

**Network of Minority Research Investigators (NMRI)  
Southern Region Workshop**

**October 3–5, 2007  
Atlanta, GA**

**Summary Report**

**WEDNESDAY, OCTOBER 3, 2007**

**INTRODUCTIONS AND WELCOMING REMARKS/DINNER RECEPTION**

*Carlos M. Isales, M.D., Professor, Department of Endocrinology, School of Medicine, Medical College of Georgia, Atlanta, GA*

Dr. Isales, chair of the planning committee for the NMRI regional workshop, welcomed participants to the Network of Minority Research Investigators (NMRI) Southern Regional Workshop. This is a branch meeting of the national meeting. NMRI is holding the regional meetings to facilitate more participation in the Network at the local level. A purpose of the meeting is to network and make connections that will help researchers in their studies.

*Lawrence Agodoa, M.D., FACP, Director, Office of Minority Health Research Coordination (OMHRC), National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), National Institutes of Health (NIH), Bethesda, MD*

Dr. Agodoa welcomed participants and thanked Dr. Isales and the organizing committee for planning this workshop. He asked participants to enjoy the working dinner and encouraged everyone to participate fully in discussions.

**PREVENTING THE PROGRESSION OF HYPERTENSIVE KIDNEY DISEASE:  
LESSONS LEARNED FROM THE AFRICAN AMERICAN STUDY OF KIDNEY DISEASE AND  
HYPERTENSION TRIAL**

*Janice Lea, M.D., Associate Professor, Department of Medicine, Emory University, Atlanta, GA*

Dr. Lea presented the keynote speech for the dinner reception. She provided background data on the need for the African American Study of Kidney Disease and Hypertension (AASK) trial. Of the approximately 50 million Americans with hypertension, the prevalence is higher in African Americans. Hypertensive kidney disease, the second leading cause of end-stage renal disease (ESRD), also disproportionately affects African Americans. For almost any measure of health indicators related to heart and kidney diseases—blood pressure control related to heart disease and stroke risk, and blood pressure control related to kidney function—African Americans have seen less positive progress than Caucasians.

Compared with the general population, African Americans have a higher rate of obesity (70% higher), hypertension (40%), heart disease mortality (50%), stroke mortality (80%), diabetes (100%), and ESRD (320%). African Americans, male and female, have an almost 4-fold higher risk of developing stage 5 chronic kidney disease. These alarming statistics clearly showed the need to develop better strategies for addressing the health needs of the African American population.

Analyses of data on African Americans from 13 prospective trials, from 1993 to 1998, of hypertension treatment, indicate that African Americans do not respond to rennin-blocking drugs such as angiotensin converting enzyme (ACE) inhibitors  $\beta$ -blockers; they tend to respond better to calcium channel blockers (CCBs) and diuretics. Dr. Lea showed data on the advantage of using angiotensin blockade with an ACE inhibitor or an angiotensin receptor blocker (ARB) with a diuretic for lowering blood pressure in African Americans.

Several studies have investigated why patients progress to ESRD and end up on dialysis. A study in African American patients showed that if blood pressure was lowered to 140/90 mmHg and then to 130/80 mmHg, the target for patients with kidney disease, decline in renal function as measured by glomerular filtration rate (GFR) was slowed. Results from the Multiple Risk Factor Intervention Trial (MRFIT) showed that even with the same level of blood pressure control, renal function in African Americans declined at a 5-fold faster rate than among Caucasians.

Dr. Lea provided background for the AASK study, which was designed to address some of the issues regarding blood pressure control and renal function in African Americans. AASK also investigated differences among blood pressure drugs when prescribed to African Americans. The study questions in AASK were:

- Does very aggressive lowering of blood pressure result in slower decline in renal function?
- Does the type of antihypertensive agent used to initiate blood pressure lowering matter with regard to renal outcomes?

Antihypertensive agents used in AASK included metoprolol ( $\beta$ -blocker), amlodipine (CCB), and ramipril (ACE inhibitor). Blood pressure goals included usual blood pressure control of 140/90 mm Hg; the lower goal was less than 120/75 mmHg. Dr. Lea reviewed the entry criteria and baseline characteristics of the study population.

Results from AASK included the following:

- Treating blood pressure to the usual versus lower goal did not result in a change in GFR from baseline, and the composite clinical outcome of declining GFR, ESRD, or death also showed no differences.
- The type of drug used by patients regarding renal function was important. At 48 months, those taking ramipril had a 38 percent less likelihood of progressing to dialysis than those taking amlodipine.
- Those taking ramipril had a 22 percent less likelihood of progressing to dialysis than those taking metoprolol.
- Amlodipine lowered systolic blood pressure marginally than ramipril and metoprolol.
- Those patients who achieved the lower blood pressure tended to take more antihypertensive drugs than those in the usual goal group (3.5 versus 3).
- Proteinuria was reduced by ramipril and metoprolol, but not amlodipine. These results were at 6 months; after that, patients on all drugs had increases in proteinuria.
- Treating blood pressure to the lower goal had a positive impact on proteinuria.

Conclusions from the AASK study suggest that each of these agents can be safely used in patients with renal disease, provided that physicians measure serum creatinine after 2 weeks and avoid volume depletion; a rise of serum creatinine of 20 percent is expected due to hemodynamic effects of angiotensin II blockade; and if creatinine increases greater than 30

percent, the physician should stop the drug and assess for volume depletion or renal artery stenosis, which is usually reversible.

The AASK study provided valuable information on treating African Americans for blood pressure to maintain kidney function.

### **Questions**

A participant asked which drug would be best for patients with type 1 (T1D) and type 2 diabetes (T2D). Dr. Lea responded that ACE inhibitors have primarily done well in patients with T1D, and ARBs have been used for T2D. There are few studies that have compared these choices, although the On Target study will be completed and reported next year. This trial compares an ARB (telmisarten) with ramipril. This is a long-term study and should answer some of these questions. At this point, either an ACE or ARB will benefit patients if the physician follows the patients closely.

A participant asked about the cough associated with ACE inhibitors, and if this is due to bradykinin. Dr. Lea said that the cough also is associated with ARBs, though less than ACE. Another participant asked if treating patients with CCBs has increased the number of patients needing dialysis. Dr. Lea responded that it is difficult to determine this, although it is important to distinguish between dihydropyridine and non-dihydropyridine CCBs.

A participant asked about gender differences and obesity in AASK. Dr. Lea reported that 38 percent of participants in AASK were female. No data has been developed to look at gender. As for obesity, BMI was not a predictor of renal disease in AASK patients. Another participant asked about lifestyle change, especially diet. Dr. Lea said that this is an important question. There was no correlation with sodium excretion and urinary potassium was low, and neither appeared to contribute to hypertension or progression in renal disease.

A participant noted that TGF- $\beta$  was upregulated by angiotensin, and asked if inflammatory cytokines such as IL-6 were studied. Dr. Lea said that this has been looked at in studies other than AASK. Another participant asked if there were other risk factors besides those investigated in AASK. Dr. Lea said that other risk factors include metabolic syndrome, which influences progression to kidney disease. Individual metabolic syndrome factors (e.g., proteinuria, cholesterol, and high blood pressure) were not significant independently, but together they were a significant factor. A participant asked about genes as risk factors. Dr. Lea answered affirmatively that genes are a factor, but these have not been reported by AASK. There are many ongoing AASK studies that should be reported in the next several years.

A participant asked if there were family genetic studies included in AASK. Dr. Lea said that AASK investigators are recruiting families for a genetic study. Historically, 20 percent of patients on dialysis had family members who had kidney disease.

As to the issue of access to healthcare, Dr. Lea said that there were no differences in socioeconomic status among AASK patients regarding progression to dialysis.

**THURSDAY, OCTOBER 4, 2007**

**WELCOME AND INTRODUCTION**

*Dr. Agodoa*

Dr. Agodoa welcomed everyone to the 2nd annual regional meeting of the NMRI. On behalf of NIDDK and NIH, he expressed special thanks to Dr. Isales, who has served as chair of the planning committee and is a past Chair of the NMRI, for making this regional meeting happen. He also thanked other members of the planning committee: Dr. Conrad Cole, Dr. Janice Lea, Dr. Bridgett Rahim-Williams, Dr. Titus Reaves, Dr. Omaima M. Sabek, Dr. Zoila Vichot Sanchez, and Dr. Bessie Young. Dr. Agodoa thanked Ms. Winnie Martinez for assisting with the organization of projects in his office as well as this NMRI meeting, Dr. Judy Podskalny, Program Director for training at NIDDK, and Betsy Singer, Director of the NIDDK Office of Communications and Public Liaison. He also thanked the staff of The Scientific Consulting Group, Inc., who provided logistics support for the workshop.

Dr. Agodoa offered the observation that most of the major diseases afflicting the population of the United States disproportionately impact particular racial and ethnic communities. This is true for each of the diseases that are the focus at NIDDK. The overall mission of NIH is to improve the health of the nation through biomedical research. This is generously supported by Congress (approximately \$29 billion in the past year). The enrollment of minorities in medical and graduate schools has always been low compared with their proportional representation in the general U.S. population. Significantly, minorities have been underrepresented in the faculty ranks of medical and research institutions. Attrition of minority faculty also has been higher than non-minority faculty.

In 2000, the U.S. Department of Health and Human Services (DHHS) tasked its agencies to develop initiatives to reduce and eliminate minority health disparities. DHHS also included goals to reduce health disparities in *Healthy People 2010*, which set health goals for the nation. NIH's response to meet this challenge included establishing an initiative within each of the 27 Institutes and Centers to develop a strategic plan addressing minority health disparities. NIDDK is addressing this issue by developing an initiative to increase the number of racial and ethnic minorities in academic faculties, and to reduce the attrition rate; this is why NMRI was established.

**KEYNOTE SPEAKER**

*Robert Lee, Ph.D., Director of Multicultural Medical Student Affairs, Emory University School of Medicine, Atlanta, GA*

Dr. Lee was introduced by Dr. Janice Lea and welcomed everyone to the NMRI regional workshop. He expressed that NMRI is a valuable opportunity for minority students and researchers to increase involvement in academic and scientific research. He encouraged everyone to think of the number of students and colleagues who they have influenced in their academic lives.

Dr. Lee began his presentation, "When Good Becomes the Enemy of Excellent" by telling of those who have guided him in his career. He has found it important to be a good listener. He said we are all brothers and sisters because we are connected by our humanity, by our rejection of the the banal and the vulgar, and by our striving towards excellence. Most of us have heard the jingle, "Good, better, best.....never let it rest until your good gets better and your better gets

best.” Many of us may not have understood the jingle until we were old enough to have a supervisor tell us to do something over because the work done was not good enough.

Dr. Lee asked at what point does good become the enemy of excellent. By definition, excellence is to go beyond the limit of what is required. It is never acceptable to work at a level lower than what can be accomplished by going further than expectations. Excellence is competitive within; good is competitive among people. More than likely, someone in everyone’s career went beyond what was expected to show us how to be excellent. Going beyond good also includes saying “Thank you.” He told a story about receiving a letter from a former student, now in post-graduate research, who wrote a “Thank You” card to him for what Dr. Lee said to him in his interview two years earlier. Dr. Lee did not know that what he said at the time would have an impact on this student. This is a lesson to all to strive to go from good to excellent in every day dealings; one never knows the impact one will have on another individual. Another important aspect of allowing good to become the enemy of excellence is the way in which one protects their good name. He gave an example of a student applicant that showed how dishonesty takes away a good name that was developed over many years. This student had put an item on his application that he was the pianist for his college choir. Dr. Lee, being a pianist himself, offered the student the opportunity to play piano with him during the interview; the office was next to a residence hall piano studio. It turned out that the student had to admit that he did not play piano. This student had allowed himself to become the thief of his good name. This became a teachable moment for Dr. Lee to explain the importance of integrity to this young man. Good goes beyond just ability to do exemplary academic work; excellence must be present in everything one does.

A “Bob Leeism” is that “I don’t want to be dead until I die.” Dr. Lee gave Biblical references to exemplify the wisdom of doing the right in all one does; the need to have strength to fight the battles needed in all one does; and always being truthful. There also are hymns from the church that can give us inspiration in working for excellence in all we do.

Dr. Lee spoke of his sons. One, who just graduated from Auburn University in theater arts, played the role of Jesus in *Godspell*. He won the role when the person originally chosen for the role became ill. For the next 12 days he learned all the lines and music, and did an exceptional job in the role. He became known in the role and became recognized outside the theater community; his opportunity for attaining excellence influenced prospective students. The lesson is that his son did not allow good to become the enemy of excellence.

Dr. Lee closed his presentation by imploring those present to always remember that they are in positions of leadership and will influence many students and colleagues. The influence they have should always be directed toward striving for excellence, and to not allow good to become the enemy of excellence.

### **Questions**

Dr. Bessie Young asked how to recruit minority students. Dr. Lee responded that they first need to be told that they are wanted, even beyond the issues of cost differential. They need to know that if they invest their time and effort at the school, there will be those—even those who do not look like them—who will support them. They need to know that support will come in many forms.

Dr. Agodoa commented that Dr. Lee has been working to support minority issues for 35 years, and what advice could he give to improve the statistics of minority students in the medical

programs; progress has not been encouraging. Dr. Lee said the percentage of minority students in medical programs has remained around 1,400 to 1,500 per year; it has decreased for minority men, with approximately 70 percent women being admitted to medical programs. The answer to some of this may be the development of pipeline programs. Emory University has begun a high school program in Atlanta, GA to encourage minority students, especially those considered "at-risk," to pursue medical careers. There must be further investment in earlier grades. He offered to make his pipeline ListServ available to NMRI members to see if there is information for them that may be useful.

Dr. Lea asked if there are statistics available that show the percentage of minority students who complete medical school, go through residency programs, and pursue an academic career. Dr. Lee said that the numbers are small and are not known, but at the historic black colleges, African Americans represent only 3 to 4 percent of the medical faculty. There is a need to improve marketing in this area.

Dr. Lea added that there are financial reasons for minority students to pursue practice careers rather than academic careers. Dr. Lee said that the average student debt for students coming out of private institutions with medical degrees is \$140,000. For a student to see the disparity between pay in medical practice versus academics, it is unrealistic to think that most will choose the academic career path. There must be a new approach to address the student debt issue to have more medical graduates consider academic careers.

## **BACKGROUND OF THE NMRI**

*Dr. Isales*

Dr. Isales provided background on the NMRI, which grew out of the identified need to increase the number of minority faculty and investigators in academic medical programs. One of the most important decisions for medical students is whether to pursue a clinical, practice, or academic career. He described some of the issues that may be barriers to success, such as the choice of program, the choice of mentor, and finding the right guidance for the career path one has charted.

NMRI has an important interest in assisting those in academic training to be successful. It was founded on the precept that support would be the best way to encourage an increase in minority medical faculty. Part of the purpose of the network is to have people to talk to who are having the same challenges finding an appropriate placement.

The major objective of the network is to encourage and facilitate participation of members of underrepresented racial and ethnic minority groups in the conduct of biomedical research in the fields of diabetes, endocrinology, metabolism, digestive diseases, nutrition, and kidney, urologic, and hematologic diseases. A second objective is to encourage and enhance the potential of the underrepresented minority investigators in choosing a biomedical research career in these fields. An important component of this network is the promotion of two-way communications between network members and the NIDDK.

Dr. Isales described the activities of NMRI beginning at the first meeting in 2002. Over the past 5 years, NMRI has grown and in addition to annual meetings, has begun to hold regional meetings, such as this Atlanta workshop. The purpose of the regional meetings is to increase participation in the network. The next NMRI Annual Meeting will be held in Rockville, Maryland, on April 24-25, 2008. Dr. Isales encouraged participants to visit the NMRI website at

<http://nmri.niddk.nih.gov/> and consider attending the annual meeting. Information at the website will allow visitors to apply to attend the annual meeting.

## **NIH FUNDING OPPORTUNITIES**

*Judith Podskalny, Ph.D., Program Director, Research Training and Career Development and Digestive Disease Centers Programs, Division of Digestive Diseases and Nutrition, NIDDK, NIH, Bethesda, MD*

Dr. Judith Podskalny reviewed the various funding mechanisms available from NIH/NIDDK, including grants (including cooperative agreements), contracts, and interagency agreements. Grants are the most common type of funding support. Specific types of funding should be sought depending on the conditions of the funding and capabilities of the program or person applying for the funding. Fellowships and training grants may be particularly relevant to NMRI members because they can assist individuals in conducting research while gaining experience in a specific field.

Dr. Podskalny explained details of K- and R-awards. K-awards are available for investigators transitioning to an independent career. All but the K99 award require that the applicant be a U.S. citizen or permanent resident. No K-awards may be issued to foreign institutions.

- K01 awards are used by NIDDK for those with a Ph.D. to train them from post-doctorate until an R01 is received.
- K08 awards are provided to physicians to do basic or clinical research.
- K23 awards are provided to physicians to do hands-on, patient-oriented research.
- K24 awards are aimed at mid-career clinical investigators.
- The K99/R00 award (Pathway to Independence Award) is a two-phased award aimed at exceptional post-doctoral fellows and allows for 2 years of a mentored research experience followed by 3 years of independent support. Transition from the mentored to the independent phase requires obtaining a faculty position and good research progress during the first phase of the award. Citizenship is not required, but the recipient must remain in the United States for at least 5 years from the beginning of funding. The R00 award is only given to those who can satisfy an employment standard.

Qualifications for K-awards include prior training, letters of recommendation, and publications. Mentors must have previous mentoring experience and expertise in the area of research. Research projects must be hypothesis driven, have preliminary data submitted with the application, must be able to be completed in a reasonable timeframe as it must be completed in 5 years, include a logical sequence of studies, and have appropriate safeguards. A career development plan must be submitted.

Research grants are regarded as R-series awards, which are reserved primarily for independent investigators. There is no citizenship requirement for R-series grants, and foreign institutions are eligible to apply.

- R21 awards are exploratory, Institute-specific grants that are not renewable and are limited to \$275,000 in direct costs over 2 years.
- R03 awards are small, nonrenewable grants limited to smaller amounts of money (e.g., \$50,000) per year for each of 2 years.

- R01 awards are the major NIH grant mechanism and are renewable for as long as the research progresses and is relevant to the research being supported by NIH. Applications include a modular budget when less than \$275,000 per year is requested or a detailed budget if greater than \$275,000 per year is requested. It is suggested that first-time applicants for an R01 should apply for less than the maximum grant.

The basic properties of successful grant awards include the following:

- **Significance**—that the application addresses significance, innovation, approach, investigator, and environment.
- **Approach**—Are the conceptual or clinical framework, design, methods, and analyses adequately developed, well integrated, well reasoned, and appropriate to the aims of the project? Does the applicant acknowledge potential problem areas and consider alternative tactics?
- **Innovation**—Is the project original and innovative? Does the project develop or employ novel concepts, approaches, methodologies, tools, or technologies for this area?
- **Investigators**—Are the investigators appropriately trained and well suited to carry out this work? Is the work proposed appropriate to the experience level of the principal investigator and other researchers? Does the investigative team bring complementary and integrated expertise to the project (if applicable)?
- **Environment**—Does the scientific environment in which the work will be done contribute to the probability of success? Do the proposed studies benefit from unique features of the scientific environment, or study populations, or employ useful collaborative arrangements? Is there evidence of institutional support?

Grants have a diversity supplement that is used to recruit students, post-doctoral students, or other eligible individuals into biomedical research to improve the diversity of the research workforce. Supplements may be issued for most R-, P-, and U-series grants, and the project supported by the supplement must be within the scope of the parent grant. Applicants for the diversity supplement must be a U.S. citizen or permanent resident, be from an underrepresented racial or ethnic group, and/or a person with a disability or a person from a disadvantaged background (e.g., from a family with a low-income level or from a social, cultural, or educational environment such as those found in certain rural or inner-city areas).

Dr. Podskalny described how to use the NIH website ([www.nih.gov](http://www.nih.gov)) to find available grants. She reviewed the fact that NIH has a budget of approximately \$29 billion, and that 24 of the 27 Institutes and Centers fund grants. The website has information on current grants and details on how to find information on requests for application of grants. R01, R03, and R21 grant applications must be submitted electronically. NIDDK has five training directors for specific diseases and conditions. The take-home message is that NIH has money available to fund grants, but if a researcher does not apply for the grant, they will miss an opportunity to receive funding. NIH has tried to make the application process as painless as possible.

### **Questions**

A participant asked if there is an announcement for R03 grants. Dr. Podskalny responded that



NIDDK does not participate in the parent announcement of the R03 but if a grantee has a K08 or K23 with NIDDK, the researcher may apply for an R03. A follow-up question requested an explanation of the process for those with an R34 (clinical trial planning grant). Dr. Podskalny said that it is possible to apply for an R03 at the beginning of the R34. A third question concerned the situation when a principle investigator (PI) moves to another position and leaves the grant with another person and whether that person is now the official recipient of the grant. Dr. Podskalny responded that this does not happen; R-grants cannot be transferred.

A participant asked about institutional commitment and what can be said on the grant application if the institution will not write letters. Dr. Podskalny said NIH wants to know that the institution is committed. A follow-up question addressed the K01 grant and whether it may be taken to another position. Dr. Podskalny emphasized that the K- and F-series awards are tied to an individual and can travel with that individual to another position, as long as the individual can find a mentor in the new position.

A participant commented that minority investigators are well supported throughout the grant process until the R01; it then seems that minority investigators do not receive the fair treatment they received when they were supported by K-, F-, or P-series awards and supplements. Dr. Podskalny added that only 30 percent of all grant requests are funded, and that the race or ethnicity is never an issue at the study section level.

A few questions addressed logistics of R-series grants. Having Co-PIs at different institutions was seen as a bad idea, but is possible. Fellowships can follow a grantee to another institution, although they only transfer on the anniversary date (July 1).

### **FROM CHICKEN LUNGS TO THE PUBLIC'S HEALTH—UNUSUAL CAREER PATH**

*George A. Mensah, M.D., FACP, FACC, Distinguished Scientist, Heart Disease and Stroke Prevention, Chief Medical Officer and Associate Director for Medical Affairs, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention (CDC), Atlanta, GA*

Dr. Mensah presented his experience in taking an unusual career path to his present position at the CDC. The title of his presentation reflects his progress from bench work in molecular biology to a career in public health. He listed his ten pearls of wisdom and gave examples of how he has learned from his past.

#### **Pearl #1: Cherish your family.**

Dr. Mensah projected a picture of his father, who could not read and had little education. One of the things that Dr. Mensah regrets is not thanking his father enough for the support he received, because his father died 6 months before Dr. Mensah graduated from medical school. He stressed that family and friends are the ones that will help you through rough times.

#### **Pearl #2: Have a dream!**

He quoted the American educator Benjamin Hayes who said that "It isn't a calamity to die with dreams unfulfilled, but it is a calamity not to dream" and "The tragedy in life doesn't lie in not reaching your goal. The tragedy lies in having no goal to reach."

#### **Pearls #3 and #4: Be flexible in your goals when necessary, and find the right mentors.**

Dr. Mensah found that his goal of becoming a molecular biologist may not have been met, but his ultimate path led him beyond his original goal to something that is very satisfying. He gave

the advice that using mentors was one of the most valuable lessons he would like to impart to participants. He reflected on one of his first mentors, who worked him very hard, but taught him how to organize his research, how to write a winning proposal, and helped him write his first abstract, poster presentation, and scientific manuscripts. Dr. Mensah challenged participants to make sure that they don't stop writing at the poster abstract level; take the abstracts from the poster session at this meeting, return home, and turn those into journal manuscripts.

**Pearl #5: Seek out opportunities at every corner.**

The important point for this pearl is that opportunities present themselves throughout one's career. Take advantage of those that feel right and match your skills.

**Pearl #6: Develop a passion for your work.**

Dr. Mensah said that when students come to him and want advice about career opportunities, he asks them if this is something they would like to do for the rest of their lives. Many students answer that it is, but just as many indicate it is not. Finding the passion for a particular work is an important aspect of choosing a career.

In his case, Dr. Mensah found the topic of hypertension to be his passion. Even in his village in Ghana, many of his relatives and family friends had high blood pressure (HBP). This has become a passion. HBP has so many effects in society, including heart attack and stroke. It also is the major risk factor for left ventricular hypertrophy (LVH), kidney disease, and many other conditions, yet HBP is one of the most treatable conditions in medicine.

**Pearl #7: Examine the broad implications of your research.**

Dr. Mensah related the story of his first encounter with Dr. Richard B. Devereux, Professor and Director of the Laboratory of Echocardiography at Cornell University Medical Center.

Dr. Devereux had a passion for the study of LVH. Dr. Mensah went to him, with his passion for HBP, and said he was interested in LVH, but did not have experience with echocardiography. This led to a partnership that lasted for many years and resulted in numerous studies on LVH, HBP, and echocardiography. These studies showed a clear connection between HBP and LVH, and cardiovascular mortality.

Other studies have shown that in African American youth, who do not have HBP, echocardiographic studies show that they have a higher level of LVH than whites. This also is true in those with a family history of HBP but who do not have overt HBP.

There are broad implications in research, and it is up to the individual to determine the scope of the impact of research. Dr. Mensah showed numerous examples of how the study of HBP and LVH can impact public health. Of particular interest is that the mortality rate for coronary disease has been reduced more than 40 percent, although this benefit is not being seen across all racial and ethnic groups. He said that groups such as NMRI can help close the health disparity gap.

The next frontier for public health will be addressing the rise in obesity in the past decades. This has immense public health implications because of the association of obesity with T2D, CVD, and cancer.

**Pearls #8 and #9: Always stay in touch with mentors and be a mentor to others whenever possible.**

In building the network and relationship of mentors, it will be a key to the success of anyone looking to develop a career path. He told how getting involved in professional organizations—

American Heart Association and International Society for Hypertension in Blacks—can open many doors in research.

The key message from Dr. Mensah is that scientist like those attending the workshop are crucial to extramural research at NIH and CDC. Collaboration is important for attacking health issues to improve the public health.

**Pearl #10: “You may encounter many defeats but you must not be defeated. In fact, the encountering may be the very experience which creates the vitality and the power to endure.”**

**- Maya Angelou**

### **Questions**

A participant asked if there is criteria of measuring LVH in adolescents using electrocardiogram (ECG). Dr. Mensah responded that there are criteria and results from clinical studies showing that LVH may be overrepresented using the ECG. A follow-up questioner asked if there are differences in criteria between adults and children. Dr. Mensah said the main difference is in adolescents, when growth may misread LVH.

Dr. Lea asked if there are differences in kidney disease incidence or prevalence between African Americans and Africans (issue of admixture). Dr. Mensah said admixture is an issue. When he came to this country in 1976, he was an African; in some surveys, he was also “Black”; and when he changed his citizenship, he became “African American.” This exemplifies one of the barriers for gathering and reporting data on populations. Looking at genetic studies, there is a major influence of gene-environment interactions that surpass genetics or genomics alone. A study comparing African Americans, Caribbean blacks, and Cameroon blacks, also showed there are differences among urban and rural populations, with higher rates of kidney disease risk factors among urban populations compared to rural populations.

A participant asked if there is a benefit for having LVH. Dr. Mensah said he has studied the possible benefit, evolutionarily, for having LVH, but the only thing he can find is that the ancient Egyptians cut the heart out of the dead and weighed it; the larger the heart, the greater the rewards in the afterlife because they thought it indicated that the heart grew when you did good deeds. Basically, there is no benefit in this world for LVH. It is known that athletes may have larger heart mass, but this is a known result of intense exercise.

### **CONCURRENT BREAKOUT SESSIONS I: LUNCH AND MENTOR SESSIONS TABLE TOPICS**

#### **(1) Diabetes and Obesity**

*Omaima M. Sabek, Ph.D. Assistant Professor, Department of Nursing/Acute and Chronic Care University of Tennessee Health Science Center, Memphis, TN*

Participants discussed current research on genetic and ethnic differences in the rate of diabetes, obesity and insulin resistance, beta-cell function, and effects of gastric bypass surgery on insulin resistance and beta-cell function.

Studies currently are being conducted to find determinants for differences in obesity, body

composition, and insulin response to glucose. Variables for genetic and ethnic differences in the rate of obesity and diabetes include:

- Ethnic background (percentage of European, American Indian, and African present in individuals, ethnic identification of parents).
- Body composition (including lean and fat mass, bone density, waist circumference, response to glucose).
- Physical activity levels (aerobic capacity, heart rate).
- Environmental and culture factors of neighborhood (racial composition, access to fruit and vegetables).

Researchers have discovered that racial disparities are more complex than originally thought particularly concerning Hispanics. A variety of social-economic and social-cultural determinants must be evaluated and considered. Factors such as the body mass index (BMI) that currently are based on white populations should be recalculated for ethnic populations. The goal of preventing diabetes is possible as investigators studying minority health research better understand the variety of determinants of the disease.

Knowing a patient's genetic background before beta-cell transplant surgery enables investigators to identify which medications will perform better with various ethnic populations. How transplant medication and other factors prevent proteins from reaching cell membranes currently is being studied with the goal of minimizing transplant rejection in patients.

Research also is being conducted to discover why some individuals tolerate excess body fat and do not develop metabolic abnormalities. Factors affecting insulin resistance include excess adipose tissue, beta-cell function, C-reactive protein, inflammation, and oxidative stress. Investigators also have discovered that intramyocellular fat is well correlated to insulin sensitivity and hope to determine how fat tissue in obese individuals with insulin resistance compares to obese individuals who are not insulin resistant. In the future, a biopsy of adipose tissue may help predict which individuals will develop diabetes.

Beta-cell function is a universal marker for understanding diabetes. While poor beta-cell function is present in individuals with insulin resistance, beta-cell function is absent in persons with diabetes. Investigators must distinguish between beta-cell viability and function, however, because cells can be living and viable, but function poorly. Studies have demonstrated that visceral adiposity and body shape are strong predictors of beta-cell function. Future studies that characterize body fat by cell type and activity of cells will provide valuable insight into beta-cell function and the possibility of developing diabetes.

Gastric bypass surgery appears to disrupt the relationship between visceral adipose tissue and beta-cell function thereby resolving insulin resistance and diabetes. Changing levels of gut hormones, such as gastric inhibitory peptide (GIP) and glucagon-like peptide-1 (GLP-1), after bariatric surgery, may repair beta-cell function and provide complete resolution of diabetes. The dramatic changes in diet among patients who have gastric bypass surgery also must be considered.

## **(2) Hypertension and Renal Disease**

*Dr. Lea*

Dr. Lea asked participants to introduce themselves and to state their positions and their interests so that the discussion could be geared toward the audience. Most attendees were present for Dr. Lea's presentation the previous night on the impact of hypertension on kidney disease. Copies of her presentation also were distributed in the handouts. This session was intended as a follow up to that talk, to provide participants a chance to ask questions and discuss related issues in an interactive setting. Dr. Mensah was present as an additional resource.

Dr. Lea noted that approximately 20 million people in the United States have some form of kidney disease. Many of these people are not aware that they have the disease. Only approximately 400,000 are at stage 5 and receiving dialysis. More nephrologists are needed to respond to the needs of kidney disease patients. Many patients die between stages 3 and 5 without ever having received dialysis. Lowering blood pressure levels and treating cardiovascular disease, diabetes, obesity, and other risk factors are important in preventing early death among patients. Dr. Lea emphasized the need for more nephrologists to attendees who may not have decided yet on an area of concentration.

Dr. Lea described her own educational background and emphasized the importance of networking and mentoring, and of encouraging minority investigators to become involved in fields such as nephrology. She has combined both research and treating patients into a satisfying, meaningful career, and she encouraged those present to explore what would be satisfying and meaningful for them. She and Dr. Mensah also highlighted the importance of keeping careful track of various tasks, papers, projects, memberships, activities, and the like for use when applying for positions and promotions.

Other points made during the discussion included:

- Additional studies are needed on using combinations of drugs to treat kidney disease.
- Lifestyle changes may allow patients to reduce or eliminate certain hypertension medications, but this should be done under supervision of a physician.
- Frequently, patients can be started on medication(s) and encouraged to make lifestyle changes simultaneously, with the idea that it may be possible to eliminate their medication(s) when they return for a 3-month follow up visit. In such a scenario, starting the patient on medication may serve as an incentive to make a good effort at the lifestyle changes in hopes that they will allow the patient to go off his or her medication in the future.
- In the United States, 90 percent of salt intake comes from processed foods as opposed to table salt. Thus, encouraging patients to reduce their intake of processed foods can be an effective means of reducing sodium intake.
- Not all patients are salt-sensitive, although most people with hypertension will benefit from reducing their sodium intake.
- Most studies that have compared salt intake among African Americans and whites have found the intake among both groups to be similar; African Americans, however, appear to be more sensitive to salt intake.
- Increased education is needed for both patients and physicians regarding kidney disease risk factors in African Americans.

### **(3) Nutrition and Epidemiology**

*Conrad Cole, M.D., M.P.H., Assistant Professor, Department of Pediatrics, Emory University, Atlanta, GA*

Dr. Cole provided background on the importance of epidemiology in the study of nutrition. Obesity is an increasing problem in the United States, with increases in prevalence across all racial and ethnic groups. Obesity is generally a disease of malnutrition. Epidemiologic studies offer clues as to the relationships between nutrition and disease, with increasing emphasis on the rise in obesity as a comorbid condition associated with diabetes, cardiovascular disease (CVD), and cancer. Epidemiologists also have identified the rise in subclinical rickets in the United States, which is caused by a lack of vitamin D and adversely affects African Americans because of lower milk intake and higher rates of lactose intolerance than in the general population.

It is important to determine how to move from epidemiology to policy. Food policy includes many things, such as recommendations for specific groups (e.g., nursing mothers, the elderly, and adolescents), and the challenge is how to translate research findings for the public. On the issue of obesity, most people may think that the increase in the incidence of obesity in recent decades is being caused by an increase in food intake. This is not the case. A University of Cambridge study looked at food intake for the past 60 years and found that caloric intake has not increased—the one variable that has changed demonstrably is physical activity, which has declined.

Dr. Cole presented slides showing the nutritional deficiencies of essential minerals and vitamins in the American diet. Processing foods has depleted many essential micronutrients; much of the salt in processing is not iodized, which can lead to thyroid problems. Fortification of foods has helped, but in the past decade there has been a decrease in intake of certain micronutrients, such as iron, irrespective of the population's exposure to fortification. These trends may be attributable to changing eating habits among some population groups. Worldwide, the deficiencies approach 50 percent, especially for iron, iodine, vitamin A, folic acid, zinc, fluoride, and others. This is occurring even among obese individuals.

To address some of these problems, many programs attempt to address the public health elements of nutrition. Dr. Rodgers, Director of NIDDK, has begun investigating the use of celebrities to promote healthy eating and increased physical activity. This approach has some risks, but with proper vetting it may be possible to choose celebrities who will promote a healthy message.

Programs are being implemented in public schools to increase physical activity and offer more nutritious lunches and snacks. Studies of these programs have not been encouraging regarding their ability to change behavior. Changing behavior is much more difficult than changing awareness. Dr. Cole used a triangular model to depict the relationships among efforts to promote behavioral change, intervention systems, data systems, and management. Data systems include assessments, laws and regulations, surveillance programs, the impact of mentoring, and inspection and enforcement. To promote behavioral change, there must be strong advocacy, strategic mobilization, education and marketing. This can lead to intervention systems involving medical delivery systems, food systems (such as fortification), transportation system changes, changes in the financial infrastructure, and community action. Management elements for changing behavior must include the infrastructure, workforce issues, and annual appropriations that encourage healthier lifestyles.

Dr. Cole said that programs being discussed in Arkansas to address obesity may be a model for other states. It is important that partnerships be developed to attack this public health problem.

## **CONCURRENT BREAKOUT SESSIONS II: PARALLEL CAREER DEVELOPMENT WORKSHOPS**

### **(1) Grants: Going From an Idea to a Winning Proposal**

*Bessie A. Young, M.D., M.P.H., Assistant Professor, Department of Medicine, University of Washington, VA Puget Sound Health Care System, Seattle, WA*

Dr. Young offered strategies for developing ideas for a grant proposal and steps to take to ensure the best chance of success for the application. Whether applying for a grant at NIH, private foundations, or professional societies, a well-developed idea must have a logical and presentable submission as the first step. She reviewed the types of NIH grants available for researchers and showed that the success rate for some NIH awards, such as K-series grants, is dropping as NIH funds decrease and more researchers apply for grants. Decisions regarding the grant that is most appropriate for an individual should be based on an understanding of what the grantor is asking for and requirements for awarding grants.

Application planning and preparation are critical for submitting a successful grant. Of particular importance is reading directions and following them at each step of the process. Time management will make the process painless, especially for mentors or colleagues who will be asked to review the application. Dr. Young provided typical timelines for planning and preparing a grant application; most applications take longer than one would expect.

Each of the individual pieces of the application is important, but the front matter, including the title and abstract, offers the reviewer initial information that may color their review of the remaining pieces of the application. These are the most important parts of any proposal. A hypothesis-driven proposal is more interesting to the reviewer than a completely descriptive proposal. State the hypothesis in the abstract followed by long-term objectives or specific aims, and think about the most pressing question your proposal will answer. Dr. Young provided examples of this approach.

To inform the reviewer that you have the interest and background to conduct the research described in your proposal, an application should contain a summary of previous research, including a review of relevant preliminary studies and results (include actual data, tables, and figures). Make sure to tie studies to the hypothesis and long-term objectives of the proposal, with a list of publications submitted or accepted.

Dr. Young reviewed specific strategies for presenting research design and methods. This may be viewed as the “operations manual” and should be closely linked to each specific aim. Statistical methods should be included in detail so reviewers will know that the grant will result in data that will be useful for addressing the hypothesis. It always is advisable to bring statisticians into the process early on in proposal development. A list of strengths and weaknesses and a realistic budget that is related specifically to steps in the research methods and design sections of the proposal can enhance the presentation of the proposal and shows that the applicant has been thoughtful.

Submitting the grant must adhere to deadlines and expectations. Most funding organizations have very specific guidelines for submission; follow these to the letter of the request. Many

institutions have internal review panels that can offer suggestions to strengthen the proposal. Follow these recommendations if given, because these panels have experience with successful grant applications.

A grant that is not funded it is not an indication that it is time to quit. Evaluating the critiques is very valuable, and this should be done with mentors or colleagues. Review the evaluation point by point and pick specific areas to improve the application. It is possible to discuss the review with NIH program staff. In most cases, it is advisable to revise the application and resubmit it—NIH allows applications to be submitted twice. It is important to be sure that the grant has been reviewed by the appropriate NIH committee; in addition, one may ask NIH to assign new reviewers.

Dr. Young concluded the presentation with “Bessie’s Grant Pearls,” things she has learned from past grant application experiences.

- Never give up! Keep revising!
- Ask colleagues to give you copies of their funded grants for review.
- Find a good mentor who will help you with all of the small details.
- If you are not an expert writer, find someone to read and edit for you. Avoid jargon and make sure you correct grammatical errors.
- Create a timeline, write an outline, and stay on time.
- Adhere to page limits.
- Make sure you read the final version and look at the details.

## **(2) Managing Laboratory Growth and Remaining Focused**

*Mario B. Marrero, Ph.D., Associate Professor, Department of Vascular Biology Center, Medical College of Georgia, Augusta, GA*

This breakout session consisted of discussions on successfully managing a laboratory, and issues of growth. Dr. Marrero gave examples from his experience. Important lessons for managing the workplace include the following:

- Maintain a friendly disposition with those in the laboratory, but always make sure you maintain the barrier between supervisor and employee.
- Treat each employee individually, but be fair in application of laboratory work standards. Some employees or staff members work harder than others, and it is appropriate to make note of this.
- Be a mentor and/or a boss, but do not be a “buddy.”

One of the most important aspects of managing a laboratory is keeping an open door to facilitate communication among staff members. Being available also means meeting formally with staff to discuss progress and problems in operations and research studies. It also is important that the laboratory manager meet regularly with individual staff members to make sure they have an opportunity to discuss issues or to seek advice.

Smooth operations in the laboratory depend on a good leader. Being a role model, both in the science implemented and the interactions with staff, is critical for maintaining a laboratory in which everyone operates on the same page. Successful laboratories have leaders who lead by example.



For managing the growth of a laboratory, Dr. Marrero said that growth or retraction is dependent on funding; ensuring that adequate funding exists is the primary responsibility of the manager. In the current funding environment, it is becoming increasingly difficult to receive funds for many of the support personnel for the laboratory, such as technicians and assistants. This is painful for everyone and creates anxiety among laboratory staff. Many staff members have to spend valuable time making sure they have opportunities to continue their research elsewhere if their current laboratory loses funding.

A good manager will make sure everyone in the laboratory understands their status regarding continued funding, and how that impacts their continued employment. Commitments regarding funding and employment must be realistic and no commitment should be made if funding is not available.

As a manager of a laboratory, this is an especially difficult time to be in charge. Uncertainty exists in funding from almost all sources, and junior investigators and technicians have greater opportunities for employment than in the past, possibly due to changing technologies and broader research agendas.

Dr. Marrero cautioned about the dangers of trying to grow too big, too quickly. Managing growth must be undertaken with logic and care to protect the research environment of the laboratory and to provide a stable funding base. Expanding also impacts the laboratory manager's control, so picking capable supervisors is critical.

### **(3) Negotiating Your First Academic Position**

*Evangeline Motley, Ph.D., Associate Dean, School of Graduate Studies and Research, Associate Professor, Division of Cardiovascular Biology, Department of Biomedical Science, Meharry Medical College, Nashville, TN*

Dr. Motley introduced herself and asked the attendees to introduce themselves. She noted that the information she provided was from ScienceCareers.org.

The first step in negotiating an academic position is to know one's "bottom line," which involves researching the prospective employer, knowing the department chair, knowing the chair's bottom line, and knowing one's own bottom line. Critical initial questions include:

- Is the department a good fit for my research program?
- What size laboratory do I need?
- How much "startup" money do I need to establish my research program?
- How much time am I willing to devote to teaching?
- How much time can I afford to devote to service-oriented duties?

To determine if a department is a good fit, decide how many other things you would be willing to sacrifice to get there. If it's not a good fit, try to negotiate to make the position more attractive, or look elsewhere.

In negotiating the startup package, consider laboratory and office space and funding for staff, equipment, and reagents. Space considerations include the following:

- Junior faculty often receive a minimal amount of space (400 to 1,000 square feet).
- The research techniques you use and the equipment you need will determine how much space you will need.
- For modern molecular/cellular biology research, a well laid-out 400-square foot lab can accommodate two to three full-time staff and some equipment.
- The space may need to be renovated.

The value of startup packages has increased during the past 10 years because research universities are competing to hire the most promising young faculty. A startup package maybe offered as a lump sum or as a tally of individual items (equipment, staff, reagents, etc.). Be prepared to negotiate for more if the offered sum is not sufficient. This means having a clear idea of your needs and how much they will cost before you enter into negotiations.

Equipment considerations may include a one-time cost that will depend on whether the department or institution owns it, whether it will be shared with other scientists, and cost range (\$100,000–\$150,000). Some very expensive equipment may require separate negotiations.

Staffing needs are the most difficult item to negotiate. Junior faculty will establish a laboratory of two to three full-time staff members during the first 3 years (a technician and one or two graduate students). A midlevel technician and one graduate student will cost \$65,000 to \$75,000 (tuition can increase this by \$20,000–\$30,000). Negotiate for a talented post-doctoral student. You may be able to negotiate for an additional person in 2 years (budgets differ by fiscal year).

Costs of reagents are difficult to predict. Each full-time staff member, including yourself, will spend about \$15,000 to \$24,000 per year on reagents. This includes animal costs, specialty reagents such as antibodies, and radioactivity.

Regarding the length of time to negotiate for, consider that startup funds help initiate your career, not maintain it, and several years of support will be required. Remember that your grant may not be funded on the first or second submission because of tight federal budgets. Be prepared to discuss what happens to the startup funds if you get your own grant before the funds run out.

It is important to clearly spell out the teaching responsibilities that you will have. All junior faculty are expected to teach one or more courses per semester or year in the undergraduate department. To establish a strong research lab, it may be necessary to delay teaching as long as possible.

Service responsibilities include committee work, advising students, administering graduate programs, running a core facility, and seeing patients.

Salaries are derived from university funds, research grants, and, sometimes, clinical service. Parameters that govern salary include:

- The type of institution and department (medical school, undergraduate college).
- Your degree (Ph.D., M.D.).
- The cost of living in the region.
- What others at your rank and experience earn at this institution as well as at peer institutions.

Review salary surveys via the Association of American Medical Colleges, professional societies, etc. You may be expected to pay part (50% or more) of your salary from extramural research funds once you receive a grant. Bringing your own grant when you start puts you in a strong negotiating position.

It is **critically** important to receive your offer in writing and signed by the chair. The offer letter should include how long you will have access to the funds. In addition, if a lump-sum number is cited, ask to have the categories (e.g., staff, supplies, equipment, and travel) listed.

Other points to consider in the negotiation process include: relocation and housing, health and retirement benefits, secretarial support, professional development, timing, start date, other logistics, and tenure.

Dr. Motley summarized the discussion by advising attendees to rank their negotiation points as “must have,” “would like to have,” and “can live without.” It may require extensive “back and forth” discussions before you have what you need, so it is important to be patient. In the end, you will most likely receive a fair package that will allow you to develop your career.

#### **(4) Mentor: Finding a Great Mentor**

*Titus Reaves, Ph.D., Assistant Professor, Department of Cell Biology and Anatomy, Medical University of South Carolina, Charleston, SC*

Dr. Reaves presented information on finding and being a great mentor. The characteristics of a good mentor are that they share interests and projects with the mentee. This is true for all mentor/mentee relationships, whether minority or not. The chemistry between mentor and mentee must be obvious from the beginning, and expectations need to be defined. The mentee must bring something of value to the relationship to ensure that the mentor understands the value of the relationship. Mentors should be accessible but should recognize the mentees' independence; this should extend to providing credit for contributions to the research project. Lastly, there must be collegial interactions within the workplace environment.

The practical importance of the mentor is in navigating the research or institutional environment, to assist in understanding and managing the tenure process, and to discuss scientific results.

When a mentee is considering finding an appropriate mentor, they should consider the behaviors they want in a mentor. If possible, evaluate the potential mentors for past successes, whether the mentor is considered approachable at the institution, and determine if the mentor is respected and well connected both within and outside the institution. Also, see if they are willing to invest the time in you, or if they are only interested in having someone to complete their research. Often, it is advisable to find more than one mentor because it may not be possible to find all the characteristics you want in one person. On the other hand, it is important for the mentee to understand the role of the mentor in advancing the mentee's career and research agenda. It is important to understand the mentor's contributions to your career development, and make sure always to give recognition to the mentor.

The mentor can do the following:

- Provide constructive and timely feedback, which may be difficult because of time constraints.

- Monitor the mentee's academic progress.
- Direct the mentee to channels for resolving and advancing professional issues, such as meeting with people within the institution (whether scientific or political).
- Advocate for the mentee and promote the mentee's professional exposure.
- Alert the mentee to appropriate career opportunities in continuing education workshops, funding, and so on.
- Seriously and objectively review the mentee's academic progress and products.

The mentee has responsibilities in the mentor/mentee relationship. The mentee should meet regularly with the mentor on a schedule that accommodates the mentor's style and schedule to share aspirations and challenges. The goal should be a professional, collegial relationship—not emotional and needy—and the mentee should seek continuous feedback. It also is important that the mentee not become defensive when the mentor is offering constructive criticism. The mentee should take the initiative to improve his or her work based on constructive comments.

### **Mentor: Being a Great Mentor**

*LaDonna Jones, Pharm.D., Assistant Professor, Department of Pharmacotherapy and Outcomes Science, Loma Linda University School of Pharmacy, Loma Linda, CA*

Dr. Jones provided a list depicting the characteristics of mentors:

- Advisors, people with career experience willing to share their knowledge.
- Supporters, people who give emotional and moral encouragement; people who give specific feedback on one's performance.
- Sponsors, sources of information about and aid in obtaining opportunities.
- Models, of identity, of the kind of person one should be to be an academic.

One should want to be a mentor to achieve satisfaction, attract good students, stay on top of one's field, develop one's professional network, and extend one's contributions. Qualifications for mentors include supervisory skills, interpersonal skills, an interest in the mentee's growth, and knowledge of a type of career and/or a specific discipline. Roles and responsibilities of mentors include the ability to serve as a role model; provide support, encouragement, and positive perspectives; serve as a resource and confidant when personal, job, and educational problems occur; and to recommend ways for the mentee to develop specific skills, effective behavior, and to learn how to function in the academic environment. Other important roles for the mentor include assisting the mentee in planning a career path; giving feedback on observed behavior and reported performance; acting as a source of information regarding careers and career development techniques; establishing and maintaining ongoing contact with school faculty, mentor coordinator, and mentee; and eliciting feedback as needed to ensure success.

A mentor comes to the relationship with his or her own unique life experiences in learning and working with others. The best mentors are people whose own enthusiasm for their work and recreation is so contagious that they inspire others just by doing what they enjoy most. The mentoring relationship includes the following:

- Ensuring a common goal to advance the education and personal growth of the undergraduate or graduate student or junior colleague.

- Recognizing that there is **NO** single formula for good mentoring; different students and colleagues will require different amounts and kinds of attention, advice, information, and encouragement.
- Listening to the mentee to understand what is being said, the subtext and tone, and body language that may indicate a different message.
- Keeping in touch with the mentee to anticipate problems before they become serious.
- Encouraging the mentee to find additional mentors because no one can meet the entire needs of another person and everyone benefits from mentors with diverse talent, ages, and personalities.

One of the most critical responsibilities of a mentor is to address personal ethics. Illustrating ethics in everyday situations is the most effective lesson to impart to a mentee. Make sure the mentee understands what is meant by scientific misconduct.

Dr. Jones addressed population-diversity issues regarding mentoring. Many mentors are effective at mentoring those from different racial and/or ethnic backgrounds. They are able to make the effort to understand these differences and communicate those with the mentee. Because minorities make up a small percentage of the scientists in academia, they often are perceived as having inadequate preparation for the specific career field. Mentors can help displace some of this perception by listening closely to the mentee and not judging the situation too quickly.

## **TREATING DIABETES BY TRANSPLANTATION**

*Dr. Sabek*

Dr. Sabek presented information on the background research that led to transplantation for treating diabetes. Transplantation of sheep pancreata was attempted in 1894. Although it was unsuccessful, the patient lived a few days with normal glucose control before dying of organ rejection. The discovery of insulin in 1921 made treatment of diabetes routine. In 1966, the first human pancreas transplant was attempted successfully. It now is understood that only transplantation of the pancreatic islets is needed to improve the diabetic condition, although at this time, it takes many islet cells to return to normal glucose levels. Dr. Sabek explained the procedures for securing islet cells and transplant procedures.

Dr. Sabek described methods for isolating pancreatic islet cells that are more efficient and less costly than procedures generally conducted. These newer procedures result in approximately 1 to 2 cubic centimeters of islets, which then can be treated and transplanted in an outpatient procedure. She reviewed eligibility criteria for being accepted for islet transplantation, as well as post-transplantation data showing that use of the Edmonton Protocol results in 87 percent of 15 patients off insulin at year 1 and 71 percent still off insulin at year 2.

A significant barrier to transplantation is the low level of islet viability during transplantation. Tests in NOD-scid mice have been conducted to try to improve islet viability. This research has shown that the number of islets needed for transplantation may be lower than the number generally transplanted. This may allow for more transplants.

A second barrier is the length of time the islets remain viable after removal from the donor. Research in this area has improved the treatment of islets so they can be distributed without losing viability.

Ongoing experiments are being conducted to clarify the best conditions for assuring viability of transplanted islets. Genetic expression maps have identified approximately 1,300 genes that are expressed in nonfunctional pancreatic islet. Nonfunctional pancreatic islets showed high levels of expression for a large number of genes known to be upregulated under hypoxic or ischemic conditions. They also showed very low levels of expression for genes encoding proteins critical to insulin processing and secretion, as well as communication within the endocrine pancreas. It also was shown that gender has some impact on islet viability, possibly because of hormonal influences.

### **Questions**

A participant asked how to prevent, after transplantation, the autoimmune process that destroys beta cells that produced diabetes before transplantation. Dr. Sabek responded that it is not known if the islet cells fail over time, or if there is an autoimmune process that destroys the cells.

Another participant asked whether the genetic changes occur during processing of the islet cells or in the donor before the islets are recovered. Dr. Sabek said this is a good question and it has not been answered. The islets come from patients without diabetes, but it is possible that they may have been in a prediabetic state.

Regarding the shaking by hand to separate the islets, a participant asked if mechanical shaking had been tried. Dr. Sabek said that they find that mechanical shaking tends to destroy more islets; hand shaking is less traumatic to the islets.

### **COMMUNICATING RESULTS OF RESEARCH TO THE PUBLIC**

*Elizabeth H. Singer, M.S., Director, Office of Communications and Public Liaison, NIDDK, NIH, Bethesda, MD*

Ms. Singer presented information on communicating the results of research by NIDDK and NIH to inform the public, whose tax dollars fund this research. Dr. Griffin Rodgers, Director of NIDDK, feels strongly that translating research is a key mission of the Institute. If the results of NIDDK research do not reach the intended audiences, there is little point in conducting research. NIH has a number of audiences, including patients, health professionals, science reporters, Congress, and the general public. NIH communicates with these audiences through publication of research manuscripts, and also through social marketing approaches involving the mass media, partnerships with the public and private sectors, and community outreach programs.

An example of a communication effort is the activity that followed publication of results from the NIDDK-funded Diabetes Prevention Program (DPP). For the past decade, NIDDK has been translating those results to physicians and the public in a multitude of venues and formats.

NIDDK has three national clearinghouses for disseminating information: the National Diabetes Information Clearinghouse, the National Digestive Diseases Information Clearinghouse, and the National Kidney and Urologic Diseases Information Clearinghouse. Each of these resources provides web information, toll-free numbers, electronic newsletters, and print copies of information. NIDDK also has started the Endocrine and Metabolic Diseases and Hematologic Diseases clearinghouses to address increased requests for information in these areas. In

addition, the Weight-Control Information Network (WIN) has been funded by NIDDK for the past 13 years, and has become very important in disseminating information about obesity.

Much of the translation occurs in the form of social marketing through NIDDK programs, such as the National Diabetes Education Program (NDEP), which is the largest of the education programs. The focus is on providing information to help people change their behavior. There are approximately 20 million people in the United States with T1D and T2D; another 50 million have prediabetes. This represents a significant number of people at risk in this country. NDEP began with a control message for those with diabetes. With publication of results from DPP, the NDEP has begun to translate those results into a prevention message.

An example of a prevention public campaign based on the DPP results is “Small Steps, Big Rewards: Prevent Type 2 Diabetes.” The goals of the campaign were to create awareness that T2D can be delayed or prevented in people with prediabetes; identify those at risk for prediabetes; define the term “prediabetes;” describe indications for testing patients at risk for prediabetes; and describe how providers can help patients with prediabetes.

NIDDK is collaborating with CDC in a community partnership with their Diabetes Prevention and Control Programs at the state level in a social change approach. Other community efforts include an NDEP initiative entitled “It’s Never Too Early to Prevent Diabetes,” which Dr. Rodgers helped kick off by visiting a District of Columbia community center to focus on gestational diabetes. Partnerships have been developed for every racial and ethnic group to focus on diabetes.

The NDEP website (<http://ndep.nih.gov>) provides a wealth of information for individuals and for those implementing community programs. The website was visited by unique individuals 2.4 million times in 2006; the first quarter of 2007 saw this many visits, including downloads of NDEP materials. These are impressive numbers and indicate that NDEP is offering materials that are useful to both individuals and community health promotion planners. Information for health systems and worksite programs also is available.

Since the beginning of the NDEP in 1997, according to media relations outreach, more than 1 billion people have been exposed to NDEP news stories. NDEP also has developed television and radio public service announcements (PSAs) valued at more than \$30 million, and print PSAs that have reached more than 53 million readers. Some of the current outreach efforts include music CDs developed in cooperation with CDC for Latino and Asian audiences; these CDs are available through the NDEP website.

The redesigned NIDDK website (<http://www2.niddk.nih.gov/>), under the direction of Dr. Rodgers, highlights research results and NIDDK education programs. New features include podcasts and bodcasts for audio and video that are available for downloading onto personal music and video technologies such as the iPod™.

Programs to address the dramatic increase in obesity in the United States have addressed women, African Americans, and Latinos/Hispanics. NIDDK’s WIN develops materials about improved nutrition and physical activity. WIN also sponsors outreach activities, such as *Sisters Together*, geared toward African American women, and *Toda La Vida*, which targets Latino/Hispanic women. Both of these programs are meant to increase participation in “fun” physical activities through initiatives such as walking clubs. Another weight control activity is *We Can!* (Ways to Enhance Children’s Activity and Nutrition). The National Heart, Lung, and Blood Institute (NHLBI) and NIDDK partnered to establish 376 community sites in 43 states, and

additional sites overseas. Communities that sign up for *We Can!* receive grant money to implement one of three curricula.

Ms. Singer completed her presentation by reviewing programs of the National Kidney Disease Education Program, and its focus on the AASK clinical study results. She presented examples of informational kits targeting African Americans through an emphasis on ethnically-appropriate materials, such as those geared for the African American Family Reunion Initiative. There also are new materials on kidney disease for Spanish speaking populations.

Additional information on any of the programs or clinical trials described are available at NIDDK's website, <http://www2.niddk.nih.gov/>, and at the NDEP website. Ms. Singer offered to work with the NMRI if members would like information or support in developing a communication plan.

### **Questions**

A participant asked for a reference for the data Ms. Singer reported that 81.6 percent of African American women are overweight or obese. Ms. Singer replied that these data come from the National Health and Nutrition Examination Survey (NHANES) datasets from the National Center for Health Statistics, a branch of CDC. The data were based on BMI.

Another participant asked if NIDDK grantees should notify the Institute if they publish a manuscript. Ms. Singer said that it would be most appropriate to contact the program officer, who will assess the possibility of the manuscript having significant findings that could be marketed through NIDDK information channels.

### **NMRI ANNUAL MEETING UPDATE**

*Dr. Isales*

Dr. Isales said that the scientific studies discussed today were very impressive. This is one of the reasons for continuing to offer scientific sessions during the NMRI meetings. He said that it now is up to network members to make use of the ideas and information offered at this meeting, especially in the sessions explaining how to improve grant writing.

The next national meeting for NMRI will be held at the Hilton Washington DC/Rockville Executive Meeting Center in Rockville, Maryland, on April 24–25, 2008.

### **WRAP-UP**

*Dr. Agodoa*

Dr. Agodoa restated the focus of NMRI on the success of minority researchers. NIDDK has been supportive of NMRI, but the network is run by its members. NIDDK is extremely grateful to the volunteer time given by NMRI members to assist members in mentoring activities. He encouraged participants to join NMRI. There will be special sessions for post-doctoral researchers at the NMRI National Workshop next April.

He presented Dr. Isales a plaque in appreciation of his term as chair of NMRI.

Dr. Agodoa adjourned the meeting.



## **FRIDAY, OCTOBER 5, 2007**

### **WELCOMING REMARKS**

*Dr. Isales*

Dr. Isales welcomed undergraduate students, graduate students, and NMRI members to the Friday session of the workshop. He informed participants that these sessions will be informal, with a lot of time for the students to interact with NMRI members and others who can speak from experience to the challenges and successes of applying and being accepted to medical programs. He provided time for the undergraduate students to introduce themselves and then introduced four graduate students in M.D./Ph.D. or Ph.D. programs who will take part in a panel discussion.

### **GRADUATE STUDENT PANEL AND PRESENTATIONS**

*DeAnna Baker, Doctoral Candidate, Department of Microbiology and Immunology, Medical University of South Carolina, Charleston, SC*

Ms. Baker, from Baltimore, said that the 7- to 8-year M.D./Ph.D. program includes 2 years of medical school, 3 years of graduate school, and then a return to medical school. She decided to enter the program because she wanted to pursue a career in academic research on mouse models of inflammation, which may have applications for medical treatment.

Ms. Baker began the road to her current career path in high school, when she worked in a summer program at Johns Hopkins and was exposed to medical research. At the time, she knew she wanted to pursue a medical career, but had not considered medical research. That experience opened the possibility for doing research in medical sciences, and led directly to her decision to enter the program. Undergraduate programs for minority students offered the opportunity to work in research on independent projects; this increased her interest in research.

The most important academic criteria for applying to the M.D./Ph.D. program were grade point average (GPA) and scores on the Medical College Admissions Test (MCAT) test. It also was important to do well before the medical faculty panels who listened to applicant's presentations about the type of research they hoped to pursue. It was important to have a solid background and strong recommendations from past research supervisors and teachers. The interview process can be quite daunting, but preparation can alleviate some of the nervousness and fear going into the interview. The best advice Ms. Baker was given before the process was, to "be yourself."

The transition from undergraduate school to the graduate program can be stressful, but Ms. Baker received a lot of support from the school. Ms. Baker's goals at this point include learning more about translation research and developing skills that can help her in her research interests.

Ms. Baker's motivation for success comes from her family; she was the first person in her family to graduate from a 4-year college, and is the first to go into medicine. In addition, her friends have supported her through the stressful times.

*Shirleatha T. Lee, M.S.N, R.N., Doctoral Candidate, Graduate School of Nursing, University of Tennessee Health Science Center, Memphis, TN*

Ms. Lee said that after she had been a nurse for 6 years, she decided to go back to graduate school and recognized that she was very interested in teaching and pursuing a medical career. This led her into the Ph.D. program in nursing at the University of Tennessee at Memphis. The GRE exam was one of the most stressful parts of the application process. Even after a few tries, she still did not meet the minimum score acceptable by the school. However, the school allowed the lower score because of excellent grades in undergraduate and graduate schools, as well as an excellent work history. The lesson is that working hard and doing your best can overcome one area of deficit. The people she is working with in her program are very supportive and she is learning a lot that will help her in her teaching and research career.

The transition from undergraduate to graduate school was relatively uneventful because she took time off to work and go into a masters program before attempting the Ph.D. program. Statistics courses have been quite challenging, but mentoring and tutoring support offered by the program has been helpful. One other important issue is how to pay for the program. Because she has a family, she was concerned about being in a program that did not allow the time needed for full-time employment. By applying for grants and other assistance, however, she was able to attend her program at no cost. The lesson is to apply for funding everywhere possible and work hard to meet requirements for funding; the number of times a student is turned down for funding should not deter the student from trying other sources.

Ms. Lee said that after two years in the Ph.D. program she has received support from so many people in the program that she knows she will be successful. Her motto is to do what is necessary today to make it possible to be successful tomorrow. It is overwhelming at times, but the goal is worth the effort, and the options available at the end of the program will allow her to do what it takes to meet her career goals.

*Yanci O. Mannery, Doctoral Candidate, Department of Molecular and Systems Pharmacology Emory University, Atlanta, GA*

Ms. Mannery is a Ph.D. candidate who has been interested in a medical career since high school, when her mother was diagnosed with lupus. During undergraduate school she decided that she did not want to go to medical school, and left science entirely. After some time of indecision about a career path, she was exposed to the possibility of a career path in medical research, which led her to begin the study of pharmacology. Interviews for graduate school were instructive and her choice was made based on the perceived high level of student support at Emory University. The transition from undergraduate to graduate school was difficult, possibly because she went directly to a doctoral program without first completing a masters program. She also was one of the few African American students in her program.

She is in the sixth year of the Ph.D. program and will soon to begin final preparations for graduation in 2008. One of the biggest disappointments at the beginning of the program was that she was in a program with many people who seemed smarter than her. She realized, however, that she could keep up with everyone in her classes by working hard. This challenge became a positive experience for her and improved her self confidence, which she has needed throughout the program.

She is the first person in her family to pursue a science or medical career. Her goal is to graduate and seek employment with a pharmaceutical company working on clinical trials or in

the laboratory on basic research. She could not have accomplished what she has without the support of her family, friends, and mentors. In closing, she said that graduate school is not a sprint, it is a journey with many ups and downs. Supportive people are critical to success. It also is important to have outside interests, and to spend some time participating in that part of your life. This will enhance the medical and career parts of your life.

*Chrystal Smith, M.A.A., M.P.H., Doctoral Candidate and Graduate Research Assistant,  
Department of Anthropology, University of South Florida, Tampa, FL*

Ms. Smith is an international student from Trinidad and has been on the journey for her career for a long time. She has been interested in population genetics and evolutionary science since she was in undergraduate school. She is a Ph.D. candidate at the University of South Florida (USF) in an applied program that allows research in policy and the health fields. Her first step after undergraduate school was to pursue an M.P.H. degree so that she would better understand epidemiology and population science.

The transition from undergraduate to graduate and postgraduate school has been difficult. She did not think it would take this long to complete her studies. She has had issues with being an international student; but through all the trials, support from friends, faculty, and colleagues has been invaluable.

Her specialization is in public health in Latin America and the Caribbean, with a secondary interest in diabetes; both of these areas of study are covered by programs at USF. She finds a lot of support in her academic program, as well as a lot of expertise in her fields of interest, but as she becomes more specialized, she must seek out additional faculty mentors. Choosing the correct mentor is critical to improve her chances of academic success. She has learned that adjustments must be made in designing a program that addresses other aspects of study—in other words, it is important to be open to new ideas. For her, this meant looking at aspects of diabetes that are different from the narrow focus she envisioned when she entered the program; this will let her grow academically and as a person.

### ***Discussion***

A participant asked Ms. Baker if all six of the programs she applied for were M.D./Ph.D. programs. Ms. Baker replied that she thought they were. One program accepted her only in the M.D. program (she did not accept that program). It was her intent to apply to Ph.D. programs as a backup plan if she did not get accepted into the M.D./Ph.D. programs.

A participant asked Ms. Mannery why she did not apply for M.D. programs. Ms. Mannery said that pharmacology and toxicology were her interests, and the clinical component did not interest her.

A participant asked each of the panelists what surprised them the most about graduate school. Ms. Lee said it was not easy; she didn't really expect it to be so difficult. Having to balance so many different aspects of life still has not been resolved. Ms. Mannery responded that she did not know it would take so long to complete the program. She is in the 5th year of the program. Ms. Baker said that transitioning from medical school to graduate school was very difficult. Medical school is planned out by the school for even the tiniest aspect of the program; the Ph.D. program was much less scheduled, with more free time to write papers and do research. Ms. Smith said that the amount of reading and writing was devastating at first. Teachers would give 20 articles to read and a 20-page paper would be due within a week. It took a while to get used

to that pace. Ms. Lee added that she wishes she had been exposed to the options available to students earlier in her academic career. It would have been beneficial if she had known in high school that these career paths were available.

## **STUDENT NETWORKING SESSION**

*F. Bridgett Rahim-Williams, Ph.D., M.P.H., M.A., Post-doctoral Associate, Pepper Scholar in Aging Research, Department of Community Dentistry and Behavioral Science, University of Florida, Gainesville, FL*

Dr. Rahim-Williams thanked the graduate panelists for sharing their experiences with the undergraduate attendees. The journey that each panelist described was made easier by support systems, which are related to networks. She presented background information on networks, including definitions and examples.

A network is a communication system consisting of a group of broadcasting stations that all transmit the same programs. It is a system of intersecting lines or channels, like a railroad network, that connects things and people. Networking also may describe communication with and within a group. Types of networks may include friends, family, co-workers or colleagues, communities, professional groups, or service groups, and they may be directional, bidirectional, or multidirectional. It is important to recognize your networks. If you cannot identify a network with which you are involved from the list above, it may be that developing that network will become a positive aspect for career development.

Most people have an idea of where to find networks, although in some cases you may be surprised. The following are common places where networks may be found.

- Academic Institutions
- Conferences or Meetings (such as this NMRI meeting)
- Places of Employment
- Service Clubs or Organizations
- Faith Organizations
- Sororities and Fraternities
- Online (chat rooms, YouTube, etc.)
- Geographic Regions (NMRI Southern)

It is important to map pathways of networks to see where they can take you. Some people at this meeting yesterday spent time talking to presenters to ask questions about their research and the way they applied for and received funding for the research. Dr. Rahim-Williams asked participants if they have reached out to introduce themselves to Dr. Agodoa, who has an extensive network of researchers that could be offered to students. You never know if the person you meet will become important in your career, or important in your avocation. There are so many interesting and experienced people who can assist you in a career path. The same can be said for Ms. Martinez. She is the right hand of Dr. Agodoa and is a wealth of information about untold resources and how to connect to them.

Academic and career networks create support systems. They can provide guidance and direction for a career path. They can open doors to opportunities you may not be aware of. These networks also will support your dreams and goals, and importantly, provide a safety net. Most of the time, you know in which direction you are going but do not know how to get there.

Networks can keep the doors open along the way. It also is important to know that, as new doors open, you may be closing others. The purpose of an academic and career network is your success, and it is important that you identify your networks.

After the presentation, Dr. Rahim-Williams asked undergraduate and graduate participants to spend a few minutes meeting people in the room and addressing a few specific questions that will allow them to get to know a little about that person. The purpose of this activity, known as “treasure hunt,” is to show how networks can be developed. She listed specific questions that should be asked. At the end of the activity, each participant explained what they learned about two individuals in the room and how knowing this enhanced their networks.

## **MEDICAL SCHOOL AND GRADUATE SCHOOL OPPORTUNITIES**

*Roy L. Sutliff, Ph.D., Assistant Professor of Medicine, Assistant Professor of Pathology and Laboratory Medicine, Emory University, Atlanta, GA*

Dr. Sutliff gave an overview of graduate programs in biological and biomedical sciences at Emory University. The manner in which you matriculate into a specific program or into an entire division is different at each graduate school. Emory has a Division of Biological and Biomedical Sciences, which is made up of eight different divisions.

Students apply to the program and, if accepted into the program, they are accepted into the division. This means that the student has access to more than 300 faculty members, even those who do not belong to the specific program to which the student applied. This is an advantage because, in times of shrinking funding, it is possible to work within a specific division. The stipend for students is paid by the university and does not come from funds of the division.

Dr. Sutliff reviewed requirements for admission, but said that they look at the entire person. They are looking for students with a real commitment to research, which sometimes overcomes less than exemplary scores on entry tests.

*Geoffrey H. Young, Ph.D., M.A., Associate Dean for Admissions, School of Medicine, Medical College of Georgia, Augusta, GA*

Dr. Young presented information on medical school opportunities at the Medical College of Georgia (MCG). MCG was founded in 1828 and is the 13th oldest of 126 medical schools in the nation. The School of Medicine has 730 Students (190 per class each year). MCG also has schools of dentistry, nursing, allied health, and a school of graduate studies with a total combined student body of 2,227 for 2007. MCG has varied research opportunities, including an M.D./Ph.D. program, summer research programs, projects with faculty members, NIH and other competitive fellowships, and a new \$54 million cancer research center.

Dr. Young reviewed the 4-year medical curriculum and the process for admission to the medical school. The school is very interested in research practitioners. Course requirements include 1 year each of the following courses, each with laboratory experience: biology, general chemistry, physics, organic chemistry, and advanced chemistry. English classes required to graduate from your individual college also are required. It is recommended that prerequisite courses in cellular biology and statistics are completed at the undergraduate level.

Students preparing for a medical education should take the following steps:

- Maintain a strong GPA.
- Receive a bachelor of arts or bachelor of science degree from an undergraduate college.
- Take as many science classes as possible.
- Have a strong performance on the MCAT.
- Get experience shadowing doctors and volunteering in the hospital.
- Ask a lot of questions to determine if medicine is really for you.

Dr. Young reviewed general admission requirements at MCG. Of particular importance are academic accomplishments, personal attributes, and general interests. For minority students, it is important to show a history of leadership. One of the missions of MCG is to provide quality medical care in underserved areas of Georgia. A commitment to serving in these areas is an important factor in admission to MCG.

The M.D./Ph.D. program at MCG is structured in conjunction with the University of Georgia, Georgia Institute of Technology, and Georgia State University. This program is directed toward those select individuals focused on preparation for careers as biomedical investigators, and is designed to train physician-scientists as both clinicians and critically trained scientists. Students complete all of the normal requirements of MCG for the M.D. degree; the Ph.D. degree can be earned in any of the degree-granting biomedical science departments of the cooperating institutions. A student completes 2 years of preclinical medical studies, takes 3–4 years to complete the Ph.D. through coursework and research, and then completes clinical studies at MCG during years 6–7.

Entry to the MCG M.D./Ph.D. program is a competitive process. For those who are accepted, tuition is \$25 per semester for Georgia residents. Each student receives \$23,000 per year as a stipend, and can receive travel awards to present research at a number of conventions and meetings around the country. This is a supportive program that has placed students postgraduation at the best medical institutions in the country. Of the 190 students admitted to MCG medical school in 2007, four were admitted into the M.D./Ph.D program.

*Patricia L. Cameron, Ph.D., Associate Dean, School of Graduate Studies, MCG*

Dr. Cameron presented information about the graduate school at MCG that was not covered by Dr. Young. She thanked undergraduate students for attending this session and said that this is an excellent opportunity to network with researchers and get information that can be used when it is time to make the decision to apply for medical or graduate school.

MCG trains health professionals and many options are available. Dr. Cameron focused on the health sciences. Health professionals work in a team to solve puzzles together. Thomas Edison had the perspective of health professionals when he said, “I have not failed 700 times. I have succeeded in proving that those 700 ways will not work. When I have eliminated the ways that will not work, I will find the way that will.”

MCG provides a rich intellectual, academic, and research environment for educating students to become leaders in the discovery and dissemination of knowledge, and in its application to human health and disease. She reviewed the admission requirements for the Ph.D. program in biomedical sciences. Once admitted, the student becomes a member of a professional team that derives support from faculty, mentors, and peers. At the end of the first year, students

choose their research field, select a major advisor, and enter into one of seven majors: biochemistry and molecular biology, cell biology and anatomy, molecular medicine, pharmacology, physiology, vascular biology, or neuroscience.

Dr. Cameron reviewed the M.D./Ph.D. program discussed by Dr. Young and added that it is never too early to begin planning to apply for these programs. She gave information about the summer STAR program available for undergraduate students. Students choose a research area of interest and spend part of the summer participating in a biomedical research project. Students attend fun and interactive workshops and prepare and present a scientific poster. They are paid for the experience.

Dr. Cameron concluded by offering advice to work hard and to be aware that there will be times when it may not seem achievable, but it is important always to remember why you wanted to pursue a career in something that excited passion.

### **Questions**

A participant asked about how to decide which program to attend for the M.D./Ph.D. program. Dr. Sutliff responded that at Emory the student should find a faculty member who is conducting research in the student's area of interest and go to the division in which that faculty member is located. Dr. Cameron said that, at MCG, everyone takes the same 1st year courses, but after that, they will work with faculty members who may be in different departments.

A participant asked for clarification about the M.D./Ph.D. program regarding the sequence of courses. Dr. Sutliff said that, at Emory, students must complete the Ph.D. program before continuing in the M.D. program. Dr. Cameron said that a student must be accepted into the M.D. program before acceptance to the M.D./Ph.D. program. If a student wants to apply for just a Ph.D. program after 1 year, it may be possible to apply then. The order for completing the M.D. and Ph.D. programs may be in either order, it may take longer to complete them sequentially.

Dr. Sutliff emphasized that personal statements are important in the application process. Dr. Young added that a poor application, whether in terms of grammar or format, make it difficult to take the applicant seriously. It should not be difficult to sell yourself on the application and to find people who know you to write honest and realistic recommendations. One tip is to say something about people you admire in your personal statements. Have a lot of people review your application, especially the personal statement, to make sure it passes their review before submission.

### **NIH RESEARCH TRAINING OPPORTUNITIES**

*Dr. Agodoa*

Dr. Agodoa presented information on research opportunities for minorities. In contrast to Dr. Podskalny's overview of NIH funding opportunities, this presentation focused on funding opportunities for health disparities research by underrepresented minorities. The research and dissemination spectrum at NIH includes the identification of health problems, the collection of epidemiologic data to identify potential risk factors that affect this health problem, and the design of clinical trials to examine the effects of risk factor changes on health outcomes. Once results of clinical trials are reported, it is critical that this information is translated and disseminated to the health community and the public.

The percentage of the population that is minority will increase until the year 2049, when it is anticipated that the United States will have become a plurality nation (with no true majority). Health status affects quality of life, and, ultimately, life expectancy. It is anticipated that the quality of life and life expectancy in the United States will continue to improve; however, a high quality of life and longevity have not been uniformly enjoyed by all Americans. Dr. Martin Luther King in 1966 recognized health disparities when he said, "Of all the forms of inequality, injustice in health is the most shocking and inhumane." Dr. Agodoa showed data that describe the health disparities in diabetes, CVD, cancer, and many other diseases and conditions.

The NIDDK Health Disparities Strategic Plan includes strategies for T2D, obesity, and ESRD. Approximately 30 percent of individuals greater than 60 years of age have diabetes or impaired fasting glucose. Each year, approximately 800,000 Americans develop diabetes. The prevalence of diabetes disproportionately affects minorities, with 19 percent of American Indians/Alaska Natives, 15 percent of African Americans, and 14 percent Hispanic/Latino Americans compared with only 7 percent of non-Hispanic whites. Diabetes complications also disproportionately affect minorities, and African Americans and Hispanics are twice as likely to die of diabetes than whites.

Data on obesity indicate dramatic increases in the past decades, especially among minority groups compared with whites. Data on obesity from NHANES indicate the following:

- American Indian children have obesity rates more than twice as high as any other racial or ethnic group.
- More than 65 percent of African American and Mexican American women are overweight, as defined by BMI above 25, and more than 10 percent of non-Hispanic Black women between the ages of 40 and 60 years are severely obese, with BMI exceeding 40.
- Hispanic Americans also have higher rates of obesity and hypertension.

NIDDK and NIH are addressing the obesity epidemic in the Strategic Plan for NIH Obesity Research, which may be found at <http://www.obesityresearch.nih.gov>. The focus of the plan is for site-specific approaches to prevention, prevention and treatment of childhood obesity in the primary care setting, and Intrauterine environment effects on the development of energy balance pathways. The Plan is being implemented across government agencies.

ESRD is another growing health problem in the United States that disproportionately affects minority populations. For example, African Americans have more than 4 times, and American Indians and Alaska Natives have 2.5 times the incidence rate of ESRD of Whites. African Americans are less likely than other racial and ethnic groups to be placed on the renal transplant waiting list and, when wait-listed, are less likely to receive renal transplants. In addition, the relative risk of kidney failure compared with Whites is 4.45-fold higher among African Americans; 3.57-fold higher among Native Americans; and 1.59-fold higher among Asian Americans. Among the risk factors for ESRD, minority populations have higher rates of hypertension, glomerulitis, cystic kidney disease, and diabetes.

Dr. Agodoa listed available funding sources for minority researchers from the NIDDK Health Disparities Strategic Plan, including funding for research infrastructure and training. General NIH training program grants, pipeline training programs, and capacity-building grants are available to encourage minority researchers and those working in the field of health disparities. Of particular importance are the diversity supplements available with many NIH grant



mechanisms. The diversity supplements are available throughout the year.

#### **CLOSING REMARKS AND ADJOURNMENT**

*Dr. Isales*

Dr. Isales thanked undergraduate students for attending the NMRI program and encouraged them to consider the programs presented at this meeting. He thanked speakers and other participants for supporting NMRI.

Dr. Isales reminded participants that the next annual meeting of NMRI will take place in Rockville, Maryland, on April 24–25, 2008.

He adjourned the meeting at 12:20 p.m.