

Population and Social Processes Branch – Genetics Section
Project Officer: Angie Chon-Lee

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PUBLIC ABSTRACTS

Grant: 5D43TW006221-02
Program Director: CHON-LEE, ANGIE J
Principal Investigator: GILLIAM, T CONRAD PHD
Title: Genetics of Common Heritable Disorders in Venezuela
Institution: COLUMBIA UNIVERSITY HEALTH SCIENCES NEW YORK, NY
Project Period: 2002/09/20-2007/08/31

DESCRIPTION (provided by applicant): The goal of the proposed research-training program is to strengthen the capacity of Venezuelan scientists based at the University of Zulia to study genetics of common heritable disorders relevant to Latin America and the Caribbean, and in particular to Venezuela. The strategy is to enhance the current research and training programs at the University of Zulia by: (1) training a critical mass of scientists and engineers in the design and conduct of modern genetic/genomic research (2) facilitating the development of a research and training infrastructure at the University of Zulia that will draw upon and focus clinical and scientific expertise throughout Western Venezuela (3) sustaining the research and training programs at the University of Zulia by establishing collaborative networks with Columbia University researchers studying the genetic basis of the most common complex heritable disorders. The proposed training program seeks to capitalize upon current genetic and genomic research programs at Columbia University that overlap thematically with the focus on common heritable neurodegenerative disorders at the University of Zulia. The training program is designed to educate doctoral students and postdoctoral fellows in human genetics, including genetic epidemiology, population genetics, molecular genetics, clinical genetics, statistical genetics and bioinformatics, with a broad understanding on the ethical, legal and social issues related to human genetics research. The didactic component of the program includes a series of academic courses, seminars and laboratory rotations. In the research component each Fellow will work closely with a Preceptor on an independent research project of the Fellow's choosing and that is related to his/her future research in Venezuela. In addition Fellows will be exposed to the process of development of low-cost diagnostic methods that may facilitate the recognition of neurodegenerative disorders and the development of preventive or ameliorative treatment options. At the end of the program Fellows should understand the critical aspects of study design, methodology, and genetic and epidemiological theory relevant to the detection of complex disease loci and to specifically address the interaction of genetic factors with environmental and cultural factors. Emphasis will be given to defining tractable genetic targets and building productive collaborations.

Grant: 5D43TW006176-02
Program Director: CHON-LEE, ANGIE J
Principal Investigator: JABS, ETHYLIN W BA BIOLOGY, OTHER
Title: Collaborative Genetics Research Training Program
Institution: JOHNS HOPKINS UNIVERSITY BALTIMORE, MD
Project Period: 2002/09/22-2007/08/31

DESCRIPTION (provided by applicant): This grant application proposes to create a new research-training program in genetics for students, researchers, and professionals from the developing country, People's Republic of China. This collaborative program will be developed between The Johns Hopkins University and two major institutions in Beijing, Peking Union Medical College and Peking University. This program will train researchers in the principles of genetic research on complex disorders such as birth defects and chronic diseases. The Training Advisory Committee and faculty from Hopkins have expertise in clinical genetics, molecular genetics, statistical genetics, population genetics, bioinformatics, and epidemiology. Expertise on the ethical, social, and legal implications of human genetics research will also be an integral part of our curriculum. Short term trainees from China will enroll in established courses such as the Graduate Summer Institute of Epidemiology and Biostatistics at The Johns Hopkins Bloomberg School of Public Health and the Short Course in Medical and Experimental Mammalian Genetics co-sponsored by The Johns Hopkins Institute of Genetic Medicine and The Jackson Laboratory at Bar Harbor. Long-term trainees will enroll in a Master of Public Health, Master of Science in Genetic Counseling, or research laboratory training, some of whom may obtain certification in Clinical Molecular Biology, Biochemical Genetics, or Cytogenetics. Predoctoral students will enroll in degree programs for a Ph.D. in Human Genetics and Molecular Biology, Epidemiology, or Biostatistics. After the training, fellows and students will return to China to develop their own research and strengthen the "genetics research culture" in Beijing and beyond. The Johns Hopkins University School of Public Health conducts more international health research than any other school in the country. Johns Hopkins offers strong training programs in epidemiology, biostatistics, and bioethics appropriate for scientists from developing countries. We have confidence in our ability to provide relevant, practical, and flexible training to these visiting professionals, as well as to ensure smooth and successful transition in bringing genetic research to China.

Grant: 5K01AG019194-03
Program Director: CHON-LEE, ANGIE J
Principal Investigator: ROMEIS, JAMES C
Title: High-risk health behaviors, health services use & aging
Institution: ST. LOUIS UNIVERSITY ST. LOUIS, MO
Project Period: 2001/09/30-2004/08/31

DESCRIPTION (provided by applicant): This MRSDA K01 requests 3 years support for advanced research training in genetic gerontology and research support to study genetic and environmental influences on psychosocial geriatrics, health behavior, health services use, and aging. The long-term overall goal of the proposed study is to establish the Vietnam Era Twin [VET] Registry's promise for longitudinal health behavior and aging research. The intermediate goal is to conduct a study that points to research directions for health behavior and aging using the VET Registry. Aims 1 and 2 use data from the Swedish Adoption and Twin Survey and Aging (SATSA) and VET studies to evaluate genetic and environmental influences on stability versus change in (a) self-reported health, (b) health services utilization in Sweden and (c) high-risk health behaviors (obesity, smoking, low physical activity, excess alcohol consumption) in aging male and female like-sex twin pairs. Effects of cohort, gender, and medical condition will be controlled. Aim 3 evaluates the influence of psychiatric Hx and history of substance abuse on self-reported health and high-risk health behaviors among VETs. Aim 4 uses prospective data on obesity, smoking and alcohol use to evaluate genetic and environmental influences on persistence and change in health behaviors and the extent to which these are mediated through psychiatric risk factors. Both Registries have four assessments spanning periods 1984-1996 [total N ~ 3,100 like-sex twin pairs] aged 40-80+ [SATSA] and 40-55 [VET]. For Aims 1-2, bi-variate and developmental genetic modeling will evaluate stability and change in self-reported health, health services use and high-risk health behaviors, controlling for gender, cohort and medical conditions. Replicability of SATSA modeling for VETs will be assessed. Aims 3-4, use developmental genetic modeling and include nine year risk factor Hx and psychiatric Hx to evaluate genetic and environmental influences on persistence and change in high-risk health behaviors, mediated through psychiatric risk factors. The training is designed to provide analytical skills in genetic gerontology to be competitive as an independent investigator. The research project will add significantly to the literature on the role of genetics in understanding persistence of high-risk behaviors in the context of aging.

Grant: 5R01AG020916-03
Program Director: CHON-LEE, ANGIE J
Principal Investigator: JUENGST, ERIC T. BS ETHICS IN
CLINICALPRACTICE
Title: Enhancement Ethics and the Molecular Genetics of Aging
Institution: CASE WESTERN RESERVE UNIVERSITY CLEVELAND, OH
Project Period: 2001/09/30-2004/08/31

DESCRIPTION (provided by applicant): Advances in the molecular genetics of cellular aging raise the prospect of intervening in the human aging process to dramatically extend the human life span. The development of such interventions would confront society with the challenge of interpreting, using and regulating the ultimate genetic enhancement technology: a technology that could allow us to change a basic constant of human life at the cellular level. This project is designed to combine the work of two ongoing research programs to begin to address these challenges. The first is the research that Eric Juengst, Maxwell Mehlman and Thomas Murray have been conducting on the ethical and public policy challenges that are posed generically by genetic enhancement technologies. The framework for ethical analysis and public policy development generated by that research would be applied here to the case of anti-aging interventions, both as a test of the framework and to see what it yields in this case. The second resource is the work of the other co-investigators, Stephen Post, Peter Whitehouse and Robert Binstock, on the clinical and social meanings of the human aging process. That research will be used to identify the issues to analyze in this project, by providing the landscape of contemporary social practices, values and beliefs that radical life extensions could challenge. Collaboratively, we will seek to anticipate the issues that anti-aging interventions could raise for three constituencies: the individuals and families that might use them, the health professionals that might provide them, and the public-policy makers that will shape the context in which they might become available. The project's methods will be analytic and discursive: we will be critiquing, constructing and proposing arguments on the basis of existing information and our previous work, through a regimen of regular research meetings and collaborative writing. This work will be overseen by an expert group of advisors; Carol Donley, Co-director, Center for Literature, Medicine and the Health Profession at Hiram College; Michael Fossel, Editor, Journal of Anti-Aging Medicine; Linda George, Associate Director, Center for the Study of Aging and Human Development, Duke University; and Thomas Murray, President, The Hastings Center.

Grant: 5R01AG020263-02
Program Director: CHON-LEE, ANGIE J
Principal Investigator: RICKLEFS, ROBERT E. PHD
Title: Demographic Aging in Captive Birds and Mammals
Institution: UNIVERSITY OF MISSOURI-ST. LOUIS ST. LOUIS, MO
Project Period: 2002/02/01-2005/01/31

DESCRIPTION (provided by applicant): This project takes advantage of a unique data resource to characterize variation in rates of aging in captive populations of vertebrates (mammals, birds, and reptiles) in zoological institutions. We define rate of aging as the increase in mortality rate as a function of age, or actuarial senescence (AS). Previous analyses have shown that AS in both natural and captive populations of mammals and birds varies by nearly an order of magnitude and that mortality resulting from aging processes is generally similar in natural and zoo environments. This suggests that aging-related mortality results primarily from unique intrinsic causes of death (e.g., vascular disease, malignancies, autoimmune disease) rather than increasing vulnerability to extrinsic causes of mortality (predation, accident, contagious disease, weather-related starvation) owing to general deterioration of physiological function. Demographic patterns of aging will be compared by analyzing data in the International Species Information System (ISIS), which is the major international data base for zoological institutions. The data include age at death, reproductive history, and genealogy. We use the Weibull function to quantify actuarial senescence. Rate of AS for each species will be related to other aspects of life history, including sex, early experience (wild versus zoo born), body mass, brain mass, metabolic rate, development period, age at maturity, diet, and mortality rates in the wild. We shall additionally determine whether birds exhibit reproductive menopause and whether a trade-off exists between reproduction and aging. Ages at death will be compared among siblings and half-siblings to estimate its heritability. Medical records of zoos will be analyzed to determine how causes of death change with age. The ultimate goals of this study are to establish a comparative database for actuarial senescence in captive populations of vertebrates, to identify model organisms for further research on the physiology of aging, and to determine the feasibility of involving zoological institutions in collaborative, non-invasive research on aging.

Grant: 1R01AG019726-01A2
Program Director: CHON-LEE, ANGIE J
Principal Investigator: SCOTT, WILLIAM K PHD
Title: Genetic Studies of Successful Aging in the Amish
Institution: DUKE UNIVERSITY DURHAM, NC
Project Period: 2003/07/01-2008/04/30

DESCRIPTION (provided by applicant): Advances in molecular and statistical methods have greatly facilitated the identification of susceptibility genes for diseases, such as Alzheimer disease, that are common in older adults. These same methods may be applied to the study of the natural aging process to identify genes that are associated with a long and healthy life. Identification of both disease-causing and health-promoting polymorphisms and their interactions with the environment has the potential to greatly improve the health of older adults, the most rapidly growing segment of the U.S. population. One method of identifying genes associated with a particular trait is to study relatively stable, isolated populations established by a few founding members, such as the Amish community in northern Indiana. This community has previously participated in a cross-sectional survey for cognitive impairment conducted from 1991-1993. Several families with multiple cognitively impaired individuals were identified and included in ongoing studies of the genetics of dementia at the DUMC Center for Human Genetics. We also observed in these families apparent clustering of "successful aging", suggesting that this trait may be, in part, under genetic control. In light of these observations, we propose a second population survey to systematically evaluate Amish adults aged 80 and older for cognitive and functional impairment. We will determine the prevalence and degree of familial aggregation of successful aging in the Amish community and perform genetic studies to identify genes associated with successful aging. To accomplish these goals, we specifically propose to: (1) conduct a community survey of Amish residents aged 80 and older in Adams and surrounding counties in Indiana and Holmes and surrounding counties in Ohio; (2) examine the relationship between successful aging and genes implicated in longevity; (3) perform a complete genomic screen for successful aging loci, and (4) follow-up results of the genomic screen through positional cloning and candidate gene analysis approaches.