



BRAIN AWARENESS

We have learned more about the human brain in the last two decades than throughout all of human history. The ‘brain’ is what makes us uniquely human. Neuroscientists who study the brain are beginning to unlock its secrets and provide insights into the mind. But not fast enough.

The total number of persons with **Alzheimer’s disease** will rise three-fold between 2000 and 2050. Alzheimer’s care is likely to remain a major public health problem during the coming decades with huge costs to American healthcare.

Schizophrenia is not very common, but it affects its victims profoundly and is incurable. It affects thought, perception, decisions and behavior.

Neuroscientists have not found the exact cause, but genetic factors as well as birth and gestational complications are strongly suspected. Drugs to treat the symptoms of schizophrenia became available in the 1950s and 1960s and allowed patients to remain in the community instead of a lifetime in a hospital ward.

The clearest risk factor for **Parkinson’s disease (PD)** is age. That is something we all are facing – growing old in world full of toxins and chemicals. Researchers have identified a number of genes that cause or contribute to PD, as well as environmental risk factors. Toxins play a role because



Dr. Deborah Mash

the risk of PD is higher in industrialized countries. Farmers and other agricultural workers also have an increased risk of developing PD, suggesting exposure to chemicals or other environmental factors increase the PD risk. But there is some good news. Diet may be a factor. In some studies, coffee drinking decreases your risk. Smoking is a health risk, but smokers have a lower rate of PD – about 50 percent less – than nonsmokers.

We have been studying the cyanobacterial toxin - BMAA. You can read more details about this research on Page 3 of the newsletter. This environmental toxin has been linked to ALS, **Lou Gehrig’s Disease** and dementia on the island of Guam. Our work sheds new light on this toxin and shows that many people may be exposed to it from their diet.

Brain donations are the key to unlocking the mystery of the human brain. Without your support there will be no cures for diseases of the brain. One of the most valuable contributions to research a person can make is to volunteer for a brain donation program. Since this can be an emotionally difficult topic, people should decide early and allow ample time for discussion with family members.

When you plan to donate your brain for research, you become part of the University of Miami research program.

Your generosity and foresight will make the difference. One brain donation can support research in hundreds of laboratories in the USA and elsewhere. Together, we will help scientists find the cures to end the suffering of Alzheimer’s and Parkinson’s disease, ALS and schizophrenia.

Brain Endowment Bank Moves to Life Sciences & Technology Park

The Brain Endowment Bank’s stunning new home is within the six-story UM Life Science & Technology Park building. Located on N.W. 7th Avenue just east of the Miller School of Medicine campus, the Brain Bank’s new facility features three state-of-the-art laboratories, offices, storage and support space.

The new facilities will aid the Brain Bank’s team of researchers as they search for breakthroughs in neurologic diseases. The Brain Bank joins the UM Tissue Bank and the Life Alliance Organ Recovery Agency in the Life Science & Technology Park building.



Sydell "Twiggy" Oppenheim



Twiggy Oppenheim passed from this life on February 4, 2012 at the age of 102. She made a special gift and left some of herself behind when she chose to donate her brain to the UM Brain Endowment Bank. This remarkable woman had a life rich with experience.

"Feisty" as described by her family, Twiggy was a thin, direct and practical woman. Happily married for many years with two wonderful sons and a daughter-in law. She often remarked, "I choose life. I take life as it is." Early in her life, she was a model in NYC and was active in her children's PTA.

Not a big eater, she never drank or smoked, she loved

beauty and sexiness. She was interested in politics, loved playing bingo and watching game shows that stimulated her mind. She ended her day with a glass of milk before bed. Twiggy didn't like taking medication, so she always tried to stay healthy. She was an avid reader of novels, she loved dancing, singing and music. She was a very forward thinker always ahead of her time.

She became a brain donor after she heard a presentation by Dr. Deborah Mash at the Seaside Retirement Resort. Twiggy was a friend of Dr. Mash's mother, Valerie, who is also a brain donor. Twiggy's decision was supported by her children who honored her last wish. Twiggy wanted to help science understand how people age well with a sharp mind and happy living. Her brain donation was a remarkable gift that will support many researchers. We honor her vision and foresight.

Their Spirit of Giving Lives on Through Brain Research

August Abbatematteo
Louis Adams
Frances Adams
Charles Allen
Estelle Appel
Abe Bailis
Flavio Bell
William Birkner
Loretta Boersma
Marilyn Bruce
Richard Bryant
Judith Carlos
E. Theodore Carlson
Robert Cleaver
Marie Conrad
Leland Crawford
Marjorie Cridland
Ibis Diaz
Norman Downing
Naomi Dunkel
Jean Ellis
John Eriksson

Nina Erisman
Evelyn Glode
Paula Gossmann
Florence Griffiths
Kenneth Gunther
Joseph Haber
Phylliss Hagedorn
Stanley Harms Jr.
Joel Hirsch
Elizabeth Howland
Maria Hug
Daphne Hughes
Elizabeth Jackson
Verner Jensen
Margarita Jimenez
Robert Johns
Marcelle Jones
Christine Kane
Harry Keiser
Bernardine Keshel
Phylliss Koelsch
Stephen Krantz

Marjorie Lamb
Joseph Liantonio
William MacDonald
Mary Mackintosh
Robert Mattox
Dortha McGee
Betty Mero
Loretta Miller
Megan Mishork
Jose Montalvo
Allen Morris
Althea Mosher
Elizabeth Muhtar
Fred Narcisco
Dorothy Neitzke
Sydell Oppenheim
Virginia Parrish
Phylliss Patterson
Florence Paull
Alvin Perlin
Julie Pettigrew
Virginia Polin

George Price
Alan Provencher
Margarita Rankine
Vera Richards
Julianne Riley
Gertrude Rocklein
Harold Rosen
Nona Roy
Lorraine Salkaus
Kurt Sauer
Robert Sawyer
Shirley Schekman
Richard Scruggs
John Senko
James E. Seymour
Richard Shaw
Morton Silverblatt
Alice Silverblatt
John Slater
Winifred Snover
Edward Sonier
Jeanne Stanley

Richard Stapleton
Emmett Stegall
James Stokes
Eva Stuenkel
Frances Swartz
Margery Thomas
Betty Titus-Lechot
Natalie Turner
Alice Tuttle
Louis Ullian
Palma Rosa Venezia
Phylliss Wagner
Jean Wells
Susan Westad
Elizabeth Whittall
Rosemarie Williams
Josephine Willis
Faye Wilpon
Mary Wise
Margaret Woodall
Philip Woodbury
Robert Wright
Christopher Zolnowksi

FORMER WASP AND BRAIN BANK DONOR KEEPS FLYING HIGH

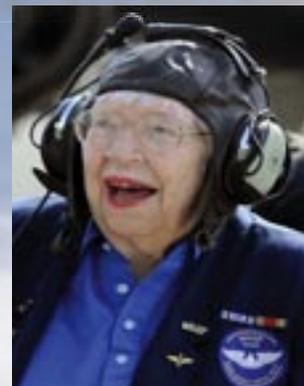
Tex Amanda Brown Meachem of Pompano Beach is one of our future donors. She is also the recipient of one of the highest civilian award in the United States, the Women Airforce Service Pilots (WASPS) Congressional Gold Medal, bestowed by the US Congress.

Thirty-eight WASPS died during active duty in World War II, yet they were not recognized as veterans until 1977. Of the 25,000 women who applied to the WASP, only 1,830 were accepted. Of those, 1,074 women passed the training and joined. Tex was one of the 300 surviving WASPS who were finally honored by Congress for their World War II efforts. She and other WASPS opened doors for generations of women who pursued their dream as a pilot.

At age 93, Tex is still living life to its fullest at John Knox Village. She flew one of her favorite planes - the AT-6 Texan

- with pilot John Makinson in a surprise wish-come-true. Trading her walker for the cockpit, she took the controls and once again flew the plane and did acrobatics. Pictures and stories of her special award ceremony can be found at:

- www.miamiherald.com/2010/04/23/1595641/surviving-wasp-93-fulfills-dream.
- Other links: • www.wings1944.blogspot.com/2010_10_03_archive.html
- www.wingsacrossamerica.us/wings/



Tex Amanda Meachem

Neurotoxins In Shark Fins: A Human Health Concern

A University of Miami study shows alarming accumulation of BMAA neurotoxin in shark fins, which may pose a threat to consumers of shark fin products.

Sharks are among the most threatened of marine species worldwide due to over fishing. Sharks are primarily killed for their fins, to fuel the growing demand for shark fin soup, an Asian delicacy. A new study by University of Miami scientists in the journal *Marine Drugs* has discovered high concentrations of BMAA in shark fins, a neurotoxin linked to neurodegenerative diseases in humans including Alzheimer's and Lou Gehrig Disease (ALS). The study suggests that consumption of shark fin soup and cartilage pills may pose a significant health risk for degenerative brain diseases.

"Shark fins are primarily derived through finning, a practice where by shark fins are removed at sea and the rest of the mutilated animal is thrown back in the water to die," said co-author Dr. Neil Hammerschlag, research assistant professor of Marine Affairs & Policy and director of the RJ Dunlap Marine Conservation Program (RJD) at UM. "Estimates suggest that fins from as many as 70 million sharks end up in soup. As a result, many shark species are on the road to extinction. Our study suggests that the soup is likely harmful to those who are consuming it." Seven species of shark were tested: blacknose, blacktip, bonnethead, bull, great hammerhead, lemon and nurse sharks. Samples were collected from live animals in waters throughout South Florida.

"The concentrations of BMAA in the samples are a cause for concern, not only in shark fin soup, but also in dietary supplements and other forms ingested by humans," said study co-author Dr. Deborah Mash, Director of the UM Brain Endowment Bank. The Bank supports basic and clinical research and holds one of the world's largest collection



of postmortem human brains encompassing a wide range of neurological disorders. In 2009, Dr. Mash and her co-authors published a study in the journal *Acta Neurological Scandinavica*, demonstrating that patients dying with diagnoses of Alzheimer's Disease and ALS had unusually high levels of BMAA in their brains – up to 256 ng/mg, whereas normal healthy aged people had no BMAA, or only trace quantities of the toxin present. "BMAA was first linked to neurodegenerative diseases in Guam, which resulted in the progressive loss of structure and function of neurons."

The shark study found a similar range and even higher BMAA in the fins tested. The new study found levels between 144 and 1836 ng/mg of BMAA, which overlapped the levels we measured in the brains of Alzheimer's and ALS victims. Surprisingly, this level fits with the BMAA levels in fruit bats examined by Paul Cox, animals which concentrate BMAA from their diet of cycad seeds. He linked ingestion of fruit bats to the severe ALS/Parkinsonism dementia that afflicted many people in Guam.

The project was funded through a donation from the Herbert W. Hoover Foundation. The foundation supports unique opportunities that provide solutions to issues related to the community, education and environment. Herbert W. Hoover was an early leader in the conservation movement, fighting to protect Biscayne Bay and leading the effort to create Biscayne National Park. For more information, www.rjd.miami.edu.

VISIT US ON-LINE AT www.brainbank.med.miami.edu

YES! I want to help the UM Brain Endowment Bank continue their research to find cures for diseases affecting our brains.

NAME: _____ Email _____

ADDRESS: _____ CITY _____ State _____ ZIP _____

PHONE _____ CELL PHONE _____

I am enclosing \$ _____ to further the research of the Brain Endowment Bank.

Return to: UM Brain Endowment Bank, 1951 N.W. 7th Avenue, Suite 240 • Miami, FL 33136

PLEASE CONTACT ME, I want to join your Brain Bank Registry

Birth Date _____ MALE FEMALE Current or former occupation _____

Growing a Bigger Brain is as Easy as a Walk in the Park

Want to make your brain bigger? A new study in the *Proceedings of the National Academy of Sciences* found that adults who walk for 40 minutes three times a week for a year had a region of the brain called the hippocampus that grew bigger. Walkers also performed better on tests of memory function.

This does raise some questions. Why would exercise increase your brain? Is a bigger brain a healthier brain? What about crossword puzzles to improve brain health?

The study reports results in humans based upon a number of years and over a decade's work on research with animals, mostly rodents. Animal research shows that if you give an animal access to a running wheel there are a number of changes in the brain especially in the hippocampus.

The hippocampus supports episodic or rational memory. An example of this type of memory would be meeting somebody at a party and trying to remember their name, their face, what you talked about and so forth.

Hippocampal function declines with normal aging and even worse with Alzheimer's disease. Improvements were found in birth of new neurons with increased exercise and those new neurons seem to be related in improvements in memory.

It has been known for many years that exercise, especially cardio-respiratory exercise, can reduce the risk for hypertension



and heart disease, stroke, osteoporosis and a number of forms of cancer and diabetes. Research shows that even individuals with very low levels of fitness and individuals in their 60s to 80s, can still show benefits in

terms of brain health and cognition.

Start today! It doesn't matter if you have been inactive. What matters is to start with even 15 minutes. Take breaks until you are able to reach the 40 minutes, three times a week.

Research also shows that greater exposure to intellectual and cultural stimulation in midlife is related to lower risk of dementia in older adults. This effect is particularly strong in women. Focusing on reducing cardiovascular risk, protecting the brain from injury or strokes, and doing physical exercise are important for brain health.

It's simple, just take a walk in the park.

Brain Endowments Support Research for Future Generations

To make brain donations possible, it takes a team of donors, family members and friends, dedicated health care workers, funeral home staff and doctors who give their time and efforts. People often pass away on weekends, holidays at all hours of the day or night. A brain donation takes a lot of coordination and we want to acknowledge the role of the donor's family. Family members play a big role in fulfilling the final life wishes of a brain donor.

A brain donor selects their "Next of Kin" who will assure that the brain endowment is made after death. We rely on the family to ensure that the final gift for research is made and that the legacy of this donation supports future research. Because of the efforts of our donors and their families, the program has grown and become very successful.

The University of Miami Brain Endowment Bank is one of the largest brain tissue resources in the United States. The program was established in 1986 at the University of Miami Miller School of Medicine. This Brain Biorepository has grown over the past 20 years and now houses over 1970 donor tissues.

The Brain Endowment Bank distributes brain tissue specimens to scientists worldwide who are investigating healthy aging, neurodegenerative and psychiatric diseases. One brain donated to research

can support hundreds of scientists and doctors.

Many of the brain disorders that researchers study today have genetic links which can be passed on to family members through generation after generation. As research advances and causes are known, the brain disease can be identified early and new treatments can be individualized.

Family members in future generations are helped through brain donation. We supply a final brain autopsy report which describes whether the brain was healthy or had signs of disease.

This work allows researchers to examine genetic transmission of these disorders and help determine the risk of a relative being affected by the disease.

Scientific study of brain-based diseases is often slowed by the shortage of brains, including healthy brains for comparison studies.

A brain donation is a gift of hope for cures for brain disorders. ***Donors and their family make the difference today and for future generations.***



Staff of the Brain Endowment Bank work to solve the puzzle of brain diseases.