



## MIDUS Study Goes Forward with Five More Years of Funding

We are pleased to announce that MIDUS, the national study administered by the UW Institute on Aging, will continue for another five years, thanks to a new grant from the National Institute on Aging. MIDUS (Mid-life in the United States) looks at how biological, psychological, and social factors work together to influence health as we age across the decades of adult life. Grant support totaling nearly \$90 million has allowed MIDUS to evolve and expand since it began over 20 years ago.

### Collecting Multiple Waves of Data

- In 1995, MIDUS was the first major study to explore midlife, the longest segment of our life span. Over 7000 Americans from across the country, aged 25-74, were surveyed about an unprecedented range of topics, including: personality, psychological well-being, positive & negative emotions, sense of control, goal orientation, relationships, employment, and religion/spirituality, along with extensive mental and physical health measures.
- Since then, MIDUS has collected additional waves of data at roughly 9-10 year intervals, surveying the same adults to see what has changed as they age, looking for factors that create vulnerability to poor health or that promote well-being.

### Continually Adding New Content

With each wave, MIDUS added new projects that offered greater depth in key areas. These are also followed over time:

- **Cognition:** a phone-based test that tracks age-related changes in a diverse array of thinking abilities.
- **Daily Stress:** obtains eight days of personal experiences & emotional reactions along with daily measurements of stress hormones (salivary cortisol) to study how short-term stress impacts health.

- **Biomarkers:** a 2-day clinic visit with a physical exam & tests (blood pressure, bone density, hormone levels, etc.), that allows survey data to be linked with biological risk factors involved in various disease outcomes.
- **Neuroscience:** examines the brain's response to emotional stimuli, looking at the neural pathways involved in the regulation of emotion (reactivity and recovery).

Two new projects will be added in this next phase of funding:

- **Gene Expression:** will study whether environmental conditions, such as social isolation or socioeconomic inequality, affect genetic influences on inflammatory processes that promote age-related diseases.
- **Retention-Early Warning:** will look at the interplay of attrition (participant dropout rate) and early warning signs for later life health decline via home visit assessments of people who have dropped out of the study.

### Expanding the Sample

- From the beginning, MIDUS included samples of twins & siblings to allow for the study of genetic influences.
- At the second wave, a sample of African Americans from Milwaukee was added to look at issues of race and health.
- A recent "Refresher" initiative doubled the size of both the national sample & the Milwaukee African American sample, so that MIDUS now comprises over 12,000 participants.

Ultimately, MIDUS is unique because it captures enormous amounts of psychosocial & biological data, including the minutia of daily life, to track long-term changes in health. Scientists have used this data to greatly extend what is known about factors that increase or decrease risk for later life health decline, many of which can be used as targets for intervention.

### MIDUS asks:

- *How well are Americans doing during mid-life?*
- *Why are some able to face the challenges of aging better than others?*

### The answers have been making an impact:

- Scientists have used the publically available MIDUS data to publish over 800 articles in more than 200 scientific journals, covering diverse topics, which are categorized at:

[midus.wisc.edu/findings](http://midus.wisc.edu/findings)





There's been an explosion in scientific interest in MIDUS biomarker data, which links life experiences to how our bodies actually function.

More than 130 articles have been published using the publically available biomarker data, most appearing in the last three years.

## MIDUS Connects Life Experiences to Biological Functioning

The MIDUS Biomarker Project will continue into its next wave thanks to the new grant from the National Institute on Aging. The original 1200 participants will be invited back for a second clinic visit to see how their biomarkers have changed (blood pressure, hormone levels, etc.) since their first visit 9-10 years ago.

The Biomarker Project helps scientists link subjective reports from the MIDUS survey about life experiences (such as daily behaviors, social ties, emotions, childhood events) to objective biological measures, by collecting data on heart health, brain function, metabolism, stress hormones, inflammation, wear & tear on bodily systems, and bone health. Some recent results include:

### Spending Money on Others Can be Good for Your Blood Pressure:

- Researchers looked at adults 55 & older who had high blood pressure at the beginning of the study. Most (86%) reported donating money to religious, political, or other types of organizations.
- The more money people donated, the lower their blood pressure was two years later, even when variables known to influence heart health were taken into account. [Whillans, 2016]



### Positive Emotions May Reduce Diabetes Risk:

- Those who reported that one of their parents had diabetes were three times more likely to have diabetes themselves.
- However, those who also reported more positive feelings during the past 30 days (being cheerful, extremely happy, calm & peaceful, satisfied) showed a significantly lower risk for diabetes.

- Positive feelings did not influence diabetes risk for those without a parental history of the disease. [Tsenkova et al., 2016]

### Support During Childhood Predicts Better Health in Midlife:

- Allostatic load is a measure of the wear & tear on the body that can result over time from long term hardship. Those who reported greater social support during childhood (they felt taken care of and protected by their families), showed healthier allostatic loads in midlife.
- While many studies have shown that negative childhood experiences are linked to worse adult health, this study implies that positive experiences can also have enduring effects that are beneficial to health. [Slopen et al., 2016]



### Living in Low Income Neighborhoods Increases Wear & Tear on the Body:

- People living in poorer neighborhoods showed increased health risks indicated by higher allostatic load. This relationship was partially accounted for by two factors:
- Those who reported more anxiety (such as being easily startled) had the higher allostatic loads that are indicative of long term hardship, supporting the theory that living in poor neighborhoods can represent a situation of chronic stress.
- Those living in poor neighborhoods who ate fast food more often, who smoked, and who exercised less, also had higher allostatic loads. This suggests that inter-

ventions at the community level that promote health-enhancing behaviors (such as increasing access to healthier foods & safe places to exercise) may help improve health in disadvantaged neighborhoods.



[Robinette et al., 2016]

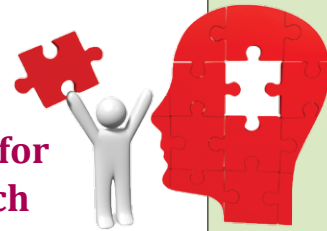
### Psychological Resources & Social Status Interact to Affect Inflammation

- Chronic inflammation in bodily tissues is associated with physical decline and age-related illnesses, such as diabetes and heart disease. MIDUS scientists have investigated links between markers of inflammation, social standing (income, level of education, job prestige) and psychological resources (optimism, sense of control, self-esteem).
- Results showed that men of *lower* social standing who had *more* psychological resources showed *less* inflammation (measured by IL-6).
- Unexpectedly, men of *higher* social status who had *more* psychological resources had *higher* inflammation (both IL-6 & CRP), which was not explained by having more stress, negative emotions, or engaging in unhealthy activities. The authors suggest that lifestyles that reward striving for money & status may come with a physical cost that eventually leads to higher inflammation.
- The absence of findings for women was puzzling. Part of the answer may be that the range of social statuses among women was more constricted, most likely because they have less access to higher status jobs and make less money than men in the same occupations.



[Elliot & Chapman, 2016]

## Anderson Wins Breakthrough in Gerontology Award for Alzheimer's Research



IOA Affiliate Rozalyn Anderson (Assoc. Prof., Dept. of Medicine- Geriatrics, UW-Madison) has won one of two prestigious 2016 Glenn/AFAR Breakthroughs in Gerontology Awards from the American Federation for Aging Research and the Glenn Foundation for Medical Research. The two-year grant (\$200,000) supports research that builds on early discoveries and shows potential for clinically relevant treatments.

Dr. Anderson and her group are studying changes in brain metabolism that occur naturally with age and are believed to contribute to a range of diseases, including Alzheimer's. They are looking at an enzyme known as GSK3b (glycogen synthase kinase 3 beta) that promotes the amyloid plaques and neurofibrillary tangles that are normally seen in the brains of people with Alzheimer's. Dr. Anderson's lab found that levels of GSK3b are lower in the brains of monkeys who have been fed a restricted calorie diet.

Dr. Anderson's lab has also shown that GSK3b is responsible for regulating energy metabolism, and will be testing the hypothesis that activation of GSK3b, caused by age and/or Alzheimer's, leads to metabolic dysfunction in the hippocampus, an area of the brain that plays an important role in memory and is one of the first areas to suffer damage from Alzheimer's. By identifying processes that are responsive to changes in GSK3b, Dr. Anderson hopes to find factors that can reduce age-related problems with memory loss and reduce our age-related increase in vulnerability to Alzheimer's. More information about the award is at: [www.afar.org/grantees/detail/rozalyn-anderson](http://www.afar.org/grantees/detail/rozalyn-anderson)

### AGING NEWS

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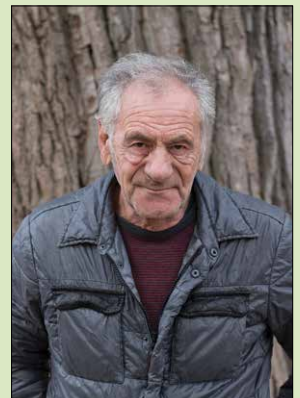
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Subscriptions are free, see:  
[aging.wisc.edu/publications/newsletter.php](http://aging.wisc.edu/publications/newsletter.php)

*Over the years  
your bodies  
become walking  
autobiographies,  
telling friends and  
strangers alike  
of the minor and  
major stresses  
of your lives.*

- Marilyn Ferguson,  
American writer



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*We've put more effort into helping folks reach old age than into helping them enjoy it.*

~ Frank Howard Clark,  
American Screenwriter

*Resources from IOA's Colloquium on Aging are available at:*  
[aging.wisc.edu/outreach/colloquium.php](http://aging.wisc.edu/outreach/colloquium.php)

### **VIEW PRESENTATIONS from the LAST EVENT:**



Keynote:

#### **Challenging the Bard: Well-Being and Health into Shakespeare's 7th Age**

*Elliot Friedman, PhD,  
Purdue University*

#### **A Novel Systems Biology Approach to Sarcopenia: New Molecular Insights Enabled by Cutting-edge Technologies**

*Ying Ge, PhD, UW-Madison*

#### **Maintenance of Balance with Aging: Choose Your Steps Carefully**

*Darryl G. Thelen, PhD, UW-Madison*

#### **Who Cares? The People Who Support Older Adult Health and What They Need**

*Barbara Bowers, PhD, UW-Madison*

### **FIND LOCAL AGING ORGANIZATIONS:**

See descriptions from 50 local organizations that attended our Health & Resource Fair, and offer resources for positive aging.



### **SEE THE AWARD WINNING POSTER:**

**by Julie A. Kirsch**

*Hardships of the Great Recession and Health:  
Understanding Varieties of Vulnerability*

**MARK YOUR CALENDAR!**

*the 29th Annual Colloquium on Aging*  
will be held Thurs., Oct. 12, 2017  
at the UW-Madison Gordon Dining & Event Center  
Registration opens the first Monday in August (8/7/17)