

ADVANCES *in Aging*

Division of Gerontology Enhancing Aging Research Through Genetic Studies

The Division of Gerontology in the Department of Medicine is beginning to use genetics as a tool to advance studies in the areas of obesity, exercise training, and nutrition in the elderly. Several studies are under way to determine whether genetic variation in selective genes is predictive of metabolic, hemodynamic and body composition responses to weight loss and exercise interventions.

One study, funded by an R01 supplement grant to Karen Dennis, R.N., Ph.D., Barbara Nicklas, Ph.D., and Alan Shuldiner, M.D., is designed to determine whether genetic factors play a role in determining a woman's success in a dietary weight-loss treatment. Variants in several candidate obesity genes will be determined to examine whether women with one or more of these gene polymorphisms will lose less total weight and/or less visceral fat during the intervention, and gain more weight during follow-up than women without a genetic predisposition to obesity.

In a separate study, funded by a Veterans Affairs MERIT award, Andrew Goldberg, M.D., and Barbara Nicklas, Ph.D., will determine whether variability in the lipoprotein lipase (LPL) gene affects the amount of weight loss and metabolic adaptations during a hypocaloric diet treatment for obesity in overweight veterans.



Barbara Nicklas

According to Nicklas, the hypothesis is that subjects who are heterozygous or homozygous for the LPL PvuII polymorphism will have less favorable metabolic adaptations to the treatment, such as decreases in resting and

total energy expenditure, fat oxidation rate, and/or increases in adipose tissue LPL activity which predispose them to lose less body weight during a hypocaloric diet.

"Results of this research," says Nicklas, "will clarify the role of at least one of the two common LPL gene polymorphisms in the development of obesity and the metabolic responses to hypocaloric diet therapy."

The Division of Gerontology is also interested in whether there is a genetic contribution to hemodynamic and metabolic responses to exercise training. Les Katzel, M.D., Ph.D., was awarded a Mid-Career Development Award from the National Institute on Aging to

study whether variation in the angiotensin-converting enzyme gene affects blood pressure responses to aerobic exercise in hypertensive, older men. Katzel states, "These types of studies will help determine whether exercise is an effective lifestyle treatment for lowering blood pressure in individuals with a certain genetic makeup."



To facilitate future genetics research, the Division of Gerontology recently hosted a day-long seminar with Robert Ferrell, Ph.D., from the Department of Human Genetics at the University of Pittsburgh, serving as the main speaker. His talk focused on his current research using young sib-pairs to identify susceptibility genes for hypertension. Ferrell collaborates with several of the faculty in the Division of Gerontology and serves as a consultant for the ongoing genetic studies in the Division. Ferrell's visit provided the opportunity for investigators from various disciplines to interact and discuss plans to incorporate the use of genetics in their respective research areas.

The results of these and future studies will contribute new, fundamental knowledge about hereditary factors that influence obesity, body fat distribution, and lipid metabolism in elderly individuals. This information will provide a basis for the identification of genetic variation underlying these phenotypes, which will lead to innovative, individualized, and more effective treatments for obesity, heart disease, and diabetes.

**GGEAR Program, the Alzheimer's Association and
the Maryland Gerontological Association**

are proud to cosponsor

Clinical Perspectives on Alzheimer's Disease

October 20, 1999

(See page 3.)

Healthcare Informatics Examines Nontraditional Approach in Analyzing Large Datasets

The move towards integrated healthcare delivery systems and the tracking of data from "cradle to grave" has highlighted the need for a method to analyze and visualize vast amounts of healthcare data. The need for automated and intelligent database analysis is receiving increasing levels of attention as healthcare enterprises and payors struggle to make sense of the data that tremendous amounts of resources are being spent to capture.



Patricia Abbott

"The problem arises in the intensive multidimensionality, fragmentation, and distribution of healthcare data, which can overload human cognition, as well as traditional methods of aggregation and analysis," says Patricia Abbott, Ph.D., RNC, School of Nursing. Abbott is assistant professor and coordinator of the Graduate Program in Nursing Informatics.

"This dilemma is evident in the care of the elderly, where health conditions are complex and factors that contribute to health status and outcomes are fragmented and distributed," explains Abbott. "Care of the elderly is focused on the maintenance of optimal levels of health. It is very difficult to do this when health data are limited, unmanageable, and inaccessible."

Increasing public and governmental attention is focused on the quality and effectiveness of care of the elderly, giving impetus to efforts to improve patient outcomes. Outcome management is most effective when actions and impacts can be measured and analyzed. Management is impaired, however, when the foundation of measurement and analysis is not in place.

In elder care facilities, factors that contribute to patient outcomes can be related to specific patient characteristics, external forces such as facility ownership, reimbursement patterns, and regulatory agencies, and internal forces such as case-mix and staffing ratios. These data points are captured and stored in a variety of systems, both internal and external to the agency and/or enterprise. Information technologists are faced with determining how to unlock the information trapped in these massive and fragmented data sets.

The challenge lies in harnessing the collected data, turning the data into information, and using the information to generate new knowledge. Informatics faculty in the School of Nursing are meeting this challenge by actively investigating non-traditional approaches such as Knowledge Discovery in Large Databases (KDD), sometimes referred to as Data Mining. Discovery-based approaches are different from traditional (verification-based) approaches in that a hypothesis is not stated in advance. Instead, the classification algorithms are provided with the known outcome (such as admitted or not admitted). The mechanism proceeds to detect, illuminate, and explain the major predictors of

the known outcome. Abbott states, "This is not to say that one blindly dredges the data for significant patterns—instead domain expertise and intuition are heavily relied upon."

Traditional approaches to data analysis, based primarily on humans dealing directly with the data, are generally unable to scale up to working with "big data." Therefore, alternative approaches to data analysis and management must be examined. The traditional use of fixed equations and numbers to describe phenomena is often not suited to ever-changing biological events found in healthcare. The complexity of human data requires adaptive and evolving approaches to analysis and management.

One may suppose that working with highly dimensional patient data is best suited to specialized analysts. "Actually," says Abbott, "many of the biggest benefits of understanding complex healthcare data are afforded to those in clinical practice, where decisions that directly impact resource utilization and patient outcomes are made. The issue at hand is how to assist clinicians in analyzing, leveraging, and understanding these huge bodies of information, as well as how to filter the 'essence from the bulk'."

For more information regarding the Graduate Program in Nursing Informatics, visit the Informatics Program web page at: <http://parsons.umaryland.edu/dept/eahpi/NI.htm>, or call the School of Nursing at 410.706.7238.

‘Successful Aging’ Study Considered for GSA Clinical Medicine Research Award

NICOLE LYNCH, Ph.D., second-year postdoctoral fellow at the School of Medicine, Division of Gerontology, has conducted a two-fold investigation examining age-related benefits of athleticism on (1) bone and muscle mass and (2) obesity and cardiovascular risk factors.

Her study on the effects of early athleticism on bone and muscle mass is being considered for the Clinical Medicine Research Award of the Gerontological Society of America (GSA). In this project, accepted for presentation at GSA this November, Lynch hypothesized that former athleticism would lead to lifelong benefits in body composition associated with ‘successful aging’, as opposed to usual aging and disease.

The study capitalized on the 40th reunion of the 1958 Championship Baltimore Colts. Members of that team were compared with men who were never athletic and were matched for age, body mass index, weight, and race. According to Lynch, “We wanted to



Nicole Lynch

determine whether former professional football players were at less risk for bone fracture and functional disability.”

Lynch found that although the former players and controls had the same current fitness levels, the vigorous high-impact athleticism required of professional football athletes of the 1950s and 1960s led to higher total, arm, and leg bone mineral density and muscle mass. Lynch states,

“Former professional football players into

their sixth and seventh decade of life may have a lower risk for bone fracture and sarcopenia (age-associated loss of muscle mass), which may lead to fewer musculoskeletal and functional declines with aging.”

Lynch’s second hypothesis investigated whether former professional football athleticism would lead to lifelong benefits in body fat and cardiovascular risk profiles. The results of this study indicate that despite current physical inactivity, vigorous high impact athleticism during the second through fourth decade of life led to lower percent body fat, visceral fat, subcutaneous fat, triglyceride levels and higher HDL-cholesterol levels in older age. Results from this aim will be presented at the annual meeting of the North American Association for the Study of Obesity.

Most geriatricians would agree that regular physical activity may reduce risk factors for disease, but the frequency, intensity, and duration of exercise, and the most beneficial types of exercise are not known. Aging is associated with declines in cardiovascular and musculoskeletal function. “These declines increase susceptibility for frailty and disease,” says Lynch. “Some changes in organ function may be due to ‘primary aging’, but they are also influenced by the so called ‘secondary aging’ processes such as lifestyle habits and disease.”

“The results of these studies would suggest,” says Lynch, “that a high level of physical activity in youth may enhance the likelihood of ‘successful aging’ with a reduced risk for frailty, falls and cardiovascular disease in older age.”

Hot Topics In Alzheimer’s Disease

The conference, “Clinical Perspectives on Alzheimer’s Disease,” is planned and cosponsored by the GGEAR Program, the Alzheimer’s Association, Central Maryland Chapter and the Maryland Gerontological Association. The event will take place on Wednesday, October 20, at the Columbia Hilton Hotel.

The program will commence with the keynote presentation to be given by Marshall Folstein, M.D. Folstein is creator of the widely used Mini-Mental State Examination. He will discuss his research utilizing this tool.

The conference day will also include a presentation on driving and dementia, presented by George Rebok, Ph.D., Johns Hopkins University School of Hygiene and Public Health; Conrad May, M.D., Baltimore Veterans Affairs Medical Center, Joan O’Sullivan, J.D., University of Maryland School of Law; and Robert Raleigh, M.D., Motor Vehicles Administration.

Additional sessions will explore a new model of comprehensive coordinated care for people with dementia, to be presented by Katie Maslow, National Alzheimer’s Association; sessions on pain assessment in persons with dementia; and, a program on failure-free activities for those with Alzheimer’s disease.

For a conference brochure, call 410.561.9099, or 410.706.4327

NEWS

RESEARCH

Highlights

Study Examines Underlying Effects of Smoking Cessation on Weight Gain in Women

Cigarette smoking is the largest preventable cause of death and disability in the United States today. It is causally related to lung cancer, coronary heart disease and chronic obstructive pulmonary disease in both men and women. Additionally, for women, the risks of cigarette smoking include reduced fertility, ovulatory dysfunction, ectopic pregnancy, and earlier menopause. Cessation of smoking has immediate health benefits, including a reduction in the risks of lung cancer, cardiovascular disease, myocardial infarction and an overall reduction in cardiovascular morbidity and mortality. Despite overwhelming medical evidence of the harmful effects of smoking and the beneficial effects of smoking cessation, more than 22 million women continue to smoke. Most women who smoke want to quit.

MONICA KUMAR, Ph.D., and CYNTHIA FERRARA, Ph.D., postdoctoral fellows in the Division of Gerontology, understand that many smokers, especially women, are concerned about post-smoking weight gain. Many women who maintain both their caloric intake and exercise intensity after they stop smoking experience weight gain. "This fear of putting on extra weight is a major deterrent to quitting smoking, especially in women," Ferrara says. "Thus, understanding the mechanisms underlying weight gain following smoking cessation may assist in the development of interventions that would prevent or reduce weight gain." Ferrara says that such interventions could maximize the success of smoking cessation and improve long-term abstinence in women.

Studies examining the effects of smoking cessation on total caloric intake, physical activity and resting energy expenditure suggest that changes in these parameters cannot completely account for the amount of weight gain following smoking cessation.



Cynthia Ferrara



Monica Kumar

Ferrara and Kumar are conducting investigations to examine whether smoking cessation (with and without nicotine patches) is associated with changes in the fat-storing or fat-burning functions of the adipocyte (fat cell), or with changes in the fat cell secretion of the obesity hormone leptin.

Kumar explains, "It is our goal to understand the metabolic adaptations to smoking cessation with and without nicotine patches and their relation to success (or failure) of smoking cessation."

This study includes acute (4 week) and long-term (16 week) phases, with and without nicotine patches. Participants will undergo testing of fat metabolism, body composition and cholesterol levels.

For more information regarding this study, contact, Dr. Ferrara, 410.706.1542, or Dr. Kumar, 410.706.1545.

RESEARCH *Presentations*

North American Association for the Study of Obesity Charleston, South Carolina November 14-18

FROM THE DIVISION OF GERONTOLOGY, DEPARTMENT OF MEDICINE, UM SCHOOL OF MEDICINE

Kumar, M.V., Nicklas, B.J., Berman, D.M., Dennis, K.E., & Goldberg, A.P. Improvements in lipoprotein with weight loss relate to changes in TNF-alpha levels in obese postmenopausal women.

Lynch, N.A., Ryan A.S., Evans, J.M., Kruba, G.J., & Goldberg, A.P. Benefits of athleticism on obesity and CVD risk factors: Studies of former professional football players.

Nicklas B.J., Rogus, E.M., Ferrell, R.E., Berman, D.M., Ryan, A.S., Dennis, K.E., & Goldberg, A.P. Lipoprotein lipase (LPL) gene variation is associated with adipose tissue LPL activity and metabolic risk factors in postmenopausal women.

Ryan, A.S., Nicklas, B.J., Berman, D.M., Dennis, K.E., & Goldberg, A.P. Weight loss and exercise reduce fat deposition in the mid-thigh in overweight older women.

52nd Annual Meeting of the Gerontological Society of America San Francisco, California November 19-23

FROM THE DIVISION OF GERONTOLOGY, DEPARTMENT OF EPIDEMIOLOGY & PREVENTIVE MEDICINE, UM SCHOOL OF MEDICINE

Baumgarten, M., Margolis, D., Gruber-Baldini, A. L., Zimmerman, S. I., & Magaziner, J. Pressure ulcers among newly admitted nursing home residents.

Burton, L.C., German, P.S., Gruber-Baldini, A. L., Hebel, J. R., Zimmerman, S.I., & Magaziner, J. Differing patterns of medical care for nursing home residents associated with their dementia status.

Dolan, M., Hawkes, W, Hebel, R., Zimmerman, S. & Magaziner, J. Delirium at admission in aged hip fracture patients: Two-year functional outcomes.

Gruber-Baldini, A.L., Magaziner, J., Zimmerman, S.I., Kittner, S. & Hebel, J. R. MDS assessment of dementia compared to an expert panel.

Mossey, J., Magaziner, J. (Symposium Organizers). Epidemiology of Aging Interest Group Symposium: Issues in the study and the understanding of recovery.

Orwig, D., Ahern, F, & Gold, C. Quality of life and concomitant use of alcohol with alcohol-interactive medications among the elderly.

Quinn, C.C. The relationship of choice to quality in personal care services for the elderly.

Zimmerman, S.I., Gruber-Baldini, A.L., Sloane, P.D., Hebel, J.R., & Magaziner, J. The relationship between nursing home characteristics and infection.

FROM THE DIVISION OF GERONTOLOGY, DEPARTMENT OF MEDICINE, UM SCHOOL OF MEDICINE

Izquierdo-Porrera, A.M., Gardner, A.W., Powell, C., Katzel, L.I. Effects of aerobic exercise rehabilitation on cardiovascular risk factors of older patients with peripheral arterial occlusive disease.

Lynch, N.A., Ryan A.S., Evans, J.M., Kruba, G.J., Goldberg, A.P. Age-related benefits of athleticism on bone and muscle mass: Studies of former professional football players.

McCrone, S., Dennis, K., Brendle, D., Barton, K., Katzel, L.I. The effectiveness of a multibehavioral intervention to decrease cardiovascular risk in older men.

Neumann S., Waldstein, S., Katzel, L.I. Higher body mass index leads to increased blood pressure responses to angry situations in older adults.

Cutting Edge

NEWS

Faculty & Staff



Denise Orwig

DENISE ORWIG, Ph.D., research associate, Department of Epidemiology and Preventive Medicine, School of Medicine, will present a paper at the Joint Meeting of the European Association for Clinical Pharmacology and Therapeutics and of the European Drug Utilization Research Group being held in Jerusalem in October. Her paper was chosen as the best selection submitted

to the conference and will be highlighted during the opening session. The paper, "The Use of Psychoactive Medications and Cognitive Function in the Oldest Old," utilized a Swedish dataset.

LESLIE I. KATZEL, M.D., Ph.D., JOHN D. SORKIN, M.D., AND ANDREW P. GOLDBERG, M.D., Division of Gerontology, Department of Medicine recently published "Exercise-Induced Silent Myocardial Ischemia and Future Cardiac Events in Healthy, Sedentary, Middle Aged and Older Men," in the *Journal of the American Geriatrics Society*, Vol 47 No 8, August 1999, 923-29.

The GGEAR Program has awarded a \$40,000 grant to ANN MARIE SPELLBRING, Ph.D., School of Nursing, DENISE ORWIG, Ph.D., Division of Gerontology, Department of Epidemiology & Preventive Medicine, and NICOLE BRANDT, Pharm.D., School of Pharmacy, for "An Evaluation of Strategies for Safe Medication Management Among the Elderly in Congregate Housing Service Program Pilot Study."

ANDREW GARDNER, Ph.D., associate professor, Department of Medicine, and health research scientist, GRECC and Geriatrics Service, VA Maryland Health Care System, and RICHARD MACKO, M.D., associate professor, Department of Neurology, and physician specialist, Neurology, Baltimore VA Maryland Health Care System, have received a Veterans Affairs Rehabilitation Research Development Merit Award to investigate "Portable Monitoring of Physical Activity and Depression in Stroke."



Mona Baumgarten



Mary Palmer

MONA BAUMGARTEN, Ph.D, has received a \$15,000 Intramural Grant, School of Medicine, "Pressure Ulcers in Elderly Hip Surgery Patients;" a \$4,900 DRIF Award, Department of Epidemiology and Preventive Medicine, "Pressure Ulcers in Elderly Hip Surgery Patients; A Pilot Study;" and, with MARY PALMER, Ph.D., a \$4,600 grant from the Women's Health Research Group for "Urinary Incontinence in Elderly Female Hip Surgery Patients."

Adult Guardianship for the Disabled— A Serious Matter

Adult guardianship “invites the court into the life of the person with disabilities,” said Joan O’Sullivan, J.D., School of Law. Adult guardianship occurs when a person is unable to make decisions because of dementia, mental illness, mental retardation, or other reasons. Maryland law recognizes two types of guardians: the guardian of the person, who takes care of medical treatment, where the person lives, and other personal issues, and the guardian of the property, who handles finances. These can be two different people, or one person can assume both responsibilities. Guardians can be family members or friends, an attorney, a public agency, a trust company or a corporation. The court decides the best person to serve as guardian.



Joan O’Sullivan

“If there’s a family member, the court is supposed to ask if the person has the ability to care for the person and file the annual report to the court,” says O’Sullivan. “Sometimes family members get appointed and they don’t realize what they need to do, they don’t file the report and they end up being removed as guardian and a local attorney is appointed. That’s hard for families to understand.”

O’Sullivan teaches the health and elder law clinic, which represents poor clients. She says guardianship in Baltimore City is quite common, and the institution of a guardianship can take as little as a week.

“In other parts of the state, especially if a public guardian is being appointed, the county may resist and try to find an alternative,” says O’Sullivan. “In Baltimore City guardians are appointed very quickly, so there are hundreds of guardianships. Public guardians have many, many cases.”

On the national scene, some states are seeking ways around guardianship. Expense is a major factor. “There are two attorneys involved, there’s a lot of paperwork,” explains O’Sullivan. “And sometimes the only decision that has to be made is consent for medical treatment.”

For consent for medical treatment decisions, O’Sullivan and others drew up a model statute for Maryland, based on a New York statute.

“New York has panels of volunteers—a lawyer, a physician, an advocate for the person, and another interested person—who meet and have the authority to consent or refuse the medical treatment. They would take the same evidence that would be heard in court but they probably give it a much more thorough airing because that’s the only decision they’re making.

“We see this as a real alternative to guardianship,” she says. “Decisions would be less expensive and more timely.” O’Sullivan says she has yet to find legislators willing to back the statute.

O’Sullivan has written two books—*The Guardianship Handbook* and *The Guardianship Bench Book*—that address the guardianship

issue. *The Guardianship Handbook* stresses alternatives to guardianship and quotes Claude Pepper, the late U.S. Representative: “The typical ward has fewer rights than the typical convicted felon—they no longer receive money or pay their bills. They cannot marry or divorce . . . It is, in one short sentence, the most punitive civil penalty that can be levied against an American citizen, with the exception . . . of the death penalty.”

Advances in Aging is published quarterly by the University of Maryland Claude D. Pepper Older Americans Independence Center, the University of Maryland Center for Research on Aging, the University of Maryland Geriatrics and Gerontology Education and Research Program, and the Geriatrics Research, Education and Clinical Center of the VA Maryland Health Care System, Baltimore, Maryland. For further information about the newsletter and gerontology programs at the University of Maryland, Baltimore, call 410.706.4567, or visit our web site, <http://gerontology.umaryland.edu>.

Editorial Staff

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Nancy Volkers

CALENDAR *of Events*

A quarterly listing of educational programs on aging research and clinical practice in the mid-Atlantic region. Contact information is listed with each program.

October 6, 1999

Copper Ridge Institute Lecture Series
affiliated with Johns Hopkins
University School of Medicine

End of Life Decision Making in Dementia

Peter Rabins, M.D.

Sykesville, Maryland
410.795.8808, Ext. 141
(must pre-register)

October 14, 1999

UM Center for Research on Aging
Lecture Series

The Use of Psychoactive Medications and Cognitive Function in the Oldest Old

Denise Orwig, Ph.D.

UMB
410.706.4567, or
umcra@som.umaryland.edu

October 18, 1999

Maryland Respite Care Coalition
Respite Awareness Day
Maritime Institute Conference Center
Linthicum, Maryland
410.341.0307 or
baysrv@shore.intercom.net

October 20, 1999

GGEAR, The Central Maryland
Chapter of the Alzheimer's
Association, Maryland Gerontological
Association

Clinical Perspectives on Alzheimer's Disease

Columbia Hilton
Columbia, Maryland
410.706.4327 or 410.561.9099

October 21, 1999

Eastern Shore Area Health Education
Center

Second Annual Geriatric Symposium

St. Michaels, Maryland
410.221.2600

November 3, 1999

Copper Ridge Institute Lecture Series
affiliated with Johns Hopkins
University School of Medicine

At the Cutting Edge of Basic Research in Alzheimer's Disease

Donald Price, M.D.
Sykesville, Maryland
410.795.8808, Ext. 141
(must pre-register)

November 4, 1999

UM Center for Research on Aging
Lecture Series

Exercise and the Potential for Successful Aging

Andrew P. Goldberg, M.D.
UMB
410.706.4567, or
umcra@som.umaryland.edu

November 5, 1999

Maryland Coalition on Aging and
Developmental Disabilities

Aging is Aging is Aging

Anne Arundel Community College
410.296.5520, Ext. 5013

November 14-18, 1999

North American Association for the
Study of Obesity

NAASO Annual Meeting

Charleston, South Carolina
301.563.6526

November 19-23, 1999

Gerontological Society of America

Gerontological Society of America 52nd Annual Meeting

San Francisco, California
(202) 842-1275
www.geron.org

December 1, 1999

Copper Ridge Institute Lecture Series
affiliated with Johns Hopkins
University School of Medicine

Depression in the Elderly

Adam Rosenblatt, M.D.
Sykesville, Maryland
410.795.8808, Ext. 141
(must pre-register)

December 9, 1999

UM Center for Research on Aging
Lecture Series

The Case for Medicine Prescription Drug Benefit

Bruce Stuart, Ph.D.
UMB
410.706.4567, or
umcra@som.umaryland.edu

Abbreviations

UM - University of Maryland
UMB - University of Maryland,
Baltimore campus
GGEAR - UM Geriatrics and
Gerontology Education and Research
Program

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