If the 1990s were the decade of the BRAIN, the next 10 years will be the decade of the MIND.

On April 2, 2013, the White House proposed a major national project to unlock the mysteries of the brain – the Brain Research through Advancing Innovative Neurotechnologies (BRAIN) Initiative. The President called on scientists to “get a dynamic picture of the brain in action and to better understand how we think and how we learn and how we remember.”

In the very near future, scientists interested in studying how external stimulation might affect cognitive behaviors, including complex mental tasks, will help to unravel the Mind-Brain connection. Neuronal activity correlates with consciousness and its characteristic patterns generate mind. This means for every mind state there is also a brain state. The BRAIN initiative will bring about great discoveries about how the brain actually works, including what parts of the brain are involved in thoughts, dreams and directed activity.

Some people have an ability to focus or perform multiple tasks in parallel. How the brain patterns activity to allow us to multi-task is an unknown. But we know that our mind may wander when performing monotonous, repetitive tasks. Driving a car in traffic is a perfect time for mind wandering. We escape into complex thoughts but we still manage to drive the car and perceive traffic lights, potential accidents and we remember to drive home.

Scientists show us that daydreaming involves more and can impart a distinct mental advantage. This new study was carried out in Bar-Ilan’s Cognitive Neuroscience Laboratory supervised by Prof. Moshe Bar, part of the university’s Multidisciplinary Brain Research Center.

The scientists at Bar-Ilan University are the first to demonstrate how an external stimulus of low-level electricity can literally change the way we think, producing a measurable up-tick in the rate at which daydreams – or spontaneous, self-directed thoughts and associations – occur.

Along the way, they made another surprising discovery. While daydreams offer a welcome “mental escape” from boring tasks, they also have a positive, simultaneous effect on task performance.

The brain-daydream connection
The frontal lobes of the brain have been previously implicated in mind-wandering. This is important because the frontal lobe is a central focus of the executive control network that allows us to organize and plan for the future. If you think of the brain as an orchestra, the frontal lobe is our conductor. Bar and his team demonstrate that the “frontal lobes play a causal role in the production of mind wandering behavior.”

Improved “Cognitive Capacity” of the Wandering Mind
What is more interesting is that the increased mind wandering behavior produced by external stimulation of the frontal lobe not only does not harm a person’s ability to succeed at a chosen task, it actually helps.

Professor Bar believes that this surprising result might stem from the convergence, within a single brain region, of both the “thought controlling” mechanisms of executive frontal lobe function and the “thought freeing” activity of spontaneous, self-directed daydreams. This cross-brain involvement may be involved in behavioral outcomes such as creativity and mood, and may also contribute to the ability to stay successfully on-task while the mind goes off on its merry mental way.

Toward A Less-Mysterious Brain-Mind
To make the brain less mysterious, scientists need to study the human brain after death to understand the brain – that which makes us uniquely human. Our thoughts, dreams, memories, ability to love, create and discover are the elaborate functions of the human brain.

While it is assumed that people have a finite cognitive capacity for paying attention, this new study suggests says that the truth may be more complicated. But one thing is for certain, “engaging” the frontal lobe is good for your brain-mind connection.

Your gift of a brain donation after death puts you in the elite group of people that will help neuroscientists unlock the mystery of the mind-brain connection.

The Israeli Center of Research Excellence in Cognition (ICORE) funded Dr. Moshe Bar’s Research.
Remembering Legendary Photographer Klara Farkas

Klara Farkas was a part of South Florida history. She was a pioneering photographer, an early promoter of culture, a voice for conservation of our natural beauty and, since 1992, a member of the UM Brain Bank registry.

Born in Budapest, Hungary, on Dec. 2, 1910, Klara passed away six weeks before her 104th birthday.

“She was a pioneering Miami artist. Much beloved and much admired,” said Helen Kohen, a former Miami Herald art critic and historian. “She is the last word on the origins of Miami’s cultural life from the 1940s to the near present.”

In her youth, Klara studied piano at Budapest’s Royal Academy of Music. She married famed architect and interior designer George Farkas in 1933 and discovered her future. “I decided to take pictures of his work. I went to a studio and studied photography,” Klara said in 2003 at the opening of her exhibit, Glimpses of Nature.

The couple moved to London in 1937 and then to New York in 1939. In 1940, George was offered a chance to design the Modernage furniture building (later a bank) at Lincoln and Alton Roads in Miami Beach. Klara had a studio and darkroom above The Forge Restaurant until the couple moved to Coconut Grove, where they became pivotal in the Grove’s growing artist colony. Klara would live in their Grove home for the rest of her life.

She took memorable portraits of those who shaped our region, including David Fairchild, Marjory Stoneman Douglas, Roddy Burdine, Judith Arango Henderson, Roxy Bolton and Elizabeth Virrick. Klara’s work has been published internationally and exhibited nationally. Her exhibit of 10 notable Coconut Grove women hangs in the permanent collection at the Miami-Dade Public Library.

Her passion for the arts led to her involvement in the creation of the Lowe Art Museum on the University of Miami grounds. She also taught photography at the Grove House, The Center of Fine Arts and the Miami Art Museum.

“She was inquisitive throughout her life and prided herself on keeping up with current events and being politically active,” said her daughter, Georgette Farkas Ballance. At 103, she had season tickets to the New World Symphony and Cleveland Orchestra and went to 25 concerts in her last year.

Klara traveled extensively throughout the world with family or friends. “She had a passion for living and was always ready for an adventure,” Ms. Ballance said.

Klara’s energetic involvement in the community continued into the current century. Klara was an advisor to Lowe’s Beaux Arts, president of the University of Miami Women’s Guild, a board member of the Women’s Caucus for Art and a member of the League of Women Voters. She was a member of the Miami Art Museum, The Wolfsonian, Fairchild Tropical Botanic Garden and a fellow of The Kampong.

Through her endowment to the UM Brain Bank, Klara hoped to advance medical research in the working of the mind. Active until her final days, Klara Farkas was an inspiring force for generations of South Floridians.

Celebrating the Life of Retired Fire Captain John Somerville

The UM Brain Bank was honored to attend a recent celebration of life ceremony for retired Miami-Dade Fire Rescue Captain John Somerville at the Doral Fire Tower. Dr. Mash recognized John’s commitment to service and his visionary forethought of making a final gift to support Parkinson’s disease research through brain donation.

April is National Parkinson’s Month. Nationwide, more than 50,000 new cases of Parkinson’s disease are diagnosed each year, adding to the more than a million people affected by the disease. These do not include the countless cases that go undetected. The incidence of Parkinson’s disease increases with age and men are twice as likely as women to be diagnosed.

Progress and advancement in knowledge will lead to better treatments and prevention, but only if the brain is donated after death. One donated brain supplies tissue to hundreds of medical researchers searching for a cure.
Brain Bank Reaches Out With Front Page Story

A major goal of 2014 was spreading the story and mission of the UM Brain Bank to the greater community. A centerpiece of the effort was a front page story in the Miami Herald by Ana Veciana-Suarez. The article raised the profile of the organization and resulted in many new donors joining the Brain Bank tissue registry.

The Brain Bank was also featured in: The Doctors (air date: December 1, 2014); CNN Online (air date: September 26, 2014); Florida Trend Magazine (September 2014).

Brain Bank Presents At NAMI Convention

The UM Brain Bank had a booth at the National Alliance of Mental Illness (NAMI) annual convention in Washington, D.C., meeting with hundreds of visitors eager to learn about the mission of the Brain Bank. Staff members also joined with Florida’s NAMI chapters to meet with Florida legislators on Capitol Hill to discuss the importance of mental health support and advocacy.

Greeting visitors at the Brain Bank booth are (L-R) Morgan Abaravich, Director Deborah Mash, Ph.D. and Cassandra Anton.

Dr. Mash Interviewed on “The Doctors”

Brain Bank Director Deborah Mash captivated the audience during her taping of television’s The Doctors, which aired nationwide on December 1, 2014. Dr. Mash emphasized the importance of brain donation to the audience, the popular program’s first discussion of this important topic. The Doctors is a daytime televised health program in which a team of medical professionals discuss health-related topics. As a result of Mash’s appearance on The Doctors, the UM Brain Bank has responded to more than 100 requests for information on brain donation. The video from Dr. Mash’s appearance on The Doctors is available on our website: www.brainbank.med.miami.edu.

BRAIN BIOREPOSITORY

Latest Technology Secures Donor’s Last Wishes

The UM Brain Bank Biorepository includes a state-of-the-art freezer facility maintaining more than 2,000 brain specimens. Freezer monitoring and maintenance is ensured through our partners at AirEze, Inc.

The operation of our equipment is routinely monitored and the temperature of each storage unit is continuously recorded. All freezers have alarms that notify personnel if temperature ranges are exceeded. In addition, all freezer units relay temperature readings via thermocouple sensors to a centralized server and managed with our environmental monitoring software, Tutela. This system instantly notifies key biorepository personnel of an emergency via a Sensaphone system. Corrective action is taken in accordance with the corresponding standard operating procedures.

We have started a campaign to move our existing inventory into the new SimpleFreez™ and DuoFreez™ freezers by Daihan. Daihan SimpleFreez™ freezers are a simplified, green freezing system. Using eco-technology, they use less power consumption which means less money and more environmental-friendly practices. Daihan DuoFreez™ Freezers are double the power. Using advanced compressor control technology, two SimpleFreez™ systems run independently. Unlike in other freezers, even if one fails, the other keeps running to maintain temperatures as low as -86°. SimpleFreez™ freezers protect the integrity of our brain tissue.
Flex Your Cognitive Reserve to Keep Your Brain Sharp

Although our brains are complex and highly specialized, we are beginning to understand what helps heal the brain and what may protect us from brain diseases.

Research within the past decade shows us that the living brain is “neuroplastic,” which means its “circuits” are constantly changing in response to our interactions with the outside world.

But just like an aging computer, our brain circuits wear out and software becomes outdated. As we reach middle age, it is increasingly important to exercise the brain to offset natural degeneration, the damaging influence of our environment and our increasingly sedentary modern lives.

The brain is like a muscle and continuous “exercise” of our neurons produces new brain cells. It also causes the release of neurotropic growth factors, which help establish new circuits and protects aging cells. These factors help your brain stay healthy.

The concept of “cognitive reserve” may provide some insights. Cognitive reserve refers to the brain’s ability to operate effectively even when some function is disrupted.

It also refers to the amount of damage or cell loss that the brain can sustain before changes in cognition are seen in aging. People vary in their cognitive reserve they have, and this variability may be because of differences in genetics, education, occupation, lifestyle, exercise, diet or other life experiences. So depending on a person’s cognitive reserve and their unique mix of genetics, environment, and life experiences, the balance may put you more at risk for developing dementia as you age.

One way to exercise your neurons is to challenge your brain. Try to learn a completely new skill: learn to speak a foreign language, dance the tango, play bridge or chess. By challenging yourself, you can stay mentally razor sharp well into your eighth, ninth and tenth decade.

An example of failed neuroplasticity in a brain affected with Alzheimer’s disease.

O U R   S P O N S O R S

Air-Eze Scientific Service was established in 1985 by Ron McAlpin and Ritch Holt, to realize their dream of providing fast, accurate and professional service to the research and medical industries. Air-Eze specializes in Ultralow Temperatures Refrigeration by providing service for many types of equipment including the University of Miami Brain Endowment Bank™ fleet of over 45 –80°C freezers. Air-Eze services the entire state of Florida with technicians that are factory trained and experienced. Air-Eze is proud to be the preferred vendor for the University of Miami Brain Endowment Bank. They provide 24/7 coverage to protect the biorepository of donated brain specimens. Air-Eze is the proud sponsor of this issue of BrainTrust newsletter.

For more information, contact: Ron McAlpin, President of Air-Eze contact at 954-924-1001 ext. 103; Email: RMcAlpin@air-eze.com

Tutela Monitoring Systems provides continuous environmental monitoring to the widest range of Life Science applications; including Biobanking, Pharmaceutical, Biotechnology, Academic & Clinical Research, Blood Banking, Plasma Centers, Laboratories and Hospitals. The Genesis II system monitors many critical parameters including temperature, humidity, differential pressure, oxygen. Tutela Monitoring Systems LLC are part of Next Control Systems, an ISO9001:2008 company that has been successfully marketing web-based scientific wireless temperature monitoring and recording systems worldwide for over 20 years. Tutela Monitoring Systems are the first alert in the event that an Ultralow freezer system needs service or is malfunctioning. Tutela is a proud sponsor of this issue of the BrainTrust newsletter.

For more information, contact: Tim Bartholomew at info@tutelamedical.com or call (941) 462-1067

Help us find the answers!  
Contact us today to join our brain registry.  
Miami-Dade: (305) 243-6219 • Outside Miami-Dade: (800) UM-BRAIN  
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