

*I fear vastly more a futile,  
incompetent old age than  
I do any form of death.*

—William Allen White

# aging news

NEWSLETTER OF THE INSTITUTE ON AGING (IOA) | UNIVERSITY OF WISCONSIN-MADISON

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## Forums on Improving Long-Term Care in Wisconsin

IOA Affiliate **Barb Bowers** (Prof. & Assoc. Dean for Research, School of Nursing, UW-Madison) was recently involved in Part I of a forum on long-term care in Wisconsin that focused on improving care in nursing homes. Although Wisconsin scores well on key measures in state-by-state comparisons, it is not immune to workforce challenges and systemic issues that threaten care quality and increase nursing home costs. Forum topics on these and other issues included long term care trends, quality measurement, the care transition process between hospitals and nursing homes, innovative care models, resident rights, and palliative care (preventing patient suffering).

As part of the event, Prof. Bowers gave a talk on *Long Term Care Workforce Innovations*, which included an overview of workforce concerns. For instance, 80-90% of direct care to residents in nursing homes is provided by certified nurse assistants (CNAs), 22% of whom have not completed high school, as compared to CNAs in hospitals, who provide only 5-10% of direct care and 90% of whom have a high school diploma. Further,

CNAs have a high annual turnover rate of nearly 40%, due to various causes such as heavy work load and lack of adequate training.

The talk ended with an overview of promising innovations, such as the Eden Alternative, a non-profit that provides staff training intended to de-institutionalize the environment of long-term care,

and the Green House model, that transforms both the physical environment and the organization of care. Both programs address the loneliness, helplessness, and boredom that can make life difficult in many facilities, and emphasizes that companionship, the opportunity to give meaningful care to other living beings, and variety and spontaneity can eliminate

these problems and should be available in all habitats where elders live.

Part II of the Evidence-Based Health Policy Project Long Term Care Forum will be held this Fall and will focus on home and community-based long-term care. For more information and access to presentations from Part I, see the Events section at: [www.evidencebasedhealthpolicy.org](http://www.evidencebasedhealthpolicy.org)



***Nursing homes that  
adopt the Eden  
Alternative typically  
include close contact  
with plants, animals,  
and children.***

# award winning speakers at the next Colloquium



## Lessons on Aging from Japan

A recent article by several IOA Affiliates (**Christopher Coe**, Prof. Psychology; **Carol Ryff**, Director, and **Gayle Love**, Researcher, Institute on Aging; all from UW-Madison) and their colleagues has won the inaugural prize for the *Best Research in Health & Society* at UW-Madison. It was awarded by the Robert Wood Johnson Health & Society Scholars Program for scholarship addressing population health issues. The article used MIDUS & MIDJA (Mid-life in Japan) data to compare aging in Japan & the U.S.

Research has shown that older age is commonly characterized by a decline in immune system function, which is often accompanied by a rise in inflammatory processes that irritate numerous tissues and contributes to diabetes and heart disease. These normal age-related changes appear to be compounded by obesity, a high fat diet, inactivity, and work stress. This study tracked these age-related changes by measuring proteins in the blood that indicate inflammation: interleukin-6 (IL-6), C-reactive protein, and fibrinogen.

Most of what is known about these proteins comes from research on Europeans and Americans of European descent. This study instead examined 382 Japanese, 976 Caucasian Americans, and 233 African Americans.

One of the more dramatic differences found was in BMIs (body mass index). 44% of the American participants were overweight enough to be considered obese, whereas less than 1% of the Japanese were in this category.

Because IL-6 is associated with obesity (it is released by fat cells as well as white blood cells) researchers controlled for differences in BMI, but IL-6 levels differed significantly among the three groups even after taking weight into consideration. The Japanese had the healthiest profiles, with markedly lower IL-6 values. African-American participants had the highest levels of all three of the measured proteins.

Different diets and lifestyles influence IL-6 and are associated with population differences in the prevalence of heart disease, and perhaps even a person's ultimate life span. Prof. Coe will be sharing more insights about aging from comparisons between Japan and the U.S. at the IOA Colloquium (see opposite page).

**Source:** Coe, C. L., Love, G. D., Karasawa, M., Kawakami, N., Kitayama, S., Markus, H. R., . . . Ryff, C. D. (2011). Population differences in proinflammatory biology: Japanese have healthier profiles than Americans. *Brain, Behavior, and Immunity*, 25(3), 494-502. doi:10.1016/j.bbi.2010.11.013

## Aging & Eating Enjoyment

IOA Affiliate **JoAnne Robbins** (Prof., UW Dept. of Medicine; Assoc. Dir. for Research, Veterans Hospital Geriatric Research Education & Clinical Center), has received the 2012 *Frank R. Kleffner Lifetime Clinical Career Award* from the Wisconsin Speech-Language Pathology & Audiology Association. The Kleffner Award is intended for an individual who has made outstanding contributions to clinical science and practice in communication science and disorders over a twenty year or longer period.

Dr. Robbins' career has focused on research and clinical care of patients with swallowing problems (called dysphagia). Dysphagia affects more than 18 million adults and many children annually. If untreated, swallowing problems can cause food, liquid, and saliva to be misdirected into the airway, which may result in pneumonia, malnutrition, and/or dehydration. Dysphagia is commonly associated with age-related health issues such as stroke and Parkinson's disease.

Dr. Robbins' work has also illuminated declines in swallowing ability associated with healthy aging. The muscles of the mouth and throat get weaker as people age, preventing adequate propulsion of food. Recent work by Dr. Robbins has shown that exercises for the head and neck muscles can counteract some of these age-related changes.

Dr. Robbins currently holds three U.S. patents, one of which is for the Madison Oral Strengthening Therapeutic (MOST) device, a custom fit mouthpiece against which patients press to exercise their swallowing muscles. Preliminary research with the device has shown that after 8 weeks of exercise, stroke patients can improve swallowing safety and begin to enjoy the simple act of eating a meal. Prof. Robbins will be sharing more results from her research at the IOA Colloquium (see opposite page).

*Differences in diet may in part explain why the Japanese have the longest lifespans worldwide.*



# 24<sup>th</sup> Annual Colloquium on Aging



## Keynote

### When We Test, We Do Stress: Effects of Stress on Memory Performance in Aging

**Sonia Lupien, PhD**

*Director, Centre for Studies on Human Stress; Scientific Director, Research Centre, Mental Health Institute of University of Montreal*

It is widely accepted by scientists, health care professionals, and the general public that memory capacities decline with age. However, studies performed in the last two decades show that exposure to stressful situations can acutely decrease memory performance in older adults. This presentation will summarize studies about stress and memory performance in aging. The implications of these results for clinicians and scientists testing memory performance of older adults will be discussed.



### Lessons About the Biology of Aging from Japan

**Christopher L. Coe, PhD**

*Professor, Dept. of Psychology; Director, Harlow Center for Biological Psychology; UW-Madison*

Cultural and biological aspects of aging vary across countries. Many factors including diet influence age-related aspects of health and longevity. This presentation will focus on findings from a comparison of the biology of aging in American to Japanese adults (the MIDUS & MIDJA projects).



### Aging and Eating Enjoyment: Sustainability and Rehabilitation

**JoAnne Robbins, PhD, CCC-SLP, BRS-S**

*Professor, Dept. of Medicine, UW-Madison; Assoc. Dir., Geriatric Research Education & Clinical Center (GRECC); Board Recognized Swallowing Specialist*

Swallowing changes each decade after 40 years of age in healthy adults. Aging is a major risk factor for swallowing disorders, also known as dysphagia. The insidious neurophysiologic changes underlying presbyphagia (age-related swallowing changes that occur in otherwise healthy older adults) will be demonstrated. 18 million Americans suffer swallowing disorders, due to a variety of diseases and conditions that become more common with increasing age. Innovative, simple methods to compensate for, as well as new device-driven therapies to rehabilitate the swallow and bring enjoyment back to dining, will be presented.



### The Importance of Neighborhoods for Health and Wellbeing at Older Ages

**Stephanie A. Robert, PhD**

*Professor, School of Social Work, UW-Madison*

When talking about the factors that impact health at older ages, we often emphasize personal characteristics and behaviors. Yet there are many aspects of the broader social and economic context that can affect health. In particular, characteristics of our neighborhoods—the contexts in which we live, play, and work—can affect our health. This talk will highlight current research on the importance of neighborhood context to the health and wellbeing of older adults.



## Health & Resource Fair

Resources to Improve Quality of Life:

*Social & Educational Programs  
Support for Independent Living  
Volunteer Opportunities  
Legal & Legislative Advocacy  
Retirement Communities  
Osteoporosis Screening  
Blood Pressure Testing  
Alzheimer's Treatment  
Swallowing Disorders  
Fitness & Nutrition  
Hospice Care*

## Poster Session

Meet with UW-Madison faculty, students & advanced trainees presenting their recent aging research.

## New Investigator Awards

Awarded to new UW-Madison researchers in recognition of outstanding achievement in biomedical, psychosocial, or clinical/applied aging research.

## Details

Sponsored by the Institute on Aging. CEUs will be offered. Registration will open in August when the registration brochure is mailed. If you are not on the mailing list, sign up via our website, or contact:  
(608) 262-1818  
[aging@ssc.wisc.edu](mailto:aging@ssc.wisc.edu)

Upcoming details will be posted at:  
**[aging.wisc.edu](http://aging.wisc.edu)**

**SAVE THE DATE: TUESDAY, OCTOBER 2, 2012**  
Registration opens in August

**FREE and OPEN to the PUBLIC**  
Held at Monona Terrace  
in Madison, WI

# affiliate news

For more information on the work of IOA Affiliated Faculty and Researchers at UW-Madison, see: [www.aging.wisc.edu/research/affilindex.php](http://www.aging.wisc.edu/research/affilindex.php)

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newsletter.php](http://aging.wisc.edu/publications/newsletter.php)

*Later onset of  
menopause is  
associated with  
longer lifespans.*



## Age at Menopause Predicts Lifespan

IOA Affiliate **Craig Atwood** (Assoc. Prof., Geriatrics, UW-Madison) recently co-authored an article that provided evidence supporting the Reproductive-Cell Cycle Theory of Aging. The theory defines aging as change in an organism over time, such that whatever controls the chemical reactions that regulate the major cellular changes—growth, development, and death—also controls aging. The reproductive hormones of the HPG axis (hypothalamic-pituitary-gonadal axis), such as estrogen and testosterone, direct these cellular changes. HPG axis hormones normally promote development of an organism early in life to achieve reproduction. When the HPG axis becomes unbalanced later in life (e.g., during menopause), cell death and dysfunction occur, which leads to the accumulated tissue damage that happens over time and is associated with aging.

Thus the theory suggests that the hormones that regulate reproduction also regulate aging, and predicts that the longer the reproductive hormones of the HPG axis remain in equilibrium, the longer an organism will live. This was tested in a study of over 5,000 women whose age at the time of their last menstrual cycle was compared to their life spans. Results showed that age at menopause did significantly predict mortality. There was a 2.6% reduction in mortality for every year of later menopause such that women who reached menopause at age 40 had only a 39% chance of surviving to age 90, whereas those who didn't reach it until age 55 had a 53% chance of surviving to 90. Surgical

and natural menopause resulted in identical lifespan probabilities and other reproductive traits were not found to be significantly predictive of mortality.

This data supports the theory that aging is controlled by the reproductive hormones of the HPG axis. More supporting evidence for the theory was discussed in the Spring/Summer 2011 issue of this newsletter, which can be viewed on our website ([aging.wisc.edu/publications/newsletter.php](http://aging.wisc.edu/publications/newsletter.php)).

**Source:** Yonker, J., Chang, V., Roetker, N., Hauser, T., Hauser, R., & Atwood, C. (2012). *Hypothalamic–pituitary–gonadal axis homeostasis predicts longevity. Age. Advance online publication.* doi:10.1007/s11357-011-9342-1

## Possible Key to Blindness & Other Degenerative Nerve Diseases

IOA Affiliate **Nansi Jo Colley** (Prof., Ophthalmology and Visual Sciences, UW-Madison) is senior author of a recent publication that announced the discovery of a powerful protein that may shed light on blindness and other diseases caused by neurodegeneration (the progressive deterioration of tissues or organs over time).

The new protein, which has been named XPORT, was discovered to be a molecular chaperone for two proteins that are key to sensory activities in the eye. Rhodopsin is a protein responsible for absorbing light. The second protein, TRP, is involved with getting calcium into cells involved in vision, taste, smell, hearing, and touch. XPORT chaperones, or guides, these two proteins from the place where they are made in the cell to the location where they do their jobs. Chaperones help prevent malfunctions, such as proteins that are misfolded so that they do not



assume a functional shape. An accumulation of misfolded proteins can lead to cell death, in this case producing blindness.

Colley and her team discovered XPORT as a result of screening a collection of 900 fruit flies that undergo neurodegeneration of the retina that lines the inner surface of the eye. Their experiments showed that XPORT forms a complex with rhodopsin and TRP, and is required to successfully transport the two proteins to a specific location on the cell surface. They also determined that XPORT is essential for cell survival, that mutations in XPORT prevented the two proteins from moving correctly, causing blindness in the fly. XPORT is only found in insects, but it is expected that a similar protein is at work in humans. Such yet-to-be-discovered chaperone proteins in the human eye and brain could help explain age-related macular degeneration (an eye disease that reduces



vision), as well as other neurodegenerative diseases such as Huntington's, Parkinson's, and Alzheimer's.

**Source:** Rosenbaum, E. E., Brehm, K. S., Vasiljevic, E., Liu, C.-H., Hardie, R. C., & Colley, N. J. (2011). Xport-dependent transport of TRP and rhodopsin. *Neuron*, 72(4), 602-615. doi:10.1016/j.neuron.2011.09.016

## AGING FACTS

*Vision trouble affects 18% of those 65 and older (15% of men and 19% of women). Among people age 85 and over, 28% reported trouble seeing.*

— Older Americans 2010: Key Indicators of Well-being at [agingstats.gov](http://agingstats.gov)



## new research grants

### Long-lived *Drosophila* Larvae for Studies of Synaptic Growth, Decay, and Repair

IOA Affiliate **Barry Ganetzky**, and former trainee on the IOA Biology of Aging Training Grant, **Daniel Miller** (Prof. & Asst. Scientist, respectively, Dept. of Genetics, UW-Madison), have been awarded an R21 grant. The goal of their project is to obtain new insights into synaptic growth, function, and stability by using an experimental system where the lifespan of mature fruit fly larvae has been greatly extended. Synapses are the structures that allow nerve cells to communicate with each other. Loss of synapses and nerve cells in the brain is typically seen in neurodegenerative diseases such as Alzheimer's.

### Quality of Life of Adults with Autism

IOA Affiliates **Marsha Mailick Seltzer** (Director, Waisman Center), **Jan Greenberg** (Prof., School of Social Work), and **Christopher Coe** (Prof., Psychology; all from UW-Madison), in collaboration with others, were recently awarded a grant from Autism Speaks to study the quality of life of adults with autism spectrum disorders (ASD) in early adulthood and midlife.

The research will reconceptualize quality of life for this population. It will investigate how trajectories of change in autism symptoms, behavior problems, functional abilities, and health over a 12 year period predict quality of life. It will also explore how telomere length is related to quality of life outcomes (telomeres are the tips of chromosomes that protect them from deterioration and are a biomarker indicative of aging). The results of this study have the potential to inform the design of interventions, treatments, and services aimed at enriching the lives of individuals with ASD and their families over the life course.





# new findings from MIDUS

Funded by the National Institute on Aging  
(P01 AG020166)



*MIDUS studies aging as a long-term journey involving multiple factors (psychological, social, biological). It began in 1995 with over 7000 participants, aged 25-74, and continues with follow-up studies at 10 year intervals. Over 400 publications have utilized MIDUS data. They are archived at: [midus.wisc.edu/findings](http://midus.wisc.edu/findings)*

*Those who were persistently poor throughout their lives had greater health risks.*

## History of Socioeconomic Status Affects Later Life Health

Research has documented that those with lower socioeconomic status (SES) tend to have poorer health. SES is a measure of one's social status based on economic indicators such as income and level of education. This MIDUS article explored whether greater exposure to lower SES across the life course can accumulate to have a negative impact on health in later life.

SES was measured across the life span from childhood to adulthood in 1008 participants (92% of whom were white). Childhood SES was measured by participant's self-recollections of whether their family's financial level was better or worse than others growing up, whether they had been on welfare as children, and their parent's highest level of education. Adult SES was measured by education level, family-size adjusted income to poverty ratio, and self-rating of current financial situation, whether they had enough money to meet basic needs, and whether they had difficulty paying bills at both MIDUS surveys (at MIDUS I and 10 years later at MIDUS II).

The connection between level of SES across the life course and levels of allostatic load (AL) in later adulthood was assessed. AL is a measure of the wear and tear on multiple bodily systems and is a good predictor of risk of poor health over time. The biological measurements taken at MIDUS II allowed for

the most comprehensive assessment of AL to date, averaging risk across 24 biological markers, covering heart functioning, metabolic activity, inflammation, and nervous and immune system functioning. Results showed that those reporting lower SES at any of the three time periods had higher AL levels at MIDUS II, indicating higher health risks.

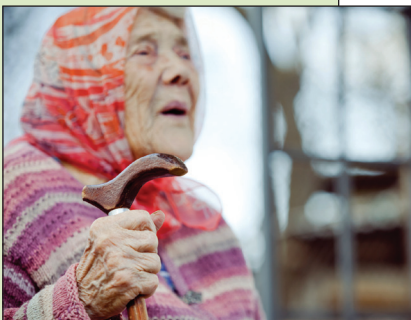
AL scores were also compared for four patterns of SES mobility through the life course. Those with persistent, low SES at all three time periods had the highest AL levels, followed by the downwardly mobile (who had high childhood SES but low adulthood SES), and the upwardly mobile (who had low childhood SES but high adult SES). Those with high levels of SES at all time points had the lowest, and thought to be the healthiest, AL scores.

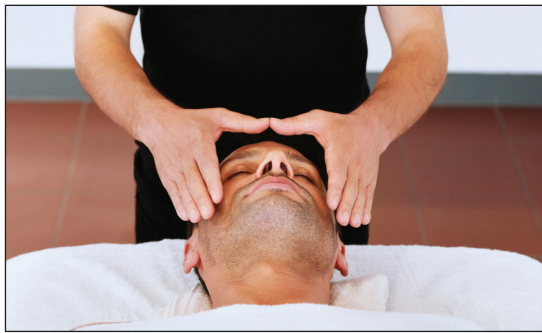
This research suggests that chronic SES adversity may work through multiple biological systems to lead to more negative health outcomes in later life. While the findings portray a negative story of the biological costs associated with chronic low SES, the outcome that biological functioning was similar between the upwardly mobile and those who always had high SES suggests that interventions to improve social conditions could benefit individuals' biology and hopefully lead to healthier patterns of aging.

**Source:** Gruenewald, T. L., Karlamangla, A. S., Hu, P., Stein-Merkin, S., Crandall, C., Koretz, B., & Seeman, T. E. (2012). History of socioeconomic disadvantage and allostatic load in later life. *Social Science and Medicine*, 74(1), 75-83. doi:10.1016/j.socscimed.2011.09.037

## Religious and Spiritual Identity Affects Use of Alternative Healing Therapies

Complementary and alternative medicine (CAM) has been gaining popularity in the mainstream medical community, as well as among the public, as a means of promoting health and well-being. CAM includes such healing modalities as acupuncture, homeopathy, massage, chiropractic care, and various energy balancing therapies. This MIDUS article explored whether religious or spiritual self-identification affected who was likely to use CAM.





**People who consider themselves spiritual but not religious are especially likely to use alternative energy therapies such as Reiki.**

Although most Americans still nurture their spiritual lives through established (mainly Christian) religious groups, a growing number of adults are pursuing highly individual forms of spiritual practice that are a self-chosen combination of beliefs from different traditions. This article explored differences in CAM use among those who self-identified as “spiritual-only,” “religious & spiritual,” “religious-only,” and “neither religious nor spiritual.” (“Spiritual” and “religious” were self-defined.)

Although some body-mind CAM therapies, including prayer, meditation, and spiritual healing (the channeling of healing energy), are well-received in most Christian circles because they are part of traditional Christian practices, other types of CAM that draw upon non-Christian beliefs are sometimes denounced. Examples of the later include body-mind therapies such as hypnosis and guided imagery, and energy therapies that use the hands to manipulate and balance the body’s energy fields, such as healing touch and Reiki.

Results indicated that those who self-identified as spiritual-only were notably more likely to use energy therapies. The odds of using energy therapies was 86% less for those who were both religious & spiritual, 65% less for religious-only persons, and 52% less for those neither spiritual nor religious.

Differences were also found in who was likely to use body-mind therapies. When defined to include prayer, meditation, and

spiritual healing, body-mind therapies were much more likely to be used by those who were both religious & spiritual, even when compared to spiritual-only people. However, when body-mind therapies were defined to exclude the religious practices of prayer, meditation, and spiritual healing, the odds of using the remaining non-religious body-mind therapies were 79% higher for spiritual-only people. This points out that examining the religious and non-religious types of body-mind CAM separately may be particularly important in future research.

Medical professionals, many of whom now refer their patients to CAM, may also want to take into account their patient’s religious and spiritual practices when prescribing CAM therapies. Some patients may be more or less likely to use CAM or to abide by or benefit from the prescribed treatment, depending on their religious or spiritual views. This possibility may be increasingly significant as the number of self-identified spiritual-only people continues to grow.

**Source:** Ellison, C. G., Bradshaw, M., & Roberts, C. A. (2012). *Spiritual and religious identities predict the use of complementary and alternative medicine among US adults.* *Preventive Medicine*, 54(1), 9-12. doi:10.1016/j.ypmed.2011.08.029



**Age is an issue of mind over matter. If you don't mind, it doesn't matter.**

—Mark Twain

## volunteering- does it help us age?

The latest MIDUS newsletter is an overview of research showing that volunteering seems to improve the lives of older volunteers in many ways. It can help maintain a sense of purpose as we age, even as lives change significantly when children leave home or after retirement. Older adults can also find satisfaction in contributing to the future through volunteer work that helps children or that helps maintain significant institutions for future generations. The key message is that volunteering is beneficial for everyone— not only are volunteers improving the lives of untold numbers of people in their communities, their service is rewarded by improvements in their own lives as well. A copy of the newsletter can be viewed at the website below.



[www.midus.wisc.edu/newsletter](http://www.midus.wisc.edu/newsletter)

# promising new approach to preventing Alzheimer's

The cause of Alzheimer's Disease (AD) is not completely understood, but many researchers believe that the amyloid  $\beta$  peptide ( $A\beta$ ), which accumulates in the brains of people with AD, plays a major role.  $A\beta$  originates from a protein called amyloid precursor protein (APP). An enzyme called BACE1 (beta-site APP cleaving enzyme), cuts APP to produce  $A\beta$  and another small fragment (AICD), both of which are linked to AD. Elevated levels of BACE1, which occur during normal aging, may lead to high levels of amyloid and an increased risk of AD. IOA Affiliate **Luigi Puglielli** (Assoc. Prof., Geriatrics & Gerontology, UW-Madison) is leading a study to find drugs that can block BACE1 and prevent the build-up of amyloid plaques, in hopes of slowing or stopping Alzheimer's disease.

In 2007, Prof. Puglielli and his colleagues discovered that regulation of BACE1 occurs when it undergoes a molecular process called acetylation, which changes its structure. If BACE1 is acetylated, it can travel through the cell in a series of steps to cleave APP and produce  $A\beta$  and AICD. In 2009,

they found that two enzymes, ATase1 and ATase2, are responsible for the acetylation of BACE1. In their current research, they found that ATase1 and ATase2 are indeed present in the brains of AD patients and focused on searching for compounds that could turn them off. After screening about 15,000 compounds, they found two that worked in living cells and have filed patents on them.



*Patents have been filed on two compounds that may stop the build up of plaques in the brain believed to contribute to Alzheimer's.*

Compound 9 & 19 were shown to shut down ATase1 and ATase2 in test tubes, which in turn resulted in less acetylation of BACE1 and less production of  $A\beta$  and AICD in the cells. Preliminary tests of the compounds in animal models of AD are encouraging, and researchers are hopeful that they are making progress toward a new approach to preventing Alzheimer's.

**Source:** Ding, Y., Ko, M. H., Pehar, M., Kotch, F., Peters, N. R., Luo, Y., . . . Puglielli, L. (2012). Biochemical inhibition of the acetyltransferases ATase1 and ATase2 reduces  $\beta$ -secretase (BACE1) levels and  $A\beta$  generation. *Journal of Biological Chemistry*, 287(11), 8424-8433. doi:10.1074/jbc.M111.310136

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ADDRESS SERVICE REQUESTED



*Inside every older person  
is a younger person  
wondering what happened.*

— Jennifer Yane