Cancer Research Center of Hawai'i
UNIVERSITY OF HAWAI'I

USC
UNIVERSITY OF SOUTHERN CALIFORNIA

Multiethnic Bulletin

A NEWSLETTER FOR THE PARTICIPANTS IN THE MULTIETHNIC COHORT STUDY

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Analytical Laboratory Shared Resource (ALSR)

Many of you may be wondering what happens to the blood and urine samples that you provided during the course of the study. Who gets the samples after you donate them? What kinds of tests are run? What has been learned from these samples? In this article, we will provide you with answers to these questions.

One of the main places which analyzes samples from the Multiethinc Cohort (MEC) is the Analytical Laboratory Shared Resource (ALSR), at the Cancer Research Center of Hawai'i. Under the direction of Dr. Adrian Franke, the ALSR was set up in 1990 to support collaborative cancer research by providing chemical analyses which contribute to understanding what causes chronic diseases, such as cancer, in our population. The basic task of this laboratory is to determine the nature or structure of molecules or compounds and to measure their amount (or concentration) in the samples being analyzed. The ALSR is equipped with all the essential instruments needed to perform analytical chemistry, and it possesses the most modern, state-of-the-art instruments for analyzing difficult-to-measure compounds, such as those present in ultra-low amounts in the samples.

The public is constantly bombarded with news about what foods or nutrients are supposed to be good for us, but it is important to know how much of the nutrients from the foods we eat actually gets absorbed into our bodies. If nutrients are not well absorbed, they will not provide their presumed beneficial (or harmful) effects. The ALSR helps the MEC researchers determine the absorption rates for food components.

The ALSR uses a variety of techniques to determine the concentration of various nutrients and other molecules in blood and urine specimens. The samples are first retrieved from storage in ultra-low temperature freezers (-80˚C) which assure that the specimens do not degrade during their long storage times (often many years). The samples are then thawed and immediately processed. The processing generally starts with extracting the important components in the samples with organic solvents. This extract is then subjected to high pressure liquid chromatography (HPLC) to separate individual molecules from the complex mixture in the extract. This is followed by detecting or measuring the individual molecules by a variety of methods. The most important ones are photo-diode array (PDA) detection which measures the absorbance of light by molecules, and mass spectrometry (MS) which measures the mass of a chemical compound.

These techniques are used to measure compounds thought to have protective effects against cancer, such as the antioxidant vitamins A, C and E, and other phytochemicals (plant-based chemicals) such as isoflavonoids (a group of estrogen-like compounds typically found in soy).

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***Laurie Custer** is using a robot that analyzes molecules in blood and urine specimens that were extracted with organic solvents.*

SOMETHING NEW!

Please visit our website at www.crch.org/multiethniccohort. You will find some important details about *The Multiethnic Cohort Study,* be able to read past *Multiethnic Bulletins,* view our questionnaires, be directed to abstracts of articles published on MEC data, and more. Be sure to look us up!

IN THIS ISSUE

Dr. Kristine Robinson Monroe

Twenty years is a long time for any scientist to be involved in a single research study. However, Kristine Monroe, Ph.D., of the University of Southern California (USC), has accomplished this feat, having been involved in nearly every aspect of USC's collaborative role in The Multiethnic Cohort (MEC) Study, from helping to establish the MEC in 1989, followed by start up of the pilot phase in 1990. The official MEC Study began in 1993. An Assistant Professor in the Department of Preventive Medicine at the USC Keck School of Medicine, Dr. Monroe has served as the Project Manager for the Los Angeles component of The MEC Study, which boasts 102,000 active participants.

Dr. Monroe's responsibilities have encompassed coordinating the entire spectrum of activities related to the project such as developing study questionnaires, collaborating with cancer registries to update cancer cases, validating the food frequency questionnaire, initiating the linkage of the MEC with the California Hospital Discharge database, developing newsletters for active study participants, establishing the biospecimen collection from nearly 40,000 participants, serving as database manager for the LA site of the MEC, training and/or supervising study personnel, and responding to participants' inquiries. Aside from her MEC study duties, Dr. Monroe is also a lecturer in a graduate course titled, "Research Methods in Cancer Epidemiology."

She describes her education and training path as unique. Dr. Monroe states that "I perhaps have the distinction of being the 'student' with the longest tenure in the Department of Preventive Medicine," not for lack of motivation, but rather due to logistical constraints from balancing her education with parenting three young sons and full-time management of The MEC Study at Los Angeles. She adds that while her education extended over a decade and a half, more significantly, her time studying at USC was enriched through faculty mentoring, work experience and exposure to scientific collaboration.

In explaining why she became an epidemiologist, a scientist that studies the cause of diseases in human populations, Dr. Monroe first decided on a graduate education in public health when one of her sons was born with a heart defect. She was interested in studying the causes of birth defects. However, she eventually developed an interest in cancer epidemiology through her work with several cancer epidemiologists at USC.

As an epidemiologist, Dr. Monroe's research interests are: 1) studying the role of nutrients, genetics, and gene/environment interactions in causing cancers of the breast, prostate, endometrium (the tissue lining the uterus or womb), and colon and rectum in multiethnic populations; and 2) describing and assessing the inhibitory effect of grapefruit on an enzyme system that is important in the metabolism of hormones, resulting in elevated levels that may contribute to breast, endometrial, prostate, and ovarian cancer risk. She has co-authored numerous joint publications with Drs. Brian Henderson and Malcolm Pike from USC as well as scientists from the Cancer Research Center of Hawai'i's Epidemiology Program including Drs. Loïc Le Marchand, Laurence Kolonel, Suzanne Murphy, Lynne Wilkens, Abraham Nomura, and Jean Hankin.

Dr. Monroe graduated from USC with a Bachelor of Arts degree in International Relations, a Masters degree in Applied Biometry, and a Doctorate in Epidemiology. She was recognized in 2004 as a Scholar in Training by the American Association for Cancer Research, and in 2007 as the California Breast Cancer Research Program Honorable Mention for the Cornelius L. Harper Poster Award for impact on breast cancer. ❖

WHAT'S AHEAD?

A new, short survey for you to fill out and mail back to us! All of you have been members of our study for as long as 15 years. You completed our very first survey between 1993 and 1996. It is important for us to periodically update information on your diet, other behaviors, and health-related conditions. To be able to examine these changes, we must ask for your help again. The mailing of these surveys will begin shortly and will continue through 2012. So, some of you may not receive your survey for another couple of years. As always, no one else can take your place! We truly appreciate your continued support.

Analytical Laboratory Shared Resource (ALSR) [continued from page 1]

Now that you have learned a bit about how one of the labs that got some of your samples functions, you may be wondering what type of information was actually generated. Here's one example: Using MEC samples, Dr. Franke and his colleagues found that isoflavonoids in urine (resulting from consumption of soy products) were associated with a reduced risk of breast and prostate cancer. This suggests that a relatively high intake of isoflavonoids from soy products (or possibly other factors associated with high soy intake), may protect against breast and prostate cancer.

The ALSR also supports a variety of other cancer-related projects. If you want more information about the ALSR, you can either visit www.crch.org/shanalyticallab.htm or call Dr. Franke at (808) 586-3008. ❖

Obesity and Cancer

You have no doubt been hearing a lot about the epidemic of obesity in the U.S. and, indeed, much of the rest of the world. This is a topic of great interest to the investigators of The Multiethnic Cohort Study because obesity is an important risk factor for cancer. In this article, we provide answers to several questions about obesity that we think will interest MEC participants.

What is obesity and how is it measured?

People who are obese have an unhealthy amount of body fat which increases their risk for diseases such as diabetes, hypertension, heart disease, stroke, and certain cancers. A common measure of a person's fatness is the body mass index (BMI) which is determined using a formula based on weight and height. A chart like the one shown in Figure 1 above can be used to estimate your BMI. Find your height on the side and weight at the top of the chart, and then your BMI is where the two lines cross. A normal or healthy range of BMI is defined as 18.5 to 24.9, while a BMI below 18.5 is defined as underweight, and a BMI above the normal range is defined either as overweight (25-29.9) or obese (30 and higher).

How common a problem is obesity in the U.S.?

In recent decades, the percent of the U.S. population with obesity (a BMI over 30) has increased dramatically. All the states, including Hawai'i and California, have seen almost a doubling of obesity in the past 20 years. National surveys show that we are eating more food and getting less exercise than we were in the past, so the increases in obesity are not surprising.

What are the controversies in recent research on obesity?

It is easy to ignore an increase in weight as people age, because it often happens slowly. Even the clothing manufacturers

FIGURE 1: ADULT BODY MASS INDEX

Source: U.S. Surgeon General

help with this misperception by making standard sizes of clothing larger, so we don't see that our same dress or shirt sizes now fit larger bodies. In addition, there have been conflicting reports in the media, based on some research which seems to say that being a little bit overweight might actually be healthier. This made a lot of people wonder whether it is healthier to be on the "heavy side" of the weight range. Additional studies are being conducted to see if there really is a difference in health outcomes, but it is possible that some people have lost weight *because* they are sick and that made it appear that the heavier people (who had not lost weight) were healthier. However, researchers agree that being overweight is still associated with a higher risk of being diagnosed with obesity-related diseases, including cancer, at an earlier age. Therefore, achieving and maintaining a healthy weight is important in order to reduce healthcare costs and to improve a person's quality of life.

What have we learned about obesity in The Multiethnic Cohort Study?

For the MEC, we asked you to tell us your current weight and height when you joined the study (about 1993 to 1996) and also to try to remember how much you weighed when you were 21 years old. Since then, we've asked you to fill out two additional questionnaires where you reported your weight. Now we have information on how weight has changed over the years for the people in the MEC, and using each person's height, we can also see how BMI has changed. Using this information, we see that the percent of people who are overweight or obese is different across ethnic groups. Among men, obesity is most common among Native Hawaiians (31%), and least common among men of Japanese descent (6%). Among women, African Americans are the most likely to be obese (34%), while women of Japanese descent are least likely (5%). We have also found that the level of obesity is higher in people of mixed ethnicity than in people of a single ethnicity. For example, among the male MEC participants who were 60-69 years old, 4% of Asians and 14% of Caucasians were obese, whereas 16% of people who said they were of mixed Asian and Caucasian ethnicity were obese.

What are we studying about obesity and cancer in the Multiethnic Cohort?

We know that obesity increases the risk of certain cancers more than others. Several research groups have shown that people who are obese are more likely to have cancers of the esophagus, uterus, kidney, large intestines and breast (among postmenopausal women). Evidence is also accumulating for certain rarer cancers. In the MEC, we found that men who were obese at the beginning of the study had a higher risk of developing pancreatic cancer, and that persons who had a higher BMI at age 21 were at increased risk of developing non-Hodgkin lymphoma. These findings suggest that obesity is a risk factor for more types of cancer than was originally thought. They also indicate that both the weight status attained by young adulthood, as well as weight gain as people get older, can add to the risk of some cancers.

[continued on page 4]

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ADDRESS SERVICE REQUESTED

RECIPE FOR HEALTHY LIVING

SPINACH LASAGNA WITH THREE CHEESES

INGREDIENTS:

- 3 10-ounce boxes frozen chopped spinach, thawed
- ¼ cup finely chopped fresh parsley
- 2 cups low-fat ricotta cheese
- 1 egg, lightly beaten
- 1 26-ounce bottle of meatless tomato pasta sauce with Italian herbs
- 1 8-ounce package lasagna noodles
- 1 cup shredded mozzarella cheese
- 1 cup grated Parmesan cheese

NUTRITION INFORMATION PER SERVING

Calories	210
Protein (g)	5
Fat (g)	8
Saturated Fat (g)	4
Carbohydrate (g)	23
Cholesterol (mg)	40
Calcium (mg)	350
Sodium (mg)	413

Preheat the oven to 350 degrees. Place the spinach in a colander and squeeze out all of the water. In a bowl, combine the spinach with the parsley, ricotta cheese, and egg until well mixed. Lightly oil the bottom and sides of a 9 x 13 inch baking pan and layer the ingredients as follows: 1) Spread 1 cup tomato sauce evenly at the bottom of the pan, 2) Place a layer of noodles (about a third of the package) over the sauce, 3) Add half of the spinach, 1 cup tomato sauce, half of the mozzarella cheese, and half of the Parmesan cheese, 4) Add another layer of noodles, 1 cup tomato sauce, the rest of the spinach, and the rest of the mozzarella cheese, 5) Add a final layer of noodles (you may have a few left over) and the rest of the tomato sauce and sprinkle the remaining Parmesan cheese on top. Bake covered for 45 minutes, then uncovered for 10 to 15 minutes. Remove from the oven and let sit for 10 to 15 minutes before cutting and serving. Makes 12 (1 cup) servings

Obesity and Cancer [continued from page 3]

Furthermore, we have found that the cancer risk associated with being obese is greater in certain ethnic groups than others. For example, overweight Japanese-American men and women have higher risk of developing colon cancer than do overweight Caucasians. We suspect that this is because certain ethnic groups, such as Asians and Latinos, tend to deposit their excess fat around internal organs rather than in their arms and legs, while the reverse happens in Caucasians. These differences in the location of fat may lead to a higher disease risk even among people with the same BMI.

We are conducting further studies to investigate how we can tell if people have high-risk obesity. We are now looking at newer information, such as waist and hip circumferences and markers we can analyze in the blood samples that we collected more recently from MEC participants. By combining these new measures with BMI, we hope to be able to accurately identify obesity-related disease risks in different ethnic groups. Ultimately, our goal is to come up with appropriate advice on ways that people can manage their weight to reduce their risk of cancer. ❖

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