Obesity Task Force unites to translate scientific advances

One would be hard pressed to find a more diverse group of experts than UT Southwestern's Task Force for Obesity Research.

Visitors at the group's weekly meeting are likely to find the conference room on the sixth floor of the Cecil H. and Ida Green Science Building filled with world-renowned endocrinologists, biochemists, nutritionists, gastroenterologists, cardiologists and psychiatrists.

Getting such a diverse group of experts to congregate for one mission—to develop more directed approaches to prevent obesity and treat the metabolic complications of this disorder—hasn't been easy. Bridging the assembled specialties' variety of scientific languages adds to the task force's goal.

Dr. Gloria Vega, professor of clinical nutrition, compared the job to creating the European Union.

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The language of each discipline is different, but we have very good, lively discussions," she said at a Friends of the Center for Human Nutrition luncheon last fall.

"At the end of the day we are succeeding at meeting the challenge of having a meaningful dialogue, whether we are from human subject-oriented or bench-oriented backgrounds, to study a topic as challenging as obesity."

Dr. Vega, professor of clinical nutrition, joined Drs. Jay Horton, Darren McGuire and Philipp Scherer in a discussion on obesity and diabetes at the fall luncheon.

All but Dr. McGuire are part of the obesity task force, which was recently awarded a $22 million grant from the National Institutes of Health to enhance its groundbreaking efforts to attack obesity from every angle, from studying fat cells to developing medicines.

Dr. Scherer, director of the Touchstone Center for Diabetes Research, is spearheading some of the research on fat cells. A major initiative in his laboratory is to understand how female fat can be more protective than male fat in diseases such as cardiovascular disease and cancer, particularly post-menopausal breast cancer.

"Fat cells are not just for storage," said Dr. Scherer, who holds the Gifford O. Touchstone Jr. and Randolph G. Touchstone Distinguished Chair in Diabetes Research. "A lot of evil things come out of adipose tissue as we expand it. But, on the other hand, fat also releases positive, insulin-sensitizing factors. Fat in the right anatomical regions can actually be very protective."

Dr. McGuire, associate professor of internal medicine, said diabetes continues to become more prevalent worldwide. There is hope, he said, as the number of people living with diabetes will drop significantly if the obesity epidemic slows.

"There are genetic predispositions but it's largely a societal problem," said Dr. McGuire, who studies obesity and diabetes as they impact the heart. "We can reduce the risk of developing diabetes by about 60 percent just by addressing lifestyle changes."

Statistical research from the Dallas Heart Study has uncovered disturbing, but correctable, trends, he said. Of the 6,000 Dallas County residents originally tested by UT Southwestern researchers, about 5 percent had a diagnosis of diabetes. But another 3.5 percent of study participants were diagnosed with diabetes at their initial study assessment, which suggests that about 40 percent of adults in Dallas County with diabetes aren't even aware that they have the condition.

Dr. McGuire likened treating diabetes and cardiovascular diseases without addressing obesity issues to firefighters arriving at a blaze and clearing away smoke without extinguishing the flames.

"We know higher risks of heart attacks and strokes are byproducts of diabetes," he said. "It takes a 'village' approach, because it will be worse for the next generation. About 15 percent of our children are already classified as obese. The projection is that one-third of them will develop diabetes in their lifetimes if nothing changes."

Dr. Horton, professor of internal medicine and molecular genetics and the NIH grant's coordinating investigator, said obesity research lends itself to a multi-disciplinary approach like the one under way at UT Southwestern.

"With more than 30 investigators from very different backgrounds, we hope to be able to more rapidly translate basic scientific discoveries into clinically meaningful applications," said Dr. Horton, who holds the Dr. Robert C. and Veronica Atkins Chair in Obesity & Diabetes Research. "With more than 30 investigators from very different backgrounds, we hope to be able to more rapidly translate basic scientific discoveries into clinically meaningful applications," said Dr. Horton, who holds the Dr. Robert C. and Veronica Atkins Chair in Obesity & Diabetes Research.
Obesity research receives $22 million NIH Roadmap grant

UT Southwestern's obesity research team has received a $22 million grant from the National Institutes of Health to enhance its groundbreaking efforts to attack obesity from every angle, from studying fat cells to developing medicines.

The award, formally announced in September 2007, is one of nine interdisciplinary research consortia sponsored by the NIH Roadmap for Medical Research. These groups seek to solve difficult problems by blending approaches from multiple biomedical research disciplines.

UT Southwestern's group is the only one focused on obesity.

The money, to be given over a five-year span, fortifies UT Southwestern's Task Force for Obesity Research, a team of scientists and clinicians who are investigating the behavioral, molecular and metabolic mechanisms behind obesity and metabolic disorders.

"This extends and strengthens our task force's ability to conduct studies to gain much-needed insight into the key molecular pathways that govern energy metabolism and translate that into the development of new approaches to prevent obesity and treat associated metabolic complications, such as heart disease and diabetes," said Dr. Jay Horton, associate professor of internal medicine and molecular genetics and the grant's coordinating investigator.

The grant comes at a time when waistlines are bulging. Two-thirds of adults in America are overweight or obese, raising their risk of developing health maladies including heart disease, stroke, diabetes, fatty liver disease and others.

But the reasons why obesity and these conditions go hand-in-hand are largely unknown.

To help answer these questions, UT Southwestern's Task Force for Obesity Research was formed in 2004 with a three-year, $1.78 million planning grant that also was part of the NIH Roadmap.

The UT Southwestern group comprises more than 30 scientists from different backgrounds, including genetics, endocrinology, nutrition, neurology, lipid metabolism, psychiatry and epidemiology - a combination aimed at better understanding the processes that lead to obesity and associated metabolic disorders, said Dr. Horton.

The scientists are divided into four interconnected research groups focused on certain metabolic aspects, and each will tackle new research projects with the NIH Roadmap infusion.

Dr. Joel Elmquist, professor of internal medicine and pharmacology, heads the group focused on the central regulators of energy metabolism, namely the hypothalamus, a region of the brain that controls food intake and energy expenditure. Dr. Craig Malloy, medical director of the Advanced Imaging Research Center, and Dr. Elizabeth Parks, associate professor of clinical nutrition, oversee the "in vivo intermediary metabolism" group, which uses different imaging techniques to study metabolic disorders in humans and animals. Dr. David Mangelsdorf, chairman of pharmacology, and Dr. Joseph Goldstein, chairman of molecular genetics, head a group studying the molecular biology of energy metabolism. Dr. Jonathan Cohen, professor of internal medicine and in the Eugene McDermott Center for Human Growth and Development, heads a group that examines human genetics and energy metabolism.

Combined, the quartet has three main objectives:

- **Foster interdisciplinary interactions** to study obesity and metabolic syndromes;
- **Develop research programs** using genetically modified mice to elucidate the metabolic and molecular bases of obesity and metabolic syndromes throughout the body; and
- **Translate scientific findings made in animal models to humans.**

"Obesity remains a pressing problem, but the coordinated efforts of the task force increase our ability to generate future successes in fighting metabolic disorders," Dr. Elmquist said.

In applying the task force's research to humans, grant investigators will use data from participants in the Dallas Heart Study, an investigation of cardiovascular disease involving nearly 6,000 Dallas County residents, led by Dr. Helen Hobbs, director of the Eugene McDermott Center for Human Growth and Development and the Donald W. Reynolds Cardiovascular Clinical Research Center.
The latest Roadmap grant also sets up a program to provide interdisciplinary training for postdoctoral fellows. Participants will work with mentors and primary investigators from many different disciplines to help break down the barriers that often exist between research fields.

"Obesity is obviously an enormous public health problem. Many of our most talented faculty members want to help, and we are delighted that their coordinated efforts have been recognized by award of this major grant from the National Institutes of Health," said Dr. Alfred Gilman, executive vice president for academic affairs, provost, and dean of UT Southwestern Medical School.

Other UT Southwestern researchers involved in the Task Force for Obesity Research and the new grant are:

Dr. Scott Grundy, director of the Center for Human Nutrition

Dr. Michael Brown, director of the Erik Jonsson Center for Research in Molecular Genetics and Human Disease

Dr. Jeffrey Browning, assistant professor of internal medicine and in the Advanced Imaging Research Center

Dr. Shawn Burgess, assistant professor in the Advanced Imaging Research Center and of radiology

Dr. Abhimanju Garg, professor of internal medicine

Dr. Steven Kliewer, professor of molecular biology and pharmacology

Dr. Bassil Kublaouli, assistant professor of pediatrics and internal medicine

Dr. Ildiko Lingvay, assistant professor of internal medicine

Dr. Edward Livingston, chief of GI/endocrine surgery

Dr. Eric Nestler, chairman of psychiatry

Dr. Keith Parker, professor of internal medicine and pharmacology

Dr. Joyce Repa, assistant professor of physiology and internal medicine

Dr. David Russell, professor of molecular genetics

Dr. Philipp Scherer, director of the Touchstone Center for Diabetes Research

Dr. Dean Sherry, director of the Advanced Imaging Research Center

Dr. Carol Tamminga, professor of psychiatry

Dr. Kosaku Uyeda, professor of biochemistry and internal medicine

Dr. Gloria Vega, professor of clinical nutrition

Dr. Masashi Yanagisawa, professor of molecular genetics

Dr. Andrew Zinn, associate professor in the Eugene McDermott Center for Human Growth and Development and of internal medicine

Fresh produce's colorful palette can entice youthful palates

The abundance of Texas' fresh produce offers families the perfect opportunity to introduce the healthy habit of eating more fruits and vegetables, say clinical nutritionists from UT Southwestern.

"Offering children fruit or vegetable choices empowers them to make healthy decisions regarding their diet," said Cindy Cunningham, assistant professor of clinical nutrition.

Young children should consume at least five servings of fruits or vegetables per day, as should teenagers and adults, said Ms. Cunningham, who is a registered dietitian.

Dr. Abhimanju Garg, professor of internal medicine in the Center for Human Nutrition, said it's essential to teach children about good nutrition so they can carry the healthy habits with them for life. Adults have generally already formed their food preferences, but if a variety of fruits and vegetables are introduced to young children, a lifelong impression might be made, he said. Children who learn to make good food choices are more likely to grow up to be healthy adults, said Dr. Garg, who holds the Endowed Chair in Human Nutrition.

"It's simple for people to work fruits and vegetables into their diet," Ms. Cunningham said. "Berries can be added to breakfast cereal, or a fruit salad can be served for lunch. Vegetables can be grilled alongside meat, and fruit makes a delicious and simple dessert."

Color is the key when choosing fruits and vegetables, she said. Studies have shown that red, orange or green vegetables are the most nutrient dense. All fruits and vegetables contain phytochemicals, which give them their color. Phytochemicals are the disease-fighting substances found only in plant-based foods.

Studies have shown that eating a diet rich in fruits and vegetables may help lower the risk for certain cancers, high blood pressure and eye disease. UT Southwestern researchers have found that eating at least 50 grams of soluble fiber, which is found in fruits and vegetables, each day can help lower insulin levels for diabetics.
Q: I know we need fluid every day. Is water really the best thing to drink? What about other beverages?
A: Water is a good beverage of choice. The adage of eight 8-ounce glasses of water daily can really be expanded to include a variety of beverages. In deciding what to drink, keep in mind your calorie needs, your nutrient needs and the effect of caffeine. If you are overweight, then water is a great no-calorie option. On the other hand, if you are recovering from surgery or are underweight, you should drink caloric beverages, such as milk, juice and even some sugared beverages. You can obtain extra nutrients from specific beverages:
- In most locations, drinking tap water provides fluoride that can strengthen teeth, especially important during pregnancy, infancy and childhood.
- "Vitamin waters" provide small amounts of vitamins. If your diet is lacking nutrients, you can better meet your needs with a bowl of cereal and/or a glass of nonfat milk.
- Sports drinks provide sugar for energy and electrolytes like sodium and potassium. These beverages are good selections for active people who exercise intensively for more than 30 minutes.
- Energy drinks provide sugar and caffeine. Their extra calories and stimulant effects make them unwise choices for pregnant women or older adults.
- "Smart water" has no calories or sugar, but includes calcium, potassium and magnesium – minerals thought to reduce blood pressure. It might be a helpful addition to a healthful diet, but you could get similar benefits from drinking milk and fruit juice.

Q: I always felt we were diligent by having low fat, 2 percent milk in our home, but I heard recently that it is not good for your heart. Is that true?
A: Non-fat or skim milk is the best milk option for heart health, but reduced-fat or 2 percent milk is better for you than whole milk. With about half the cream contents of whole milk, 2 percent milk cuts in half the total fat, cholesterol and saturated fat. Skim milk virtually eliminates fat and cholesterol. Milks at all levels of fat contain similar amounts of calcium, protein, vitamins and minerals. When you drink two cups of 2 percent milk you are getting more than a third of the American Heart Association's saturated fat allowance for a 2,000-calorie diet. Changing to 1 percent milk would give you 3 grams of saturated fat, only a fifth of your daily allowance. Choosing non-fat milk will leave your saturated fat allowance untouched. Regardless of the level of fat you choose, various milks provide similar amounts of protein, calcium and other minerals and vitamins. Recommendations on milk for very young children differ from those of adults. Up to the age of 1, breast milk or formula is recommended. Whole milk is generally recommended for children ages 1 to 2 to ensure dietary fat for adequate brain and nerve maturation. After age 2, reduced fat or non-fat milk can be used. Non-fat milk can help balance energy intake for children at risk for becoming overweight.
Joining the Friends makes you part of the effort to improve the quality of life today and for the next century. Your membership will support the research of promising young scientists and ensure that excellent nutrition research continues well into the future. Your membership also entitles you to receive the Center for Human Nutrition Newsletter, the Fresh News postcard eight times a year, to attend regular meetings with other members and distinguished nutrition scientists, and to receive letters from Dr. Scott Grundy clarifying and updating current nutrition issues.

Annual membership in the Friends is a tax-deductible contribution of $1,000 per individual or couple. Membership in the Younger Friends, which has activities oriented toward those 40 or younger, is $250. A new category has been added to the Younger Friends for those who are 41 to 45 years of age. That fee is $500 per year. To join the Friends of the Center for Human Nutrition, call 214-648-2344.

Center for Human Nutrition

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