



# DIMENSIONS

The Newsletter of the University of Washington Alzheimer's Disease Research Center • FALL 2014

## SURVIVORS:

THE GENETICS, DEMOGRAPHICS, AND  
ENVIRONMENT OF ALZHEIMER'S DISEASE

• **Writer, Filmmaker, and UW ADRC Participant: An Interview with Ann Hedreen**

• **SNIFF: Alzheimer's Disease and Nasal Insulin**

• **Food for Thought: A New Study on MCTs**

• **The Healing Arts: An Interview with Local Art Therapist Erin Partridge**





Each year, the UW ADRC Biomarchers join more than 42,000 teams around the United States as participants in the Alzheimer's Association Walk to End Alzheimer's. The walk is a fun way to raise money for Alzheimer's disease support, advocacy, and research, and we invite you to join us! The 2013 Walk to End Alzheimer's raised more than \$55 million. •



SECTIONS

- 4 BULLETINS / AAIC Updates
- 6 INTERVIEW / Writer, Filmmaker, and UW ADRC Participant
- 15 Community Opportunities
- 18 INTERVIEW / The Healing Arts

ARTICLES

- 8 SNIFF: Alzheimer's Disease and Nasal Insulin
- 10 Survivors: The Genetics, Demographics, and Environment of Alzheimer's and Hope
- 16 If at First You Don't Succeed
- 17 Food for Thought: A New Study on MCTs

DIMENSIONS

The University of Washington Alzheimer's Disease Research Center (UW ADRC) is affiliated with the University of Washington and the Veterans Affairs Puget Sound Health Care System. The UW ADRC has been funded by the National Institute on Aging since 1985 to facilitate cutting-edge research on Alzheimer's disease and related dementias. In particular, the UW ADRC focuses on Alzheimer's biomarker research and advancing clinical treatment for dementia. The UW ADRC is also supported by the Friends of Alzheimer's Disease Research, the Alzheimer's Association, and members of the public.

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# AAIC UPDATES

FALL 2014

Every year the Alzheimer’s Association International Conference (AAIC) brings together scientists from all over the world to report on the latest Alzheimer’s findings. This year’s conference in Copenhagen, Denmark, featured a wide range of findings, including updates from phase II and phase III drug trials, as well as some encouraging results from lifestyle-intervention and caregiver-training trials. Here are a few of the results reported at the conference:

**Completed Studies**

**The FINGER Findings on Lifestyle Changes**

Good news came from the recent Finnish Geriatric Intervention Study to Prevent Cognitive Impairment and Disability (FINGER) for older folks at high risk for dementia. The two-year, randomized, controlled trial enrolled 1,260 participants who were between the ages of sixty and seventy-seven into two groups. One group participated in a regimen of physical exercise, cognitive training, nutritional guidance, social activities, and management of heart health risk factors, and the other group (the control group) received standard health advice. At the end of the study, members of the first group performed significantly better on an overall cognitive assessment and on specific tests of memory, executive function, and cognitive processing speed, suggesting that these kinds of activities (described as *environmental factors* in the article that begins on page 10) may reduce the likelihood of developing Alzheimer’s. A seven-year follow-up study is now in the works.



**The START Study of a Caregiver Training Program**

More great news came from the UK START (Strategies for Relatives) study. To address the high rates of depression and anxiety among caregivers, this study evaluated the effectiveness of a caregiver-training program that included basic dementia education, problem-solving skills for difficult behaviors, tips for accessing emotional and practical support networks and maintaining a satisfying lifestyle outside of caregiving, and other caregiver self-care skills. The study found

that even two years after the training sessions had concluded, the caregivers who participated in the sessions were much less likely to be depressed or anxious, reported higher qualities of life, required fewer medical services for their loved ones, and were able to care for their loved ones in their homes longer than their peers who had not participated in the sessions. The results were so positive that the British Alzheimer’s Society is planning to fund widespread access to the caregiver-training program.

**The Crenezumab Drug Study**

Contrary to the good news surrounding the previous two studies, Genentech reported that their anti-amyloid hopeful, crenezumab, failed to deliver in the phase II ABBY and BLAZE studies. The drug was being evaluated for its effects on cognition, function, and biomarkers, and although it was safe and well tolerated, it did not produce any statistically relevant benefits for the participants. However, echoing the pattern seen in Eli Lilly’s disappointing 2012 trial of the drug solanezumab (see our solanezumab article on page 16), further analysis of the data from these crenezumab trials suggests that it may still be beneficial for people who are at risk for Alzheimer’s. To this end, an ongoing study in Columbia is investigating the use of crenezumab in cognitively healthy family members who are potentially at a very high risk for developing early-onset Alzheimer’s due to a rare genetic mutation.

**Future Studies**

**The APOE e4 Prevention Drug Trial**

As part of their Alzheimer’s Prevention Initiative, Banner Alzheimer’s Institute has partnered with the Swiss Novartis pharmaceutical company to pursue anti-amyloid treatments in people who have not yet experienced cognitive decline. These researchers will create a study similar to the ongoing trial of crenezumab in Columbia but for individuals who are at high risk of developing *late*-onset Alzheimer’s rather than early-onset Alzheimer’s. The study will enroll 1,300 individuals who are between the ages of sixty and seventy-five and who have two copies of the *APOE e4* allele, a major genetic risk factor for late-onset Alzheimer’s disease (for more on genetic risks, see pages 10 through 12). Participants will receive one of the following: a medication that aims to remove harmful beta-amyloid from the brain, a medication that aims to prevent the formation of harmful beta-amyloid in the first place, or a placebo (an inactive substance indistinguishable from the real medications). •

Hello readers,

In our interview with Erin Partridge about her work as an art therapist at Salem Lutheran Home (see page 18), she describes how “art therapy helps . . . residents see each other in a different way.” By making art together, the cognitively healthy residents at Salem Lutheran House begin to realize that the residents with dementia are “creative people engaged in their world.” They begin to see people with Alzheimer’s as more than a disease, set of symptoms, or dark harbingers of their own futures. They begin to see people. Art therapy shows the residents of Salem Lutheran House that things aren’t always quite what they seem, and in this issue, we embrace that principle, publishing several pieces that turn our expectations topsy-turvy.

The lead article (see page 10), for example, approaches the genetic, demographic, and environmental causes of Alzheimer’s from the unlikely perspective of a television drama set in postapocalyptic London. Yet that article—despite its emphasis on *APOE e4*, beta-amyloid, and other potential causes of Alzheimer’s—takes its cue from the TV show’s title, *Survivors*, by ultimately discussing ways in which we can decrease our chances of developing Alzheimer’s and, following the example of filmmaker Ann Hedreen (see page 6), fight back against the disease.

More particularly, this issue discusses crenezumab (see page 4), solanezumab (see page 16), intranasal insulin (page 8), and medium chain triglycerides (MCTs; see page 17), four medications that may have brighter futures than scientists once believed. Solanezumab and crenezumab failed as Alzheimer’s treatments but may be helpful in prevention; intranasal insulin may be showing some surprising promise for individuals with mild cognitive impairment; and MCTs have overcome the bad reputation of saturated fats to become a potential Alzheimer’s treatment.

As always, we hope you enjoy the issue. Please let us know if you have thoughts about our work here or in the UW ADRC. Happy reading!

Murray Raskind, MD  
Education Core Director

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Dimensions Managing Editor

Andrew David  
Dimensions Editor



**Alzheimer’s Program Support Fund**

The ADRC’s Program Support Fund helps junior faculty to use their expertise and innovation to pursue promising research studies within the UW ADRC. Your community partnership in the Program Support Fund is essential to these continued efforts to find better treatments and a prevention for Alzheimer’s disease. For more information regarding the Support Fund, please contact Susan Martin at **206.764.2703** or **800.329.8387 x62702**. Checks can be made out to “UW ADRC” and mailed to: VAPSHCS, S-116 MIRECC, Attn: Susan Martin, 1660 South Columbian Way, Seattle, WA 98108. To donate online, visit [www.washington.edu/giving/make-a-gift](http://www.washington.edu/giving/make-a-gift) and search for “Alzheimer’s Program Support Fund.”

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# WRITER, FILMMAKER, AND UW ADRC PARTICIPANT:

## AN INTERVIEW WITH ANN HEDREEN

By Sydney Lewis

Ann Hedreen is a UW ADRC research participant and the talented filmmaker who produced the Emmy-nominated *Quick Brown Fox*. She has also just published a memoir, *Her Beautiful Brain*, about her family's experience with Alzheimer's. She has participated in both the UW ADRC registry and the SimBio study.

### FIRST OFF, WHAT DREW YOU TO PARTICIPATE IN ALZHEIMER'S RESEARCH?

My participation with the UW ADRC actually goes back to 2003 when I started making *Quick Brown Fox*, a film about my mother. I wanted to include a few interviews with Alzheimer's researchers in the film, so I called up the ADRC and ended up having a much different conversation than I expected. I spoke with Kirsten Rhode, who was then an ADRC research nurse, and she told me all about the UW ADRC—about the research, about the volunteer experience—and she suggested that if I was interested I should get involved. I hadn't really considered that before, but the minute she said that, I realized it would be such a meaningful way to do something about a disease that is so overwhelming and frustrating, a disease that had left me feeling so helpless.

### AND WHAT WAS YOUR EXPERIENCE WITH THE ADRC LIKE?

The UW ADRC staff is so compassionate and empathetic and welcoming. I'll be honest, the memory testing is sometimes a bit daunting; it was difficult to watch my mom do the memory tests over time as her disease progressed. But it's been worth it. Since I have Alzheimer's in my family, it's very reassuring to do the memory testing every once in a while and to know that I'm doing just fine—that it's not something I need to be worrying about.

### IS PARTICIPATION IN UW ADRC RESEARCH SOMETHING THAT YOU WOULD RECOMMEND TO OTHERS IN YOUR SITUATION?

Absolutely. One of the things I tell people about volunteering is that if you or a family member is suffering from Alzheimer's, this is a great way to be in touch with experts in the field. It gives you access to the latest research that you may not otherwise know about and access to medical professionals who are at the top of their fields. Volunteering also gives you time to ask questions and it offers you the assurance that if something were terribly wrong with your brain or body, the researchers at the ADRC would tell you. My brother died of a glioblastoma, and it is very comforting to be assured, through talking with the doctors and going over the various brain scans I've had, that I am not at risk for developing one. And again, volunteering in research gives you the sense that you're not entirely helpless—Alzheimer's disease can be so frustrating and it is valuable to know that you are doing something meaningful to fight the disease.

### PLEASE TELL US ABOUT YOUR FILM.

I started working on *Quick Brown Fox* because I was angry. I was angry at the illness. I was angry at how our government seemed to thwart potentially promising research without batting an eyelash. I was angry at having to stand by and watch my mother's life crumble at the age of sixty. And so I tried to learn everything I could about the disease. I learned, for example, about how Alzheimer's would claim tens of millions of people worldwide by the middle of the century. But as I studied the disease, I came to realize that my story wasn't so much about anger as about love. I came to realize that my story was about my beautiful, brainy mother and what it's been like to watch her lose herself bit by bit. And as I considered this story, it led to unexpected places, like our participation in ADRC research and to my mom's hometown—Butte, Montana—and her Finnish roots. And so *Quick Brown Fox* is certainly about Alzheimer's disease, but it is also about so much more. It is a story of memory and love. •

More information about *Quick Brown Fox* can be found at [www.quickbrownfoxfilm.com](http://www.quickbrownfoxfilm.com); and the film can be watched on Amazon Instant Download, through the Seattle Public Libraries, or on DVD from Women Make Movies ([www.wmm.com](http://www.wmm.com)). *Her Beautiful Brain* can be found at Amazon.com or at our local bookstore [elliottbaybook.com](http://elliottbaybook.com).



# Her Beautiful Brain

a memoir



ANN HEDREEN

# Sniff

Alzheimer's Disease and Nasal Insulin By Sydney Lewis

In 2012, the Obama administration pledged to invest \$50 million in Alzheimer's disease research as a part of the National Alzheimer's Plan. Only two clinical research projects made the cut to receive portions of that funding, and one of those studies is the Study of Nasal Insulin to Fight Forgetfulness (SNIFF).

In collaboration with the Alzheimer's Disease Cooperative Study, the SNIFF study, which includes the UW ADRC as a research site, is being led by Dr. Suzanne Craft, a former professor at the University of Washington Department of Psychiatry and Behavioral Sciences who now works as a professor of gerontology at the Wake Forest School of Medicine. Dr. Craft has been researching the connection between insulin resistance and Alzheimer's disease for many years. As part of this work, she has led studies examining the effects of increased exercise, diet modification, insulin-sensitizing medications, and insulin supplementation on cognition and Alzheimer's biomarkers. Promising results from her research team's 2012 pilot study on the use of intranasal insulin for patients with mild cognitive impairment and mild to moderate Alzheimer's are now drawing her research to a larger audience.

Insulin has been around as a treatment for diabetes for close to a century, but it is only now coming into focus as a potential treatment for Alzheimer's. Because of work by Dr. Craft and other scientists, we have recently learned that insulin plays an important role in the body's aging process, including the aging process of the brain. Moreover, physical conditions in which insulin does not work effectively—diabetes, hypertension, and obesity, to name a handful—predispose older adults to develop Alzheimer's disease and other forms of dementia.

Insulin performs many important tasks in the body, but sometimes you really can have too much of a good thing—people with an excess of insulin, for example, develop insulin resistance, a condition where the body compensates for that excess by ignoring the signals that insulin sends throughout the body. It is well

known among doctors that this can cause fatigue, an impaired immune system, and other symptoms of pre-diabetes, but it is less well known that even the early stages of this process can have negative effects on brain functioning. Insulin resistance can impair the system that transports insulin into the brain from the bloodstream, which means that insulin can't perform its usual task of assisting in the transportation of glucose to the cells that need it for energy. Without this energy, brain cells may begin to malfunction, which could result in memory loss and other symptoms of Alzheimer's.

Additionally, recent research suggests that the rates of pre-diabetes among people in the early stages of Alzheimer's may be much higher than expected. Yet this relationship between pre-diabetes and the early stages of Alzheimer's may go unnoticed because insulin resistance seems to take its toll on the brain before it is detectable elsewhere in the body.

In the SNIFF study, researchers are evaluating how effectively insulin that is inhaled nasally combats mild cognitive impairment and Alzheimer's disease. Research has found that for adults at increased risk for type II diabetes and Alzheimer's disease, insulin levels in the brain are often much lower than elsewhere in the body. In individuals with insulin resistance, this difference is thanks to the blood brain barrier, a membrane that regulates the movement of insulin (and many other things) in and out of the brain. When the insulin system in the rest of the body is off-kilter, it can impair the way that the blood brain barrier transports insulin into the brain. "You have a situation in which there are very high levels of insulin in the periphery of the brain

that are driving inflammation and other negative effects, yet you have abnormally low levels in the brain itself," explains Dr. Craft. "We have been trying to develop a way of correcting this imbalance." Dr. Craft and her colleagues have found that giving insulin with a nasal inhaler that targets the upper nasal passages and the upper sinuses seems to avoid the

blood brain barrier and to send insulin directly to the brain. In contrast to other methods of taking insulin, this method may help restore the insulin balance in the body and brain.

An additional benefit of the insulin inhaler may also be seen in relation to the toxic protein known as beta-amyloid. We now know that insulin and beta-amyloid may have an adversarial relationship whereby the accumulation in the brain of beta-amyloid can interfere with insulin function and may lead to Alzheimer's disease.

Restoring insulin levels may thus help protect the brain against toxic effects of beta-amyloid.

Researchers are being cautious not to oversell this potential treatment, however. Although nasal insulin may have the potential to slow or delay the onset of Alzheimer's or to lessen the cognitive impairment of the disease, SNIFF researchers do not believe it is a cure-all for everyone. Still, recent research indicates that therapies that are directed at correcting the insulin abnormality in mild cognitive impairment and Alzheimer's disease may be fruitful, and this particular way of doing so has produced some very promising preliminary results. •

Check our website to learn more information about this study: [www.uwadrc.org](http://www.uwadrc.org).







# SURVIVORS

By Andrew David

THE GENETICS, DEMOGRAPHICS, AND ENVIRONMENT OF ALZHEIMER'S AND HOPE

Among the many books, films, and television shows that imagine our future as an apocalyptic dystopia is *Survivors*, a BBC drama that follows a band of strangers who share food, shelter, and companionship after a dangerous flu-like virus descends upon the United Kingdom. The show employs many of the hackneyed tropes of the genre, including sinister hints about the cause of the outbreak, roving gangs of resource-hoarding psychopaths, and budding flirtations among the protagonists, but the blatant question it poses—who are these survivors?—is one that resonates even beyond the series.

At the UW ADRC, we don't huddle around televisions, extrapolating new research protocols or clinical philosophies from our Netflix queues, but the mysteries that foreground the show *Survivors* are central to our work—Who are the survivors? Who are the people who get sick? And what can we do about it?

## THE GENETICS OF SURVIVAL

When *Survivors* begins, we see only one character catch the illness and then recover. This woman, Abby Grant, possesses an unwavering confidence that her son, who was away at the time of the outbreak, may still be alive. Given that so many people catch the illness and do not recover, Abby's hope may strike us as an outrageous unlikelyhood, but beyond her mother's intuition, there may be something more: she may be grasping at a genetic explanation for her own survival from the mysterious pandemic.

As other characters in *Survivors* intimate later in the first season, Abby may have a point. Here in the real world, we know that some diseases are genetically passed down from one or both parents to their children. Sometimes these genes directly cause a disease, and sometimes these genes only increase the risk of a disease. Researchers have determined that about 1 to 3 percent of Alzheimer's cases, for instance, are directly caused by genetic mutations, that about 40 to 60 percent of Alzheimer's cases are caused in part by variations in the *APOE* gene that increase the risk of the disease, and that the remainder of Alzheimer's cases appear to be caused by other environmental or genetic factors that we do not yet know about.

That first category of Alzheimer's cases, the ones that are directly caused by the genetic mutations, are due to three specific mutations in the genes amyloid-beta precursor protein (*APP*), presenilin 1 (*PSEN1*), and presenilin 2 (*PSEN2*). Individuals who have these rare genetic mutations passed on to them will almost certainly develop the disease, and they will develop the disease much earlier than more typical cases of Alzheimer's.

The most common known genetic factors in the development of Alzheimer's, however, are the variants of the *APOE* gene. We all inherit an *e2*, *e3*, or *e4* version of this gene from each parent. The majority of people in the United States, about 60 percent of us, inherit two copies of the *APOE e3* variant, which neither increases nor decreases our risk for Alzheimer's. But 20 to 30 percent of people inherit one or two copies of the *APOE e4* variant, which conveys an increased risk of the disease: individuals with the *e4* variant are anywhere from three to eight times more likely to develop the disease than individuals without the variant. Given that the symptoms of *APOE*-related Alzheimer's begin sometime after the age of sixty or sixty-five, this common form of the disease is characterized as late-onset Alzheimer's.

But even with this increased risk, many people with the *APOE e4* variant do not develop Alzheimer's. That is because unlike the rare *APP*, *PSEN1*, and *PSEN2* gene mutations, the *APOE e4* variant signifies a genetic predisposition to developing the disease, not a genetic certainty of developing the disease.

Alternatively, our genetics may sometimes play a role in protecting us from the development of diseases, and this may be the genetic silver lining that Abby intuitively hopes for in *Survivors*: perhaps she is subconsciously attributing her recovery to a gene that she hopes to have passed on to her son.

Although researchers have found no evidence of genes that actually reverse the degenerative processes of Alzheimer's, some genetic variants appear to play a protective role against the development of the disease in the first place. In August 2012, for instance, researchers found that in addition to having a mutation known to cause early-onset Alzheimer's disease, the *APP* gene also has a very rare A673T coding mutation that may reduce the likelihood of developing Alzheimer's by as much as 40 percent. Similarly, about 10 to 20 percent of the population inherits a copy of the *e2* variant of the *APOE* gene, which, in contrary fashion to the *e4* variant, appears to play a protective role against the disease.

Our hope at the UW ADRC is that by discovering new risk and protective genes and gene variations for Alzheimer's disease, we may be able to target particular treatments for individuals with the illness and to pursue preventive measures for individuals who may be at risk for developing the disease.

## THE DEMOGRAPHICS OF SURVIVAL

Eventually, Abby Grant's search for her missing son leads her to cross paths with other survivors, and together they form a small group of friends who warily begin the hard work of starting over. With each episode, this band encounters new hardships and revelations, but from the outset we can spot one tremendous difference between the fictional flu of *Survivors* and the real-life devastation of Alzheimer's—demographics.

The survival of Abby, her friends, and the strangers they meet in later episodes suggests no discernible pattern in the demographics of survival or sickness. The survivors are young and old. They are male and female. They are Brits with Middle Eastern, African, and European heritage. In contrast, Alzheimer's disease seems to divide its victims and bystanders into more discernible demographic profiles.

As most people know, age is the number one risk factor for developing Alzheimer's. In very rare cases—particularly among people with *APP*, *PSEN1*, and *PSEN2* mutations—early-onset Alzheimer's may begin in people in their forties, but generally speaking, the troubling effects of the disease are first seen in the elderly. Given that we can't do anything about our age, scientists are interested in learning as much as possible about the other factors—such as genetics and environment—that differentiate healthy brain aging from the development of Alzheimer's.

People of both sexes and all ethnicities develop Alzheimer's disease, but the pool of Alzheimer's victims and those who survive without developing the disease isn't nearly as diverse as in the BBC show. For starters, about two-thirds of the people with Alzheimer's disease are women. Part of this is a function of age, as women have longer life expectancies than men and are therefore more likely to live to an age where Alzheimer's develops. But that only explains about half of the increased prevalence in women. At this time, researchers theorize that women may be more likely to get Alzheimer's than men because of the hormone changes they experience over the course of their lives, because of particular life stressors that women are more likely to encounter than men, or because dementia may develop differently in male and female brains. A large difference is also seen when considering race and ethnicity. Studies suggest that African Americans are two to four times more likely to develop Alzheimer's than

Caucasian Americans. Likewise, Hispanic Americans are, on average, two times more likely to develop Alzheimer's than non-Hispanic Americans. Given these differences, our ADRC has made it a priority to set aside part of our resources for learning more about how Alzheimer's specifically affects African Americans in the Pacific Northwest.

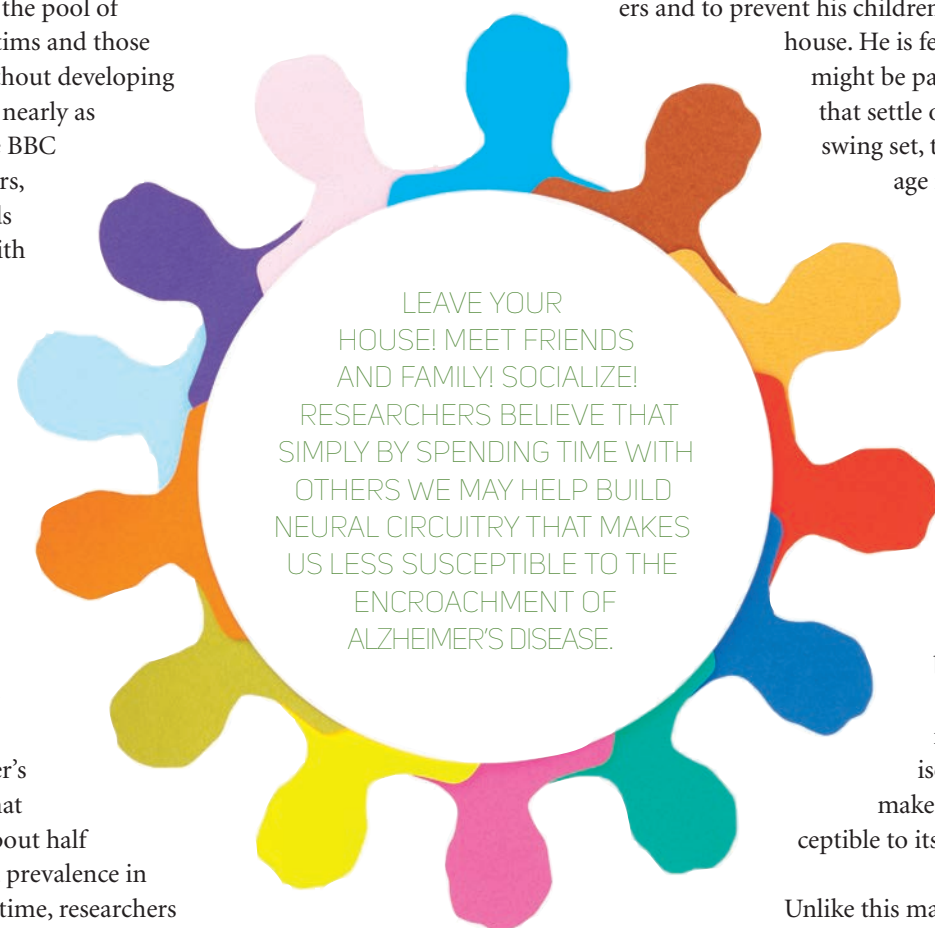
### THE ENVIRONMENT OF SURVIVAL

In an early episode of *Survivors*, the main characters encounter a man and his two children who have been isolated since the initial outbreak of the disease. The man has boarded

up his windows to protect his family from outsiders and to prevent his children from leaving the house. He is fearful that the virus might be passed on by the crows that settle on their outdoor swing set, the humans who forage in his barn, or any living thing.

The man is, in a sense, concerned with environmental factors. He knows that the infection must be passed on in some way, through some outside influence, and he believes that there are certain behaviors—for example, isolation—that might make his family less susceptible to its effects.

Unlike this man and his two children, we have the tools and experience to confidently certify that Alzheimer's disease isn't passed on through the cough of a stranger or the caw of a crow. We know that contrary to common misconceptions, the disease isn't contracted by cooking with aluminum pots, consuming beverages containing the artificial sweetener aspartame, or fixing a broken tooth with a silver filling. We know that receiving an annual flu shot is good for one's health and not a potential cause of Alzheimer's disease.



But we also know that environmental factors may play a role in Alzheimer's. One risk factor that has been making the news lately is traumatic brain injury (TBI), a term used to describe the disruption in normal brain functioning that occurs because of a blow to the head. TBI is categorized as mild, moderate, or severe, depending upon how long a person is unconscious or amnesic. People with severe TBI have about 4.5 times the risk of developing Alzheimer's than people with no head injuries; people with moderate TBI have about twice the risk; and research is now showing that even mild TBI, such as the kinds of injuries that are common in professional football or boxing, can lead to increased risks of a related memory disorder called chronic traumatic encephalopathy when such injuries are endured repeatedly. The easiest ways to avoid these TBIs in everyday life is to always buckle one's seat belt when going for a drive or to don a helmet when taking part in activities that might have a greater risk of falling, like biking, skiing, and even hiking.

In addition to protecting ourselves from head injuries, what we eat and how we treat our bodies may also influence whether we survive or—more accurately—avoid developing Alzheimer's. And even if we don't avoid Alzheimer's, the way we manage environmental factors may change the course that the disease takes, including the speed at which the disease progresses and the particular range of symptoms we develop. We can't change our genetics, gender, age, or ethnic background, but we can work to secure ourselves from those other risk factors.

Research suggests a clear relationship between brain and heart health. Alzheimer's has been associated with obesity; heart disease; stroke; diabetes; and high stress, cholesterol, and blood pressure. By exercising regularly—say, walking vigorously around one's neighborhood, riding a stationary bike in the gym, or spending thirty minutes in a yoga or tai chi class—and eating well, we may increase blood and oxygen flow to the brain, improve our brain and cardiovascular health, and reduce our chances of developing Alzheimer's. In terms of diet, researchers advise limiting highly processed foods, fried foods, and refined sugars; taking advantage of Seattle's abundance of fresh halibut, salmon, or trout; and eating lots of fruits, vegetables, and nuts that have high antioxidant levels.

In addition to cardiovascular exercise, researchers also advocate brain exercise. To this end, researchers have found that education may be an important environmental factor in

Alzheimer's: the higher our education level, the less likely we are to develop the disease. One theory about this relationship between education and brain health is that people who complete higher levels of education tend to belong to higher socioeconomic groups and may therefore benefit from their economic and class backgrounds; indeed, people from higher socioeconomic groups are generally less likely to develop all kinds of diseases. Another theory, however, is that people who complete higher levels of education may have devoted more time to particular kinds of learning and problem solving that give their brains a workout and create a larger cognitive reserve. That is, people who think hard and think often build more connections between the neurons in their brains so that when their brains start to deteriorate, they potentially have more of these connections and can therefore stave off the effects of Alzheimer's for longer than people who do not build up that cognitive reserve. Similarly, evidence suggests that, on average, bilingual people develop Alzheimer's up to five years later than monolingual people. With that in mind, if you're considering ramping up your brain-training regimen, taking a French or Spanish class may be a good place to start.

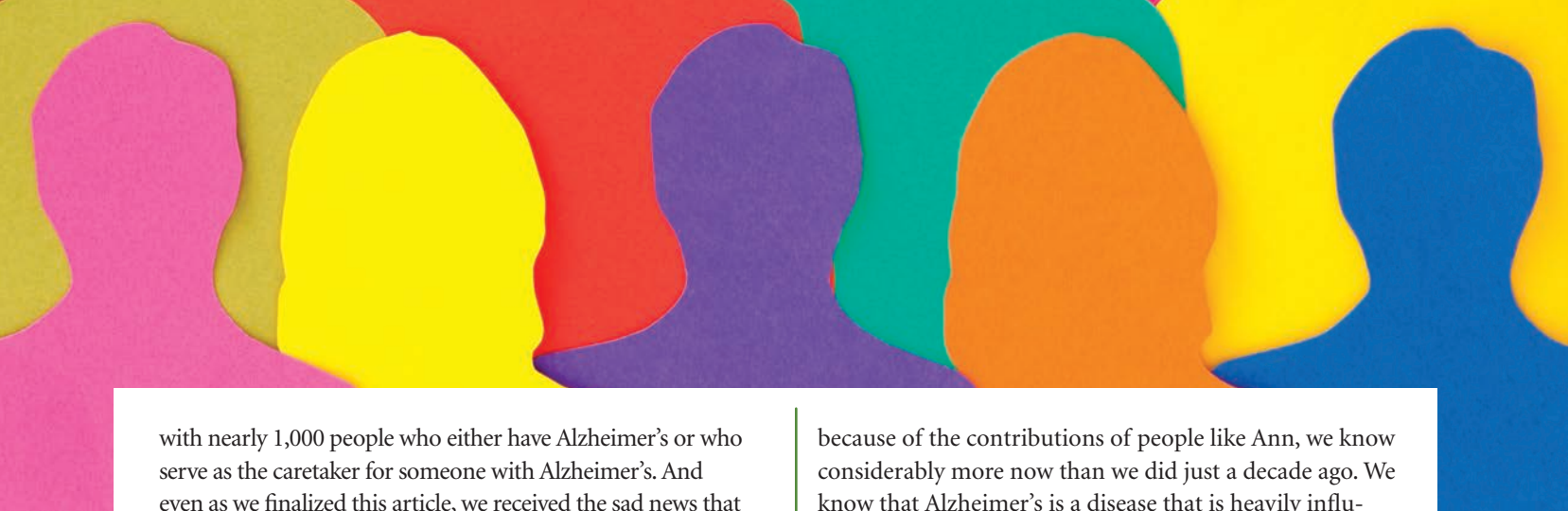
Another way to give our brains exercise is to avoid the example of the man in *Survivors* who barricades his family indoors. Leave your house! Meet friends and family! Socialize! Researchers believe that simply by spending time with others—by listening to their words, watching their facial expressions, formulating responses, cracking clever dinosaur puns, and expressing empathy—we may help build neural circuitry that makes us less susceptible to the encroachment of Alzheimer's disease.

### HOPE FOR SURVIVAL

On the DVD cover for the first season of *Survivors*, just above the serious faces of the cast, text reads, "One virus. Millions dead. All that's left is hope." Unlike the fictional flu strain of *Survivors*, Alzheimer's isn't a virus—it can't be passed between strangers on a subway or from the bite of an angry mosquito—but it has affected millions.

Alzheimer's is the fourth-leading cause of death in the United States, with nearly 500,000 Americans dying from Alzheimer's each year. And that number is growing. The Alzheimer's Association estimates that more than 5 million Americans are living with the disease and that another 15.5 million are caregivers for people with the disease. At our small research outpost in the Pacific Northwest, we've met





with nearly 1,000 people who either have Alzheimer's or who serve as the caretaker for someone with Alzheimer's. And even as we finalized this article, we received the sad news that one of those participants, a man whose art hangs in the office of our research nurse Debbie Burges, passed away.

There is no use sugarcoating the immensity and deep pain of the disease by asking everyone simply to have hope. And yet we are not entirely powerless. As UW ADRC research participant Ann Hedreen notes in our interview with her on page 6 and 7, "Volunteering in research gives you the sense that you're not entirely helpless—Alzheimer's disease can be so frustrating and it is valuable to know that you are doing something meaningful to fight the disease."

The pace of research may seem aggravatingly slow, but

because of the contributions of people like Ann, we know considerably more now than we did just a decade ago. We know that Alzheimer's is a disease that is heavily influenced and sometimes directly caused by genetic variations or mutations. We know that certain gender, age, and ethnic traits affect our likelihood of developing the disease. And we know that environmental factors—including environmental factors that we can adjust in our favor—also play a role in the disease.

This knowledge may not seem like much for people who have the disease or for people who have friends or relatives with the disease, but as we learn more about the underlying causes of Alzheimer's and as we continue to try out new interventions, we move closer and closer to treatments and preventions that might help us all to be survivors. ●

## FOUR COMMON ALZHEIMER'S MYTHS

### 1. ALZHEIMER'S DISEASE CAN BE CAUSED BY COOKING WITH ALUMINUM POTS

There is controversy in the scientific community about whether some patients with Alzheimer's may have higher levels of aluminum in their brains than is normal. However, even if aluminum may play a role in the disease, scientists know that the aluminum found in pots, cooking utensils, and Coca Cola cans does not somehow pass into the food or drink that we consume. While we should perhaps consider reducing the amount of soda pop we drink, we shouldn't do so out of fear of aluminum.

### 2. ALZHEIMER'S DISEASE CAN BE CAUSED BY CONSUMING BEVERAGES OR FOODS CONTAINING ASPARTAME.

More than one hundred laboratory and clinical studies have been conducted on the artificial sweetener aspartame, which is found in Equal and Nutrasweet. These studies may not necessarily extol the health benefits of aspartame, but they have convincingly demonstrated that aspartame does not cause Alzheimer's.

### 3. ALZHEIMER'S DISEASE CAN BE CAUSED BY SILVER DENTAL FILLINGS.

Silver fillings may contain mercury, a substance that, on its own, is known to cause neurological problems and that may be related to some of the biological processes that cause Alzheimer's disease. However, multiple studies of these mercury-containing dental fillings have demonstrated that they pose no health risk and no additional risk for developing Alzheimer's disease.

### 4. ALZHEIMER'S DISEASE CAN BE CAUSED BY RECEIVING A FLU SHOT.

Receiving a flu shot can protect us from developing such upper-respiratory symptoms of influenza as congestion, fever, and cough that can develop into pneumonia or other breathing difficulties. There is no evidence that flu shots can lead to the development of Alzheimer's. In fact, a 2001 study of more than 4,000 participants found that individuals who received a flu shot were actually less likely to develop Alzheimer's disease.

## COMMUNITY OPPORTUNITIES

### Columbia City Alzheimer's Café

*Tutta Bella Neapolitan Pizzeria, 4918 Rainier Ave South*  
*2nd Thursday of the month, 2:30 to 4:00 p.m.*  
Contact: Doug Harkness at **206.224.3757** or **doughh@fulllifecare.org**.

Individuals with memory loss and their care partners are invited to join the new Alzheimer's Café in Seattle's Columbia City neighborhood. Socialize in a supportive environment where there's no judgment or expectations—just companionship, great food, and fun! There is no cost, other than items ordered from an easy-to-read, short menu of Tutta Bella's authentic Italian pizza and more.

### Phinney Ridge Alzheimer's Café

*Ampersand Pantry & Cafe, 424 N. 85th St.*  
*2nd Tuesday of the month, 3:30 to 5:00 p.m.*  
Contact: Carin Mack at **206.297.0875**.

Hosted by the Greenwood Senior Center (**www.greenwoodseniorcenter.org**). The Alzheimer's Café at the Greenwood Senior Center provides an opportunity for people living with Alzheimer's disease or other dementias and their care partners to socialize in a safe environment with others. No reservations are necessary; the only cost is your dessert and drink.

### Free Memory Screening

*Alzheimer's Society of Washington Office*  
*1308 Meador Ave, Suite C-1, Bellingham*  
*3rd Tuesday of the month, 10:00 a.m. to 12:00 p.m.*  
Walk-ins are welcome. To make an appointment, please call the Alzheimer's Society of Washington Office at **360.671.3316**.

### Free Online Caregiver Support Classes

The King County Caregiver Support Network helps unpaid caregivers of adults who are age eighteen and older. By helping to reduce caregiver stress, the network enables care receivers to remain at home and independent. The network's website is a good place to learn about free in-person and online caregiver courses, as well as events for caregivers and their loved ones in King County. To browse or enroll in courses, visit **www.kccaregiver.org/news-events/**.

### Color of Love: African American Caregiver Forum

On March 22, 2014, the UW ADRC African American Advisory Board hosted the first annual UW ADRC African American Caregiver Forum at the Central Area Senior Center. The forum provided local resources and information to help individuals who care for a loved one with memory loss to stay healthy. The forum also featured presentations from experts on Alzheimer's disease, legal concerns for caregivers, and strategies for dealing with difficult behaviors. The next forum will be held in the spring of 2015. There is no charge to attend the forum. For more information contact Sydney Lewis at **Sydney.Lewis@va.gov**.

### Annual Alzheimer's Benefit Dance

*Save the Date! February 22, 2015*

Every February, Joe Bahr and the Sky Valley Whirlwinds Square Dance Club host the Alzheimer's Disease Benefit Dance. All of the donations raised at the square dance are given to the UW ADRC and the Rush University ADRC in memory of Marty Bahr, a loving father, husband, and brother who passed away of Alzheimer's at age fifty-nine. Everyone is welcome to attend the dance, whether you are a square dancing pro or a complete beginner. For more information visit **www.remembertodance.org** or contact Joe Bahr at **206.310.5627**.





# IF AT FIRST YOU DON'T SUCCEED...

Seemingly disappointing study results may lead to surprising breakthroughs in Alzheimer's research on the study drug solanezumab. By Sydney Lewis



The trajectory of Alzheimer's research isn't always smooth. Clinical trials often end in disappointment for researchers, participants, and families, leaving some to wonder about the usefulness of the studies in the first place. But in the long run, discouraging findings can improve the information available to scientists and help them as they formulate new theories.

At the UW ADRC, we have certainly experienced our share of disappointing findings. Take, for example, our recent LZAN and LZA0 treatment studies for mild to moderate Alzheimer's disease. These studies examined solanezumab, a drug that targets the beta-amyloid proteins which many scientists believe contribute to the development of Alzheimer's disease. Researchers created the study with the hope that they could use solanezumab to prevent individuals with mild to moderate Alzheimer's from progressing into more

cognitive decline for study participants in the early stages of Alzheimer's. Based on their earlier work, researchers designed a new study to test whether solanezumab will be effective at slowing the cognitive and functioning decline in the early stages of Alzheimer's. The study, referred to as LZAX, aims to use solanezumab to remove beta-amyloid from the brain before it can form harmful plaques.

The LZAX study, which is now enrolling participants at over 200 research centers throughout the world, including the UW ADRC, will test these ideas directly by comparing a group of individuals who receive solanezumab to a group of individuals who receive a placebo (a substance that has no effect on a person's brain). Drug-related changes will be evaluated through a variety of methods, including memory testing, functional evaluations, brain scans, and blood tests. The benefit of having one group receive the drug and the other receive placebo is that although both groups may experience changes related to Alzheimer's disease, any changes related to solanezumab will stand out when comparing the two groups.

These two studies—the first attempted solanezumab studies and the current LZAX effort—demonstrate the need for a long view when it comes to Alzheimer's research and science in general. For the individuals who suffer from dementia and their families, this progress may seem far too slow; participating in a new, slightly modified research study may seem futile based on the disappointing findings of previous attempts. But with each attempt, research participants provide scientists with information that adds to the larger goal of curing or preventing the disease. Sometimes these pieces of information come in the form of a disappointing finding or an unexpected discovery, but together they will ultimately help scientists put the pieces of the Alzheimer's puzzle together for the millions of people who suffer from the disease. •

Check our website for more information on this study:  
[www.uwadrc.org](http://www.uwadrc.org).

advanced stages of the disease. The results were less than optimal: study participants showed no slowing in the progression of their Alzheimer's.

However, after taking a closer look at the data, the researchers noticed unexpected evidence that solanezumab slowed

# food for thought

By Sydney Lewis

Medium chain triglycerides (MCTs) have received their fair share of media attention over the years. As a source of medium chain fatty acids, these components of coconut oil have had their honor besmirched by reports of their harmful effects on human health, and then in a recent twist, they have seen their chemical properties praised as a potential miracle cure for people who suffer from Alzheimer's disease. So what are we to make of MCTs? And are they really worth their fifteen minutes of fame?

You may remember the movie theater concession crisis of the midnineties when the Center for Science in the Public Interest announced that a large bag of movie popcorn—hold the butter—contained as much saturated fat as six Big Macs. This disproportionate amount of saturated fat was thanks to the coconut oil the kernels were popped in. Health experts at the time were a breath away from calling the oil poison. They sternly warned that its high concentration of saturated medium chain fatty acids should be avoided at all costs, that including such fatty acids in one's diet could lead to sky-high cholesterol levels. Coconut oil was bad for cholesterol and bad cholesterol was a step away from heart attack and stroke.

But these particular saturated fats may not have the harmful effects on one's cholesterol that scientists previously assumed. MCTs have an unusual chemistry that causes them to have a different effect on the body than other fats—perhaps a therapeutic effect. Most fats are broken down in the intestine and remade into a special form that can be transported in the blood. MCTs, however, are absorbed intact, transported directly to the liver, and then rapidly oxidized. This unique process produces three types of products called ketone bodies, two of which are directly used by the body as a source of energy in the heart and brain.

We now know that one of the early characteristics of Alzheimer's disease is cerebral hypometabolism; that is, when a person develops Alzheimer's, parts of their brain lose the ability to efficiently draw glucose from the bloodstream and convert it to energy. Researchers believe that MCTs may provide an alternate source of energy for the brain in the form of ketones—the ketones from coconut oil may generate brain energy without having to import and use glucose. In



addition, some studies suggest that certain ketones may help preserve the stability of neurons, reduce the neuronal toxicity of beta-amyloid, and lower the total beta-amyloid protein buildup in the brain—all good signs in a potential treatment for Alzheimer's disease.

So far, however, there hasn't been enough research to conclude that MCTs really offer substantial benefits to individuals with Alzheimer's, and although the research may suggest that MCTs are not as harmful for our cholesterol as scientists once thought, it is not yet clear whether they are safe enough to prescribe to patients. Accera, a privately held biotechnology company, is now enrolling for a clinical trial to evaluate a medication containing MCTs. The study will occur at twenty-six sites around the country, including here at the UW ADRC. The trial examines the safety and efficacy of this investigational treatment in a large population and seeks to determine whether the treatment has the same effect for individuals with and without a genetic predisposition to Alzheimer's. This study may be a good fit for people in the Pacific Northwest who find natural approaches to avoiding Alzheimer's more appealing. And so, keep your radios tuned and your blog feeds rolling because no one knows what headlines MCTs will make next. •

Check our website for more information on this study:  
[www.uwadrc.org](http://www.uwadrc.org).



# THE HEALING ARTS

An interview with local art therapist Erin Partridge by Sydney Lewis and Andrew David



*Erin Partridge, MA, ATR, is a fine artist, a registered art therapist, and the life enrichment coordinator at Salem Lutheran Home, where she leads art and art therapy groups. In this interview, she tells a bit about herself, her work, and the benefits of art therapy for individuals with Alzheimer's disease and other dementias.*

*Tell us about your work as an art therapist. What does a typical day of art therapy entail? And what benefits do you notice among your patients with Alzheimer's disease?*

People can usually tell when I've been at work because I am covered in glitter or paint. I think people at the yoga studio I go to after work must think I roll around in art supplies before I arrive. But I generally facilitate two large art groups a day with some other sessions mixed in. When I arrive at work, I start by getting the supplies ready for the first group of the day.

I work in all areas of our community—with elders who live independently, with elders in our memory care program, and with elders who live in our skilled nursing unit—and I've found that art therapy helps these residents see each other in a different way. The residents without memory loss often have a lot of prejudice against the residents with dementia, probably driven from their own fears about aging, and seeing the residents with dementia as creative people engaged in their world helps to fight some of that prejudice and negativity.

I have quite a few regulars in each group, and I am always prepared for someone new to drop in. I try to create an open, welcoming environment in our groups. I invite elders to come observe for a while if they are not ready to jump right into making art. This helps them to feel comfortable and sparks their curiosity. We have some residents who never make any art, but they are alert and engaged in our conversation. They become a part of the creative process.

My favorite activities involve collaboration—such surprising and wonderful things happen when the elders work together

to create an image. They are able to connect with each other in a deeper, more meaningful way. They share stories and assist each other. And I find they are more prideful and much less critical of their group efforts than their individual artwork.

I also observe signs of physical relaxation as they create—especially in the residents in memory care and skilled nursing. Their postures relax, their faces relax, and they appear more at ease. They connect to each other rather than being isolated.

Another benefit of art therapy is that it helps people feel that they have some control over their life and their world. When people receive medical care, they often feel as if they are losing control, but here, even the faintest brushstrokes are an expression of choice and presence. I believe we should be providing as many opportunities for expression as possible. The world does not need to shut down or close its doors just because someone has reached a certain age or has a diagnosis of dementia.

*How does the art therapy experience differ for patients with varying levels of dementia?*

In general, I have found that the residents in our memory care program are more open to free creating. They are less intimidated by the blank page. They are less attached to the outcome of the artwork and more involved in the process of creating. Some residents with dementia require more supervision with certain materials, but I try not to limit our materials to crayons and watercolors—it is exciting to see someone working with clay or printmaking or mosaics for the first time. When they are supported in using these materials they are able to really get into the creative process. There is one resident who has participated in art therapy



groups at least once a week since she moved into the assisted living quarters a few years ago. When we first started working together, she used the art sessions to create about her past; her work often included a lot of words and writing. She would only participate if I promised her it would not be too much work. Now she seems to be using the art sessions to create something of beauty or to self-soothe. She is much more relaxed in the sessions and is more likely to use paint and other materials she did not explore before.

*What therapeutic art activities would you suggest that people incorporate into their daily lives?*

I am a big advocate for keeping a visual journal. For people who are hesitant to start something like this, journaling could be as simple as writing a different memory down each day or gluing an old photograph or newspaper clipping to a journal page. For someone in the early stages of dementia, journaling can be a physical way they can record their world and carry their memories and life around with them. It is also a great intergenerational activity and a way for couples to reconnect.

*How did you become an artist and an art therapist? And how did you choose to specialize in helping patients with dementia?*

I have been an artist my whole life, and I believe it is important for art therapists to maintain their own art practice. It is a form of self-care. I do a lot of mixed-media work with found materials. I enjoy painting, drawing, printmaking, mosaics, and fiber arts. I have been keeping an art journal since 1999—I have over 300 of them now. I show my work in galleries, publications, and online.

I found art therapy after my own art practice helped support me through a few years of health problems. I was so excited to find the field—it validated that the thing that had been so helpful in my own life was something I could share with others! I got my MA in art therapy at New York University and I started a PhD program in art therapy at Notre Dame de Namur last August. I have worked with a wide range of clients—from very young children to elders—and in many different settings, including community, medical, and forensic mental health, to name a few. I enjoyed and learned from all those experiences, but I really love working with elders. I love their stories, I love the challenge of adapting materials to their needs, and I love hearing their opinions about the world. I feel so honored to get to be a part of their lives. •



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