

Cure Alzheimer's Fund and Rotary Co-Fund Research on Women and Alzheimer's

Cure Alzheimer's Fund and Rotary joined forces this fall to fund research into why women are more likely to get Alzheimer's disease than men. The two organizations granted a total of \$375,000 to the lab of Rudy Tanzi, Ph.D., at Massachusetts General Hospital. Tanzi, who serves as the Research Consortium chair for Cure Alzheimer's Fund, will analyze existing databases of Alzheimer's family genomes to identify gene variants that impact risk differently for women than for men.

Women and Alzheimer's

Of the 5.4 million Americans living with Alzheimer's disease, nearly two-thirds are women. While researchers and clinicians have observed this phenomenon for some time, the reasons why incidence among women is greater are unknown, and little research has been done to determine possible genetic underpinnings. Women do have a longer expected lifespan than men, but this difference alone does not explain the observed imbalance in incidence of the disease. At age 65, women face twice the lifetime risk of developing Alzheimer's than men. At 75, their risk is nearly threefold.

Women also exhibit faster cognitive decline than do men. In one study, women with mild cognitive impairment, a diagnosis that often precedes Alzheimer's, increased their rate of cognitive errors faster than did their male counterparts when tested over several years. This seems to show that not only are women at higher risk of Alzheimer's, but they also are affected by the disease in different ways.

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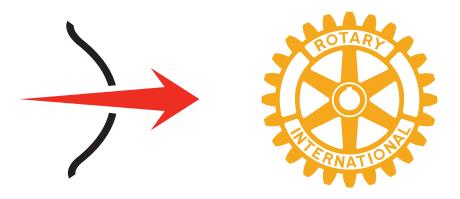
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Rotary

While this is the first time Rotary and Cure Alzheimer's Fund have co-funded a research grant, the two organizations have ties going back several years. The initiative started with a chance meeting between Jeff Morby, co-chairman and co-founder of Cure Alzheimer's Fund, and Dick Pratt, a member of the Martha's Vineyard Rotary Club. Members of that club joined others in New England and ultimately from around the world to champion more attention and resources to combat the global scourge of Alzheimer's disease.

In 2013, Martha's Vineyard Rotary officially partnered with Cure Alzheimer's Fund to create the Alzheimer's Disease Rotary Action Group (**adrag.org**). In addition to funding more research like Tanzi's, the group hopes to promote awareness of Alzheimer's and its impact by partnering with local communities served by Rotary around the world. The initiative to fund Tanzi's work was a joint effort between the Martha's Vineyard Rotary Club and the Toronto Rotary Club. Rotary funding for the project was provided by The Rotary Foundation, a nonprofit charity.

The project

Tanzi's study about women and Alzheimer's stood out to both Rotary and CureAlz as an excellent co-funding opportunity. The percentage of women in Rotary is growing rapidly, as are members from the Indian subcontinent, a population dealing with increased rates of Alzheimer's. Many current Rotary members have a parent, spouse or other loved one suffering from the disease. Tanzi will be working with three databases of genetic samples from Alzheimer's families: one from the National Institute of Mental Health (NIMH), one from the National Institute on Aging (NIA) and one from the National Cell Repository for Alzheimer's Disease (NCRAD). This wealth of genetic data already has been screened by Tanzi and others for genes and variants that appear statistically associated with risk for Alzheimer's. However, no one has attempted to mine the databases for risk factors specific to men or women.

"Studying sex-based differences is a harder problem, computationally speaking," Tanzi explained. "On Chromosome 23—XX in women, XY in men—you sometimes have multiple copies of a gene, or silenced genes. Historically, these complications have pushed geneticists doing genomewide association studies to omit the sex chromosome, or avoid breaking out men and women in their results."

Tanzi will work with Christoph Lange, Ph.D., at the Harvard School of Public Health, to write new high-powered algorithms for sex differentiation risk analysis. The grant from Rotary and Cure Alzheimer's Fund will allow them to tackle this difficult problem that many scientists have long avoided.

The potential reward for doing such work is great. "This is important for the treatment of all patients—not only women," Morby said. Identifying a gene that seems to be protective in men, for instance, might point to a therapy that would benefit both sexes. One specific goal is to gain a better understanding of the APOE gene; while having the APOE4 variant of this gene increases risk for any carrier, women are at significantly higher risk as carriers of the gene than men are. More broadly, the study will provide insight into the mechanisms behind Alzheimer's pathology and expand our understanding of what goes wrong in the disease.

More studies

Cure Alzheimer's Fund plans to support further studies into sex-based differences in Alzheimer's disease. Murali Doraiswamy, M.D., of Duke University, currently is being funded for a study looking at trends in cognitive, biomarker and genetic data that may indicate why women are at greater risk. Doraiswamy will perform secondand third-level analysis on the data to determine not just individual genes linked to risk, but interactions among different risk factors. He also is collaborating with Tanzi to share data and learn from one another's findings.

"We are delighted to collaborate with Rotary as we tackle one of the most difficult conundrums relating to the disease," said Morby. "Understanding the difference in response of women and men to the disease has been a subject that researchers have been reluctant to take on because of its complexity. Cure Alzheimer's Fund is proud to take on this challenge with the support of an international service organization like Rotary."

MILESTONE RESEARCH YEAR

Momentum is on our side. Through the end of Q3 we had distributed **\$6 million in research grants**-

funding 29 different projects around the world to help find a cure for Alzheimer's disease. We have you, our donors, to thank for this incredible milestone. However, while our researchers are making great progress, support still is needed to fund critical research projects in the future. Thank you.

Do You Remember?

On Sept. 22 Milton, Massachusetts, residents Leslie and Paul Durgin held a fundraiser at the Mirbeau Inn & Spa at The Pinehills to benefit Cure Alzheimer's Fund. In exchange for a donation, guests enjoyed an evening of appetizers, dancing, a silent auction and heartfelt presentations about the impact of Alzheimer's. Greg O'Brien, author of "On Pluto: Inside the Mind of Alzheimer's" and a friend of the Durgins, spoke about living with the disease and how he keeps fighting to stay active and productive. Dr. Rudy Tanzi, chairman of the CureAlz Research Consortium, talked about the organization's latest research progress, while Tim Armour, president and CEO of CureAlz, reinforced that 100 percent of donations go directly to research. Colleen Petitti, caregiver for her husband, Joe, who was diagnosed with early-onset Alzheimer's at the age of 46, shared her insights and personal experiences. "We are so proud that the evening was incredibly inspiring and, most importantly, hopeful," said Leslie Durgin. "Cure Alzheimer's Fund is making great strides in research and community support is critical." The event raised more than \$12,000 for research.





CaringKind Support

Cure Alzheimer's Fund and CaringKind—formerly the Alzheimer's Association in New York City—have formed an unofficial care and cure alliance, with CaringKind representing "care" in New York City and CureAlz representing research toward a "cure." It's a win-win relationship that puts the needs of families struggling with Alzheimer's first. When donors give contributions to CaringKind earmarked for research, the money goes to CureAlz, which puts 100 percent of it directly into Alzheimer's research. In addition, the Junior Committee of CaringKind raises donations through yearlong fundraising efforts. At its allocation meeting in September, the board also chose to fund innovative research through Cure Alzheimer's Fund. CureAlz Senior Vice President Sally Rosenfield said, "CaringKind has become an important ally for us in the fight against Alzheimer's disease, and we look forward to our continued relationship."

L to R: Brittany Krygowski, vice president; Laurel Crosby, president; Maxine Squires, secretary; and J.C. Hay, treasurer, CaringKind.

Not Your Average Night at Yankee Stadium

Since losing her beloved grandmother to Alzheimer's, Casey Headley wanted to do something to protect other families from the horrors of the disease. This year, Casey and her husband, New York Yankees third baseman Chase, directed a significant contribution to Alzheimer's research through CureAlz. Then, in August, Casey joined and spoke with a group of CureAlz donors and others interested in Alzheimer's research while attending a game at Yankee Stadium. More than 30 New York friends of CureAlz attended the game. The Yankees won, as did all who met Casey.



Remembering Bob Kiley

On Aug. 9, Robert R. Kiley passed away at age 80. During his career, Kiley revitalized the transit systems of Boston, New York and London. He worked in public service at the local, state, federal and international levels holding many leadership positions—from deputy mayor of Boston to chief executive



of New York's Metropolitan Transit Authority. His positive outlook, keen insights and strong moral code helped make a difference in the lives of so many. In his final years, Bob was diagnosed with Alzheimer's disease. After he passed, many family and friends made generous contributions in his memory to Cure Alzheimer's Fund.

We are deeply grateful to Bob's friends and family, and to all those who have given in memory of a loved one.

Women Against Alzheimer's

In 2013 Sally Rosenfield, senior vice president at CureAlz, joined the Women Against Alzheimer's (WA2) Network Founding Board in Washington, D.C. WA2 is one of the networks established by UsAgainstAlzheimer's engaged in advocacy and education for the disease. Representatives from the nonprofit sector, government, biotech and pharma attended the organization's summit this year, as well as former first lady Laura Bush, who spoke about her father's

Js4gains

experience with Alzheimer's. Cure Alzheimer's Fund was pleased to co-sponsor the event. "It was great to see so many different organizations working in the Alzheimer's community come together to fight this terrible disease," said Rosenfield.

Sally Rosenfield and Laura Bush.



The Alzheimer's Reading Room

In 2003 Bob DeMarco realized there was something "dramatically wrong with his mom, Dotty." He later learned she was living with Alzheimer's disease. He left his position as a Wall Street executive and CEO of a software company to care for her. Bob soon found a place he calls "Alzheimer's World," where caregivers and their loved ones become bonded by "emotional super glue." "If they (the afflicted) can't see us, they call out our name," said Bob. "Sometimes they'll follow us from room to room. And if we go out for even a small period of time, they become distressed. They can't live without us, and they love us more. Caring for them allows us to live a 'meaningful and purposeful life." AlzheimersReadingRoom.com, created by Bob, provides Alzheimer's caregivers and dementia professionals advice and solutions regarding the problems they face. DeMarco also champions the cause of Alzheimer's research, encouraging his readers to support CureAlz and other charities. The blog has more than 29,000 subscribers and more than 6 million people from 200 countries have visited the website.

'Tis the Season to Give

Even a small gift can make a big difference to Alzheimer's research, and giving has never been easier.

You can donate directly from our website at curealz.org, text the word **RESEARCH** to 41444 to send a donation, or write a check made out to Cure Alzheimer's Fund and send it via snail mail.

For gifts of securities or direct wire transfers, please contact Tim Armour at 877-CURE-ALZ (287-3259) for further information.

All donations are fully tax deductible. Thank you for your support!

CURE ALZHEIMER'S FUND HEROES

When we started out 12 years ago, we had just a few "heroes," mostly from New England. Now, with the success and growth of our organization, our heroes can be found around the world. Thank you for supporting our mission with your time, your donations and your voice. You've helped us get where we are today.

Third Annual Jog Your Memory

In September, the Needham, Massachusetts-based Jog Your Memory Board (Jess and Bob Rice, Dick Caley, Michelle Vitagliano Taranto, Michelle Schmidt and Harry Stants) held its third annual 5K run and 2-mile walk to raise money to eradicate Alzheimer's disease. Jess' mother was diagnosed with earlyonset Alzheimer's in 2007, inspiring Jess and Bob to found the nonprofit Jog Your Memory Inc. This year, a record 415 people participated in the organization's most successful fundraiser yet. Said Jess, "We are so lucky to have a board composed



of people who are near and dear to our hearts, our cause and our mission. CureAlz continues to inspire us to do more, do better and press on. We are always looking forward...onward and upward." The group donated \$100,000 to research this year.



A Decade of Commitment

For 10 years the women of Hay Harbor Tennis Club on Fishers Island, New York, have been gathering every July to raise money for Alzheimer's research in honor of their friend, Alison McCance, wife of Cure Alzheimer's Fund Co-Chairman Henry McCance. Once again, club member Diana Fiske organized and promoted the annual round-robin tennis tournament and fundraiser. This year, Henry introduced the event with a short update on general progress made in the field of Alzheimer's research over the past decade, and the significant part CureAlz has played in funding this research. "It was an inspiring way to begin the event!," said Diana. "This terrible disease has impacted so many of us. Cure Alzheimer's Fund is a groundbreaking organization that is making huge strides, and we are so proud to support it."

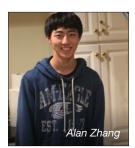
Recreation With a Purpose

The Murphy's Masters golf tournament, started by avid golfer Jim Murphy and his wife, Ruth, of North Salem, New York, has a long history of giving. It started out in 1989 as a way to get friends together once a year, and then became something much more—a successful annual fundraiser for those less fortunate. Over the years, the tournament has supported a variety of charities. This year, the Murphy family selected Cure Alzheimer's Fund, because the lives of many friends and family have been impacted by this terrible disease. In addition, the organization has a perfect Charity Navigator rating and sends 100 percent of donations directly to Alzheimer's research. The tournament was held at Pehquenakonck Country Club in North Salem in September, and raised more than \$31,000 for research.



Music to Their Ears

Alan Zhang, a junior at Wellesley High School, Massachusetts, both plays and teaches piano. Two years ago, when he began playing at the Newton Wellesley Center for Alzheimer's Care, he'd never met anyone with the disease. As he became acquainted with the residents, he also learned their favorite songs. "One woman named Marilyn knew almost every song I played, and especially loved, 'And The Band Played On,'" Alan said. "Sadly, as time passed, patients like Marilyn, who used to be so lively, no longer had as much spirit as they used to. But I still play that song for her whenever she walks into the room." Each week, Alan brings joy to the Alzheimer's patients through his music. After witnessing the terrible toll the disease takes, he decided to donate all the money he earns teaching piano and chess to research.





Reaching New Heights Toward a Cure

Climbers Jeff Madden of Chicago and Terry Lee of Marion, Massachusetts, met last year at the CureAlz Symposium in Boston. Both avid athletes with a family history of Alzheimer's disease, Jeff convinced Terry and his brother Cliff to climb Mount Baker in the Cascade Mountains to support Alzheimer's research. "Alzheimer's disease is a horrific fate for anyone, and I know this firsthand because my grandmother, mother, aunt and several neighbors and friends have either died from or are now suffering from this horrible disease," said Terry. Jeff added, "Cure Alzheimer's Fund provides grants to the world's leading researchers with big ideas. In just a few short years, they have made significant breakthroughs." Next year Jeff, Terry and Cliff are hoping to take on another vertical challenge together.

Sweet 16 Tournament

For the past 16 years Gregg and Bruce Johnson of Reading, Massachusetts, have held the annual DKJ Foundation Golf Tournament in memory of their father, David K. Johnson, who was diagnosed with progressive dementia at age 60. As always, the event was held at the Four Oaks Country Club in Dracut, Massachusetts, in August and drew both old and new friends, many of whom have been affected personally by the disease. "Our mission is to raise money and awareness to cure Alzheimer's and support families affected by the disease by providing resources and guidance throughout their journey," said Gregg. They donated \$25,000 to research.





Northbridge Fights Alzheimer's

In August, the Northbridge Companies, a New England-based senior living provider, held a reception to celebrate its 2016 fund drive for Cure Alzheimer's Fund. "This cause is very close to our hearts," said Wendy Nowokunski, president of the Northbridge Companies. "When my partner, Jim Coughlin, and I formed Northbridge we knew we wanted to create a supportive environment where seniors living with Alzheimer's and dementia could lead purposeful lives. Equally as important to us is partnering with those working to find a cure. We are so proud to support Cure Alzheimer's Fund." Through new admissions and a song-sharing drive on social media, Northbridge donated \$11,000 to Cure Alzheimer's Fund.

Ride Across America

On July 17 Michael Bell, 64, of Fairfax, Virginia, began a journey across the country on his bicycle in honor of his wife, Valerie, who was recently diagnosed with early-onset Alzheimer's disease. Valerie has handled her diagnosis with "strength and humor," said Michael. He rode from Everett, Washington, to Boston in a month—that's an average of about 113 miles per day—to raise money to fight Alzheimer's disease. "The longest ride of my life symbolizes the huge challenge of tackling dementia and Alzheimer's disease," he said. By donating a portion of the proceeds he raised to research, he's helping to get us closer to a cure.



Financial Update

	This Quarter*	YTD*	Inception to Date
Fundraising	\$2.0M	\$5.4M	\$ 65.4M
Expenses paid for by the board	\$0.7M	\$2.1M	\$14.1M
Funded research	\$4.0M	\$6.2M	\$44.2M

*Numbers shown are preliminary for the period and are rounded to the nearest \$100,000.

Research Update

Research funded during the third quarter of 2016

Project/Researcher	Distribution Amount
Impact of Inflammasome Deactivation on Alzheimer's Disease Vishwa Deep Dixit, D.V.M., Ph.D., Yale School of Medicine	\$75,000
Early Role of Microglia in Synapse Loss in Alzheimer's Disease Beth Stevens, Ph.D., Children's Hospital Boston	\$150,000
A 3-D Human Neural Cell Culture System for Studying Neuron-Microglia Interaction in Alzheimer's Disease Hansang Cho, Ph.D., University of North Carolina at Charlotte	\$150,000
Role of Blood-Brain Barrier Function in Alzheimer's Disease Pathogenesis Investigated Using a 3-D Microfluidic Platform Se Hoon Choi, Ph.D., Massachusetts General Hospital, and Roger Kamm, Ph.D., Massachusetts Institute of Technology	\$293,844
Microglial Core/CD33 and Alzheimer's Disease: From Biology to Therapy Rudy Tanzi, Ph.D., and Ana Griciuc, Ph.D., Massachusetts General Hospital	\$400,000
3-D Neural Core/High-Throughput Drug Screening for Alzheimer's Disease Using 3-D Human Neural Culture Systems Doo Yeon Kim, Ph.D., Massachusetts General Hospital	\$400,000
Search for Female-Specific Genetic Factors Contributing to Risk for Alzheimer's Disease Rudy Tanzi, Ph.D., Massachusetts General Hospital	\$375,000
Use of High-Content Drug Screening and Systems Biology Modeling on a Novel 3-D Cell Model to Repurpose Known Drugs for Alzheimer's Disease Stephen Wong, Ph.D., Houston Methodist Research Institute	\$150,000
3DDS: Alzheimer's Disease Drug Discovery in 3-D Weiming Xia, Ph.D., Boston University	\$150,000
SORLA Attenuates Abeta Toxicity Through Interactions With EphA4 Huaxi Xu, Ph.D., Sanford Burnham Prebys Medical Discovery Institute	\$150,000
Nanobodies to Cross the Blood-Brain Barrier Bart De Strooper, M.D., Ph.D., and Maarten Dewilde, Ph.D., VIB Center for the Biolog of Disease	\$150,000 y
Development of Novel APP Dimerization Inhibitors That Lower Abeta Levels Carmela Abraham, Ph.D., Boston University	\$129,373
Uncovering Determinants of Neuronal Vulnerability in Alzheimer's Disease Paul Greengard, Ph.D., The Rockefeller University	\$250,000
Binding Site Characterization of a Novel Pyridazine-Derived Class of γ-Secretase Modulators Steven Wagner, Ph.D., University of California, San Diego	\$194,950
BIN1 in Alzheimer's Disease Neuropathology Gopal Thinakaran, Ph.D., University of Chicago	\$150,000
G2T Research Models and Materials Taconic Biosciences	\$280,264
Total Distributed to Research for Q3 2016	\$3,448,431

CHARITY DESIGNATION

Cure Alzheimer's Fund® is a "doing business as" name for the Alzheimer's Disease Research Foundation, a 501(c)(3) public charity with federal tax ID #52-2396428.

Cure Alzheimer's FUND

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Mission

Fund research with the highest probability of preventing, slowing or reversing Alzheimer's disease.

Research Consortium

Rudolph E. Tanzi, Ph.D., Chairman, Research Consortium; Harvard Medical School/Massachusetts General Hospital Ben A. Barres, M.D., Ph.D., Stanford University Bart De Strooper, M.D., Ph.D., Vlaams Instituut voor Biotechnologie Murali Doraiswamy, M.D., Duke University Karen Duff, Ph.D., Columbia University Sam Gandy, M.D., Ph.D., Icahn School of Medicine at Mount Sinai Charles Glabe, Ph.D., University of California, Irvine Christian Haass, Ph.D., Ludwig-Maximilians-Universität München David Michael Holtzman, M.D., Washington University, St. Louis Richard L. Huganir, Ph.D., The Johns Hopkins University Nancy Ip, Ph.D., The Hong Kong University of Science and Technology Bruce Lamb, Ph.D., Indiana University Christoph Lange, Ph.D., Harvard T.H. Chan School of Public Health Virginia M.-Y. Lee, Ph.D., University of Pennsylvania Roberto Malinow, M.D., Ph.D., University of California, San Diego Eric E. Schadt, Ph.D., Icahn School of Medicine at Mount Sinai Sangram S. Sisodia, Ph.D., University of Chicago Li-Huei Tsai, Ph.D., The Picower Institute, MIT Robert Vassar, Ph.D., Northwestern University Steven L. Wagner, Ph.D., University of California, San Diego Berislav Zlokovic, M.D., Ph.D., University of Southern California

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Check out our Facebook page for our most recent posts, photos, videos and more! Go to **facebook.com/CureAlzheimers**.

STATE OF THE MIND

Jim and Ruhan Figliulo of Chicago know the extraordinary importance of research to find a cure for Alzheimer's. Ruhan's mother, Hediye Memishi, died in 2009 at age 65 after courageously battling the disease for 15 years. Upon meeting Dr. Sam Sisodia of the CureAlz Research Consortium, who directs the Center for Molecular Neurobiology at the University of Chicago, the Figliulos asked him to speak at the first CureAlz State of the Mind reception in September, with the hope that attendees would be inspired to support Alzheimer's research. Approximately 60 guests shared food, drink and stimulating discussion about the impact of Alzheimer's and the cutting-edge research being funded by CureAlz. Afterward, CureAlz received more than \$10,000 in contributions from those who attended. "Alzheimer's is such an emotionally devastating disease for many families, including mine, and it's among the most expensive to try to manage and treat," said Ruhan.



"Our only hope of finding a cure depends on raising as much money as we can to fund breakthroughs in research. The State of the Mind reception is an engaging and positive way to accomplish that goal." —Ruhan Figliulo