



Advances in Geroscience: Impact on Healthspan and Chronic Disease

Meeting Site: Natcher Conference Center, Bethesda MD

Date: October 30th – November 1st, 2013

A Scientific Summit from the NIH Geroscience Interest Group

Day 1

Opening 8:00 am – 8:15 am

Welcoming Remarks: **Francis Collins (NIH)** - The NIH and Aging Research (tentative)

Session I: Keynote Presentations 8:15 am – 9:45 am

Keynote speaker: **Christopher Murray (Univ. Wash.)** - The Global Burden of Disease (tentative)

Keynote speaker: **Brian Kennedy (Buck Inst)** - Current Status on Basic Research on Aging (tentative)

Keynote speaker: **Linda Fried (Columbia)** - Frailty and Relationships to Disease in the Elderly

Break 9:45 am – 10:15 am

Session II: Inflammation 10:15am – 12:00 pm

Co-Chairs: **Claudio Franceschi (Universita di Bologna)** - *Introduction*
Judith Campisi (Buck Institute) - *Wrap-up*

Panelists:

1. **Luigi Ferrucci (NIA/NIH)** - How do inflammatory processes associated with chronic disease differ from those due to acute insults/disease?
2. **Jim Kirkland (Mayo Clinic)** - How do local and systemic sources of chronic inflammation contribute to chronic disease processes?
3. **Jayakrishna Ambati (University of Kentucky)** - What are the core inflammatory components or pathways that cause inflammatory damage across a spectrum of chronic diseases?
4. **V. Deep Dixit (Yale)** - Can age-associated chronic inflammation be adaptive or beneficial or is it always pathogenic?
5. **Russ Tracy (University of Vermont)** - Are there interventions that can alter the dynamics of inflammation and prevent/limit chronic disease?

Lunch 12:00 pm – 1:00 pm

Session III: Adaptation to Stress 1:00 pm – 2:45 pm

Co-Chairs: **Elissa Epel (UCSF)** - *Introduction*
Gordon Lithgow (Buck Institute) - *Wrap-up*

Panelists:

1. **Firdaus Dhabhar (Stanford)** - Under what conditions is stress linked to disease processes?

2. **Gretchen Darlington (Baylor)** - How does stress exposure and the cellular response to stress regulate aging?
3. **Richard Miller (Michigan)** - Can we harness the mechanisms of successful adaptation to stress to slow aging and prevent age-related diseases?
4. **Nathan LeBrasseur (Mayo)** - How does exercise affect stress and stress-related diseases?
5. **Steve Cole (UCLA)** - How does the human genome's response to stress regulate aging?

Break

2:45 pm – 3:15 pm

Session IV: Epigenetics and Regulatory RNA

3:15 pm – 5:00 pm

Co-Chairs: **Shelley Berger (UPenn)** - *Introduction*
Anne Brunet (Stanford) - *Wrap-up*

Panelists:

1. **David Sinclair (Harvard)** - What drives epigenetic change during aging and is it preventable?
2. **Stuart Kim (Stanford)** - Is there an underlying epigenetic clock that determines the rate of normal aging?
3. **Li-huei Tsai (MIT)** - Cognitive aging and neurodegeneration: a slope or an epigenetic switch?
4. **Peter Adams (Beatson Institute)** - Could age-dependent 'plastic entities' (metabolic network and chromatin changes) be responsible for the age-dependency of cancer?
5. **Juan Carlos Izpisua Belmonte (Salk Institute)** - Progeriatric diseases: cellular models and possible cures.

Day 2

Session V: Metabolism

8:00 am – 9:45 am

Co-Chairs: **Chris Newgard (Duke)** - *Introduction*
Jeffrey Pessin (Albert Einstein) - *Wrap-up*

Panelists:

1. **Morrie Birnbaum (UPENN)** - How do signaling pathways that regulate growth and metabolism contribute to ageing?
2. **Bill Evans (GlaxoSmithKline)** - Implications of age-associated increased nutrient requirements and decreased energy needs
3. **Deb Muoio (Duke)** - Futile cycles as targets of metabolic control in aging and disease
4. **Dongsheng Cai (Albert Einstein)** - Hypothalamic neurodegeneration: a common link between metabolic disease and aging
5. **Roman Kondratov (Cleveland State University)** - Circadian desynchronization: chronic metabolic disease of aging.

Break

9:45 am – 10:15 am

Session VI: Macromolecular Damage

10:15am – 12:00 pm

Co-Chairs: **Arlan Richardson (UT Health Science Center)** - *Introduction*
Eric Schadt (Mt. Sinai) - *Wrap-up*

Panelists:

1. **Jan Vijg (Einstein)** - Does DNA damage or mutations ever rise to high enough frequencies to directly cause functional decline?
2. **Bill Bonner (NIH/NCI)** - Are chromatin changes a result of aging, a cause of aging, or both?
3. **Rod Levine (NIH/NHLBI)** - Does protein oxidation during aging really matter?
4. **Dean Jones (Emory)** - What therapeutic strategies prevent or remedy changes in redox potential?
5. **Michael Yaffe (MIT)** - How does signaling in the surrounding microenvironment affect the response of cells to macromolecular damage?

Lunch

12:00 pm – 1:00 pm

Session VII: Proteostasis

1:00 pm – 2:45 pm

Co-Chairs: **Ana Maria Cuervo (Albert Einstein)** - *Introduction*
Richard Morimoto (Northwestern) - *Wrap-up*

Panelists:

1. **Alfred Goldberg (Harvard)** - Does aging impair the proteostasis network leading to proteotoxic stress?
2. **Roberta Gottlieb (UCSD)** - Mitophagy, impact of organelle quality control in proteostasis.
3. **Judith Frydman (Stanford)** - How are proteostatic mechanisms regulated and how are these mechanism affected by aging?
4. **Randal Kaufman (Sanford-Burnham MRI)** - How does impaired proteostasis in one cell or tissue affect the organism as a whole?
5. **Jeffrey Kelly (Scripps)** - Can impaired proteostasis be a therapeutic target?

Break

2:45 pm – 3:15 pm

Session VIII: Stem Cells and Regeneration

3:15 pm – 5:00 pm

Co-Chairs: **Mahendra Rao (NIH)** - *Introduction*
Tom Rando (Stanford) - *Wrap-up*

Panelists:

1. **Danica Chen (UC Berkeley)** - How do stem cells change intrinsically with age and what are the implications for stem cell based therapeutics?
2. **Hartmut Geiger (CCHMC)** - How does aging alter the local stem cell niche and does this contribute to chronic disease progression?
3. **Tony Wyss-Coray (Stanford)** - How do systemic factors and regulators of aging impact stem cells?
4. **Richard Lee (Harvard)** - How do you repair whole organs in an aging system?
5. **Irina Conboy (UC Berkeley)** - Is stem cell rejuvenation a likely candidate for therapeutics against chronic disease?

Day 3

Session IX: Executive Closed Session

9:00 am – 12:00 am

Co-Chairs present a summary and recommendations for each Session