also resubmit grant applications at very low rates, she said, so a support system for following up and encouraging resubmission could improve the proportion of Hispanic researchers that are funded. Improvement of recruitment efforts might also increase the number of Hispanics in the

biomedical research workforce. The alliance has a program to provide four years of academic support for STEM training, she said, and there are currently 30 students in the program.

The next presenter for the public comments session was Mr. Dale Dirks, President of the Association of Minority Health Professions Schools, Inc. (AMHPS). Mr. Dirks said that he was speaking on behalf of Drs. Sullivan and Wilson from the association. He brought with him a proposal to submit to the committee from his organization. The proposal addressed the topic of increasing the number of young minority researchers with R01 research grants from the NIH and was entitled *A Proposed Program to Increase the Number of Young Minority Researchers with Investigator-Initiated (R01) Research Grants from the NIH*. He said the association recognizes the shortage of minorities in the health and research workforce, and that African American investigators make up only 0.4 percent of R01 grants from the NIH, with the bulk of R01 grants awarded to Caucasian investigators. Dr. Tuckson thanked Mr. Dirks for bringing the proposal to the attention of the committee.

The next presenter for the public comments session was Ms. Michelle Quinteros, who is a program manager for Hispanic-Serving Health Professions Schools (HSHPS), an organization that is composed of 26 schools of medicine and public health. The organization's mission is to improve the health of Hispanics through academic development, research initiatives, and training. The organization's training programs are geared toward graduate, medical, public health, and doctorate students, and its faculty development workshops are geared toward doctorate students and Hispanic junior faculty members. Training programs of HSHPS train 65 percent Hispanics, with 40 to 80 students placed during each summer (e.g., at UCSF/Centers for Disease Control [CDC] program). African Americans, Asian Americans, and Caucasian/non-Hispanic groups make up lower proportions of additional students in the training program. The training program greatly increases the scientific activities of supported students, including, for example, that they more frequently submit publications to peer-reviewed journals. Students in the HSHPS program are working on research as it relates to Hispanic communities. Since 2006, 12 students have been trained at USCF/CDC and most continued working at USCF after completion of the program. At least one student that was trained through the program has received NIH funding. The committee asked Ms. Quinteros to provide data on students in the HSHPS programs that have been successful in obtaining funding from the NIH, and she agreed.

The next presenter for the public comments session was Dr. Ernest Marquez, President of the Society for Advancement of Chicanos and Native Americans in Science (SACNAS). The society is devoted to building a diverse STEM workforce. His organization recommended that the NIH develop more programs to encourage underrepresented minorities such as Chicanos and Native Americans to apply for fellowships and grants. Universities that are funded by the NIH should also be required to implement diversity training of its grantees and increase faculty diversity. In addition, the NIH should also release raw data for the Ginther (2011) paper. The NIH should encourage resubmission of R01 applications since resubmission is low among these populations. SACNAS holds regional meetings to bring scientists and students together on a yearly basis, he said, and mentors interact with the students by serving as role models. At the meetings, students can present their work and poster sessions are judged. These types of additional opportunities help the students develop skills and communication in STEM areas of research. He said SACNAS is holding a meeting soon and he invited an earlier public comment

presenter, Dr. Maunakea, to attend. Besides the meetings, students also attend a one-week intensive leadership session, which includes preparation of a personal development plan. The SACNAS board is putting together a manuscript for a white paper on increasing workforce diversity.

Dr. Florez said that the committee heard during the day's meeting that increasing ethnic diversity of the review panel is a necessary step. The problem with the grant applications, he said, is that many do not get reviewed by the entire panel. Therefore, increasing the diversity may not help if there is not an opportunity for minority panelists to weigh in on applications from minorities. Dr. Marquez said that he also participated on review panels, so understands the grant process. In participating on review panels, he found that prejudices were not only against individuals, but against universities or organizations.

Dr. Tuckson requested that Dr. Marquez provide feedback on the report that Dr. Ruffin will prepare for the committee on lessons learned from the NIH funding programs to increase diversity in the workplace. Dr. Jenkins said that it is also important for the committee to obtain data in parallel for people that have not received similar funding, so Dr. Ruffin should include this type of information in his report.

The next presenter for the public comments session was Ms. Evangelina Montoya, an advocacy liaison for the National Association of Hispanic Nurses, Washington, DC Chapter. The organization, she said, advocates for Hispanics Nurses across the U.S. and currently has about 3,000 members. The organization recognizes a commitment to mentoring nurses and assisting them in career development. The workforce of nurses is aging, she said, and there is not enough interest by younger Hispanics to enter the field of nursing. In order to reach the community, she said that her organization's chapters can assist the NIH in disseminating information on workforce issues. She said educational barriers are primary factors in preventing Hispanics from pursuing nursing careers. The organization, she said, has several recommendations for the NIH committee to increase workforce diversity in the biomedical sciences, including (1) informing educators and counselors about the rewarding nature of nursing careers, (2) establishing an improved system of dissemination of education information on career paths to younger individuals, (3) increasing funding to community colleges for nursing programs and health researchers, and (4) developing a private sector-based association of Hispanic nurses.

Dr. Tuckson said that another individual, Dr. Alberto Roca, submitted a comment to the committee. Dr. Roca founded the Post-doc Committee of SACNAS in 2003 and founded a Web site, [MinorityPostdoc.org](http://MinorityPostdoc.org), to draw attention to underrepresented post-doctoral professionals. In his submitted comments, Dr. Roca said that many resources have been spent on the earlier aspects of the Ph.D. training pipeline (e.g., K-12 and undergraduate degree work) and very few resources have been focused on the needs of advanced Ph.D. graduate students and post-doctoral professionals. He proposed several suggestions for redirection of federal funding to these individuals, including (1) scholarships to understand career preparation and outcomes of current minority post-doctoral professionals, (2) professional development to prepare post-doctoral professionals for the demands of careers in academia (e.g., developing writing skills for publications, fellowships, and grants), and (3) proactively recruiting for openings to assist post-doctoral professionals in finding jobs, particularly tenure-track positions. He said the lone

mentorship model is not successful and the NIH needs to implement alternative methods of training, including a committee of mentors, career center access for post-doctoral professionals, and ensuring that departments are tracking their post-doctoral staff by holding departments accountable to produce publications on post-doctoral researchers' progress after leaving the institution.

Dr. Cohen said that the committee needs to know information on the percentage of post-doctoral professionals that enter faculty careers in academia and what type of disparity exists among minority populations for entering academia. Prior to the close of the meeting, Mr. Justin Hentges informed the committee that all of the handouts from the day would be electronically copied and distributed to the committee members by email.

Dr. Tuckson suggested that the committee hold a conference call to further discuss the issues of the committee. During the conference call, the committee would discuss pipeline issues, deliverables, data asked for during the day's meeting, and the R01 process. Dr. Bonham recommended that the committee discuss further the loan repayment program, and consider making a recommendation regarding loan repayment, possibly suggesting ongoing evaluations of loan repayment.

Dr. Tuckson said that proper control groups are missing with regard to institutions and other organizations that have not received funding. It is important also, he said, to know where money was spent and the lessons learned from those funding programs on the pipeline and workplace diversity, so that decisions can be based on those lessons. Dr. Tuckson asked Dr. R. Wilson to head a small subgroup of the committee to look at the MARC and MBRS programs with regard to evaluation. Dr. R. Wilson agreed. Drs. Ruffin, Bonham, and Jenkins will also be on the subcommittee.

The meeting was adjourned by Dr. Tuckson at 3:45 p.m.

## Action Items

- Dr. J. Wilson will provide an assessment of what is known and what is not known for preparing young African Americans to take a career in the biomedical sciences and STEM.
- Dr. J. Wilson will review the meeting transcript and provide feedback to ensure accuracy and precision with regard to his discussions.
- Ms. Chaves will ask her colleagues whether any risk prediction models have been developed to evaluate the low retention rates at AANAPISIs.
- Mr. Mendoza will provide the committee with a summary of the current thinking about the educational pipeline and his organization's recommendations for improving the pipeline for American Indian and Alaska Native students and communities.
- Ms. Quinteros will provide the committee with data for students in the HSHPS programs that have been successful in obtaining funding from the NIH.
- Dr. Marquez will provide feedback on the document that will be prepared by Dr. Ruffin on lessons learned from the NIH funding programs to increase diversity in the workplace.
- Committee questions and requests for additional information:
  1. Dr. Bonham would like the committee to find out about the usefulness of cross-cultural mentors to these students.
  2. Dr. Cohen said that the committee needs to know information on the percentage of post-doctoral professionals that enter faculty careers in academia and what type of disparity exists among minority populations that preclude academic careers.