

New Thinking

ABOUT THINKING

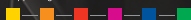
A Publication by Cleveland Clinic Lou Ruvo Center for Brain Health

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KEEP MEMORY ALIVE

Supporting the Mission of the Cleveland Clinic Lou Ruvo Center for Brain Health



Advances in Science Enhance Patient Care

This issue of *New Thinking About Thinking* highlights advances in science that are enhancing patient care. Science is most valuable when it improves the quality of life of patients and their families and prevents the occurrence of disease.

Ryan Walsh, MD, PhD, Director of the Parkinson's Disease and Movement Disorders Program at Cleveland Clinic Lou Ruvo Center for Brain Health, discusses advances in genetics as they relate to Huntington's disease. Genetics is providing important new insights in patient diagnostics and care.

Justin Miller, PhD, a neuropsychologist and our newest staff member, presents advances in cognitive testing as a means of diagnosis, exploring patients' cognitive strengths and monitoring therapies. Advances in cognitive neuroscience have placed new tools at the disposal of clinicians working with patients with brain disorders.

Pimavanserin is a breakthrough, first-in-class drug for the treatment of psychosis in Parkinson's disease. I discuss this remarkable new agent and its impact on patients and families.

Kate Zhong, MD, discusses exciting advances in the Lou Ruvo Center for Brain Health's clinical trials program. She emphasizes the TOMMORROW Study (yes, this is spelled correctly), a novel clinical trial with the goal of preventing the emergence of Alzheimer's disease in populations identified as high risk by their genetic status.

Le Hua, MD, a physician who recently joined the Lou Ruvo Center for Brain Health, plays a key role in growing our multiple sclerosis program. She offers insight into the use of magnetic resonance imaging in monitoring and treating multiple sclerosis. This powerful form of brain imaging has become critical to decision-making in care of MS patients.

Altogether, these presentations in *New Thinking About Thinking* feature remarkable progress in neuroscience in the service of advancing patient care.

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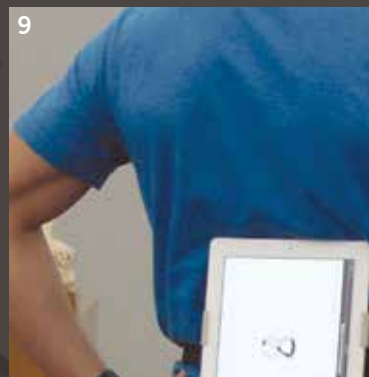
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A Wake-Up Call

Ken and Tracy Knauss

When Ken Knauss' father called him to say his mother had been asleep for more than 24 hours and he couldn't wake her, it turned out to be a wake-up call for Ken and his wife, Tracy. "Of course I told him to hang up and dial 911 immediately," Ken Knauss recalls, "but he replied that he didn't know how."

"It wasn't until we medically airlifted Ken's mother to a Las Vegas hospital and his dad moved in with us during her rehabilitation that we realized how badly his memory had declined," says Tracy Knauss.

Ken Knauss' dad, Charles Knauss, had been a bootstrapping, entrepreneurial type who in 1950, showed up in a suit and tie in the frontier town of Caliente, Nevada, population 900, and became both hospital administrator and funeral home director. In

1958, he relocated the family to Las Vegas, where he purchased and grew Palm Mortuary. By the early 2000s under Ken Knauss' management, the business had become one of the largest independently owned group of funeral homes in the United States.

Ken Knauss tells of his father's longstanding financial support of the Shriners Hospital, an expression of the gratitude he felt when the Shriners set the orphaned Charles' leg at no cost following a childhood sledding accident.

Although Charles Knauss passed away in 2009, Ken and Tracy Knauss are proud to support Cleveland Clinic Lou Ruvo Center for Brain Health, where friends, family and fellow Las Vegans now receive world-class care.

"The Lou Ruvo Center for Brain Health brings a different kind of medical experience to Las Vegas," says Tracy Knauss, who speaks of accompanying a relative seeking care at the center and finding the doctor was on time and talked directly and respectfully to the patient for more than an hour.

"Seeking medical care is no different than going to a funeral home in the sense that no one wants to be doing it," says Ken Knauss. "In order to differentiate yourself, you have to make the experience as good as it can be under the circumstances. We are proud to support the Lou Ruvo Center for Brain Health, which does just that for Nevada and the world."



National Memory Screening Day Provides Useful Information to the Las Vegas Community

Cleveland Clinic Lou Ruvo Center for Brain Health hosted National Memory Screening Day, in collaboration with the Alzheimer's Foundation of America, on November 19. All available appointments were filled just 24 hours after the program was announced. Free screenings were offered to 160 individuals.

For those concerned about memory loss, a memory screening is a great opportunity to be proactive and learn more about brain health. Screenings are appropriate for everyone, even those not currently experiencing memory loss. The Lou Ruvo Center for Brain Health staff provides participants with assessment results and an interpretation, which can serve as a point of comparison for future memory screenings.

Based on the results, participants may choose to share their memory assessment with their health care provider.



Research Coordinator Carol Varela and participant Sylvia Davis



Research Coordinator Isaac Santa Ana offers information about the Lou Ruvo Center and other local resources

Interested in a Free Memory Screening?

If you live in the Las Vegas area and would like to participate in Cleveland Clinic Lou Ruvo Center for Brain Health's next Memory Screening Day, please register online at keepmemoryalive.org/2013screen or call 702.483.6000, option 6.

Don't want to wait for the next free screening? You can use our brain health self-assessment tool online anytime at clevelandclinic.org/brainhealth. Or, contact us at 702.483.6000 to make an appointment with a neurologist.

Memory screenings:

- Are first steps toward finding out if a person may have a memory problem
- Are not used to diagnose any particular illness and do not replace consultation with a qualified physician or other health care professional
- Consist of a simple series of questions and/or tasks designed to test memory, language skills, thinking ability and other intellectual functions



How Neuropsychology Can Help Assess Memory Problems

By Justin B. Miller, PhD

Memory is a critical part of brain function, and it can go wrong in many ways. Assessing exactly what has gone wrong with memory is where specialized neuropsychological testing can be a very useful tool for both patients and their physicians, and can have a direct impact on treatment planning. Cleveland Clinic Lou Ruvo Center for Brain Health and its neuropsychology team can help.

If you think about memory like a drawer, some people might be able to put information in the drawer, but will have difficulty retrieving that same information from the drawer at a later time. On the other hand, some people have problems putting

information in the drawer in the first place, in which case no amount of help can bring back those memories that never made it into the drawer. Rather, it's as if the drawer has no bottom; therefore, memories can't be held inside.

Justin Miller, PhD administers test

Neuropsychologists are an important part of the medical team at the Lou Ruvo Center for Brain Health. A neuropsychologist's highly specialized clinical training focuses on evaluating the relationship between the brain and behavior.

Administered via pencil and paper, or question and answer, or computer, neuropsychological testing is specifically designed to evaluate an individual's patterns of cognitive strength and weakness in the areas of memory, attention, problem solving, language and more complex aspects of thinking.

It is important to remember that changes in cognition are a normal part of aging. The key is determining whether the changes someone is experiencing are consistent with the normal aging process — or instead indicate the presence of a brain disease like Alzheimer’s disease.

By combining a better understanding of cognitive functioning with information gathered through other studies such as an MRI or PET scan of the brain, the neuropsychologist can help neurologists identify what may be going on with a patient’s memory. Accurate diagnosis is the basis for informed management.

For an appointment with a member of the Lou Ruvo Center for Brain Health neuropsychology team, please call 702.483.6000. More information is online at clevelandclinic.org/brainhealth.



Neuropsychologist Justin Miller, PhD, with Head of Neuropsychology Sarah Banks, PhD, ABPP/CN



Introducing the Author: Justin B. Miller, PhD, Staff Neuropsychologist

Justin B. Miller, PhD, joined Cleveland Clinic Lou Ruvo Center for Brain Health in September 2013, after completing his predoctoral internship and postdoctoral fellowship in neuropsychology at the Semel Institute for Neuroscience and Human Behavior of the University of California, Los Angeles. He earned his doctorate in clinical psychology, with a specialization in neuropsychology, at Wayne State University.

Dr. Miller’s clinical practice spans an array of neurological disorders, including dementia, movement disorders and multiple sclerosis. “I’m proud to be involved in premium health care, state-of-the-art science and top-notch patient care at the Lou Ruvo Center for Brain Health,” he says.

“Dr. Miller is a wonderful addition to the Lou Ruvo Center for Brain Health,” says Sarah Banks, PhD, ABPP/CN, Head of Neuropsychology. “He augments our team and has embraced our collaborative culture in many ways, including presenting cases at our weekly case conference meetings. He’s also involved in many of our research studies and student education programs, to which he brings an excellent set of experiences and knowledge base.”

Dr. Miller’s primary research endeavors have focused on psychometric assessment practices. His work has been published and presented both nationally and internationally.



Laurie Larsen, MD, with patient Linda Obermann

Introducing Cleveland Clinic Urology, Las Vegas

With the success of the Lou Ruvo Center for Brain Health in Las Vegas, Cleveland Clinic decided to expand its services to build out Cleveland Clinic Nevada, which encompasses both the Lou Ruvo Center for Brain Health and Cleveland Clinic Urology, Las Vegas.



With the opening of Cleveland Clinic Urology, Las Vegas area residents have access to the urology program ranked second in the nation by U.S. News & World Report: Cleveland Clinic Glickman Urological & Kidney Institute.

Cleveland Clinic Urology, Las Vegas is staffed by Scott Slavis, MD, and Laurie Larsen, MD, experienced urologists who have practiced together in Las Vegas for 20 years.

“Dr. Slavis and Dr. Larsen are respected physicians with a well-established practice. Together, we are providing high-end urologic care in Las Vegas,” says Eric Klein, MD, Chairman of the Glickman Urological & Kidney Institute. Dr. Klein has become licensed in Nevada and visits Las Vegas to consult on complex cases.

Since becoming part of the institute, Cleveland Clinic Urology has moved into spacious new offices equipped with

state-of-the-art medical equipment, including new machines for performing endoscopies and ultrasound scans. The office includes nine staff members who have received training in Cleveland Clinic’s “Patients First” approach to medical care.

Cleveland Clinic Urology sees patients with a wide range of urological issues, including urinary incontinence, erectile dysfunction and cancers of the prostate, kidney and bladder.

Scott Slavis, MD, Urologist

After completing his fellowship at Cleveland Clinic Glickman Urological & Kidney Institute in 1989, Dr. Slavis was recruited by Sunrise Hospital to start a kidney transplant program. “It was an excellent opportunity to use my training and meet an important need in Las Vegas,” says Dr. Slavis, who has performed more than 600 transplants. He also opened a private practice and was later joined by Laurie Larsen, MD.

Over the years, Dr. Slavis stayed in touch with former colleagues in Cleveland, and was eager to bring their expertise to Las Vegas. In April 2013, his plans became reality with the opening of Cleveland Clinic Urology, Las Vegas.

“I knew that the Glickman Urological & Kidney Institute had an exceptional model of patient care. It’s great to have our practice become part of the institute,” he says.



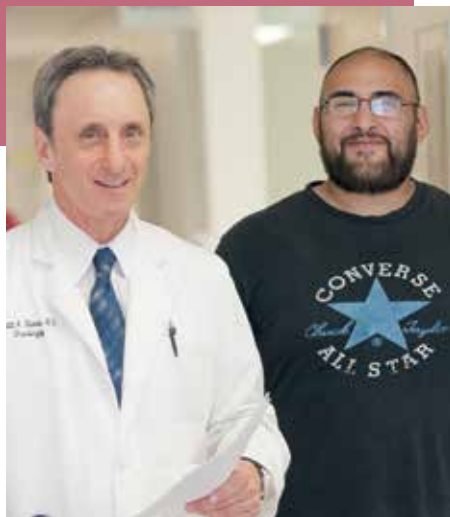
Laurie Larsen, MD, Urologist

When Dr. Slavis invited Dr. Larsen to join the Sunrise Hospital transplant program and his Las Vegas practice, she was excited at the opportunity to become the first female urologist in Nevada. “Women really appreciate seeing a urologist who understands the female body. It’s very gratifying to help all my patients with one of the most basic human needs,” says Dr. Larsen.

Working with Dr. Slavis, Dr. Larsen got to know Cleveland Clinic Glickman Urological & Kidney Institute and shared his goal of affiliating with it. Since the opening of Cleveland Clinic Urology, “it’s been an honor for us to be part of the Glickman Urological & Kidney Institute and offer our patients the most up-to-date urological care,” she says.



Scott Slavis, MD, with patient Eric-John Diaz



“We can bring the expertise and cutting-edge techniques of the Glickman Urological & Kidney Institute to benefit our patients and be an asset to the Las Vegas community,” says Dr. Slavis.

The Glickman Urological & Kidney Institute is known for its innovations in urological care, including pioneering minimally invasive techniques for kidney and prostate surgeries.

Cleveland Clinic Urology and the Lou Ruvo Center for Brain Health share an electronic medical records system, which enables physicians to easily access common patient

information. Both urological issues such as incontinence and neurological disorders such as Alzheimer’s disease are prevalent in the aging population.

“We are developing a close relationship with the neurologists at the Lou Ruvo Center for Brain Health, and often see the same patients,” says Dr. Slavis.

For more information on Cleveland Clinic Urology, Las Vegas or to make an appointment, please visit clevelandclinic.org/Nevada or call 702.796.8669.

Retired NFL player Matt Snider with Samantha McLea, MSN, NP-C



“The cumulative effect of repeated collisions and head brain trauma is now recognized as a major factor in declining mental and physical health among some — but certainly not all — retired athletes who participated in contact sports,” says Charles Bernick, MD, Associate Medical Director at the Lou Ruvo Center for Brain Health. “Our objective is to identify which individuals are at risk as early as possible and offer intervention.”

Enhancing the Lives of Retired Athletes With Head Trauma

As the long-term effects of sports-related collisions and brain trauma in some athletes continue to cause concern, Cleveland Clinic has teamed with the National Football League Players Association (NFLPA) to assess and improve the brain health and overall well-being of retired professional football players.

The NFLPA program, called The Trust, offers physical and neurological evaluations to former players, followed by a comprehensive plan to relieve symptoms, restore function and improve cognitive skills.

Cleveland Clinic uses an evidence-based approach to customize care for each retired athlete, factoring in age, history of concussion and health history. The goal is earlier identification of potential physical, neurological or cognitive problems, which may lead to improved interventions and treatments.

Cleveland Clinic Lou Ruvo Center for Brain Health is part of this effort to develop a collaborative “game plan” to enhance cognitive, motor and social function in retired athletes. Building on the success of the Retired Athletes Clinic in Las Vegas and findings from the ongoing Professional Fighters Brain Health Study, the Lou Ruvo Center for Brain Health continues to lead in cognitive health for athletes exposed to repeated head trauma.

NFLPA members who choose to take part in the program at the Lou Ruvo Center for Brain Health can receive services ranging from the diagnostic (neurological exam, neuropsychology assessment, psychiatric evaluation, brain MRI, balance assessment) to guidance on long-term management of quality of life (physical therapy, social services).

Each player will leave with his own “neurological passport” that outlines exactly where he stands, cognitively and neurologically, and short-term and long-term treatment plans customized to meet his specific needs. The plans will include ongoing communication between the player and his health care team.

Cleveland Clinic has been at the forefront of concussion treatment and research, developing the Cleveland Clinic Concussion Assessment System (C3), a tablet-based app that offers a global assessment of concussion symptoms; designing an intelligent mouthguard that measures impact; and developing a blood test to assess concussion symptoms.

NFLPA members may call 216.445.9815 for more information on an appointment at Cleveland Clinic’s main campus in Cleveland, Ohio; at Cleveland Clinic Florida in Weston; and at Cleveland Clinic Lou Ruvo Center for Brain Health in Las Vegas. Other participants in The Trust include the University of North Carolina in Chapel Hill, N.C., and Tulane University in New Orleans.



Jay Alberts, PhD, with the tablet-based Cleveland Clinic Concussion Assessment System

Ryan Walsh, MD, PhD, oversees the Huntington's Disease Comprehensive Clinic



Preparing to Know: **The Genetics of Huntington's Disease**

If you knew you had a 50 percent chance of developing an incurable disease of the brain, would you want a simple blood test to find out for sure?

Huntington's disease (HD) is among the growing number of neurodegenerative diseases for which there is such a test. The gene mutation that causes it has a 50 percent chance of being passed from parent to child. Those who inherit the gene mutation always get the debilitating disease, usually in their mid-30s or 40s.

There are advantages to knowing, says Ryan Walsh, MD, PhD, Director of the Parkinson's Disease and Movement Disorders Program and the Huntington's Disease Comprehensive Clinic at Cleveland Clinic Lou Ruvo Center for Brain Health.

"Just because we don't have a way to cure it now, that doesn't mean we won't in the future," he says. Numerous clinical trials are available and ongoing research may benefit those diagnosed even now. In the interim, knowing you will get the disease allows you and your family and support network to prepare for it and plan for managing quality of life as symptoms progress.

Even so, knowing you have a mutation can have negative consequences, and Dr. Walsh insists his patients undergo genetic counseling prior to being tested.

"It's important to know all of the pros and cons of finding out before you have the test done," he says. "It's rare to be able to know this type of information. If the results are positive, it's life-changing."

Genetic counseling can help. Genetic counseling includes information on the disease, its potential for being passed on, legal and insurance ramifications, and how to tell loved ones. Patients who receive a positive result are also encouraged to go through psychotherapy at the Lou Ruvo Center for Brain Health.

Genetic testing has become increasingly important in disease diagnosis, management of treatment and prediction of side effects.



Huntington's Disease Comprehensive Clinic

The Huntington's Disease Comprehensive Clinic at Cleveland Clinic Lou Ruvo Center for Brain Health provides the complex care needed by HD patients and their families. A multidisciplinary team can address physical, emotional, cognitive and behavioral needs, as well as provide genetic counseling and testing — all aimed at enhancing the quality of life of families living with HD.

Opportunities to participate in clinical research trials also are available at the Lou Ruvo Center for Brain Health.

To learn more, please visit clevelandclinic.org/brainhealth or call 702.483.6000.



Educating the Next Generation

When elementary school groups come on field trips to Cleveland Clinic Lou Ruvo Center for Brain Health, the staff often hears comments like “My grandma forgets things and so she came to live with us.”

“I’m struck by kids’ curiosity around dementia and other brain problems in their families,” says Dylan Wint, MD, Director of Education in Neurodegeneration.

Along with providing excellent patient care and advanced research, the Lou Ruvo Center for Brain Health is deeply involved in education programs in the Las Vegas valley. Dr. Wint and Education Coordinator Susan Farris are finding that by interacting directly with students of all ages, they’re helping people better understand their families and their own career choices.

“We feel a responsibility to the community to share our specialized knowledge about neurodegenerative diseases because we’re among the few in Nevada equipped to do so,” says Ms. Farris. “We strive to fulfill as many requests for collaboration as we can.”

Among its K-12 initiatives, the Lou Ruvo Center for Brain Health is involved with the Clark County School District’s STEM (science, technology, engineering, math) grant, offering interdisciplinary field trips and internships for middle school students, as well as the Ford Foundation’s program for at-risk elementary students. Seniors at Bishop Gorman High School can apply to do their 100-hour community internship at the Lou Ruvo Center for Brain Health.

While field trips capture the imagination of the youngest visitors, internships for older students provide a multidisciplinary approach to education, with neurologists, psychologists, physical therapists and the social work and imaging teams collaborating on well-rounded, holistic training experiences.

The Lou Ruvo Center for Brain Health also offers educational opportunities to aspiring nurses, physician assistants, doctors and allied health professionals through collaborations with the University of Nevada Las Vegas, the University of Nevada School of Medicine, Touro University Nevada and Valley Hospital.



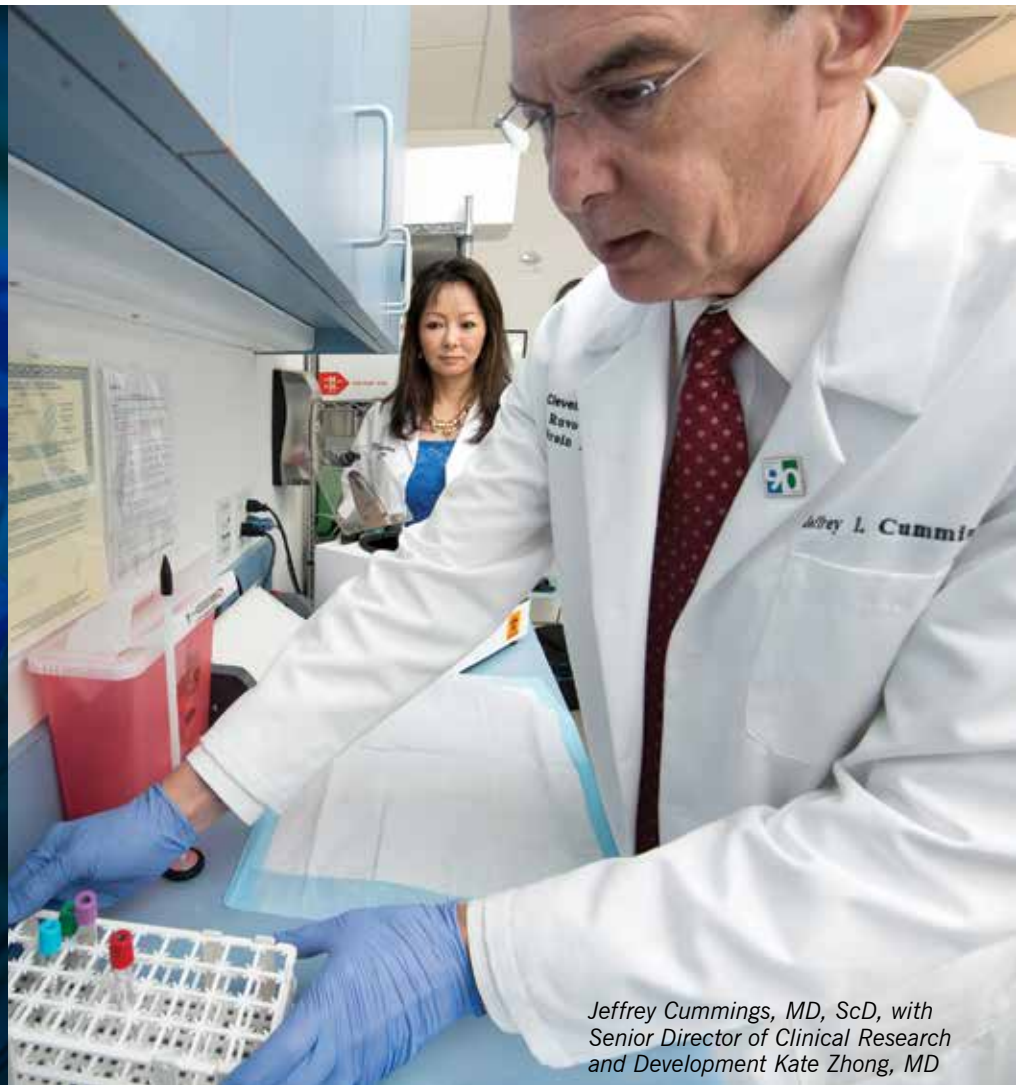
above: Mark Kahre Elementary

lower: Alexander Dawson kindergartners learn about brain health with Ryan Walsh, MD, PhD

Dr. Wint’s hope for the future of Nevada health care is that it steadily develops its considerable local talent, and he and Ms. Farris are proud to play a role in that long-term goal. The pair encourages those interested in educational opportunities at the Lou Ruvo Center for Brain Health to contact them at CBHeducation@ccf.org.

He sums it up this way: “If those who spend time with us continue having conversations about the brain that they weren’t having before their time on our campus, then their educational experience at the Lou Ruvo Center for Brain Health was a success.”

Breakthrough Drug for Behavioral Changes in Parkinson's Disease



Jeffrey Cummings, MD, ScD, with Senior Director of Clinical Research and Development Kate Zhong, MD

Many patients with Parkinson's disease (PD) experience hallucinations (seeing things that are not there) and paranoia (false beliefs, such as the fear that people are going to harm them) in the course of their disease. In many cases, these behavioral changes appear to be induced by medications taken for the treatment of PD, whereas in others they may be produced by the brain disease itself. These symptoms are disabling to patients and profoundly disturbing to family members.

Pimavanserin is a new type of drug, recently shown in a clinical trial to significantly reduce hallucinations and delusions in patients with PD. The trial was led by Jeffrey Cummings, MD, ScD, Director of Cleveland Clinic Lou Ruvo Center for Brain Health. He says preliminary review by the U.S. Food and Drug

Administration suggests that this medication will be approved for use in PD.

This drug represents a breakthrough in therapy because currently, no approved medication exists for this problem. Moreover, no agent is specifically approved for psychosis in any neurological disorder. Pimavanserin is an unprecedented agent that shows behavioral changes can be treated in patients with brain diseases.

Dr. Cummings expects the medication to be on the market by late 2014 or early 2015. Pimavanserin will provide relief to thousands of PD patients suffering from this disturbing complication of their disease. The success of Pimavanserin will encourage more clinical trials to develop treatments for psychosis and other behavioral disturbances in a broad range of neurological disorders.



For information on clinical trials at Cleveland Clinic Lou Ruvo Center for Brain Health, please contact BrainHealth@ccf.org or 855.LOU.RUVO (855.568.7886).

A complete list of clinical trials is available online at clevelandclinic.org/BrainHealthTrials.



Preventing Alzheimer's Disease: An Exciting New Era in Research

By Jeffrey Cummings, MD, ScD

Left to right: Yolande Mucharbach, Donna Munic-Miller, PhD, Annette Johnson, Christine Garcia and Jeffrey Cummings, MD, ScD

Wouldn't it be great if no one got Alzheimer's disease? That is the goal of five new trials in the planning or initiation phases in the U.S. (see table). The studies involve testing drugs in cognitively normal people to see if we can prevent Alzheimer's disease from occurring.

The TOMMORROW study (see article on page 15) focuses on age and genetics to determine the risk for Alzheimer's disease among older persons who are still cognitively normal. Individuals at high risk for Alzheimer's disease will be randomized to drug or placebo to determine whether pioglitazone, the drug, can delay or prevent Alzheimer's disease.

A4 refers to another prevention study in which cognitively normal older individuals with evidence of the Alzheimer's disease protein (amyloid) in the brain will receive a placebo or an intravenously administered antibody that attacks the abnormal protein.

A third prevention study will test a drug to prevent the onset of Alzheimer's disease in

cognitively normal people with two copies of a gene that represents a powerful risk factor for Alzheimer's disease. Individuals with one copy of this E-4 gene are at increased risk for the disease and those with two copies are almost certain to get Alzheimer's disease in later life.

Two studies — one being conducted with a large family in Colombia and one in families throughout the world — test the effects of therapies in patients who carry a mutation that always causes Alzheimer's disease. The time the disease strikes is consistent among family members, which

means scientists know exactly who will get the disease (those carrying the mutations) and when they will get it (near the time other family members got it). Drugs can be tested in this vulnerable group to determine if they delay or prevent the onset of Alzheimer's disease.

Altogether, these studies represent an exciting new era in Alzheimer's disease research, the goal being to prevent the disease. Great new science informs these studies, including genetics and brain scans of the Alzheimer's disease protein. New therapies are being tested in these studies, including antibodies administered intravenously, oral medications to

improve function of mitochondria (the energy-producing parts of cells) and other agents that impact the pathology of Alzheimer's disease.

Cleveland Clinic Lou Ruvo Center for Brain Health is participating in the TOMMORROW study and the A4 study, and is also involved in testing two antibodies being used in these prevention trials.

A complete list of clinical trials at the Lou Ruvo Center for Brain Health is available online at clevelandclinic.org/BrainHealthTrials. Or, contact us at BrainHealth@ccf.org or 855.LOU.RUVO (855.568.7886).

Research Coordinator Yolande Mucharbach with Dr. Kate Zhong



Studies of Alzheimer's disease prevention

In each study, people have no memory problems at the beginning. Research will determine if medication reduces progression to memory loss and Alzheimer's disease.

| Study | Risk Factor | Treatment |
|---|-------------------------------|---|
| Alzheimer's Prevention Initiative (API) | Mutation | Immune therapy (crenezumab) |
| Alzheimer's Prevention Initiative (API) | Risk gene (ApoE4) | To be determined |
| Dominantly Inherited Alzheimer Network (DIAN) | Mutation | Immune therapy (gantenerumab or solanezumab) and oral medication (to be determined) |
| TOMMORROW | Risk genes (ApoE4 and TOMM40) | Oral medication (pioglitazone) |
| Anti-Amyloid in Asymptomatic Alzheimer's Disease (A4) | Positive amyloid brain scan | Immune therapy (solanezumab) |



TOMMORROW Study Brings Hope for a Tomorrow Without Alzheimer's Disease

Cleveland Clinic Lou Ruvo Center for Brain Health, which has one of the nation's largest and most active Alzheimer's disease clinical trial programs, is participating in the largest worldwide AD prevention study to date.

*Kate Zhong, MD, Senior Director of
Clinical Research and Development*



The TOMMORROW clinical trial is evaluating whether pioglitazone — a Food and Drug Administration-approved drug that is used to treat type 2 diabetes, and that also protects nerve cells — can prevent or delay the onset of Alzheimer’s disease. The study will also examine whether a genetic-based biomarker can determine the risk of developing AD.

“In recent years, there is a new emphasis on Alzheimer’s disease prevention, aiming to delay the onset of the disease,” says Kate Zhong, MD, Senior Director of Clinical Research and Development at the Lou Ruvo Center for Brain Health.

It’s easy to understand why. More than 5 million Americans have Alzheimer’s disease, costing the nation \$200 billion in direct health care costs. As the percentage of Americans older than 65 continues to grow, estimates are that the number of people with AD will nearly triple to 13.8 million in 2050, with health care costs ballooning to \$1.2 trillion.

Dr. Zhong is supervising the TOMMORROW trial at the Lou Ruvo Center for Brain Health’s locations in Las Vegas and Florida. “We are excited to be a part of this landmark clinical trial,” she says. “This study will help us learn more about the genetic risk of developing Alzheimer’s disease and the benefit of drugs that may prevent the disease.”

In addition to evaluating pioglitazone as a preventive medication, the trial will test whether specific genes are valid tools for predicting the risk in people older than 65 of developing mild cognitive impairment due to Alzheimer’s disease within five years. One of these genotypes is TOMM40, which inspired the study’s name: TOMMORROW.

“If people knew their risk of developing Alzheimer’s disease, it would help them better plan for the future,” says Dr. Zhong.

TOMMORROW Research Coordinator Annette Johnson, standing, with Gail Vranesh, RN



Recruitment for the trial is under way, with many people in the Las Vegas community expressing interest in participating. “We are using this trial as an opportunity to educate people about the importance of prevention.

There is so much that people, even those with genetic risk factors, can do to decrease their risk of developing Alzheimer’s, such as exercising and following a healthy lifestyle,” says Dr. Zhong.



You may be able to participate in the TOMMORROW study and contribute to preventing Alzheimer’s disease if you:

- Are 65 to 83 years old
- Are available to participate for five years
- Are in good physical and mental health
- Have a relative or friend who can assist with the study
- Have not been diagnosed with cognitive impairment

For more information, please contact BrainHealth@ccf.org or 855.LOU.RUVO (855.568.7886). A complete list of clinical trials at Cleveland Clinic Lou Ruvo Center for Brain Health is available online at clevelandclinic.org/BrainHealthTrials.

Timothy West, MD, Director, Mellen Program for MS at the Lou Ruvo Center for Brain Health, Las Vegas, with patient Suzanne Hackett-Morgan



Multiple Sclerosis Program Launches **First Clinical Trial**

The Cleveland Clinic Mellen Program for Multiple Sclerosis at the Lou Ruvo Center for Brain Health, Las Vegas, has launched a clinical trial program to investigate new treatments for multiple sclerosis (MS). The first trial compares two of the most commonly used medications for the treatment of relapsing remitting MS and a novel, lower-dose form of one of these medications, known as fingolimod.

In 2010, fingolimod became the first oral medication to gain Food and Drug Administration approval for the treatment of relapsing forms of MS. Oral options are sorely needed because up to 30 percent of MS patients stop taking their

injectable medications due to injection-related concerns.

While fingolimod has been an important step forward in the care of MS patients, it is not without side effects. Clinical trials and post-marketing experience with this

medication have revealed an association with cardiac events; thus, fingolimod is not recommended for people with certain heart conditions.

A one-year clinical trial at two Cleveland Clinic sites, including the Lou Ruvo Center for Brain Health, will evaluate whether a lower dose of fingolimod is as effective as the full dose in treating MS, with fewer side effects. As a comparator, both the FDA-approved current dose and the lower dose will be tested against glatiramer acetate (Copaxone®) the most commonly used injectable medication for the treatment of MS.



*Research Coordinator Annette Johnson
with Suzanne Hackett-Morgan*

Interested in Clinical Trials?

The study on fingolimod is being conducted at two Cleveland Clinic locations: the Mellen Program for MS at the Lou Ruvo Center for Brain Health, Las Vegas, and Cleveland Clinic Mellen Center for Multiple Sclerosis in Cleveland.

For more information on participating in research, please contact BrainHealth@ccf.org or 855.LOU.RUVO (855.568.7886). A complete list of clinical trials at the Lou Ruvo Center for Brain Health is available online at clevelandclinic.org/BrainHealthTrials. Information on counseling and other free social services programming in Las Vegas is at keepmemoryalive.org/socialservices.

When Suzanne Hackett-Morgan heard of the Lou Ruvo Center for Brain Health's clinical trial of fingolimod, she was immediately interested in learning more and was accepted as a participant. Since being diagnosed with MS in July 2012, Ms. Hackett-Morgan has become a strong advocate of clinical trials.

"I think it's important to participate in trials and advance treatment options for people with MS," says Ms. Hackett-Morgan, a painter, longtime fundraising consultant for nonprofit and arts organizations, and founding director of the Goldwell Open Air Museum.

Ms. Hackett-Morgan hopes the lower dose of fingolimod proves effective so that she and others with MS can benefit from it. "The trial has been a fantastic experience. The people at the center are loving and supportive," she says.

Clinical trials are a critical step in evaluating the safety of a medicine and a requisite step in gaining FDA approval, explains Timothy West, MD, Director of the Mellen Program for MS at the Lou Ruvo Center for Brain Health. "Without individuals with MS generously donating their time to participate in clinical trials, new drug treatments would never become available to the MS community," he says.

Thanks to generous support from the Conrad N. Hilton Foundation, the Mellen Program for MS at the Lou Ruvo Center for Brain Health, Las Vegas, continues to expand its services. Well-rounded care includes more than drug treatment. In addition to participating in the fingolimod trial, Ms. Hackett-Morgan and her husband took advantage of the Lou Ruvo Center for Brain Health's free counseling sessions for MS patients. "We both needed support to deal with my illness and the changes it's made in our lives. The center is a great community resource, and it's making a big difference for me," she says.

Imaging of the Brain Is Making a Difference in MS

By Le Hua, MD

Since its introduction in 1980, magnetic resonance imaging (MRI) has revolutionized multiple sclerosis (MS) care and research.

In MS, the body's own immune cells attack the myelin (the white matter in the nervous system), leaving lesions (scar tissue) where the attacks occur. Seeing MS lesions via MRI has improved clinicians' ability to diagnose and track the disease over time.

MRI uses specialized magnets and takes advantage of the unique electromagnetic signals from the body's different tissues to capture pictures of the brain with remarkable clarity. That's critical because multiple sclerosis symptoms can vary widely in different people, depending on where the lesions occur. Moreover, other diseases can mimic MS, making it difficult to diagnose.

Thanks to MRI, we now know that many attacks in MS are silent; due to the brain's remarkable ability to adapt, the patient doesn't notice any symptoms. Over time, however, the brain can no longer compensate for these attacks and a permanent cognitive disability develops.

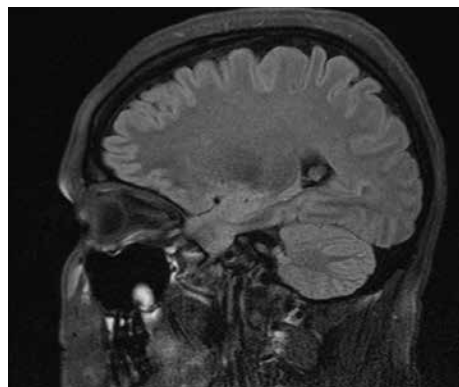
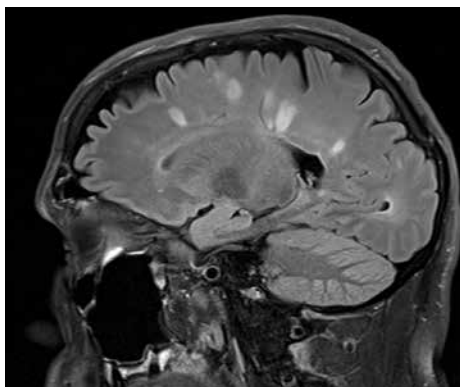
We can measure how effectively different MS therapies decrease MRI activity in a



Imaging Specialist Laura Rogers helps Joyce Luman into the scanner

much shorter time span than if we relied on visible attacks alone. MRI is also an essential tool in measuring the effects of MS treatment during clinical trials.

MRI has remarkable diversity, allowing scientists to explore brain structures and function, white matter components, and chemical constituents. At Cleveland Clinic Lou Ruvo Center for Brain Health, our 3-Tesla MR machine offers state-of-the-art image clarity. Please call 888.370.8933 to make an appointment or speak with your neurologist.



In the MRI of the patient with MS (left), white spots indicate lesions caused by the disease. In the normal brain (right), note the absence of white spots indicating a healthy brain with no MS changes.

About the Author Le Hua, MD Staff Neurologist

In August 2013, neurologist Le Hua, MD, joined the Mellen Program for MS at the Lou Ruvo Center for Brain Health after completing her fellowship in neuroimmunology and MS at the Barrow Neurological Institute and St. Joseph's Hospital and Medical Center in Phoenix. She joins Program Director Tim West, MD, as the second fellowship-trained neurologist at the Lou Ruvo Center for Brain Health's Las Vegas location.

Dr. Hua was attracted to the Lou Ruvo Center for Brain Health by the staff's dedication to patient-centered care. She relishes the research opportunities and is eager to apply her experience working on clinical trials and using advanced MRI neuroimaging to better understand cognitive functioning in MS, which she considers an understudied area.

Dr. Hua notes it is an exciting time to work in the MS field because understanding of the disease has grown and many more effective therapies have and will become available.



Le Hua, MD and James Hildreth

Imaging Specialist **Laura Rogers** Embodies the Caregiving Spirit



Laura Rogers at her urban ranch



Laura Rogers was crowned Ms. Nevada 2007

Cleveland Clinic Lou Ruvo Center for Brain Health Imaging Specialist Laura Rogers always wanted to become an imaging professional because she recognized that the field is “both computer-driven and patient-dependent.”

This seemingly incongruous career pairing of technology and interpersonal communication doesn't surprise those who know Ms. Rogers well. What else might one expect from a woman who spent a

summer in Russia as an Olympic hopeful track star and for 22 years held her high school's record for triple jump; who served as activities director for her college campus; who was crowned the 2007 Ms.

Nevada; who took up barrel racing in her 30s; and who now runs a mini-urban ranch complete with chickens, goats and horses? Given such disparate talents, why not obtain a Bachelor of Science in medical imaging technology, too?

Today, Ms. Rogers is an integral part of the neuroimaging team at the Lou Ruvo Center for Brain Health, which offers advanced MRI and PET facilities that allow the center's physicians to diagnose and monitor patients with brain disorders.

While Ms. Rogers was in high school, her mother, who had been a home care nurse for people with multiple sclerosis, developed a mass in her spine that left her a paraplegic. The illness left her daughter with the approach of creative problem solver and fueled her passion for patient care.

“You see the world in a whole new way once you're personally affected by a neurologic disorder,” Ms. Rogers explains. “As both a family caregiver and an imaging professional, I appreciate that imaging helps us better understand brain disease, and can really make a difference in people's lives.”

Ms. Rogers enjoys being a part of the patient and family education process: “I try to calm them and eliminate anxiety by explaining that imaging is a useful technology that plays a key role in diagnosis and prognosis.”

To make an appointment with the neuroimaging team, please call 888.370.8933.

Physical Therapy Group Exercise Classes Expand Fitness Opportunities for Patients

In line with the holistic approach to care that defines Cleveland Clinic Lou Ruvo Center for Brain Health, newly expanded group exercise classes focus on improving fitness and overall health among patients with neurodegenerative disorders.

“The purpose of the biweekly classes is to empower participants and offer socially enriching experiences, while increasing mobility and agility and decreasing fatigue and falls,” says Jennifer Nash, PT, DPT, Manager of Neurorehabilitation Services. She leads a team certified in neurologic and geriatric physical therapy, which conducts the group classes.

James L. Tucker Jr., 88, is among the many patients who choose this safe, motivational group exercise environment after completing one-on-one sessions with physical therapists.

“I look forward to exercise class with enthusiasm, and I enjoy using humor to



Karin and James Tucker



Jennifer Nash, PT, DPT, NCS, and James Tucker

keep my classmates motivated and laughing with me,” says Mr. Tucker.

That wasn’t always the case, recalls his wife, Karin. As his Parkinson’s disease progressed, Mr. Tucker struggled with balance, despite the assistance of a walker, and movement became nearly impossible. Then the couple saw Ryan Walsh, MD, PhD, Director of the Lou Ruvo Center for Brain Health’s Parkinson’s Disease and Movement Disorders Program, who adjusted Mr. Tucker’s medication and recommended physical therapy.

When it comes to adherence to the exercise regimen prescribed by his physical therapists at the Lou Ruvo Center for Brain Health, Mr. Tucker harkens back to his experience as a Navy physical training instructor on the battlefield during World

War II, where mastery of physical skills, such as swimming, was truly life-saving.

“I committed to doing exactly what the Cleveland Clinic physical therapists told me, including using ankle weights and an exercise bike at home,” says Mr. Tucker. “Meleah Murphy and Jennifer Nash don’t accept shortcuts. They’re as dedicated to me as I was to teaching men to swim in the Navy.”

Mrs. Tucker has seen the difference in her husband: “There was a period of time when James passed the day napping in his chair, but physical therapy has improved not only my husband’s physical strength, but his overall quality of life. Now, he’s in a better mood. He’s much more energetic and has begun reading the newspaper and going out again.

Group Therapy: One Concept. Two Options.

Group exercise classes conducted by a Cleveland Clinic physical therapist focus on maintaining function in the lives of Cleveland Clinic Lou Ruvo Center for Brain Health patients. Patients can choose between two classes:

- 1) Parkinson's disease exercise class: Tailored to the movement symptoms of Parkinson's disease
- 2) Group exercise class: A seated exercise class open to individuals with any neurodegenerative disorder

All classes take place on Tuesdays and Thursdays in the Lou Ruvo Center for Brain Health's Event Center. A monthly fee of \$80 includes two classes a week. Insurance does not cover the classes.

Call 702.483.6000 to reserve your place in class.



Lace Up Your Walking Shoes: Walk With a Doc

Get out of bed, off the couch and away from those Saturday morning cartoons. Grab the dog, the kids or the grandparents and join Cleveland Clinic doctors for a talk and walk through Las Vegas' new, vibrant downtown.

Walk With a Doc is a free community event that combines a brief, informative talk by a Cleveland Clinic Nevada doctor, followed by a casual 45-minute stroll during which participants can walk alongside the doctor and ask questions.

So bring your water bottle, friends and family. Children and well-behaved dogs are welcome.

Come Walk With Us

Held on the first and third Saturdays of the month through May 2014, walks with Cleveland Clinic Nevada depart from and conclude at Cleveland Clinic Lou Ruvo Center for Brain Health. No registration is required.

Information on the Walk With a Doc program in your city and the Cleveland Clinic Nevada chapter is online at walkwithadoc.org/ClevelandClinicNevada.



Walk with a Doc participants bundle up on a cold Vegas morning

Six Pillars of Brain Health

By Kate Zhong, MD
Senior Director of Clinical Research
and Development

Brain health is critical to a vital mental life. Brain-healthy behaviors should begin in childhood and continue throughout one's life. Brain health activities increase brain reserve and reduce the risk for many diseases, including Alzheimer's disease, multiple sclerosis and the effects of traumatic brain injury. Six pillars have been identified as key to maintaining brain health and creating a brain span that matches our lifespan:

Physical exercise should be done at least three times per week for at least 30 minutes, with a goal of increasing your heart rate. At age 70, your heart rate should get above 120; age 50, above 136; and at age 30, above 152. These figures guide the vigor of the exercise. Your exercise regimen should be attuned to your general health.

Brain Fitness helps keep the mind sharp. There is evidence supporting the "use it or lose it" approach to mental activity. Daily business activities of



employed individuals; crossword puzzles; Sudoku exercises; and active engagement with news, reading and computer information are examples of mental exercise. Commercial products such as Dakim BrainFitness and Lumosity may also support ongoing brain health.

Food and nutrition is critical to brain health, and increasing evidence suggests that a Mediterranean-type diet with fish, olives, colorful vegetables and fruits, and nuts helps maintain brain health throughout life. Red wine has a neuroprotective element — resveratrol — and modest quantities contribute to brain health.

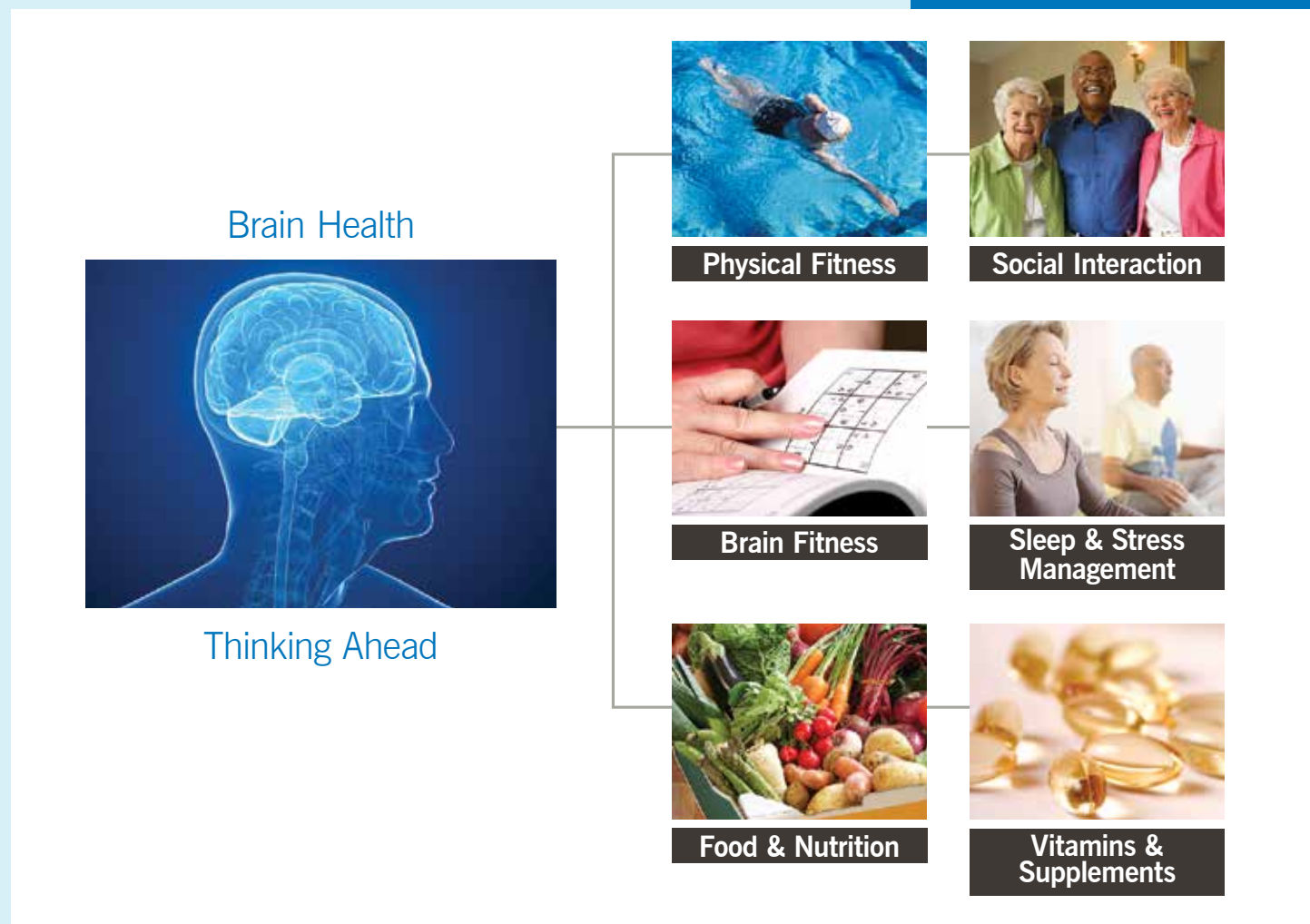
Social interaction is critical to healthy aging and a normal brain span. Volunteerism, clubs, family activities and entertainment are all important to a brain health lifestyle.

Vitamins and supplements may assist in maintaining brain health. Omega-3 fatty acids, curcumin, polyphenols from grape skins, and vitamins E, D and C all have anti-oxidant activities, and appear to defer the onset of cognitive decline and reduce the pathology of brain disease in experimental animals. Precise recommendations for dosing are evolving.

Both reducing daily **stress** and enhancing **sleep** contribute to brain health. Recent studies show that poor sleep is associated with the occurrence of Alzheimer's disease and good sleep reduces the risk of the disease. Similarly, high stress levels have been associated with an increased occurrence of Alzheimer's disease and reduced stress with lower risk and better brain health.

The six pillars of brain health are central to Cleveland Clinic Lou Ruvo Center for Brain Health's brain health program. Brain health recommendations are integrated into a comprehensive care plan for patients and presented to Lou Ruvo Center for Brain Health's patients and families as a means of reducing their risk for Alzheimer's disease and other late-life disorders, as well as for maintaining cognitive vitality throughout life.

For more information, please visit clevelandclinic.org/brainhealth or keepmemoryalive.org.





Gabriel Léger, MD, Director of the Frontotemporal and Young-onset Dementias Program, examines Stewart Barquist while wife Teri Lawrence-Barquist looks on.

Young-Onset Dementia: A Challenge for Families and Physicians

Active and energetic, Stewart Barquist especially loved spending time with his six adopted and two foster children, currently aged two to 22, all of whom have special needs.

“He was the one who took the children to the park and went bicycle riding with them,” says his wife, Teri Lawrence-Barquist.

About 10 years ago, Teri Lawrence-Barquist noticed that Mr. Barquist had difficulty balancing their checkbook. In recent years, he became increasingly forgetful and had difficulty driving, which interfered with his work as a police officer at the University of Nevada Las Vegas. He was unable to remember where campus buildings were, and once drove on the wrong side of the road.

After Mr. Barquist was placed on administrative leave from his job in April 2012 at age 63, the Barquists saw Gabriel Léger, MD, at Cleveland Clinic Lou Ruvo Center for Brain Health. He diagnosed Mr. Barquist with young-onset Alzheimer’s disease.

Initial symptoms of young-onset Alzheimer’s disease may differ from later-onset Alzheimer’s symptoms, often affecting visual/spatial function rather than memory. People may have difficulty, for example, locating objects or navigating a car through traffic. They may also have impaired language ability. Developing dementia at an early age can be particularly devastating because these patients are typically involved in pursuing their careers and raising children.

However, “There is hope for patients like Stewart Barquist. We have medications that may reduce symptoms, and social workers who offer counseling to patients and caregivers and help them with finances and finding support services,” says Dr. Léger, Director of the Frontotemporal and Young-onset Dementias Program.

The Lou Ruvo Center for Brain Health’s young-onset Alzheimer’s program includes brain imaging, diagnosis, treatment, neuropsychology, psychiatry, and family education. To complement care, patients and their families can participate in clinical trials of new drug therapies.

Mr. Barquist has already participated in one Lou Ruvo Center for Brain Health Alzheimer’s disease clinical trial, and he may participate in a second trial. “I encourage all my patients to get involved in clinical trials. It’s a very positive experience for people to contribute to research that may benefit them and others with the disease,” says Dr. Léger. “While trials are ‘blind’ in the sense that the investigator doesn’t know if the patient is on the drug or a placebo, Mrs. Barquist has commented that her husband’s mood has improved.”

A complete list of clinical trials is online at clevelandclinic.org/BrainHealthTrials. For more information on clinical trials, please contact BrainHealth@ccf.org or 855.LOU.RUVO (855.568.7886). To make an appointment with the Lou Ruvo Center for Brain Health’s neurology team, please call 702.483.6000, option 2.

Staging of “Caregiver Collage” Offers Humorous and Poignant Insights



Sandy Runkle



left: Vince Ragazzo, right: Marion Stedman

Over the course of a degenerative brain disease, patients and families strive to find a sense of balance and maintain their quality of life. To help, Cleveland Clinic Lou Ruvo Center for Brain Health offers programs and services designed to increase knowledge, coping skills and a sense of well-being.

Accordingly, on April 16, 2014, the Lou Ruvo Center for Brain Health will again offer “Caregiver Collage,” a play that presents an opportunity for respite built upon a shared group experience of the role of the family caregiver. When we last staged the production in June 2010, Director of Social Services Susan Hirsch asked members of the cast and audience to share their reactions in a group setting after the performance. With great emotion, participants expressed gratitude that their experiences were being brought to light, and proceeded to share personal stories about the impact of caregiving on their relationships and their lives.

Written by Douglas Hill based on interviews of Lou Ruvo Center for Brain Health family caregivers, and performed in readers’ theater style by Speeding Theater Over 55, “Caregiver Collage” brings to life commonly experienced emotions — stress anxiety, denial, anger and loss — through vignettes that portray care for a parent in the home, long-distance caregiving and older spouses with their own health challenges caring for their partners.

Ms. Hirsch says the purpose of “Caregiver Collage” — and of the center’s no-cost social services programming — is to

heighten awareness of the range of experiences and emotions associated with caregiving and offer a forum where caregivers and families can connect with others in similar circumstances to share a laugh, a tear or a tip.

The center’s social services encompass group opportunities — including support groups and educational programming such as weekly Lunch & Learn sessions — as well as individual services like psychotherapy (see more information on our social services offerings in the sidebar on page 28).

Check Online

For more information on the April 16 performance of “Caregiver Collage” and other social services programming, please visit the program calendar at keepmemoryalive.org/socialservices. Educational programming is free of charge and open to members of the community regardless of whether they or a loved one are patients at the Lou Ruvo Center for Brain Health.



Singer Kenneth Edmonds Makes Social Services Possible for Families

When Barbara Edmonds retired and moved from Indianapolis to Las Vegas in the mid-1990s, members of her family soon followed. “Everyone loved my mother,” says Kenneth “Babyface” Edmonds, the Grammy Award-winning R&B singer, songwriter and record producer. “She was an energetic, spicy lady with a great sense of humor.”

Singer Kenneth Edmonds performing at Lake Tahoe



above: Barbara Edmonds

left: Barbara and Kenneth Edmonds in Paris

Mrs. Edmonds sometimes accompanied her son on his musical tours, traveling to China, Egypt and Europe. “It was a pleasure to show her the world, something we never dreamed would be possible when I was growing up,” Mr. Edmonds recalls.

Life wasn’t always so easy for Mrs. Edmonds. Widowed at age 40, she supported her six sons working as a manager at the pharmaceutical company Eli Lilly. “She was a strong woman who was dedicated to her kids, every one of us,” says Mr. Edmonds.

Over the years in Las Vegas, Mrs. Edmonds began having problems with her memory. In 2009 at Cleveland Clinic Lou Ruvo Center for Brain Health, Director Jeffrey L. Cummings, MD, ScD, diagnosed her with Alzheimer’s disease.

Family photos courtesy of Kenneth Edmonds.
Top left to bottom right Kevon, Derek, Michael, Kenny, Mom, Marvin, Melvin



“My mother still had her sense of humor, but the full essence of her was no longer there,” says Mr. Edmonds. “Alzheimer’s is a lonely disease — it takes away the person’s awareness that they are loved and the comfort that love provides when you’re sick.”

His experience with his mother, who passed away in 2012, moved Mr. Edmonds to become a supporter of the Lou Ruvo Center for Brain Health. At a Keep Memory Alive fundraiser at Lake Tahoe last summer, he contributed to the auction a song that he would write for the winning bidder, which included an invitation to his studio in Los Angeles for the songwriting session and a luncheon with Babyface. The package went for \$100,000, which will support the Lou Ruvo Center for Brain Health’s Patient and Family Services.

“Countless individuals have told me they underestimated the effect a loved one’s brain disorder would have on their families,” says Dr. Cummings. “We’re so grateful to Kenneth Edmonds for combining his deep understanding of the impact of this disease with his musical talents to help support the growth of the Lou Ruvo Center for Brain Health’s social services programming, through the Barbara Edmonds Caregiving Program, enabling us to offer these valuable services at no cost to families.”

Caregivers of people with Alzheimer’s disease are “the true heroes who need support so they can take care of themselves, which ultimately helps them care for the patient. It’s a blessing to use my talent to help people with Alzheimer’s and their families,” Mr. Edmonds says.



Our Approach to Family Support

Cleveland Clinic Lou Ruvo Center for Brain Health Patient and Family Services provides a continuum of services to help patients and families “be proactive and hopeful in dealing with one of the greatest challenges of their lives,” says Susan Hirsch, Director of Social Services. “We want individuals to have access to supportive services at a place where people understand what they are going through.”

Our no-cost services focus on education (including a lending library and weekly Lunch & Learn program) and support (counseling, social work and support groups). “Gaining knowledge and coping skills is so empowering for families,” says Ms. Hirsch.

A calendar of no-cost social service programs is available online at keepmemoryalive.org/socialservices. To join the mailing list, please e-mail LouRuvoSocialServ@ccf.org or call 702.483.6055.



Larry Ruvo welcomes Nicole Pantenburg and Kenneth Edmonds to the Lou Ruvo Center for Brain Health

Contributions from donors like Kenneth Edmonds help make these programs possible. “We witness first-hand the difference that these services make in the lives of our patients and families. We are honored to be recognized through such a meaningful and generous donation,” says Ms. Hirsch.

If you would like to support Keep Memory Alive, please contact Senior Director of Development Laura Fritz at 702.331.7044 or fritzl@ccf.org.

Volunteer and Canine Ambassador Jordan Achrem welcomes all

Volunteers Reinforce Commitment to Compassionate Care

Volunteers are integral team members at Cleveland Clinic Lou Ruvo Center for Brain Health. From welcoming guests, to guiding patients and families to their destination, to conducting tours of our legendary building, volunteers are the first step in a world-class care experience.



“Going to a doctor’s office can be intimidating and anxiety-provoking, especially with the kinds of diseases we treat,” says Dylan Wint, MD, Director of Neurodegenerative Education at the Lou Ruvo Center for Brain Health. “It’s nice to start our patient interactions off on the right foot, and that occurs because of the volunteers who greet our patients. They make a potentially frightening situation warm and friendly.”

Volunteers also play a role in patient and family education. “Our library volunteers build rapport with families and offer understanding, which eases the process of navigating brain disorders,” says Susan Hirsch, Director of Social Services, who notes it would be impossible to staff the library and manage its collection of more than 1,500 volumes without the volunteers who contribute more than 50 hours a week.

Volunteers assist with administrative tasks, clinic and research duties, and physical therapy appointments and group classes. They represent the Lou Ruvo Center for Brain Health at walks and rides in the community to raise awareness of diseases treated at the center. Since 2011, a group of 10 volunteers has touched more than 3,000 individuals in the community by making 165 outreach presentations.



Volunteer Murlin Hampton welcomes Muhammad Ali to the Lou Ruvo Center for Brain Health



Volunteer Sharon Lynch welcomes Shirley Chaplin and family

Berniece Borge visits the library with Volunteer Jean Hamilton



Left to right Marlene Rengert, Robyn Hennessy, Dee King, Director of Volunteer Services (seated), Murlin Hampton, Gerri Shaw, Sharon and Bob McGarity raise awareness at an Alzheimer's walk



Thirteen volunteers supported the Lou Ruvo Center for Brain Health's research department in conducting more than 140 memory screening assessments in a single day. (See article on page 4)

"Although volunteers may receive the unexpected rewards of new and lasting friendships with fellow volunteers, their pure intent is to give generously of their time, without expectation of accolades or reward," says Dee King, Director of

Volunteer Services. "It is my mission to make sure each one knows how much we appreciate their generous donation of time and talent."

Like the staff of the Lou Ruvo Center for Brain Health, the volunteers are passionate and committed to Patients First care, from the warm welcome they extend to each visitor to the flower they present at the conclusion of each patient appointment.



Volunteer Linda White with patient Asiati Trowbridge and Cleveland Clinic Nevada Administrator Justin Schmiedel

If you would like to make a difference in the Las Vegas community by joining the team of engaged volunteers at Cleveland Clinic Lou Ruvo Center for Brain Health, please contact Dee King at 702.331.7046 or dking@keepmemoryalive.org.



Lovee and Bob Arum: Keeping Memory Alive for Patients and Fighters

Bob Arum, a boxing promoter and President of Top Rank, Inc., says it best: “Brain diseases are such a mystery. George Chuvalo was famous for taking more punishment than any other fighter during the ’60s and ’70s, yet when you talk to him now, he’s clear as a bell. Why is it that he has suffered no discernible effect from such excessive trauma, while some other retired fighters have trouble speaking and thinking? No one can explain this.”

Mr. Arum is proud to support Keep Memory Alive and the work of Cleveland Clinic Lou Ruvo Center for Brain Health. He is quick to note that Associate Medical Director Charles Bernick, MD, MPH, is conducting a study of hundreds of fighters to gain a better understanding of which fighters sustained brain problems and how to protect and prevent them.

For Mr. Arum’s wife, Lovee Arum, contributing to the organization is truly a labor of love. “In 2004, I lost my father, Morris Hazan, to Alzheimer’s at 3 a.m. on the morning of Keep Memory Alive’s Power of Love gala,” she explains. “My dad had been an unbelievable force with great joie de vivre. It broke my heart to see the devastating effects the disease had on him.”

The Arums have attended the Power of Love™ since the first dinner at Spago in 1996. When the Lou Ruvo Center for Brain Health was under construction and seeking a medical partner, Mrs. Arum, a Keep Memory Alive board member, accompanied its leadership team to meet with the Cleveland Clinic team, including CEO Toby Cosgrove, whose commitment to solving the mysteries of the brain intrigued her.

“I saw the facility there in Ohio, the way they brought the patient in, screened him, treated him with dignity, and I wanted so badly to create this kind of medical experience in Las Vegas,” she recalls.

When Keep Memory Alive Chairman and Founder Larry Ruvo decided to celebrate

Muhammad Ali’s 70th birthday at the 2012 Power of Love gala, he called on Mr. Arum, who had promoted Ali in 25 fights. Many of Ali’s former opponents joined the festivities, collaborating to raise funds for an organization that addresses brain disorders, including the Parkinson’s disease that plagues Ali.

Amid all the star power in the arena that night, Mr. Arum says the undisputed highlight was seeing the smile on his friend Muhammad Ali’s face while he was onstage, surrounded by friends and former opponents as Stevie Wonder sang “Happy Birthday.”

That’s the Power of Love.



Lovee Arum with grandson Mason duBoef, son Todd duBoef and daughter Dena duBoef

Lovee and Bob Arum recognize their parents as role models for philanthropy, and strive to foster that behavior in their own family. “We knew our 10-year-old grandson, Mason, got it,” says Mrs. Arum, “when he received \$100 for a birthday gift and asked to trade it for two 50-dollar bills, because half of his monetary gifts were always to go to charity.”

“We want to find a way to make certain that Mason and our six other grandchildren won’t experience Alzheimer’s. If only our researchers can find the cure.”

The Arums were recognized for their philanthropy with induction in 2012 into Cleveland Clinic’s 1921 Society. Bob Arum explains their commitment by saying the only way to prevent brain diseases is to “throw resources at it.”

“Everyone should be very proud of the work that Cleveland Clinic Lou Ruvo Center for Brain Health is doing because it’s on the cutting edge of what will change people’s lives,” he adds with conviction.

To support Keep Memory Alive, please contact Senior Director of Development Laura Fritz at 702.331.7044 or fritzl@ccf.org.

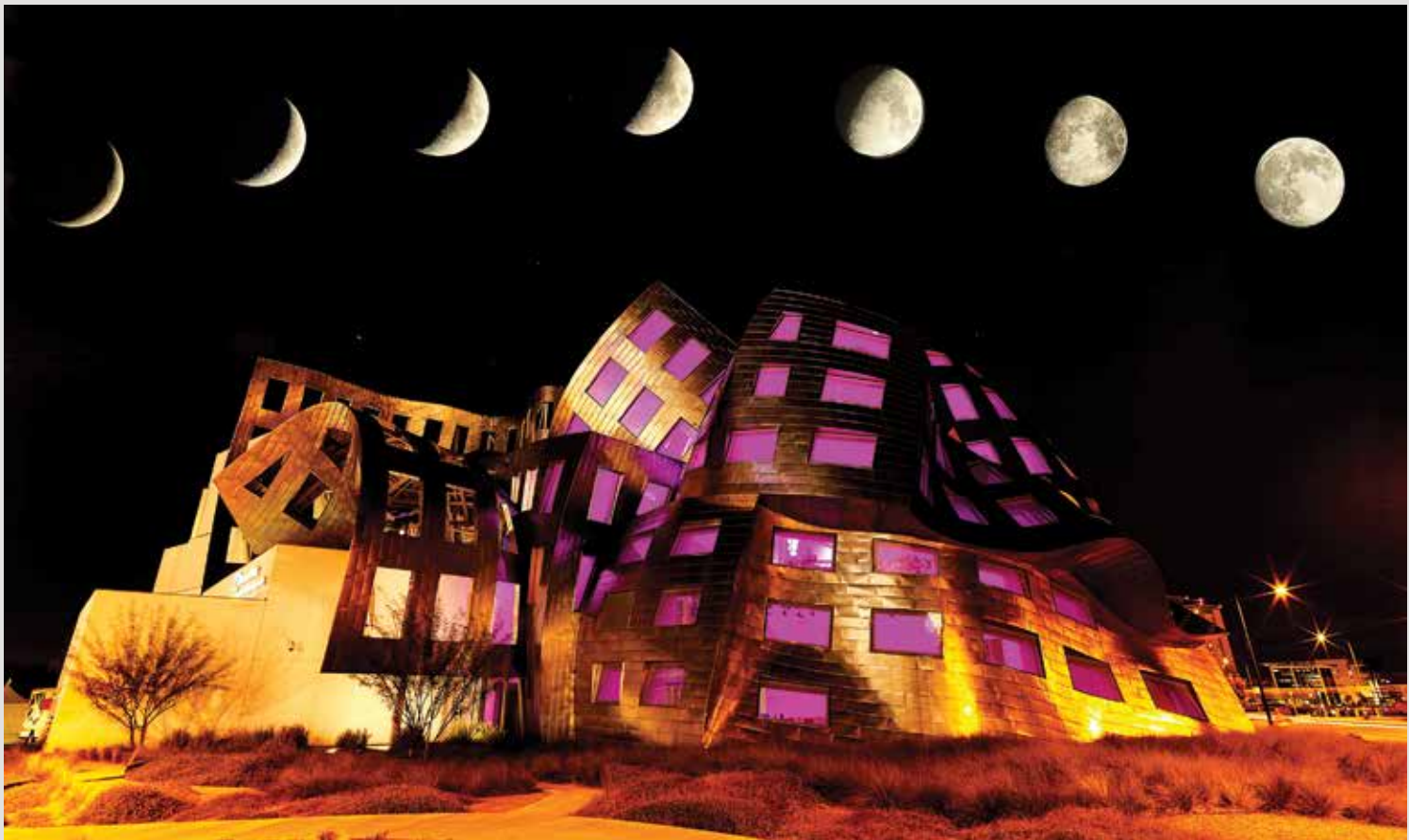
Acclaimed Photo Sequence Symbolizes Hope

The Cleveland Clinic Art Program inspires and enlivens patients, visitors, employees and community. At Cleveland Clinic Lou Ruvo Center for Brain Health, the proceeds from artworks available for sale benefit the artists and Keep Memory Alive, while other pieces are created specifically for the center's permanent collection.

Such is the case with "The Triumph of Light and Hope," which features seven moons passing over the Lou Ruvo Center for Brain Health. Jeff Mitchum of Jeff Mitchum Galleries photographed this sequence from April through November 2011. An ardent supporter of Keep Memory Alive, Mr. Mitchum says the

piece represents his hope that remarkable progress in the treatment of brain disease will happen right here in Las Vegas.

Please visit LouRuvoCenterArt.org for more information on the Keep Memory Alive Fine Art Program.



This remarkable piece was mentioned in the Los Angeles Times as a reason to visit Las Vegas: "The Keep Memory Alive Event Center at the Lou Ruvo Center for Brain Health includes the stunning 'Triumph of Light and Hope' by lauded landscape photographer Jeff Mitchum."

La Cucina Italiana Benefits Keep Memory Alive

Long-time supporters The Venetian and The Palazzo cooked up yet another way to raise funds for Keep Memory Alive: Winter in Venice at The Venetian Las Vegas Presents La Cucina Italiana Food & Wine Festival, which took place Dec. 5-8.

Forget the snow and slush: Winter in Venice was a magical experience with blue skies, gondoliers and, most importantly, food — lots of it. Celebrity chefs

Wolfgang Puck, Mario Batali and Dario Cecchini headlined the festivities, where the risotto contained truffles, the carpaccio was veal and the prosciutto was 24-month Galardi.

The festival showcased five food events, all of which benefited Keep Memory Alive. Thanks to The Venetian and The Palazzo, winter never tasted so good!



Smith & Wollensky Support Flows

“It has been amazing to see how our patrons poured out their support of Keep Memory Alive and Cleveland Clinic Lou Ruvo Center for Brain Health during National Wine Week,” says Michael Feighery, president of Smith & Wollensky Restaurant Group (SWRG).

On Nov. 19, SWRG presented Keep Memory Alive with a \$25,000 check at the Green Carpet Event at the Smith & Wollensky Las Vegas location.

The restaurant group began its partnership with Keep Memory Alive during its 53rd National Wine Week in September 2013 when a portion of proceeds benefitted the nonprofit. Support continued through the end of the year with online sales of a Smith & Wollensky “Private Reserve” Meritage & Sauvignon Blanc Gift Pack.

“We take pride in cultivating memorable experiences for our guests, and strive to make a meaningful impact where we can,” says Mr. Feighery. “We are pleased to make this donation in support of the continued work to improve the lives of so many patients and their families affected by brain disorders.”

The partners have similar goals: In support of the Lou Ruvo Center for Brain Health, Keep Memory Alive strives also to make an impact.

“With partners like Smith & Wollensky on the front line as we fight Alzheimer’s, Huntington’s and Parkinson’s diseases, as well as frontotemporal dementia and multiple sclerosis, together we will find cures for these mind-robbing diseases,” says Larry Ruvo, Co-founder and Chairman of Keep Memory Alive.



Unleash Your Creative Side

If you would like to propose an idea for a creative fundraising opportunity on behalf of Keep Memory Alive, please contact the Special Events team at 702.263.9797 or events@keepmemoryalive.org

Nobu Stirs Up Support for Keep Memory Alive

“No one knows him yet, but he’s going to be a famous chef one day,” said celebrity chef Wolfgang Puck back in 1997, when he told Larry Ruvo he would bring his friend, Nobu Matsuhisa, to cook alongside him at Keep Memory Alive’s second Power of Love™ gala.

With the passing years, both the fundraising gala and Chef Matsuhisa’s fame have grown.

Nobu Matsuhisa has continued to support Keep Memory Alive, most recently on Oct. 9, 2013, when he brought 28 of his chefs to Caesars Palace in Las Vegas for Nobu United, a seven-course omakase dinner benefiting Keep Memory Alive.

The day before, Keep Memory Alive Chairman and Founder Larry Ruvo took all 28 chefs and his friend, Nobu, on a tour of Cleveland Clinic Lou Ruvo Center for



top: Nobu applauds his chefs alongside Gary Selesner, President of Caesars Palace

middle left: Nobu receives a model of the Frank Gehry-designed Lou Ruvo Center for Brain Health from Larry Ruvo

middle right: Nobu and his chefs visit the Lou Ruvo Center for Brain Health



Mari and Thom Landers flank Jewel Brooks at the Nobu United dinner that raised funds for Keep Memory Alive

Brain Health, so they could see how their support makes a difference in the lives of patients’ and families.

Chef Matsuhisa told journalist and fellow Keep Memory Alive supporter Robin Leach, “I like to support local as much as possible. This is my concept. If I went to Tokyo, I would support the tsunami foundations. I do Meals on Wheels in New York and L.A. Each place we have a restaurant, I like to support the local initiatives. Larry Ruvo is my friend.”

Nobu Matsuhisa has 22 restaurants globally and is acclaimed for the world’s best sushi. Wolfgang Puck’s prediction has indeed come true.

Interested in information on Keep Memory Alive’s events? Please contact events@keepmemoryalive.org or 702.263.9797. Upcoming events are listed online in the “Ways to Contribute” tab at keepmemoryalive.org.

Power of Love Gala: Your Philanthropy Can Change the World

If you haven't yet attended the Power of Love™ gala, imagine an evening of first-rate headliner entertainment, food prepared by celebrity chefs and wine chosen by master sommeliers. Now imagine that same evening in the entertainment capital of the world.

After 18 years, Keep Memory Alive's Power of Love gala has become an annual tradition among Las Vegas' signature celebrity events, and now attracts a national audience. Chefs have included Mario Batali, Tom Colicchio, Scott Conant, Todd English, Thomas Keller, Emeril Lagasse, Michael Mina and Wolfgang Puck. Guests have been entertained

by the likes of Bono, Michael Bublé, Snoop Dogg, Cee Lo Green, Enrique Iglesias, LL Cool J, Lenny Kravitz, Barry Manilow, Lionel Richie, Stevie Wonder and many other luminaries.

But this gala is much more than a party. It's an annual celebration of life that exists to raise money for Cleveland Clinic Lou

Ruvo Center for Brain Health's programs and services. It reaffirms the critical role of generous donors, not all of whom have been personally affected by neurodegenerative disease in a loved one — but all of whom share the mission of eradicating these scourges forever.

A highlight of the evening — and of the fundraising — is the live auction, which features items not available for sale to the general public.

One such auction item was a trip on a private yacht, which included six nights at sea with stops in the Italian ports of Amalfi and Positano as well as the Aeolian Islands, Sicily and Capri.

“Luxury on the high seas’ is how this trip on the 180-foot M.Y. Maridome was publicized when I chose to bid on it at the Power of Love gala. However, it was so much more than that,” says longtime Keep Memory Alive supporter Abbie Friedman. “It was an experience that could never be replicated: traveling the Mediterranean on a sophisticated private yacht during the summer season.”

Abbie Friedman and her nine guests were a group of women looking to relax, have fun and create cherished memories, and their staff of 14 helped them do just that.



Keep Memory Alive Chairman and Founder Larry Ruvo takes the stage to auction items to benefit the Lou Ruvo Center for Brain Health

**Power of Love Gala:
April 26, 2014**


Interested in attending the Power of Love gala? Please contact 702.263.9797 or poweroflove@keepmemoryalive.org. More information about this year's event, as well as other ways to support Keep Memory Alive, is online at keepmemoryalive.org.

In the end, according to Ms. Friedman, "They had to pry us off that boat. No one wanted to leave!"

Ms. Friedman and crew have already thrown down the gauntlet for this auction item at the 2014 gala. Will it be a twice-in-a-lifetime experience, or will someone else cruise away with the spoils?

You'll just have to attend the 2014 Power of Love to find out. Won't you join in raising funds for Cleveland Clinic Lou Ruvo Center for Brain Health?

KEEP MEMORY ALIVE
— PRESENTS —



**POWER
OF LOVE™**

HONORING
GLORIA AND EMILIO ESTEFAN

*back row: Denise Gentile, Kelli Biggans, Melissa Ogron, Elaine Newton
front row: Melissa Victorino, Dale Wynn, Abbie Friedman, April Luevano, Allison Friedman, Vivi Marshall*



VISITOR PHOTO GALLERY



World Series Champion Shane Victorino of the Red Sox with Larry Ruvo



Chef Nobu Matsuhisa tours the Lou Ruvo Center for Brain Health with Larry Ruvo.



Left to right: Joseph Jankovic, MD, Ryan Walsh, MD, PhD and Jeffrey Cummings, MD, ScD



Las Vegas Cancer Center Staff tour with Gina Hines (L)



Jean-Francois Lichtenstern



Claudia Candela, Faith Willinger, Larry Ruvo, Chef Dario Cecchini and guests



Larry Ruvo, Miriam and Wayne Prim



Larry Ruvo welcomes choreographer-producer Kenny Ortega

Keep Memory Alive Honor Wall

Now more than ever, philanthropy drives neuroscience and the Lou Ruvo Center for Brain Health's ability to achieve its mission of providing state-of-the-art care for patients and supportive services to their families, while investigating the next generation of drug therapies for brain disease.

We are very pleased to offer enduring and meaningful tributes to those who have invested in helping us to Keep Memory Alive.

The Keep Memory Alive Honor Wall is a three-dimensional visual centerpiece of the center's entrance. You or someone of your choice will be recognized on a stainless steel mural of plaques artfully integrated into Frank Gehry's landmark building and headquarters of the Lou Ruvo Center for Brain Health.

Kate Zhong, MD, and the research team thank Paulette Crise for supporting research while honoring Jesse Crise



Rhoda Schaefer admires the plaque acknowledging her gift in honor of her sister, Millie Anderson



Jeffrey Cummings, MD, ScD, thanks Jane and Terry Semel of Windsor Media for their gift

Dr. Cummings, Director, Lou Ruvo Center for Brain Health, Achieves a New Milestone with Book #38

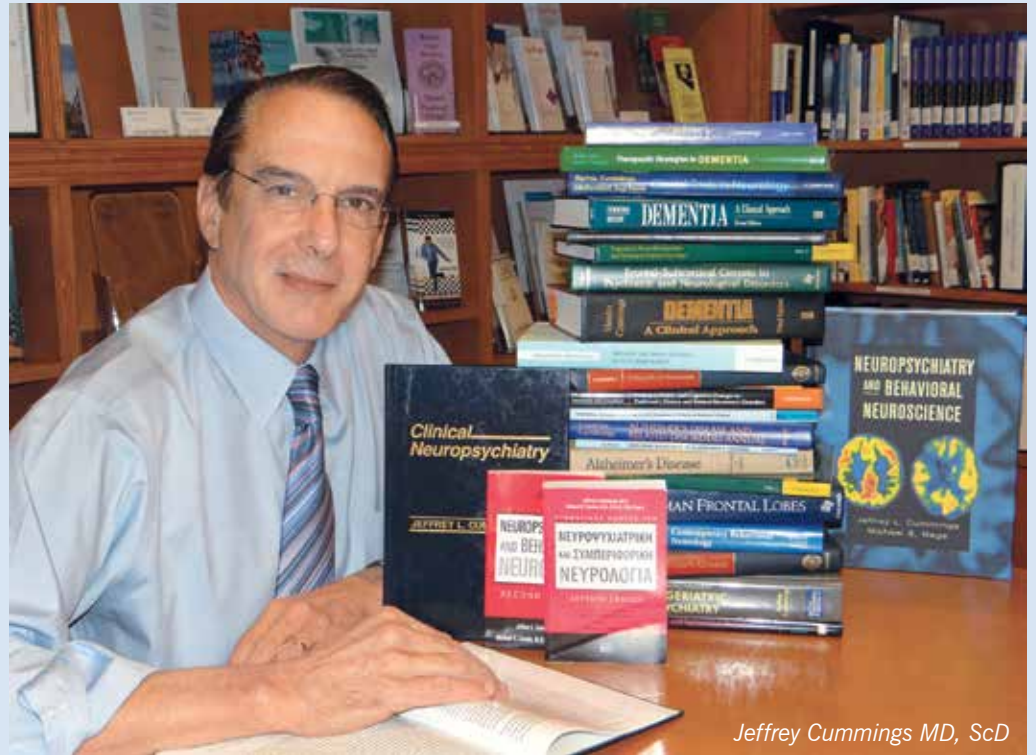
The impact that knowledge-sharing can have on patient care and drug development has inspired Jeffrey Cummings, MD, ScD, to publish a monumental 38 books and more than 650 peer-reviewed articles on Alzheimer's disease and related topics in the country's top medical journals.

"Science becomes valuable only when it's public. If I know the treatment for Alzheimer's but I don't tell anyone, then there is no treatment for Alzheimer's," says Dr. Cummings, Director, Cleveland Clinic Lou Ruvo Center for Brain Health.

In 2013, Dr. Cummings published in the prestigious and oft-quoted journal, *Lancet*, on the effectiveness of Pimavanserin, which, if approved by the Food and Drug Administration, could become a game changer as the first drug for managing psychosis in any neurological disease. As such, Pimavanserin could improve quality of life for countless patients and families living with Parkinson's disease. (see article on page 12)

Dr. Cummings' books are written specifically for physicians engaged in patient care, researchers, or advanced students preparing for board certification. These textbooks capture a snapshot in time within a given scientific field, and usually become outdated in five years.

In the mid-1980s, Dr. Cummings authored *Clinical Neuropsychiatry*, one of the first books to marshal evidence available at the time to explain the brain's role in behavioral disturbances such as delusions, hallucinations, depression and obsessive compulsive behavior.



Jeffrey Cummings MD, ScD

Dr. Cummings notes that, in addition to sharing knowledge throughout the scientific community, books capture relationships between students, mentors and colleagues. He remembers fondly the collaborative process with his mentor, Frank Benson, that resulted in the 1980 publication of his first book, *Dementia: A Clinical Approach*.

"Dr. Benson wrote loosely and conversationally, while I write very tightly," Dr. Cummings recalls. "He lengthened my writing; I tightened up his. It was a fun collaboration and remains a wonderful memory for me, 37 books later."

Many scientists around the world do not have the opportunity to benefit daily from the intense concentration of individuals with complementary experience and interests like at the Lou Ruvo Center for Brain Health. Dr. Cummings observes: "Books are a fantastic, targeted medium for exporting knowledge globally, particularly to isolated individuals yearning to develop clinical excellence."

He hopes what happens in Las Vegas will truly benefit the world.

Recognized for Excellence

Employees of Cleveland Clinic Lou Ruvo Center for Brain Health continue to be recognized by their community, peers and professional associations for clinical excellence and leadership in their fields.

We celebrate their accomplishments.



Christy Ross, PT, DPT, GCS

American Physical Therapy Association Recognizes Christy Ross

Christy Ross, PT, DPT, GCS, was named a 2013 American Physical Therapy Association Emerging Leader. The Emerging Leader Award was established to annually honor individuals who have demonstrated extraordinary service to the profession and APTA early in their careers.

“In addition to this honor, Christy has gained board certification in geriatric physical therapy,” says Jennifer Nash, PT,

DPT, NCS, Manager of Neurorehabilitation Services at the Lou Ruvo Center for Brain Health and an APTA member. “We are privileged to have Christy as a part of our team. Under Christy’s guidance, patients routinely improve their function and quality of life after physical therapy, wowing themselves and their families. I’m so proud of Christy and her patients’ accomplishments.”

Girl Scouts of Southern Nevada Honor Kate Zhong, MD

Kate Zhong, MD, Senior Director of Clinical Research, was honored for her passion for science and commitment to bringing the best treatment to patients. Partnered with Girl Scout Charli Tsang, Dr. Zhong served as a role model and inspiration for the girls and their families who attended the Girl Scouts of Southern Nevada’s annual Dessert Before Dinner fundraiser.

In Girl Scout tradition, Dr. Zhong received a badge for her achievements, recognizing her as a “Social Innovator.”

Dr. Zhong leads the Lou Ruvo Center for Brain Health’s clinical trials program, which after just four years is among the largest such programs for Alzheimer’s disease research, with additional trials in progress for Huntington’s and Parkinson’s diseases and multiple sclerosis.



Girl Scout Charli Tsang with Kate Zhong, MD

KEEP MEMORY ALIVE

Supporting the Mission of the Cleveland Clinic Lou Ruvo Center for Brain Health



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Please visit keepmemoryalive.org to learn how you can invest in memories and support the work of Cleveland Clinic Lou Ruvo Center for Brain Health