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Editor: Tony DiNuzzo, Ph.D.

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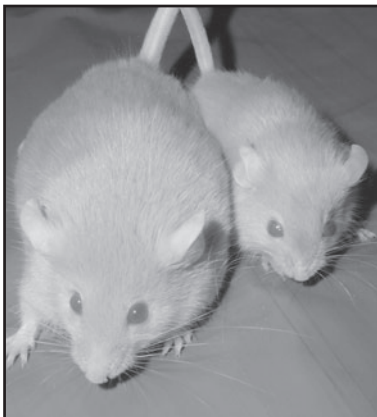
WHAT'S HAPPENING IN BIOMEDICAL RESEARCH AND AGING AT UTMB

Biomedical research of aging has increased in interest with the realization that aging is here to stay. It is a field that is both medically and economically relevant to our way of living. The need to understand aging at the molecular and cellular levels is increasingly important for the development of interventions that could affect quality of life for the elderly. UTMB is fortunate to have a top-notch program in research on the molecular basis of aging as part of the Department of Human Biological Chemistry & Genetics (HBC&G). The main focus of this research, conducted under the guidance of John Papaconstantinou, Ph.D. (right), holder of the Bertha and Robert Bucksch Distinguished Professorship in Aging Research, is to examine the effects of oxidative stress on aging. The primary concept is that reactive oxygen species cause oxidative damage to molecules such as DNA and proteins, thus affecting the functions of cells and tissues and leading to the age-associated decline in tissue function and development of disease. The challenge is to understand the mechanisms of oxidative damage, how and why this damage affects tissue function, and to determine how such damage can be repaired.



Genetic programs

There are two major areas of research in Dr. Papaconstantinou's laboratory. One concentrates on the underlying *causes* that impact longevity. This research focuses on the genetic basis of longevity as investigators attempt to understand molecular and genetic factors that determine longevity. The second area constitutes the *effects*



or role of oxidative and inflammatory stress on the acceleration of the aging process. For example, using the long-lived Snell dwarf mutant (pictured left) mouse model that lives 60 percent longer than its siblings, researchers are studying how the slowing down of oxidative metabolism affects longevity. These studies essentially correlate the role of oxidative stress as a factor in determination of longevity. The long-lived dwarf mice, with reduced levels of oxidative metabolism have a considerably longer survival compared to their larger, normal-sized brothers and sisters. This phenomenon of longevity is a major characteristic that results from slowing down the levels of oxidative stress. The dwarf mice arose as a result of a spontaneous mutation that slows down the activity of genes, which

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regulate cholesterol and fatty acid biosynthesis (oxidative metabolism), thus lowering oxidative stress and favoring basic physiological factors that determine or favor longevity.

Why does it happen?

An important question is how does oxidative stress accelerate the processes of aging? Through the Free Radical Theory, it is postulated that production of endogenous oxygen radicals increases. These radicals are a basic cause of progressive age-associated decline in cell and tissue functions because they cause tissue damage. This decline occurs in the absence of disease and oxidative stress generated by extrinsic or environmental factors, and it accelerates the age-associated decline in tissue function. In general, under normal conditions of aging, tissues develop a state of chronic oxidative stress. This results in the increased level of observed oxidative damage to DNA and proteins with aging. The overall goal of longevity research is to understand why the damage to these molecules is not repaired efficiently. It is also known that oxidative stress increases in the absence of challenge in aged tissues. Thus, basic questions in this research include: How do individuals develop a state of oxidative stress, how can it be slowed down, and, does this affect longevity and slow down age-associated diseases?

Effects on disease recovery

As an age-related phenomenon, it is important to examine the potential effects of oxidative stress on the disease processes and recovery from disease, such as hemiparetic stroke, a condition that causes muscle paralysis. Examination of the loss of muscle function and the recovery from paralysis has identified several proteins that are essential for muscle contraction that are lost in the paralyzed muscle and regained during rehabilitation. With modern state-of-the-art technology developed by Dr. Papaconstantinou and his

co-workers, we are able to identify the damage or loss of proteins essential for muscle function and whether these critical proteins are part of the rehabilitation process. These studies lay down basic foundations for development of intervention protocols for age-associated sarcopenias. A similar series of studies has recently been initiated to determine the mechanisms by which cardiovascular disease causes muscle dysfunction and sarcopenia. An understanding of the molecular and genetic basis of age-associated sarcopenias and muscle frailty in aging is a major focus of the research programs and goals of the UTMB-Claude Pepper Older Americans Independence Center (Pepper Center).

Connection with the Claude Pepper Older Americans Independence Center

An important aspect of Dr. Papaconstantinou's laboratory is collaboration with other research groups. As Project Leader for the Research Development Core (RDC) within UTMB's Claude Pepper Older Americans Independence Center, research conducted by Dr. Papaconstantinou and his colleagues connects his laboratory with the Pepper Center. For example, collaboration with other Pepper Center investigators, including Dr. Robert Wolfe, professor, Department of Surgery and the Shriners Burns Hospital Metabolism Unit, and Dr. Randall Urban, professor, Department of Internal Medicine, Division of Endocrinology and director of the Starks Diabetes Center, have greatly enhanced our understanding of the ways of monitoring changes in oxidative stress during muscle function and recovery based on the effects of various interventions including nutritional supplements, exercise and hormonal treatment. UTMB's Pepper Center has taken a leading role in the development of state-of-the-art technologies to study sarcopenias. These technologies are now being used by investigators from other Pepper Centers, including the University of Maryland and Wake Forest.

NEW EMPLOYEES



TRINA PHILLIPS

Trina Phillips has joined the Sealy Center on Aging as an accountant II. She comes to us from the Office of Sponsored Programs, where she worked as a post-award specialist II. Trina graduated from the University of Houston–Clear Lake with her bachelor's degree in business administration and currently resides in La Marque.

Welcome to Geriatrics, Trina!



SPOTLIGHT ON FACULTY

This issue spotlights two faculty members from Dr. Papaconstantinou's lab:

▶ JEFFREY P. RABEK, PH.D.



Dr. Jeffery P. Rabek is an assistant professor in the Department of Human Biological Chemistry and Genetics at UTMB and has been conducting research in Dr. Papaconstantinou's laboratory focusing on molecular aging since 1979. Dr. Rabek received his Ph.D. from Princeton University, and has conducted research as a post-

doctoral investigator at Oak Ridge National Laboratory in Oak Ridge, Tennessee. His current research focuses on age-related increases in oxidative damage to specific components of the unfolded protein response in the endoplasmic reticulum (ER). He has also established collaboration with Dr. Monica Driscoll at Rutgers University to look at oxidative damage to ER and mitochondrial chaperone proteins in aged and long-lived mutants of mice models. He is also collaborating with Dr. Richard Macko at the University of Maryland to look at human muscle biopsy material from a longitudinal study of functional recovery of muscle tissue from patients paralyzed after stroke.

▶ CHING-CHYUAN (WINSTON) HSIEH, PH.D.



Dr. Ching-chyuan (Winston) Hsieh is an assistant professor in the Department of Human Biological Chemistry and Genetics at UTMB and has been conducting research in Dr. Papaconstantinou's laboratory focusing on signaling pathways related to aging effects and longevity utilizing various

animal models. He has been conducting research at UTMB since 1980 when he started out as Research Associate in HBC&G. Dr. Hsieh received his Master of Science and Ph.D. degrees from Illinois State University. His current research focus is on: (1) the activities of stress response signaling pathways, p38 MAPK and SAPK/JNK in the long-lived Snell dwarf mouse livers; (2) the activities of translation initiation factors in the Snell dwarf mouse livers; and (3) the effects of aging and reactive oxygen species generated by mitochondria toxin on the activities of translation initiation factors in young and aged C57BL/6 mouse livers.

Representative Publications from Faculty and Students

From Dr. Papaconstantinou's Laboratory:

- 1.) *Forbes Magazine* (Internet) 09/05/03 "Why Aging Cells Lose Ability to Repair Themselves"
<http://www.forbes.com/lifestyle/health/feeds/hscout/2003/09/05/hscout514942.html>

A defect in the body's self-defense mechanism against age-related genetic mutations has been identified by researchers at the University of Texas Medical Branch at Galveston. The finding may help explain why the aging human body can't defend itself against DNA damage in the mitochondria, the power plants that fuel the growth and activity of cells.

- 2.) *The Scientist* (Internet) 09/03/03 "Stuck on an Aging Mitochondria"
<http://www.biomedcentral.com/news/20030903/01>

In the Sept. 1 *Proceedings of the National Academy of Science*, Bartosz Szczesny and colleagues at the University of Texas Medical Branch show that this apparent inconsistency is caused by a large fraction of OGG1 being caught in the mitochondrial membrane.



UPCOMING EVENTS

THE WINTER SERIES ON AGING ▸

Every year the Sealy Center on Aging sponsors six weeks of nationally and internationally known speakers on topics in aging. This year, the Winter Series on Aging begins Tuesday, Jan. 13, 2004, and continues each Tuesday until Feb. 17. All lectures will be held from 5–6 p.m. in Levin Hall North Auditorium on the UTMB campus. There are wine and cheese receptions following each lecture in the Levin Hall lobby. All are welcome!

For more information, contact Rhonda Bailes at (409) 772-8333 or rbailes@utmb.edu.

Winter Series schedule and guest speakers:

Jan. 13, 2004

Alberto Palloni, Ph.D.

Professor in the Department of Sociology,
Center for Demography and Ecology
University of Wisconsin–Madison

*“Neither entirely Hispanic nor much of a paradox:
adult mortality among Hispanics in the U.S.”*

Jan. 20, 2004

Anne Basting, Ph.D.

Director of the Center on Age and Community
Associate Professor in the Department of Theatre
and Dance at the Peck School of Arts
University of Wisconsin–Milwaukee

“Dare to Imagine: Creative Expression in Late Life”

FIRST CENTER FOR POPULATION HEALTH AND HEALTH DISPARITIES (CPHHD) INVESTIGATORS’ MEETING ▸

When: Friday, Feb. 13, and Saturday morning,
Feb. 14, 2004

Where: Moody Gardens, Galveston, TX

UTMB’s Sealy Center on Aging, host for the first CPHHD Investigators’ Meeting, is one of eight Centers for Population Health and Health Disparities established by the National Institutes of Health (NIH). The Centers are designed to support cutting-edge research to understand and reduce differences in health outcomes, access and care.

Jan. 27, 2004

Joseph G. Ouslander, M.D.

Professor of Medicine and Nursing
Director, Division of Geriatric Medicine
and Gerontology

Director, Emory Center for Health in Aging
Research Scientist, Birmingham/Atlanta, VA GRECC
Wesley Woods Center of Emory University,
Atlanta, GA

“Improving Long Term Care”

Feb. 3, 2004

Carol Ryff, Ph.D.

Professor, Department of Psychology
Director, Institute on Aging
University of Wisconsin, Madison, WI

“Positive Aging: An Integrative Approach”

Feb. 10, 2004

Catherine A. Sarkisian, M.D., MSPH
Assistant Professor

UCLA Department of Medicine
Division of Geriatrics, Los Angeles, CA

*“Do Older Adults’ Expectations Regarding Aging
Influence Health Behaviors?”*

Feb. 17, 2004

Richard Schwartz, M.D. and Jacqueline Olds, M.D.
Associate Clinical Professors of Psychiatry
Harvard Medical School, Boston, MA

“Overcoming Loneliness in an Aging Population”

The overall theme of the UTMB Center for Population Health and Health Disparities is to understand the mechanisms responsible for lower cancer incidence, lower prevalence of other diseases, and lower mortality associated with the increasing percentage of Hispanics in the neighborhood. Projects are stimulated by our recent preliminary findings that more homogeneous Hispanic neighborhoods (higher percentage of Hispanics) have a protective impact on cancer incidence and mortality. The center aims thus to extend the literature on the “Hispanic Paradox”—relatively good health despite relatively poor socioeconomic conditions—to the community context.

For more information, contact Becky Sella at (409) 772-1936, or visit the CPHHD main web site <http://obsr.od.nih.gov/cphhd/>

UPCOMING EVENTS, continued

GERIATRIC/SURGERY SYMPOSIUM ▸

Symposium: "Surgery in the Elderly Patient"

Sponsored by the Sealy Center on Aging East Texas Geriatric Education Center, the Hartford Foundation Association of American Medical Colleges (AAMC) grant and the Department of Surgery, UTMB

When: Jan. 27, 2004

Where: Levin Hall South Auditorium

CME credits will be made available.

For more information contact:

Johnnie Roach, Department of Surgery at
(409) 770-6736 or jroach@utmb.edu

Beth Schilling, Sealy Center on Aging at
(409) 747-3525 or baschill@utmb.edu

Moderator:

James C. Thompson, M.D.–UTMB, Surgery

Guest Speakers:

Frederick Cason, M.D.–University of Alabama
"Surgical Oncology: Decision-Making in the Elderly Patient"

Ronnie Ann Rosenthal, M.D.–Yale University,
New Haven, CT
"Nutritional Concerns in the Elderly Patient"

Donald Prough, M.D.–UTMB, Anesthesiology
"Anesthetic Pitfalls in the Elderly Patient"

Joseph Zwischenberger, M.D.–UTMB,
Surgery–Cardiothoracic
"Evaluation of Elderly Patients for Chest Surgery"

James S. Goodwin, M.D.–UTMB, Internal
Medicine/Geriatrics
"Postoperative Delirium in the Elderly Patient"

Michael J. Grecula, M.D. –UTMB, Orthopaedics
"Common Orthopedic Problems in Elderly Patients"

Michael Warren, M.D.–UTMB, Surgery/Urology
"Perioperative Urologic Problems in the Elderly Patient"

Valerie Lawrence, M.D.–UT Health Science Center,
San Antonio, TX
*"Functional Recovery Following Major Abdominal
Surgery in the Elderly Patient"*

Closing Remarks:

B. Mark Evers, M.D.–UTMB, Surgery

ABUNDANT AGING: MIND, BODY AND SPIRIT ▸

When: March 9–11, 2004

Where: Camp Allen Conference & Retreat Center
18800 FM 362 Navasota, TX 77868
Phone: (936) 825-7175 (ext 4013)
Fax: (936) 825-8495
Web site: <http://www.campallen.org>

This conference is sponsored by Camp Allen, the Episcopal Health Charities and the UTMB Sealy Center on Aging. It is designed for seniors, their family members; their health care, pastoral care, and residential care providers; social workers; and leaders of all faith communities. It is an opportunity to gain fresh insights into the spiritual aspects of aging and be entertained by seniors performing in "Life-Story Theater."

For more information, please contact the Camp Allen Conference Center or The Reverend Helen W. Appelberg, D.Min., Spiritual Leader and Labyrinth Facilitator, Visiting Scholar, Sealy Center on Aging, University of Texas Medical Branch, Galveston, at (409) 772-5352 or hwappelb@utmb.edu

PEPPER CENTER RECRUITMENT

To answer their question about why muscle function deteriorates with age, researchers with the Pepper Center will recruit volunteers who are 60 years old or older, and in good general health. For information, contact: Susan Minello (409) 772-8350, Roxana Hirst (409) 772-3588 or toll-free (800) 298-7015.

THE SEALY CENTER ON AGING VOLUNTEER REGISTRY

There are more than 700 volunteers who have joined the UTMB Sealy Center on Aging Volunteer Registry to participate in a variety of UTMB research projects. If you are 55 or older and would like information on becoming a volunteer, please call Roxana Hirst or Susan Minello, registry coordinators, (409) 772-3588 or toll-free (800) 298-7015.



IN THE NEWS

GRANTS AND GRANT ACTIVITIES ▸

J. Regino Perez-Polo, Ph.D.

- Sept. 11–27, 2003, Durkheim, Germany to collaborate with Dr. Steffen Rossner on the Handbook of Neurochemistry volume, to put together an R01 grant and new program project grant on Alzheimer's.
- Sept. 28–30, 2003, La Jolla, Calif., to participate on a Study Section grants review for the Christopher Reeve Foundation.

Maria Chong, M.D.—Geriatric Academic Career Award (GACA)

The Geriatric Academic Career Award will provide Dr. Chong the opportunity to complete education and training to obtain Medical Director's Certification for the nursing home, complete formal training in palliative care, and develop formal lectures and presentations that address topics relevant to long term care and/or end of life issues. The goal is to become a competent geriatric clinical educator focusing on nursing home care, palliative and hospice care and end-of-life issues.

Felipe L. Amador, M.D.—Geriatric Academic Career Award (GACA)

This Geriatric Academic Career Award will assist Dr. Amador to pursue advanced geriatric educational opportunities. He will be taking classes designed to teach students how to instruct other students in medicine as part of night classes offered through the Office of Educational Development. He also is taking classes online through the University of California at Berkeley to expand his knowledge of network systems through internet and WEB CT classes through the Texas Consortium Geriatric Education Center (TCGEC) at Baylor College of Medicine, Houston.



AWARDS

SCHOLARSHIP AWARDS/RECOGNITION ▸

Poster Award:

Vincent Dimayuga, a student in our laboratory, won "First Place for BBSC Student Judging" for his poster: Age-Associated Oxidative Damage and Pool Changes of Chaperone Proteins in *Caenorhabditis elegans*. Authors: V. Dimayuga, H. Boylston, J. Rabek, J. Papaconstantinou at the recent HBC&G Graduate Program Orientation meeting on 9/10/03.

Congratulations!! Forum on Aging student poster winners. The following students received \$100 awards for poster presentations at the 7th Annual Forum on Aging held on Sept. 25, 2003.

Carlos Reyes Ortiz—Poster title: SENSORY DEPRIVATION AND COGNITIVE IMPAIRMENT IN OLDER MEXICAN AMERICANS

Soham Al Snih—Poster title: PREVALENCE OF SELF-REPORTED ARTHRITIS AMONG ELDERS IN LATIN AMERICA, THE CARIBBEAN, AND MEXICAN AMERICANS FROM THE SOUTHWESTERN UNITED STATES

Ivonne Indrikovs—Poster title: RELIGIOUS INVOLVEMENT AND CHANGE IN PHYSICAL FUNCTIONING AFTER STROKE IN OLDER MEXICAN AMERICANS: FINDINGS FROM THE H-EPESE

Mark Madsen—Poster title: RESPONSE OF THE LONG-LIVED SNELL DWARF MOUSE TO OXIDATIVE STRESS—EFFECTS OF 3-NPA

Joel Kaufmann—Poster title: NUCLEAR LOCALIZATION OF BCL-2 IN THE AGED CNS MAY NOT REFLECT INCREASED NEURONAL PROTECTION FROM APOPTOSIS

Melanie Cree—Poster title: INSULIN RESISTANCE, AGING AND THEIR RELATION TO MUSCLE AND LIVER LIPID CONTENT

Michael Thomas—Poster title: SIGNALING EVENTS MEDIATING TNF-ALPHA/NGF PROMOTED iNOS EXPRESSION IN PC12 CELLS

Darren Lackan—Poster title: A DOSE RESPONSE STUDY EXAMINING THE PROTEIN METABOLIC EFFECTS OF ESSENTIAL AMINO ACID SUPPLEMENTATION IN THE ELDERLY

Tony DiNuzzo—Poster title: FUNCTIONAL BLINDNESS AND VISUAL IMPAIRMENT AS PREDICTORS OF FRACTURES, DISABILITY AND MORTALITY AMONG OLDER MEXICAN AMERICANS



EDUCATIONAL OPPORTUNITIES

EAST TEXAS GERIATRIC EDUCATION CENTER (ETGEC) UPDATE ▾

The mission of the ETGEC, a five-year grant funded by the Health Resources and Services Administration (HRSA), is to enhance interdisciplinary geriatric education and training to health professionals, faculty and students in allopathic medicine, nursing, occupational therapy, physical therapy, physician assistant studies, and social work. The ETGEC has already established itself as a center dedicated to providing geriatric educational programs and activities including:

ETGEC-sponsored satellite broadcast presentations with available CEU credits:

Nov. 12, 2003

Understanding and Managing Parkinson's Disease: A Program for Healthcare Professionals

This project was developed in collaboration with the Virginia, Ohio, and West Virginia consortia of Geriatric Education Centers with the support of the Division of Interdisciplinary, Community-Based Programs, Bureau of Health Professions, Health Resources and Services Administration, Department of Health and Human Services.

The purpose of the presentation was to improve the care of patients by providing staff with timely training regarding the management of Parkinson's disease.

Nov. 5, 2003

2003 Secondary Stroke Prevention

Presented by the American Stroke Association

The objectives of this presentation were to:

- Identify stroke as a national health problem.
- Describe the major risk factors for stroke and manage patients at risk.
- Incorporate secondary stroke prevention into office or hospital-based practices.
- Utilize available resources for stroke prevention.

Getting the word out:

Currently, a major task for the ETGEC is to disseminate information about what it is about and how it will benefit faculty and students in health professions in the East Texas area. On Nov. 11, ETGEC Program Director, Tony DiNuzzo, Ph.D., was special guest at the annual Area Health Education Center (AHEC) Retreat in Houston, Texas, and presented an overview of the ETGEC and its role in enhancing geriatric education. In attendance were directors and area coordinators representing the ETGEC-targeted AHEC regions including the Brazos, Piney Woods, Coastal, and Lake Country AHECs. This provided an excellent opportunity for those who will play integral roles in the program's success to become more familiar with the main program objectives and planned activities and have the opportunity to ask questions and offer suggestions for recruitment and increase the visibility of the program. For more information on the ETGEC, contact Tony DiNuzzo, at (409) 772-5367 or toll-free (800) 298-7015 or email, adinuzzo@utmb.edu.



NEW GRADUATES ———*Congratulations to new GSBS doctoral graduates!*———

Tony DiNuzzo, Ph.D.—Dissertation title: *“Impact of Functional Blindness and Visual Impairment on Health Outcomes in Older Mexican Americans.”* Degree awarded December 2003 from the Department of Preventive Medicine and Community Health. Dissertation Committee Chair: Kokos Markides, Ph.D. Dr. DiNuzzo has been with the Sealy Center on Aging since 1994 as project coordinator for various studies and programs including the Health of the Public Needs Assessment Survey, Mammography Use among Older Hispanic Women and the Geriatric Fellowship Program. He is currently a senior research associate and program director for the East Texas Geriatric Education Center.

Christi Holland, Ph.D.—Dissertation title: *“Spousal Relationship Changes in Alzheimer's Disease.”* Degree awarded December 2003 from the School of Nursing. Dissertation Committee Chair: Judith Drew, Ph.D., R.N. Dr. Holland is a nurse practitioner and is currently employed as an assistant professor of clinical nursing, UT Health Science Center School of Nursing, in Houston. Prior to completing her degree, Dr. Holland was a predoctoral fellow with the Sealy Center on Aging.



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Information

Contact Tony DiNuzzo, Ph.D. at (409) 772-5367 or Maricela Tamayo at the Sealy Center on Aging, (409) 747-0008, for information regarding items in this issue.

THE SEALY CENTER ON AGING at UTMB has openings for predoctoral and postdoctoral positions for Fall of 2004. Funded by a training grant from the National Institute on Aging, these research positions focus on the health of older minorities, with a particular emphasis on older Hispanics. Fellows will collaborate with any of more than 15 Center faculty, located in Galveston with over \$25 million in aging research funding in the areas of medical outcomes, health service utilization, social epidemiology, psychosocial stress, and health promotion as they pertain to older minorities. The salary stipend for predoctoral positions is \$21,000 and ranges from \$31,092–\$48,852 for postdoctoral positions, depending on experience level. Applicants must be U.S. citizens or permanent residents. Application deadline is March 1. Applicants should send a curriculum vitae and a letter stating research interests and relevant prior training to: M. Kristen Peek, Ph.D., Department of Preventive Medicine and Community Health, The University of Texas Medical Branch, 301 University Blvd., Galveston, TX, 77555-1153. Email: mkpeek@utmb.edu.

UTMB is an equal opportunity, affirmative action institution which proudly values diversity.

Donations and Bequests UTMB's Sealy Center on Aging welcomes contributions to further geriatric research, education and training. You can help by contributing to the Fund for the Study of Aging, or contact us for information on how to select a particular program to support. Donations can be made to honor an individual and are deductible for income tax purposes to the extent allowed by law. Donations and bequests may be sent to:

The Fund for the Study of Aging
The Sealy Center on Aging
UTMB Office of University Advancement
301 University Blvd.
Galveston, TX 77555-0148

Please direct inquiries to: (409) 772-3950.

For more information on the Sealy Center on Aging, please go to our web site: <http://aging.utmb.edu>