DEAN'S MESSAGE: What's On My Mind

What’s On my Mind this month is student research. One-half of our students engage in research at some point during their medical education. It is imperative that we provide our students with a realistic understanding of the research environment, contact with appropriate role models and mentors, and collaborative arrangements with the faculty, in order to give our students an understanding of the ethical and responsible conduct of research and to nurture in them a growing interest in research careers.

The Office of Student Research (OSR), led by Jordan Warnick, Ph.D., exists to provide medical, K-12, undergraduate and graduate students, and K-12 science and teaching faculty with students to focus their research ideas, choose a direction, find a mentor, and identify external funding. The OSR Website lists nearly 100 sources of external funding.

Our student research office has a long history of attracting National Institutes of Health (NIH) training grants for medical, high school and college students and science teachers. I am very pleased that over the past 20 years, the OSR has provided over $6 million in training funds for student research experiences through internal office’s funding and the NIH, among other sources.

The most recent NIH application to be funded is the National Institute on Aging pre-doctoral professional student summer research program. This grant will enable 20 students to conduct aging-related research with 45 faculty mentors for 10-12 weeks this summer on research in epidemiology, exercise, rehabilitation, cardiovascular, to conduct aging-related research with 45 faculty mentors for 10–12 weeks this summer on research in epidemiology, exercise, rehabilitation, cardiovascular, to conduct aging-related research with 45 faculty mentors for 10–12 weeks this summer on research in epidemiology, exercise, rehabilitation, cardiovascular,

Dr. Warnick, a professor, Departments of Pharmacology & experimental therapeutics, has headed the OSR since 1992, and has been assistant dean for Student Research since 1995. He has done a fantastic job of ensuring that his office serves the needs of our students. Dr. Warnick and his staff work closely with the faculty, in order to give our students an understanding of the ethical and responsible conduct of research and to nurture in them a growing interest in research careers. The programs offered by the OSR provide prospective trainees with primary or advanced experiences in biomedical and behavioral research at the School of Medicine and at our foreign research sites.

In the relentless pursuit of excellence and more student research opportunities, I'm looking forward to the challenges ahead of me in my new role and the opportunity to capitalize on all the interdisciplinarity of the School of Medicine faculty.
**Controversial Weight Loss Treatment**

May Have Contributed to the Early Death of 1950s Star Mario Lanza

The death at age 38 of film and recording star Mario Lanza may have been related to a controversial weight loss program based on a hormone derived from the urine of pregnant women, according to a new article by Philip A. Mackowiak, M.D., professor and vice chair, Department of Medicine. The article, co-written by Lanza biographer Armando Cesari, was published in the January issue of *The Pharos*, the journal of Alpha Omega Alpha, the medical honorary society.

The diet in question was developed in the 1950s and debunked in the 1960s, but has undergone a recent revival and is touted on numerous Web sites. Lanza's career in film, recording and live performance reached its height in the late 1940s and through the 1950s. His operatic voice and style inspired some of the world's greatest singers, including the three tenors, Jose Carreras, Placido Domingo and Luciano Pavarotti.

Dr. Mackowiak is a history enthusiast who founded the Historical Clinicopathological Conference (CPC), the School of Medicine's annual event that engages modern medical experts in the diagnosis of disorders that affected prominent historical figures. Dr. Mackowiak’s interest in the life and health of Lanza began when Mr. Cesari contacted him to suggest the singer as a subject for a future CPC. Dr. Mackowiak decided Lanza was a better subject for a journal article than for the CPC.

“Mario Lanza was a massive overeater with major weight problems, which he attempted to correct through one crash diet after another,” said Dr. Mackowiak. By the age of 22, Lanza, who was five feet seven, had ballooned to 260 pounds. In 1947, he signed a seven-year film contract with MGM after Louis B. Mayer heard him perform at a live concert.

The contract required him to make movies for six months a year, leaving him free to appear in concerts the remaining months. Lanza would crash diet in order to look good on film. He would put on the pounds during drinking and eating binges when he did not have to appear in front of the camera.

In 1957, two years before his death, Lanza entered a weight loss program that was developed by Dr. Albert T.W. Smeets of the Salvatore Mundial International Hospital in Rome. The diet included daily doses of the hormone, human chorionic gonadotropin (hCG), and food intake of no more than 500 calories a day. Though decades have passed since the diet's inception, a book written by an infomercial marketer in 2007 has revived interest in hCG as part of a diet regimen.

hCG is made by the placenta during pregnancy and can be measured as a test for pregnancy. More is known now about the qualities of the hormone than Lanza’s day.

hCG has a structure similar to that of thyroid stimulating hormone. “If given in sufficient quantity and duration, it can induce a condition known as thyrotoxicosis,” said Dr. Mackowiak, who is also director of medical care at the VA Maryland Health Care System. “The body’s metabolism speeds up, causing sudden weight loss, a rapid or irregular heartbeat, sweating and irritability.”

It is not known whether Lanza was given enough hCG to cause thyrotoxicosis, but he lost an astounding 30 pounds in his first nine days on the diet and another 44 pounds in the next three months, leaving him trim and drawn in appearance. “Such precipitous weight loss could not have resulted from a reduction in his intake of calories alone, but might have been possible if Lanza had been rendered thyrotoxic as a result of large doses of hCG,” said Dr. Mackowiak.

The hormone has been approved for treatment of some medical conditions, but the U.S. Food and Drug Administration (FDA) has not approved the use of hCG for weight loss. Utilizing hCG for weight loss is considered an “off label” use. Since 1975, the FDA has required labeling and advertising of hCG to state that hCG has not been demonstrated to be effective adjunctive therapy in the treatment of obesity. There is no substantial evidence that it increases weight loss beyond that resulting from caloric restriction, so it causes a more attractive or “normal” distribution of fat, or that it decreases the hunger and discomfort associated with calorie-restricted diets.

Besides obesity, Mario Lanza’s health was complicated by other issues, said Dr. Mackowiak. By his mid-30s, he suffered from hypertension, liver failure, coronary artery disease and thrombophlebitis of his right leg. He died suddenly on October 7, 1959. His medical records were never made an autopsy was not performed.

Dr. Mackowiak says Lanza’s death could have been due to any one of a number of disorders. He could have had a heart attack. He could have had a pulmonary embolism related to his phlebitis. “It is also possible,” said Dr. Mackowiak, “that he was thyrotoxic as a result of the hormone treatment. One of its consequences is a cardiac arrhythmia, which can result in sudden cardiac death.”

“Medical research looks toward the future to understand disease processes, improve patient care and develop cures,” said Dean E. Albert Reece, M.D., Ph.D., M.A. “But knowledge of the past can help guide researchers toward the future. Dr. Mackowiak is a worldwide leader in analyzing the health of famous people in the past and applying the results of that analysis to the teaching of medical students today.”

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The School of Medicine’s Department of Psychiatry is positioning itself at the forefront of telemedicine, with an eye to becoming a center of excellence in the field. The department has found that the provision of healthcare from a distance, is particularly useful for mental health care. The application of telemedicine in psychiatry has come to be known “telehealth.”

“Telehealth services are a priority for our department,” said Anthony Lehman, M.D., M.S.P.H., professor and chair, Department of Psychiatry. “They represent an exciting opportunity to use emerging technologies to extend mental health services to citizens in underserved areas of the state and region.”

As the department’s director of telehealth, Brian Grady, M.D., M.S., assistant professor, Department of Psychiatry, stresses the effort to strengthen the department’s telemedicine presence. The department is involved in best practices, rural health care delivery and school-based telehealth projects. It has also entered into contractual relationships for telehealth care delivery. Faculty use telemedicine health technologies in providing services such as direct clinical care, consultation and health education. Training in telehealth is being incorporated into the curriculum of the Department of Psychiatry trainees.

“The benefits of telehealth care to rural and underserved communities are enormous,” said Dr. Grady. “Telemedicine brings patients in remote areas increased access to care, including subspecialists and culturally competent providers that are hard to come by in certain regions of the state.”

In 2009, the School of Medicine partnered with several organizations to establish telemedicine services in several rural counties. This network was funded by the Health Resources and Services Administration (HRSA), part of the U.S. Department of Health and Human Services. The grant supports a partnership between the School of Medicine, Mid-Shore Mental Health Systems, Inc., the Mental Health Institute, Garrett County Healthcare Service Agency and the St. Mary’s County Department of Human Services. The consortium’s goal is to provide increased access to appropriate, high-quality mental health services for the minority, underserved and uninsured residents in several rural Maryland counties. It employs real-time videoconferencing technologies to connect patients in rural sites with psychiatric experts located in Baltimore with community mental health centers that serve public mental health recipients in Caroline, Dorchester, Garrett, Kent, Queen Anne, Talbot and St. Mary’s counties. The services provided include individual and family consultation, assessment and ongoing psychiatric treatment of children, adolescents, adults and elderly residents eligible for services under the Public Mental Health System.

“Many of rural Maryland, there’s a shortage of general practitioners and even fewer psychiatrists with specialty training in areas such as addiction, geriatric and child and adolescent psychiatry,” said Dr. Grady. “Some patients do not have transportation to travel to seek care outside their communities. This consortium brings much-needed services to these rural patients.”

The department’s wide-ranging telehealth capabilities include a Best Practices project that began in 2001 with funding from the Mental Hygiene Administration of the state of Maryland’s Department of Health and Mental Hygiene. The project is co-chaired by David Pruitt, M.D., professor, Department of Psychiatry, and director, Division of Child and Adolescent Psychiatry and Toghi Modesti Center for Infant Study.

The project’s goal is to disseminate state-of-the-art information on best practices to mental health providers across the state, using videoconferencing capabilities. Since 2004, the project has supported monthly seminars to seven sites across Maryland. The live, interactive seminars offer slide presentations, didactic material and interactive discussion. “The project keeps state providers informed of the latest developments in their fields without requiring them to travel at a cost of both time and money,” said Dr. Grady. “Our telehealth work further emphasizes the Department of Psychiatry’s commitment to mental health care access, technology development and telehealth training experiences for our residents and fellows,” said Dr. Grady. “Our ambitious goal is to develop a Center of Excellence in telehealth services and expand on various technologies to deliver quality preventative and restorative mental health services and education to residents of Maryland, near and far.”

**RESEARCHERS STUDY POST-HEART ATTACK ADULT STEM CELL THERAPY**

Heart experts used to think cardiac tissue damaged after a heart attack could not be repaired. That assumption is changing as more is learned about the properties of certain stem cells to grow or regenerate tissues, including heart muscle. School of Medicine faculty are collaborating with 44 centers in the United States and Canada in a two-year clinical trial of an investigational intravenous adult stem cell therapy that has been developed by a University of Washington investigator, Dr. Mark Vesely, M.D., professor of medicine, Department of Medicine, doctors will test the therapy in patients who have had their first heart attack within the previous seven days.

This study is unique because it is testing cells that have been previously extracted and grown from healthy donors and are ready to be infused into the patient’s bloodstream, just like an intravenous medication. Other stem cell therapies also being studied for heart attack patients use stem cells that are taken from the patient, grown in a lab for three-to-four weeks and then injected directly into the heart. This time delay may have a significant impact on the effectiveness of the therapy.

“A heart attack, there is a lot of scar tissue and dead heart muscle. Much of that muscle is lost up front, right after the heart attack,” according to Dr. Vesely. “The body has limited ability to rebuild damaged heart muscle, but the goal of this study is to try to limit the amount of damage that is done by the heart attack and take advantage of a natural healing process.”

Current treatments, such as catheterization and bypass surgery, can restore blocked blood flow to the heart, while drug therapy is designed to keep coronary disease from getting worse and to help the heart pump blood more effectively. Despite the success of these treatments, Dr. Vesely says they are not effective at restoring damaged cardiac muscle. He hopes this stem cell therapy will do just that.

The therapy uses what are known as mesenchymal cells, adult stem cells stored in bone marrow that can generate new tissue, including heart muscle and other muscle, and develop into other types of cells including bone, cartilage, ligament, tendon and fat. Mesenchymal cells are part of the body’s complex healing system. They respond to chemical signals sent from inflamed parts of the body, such as a twisted ankle or knee. Infarction is part of the picture after a heart attack, says Dr. Vesely, so the heart, too, sends signals to the mesenchymal cells.

“If you think of these stem cells as almost like a hound dog, they pick up the scent and track down areas of inflammation,” said Dr. Vesely. Once the mesenchymal cells pick up the signals, they leave the bone marrow, travel through the blood stream to the site of the inflammation and begin their repair job.

Dr. Vesely says researchers are not sure how mesenchymal stem cells reduce inflammation and heal tissue, but it is clear that children have a great abundance of these cells. As people age, the number of available stem cells gets smaller and smaller, and their ability to change into different types of cells is reduced as well. But Dr. Vesely points out that several days after a child has fallen and scraped his knee, the wound is healed with no scar. “Children are not going to scar as they are still growing. As we get older, our scar formation goes down,” he says.

Most heart attacks occur in older people. “The idea behind this trial is this: if part of that loss of the healing process is because we have lost stem cells, let’s try to game the system, by supplying more of these stem cells to help the healing process,” said Dr. Vesely. The mesenchymal stem cells in this study have been taken from bone marrow samples of young, healthy adults in their twenties and from a fetus, embryo or animal. The marrow is filtered so it yields only these specific stem cells, which are easily grown in culture in large quantities. The cells are processed as an off-the-shelf product that is ready to use and does not require further preparation. Mesenchymal stem cells are universally compatible, which means they can be used in anyone without typing or matching, similar to blood type O. Because of this quality, the cells have an extremely low chance of being rejected by the recipient’s body.

This research project is a multi-center, randomized, double-blind, placebo-controlled Phase II study evaluating the safety of Prochymal in 220 patients. Patients in the study will receive a single injection of Prochymal or the placebo within seven days of their first heart attack and will undergo a variety of heart imaging assessments. It is expected that the infused mesenchymal cells will travel to the heart and all other areas of the body where there is swelling and inflammation. To help ensure that most of the cells go to the heart, the study will exclude people who have inflammatory diseases, such as rheumatoid arthritis.

In an initial Phase I cardiac trial involving 53 patients, adverse events were lower, heart function improved and cardiac arrhythmias (irregular heartbeat) were reduced in patients treated with Prochymal compared to the placebo group.
Integrative Medicine Offers Students Another Perspective on Patient Care

Without any hesitation, Mary Desi and Ashley Huber, fourth year medical students, would recommend the Integrative Medicine elective to third year students. Both want to practice family medicine and appreciate Integrative Medicine’s emphasis on treating the whole person.

Each one was surprised by the number of therapies under the Complementary and Alternative (CAM) umbrella, such as acupuncture, traditional Chinese medicine, homeopathy, massage, yoga, reflexology, mind-body medicine, spirituality and end of life care. They also learned that Integrative Medicine incorporates modern evidence-based Western medicine with established health practices from around the world.

Desi chose the elective because of her experience in an outpatient clinic. “Patients have a lot of questions about CAM treatments. They want to know what is safe and what isn’t. In the future, I want to be a resource for them,” she says.

“A key thing about taking this course is to keep an open mind,” Huber says. “We are encouraged to question to a lot of things. If patients have questions about CAM, it is important not to disregard them but to either find the information or refer them to someone who can answer their questions.”

According to a survey conducted by the National Institute for Health Center for Complementary and Alternative Medicine, Desi, Huber and other physicians can expect more questions from patients about CAM. The 2007 survey found that 38 percent of adults and 12 percent of children use some form of CAM. In addition, Americans spend $33.9 billion out of pocket on CAM therapies.

Delia Chiaramonte, MD, clinical assistant professor of Family & Community Medicine, says Desi and Huber are representative of students selecting the Integrative Medicine elective. “They know their patients are using it and they want to be able to advise them and be aware of how it can affect their care,” she says. “The course provides them with an introduction to Integrative Medicine. Students also take the course because of a personal interest or because a CAM therapy such as acupuncture may be useful for their specialty,” Dr. Chiaramonte says.

As a part of the course, students experience for themselves many CAM therapies. For example, they receive an acupuncture treatment, massage and take yoga and Qi Gong classes. At the end of the four week elective students create a case study and present it to their classmates. The case study, summarized in a three to five page paper, must integrate an evidence-based treatment with a CAM therapy.

Dr. Chiaramonte says, “The presentations are important because they provide an opportunity for students to learn from each other.”

When the course ended Desi had another reason to recommend it to other medical students. She says, “You learn how to reduce your own stress. You can only be effective for others and better at paying attention if you reduce your own stress level.”

School of Medicine Website Redesign to Debut in February

For the first time since 2005, the School of Medicine Website (http://medschool.umaryland.edu) is undergoing a major redesign. The homepage will get a fresh new look and the navigation will be streamlined to emphasize our missions of education, research, patient care and community service. The new homepage will feature new video and photo galleries, and a new campus map. In addition, the new design will more effectively showcase school news, publications and events, and highlight the school’s presence on Facebook, ItunesU and YouTube.

After the new homepage is launched, the focus will be on official School of Medicine websites, including department, program and research center sites. The redesign of official SOM sites will be phased-in over several months, and will be overseen jointly by the Office of Public Affairs and Office of Information Services. A representative from one of those offices will contact departments, programs, ORCs, institutes and offices when it is time to begin the upgrade of that site. The redesign will be an opportunity to update existing Web pages and add fresh new content.

As part of the redesign initiative, the school is adopting new content management software to keep websites up to date. Training in the use of this software will take place after sites are upgraded to the new design.