2012
Network of Minority Health Research Investigators Membership Directory

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Mission Statement

The Office of Minority Health Research Coordination of the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) has established a communication network of current and potential biomedical research investigators and technical personnel interested in minority health research, including individuals from traditionally under-served communities: African American, Hispanic American, American Indian, Alaskan Native, Native Hawaiian, and other Pacific Islanders. The major objective of the network is to encourage and facilitate the participation of members of underrepresented population groups and others interested in minority health in the conduct of biomedical research in the fields of diabetes, endocrinology, metabolism, digestive diseases, nutrition, kidney, urologic and hematologic diseases. A second objective is to encourage and enhance the potential of the investigators in choosing a biomedical research career in these fields. An important component of this network is promotion of two-way communications between network members and the NIDDK.

Through the Network of Minority Health Research Investigators (NMRI), NIDDK will elicit recommendations for strategies to enhance the opportunities and implement mechanisms for support of underrepresented population groups and others in biomedical research. The NMRI will advance scientific knowledge and contribute to the reduction and eventual elimination of racial and ethnic health disparities.

NIDDK Executives

Griffin P. Rodgers, M.D., M.A.C.P.

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Dr. Griffin P. Rodgers was named Director of the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)—one of the National Institutes of Health (NIH)—on April 1, 2007. He had served as NIDDK's Acting Director since March 2006 and had been the Institute's Deputy Director since January 2001. As the Director of NIDDK, Dr. Rodgers provides scientific leadership and manages a staff of more than 600 employees and a budget of $2.0 billion.

Dr. Rodgers received his undergraduate, graduate, and medical degrees from Brown University in Providence, Rhode Island. He performed his residency and chief residency in internal medicine at Barnes Hospital and the Washington University School of Medicine in St. Louis. His fellowship training in hematology/oncology was in a joint program of the NIH with George Washington University and the Washington Veterans Administration Medical Center. In addition to his medical and research training, he earned a Master's degree in Business Administration, with a focus on the business of medicine/science, from Johns Hopkins University in 2005.

As a research investigator, Dr. Rodgers is widely recognized for his contributions to the development of the first effective—and now FDA-approved—therapy for sickle cell anemia. He was a principal investigator in clinical trials to develop therapy for patients with sickle cell disease and also performed basic research that focused on understanding the molecular basis of how certain drugs induce gamma-globin gene expression. He was honored for his research with numerous awards, including the 1998 Richard and Hinda Rosenthal Foundation Award, the 2000 Arthur S. Flemming Award, the Legacy of Leadership Award in 2002, and a Mastership from the American College of Physicians in 2005.

Dr. Rodgers has been an invited professor at medical schools and hospitals in France, Italy, China, Japan, and Korea. He has been honored with many named lectureships at American medical centers; has published more than 200 original research articles, reviews, and book chapters; has edited four books and monographs; and holds four patents.

Dr. Rodgers served as Governor to the American College of Physicians for the Department of Health and Human Services from 1994 to 1997. He is a member of the American Society of Hematology, the American Society of Clinical Investigation of the National Academy of Sciences, the Association of American Physicians, and the Institute of Medicine, among others. He served as chair of the Hematology Subspecialty Board and is a member of the American Board of Internal Medicine Board of Directors.

Lawrence Y.C. Agodoa, M.D., F.A.C.P.

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Dr. Lawrence Y.C. Agodoa graduated from the Cornell University Medical College, New York, in 1971. He completed internship and residency training in Internal Medicine at the University of Washington Hospitals in Seattle and 3-year training in clinical and basic research in Nephrology and Renal Pathology.

He was appointed Chief of the Nephrology Service at the Madigan Army Medical Center, Tacoma, Washington, 1976-1981. He subsequently completed 2 years of clinical and research training in Rheumatology and Immunology, 1981-1983. In 1983, he was assigned to the Walter Reed Army Medical Center as Assistant Chief of the Nephrology Service and the Nephrology Training Program, and also appointed to the faculty of Medicine at the Uniformed Services University of the Health Sciences (USUHS), Bethesda, Maryland. In 1985, he was appointed Director of the Military Medical Research Fellowship at the Walter Reed Army Institute of Research.

In 1987, he was appointed Director of the Clinical Affairs Program in the Division of Kidney, Urologic, and Hematologic Diseases at the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) of the National Institutes of Health (NIH), Bethesda, Maryland. He also was an intramural research scientist in the Laboratory of Cell and Molecular Biology, NIDDK, from 1987 to 1992.

Presently, he is Professor of Medicine at the Uniformed Services University of the Health Sciences, F. Edward Hebert School of Medicine, and Program Director at the NIH. His current duties include the following:

- Director, Office of Minority Health Research Coordination, NIDDK, NIH.
- Director of the Minority Chronic Kidney Disease and End Stage Renal Disease Programs in the Division of Kidney, Urologic and Hematologic Diseases of NIDDK.
- Co-Project Officer of the ESRD renal database, the United States Renal Data System (USRDS).

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Research Interests

My laboratory employs an integrative approach to studying signaling complexes that regulate vascular contractility. We utilize a combination of molecular, physiological, and pharmacological tools to investigate macromolecular complexes formed by ion channels and scaffolding proteins and their roles in the physiology and pathophysiology of microcirculation.

Gbemisola Adeseun, M.D., M.P.H.

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Research Interests

I am interested in exploring the impact of health literacy on clinical outcomes in chronic kidney disease. My future research will seek to better understand the influence of health literacy on health behavior and decision making in the context of a complicated health care system. I also am interested in elucidating the interplay between health literacy, health care utilization, and health care quality in chronic kidney disease.

Roberto Aguilar, Ph.D.

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Research Interests

I have been studying the effects of increased cAMP and/or cGMP on the ability to regenerate axons after an injury using genetically engineered mice that lack cyclic nucleotide phosphodiesterases. Additionally, I have designed, generated, and characterized a novel model of cervical bilateral contusion in mice. This model is important because more than 50 percent of spinal cord injuries (SCI) in humans are at the cervical vertebral level. Thus, generating a clinically relevant model of SCI in mice would allow us to utilize genetically modified mice to design proof-of-principle experiments. My future research interests include the use of my training in endocrinology, SCI, genetics, molecular biology, and neuroscience to explore new therapeutic avenues that would allow for neural regeneration to occur after an injury. I would like to identify what endocrine hormone(s) can be utilized, either on their own or in combination, to regenerate neurons/axons after injury.

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Research Interests

My interests are in translational research in the following areas: effect of testosterone replacement on bone health; effect of weight loss and exercise on bone and markers of inflammation in obese, older, frail humans; and effect of diet and exercise on mice bone and inflammatory markers.

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Research Interests

My research interest is in physical activity in the prevention of pediatric obesity. In particular, my interest is in the utilization of community family-based physical activity interventions to reduce early onset cardiovascular disease risk factors in ethnic-minority children. My research agenda also includes examining: (1) the interrelationship between physical activity and nutrition in preschool-age children; and (2) environmental and media influence on various health behaviors in ethnic-minority populations.

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Research Interests

My overall research interest is driven by Infectious Disease conditions that are overrepresented in minorities. Specifically, I am interested in HIV improved testing and using technology to improve care. I am building an HIV care cohort in a new HIV clinic in El Paso. I am also interested in HCV in minorities, including education, testing, and treatment that help to improve the differential outcomes for minorities with HCV.

Erica Renee Alvarez, M.D. candidate

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Research Interests

I am interested in studying the metabolic syndrome as a risk factor for the development and the progression of chronic kidney disease in Hispanics.

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Research Interests

My research interests include the effects of exercise/physical activity on different clinical and physiological aspects of chronic kidney disease; specifically, the role of exercise/physical activity on disease progression, blood pressure control, glucose control, functional capacity, protein excretion, number of hospitalizations, complications, co-morbidities (cardiovascular disease), and quality of life in this population. I am investigating physical activity levels and patterns, as well as determinants of physical activity behavior, in CKD patients in Puerto Rico.

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Research Interests

My research focuses on the cell biology of diarrheal disease. Specifically, our laboratory has focused on studies that investigate mechanisms that regulate apical endocytosis and exocytosis of the Cystic Fibrosis Transmembrane Conductance Regulator (CFTR) chloride channel in the intestine. CFTR is the major exit pathway for chloride and bicarbonate (anions) secretion in epithelial cells of the intestine and therefore is critical for intestinal fluid secretion. In the genetic disease Cystic Fibrosis, mutations lead to defective intracellular traffic of CFTR to the plasma membrane of intestinal cells, resulting in lack of fluid secretion in the intestinal lumen. On the other hand, diarrhea results when the number of CFTR channels on the apical surface of intestinal cells is increased by exocytosis or defective endocytosis. Our group was the first to demonstrate that intestinal fluid secretion is regulated by agonist (cAMP/PKA and cGMP/PKG)-stimulated traffic and insertion of CFTR channels from subapical endosomes to the plasma membrane and by defects in apical clathrin mediated endocytosis. Since then, we have worked to characterize the physiologic regulators of apical endocytosis, recycling, and exocytosis of CFTR in the intestine, with the goal of identifying targets for the pathogenesis and treatment of diarrheal diseases. Most recently, we have been examining the role of myosin motors and adaptor proteins in CFTR endocytosis.

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Research Interests

My research interests include skeletal muscle function and metabolism, integrated biochemical and physiological approaches to the study of prototypical and atypical skeletal muscles and the process of how they are altered by age, neuromuscular disorders, and the study of preferentially targeted or spared motor groups to determine protective strategies.

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Research Interests

My research interests include ethnic differences in Type 2 diabetes and its complications, cardiovascular disease, visceral fat accumulation, adipocytokines, osteoporosis, and nonalcoholic fatty liver disease among postmenopausal Filipino, African-American, and Caucasian women. Other interests include metabolic abnormalities among HIV-infected children, and behavioral interventions, including restorative yoga, active stretch, and Zumba Fitness to reduce components of the metabolic syndrome in sedentary adults.

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Research Interests

I am interested in the role of microRNAs (mRNA) in diabetic nephropathy. Specifically, my interests are in the differential expression of mRNAs in response to high glucose, Angiotensin II, and TGF-beta in the diabetic kidney. mRNAs are short RNA molecules that bind and either block or degrade mRNA gene targets to mediate gene expression. As negative regulators of gene expression, mRNAs have been demonstrated to downregulate repressors of fibrotic genes in the diabetic kidney, therefore promoting renal fibrosis. My goal is to identify mRNAs induced in the diabetic kidney as well as their respective target mRNAs. This will elucidate the molecular mechanisms involved in diabetic nephropathy and potentially yield new therapeutics.

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Research Interests

Fibrosis is a leading cause of organ failure and inflammation worldwide. Understanding the mechanisms that lead to or prevent fibrosis will allow easier and more practical therapies to ameliorate this Multi-System Pathology (MSP). Our results indicate that 1,25D, the biologically active form of vitamin D, also known as calcitriol, induces the promotion of an anti-inflammatory/anti-fibrotic phenotype in mesenchymal multipotent cells, suggesting that supplementation with vitamin D could be a valid anti-inflammatory/fibrosis strategy in therapeutic treatment of chronic diseases such as renal or cardiac fibrosis. Our goal is to develop a therapeutic approach more easily translatable to the clinic, identifying factors or genes such as myostatin and vitamin D that can be responsible for promoting or inhibiting fibrosis. I am also interested in the process of cell differentiation mediated by vitamin D.

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Research Interests

I am a structural biologist with diverse interests. My current focus is structure-based drug design and the use of crystallography, biochemistry, and other methods to understand and develop new treatments in diverse systems, including hookworm infection, enteric parasites, and gut bacterial infections. I am also interested in diseases of poverty that affect predominantly minority populations.

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Research Interests

My research interests include the study of the polycystic ovary syndrome (PCOS); insulin action in adipocytes; the role of the adrenal in hyperandrogenic disorders; the nonclassic adrenal hyperplasias (NCAH); the genetics of hyperandrogenic disorders, including PCOS and NCAH; the treatment of hirsutism; and the regulation and physiology of adrenal androgens.

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Research Interests

In 2011, I became the Director of the Mayo Clinic Center for Translational Science Activities Office for Community Engaged Research and Assistant Professor of Epidemiology. My focus is community-engaged research in order to reduce health disparities and increase health equity in minority and disadvantaged populations. I am interested in studying the approaches that are used by researchers and communities to reduce disease burden. My research has focused on several areas, including but not limited to HIV/AIDS, breast cancer, tobacco cessation, and health services research. My research on perceptions and practices of primary care providers concerning tobacco cessation and minorities was published in the 2011 July issue of the *Journal of the National Medical Association*. I would like to continue in this manner by submitting and publishing work that will help to eliminate health disparities. My long-term career objective is to become a collaborative researcher who specializes in community-engaged research among diverse populations. It is also my desire to gain the necessary tools to expand on my knowledge and skills in developing, testing, and implementing health promotion interventions that are culturally sensitive and tailored for minorities and disadvantaged individuals. More importantly, I would like to work with mentors who will help me to: (1) expand my knowledge in qualitative research design as it applies to using social marketing principles to tailor interventions for unique settings and population segments; (2) expand my ability to conduct data analysis using multilevel sampling; and (3) apply for future independent research funding for a multilevel mixed method study of patients, health care providers, and built environments that influence culturally sensitive health care.

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Research Interests

I am a nephrologist with advanced training and expertise in extracorporeal therapies, the use of highly specialized techniques for blood purification. My clinical responsibilities include providing care for patients focusing on prevention and treatment of chronic kidney disease and using specialized blood purification techniques like therapeutic apheresis to treat renal, neurological, and hematological disorders. My areas of interest in clinical research have included examination of outcomes (morbidity and mortality) in older dialysis patients ("geriatric nephrology") with clinical depression, especially, and I am currently involved in trials looking at novel blood purification techniques that are promising for acutely ill patients who have kidney and liver failure.

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Research Interests

My research interests include the effects of fluid mechanical forces on cell adhesion and tissue growth and development, cellular and tissue engineering, and bioengineering aspects of the vasculature. *In vitro* flow systems and models have been developed and employed to better understand the pathophysiology of disease states such as sickle cell disease with an eye towards novel therapeutic approaches.

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Research Interests

My main area of research interest is in the field of Hepatology. I am currently working on two projects, one retrospective and one prospective, dealing with Non-Alcoholic Fatty Liver Disease (NAFLD) and its relation to Obstructive Sleep Apnea. I plan to continue to focus on NAFLD and will be going on to a Liver Transplant Fellowship after my current fellowship is done. In the past, I have also done research in the treatment of hepatitis C in previous non-responders. I also have a strong interest in academics and education. My current quality improvement research project involves developing techniques to educate gastroenterologists on how to appropriately estimate polyp size during endoscopic procedures.

Detrice Green Barry, Ph.D., M.S.N., R.N.

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Research Interests

My research interests are in bleeding disorders (hemophilia), specifically, treatment decision making of parents. A quantitative study of my dissertation has led to a qualitative study of parents' perceptions of the barriers to shared decision making, which is currently in progress. I have an interest in incorporating findings from the research to develop education for patients, families, and health care providers in an innovative way—the use of high-fidelity human patient simulators, virtual environments, and augmented reality. Collaborations from resources at Wright State University include the Ohio Human Centered Innovation and the Nursing Institute of West Central Ohio. Other collaborations include Wright Patterson Air Force Base (Tech Edge Discovery Lab).

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Research Interests

My major research interests are in elucidating the mechanism(s) involved in salt-induced hypertension and in the role of eicosanoids in health. I am particularly interested now in understanding the vasculopathic effects of one of the major culprits associated with the renin-angiotensin-aldosterone system (RAAS), aldosterone, which is significantly elevated following high salt administration in Dahl rats. Other research interests of my laboratory pertain to better understanding the role of the glucocorticoids on vascular structure and function in the progression of metabolic syndrome in Zucker obese rats. Hypercholesterolemia and hypertension may precipitate one another, resulting in significant vascular remodeling and end-organ damage.

Tiffany R. Beckman, M.D., M.P.H.

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Research Interests

My research interests and activities include: (1) using brain functional magnetic resonance imaging (fMRI) to define the neural correlates of obesity in American Indians; (2) using a rodent model to study the neurobiology of reward-based appetitive behavior; (3) investigating satiety and changes in incretin hormones within the context of differing macronutrient paradigms in pre- and postgastric bypass surgery patients, longitudinally; (4) using community-based participatory research methods to examine the effects of improved food availability on incident rates of diabetes and obesity in American Indians; and (5) using holistic methods such as traditional Indian medicine, cross-cultural healing methods, and storytelling to improve health disparities in American Indians.
My fMRI work is funded by the NIH/NIDDK K23.

Rhonda Bentley-Lewis, M.D., M.B.A., M.M.Sc.

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Research Interests

My research involves patient-oriented investigations of hormonal mechanisms underlying cardiovascular disease risk; specifically, the roles of the renin-angiotensin-aldosterone system (RAAS) and insulin resistance in mediating vascular dysfunction. My work on the RAAS is funded by the NIH/National Center for Advancing Translational Science; my work on the role of gestational diabetes mellitus in mediating cardiovascular disease risk is funded by the Robert Wood Johnson Foundation Harold Amos Medical Faculty Development Program Award and the NIH/NIDDK.

Shakhawat Bhuiyan, Ph.D.

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Research Interests

My specific research interests are in the field of molecular aspects of signal recognition particle (SRP), an important cytosolic ribonucleoprotein complex that directs secretory proteins to and across biological membranes in all organisms. My research has the goal of identifying the signal peptide interactions that involve the signal peptide in interactions with SRP54 and SRP RNA, using *Archaeoglobus fulgidus* as a model system. As the Principal Investigator (PI) of the National Science Foundation-funded project entitled "Cytosolic SULTs and Environmental Xenoestrogen Metabolism: A Zebrafish Model," I have been involved in the cloning of new zebrafish cytosolic sulfotransferases (SULTs), and carry out experiments related to the characterization of the activities of the purified enzymes toward environmental xenoestrogens.

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Research Interests

My research interests include obesity and depression in African-American women. I am investigating the use of faith-based institutions to prevent and reduce the health risks associated with obesity. By providing culturally relevant health education programs in the community of the church, African Americans are empowered to change health behaviors and ultimately to reduce health disparities.

Maha Boktour, M.D., M.P.H.

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Research Interests

In the United States, disparities in health care delivery and access are apparent between different racial and ethnic groups. Minorities, including African Americans, often suffer unreasonably from chronic diseases compared to Caucasians. The relative contributions of genetic and environmental factors to this susceptibility are not yet well understood. In the field of organ transplant such as kidney and liver, access to transplantation, both from deceased and living donors, is also restricted in many minority populations, and graft survival is often inferior. Disparities have been identified as a problem, and this could be due to barriers in early screening and treatment choices. Analysis of the explanations is complex because of the many confounding factors such as cultural, social, and economic. I am very interested in addressing these barriers to increase cultural awareness by physicians; steps then can be made to reduce health care disparities.

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Research Interests

I am interested in researching the effects of Vitamin D deficiency on Multiple Sclerosis (MS) patients. MS is a severe demyelinating disease of the central nervous system, affecting young adults by producing a progressive neurological dysfunction. A high number of MS patients have Vitamin D deficiency/insufficiency.

Juan Bournat, Ph.D.

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Research Interests

My goal is to study the potential molecular mechanisms underlying the effects of TGF-beta family proteins in adipogenesis using adipocyte cell lines and transgenic mouse models. Ultimately, these models will help us to better understand the role of these proteins in energy expenditure and metabolic diseases, including obesity.

Mirella Vasquez Brooks, Ph.D., FNP-BC, APRN

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Research Interests

My research interests include chronic illness management and type 2 diabetes. The long-term research goal would be to follow the ancestry of the participants in the parent grant in identifying specific genetic variants and cultural influences that may be predictive in acquiring diabetes and improving quality of life, depression, and adherence to self-management strategies in Asian and Pacific Islanders with type 2 diabetes.

Chester W. Brown, M.D., Ph.D.

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Research Interests

Our laboratory is working to understand the mechanisms by which genes regulate body composition, using cell-based approaches, genetically engineered mouse models, and microarray technologies to dissect the complex interrelationships among gene products and their effects on adiposity and metabolism. Several of these gene products are members of the TGF-beta superfamily, which has been our main focus. Our team's ultimate goal is to understand the variety of mechanisms by which genes affect adiposity in humans, thereby providing the basis for the rational design of drugs for the medical treatment of obesity and its co-morbidities. Accordingly, my clinical interests include genetic syndromes with obesity as a feature, and the contributions of genomic copy number variation and monogenic variants to non-syndromic obesity.

Lynda M. Brown, Ph.D.

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Research Interests

As a postdoctoral fellow at the Obesity Research Center at the University of Cincinnati, I investigated the interactions among several key factors that determine whether or not animals become obese. These included gender (e.g., we have found that males and females respond differently to adiposity signals); dietary fat (e.g., we have found that rats maintained on a high-fat diet are resistant to the catabolic actions of insulin and leptin in the brain); and the presence or absence of specific genes important in the regulation of energy homeostasis. One of my major areas of investigation was central insulin resistance caused by high-fat diets. I wrote a research proposal and subsequently received an award from the NIH to conduct these experiments. The objective of the research I have initiated at the University of North Carolina at Greensboro is to develop an animal model of middle-aged humans, a time when estrogen levels decline in women and the incidence of obesity and its complications increases, and to evaluate fundamental questions related to body fat and sex differences. I will compare central leptin sensitivity in male and female rats that are middle-aged to determine the role of estrogen in determining visceral fat as well as the brain's sensitivity to leptin. These objectives will allow me to establish novel techniques to ask important questions of the association between aging, estrogen levels, and body fat as individuals end their reproductive capacity (mimicking menopause in women).

Terry A. Brown-Bryan, Ph.D.

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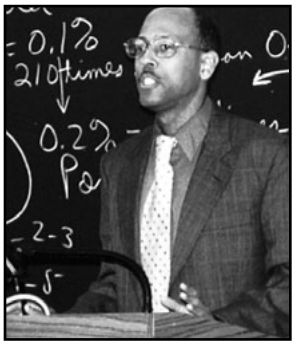
Research Interests

The prevalence of diabetic nephropathy (DN) is of much concern to health care systems worldwide. Extensive research has been done to understand the pathogenesis of this disease. Studies have characterized several factors that may mediate structural alterations during the progression of DN, such as renal tubular hypertrophy and subsequent tubulointerstitial fibrosis (TIF). However, ongoing research is necessary to identify novel genes that may be critical modulators of tubular hypertrophy, TIF, and progressive DN. My long-term research interest is to establish the regulatory mechanisms of tubular hypertrophy and TIF in the progression of DN and to develop innovative therapies and effective interventions for reversing and preventing the progression to DN.



Gregory W. Buck, Ph.D.

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Research Interests

My research interests include: (1) global regulation of *Vibrio vulnificus* pertaining to pathogenesis; (2) analysis of health disparities between diabetic Hispanics and Caucasians in effects of MRSA colonization on amputation rates; (3) efficiency of Mexican herbal remedies on treatment of antibacterial infections; and (4) DNA repair in enteric bacteria and the evolution of general repair mechanisms throughout bacterial families.

Sherri-Ann M. Burnett-Bowie, M.D., M.P.H.

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Research Interests

My research is focused on defining the physiology of the mineral metabolism hormone, FGF23; defining the relationship between vitamin D deficiency and insulin resistance; and studying novel therapies for osteoporosis.

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Research Interests

Although short-term graft and patient survival after liver transplantation have markedly improved over the last 2 decades, an unacceptable rate of graft loss due to uncharacterized immune-mediated complications persists. Durable graft survival remains an elusive goal for many patients, particularly patients of African and Latino descent. A review of the United Network for Organ Sharing statistics demonstrates that African American and Latino recipients fare 5-10 percent worse in 1- and 3-year graft and patient survival after liver transplantation than their Caucasian and Asian counterparts. The negative impact of this problem has eroded the recent overall short-term gains and contributes to the persistent problem of relisted candidates and failed retransplants. Unfortunately, these recipients are generally only identified after failing standard immunosuppressive therapy; their course is often that of unanticipated and/or difficult-to-treat rejection with histologic changes on biopsy suggestive of immune-based injury, often classified using the wastebasket term "chronic rejection." The immunobiology of chronic rejection is poorly understood but likely related to suboptimal response to standard immunoprophylaxis and/or immune hyperreactivity. Population-based pharmacogenomic analyses described in genetic studies of other disease processes, coupled with relevant immunogenetic findings in high-risk recipients of other organs such as kidney transplants, suggest that immunogenetic and pharmacogenomic analyses of liver transplant recipients may assist in stratifying patients' risk of graft loss. Polymorphisms of genes encoding drug metabolizing enzymes such as cytochrome p450 as well as those encoding critical downstream mediators of the alloimmune response, including lymphocyte calcineurin, IL-2 receptor and cytotoxic T lymphocyte antigen-4 expression, may impact patient response to conventional immunosuppressant therapy and therefore immunosuppressant efficacy. This line of investigation has not been extensively pursued in the liver transplant population and may reveal a scientific basis for differential outcomes in survival after liver transplantation.

Juan Bustamante, Ph.D.

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Research Interests

My current research investigates the influence of pregnancy and lactation on growth and gene expression patterns of the maternal liver. I am interested in examining the molecular mechanism(s) by which maternal liver size is regulated during pregnancy. These studies are very interesting because an increase in the size of the maternal liver may be very important for fetal development and/or maternal health and, therefore, it is possible that conditions that impede liver growth, such as alcohol consumption or steatosis, could indirectly affect development of the fetus and/or the health of the mother.

José Luis Calderoń, M.D.

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Research Interests

My research expertise is grounded in health services research that addresses how best to enhance health literacy to improve access to and utilization of health care, and self-efficacy to improve outcomes from secondary and tertiary disease prevention, with a focus on breast cancer prevention and diabetes management among vulnerable populations, including the elderly. Using an ethnomedical science framework (cross-cultural research) and mixed methods (survey and qualitative), I have pioneered and published two methods that may enhance health communication among vulnerable populations with limited literacy skills, and a new qualitative method, Focused Discussion Groups, that has been shown to be effective as an educational intervention.

José Camacho, M.D.

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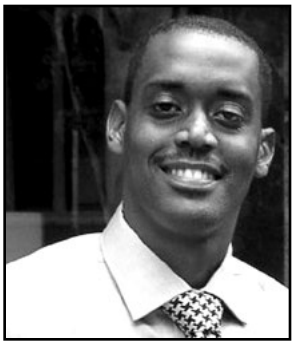
Research Interests

My laboratory studies the mechanisms of disease in the Hyperornithinemia-Hyperammonemia-Homocitrullinuria (HHH) syndrome, a disorder of the urea cycle (UC) and ornithine degradation pathway, caused by mutations in the mitochondrial ornithine transporter, ORNT1, which also serves to transport lysine and arginine across the inner mitochondrial membrane. The clinical presentation of HHH syndrome is generally milder, later-onset, and more variable when compared to other UC disorders such as ornithine transcarbamylase deficiency, which presents as neonatal hyperammonemia. We believe this clinical presentation may, in part, be related to the existence of gene redundancy at the level of the mitochondrial carrier proteins (ORNT2 and ORNT3). Symptoms are associated with CNS (i.e., spastic ataxia, stroke-like episodes, developmental delay) and hepatic dysfunction. Despite early detection and adequate metabolic control, patients with HHH syndrome may continue to worsen neurologically. Given ORNT1's crucial role in the UC, ornithine degradation pathway, and the metabolism of lysine and arginine, our overall hypothesis is that tissue-specific abnormalities due to ORNT1 ablation contribute to the mechanism of disease in this metabolic disorder independent of hyperammonemia and that redundant transporters may serve to modify the HHH phenotype. To study the mechanisms of disease in HHH syndrome, we utilize a combined experimental approach that includes the use of fibroblasts and lymphoblastoid cells from HHH patients and a transgenic mouse model. Because current treatment focuses solely on the prevention of hyperammonemia, one of our long-term objectives is to design more effective nutritional and pharmacological therapies to treat HHH patients. To achieve this goal, we are currently investigating mitochondrial dysfunction as a putative disease mechanism in patients with HHH syndrome using an *Ornt1* KO mouse model. Surprisingly, the *Ornt1* KO mouse shares many of the clinical findings of HHH patients such as variable and late onset presentation, progressive neurological deterioration, residual ornithine transport, mild hyperammonemia, fatty liver, and a clinical biochemical profile suggestive of mitochondrial disease. Overall, preliminary studies suggest that the *Ornt1* KO mouse is a useful model to study the fundamental role that ORNT1 and other mitochondrial amino acid carrier proteins play in mitochondrial physiology and mitochondrial protein synthesis. Moreover, the content or activity of these redundant mitochondrial amino acid carrier proteins could be manipulated to the physiological advantage of patients with HHH syndrome or other forms of mitochondrial disease.



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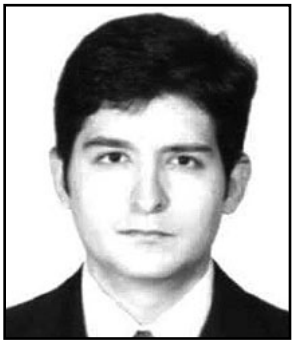
Research Interests

My current area of focus centers on the functional characterization of the glomerular slit diaphragm protein dendrin. We have demonstrated that dendrin relocates from the slit diaphragm to the podocyte nucleus in response to pro-apoptotic TGF-β as well as in a mouse model of anti-glomerular basement membrane glomerulonephritis. Our current work seeks to elucidate the mechanism of the nuclear import of dendrin as well as identify the nuclear targets that enhance the pro-apoptotic response. Given the correlation between a reduction in podocyte number (podocytopenia) and the progression of chronic kidney disease, we hope to identify specific molecular targets to tackle disorders that result in a compromise of slit diaphragm integrity and proteinuria.



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Research Interests

My research interests include factors that relate to solid organ dysfunction and transplantation science. Most of my work has been centered at the clinical level. Replacing dysfunctional organs in people requires careful selection of candidates and careful application of multidisciplinary medical knowledge. This maximizes the function of the organ and the quality of life of the individual. Clinical trials and research are indispensable to consistently perfect what can be done for each individual patient and to do this in a safe and cost-effective way. Over the last decade, clinical transplant science has excelled at understanding how to achieve good short- and intermediate-term results. However, we now are trying to decipher what is necessary to attain better long-term outcomes.

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Research Interests

The focus of my laboratory is lysophosphatidic acid (LPA) as a mediator in oral wound healing and inflammation. LPA is a potent, simple phospholipid mediator made by many cell types. LPA is a pleiotropic molecule with hormone and growth factor-like properties. It binds to and activates its cognate G protein-coupled receptors (LPA1-6), each of which can signal through Gi, G12/13, and Gq and/or couple to the elevation of cAMP. Using an *in vitro* oral wound healing model, we have provided the first evidence that LPA controls the regenerative responses of human gingival and periodontal ligament fibroblasts. The present focus of our research is to understand the biochemical and molecular regulation of the LPA receptors on these cells, and to define the contribution played by each receptor subtype in controlling these "healing" responses, with emphasis on how these are altered under "diabetic" high-glucose conditions. We employ a combination of cellular, biochemical, and molecular approaches to investigate these changes. Other interests: adrenergic, purinergic, and serotonergic receptor pharmacology, adipokines.

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Research Interests

My area of expertise includes hormonal modulation of pain transmission and non-genomic effects of sex steroids. The aim of my research program is to elucidate the nociceptive pathways modulated by steroid hormones in nervous tissue. Although a central site of this modulation is widely accepted, we study how sex steroids modulate the response to pro- and anti-nociceptive signals, depending upon the nature of the signals interacting at the level of sensory neurons. I also serve as Executive Editor of the *Journal of Autacoids* and Editor for the *International Journal of Research in Nursing*.

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Research Interests

My research interests include the clinical and epidemiological study of insulin resistance and cardiovascular disease risk factors among adult Native Hawaiians and Hawaii's other multiethnic populations. Our current work involves a patient-centric web-based diabetes program to improve glycemic control and reduce diabetes complications.

Shelton Charles, Ph.D.

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Research Interests

The research that I am currently working on is based on the Barker hypothesis. The Barker hypothesis postulates that fetal stress *in utero* can lead to the development of diseases in adult life. The project that I am currently working on restricts the feed or food intake of pregnant rats. Our goal is to test the hypothesis that maternal food restriction (MFR) causes changes in the vascular system, hence making the offspring more vulnerable to diseases such as stroke, hypertension, and coronary heart disease when they become adults. This study is relevant because, in low socioeconomic communities, pregnant mothers may not have access to the proper nutrition during pregnancy, which can lead to their offspring developing diseases such as stroke, hypertension, coronary heart disease, and the like.

Glenn Chertow, M.D.

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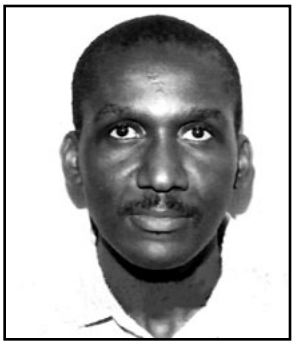
Research Interests

My research interests broadly address fundamental issues in acute and chronic kidney disease, using techniques of clinical epidemiology, health services research, decision sciences, and clinical trials. Active NIH-sponsored research projects on which I serve either as Principal Investigator or a member of the Executive or Steering Committee include the Frequent Hemodialysis Network (FHN) study, the United States Renal Data System (USRDS) Special Studies Center in Nutrition, the Chronic Renal Insufficiency Cohort (CRIC) study, and the Systolic Pressure Intervention Trial (SPRINT) and SPRINT MIND.



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Research Interests

My research interests are in clinical nutrition and nutritional epidemiology. My focus is currently on understanding the role of nutrition and immune status of infants with intestinal failure and their response to bacterial translocation and catheter-related blood stream infections, specifically the potential use of specific nutritional agents to modify the bacterial population in the intestines and improve the immune response of these infants. I am also involved in evaluating how to improve the micronutrient status of preschool children, especially zinc and iron, and prevent the long-term effect of deficiencies that occur during this crucial period.

Leonor Corsino, M.D., M.H.S.

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Research Interests

My goal is to become an independent clinical investigator with a focus on the prevention and management of chronic diseases, with a particular focus on behavioral intervention and the role of social support. In addition, I have a strong interest in Latino Health. During the last couple of years, my work focused on studies looking at behavior lifestyle interventions aiming to reduce the burden of chronic diseases such as obesity and hypertension (e.g., Weight Loss Maintenance Study, Hypertension Improvement Project, Hypertension Improvement Project-Latino and Latino Health Project, Cellphone Intervention for You-CITY).

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Research Interests
During my residency, I had the opportunity to explore clinical research in liver transplantation. Specifically, I participated in a prospective cohort study where we conducted a chart review looking for the association of troponin and cardiovascular and mortality outcomes in liver transplant recipients. Over the last year, my research interests have changed. As a minority, I have developed an interest in how certain gastroenterologic diseases are manifested in our patient population. I hope to explore this further once I begin my fellowship.

Vanessa Costilla, M.D.

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Research Interests
I have a strong interest in gastroenterology and hepatology. My current research focuses on motility, including the utility of high-resolution manometry in chronic constipation and fecal incontinence.

Deidra C. Crews, M.D., Sc.M., F.A.S.N.

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Research Interests
My research interests include chronic kidney disease epidemiology, patient and provider education, and racial disparities in chronic kidney disease. I am particularly interested in the mechanisms through which socioeconomic, lifestyle, and behavioral factors might contribute to racial disparities in chronic kidney disease.

Luis Angel Cubano, Ph.D.

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Associate Professor of Cell Biology
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Research Interests

My research focuses on how mechanical culture conditions affect renal cell gene expression, NF-kB and vitamin D receptor expression, and the production of vitamin D and urokinase.

Carla M. Davis, M.D.

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Research Interests

My research interest is in the area of immune responses to foods. My interest is in the cellular mechanisms, which are involved in clinical conditions typically described as non-IgE mediated food hypersensitivities. These include eosinophilic esophagitis and food protein-induced enteropathies. Because I have an interest in discovering the cellular and biochemical mechanisms of eosinophilic inflammation in the gut mucosa, the specific role of food allergens as a trigger for this inflammation is a specific interest of mine. I have a clinic in which I see patients for the determination of the role of food allergies in eosinophilic esophagitis where allergy testing is performed routinely in collaboration with Dr. Anthony Olive, a gastroenterologist at Texas Children's Hospital. I am exploring the role of testing for delayed-type hypersensitivity by patch testing to allergenic foods with the purpose of improving the clinical management of non-IgE mediated disorders. I have been exploring T regulatory involvement in the pathogenesis of eosinophilic esophagitis as well. I also am involved in a project entitled, "Eosinophilic Proteome Analysis in Eosinophilic Esophagitis." This study will help elucidate the effect of the peripheral blood eosinophil protein expression on mucosal inflammation in children and adolescents with eosinophilic esophagitis (EE). The current objective of this study is to determine the relationship between the eosinophil proteome and markers of mucosal eosinophilic inflammation in eosinophilic gastrointestinal (GI) disease. This project will focus on identification of peripheral blood eosinophil biomarkers, which could lead to the development of a non-invasive method of assessing disease progression or remission, and the effectiveness of treatment modalities in EE.

Daisy Delgado DeLeon, Ph.D.

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Research Interests

My research interests include the role of insulin-like growth factors in breast cancer. The main interest of our laboratory is to evaluate the role of IGF-II in breast cancer development and the progression of metastasis. We have demonstrated that expression of IGF-II stimulates cancer growth and enhances the secretion of cathepsin D, an enzyme associated with poor prognosis in breast cancer patients. Of great interest is our recent observation that IGF-II is also important in the establishment of breast tumors. Breast cancer tumors can be developed in SCID and NUDE mice without the requirement of estrogen when the tumors secrete pro IGF-II. We are currently identifying the mechanism involved with this effect.

Clarissa Jonas Diamantidis, M.D., M.H.S.

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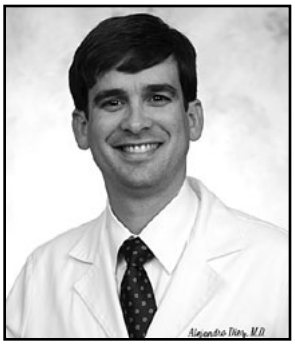
Research Interests

My research interests are in the areas of patient safety in chronic kidney disease (CKD) and health information technology (IT) as a means to educate patients and raise self-awareness. Awareness of CKD is remarkably low among both at-risk patients and providers, and using novel health IT tools may be a means to eliminate information barriers and mitigate the disparate outcomes noted in minorities with CKD. My colleagues and I have developed a medication inquiry system on several IT platforms, which provides guidance on the safety of medication usage in patients with CKD, as a means to improve patient education regarding potential medication errors in CKD.



Alejandro Diez, M.D., FASN

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Research Interests

My main area of interest is kidney transplantation. My current research focuses on recipient clinical outcomes following living kidney donation and transplantation of difficult to match recipients requiring kidney transplantation.

Ayotunde Dokun, M.D., Ph.D.

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Research Interests

I am interested in a better understanding of the molecular basis of vascular occlusive diseases in general and the adaptive process that occurs following vessel occlusion. I am particularly interested in the influence of diabetes on the development of vessel occlusion and its impact on the normal adaptive processes that occur following occlusion.

O. Kenrik Duru, M.D.

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Research Interests

I am a general internist and health services researcher interested in promoting physical activity and medication adherence among older minority adults, including those with diabetes. I hope to ultimately develop and implement interventions that improve outcomes among these patients. I have conducted and published several studies showing that clinical care strategies such as diabetes registries are not linked to reductions in black-white disparities in diabetes outcomes, while patient-level factors such as depression and medication adherence play a larger role. I am also interested in faith-based approaches to initiate and maintain physical activity among African-American women with diabetes and those at risk for developing the disease.

James Dzandu, Ph.D.

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Research Interests

My research interests are in health disparities using the sickle cell model at several levels of analysis, including cells, proteomics, genomics, community, and individuals. I was one of the early graduate students at Wayne State University Comprehensive Sickle Cell Center in Detroit, Michigan. Our work at the center benchmarked abnormal membrane protein phosphorylation in sickle cell disease. The test of time continues to highlight the importance of protein kinases as clever molecular control devices that drive many processes in health and disease states. Our earlier work focused on changes in red cell membrane structure (trans-membrane signaling) in sickle cells as predictor variables for adhesion and or red cell fragmentation. In 2009, we published studies on how fetal hemoglobin may be regulated through the effect of transcription factors, including Stat3 and GATA-1with clues about the role of specific kinases. My current research interests are focused on hemoglobin A1c as a diagnostic marker for diabetes and prediabetes in emergency department patients. Beyond the diagnostic utility of A1c, I am interested in the identification of predictor variables of A1c. What factors determine A1c disparities among ethnic groups, gender, age, etc. Since there are hundreds of thousands of human proteins, what are the effects of glycation on these proteins? What will be the effect of glycation on kinases, receptors, antibodies, and structural proteins, etc.? These ideas should drive basic research initiatives far into the future. Our current plan will establish the relationship between A1c and clinically meaningful patient outcome variables such as morbidity and mortality.

Danita Eatman, Ph.D.

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Research Interests

My research interests are in elucidating better biomarkers for assessing renal injury due to salt-induced hypertension. I am also interested in the role of dietary supplements in reducing the development of chronic kidney disease in Dahl rats. My other research interest lies in understanding the causative mechanisms responsible for increased blood pressure in women following menopause.

Lincoln Edwards, D.D.S., Ph.D.

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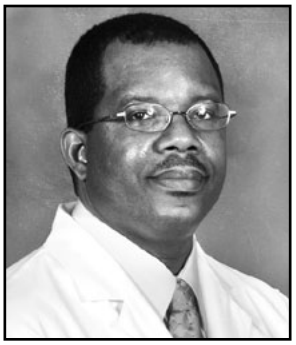
Research Interests

As the human body continues to expand and fuel the epidemic of type 2 diabetes, novel approaches to the treatment of metabolic diseases will be needed. My research interest involves the development of imidazoline compounds as therapeutic agents to treat metabolic diseases such as type 2 diabetes. Some of these compounds are currently in clinical use as antihypertensive agents, and I am exploring the possibility of developing imidazoline compounds as single agent therapy for diabetics with hypertension. I am also studying the cross-talk between insulin and imidazoline receptor signaling pathways.



Michael A. Edwards, M.D., F.A.C.S.

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Research Interests

My current research interests focus on primary aldosteronism. The current focus includes: (1) identifying a candidate gene for aldosterone producing adenoma (APA); (2) defining the possible molecular role of type-4 serotonin receptor in APA; (3) evaluating outcomes (hypertension resolution in particular) in APA patients following surgical versus medical treatment; (4) developing novel noninvasive diagnostic tools for lateralizing APA; and (5) identifying more sensitive and specific steroid biomarkers for primary aldosteronism.

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Research Interests

I have participated and led research projects designed to understand racial/ethnic variations in health care. My expertise is in the interplay among psychosocial factors, race/ethnicity, and health outcomes for chronic diseases, and development and testing of interventions to improve health behaviors in ethnic minorities with chronic medical and mental conditions. I have published extensively in this area of research in a variety of peer-reviewed journals. I am a member of NIH scientific review study sections, regularly serve as an *ad hoc* reviewer for National Institute of Mental Health special emphasis panels in the areas of mental health service delivery and ethnic disparities, and serve on VA health services research study sections. I currently serve as a Deputy Editor for the *Journal of General Internal Medicine* and am on the editorial board of *Current Diabetes Reviews*. I am a member of the National Advisory Council of the Robert Wood Johnson Physician Faculty Scholars Program.

Uche Ezeh, M.D.

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Research Interests

PCOS is a common endocrine disorder characterized by a state of hyperandrogenism and oligoovulation. It is associated with obesity and insulin resistance, with resultant hyperinsulinemia leading to hyperandrogenism. PCOS affects 1 in 10 women of reproductive age. Both obesity and insulin resistance constitute a public health problem by increasing health care costs and increasing the risks for premature death from cardiovascular disease, type 2 diabetes, and cancer. However, the cause of both PCOS-related insulin resistance and obesity are largely unknown. My research is focused on defining the molecular basis of obesity and insulin resistance in PCOS.

Robert Ferry, Jr., M.D.

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Research Interests

My research is focused on diabetes mellitus and its complications, the endocrine sequelae of childhood cancer, and growth disorders in children.

Gregory L. Florant, Ph.D.

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Research Interests

My research interest is in the area of energy metabolism. In particular, I am interested in studying animal models that can help us understand obesity, diabetes, and food intake. I study mammals that hibernate because they undergo dramatic body mass cycles that are primarily based on fat storage and utilization. In addition, I work on hormone cell signaling in fat and muscle cells because this is an important part of how nutrients are used.

Nketi Forbang, M.D.

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Research Interests

My main interest is in peripheral arterial disease (PAD). My investigations during these next few years will follow the spectrum of genesis, progression, and hopefully their relationship to management. My first project will be on disease progression. I will be investigating change in ankle brachial index (ABI), a measure of PAD, in individuals diagnosed with both diabetes and PAD. Comparisons will be made with individuals having only PAD. The idea is to see how diabetes compounds the effects of PAD, using this particular measure of disease. My second project will be investigating vitamin D deficiency and its relationship to the higher risk of development of PAD in African Americans (AA). Numerous studies are showing AA with a higher rate of both vitamin D deficiency and PAD. Vitamin D deficiency is proving to be an important risk factor, which may help explain the higher prevalence of the disease in AA.

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Research Interests

My current research investigates the role excessive fatty acid effluent to the liver via the hepatic portal vein plays in insulin resistance. To accomplish this, I use rodent models to differentiate the role of anatomical location and/or origin of adipocytes in influencing a number of metabolic outcomes, including glucose tolerance, plasma lipids, and hepatocyte activity. An important model I use is that of adipose tissue removal (lipectomy) and/or transplantation. In these studies, samples of individual fat pads (e.g., mesenteric, epididymal) are removed from some animals and in some cases transplanted into other animals, or alternatively into different anatomical sites in the same animals. We are finding that there are adipose-depot autonomous functions of adipocytes that may have important clinical implications. Another focus of my work is identifying the link between increased visceral adipose tissue mass and metabolic dysregulation, especially as it relates to hepatic activity (i.e., gluconeogenesis, fatty acid oxidation, hepatic lipogenesis, and liver triglyceride content [i.e., fatty liver]) and insulin resistance.

Temitope Foster, M.D., M.S.C.R.

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Research Interests

My area of interest is in the epidemiology of Non-Alcoholic Fatty Liver Disease (NAFLD), specifically in the African-American population that has significantly lower rates of NAFLD compared to other ethnic groups but still has prevalence rates quoted as high as 24%. My objective is to identify clinical predictors of NAFLD that physicians can use to determine which African Americans are at risk for NAFLD development and the sequelae of increased mortality from cardiovascular disease and liver-related deaths so that early interventions can be made.

Martin Frank, Ph.D.

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Research Interests

My research interests include excitation-contraction coupling in cardiac muscle and the effects of pharmacological interventions on the electrophysiology of isolated atrial muscle and the movement of calcium within the tissue. However, I have not been involved in research for many years, instead focusing my efforts toward association management and science policy.

Stanley Frencher, M.D.

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Research Interests

I am a second-year Robert Wood Johnson Foundation Clinical Scholar at the University of California, Los Angeles (UCLA). I am the first Clinical Scholar sponsored by the American College of Surgeons conducting research at UCLA/RAND, deferring the completion of my General Surgery residency training at Yale New Haven Hospital. I graduated from the University of Michigan with a Bachelor's degree in Biology/Sociology, earned my medical degree from the Albert Einstein College of Medicine, and earned a Master's degree in Public Health at Columbia University as a Macy's scholar. I am interested in quality of surgical care, appropriateness of care, and health care disparities. Transitioning to a surgical career in urology, my research focus includes understanding patterns of screening and awareness of prostate cancer among minorities within health care systems and in community settings. I am also conducting research on the risk factors associated with perioperative infections (e.g., catheter-associated urinary tract infections) and developing preventative guidelines with ACS NSQIP. In addition, I endeavor to develop metrics and policies in order to decrease risk factors, increase patient's access to treatments, and improve quality of care.

Lucy Cardenas Freytag, Ph.D.

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Research Interests

The main focus of my research is on vaccine development, particularly on the development of adjuvants that can safely enhance immunity to acute or chronic infectious diseases. For several years, we have investigated the innate and acquired immune responses induced by vaccination with novel adjuvant delivered in combination with antigens derived from bacterial viral and fungal parasites. The main thrust of my research is to develop and evaluate needle-free vaccines that can be delivered directly on mucosal surfaces or via transdermal patches. A few years ago, I had collaborations with faculty members in the Tulane Department of Urology, and we worked on several projects related to the development of vaccines against Urinary Tract Infections, and also on cryptic bacterial infections as a cause of interstitial cystitis. I am keenly interested in rekindling this line of research in my laboratory.

Eduardo Fricovsky, Pharm.D.

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Research Interests

My research interests include diabetic cardiomyopathy and the effects of enzymatic protein glycosylation (O-GlcNAc) in type 2 diabetic mouse hearts and their influence on cardiac function. Also, I conduct studies related to the expression of O-GlcNAcase (GCA), an enzyme that removes excessive O-GlcNAc modification and protection against cardiomyopathy. Furthermore, the abnormal calcium transients occurring in type 2 diabetic hearts are examined using transgenic animals.

Crystal Gadegbeku, M.D., F.A.H.A.

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Research Interests

My research interests include hypertension and vascular biology in kidney disease, chronic kidney disease, and health disparities in kidney disease.

Trudy Gaillard, Ph.D., R.N., CDE

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Research Interests

I am currently Assistant Professor of Medicine (Research) in the Division of Endocrinology, Diabetes, and Metabolism. In this position, I am responsible for exercise research aimed at examining the benefits of aerobic exercise on metabolic risk factors for cardiovascular disease (CVD) and type 2 diabetes in African Americans. I am interested in studying the metabolic correlates and nontraditional metabolic risk factors that lead to the development of type 2 diabetes and CVD in African-American women. I believe that understanding of the nontraditional risk factors may lead to future development of primary prevention protocols that could possibly curtail the higher rates of the disease in this population. African-American women have the lowest rates of reported leisure time physical activity. I am interested in designing culturally specific and relevant exercise programs for women and examining the benefits of exercise in the prevention of diseases in African-American women. Finally, I am interested in examining other nontraditional risk factors for CVD and type 2 diabetes, for example, the role of aspirin and/or exercise in the prevention of atherosclerosis and the functionality of high-density lipoprotein cholesterol (HDL-C) and its correlations to heart disease in African-American women. I believe understanding of the role of HDL functionality on the vasculature (structure and function) could provide (1) new insights into the mechanisms of the atherocardioprotective effects of aspirin in African-American women compared to white American women, and (2) the potential to develop novel and therapeutic armamentarium to improve HDL as a nontraditional approach to preventing CVD.

Mary L. Garcia-Cazarin, Ph.D.

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Research Interests

My interests are in the following areas: muscle physiology focused on muscle metabolism and mitochondrial function; outreach science education; science policy.

Senta K. Georgia, Ph.D.

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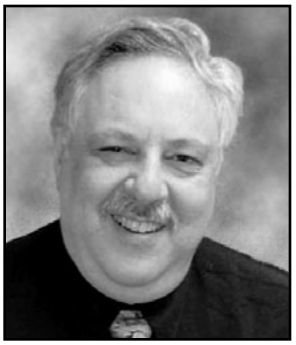
Research Interests

Currently, my research focuses on how methylation restricts cell fate decisions during pancreatic organogenesis, and how methylation restricts beta cell self-renewal in adulthood. I hope to apply my expertise to methods of expanding beta cell mass, either *in vivo* or *ex vivo*, as a potential therapeutic for patients with diabetes.



Sidney H. Golub, Ph.D.

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Research Interests

Currently, my interests focus on issues of science policy and research ethics. My laboratory research program has followed two closely related themes: the *in vitro* regulation of cytotoxic cells by cell interactions and regulatory cytokines and the *in vivo* expression of cytotoxic cell function in cancer patients.

Eddie L. Greene, M.D.

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Research Interests

My research interests include: (1) the pathophysiology of chronic kidney disease (specifically the biology of fibrosis-inducing signaling cascades in renal tubule cells and in the renal mesangium); (2) the evaluation and management of cardiovascular comorbidities in patients with chronic kidney disease; and (3) the pathophysiology of renal malignancies.

Raquel Charles Greer, M.D., M.H.S.

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Research Interests

My research focuses on identifying and addressing modifiable factors to improve the health of patients with chronic kidney disease and to narrow ethnic/racial disparities in clinical outcomes. I am specifically interested in improving the care that primary care providers deliver to patients with chronic kidney disease and improving awareness and knowledge of chronic kidney disease among ethnic/racial minorities.

Absalon D. Gutierrez, M.D.

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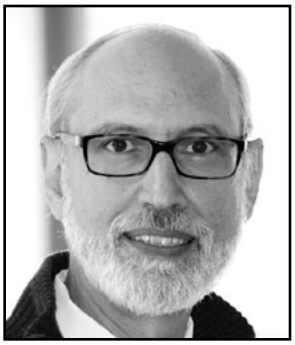
Research Interests

My clinical and translational research focuses on the effects of glucoincretin hormones and PPAR-gamma agonists on the development of cardiac and hepatic steatosis. I am also very interested in the effects of antioxidants on the progression of atherosclerosis in type 2 diabetic patients.



Arthur Gutierrez-Hartmann, M.D.

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Director, Physician Scientist Training Program
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Research Interests

The main focus of my laboratory is to determine the role of Ras/MAPK signaling and Ets transcription factors in epithelial cell development and tumorigenesis, with a focus on pituitary and mammary model systems.

B. Michelle Harris, Ph.D., M.P.H.

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Research Interests

Through a resident-led Health Committee initiative, I am currently engaged in a collaborative relationship building with the University of the District of Columbia, the District of Columbia Housing Authority (DCHA), and various health-related agencies across the District of Columbia to encourage the active participation of DCHA residents in conducting research and surveillance that will contribute to reducing health disparities, especially in the area of obesity-related diseases. I will continue to explore the metabolic syndrome and will examine various approaches to reducing its negative impact on the health of minority populations. I am working to expand research opportunities among undergraduate students in the areas of nutrition and related sciences. My past research includes a Robert Wood Johnson Foundation Active Living Research-funded project titled, "The Availability of Healthy Foods, BMI, and Dietary Patterns in Urban Adolescents." In this project, we examined the associations among adolescents' perceived and objective availability of healthy foods, the physical environment, and BMI. I also completed a study titled, "The Relationship of Low Birth Weight and Current Obesity to Diabetes in African-American Women." I was recently invited to become a member of the Technical Advisory Committee of the Caribbean Health Education Foundation (CHEF), where evidence-based approaches to reducing health disparities among our West Indian neighbors are the focus (http://www.chefuscarib.org.)

Marquis Hawkins, Ph.D.

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Research Interests

The title of my doctoral dissertation was, "The Relationship Between Physical Activity and Chronic Kidney Disease/Kidney Function." Using data from the National Health and Nutrition Examination Survey and the Strong Heart Study, I investigated whether physical activity can prevent the onset and/or slow the progression of chronic kidney disease. We showed that physical activity, specifically activities of light intensity, was independently associated with kidney function. We also showed that physical activity was associated with lower odds of rapid progression of kidney disease. Currently, I am part of a team that is conducting a pilot study investigating the impact of a lifestyle (diet, physical activity, and weight loss) intervention on cardiovascular risk factors in individuals with chronic kidney disease. Given the complex dietary regimens of individuals with CKD, we hope to create an intervention that simplifies behavioral monitoring for this population. My future research goals are to investigate what factors mediate the relationship between physical activity and CKD progression.

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Research Interests

My main research interest is in health disparities in kidney disease among minority populations. I am focusing on environmental exposures (lead, cadmium, and mercury) as potentially modifiable risk factors for the progression of chronic kidney disease among Hispanics. I am also interested in increasing the participation of Hispanic patients in therapeutic trials for glomerulonephritides.

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Research Interests

In our society, metabolic bone disease is related to increased costs and significant morbidity and mortality. Little information is available on some factors that may be associated with metabolic bone disease and increased fracture risk, including diabetes mellitus, inflammatory bowel disease, and bariatric surgery. This is especially true for Puerto Rican and Hispanic subjects. My research interests lie in these areas, and in discovering possible preventive measures for this population.

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Research Interests

My research interests encompass three investigational areas related to the effects of physical activity training on: (1) metabolic syndrome (MetSyn) and insulin resistance (IR); (2) cognitive function; and (3) cytokines and neurotrophic factors. I am currently evaluating the effects of exercise training with or without pharmacological treatment on selected metabolic markers (lipids, glucose, cytokines, and growth factors), obesity, lifestyle behavior, and cognitive function. I am constantly designing behavioral treatments for the prevention of cardiovascular diseases targeting adults with: (1) mild cognitive impairments, (2) MetSyn, and (3) disabled individuals (i.e., chronic tetraplegia). My research interests include establishing phenotypes for inherited forms of neurodevelopmental and neurodegenerative disorders and identifying preclinical stages of Alzheimer's disease by biobehavioral, genetic, and neuroimaging markers. I have been involved in several international academic programs and scientific meetings. In December 2006, my research was featured in the most popular Argentinean newspaper, *La Nacion*, after I delivered a keynote lecture at the 6th Neuropsychological Argentinean Congress. The National Alzheimer's Association features my research on the effects of exercise on dementia on its "Maintain Your Brain™—the Science Behind the Recommendations" website.

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Research Interests

My research interests involve advancing our molecular understanding of diabetes and neurological disease by combining sensitive biophysical methods with systems biology. As a graduate student, I employed quantitative imaging techniques to study the structure and trafficking of the GABA transporter, GAT1, a neurotransmitter transporter involved in inhibitory neurotransmission and targeted in the treatment of epilepsy. These studies uncovered GAT1 trafficking motifs and novel interactions with the cytoskeleton with implications for epilepsy research. For the first time, the dynamics of the GAT1 containing vesicle were quantified, and the number of transporter molecules on vesicles were confirmed—advancing our understanding of GAT1 trafficking onto the membrane. In my current research, I apply similar quantitative-fluorescence approaches to determine the angiogenic balance in healthy and diseased tissue by measuring pro-angiogenic and anti-angiogenic receptor density and dimerization. Furthermore, I am currently designing high-throughput methods of analyzing the angiogenic balance and combining these approaches with computational models of angiogenesis to determine novel targets for the treatment of type 1 and type 2 diabetes.

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Research Interests

Our interest in the epigenetics of metabolic syndrome stem from new methodological issues regarding the Mendelian assumptions of linkage analysis used in genome-wide scans for complex traits and the emerging area of intra-uterine fetal metabolic programming via nutritional effects on gene expression that might set the stage for the cluster of adult-onset diseases that underlie the metabolic syndrome. Our goal is to identify and characterize parent-of-origin effects in imprinted candidate genes and establish epigenetic associations between these genes and the metabolic syndrome using algorithms designed to test for imprinted transmission of disease alleles. In this regard, an R15 application for a pilot study is under development for submission to NIDDK next month to look at the epigenetics of Pdx-1, a gene highly expressed in pancreatic beta cells in the diabetic mouse, to ascertain if there are epigenetic changes in Pdx-1 and if so, if they are triggered by the onset of type 2 diabetes or vice versa. We are also interested in exploring the genetic underpinnings of the disproportionate burden of metabolic disease in minority populations, especially American blacks. Essential hypertension (EH) is increasingly recognized as the archetypal polygenic disease of complex inheritance with a sexually dimorphic component. We recently submitted a grant application as a subproject on an institutional NIH-RIMI grant to explore these relationships using family-based studies of polymorphisms in Y chromosome genes in a mouse model, to be followed by analyses in a population-based human sample drawn from the Multi-Ethnic Study of Atherosclerosis (MESA) project.

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Research Interests

Our laboratory is working to understand the hormonal links between nutrient ingestion and bone formation. We have identified several hormones of interest—in particular, glucose-dependent insulinotropic peptide, an enteric hormone that rises on nutrient ingestion and appears to be able to both stimulate bone formation and inhibit bone breakdown. We are using a variety of genetic models to study this link.

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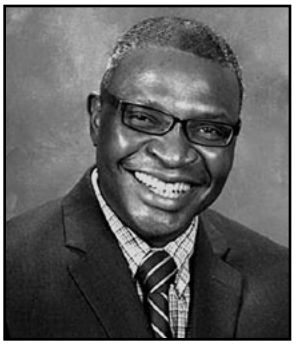
Research Interests

My area of research interest is renal physiology, focusing on understanding how the heterogeneity segments of the kidney regulate various parameters involved in water and electrolyte balances. Presently, I have two major ongoing projects in my laboratory. My first project is identifying urinary protein markers associated with various pathophysiological diseases, specifically sodium-induced hypertension. My second and most recent project involves investigating signal transduction pathways and biomarkers of renal carcinoma. My previous research projects have examined the role of Prostaglandin EP1 and FP receptors in the regulation of blood pressure, the effects of a high salt intake on the development of hypertension, the renin-angiotensin system in two kidneys, one-clipped Golblatt Hypertension, the effects of verapamil and captopril on renal function, the role of renal α1-adrenoceptors in hypertension, renal potassium adaptation, the effect of calcium blocker in kidney and MDCK cells, and the expression of α1-adrenoceptors in the heart.



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Research Interests

My long-term career goal is to make substantial contributions to sickle cell disease analgesic pharmacogenetics by developing a robust pharmacogenetic research program centered on the clinical translation of inherited genetic variants that would foster the development of algorithms for appropriate selection of analgesics for pain management in sickle cell disease patients. My current NIH/National Institute of Nursing Research-funded study investigates incidence of suboptimal prescribing of analgesics and association between suboptimal prescribing, deficient cytochrome P450 (CYP2D6, CYP2C9, and CYP2C19) metabolic enzymes, frequent acute care visits, and quality of life in adult sickle cell disease patients.

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Research Interests

I am primarily interested in biomechanics and molecular signaling during orthopaedic diseases and injury. I am focused on the mechanisms of osteoarthritis development, fracture healing, age-related bone loss progression, and on developing new therapeutic options for patients to target these debilitating orthopaedic ailments. I am currently investigating Wnt/Beta-catenin Signaling, Epidermal Growth Factor Receptor Signaling, and Mitogen Activated Protein Kinase Signaling during orthopaedic disease progression, and strive to better understand the failure mechanisms of current orthopaedic treatments and implants in order to make improvements. I hope to utilize research to protect and advance public health and to disseminate scientific knowledge to the public.

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Research Interests

My research interests are in chronic kidney disease epidemiology and outcomes, with a particular focus on American Indians and Alaska Natives. I am also interested in chronic kidney disease awareness and knowledge, and in the development of educational interventions.

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Research Interests

My goal is to improve our ability to diagnose the genetic cause of epispadias (E), bladder exstrophy (BE), cloacal exstrophy (CE), and urological anomalies with different degrees of anterior midline defect by using high coverage array comparative genomic hybridization (aCGH). The incidence of these conditions is not common (1:100,000 for E; 1:30,000 for CBE; and 1:300,000 for CE). However, treatment of all of them requires a number of surgeries over the first several years of life to achieve bladder control and normal-appearing genitals, which can be costly and traumatic. In some patients, incontinence and sexual dysfunction progress through their lives, ending with morbidity due to chronic and recurrent renal infections. The majority of cases are sporadic and nonsyndromic, with normal karyotype and unknown etiology. However, abnormal karyotype and association with syndromes, malformations, and other congenital diseases have been identified in more than 20 patients. Even though most of the genetics studies have failed to find a specific gene that causes the disorder, evidence indicates a strong genetic component. Since the etiology of this malformation is still unknown, this project seeks to improve our ability to diagnose structural and numerical genetic abnormalities in children born with genitourinary defects. Also, we will seek to correlate the clinical features of children with urological defects with new discoveries at the molecular level and to better understand the disease processes and thereby develop new and more effective treatment and diagnostic modalities. Our findings could be extrapolated to a mouse model that will help us to understand the mechanism of bladder formation. I am also interested in identifying new genetic causes of infertility. At the present time, using the same aCGH technology cited above, we are searching for new genes responsible for male infertility. I have been able to identify some potential genes and also to associate other unrecognized genomic syndromes in infertile men.

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Research Interests

I am interested in the genetic architecture of complex traits. My current research is focused on using cerebrospinal fluid protein levels as intermediate traits, or endophenotypes, to identify genetic risk factors for Alzheimer's disease. I also have collaborative projects examining mitochondrial and nuclear genetic factors that influence mitochondrial genome copy number and genetic variation that may influence adiponectin levels. I collaborate with several large clinical centers and focus on data analysis and bioinformatics.

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Research Interests

My principal interests are in chronic disease management, continuing medical education, quality improvement, and providing health care to under served populations. My research activities include cardiovascular disease risk factors in chronic kidney disease (CKD) patients, health literacy assessment, the impact of modifying patient education programs on health outcomes, and the effect of modified clinical visits on health outcomes and access to health care. As health care payment models change, implementation of chronic care management teams will be an integral part of these new health care models. I am interested in studying the impact of patient-centered medical homes on care delivery and reduction of health disparities in CKD patients.

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Research Interests

My research interests involve the population risk assessment of diabetes, cardiovascular disease, stroke, kidney disease, and hypertension. In particular, my work focuses on the factors associated with the racial disparity in disease and the geographic patterns of disease through the assessment of population-based cohort studies around the world. I am currently collaborating with Professor David Barker at the Medical Research Council with a study of the fetal origin of adult chronic diseases. I am also involved in population diabetes and high blood pressure control efforts. I am also developing global health research projects focused on health disparities. A major component of this effort is the training of international collaborators in research methodology.

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Research Interests

Our laboratory's focus is directed toward gaining a better understanding of the mechanisms by which the immune system minimizes damage to self-tissues, a process called tolerance. In general, immune system tolerance is highly effective; however, the self-tissue damage that occurs in rheumatoid arthritis, type 1 diabetes, multiple sclerosis, and lupus is mediated by aberrant immune responses. Recently, a subset of immune system cells known as regulatory T cells has been shown to play a significant role in moderating immune responses. However, it is not clearly understood how variations in the environment where regulatory T cells develop and are activated influence regulatory T cell function. In addition, the ability of regulatory T cells to prevent autoimmunity by migration to potential autoimmune tissue sites is poorly understood. Current projects include: (1) the characterization of the regulatory T cell population in a mouse model where immune system damage to self-tissues results in death; and (2) the examination of intracellular processes occurring within regulatory T cells during effective immune regulation.

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Research Interests

We are investigating the molecular mechanisms of hormone action in the pituitary, with a special emphasis on factors controlling reproductive function. Current studies are focused on understanding the role of hormone action in regulating translation initiation and mRNA utilization. We are also interested in the mechanism of endocrine diseases affecting reproduction, such as polycystic ovary syndrome and type 2 diabetes. Our long-term interest is in understanding the integration of multiple hormone signaling pathways in the regulation of endocrine cell function.

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Research Interests

I recently completed my Ph.D. in Nursing in May 2009. My dissertation examined the effects of pre-diabetes and elevated blood pressure on heart rate variability, QT interval duration, and left ventricular hypertrophy in overweight-obese youth. Childhood obesity continues to be a growing concern and the development of co-morbidities such as type 2 diabetes in this population is steadily increasing. An imbalance in cardiac autonomic dysfunction increases the risk of sudden cardiac death and has been found to be associated with pre-diabetes and type 2 diabetes. I am very interested in pre-diabetes and cardiac autonomic dysfunction in obese youth and recently had my first manuscript accepted for publication from work completed in my dissertation. As a new researcher, I would truly enjoy the opportunity to network with seasoned minority researchers. I would be interested in acquiring knowledge and expertise from mentors with similar research interests to help me become a successful biomedical researcher.

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Research Interests

My research interests include the molecular characterization of normal and abnormal male genitourinary tract development, including the prostate, in order to define the etiology of congenital defects and prostate disease progression. Genetic, environmental, and hormonal insults sustained *in utero* are associated with congenital and adult onset diseases even with apparently successful medical interventions. Genome-wide association studies can identify genetic variations to explain complex human diseases. I have identified chromosomal structural variations resulting in *de novo* copy number duplications and deletions in patients diagnosed with combined hypospadias and cryptorchidism. I hypothesize that these subtle chromosome aberrations affect dosage sensitive genes in these regions that are critical for genitourinary tract development. Subjects with combined hypospadias and cryptorchidism displayed distinct regions affected by submicroscopic chromosome duplications or deletions not detected in normal pregnancy proven fertile controls or in the Database of Genomic Variants (http://projects.tcag.ca/variation/). Novel, candidate genes identified by aCGH may be required for normal genitourinary tract and male external genitalia development and function. Identification of such genes will improve patient diagnosis and perhaps treatment. Long term, I hope to develop more sensitive assays that, when utilized from a systems biology approach, result in a better understanding of the roles and interrelatedness that genomic, environmental, and hormonal insults have on genitourinary tract development. Ultimately, these will improve prevention, diagnosis, and treatment of diseases associated with genitourinary tract development and prostate disease progression in humans.

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Research Interests

My research interest is to investigate the involvement of DNA in glycoxidation reactions having implications in diseases such as diabetes, mutation of DNA, synthesis of proteins such as insulin, and cancer. It is widely believed that DNA is involved in complications arising out of obesity, diabetes and other age-related diseases. Initial experiments were designed to identify uniquely modified DNA nucleosides (CMdA and CMdC) from *in vitro* reactions followed by experiments to detect the presence of the same in calf thymus and human serum DNA. Our work describing detection of carboxymethyl-2'-deoxyadenosine (CMdA) and carboxymethyl -2'-deoxycytidine (CMdC) was already reported. Our current research is to develop a method for quantification of modified DNA nucleosides using spectrophotometer, HPLC, and LC-MS/MS spectroscopy. These results will indicate the severity and age/obesity dependency of DNA modification in relation to diabetes and other age-related diseases. We hope that continued research in this area will lead to the discovery of a biomarker for diseases that result from complications in diabetes such as blindness, renal failure, coronary heart, and Alzheimer's diseases.

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Research Interests

My research is focused on studying the intracellular mechanisms involved in insulin-like growth factor actions. The laboratory is currently examining the role of Igf2 deficiency in fetal carbohydrate metabolism and the mechanisms by which Igf2 affects neurodegeneration after injury. My research is currently being supported by the National Institute of General Medical Sciences.

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Research Interests

Our laboratory's research focuses on the molecular mechanisms of renal interstitial fibrosis, particularly those changes occurring during the inflammatory and fibrotic stages. To study renal interstitial fibrosis, we use the unilateral ureter obstruction (UUO), Adriamycin®, puromycin, and protein overload models; for diabetic nephropathy, the streptozotocin (Stz) and db/db models are utilized. We have established that Timp1 deficiency does not alter the degree of interstitial fibrosis in either the murine protein overload or UUO models, possibly due to a genetic redundancy with genes such as *Timp2*. Additionally, we have demonstrated the fibrogenic role of PAI-1 (plasminogen activator inhibitor-1), proving its importance as a fibrosis promoting gene. Similar results were observed in two diabetic nephropathy models (Stz and db/db) using PAI-1 +/+ and PAI-1 deficient mice. Recent results using PAI-1 ++/++ mice have confirmed the importance of PAI-1 in renal fibrosis; mice overexpressing PAI-1 developed significantly more fibrosis than their wild-type counterparts. We also have shown that the uPAR gene attenuates renal fibrosis, possibly mediated by a urokinase-dependent—yet plasminogen-independent—system. Our studies using uPA null mice showed no difference in the fibrosis level between wild-type and null mice. This raises the question of the role of uPA in renal fibrosis as well as its function in the absence of its receptor, uPAR, which may have antifibrotic properties. We have demonstrated the importance of the gp130 family of cytokines during the renal inflammatory process, prior to the chronic fibrotic stage. Preliminary results indicate that gp130 functions in a profibrotic capacity as an "alternative" receptor for uPA in the absence of uPAR. Studies have been initiated on the IL6 family of cytokines and the metabolic syndrome, focusing specifically on the role of macrophages during the inflammatory process.

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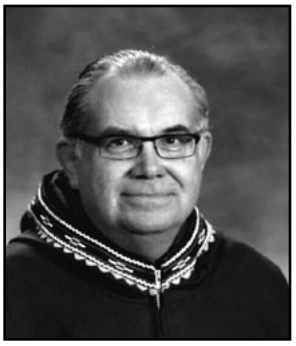
Research Interests

I recently completed a Ph.D. in the Joint Doctoral Program in Public Health, Epidemiology at the University of California, San Diego (UCSD) and San Diego State University through the mentorship of Dr. Steffanie Strathdee (UCSD Global Public Health). The title of my dissertation was "Factors Associated With Early Initiation Into Sex, Work, and STI Among Female Sex Workers in Two Mexico-U.S. Border Cities," based on a sexual behavior intervention study among female sex workers in Tijuana and Ciudad Juarez. Other research experiences and interests lie in ethnic health disparities research, particularly in the cross-section between diabetes and cardiovascular disease. I presented a poster entitled "Association Between Coronary Artery Calcium and Urine Albumin to Creatinine Ratio and the Variation by Ethnic Group" at the NMRI meeting in April 2010 under the mentorship of Dr. Happy Araneta (UCSD Epidemiology). I am currently teaching epidemiology and statistics as an assistant professor at the University of Texas at El Paso (UTEP College of Health Sciences) and continuing with border health research in HIV/STI prevention among the high-risk populations in the El Paso del Norte Region.



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Research Interests

My interests are in the area of Native American Traditional Medicine. I strongly believe that culture must be integrated into Western medicine. To me that means integrating cultural beliefs and practices into clinical medicine to form a more holistic approach to healing. I believe that clinical outcomes are strongly balanced with psychoneuroimmunology and that this can be demonstrated in all areas of clinical medicine. I am especially interested in the connection between Northern Circumpolar peoples and their relationship to Native Hawaiians and other Polynesian peoples.

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Research Interests

My research emphasizes mechanisms of toxicant action/interaction. My laboratory studies the role of multidrug resistance proteins in the hepatobiliary disposition of toxicants and the changes in expression of transport proteins in response to chemical liver injury. My group also investigates the biochemical and genetic determinants associated with the hepatoprotective actions of peroxisome proliferators and other chemicals that prevent drug liver injury. I have published numerous seminal articles on these research areas in both toxicology and liver-related journals. I have been an active member of the Society of Toxicology (SOT) since joining as a student member. In 2003, I was elected Councilor of the SOT and have also served on key committees and task forces for the society. I was the recipient of the 2006 SOT Achievement Award and the 2008 AstraZeneca Traveling Lectureship Award. I have served as a member of the National Research Council Committee assessing the human health risks of trichloroethylene and currently am Associate Editor of the journal *Toxicology and Applied Pharmacology*. I am also on the editorial board of six other journals. I was a member of the NIH Xenobiotic and Nutrient Disposition and Action (XNDA) Study Section and also served as an external reviewer of grants for the European Commission. I am currently a member of the National Institute of Environmental Health Sciences Board of Scientific Counselors. I received my B.S. in Pharmacy from the University of Puerto Rico, Ph.D. in Pharmacology and Toxicology from Purdue University, and postdoctoral training in Biochemical Toxicology at the University of Connecticut. I also conducted sabbatical research at the Amsterdam Liver Center of the University of Amsterdam, The Netherlands.

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Research Interests

Many complications of diabetes, particularly those requiring surgical procedures, may be avoided or reduced in young individuals if effective early detection and management protocols are implemented. With regards to type 2 diabetes mellitus, initially my primary research focus was to identify undiagnosed type 2 diabetes among young individuals in order to reduce long-term, diabetes-related complications. Therefore, my research goals are to: (1) develop a clinical paradigm/protocol specifically designed to identify diabetes and prediabetes, particularly in patients requiring surgical procedures; (2) develop a comprehensive multidisciplinary approach to diabetes care in order to address the plethora of medical and psychosocial needs of the young individual with diabetes and/or pre-diabetics; and (3) provide an opportunity for training minority physician residents with an interest in developing a clinical research career and to network with a critical mass of other minority research investigators. The research design and method is based on a current prospective observational cohort study of patients admitted to the Emergency Department (ED) with a general surgery or trauma admission. A1c is determined at the time of admission, and FPG measurements are done after patients are stable the following morning. Anthropomorphic data, prior medical and surgical histories, BMI, alcohol use, and smoking status are abstracted from medical records and then analyzed.

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Research Interests

I am interested in understanding the relationship between obesity, diabetes, and breast cancer. Obese women who develop type 2 diabetes are at an elevated risk for breast cancer recurrence. Diabetes is a significant condition among Latinas due to a higher prevalence of obesity. As the number of Latina breast cancer survivors rises, diabetes will serve as a major risk factor for recurrent breast cancer and death. I am currently looking to identify biological predictors of cancer recurrence using a large biological database of over 3,000 breast cancer survivors in the Women's Healthy Eating and Living (WHEL) Study. The next step is to conduct a randomized clinical trial to determine the effects of obesity reduction on biomarkers of recurrence among patients with diabetes.

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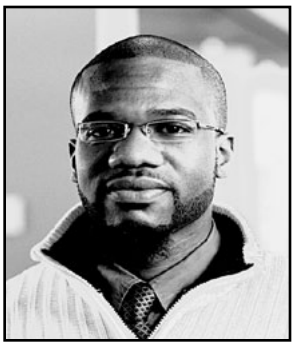
Research Interests

Studies in my laboratory focus on the identification and functional analysis of novel transport proteins and G-protein coupled receptors in retina, with specific interest in not only characterizing their role(s) under normal physiologic conditions, but also their potential for use as therapeutic targets for treatment/prevention of sight-debilitating diseases like diabetic retinopathy and age-related macular degeneration.



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Research Interests

My research interests consist of describing and measuring the influence of chronic kidney disease management interventions on vitamin D and phosphorous metabolism. Specifically, my interest is focused on determining molecular mechanisms (i.e., cardiovascular and immunological) and pathways that are modified by these therapies.

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Research Interests

My main project is to investigate the role of the Isc1 protein in cell cycle progression and in the regulation of the G2/M checkpoint when cells are treated with genotoxic agents such as hydroxyurea. Using the budding yeast *Saccharomyces cerevisiae*, I am studying the interconnection between the Isc1 enzyme that catalyzes the chemical reaction which produces signaling lipid molecules like phytoceramide and the downstream effect of those molecules on cell cycle progression and response to damaging agents. We found that ISC1 influences the phosphorylation status of the key regulator of the G2/M checkpoint in the cyclin dependent kinase Cdc28p. In an attempt to identify the connecting link between ISC1 and the key players in the G2/M phase, we started a collaboration with Dr. Jim Zheng at the Medical University of South Carolina. Dr. Zheng is a bioinformatician who is helping us identify proteins that may be involved in the regulation of SWE1 and CDC28 in an ISC1-dependent manner. My projects are defined as basic science research investigating the role of sphingolipid metabolism enzymes in the regulation of key cellular processes such as the regulation of the cell cycle. Although these investigations are not done directly on specific diseases, they are fundamental for understanding the involvement of sphingolipids in these diseases at the molecular level.

Marjorie Mau, M.D., M.S.

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Research Interests

My research interests are diabetes health disparities, especially among Native Hawaiians, Pacific Island peoples, and other Native populations of the United States; community-engaged research as an effective approach to conduct translational research in metabolic syndrome, obesity, diabetes, and heart disease.

Jennifer McGee, M.D.

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Research Interests

My research examines outcome inequities by race and gender in kidney transplantation. I am interested in understanding the etiologies of disparities and finding solutions for elimination. Currently, through clinical and basic science, I am working toward building research models to test risk-reduction protocols in vulnerable kidney transplant populations, specifically black recipients and gender mismatched transplants, such as female recipients of male kidneys.

Eva M. McGhee, Ph.D., M.S.

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Research Interests

I have two main research interests. The first is to study E6/E7 proteins of the high-risk human papillomaviruses that are associated with more than 95 percent of anogenital cancers. E6/E7 oncoproteins are consistently expressed in cervical cancer, and continued expression of E6/E7 is necessary for the induction as well as the maintenance of the transformed state. The main thrust of our studies is to determine chromosome instability and DNA repair mechanisms that are associated with E6/E7 protein's influence on cancer. A second interest of the laboratory is to delineate the function of genetic factors involved in diabetes, obesity, and kidney tumors.

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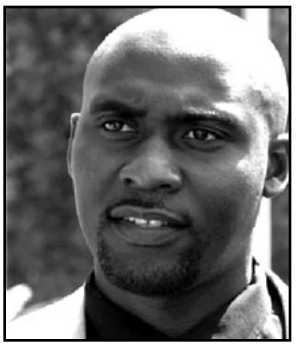
Research Interests

Investigating the control of female reproductive hormones is my primary research interest. During my doctoral studies, I investigated the neural mechanisms in which mating stimulation results in a unique prolactin secretion from the pituitary gland during the first half of pregnancy in the rat. My focus was to determine the role of oxytocin neurons of the hypothalamus on this unique prolactin secretion. I pursued these questions using surgical techniques, including brain cannulation and jugular catherization, immunohistochemistry, and high-performance liquid chromatography coupled with electrochemical detection. In addition to studying the interactions of reproductive hormones, I am also interested in the mechanisms by which hormones involved in metabolism affect the synthesis and secretion of reproductive hormones from the pituitary gland. During my postdoctoral studies, I will investigate the role of metabolic hormones on gonadotrophin synthesis and secretion. In order to explore my research interests, I aim to complement the *in vivo* approaches learned throughout my doctoral studies with *in vitro* approaches I plan to learn during my postdoctoral training.



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Research Interests

Our research interest involves investigating the mechanism of action of imidazoline compounds in the treatment of insulin resistance, hypertension, and metabolic syndrome X.

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Research Interests

My overall research interest and goal includes the use of population genomics, and quantitative and statistical genetics methods to understand human genome variation and utilize this information to dissect complex diseases, particularly allergy disorders, through approaches and methods ranging from linkage, association, admixture mapping, and transcriptional profiling analysis. Complementary to statistical analysis, I also frequently apply biological pathways and functional commonalities analysis to uncover co-regulation of gene expression across the genome, data mining, and bioinformatics techniques for candidate genes prioritization procedures from linkage and expression studies. My long-term goals are to reduce childhood morbidity and mortality associated with metabolic and allergic disorders, and to eliminate the significant racial disparities in asthma and asthma-related outcomes. To enhance my analytical skills for verifying statistical properties of biological problems as applied to admixed populations such as ancestry inference, disease gene localization, evolutionary relationship, patterns of molecular diversities, and population structure in disease genetics, I will be actively involved in the NMRI program.

Jennifer Molokwu, M.D., M.P.H.

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Research Interests

My overall research interest is in women's health and includes health education, health literacy, and chronic disease management. Currently, I am working on improving cervical cancer screening rates and HPV vaccination rates in Hispanic females. I am also working on a PCMH model for delivery of hepatitis C care focusing on primary care physician education and community awareness of screening and treatment.

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Research Interests

My research interest is to determine the genotype and allele frequencies based on the mutation M55V within the SUMO4 gene in patients with T1DM in Puerto Rico. Currently, I have a collaborative project studying type 1 diabetes susceptibility genes in the Puerto Rican population. The small ubiquitin-like modifier 4 (SUMO4) gene was identified as a Type 1 Diabetes Mellitus (T1DM) susceptibility gene. Multiple studies have shown that a single nucleotide polymorphism (SNP) results in M55V substitution within the SUMO4 gene, and this is associated with increased risk for developing T1DM in multiple ethnic groups. SUMO4 has a major function in the regulation of the activity of the immune system. SUMO4 conjugates to IκBα, which is the inhibitor of NF-κB. This conjugation offers additional stability of the inhibitor preventing signal-induced degradation. As a result, SUMO4 negatively regulates NF-κB, a pivotal transcription factor involved in immune response. Our goals are to examine the hypothesis of association between the SUMO4 gene M55V mutation and the phenotype of T1DM by comparing allelic and genotypic frequencies in cases vs. controls and compare the expression of NF-κB and IκBα in cases vs. controls. Another collaborative research investigation is in the area of diabetes, studying the effects of plants found in Puerto Rico with anti-hyperglycemic effects *in vivo*. As the result of an ethnopharmacological survey covering 11 municipalities in Puerto Rico, our team identified a series of medicinal plants that are frequently used as diabetes adjuvants by the surveyed population. The purpose of this investigation is to document and study the biological activities of these lesser known and commonly used anti-diabetic medicinal plants and verify their antioxidant capacity and their anti-diabetic effects *in vivo*. Additional research interests are the study of miRNAs in cancer progression, effects of natural compounds as complementary therapies for cancer, nutritional effects of diet and cancer, and the biology of disease.

Stacey D. Moore-Olufemi, M.D.

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Research Interests

My research focus is directed at pediatric intestinal failure, with a focus on gastroschisis-related intestinal dysfunction. I am currently using animal models to help elucidate the pathophysiology of intestinal dysmotility and shortened intestinal length seen clinically and in our model of gastroschisis. We are also interested in amino acid metabolism in intestinal failure and adaptation.

Daniel H. Moralejo, D.V.M., Ph.D.

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Research Interests

Diabetes and obesity are interacting complex diseases in which the genetic and environmental factors control the development. We are using a different strain of congenic rats with the following natural mutated genes, *Cckar*, *Lepr*, and *Gimap5*, to elucidate the molecular mechanism of diabetes, obesity, and diabesity. The non-human primates (NHP) are a very useful model for diabetes and obesity as well. Also, I am interested in the identification of new biomarkers profiles in the serum of obese NHP that might create a signature pattern in healthy peripheral blood mononuclear cells (PBMCs). Our hypothesis is that inflammatory mediators or molecules in the sera from obese NHP will induce a specific signaling molecules signature and a specific transcriptional gene signature in unrelated, healthy PBMCs. Also, we are inclined toward the accelerator or increased predisposition on pre-existing condition hypothesis caused by the chronic inflammation generated by the obesity environment.

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Research Interests

The goal of my research is to delineate the signal transduction pathways that are involved in the development of cardiovascular diseases such as hypertension and atherosclerosis. I have studied various signaling pathways in my career, starting with alpha-1 receptor signaling in the vasculature and then angiotensin II signaling. I am currently studying protease-activated receptor (PAR) signaling in endothelial cells and how it regulates endothelial nitric oxide synthase (eNOS) phosphorylation and nitric oxide production. In previous studies, my collaborators and I have shown that PAR-1 and PAR-2 differentially activate eNOS by different signaling pathways. We would like to further delineate the role of other PARs—such as PAR-3 and PAR-4—in the signaling pathways that lead to vascular inflammation, cell migration, and proliferation in cardiovascular diseases. Understanding the signaling pathways involved in these diseases will allow therapeutic agents to be developed at the molecular level.

Susanne Nicholas, M.D., Ph.D., M.P.H.

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Research Interests

My research interests include diabetic nephropathy and other kidney diseases. My basic science work involves investigating and assessing the pathophysiologic mechanisms and morphometric analyses of diabetic nephropathy, with the goal of finding novel therapeutic targets. I am involved in engineering vault nanocapsules for drug delivery in the treatment of types 1 and 2 diabetic nephropathy and other kidney diseases. I also am involved in a genetic clinical study that identifies genes responsible for diabetic nephropathy and their linkage relationships to nephropathy and retinopathy in Mexican Americans and African Americans and in a project to assess the progression of diabetes in patients with end-stage renal disease.

Keith C. Norris, M.D.

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Research Interests

My research interests include the prevention and early intervention of chronic kidney disease (CKD) and CKD risk factors/complications in African-American and Latino populations. I also have interests in the role of vitamin D in CKD, hypertension and cardiovascular risk factors, and the interplay of social determinants of health and biologic mediators in health disparities, especially CKD and CKD risk factors.

Phyllis A. Nsiah-Kumi, M.D., M.P.H.

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Research Interests

I conduct research focused on health disparities, health literacy, and type 2 diabetes prevention in minority communities. My goal is to improve the health of these communities and ensure that they have culturally and literacy appropriate health information available to them in plain language. I am working with minority communities to prevent type 2 diabetes in children using qualitative, quantitative, and clinical research methodologies. My recent and ongoing studies include "Predicting Insulin Resistance in Native American Youth," "Engaging North Omaha Youth in Type 2 Diabetes Prevention," "Developing Health Literacy Curriculum for English Language Learners," and "Developing a Community-Based Lay Navigator Program: Improving Culturally-Appropriate Breast Cancer Support Services in Douglas County, Nebraska." All of these studies use some element of community-based participatory methodologies.

Samuel Nurko, M.D.

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Research Interests

I am a full-time clinician investigator in the Division of Gastroenterology at Children's Hospital Boston. My present research focuses on defecation disorders, esophageal motility problems, functional bowel disorders, and motility complications after gastrointestinal surgery. I have designed and conducted prospective randomized studies, including multicenter trials that have been funded by different institutions. One of my aims has been to understand the mechanisms of fecal continence in children. To that end, I have studied and defined different aspects of anorectal and colonic function. I have also tried to understand the pathophysiology of gastroesophageal reflux and other esophageal problems. I have developed standards for the prolonged study of esophageal motility in children, and I am actively engaged in the study of nonacid gastroesophageal reflux and the implementation of impedance technology for the study of gastroesophageal reflux.

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Research Interests

My research interests include the role of botanical actives in the treatment of type 2 diabetes, specifically, underlying cellular mechanisms by which natural compounds from botanical sources improve insulin sensitivity and reduce inflammation in type 2 diabetes and obesity. I am currently studying bioactives of *Artemisia dracunculus* and blueberries.

Olorunseun Ogunwobi, M.D., Ph.D.

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Research Interests

My current research is focused on understanding the mechanisms of cancer metastasis with particular interest in the role of epithelial-mesenchymal transition, cancer stem cells, and circulating tumor cells. I am also interested in cancer health disparities.

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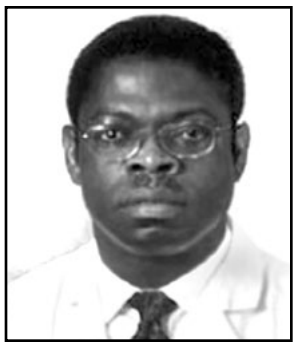
Research Interests

Currently, I am an associate professor in the Department of Obstetrics and Gynecology at the Morehouse School of Medicine in Atlanta, GA. In this capacity, I am working on developing a career as a clinician scientist that will integrate basic science expertise to study clinical problems as a translational researcher. I am particularly interested in health disparities pertaining to obesity and women's reproductive health.



Kwame Osei, M.D.

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Research Interests

My research interests include type 2 diabetes mellitus, obesity metabolism, and race/ethnicity.

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Research Interests

My main area of interest is liver disease, where I am currently working on an NIH-funded study looking at two genes of interest in liver cancer—*Sulfatase 1 (SULF1)* and *Sulfatase 2 (SULF2)*. This study involves generating transgenic mice overexpressing the above genes and monitoring the respective effects on the development and progression of liver cancer in these mice. Besides further elucidating the role of these genes in liver cancer, we expect to generate enough data that will hopefully lead to effective chemotherapeutic modalities against this disease. I am also interested in working on hepatitis B and C viruses in the pathogenesis and progression of liver cancer, with the aim of developing a cure for these viral infections and the cancers they cause. At this time, I am involved in another study that will potentially better characterize the main markers for cancers of the liver. It involves comparing the standard marker (alfa-feto protein) with a relatively new one (Desgamma Carboxy Prothrombin) in liver-transplanted patients for cancer as compared with those with liver cirrhosis.

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Research Interests

My research interests include the regulation of bone mass and metabolism by estrogens, the regulation of calcium handling in the kidney by estrogens, and the application of *in vivo* imaging to study the expression and function of specific molecules and disease pathogenesis.

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Research Interests

I am interested in vascular pathology associated with atherosclerosis and (re)stenosis of organs such as the heart and the kidney. I would like to understand what role nutrition, specifically appropriate levels of vitamin D, plays in protecting major organs from the development of chronic diseases such as atherosclerosis and subsequent pathologies such as restenosis. More specifically, I am interested in the effect of vitamin D on the immune cells, such as the monocyte/macrophage, and the role it plays in inflammation and resolution of injury in the vasculature. Long term, I am interested in the impact of poor diet and lack of physical activity in the development of chronic disease such as atherosclerosis, hypertension, and renal failure.

Rocio I. Pereira, M.D.

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Research Interests

My research interest is in the area of adipose tissue dysfunction in obesity, with a focus on the identification of biological mechanisms to explain increased diabetes risk in Mexican Americans. My laboratory has found that otherwise healthy Mexican Americans have evidence of adipose tissue dysfunction (decreased adiponectin) and increased risk of diabetes (decreased insulin sensitivity) even after controlling for adiposity. Current research is focusing on the identification of nutritional factors that may increase adiponectin and insulin sensitivity in Mexican Americans at risk for diabetes.

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Research Interests

My research bridges tissue remodeling and systems biology. Tissue remodeling involves the activation of proteases, enzymes capable of degrading the structural proteins of tissue and organs. The implications of the activation of these enzymes are applicable to many different diseases, and the Platt Lab targets sickle cell disease and cancer metastasis. Mathematical models used by the Platt Lab add value to experimental systems by explaining phenomena difficult to test at the wet lab bench and to make sense of complex interactions among the proteases or of the intracellular signaling changes leading to their expression.

Velvie Pogue, M.D.

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Research Interests
I am a nephrologist with an interest in hypertension and its complications. I have participated in various multicenter studies in these areas, including: the HOT Study, ALLHAT, SHHS, AASK Clinical Trial, and AASK Cohort Study. In addition, I have worked with my colleagues at Harlem Hospital Center/Columbia University to report on various areas in clinical nephrology. We have reported on kidney disease in patients with HIV and HCV infections, renal and electrolytes complications of illicit drug abuse, and other areas of interest to clinical nephrologists.

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Research Interests
My research interests include the association of nuclear receptor genetic variability with pharmacologic response and therapeutic outcomes in diabetes, nephrology, hypertension, and dyslipidemia.

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Research Interests

My research focuses on the development of various *in vitro* cellular models to explore and evaluate the mechanism by which xenobiotics damage or injure specific cell types of various organs or tissues. I mostly work with primary culture systems (liver, kidney, heart, and skin) as well as cell lines as experimental models to study the cellular and subcellular toxicity of selected xenobiotics using sensitive indices of cytotoxicity. I also perform drug transport and metabolism using a variety of intestinal models (*in vitro*, *in situ*, and *in vivo*) as well as perform pharmacokinetic studies. I am specifically interested in drug-dietary flavonoid interactions on drug transport, metabolism, excretion, and pharmacokinetic alterations resulting from these interactions. Using the intestinal drug transport model, Caco-2 cells, I am investigating the mechanism of cyclosporine A (CSA)-induced hyperlipidemia such that preventative measures can be taken to prevent the development of graft coronary vasculopathy. I am also investigating the effects of xanthohumol (XN) on cholesterol homeostasis. In this study, I am performing the pharmacokinetic studies of XN as well as data analysis and investigating the mechanism of cholesterol transport on the following transporters: ABCA1, ABCG5/G8, and NPIC1L1 using *in vitro* models and *in vivo* methods to evaluate cholesterol homeostasis.

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Research Interests

Our laboratory focuses on delineating the mechanisms that are involved in the activation and uncontrolled expansion of pathogenic autoimmune responses by microbial organisms. Conversely, we are also engaged in studies to reveal the regulatory responses that seem to provide protection to normal individuals.

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Research Interests

As a biocultural applied Medical Anthropologist, my research interests include minority health and health disparities among women with co-morbidity associated with HIV/AIDS, type 2 diabetes, cancer, and osteoarthritis across the lifespan. Moreover, I am a pain researcher and I investigate ethnic group differences in experimental and chronic pain sensitivity. I am a Fellow of the Summer Institute on Aging Research, Fellow of the RAND Summer Institute on Aging Research, and Fellow of the Health Equity Leadership Institute. In addition, I am a recipient of the DREAM (Disparities Research and Education Advancing Mission) Career Transition Award (K22) funded through the NIH/National Institute on Minority Health and Health Disparities. This award supports 5 years of career training and development in health disparities research; 2 years in the NIH intramural program plus 3 years of extramural funding support.

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Research Interests

We are particularly interested in Light Chain Amyloidosis, a misfolding disease characterized by the deposition of monoclonal immunoglobulin light chains as amyloid fibrils affecting several organs, causing dysfunction. Understanding the protein misfolding and aggregation mechanisms will help us to understand these diseases and will guide us to design therapeutic strategies to overcome the amyloid phenomenon. By exploring the role of folding kinetics, misfolding pathways, and stability, it is possible to understand the mechanisms of amyloid formation in light chain amyloidosis, leading to the prediction of the behavior of other amyloid diseases, with the ultimate goal of intervening to prevent progression of the disease.

Titus A. Reaves, Ph.D.

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Research Interests

My research interests involve epithelial cell biology and neutrophil (PMN) migration. PMN migration is the immune system's first line of defense against infection, serving as a major component of the acute innate inflammatory response. We are investigating the protein receptors that modulate neutrophil transmigration into the lumen of the gut. In addition, the epithelium also plays a role in efficient PMN migration into the intestinal lumen. Studies have shown that when exposed to inflammatory cytokines, the GI epithelium becomes more immunogenic, and PMN migration through this epithelium may be altered. Recently, we have an additional research focus—namely intestinal fibrosis. For this area, we have focused on the intestinal fibroblast and how the functional intestinal fibroblast becomes dysregulated leading to a fibrotic phenotype. Consequently, the primary focus of my research is to understand the molecular events that regulate aberrant intestinal inflammation involving PMN migration, epithelial interactions, and the functional fibroblasts.

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Research Interests

Research in my group includes: (1) laboratory studies of the molecular mechanisms of liver carcinogenesis; (2) development and evaluation of biomarkers and clinical tests to improve the diagnosis and treatment of liver, bile duct, and pancreatic cancers; and (3) epidemiologic, clinical, and translational studies focused on improving the prevention, diagnosis, and treatment of hepatitis and liver cancer in sub-Saharan Africa and in minority and immigrant African and Asian communities in the United States.

Beatriz Rodriguez, M.D., Ph.D. M.P.H.

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Research Interests

I am a physician-epidemiologist who has devoted my career to diabetes and cardiovascular disease epidemiology. After completing my training in Public Health and Epidemiology at The University of Texas, I moved to Honolulu where I have served as Co-Principal Investigator of the Honolulu Heart Program since 1991. I was Principal Investigator of the Intermap Study Center, the SEARCH for Diabetes in Youth Hawaii Center, an Established Investigator Grant from the American Heart Association and several other projects. I am Co-Director of the National Children's Study of the Hawaii Center and have served as Co-Investigator of the Women's Health Initiative. I was President of the American Heart Association Hawaii Affiliate and served on the National Board of Directors of the AHA. I am currently on sabbatical working in Madrid, Spain.

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Research Interests

Two of my research interests include the interaction of HIV and kidney disease; and the interaction of race, kidney disease outcomes, and geography. I hope to better characterize the renal health services provided in racially segregated areas. Despite similar insurance coverage, dialysis patients living in racially segregated areas seem to have different rates of transplantation, and the health services provided seem to differ in comparison to nonracially segregated areas.

José R. Romero, Ph.D.

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Research Interests

The main research goal of my laboratory is to define the signal transduction pathways involved with the regulation of cation transport mechanisms across the cell membrane as they affect human cardiovascular disease. The central hypothesis for our research is that cellular cation metabolism plays a major role in the pathophysiology of cardiovascular disease by regulating the production of reactive oxygen species, nitric oxide, and cellular volume. To this end, we are currently studying the role of cellular magnesium homeostasis in the pathophysiology of diabetic complications and the dysregulation of the renin-angiotensin-aldosterone system on the *in vivo* regulation of K+ and Mg2+ transporters. Furthermore, because of our expertise in cation metabolism in erythrocyte volume regulation and its role in the pathophysiology of sickle cell disease, we maintain a productive collaboration with Dr. Ronald Nagel, from the Montefiore Medical Center, with whom we are studying the *in vivo* role of nitric oxide on the Ca2+-activated K+ channel and the K+/Cl− co-transporter in mice and humans.

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Research Interests

My research interests include Barrett's esophagus, esophagus cancer, and genetic epidemiology.

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Research Interests

My primary research focus is on cardiovascular disease in patients with chronic kidney disease (CKD), including dialysis and renal transplantation. I am an ancillary study investigator for the national Chronic Renal Insufficiency Cohort (CRIC) Study evaluating the role of carotid intima media thickness to predict cardiovascular events in patients with CKD. Another area of research includes risk factors for progression of vascular calcification in CKD, including mineral metabolism disorders, inflammation, and oxidative stress. My research is funded by the NIH (National Heart, Lung, and Blood Institute and NIDDK) and the Veteran's Health Administration. I am also interested in health disparities research and in the professional development of minority faculty.

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Research Interests

My research interests encompass islet, acute pancreatitis, and allograft rejection studies. (1) Our center has isolated human islets from more than 350 cadaver donors to improve human islet recovery, engraftment, and functioning, with an emphasis on donor variables, isolation methods, and islet preservation. We have developed a culture media that can maintain human islet in culture for up to 2 months without compromising islet viability. We also have identified a gene expression profile that can predict islet function, with an interest in improving islet vascularization (angiogenesis) and suppressing host-specific and nonspecific immune response. (2) Regarding acute pancreatitis, we have studied the systemic manifestations of acute pancreatitis, particularly the effects of neutralization of TNFα with monoclonal antibody on the morbidity and mortality associated with acute pancreatitis. (3) Experiments to monitor allograft rejection in renal, pancreas, and islet transplant recipients have identified HLA-DRA mRNA upregulation as a marker for renal acute rejection; in addition, we have been the first to report the possibilities of using a noninvasive method to monitor the increase in T-cell activation markers gene expression as a marker of pancreas allograft rejection.

Juan Sanabria, M.D.

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Research Interests

My areas of interest include metabolomics in liver and pancreas transplantation, metabolomics in liver cancer, islet cell transplantation, and ischemia-reperfusion injury.

Virginia Sarapura, M.D.

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Research Interests

My research has focused on several areas. As a trainee, I learned the basic tools of molecular biology research and began to investigate the mechanism of expression of the alpha-subunit of the pituitary glycoprotein hormones under the guidance of Dr. E. Chester Ridgway and his Ph.D. associates, Drs. William Wood and David Gordon. I collaborated on other projects within the laboratory, including the regulation of thyrotrope cell growth by thyroid hormone. I also have explored other areas of investigation, including the expression of the glycoprotein hormone alpha-subunit gene in solid tumors, specifically lung cancer. Currently, my interest is to identify the genes and epigenetic factors that predispose to the development of autoimmune thyroid disorders and the various phenotypes seen in these patients.

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Research Interests

I am trained in medicine and nutrition science. My interdisciplinary research interests focus on aging, chronic disease prevention/management, and health promotion. My work centers on the development, evaluation, and dissemination of nutrition and exercise interventions to promote health in older adults. I conduct translational research (randomized controlled trials, RCTs; and participatory community-based interventions) to examine the effects of nutrition and exercise on health-related quality of life and disease outcomes. I target my research on chronically ill, frail, older adults, with particular emphasis on Hispanic Americans, who bear a disproportionate burden of health disparities. My research in nutrition provided the evidence used by the Institute of Medicine in revising the Dietary Recommended Intake for protein. My pioneering research on resistance exercise in diabetes and chronic kidney disease has been translated into clinical practice by the American Diabetes Association in the most recently published guidelines on physical activity and exercise, as well as by the American College of Sports Medicine and American Heart Association revised guidelines for exercise in older adults. Currently, I am the Principal Investigator of a participatory community-based intervention to develop a Heart Healthy Action Program for Puerto Rican older adults living in MA. This is one of five projects in the Center on Population Health and Health Disparities, newly funded by the NIH. I lecture frequently nationally and internationally and am an active member of the American Society for Nutrition, the Gerontological Society of America, the American Diabetes Association, and the Massachusetts Public Health Association. I am a board member of various nonprofit and academic organizations.

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Research Interests

My research program has centered on investigating the mechanisms by which the steroid hormones are produced. Specifically, my laboratory is interested in how adrenocorticotropin (ACTH) controls steroid hormone biosynthesis in the human adrenal cortex. We have spent the past several years examining the mechanism by which ACTH signaling controls the transcription of cytochrome P450 enzymes (CYP) that metabolize cholesterol into steroid hormones (supported by NIH/National Institute of General Medical Sciences). Studies on the mechanism by which ACTH controls CYP17 transcription have resulted in several novel findings and have spawned new areas of investigation. In addition, we recently identified sphingosine as an antagonist and a short chain phosphatidic acid species as an agonist for the nuclear receptor steroidogenic factor-1 (SF-1). Since SF-1 is predominantly expressed in the nucleus, we have embarked on studies to characterize the nuclear lipid profile, to determine the mechanism by which these bioactive lipids are metabolized in nuclei, and to define how ACTH signaling regulates the activity and subcellular localization of enzymes that regulate sphingolipid and phospholipid biosynthesis (supported by NIH/NIDDK). Additionally, in work supported by NIDDK, we are investigating the mechanism by which ACTH signaling controls inter-organelle substrate trafficking and communication between the endoplasmic reticulum and mitochondria during cortisol production.

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Research Interests

The overall goal of my current research is studying chronic hepatitis B and hepatitis C infection as major risk factors for hepatocellular carcinoma (HCC) in U.S. African immigrants, particularly the East African immigrant population, including Somalis. In my current research, I am particularly interested in the role of hepatitis B and hepatitis C genotypes/subgenotypes, hepatitis B and hepatitis C mutations, and the host factors (genetic and immunologic) for viral persistence and HCC progression among U.S. Somali immigrants. In addition, with collaboration of behavioral scientists, I am interested in studying health beliefs and behaviors of Somalis towards prevention, treatment, and surveillance regarding chronic hepatitis infection and its sequelae. These and other factors, including language, culture, religion, education, socioeconomic status, etc., may be contributing to health disparities among Somali immigrants in the United States.

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Research Interests

I am an African-American female conducting research in the field of diabetes and oral disease and am a U.S. citizen. My areas of interest are in periodontal disease and diabetes, oral cancer, HIV/AIDS, and the impact of these oral diseases in special populations. I have worked closely with leaders in the field of evaluating the impact of oral infection on systemic disease progression (Steven Offenbacher and Dr. Jim Beck, both at the University of North Carolina). I was a member of the Center for Oral and Systemic Diseases and the Lineberger Comprehensive Cancer Center. I have been an investigator on the Dental Atherosclerosis in Communities Project (Dental ARIC; PI–Dr. Jim Beck) that was associated with the Atherosclerosis in Communities (ARIC) Project funded by the National Heart, Lung, and Blood Institute. I also received a 3-year minority supplement grant associated with this project. I am currently working on several papers from data collected during this project and an HIV/AIDS Demonstration Project. Some of the titles include "Evaluating the Relationship Between Periodontal Infection and Fasting Glucose Levels" and "The Relationship Between Periodontitis and Diabetes Associations With Measures of Atherosclerosis and CHD." I have published in the area of diabetes and periodontal disease and continue to be actively involved in research in the area. Currently, I am funded under a Health Resources and Services Administration project looking at the impact of oral disease on HIV overall health outcomes called the UNC HIV Demonstration Project and will soon be implementing a project detecting SCCa antigen in head and neck cancer patients pre- and post-treatment. We will also focus on the patients who have diabetes in this study.

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Research Interests

My research is in the area of hypertension and chronic kidney disease (CKD). I am particularly interested in the association of sleep-disordered breathing and kidney disease. Both disordered sleep and CKD are known to increase the risk of cardiovascular disease. Unfortunately, there is a high prevalence of CKD in minorities who are known to have reduced sleep duration and sub-optimal sleep quality. I am interested in investigating how downstream factors generated in the setting of poor sleep affect blood pressure as well as lipid metabolism, and whether these lead to end organ injury (e.g., kidney dysfunction). It will be interesting to know whether appropriate management of sleep disorders in CKD patients modifies their risk of cardiovascular disease.

Charmaine Stewart, M.D.

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Research Interests

My research interests include the pathophysiology of cognitive impairment in hepatic encephalopathy and sleep disorders associated with cirrhosis.

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Research Interests

My laboratory uses a multilevel approach to resolve the role of glucocorticoid hormones in hippocampal synaptic deficits in leptin receptor deficient mice, a rodent model of insulin resistant diabetes. We also study rats with diet-induced insulin resistance, which more closely resemble the etiology of diabetes in humans. These models are being characterized with regard to glucocorticoid-mediated changes in plasticity in the hippocampus, with the eventual goal of targeting the hippocampal corticosteroid signaling cascade to attenuate cognitive impairment in individuals with insulin resistant diabetes.

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Research Interests

My research interests are in botanical dietary supplementation and insulin resistance. My research focus is on the health benefits of blueberries and their effects on improving the health and well-being of insulin-resistant humans with pre-diabetes and type 2 diabetes. Preliminary data in our laboratory suggests that dietary supplementation with bioactives in blueberries for 6 weeks was well tolerated and increased whole-body insulin stimulated glucose disposal in obese humans with pre-diabetes when compared to the placebo group. The next steps are to determine the cellular mechanisms by which blueberries enhance insulin sensitivity. In addition, I am interested in studying other botanicals and metabolic syndrome.

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Research Interests

I am investigating novel approaches to treat and cure heart failure. Among those approaches is cutting-edge, vector-based gene therapy. I discovered that a new protein called Sorcin is able to alleviate cardiac failure of mice with diabetic cardiomyopathy. In addition, I was able to rescue cardiac failure by over-expressing SERCA2a in an inducible way in the heart of pressure-overloaded and diabetic mice, using a novel line of transgenic animals that I designed and engineered. More recently, my focus of research is the study of excessive enzymatic glycosylation of proteins in the diabetic heart. My interest is concentrated in the mitochondria of cardiac myocytes and the effects of excessive glycosylation of mitochondrial proteins and the mechanisms that lead to energetic inefficiency in the diabetic heart.

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Research Interests

My research interests are in cancer and chronic disease epidemiology, with an emphasis on the interactions between genetic susceptibility and environmental factors. The environmental factors that I focus on are infections, familial aggregation, behaviors, anthropometric changes/obesity. I am also interested in research on environmental factors that contribute to health disparities in neighborhoods and communities.

Bolaji Thomas, Ph.D.

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Research Interests

My areas of research interest include complement regulatory genes and sickle cell pathophysiology, antigenic diversity and drug resistance in *Plasmodium falciparum,* and metagenomics and gene expression in cutaneous leishmaniasis.

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Research Interests

My laboratory is interested in understanding the mechanisms used by enterohemorrhagic *Escherichia coli* (EHEC) strains to adhere to and colonize the intestinal epithelia. Our major goal is the characterization of novel adhesins and the regulatory network controlling their expression during intestinal colonization. A second main project of our laboratory is defining the importance of bacterial surface structures in the pathogenesis of Adherent-Invasive *Escherichia coli* (AIEC) isolates and their role in the development of an inflammatory response. We are determining whether certain serotypes of AIEC strains are associated with inflammation, as observed in patients suffering from Crohn's disease and ulcerative colitis. Furthermore, we have recently completed the genome sequence of our prototype AIEC strain and now are establishing whether specific virulence factors expressed by AIEC strains are associated with chronic inflammation using *in vitro* and *in vivo* models of infection. Finally, my laboratory has initiated a new area of investigation focusing on the pathogenic mechanisms of *Burkholderia mallei* and the development of candidates for vaccine testing. Currently, we are characterizing the type III secretion system found in this pathogen using *in vitro* approaches and testing multiple virulence factors as vaccine candidates to protect against aerosol infection.

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Research Interests

My research interests include dysregulation of lipid, carbohydrate, and lipoprotein metabolism and its implications in cardiovascular diseases, obesity, and type 2 diabetes. Other areas of interest are diabetic cardiomyopathy and cardiac mitochondria dysfunction.

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Research Interests

My research interest focuses on genetic and environmental factors causing lymphatic dysfunction that contributes to cardiovascular and lymphatic vascular diseases. I am particularly interested in structural and molecular changes in the cardiac lymphatic system related to diabetes. We have discovered interesting, novel findings regarding PROX-1, a lymphangiogenic transcription factor, under the backdrop of diabetes in Zucker diabetic fatty rats. I am preparing a grant application to continue exploring changes in lymphangiogenesis in another animal model of type 2 diabetes. I am currently investigating obesity-related secondary lymphedema in humans and 100 percent of the subjects have a co-morbidity of type 2 diabetes. I have requested internal funds to evaluate gene expression in these subjects compared to age-matched healthy controls.

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Research Interests

My research interests include the design and testing of interventions to improve quality of care and to reduce health disparities. This includes efforts to reduce disparities in cancer outcomes, improve detection and treatment of kidney disease, and improve management of chronic disease. In addition to conducting policy analyses and health services research, I am also engaged in community-partnered research projects to reduce disparities in cancer care and to address negative social determinants of health.

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Research Interests

I am interested in health disparities within the obese pediatric and adolescent surgical community. Specifically, as a pediatric anesthesiologist, I am studying the role of pharmacogenetics in fatty liver through Pk/Pd modeling. I want to explore the possible genetic variations in the cytochrome P450 systems and anesthetic drug metabolism within ethnic populations diagnosed with nonalcoholic steatohepatitis.

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Research Interests

My Ph.D. is in Immunology, and I completed my thesis work in the area of B cell development. My goal is to complete a fellowship in nephrology and then develop a basic research focus on inflammatory or autoimmune disease processes in the kidney.

Francisco Villarreal, M.D., Ph.D.

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Research Interests

Diabetes mellitus is the fastest growing pathology in the United States. In the last 2 years, 3 million more Americans have been diagnosed with the disease. Under the umbrella of an NIH-sponsored program project (National Center on Minority Health and Health Disparities-sponsored EXPORT grant, Dr. Sandra Daley, PI), we have undertaken a research effort jointly with Dr. Wolfgang Dillmann, Chief of Endocrinology at the University of California, San Diego, to examine the *in vitro* and *in vivo* effects that diabetes has on cardiac diastolic function. Efforts focus on alterations that arise in both cardiac myocytes and fibroblasts. Animal models of type 2 diabetes are used, including transgenic animal models. Our laboratory has also undertaken a project related to the characterization of the cardioprotective actions of cocoa flavanols on animal models of ischemia-reperfusion injury, currently sponsored by a National Center for Complementary and Alternative Medicine R21. Cocoa flavanols are known to have beneficial effects in humans within a large dose range and with no toxic effects. Our intention is to demonstrate that the cocoa flavanol epicatechin can exert cardioprotective actions. For this purpose, we are currently pursuing studies *in vitro* and *in vivo*. Our expectation is to take our concept to initial clinical trials within a short timeframe.

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Research Interests

My major research interest is to understand the role of hemoglobin S and other variant hemoglobins in malaria chemotherapy. My research focus has been to elucidate the mechanism of action of antimalarials such as artemisinin and new lipophilic iron chelators in sickle cell malaria. Other areas of interest include neurophysiology, electrophysiology, the patch clamp, neurodegenerative diseases, neurogenetics, neuropharmacology, and ion channels.

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Research Interests

My research interests include: health disparities, cancer control and prevention, minority health, adolescent health, gender minority health, behavioral interventions, medical home, qualitative research, and mixed methods design. I also examine the benefits of fruit and vegetable consumption and physical activity as predictors and promoters of health and well-being.

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Research Interests

My research interests include implementing evidenced-based health programs within community and clinical settings to improve health outcomes and decrease health disparities among African Americans. One of my research interests is (1) implementing evidenced-based health programs in community settings to improve health outcomes and decrease health disparities among African Americans, and (2) developing a community-based participatory research agenda where I collaborate with community organizations/individuals to develop, implement, and evaluate programs developed specifically to meet the unique needs of African Americans living with chronic diseases. In addition, my interests include examining the psychosocial effects resulting from changing health behaviors. Another interest is implementing evidenced-based health programs in clinical settings to improve health outcomes and decrease health disparities among African Americans and determine the effectiveness of patient-centered medical home models to improve patient satisfaction and health outcomes.

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Research Interests

I am Professor of Medicine and Program Director of the William T. Dahms Clinical Research Unit at Case Western Reserve University and Director of the Clinical Hypertension Program at University Hospitals Case Medical Center. My research interests include long-term clinical outcome trials, particularly in black populations. I served as Vice Chair of the Steering Committee for the African American Study of Kidney Disease in Hypertensives Trial and first authored its primary results paper. I also chaired the Executive Committee and was Vice Chair of the Steering Committee for the Antihypertensive and Lipid-Lowering to Prevent Heart Attack Trial (ALLHAT). I am now the Principal Investigator of one of the five clinical center networks in the Systolic Blood Pressure Intervention Trial (SPRINT).

Bessie A. Young, M.D., M.P.H.

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Research Interests

I received an M.P.H. in Epidemiology from the University of Washington, and I am currently an Associate Professor in Medicine, Adjunct Associate Professor in Epidemiology and Health Services at the University of Washington. My research program focuses on evaluating health and gender disparities in chronic kidney disease, diabetes, and dialysis modalities. My research program is currently conducting research on the epidemiology of health and gender disparities in diabetes, diabetic kidney disease, chronic kidney disease (CKD), depression, access to transplantation, and dialysis initiation and home dialysis modalities. Our research projects include the development and testing of new educational materials for patients with late stage CKD as part of the Increasing Kidney Disease Awareness Network (IKAN) Transplant project, an NIH-funded project; evaluation of health and gender disparities in CKD as part of the NIH-funded Pathways to Health project; and evaluation of health disparities in diabetes within the VA health care system. Currently, our research program receives NIH funding that supports several co-investigators and graduate students. Our goal is to develop interventions aimed at decreasing health disparities in diabetes, CKD, home dialysis, and transplant evaluation and initiation.

Network of Minority Heath Research Investigators 10th Annual Workshop
National Institute of Diabetes and Digestive and Kidney Diseases
National Institutes of Health

Bethesda Marriott at Pooks Hill
Bethesda, MD
April 19 - 20, 2012

Summary Report

THURSDAY, APRIL 19, 2012

INTRODUCTIONS

Juan Sanabria, M.D., M.Sc., F.R.C.S.C., F.A.C.S., Assistant Professor of Surgery and Nutrition, Case Western Reserve University, Cleveland, OH, and Lawrence Agodoa, M.D., 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. Sanabria, Chair of the Network of Minority Health Research Investigators (NMRI) 10th Annual Workshop, welcomed the attendees and thanked Dr. Lawrence Agodoa and Ms. Winnie Martinez for the success they have had in promoting and organizing the NMRI for the past 10 years. He asked that everyone introduce themselves and tell how many years they have belonged to the NMRI and how many annual workshops they have attended. After the introductions, Dr. Sanabria asked Dr. Agodoa to say a few words about the NMRI.

Dr. Agodoa welcomed the participants and said that the NMRI has had two meetings per year: an Annual Workshop in the spring and a Regional Workshop in the fall. The Regional Workshops are held to recruit young investigators into the NMRI. He said that he was pleased to see so many senior NMRI members who have supported the Network in the past decade. He recognized Dr. Jacqueline Tanaka, chair of the first NMRI Annual Workshop in 2003.

WELCOMING REMARKS

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

Dr. Germino welcomed participants and passed along greetings from Dr. Griffin Rodgers, Director of the NIDDK, who had a prior commitment and could not attend. He announced that on the previous day Dr. Rodgers, a champion of the NMRI, was inducted into the 2012 class of the American Academy of Arts and Sciences, a prestigious group that is more than 200 years old and includes George Washington, Benjamin Franklin, and many other legendary figures from American history as past members.

Dr. Germino congratulated the NMRI on its 10th Anniversary and said that it was established and has been supported by the NIDDK because of the commitment to overcoming the challenges involved in increasing minority participation in research. He provided background on the NMRI and data collected as part of its evaluation process. The goals of the NMRI include the following:

- To encourage and facilitate biomedical research within NIDDK mission areas by its members.

- To recruit new investigators from these communities to biomedical research in NIDDK mission areas.

- To promote dialogue between NMRI members and the NIDDK.

The NMRI is dedicated to increasing the number of minority researchers and furthering research on health disparities. This effort is led by the NIDDK's Office of Minority Health Research Coordination (OMHRC) and its Director, Dr. Lawrence Agodoa, who was tapped to head an initiative of the National Institutes of Health (NIH) Director at the time, Dr. Harold Varmus, to address these issues. Dr. Varmus worked with then-NIDDK Director Dr. Allen Spiegel to support Dr. Agodoa in establishing the NMRI. Dr. Agodoa began by enlisting minority senior investigators as "owners" of the Network. Membership in the NMRI required that an individual have a postdoctoral level or higher degree and be a member of an underrepresented minority group; at the occasion of its 10th Anniversary, the NMRI has more than 200 members, 20 percent of whom are senior members; 80 percent have faculty appointments. Throughout the years, more than 300 investigators have attended NMRI annual or regional workshops.

The NMRI began collecting member information through the online NMRI Questionnaire in 2008 (see http://nmri.niddk.nih.gov/membership/questionnaire.aspx). Data collected from 2008 to 2011 indicate what would be expected from a high-energy group such as the NMRI. During that time, there have been 16 promotions/appointments, 34 members have received grants (28 from the NIH), 23 members have received honors or awards, 170 publications have been generated by members, and members have been responsible for 93 poster presentations at national and international scientific conferences.

The NMRI is only one of the NIDDK's efforts to address health disparities, which disproportionately affect racial/minority groups as well as other underrepresented populations. The NIDDK has coordinated research efforts on obesity, type 2 diabetes (T2D), and kidney diseases, each of which are major health problems among underrepresented/disadvantaged populations. The estimated annual cost of these three conditions is $150 billion for obesity, $174 billion for T2D, and $27 billion for kidney diseases. Obesity—a significant risk factor for T2D, which in turn is the most significant risk factor for kidney diseases—is increasing in the United States and internationally and is likely to become the world's most significant health problem within decades.

Dr. Germino recounted the successes of NIDDK clinical trials that have special significance for minority populations, including the following:

- **The Diabetes Prevention Program (DPP).** This program showed that the risk of developing T2D could be reduced by 58 percent through lifestyle changes, compared with 31 percent through treatment with metformin. The DPP oversampled for minorities, and results indicated that these reductions were equivalent among minorities and Caucasians. The DPP followup study showed that the reduction in the risk of T2D has continued after the end of the trial.

- **LookAHEAD.** This randomized clinical trial study, which ends in 2014, compares intensive lifestyle interventions with conventional diabetes education among individuals who are obese and have T2D. LookAHEAD also oversampled for minorities. Preliminary results at Year 4 indicate that participants in the intensive lifestyle intervention arm of the study experienced improved fitness, glucose and blood pressure control, improved high-density lipoprotein (HDL) levels, and less use of medication. It is hoped that this study will have positive impacts not only on T2D and obesity, but also on cardiovascular disease (CVD) and mortality.

- **The African American Study of Kidney Disease and Hypertension (AASK).** The AASK study tested the hypothesis that an intervention with strict blood pressure control could delay the progression of chronic kidney disease (CKD). Results indicated that an angiotensin-converting

enzyme inhibitor (ACEi) was more effective for blood pressure control among African Americans than calcium channel blockers and beta blockers. This was an unexpected finding. Other findings included a reduced rate of CKD progression among participants with a urinary protein/creatinine ratio of greater than 0.22, and that African American participants with hypertensive kidney disease had progressive CKD despite aggressive blood pressure control. The study authors commented that although aggressive blood pressure control slowed the rate of progression, it did not stop or reverse progression. This indicates the need for more effective therapies for CKD in this population.

- **Basic Science at the NIDDK.** Because approximately one-third of CKD cases in the United States are in the African American population, the search for understanding remains a priority. The NIDDK has supported genetic admixture studies to identify genetic risk factors for CKD among African Americans. A locus on chromosome 22 of African American CKD cases, but not controls, was 93 percent associated with African American ancestry. The gene *APOL1* was identified as a risk factor for CKD. Interestingly, individuals with the G1 and G2 variants of *APOL1* were found to have a 10-fold increased risk of focal segmental glomerulosclerosis (FSGS) and a 7-fold increased risk of end-stage renal disease (ESRD). The high prevalence of this variant in individuals of African descent is similar to what had been reported for sickle cell variant in the hemoglobin gene. The latter was thought to confer evolutionary advantage by affording protection against malaria. ApoL1 may have similarly arisen through selective pressure as it seems to protect against *Trypanosoma brucei rhodesiense* infection.

- **Study of Latinos (SOL).** This National Heart, Lung, and Blood Institute (NHLBI)-funded epidemiological study is investigating Hispanic groups in the United States for a variety of health indicators. The NIDDK is one of many co-sponsors of the study, which began in the past year.

The NIDDK also is committed to communicating research findings to those communities that can benefit the most. The Diabetes Education in Tribal Schools (DETS) project has developed and implemented a grades K-12 school-based diabetes curriculum that supports the integration of American Indian/Alaska Native culture and community knowledge with diabetes-related scientific knowledge. Similarly, the National Kidney Disease Education Program (NKDEP) has developed a faith-based community program known as "Kidney Sundays" to provide African American communities with the information they need to increase awareness of kidney diseases.

Dr. Germino related the challenges ahead for reducing health disparities in the United States. The first challenge is illustrated by a graph of prevalence rates of ESRD from 1980 to 2008, which shows that ESRD rates continue to dramatically rise in each minority population except American Indians. Many of the diseases that fall within the NIDDK research mission, and which are fast increasing in their prevalence, disproportionately affect minority populations. We also face important gaps in the balance of our workforce composition and in their relative success rates. A recent analysis of minority participation published in the *Journal of the American Medical Association* showed that not only is the number of black applicants low but that their success rate is much below that of all other racial and ethnic groups. For example, of the approximately 83,000 grant applications analyzed in the study, only 185 awards were made to African American applicants, more than 10 percentage points below whites who received NIH funding. To draw attention to this concern, a recent issue of *Science* published a "Call to Action" for minority men in science, with data showing that approximately 25 percent of male African American and Hispanic high school students drop out of school between the 9th and 10th grades. In addition, among those enrolled in college and studying in the science and math fields, nearly 35 percent work 20 hours per week to make ends meet. The time constraints make it even more difficult for students to do both. Therefore, it is not surprising that although African Americans, Hispanics and Native American men accounted for 35 percent of the college population in 2008, only 12 percent graduated with science and math degrees. Proposed solutions include encouraging more minority faculty members and scientists to become actively engaged in mentoring undergraduates and providing adequate financial support

so that students can focus on their academic pursuits. The NIDDK is addressing the pipeline problem through its Diabetes Education Curriculum in K-12 Schools Program (DECK-12) program. The goal of DECK-12 is to educate at-risk youth about healthy living and risk reduction strategies for preventing diabetes while exciting them about the power of science to improve health. Increasing the numbers of students who choose science-related careers is one of the goals of DECK-12.

For the NMRI, challenges for the future include retaining senior members who can become mentors for young investigators. As Dr. Agodoa wrote in the most recent issue of the *NMRI News*, an NMRI publication, "the NMRI belongs to its members, and their hard work and enthusiasm for the program will dictate success or failure. The challenge will be to keep the good work of the past moving forward in the future."

The final and possibly the most critical challenge for the NMRI is how to exist in a time of budgetary austerity. The NIDDK budget from 2007 to 2011 rose by a small amount, but given the added expense of biomedical inflation, there is less money to support the same level of funding for all programs. The real buying power in 2011 has returned to the real funding levels of 2001. Examining data on the percentage of grant applications funded during the past decade provides a way to illustrate what may be expected in the future: the percentage of grants funded in 2011 was at its lowest level than during any year other than 2006.

Dr. Germino concluded by congratulating the NMRI for 10 years of excellence and thanked the group for the opportunity to speak on this occasion.

Discussion

Dr. Lincoln Edwards commented that the burden of mentoring created by the lack of senior minority investigators presents another challenge for senior minority investigators who currently are in the academic setting. In addition, academic institutions generally do not recognize mentoring as a significant activity when individuals are evaluated for promotion. Dr. Germino noted that this problem can be overcome only by having institutions recognize the value of mentoring and having adequate numbers of minority faculty members serve on promotion committees. The NIH sometimes faces a similar problem with its review committees when they review applications from minority individuals or institutions; therefore, it is important that minority grant awardees be willing to serve on review committees when offered the opportunity

Dr. Kwami Osei asked about the relationship between the NIDDK and the National Institute on Minority Health and Health Disparities' (NIMHD) Research Centers in Minority Institutions (RCMI), headed by Dr. John Ruffin. Dr. Osei also asked if the NIH needs to make structural changes to encourage minority researchers. Dr. Agodoa noted that as part of Congressionally-mandated consolidation in 2012, the RCMI was moved from the National Center for Research Resources, which was dissolved, to the new NIMHD (which was elevated from a Center to an Institute in 2011). Dr. Germino addressed the comment on structural changes. He said that efforts should be made to ensure that the NIH grant review process includes a broad-based group of reviewers who appreciate the science without looking at the institution or past success of applicants in receiving grant awards. This would include reviewers who understand the context of the science included in the application and that the results of the project address something that will improve the health of all populations. He challenged those present to become involved in the NIH review process to offer their experience and perspective.

KEYNOTE ADDRESS: CHANGE AND CONTINUITY: LATINOS IN THE FUTURE OF AMERICA

Luis Ricardo Fraga, Ph.D., M.A., Associate Vice Provost for Faculty Advancement, Russell F. Stark University Professor, Director, Diversity Research Institute, Professor, Department of Political Science, University of Washington, Seattle, WA

Dr. Fraga began by relating his experience as a high school student in the sciences and being chosen for a National Science Foundation summer research institute in the Jackson Laboratory in Bar Harbor, ME. He recalled the importance of that experience in setting him on the path to an academic career.

He added that the United States is changing demographically, and this is a time for critical choices. Shifts in Latino demographics can be viewed through the lens of change and the consequences that come from these demographic shifts. Many people feel threatened by this demographic shift, and this should be addressed by the political system. Community leaders have a responsibility to describe and support tradeoffs that must occur to ease the effect of the demographic shift and make it acceptable to a majority of the people in the United States.

Population data from 1970 projected through 2050 show a dramatic demographic shift that is likely to continue. By 2050, the percentage of the U.S. population that identifies itself as a specific race will change among whites (84.1% to 46.3%), African Americans (10.6% to 11.8%), Latinos (4.5% to 30.2%), and Asians (0.7% to 7.6%). At the state level, California is the largest state and sends the most legislators to Washington, DC. California recently became a minority-majority state (i.e., the total number of minorities surpassed the total number of whites); Texas and Hawaii also are states that soon will be minority-majority states. Dr. Fraga characterized the changing demographics as an example of "linked fate and destiny" in describing the tradeoffs that will be needed in the future.

Since 2002, the source of growth in the Latino population has been among those born in the United States (62.6%), with 91.7 percent of those under the age of 18 years being native born. Both immigrant and native-born Latinos are important in today's population, but the future will belong to those who are native born. The Latino population has a significant regional concentration, with New Mexico having the highest percentage of Latinos (46.3%). The pattern of Latino population dispersion in the United States from 1980 through 2008 shows that Latino population growth is spreading to the South and Northwest, but growth continues in traditional Latino areas such as the Southwest, California, New York, and Chicago. New areas of Latino growth are in states that traditionally have a history of poor race relations. Approximately one-fifth of all students enrolled in public schools in the United States are Latino, with higher rates in Texas (50.3%) and California (49.3%). These changes have occurred over a relatively short period of time, and have led to a perception of threat, loss of control, and a national identity crisis as one of the responses to these changes.

Dr. Fraga related his experience of trying to raise funds for a comprehensive survey of Latino perceptions, which garnered little support among funding agencies. When funds finally were acquired, the survey, which was the first state-stratified national survey of the U.S. Latino population, provided data on Latino attitudes about a wide range of issues relevant to the ongoing debate in the United States on immigration. The survey included both participants who were citizens and illegal immigrants and assessed the views of more than four generations. Survey findings included the following:

- Overwhelming majorities, especially in the first generation, felt that it was very important or somewhat important to learn English. It was noted that there is a large gap in the United States between the number of people who want to learn English and the number of publicly sponsored programs that provide this service.

- Majorities across generations felt that it was important to maintain the ability to speak Spanish, although by the third generation few survey participants had maintained that ability; the aspirational choice is to maintain both.
- More survey participants chose to identify themselves as "Hispanic" rather than "Latino," indicating a pan-ethnic identity regardless of country of origin. This is borne out by survey participants simultaneously identifying with pan-ethnic, country of origin, and American identities.
- Across the four generations, those who identified with their home country decreased from the first to the fourth generation; the opposite occurred from the first to fourth generation for identification as Americans.
- For maintaining cultural identity, survey participants felt that it was important to assimilate but also to maintain the distinct culture of their home country.

There was a clear aspiration for educational attainment among survey participants, which shows cultural convergence with a general American value. When asked how far they expected their children to go in the educational system, there were high expectations, but by the third and fourth generation there were fewer parents who expected their children to achieve a college or graduate degree. This may be indicative of the realities of the debt load at those levels.

The survey also included questions about political association or identification. This should be important to the scientific community because politics drives scientific funding, mentoring programs, and the research agenda. These are central questions that will impact academic institutions and, ultimately, the research community.

Data from the U.S. Census Bureau (2009) indicate that one-third of Hispanic children live in poverty; the national figure for all Americans is 20.1 percent. Approximately two-thirds of Hispanic and African American high school students attend schools that are 90 percent segregated. Not being able to read or complete high school are key indicators for entry into the prison system in the United States. These data show that the futures of minority children are being limited.

Dr. Fraga concluded with a quotation from Roberto Unger and Cornell West in their 1998 book, *The Future of American Progressivism:*

> *"To understand your country, you must love it. To love it you must, in a sense, accept it. To accept it as it is, however, is to betray it. To accept your country without betraying it, you must love it for that in it which shows what it might become."*

Dr. Fraga said that choices await us concerning the type of future we want in the United States. Immigrants come here for a better life and have faith that their children's lives will be better than their lives have been. Dr. Fraga ended by saying that the choices we make should be made in the context of the legacy we want to leave for our children. He asked that the choice be for a future of linked faith and common destiny, and noted the tough choices that will have to be made to achieve such a future.

Discussion

Dr. Fraga clarified that "first generation" in his survey includes those not born in the United States, which may differ from other sociological or political definitions. As for defining ethnic and racial background, the U.S. Census began including a category of "mixed race" in 2000; 3.9 percent of Americans have chosen this category. This is not the same as ethnicity or ethnic identity. Regarding the issue of women in science, Dr. Fraga commented that there is a dysfunctional system of academic promotion in this country. It seems that an individual's value often is appreciated only when that employee notifies the institution that he or she is leaving. Loyalty to the institution seems to be undervalued. The standard in research institutions should be to value those who can bring diverse racial and ethnic perspectives to the scientific enterprise.

Population growth and birth control are significant issues in the immigrant community. A participant asked how the politics of religion and birth control will impact the population. Dr. Fraga indicated that birth rates among Hispanics are decreasing in both the United States and Latin America. The number of years of education is the highest predictor of number of children, with access to birth control as another critical factor. As educational levels increase in Latin America, it is expected that birth rates will decrease. In the United States, first generation Latinos are overwhelmingly Catholic, but there are marked declines with each generation. There does not, however, appear to be an impact of religion on birth control, which may sound contradictory.

PANEL DISCUSSION: ARTICLE IN SCIENCE ON RACE, ETHNICITY, AND NIH AWARDS

Ann Bonham, Ph.D., Chief Scientific Officer, Association of American Medical Colleges, Washington, DC
Kwame Osei, M.D., F.A.C.E., F.A.C.P., Director, The Ohio State University College of Medicine, Columbus, OH, and Walter Schaffer, Ph.D., Senior Scientific Advisor, Office of the Director, NIH, Bethesda, MD

Dr. Schaffer

Dr. Schaffer began by describing the context from which the Ginther et al., paper on race, ethnicity, and NIH awards arose. The study was designed at the NIH and conducted by a contractor. The NIH, which has had diversity-related programs in place for nearly 40 years, has a unique and compelling need to promote diversity in biomedical research. Diversity improves the quality of education and training, broadens perspectives in research priorities, improves the ability to recruit subjects from diverse backgrounds, and improves the Nation's ability to address health disparity issues.

Drs. Schaffer and Raynard Kington launched a series of studies to provide credible evidence that would change the nature of the discussion about this issue. A study of women showed a steady increase of women in research programs. Currently, the number of women receiving doctorates is slightly more than one-half, and women receive approximately 30 percent of research project grants (RPGs). Women have almost identical success rates to men on Type 1 applications, and their retention as faculty and as individual investigators (R01 pool) remains the same. However, the situation with racial and ethnic minorities is more disparate: approximately 12 percent of the population is Hispanic or Latino; 10 percent is black or African American; 3 to 6 percent is Asian. The trends since 2000 show an increase in the number of Asians obtaining research project grants but the proportion of Hispanics and African Americans serving as Principal Investigators has changed little.

Dr. Schaffer described studies of education and funding trends. One paper (Pohlhaus JR, et al., Sex differences in application, success, and funding rates for NIH extramural programs. *Acad Med* 2011;86:759-767) examined application, success, and funding rates. A second paper (Ginther DK, et al. Race, ethnicity, and NIH research awards, is available on the Social Science Research Network at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1677993) considered the percentage changes in representation across career stages. It showed that Hispanics and African Americans were much less likely to go to college than whites or Asians, and a further decrease was seen from college to graduate school. The study also showed a significant increase in the number of Asians obtaining advanced education.

The Ginther et al. paper published in the journal *Science* showed a significant difference in the success rates among white, Asian, and Hispanic NIH grant applicants compared with African Americans, who were much less successful in receiving grant awards. These differences are seen across almost every field of science: African Americans receive lower application scores in a pervasive and persistent way. This trend in success rates also is seen in applications from top-ranking institutions.

Three additional studies are under way. One focuses on disparities among M.D.s. Dr. Schaffer noted that the disparity among M.D.s is not as large as with Ph.D.s, and that all applicants who work in medical schools experience better outcomes on NIH grants. Further studies will try to distill additional information from applications beyond what was available in the structured datasets on the individual applicants. In addition, the Diversity Workgroup of the Director's Advisory Committee held a workshop to discuss experimental techniques that could be used in the pre-application setting as well as during review to determine if biases are a contributing factor.

Dr. Bonham

Dr. Bonham said that the Diversity Workgroup (DW) report is due to the NIH director in June. As the Chief Scientific Officer of the American Association of Medical Colleges (AAMC), Dr. Bonham works with research policies and programs that interact with federal agencies involved with academic medicine. The AAMC is concerned about health equity and improving the quality and quantity of research to address problems of health equity and inequity. The organization recently hired Dr. Philip Alberti as its Director for Health Equity Research and Policy.

Dr. Osei

Dr. Osei was born in Ghana, trained in science in the 1970s, and completed his internship and fellowship in the United States. During the past 30 years, he faced challenges similar to those faced by today's younger investigators, but he persevered and received funding through NIH mechanisms. He has participated on multiple study sections, was part of RCMI, and has conducted work with the NIDDK.

Twenty-four questions were selected by a committee, based on responses to a premeeting solicitation via email for questions that participants wanted to hear answered. Panelists discussed the questions as time permitted.

Question #1: *How did you prepare the represented investigators to submit a more competitive and successful application?*

The panelists indicated that mentorship, grantsmanship, networking, and institutional resources are important components in this process. Dr. Schaffer said that education is an important factor. A survey of institutions showed that those whose investigators achieved the best success rates used strong internal review procedures ("pre-view") that provided constructive, critical feedback and allowed investigators to make substantive changes before submitting their application to the NIH. Dr. Osei commented that internal procedures are needed, particularly pre-review from researchers who have served on study sections. However, incentives (e.g., financial rewards or points toward promotion for faculty) are needed to encourage faculty to participate in this pre-review process. This pre-review phase must be institutionalized to be successful, and young investigators must have mentors. Dr. Bonham added that, in addition to mentoring and procedures, other key elements of grantsmanship are networking and pre-grant assistance (i.e., not related to the science) before beginning to write the grant application. The institutional resource list is an example of a pre-grant resource. Dr. Osei agreed that institutional infrastructures are critical to sustaining a grant, and a scientific writer can help ensure that the text conveys the science accurately.

Discussion of Question #1

Shay Lewis, Baylor College of Medicine, asked how applications from small institutions that do not have core facilities are considered and whether it is helpful to describe access to resources at other institutions. Dr. Bonham said that the best approach is to provide a statement from the other institution(s) with documentation about access and use of their core facility. Dr. Osei agreed and encouraged inclusion of a letter from the external institution indicating the researcher's knowledge and use of the facility.

A participant raised concerns about equity in grant awards, noting a long-term trend of larger universities receiving larger grants. Dr. Osei said that applicants should strive to submit the best application possible, and he encouraged pre-views of the grant before submission. Dr. Schaffer added that persistence is a virtue, and unsuccessful applications should be revised. He noted that having publications is an advantage, particularly if a member of the review committee has cited an applicant's paper. Dr. Bonham wondered about establishing a process for new investigators to interact with the review committee, and a participant suggested that interviews by the committee would provide a new approach. Dr. Germino said that NIDDK program staff are particularly attentive to applications from new investigators, and their R01 applications are considered under different paylines. He encouraged applicants to submit the right grant to the correct NIH grant category and to make sure that the program officer gets to know him/her. The panelists also recommended mentorship of first-time investigators.

Alexis Drenaham, Georgia Health Sciences University, described unsuccessful experiences of preparing and submitting $1.5 million in proposals during the past year and several attempts to find pre-reviewers. She asked about NIH plans to fund grant proposal mentoring to help facilitate relationships between senior and junior scientists and improve success rates for minority applicants. Dr. Bonham acknowledged that the DW considers this an important issue, including what would constitute a successful, targeted mentoring program, as well as issues of unconscious bias in processes and across institutions. She suggested that investigators could approach their institution's president for assistance in this area.

Question #2: *How can we position investigators to be viewed more favorably in the review process, including trying to diminish, eliminate, or address any unconscious biases?*

Dr. Bonham said that the DW is strongly committed to developing an evidence base for managing bias and unconscious bias during the peer review process. In terms of institutional bias, its recommendations will cover ideas to gather data and encourage mitigation. Dr. Osei commented that one approach is to omit investigator and institutional names from applications in review. This approach has been unsuccessful in the past, however. Dr. Osei suggested that investigators thoroughly proofread their applications prior to submission, as grant applications with grammatical errors are poorly received by review committees.

Discussion of Question #2

In premeeting comments, participants suggested that study sections do not always include a diverse membership and wondered whether junior researchers who do not have grants could serve on study sections. Dr. Schaffer said that younger investigators can participate as early career reviewers.

A participant expressed appreciation for the DW's desire for an evidence base for bias, commenting that the Endocrine Society had recommended an ethnographic or social science-based study on the operations of the review committees. To help shift peer review decisions, which often seem to be made on an investigator's "pedigree," clearer guidance may be needed regarding how closely the science meets the goals of NIH research, and there may need to be a separation between more mundane, needed studies versus exploratory science. Dr. Schaffer said that the NIH has a two-stage review process—the study section to identify the applications with the highest scientific merit, and selection by Council and program offices—with the funding decision made elsewhere. Dr. Bonham added that the issue of health disparities could be addressed at the funding level; health-equity related research should be given a higher priority in the broader biomedical community.

Deirdre Crews of The Johns Hopkins University asked whether personal statements on the NIH biosketch might affect bias about the applicant and how revealing the statement should be. Dr. Osei

said that the statement should reflect passion for health disparities, and Dr. Bonham suggested that applicants include the following statement from former Surgeon General David Satcher:

"The diverse team of researchers will be more likely to ask and pursue the appropriate questions in the appropriate manner, whether in basic, clinical, or health services and behavioral research, that affect their own group."

The question of whether diversity should be an NIH criterion was raised. Dr. Schaffer replied that this information is on the application under race/ethnicity, but the information is not provided to the reviewers.

A participant noted that, to be successful in today's fiscally strained environment, investigators must look for mechanisms of success, including emphasizing interdisciplinary teams, including a translational research component, displaying business sense, and adopting an altruistic approach, along with significant networking. The panelists were asked what else could be done if success was not achieved despite following the above advice. Panelists replied that collaboration is necessary, and that all possible sources of funding—foundations, industry—should be sought.

A participant commented on the very high percentage (98%) of foundation money that his institution receives as opposed to that received by the laboratories. Dr. Bonham observed that most institutions spend about 30 percent more from institutional funds for each $1 received through an NIH grant; state funds likely will be reduced, clinical margins are fragile, and contributions from philanthropy are never guaranteed. Dr. Schaffer added that, because of the potential for a substantial reduction in NIH funding, institutions are seeking additional funding sources. Strategies to adapt to reduced funds are needed; one idea is to fund applications through a lottery system.

Panelists were asked how the research community could best learn to develop creative solutions. Dr. Osei said national priorities for public health should be considered in the allocation of the budget. Dr. Bonham responded that this could be considered in terms of whether the research should benefit everyone or some citizens; in the clinical setting, the lupus drug shows great benefits for whites, but the drug's benefits for African American and Hispanic minorities, whom lupus affects the most, are unknown.

A participant asked how health disparities are considered and reviewed in study sections and whether the review panels understand health disparities. Dr. Osei agreed that it is important that health disparity applications be reviewed by the right people. Dr. Schaffer reflected on the NIH review process and commented that literature about health disparities may be relegated to second-tier journals. The grant application's cover letter should suggest specific review committees.

One participant related an anecdote about a researcher who, unable to obtain NIH funding, approached his university with the idea of forming an after-hours nephrology group that the university would help fund; he never had to write another NIH grant. Dr. Osei said that universities are becoming creative and have other businesses beyond academia, such as setting up companies to assist with grant applications. Institutions can support many different types of activities, provided that conflicts of interest are avoided.

A participant wondered how the constitution of study sections is determined. Dr. Schaffer said that every Scientific Review Officer (SRO) is cognizant of the need for diversity on his/her committee and actively recruits for this. The review pool is restrictive, however. NIDDK staff pointed out that, for committees that are chartered (i.e., most of the NIH Center for Scientific Review study sections), there is a legislative requirement for diversity in terms of gender, minority status, geography, etc. Dr. Bonham said that the DW received a suggestion to review the success rates of applicants to determine if there is a link between a more diverse group of reviewers and the success rate for minority awards.

A participant observed that young investigators face criticisms from review boards and institutions about too few publications and the lack of publications in first-tier journals; however, young researchers have not had the funding to conduct studies and publish many articles, and most health disparities science is not published in the first tier of publication journals. Dr. Schaffer said that the NIH is considering changes to the biosketch to shift emphasis from the number of publications to "what have you done?" The NIH will issue an RFI to solicit feedback on this, and thus reduce the tyranny of "single-word" journals.

Because of time constraints, all questions were not answered. Dr. Sanabria said that the meeting Planning Committee would investigate a method to address the other questions, either by email or through the NMRI website.

LUNCH ADDRESS: CAREER DEVELOPMENT: LEADERSHIP FOR MID-CAREER PROFESSIONALS

Jasjit S. Ahluwalia, M.D., M.P.H., M.S., Associate Director, Clinical and Translational Science Institute (CTSI); and Director, Center for Health Equity (CHE), University of Minnesota Medical School, Minneapolis, MN

Dr. Ahluwalia encouraged participants to attend the upcoming "Summit on Science of Eliminating Health Disparities," a multi-agency conference that will be held October 31 to November 3, 2012, at National Harbor, MD.

Dr. Ahluwalia discussed successful career trajectories in academics. Success can be defined differently, based on what is most important: family, professional, work promotion, etc. He referred to Ginther's article (Science, Aug 2011), which showed that percentage points (for NIH R01 awards) were dramatically lower for African American Ph.D. scientists. The denominator—that is, the number of applications received from African Americans or Hispanics—may be a contributing factor. This will be interesting to watch during the next 10 years.

In pursuing success, it is important to be assertive and persistent, be inspired, encourage hard work, seek opportunities, emphasize personal and professional balance, and increase one's "people currency." There will be "ups and downs" in an individual's career path; it is a marathon without shortcuts. Younger investigators should focus on the road to excellence rather than worry about the outcome (e.g., tenure).

Who you know matters a lot—this is known as "people currency." Dr. Ahluwalia shared examples of his networking experiences, including greeting new acquaintances at restaurants, in airport lounges, and on airplane flights. He takes advantage of his service on National Advisory Councils and Board of Director positions for some of his networking. He encouraged participants to feel empowered to network, as the payback is significant though often intangible.

Dr. Ahluwalia shared his career trajectory from his early years through medical school and into several phases of his professional life. During the formative years, the experience of mentors should not be underestimated; his early mentor was his father. He completed combined M.D./Ph.D. degrees, with inspiration from many people along the way at Tulane Medical School, internal medicine residency at the University of North Carolina at Chapel Hill, and during fellowship in clinical epidemiology at Harvard. During this time, he had no abstracts or papers and almost quit his research trajectory. Through second jobs, he paid back his $100,000 student loan debt in 7 years. He also became involved in grant reviews and encouraged participants to do the same.

Mentorship is critical for success in the fellow-to-faculty transition. He was hired at Emory University with some support for protected time for research; 50 percent of his time was devoted to the walk-in clinic, which provided a laboratory for his first research projects. Bilateral mentor-

mentee relationships were formed with colleagues working together on each other's projects. Dr. Ahluwalia also networked while attending many national meetings. His time at the University of Kansas was marked by "academic entrepreneurship." This included a randomized controlled trial of the nicotine patch for smoking cessation. He networked with Ed Riley, Marion Merrell Dow, Inc., which manufactured nicotine patches, and eventually received $175,000 in grants from the company to support a smoking cessation clinical trial. He received a number of small and then somewhat larger grants ($15,000-$25,000 to $40,000), including those from the Cancer Research Foundation of America, to conduct focus groups or pilot test interventions. These grants can build the basis for larger studies in the future. "Club membership" grants, such as from the American Cancer Society and Robert Wood Johnson Foundation, provide additional funding along with their respective grantee annual meetings, which were an excellent networking forum.

Dr. Ahluwalia moved to the University of Kansas and served as Vice Chair and then Chair of the Department of Preventive Medicine, despite the caution expressed by his Chair at Emory that such a move would be "career suicide." It turned out to be an incredible 8 years of his professional life. He garnered leadership skills and helped colleagues grow their careers. However, events do not always happen as they are planned—the main outcomes paper of a major trial took him 9 years to submit, with the help of many others.

His first R01 grant focused on bupropion as a smoking cessation aid for African Americans. Receipt of an R01 is a career tipping point. There is an incremental drop of 50 percent between the first and second R01s, and again between the second and third R01s. Anyone with an R01 award should leverage it to obtain additional grants. Applications for smaller grants should be strategically focused to leverage the next award; Dr. Ahluwalia received three R01s that originated from small grants. Infrastructure grants provide support for helping other people become successful, and co-investigator mentoring provides additional opportunities on other investigators' R01 awards, both within and external to one's own institution.

Associate professors have a myriad of opportunities for career development, including: study sections, editor positions and editorial boards, reviewer/study sections, visiting professorships, scientific and pharmaceutical advisory boards, academic committees, community activities, and mentorship. Investigators should continually seek new opportunities and have grants in the pipeline. One way to address potential overfunding issues is to modify the level of effort at the onset and close of a grant. Another important component is team science. As clinical research commences, there is an initial delay in preparing papers. In time, though, the amount of research and ensuing literature increases.

Dr. Ahluwalia went to the University of Minnesota. He applied for and was awarded an NIH center grant which established the Center for Health Equity. He briefly reviewed his awards, noting that downtimes are followed by successes, such as the Herbert W. Nickens Award (2009), ASPO Joe Cullen Award (2010), APHA ATOD Lifetime Achievement Award (2011), and PCF – Cancer Prevention Laureate (2012). He was also is the Founding Chair, NIH Health Disparities Study Section, and is currently a National Advisory Council member for the National Institute on Minority Health and Health Disparities.

Dr. Ahluwalia encouraged attendees to strive for balance and stability in their personal and professional lives, exercise, and focus on activities they consider to be important. He recommended that participants read Time Tactics of Very Successful People, by B. Eugene Griessman (McGraw Hill, 1994).

MOCK STUDY SECTION

During a breakout session, participants attended one of three Mock Study Sections. Each session covered different types of NIH awards: R01/R03, K-Awards, and F-Awards. Session leaders were given sample grant applications (some from meeting participants) to review and provide critical feedback. The SRO led a discussion of the feedback sessions. One of the most useful activities during the session was the grading of the sample applications by "study section" participants, with direct feedback on why they would have scored the application as they did. The three study sections were comprised of a Chair and SRO, as noted below. Each mock session included experienced researchers who had submitted successful grant applications; they provided real-life experiences about their quest for funding, often after being unsuccessful in their first attempts. Discussion sessions were scheduled to allow participants to ask specific questions after hearing about the process and grading scale. These sessions were invaluable at this time because of the difficulty in winning awards due to budgetary reductions.

Study Section 1: R01/R03 Awards

SRO: Lakshmanan Sankaran, Ph.D., Scientific Review Officer, NIDDK, NIH, Bethesda, MD

Chair: Susanne Nicholas, M.D., Ph.D., M.P.H., Associate Professor of Medicine, David Geffen School of Medicine, University of California at Los Angeles, Los Angeles, CA

Study Section 2: K Awards

SRO: Barbara Woynarowska, Ph.D., Scientific Review Officer, NIDDK, NIH, Bethesda, MD

Chair: Sylvia Rosas, M.D., Assistant Professor, Department of Medicine, University of Pennsylvania School of Medicine, Philadelphia, PA

Study Section 3: F Awards

SRO: Michele Barnard, Ph.D., Scientific Review Officer, NIDDK, NIH, Bethesda, MD

Chair: Carlos Isales, M.D., Associate Director, Professor, Department of Orthopaedic Surgery, Georgia Health Sciences University, Augusta, GA

ROLE OF SCIENTIFIC SOCIETIES AND PROFESSIONAL ORGANIZATIONS

American Society of Transplant Surgeons

Jonathan Bromberg, M.D., Ph.D., Professor of Surgery, and Microbiology and Immunology Head, Division of Transplantation, University of Maryland School of Medicine, Baltimore, MD

The American Society of Transplant Surgeons (ASTS) is a nonprofit organization with a mission of being the authoritative resource in the fields of organ and cell transplantation by advocating for comprehensive and innovative solutions in the fields. ASTS promotes training and career-long education of transplant surgeons. More information about ASTS is available at http:\\www.asts.org.

The ASTS grant program was established in 1985 and awards $600,000 in grants annually; more than $8 million in grants has been awarded to more than 200 individuals in the past 20 years. Applications are received online, and more than 108 applications were received for 2012. The peer-review process is rigorous and similar to the NIH review process. Dr. Bromberg presented a list of criteria that are scored during the review process, members of the review teams, and those who were recipients of the grants for 2011. Dr. Bromberg noted that he was awarded a collaborative scientist award, which allows him to provide opportunities for transplant scientists to talk with scientists outside the field to develop innovative collaborative research. For example, Dr. Bromberg has been able to investigate the microbiota, a field of study he may never have been able to study without this collaborative grant.

Because of the increased number of applicants, the chance of receiving an ASTS grant is similar to that of the NIH. An advantage is that the grant application is generally about three pages in length. The types of grants available are for faculty, resident or trainee, and recognition. ASTS wants to make these grants available to a wider range of scientists, but there must be some application to transplantation.

Discussion

During the discussion period, Dr. Sanabria noted that ASTS is one of many professional societies and organizations that are of interest to NMRI members.

SCIENTIFIC PRESENTATIONS

Cirrhosis and Cognitive Impairment

Charmaine Stewart, M.D., Associate Professor, University of Minnesota, Minneapolis, MN

Dr. Stewart reviewed her K award-funded research involving the neuropsychological (NP) profiles of individuals with cirrhosis. She focused primarily on hepatic encephalopathy (HE), which ranges from no psychological impairment to coma. The primary neurotoxin underlying pathogenesis is ammonia, which is present in high amounts in cirrhosis patients because of poor systemic shunting (i.e., blood does not efficiently circulate through the liver, the primary site of ammonia detoxification), changes in gut flora, and impaired renal and liver function. Minimal hepatic encephalopathy (MHE) lacks overt clinical signs and requires NP testing for diagnosis. MHE affects a patient's overall productivity, quality of life, and ability to drive safely. Up to 60 percent of cirrhosis patients are not fit to drive, but this varies significantly by study. In this study, comparisons between the driving performances of cirrhosis patients versus controls were conducted using a driving simulator. Cirrhosis patients drove slower, experienced more pedestrian collisions, exhibited slower reaction times, and were less able to follow map instructions. Upon NP testing, slow speed was found to be correlated with motor deficits, and impaired map abilities were correlated with impaired visual-spatial function. Practitioners are reluctant to make strong recommendations about driving; however, they do recommend that patients undergo on-road testing until the simulator is validated for testing in these patients.

Patients with any chronic disease exhibit a stronger tendency for depression, which is associated with poor cognitive function. Dr. Stewart designed a test battery with six domains to evaluate the NP effects in depressed (Beck Depression Index [BDI] >14) and nondepressed cirrhosis patients. The BDI scores correlated inversely with learning, attention, processing speed, and visual perception. Overall, cognitive function worsened as depressive symptoms worsened, indicating that a subset of cirrhosis patients may benefit from antidepressant therapy.

Factor analysis uses levels of significance to determine if a test is applicable to a particular disorder and if the disorder is present in a patient or population. Using a standardized battery developed with all three factors, Dr. Stewart was able to determine premorbid conditions of patients, assess typical HE findings, and evaluate memory and learning. The battery includes tests on global intellectual function (patient function prior to chronic illness), psychomotor speed, and learning and memory.

In summary, cirrhosis patients have been shown to exhibit cognitive impairment, which leads to poor performance in a driving simulator, which correlates with impaired attention/concentration and visual-perceptual function. Cirrhosis patients with comorbid depression demonstrate worse cognitive performance than patients without depression. Finally, cirrhosis patients display a particular pattern of cognitive impairment. A standard battery of tests for these patients currently is under evaluation.

Discussion

A participant asked if the extent of cognitive impairment is related to the cause of cirrhosis. Dr. Stewart said she had not found this to be the case, but she did note a correlation between NP impairment and patient survival. A question was asked regarding functional magnetic resonance imaging (fMRI) and other structural studies on cirrhosis. Dr. Stewart replied that others are using fMRI to investigate blood flow and have discovered impaired blood flow to the brain and increased blood flow to subcortical regions in patients with cirrhosis. A nephrologist noted many similarities regarding the NP impacts of depression on patients with either cirrhosis or kidney disease. Finally, a participant involved in rehabilitation and occupational therapy suggested several other potentially useful tests, for example motor-free visual perception and Dynavision tests.

A Decade of Diabetes Research Among Native Hawaiians: Experiences From Hawai'i and Beyond
Marjorie Mau, M.D., F.A.C.P., Professor, Center for Native and Pacific Health Disparities Research, John A. Burns School of Medicine, University of Hawaii at Manoa, Honolulu, HI

Dr. Mau indicated that when she started her career, there were very few publications on diabetes in Native Hawaiians, but there are lessons from this population that may be applicable to others. She presented data on the incidence, causes, and health outcomes of T2D in Native Hawaiians, comparing them to those of other ethnic groups in Hawai'i as well as the general population. Native Hawaiians were aggregated with Pacific Islanders in the 2007 Office of Management and Budget racial/ethnic designation "Native Hawaiian/Pacific Islander," but their political history and self-perception are distinct from Pacific Islanders and likely affect their health. Despite the Native Hawaiian diaspora, most Native Hawaiians still live in Hawai'i. The age-adjusted mortality rates of Native Hawaiians are comparable to those of African Americans and higher than those of whites. Of the causes of death for Native Hawaiians, heart disease is the primary one, but diabetes ranks fourth.

As recently defined by the NIMHD and Agency for Healthcare Research and Quality (AHRQ), a health disparity is a health difference that is "closely linked with social, economic, and/or environmental disadvantage," and a health disparity population is a group that has significant disparity compared with the general population in overall rates of disease incidence, disease prevalence, morbidity, mortality, or survival rates. Health disparities science and research study the differences in health that are biologically unavoidable and those that arise from disadvantage and injustice. Ideally, Dr. Mau said, the results of this research inform the health policies that address these disparities.

Research on health disparities shows that, compared with whites, Native Hawaiians have high incidences of T2D (20%), impaired glucose tolerance (15%), central adiposity (for all categories of BMI), metabolic syndrome, and cardiovascular outcomes. Many of these elevated risks are shared by the other minority ethnic groups (Japanese, Chinese, and Filipino), particularly Filipinos that reside in Hawai'i.

Studies of the risk factors for health disparities for Native Hawaiians have failed to show a correlation between Native Hawaiian ancestry and BMI or waist-to-hip ratio (WHR), although BMI and WHR were correlated. Adherence to traditional cultures and beliefs among Native Hawaiians has been linked to elevated diabetes risk. Native Hawaiians were found to have a comparatively healthy diet but had the highest total energy intake of all of the Hawaiian ethnic groups (including whites). High fat/meat dietary patterns were associated with diabetes risk in all minority populations.

The prevalence of ESRD is increasing in Hawai'i, as is ESRD caused by diabetes. This rise is occurring despite advances in diabetes treatment and prevention. In Native Hawaiians, compared with other Hawaiian ethnic groups, ESRD is overwhelmingly due to diabetes. Ethnic differences in CKD

incidence indicate a need for programs that target particular groups. Native Hawaiians have disparities in other diabetes-associated outcomes as well, including lower extremity amputations and CVD.

Community-based lifestyle interventions show promise as the most effective approach, both in cost and outcome, to address the problem of diabetes in Native Hawaiians. An example is the PILI 'Ohana Project, in which community members identified the primary health problem (obesity), delivered culturally relevant interventions, and collected the data. Participants successfully improved and maintained improvement in their weight, fitness, and physical activity levels. Dr. Mau concluded by saying that engaging the community is a lifelong journey that can improve scientific research, and be an effective approach to translating science into communities. Our next challenge is to convince policy makers of such an approach that works and that can be applied across many health disparate diseases and populations at high risk.

Epicatechin Rich Cocoa to Treat What Ails the Type 2 Diabetes, Heart Failure Patient

Francisco Villarreal, M.D., Ph.D., Professor, Department of Medicine, University of California, San Diego, La Jolla, CA

Cacao has been used by Mesoamerican Indians since pre-Columbian times for its health benefits, including for the treatment of fatigue, heart problems, breathing difficulties, and emaciation. The special qualities of cacao were recognized by the Spanish Conquistadores. Cacao has the highest concentration by weight of any fruit or vegetable of flavanols, a family of flavonoids. The most abundant flavanol in cacao is (-)-epicatechin. Inspired by studies of the effects of green tea-derived catechin (another flavanol) on mouse exercise capacity, Dr. Villarreal and his colleagues evaluated the impacts of epicatechin and exercise, as well as their combination, on exercise capacity, heart and skeletal muscle structure, and mitochondria in mice. In a proof-of-principal clinical trial, he and his research team also explored the effects of chocolate and cocoa beverages on patients with heart disease and diabetes.

In the mouse study, the researchers found that 15 days of epicatechin treatment increased skeletal muscle, mitochondrial volume, and cristae abundance in the heart and skeletal muscle. In addition, epicatechin, as well as epicatechin combined with exercise, elevated markers of mitochondrial biogenesis. Treated mice had improved exercise capacity, which Dr. Villarreal demonstrated in a video clip of the mice running on treadmills.

In the clinical trial of five patients with Stage II heart failure and type 2 diabetes, patients underwent blood tests as well as skeletal muscle biopsies at baseline and after 3 months of epicatechin treatment, during which no adverse reactions to chocolate consumption were observed. At baseline, patients had symptoms of fatigue and diminished physical capacity, in addition to exhibiting highly disrupted skeletal muscle mitochondrial structure. The cocoa/chocolate treatment increased cristae abundance and density, improved skeletal muscle mitochondrial structure, and elevated markers of mitochondrial biogenesis. Dr. Villarreal also discussed unpublished data on the destructive effects of the disease on dystrophin associated complex members and the striking recovery of these proteins with treatment as well as of various markers of muscle regeneration. He presented putative mechanisms by which epicatechin might act to increase ATP production, improve metabolism, decrease oxidative stress, and enhance endothelial function, thereby improving skeletal muscular and cardiac function, lung capacity, and ultimately, quality of life in patients with heart disease.

Dr. Villarreal concluded by saying that the optimal dose of epicatechin for building human muscle capacity is about 5 grams per day—the equivalent of a "Hershey's Kiss" worth of 70 percent cacao chocolate.

MARCO CABRERA POSTER AND NETWORKING SESSION—OVERVIEW

Judges: Drs. Carmen Sceppa, Luis Cubano, and Trudy Gaillard

Participants were invited to see the posters submitted to the NMRI Annual Workshop. This year, 33 posters were submitted in three categories: Basic Science, Clinical Science, and Translation. During the poster review, judges observed the posters and chose winners for each category; the awards were given to recipients on the second day of the workshop. This was the highest number of posters yet submitted for an NMRI Annual Workshop.

DINNER ADDRESS

Making Progress in Understanding the Causes of Health Inequalities

Thomas LaVeist, Ph.D., Director, Hopkins Center for Health Disparities Solutions, The Johns Hopkins Bloomberg School of Public Health, Baltimore, MD

Dr. LaVeist addressed the issue of health inequalities during the NMRI 10th Anniversary Dinner. He began by announcing development of a documentary film on health disparities that will be available in the spring of 2013. The promotional materials include the statement that "African Americans live sicker and die younger than any other ethnic group in the United States. Why is this?" This is the core focus of Dr. LaVeist's research at The Johns Hopkins University (JHU). He used the example of disparity in those saved in the 1912 Titanic disaster: the chance of survival by class of accommodations indicated that 97.2 percent of first-class passengers survived, compared with the 54.7 percent of third-class passengers who survived. This example can serve as a reflection of the disparity in the U.S. health care system.

The 2002 report of the Institute of Medicine (IOM), which was not the first report on health disparities, finally raised awareness of the issue in the medical and research community. One reason this IOM report had an impact was that it reviewed only high-quality, peer-reviewed studies of patient-reported outcomes (PRO) and access to care among patients who had health insurance. The scientific rigor of the 2002 report made it acceptable to the medical community and put the issue on the agendas of health policymakers.

In discussions among Dr. LaVeist's colleagues at JHU, it was determined that calling for initiatives to address health inequities based on social justice and the fact that this would be the moral choice for the United States would not be sufficient to encourage political backing; a more fact-based argument was needed. This led to the writing of a report that used the monetary impact of health inequality on the U.S. health care system as a basis for developing strategies to address the issue. Three factors were readily apparent using data from 2003 to 2006: the direct medical care costs of health inequality were $229.4 billion; the indirect costs of disability and illness were $50.3 billion; and the costs of premature death were $957.5 billion. The total costs for health inequality from 2003 to 2006 were $1.24 trillion in 2008 inflation-adjusted dollars.

Dr. LaVeist presented data that show that African Americans with insurance have disparate access to procedures compared with white patients. An example is that African American patients are referred for coronary angiography approximately 25 percent less than white patients with the same symptoms. In the Veterans Administration (VA) health care system, African Americans are referred for coronary revascularization at a rate that is approximately 50 percent less than that for whites. The VA system has no differences in physician salaries or differences in cost to the patient. At its core, this is what health disparity is about.

Dr. LaVeist offered different factors to account for health inequalities. For example, it is timely to provide a genetic rationale to explain diseases or treatments. The drug BiDil®, a heart failure drug that was FDA-approved for use in African Americans, is a good example. Dr. LaVeist suggested that this approval was based entirely on the wrong hypotheses because this drug addresses a genetic factor that only 8 percent of African Americans have, which means that 92 percent do not. However, because the FDA wanted to do what it thought was addressing a health disparity, the drug was approved for use in African Americans. Dr. LaVeist cited similar thinking and types of studies that can discount the fact that social status or income level are responsible for health inequities. For example, he used the 2005 National Health Interview Survey (NHIS) to construct a theoretical study that showed that income and race were not correlated with activities of daily living, which is an indicator of disability. For education, he showed pictures of four Baltimore-area high schools from different socioeconomic backgrounds to illustrate that any student who graduated from any of these schools would be counted as a "high-school graduate" in surveys, although it is clear that the quality of the education probably is not the same. In fact, few conclusions can be drawn about high school graduates in Baltimore without accounting for the students' different environments.

The critical point from the previous examples is that, for those who design and conduct such studies, segregation dramatically confounds health disparities research. The United States is racially segregated. Although everyone lives in the same country, we all experience it differently. National statistics have little meaning without the context of those experiences. Race is just one of the factors that are included in the experience. To conduct health disparities research studies that move beyond the confounding of segregation or SES, Dr. LaVeist began to look for communities of equivalence; communities that were racially integrated and did not have differences in income or education. The goal was to find these communities and replicate the study done by the NHIS to build models to determine if health disparities exist when people are living under similar conditions. Dr. LaVeist described the design of the study entitled Exploring Health Disparities in Integrated Communities (EHDIC). Researchers found 425 of the 168,000 census tracts in the United States that met the criteria of 35 percent African Americans and whites and black/white median income and percent of high school graduation ratios of 0.85 to 1.15. Many of these tracts were in Maryland, and two were in Baltimore. The Baltimore tracts were chosen for use in the EHDIC study. After replicating the NHIS methods, procedures, and analysis, the EDHIC results did not show the same level of health disparity as found in the NHIS, regardless of the variable included in the model. For example, the NHIS disparity for diabetes was 61 percent greater for African Americans than whites, but the disparity was only 7 percent greater in the EDHIC study; obesity among women was 87 percent to 25 percent in favor of the EDHIC. Neither of these was statistically significant. The significance of these results suggests that health disparities research needs to account for the type of environment being studied. Clearly, the complexity of the lives of individuals has an impact on their health.

In conclusion, to make a point about the need to look behind the statistics to confirm conventional perceptions, Dr. LaVeist asked how many people had heard the statistic that there are more black men 20 to 29 years of age in prison than in college. (Almost everyone said they had heard this.) Dr. LaVeist recounted that he also believed this, but he decided to investigate this perception by going to the U.S. Department of Justice website and educational websites to confirm it. He found that the perception is wrong; in 2006, there were 310,000 black men in prison and 480,000 in college. However, an individual can be in prison and in college during the same year, and some colleges offer courses in prison. What may be happening is that some individuals are being counted more than once in the survey. Dr. LaVeist asked participants to help him dispel the myth that more black men are in prison than are in college.

Discussion

A participant mentioned that some communities are being transformed as African Americans are being supplanted by Latinos and Asians, and he wondered how this impacts health disparities. Dr. LaVeist responded that the communities he studies in the EDHIC also have changed over time. For example, the Baltimore communities were established during World War II, when whites moved from West Virginia and blacks moved from North Carolina to the same community to take jobs in the manufacturing sector. Although some have moved to the suburbs, these communities have had the same level of integration for more than 50 years. This is different than the gentrification that is occurring in some inner city neighborhoods. These are stable working-class neighborhoods in southwest Baltimore.

A participant asked if there is a place for faith in combating health disparities. Dr. LaVeist strongly affirmed his belief that there is a place for everyone, including those from the faith community as well as those from the atheist community. At a time when many people are disengaging from their churches, individuals must adapt in ways that are relevant to the new generation; this also should include changes in the churches.

A participant noted that she studies health disparities in Alzheimers disease (AD). She noted that individuals of African heritage in the United States have a higher rate of AD than whites, but those of African heritage living in Brazil appear to be protected from AD. This supports Dr. LaVeist's position that context must be considered when researching health disparities.

A question was posed regarding the drug BiDil®, and whether this was an attempt to help poor people. Dr. LaVeist responded that the drug was a combination of two generic drugs and the new drug was not sold as a generic, which raised the price and actually goes against the idea that it was approved to help poor people. Everything we know about the drug is that it is effective, but the company that sold it has not done well. This is an example of science, politics, and policy coming together, and in these cases science will lose. If science was the primary force behind the production of the drug, it would have been made available to everyone. Once politics and policy became involved, the primary force became something different and eventually led to the failure of the company that produced the drug.

Because it appears that factors other than race are at the root of the health disparity issue, a participant asked what the new strategy should be for addressing them. Dr. LaVeist corrected the questioner by saying that his point was not that race should not be studied, but that race should be used carefully in the context of place (i.e., lifestyle, risk exposures, protective factors). This is the context for studying health disparities. He added that looking for the "racial gene" is not the right approach. In addition, admixture is a reality in the African American community if individuals have been here for more than three or four generations. If there ever were genes that affected one racial or ethnic group, they probably are irrelevant in today's world. This does not mean that there may not be gene variants that are important in some groups, but this is a nuance that is not likely to lead to results that impact large numbers of people.

FRIDAY, APRIL 20, 2012

BUSINESS MEETING AND COMMITTEE REPORTS

Oversight Committee Report

Charmaine Stewart, M.D., Associate Professor, Department of Internal Medicine/Gastroenterology, Hepatology, and Nutrition, University of Minnesota, Minneapolis, MN

Dr. Stewart, Chair of the NMRI Oversight Committee, provided an overview of NMRI activities during the previous year. She reviewed data presented by Dr. Germino the previous day and highlighted that there were approximately 200 active members of the NMRI and the list of accomplishments presented earlier.

The Oversight Committee was working to update the NMRI website with links to provide resources for members, including sections on completing grant applications and resume updating for junior members. The focus next year will be to collect as much information as possible from members on promotions, publications, and grants submitted and awarded. This will be facilitated by the revised online NMRI Questionnaire that can be accessed from the following URL: www.scgcorp.com/NMRIQuestionnaire. Dr. Stewart encouraged participants to complete the questionnaire following the meeting or during the meeting at the desktop stations in the corridor. It is critical that the NMRI have these data to show the value of the Network. It is anticipated that data will be published once there is enough to develop statistically significant results.

Dr. Stewart thanked Dr. Shirley Blanchard for chairing and hosting the 2011 NMRI Midwest Regional Workshop in November at Creighton University, Omaha, NE. A highlight was a session with more than 40 students from Omaha high schools, who spent an afternoon learning about scientific research and careers. Dr. Blanchard reported that after the session she received telephone calls from Omaha-area teachers requesting that additional sessions be scheduled for students who could not attend the November session.

Dr. Stewart announced that Dr. José Romero, Brigham and Womens Hospital/Harvard Medical School, Boston, MA, will be the 2013 Chair for the NMRI Annual Workshop. She thanked members of the current Planning Committee for their support during the past year in planning and organizing this workshop.

NMRI Mentorship Program

Virginia Sarapura, M.D., Associate Professor, Department of Medicine/Endocrinology, Anschutz Medical Campus, University of Colorado Denver, Aurora, CO

Dr. Sarapura reported on the NMRI Mentorship Program, which has been growing each year. The goals of the program are to identify willing mentors for a mentee in need and to create a framework to help accomplish the mentee's goals. At the current time, there are 23 mentor-mentee pairs; she requested that mentors and mentees provide her an update on whether these pairs are still active.

Dr. Sarapura asked that those who want a mentor or mentee visit the NMRI website at http://nmri.niddk.nih.gov/mentor/index.aspx and complete the appropriate Mentor or Mentee form. There also are questions about mentoring on the NMRI Questionn aire, specifically questions 11, 12, and 13.

Planning Committee Report
Dr. Sanabria

Dr. Sanabria thanked those who served on the workshop Planning Committee. He also thanked past Chair, Dr. Blanchard, next year's Chair, Dr. Romero, Dr. Agodoa, and Ms. Martinez for their support. He asked the attendees to increase their participation on the NMRI standing committees and to help Dr. Agodoa in his fight to maintain funding for the NMRI.

Dr. Sanabria asked participants to affirm that they liked the format of this workshop and if they were planning to attend in 2013 and bring someone with them. Overwhelming majorities affirmed this. He then asked if some would be willing to pay one-half of their own way so that more people could attend; approximately one-half of the attendees said that they would consider paying one-half of their expenses next year. If the Network grows, it will become more successful.

MARCO CABRERA POSTER AWARDS

Carmen Castaneda-Sceppa, M.D., Ph.D., Associate Professor, Health Sciences Department, Northeastern University, Boston, MA

Dr. Castaneda-Sceppa thanked judges Drs. Luis Cubano, Trudy Gaillard, Sylvia Rosas, and Carlos Isales, and those who submitted posters. The following were determined to be winning posters in the categories of Basic Science and Clinical Translational Research.

Basic Science Poster Award: Dr. Lincoln Edwards, Loma Linda University, Loma Linda, CA

"Moxonidine and S43126 Enhance Glucose Uptake and Insulin Release in Cells"

Clinical Translational Research Poster Award: Drs. Alicia Mangram and James Dzandu, John C. Lincoln Health Network, Phoenix, AZ

"Increased A1C Level in Acute Care Surgical Patients Is Associated With Increased Risks of Infections at Admission, Hyperglycemia, and Prolonged Hospital Lengths of Stay"

POSTER SESSION ORAL PRESENTATIONS

Glycoxidative Modification of DNA (dC) and RNA (C) in Relation to Diabetes: Estimation of Carboxymethyl-2′-Deoxyadenosine (CMdA) and Carboxymethyl-2′-Deoxycytidine (CMdC) in Fasting Human Urine

Zeenat Lila, Ph.D., Kamika Manzano, Gabrielle Jenkins, Tatreka M. Polite, Miranda Williamson, Rafida Idris, Ph.D., and Mahtabuddin Ahmed, Ph.D., South Carolina State University, Orangeburg, SC

According to the Centers for Disease Control and Prevention (CDC), more than 26 million people in the United States suffer from diabetes, with an estimated annual treatment cost of $174 billion. In South Carolina specifically, 348,000 people suffer from diabetes, with an annual cost of more than $2.7 billion. The objectives of Dr. Lila's study with others (pending publication: Dr. Mahtabuddin Ahmed, PI 1890 Project) were to identify uniquely modified deoxyribonucleic acid (DNA) nucleosides in vitro, identify modified DNA nucleosides in urine samples from fasting humans, and investigate the involvement of DNA in glycoxidation reactions that have implications in several diseases.

Minimal previous work has been done on this topic; however, studies that have been conducted indicate that N2-carboxymethyl-2′-deoxyguanosine was identified in cells exposed to induced

glyoxal modification, and carboxymethyl-2′-deoxyadenosine (CMdA) was identified from glycoxidation reactions in DNA and urine. In the structure of DNA and RNA, there are four nucleosides that are susceptible to the glycation reaction: cytidine, deoxycytidine, adenosine, and deoxyadenosine. A glycation reaction is a nonenzymatic addition of a sugar molecule into protein, DNA, and/or lipid, causing damage and contributing to aging.

For this study, experiments isolate, identify, synthesize, detect, characterize, and quantify modified nucleosides in urine samples using liquid chromatography mass spectrometry (LC-MS), high-performance liquid chromatography (HPLC), a spectrophotometer, and a rotary evaporator.

The LC-MS spectra of 2′-deoxycytidine (dC) and 2′-deoxyadenosine (dA) with D-glucose, D-ribose, chloroacetic acid, and a control were visualized. The LC-MS spectra of CMdC and CMdA in urine samples of humans who were fasting also were examined. It was found that the concentration of CMdC and CMdA in urine samples from fasting humans increased with increasing patient age.

These data suggest that CMdC and CMdA in human urine are formed by degradation of glycated proteins in vivo and increase with patient age. Additionally, glycoxidation is involved in modification that leads to CMdC and CMdA having implications in diabetes. It is hoped to mitigate disease suffering in the future by determining a mechanism to prevent or block the changes that occur in DNA and RNA molecules.

Discussion

A participant questioned the figure illustrating modified DNA and RNA as a ratio to urine creatinine that increases with age. This number may be increased artificially because creatinine (the ratio denominator) actually decreases with age. Dr. Lila affirmed that creatinine decreases with age; however, she confirmed that the modified compound increases with age. In this experiment creatinine was used as an internal standard (per unit of creatinine), not total creatinine, and estimation of CMdC and CMdA contents in fasting urine specimens using creatinine present therein as an internal standard indicate increasing amounts of CMdC and CMdA in human subjects within higher age groups compared with younger age groups of people investigated.

Responding to a question, Dr. Lila said that CMdC and CMdA can be utilized as biomarkers for early detection or to understand the extent of the disease in humans (due to the DNA damage indicated by the presence of CMdC and CMdA). A participant questioned the clinical utility of this biomarker because it requires a patient to have fasted. Can it be used if a patient arrives at a clinic after having eaten a hamburger? Dr. Lila responded that it was developed in fasting humans. More samples must be analyzed to achieve better quantification for such clinical applications. But to maintain a standardized situation, it was developed in fasting conditions to get the baseline value that is not influenced by a recent meal.

N-3 PUFA, Fatty Liver, and Inflammation

Moises Torres-Gonzalez, Ph.D., Department of Medicine, University of California, San Diego, La Jolla, CA

Dr. Torres-Gonzalez and colleagues investigated the effects of omega-3 polyunsaturated fatty acids (ω-3 PUFA) on nonalcoholic fatty liver disease (NAFLD) and inflammation. As obesity rates have increased, NAFLD, defined as excessive lipid accumulation in the liver, has become the most common cause of liver disease in developed countries, affecting 75 percent of obese and 100 percent of morbidly obese individuals. Twenty-five percent of the U.S. population has NAFLD, a hepatic manifestation of the metabolic syndrome that ranges in severity from simple fatty liver (steatosis) to

progress to NASH. A "2-hit" hypothesis provides a possible explanation of the development of NASH in obesity: metabolic changes in the liver and adipose tissue caused by hyperinsulinemia/insulin resistance are followed by more severe effects (including mitochondrial dysfunction, oxidative stress, increased inflammation, cytokine production and release, and stellate cell activation), leading to liver fibrosis. These effects are difficult to reverse; therefore, efforts have been directed toward decreasing incidence through improved diet and increased physical activity. In the long term, however, maintaining these changes is difficult. Increased dietary intake of ω-3 PUFA (in particular eicosapentaenoic and docosahexaenoic acids) is an alternative strategy for reducing de novo lipogenesis, increasing fatty acid oxidation, and decreasing inflammation to protect against NAFLD.

Dr. Torres-Gonzalez examined the effects of ω-3 PUFA (i.e., fish oil) on hepatic function in a mouse model (LDL-R KO) of dietary-induced obesity and fatty liver. For 12 weeks, 3 groups of mice (8/group) were fed either standard chow or high-fat/high-cholesterol diets supplemented either with olive oil (HO) or fish oil (HF). The researchers determined that fish oil did not protect against obesity or hyperglycemia, but mice in the HF diet had reduced plasma triglycerides, cholesterol, apolipoproteins B and C (ApoB and ApoC3), and nonesterified fatty acids (NEFA). In liver tissue, mice fed fish oil had lower levels of markers for fatty liver.

In addition, the researchers showed that fish oil altered the expression of some of the transcription factors controlling de novo lipogenesis and mono-unsaturated fatty acid (MUFA) synthesis. Fish oil also reduced the expression of enzymes involved in liver triglyceride formation but not those that govern cholesterol metabolism. In addition, fish oil had anti-inflammatory effects that were not mediated by the NFκB pathway. Finally, hepatic fibrosis was reduced in fish oil-fed mice.

Dr. Torres-Gonzalez concluded from these results that dietary ω-3 PUFA can protect against some but not all of the metabolic abnormalities associated with NAFLD and NASH.

NIH/NATIONAL INSTITUTE ON MINORITY HEALTH AND HEALTH DISPARITIES

M. Roy Wilson, M.D., Deputy Director for Strategic Scientific Planning and Program Coordination, National Institute on Minority Health and Health Disparities (NIMHD), NIH, Bethesda, MD

Dr. Wilson discussed the importance of health disparities research and offered advice on career development in academia, drawing on his own experiences in navigating the academic ladder to success. Although disparities exist throughout the United States, a study published in October 2011 highlighted state-level variations in life expectancy. The District of Columbia has the largest gap in life expectancy in the country: a 14-year difference between white and African-American males. Health disparities in the United States are a problem for all Americans because the health of the Nation as a whole will not improve while these disparities exist. In addition, Dr. Wilson observed, the existence of racial disparities in health is an issue of morality and justice.

Disparities in African-American versus white life expectancy arise from multiple causes, including: (1) inequitable access to health care; (2) inequitable quality of health care received; (3) differences in disease manifestation, responsiveness to drugs and other therapies, and other biological/physiological considerations; and (4) racial variations in the social determinants of health. The importance of access to health care is illustrated by higher-than-expected life expectancies for African Americans in states with broader eligibility requirements for Medicaid and lower life expectancies for whites in states with more restricted Medicaid access.

Not only is access to health care unequal, but racial bias has been documented in the quality of care. One study compared the type of heart care recommended for people of different sexes and races under simulated conditions that controlled for socioeconomic status. African-American men were less likely than white men to be referred for appropriate care, and women were less likely than

men to receive such referrals. These results received widespread coverage in the popular press, including The New York Times.

Historically, the NIH's strength has been more on investigations of the biological and physiological basis of health and less on social determinants. Social determinants of health include the conditions under which an individual is born, lives, works, and ages. These determinants are rooted in the societal distribution of resources, money, and power—all of which are affected by public policies.

The NIH, with NIDDK being among the leaders, has devoted significant resources to health disparities research. The NIMHD recently held a symposium on social determinants of health disparities and is committed to focusing attention and resources on this topic in the future. In 2011, the NIMHD issued two requests for applications (RFAs) for research on health disparities that used the R01 grant mechanism. One of these RFAs was for basic research, and the other was on the social determinants of health disparities.

Dr. Wilson offered advice for the early stages of an academic career. He advised seeking good mentors, ideally including someone from outside an individual's department or institution, to help with grant writing, the tenure process, institutional politics, and general career development. He also stressed the importance of being selective and committing only to those activities that further an individual's career.

Dr. Wilson discussed the disproportionately small number of research investigators who are members of minority groups. Over a 7-year period (2000-2006), the proportion of applications for NIH R01 grants that were submitted by investigators who are African-American or Hispanic/Latino was approximately 10 times lower than would be expected from their representation in the general U.S. population. In the fields of the biological sciences, chemistry, and physics, African Americans and Hispanics/Latinos are underrepresented in the number of B.A. and B.S. degrees received. The discrepancy is even greater in the number of doctoral degrees awarded. Dr. Wilson emphasized that despite its small size, the community of minority researchers represented at this Workshop is of vital importance to the Nation. One of the keys to success for members of this community is to help each other, rather than compete with one another.

Discussion

A participant asked whether an unwelcoming work environment might be a factor that discourages African Americans from pursuing academic careers. Dr. Wilson responded that the working group established by the Advisory Committee to the NIH Director on funding disparities was aware of this issue but had not yet issued its recommendations.

Participants raised the questions of why such large disparities in health care exist in the United States, given that U.S. spending on health care is so high relative to other developed nations; and what the role of minority research should be in addressing the disparities. Dr. Wilson answered that it is a complex question and that cultural differences in spending priorities (i.e., high spending on end-of-life versus preventative care in the United States) as well as issues of morality and social justice are important. He called on minority researchers to interact with society so that their research is informed by societal needs, noting that community participatory programs provide a mechanism for this.

A participant lauded the NIHMD's support of health disparities research through its educational loan repayment program and asked about the NIMHD's future plans to foster career development using the K grant mechanism. Dr. Wilson explained that in the past, many NIMHD resources fell under congressional mandate but now that it is an NIH Institute, it is likely that future discretionary funding levels will increase.

An attendee said that the subject of her research, which uses a mouse model, is the role of stress hormones in diabetes, and asked about the potential for using animal models to study health disparities. Dr. Wilson cited the beneficial interactions between epidemiologic and basic research and said that it is likely that researchers will be able to make such connections with animal models.

PARALLEL INTERACTIVE WORKSHOPS

Attendees participated in two of three parallel interactive workshops during this session.

Workshop 1: Community-Based Participatory Research/Community Engagement, Research, and Research Scientists

This workshop had three speakers who addressed community-based participatory research (CBPR), and how to engage the community in research. Each speaker presented a brief overview of his/her topic; a discussion period followed the three speakers.

Community Engagement, Research, and Research Scientists

Beth Furlong, Ph.D., J.D., R.N., Associate Professor, Center for Health Policy and Ethics, Creighton University, Omaha, NE

Dr. Furlong related a story from her first meeting on the Council of Public Representatives (advisory to the NIH), when a consumer member from Arkansas told several pivotal stories based on a helicopter metaphor regarding the belief that outside researchers swoop into a community, conduct their research, and leave without follow-up. She recognized that community engagement is a necessary component of every research endeavor and provided a definition of CBPR:

> *"Community engagement in research is a process of inclusive participation that supports mutual respect of values, strategies, and actions for authentic partnership of people affiliated with or self-identified by geographic proximity, special interest, or similar situations to address issues affecting the well-being of the community of focus." (Ahmed and Palermo, 2010, p. e4)*

The rationale for including community engagement is multifold: research is tax-funded and society should demand accountability and respectful treatment of individuals who are affected by the research program; participants typically wish to receive feedback on the research results; community engagement enhances research outcomes by contributing to the need, design, execution, and analysis of the research; and the NIH has specified that translational CBPR is a high priority. In addition, engaging the community is viewed as beneficial to the common good and likely attracts more participants for future research endeavors.

A number of barriers work against community engagement. Dr. Furlong provided an argument and a counterargument for each of the points she listed in her rationale above. For example, private-sourced funding removes accountability related to tax support, although scientists may be accountable in other ways in privately funded research. With regard to respect for research participants, scientists often view that as covered by having participant sign consent forms, although participants often do not understand the agreement they signed. A significant barrier for researchers is a general lack of experience or understanding of community engagement; this challenge can be addressed by developing training programs aimed at researchers to increase their ability to engage communities. The argument that research is for the common good has no counterargument.

Dr. Furlong concluded by asking attendees to think about their research efforts and goals and to consider how their approach engages research participants, and she asked them to identify potential barriers and opportunities.

Black Family Health and Wellness: How to Organize an Annual Community-based Wellness Program

Wayne Houston, M.P.H., North Omaha Community Liaison, Center for Reducing Health Disparities, College of Public Health, University of Nebraska Medical Center, Omaha, NE

Mr. Houston spoke about the origins of the Black Family Health and Wellness Association (BFHWA). The idea of the program came to him in 1998 when a first-year medical student asked if he could help him develop a cancer presentation for the African American community. After many discussions, they decided to hold a health fair and provide lunch to all participants to gain community interest.

Mr. Houston listed several specific principles of community organizing:

- Insist that community leaders and all participants focus on the planned activity and not on their own agendas.
- Increase publicity by identifying sponsors who will support activities that occur early in the process, particularly in the case of a large community event.
- Create a theme for the event, for example, "A Healthy Family is the Heart of the Community."
- Create a name for the organizing group, especially if events will recur. For example, Mr. Houston's group branded themselves as the BFHWA.
- Build confidence through consistency; do not stretch resources too thin. For example, BFHWA health fairs always focus on health screenings and education, which gives the effort staying power.

Mr. Houston reported on the 2011 Health Fair Summary Report, a summary of the results from self-reported medical questionnaires completed by participants. The areas assessed included medical history; doctor and dental visits; return visits to the BFHWA health fair; lifestyle issues (e.g., smoking and inactivity); and screening results for blood pressure, cholesterol, triglycerides, BMI, and glucose.

The Community Nurse Perspective

Ira Combs, B.S.N., Community Liaison Nurse Coordinator, College of Public Health, University of Nebraska Medical Center, Omaha, NE

Mr. Combs provided a perspective on community nursing and highlighted a unique program he designed as an educational tool for the African American community in Omaha. He told a story about a previous discussion with physicians on the reasons why African American men tend to forgo prostate digital-rectal exams. Although conventional wisdom implies that the physical discomfort related to the exam was the main barrier, Mr. Combs showed them that the real issue was cost. This discussion led to a job offer for Mr. Combs in the SELECT study, a prostate cancer study that required the recruitment of large numbers of African American men. Mr. Combs helped to design a brochure and a community project to help overcome the barriers to the accrual of men in the African American community.

Mr. Combs played several videos representing a particularly significant component of the education program—a series of public service announcements based on a puppet known as "Dr. Jesse," who talks about the importance of research for the African American community with "Prevention Man" (seen on YouTube). This campaign has succeeded both in increasing the number of men who receive screenings and in encouraging young people to learn more about participation in research studies.

In conclusion, Mr. Combs said that CBPR is critical to building research in communities. He said that one serious problem with the research agenda is the tendency of researchers to pursue grant money without necessarily determining or considering community needs or wants.

Discussion

Mr. Combs said that his educational model initially was intended as a marketing strategy. Several individuals suggested that he partner with others to enable duplication of the effort and outcomes elsewhere. Mr. Combs was commended for the creative use of puppets as authoritative figures, versus their common patient-based use in pediatrics.

Mr. Combs said that recruitment often is overlooked in budget plans, which has become an ongoing problem for universities and other institutions.

Mr. Houston indicated that no formal needs assessment was conducted to determine community needs before the health fair, but the events are highly publicized. He has found ways to track individuals with abnormal readings between health fairs.

Workshop 2: Comparative Effectiveness Research
Ann Bonham, Ph.D., Chief Scientific Officer, Association of American Medical Colleges, Washington, DC

The Patient-Centered Outcomes Research Institute (PCORI) was congressionally mandated in 2010 to conduct research to provide information about the best available evidence to help patients and their health care providers make more informed decisions. PCORI's research is intended to give patients a better understanding of the prevention, treatment, and care options available, and the science that supports those options. PCORI specifically calls for Comparative Effectiveness Research (CER)—also called comparative clinical effectiveness research—to evaluate and compare health outcomes and the clinical effectiveness, risks, and benefits of two or more medical treatments and services.

Dr. Bonham stressed the value of networking and had participants list their contact information so that they could develop contacts with others interested in the same topic(s).

Understanding the intersection between basic science and partnering with clinical researchers in health disparities research is important. For example, a research question that asks how a signaling pathway differs among racial and ethnic groups would contribute to the understanding of disease inequities among groups. Dr. Bonham used the example of research in the Gullah Islands of South Carolina to illustrate CBPR investigations for diabetes. The research was based on genetic differences identified in the population that accounted for the incidence of diabetes.

Dr. Bonham provided information on PCORI funding and the types of investigations that are expected to be awarded funding. PCORI is a product of the first legislation that mandated a semi-independent funding organization with appropriated funds, generally from Medicare and insurers. The first call for grant applications for PCORI will be May 23, 2012.

What makes PCORI different from conventional clinical trial research is that patients must be involved at every step of the granting process. They also must be involved in disseminating the results to the community. This might include point-of-care studies, CBPR, and pragmatic trials, but all must have some value to the people in the "real world," not just those who have met inclusion criteria in a randomized clinical trial. Other important facets of PCORI include that patients must come from underserved populations, and a dissemination (implementation) plan must be included. The types of studies that can be conducted under PCORI include prevention strategies, prevention versus interventions, diagnostics, health care delivery mechanisms, outcomes mechanisms, and comparing therapeutics. The main focus of the research will be to improve outcomes of historically underserved communities.

The PCORI Board meets regularly; Dr. Joe Selby, formerly of Kaiser Permanente, is the Director. PCORI is accountable to the U.S. Congress, and its Board includes members from other federal agencies.

Dr. Bonham concluded by stressing that in developing a PCORI RFA for submission, participants should present evidence of engagement with patients and the community. The best way to approach a study is to develop the needs to be met, design the experiment with patients and the community in mind, and create a dissemination plan based on the results.

Discussion

A participant asked if preliminary data would be required when applying for PCORI funding. Dr. Bonham responded that she did not know, but that this would be specified in the RFA to be released in May 2012. As noted above, requirements were expected to include involving the community and patients in designing, conducting, and disseminating the results of the experiment to the community. The PCORI was not expected to use the same review mechanism as the NIH R01 process. The criteria were expected to be different, although the review process was expected to be rigorous, as is the NIH review process. The PCORI was expected to have individual and team-based awards.

A participant asked if a feasibility study would be required, and if foreign investigators would be eligible. Dr. Bonham did not know if the feasibility study would be required and referred the participant to the RFA instructions. As for the eligibility of foreign investigators, she did not necessarily think they would be restricted from applying.

Workshop 3: Employing Multi-level Genomic Strategies to Profile Aggressive Hepatocellular Carcinoma

Anuradha Budhu, Ph.D., Staff Scientist, Liver Carcinogenesis Section, Laboratory of Human Carcinogenesis, National Cancer Institute, NIH, Bethesda, MD

Dr. Budhu studies multilevel genomics in the context of liver cancer, a common and deadly disease. Hepatocellular carcinoma (HCC), the most common type of liver cancer, is partly attributable to a viral infection with hepatitis. HCC is most prevalent in Asia and Africa; however, its incidence is increasing in developed countries due to obesity and alcoholism, among other factors.

Various "omics" can be used to delineate critical pathways that occur in advanced cancers. The hope is that by examining all of the information that is provided by "omics" approaches, the entire "interactome" can be understood. "Omics" also provides a route to personalized medicine that can be used to improve cancer outcomes.

The current study identified patient populations with "extreme" phenotypes (e.g., an extremely good or extremely bad characteristic). Metastasis, stemness, and gender were the factors examined via observing genomic gains and losses through DNA analysis, and by combining metabolomic with transcriptomic findings.

The first study example is metastasis, which is a significant problem in liver cancer patients. Tumor and microenvironment tissue are important features to examine. Using a copy DNA (cDNA) microarray, tumor tissue from two patient groups (metastatic lesion versus none) could be differentiated. This result has been validated (153 gene signature) and is related to patient outcome. This result is different from that obtained with other cancer types. The gene signature can be combined with clinical markers to substratify patients to determine high versus low risk of metastasis.

The microenvironment tissue was compared on the same platform as the tumor tissue, and 454 genes were found to be different in their expression in metastatic patients versus not. Bioinformatic work refined the 454 gene signature to 17 genes, all of which are related to the inflammatory system. These 17 genes could correctly predict patient groups (metastasis or not) with 92 percent accuracy.

These results led to the model that there is an imbalanced network in the immune system that may promote metastasis-related relapse, and particular elements in the microenvironment or tumor push the cytokine profile in the metastatic direction. This "opens a therapeutic window" so that interferon or other inflammation-related molecules may be used to shift patients toward the non-metastatic condition.

As it is inherently difficult to decide on relevant targets based on interrogation of a large number of genes in a clinical setting, microRNAs (miRNAs) were examined. miRNAs are one of the largest classes of gene regulators and account for 1 to 4 percent of all expressed human genes. miRNAs bind to messenger RNA (mRNA) sequences and alter their stability, degradation, and translation. The expression of miRNAs is altered in many cancer types and can function as oncogenes or tumor suppressors.

miRNA expression was screened and examined for correlation with cancer diagnosis. It was found that there is differential expression of miRNA between metastatic and nonmetastatic patient groups. The researchers found a 20 miRNA signature that is both predictive and associated with patient outcome (i.e., risk for metastasis and recurrence). Substratification by stage can be achieved. A functional followup study found that certain miRNAs were associated with poor survival and affect tumor cell proliferation, colony formation, migration, invasion of cells, and wound recovery. miRNAs could be an effective target for the disease.

HCC heterogeneity also was studied in the same group of patients. HCC is a heterogeneous disease, and this heterogeneity is hypothesized to arise as a result of lineage-specific tumor subtypes that have prognostic impact. In fact, different gene expression profiles that relate to survival and outcome have been found in different HCC subtypes. Using bioinformatics, a stem-like subtype of HCC was identified. Follow-up studies with phenotypic and quantitative polymerase chain reaction (qPCR) experiments both in vitro and in vivo confirmed the stem-like properties of cells within this subgroup. Similarly, array and functional studies showed that certain miRNAs were significantly altered in stem-like, aggressive HCC.

A final study example involves gender and miRNAs in liver carcinomas. Liver carcinoma is more common and aggressive in men than women. There are miRNAs that are dysregulated between men and women; one specifically is miRNA26, which is an abundant metabolite. This miRNA is associated with outcome, and patients with low levels have poor survival. Low miRNA26 levels are associated with inflammatory networks. This knowledge can assist in predicting patient response to interferon therapy.

Integrating genomic information is important. High-throughput studies have begun that examine genomic gains (oncogene regions) and losses (tumor suppressor regions) in cancer patient cells. Measuring mRNA levels in the same cohort of patients has revealed that there is a shift away from a normal random distribution. Genetic clusters develop that predict poor patient prognosis.

Metabolic products have an effect on cancer properties; therefore, a study was designed to integrate metabolomics with mRNA signatures (transcriptomics). Tumor and nontumor cells were analyzed in cohorts of patients that expressed different gene subtypes. With transcriptomics being performed in parallel, metabolites and their gene surrogates were found to be related to aggressive HCC with poor outcome. The integration of these 'omics' data supply a discrete pathway that can be targeted clinically.

Discussion

Dr. Budhu's research highlights some of what is occurring in cancer cells and the microenvironment; however, at any given moment or location near or in the tumor cells, the genetic and phenotypic occurrences can vary.

The cohorts in the discussed studies were patients from China with hepatitis B infections; patients from the United States will be examined in upcoming studies. In developing gene signatures, multivariate analyses were performed to ensure that the signatures were independent of clinical parameters.

Differential gene expression can indicate what is occurring in the cell; however, it is important to input all of the genetic information into pathway information. The key is not to determine if a certain gene is altered, but to be able to determine what pathway is being altered in some fashion.

Epigenetic modification currently is being studied. The bioinformatics therein are complicated, but correlative analyses are being done. These modifications, as well as mutations, gene expression, protein expression, and so forth all culminate in the presence or absence of biochemicals (metabolomics). Whether certain biochemicals are present or absent determines whether or not a tumor cell will proliferate. These alterations culminate to determine the risk of HCC development and the prognosis of HCC patients.

WRAP-UP, NEXT STEPS, ADJOURNMENT

Dr. Sanabria and Dr. Agodoa

As part of the NMRI 10th Anniversary celebration, Dr. Agodoa acknowledged those NMRI members who have served in leadership positions for the NMRI since 2003.

Chairs of the NMRI Annual Workshop
Jackie Tanaka, Dale Abel, Ricardo Aziz, Carlos Isales, Eddie Greene, Sylvia Rosas, Bessie Young, and Juan Sanabria

Chairs of the NMRI Regional Workshops
Carlos Isales, Jesus Lopez-Guisa, Shirley Blanchard, Mark Lawson, Francisco Villarreal, Eddie Greene, Omaima Sabek, and Yvonne Romero

Chairs of the NMRI Oversight Committee
Shirley Blanchard, Virginia Sarapura, Daisey DeLeon, Carlos Isales, and Charmaine Stewart

Dr. Agodoa presented an award statue and certificate to Dr. Sanabria for chairing the NMRI 2012 Annual Workshop Planning Committee. Dr. Sanabria accepted the certificate and thanked everyone who helped him make the workshop successful.

Dr. Agodoa presented an award statue and certificate to Dr. Blanchard for chairing the NMRI 2011 Midwest Regional Workshop. Dr. Blanchard thanked the members of her planning committee who worked to make the workshop well organized and successful. The Planning Committee members included Mario Ascoli, Joyce Balls-Berry, Luis Cubano, Trudy Gaillard, Eddie Greene, Neali Hendrix Lucas, Judith McElhiney, Charmaine Stewart, Monique Williams, and ad hoc members Ira Combs and Bennie Upchurch.

Dr. Agodoa announced that the Chair-elect of the NMRI Planning Committee for the 2013 NMRI Annual Workshop is Dr. Carmen Castaneda-Sceppa.

Dr. Agodoa announced that, because of recent budget cuts, there will not be a Regional Workshop in 2012. He said he is hopeful that the NMRI will be able to resume the regional meeting in 2013.

Dr. Agodoa asked participants to stand and announce any promotions, honors, and successful grant applications they had had since the 2011 workshop. The following NMRI members announced their successes:

Greg Florant—Distinguished Professor Award
Lincoln Edwards—An R15 award and promoted to Assistant Professor
Shirley Blanchard—The RFK Award at Creighton University
Bridgett Rahim-Williams—K22 Award from NIMHD
Joyce Balls-Berry—Promoted to Assistant Professor
Manu Platt—Innovator Award
Mark Lawson—R01 renewal and started a T36 mentoring program
Marion Sewer—Two R01 Awards and another grant
Healani Chang—30-year Faculty Award
Bob Ferry—Promoted to Chief/Program Director
Marina Ramirez-Alvarado—Grant renewal and promoted to Associate Professor
Rhonda Bentley-Lewis—Promoted to Assistant Professor
Charmaine Stewart—Elected Chair of the Women Faculty Cabinet
Detrice Barry—Received an Undergraduate Award for Public Service

ADJOURNMENT

Dr. Sanabria thanked participants for attending and for making this workshop successful. He encouraged attendees to plan on coming again next year.

Dr. Agodoa said he is excited about the number of successes he hears about each year at the workshop. He thanked Dr. Sanabria for organizing a very exciting agenda and for his hard work in planning the workshop. He thanked Ms. Martinez for her organizing efforts on the NIDDK side, and thanked the contractors, especially John Hare (The Scientific Consulting Group), for their support.

Dr. Agodoa concluded by saying that he was troubled by the statements from one of the junior investigators who has not been able to find a mentor. He reiterated that the mentoring program is critical to the success of the NMRI, and stressed that everyone should make an effort to find a mentee or mentor.

Dr. Agodoa thanked everyone again and announced that the tentative dates for the 2013 NMRI Annual Workshop will be April 18-19, 2013. He asked that attendees complete the evaluation form before leaving. Hearing no more comments or questions, Dr. Agodoa adjourned the workshop.

APPENDIX

NMRI Oversight Committee Report
NMRI Questionnaire Results From April 2011 to March 2012
(Presented at the 2012 NMRI Annual Workshop)

The survey included 24 questions, and 44 attendees responded.
(Note: All participants did not answer every question and totals may not add to 100% due to rounding.)

A. Academic Status of Respondents:

Faculty Member – 32 (32.7%)
Post doc – 7 (15.9%)
Researcher – 2 (4.5%)
Student – 2 (4.5%)

B. Status of 32 Faculty Members

Professor – 1 (3.2%)
Assistant Professor – 22 (68.6%)
Associate Professor – 8 (25%)
Instructor – 1 (3.2%)

C. Tenure Status

n = 41
Tenured = 7 (15.9%)
Non-tenured = 34 (77.3%)

D. Question: What motivates you to attend NMRI? (May choose more than one answer.)

Professional mentorship – 37
Research opportunities – 24
Enhance grant writing skills – 32
Assistance in developing management skills – 25
Continuing education – 14
Poster presentation – 14
Assistance in applying for tenure – 13
Oral presentation – 12
Networking – 7

E. Question: How has NMRI helped with career development and mentoring?

- **Grant study sections:**
  - Grant writing and submission (most common answer)
  - Collaboration and mock review workshop
  - Hearing from those with successful grant applications helped me to develop my first successful grant application

- **Career development:**
  - Networking (most common answer)
  - Hearing about research opportunities
  - Career development skills
  - Networking opportunities and opportunities to collaboration
  - Mentorship opportunities to advance my career

- **Mentorship**
  - I have benefited from the mentor chosen through the NMRI
  - Mentorship helped me become a better manager for my research group

F. Question: On a scale of 1-10, 10 being the most opportunity for professional growth, rate your professional development associated with the annual NMRI meetings.

n = 44
Total score = 8.1/10.0

G. Question: Are you willing to be a mentor?

Yes – 34 (77.3%)
No – 9 (20.5%)
No answer – 1 (2.2%)

H. Research topics identified for mentorship:

Balancing career and personal life
Basic vascular physiology
Behavioral methods in clinical research
Biochemistry of nutrition
Biomarkers
Brain-induced activity function
Calcium handling-related proteins
Cardiovascular and cardiovascular epidemiology
Chronic kidney disease
Circulated cells and disease complications
Communication
Community awareness/education in type 2 diabetes
Community-based participatory research
Comparative Effectiveness Research
Diabetes
Disparities research
Endocrinology
Enzymatic glycosylation
Epidemiology of kidney diseases
Faculty development
Fatty acid metabolism
Gastroenterology
Genomics
Glutathione
Grant writing and review
Health disparities
Inflammation and fibrosis
Ion membrane transport
Islet cell biology/transplantation
Lipoprotein metabolism
Malnutrition in children in the US
Managing research laboratory
Mentorship
Metabolism
Metabolomics
Nephrotic syndromes
Obesity
Obstructive sleep apnea
Pediatric gastroenterology/nutrition

Quality Improvement Sciences
Seeking tenure
Stem cells
Telehealth for improved glucose control
Translational research
Workforce development for diversity

I. Question: Are you interested in having an NMRI member as a mentor?

Yes – 32 (72.7%)
No – 11 (25%)
No answer – 1 (2.3%)

J. Question: Which area do you need the most assistance?

Diabetes research – 9
Kidney disease – 3
Health disparities – 4
Nutrition/Obesity – 4
"-omics" Research – 6
Career Advancement – 6
Bioinformatics – 2

K. Total grants submitted 2011

71 grants submitted by 37 members: submitted an average of 1.9 grants per respondent
32 grants were funded

L. Presentations – 2011

Oral/podium/poster: 180 from 44 members = 4 average number presentations/posters