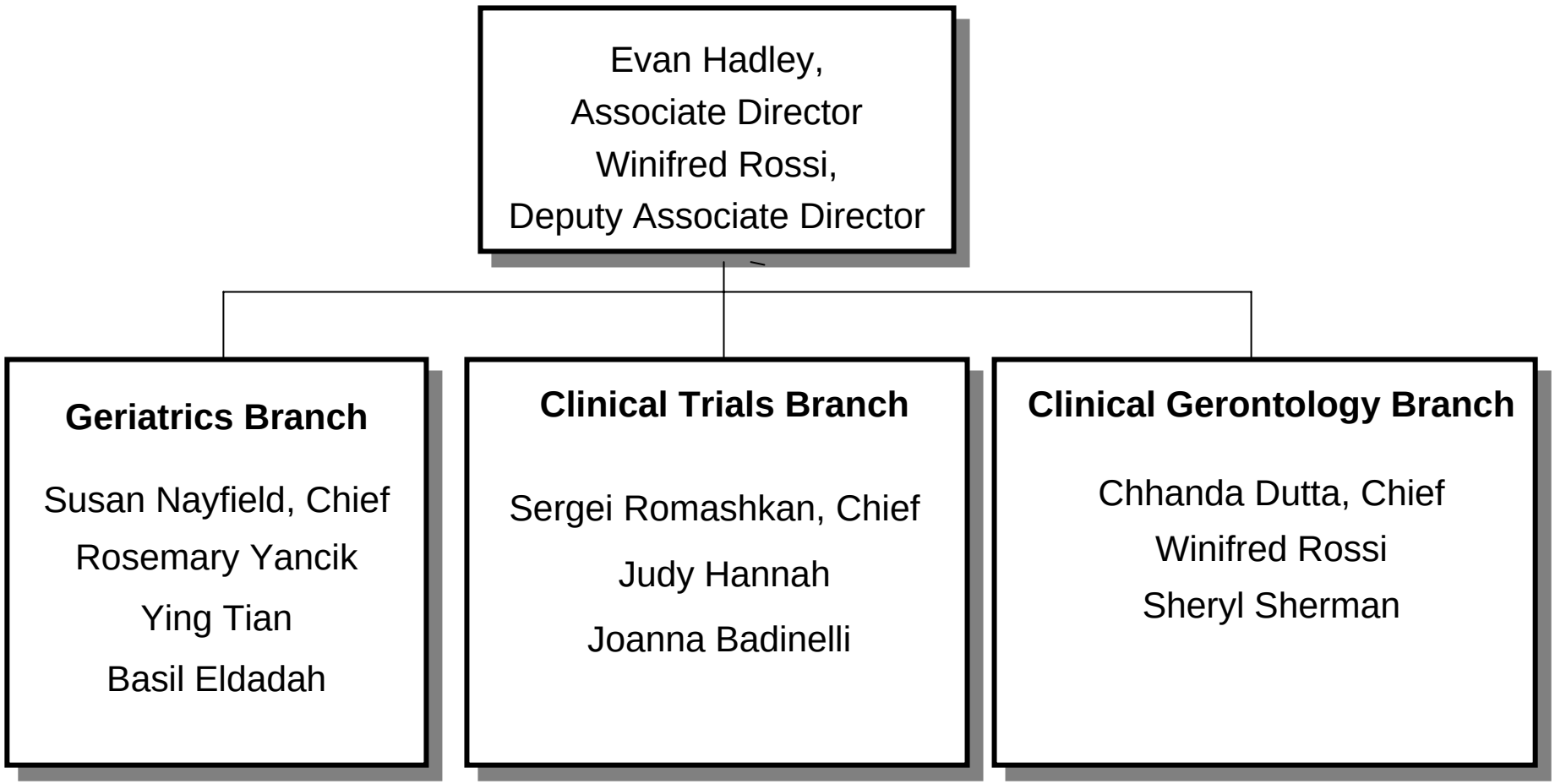
National Institute on Aging

Geriatrics and Clinical Gerontology Program



Geriatrics Branch	Clinical Gerontology Branch
Focus on the *aged:*	Focus on *aging* over the life span:
Treating or preventing problems in older persons	Altering progressive aging changes
Previously undefined pathologies in old age	Processes leading to age-related pathologies
Late-stage disease	Early pathophysiology
Comorbid interactions	Common factors leading to multiple age-related pathologies

Shared foci: Disease/disability prevention in old age, progression of aging pathologies in late life

Geriatrics and Clinical Gerontology Program: *Examples of Research Emphases*

- Geriatric conditions and functional problems (frailty, incontinence, auto driving disabilities, poor hip fracture recovery)
- Age-related issues in disease diagnosis, prevention, and treatment, e.g., effects of comorbidity
- “New” diseases of old age (vascular stiffening, sarcopenia)
- Hormonal therapies (estrogen, testosterone, growth hormone)
- Physical activity’s effects on aging changes and age-related morbidity and disability
- Aging before old age (reproductive aging, early physiologic changes)
- Exceptional longevity and exceptionally healthy aging
- Health implications of findings from basic aging research

Recent Activities and Plans
Goal 1: Geriatric Conditions

Goal 1: Identify risk factors and test interventions for "geriatric conditions": disabilities, symptoms, vulnerabilities to stressors.

- Disability and Rehabilitation
  - Musculoskeletal Research Conference (with NCMRR and others)
  - NIH "State-of-the-Science" Conference on Urinary and Fecal Incontinence
- Vulnerabilities
  - Emergency care
  - Special considerations during hospitalization
    - Surgical management
    - ICU care
  - Vulnerabilities to infection in long-term care

Recent Activities and Plans
Goal 1: Geriatric Conditions

- Symptoms and Palliative Care
  - Fatigue
    - NIA Exploratory Workshop “Unexplained Fatigue in the Elderly”
    - AGS Conference on Fatigue
  - Pain (with NNA)
    - NIH-wide PA “Mechanisms, Models, Measurement, and Management in Pain Research”
    - Workshop in FY2008

Recent Activities and Plans
Goals 2 and 3: Diseases in Old Age

- Factors in old age that influence risk or progression
- Age-related differences in accuracy of diagnostic measures or in responses to interventions
- Test improved diagnostic or therapeutic approaches based on above data

- Cardiovascular Disease in Older Patients
  - Society for Geriatric Cardiology Conference Series: Pivotal Research in Cardiology in the Elderly
    - Acute Coronary Syndromes (2002)
    - Heart Failure (2004)
    - Cardiac Arrhythmias in the Elderly (2006)
    - Preventive Cardiology in the Elderly (2007)

Recent Activities and Plans
Goals 2 and 3: Diseases in Old Age

- Anemia in the Elderly
  - American Society of Hematology Workshop
  - RFA on Anemia in the Elderly (with NHLBI)
  - GCG Clinical Trials Workshop
- Cancer in the Elderly
  - NIA/NCI P20 Program
- Venous Thrombosis and Thromboembolism
  - US Surgeon General's Workshop
  - American Society of Hematology Workshop
  - RFA in progress (with NHLBI and ODS)

Recent Activities and Plans
Goals 2 and 3: Diseases in Old Age

- New Areas
  - Hypertension, Renal Function, Kidney Disease
  - Pulmonary Disease
    - Workshop on the Aging Lung (with BAP)
    - Asthma in the Elderly
  - Endocrinology
    - Thyroid Function and Disease in Older Patients
  - Infectious Diseases
    - HIV/AIDS in Older Persons
    - Preventing and Controlling Infections in Aggregate Living Facilities

Recent Activities and Plans
Goal 4: Comorbidity

Focus: Clinical and functional effects of interactions of diseases and treatments

- Efficacy of interventions to prevent or treat adverse interactions, and multiple coexisting risk factors for adverse outcomes
- Clinical and functional effects of interactions of ***comorbid conditions***, and of their therapies

- NIA Task Force on Comorbidity
- RFA: Developing Interventions for Multiple Morbidities
- AGS Conference on Comorbidity
- Animal Models of Comorbidity in Aging Workshop (with BAP, NNA, and other ICs)

Recent Activities and Plans
Goal 5: Unrecognized Pathologies

Goal 5: Identify **previously unrecognized pathologies** in older persons and develop and test diagnostic and treatment approaches.

- Frailty
  - PA on Frailty in Old Age: Pathophysiology and Interventions
  - AGS Conference on Frailty in Older Adults
- Cytokinemia
  - RFA on Inflammation, Inflammatory Mediators, and Aging (with BAP, NNA)

Recent Activities and Plans
Goal 5: Unrecognized Pathologies

- Pathologic consequences of putative aging mechanisms (with Goals 6 and 7)
  - Mitochondrial changes
    - Lipid metabolism
    - Insulin sensitivity
  - Impaired endothelial function
    - Vascular stiffening
    - Exercise tolerance
- Low Testosterone
  - Institute of Medicine Report
  - RFA for Planning Project for Testosterone Trials in Aging Men

Recent Activities and Plans

Cross-Cutting Issue: Selecting Types of Outcome Measures

Problem:

- Many ways to characterize outcomes in old age, each addressing an important aspect of clinical problems (e.g., functional status, disease-related outcomes, QOL)
- Outcomes in epidemiologic and intervention studies depend on investigators' interests and design considerations
- Potential advantage to expand outcome measures to provide additional information on study topic and to assist in planning intervention studies

Plan:

- Workshop to identify criteria for selecting range of measures and appropriate analytic approaches for individual studies

Goals 6/7: Characterize **changes across the life span** that influence the risk of age-related diseases. Identify their interactions and determinants of their rates of progression. Identify significant aging **changes occurring in early and mid-life** and determine consequences for changes in later life.

Recent Activities and Plans:

- Longitudinal Data on Aging Working Group (with BAP, NNA and BSR)
- NIA Database of Longitudinal Studies
- NIA and NIBIB Meeting on Bioimaging and Sensor Technologies and SBIR PA "Applications of Imaging and Sensor Technologies for Clinical Aging Research"

Recent Activities and Plans:

- NIA RFA,"Aging Across the Life Span: Longitudinal Data Analyses" (with NNA and BSR)
- NIH Workshop on Assessing and Improving Measures of Hot Flashes (NIA co-sponsor)
- NIH State-of-the-Science Conference on Management of Menopause-Related Symptoms
- NIA RFA,"Biology of the Perimenopause: Impact on Health and Aging in Non-Reproductive Somatic and Neuronal Tissues" (BAP)

Recent Activities and Plans:

- Recent focus on “juvenile protective factors”
  - active during one or more developmental stages, and
  - prevent specific adverse changes from occurring when they they are active, and
  - diminish or disappear at or before maturity
- NIA and NICHD Meeting on Factors in Youth that Protect Against Aging Processes (with BAP and NNA)
  - How to identify such factors, if they exist?
  - How to examine potential beneficial and/or adverse effects of such factors on aging in adults if they were maintained or restored after maturation?

Research Opportunities and Future Plans:

- Initiative on juvenile protective factors
- Think Tank on New Interventions for Menopausal Symptoms (NIMS)
- Meetings focusing on translation of findings on mitochondrial dysfunction and endothelial dysfunction
- Statistical Methods for Longitudinal Data Workshop
- Second Meeting of the LDA Working Group- Focus on translational epidemiologic research

Goal 8: Identify protective factors contributing to **exceptionally healthy aging**, e.g., exceptional longevity, exceptional “health span” or exceptionally slow rates of decline in physiologic characteristics.

Recent Activities and Plans

Complementary Strategies to Identify Genetic and Other Factors that Contribute to Exceptional Survival in Humans

Longevity Consortium	Long Life Family Study
Large population cohorts	Long-lived families
Identify effects of **common** genetic variants with **small-moderate** effects	Identify patterns of inheritance; **rare** genetic variants with **large** effects
Collaboration among basic scientists and epidemiologists: Test effects of candidate loci implicated by laboratory animal studies	Collaboration among geneticists, epidemiologists, and demographers: Develop methods to analyze familial survival data

Recent Activities and Plans

- NIA RFA, "Aging Across the Life Span: Longitudinal Data Analyses"
- Workshop on Uses of Survival Data in Research on Factors Affecting Aging (with BAP and BSR)
- Development of new projects from findings generated by current projects
  - Longevity Consortium: Genetic association and confirmation studies
  - Long Life Family Study: Familial patterns and phenotypes of exceptional survival
- Participation in NIH-wide initiatives such as the "Genes and Environment Initiative" to provide insights into contributors for exceptional survival

Goal 9: Develop and test human interventions that may affect aging rates, life span, or health span.

- **Clinical Trials Operations Support Center (CTOSC)**
  - Development, implementation, and maintenance of an effective NIA-wide clinical trials quality assurance and safety surveillance program
  - Clinical trials operations and quality assurance
  - Safety-related operations
  - Biostatistics
- **Standing Advisory Group**
- **Clinical Trials Networks**

Research Opportunities for Clinical Trials in Aging

- Multiple-risk-factor-reduction trials
- Interventions to prevent subsequent additional morbidities in high-risk groups
- Trials to prevent disabilities
- Interventions against anemia and/or low hemoglobin
- Interventions to alleviate or prevent symptoms and complaints

Interfaces with Clinical Specialties

GCG supports educational and research goals of professional organizations with missions relevant to research in aging by:

- Participation in educational and research activities at annual scientific meetings
- Collaboration in planning workshops to identify research opportunities
- Service on standing committees and review groups
- Support of conferences and Summer Training Institutes
- Development of research initiatives in scientific areas of mutual interest

Interfaces with Clinical Specialties

Future Program Development Considerations

- What kind of research do we want?
  - How to focus specialty research on problems of the elderly
- What incentives will get sustained engagement of strong researchers from these fields on important aging problems?
  - Interactions with professional societies
  - Funding opportunities as incentives
- How can NIA stimulate interdisciplinary collaborations among the clinical specialties on aging topics?
- How can NIA best interact with other NIH components to enhance the involvement of clinical specialties in aging research?

Aging Translational Research

Domains of Interest

- Clinical implications of basic aging research findings
- Development of new interventions/diagnostics based on clinical and/or basic aging research
- Follow-up of findings from small-scale clinical studies to larger scale studies or trials
- Increased incorporation of new knowledge from intervention studies into health practices of individuals and caregivers

Program Activities

NIA Workshop on Aging Translational Research (BAP)

- Most researchers do not understand the process of moving an idea from basic research to the clinical realm.
- "Educational" component to address regulatory issues, IP and patent issues, Pharma perspective on translational research and existing NIH Roadmap Initiatives
  - Clinical Translational Science Awards (CTSAs)
  - NIH-Rapid Access Intervention Development (RAID) Pilot Program
- Discussion of research opportunities on:
  - Diastolic Dysfunction
  - Mitochondrial Dysfunction/Insulin Resistance
  - Immune Function/Vaccine Response
  - Physical Function/ Disability

Developing Clinician-Investigators in Aging

- Need for differing types of clinician-investigators
- Interfaces with multiple clinical specialties
- Attracting high-quality students, fellows, and junior faculty
- Providing continuum of support through career development pathway
- Enhancing quality of mentorship

Research Career Development

Recent and Current Activities

- NACA Working Groups on clinical investigator career development (previous and upcoming)
- NIA-Beeson collaborative initiative (K-series awards)
- Targeted K08 RFA (Genetic Epidemiology and Aging)

Research Career Development

Future Plans/Potential New Strategies

- Collaborative career development initiatives with professional societies
- New targeted career development RFAs?
- Support for “pre-K” researchers (analogous to Williams, Jahnigen awards, possibly for longer duration)
- Emphasizing role of other mechanisms besides career awards
  - Mentor’s awards and Mentoring awards
  - Other “start-up” mechanisms (R03, R21)
  - New Investigators R01
- Expanding junior aging researchers’ use of NIH Roadmap infrastructure, e.g., Clinical and Translational Science Awards

"They're harmless when they're alone, but get a bunch of them together with a research grant and watch out."