

**National Institutes of Health (NIH)
National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)**

**Network of Minority Health Research Investigators (NMRI)
13th Annual Workshop**

**Bethesda Marriott
Bethesda, MD
April 16–17, 2015**

Final Meeting Summary

Thursday, April 16, 2015

INTRODUCTIONS

*Rhonda Bentley-Lewis, M.D., M.B.A., M.M.Sc., Assistant Professor of Medicine, Harvard Medical School/Massachusetts General Hospital
Winnie Martinez, Program Officer, NMRI, NIDDK, NIH*

Dr. Rhonda Bentley-Lewis, chair of the NMRI Planning Committee, welcomed the participants to the 13th Annual Workshop of the NMRI. NMRI, established in 1999 by the Office of Minority Health Resource Center at the NIDDK, was designed to comprise biomedical research investigators and technical personnel interested in minority health research and to include individuals from populations traditionally underrepresented in biomedical research. The mission of NMRI is to: (1) encourage minority health investigators to be researchers in fields of interest to the NIDDK; (2) promote two-way communication between members of NMRI and the NIDDK; (3) gather recommendations for strategies to enhance opportunities that not only support but advance underrepresented individuals and others in biomedical research; and (4) advance scientific knowledge and contribute to the reduction and elimination of racial and ethnic health disparities.

Dr. Bentley-Lewis stated that NMRI falls under the leadership of Dr. Griffin P. Rodgers, Director of the NIDDK, and Dr. Lawrence Agodoa, Director of the NIDDK's Office of Minority Health Research Coordination (OMHRC), and is supported and guided by Ms. Winnie Martinez. Dr. Bentley-Lewis expressed appreciation to the NMRI Planning Committee, the NMRI Oversight Committee, and the professional societies that helped support the meeting, including the previous evening's Reception/Networking Event sponsored by the American Gastroenterological Association.

Ms. Martinez thanked the attendees for their participation and attendance on behalf of Dr. Agodoa, who expressed pride regarding the group's accomplishments. Dr. Bentley-Lewis invited all of the meeting participants to introduce themselves to the group.

WELCOMING REMARKS

Our Diverse Health Challenges Require a Diverse Workforce

Gregory Germino, M.D., Deputy Director, NIDDK, NIH

Dr. Gregory Germino welcomed the meeting participants on behalf of Dr. Rodgers and the NIDDK. Dr. Germino stated that the research mission of the NIDDK, one of NIH's 27 Institutes and Centers, is to support and conduct research on common, costly, and consequential diseases that affect nearly all of the organs below the diaphragm as well as a few above, such as the esophagus. The NIDDK is divided into the Office of the Director, three extramural divisions (Division of Diabetes, Endocrinology, and Metabolic Diseases; Division of Digestive Diseases and Nutrition; Division of Kidney, Urologic, and Hematologic Diseases), the Division of Intramural Research, the Division of Extramural Activities, the Office of Obesity Research, OMHRC, and the Division of Nutrition Research Coordination.

NIDDK's funding portfolio includes both basic and clinical research. The NIDDK's budget for fiscal year 2014 was \$1.7 billion, with an additional \$150 million special appropriation for type 1 diabetes research that also includes funds to other Institutes and the Centers for Disease Control and Prevention (CDC). Extramural activities account for 80 to 85 percent of the budget, approximately 9 percent is dedicated to the intramural program, 4 percent is allotted to overhead, and some goes to contracts that support administrative and research activities. Dr. Germino stated that NIDDK aligns its budget with its core principles, which are to: (1) maintain a vigorous investigator-initiated research portfolio; (2) support pivotal clinical studies and trials; (3) preserve a stable pool of talented new investigators; (4) foster exceptional research training and mentoring opportunities; and (5) ensure knowledge dissemination about clinically impactful research. That is, approximately 60 percent of NIDDK's budget supports R01 awards; 15 to 20 percent supports other R award mechanisms; 15 to 20 percent supports clinical consortia, networks, and other initiatives; and the remaining funds support training and career development (e.g., K awards).

Dr. Germino remarked that many diseases that fall within NIDDK's primary mission disproportionately affect African Americans, Native Americans, Hispanic Americans, Pacific Islanders, and Asian Americans. He elaborated on the large ethnic and racial differences that exist in prevalence rates of obesity and diabetes. Obesity has become a critical national and global concern because it fuels multiple medical problems and its risks are significant for morbidity and premature death. Obesity is a major risk factor for type 2 diabetes, and the burden of diabetes is paralleling that of obesity both in the United States and globally. Dr. Germino stated that in the United States in 2012, 9.3 percent of the population (29.1 million people) were affected by diabetes, a number that could increase to 33 percent by 2050. Among Americans 20 years of age or older with diabetes, racial and ethnic age-adjusted percentages are 15.9 percent for Native Americans, 13.2 percent for non-Hispanic African Americans, 12.8 percent for Hispanics, 9 percent for Asian Americans, and 7.6 percent for Non-Hispanic whites. Diabetes is the seventh leading cause of death, the leading cause of new blindness among adults ages 20 to 74, a major cause of lower limb amputations, and a cause of major birth defects. In addition, it increases the risk of heart disease two- to fourfold and is the leading cause of irreversible kidney failure. The annual financial cost of diabetes is \$245 billion.

Dr. Germino informed the audience about end-stage kidney disease (ESKD). He said that 115,000 Americans began ESKD therapy in 2011 and that patient care for ESKD cost approximately \$29 billion (2012 figure). The adjusted 5-year survival rate for individuals with ESKD, without a transplant, is worse than for many cancers. ESKD affects different groups at different prevalence rates, but Dr. Germino noted that research coupled with implementation of science has changed the curve for the Native American population, although rates are still high, particularly in the African American community.

Genetic research has uncovered the Apolipoprotein L1 (*APOLI*) gene to be a factor that has causal variance associated with a highly increased risk of ESKD in African Americans. The *APOLI* variant not only is associated with hypertensive ESKD, but it is also the major reason that African Americans have a 60-fold increased risk of HIV nephropathy. Dr. Germino explained that this variant has become common because it is protective against trypanosomes (sleeping sickness infection); when the environmental factor is removed, however, the variant becomes a risk factor.

Dr. Germino presented several examples of the NIDDK's commitment to finding effective treatments for all individuals in the American population. The landmark Diabetes Prevention Program compared lifestyle modification, metformin, and conventional treatment across more than 3,000 Americans with pre-diabetes and demonstrated that lifestyle modifications made a dramatic improvement in delaying the transition from pre-diabetes to diabetes. The Look AHEAD trial showed that individuals with type 2 diabetes treated with intensive lifestyle intervention lost more weight; showed improved fitness, glucose control, blood pressure, and high-density lipoprotein levels; and required less medication. Cardiovascular risk, however, did not change. The African American Study of Kidney Disease and Hypertension revealed that most African Americans with hypertensive kidney disease had progressive chronic kidney disease (CKD) despite aggressive blood pressure control.

Dr. Germino emphasized the need to tap into the full expertise of all communities in the United States to inform research questions and find effective solutions. Currently, research award rates vary across populations, with African Americans having lower success rates in obtaining R01 grants. Dr. Germino stated that resources must be increased to help diversity the workforce and bring more people into the pipelines at an earlier stage. Examples of research and training opportunities include the Short-Term Research Experience for Underrepresented Persons (STEP-UP) program, R03s for clinical scientists, F31 predoctoral fellowships, research supplements to promote diversity in health-related research, and travel awards.

Dr. Germino acknowledged that the future of research funding is uncertain, especially with the ongoing dialogue in the United States about the role of government. He stated that passion and outcomes will drive the community forward. Dr. Germino celebrated the successes of the researchers at the meeting and noted the celebration of National Minority Health Month with Department of Health and Human Services Secretary Sylvia Mathews Burwell. Dr. Germino wished a great meeting and thanked the audience for its support of NMRI.

Discussion

In response to a question about the relationship between low minority participation rates and the review process, Dr. Germino confirmed that the NIH Center for Scientific Review (CSR) is attempting to broaden recruitment strategies. CSR is in the process of conducting pilot studies that test unconscious bias by stripping away information that might reveal investigator identities.

A participant asked about the success rate of students from the STEP-UP program entering science or research programs. Dr. Germino replied that tracking individuals post training is difficult, particularly those earlier in the pipeline who may not end up pursuing an academic career. To help resolve this issue, the NIH is considering using universal identifiers. Dr. Germino expressed enthusiasm for the addition of Dr. Hannah Valentine to the NIH as its first Chief Officer for Scientific Workforce Diversity. NIH intramural programs are attempting to broaden recruitment strategies with her assistance.

A meeting participant asked how best to communicate to Congress the importance of government funding of scientific research. Dr. Germino responded that the challenge lies in the "disconnect" between dialogue and facts and noted that evidence and education alone cannot change the funding landscape. The NIH

strives to ensure that its funds are kept robust and can be utilized as the NIH, with input from its scientific and workforce communities, sees fit.

An audience member asked whether genotyping of African Americans has become routine. Dr. Germino responded that he is certain that the *APOLI* discovery, made only a few years ago, will have an impact on clinical practice. For example, because kidneys with the *APOLI* variant perform less well in transplants, a relevant question is whether such a kidney should serve as a donor. Dr. Germino added that an upcoming *APOLI* conference will be taking place at the NIH.

The audience member also asked whether the NIH contextualizes change in the availability of NIH funds in the funding environment. Dr. Germino remarked that administrative issues are difficult and are being discussed internally with division directors. He noted that young investigators who have received a K award have a favorable success rate of obtaining an R01 award. He recognized the uncertainty in the budget but was optimistic about its stability.

KEYNOTE SPEAKER

Leveraging Failure and the Unexpected for Success: Instructive Anecdotes in a Quest to Understand Myocardial Autophagy

Dale Abel, M.D., Ph.D., Professor of Medicine and Biochemistry, Roy J. and Lucille A. Carver College of Medicine, University of Iowa

Dr. Dale Abel thanked Dr. Bentley-Lewis for extending an invitation to him to present as NMRI's Keynote Speaker. He said that he attended the inaugural NMRI meeting over 13 years ago and has benefitted from NMRI's emphasis on mentorship, networking, and other principles. Dr. Abel outlined his presentation as consisting of two parts: an overview of a project arising from his scientific research program and some reflections on areas that have impacted him and his career. He acknowledged the contributions of the members of his laboratory as well as his funding sources, including the NIH, Juvenile Diabetes Research Foundation, American Diabetes Association, and American Heart Association.

Dr. Abel's laboratory focuses on cardiovascular complications of diabetes, specifically the role of aberrations in insulin signal transduction within the cardiomyocyte. Dr. Abel explained that when insulin binds to tyrosine kinase receptors, these receptors interact with intracellular molecules that include insulin substrate receptor (IRS) proteins. IRS proteins activate a variety of intercellular signaling pathways that lead to increased metabolism, protein synthesis, and inhibition of cell death. Dr. Abel said that his laboratory stumbled into work on the process of autophagy, the intracellular degradation system induced during starvation in which autophagosomes engulf organelles and then fuse them with lysosomes to degrade their content. Autophagy is a highly regulated process because it must balance the accumulation of organelles with the degradation of cells. A number of autophagy-related (Atg) proteins were identified in yeast and shown to be conserved through mammalian systems. One such Atg protein, LC32, is a marker of autophagosomes and can be used to track the autophagy process. Dr. Abel described how a temporary fasting situation, as occurs overnight during sleep, induces cardiac autophagy *in vivo*. The parallel increase in insulin signaling provides evidence that autophagy might be regulated by insulin signaling. Dr. Abel added that the very dynamic process of fasting-induced autophagy is reversed within an hour of refeeding.

Dr. Abel stated that his laboratory has used a variety of genetic strategies to perturb various aspects of the insulin signaling pathway in the heart. He explained that the insulin receptor and the insulin-like growth factor 1 (IGF-1) receptor cross-talk with each other in cardiac muscle and that the laboratory spent many years attempting to determine the extent of each one's effect on heart size. The laboratory learned that

insulin signaling plays a crucial role in multiple facets of mitochondrial function and in how the heart responds to stress.

Dr. Abel shifted to a story about a bright former student named Christian whose goal was to perform his research, publish journal articles, and return to Germany within 18 months. Dr. Abel convinced Christian to pursue a project that would knock out the IRS signaling complex in mice. When it was clear that the mice were all dying at 4 weeks, however, Christian requested a new project. Dr. Abel encouraged Christian to determine what was leading to the premature mortality. At that point the researchers heard a presentation about autophagy, which led them to investigate the potential role of autophagy. Their experimental results revealed a dramatic increase in myocardial autophagy 24 hours after birth, supporting earlier observations that autophagy is an important survival mechanism that maintains the energy status of critical organs (e.g., heart, liver, diaphragm) in the perinatal window. Autophagy represents a critical survival mechanism in the face of short-term caloric restriction. Dr. Abel then convinced Christian to determine how an animal knows to turn off autophagy once it starts feeding. Christian performed experiments to examine the potential mechanisms by which autophagy could be suppressed. Christian determined that the animals could not sense an increase in insulin.

Dr. Abel stated that although autophagy in the model might have been due to insulin signaling, it was still unclear why the animals were dying. Experiments so far had consisted of a series of observations, but a mechanistic experiment was needed to test whether animals with inhibited autophagy lived longer. Therefore, Christian injected mice with amino acids or saline every day for 1 month. The animals that received saline had thin, fibrotic hearts and were dying of heart failure, whereas the animals that received amino acids had histologically healthy hearts and lived longer. To prove their hypothesis and complement the experiments that showed success using a pharmacologic approach, Dr. Abel and Christian performed an expensive experiment that would delete a gene, Beclin 1, from the mutant mice (which already had two deleted genes) to prohibit autophagy genetically. Beclin 1 haploinsufficiency prevented suppressed autophagy and fixed the heart. Dr. Abel stated that the data supported the hypothesis that insulin signal transduction is a physiological regulator of autophagy during the fasting-to-feeding transition as well as upon refeeding. The paper was finally submitted and published, and Christian was ready to return to Germany after spending more than the originally planned 18 months.

Dr. Abel urged Christian to try to determine whether the paradigm they described is true also in the adult heart. Using genetic engineering, they generated a variety of mutant animals in which they could delete genes in the adult heart. When the researchers acutely removed insulin receptor and IGF-1 signaling, the hearts failed within 1 week, which was very acute and dramatic heart failure. Suppression of autophagy did not reverse heart failure. In a final experiment, the researchers performed a genomics screen that revealed that nearly the entire genetic program that regulated sarcomeres, the muscle structures within the heart, and gap junctions, which are located between cardiac muscle cells, were unexpectedly repressed. Overall, Dr. Abel and Christian showed through this series of studies that insulin and IGF-1 signaling serves as a “glue” that keeps the heart together. Dr. Abel emphasized Christian’s role in the aforementioned story to demonstrate how a project could be used to stretch a young researcher scientifically. Christian, who is now building his own independent research program, has acknowledged to Dr. Abel his appreciation of having been stretched.

Dr. Abel transitioned to reflecting on his personal career. He described the path up the academic ladder over the arc of one’s career as “navigating a very challenging environment.” Dr. Abel underscored the importance of consulting with senior members who have been through the process and can begin to demystify the academic process. Dr. Abel advised young faculty to focus on sustainability when evaluating offers, not only on the startup package. Citing his experience relocating from the University of Utah to the University of Iowa, he encouraged negotiating not only for what one’s laboratory needs but also what the program needs to sustain its success. Dr. Abel also described instituting an informal

monthly “chalk talk” during which investigators can present their grants to their peers to be vetted and refine their thoughts and concepts before forming specific aims. This approach has proven to be vital in increasing the competitiveness of grant applications particularly by early-stage investigators. He emphasized the need to adapt to changing funding climates.

RESEARCH SUPPLEMENTS TO PROMOTE DIVERSITY IN HEALTH-RELATED RESEARCH (PA-12-149)

Kevin McBryde, M.D., Program Director, OMHRC, NIDDK, NIH

Dr. Kevin McBryde presented both general and NIDDK-specific instructions regarding Research Supplements to Promote Diversity in Health-Related Research (funding opportunity PA-12-149), which he said is expiring in 2015 but will be renewed. He urged the participants to bookmark the website www.grants.nih.gov to find any information regarding funding opportunity announcements and application forms, dates, and types. Dr. McBryde guided the audience through a sample search on the website and noted that original funding opportunities are located at the bottom of results pages because subsequent Institute-specific notices and updates are added to the top.

Dr. McBryde stated that research supplements, which must be associated with an existing peer-reviewed parent award, are available through 24 NIH Institutes, each of which has a separate contact person and protocol for handling applications. Eligible parent awards include R, P, and U awards, and if a specific award type is not listed in the announcement, Dr. McBryde encouraged researchers to inquire with the relevant Institute’s contact person. The NIH seeks to reach a broad and diverse audience with this funding opportunity announcement, and candidates for support can range from a high school student up to a faculty member. He reminded the participants that new independent research projects cannot be introduced in a research supplement application.

Dr. McBryde also remarked on NIDDK-specific guidelines. He stated that the NIDDK’s review committee seeks candidates who have not yet received independent funding from the NIH. The NIDDK’s receipt dates are rolling, and reviews occur every month except in December, August, and September. The deadline for application submission is the first of each month at 5:00 p.m. local time, and the review takes place on the fourth Wednesday of the month. Applications can be submitted on paper, electronically via PDF, or through the older PHS 398 forms. The NIH encourages electronic submission for tracking purposes, but Dr. McBryde urged participants to submit in the format required by their institution’s grants office. He stated that the eRA Commons system does not allow the NIH to upload documents, so any administrative notes or notification letters are emailed to applicants manually.

Dr. McBryde offered advice to participants regarding the 6-page research strategy portion of the application. Dr. McBryde emphasized that applicants should *not* focus on the science (e.g., research, statistical analysis plans, innovation, pitfalls, alternative approaches) because the science has already been peer-reviewed through the supplement’s parent grant. Instead, the research strategy should focus on the candidate’s role in the project and the mentorship plan for the candidate, the application’s most important component. Supplements offer support for 1 to 5 years depending on the Institute; the NIDDK offers support for 2 years, with an option for a third year on a competitive basis.

A common question that Dr. McBryde receives is in regard to salaries. He stated that high school and undergraduates receive minimum wage but can be paid more if adequate institutional justification is provided. Postbaccalaureates and Master’s degree candidates can receive a maximum of \$42,840 (salary plus fringe benefits). Graduate students receive a salary of \$42,840, but this includes stipend, tuition, and fringe benefits (exact amounts are decided by individual institutions). Postdoctoral scholars can receive a maximum of \$50,000 (salary plus fringe benefits), and investigators can receive a maximum of \$70,000

(salary) or \$80,000 (with fringe benefits). Both postdoctoral scholars and investigators require a minimum commitment of 9 calendar months (0.75 effort).

Discussion

A participant asked how the term of one's R grant affects the ability to apply for a supplement. Dr. McBryde responded that applicants should have minimum of 2 years remaining on the parent award when applying for a supplement; however, the NIH will accept applications that have 1 year remaining on the parent award. In all cases, the supplement will end when the parent R01 ends. If the R01 is renewed, applicants can reapply for a continuation request for up to 2 years.

A meeting participant asked why candidates for supplements cannot be placed directly on the R01 parent grant. Dr. McBryde stated that the supplement program exists for those investigators whose R01s are unable to include the qualified candidate.

An audience member asked about the recommended time frame for submitting a supplement application. Dr. McBryde replied that applications are accepted at any time within the same fiscal year as the supplement's intended start date. Dr. McBryde reminded the audience that the NIH fiscal year is October 1 through September 30 and recommended submitting early in the fiscal year due to decreased funds later in the year. Dr. McBryde said that the NIDDK budget for supplements has dropped from \$12.5 million in the mid-2000s to \$6 million in 2014. The majority of the funds for the supplement program currently comes from the NIDDK Director's budget.

NATIONAL INSTITUTE ON MINORITY HEALTH AND HEALTH DISPARITIES (NIMHD)

Joyce Hunter, Ph.D., Deputy Director, Extramural Research Activities, NIMHD, NIH

Dr. Joyce Hunter presented on the NIMHD and its loan repayment program. She said that the NIMHD began as an office within the Office of the Director and was a direct response to a report published 30 years ago about the disparities that existed in the health of African American populations. With the passage of the Minority Health and Health Disparities and Education Act in 2000, the office became a Center and was given funding authority. With the passage of the Patient Protection and Affordable Care Act in 2010, the Center was elevated to an Institute.

Dr. Hunter said that the NIMHD's mission is to lead scientific research that will improve minority health and eliminate health disparities. The NIMHD accomplishes this by (1) planning, reviewing, coordinating, and evaluating all minority health and health disparities research activities across the NIH; (2) conducting and supporting research on health disparities; (3) promoting and supporting the training of a diverse research workforce; (4) translating and disseminating research information; and (5) fostering innovative collaborations and partnerships. When the office became a Center, Congress mandated that certain programs be put into place, including Centers of Excellence, an endowment program, and a loan repayment program. Dr. Hunter added that the NIMHD works very hard to foster collaborations with other Institutes and Centers, communities, local and state governments, and Federal partners.

The minority groups encompassed by the NIMHD are Hispanics, Asian Americans and Pacific Islanders, African Americans, Native Americans, and rural communities. A population is considered a health disparity population if there is a significant disparity in the overall rate of disease incidence, prevalence, morbidity, mortality, or survival rates in the population as compared to the health status of the general population. Dr. Hunter stated that there is a need to develop standard analytical approaches to how health disparities are measured; identify appropriate interventions and determine the right time over the life

course that an intervention can have the greatest health impact; measure the success of an intervention; and together with policymakers and stakeholders, determine how best to disseminate information in a community. She emphasized that health disparities research needs to be multidisciplinary, and toward this end, two summits held in 2004 and 2008 focused on the intersection of science, policy, and practice. In addition, diversity among researchers is needed to encourage participation in community-based research.

Dr. Hunter remarked that the NIMHD has begun a scientific visioning process to better define and identify health disparities and to create a robust, active research agenda for eliminating these disparities. Additional goals are to identify the most promising scientific opportunities of the next 10 years across the NIMHD's broad mission, to encourage and stimulate collaborative research across the spectrum of opportunities, and to set an ambitious agenda that inspires the research community to achieve critical scientific goals and meet pressing public health needs. The visioning process focuses on the future, not on the past; on the science, not on strategic planning; and on what the entire research community can accomplish together, not on what NIMHD can achieve alone. Dr. Hunter said that the NIH spends over \$2 million on health disparities research, but the definitions of minority health disparities research are inconsistent and must be reconciled. She added that a request for information to be released soon will target scientists, physicians, and policymakers.

The NIMHD supports four main types of extramural programs: Transdisciplinary and Translational Research (e.g., P20, P60, U54); Basic, Social, and Behavioral Research (e.g., R01, R24); Science Education and Research Training (e.g., LRP, T37, R25); and Research Capacity Building and Infrastructure (e.g., BRIC, U24). Dr. Hunter expressed particular enthusiasm for the NIMHD's Community-Based Participatory Research Program in which individual projects can last up to 11 years. Other programs include the T37 award, which is an international minority training program, and the R25 award, which has three tracks (i.e., a summer program for undergraduates and graduate students, a mentoring career development program for postdoctoral scholars, and a career development track for young investigators). In addition, the NIMHD has an endowment program, the Research Centers in Minority Institution Program, the Building Research and Infrastructure and Capacity program, and U24 awards. In addition, this year the NIMHD joined the R01 and K99/R00 parent grants.

Dr. Hunter discussed the NIMHD's two congressionally mandated loan repayment programs: the Loan Repayment Program for Health Disparities Research and the Extramural Clinical Research Loan Repayment Program for Individuals from Disadvantaged Backgrounds. These programs seek to recruit and retain qualified health professionals to research careers that focus on minority health disparities or other health disparities. Eligibility requirements include a doctorate-level degree, student loan debt greater than or equal to 20 percent of one's annual salary, U.S. citizenship or permanent residency, and a job not in the Federal government. Most loans are eligible, payments are made directly to the lender, and all of one's student loans can be consolidated. Dr. Hunter added that NIMHD's loan repayment program has supported over 2,000 recipients to date, the largest such program at the NIH. Dr. Hunter invited participants to visit www.lrp.nih.gov for additional information.

Discussion

In response to an audience question, Dr. Hunter stated that the NIMHD, unlike other Institutes and Centers, can support studies that are focused entirely on minority populations.

A question was asked about how to direct an application to the NIMHD. Dr. Hunter explained that all public health service applications are routed to the Center for Scientific Review, where they are read and referred to the appropriate Institute based on specific referral guidelines. An applicant also can request in a cover letter that his or her application be directed to a specific Institute.

SESSION I: ROUND TABLE DISCUSSIONS

Participants attended one of seven round table discussions focused on various career-oriented topics. Participants self-selected which discussion to attend.

Table 1: Health Disparity Research

Carolyn Tucker, Ph.D., Professor, University of Florida

Table 2: Research Supplement

Kevin McBryde, M.D., Program Director, OMHRC, NIDDK, NIH

Table 3: Setting Priorities for Success

Marion Sewer, Ph.D., Associate Professor, University of California, San Diego

Table 4: Community-Based Participatory Research

Cherise Harrington, Ph.D., M.P.H., Assistant Professor, George Washington University

Table 5: How to Budget and Manage Your Funds (Basic and Clinical)

Sylvia Rosas, M.D., M.S., Assistant Professor of Medicine, Joslin Diabetes Center/Beth Israel Deaconess Medical Center

Mark Lawson, Ph.D., Professor, University of California, San Diego

Table 6: Strategies for Successful Recruitment (From the Perspective of a Candidate or a Chair)

Dale Abel, M.D., Ph.D., Professor of Medicine and Biochemistry, Roy J. and Lucille A. Carver College of Medicine, University of Iowa

Table 7: Patient-centered Outcomes Research Institute (PCORI)

Michael Flessner, M.D., Ph.D., Director, Inflammatory Renal Diseases, Division of Kidney, Urologic, and Hematologic Diseases, NIDDK, NIH

Table 8: Grant Writing Tips

Bessie Young, M.D., M.P.H., Associate Professor, University of Washington

Patricia Heyn, Ph.D., Assistant Professor, University of Colorado Denver, Anschutz Medical Campus

Table 9: How to Give Effective Presentations

Senta Georgia, Ph.D., Assistant Professor, Children's Hospital Los Angeles

SESSION II: MOCK STUDY SECTIONS

Participants attended one of four Mock Study Sections. Each session covered different types of NIH awards: R01/Basic, R01/Clinical, K01/Clinical and Basic, and R03. The four study sections were comprised of a Scientific Review Officer (SRO) and a Chair, as noted below. Session leaders were given sample grant applications to review and critique, and the SRO led a discussion of the feedback sessions.

Study Section 1: R01/Basic Grant

SRO: *Ann Jerkins, Ph.D., SRO, NIDDK, NIH*

Chair: *Jose Romero, Ph.D., Associate Physiologist, Harvard Medical School*

Study Section 2: R01/Clinical

SRO: *Maria Davila-Bloom, Ph.D., SRO, NIDDK, NIH*

Chair: *Susanne Nicholas, M.D., Ph.D., M.P.H., Associate Professor of Medicine, University of California, Los Angeles*

Study Section 3: K01/Clinical and Basic

SRO: *Robert Wellner, Ph.D., SRO, NIDDK, NIH*

Chair: *Senta Georgia, Ph.D., Assistant Professor, Children's Hospital Los Angeles*

Study Section 4: R03

SRO: *Michelle Barnard, Ph.D., SRO, NIDDK, NIH*

Chair: *Rhonda Bentley-Lewis, M.D., M.B.A., M.M.Sc., Assistant Professor of Medicine, Harvard Medical School/Massachusetts General Hospital*

SPECIFIC AIM REVIEW WITH SENIOR NMRI MEMBERS

Participants who signed up to meet with a senior NMRI member had the opportunity to discuss and receive feedback on the specific aims of an upcoming grant proposal. During the session, senior members reviewed the specific aims and advised on areas of improvement.

NEGOTIATION: MANAGING YOUR ACADEMIC CAREER

Ricardo Azziz, M.D., M.P.H., M.B.A., President, Georgia Regents University

Dr. Ricardo Azziz presented on managing and negotiating one's academic career and offered several pointers and primers for the audience to consider. Dr. Azziz explained that negotiation is a formal discussion between people who are trying to reach an agreement and that successful negotiation begins with an understanding of the other person's position, needs, advantages, and disadvantages. Dr. Azziz urged the participants to understand the roles and responsibilities of their director, chair, or dean, who have many responsibilities: to assure fiscal integrity, establish or enforce the institutional mission and vision, establish priorities, balance institutional versus local priorities, assure internal fairness and balance, assure regulatory compliance, maintain faculty morale, reduce turnover, and help faculty achieve their potential.

To help the audience begin to understand academic politics in the context of negotiation, Dr. Azziz discussed the value of three elements: experience, relationships, and a clear professional vision. Experience reflects not titles but goals accomplished, tasks completed, and projects managed. Dr. Azziz advised the participants to pursue, measure, and document their experience and emphasized that leadership is a learned skill set and a continually developing process. He recommended that participants seek role models, which he contrasted from mentors as being individuals with a desired ability (e.g., to be creative, to balance work and family life). Dr. Azziz described academia as a matrix framework of relationships with no clear objective. He encouraged participants to develop a network both across their organization and beyond and, when requesting advice, to do so in a more formal way (i.e., not to ask directly for mentoring). He also reminded the audience not to confuse a supervisor with a mentor. Dr. Azziz stated that having a clear professional vision is important when negotiating. He advised the participants to establish short- and long-term goals and to prioritize them, adding the caveats that no two priorities are the same and that a list with more than three priorities becomes a to-do list.

Dr. Azziz shared three questions that he commonly is asked. First, many people wonder why they do not receive more recognition and positive reinforcement. He offered three possible reasons—one's superiors

are lacking, one's extraordinary talent is hidden, or one is merely meeting expectations—and said the true reason is typically a combination of these factors. Second, faculty often ask why they were not named to a given position. Dr. Azziz said that the most likely reason is a lack of experience to perform the job. He urged the participants to gain any needed experience above and beyond what their current job requires. Third, many people ask why they are not given something that they requested (e.g., funds, laboratory support). Dr. Azziz said that most likely this is because the chair or dean must prioritize requests with a limited budget and other restrictions. Dr. Azziz described understanding the perspective of one's managers as the art of "managing up" and stressed the need to develop this skill set.

Dr. Azziz advised young researchers to understand the faculty promotion process; the specific protocol and regulations governing promotion and tenure; the requirements of different academic tracks; and the expectations of the chair, promotions committee, dean, and institution. He recommended planning in advance, establishing milestones in one's career, and being willing to be very rigorous with oneself. Common mistakes include seeking promotion prematurely, not discussing promotion with one's director or chair in advance, and not managing and formatting one's curriculum vitae (CV) with care.

Dr. Azziz shared the quote, "The one quality that can develop by studious reflection and practice is the leadership of men." He encouraged the participants to understand their leadership competencies, leverage their strengths, and work to compensate for their weaknesses. Dr. Azziz asserted that an effective leader is compassionate but firm and should act fast if needing to dismiss an employee. Other critical leadership skills include "reading the tea leaves and watching the smoke signals"; managing transformation and change; and communicating in a complex, heterogeneous environment. He added that many people incorrectly believe that they have communicated simply because they said something or sent an email. Regarding career transitions, Dr. Azziz suggested minimizing change if possible, or at least establishing oneself thematically around a research area before moving to another institution.

Regarding the deficit in faculty diversity at universities, Dr. Azziz said that there are multiple causes, including a narrow pipeline. Dr. Azziz noted that recent research suggested that interest in pursuing a subsequent faculty position drops with training and that interest among minority men and women drops more significantly than among majority men, at least for faculty positions at research-intensive universities. Furthermore, a paucity of minority leadership in academia who can serve as role models also is an issue in enhancing the diversity of the faculty body. Dr. Azziz added that the value of diversity is under-recognized in general and should be presented as the "right" business decision. Finally, he acknowledged the need to maximize "fit" in academics and leadership.

Discussion

A meeting participant asked how to decipher what one's chair was hired to accomplish, particularly if the chair is new. Dr. Azziz recommended a number of approaches, including listening closely at department meetings, speaking with senior faculty, and meeting with the chair.

In response to a question about CVs, Dr. Azziz recommended that the ratio of original publications to chapters and reviews be no more than 2–3 to 1. In addition, a CV with many outside or invited presentations tells the reader that the person is spending a significant amount of time (likely too much) away from his or her institution.

Another participant asked about the need to hire a lawyer to review one's negotiation contract. Dr. Azziz recommended that young faculty consult a knowledgeable lawyer in contract negotiations, but he added that he advises the young faculty that it is better if they are the ones executing the negotiation. At the end of the day, Dr. Azziz said, being hired is an act of mutual trust.

An audience member commented that Dr. Azziz seemed to be advocating compliance and wondered about dependency on the negotiation process, especially given that conflict drives change. Dr. Azziz clarified that his mention of compliance was in reference to regulatory compliance (e.g., Institutional Review Boards, human subjects), not to being “compliant” with everything that is said or decided upon. He asserted the importance of vocalizing one’s ideas in a positive way.

A meeting participant inquired about how to gain leadership experience if one is not getting promoted to leadership positions. Dr. Azziz suggested volunteering to be part of different tasks, duties, and services at one’s institution.

In response to a question about creating a new title for oneself, Dr. Azziz said that a new title can be a good tool in negotiation, but that the new title proposed should be nonthreatening to others, occur at no cost to others, and be genuinely meritorious. In addition, its receipt should not detract very much from the possibility of other tangible gains (i.e., real monetary resources).

MARCO CABRERA POSTER AND NETWORKING SESSION

Meeting participants were invited to view the posters submitted to the NMRI Annual Workshop. During the poster review, judges observed the posters and spoke with presenters. Winners were chosen for each of three categories: Basic Science, Translational Science, and Clinical Science. Awards were presented to the winning recipients on the second day of the workshop.

DINNER SPEAKER

Mapping a Path toward Career Success

Joan Reede, M.D., M.S., M.P.H., M.B.A., Dean for Diversity and Community Partnership, Harvard Medical School

Dr. Joan Reede presented on the elements valuable to career development and reviewed the critical questions of what, when, where, who, and why.

Dr. Reede explained that “what” begins with a self-assessment of one’s gifts, talents, knowledge, skills, interests, passions, and strengths through one’s own lens, not through the lens of others. Strengths can be identified through a modified 360-degree assessment or by asking one’s supervisors and colleagues. Dr. Reede suggested developing a single outstanding strength by selecting one strength on which to focus, thinking about skill development in an asset way, and framing the skill in a way that is valuable to one’s organization. Another “what” component is one’s personal definition of success. For some, success means promotion; for others, it means autonomy or the responsibility of solving large problems. Dr. Reede cautioned against allowing others to define success and advised the participants to be willing to take risks such as moving laterally within an organization, realigning as interests change, moving out of an organization.

Dr. Reede shifted to a discussion of “when,” highlighting that career paths are dynamic and that priorities, interests, and funding environments shift throughout one’s career. Through changes in funding climate, she encouraged staying aligned with one’s interests but reframing them in such a way that allows funding to be sustained and forward career progress to be made.

In her discussion of “where,” Dr. Reede used the analogy of an iceberg that is 10 percent above water and 90 percent below to represent the operation of an organization. She shared a quote: “A strength you feel passionate about that is not important to an organization is essentially a hobby, and a strength an

organization needs that you do not feel passionate about is just a chore.” In the academic world, she advised the participants to ensure that they are given the resources they need to succeed, such as autonomy, opportunities for promotion or advancement, and strategic committee assignments. Because people of color are often requested to join committees, she advised the participants to find a balance regarding committee membership and to be strategic about knowing how to say “no.” Dr. Reede prefers to be on committees that either will help her understand the organization or that distribute funds and resources and set the policy within the organization. She suggested asking why one is being considered for this committee and also reminded the participants that the duration of a commitment to a committee can be as little as 1 or 2 years. Volunteering for committees and assuming stretch assignments is another way to gain experience.

Dr. Reede said that the “who” is about the supports, networks, role models, advisors, mentors, and other people inside and outside the organization who can help with career progress. She recommended considering the purpose of each relationship (e.g., career development, knowledge and skills, understanding of the professional landscape, access to resources, emotional support, career outcomes) and setting reasonable expectations about mentoring and networking outcomes. Mentoring should allow both individuals to gain in the relationship. Dr. Reede noted that high performers have ties to a broad network, including those who provide personal support and promote a sense of purpose and work/life balance.

Briefly commenting on the “why” in regards to career development and purpose, Dr. Reede emphasized the need to make choices and decisions that are in line with one’s values and desired contributions to the world. She offered the quote, “Chance favors the prepared mind.”

Dr. Reede shifted to a discussion of the work of the Office for Diversity Inclusion and Community Partnerships at Harvard Medical School. One of its projects was awarded a NIH Pathfinder Award for Diversity, which is granted to projects that tackle issues of diversity in the United States and consider new ways to conduct research to change the dialogue and bring new understanding. The project focused on diversity inclusion, which is the way in which diversity is embedded within an organization’s policies, practices, and programs, and how people are connected within that organization. Early findings have shown that across all age groups, coauthorship reach and connections are lower for women than for men and for underrepresented minorities than for others. When controlling for factors such as institution, number of years at institution, number of publications, race and ethnicity, and discipline, one’s network of connections within an organization shows a relationship with one’s success in advancing within the institution. Dr. Reede advised the participants to expand the range of their network outside of their discipline and to consider each potential mentor’s reputation, experience, expertise, organizational position, accessibility, prior mentee references, and personal qualities. Dr. Reede cautioned about the existence of “de-mentors” and “tor-mentors.”

Discussion

A meeting participant asked how she should respond when a person she met yesterday does not remember her. Dr. Reede replied that the person simply might be thinking about something else or might behave this way toward everybody. If handing out a business card, Dr. Reede advised the participant to note on its back the meeting location or common interest to trigger the person’s memory in the future. She also recommended a follow-up phone call or note and, when reaching out regarding career advice, including specific questions and attaching a CV.

A meeting participant asked Dr. Reede to speak to the costs of success in academia, noting that some students pursue nursing after completing their Ph.D. because of the effort and time to achieve success in the academic realm. Dr. Reede reminded the participant that nurses can conduct research through the NIH Institute of Nursing. She advised not judging students on the path they take, recognizing that Ph.D.

training is a funnel through which not all can pass. She emphasized the need to push the dialogue further because young students have a limited understanding of career paths and the options available to them.

In response to a question about how to identify significant committees and unwritten rules, Dr. Reede suggested inquiring about the work that the committee does, its membership, to whom the committee reports, and when and how often the committee meets.

A meeting participant asked about the biggest challenge Dr. Reede has faced. Dr. Reede responded that, as a single mother, supporting her daughter as Dr. Reede suffered from cancer was a major challenge. She did not fully realize the severity of the impact on her daughter until reading her daughter's college essays years later.

Friday, April 17, 2015

MENTOR/MENTEE SESSION

On the first day of the meeting, junior investigators were given the opportunity to sign up to meet with one of several senior investigators who were willing to serve as mentors. During the session, each mentor hosted a roundtable discussion with his or her mentees, answering questions and offering advice.

BUSINESS MEETING AND COMMITTEE REPORTS

Planning Committee Report

Rhonda Bentley-Lewis, M.D., M.B.A., M.M.Sc., Assistant Professor of Medicine, Harvard Medical School/Massachusetts General Hospital

Dr. Bentley-Lewis reported on the activities of the NMRI Planning Committee, which met monthly via conference call to plan the agenda for the Annual Workshop, review abstracts, select oral presenters, and establish the travel budget. She invited all meeting attendees to become members of the Planning Committee and thanked Ms. Martinez for her hard work.

Dr. Bentley-Lewis requested that all attendees complete an evaluation form for the meeting. These forms are used collectively to plan the next NMRI workshop. For example, the Planning Committee added the Networking Reception, Mock Study Section for R03, and the Specific Aim Review with Senior NMRI Members to this year's meeting agenda based on feedback from last year's evaluations.

Dr. Bentley-Lewis acknowledged Dr. Agodoa, Ms. Martinez, the NMRI Oversight Committee, and the meeting's sponsors for their support. Dr. Bentley-Lewis welcomed Dr. Heather Tarleton as the upcoming chair of the Planning Committee.

Oversight Committee Report

Leonor Corsino, M.D., M.H.S., Assistant Professor, Duke University School of Medicine
Shirley Blanchard, Ph.D., Associate Professor, Creighton University

Dr. Leonor Corsino reported on recent accomplishments of the NMRI Oversight Committee. The Committee's major responsibility is the successful maintenance of NMRI through activities such as facilitating the development of active mentoring relationships between senior and junior members, identifying new members and planning outreach activities, establishing specific groups of NMRI

members, coordinating with professional societies that host annual meetings attended by NMRI members, exploring mechanisms to evaluate NMRI effectiveness in terms of outcomes, and ensuring that NMRI members and activities fall within the specific programmatic areas of the NIDDK.

The Oversight Committee began several initiatives in 2014 to 2015: (1) increasing visibility with partner associations; (2) gaining foundation funding to supplement NIDDK support for the 2015 Annual Workshop; (3) establishing a long-term collaboration with the American Society of Nephrology (ASN), which sponsored 15 fellows to attend the NMRI Annual Workshop; and (4) forming partnerships with foundations to disseminate information about NMRI. Dr. Corsino stated that ongoing challenges and opportunities for NMRI include recruitment, retention for senior members, mentoring, additional partnerships with societies and foundations, and ensuring a sustainable budget and support. The Oversight Committee seeks to (1) expand opportunities for NMRI members to contribute meaningfully to reducing health disparities, (2) foster collaborations and have multiple principal investigators on grant applications, (3) increase regional participation, (4) train members to diversify their funding streams due to the difficult funding environment, and (5) impact health policy.

Dr. Corsino reviewed the many opportunities that exist to become involved in NMRI's activities and mission. She invited participants to recruit others to join NMRI, sign up for the mentor-mentee program, volunteer to coordinate an interest group, serve as a NMRI representative/liaison with societies or foundations in areas of interest, serve on the Planning or Oversight Committees, help raise funding to increase support for NMRI meetings, and inform NMRI of what it could do to help foster success.

Dr. Corsino expressed special thanks to Dr. Agodoa, Ms. Martinez, the Planning and Oversight Committees, and the NIDDK. She introduced Dr. Luis Cubano as next year's Chair of the Oversight Committee.

Dr. Shirley Blanchard, a member of the Oversight Committee, presented information from the results of the 2014 NMRI evaluation forms in comparison with those of the 2013 evaluation forms.

In 2013, 34 NMRI members responded to the questionnaire. Twenty-two (65%) held the rank of Assistant Professor, and 8 (24%) held the rank of Associate Professor. Eleven (31%) were tenured, 8 (23%) were tenure-track, 16 (46%) were nontenured. The average income was \$115,000. Respondents indicated that being a member of NMRI supports the tenure process primarily through networking, mentor advice, grant application success, and promotion and tenure advice.

In 2014, 60 NMRI members completed the questionnaire. Twenty-four (40%) held the rank of Assistant Professor and 12 (20%) of Associate Professor. A marked increase was seen in the number (8) of "other" ranks (e.g., clinical scholar, research scientist, staff scientist). Thirty-one (57%) were tenure-track and 23 (43%) were nontenured. The average income was \$106,000. Respondents indicated that being a member of NMRI supports the tenure process primarily through networking, grantsmanship, building confidence, and being a source of inspiration. New responses included receiving a promotion letter, reducing feelings of isolation, serving as a welcoming forum at which to present research, and serving as a place of professional identity. In response to a question about how NMRI has helped their career, respondents indicated through networking, the grant process, mentorship, support of promotion, opportunities to contribute, and the potential for collaboration. New themes were the development of academic coping skills, increased skill in data presentation, and rekindled motivation.

Dr. Blanchard explained that the expectations that NMRI has of its members are: (1) consistent reporting of publications, presentations, grants, and promotions online; (2) completing post-program evaluations; (3) recruiting one or more members per year; and (4) contacting at least one organization or society to support NMRI.

Dr. Blanchard invited the participants to complete a questionnaire on the paper provided at each table. The seven questions asked were: (1) What is your rank? (2) Are you on a tenure or nontenure track? (3) How many grants did you have funded in the last year? (4) How has NMRI helped your career? (5) What is your salary? (6) Why did you attend this meeting? and (7) What are the pros and cons of a NMRI Fellowship? Dr. Blanchard elaborated on the proposed NMRI Fellowship and presented a list of possible requirements to achieve the title of NMRI Fellow, three of which would need to be met.

Discussion

In response to a question about the purpose of the proposed NMRI Fellowship, Dr. Blanchard stated that the goals of the Fellowship are increased participation and sustainability of NMRI, ensured documentation of mentorship outcomes, and help in verifying through outcomes that NMRI's mentorship program is successful.

A meeting attendee inquired about the availability of a set of materials about NMRI to bring to society meetings. Dr. Blanchard responded affirmatively and invited participants to contact Ms. Martinez.

Dr. Keith Norris emphasized the value of participation on NMRI committees and encouraged assistant professors to join. Serving as a committee member or chair on a national program through the NIH is an honor that can and should be highlighted on a CV as service to the academic community.

POSTER SESSION AWARDS

The three poster award winners were announced and congratulated, and all poster presenters were thanked for taking the time to explain their research to the NMRI community. The following were the winners in the categories of Basic, Translational, and Clinical Science:

Basic Science Poster Award

Diana N. Obanda, Ph.D., Instructor, Pennington Biomedical Research Center

“Insulin Sensitizing Effects of *Urtica dioica* L. Extract are Partly Mediated through Adiponectin Effects on Ceramide Catabolism”

Translational Science Poster Award

Chandra L. Jackson, Ph.D., M.S., Epidemiologist, Harvard Medical School Clinical and Translational Science Center

“Racial Disparities in Short Sleep Duration by Occupation and Industry: John Henryism in Black Professionals”

Clinical Science Poster Award

Amanda M. Fretts, Ph.D., M.P.H., Assistant Professor, University of Washington

“Associations of Processed Meat and Unprocessed Red Meat Intake with Short Leukocyte Telomere Length: The Strong Heart Family Study”

SCIENTIFIC PRESENTATIONS

Systems Biology and Angiogenesis: Developing Integrative Models of VEGFR1 Activation in Hypoxic Environments

Princess Imoukhuede, Ph.D., Assistant Professor, University of Illinois at Urbana-Champaign

Dr. Princess Imoukhuede introduced her laboratory as a systems biology research group that uses computational modeling and experimental profiling to better understand the vascular microenvironment, specifically the progression of angiogenesis and disease. Dr. Imoukhuede explained that angiogenesis, the growth of new blood vessels from pre-existing microvasculature, is critical in wound healing. Pathologies of the 70 angiogenesis-dependent diseases can be associated either with excessive angiogenesis (e.g., tumor growth, rheumatoid arthritis, cirrhosis) or with deficient angiogenesis (e.g., myocardial ischemia, preeclampsia, neurodegenerative diseases). Dr. Imoukhuede focused her presentation on tumor growth and, specifically, the vascular endothelial growth factor (VEGF) family, members of which are among the primary signaling molecules promoting both angiogenesis and arteriogenesis, and their receptors. The tumor microenvironment is highly heterogeneous, and several cell types have differential responsiveness to therapeutics. The most well-known of four anti-angiogenic drugs for the treatment of tumors is Avastin[®] (bevacizumab). Controversy has surrounded anti-angiogenic drugs because some patients are intrinsically resistant to anti-angiogenesis and others acquire resistance over time.

Although much experimental work has been conducted on VEGF, no theoretical work has been performed. Dr. Imoukhuede explained that her laboratory has optimized methods for quantitatively profiling the abundance of VEGF receptors (VEGFRs) on the cell's surface. In addition, a quantitative flow cytometry (qFlow) approach provides insight into VEGFR surface expression levels on tumor cells and tumor endothelial cells both *in vitro* and *ex vivo*. Results using the qFlow approach have shown that VEGFR levels vary as tumors develop, and VEGFR1 in particular displays significant heterogeneity on tumor endothelial cells. Subpopulations of cells expressing VEGFR1 can be identified using multicomponent mixture modeling, leading to a quantitative method for understanding heterogeneity.

Quantitative profiling of VEGFR subpopulations in combination with computational modeling can help researchers understand disease through predictions of the effect on disease and the effectiveness of therapeutics on disease. Such models have been used to study the pharmacokinetics and pharmacodynamics of VEGF binding to its receptors and Avastin[®]. Dr. Imoukhuede explained that her laboratory's models suggest that VEGFR1 could serve as a predictor of Avastin[®] efficacy. She stated that it would be very significant if such models could be used to profile individual patients. Currently, she is working with a local hospital to start to use this approach to profile patient samples and attempt to predict which patients might respond well to treatment with Avastin[®].

Dr. Imoukhuede learned several rules from this approach in addition to moving toward clinical profiling. Isolating the cells within an environment (e.g., tumor microenvironment, tissue microenvironment) yields greater insight into systemic effects, and profiling with quantitative methods yields insights into tissue heterogeneity. Incorporating these data into computation modeling hopefully can predict new therapeutic approaches. Dr. Imoukhuede said that her laboratory is now moving toward this approach: isolating, profiling, modeling, and predicting.

Because isolating endothelial cells is very time-consuming, Dr. Imoukhuede's goal is to develop a microfluidic approach on a chip that will allow for high-throughput methods of personalizing medicine. The laboratory hopes to translate their recent success in this area to profiling samples from blood and isolating circulating endothelial cells. Dr. Imoukhuede's laboratory also is focused on developing a quantum dot (Qdot) approach that allows for profiling all VEGFRs at once. Because Qdots are known for their cytotoxicity, the laboratory now is working to optimize the conditions in which Qdots can be used to allow for viability of cells.

In addition, the laboratory is starting to investigate signaling that occurs through platelet-derived growth factor (PDGF) receptors. Surface plasma resonance research is ongoing to begin to establish the binding kinetics between VEGF and its receptors and PDGF and its receptors, which will enable construction of computational models that comprehensively incorporate signaling dynamics. Dr. Imoukhuede stated that

the group has a publication in press that strives to combine all of the signaling dynamics into a model that incorporates hemodynamics to optimize drug delivery. The work was performed in collaboration with a civil engineer who has developed models of blood flow through arteries. Combining these types of models allows for the development of multiscale models that hopefully will allow for translation to the clinic in the future.

Discussion

A meeting participant asked about whether removing cells from their microenvironment is representative of the natural environment. Dr. Imoukhuede replied that the laboratory has performed optimization to ensure that profiling maintains receptors at the same level.

The same participant asked about how VEGF levels might correlate to a physiological response. Dr. Imoukhuede replied that Delta-Notch signaling determines the selection of tip cells versus stalk cells in the vascular microenvironment. Tip cells are those that protrude and move toward the hypoxic region, and stalk cells trail and form a vascular sprout. Notch signaling and down-regulation of VEGFR2 on the cell surface is the profile of a stalk cell, whereas high VEGFR2 is the profile of a tip cell. The work that Dr. Imoukhuede's laboratory is conducting can be very useful to researchers interested in molecular biophysics and the progression of competition between tip and stalk cells. This type of profiling will help validate work that other laboratories are conducting and also can give insight into the potential of the angiogenic microenvironment.

Racial Differences in the Impact of Anemia on Clinical Outcomes in Kidney Transplant Recipients *Mukoso Ozieh, M.D., Fellow, Medical University of South Carolina*

Dr. Mukoso Ozieh presented on the racial differences in the impact of anemia on clinical outcomes in kidney transplant recipients. In patients with CKD, anemia is a complication typically seen both during and after renal transplantation due to blood loss during the transplantation, iron deficiency, or other reasons. Factors that have been implicated in the etiology of post-transplant anemia include graft function in renal transplant recipients, medications, donor and recipient factors, and acid-base status. Studies show that anemia is a strong determinant of outcomes in renal transplant recipients (RTRs), but little is known about the impact of anemia on outcomes across race.

Dr. Ozieh said that she aimed to quantify the impact of anemia on graft outcomes in RTRs among veterans and to determine the impact of race on this association. She conducted a national longitudinal cohort study with a data set of veterans created by linking the Veterans Affairs (VA) Informatics and Computing Infrastructure, the United States Renal Data System, and Medicare data. This unique database contained detailed information on baseline donor and recipient characteristics, follow-up care, laboratory values, and outcomes. Included in the study were adult solitary RTRs transplanted between 2001 and 2007, with follow-up through 2010 (10-year cohort). A generalized linear mixed model was used for analysis. Hypertension and diabetes were the leading comorbidities in these patients. Of the over 5,000 patients that were studied, approximately 3,300 were non-Hispanic whites and 1,600 were non-Hispanic blacks.

Results revealed that the prevalence of graft failure was 28 percent, the prevalence of death was 18 percent, and the prevalence of death-censored graft loss was 16 percent. The mean hemoglobin was about 13 g/dL and was higher in non-Hispanic whites compared to non-Hispanic blacks. Dr. Ozieh and her team concluded from the study that non-Hispanic blacks have a higher prevalence of anemia following renal transplant than non-Hispanic white RTRs. Anemia appears to have a detrimental effect in both groups, but it is more pronounced in non-Hispanic blacks. Every follow-up visit was associated with an increased risk of graft failure, death, or death-censored graft loss. In addition, increases in hemoglobin

were associated with a lower risk of these three outcomes, and the interaction between hemoglobin and race was statistically significant. Strategies to address anemia in veterans who are RTRs are needed.

Limitations of the study were the low numbers of female patients (less than 3%) and Hispanics, the retrospective study approach that is prone to some bias, and access to VA laboratory data only. A clinical implication of this work is that non-Hispanic blacks are at three times the risk of experiencing adverse outcomes. Anemia and the need for early identification and treatment is critical. Research implications include the need to replicate the study among civilian population. Policy implications include needing specific guidelines to identify and treat anemia in RTRs.

Empowering Patient-Doctor Relationships among Older African American Patients with Diabetes and Hypertension Using Health Empowerment Technology (HET)

Greta Winbush, Ph.D., Associate Professor, Central State University

Dr. Greta Winbush presented on the HET project, a translational science research program purposed to eliminate health disparities among African Americans and other minority groups through the merger of evidence-based health disparities research and culturally centered health empowerment technology. The HET project, originally funded by the NIMHD, is aligned with the Healthy People 2020 goal of empowering individuals towards making informed health decisions. HET project hallmarks are its trademark research approach and its emphasis on relationship empowerment (of the patient-doctor relationship, not of the patient). Its innovative features include its customization to older African Americans and its mobile web-based health technology interventions. Mobile web-based health technology is perceived to strengthen the patient-doctor relationship by enabling patients to view medical records, request medication refills, research vetted health information, and communicate with their healthcare providers. HET's concept of mutuality promotes knowledge, power, influence, training, and actions among both individuals in the patient-doctor relationship for better disease treatment and management.

The first HET study involved the development and piloting of a mobile web-based health intervention on diabetes and hypertension aimed at improving health outcomes, health communication, and health technology integration among older African Americans and their healthcare providers. During a 4-week period, 12 patient-doctor dyads of older African Americans and their doctors engaged in the web-based health intervention. The patients engaged with the online health channel on tablet computers and were offered computer and HET training. Pre- and post-testing focus groups yielded measures on diabetes and hypertension health literacy, cultural and aging sensitivity, health outcomes, technology skill use and capacities, and health technology integration in the clinical encounter. Data from the 12 patients revealed increases in patients' (1) email communication with their doctor; (2) use of the electronic health record system to schedule appointments and refill medications; (3) trust of their doctor's medical decisions and explanations; (4) obeying of their doctor's instructions, (5) health literacy; and (6) confidence in their Internet skills. Patients perceived a decrease in their doctor's discussion of the advantages and disadvantages of treatment options and in the number of options offered. HET was educative for both the patients and their doctors. The patients widened their knowledge of health behaviors and their effects relative to diabetes and hypertension disease management, and the doctors widened their cultural knowledge of African American patient health behaviors. Both predicted and unpredicted results were found that offered favorable outcomes for the study participants and their healthcare providers.

Recommendations were to improve the web-based health empowerment platform technologically, increase health outreach, increase family engagement, and expand future health disparity research. Findings of this study substantiated HET's unique research approach and conceptual framework. They also shed some light on the viability of using HET to improve health outcomes of older African Americans with diabetes and hypertension. Next steps include manuscript submission, a potential project

engaging African American women with disabilities with the site, and an upcoming R15 grant submission.

Dr. Winbush acknowledged and thanked Dr. Leon McDougle for his collaboration, guidance, and support. She stressed that behind the success of the HET research project are several institutional collaborations and a great team of faculty and student researchers, both graduate and undergraduate.

PEER MENTORING

Arthur Gutierrez-Hartmann, M.D., Professor and Director, University of Colorado Denver, Anschutz Medical Campus

Dr. Arthur Gutierrez-Hartmann moderated a discussion about peer mentoring with three panelists and the meeting participants. Dr. Gutierrez-Hartmann reflected on the value of individuals conversing with one another over lunch or coffee, for example, about issues such as hiring, firing, promotions, and salary concerns. He believed that such issues are particularly important for minorities and women, citing the public outcry that occurred when Dr. Lawrence Summers, then President of Harvard University, stated that differences in intrinsic aptitude might explain why fewer women pursue careers in science, technology, engineering, and mathematics. Dr. Gutierrez-Hartmann shared two examples he has observed of physical spaces that bring together individuals of all professional levels: the lactation room and the gym. Informal discussions are invaluable for helping manage a laboratory, one's career, and one's goals.

Gabriel Gonzalez, Ph.D., Research Biologist and Postdoctoral Fellow, VA Boston Healthcare System, recounted his experience switching study organs when he began his postdoctoral position. Because postdoctoral scholars spent most of their time at the bench, Dr. Gonzalez decided to purchase pizzas and invite postdoctoral researchers to speak about their work on a monthly basis. This way he could learn about the areas of expertise and techniques being used by fellow researchers. Dr. Gutierrez-Hartmann reiterated that peer discussions at the postdoctoral level often are very practical—about publishing papers, learning a technique, and engaging in a job search.

Gentzon Hall, M.D., Ph.D., Fellow, Duke University Medical Center, recalled the existence of a corkboard during graduate school to which people posted interesting academic talks, industry presentations, and similar events. Dr. Hall valued the corkboard's postings because they spanned a range of disciplines and provided opportunities to meet researchers in other fields. Dr. Hall has continued this tradition in his new position at Duke. With regard to peer mentoring, Dr. Hall said that junior faculty have been holding meetings to share their concerns and give themselves a voice. He also shared his tactic of inserting himself into places where the emerging thought leaders are present. Dr. Gutierrez-Hartmann reflected on the value of integrating and building bridges with other researchers, which also helps ensure one is not overlooked for promotions.

Patricia Silveyra, Ph.D., M.S., Assistant Professor, Penn State College of Medicine, explained that because she is from Argentina she experienced a strong language barrier when she arrived to the United States. Joining the Graduate Women in Science organization helped her overcome her initial timidity. There she met peers with whom she connected and who introduced her to their mentors, and eventually these interactions led to introductions to international researchers. Dr. Silveyra noted that she received her first grant through Graduate Women in Science. Dr. Gutierrez-Hartmann added that holding regular meetings with peers to receive critical feedback is invaluable.

Discussion

Dr. Manu Platt suggested to young investigators that they seek out a peer who is 2 years ahead of them in the academic timeline. Dr. Platt stated that such a person was the most important mentor he had at that time because he learned from the issues she experienced and had a 2-year lag time to prepare. Because rules about promotions and tenure vary among institutions, Dr. Gutierrez-Hartmann urged participants to read their institution's rules very carefully in advance of the process.

Dr. Tolulope Falaiye asked about how to suggest ideas and be a team player without losing ownership of the ideas and therefore being overlooked. Dr. Gutierrez-Hartmann remarked that this issue is more important during the early investigator years. He emphasized the importance of "doing the work," recalling his admiration of a poster that read, "Ideas are cheap. It's work that counts." He added that women at the University of Colorado joined together and talked to their chairs to make sure that they were not being overlooked for certain awards (e.g., Howard Hughes, Basil O'Connor). He urged participants to be active. Dr. Silveyra added that ensuring a safe environment is critical prior to sharing one's ideas. A meeting participant noted the value in setting up meetings with the division chief.

Dr. Corsino commented that peers are highly useful for motivation and for asking questions that can be difficult to broach with a mentor or chief. Dr. Gutierrez-Hartmann suggested meeting at a coffee shop once per week to discuss issues of, for example, childcare, work-life balance, and promotions, as some colleagues of his do.

Dr. Deidra Cruz shared her experience as a member of peer-to-peer mentoring groups such as a "K club" of K awardees and a writing accountability group. These groups meet for 1 hour once per week to engage in process mentoring and writing.

A meeting participant shared the value of the National Institute of General Medical Sciences (NIGMS)-sponsored Institutional Research and Academic Career Development Awards (IRACDA) T32 postdoctoral program for students from groups underrepresented in biomedical research. At the University of California, San Diego, the IRACDA program funds 15 postdoctoral fellows for 3 years and provides significant opportunities for teaching activities in a structured format. Additional emphasis is placed on grant writing, publication writing, and ethical issues, among others. IRACDA fellows have seen a very high success rate in hiring.

PARALLEL SESSIONS

Two parallel sessions were designed as informal, interactive discussions led by a panel of experts addressing important career development topics for investigators. Meeting participants attended the session of their choice.

Session I: Becoming a Successful Clinical/Translational Researcher: What "Progress" Looks Like at Each Stage

Matthew Allison, M.D., M.P.H., Professor, University of California, San Diego

Glenn Chertow, M.D., Professor of Medicine, Stanford University School of Medicine

Daisy De Leon, Ph.D., M.S., Professor, Loma Linda University

Kwami Osei, M.D., Director, Diabetes Research Center, The Ohio State University College of Medicine

Dr. Matthew Allison described his medical career path beginning at the Uniformed Services University of the Health Sciences in Bethesda, MD. An internship at the Naval Medical Center San Diego followed and led to work in diving and undersea medicine for the U.S. Navy for nearly 8 years. Dr. Allison's last tour of duty was in San Diego, and while there he earned a M.P.H. degree and subsequently transitioned to a

preventive medicine residency focused on preventative cardiology at the University of California, San Diego, and San Diego State University. Dr. Allison's sources of funding have included the American Heart Association and two R01 and one R21 grants from the NIH. Dr. Allison stated that skills he developed along the way included epidemiology and biostatistics skills acquired while earning his M.P.H. and training on how to perform and read ultrasounds on carotid intima-media thickness. He encouraged others to take advantage of training opportunities that at first may seem tangential to their research. The top team members he has relied on over the years include his mentor, his study coordinator and administrative assistant, and T32 mentees who have, as a group, broadened the research agendas of principal investigators.

Dr. Glenn Chertow shared his path from childhood in Brooklyn to attending the University of Pennsylvania and Harvard Medical School. Dr. Chertow explained that when he decided to accept a residency at Brigham and Women's Hospital, he was told he would not succeed there because he was clinically oriented, not research oriented. He dismissed the naysayers and remained there as a fellow and a faculty member. During his fellowship, Dr. Chertow was awarded a grant from the American Kidney Fund and also earned an M.P.H. Dr. Chertow remarked that the valuable skills he developed along the way included those learned during his M.P.H. as well as writing and editing skills, with which his wife helped tremendously. He cautioned that academia is difficult to survive without enjoying and being skilled at writing. Dr. Chertow recognized that unpredictability in life can make navigating career changes challenging. He said that valuable to his career have been his mentors, colleagues, and mentees; his wife; and the barista. Dr. Chertow's advice to younger researchers is to not rush decisions and to take an extra year or two to engage in additional training or accomplish a goal, if financially feasible. Reflecting on his own experience, Dr. Chertow said that he might have very much enjoyed completing a Ph.D. in epidemiology or a fellowship in critical care, but was in a rush to finish.

Dr. Daisy De Leon attributed her career interest in endocrinology to a phenomenal professor. Dr. De Leon was married with a 2-year-old daughter when applying from Puerto Rico to the only three Ph.D. programs in endocrinology in the United States at the time. She arrived at the University of California, Davis, and although English was her scientific language, Dr. De Leon felt a strong language barrier. Because she and her husband were the first husband-wife team graduating together in the sciences, they made the front page of the local newspaper. Dr. De Leon moved to Stanford for a postdoctoral position and was recommended to a T32 NCI training grant program. The T32 program allowed Dr. De Leon to understand the value of research as being about the science rather than being concerned about obtaining funding. A skill she learned along the way was knowing when to say "yes" because she was accustomed to saying "no" with her children. Dr. De Leon's most valuable team members were her husband, who was excellent in negotiating; her mentor, who was extremely understanding when Dr. De Leon's pregnancy complications required her to be bedridden for 7 months; and her postdoctoral mentor at Stanford. Dr. De Leon added that because of her three children, she could only work regular working hours and therefore spent little time chit-chatting with colleagues in the coffee room. Dr. De Leon said that at Loma Linda University, tenure was not common; however, she made her case, fought for it, and was eventually granted tenure.

Dr. Kwame Osei came to the United States from Ghana in 1978 after completing medical school. He attended a Philadelphia anatomical pathology clinical program for 1 year and an internal medicine program for 3 years and then moved to The Ohio State University College of Medicine, where he has been for 32 years. Dr. Osei received funding from his division, a clinical grant from the American Diabetes Association, a cardiovascular grant from the American Heart Association, and eventually a R01 award from the NIDDK on treatment for diabetes. He recommended pursuing small-value grants whenever possible. Dr. Osei began to wonder whether a biological or genetic basis might explain why African Americans suffer more from diabetes and complications of the disease than other populations. Eventually Dr. Osei felt that he needed to expand his research, so he traveled to Ghana to compare

Ghanaians living in Ghana with Ghanaians who have migrated to the United States, as well as Caucasians and African Americans, to more fully understand the pathophysiology of diabetes in the African diaspora. Dr. Osei also remarked about the value of students and recommended that faculty guide them, protect them, bring them to meetings, and introduce them to others in the field. He advised the meeting participants to listen to and respect others and to be willing to seek collaborations.

Discussion

A meeting participant asked how to evaluate progress and success. Dr. De Leon responded that this is a personal feeling and recommended not comparing oneself with senior colleagues.

Session II: How to Thrive as a Basic/Translational Science Researcher: From Postdoc to Principal Investigator

Lynda Brown, Ph.D., Associate Professor, North Carolina Agricultural and Technical State University

Courtney Houchen, M.D., Professor of Medicine, University of Oklahoma Health Science Center

Manuel Miranda-Arango, Ph.D., Associate Professor, University of Texas

Marion Sewer, Ph.D., Associate Professor, University of California, San Diego (UCSD)

Dr. Courtney Houchen remarked that he conducts basic and translational research on the role of gastrointestinal stem cells in repair and regeneration as well as in cancer despite not having a Ph.D. Dr. Houchen trained as a gastrointestinal fellow at Washington University in St. Louis and was funded initially through a NIH training grant and during his second year through a NIH supplement to his mentor's R01 award. Dr. Houchen then received a Robert Wood Johnson Minority Faculty Development award (renamed the Harold Amos Medical Faculty Development Program), which he declared was the most significant influence in the development of his career. Dr. Houchen received K08 and R03 awards prior to being named to his current position as Chief of Gastroenterology at the University of Oklahoma Health Science Center.

Dr. Manuel Miranda-Arango stated that his research focuses on ion transporters, mainly neurotransmitters such as glycine and dopamine. Dr. Miranda-Arango arrived at Yale University from Mexico City in 1996 with a 2-year fellowship from the NIH offered to two students from Central and South America. He stayed a total of 7 years, moved to the University of Colorado for 4 years, and then was appointed Assistant Professor at the University of Texas at El Paso. Dr. Miranda-Arango pointed out that he met much success in establishing an independent career through networking. Dr. Miranda-Arango reflected that fundamental to his career has been his training at two laboratories that work in very different research areas. He added that chairing his institution's Institutional Animal Care and Use Committee for 3 years gave him much insight into how institutions operate and the resources necessary to support an animal program. Dr. Miranda-Arango reminded the audience to connect with investigators from different institutions at meetings, especially in the last couple of years before reaching tenure, to aid in the transition.

Dr. Marion Sewer shared that her research focuses on the molecular mechanisms that regulate the transcription of enzymes that metabolize cholesterol into steroid hormones. Dr. Sewer received her Ph.D. from Emory University and engaged in postdoctoral research at Vanderbilt University. She decided that she wanted to teach in addition to having a research lab, so she joined the faculty at the Georgia Institute of Technology. While there, Dr. Sewer obtained a National Science Foundation Career Development Award and her first R01. She later realized that she wanted to devote more time to research, so after receiving tenure she moved to UCSD, where she has been for nearly 6 years and was promoted to full Professor.

Dr. Lynda Brown, who studies the neuroendocrinology of obesity, performed her Ph.D. research at the University of Maryland in College Park. She remarked that two important parts of her experience as a graduate student were the mentoring group that she and two other students formed and that her advisor required that she present outside the university at least once per year. The person most disappointed with her presentations was her faculty chair. Dr. Brown accepted her criticism and strived to improve, which thoroughly impressed the chair, who is now one of her greatest mentors. Dr. Brown completed a postdoctoral fellowship at the University of Cincinnati's Obesity Research Center with funding from a minority supplement through her mentor's R01. She said that she was encouraged by her postdoctoral mentor to apply to an Assistant Professor position at the University of North Carolina at Greensboro after only 2 years as a postdoctoral fellow and succeeded. Dr. Brown is currently at the North Carolina Agricultural and Technical State University.

Discussion

The panelists were asked to elaborate on any non-obvious skills that are equally if not more important than obvious skills (e.g., networking, grant writing). Dr. Brown suggested the ability to recover after faltering and the discipline to work for and achieve more than is expected. Dr. Sewer added the abilities to extract the value from others' opinions, empower others to perform, and understand one's personality type and work on areas that need improvement. Dr. Miranda-Arango noted overcoming shyness and having the confidence to introduce oneself to others as valuable skills. Dr. Houchen urged the audience not to lock themselves into a hypothesis scientifically but to develop questions that will generate valuable findings whatever the results.

Dr. Rotonya Carr asked the panelists to name the best business tool that has fostered success in the laboratory. Dr. Houchen stated that hiring a great technician who can run the laboratory is key to establishing one's own research program. Dr. Miranda-Arango echoed Dr. Houchen's remark. Dr. Sewer suggested tapping into available institutional resources (e.g., training grants, core facilities) to minimize costs.

A meeting participant asked for recommendations for building resilience. Dr. Brown suggested having a close, small group of friends and mentors that will talk through issues, and Dr. Sewer recommended finding mentors who are simultaneously supportive and critical. Dr. Brown also noted the importance of fostering self-awareness regarding "imposter syndrome."

An audience member asked about the panelists' biggest mistake. Drs. Sewer and Brown advised the audience member to be cautious during hiring.

BIOSTATISTICS: ALL ABOUT THE BASICS

Fern Webb, Ph.D., Assistant Professor, University of Florida

Dr. Fern Webb presented practical knowledge about biostatistics with the genuine intent to increase knowledge about and understanding of basic statistical concepts and applications. She offered two definitions of epidemiology: (1) a branch of medical sciences involving the analysis of the incidence, distribution, and control of disease and/or health in a population; and (2) the study of the distribution and determinants of disease frequency and health in the population. The underlying assumption of both definitions is that disease or health distributions are not random events.

Dr. Webb stated that epidemiologists have a toolkit for designing studies. Common misconceptions are that a single best design exists to answer each research question, descriptive or retrospective studies are scientifically useless, and a randomized controlled trial is always the best option. Questions can, in fact,

be approached using various methods, each with its own strengths and limitations. Study design decisions typically are a compromise between the scientific question, available resources, and reality.

To determine study factors or variables, investigators should consider how the exposures are defined and measured. Dr. Webb informed attendees that there are multiple names for the same idea or thing. For example, exposure, treatment, independent variable, antecedent, and predictor are all synonyms. Outcome, condition, dependent variable, consequent and criterion also have the same meaning. Dr. Webb advised participants to be consistent in the terms they choose to use for each study.

Sampling design, procedures, and instruments must all be considered when collecting data. Dr. Webb recommended keeping surveys simple, short, and focused; using objective scales when possible; and using validated instruments. Examples of secondary data include patient registries, electronic medical records, observational or cohort databases, and longitudinal studies. Information needed to appropriately analyze secondary data includes access and permission, knowledge of the data collected, and the sampling frame and structure.

Data variables can be categorized into four types. Nominal data are those that can be grouped into categories that have no specific order (e.g., ethnicity, blood type). Ordinal data can be grouped into ordered categories, but the difference between levels is imprecisely defined (e.g., excellent, very good, good, fair, poor). Interval data can also be ordered into categories, the difference between levels can be defined and there is no “true” zero point (e.g., temperature). Ratio or continuous data are similar to interval data with a “true” zero point (e.g., blood pressure, weight).

Dr. Webb elaborated on methods of analysis and evaluation once variable types are defined. Measures of frequency are used in descriptive analyses to describe information (measured by variables) or characteristics of those participating in the study. Basic measures of frequency are counts (n), proportions (e.g., $a/[a+b]$), rates (e.g., $a/[a+b]$ over a period of time), and ratios (e.g., a/b with the numerator and denominator being mutually exclusive). A hallmark of epidemiology is the “ 2×2 ” table, in which the independent variable is aligned along the vertical axis and the dependent variable is placed along the horizontal axis.

Measures of association are used in statistical and inferential analyses to describe how information (usually measured by variables) is associated or related to one another (measured by variables). An association can be understood as the extent to which variables occur together (nondirectional) or as the statistical dependence between two variables. Researchers must choose the appropriate statistic to measure the association, which is based solely on the variable type for the independent and dependent variables. Researchers also should consult with a biostatistician in the study planning phase prior to beginning data collection.

ROLE OF SCIENTIFIC SOCIETIES AND PROFESSIONAL ORGANIZATIONS

American Association for the Study of Liver Disease (AASLD)

Gyongyi Szabo, M.D., Ph.D., President, AASLD

Dr. Gyongyi Szabo presented on the activities of the AASLD, first acknowledging and congratulating the recipients of the AASLD Travel Award. Dr. Szabo stated that the vision of the AASLD is to prevent and cure liver disease, and its mission is to advance and disseminate the science and practice of hepatology and to promote liver health and quality patient care. The AASLD is the leading and largest organization around the world for healthcare professionals committed to preventing and curing liver disease. AASLD provides leadership through its publications, *HEPATOLOGY*, *Liver Transplantation*, and the online journal *Clinical Liver Disease*, as well as through available practice guidelines. Dr. Szabo shared that 3 years ago the AASLD embarked on a strategic planning meeting to reassess the goals of the AASLD. The strategic plan is in its second year of implementation, and its major activities include professional development, research innovation and support, treatment advances, and organizational health.

Dr. Szabo stated that the AASLD was founded about 50 years ago as a very research-oriented organization and grew over time to include healthcare providers. The AASLD currently comprises 4,700 members (33% female and 25% international) and holds an annual meeting that brings together 10,000 individuals. It is currently working on increasing its knowledge of the demographics of its members and is incorporating its membership diversity statement into official documents. Dr. Szabo noted that many leadership opportunities exist within the AASLD, which has 19 standing committees. Forty-two percent of committee chairmanships and 41 percent of committee members are women. The AASLD Liver Research Fund is committed to encouraging members to become independent researchers in basic, translational, and clinical science arenas, and since 2008 it has provided more than \$12.5 million in support of liver research and advanced hepatology training. The AASLD Foundation, established in 2014, is focused on growing the Liver Research Fund.

Educational activities available online include the AASLD Curriculum and Training (ACT-First), which is a free, online continuing medical education course, and comprehensive hepatitis B and hepatitis C modules. Forthcoming modules will cover cirrhosis and interpretation of abnormal liver function tests (intended for nonhepatologists). Other current initiatives and resources include 16 special interest groups, the newest of which focuses on public health and healthcare delivery. This group will concentrate on disease prevention, access to care, population-based disease management, improving the quality of healthcare delivery, and economics. Dr. Szabo envisioned that diversity issues in liver diseases, gender differences in liver diseases, and increased understanding of underrepresented populations and healthcare disparities will be emphasized in future AASLD platforms.

Dr. Szabo advertised that Digestive Disease Week will be held on May 16–19, 2015, in Washington, DC; Clinical Hepatology: State of the Art Management, a mid-year course, will be held on June 27–28, 2015, in Chicago, IL; and the annual Liver Meeting will be held on November 13–17, 2015, in San Francisco, CA. Dr. Szabo invited participants to visit www.aasld.org for addition information.

American Diabetes Association (ADA)

Tamara Darsow, Ph.D., Vice President of Research Programs, ADA

Dr. Tamara Darsow informed the meeting participants about the ADA's research programs and goals. Dr. Darsow explained that the vision of the ADA is a life free of diabetes and all its burdens. Its mission is to prevent and cure diabetes and to improve the lives of all people affected by diabetes. She stated that 29 million individuals in the United States are affected by diabetes (9.3% of the population), and 86 million with pre-diabetes are at risk for the disease. The prevalence of diabetes, which has a disparate

impact on demographic subpopulations, has been increasing over time. If trends continue, one in three adults and one in two high-risk minority populations in the United States will have diabetes by the year 2050. Consequences of diabetes include long-term chronic disease management, acute and chronic complications, and \$245 billion per year in patient care costs.

The ADA to achieve its mission provides (1) professional resources through scientific meetings, professional education, and peer-reviewed scientific and clinical publications; (2) medical information through clinical practice recommendations and medical publications; (3) advocacy through research support, diabetes prevention and care, legal advocacy and support, and legislative action; and (4) community support through community health education programs, a call center for information and support, and resources for those affected by the disease. The ADA recognizes that the only way to achieve the vision of a life free of diabetes is through research, which is why research has been at the center of the ADA's mission activities since its founding in 1940. The ADA has supported nearly 4,500 independent research projects and invested more than \$700 million in diabetes research. In 2014, the ADA supported 375 active grants through a \$30 million research budget.

Dr. Darsow stated that the ADA's research portfolio is broad and supports all types of diabetes research. Sixty percent of research funds support basic science and 40 percent support clinical and translational research. Researchers investigate type 1 and type 2 diabetes, gestational diabetes, obesity, as well as pre-diabetes/insulin resistance, and funds are distributed across a range of research foci: clinical, behavior, and epidemiology (18%); complications (16%); integrated physiology (16%); and signal transduction (16%), among others.

ADA support for research is offered through three distinct programs: the Core Research Program (approximately 88% of the research budget), Pathway to Stop Diabetes (5%), and the Targeted Research Program (7%). Objectives of the Core Research Program are to support innovative research with a high potential to have a significant impact for people with diabetes, encourage new investigators to dedicate their careers to diabetes research, and support high-quality science across the spectrum of diabetes.

Dr. Darsow mentioned that grant opportunities span all career stages and brought particular attention to the ADA's Minority Postdoctoral Fellowship Awards, which are 3-year, direct-to-fellow grants, and its Minority Undergraduate Internship Awards, which are awarded to current ADA-funded investigators and require only a 1-page, noncompetitive form. The Pathway to Stop Diabetes program, launched in 2013, is meant to attract brilliant minds at the peak of their creativity; invest in people rather than projects; and provides researchers with freedom, autonomy, and resources. The program provides researchers with long-term, high-dollar awards to conduct transformative science and offers them access to extremely distinguished mentors. The Targeted Research Program supports periodic requests for applications for a narrow scope of projects that address emerging areas with high potential for significant progress.

Dr. Darsow urged the audience to become involved with professional organizations. The ADA provides opportunities to share and publish data, become involved at the local level, serve on committees and as grant reviewers, and participate in special events. Dr. Darsow invited participants to visit www.diabetes.org.

American Society of Nephrology (ASN)

Jonathan Himmelfarb, M.D., FASN, President, Co-Chair, Diversity and Inclusion Work Group, ASN

Dr. Jonathan Himmelfarb presented on the activities of the ASN. Dr. Himmelfarb reported that CKD affects more than 20 million people in the United States, and its prevalence around the world is estimated at 10 to 14 percent. CKD is a major risk amplifier for cardiovascular complications and premature mortality, and it puts individuals at risk for progression to ESKD. Tremendous racial and ethnic disparities exist in kidney disease and particularly related to ESKD requiring dialysis. Although ESKD

incidence rates are beginning to plateau among Native Americans and African Americans, they continue to be very high. For example, African Americans represent approximately 13 percent of the U.S. population, yet they are 37 percent of the dialysis population.

The primary approach to attacking the issue of kidney disease is through research that informs public policy, investigates social factors, or explores health services and healthcare delivery. An exciting area of research is the cellular and molecular biology of kidney disease, which has made new findings in recent years with regard to genetic predisposition to ESKD in African Americans (e.g., *APOLI* gene). The ASN feels a responsibility to catalyze work on changing the racial and ethnic disparities in kidney disease and developing improved treatments.

Dr. Himmelfarb pointed out that the ASN has become a very dynamic organization over the last 5 to 10 years. With 15,500 members, the ASN is the largest professional society related to kidney disease, and its annual meeting is attended by 13,000 people from 100 countries. Dr. Himmelfarb noted that the ASN publishes the *Journal of the ASN*, which is the highest impact factor kidney journal; the *Clinical Journal of the ASN*, the most highly read kidney journal; and *Kidney News*, the most widely distributed publication in the kidney community. The ASN is committed to communicating new knowledge about kidney disease and is the largest supporter outside of Federal government of kidney disease research in the United States. The ASN Foundation for Kidney Research was established in the last 5 years to ensure that research mission is sustainable. In addition, the Kidney Health Initiative is a partnership with the U.S. Food and Drug Administration to create an umbrella organization to remove barriers to the development of safe and effective treatments to kidney disease, covering food products, biologics, drugs, and devices.

The ASN has put forth efforts to increase diversity to meet its mission more effectively. A Diversity Summit held in June 2013 made recommendations to the ASN leadership and formed a Diversity and Inclusion Work Group. These efforts have resulted in an ASN mission, vision, and values statement on diversity:

- Mission: to promote diversity and inclusiveness to enhance the nephrology profession and the lives of people with kidney disease through improved healthcare, research, and education.
- Vision: a diverse and inclusive ASN will foster innovation, creativity, and sensitivity to advance health for all people living with kidney disease and serve as a model for organizations dedicated to health equity.
- Values: inclusiveness, mentorship, health equity, patient advocacy, and engagement.

Other accomplishments of the Work Group in its first 15 months include increased collection of ASN member demographics; establishment of the ASN-Harold Amos Medical Faculty Development Program Award; and recruitment of a volunteer to the Work Group to represent lesbian, gay, bisexual, and transgender (LGBT) community interests. In addition, the ASN for the first time funded participation in the NMRI Annual Workshop.

Dr. Himmelfarb shared that upcoming initiatives include a pilot project that involves matching underrepresented early career nephrologists with influential mentors, building of sponsorship opportunities, developing a mentorship curriculum built on an existing CTSA curriculum, and tracking and evaluating demographics with an emphasis on gauging the success of the ASN's diversity inclusion efforts. Two grant mechanisms highlighted by Dr. Himmelfarb are Career Development Grants, supporting early career professionals around the K-to-R transition, and the William and Sandra Bennett Clinical Scholars Program, supporting young faculty clinician educators who seek to enhance education along the research/education line. The ASN also supports students and trainees and is committed to career development for kidney professionals. More information can be found at www.asn-online.org.

American Society for Bone and Mineral Research (ASBMR)

Roberto Fajardo, Ph.D., Assistant Professor, University of Texas Health Science Center, San Antonio

Dr. Roberto Fajardo presented on the mission and activities of the ASBMR, whose motto is to make discoveries that keep bones healthy for a lifetime, and on the interaction of diabetes and bone. The ASBMR membership includes approximately 3,800 members, 46 percent of whom are from outside the United States, and its annual meeting convenes about 4,000 attendees. The ASBMR publishes the *Journal of Bone and Mineral Research*, the highest impact factor bone journal.

Dr. Fajardo asserted that bone can be considered an endocrine organ. He explained a series of experiments that revealed a dependency between bone and glucose regulation, suggesting a potential clinical impact of diabetes on the skeleton. He noted that low-energy fragility fractures related to type 2 diabetes are proving to be a major problem in the United States and around the world, with the risks of fracture significantly higher in minority populations.

Dr. Fajardo described his work on a 17-year prospective study of aging and disease in the Mexican American population. Data have shown that hip fractures correlate with age and insulin use. Strong trends also are seen between hip fracture and type 2 diabetes, as well as body mass index. Diabetic fractures are particularly difficult to understand because they are not necessarily related to bone mass loss. A change in the material properties (e.g., due to glycation of collagen), morphology, and other contributions add to the fracture risk. Researchers are also trying to determine how microvascular changes might contribute to bone and its fragility in the case of diabetes. Preliminary data have shown that the expression of VEGF, which is important for bone formation, bone remodeling, and maintenance of vascular tissues, appears to be down-regulated in diabetic and bone tissue. The mechanisms are not yet understood and warrant further research.

Dr. Fajardo highlighted that the first symposium on the relationship between diabetes and skeletal health, a very new area of interest for the ASBMR, was held in September 2014 at the ASBMR Annual Meeting. At the 2015 Annual Meeting in Seattle, WA, an increasing number of posters and presentations will focus on diabetes and bone and skeletal health, and a new symposium titled “Crosstalk Between Kidney and Bone: Bench to Bedside” will take place. Dr. Fajardo encouraged interested participants to attend the meeting. In addition, Dr. Bruce Spiegelman from the Dana-Farber Cancer Institute and Harvard Medical School will present a special lecture titled “Bone, Fat, and Energy Metabolism.” Dr. Fajardo added that \$500 travel awards are available to presenters. In addition, the Diversity Planning Committee schedules morning and evening events as well as other ways to socialize and meet others. Dr. Fajardo encouraged the meeting participants to visit www.asbmr.org.

American Gastroenterological Association (AGA)

Lewis Roberts, M.D., Ph.D., Professor of Medicine, Mayo Clinic College of Medicine

Dr. Lewis Roberts reported on the activities of the AGA and thanked the other associations for supporting NMRI. Dr. Roberts took a moment to acknowledge the late Dr. Levi Watkins, Jr., who made great efforts to seek racial equality and justice in the United States, particularly in the area of healthcare. Dr. Watkins was the first African American to graduate from Vanderbilt University School of Medicine, the first Chief Resident in Surgery at The Johns Hopkins Hospital, and the first person to insert an implantable cardioverter defibrillator. He was an outstanding role model and left a strong legacy.

Dr. Roberts began by explaining that the projected shortfall of physicians by 2025 is estimated at between 45,000 and 90,000 physicians. Currently, little change is seen in underrepresented minority representation in medical and graduate schools, yet minority physicians and scientists are critical to the health workforce in part because they are more likely to serve the minority community and can help develop more

culturally sensitive programs. Dr. Roberts highlighted some of the diseases for which there are disparities. Gastric cancer affects Latinos and African Americans at substantially higher rates; colorectal cancer affects African Americans at higher rates and earlier in age; hepatitis C, cirrhosis, and liver cancer all are more frequent in Latinos and African Americans; and hepatitis B and hepatitis B-induced cirrhosis and liver cancer are particularly important in immigrant Asian and African communities. Gallstone disease, *Helicobacter pylori*, and gall bladder cancer also are important in Native American and Hispanic communities.

Dr. Roberts stated that the AGA was founded in 1897 and is dedicated to the mission of advancing the science and practice of gastroenterology. With more than 17,000 members, the AGA is a trusted voice of the gastrointestinal community. The AGA has an annual meeting, peer-reviewed journals in the field (*Gastroenterology* is the leading gastroenterological journal, and *Clinical Gastroenterology and Hepatology* and *Cellular and Molecular Gastroenterology and Hepatology* respectively supplement the clinical and basic science scope of *Gastroenterology*), and a newsletter for members called *AGA Perspectives*. The AGA has efforts underway to better understand the demographic information of its membership and to promote diversity and gastroenterological training. Initial statistics reveal that that 1 in 6 applicants for gastroenterological fellowships yearly are accepted to a first-year accredited position. Nationally there are more than 14,000 practicing gastroenterologists.

A key element of AGA's work is providing educational and networking opportunities. The AGA competed for a NIDDK Education Program Grant (R25) that supports summer research fellowships that focus on underrepresented minorities. At the annual Digestive Disease Week meeting, the AGA will sponsor a joint diversity reception with AASLD, the American Society for Gastrointestinal Endoscopy (ASGE), and the Society for Surgery of the Alimentary Tract (SSAT). In addition, student memberships encourage high school, college, and medical students to consider gastroenterology as a career. Dr. Roberts highlighted the opportunities provided by the AGA that impacted his career personally. He added that the AGA emphasizes team science and collaborations, networking with colleagues at meetings, mentoring, and service opportunities.

Dr. Roberts ended by encouraging participants to attend the upcoming Digestive Disease Week on May 16–19, 2015, in Washington, DC, to visit its website at www.ddw.org, and to visit the AGA's website at www.gastro.org. Dr. Bentley-Lewis acknowledged and thanked the AGA for supporting the first-ever Networking Reception at this year's NMRI Annual Workshop.

Endocrine Society

Mark Lawson, Ph.D., Professor, University of California, San Diego

Dr. Mark Lawson remarked that the Endocrine Society has a history of being engaged in training and career support. The Endocrine Society over the last few years has undertaken a strategic reassessment of its activities and purpose in part to increase its efforts to support investigators, especially younger investigators and trainees. Like many societies, the Endocrine Society is currently improving its assessment of membership demographics to address position services and researcher shortages and to ensure that the field remains vibrant. This effort has been undertaken by the Endocrine Society's Minority Affairs Committee Service as well as the Trainee and Career Development Core Committee. He invited the meeting participants to join the committees.

Dr. Lawson outlined resources available through the Endocrine Society. The summer research fellowship program invites individuals at the undergraduate, graduate, and medical training levels to spend a summer in the laboratory with a mentor. This idea expanded into the NIGMS-funded Minority Access Program, a 2-year commitment to the Endocrine Society during which an individual gains summer research experience, attends the Endocrine Society conference, and is given career development training and

mentorship resources that help solidify and preserve his or her interest in biomedical sciences as a research career. The NIDDK-funded Future Leaders Advancing Research in Endocrinology (FLARE) program (R25) provides career development appropriate for late graduate/early postdoctoral levels. The Endocrine Society annual meetings offer career development events, such as a promotion and tenure workshop, and also host a Minority Student Luncheon and Minority Mentoring and Poster Reception.

Dr. Lawson encouraged participants to visit www.endocrine.org, which has additional information about the annual meeting program and special workshops, as well as information about job interviews, a grant clearinghouse, clinical practice guidelines, and more.

NEXT STEPS AND ADJOURNMENT

Rhonda Bentley-Lewis, M.D., M.B.A., M.M.Sc., Assistant Professor of Medicine, Harvard Medical School/Massachusetts General Hospital
Gregory Germino, M.D., Deputy Director, NIDDK, NIH

Dr. Bentley-Lewis thanked the professional society representatives not only for the travel awards provided to support NMRI membership to attend the Annual Meeting, but also for providing encouraging information that demonstrates their efforts to foster the career development of NMRI members. She thanked the participants for attending the meeting and looks forward to reconnecting again next year.

Dr. Germino thanked the society representatives for their commitment to the principles that NMRI and its community represent. He expressed appreciation to NMRI mentors and senior members for their continued participation and also extended a warm welcome to new investigators who have only recently joined the community. Dr. Germino closed with a presentation of awards acknowledging the efforts and leadership of Dr. Corsino, Chair of the Oversight Committee, and Dr. Bentley-Lewis, Chair of the Planning Committee. Dr. Germino again thanked the participants and wished safe travels home.