

## **National Institute on Aging - HNN**

Conducts, fosters, and supports biomedical and behavioral sciences research and training pertaining to the aging process and related health fields through: (1) research performed in its own laboratories and through contracts; (2) a program of research grants and individual and institutional research training awards; (3) cooperation and collaboration with other Departmental agencies, voluntary organizations, and other institutions; and (4) collection and dissemination of the findings of aging research and studies and other information about the process of aging.

**Office of the Director - HNN1**

Plans and directs the activities of the Institute in the areas of (1) biomedical research and clinical medicine; (2) program planning and evaluation and extramural affairs; (3) behavioral sciences research; (4) epidemiology, demography, and biometry; (5) managerial and administrative matters affecting the planning and execution of Institute programs; and (6) intramural research programs.

### **Office of Administrative Management - HNN1-3**

(1) Advises the Director and other key officials on managerial and administrative matters affecting the planning and execution of Institute programs; (2) interprets, analyzes, and implements Departmental administrative and management directives; (3) develops policies on administrative management and prepares and issues procedures and guidelines for implementation of these policies; (4) provides coordination and support services in fiscal management, management analysis, and administrative services; (5) provides coordination and support services for the computer network; and (6) develops and maintains a centralized computer-based data bank of information for business applications.

## **Financial Management Branch - HNN1-32**

(1) Serves as the principal advisory body on financial matters within the Institute; and (2) is responsible for the formulation, presentation, and execution of the Institute's annual budget.

## **Workforce and Administrative Management Branch - HNN1-33**

(1) Serves as a resource for and partner to the Office of the Director, NIA, and other key Institute officials in providing management advisory services related to organizational and workforce planning, management functions and administrative operations while ensuring transparency and clarity of operations; (2) Studies and analyses management and workforce structure and function, policy and administrative operation, develops policies and procedures and coordinates implementation, compliance and evaluation across the Institute in the areas of workforce support and management, program management, change management, procurement, travel, space, property, ethics and other critical administrative and management functions; (3) Provides and supports the following program and administrative management services: privacy coordination and compliance; records management; risk management; delegations of authority; emergency preparedness and Continuity of Operations planning (COOP); conference/travel coordination; travel card management; (4) Provides and supports the following workforce management services: performance management; awards and recognition; compensation; telework/workplace flexibilities; training and staff development; leadership development; recruitment and retention strategies/programs; workforce and succession planning; employee onboarding/orientation and offboarding; employee engagement; work/life balance; Employee Viewpoint Survey (EVS); and organizational change management.

## **Information Technology Branch - HNN1-34**

(1) Advises the Director and senior managers on information systems, technology, and resources management and policy; (2) plans, coordinates, and reports on the Institute's information systems, technology, and resources activities; (3) manages the Institute's computer security program; (4) evaluates, provides, and supports information systems and technology within the Institute; (5) coordinates implementation of Institute information technology with external organizations to assure the availability of reliable information technology services in support of the Institute mission; (6) advises and assists NIA staff on management policy issues, organization, procedures, and related IT management matters; (7) conducts management studies and prepares management reports; and (8) collaborates with NIA functional managers responsible for IT-related areas, such as acquisition, information collection, HIPAA, and the Privacy Act.

## **Ethics Branch- HNN1-36**

(1) Administers a comprehensive NIA ethics program that reflects statutory responsibilities and integrity in service to the public; 2) develops and recommends policies and procedures related to employee standards of conduct, financial interests and disclosure, outside activities, gifts administration, official duty activities, sponsored travel, and procurement integrity; (3) administers the annual public and confidential financial disclosure process including reviewing and certifying financial disclosure reports and reports of holdings in substantially affected organizations, and develops new employee ethics agreements; (4) reviews and approves requests for outside activities, official duty requests, and sponsored travel for conformance with regulations and policies; (5) provides advice and assistance to employees regarding the application of the ethics laws, regulations, and policies; (6) develops and provides NIA ethics training (7) provides liaison to the HHS Office of the General Counsel, the Office of Government Ethics, the NIH Ethics Office, other agencies, and outside organizations as needed; (8) provides advice to the Office of the Director regarding conflict of interest (COI) of individuals involved in the conduct of biomedical research, including Government employees, advisory committee members, and non-Government employees such as peer reviewers, Data Safety Monitoring Board (DSMB) members, and members of working groups; (9) reviews: (a) procurements over one million dollars involving justification of other than full and open competition; (b) gifts acceptance under NIA statutory authorities; (c) memoranda of understanding of public private partnership proposals and co-sponsorships with non-federal entities; and (d) conflicts concerning prior employment ties to academic institutions and private entities; (10) identifies management issues requiring action by the HHS Office of the General Counsel such as copyright, intellectual property, contract, or personnel authorities; and (11) review clinical protocols, conducts COI analysis to confirm that no COI exists between investigators' official duties on the protocol and their personal or imputed financial interests.

## **Office of Planning, Analysis and Evaluation - HNN1-4**

(1) Provides advice and assistance to the Director and other Institute officials on issues related to program planning, evaluation, legislative liaison, program analysis, and communications; (2) provides overall Institute guidance regarding short- and long-range program plans; and serves as the Institute contact point with planning offices of NIH, PHS, and DHHS; (3) serves as the focal point within the Institute in the initiation and conduct of evaluations of Institute activities; (4) plans, conducts, and directs activities in the area of program analysis; and provides analytic and interpretive data needed to formulate Institute goals and objectives; (5) serves as liaison with NIH, PHS, and DHHS legislative offices; coordinates Institute activities related to proposing and reviewing legislative changes; (6) provides leadership and assistance to other NIA programs in areas such as technology transfer, information systems, and networks; and (7) plans, organizes, and carries out a congressionally mandated public information and health education program that is responsive to the interests of the general public, mass media, special interest groups, government agencies, local organizations, and the scientific community.



## **Office of Communications and Public Liaison - HNN1-6**

(1) Plans and directs a coordinated program to communicate information about NIA programs, Institute research accomplishments, and health and aging issues to the general public, the news media, the scientific community, health care providers, members of Congress, public advocacy groups, and others; (2) responds to inquiries from the public, patients and families, health professionals, and the media as well as inquiries from the White House, the Department of Health and Human Services, Federal agencies, and members of Congress; (3) designs and implements long-range communications policies, activities, and evaluation projects, and directs national health education programs, using a variety of communication techniques targeted to specific audiences in order to achieve measurable outcomes; (4) advises the Institute Director, Deputy Director, and senior scientists on effective strategies for communicating information on research and health; (5) develops, produces, and evaluates publications, reports, articles, briefing materials, exhibits, audiovisuals, and other materials and coordinates the DHHS clearance of these materials for the Institute; (6) manages and directs the operations and long-range plans of the legislatively mandated Alzheimer's Disease Education and Referral (ADEAR) Center, which collects, translates, and disseminates information about Alzheimer's disease and age-related cognitive change to health professionals, patients and families, and the public; (7) manages and directs the National Institute on Aging Information Center (NIAIC), which manages, promotes, and distributes NIA publications, including in response to email, phone, and mail inquiries, and use of NIA exhibits; (8) coordinates communication policy with other NIH communications offices, the NIH Office of Communications and Public Liaison, and the office of the DHHS Assistant Secretary for Public Affairs, providing information and advice as needed; (9) collaborates with voluntary and professional health organizations to exchange information and to plan cooperative activities related to clinical, research, and public health information; (10) assists in the content development, management, and maintenance of NIA's public access web site; and (11) advises the Director, NIA, in matters pertaining to the implementation of the Freedom of Information Act and oversees FOIA compliance of the Institute.

## **Intramural Research Program - HNN-2**

(1) Plans and directs the Institute's laboratory and clinical research programs including the conduct of postdoctoral research training in gerontology and geriatrics to (a) better understand the aging process, (b) develop new knowledge to diagnose, treat, and alleviate diseases and disabilities of the elderly, and (c) ensure the most effective use of available resources to meet Institute objectives; (2) evaluates scientific progress and opportunities and establishes intramural program priorities; (3) allocates funds, space, and personnel ceilings and integrates new research activities into the program structure; (4) collaborates with other NIH programs and research institutions and maintains an awareness of scientific developments in program areas; (5) advises the Institute Director and senior staff on the Intramural Research Program and matters of scientific interest; and (6) serves as a national and regional center for Federal and non-Federal investigators in the field of aging.

## **Comparative Medicine Section - HNN-2-4**

Provides IRP investigator's laboratory animal experimentation needs. (1) Ensures the humane and safe care and use of laboratory animals.

## **Networks Computing and Telephony Section - HNN-2-5**

(1) Supports computing and communications at the Intramural Research Program. (2) This includes installing, configuring, and managing local and wide area network hardware and software; defining standards and providing support and service for computers from the desktop to large scale computational servers; and (3) implementing and maintaining IRP analog and ISDN telephone service.

**Clinical Research Core – HNN-2-6**

(1) Clinical Research Core (CRC) seeks to elucidate normative values and separate normal aging findings from disease states in aging in an effort to prolong disease-free states with age (2) performs research in various protocol studies that have direct clinical applications to human aging and disease states.

## **Laboratory of Neurogenetics - HNN-22**

(1) Studies the major neurodegenerative diseases using genetic approaches; (2) collects families with familial Alzheimer's disease, Parkinson's disease, Amyotrophic Lateral Sclerosis and other related conditions to try to identify the genetic lesions which cause the disease; (3) seeks to develop an understanding of the disease process by looking at the function of the normal protein and determining how the function of the mutant protein is different, both in cells and in transgenic mice; and (4) works to identify genes that contribute to Parkinson's disease, Alzheimer's disease, and Amyotrophic Lateral Sclerosis.

## **Molecular Genetics Section - HNN-222**

(1) Uses modern molecular genetic approaches to identify genetic lesions underlying neurological disorders; (2) Uses genome wide association methodologies to identify genetic risk factors for neurological disorders; (3) Uses genome wide association methodologies to identify the genetic basis of traits related to aging; and (4) uses genome wide methodologies to understand the role of genetic variation in the regulation of gene expression in the brain.

## **Cell Biology and Gene Expression Section - HNN-223**

(1) Uses molecular biology approaches to understand how mutations associated with inherited neurodegenerative diseases influence protein function; (2) Develops cell based models for the effects of neurodegenerative disease mutations on the function of neurons; (3) develops high throughput approaches to identify pathways involved in cellular phenotypes relevant to neurodegeneration; and (4) uses genome wide methods to understand the molecular basis of gene regulation.



## **Transgenesis Section - HNN-224**

(1) Uses mouse genetics approaches to model the key clinical and pathological features of neurodegenerative diseases; (2) Uses mouse models and primary cell cultures to investigate the physiological functions and pathogenic properties of disease-related proteins and mutations; (3) Uses biochemical methods to identify the underlying molecular determinants critical for the selective vulnerability of neurons in different neurodegenerative diseases; and (4) Uses genome wide methods to evaluate the contribution of genetic, epigenetic and environmental factors in the progression of neurodegenerative diseases.

## **Neuromuscular Diseases Research Section- HNN-225**

The primary mission of the Neuromuscular Diseases Research Section is to: (1) Use modern genomic technologies to identify the genetic etiology of neuromuscular diseases and related disorders; (2) Use modern genomic technologies to delineate the functional consequences of genetic lesions underlying neuromuscular diseases and related disorders; (3) Explore the relationship between phenotype and genotype in neuromuscular diseases and related disorders; (4) Undertake clinical trials of therapeutic agents designed to ameliorate disease in patients diagnosed with neuromuscular diseases and related disorders.

## **Laboratory of Epidemiology and Population Science - HNN-23**

The overall aims of LEPS are to: (1) Study long-term exposures and subclinical disease indicators that increase the susceptibility to loss of cognitive and physical function and subsequent disability; (2) Identify biomarkers and other useful surrogates to use in studies as integrated measures of pathology and ‘disease.’; (3) Identify the life periods when particular exposures initiate or aggravate pathology that increase vulnerability or risk for impairment in late-life cognitive and physical function; (4) Identify the factors that precipitate crossing thresholds to clinical cognitive or physical disability and determine whether control of these factors decreases the risk for clinical events; (5) Provide data from observational studies and clinical trials for use in translational research in both experimental and public health settings and (6) Investigate the mechanisms of health disparities and aging, to understand the interplay of biologic and non-biologic determinants of health.

## **Neuroepidemiology Section - HNN-235**

(1) Identifies novel risk markers for brain aging [including cognitive decline, Magnetic resonance image (MRI) changes, dementia, and neuropathology that can be used in population based studies; (2) investigates the association of, and interactions among, vascular, metabolic, behavioral and genetic risk factors for brain aging; (3) conducts trials to test the effect of cardiovascular and behavioral interventions on brain aging; and (4) conducts methodologic studies on acquisition and analytical protocols for measuring brain disease on MRI.

## **Health Disparities Research Section - HNN-239**

(1) HDRS conducts interdisciplinary clinical and basic science research focused on examining the underlying cause of the disproportionate incidence, morbidity and mortality of age-related disease among minority and low socioeconomic status (SES) Americans; (2) this provides a two-way bridge between basic science laboratory studies and clinical research that spans from the targeted epidemiologic population to the bench; (3) by dissecting the interaction of race, socioeconomic status, culture, behavior, environmental exposure, biologic vulnerabilities, genetics, social environment, health care access, and quality of health care provides insight into how these interactions result in disproportionate rates of age-related disease and disability; (4) the ultimate goal of this approach is to transform scientific discoveries arising from laboratory, clinical, or population studies into clinical applications to reduce incidence, morbidity, and mortality of age-associated diseases and health disparities; (5) this is accomplished by the development and implementation of a clinical component (The Healthy Aging in Neighborhoods of Diversity across the Life Span Study-HANDLS) and a basic science laboratory component that are interdependent and pursuing related hypotheses.

## **Behavioral Epidemiology Section - HNN-23A**

(1) Investigators in the BES examine individual differences in psychological and behavioral attributes and changes in cognitive performance and health over the adult lifespan in community-dwelling adults to assess whether and which psychological changes occur, the extent to which such changes predict physical and psychological health outcomes, and the roles of these factors in health disparities, especially those related to racial and socioeconomic differences. (2) Section investigators use data from a variety of longitudinal studies, including nationally representative epidemiologic surveys and representative samples of diverse populations.

## **Laboratory of Clinical Investigation - HNN-25**

The Laboratory of Clinical Investigation chiefly focuses on clinical research issues of importance in aging. Clinical work includes; (1) cross-sectional studies in a variety of age-related disease areas including diabetes, metabolism, cardiovascular disease, neurologic disease, and cancer; (2) conduct of basic and clinical research related to the diagnosis, prevention, and treatment of aging-related disability and age-related-diseases; (3) performing clinical correlation with extensive laboratory and clinical data in order to monitor the effects of intervention on host biology and pathophysiology.

## **Diabetes Section - HNN-254**

The work of this Section is directed at developing methods to lower blood glucose safely and effectively in elderly diabetic patients. Research endeavors are aimed at restoring glucose sensitivity of the beta cells and improving insulin action at the target cells, as well as studying the causes underlying such deficiencies in the elderly



## **Magnetic Resonance Imaging and Spectroscopy Section - HNN-25A**

(1) Conducts studies of tissue engineered constructs for noninvasive assessment of developing cartilage and muscle; (2) carries out muscle and cardiac metabolic studies; (3) studies cartilage properties using biochemical and magnetic resonance techniques that can be applied to therapeutic protocols; (4) develops methodology in magnetic resonance imaging and spectroscopy; and (5) works in interdisciplinary and collaborative studies using magnetic resonance techniques in support of other research programs.

## Immune Cells and Inflammation Section- HNN-25D

Research in Immune Cells and Inflammation Section focuses on the study of immunity, autoimmunity and inflammation. In particular, the development of conventional and innate immune cells in the thymus and the generation of gut-associated immune cells and the micro biome. We are also interested in understanding changes in gut-associated immune cells and the micro biome that may lead to systemic inflammation in older people. Ongoing projects include: (1) Study of transcription factors that regulate the development, maintenance and aging of thymic lymphocytes as well as epithelial cells; (2) Development and function of conventional and innate like immune cells in the thymus; (3) Development and age-associated changes in gut- associated immune cells and the micro biome.

## **Laboratory of Molecular Gerontology - HNN-28**

(1) Investigates the molecular basis for aging and age-associated disease, notably cancer; (2) studies DNA-related mechanisms such as genomic instability, DNA repair, DNA replication and transcription; (3) explores the mechanistic reasons for the accumulation of oxidative DNA damage that has been observed with increasing age, including an interest in mitochondrial functions since oxidative damage accumulates in these organelles; (4) studies DNA damage and its processing with special interest in DNA repair fine structure at the level of the gene, and in transcription-coupled DNA repair; and (5) studies these processes in normal, progeroid, senescent and malignant mammalian cells, and in various parts of the genome including the mitochondrial DNA.

### **DNA Repair Section - HNN-283**

Studies are focused on DNA repair, genomic instability, DNA replication, and premature aging disorders. Emphasis is on understanding the underlying mechanisms involved in DNA damage processing, their role in aging, as well as the changes that take place with aging and that make aging cells susceptible to cancer. Includes the study of DNA repair processed in individual genes, the molecular biochemistry of DNA repair processes and nucleotide excision repair and base excision repair in *in vitro* systems, in fractionated cell extracts and in intact cells.

## **Gene Targeting Section - HNN-284**

The recent success of the human genome project has produced an abundance of new genes and candidate genes. The concern of future biological research will be the identification and functional characterization of those genes. However current methods for the modulation of the sequences of genes in living mammalian cells are tedious and far too time consuming to meet the demands of contemporary functional genomics. The Section on Gene Targeting has two goals: the development of robust technologies for the facile manipulation of sequences in the-genome of living cells, and the delineation of repair pathways, including those compromised by aging, that are involved in the resolution of targeted DNA damage. The approach is based on oligonucleotides that can form triple helical structures with specific target sequences. The oligonucleotides are linked to DNA reactive compounds that introduce chemical damage to DNA bases at the target site. Repair and/or replication of the damaged site can initiate mutational or recombinational pathways, which permit the introduction of novel sequence information at the site. We have shown that chromosomal targets are accessible to these reagents, and that oligonucleotides containing novel modifications can target mutations to specific sites in mammalian, including human, genomes. These reagents allow us to study the repair of DNA damage targeted to specific sites and offer a novel approach for delineating DNA repair pathways in cells from normal, repair deficient, and premature aging syndrome donors.

## **DNA Helicases Section - HNN-286**

Helicases are DNA-unwinding enzymes that play essential roles in all aspects of DNA metabolism. (1) The growing number of DNA helicases implicated in age-related diseases, cancer, and chromosomal instability make this an important class of proteins to study their functions. (2) To understand their significance in cellular pathways important for the maintenance of genomic stability, the molecular, genetic and biological functions of human helicases are studied with an emphasis on their active participation in the DNA damage response and roles as caretakers of the genome.

## **Telomere Maintenance Section- HNN-288**

Telomere Maintenance Section will focus on (1) Conduct basic and translational research in the areas of telomere length maintenance and human diseases. (2) Identify genes or pathways that resolve telomere DNA damage and intermediates, participating in telomere maintenance; (3) investigate the consequences of mutagenesis of telomere associated proteins in telomere dysfunction and human aging.

## **Laboratory of Cardiovascular Science - HNN-29**

(1) Identifies age-related changes that occur within the cardiovascular system and determines the mechanisms for these changes; studies myocardial structure/function and response to pharmacological therapeutics in mechanical overload, altered thyroid state, and physical conditioning models; and determines how age interacts with these chronically altered cardiac states and the level of myocardial function; (2) studies basic mechanisms in excitation/contraction coupling and energy-yielding oxidative pathways in cardiac muscle; (3) determines the chemical nature and sequence of intermediate reactions controlling the movement of ions through ionic channels and pumps present in myocardium--specifically, with respect to how the affinity, capacity, and selectivity of ion translocation through membranes are affected by aging and disease; and (4) performs studies in human volunteers, intact animals, isolated heart and vascular tissues, isolated cardiac cells, and sub-cellular organelles.



## **Cardiac Function Section - HNN-292**

(1) To identify age associated changes that occur within the cardiovascular system and to determine the mechanisms for these changes; (2) to study myocardial structure and function and to determine how age interacts with chronic disease states to alter function; (3) to study basic mechanisms in excitation\_contraction coupling and how these are modulated by surface receptor signaling pathways in cardiac muscle; (4) to determine mechanisms that govern normal and abnormal function of vascular smooth muscle and endothelial cells; and (5) to establish the potentials and limitations of new therapeutic approaches such as gene transfer techniques. In meeting these objectives, studies are performed in human volunteers, intact animals, and isolated heart and vascular tissues, isolated cardiac and vascular cells, and subcellular organelles.

## **Translational Cardiovascular Studies Section - HNN-295**

(1 )Translational, in vivo, part of cardiovascular studies intended to facilitate the clinical application of novel treatment possibilities stemmed from the latest laboratory findings with main emphasis on the prevention and treatment of chronic heart failure (CHP) (2) Investigate pathophysiological processes associated with CHP and (3) Development of reliable, well-characterized models of CHP in rats and mice, reproducible and effective methods of drug delivery and gene transfer to myocardium, employment of cutting edge technologies of in vivo morphometric and functional assessment of cardiovascular system.

## **Cellular Biophysics Section - HNN-296**

(1) Studies basic physical and electrophysical processes involved in cardiac excitation contraction coupling and action potential generation at the sub-cellular level; emphasis is on the role of local calcium signaling and the gating of single calcium channels in both the sarcolemma and the sarcoplasmic reticulum; (2) experimental studies employ patch-clamp and whole cell electrophysiological methods and confocal microscopy of intracellular fluorescent ion probes in isolated cardiac cells and embryonic stem cells; and (4) strong emphasis on mathematical and numerical modeling.

## **Cardioprotection Section - HNN-297**

Studies in this section investigate the structure and function of cells from the cardiovascular system along three principal lines relevant to aging: (1) Nature and control of mitochondrial instability and cell death during oxidant stress, and protection of cardiac myocytes (and neurons) during ischemic stress; (2) Mechanisms of cardiac contractility; and (3) Cellular changes and vascular protection after vascular injury.

## **Laboratory of Behavioral Neuroscience - HNN-2A**

The focus of the Laboratory of Behavioral Neuroscience (LBN) is the study of cognitive aging in humans and animal models, the neural underpinnings of these age-related changes, and the factors that promote the maintenance of normal cognition or lead to accelerated age-related cognitive decline and neuropathology. LBN investigators: (1) Conduct basic and clinical research on individual differences in cognition, personality, and affect; (2) investigate the cellular, neural systems and genetic contributions to variation between individuals in animal models and humans; (3) examine predictors and modifiers of age-related neurodegenerative diseases and age-associated changes in behavior, predispositions, and brain-behavior associations; (4) identify early markers of Alzheimer's disease and cognitive decline and examine factors that promote the maintenance of cognitive health; (5) develop and validate biomarkers of age-related neurodegeneration to inform diagnosis and therapeutic interventions. Laboratory investigators employ a variety of approaches, including experimental, longitudinal, neuroimaging, biomarker, neuropathological, electrophysiological, anatomical, molecular and genetic methods in the analysis of biological and psychological aspects of aging.

## **Brain Aging and Behavior Section - HNN-2A2**

(1) Conducts research to characterize the magnitude, rate, and regional pattern of age changes in brain structure and function in healthy aging; (2) investigates accelerated changes in brain structure and function that may be early markers of cognitive impairment and pathological aging; (3) examines genetic, neurobiological, and cultural influences on personality traits, and the links between personality and physical and mental health across the lifespan; (4) investigates factors that modify brain-behavior associations in aging, including factors that promote cognitive and affective resilience as well as those that increase risk for cognitive impairment and dementia.

## **Neurocognitive Aging Section - HNN-2A4**

Conducts neural systems research on the basis of cognitive decline and preservation associated with normal aging in multiple animal models, including (1) quantitative in vivo brain imaging and postmortem neuroanatomical studies; (2) electrophysiological and computational research on the functional organization of the non-cholinergic forebrain (3) the influence of early experience and epigenetic regulation on differential trajectories of neurocognitive aging; (4) development of outbred rat and nonhuman primate resources for research on neurocognitive aging; (5) preclinical testing for interventions aimed at promoting optimally healthy cognitive outcomes in aging.

## **Clinical and Translational Neuroscience Section – HNN-2A5**

(1) Clinical and Translational Neuroscience Section (CTNS) seeks to discover biomarkers for and understand molecular mechanisms underlying Alzheimer's disease (2) uses a systems biology approach combining deep molecular phenotyping with analyses of epidemiological and real-world clinical datasets to discover effective treatments for Alzheimer's disease.



## **Laboratory of Molecular Biology and Immunology - HNN-2B**

The goals of the Laboratory are 1) to investigate molecular mechanisms of basic cellular processes, such as cell growth and differentiation, particularly within the immune system; 2) to study changes that occur in the immune system with age and the effects of these changes on other tissues; 3) to study transcriptional control of gene expression and identify changes that underlie age-associated diseases; 4) to understand the sources and mechanisms of age-associated inflammation and thereby identify targets for therapeutic intervention and 5) to identify and understand epigenetic changes that occur with age in order to develop strategies to promote healthy aging.

## **Gene Regulation Section - HNN-2B4**

(1) Investigates transcriptional and post-transcriptional control of gene expression in immune cells; (2) studies function of the transcription factor NF $\kappa$ B, particularly as it pertains to establishing the balance between cell viability and cell death; (3) examines epigenetic mechanisms that operate during lymphocyte differentiation and activation; (4) participates in molecular analyses of age-associated alterations of inflammatory cytokine expression patterns in humans; (5) conducts studies of targeted DNA rearrangements and repair that are essential for immune responses; and (6) studies mechanisms that contribute to dysregulated antibody production in rheumatoid disease.

## **Antibody Diversity Section - HNN-2B7**

When challenged by bacteria and viruses, lymphocytes respond by producing diverse antibody proteins which neutralize the threat. (1) Mechanisms that produce this extraordinary level of diversity are being studied at the genetic, biochemical, and whole animal levels. (2) Genes encoding relevant enzymes are eliminated by genetic engineering in mice, or by natural mutations occurring in humans and the immune response is examined. (3) DNA repair pathways are also involved in generating diversity in antibodies. Aging produces a diminished response to immunization and the effect of these various pathways in lymphocyte activation is being investigated.

## **Lymphocyte Differentiation Section - HNN-2B9**

(1) Plans and conducts basic and clinical research in the areas of lymphocyte differentiation and aging. (2) Elucidates the epigenetic mechanisms in regulation of gene expression in memory T cell generation, homeostasis, and function. (3) Understands the role of microRNA in homeostasis focusing on cytokine/chemokine expression and its age-associated changes in naive and memory T cells a. (4) Studies the causes and consequences of age-associated changes in T cells including the changes of antigen receptor diversity and senescent T cells, and (5) Dissects the role of telomere length and telomerase in immune cell proliferation, function, and aging.

## **Immunoregulation Section - HNN-2BA**

(1) Studies the regulatory immune cell network and the role of regulatory immune cells in chronic and age-associated diseases; (2) investigates ways to harness and reverse impaired immune responses in elderly; and (3) develops novel immunotherapeutic strategies to combat chronic and age-associated diseases by controlling the balance between regulatory and effector immune cells.

## **Laboratory of Genetics and Genomics- HNN-2G**

To understand the genetic and genomic determinants of aging, the Laboratory investigates (1) the genetic basis of aging traits from nucleic acids to populations, and (2) the gene expression programs that govern normal aging and age-related disease. In addition, the Laboratory provides infrastructure for genetic and genomic studies in the NIA IRP.

## **Genome Instability and Chromatin Section - HNN-2G4**

Analysis of the components and function of nuclear complexes involved in (1) chromatin remodeling; and (2) genome instability diseases, including Fanconi Anemia and progeroid syndromes.

## **RNA Regulation Section - HNN-2G5**

(1) Studies the molecular mechanisms of posttranscriptional gene regulation in aging and in cellular senescence; (2) examines the RNA-binding proteins and noncoding RNAs that influence age-related gene expression post-transcriptionally; (3) investigates the impact of post-transcriptional gene regulation on age-related physiologic decline (including loss of metabolic activity and muscle function), and age-related pathology (particularly cancer and Alzheimer's disease).



## **Translational Gerontology Branch - HNN-2K**

The Translational Gerontology Branch (TGB) is focused on improving the health and well-being of the elderly population through epidemiological, clinical and basic research programs, with a special focus on longitudinal observations and intervention studies. The TGB is investigating and developing novel strategies and interventions to support healthy aging and the prevention, or delay, of functional decline and age-related diseases. The research goals of the branch are: (1) To translate discoveries made from human and model organisms to the basic biology (and vice versa), mainstreaming the “Bench to Bedside to Bench” approach; (2) To explore and identify the underlying molecular mechanisms responsible for the functional decline that occurs with age and (3) To develop and test interventions to delay aging processes from the bench to the bedside.

## **Center for Alzheimer's and Related Dementias – HNN-2L**

(1) Collaborating closely with the National Institutes of Neurological Disorders and Stroke (NINDS), seeking to initiate, stimulate, accelerate and support research in Alzheimer's disease and related neurodegenerative disorders, leading to the development of improved treatments and cures (2) Performing translational and clinical research to understand, define, and treat Alzheimer's disease and related dementias (3) Focusing on collaboration, reproducibility, foundational resource production, and innovative solutions to existing field-wide problems.

## **Longitudinal Studies Section - HNN-2K2**

(1) Operates the Baltimore Longitudinal Study of Aging (BLSA) including BLSA participant recruitment, screening and selection; scheduling and management of BLSA participants during and between visits; participant retention; management of ethical and informed consent procedures; tracking and data collection from inactive BLSA participants; and obtaining clinical and vital information about deceased BLSA participants including autopsy when consented. (2) Carries out the clinical evaluation and functional assessment of BLSA participants performed on all visits including health evaluation relative to participation in research and provision of clinical information to BLSA participants and their physicians. (3) Performs research with the BLSA and other related studies that utilizes biological and behavioral information unique to longitudinal research. (4) Provides expertise regarding the use and usefulness of longitudinal studies of aging.

## **Drug Design and Development Section - HNN-2K3**

(1) Identify drugs that improve brain function and/or forestall the neurodegenerative process in age-related neurodegenerative disorders.

## **Experimental Gerontology Section - HNN-2K4**

(1) The Experimental Gerontology Section (EGS), applies whole-body physiological assays coupled with tissue-specific molecular approaches to investigate the effects of nutritional and genetic interventions on basic mechanisms of aging and age-related diseases. (2) EGS is working on the development of nutritional and genetic interventions targeted to different components of this complex bioenergetic network.

#### **Division of Aging Biology - HNN-4**

(1) Provides advice and assistance to the Institute Director and other officials on biomedical and basic biological aging research programs, activities, and opportunities; (2) plans and directs extramural and collaborative research and training in the areas of biomedical and basic biological aging research; (3) plans, develops, and administers policies and operating procedures of the program, and evaluates scientific accomplishments of supported scientists and institutions for conformance to program goals and objectives; (4) determines the state-of-the-art of the program's scientific fields of responsibility, and recommends priorities and areas for emphasis; (5) collaborates with NIH components and other Federal agencies in the coordination and support of relevant scientific activities; and (6) recommends mechanisms to be used or develops mechanisms to accomplish program objectives.

## **Division of Behavioral and Social Research - HNN-5**

(1) Provides advice and assistance to the Institute Director and other officials on behavioral and social research programs, activities, and organizations; (2) plans and directs a national and international program of extramural and collaborative research and training in the areas of behavioral and social research; (3) plans, develops, and administers policies and operating procedures of the Program, and evaluates scientific accomplishments of supported scientists and institutions for conformance to program goals and objectives; (4) assesses needs for research and training in the Program's scientific fields of responsibility, and recommends priorities and areas for emphasis; (5) collaborates with NIH components and other Federal agencies in the coordination and support of relevant scientific activities; (6) recommends mechanisms to be used or develops mechanisms to accomplish program objectives; and (7) consults with professional and scientific associations in identifying research needs and develops programs to meet them.

## **Division of Neuroscience - HNN-7**

(1) Provides advice and assistance to the Institute Director and other officials on neuroscience and neuropsychology of aging research programs, activities, and opportunities; (2) conceptualizes, plans, and directs extramural and collaborative research and training in neurobiology, neuroimmunology, neuropharmacology, neurovirology, and neuroendocrinology of aging, neuropsychology, and psychological studies, including differentiation of abnormal from normal learning, memory perception, and cognitive processes by age; sensory changes with age; normal and disordered sleep; and diagnosis, epidemiology, etiology, treatment, and management of Alzheimer's Disease and other dementing disorders, including clinical trials of new therapeutic modes; (3) plans, develops, and administers policies and operating procedures of the program, and evaluates scientific accomplishments of supported scientists and institutions for conformance to program goals and objectives; (4) recommends mechanisms to be used or develops mechanisms to accomplish program objectives; (5) reviews and presents applications to the National Advisory Council on Aging; (6) evaluates the grant portfolio of the program and makes decisions about the distribution of funding resources; (7) determines the state-of-the-art of the scientific fields of responsibility of the program, identifies areas for emphasis and for high-priority support and recommends them for targeted Institute support; (8) collaborates with NIH components and other Federal agencies, national and international health and research organizations in the conceptualization, coordination, and support of relevant scientific activities; and (9) makes recommendations to the Institute Director and other Federal officials on the implications of research findings on the health and social services policies of the Federal government.



## **Division of Geriatrics and Clinical Gerontology - HNN-8**

(1) Provides advice and assistance to the Institute Director and other officials on clinical aging research programs, activities, and opportunities; (2) plans and directs extramural and collaborative research and training in the area of clinical aging research, including the pathophysiology of disease processes; (3) plans, develops, and administers policies and operating procedures of the program, evaluates scientific accomplishments of supported scientists and institutions for conformance to program goals and objectives; (4) determines the state-of-the-art of the program's scientific fields of responsibility, and recommends priorities and areas for emphasis; (5) collaborates with NIH components and other Federal agencies in the coordination and support of relevant scientific activities; (6) recommends mechanisms to be used or develops mechanisms to accomplish Program objectives; and (7) consults with professional and scientific organizations in identifying research needs and develops programs to meet them. Conducts and supports biomedical and behavioral research, health services research, research training, and health information dissemination with respect to the prevention of alcohol abuse and alcoholism and the treatment of alcoholism

## **Division of Extramural Activities - HNN9**

(1) Provides advice and assistance to the Director, NIA, NIA Program Division Directors, and other Institute officials on issues related to policy and procedures for extramural activities; (2) coordinates Institute training policies, procedures, and programs, Institute small business research programs and other special grants programs; (3) manages the operations of the National Advisory Council on Aging; (4) provides coordination, support, and staff services for committee management; and (5) provides oversight and direction for scientific review and grants management activities of the Institute.

## **Scientific Review Branch - HNN92**

(1) Organizes and manages initial review of NIA extramural program projects, multisite clinical trials, training grants, career development awards, scientific meeting applications, and dissertation awards; (2) organizes review of applications submitted in response to most NIA-primary RFAs; and (3) reviews extramural and intramural research contract proposals.

### **Grants and Contracts Management Branch - HNN93**

(1) Awards, manages and monitors all business aspects of grants; and (2) provides liaison with other components of DHHS, NIH, NIA, and grantee institution's business staff.

## **Office of Small Business Research – HNN94**

(1) Oversight of the small business portfolio at NIA and shape its mission to integrate this small business focus on translation with leads from basic and translational research supported through other means. (2) Develop the strength of the small business community seeking scientific evidence to support marketing of products and services for older adults, and also tailor NIA's programs to the strengths of these companies. (3) Stimulate technological innovation (4) Foster and encourage participation in innovation and entrepreneurship by socially and economically disadvantaged persons or through cooperative R&D between small business and research institutions. (5) Increase private-sector commercialization of innovations from NIA research and development funding.