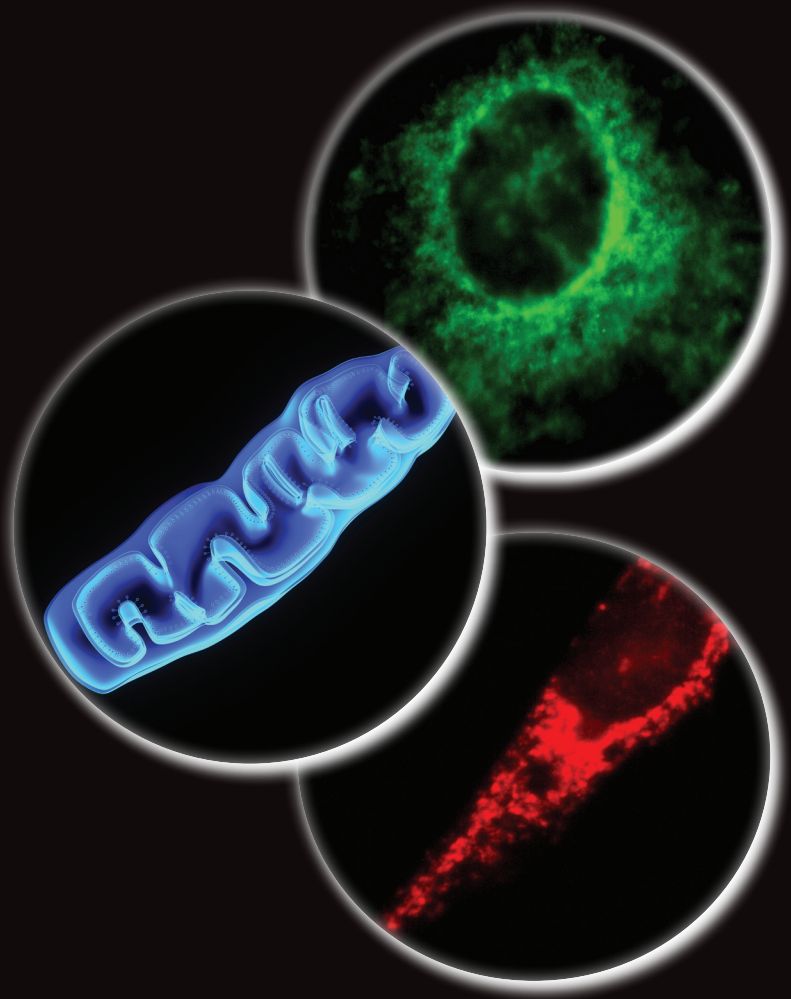
TEXAS TECH UNIVERSITY
HEALTH SCIENCES CENTER™
Garrison Institute on Aging

Annual Report
2014-2015



State-of-the-Art Research

Tedd L. Mitchell, M.D.
President of
Texas Tech University
Health Sciences Center

The Garrison Institute on Aging (GIA) represents Texas Tech University Health Sciences Center's (TTUHSC) commitment to healthy aging as a priority in the university's overall mission. Thanks to the generosity of the Garrison family, the institute continues to be a critical focal point for research, education and community outreach on issues related to healthy aging and diseases related to aging. Since its inception in 1999, the GIA has experienced significant growth in all areas of its operations and the potential is even more evident under the leadership of Dr. P. Hemachandra Reddy who has recently completed his first year at the helm of the institute. Dr. Reddy is a highly productive investigator, recognized nationally and internationally for his research on understanding the molecular and cellular basis of aging in age-related neurodegenerative diseases such as Alzheimer's and Huntington's. Dr. Reddy and his outreach/education team are putting extra efforts to enhance outreach and educational activities.

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Mission of the GIA

The Garrison Institute on Aging is a unique organization whose mission is to promote healthy aging through cutting-edge research in Alzheimer's disease and other diseases of aging, and through innovative educational and community outreach programs that target students, health care professionals and the public.

Proclamation

by Commissioners Court of Lubbock County

The Commissioners Court of Lubbock County, acting in its capacity as the governing body of Lubbock County, proclaimed July 13, 2015 as National Service Recognition Day. Through this effort it encourages residents to recognize the impact of national service in our city; to thank those who serve; and to find ways to give back to their communities. The proclamation recognizes the services of over 600 volunteers in Lubbock County. In 2014, volunteers served over 104,000 hours of service with an annual economic impact of over 2.4 million dollars to the community. Senior Corps serves RSVP locations throughout the USA and assists in meeting the needs of the community. Lubbock RSVP is hosted by the Garrison Institute on Aging at Texas Tech University Health Sciences Center.

Shirley L. Garrison
Founder of the Garrison Institute on Aging

TEXAS TECH UNIVERSITY HEALTH SCIENCES CENTER™

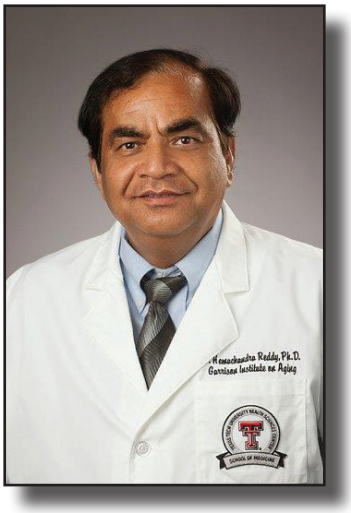
Garrison Institute on Aging

The Garrison Institute on Aging (GIA), formerly the Institute for Healthy Aging, was established in 1999 by the Texas Board of Regents to meet Texas Tech University Health Sciences Center's (TTUHSC) strategic priority on aging and as a collaborative initiative with the TTUHSC Schools of Health Professionals, Medicine, Nursing, and Pharmacy. The GIA is a unique organization, the mission of which is to promote healthy aging of the populace through cutting-edge research on Alzheimer's disease (AD) and other diseases of aging, through the development of innovative educational opportunities for students, clinicians, researchers, health care professionals, and the public. The vision of the GIA is to become nationally and internationally recognized as a center of excellence for the creation and application of new knowledge about healthy aging through research, innovative interdisciplinary education, and collaborative community outreach efforts.

In 2004, through an endowment funded by Mr. and Mrs. Shirley L. Garrison and by private donations, the GIA was created to support aging research and education programs. Multiple programs were established, including: 1) education and community outreach programs and activities, and 2) Geriatric Education and Training Academy of Certified Nurse Aides (CNA). The CNA program focused on training health care professionals who assist elderly populations. In 2007, researchers designed a collaborative, multidisciplinary study known as the Cochran County Aging Study, which researches cognitive decline and dementia syndromes of the elderly in rural Texas. The GIA also developed the first multidisciplinary, multi-school program – the Student Scholars Program – that trains university-level seniors from Texas Tech University (TTU) and TTUHSC in health care issues of the elderly. The community outreach division has grown from providing health fairs through the Healthy Lubbock program to providing new programs that focus on self-management of chronic diseases, healthy eating, and active living.

In the GIA research laboratories, academic professionals develop and perform cutting-edge research projects aimed at understanding AD and other diseases of aging, as well as developing novel therapeutic approaches to cure or prevent age-related disorders and diseases.

Executive Director's Report



P. Hemachandra Reddy, Ph.D.
Executive Director and Chief Scientific Officer
Mildred and Shirley L. Garrison Chair in Aging
Professor Cell Biology and Biochemistry, Pharmacology and Neuroscience, and Neurology
School of Medicine

My move from Oregon Health & Science University in Portland to TTUHSC, Lubbock in 2014 has been exciting, not only for my family and me, but also for my research team. My children have adapted well to schools in Lubbock, and my wife and I are enjoying the cultural activities in Lubbock and surrounding areas.

Currently, the Garrison Institute on Aging is involved with the following programs, including – 1) to provide community members and caregivers of AD patients with information on the latest research in neurodegenerative diseases, AD therapeutics and healthy aging, 2) to provide retired seniors with volunteer opportunities, 3) to educate community members about maintaining a healthy lifestyle through exercise, healthy eating and mental fitness, and 4) to conduct cutting edge research on AD.

In addition, the GIA Brain Bank offers the opportunity for families to enroll for a free brain autopsy and provide tissues to qualified scientists who are interested to investigate issues such as: 1) causes of dementia, 2) early cellular changes during AD onset and progression, 3) development of biomarkers for different stages of AD progression, and 4) development of therapies to prevent or delay AD progression. Through such research, I hope that my team and I can play a significant role in promoting healthy aging and healthier lifestyles in individuals older than 50 years of age.

My outreach team also organizes educational programs in geriatrics for the students from TTUHSC School of Medicine, School of Health Professionals, School of Nursing and School of Pharmacy. We are working hard to have the GIA be recognized as a world-wide leader in researching AD, in promoting healthy aging, and in educating researchers, students and the public in geriatric care.

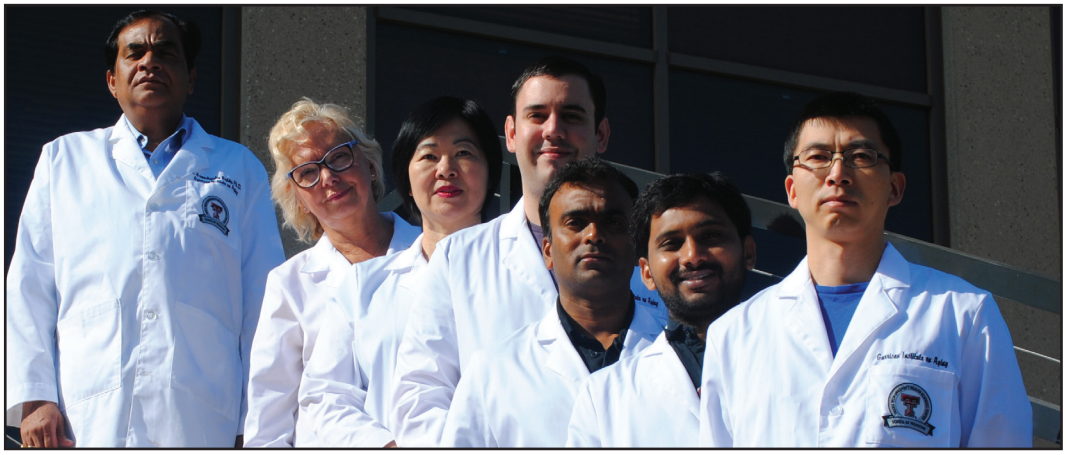
My colleagues and I wish to thank the Garrison Family Foundation; leadership of TTUHSC, particularly President Tedd Mitchell, M.D.; Executive Vice President and Provost Steven Berk, M.D. and Senior Vice President for Research Michael Conn, Ph.D., and all of our colleagues and students in the School of Medicine, School of Health Professionals, School of Nursing and School of Pharmacy at the TTUHSC for welcoming us and for supporting our educational and research programs.

P. Hemachandra Reddy, Ph.D.

Vision *of the GIA*

The vision of the institute is to become nationally and internationally recognized as a center of excellence for the creation and application of new knowledge about healthy aging through research, innovative interdisciplinary education and collaborative community outreach efforts.

Current Research Projects at Garrison Institute on Aging



Project 1

Amyloid Beta, Synaptic Pathology, and Mitochondrial Dysfunction in Alzheimer's Disease

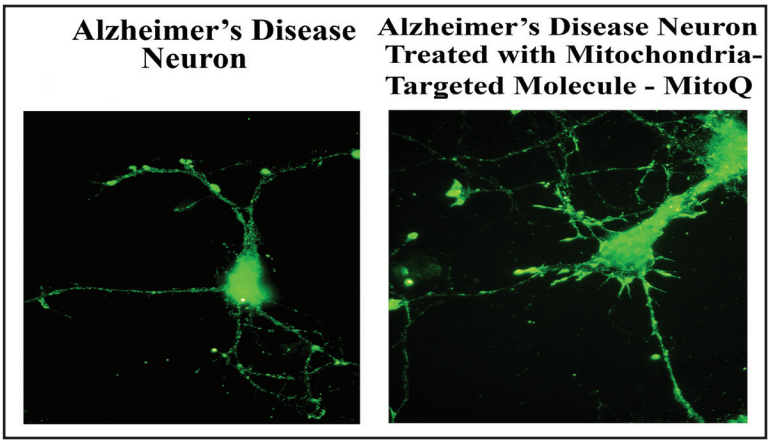
According to the Alzheimer's Association, an estimated 5.4 million Americans were identified as suffering from AD. The disease usually begins to manifest after age 60, and the risk of AD onset increases with age. It is estimated that by the year 2050, 50% of people worldwide who are 85 years of age or older will be afflicted with AD. Two-thirds of women and one-third of men are at lifetime risk for AD. Despite tremendous progress in AD research, there is still no clear understanding of why more women than men are at risk for AD, and there are still no early detectable markers and no drugs or agents that can delay or prevent AD in men or women. Aging is considered the number one risk factor for late-onset AD. Several cellular mechanisms are reported to be involved in AD pathogenesis. However, mitochondrial dysfunction and synaptic damage stand out as early events in AD progression.

The Reddy laboratory has undertaken a global gene-expression study that uses a transgenic mouse model of AD (a model with the amyloid beta precursor protein; AβPP). Dr. Reddy and his research team found that genes related to mitochondrial energy metabolism and apoptosis were up-regulated in 2-, 5- and 18-month-old AβPP mice, compared to age-matched wild-type mice. These results suggest that mitochondrial energy metabolism might be impaired by mutant APP and Aββ, and that the up-regulation of mitochondrial genes may be a compensatory response to this impairment. Further, Aβ was found to be associated with mitochondria in AD neurons and for generating reactive oxygen species, mitochondrial dysfunction, and synaptic damage, all of which have been implicated in AD pathogenesis. For the first time, the Reddy laboratory demonstrated that Aβ interacts with a mitochondrial fission protein – dynamin-related protein 1 (Drp1) – which is known to induce excessive GTPase enzymatic activity and to cause excessive mitochondrial fragmentation and abnormal mitochondrial distribution in AD neurons. Further, Dr. Reddy recently found that the voltage-dependent anion channel 1 (VDAC1; a mitochondrial permeability transition pore protein) interacts with Aβ and phosphorylated tau, and causes mitochondrial damage in neurons affected by AD. Reddy's group is currently investigating the physiological relevance of these abnormal interactions in neurological disease processes, such as AD, in order to develop molecular inhibitors to reduce Aβ- and phosphorylated tau-induced neuronal toxicities in disease progression.

Research staff working on this project are: P. Hemachandra Reddy, Ph.D., Maria Manczak, Ph.D., Ramesh Kandimalla, Ph.D., Chandra Sekhar Kuruva, Ph.D., Rui Wang, Ph.D., XiangLing Yin, M.S., David Fry, B.S., Carrah Osborn, Senior in College.

Project 2

Mitochondria-targeted Molecules and Alzheimer's Disease Therapeutics



In the mitochondrial therapeutics project, the Reddy research team is investigating whether mitochondria-targeted molecules can reduce oxidative damage and Aβ pathology, increase neurite outgrowth, and ameliorate cognitive deficits in AβPP transgenic mice. To study mitochondrial function and dysfunction, Aβ pathology, and cognitive behavior, Reddy and his research team are: treating AβPP mice with mitochondria-targeted molecules and crossing them with mitochondria-targeted catalase transgenic mice (MCAT) mice, which are known to survive 5 months longer than normal, wild-type mice. Further, they are also studying gender-based protective effects of MCAT in double mutant AβPPxMCAT mice relative to AβPP mice.

Research staff working on this project are: P. Hemachandra Reddy, Ph.D., Maria Manczak, Ph.D., Ramesh Kandimalla, Ph.D., XiangLing Yin, M.S.

Project 3

Mutant Huntington, Mitochondrial Dynamics, and Huntington's Disease

Using postmortem brains from patients with HD and brains from transgenic mice with HD, the Reddy Laboratory is exploring the role of abnormal mitochondrial dynamics in the progression of HD. Using primary neurons from the transgenic mouse models of HD; state-of-the-art, live-cell imaging tools; and transmission electron microscopy, the Reddy laboratory is investigating axonal transport of mitochondria, mitochondrial biogenesis, mitochondrial dynamics (e.g., fission and fusion balance), and synaptic activity in AD neurons. Recently, the Reddy Laboratory is studying the efficacies of neuroprotective molecules – Mdivi1, MitoQ and SS31 in vitro (using stably expressed expanded polyglutamine repeats in mouse striatal neurons) and in vivo HD transgenic mice. Further, they are studying primary neurons and mammalian cells with high throughput screening tools, and are screening small molecule libraries in order to identify molecules that protect neurons in patients with HD and other neurodegenerative diseases.

Research staff working on this project are: P. Hemachandra Reddy, Ph.D., Maria Manczak, Ph.D., XiangLing Yin M.S.

Project 4

Abnormal Interaction of Amyloid beta with Phosphorylated Tau in Alzheimer's Disease Pathogenesis

Using postmortem brains from AD patients at different stages of disease progression and control subjects, and brain tissues from multiple lines of AD mice, including AβPP, AβPPxPS1, and 3xTg-AD mice, the Reddy team studied the physical interaction between Aβ and phosphorylated tau. We found

Maria Manczak, Ph.D.
Senior Research Associate

Ramesh Kandimalla, Ph.D.
Senior Research Associate

monomeric and oligomeric Aβ interacted with phosphorylated tau in neurons affected by AD. Further, these interactions progressively increased with the disease process. These findings led to conclude that Aβ interacts with phosphorylated tau and may damage neuronal structure and function, particularly at synapses, leading to cognitive decline in AD patients. These findings suggest that binding sites between Aβ and phosphorylated tau need to be identified and molecules developed to inhibit this interaction. Currently, the Reddy Laboratory is identifying the molecular inhibitors that may reduce abnormal interactions between Aβ phosphorylated tau to reduce Aβ- and phosphorylated tau-induced neuronal toxicities in disease progression.

Research staff working on this project are: P. Hemachandra Reddy, Ph.D., Maria Manczak, Ph.D., Chandra Sekhar Kuruva, Ph.D.

Project 5

Experimental Therapeutics of Multiple Sclerosis

Oxidative stress and mitochondrial dysfunction are involved in the progression and pathogenesis of MS. Using an experimental autoimmune encephalomyelitis (EAE) mouse model (mice that mimic MS symptoms) and the mitochondria-targeted molecule MitoQ, the Reddy research team is studying the beneficial effects of MitoQ on EAE mice. Initial results are revealing that pretreatment and treatment of EAE mice with MitoQ reduce neurological disabilities associated with EAE and lead to significantly suppressed inflammatory markers of EAE, including the inhibition of inflammatory cytokines and chemokines. Currently, they are studying the neuroprotective mechanisms of MitoQ in EAE mice and also preparing to study the effects of multiple neuroprotective molecules on MS patients in a series of clinical trials.

Research staff working on this project are: P. Hemachandra Reddy, Ph.D., Maria Manczak, Ph.D., Ramesh Kandimalla, Ph.D.

GIA Brain Bank

Established in 2007 to serve as both a resource for families seeking autopsy confirmation of dementia as well as for researchers needing human tissues for discovery science, the GIA Brain Bank program has continued to grow and expand. This unique resource is funded solely through private contributions by families who have been touched by Alzheimer's disease and other dementing illnesses. We acknowledge this year the generous support provided by Shirley and LuCille Garrison as well as the Garrison Family Foundation for the continued growth and development of the GIA Brain Bank. It is through their generosity that work using human tissues to discover the causes of Alzheimer's disease is made possible.

For more information, contact the GIA Brain Bank Coordinator at 806.743.2385 or visit www.ttuhsc.edu/aging.

Spike Dykes Golf Tournament

The Spike Dykes Charity Fund was founded in honor of Sharon Dykes, who passed away in 2010 after a long battle with Alzheimer's disease. Since it's creation in 2012, the Spike Dykes Charity Fund has invested over $180,000 to support Alzheimer's research thanks to the success of the Charity Golf Tournament. This year the annual event benefitted the TTUHSC Garrison Institute on Aging. It was held in Horseshoe Bay on July 17-18. There were over 170 participants that played on Ram Rock and Apple Rock courses at the Horseshoe Bay Resort.

GIA Administrative Staff

Ruben Gonzales
Kandi Quesada
Kathy Stonum
Dr. P. Hemachandra Reddy
Annette Boles

SW Campus Staff

Taylor Lenzmeier
Kate Tebrink
Clay Ament
Joan Blackmon
Veronica Lopez
Dr. P. Hemachandra Reddy
Annette Boles

Transforming Texas

Lubbock County & Hale County

Community Outreach staff completed projects associated with the Transforming Texas grant. The three areas of focus included:

- Healthy eating and active living
- Chronic disease self management
- Reducing the effects of second hand smoke in Lubbock and Hale County

Below are some of the accomplishments that resulted from the grant.

Program Accomplishments:

- Implemented Guadalupe, Heart of Lubbock, Westminster Presbyterian Church & Booker T. Washington Community Gardens in Lubbock County.
- Implemented Retired and Senior Volunteer Program, Salvation Army, Wayland Baptist University and Date Street Gardens.
- Implemented the TTUHSC Walking Trail.
- Expanded the Healthy Lubbock Dining Guide.
- Created a Dining Guide in Spanish.
- Established a Farm-to-Work program.
- Established the TTUHSC Southwest campus Farmer's Market.
- Developed a Lubbock Health Resource Guide.
- Provided signs to both the mountain bike trails and Canyon Lakes Park.
- Developed a bicycle route that includes signage from TTU to Canyon Lakes.
- Provided TTU with 10 bicycle Fix-It Stations.

For information visit www.healthylubbock.org or call 806.743.7821.

Texas Healthy Communities

In October 2014, TTUHSC GIA received a $50,000 grant from the Department of State Health Services Texas Healthy Communities. This grant has allowed GIA to conduct a health assessment, activate a community dashboard that will showcase Lubbock's health status and develop an Active Living Plan for Lubbock County.

Comments from Volunteers and Volunteer Stations

- *"Many thanks for the enjoyable Recognition dinner. The entire program was uplifting and well planned. Always rewarding to be with such nice folks. Looking forward to another productive year."*
RSVP Volunteer

- *"To the RSVP – Thank you all so much for the blankets and infant items. Our clients really enjoyed them! We appreciate all you do for us and our community!!"*
Volunteer Station

- *"I must tell you that the bibs have been a great hit! I have given out all of them and have requests for more! "The bibs were distributed to patients in nursing homes. Mr. D was given a bright orange one and after they put it around his neck…he looked down, rubbed his chest and got this big-smile on his face! Mrs. B got one with bright flowers. She thought it was so pretty – she did not want to take it off. Our nurses try to match the fabric with the personalities of the patients. Your sewers did a great job and their work is greatly appreciated!"*
Volunteer Station

Retired & Senior Volunteer Program

Responding to the needs in our community

Joan Blackmon

Lubbock **RSVP** is sponsored by GIA and promotes volunteerism for adults 55 and older while assisting to meet the needs of the Lubbock community. Lubbock RSVP began in 1979. We have more than 600 volunteers that serve in more than 60 different agencies throughout the Lubbock Community.

Program Focus

- Promote volunteerism and service for adults 55 and older and seek opportunities in the Lubbock community to be a positive catalyst.
- Utilize the lifetimes of experience, skill, and talents and interests of senior citizens to meet community needs through volunteer service.
- Assist the Lubbock community to 'age in place' with a healthy physical and mental approach.

Benefits of Program

- Enrollment is free and open to all adults 55 and older.
- Lubbock RSVP provides a supplemental insurance for volunteers at no cost to volunteers.
- Two community events are hosted 1) Spring Forum – designed to educate and provide seniors with resources defined for their needs. 2) Movie Night-designed for members and community guests to meet and enjoy a classic movie and share a meal with others.
- Annual Recognition Event – a banquet for members and guests to meet and be recognized for their service and achievements. Members who have served 4,000 or more hours are awarded the ***Presidential Lifetime Achievement Award***.

2014 Statistics

Over 570 volunteers served over 104,000 hours for an economic impact of approximately 2.4 million dollars to the Lubbock Community.

Annette Boles

GET FiT Lubbock

Summary

The GET FiT @ School Program increased access to physical activity, healthy eating, and knowledge about chronic disease self-management (CDSM) for school employees. Community Transformation Grant (CTG) staff met the need for school worksite wellness by adapting a CDSM program for school use. Teachers and staff in 13 schools in 4 districts were given access to webinars about diet, exercise, and disease self-management. Using the GET FiT on-line tracking system, they could track and compare their results against other staff, if desired.

Challenge

According to the Centers for Disease Control and Prevention, 71.7% of adults in Lubbock are obese or overweight (TX= 65.7%, US=69.2%). More than 41% have hypertension, far above Texas (27.8%)and US (31.9%) rates, and 77.6% of adults eat less than the daily recommended amount for fruits and vegetables (TX=74.8%, US=69.5%). Some of those adults are the teachers setting examples for students, the next generation of Lubbock. CTG staff at the Texas Tech University Health Sciences (TTUHSC) Garrison Institute on Aging (GIA) realized that many of the schools they worked with on other projects did not have access to a worksite wellness program. CTG staff decided to adapt the GET FiT patient fitness program into a school worksite wellness program. The GET FiT @ School program is free. However, would the schools be interested, since it does take time for the teachers to track progress online?

Solution

In an attempt to provide more access to physical activity and knowledge about chronic disease self-management for teachers in Lubbock County, the TTUHSC GIA staff offered GET FiT @ School to all districts in the county. The worksite wellness program provided a learning opportunity, an online tracking system and health education. Each participant earned points for exercising, losing weight and staying active. They were encouraged to challenge other schools, teachers and staff, as well as view webinars about chronic disease self-management. Daily e-mail reminders about staying active also were provided.

Results

At 13 schools in 4 districts, a total of 261 teachers and staff lost a combined total of 331 pounds and accumulated more than 2,314 hours of exercise. After the program, an Internet survey was given. All 28 survey respondents were female and between the age of 25-64. Results showed that 75% said that GET FiT @ School was organized; 78.57% said they are likely to participate in another GET FiT @ School session; 75% said they were more active while participating in GET FiT @ School; 77.78% said 8 weeks was just the right amount of time; and 77.78% said GET FiT @ School is an effective way to lose weight.

Sustainable Success

In 2014, the GET FiT program was enhanced to make the online-tracking system more user-friendly, which in turn made it much easier for the CTG staff to adapt it for school use. In addition, the GIA is collaborating with the TTUHSC Human Resources department to enhance the program by tracking pedometer readings, adding nutritional categories, and increasing the number of chronic disease self-management webinars on the site. GIA staff plan to continue working with area school districts and other worksites, expand into other counties, and implement new tools and resources to the on-line tracking system.

Andrew Mitchell

Mary Katherine Grady

Kajal Parikh

Goals

- Provide a hands-on opportunity to work with the geriatric population in academic, community service and clinical care settings.
- Provide exposure to the field of Geriatrics in classroom and practice-based environments.
- Provide an opportunity to participate in faculty advised research.
- Provide students with the experiences that will help them to become leaders who promote geriatrics to their fellow students and the community at large.

Student Scholars

The Reddy Laboratory of the GIA is actively collaborating with investigators at TTU and the TTUHSC-School of Medicine, and investigators from outside TTUHSC, including Johns Hopkins University and Baylor College of Medicine and others. In addition, the GIA also participates in multiple student training programs:
1) The Student Scholars in Geriatrics (SSG)
2) The SOM Student Summer Research Program
3) The High School Student Scholars Research Program

The Student Scholars is an inter-professional program that offers students from TTUHSC and TTU exposure to the geriatric field. Students attend lectures, clinical practicum, community service, and an inter-professional geriatric service event. Students participate in the program for one academic year with the option to re-apply for additional terms in the program. Select students will have the opportunity to attend regional and national meetings of the American Geriatrics Society and the Gerontological Society of America.

The purpose of the SSG Program is to develop a cadre of students from multiple disciplines who have a long-term commitment to advancing geriatric healthcare and are actively engaged in inter-professional projects designed to extend the years of active, healthy life for older adults. Creating leaders in geriatrics is key to the long-term success of this program; therefore, the students are charged with developing learning activities for themselves and others.

The SOM Student Summer Research Program
The GIA also participates in the **SOM Student Summer Research Program**, an 8-week program designed to help students gain experience in an area of research interest. First-year medical students in Lubbock are encouraged to coordinate with interested faculty members on project proposals that are to be submitted for approval to the Office of the Dean. A stipend is paid to each participating student in accordance with this guideline, and students are required to present information regarding summer research activities during the Student Research Week in Spring 2016. Two SOM students are working in the Reddy Laboratory of GIA and conducting research. One project is focused on molecular basis of amyloid beta and phosphorylated tau in the progression and pathogenesis of Alzheimer's disease. The purpose of the second project is to investigate the role of synaptic damage, oxidative stress/mitochondrial dysfunction in relation to amyloid beta and phosphorylated tau in the progression and pathogenesis of Alzheimer's disease.

The High School Student Scholars Research Program
The High School Student Scholars Summer Research Program is a new initiative by Dr. Reddy, to help high school students gain experience in the research areas of aging and neurodegenerative diseases. It is an 8-week program, supported by the GIA. Currently, one student is working in the Reddy Laboratory of the GIA to understand the molecular basis of synaptic damage using neuronal cultures of Alzheimer's Disease.

GIA Research Seminar Series 2014-2015

The GIA Research Seminars, a new program started in 2014 by Dr. Hemachandra Reddy, focuses on research experts presenting new research findings on aging, AD, and dementia-related and age-related diseases. This program is open to the public and to persons in the scientific community. The details can be found at http://www.ttuhsc.edu/centers/aging/researchseminar.aspx

November 6

Title: ***A New Direction of Research on Aging and Neurodegenerative Diseases - Part 1***
Focus on Garrison Institute on Aging Activities and Alzheimer's Disease Pathogenesis
P. Hemachandra Reddy, Ph.D., Executive Director of Garrison Institute on Aging and Professor of Cell Biology & Biochemistry, Neurology and Neuroscience/Pharmacology, TTUHSC, Lubbock

December 9

Title: ***A New Direction of Research on Aging and Neurodegenerative Diseases - Part 2***
Focus on Reduced Alzheimer's Pathology and Longevity in Alzheimer's Disease
P. Hemachandra Reddy, Ph.D., Executive Director of Garrison Institute on Aging and Professor of Cell Biology & Biochemistry, Neurology and Neuroscience/Pharmacology, TTUHSC, Lubbock

January 6

Title: ***A New Direction of Research on Aging and Neurodegenerative Diseases - Part 3***
Focus on Huntington's Disease
P. Hemachandra Reddy, Ph.D., Executive Director of Garrison Institute on Aging and Professor of Cell Biology & Biochemistry, Neurology and Neuroscience/Pharmacology, TTUHSC, Lubbock

February 3

Title: ***Pharmacoperones: A New Therapeutic Approach Unfolding***
Michael Conn, Ph.D., Senior Vice President for Research and Associate Provost
Texas Tech University Health Sciences Center, Lubbock

March 3

Title: ***Translational Neuroscience – Brain Mechanisms of Pain***
Volker Neugebauer, M.D., Ph.D., Professor and Chair, Department of Pharmacology and Neuroscience
Texas Tech University Health Sciences Center, Lubbock

April 7

Title: ***Neurosteroids and Extrasynaptic GABA-A receptors In Neurological Disorders***
Samba Reddy, Ph.D., Professor, Department of Neuroscience and Experimental Therapeutics
Texas A&M Health Science Center, College Station

May 12

Title: ***Therapeutic Potential of Mammalian INDY (I'm Not Dead Yet): Hope or Hype?***
Vadivel Ganapathy, Ph.D., Professor and Chair, Department of Cell Biology and Biochemistry
Texas Tech University Health Sciences Center, Lubbock

June 2
Title: ***Mitochondrial Channel Proteins with Novel Functions***
William J. Craigen M.D., Professor, Department of Molecular and Human Genetics
Baylor College of Medicine, Houston

June 23
Title: ***Worlds Within Worlds: Role of the Intestinal Microbiota in Chronic Gut Inflammation***
Matthew B. Grisham, Ph.D., Professor and Chair, Vernon and Elizabeth Haggerton Chair in Gastroenterology
Department of Immunology and Molecular Microbiology
Texas Tech University Health Sciences Center, Lubbock

August 4
Title: ***Kidney Structure and Function in the Elderly – Current Concepts, Continuing Controversies and Clear Conclusions***
Sharma Prabhakar, M.D., Vice Chairman of Internal Medicine
Texas Tech University Health Sciences Center, Lubbock

August 18
Title: **Cancer Drug Development: Challenges and Opportunities in Translating Laboratory Discoveries into Clinical Care**
Patrick Reynolds, M.D., Ph.D., Cancer Center Director for the School of Medicine, Texas Tech University Health Sciences Center, and is the Director of the South Plains Oncology Consortium. He is a Professor of Cell Biology & Biochemistry, Pediatrics, and Medicine at the TTUHSC in Lubbock

The Healthy Aging Lecture Series 2014-2015

The GIA sponsors the Healthy Aging Seminars – a series of 1-hour seminars designed to educate senior citizens, patients with AD and their family members, nurses, caregivers, and other health care professionals about new advances in healthy aging and Alzheimer's dementia. The GIA routinely invites experts on aging, AD, and other age-related diseases to give seminars in the Lubbock community, such as at local community centers, and also on the TTUHSC campus. The lectures take place September through May at the TTUHSC Academic Classroom Building and focus on the importance of taking care of the body, mind and spirit at any age. In 2013, the audience consisted of mostly retired seniors, but many other health professionals, TTUHSC students and researchers also attended the lectures to hear a variety of experts speak on how to improve their health and fitness. Details about this seminar series can be found at http://www.ttuhsc.edu/centers/aging/healthyaging.aspx

January 22
Title: ***Maintaining Eye Health as We Age***
Kelly Mitchell, M.D., Department of Ophthalmology and Visual Sciences, Texas Tech University Health Sciences Center, Lubbock

February 26
Title: ***Cardiovascular Health***
Gary Meyerrose, M.D., Geriatric and Cardiology Specialties, Texas Tech University Health Sciences Center, Lubbock

March 26
Title: ***Dietary Antioxidants and Supplements***
Kathy Chauncey, Ph.D., R.D., Professor, Department of Family and Community Medicine, Texas Tech University Health Sciences Center, Lubbock

April 23
Title: ***Health Care Choices for the Aging Population***
Tommie Farrell, M.D., Associate Professor, Hospice and Palliative Medicine Fellowship Director, Department of Family and Community Medicine, Texas Tech University Health Sciences Center, Lubbock

May 28
Title: ***Hearing and Balance***
Steven Zupanacic, Au.D., Ph.D., CCC-A, School of Health Professionals, Texas Tech University Health Sciences Center, Lubbock

September 24
Title: ***Keeping Balance***
Steven Zupancic, Au.D., Ph.D., CCC-A, Amanda I. Rodriquez, Au.D., CCC-A, School of Health Professionals, Texas Tech University Health Sciences Center, Lubbock

October 22
Title: ***Aging: Bringing Increase out of Entropy***
Nathan Burgess, MPT, Assistant Professor, Doctor of Physical Therapy Program, Texas Tech University Health Sciences Center, Lubbock

November 19
Title: ***Alzheimer's Disease: Cell Damage and Defective Synapses, Research and Preventive Measures***
P. Hemachandra Reddy, Ph.D., Executive Director and Chief Scientific Officer of the Garrison Institute on Aging, Mildred and Shirley L. Garrison Chair in Aging, Professor of Cell Biology & Biochemistry, Departments of Neuroscience & Pharmacology & Neurology, Adjunct Professor, Department of Speech, Language, and Hearing Sciences, Texas Tech University Health Sciences Center, Lubbock

January 28
Title: ***Healthy Diets as We Age***
Christie Hust, MS, RDN, CDE, LD, Director, Texas Tech Diabetes Education Center, Texas Tech University Health Sciences Center, Lubbock

February 25

Title: ***Exercise and Physical Activity as We Age***

Jeff Key, M.Ed., Instructor and Coordinator, Community Outreach for the Department of Health, Exercise, and Sports Science, Texas Tech University

March 25

Title: ***Over the Counter Medications and Products for the Skin***

Ikue Shimizu, M.D., Assistant Professor, Department of Dermatology, Texas Tech University Health Sciences Center, Lubbock

April 22

Title: ***Pulmonary Health***

Cynthia Jumper, M.D., MPH, Chair and Professor, Internal Medicine, Vice President of Health Policy, Texas Tech University Health Sciences Center, Lubbock

May 27

Title: ***OTC's, Herbals and Me: Tips When Navigating the Over-the-Counter Medication Aisles for Older Adults***

Trista Bailey, Pharm.D., BCPS, CGP, Assistant Professor, Department of Pharmacy Practice-Geriatrics Division, Texas Tech University Health Sciences Center, Abilene

Invited Presentations of GIA Scientists

P. Hemachandra Reddy, Ph.D.

1. Invited talk

Is Mitochondrial Dysfunction a Trigger for Alzheimer's Disease Pathogenesis?

Department of Cell Biology & Biochemistry, Texas Tech University Health Sciences Center, Lubbock, Texas, June 26, 2015

2. Invited talk

Oxidative Stress and Mitochondrial Dysfunction in Aging and Alzheimer's Disease

School of Pharmacy, Texas Tech University Health Sciences Center, Amarillo, Texas, April 29, 2015

3. Invited talk

Mitochondria, Oxidative Stress and Neurodegenerative Diseases

Neurology Department, Texas Tech University Health Sciences Center, Lubbock, Texas, April 23, 2015

4. Invited talk

Inhibitors of Mitochondrial Fission as a Therapeutic Strategy for Diseases with Oxidative Stress and Mitochondrial Dysfunction

Mitochondrial Targeting & Toxicity, Cambridge Health Tech Conference, Boston,MA, March 18-19, 2015

5. Invited talk

Mitochondrial Approaches to Treat Neurodegenerative Diseases

2015 Translational Research Seminars by Department of Internal Medicine, Texas Tech University Health Sciences Center, Lubbock, Texas – March 4, 2015

6. Invited talk

Oxidative Stress and Mitochondrial Dysfunction in Aging - Alzheimer's Disease and Obesity/Diabetes

Obesity Research Cluster and Nutritional Sciences, Texas Tech University, Lubbock, Texas
February 19, 2015

7. Garrison Institute on Aging Research, TTUHSC Research Seminar

A New Direction of Research in Aging and Neurodegenerative Disease
Part 3 - Focus on Huntington's Disease
presented on January 6, 2015

8. Garrison Institute on Aging Research, TTUHSC Research Seminar

A New Direction of Research in Aging and Neurodegenerative Disease
Part 2 – Reduced Alzheimer's Disease and Longevity in Alzheimer's Disease
presented on December 2, 2014

9. Garrison Institute on Aging, TTUHSC Healthy Aging Lecture Series

Alzheimer's Disease: Cell Damage and Defective Synapses, Research and Preventive Measures
presented on November 19, 2014

10. Garrison Institute on Aging Research, TTUHSC Research Seminar

A New Direction of Research in Aging and Neurodegenerative Disease
Part 1 – Introduction
presented on November 7, 2014

Poster Presentation

by P. Hemachandra Reddy, Ph.D. and Maria Manczak, Ph.D.

Mitochondrial division inhibitor 1 protects against mutant huntingtin-induced mitochondrial dynamics and neuronal damage in Huntington's disease, Translational Science 2015, Washington, D.C., April 2015

Publications

2015

1. Manczak M and Reddy PH (2015) Mitochondrial division inhibitor 1 protects against mutant huntingtin-induced abnormal mitochondrial dynamics and neuronal damage in Huntington's disease. Human Molecular Genetics (in press).

2. Blackmon J, Boles A and Reddy PH (2015) Garrison Institute on Aging – Lubbock Retired and Senior Volunteer Program (RSVP) Provides Services to South Plains (submitted).

3. Reddy PH, Blackmon J, Molinar-Lopez V, Ament C, Manczak M, Kandimalla R, Yin X, Pandey AK, Kuruva CS, Wang R, Fry DR, Osborn C, Stonum K, Quesada K, Gonzales R and Boles A (2015) Garrison Institute on Aging – A New Hope for Elderly Individuals and Patients with Alzheimer's Disease. J Alzheimers Dis 48, 547-555.

4. Reddy PH (2015) Mitochondria-Targeted Molecules as Potential Drugs to Treat Patients with Alzheimer's Disease. Cur Alz Res (in press).

5. Roy M, Reddy PH, Iijima M, Sesaki H (2015) Mitochondrial division and fusion in metabolism. Curr Opin Cell Biol. 33, 111-118. PubMed PMID: 25703628.

2014

1. Reddy PH. Misfolded proteins, mitochondrial dysfunction, and neurodegenerative diseases. Biochim Biophys Acta. 2014 Aug;1842, 1167. PubMed PMID: 24686117.

2. Reddy PH (2014). Increased mitochondrial fission and neuronal dysfunction inHuntington's disease: implications for molecular inhibitors of excessive mitochondrial fission. Drug Discov Today. 19, 951-955. PubMed PMID: 24681059.

3. Reddy PH (2014). Inhibitors of mitochondrial fission as a therapeutic strategy for diseases with oxidative stress and mitochondrial dysfunction. J Alzheimers Dis. 40, 245-256. PubMed PMID: 24413616.

4. O'Bryant SE, Gupta V, Henriksen K, Edwards M, Jeromin A, Lista S, Bazenet C, Soares H, Lovestone S, Hampel H, Montine T, Blennow K, Foroud T, Carrillo M, Graff-Radford N, Laske C, Breteler M, Shaw L, Trojanowski JQ, Schupf N, Rissman RA, Fagan AM, Oberoi P, Umek R, Weiner MW, Grammas P, Posner H, Martins R; STAR-B and BBBIG working groups (2014). Guidelines for the standardization of preanalytic variables for blood-based biomarker studies in Alzheimer's disease research. Alzheimers Dement. pii: S1552-5260, 02765-02774. PubMed PMID: 25282381.

5. Grammas P, Martinez JM (2014). Targeting thrombin: an inflammatory neurotoxin in Alzheimer's disease. J Alzheimers Dis. 42 Suppl 4:S537-44. PubMed PMID: 25079808.

6. O'Bryant SE, Xiao G, Zhang F, Edwards M, German DC, Yin X, Como T, Reisch J, Huebinger RM, Graff-Radford N, Dickson D, Barber R, Hall J, O'Suilleabhain P, Grammas P (2014). Validation of a serum screen for Alzheimer's disease across assay platforms, species, and tissues. J Alzheimers Dis. 42, 1325-1335. PubMed PMID: 25024345.

7. Luo J, Yin X, Sanchez A, Tripathy D, Martinez J, Grammas P (2014). Purification of endothelial cells from rat brain. Methods Mol Biol. 2014;1135, 357-364. PubMed PMID: 24510878.

8. Grammas P, Martinez J, Sanchez A, Yin X, Riley J, Gay D, Desobry K, TripathyD, Luo J, Evola M, Young A. A new paradigm for the treatment of Alzheimer's disease: targeting vascular activation. J Alzheimers Dis. 2014;40(3):619-30. PubMed PMID: 24503617.

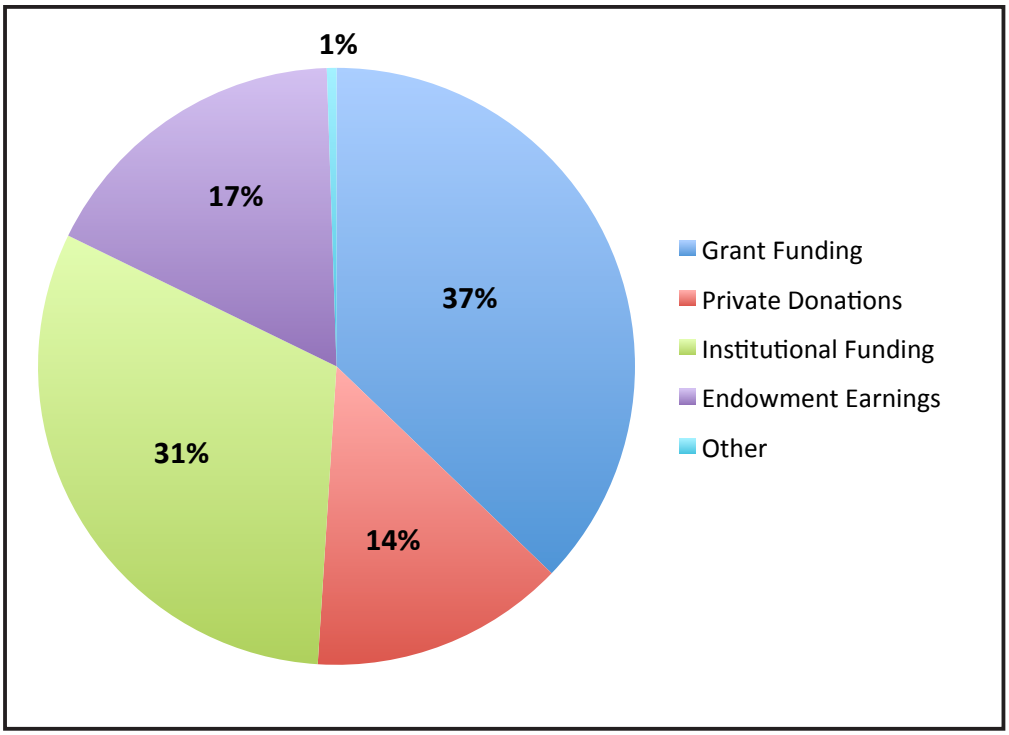
9. O'Bryant SE, Xiao G, Barber R, Cullum CM, Weiner M, Hall J, Edwards M, Grammas P, Wilhelmsen K, Doody R, Diaz-Arrastia R (2014) Texas Alzheimer's Research and Care Consortium. Molecular neuropsychology: creation of test-specific blood biomarker algorithms. Dement Geriatr Cogn Disord. 37, 45-57. PubMed PMID: 24107792.

10. Wang S, Matthan NR, Wu D, Reed DB, Bapat P, Yin X, Grammas P, Shen CL,Lichtenstein AH (2014). Lipid content in hepatic and gonadal adipose tissue parallel aortic cholesterol accumulation in mice fed diets with different omega-6 PUFA to EPA plus DHA ratios. Clin Nutr. 33, 260-266. PubMed PMID: 23672804.

Funding the Institute

The Garrison Institute on Aging is primarily funded by competitive grants. With Dr. Reddy's arrival at the GIA, he brought NIH grant awards that make up the bulk of the grant funding, with plans to continue to apply and receive additional grant funding. Additionally, through an endowment provided by the Garrison family, the GIA receives a steady flow of income from the earnings on the endowment. The earnings alone are not enough to operate the GIA but do provide a steady income for operation. Without the support of the Texas Tech University Health Sciences Center administration, the GIA would find it difficult to continue operating. It goes without saying that the funds received by our generous donors are well appreciated and allow the GIA to operate programs such as the GIA Brain Bank. Dr. Reddy and his research team express heartfelt thanks to the TTUHSC-Development Office for their efforts in raising funds through the Spike Dykes Golf Tournament.

In keeping with the GIA vision, Dr. Reddy and his research team are working to unlock the needed research results to submit for additional grant funding. As the new fiscal year for TTUHSC begins Dr. Reddy has received additional collaborative grant awards, with several big awards and additional programs on the horizon that are not included in the timeframe represented by this report.



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