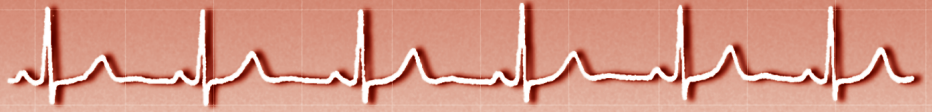


The Framingham Heartbeat



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Esta H. Shindler, Producer

Winter 2011

Launching Offspring (Generation 2) and Omni Group 1

Exams. The FHS clinic and laboratory are getting ready for a new FHS examination cycle starting in 2011. Participant coordinators will begin to book appointments for Offspring (Generation 2) and Omni Group 1 Exam 4. In many ways, this examination will be like others before it. Blood pressure, ECG, height, weight, and breathing functions will be measured again. The functioning of the heart and blood vessels will be recorded. New items include (a) monitoring a week of physical activity, (b) using special blood and cheek cell processing for testing cell and genetic functions, and (c) collecting urine samples. These new measurements, added to decades of your exam data, put FHS in a strong position to understand how diseases develop and how health is maintained. **If you live at a distance from Framingham but plan to visit the area in the next few months, please contact your participant coordinator now to book your appointment at a time that will be convenient for you.** ♥

What is a Research Proxy? You can now select someone to give consent for you with regard to your participation in FHS research. Your participation in FHS research depends on your agreement to take part and your signing a consent form. **If, in the future, you become unable to give consent for new kinds of FHS research, the person you have selected as a research proxy could give permission for you.** (Consent forms on file at FHS would cover the continuation of the types of research to which you have already agreed.) A research proxy form will be mailed to you in the coming months. Or you may name a proxy at the time of your visit to FHS. You may change your proxy any time by contacting the FHS participant coordinator, Maureen Valentino at 800-536-4143. ♥

Last call for FHS CT project. There are only a few weeks left for participating in the FHS CT (computed tomography) research project for Offspring, Third Generation, Omni Groups 1 and 2. Many thanks to all the participants who have already had an FHS CT scan. We are finding many ways to use the images in our research. If you are a woman at least 40 years old or a man at least 35 years old and you have not already had an upper torso CT scan from FHS between 2008-2010, you are still eligible. The scan displays calcification in the heart and blood vessels, fat deposits in several organs and details of lungs, muscles and spine. These images can be projected on computer screens of researchers and measured in many ways. Patterns of healthy tissues and signs of disease are measured and studied by researchers and compared with other FHS data. The FHS research CT scans are done at the Massachusetts General Hospital in Chelsea. Transportation from FHS is available. However, the project is ending on March 31, 2011. **If you are interested or have any questions, please contact Barbara Inglese for information right away at 508 935 3451.** ♥

Testing Treatments in a Tube: Induced Pluripotent Stem Cell Research (IPSC) is a recently developed method of changing ordinary white blood cells from individual blood samples so that they behave in the laboratory like cells from other organs. The first step reduces the specific functionality of the white cells, resulting in cells called IPSC's. The second step transforms the IPSC to imitate the function of another specific cell type such as liver, kidney or nerve cells. Since the IPSC testing is conducted in a laboratory after blood samples are drawn, the donor is not personally exposed to any tests or treatments.

Researchers at FHS expect to learn more about how cells in various tissues and organs work to maintain health or cause diseases by using IPSC methods with blood samples collected at the exams that start in April 2011. For example, cells that are made to imitate liver cell function can be used in the laboratory to measure cholesterol production and how drug treatment changes cholesterol levels. Because cells from various people may behave differently, and because FHS has so much information already on the health of its participants, IPSC research at the FHS may lead to important discoveries about treatment of diseases. In the Framingham Heart Study research, white cells will never be altered to behave as reproductive cells. **Participants at the Framingham Heart Study can use the consent form check boxes to choose to be included in or excluded from IPSC research.** ♥



Members of FHS Clinic Staff: Bottom Row L to R: Emily Manders, Joan Marsh, Debra McCoin
Top Row L to R: Christine Hess, Elizabeth Oberacker, Barbara Inglese, Ewa Osypiuk

Introducing the Framingham Heart Study Clinic Team!

Emily Manders is the FHS clinic manager. She has worked here for 30 years and contributed to many different research projects. Elizabeth Oberacker has worked at the FHS for over eight years. Now, while raising two young daughters, Liz wears many hats, conducting offsite visits, clinic exams and quality control observations.

Chris, Deb and Joan are the clinic technicians who take various measurements on participants each morning. Christine Hess began working in 2005 in the FHS data management department. Now that her daughters are school age, Christine transitioned to the FHS clinic. She is a "second generation" staffer; her mom, Marian Bellwood, has worked at FHS for 36 years! Debra McCoin also started with data management. She joined the clinic team in 2009. Deb has two young children and loves spending time with them. Joan Marsh has been at the FHS for a year and a half. Joan changed from a career as educator and returned to school to follow her passionate interest in community health.

(cont.)

Ewa Osypiuk has been at the FHS for over 10 years and oversees the vascular testing station. Ewa has two daughters in college. Plamen Stantchev, Shuxia Fan and Birgitta Lehman also work at the vascular station.

Barbara Inglese has been at the FHS for eight years and coordinates the CT study. She loves spending time with her nine-year old granddaughter and gardening. Barbara, Emily Smith, Mary Marinofsky, and Donna Salett take turns overseeing the flow of participants through the clinic. Donna Salett has volunteered at the FHS since 2002. Everyone on the team enjoys meeting the dedicated participants at FHS. The positive interactions of clinic staff and participants is the key to success at FHS exams. Please let us know if we can help you in any way. ♥

Health History Updates are asked of our FHS participants every 24 months to keep our records current between exams. You will be contacted by mail or telephone for information regarding medical problems for which you have seen a physician. When you receive a medical history form, please complete and return it or call Mary Ann Crossen (508-935-3430 or 800-854-7582) if you have any questions. We appreciate your efforts to help us update your medical records. ♥

The Framingham Heart Study will ask you to collect a 24-hour urine sample at the next Offspring and Omni examination cycle. Information about participating will be discussed at your exit interview. The kits to perform this collection will arrive shortly after your exam by mail. This collection can all be done at your house, and the sample can be mailed in. The urine data will provide information on your electrolyte balance and overall muscle mass, which are important correlates of cardiovascular disease. ♥

A \$1,000 scholarship in memory of Dr. Thomas R. Dawber, Director of the Framingham Heart Study from 1949 to 1966, will again be awarded by the Friends of the Framingham Heart Study to a deserving high school senior upon graduation. The competition for the Dawber award is open to children of Framingham Heart Study participants who will be graduating from high school in the spring of 2011 and going on to college. The recipient of the award will be selected by the Board of the Friends upon review of all the essays anonymously. Essays entitled "What It Means to be a Participant in Medical Research" should be sent as a Word document of a minimum of 1,000 words attached to an e-mail to Esta H. Shindler at eshindle@bu.edu no later than May 1, 2011. Please include in the e-mail message college and career plans after graduation, as well as name, address, and phone number. If you do not receive an e-mail acknowledging receipt of your essay, please call Esta Shindler at 508-935-3434. The winner will be notified by the end of June of 2011 and will be invited to meet the Friends and receive the award. ♥

What do FHS participants think about receiving individual results of genetic research? Whether or not to report individual results of genetic research to study participants is a complicated question. Experts across the country are debating whether returning results to participants in genetic research studies would be helpful or only troublesome. What about asking the participants themselves what they think? The FHS, in collaboration with the Jackson Heart Study and investigators from the Dana-Farber and the Education Development Center, under the direction of Dr. Steven Joffe, is going to do that very thing. About 1200 FHS participants and a similar number at the Jackson Heart study will receive a survey questionnaire later this year to find out their opinions about receiving genetics research results. The research questionnaires will be sent only to get opinions in general. Questionnaires will not be sent to people because of any specific result. If you receive the questionnaire, please help us by completing it and returning it to the FHS. Your responses will help the FHS and other studies establish policies on returning individual genetic results to study participants. ♥

Framingham Heart Study research findings over the past sixty-two years have been made possible through the dedication of thousands of loyal participants. A list of the research milestones of the Framingham Heart Study can be found on our website, www.framinghamheartstudy.org, in the **About Us** link. Please take a moment to go to our website and view the milestones and the bibliography of FHS journal articles that have resulted from your participation and greatly benefited public health worldwide. ♥

The Framingham Heart Study has been researching risk factors underlying stroke, Alzheimer's dementia and brain aging for decades. Over 3500 participants from the first two generations volunteered for one or more rounds of brain MRI scans and tests of cognitive abilities. The Third Generation is joining this effort by undergoing the first round of participation. Many of you share with us details of a stroke or transient ischemic attack or concerns about your own or a loved one's ability to remember. This information is combined and studied with years of FHS data on blood pressure and other vascular risk factors, blood biomarker, genetic tests and lifestyle information. More than 500 people have signed up for a Brain Donation Program, offering to donate their brain for scientific research after they die. The FHS has defined the lifetime risk of stroke and the differences in the risk of stroke and its outcomes in women compared to men. Novel blood markers have been identified that help predict the risk of stroke or of an apparently silent stroke seen only on brain MRI. We have identified two new genes, (*NINJ2* and *MACROD2*) that may be associated with increased risk of stroke and silent MRI stroke, respectively. These findings, requiring replication and further study, may in time lead to new tests for disease.

The Framingham Dementia Study estimates of risk were used by the Alzheimer Association in planning health policy and educational materials. We have shown that diabetes, depression, low bone density, changes in thyroid function, higher homocysteine levels, and lower levels of a protein called leptin are associated with higher risks of developing Alzheimer's disease. A less common, [epsilon] 4, form of a gene called *APOE* has been known to modify a person's risk of developing Alzheimer's disease. In the last 2 years, analyses of Framingham participant data, combined with data from over 30,000 other persons worldwide, have uncovered other genes that increase the risk of Alzheimer's disease. These genes, such as *CLU* (clusterin), *PICALM*, *CR1* and *BIN1*, point to previously unsuspected biological pathways in the development of Alzheimer's disease. These pathways are being studied in the donated brain tissue. The individual effect of each gene is small, and as in the case of stroke, it is still premature to test for any of these markers or genes in a doctor's office.

Finally, the data we have gathered on brain structure and function in participants who do not have stroke or dementia have been quite informative. In the last five years, we have shown that risk factors such as having a parent with Alzheimer's disease, having high blood pressure, diabetes, atrial fibrillation or more fat around the belly are associated with adverse changes in brain size and in memory function. We are now looking for risk factors, biomarkers and genes associated with MRI and cognitive test changes over time. The National Institute on Aging has funded a third round of brain MRI and cognitive testing to begin in the summer of 2011 and continue for four years. Understanding the genes, lifestyle, blood markers and risk factors that determine changes in brain structure or function is crucial to preventing age-related cognitive decline and Alzheimer's dementia. The participation of each individual in the FHS has contributed directly to the success of this research. To learn more about these brain research projects or to sign up to be a Framingham brain donor, please call Linda Farese at 508-935-3488 or 800-248-0409. ♥

FHS Participants in Motion! We know exercise is good for us. But how much activity is needed? How long should sessions be? And how often? Participants in the Third Generation and Omni Group 2 are helping us find answers to these and other questions by wearing a **physical activity monitor** for a week and returning it to FHS. The small monitor, as big as a wrist watch, is worn on a belt. It records activity measurements throughout the day. When the monitors are mailed back to FHS, the data is transferred to a computer and, along with many other FHS measurements, analyzed by a team of FHS researchers. Drs. Glazer, Vasan, Murabito and Lyass, and programmer Sue Blease already have seen some interesting patterns. According to the monitors, FHS participants engage in about 30 minutes of moderate to vigorous physical activity per day, on average (which is consistent with national guidelines). The researchers also observed that participants who engaged in moderate to vigorous physical activity on most days of the week had lower levels of traditional cardiovascular risk factors, such as blood pressure.

The monitors record a great deal of motion data that we at FHS need to condense into summary reports. When individual activity reports are ready, FHS will send a copy to you. Please help us complete the first phase of this research by taking home a monitor after your FHS exam and wearing it for a week. **BE SURE TO RETURN THE MONITOR, EVEN IF YOU DO NOT WEAR IT.** The monitors are used over and over throughout the years. Soon we will be offering the monitors to the Offspring and Omni Group 1 participants at their upcoming FHS exams. ♥

The year 2010 was a very productive year for Genetics and Genomics Research in the Framingham Heart Study.

Over 130 manuscripts were published reporting many exciting research findings from the Framingham Heart Study and collaborating scientists across the US and the rest of the world. Most of these discoveries resulted from participation of Framingham scientists in analysis of data from the SNP Health Association Resource (SHARe), by allowing precise mapping of thousands of DNA sequences in extremely fine detail. Numerous new genetic discoveries have been made for a wide variety of measures obtained from our participants during their examinations, including new genes discovered for levels of cholesterol, obesity, cigarette smoking, blood cell measures, heart rate, heart thickness measures by ultrasound, and lung disease measures. Several exciting new genome projects are now underway. Large parts of the sequence of DNA for hundreds of Framingham participants is being analyzed in 2011 in two large studies, the NHLBI Large-Scale DNA Sequencing Project and the U.S. Cohorts for Heart and Aging Research in Genomic Epidemiology (CHARGE) Consortium Sequencing Project, two projects funded by the US Recovery Act, to further uncover genetic causes of cardiovascular diseases, risk factors, lung and blood diseases and other important diseases. Also, in 2011, we will complete testing of a new high resolution genetic “chip” to conduct 2.5 million genetic tests in each of 2,500 Framingham Heart Study participants, thanks to a generous donation by the Illumina Corporation. As with the SHARe project, data from these projects is being made available to scientists in a manner that protects participant privacy and confidentiality. ♥

The FHS research team benefits greatly from advice from the FHS Ethics Advisory Board, (FHS EAB). The objective of this board is to serve as an advisory body to the Framingham Heart Study (FHS) Executive Committee regarding the ethical conduct of research. The Board consists of a representative and an alternate from each of the cohorts, a member of the local clergy, an expert in research ethics, two local physicians, a genetic counselor and two FHS participant coordinators. The Chair of the EAB is Dr. Lisa Lehmann, MD, PhD, from Brigham and Women's Hospital, a notable genetics ethicist.

The Framingham Heart Study (FHS) is one of the longest standing NIH-sponsored studies of risk factors for cardiovascular diseases. The success of the FHS rests upon the unique commitment of our participants.

Questions regarding the best way to conduct human research may arise during the planning and conduct of the study. Use of new technologies at the FHS, using data from biomarkers, subclinical imaging, and genetic testing leads to new questions about what results are meaningful to report. FHS researchers make decisions regarding how to conduct their research in conjunction with existing regulatory and monitoring bodies, such as the National Heart, Lung and Blood Institute, the Boston University Committee for Human Research, the FHS Observational Studies Monitoring Board, the FHS DNA Advisory Board, and the Ethics Advisory Board.

During the last year the Framingham Heart Study/NHLBI Ethics Advisory Board met three times to discuss issues of concern to the FHS Executive Committee, such as the following:

- FHS participation in new stimulus money, and recognition by President Obama
- Update on reporting of genetic results to participants
- Nomination and approval of Dr. Lisa Lehmann as new Chair of the EAB
- Update on research involving Induced Pluripotent Stem Cells (iPSC)
- Considerations on reporting individual FHS results from non-CLIA certified laboratories.
- Update on genetic research, DNA Sequencing Projects
- New exams and consent forms for Offspring Cohort Exam 9 and Omni Group 1 Exam 2
- Research proxy for participants ♥

In 1948 a group of highly cooperative and well-informed medical professionals, as well as a group of tireless and interested town people influenced the decision of the U.S. Public Health Service to locate the Framingham Heart Study in the town of Framingham. Together they formed the professional and executive committees. On the professional committee were Drs. Thomas J. Carnicelli, Edward J. DeNicola, John E. Dodd, Hugh Folsom, Herbert M. Levenson, J. Harry McCann, Halstead G. Murray, Maurice B. Strauss, and Mervin Weitz. On the Executive Committee were Walter F. Sullivan, Chair, Mrs. Frank W. Dunning, Dr. Stuart B. Foster, Victor Galvani, Mrs. Maxell Gordon, Andrew J. Halloran, Mrs. James E. MacPherson, Bernard A. Merriam, David Moxon, P. Raymond O'Brien, Keble B. Perine, William Pleshaw, William L. Ross, and Morey W. Seidman.

Mr. Walter F. Sullivan today is still a loyal participant of the Heart Study. Jane Klug, daughter of the late Mr. Keble B. Perine, came to the Heart Study for her regular clinic visit from Arizona in October. She just happened to be there the same day as Walter Sullivan. They were both so surprised and delighted to reconnect, as can be seen in the picture below, especially since Mr. Sullivan had also been Jane's English teacher. ♥



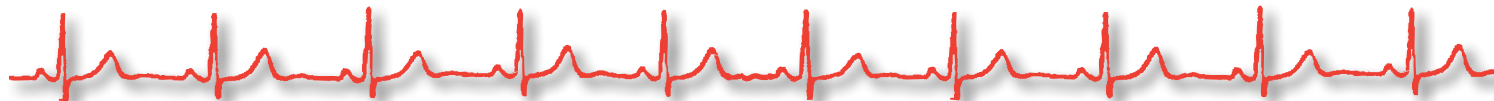
L to R: Walter Sullivan and Jane Klug

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The Framingham Heart Study website, www.framingham-heartstudy.org, is updated every month. We post details of contact information, examination content, consent forms, organization of the Study, major research findings, back issues of newsletters, our bibliography, lists of investigators and research fellows, and links to other resources. It has proven to be a tremendous tool for investigators throughout the world and a source of valuable information to our participants, as well as the public at large. If you have suggestions for new features, please send them to the editor, Esta Shindler, by phone, (508) 935-3434, by email, (eshindle@bu.edu) or by regular mail, (in care of Framingham Heart Study, 73 Mt. Wayte Ave, Framingham, MA 01702.) Our goal is to keep you, the Framingham Heart Study participants, well informed about our research activities. ♥

THANK YOU! THANK YOU! The participants of the Third Generation and of the Omni Group 2 are helping FHS complete the second examination cycle for these two cohorts. It is so important to our research to be able to track clinic measurements repeatedly over the years. Your continuous gifts of participation make FHS a reality.

**TO CONTACT FHS, USE THESE
LOCAL OR TOLL-FREE PHONE
NUMBERS OR EMAIL**

Receptionist: 508-872-6562 or 800-854-7582

Marian Bellwood: Original Cohort Coordinator and Recruitment Supervisor
508-935-3429 or 800-451-0260. bellwood@bu.edu

Maureen Valentino: Offspring, New Offspring Spouse and Third Generation Coordinator:
508-935-3417 or 800-536-4143. maureenv@bu.edu

Barbara Inglese: CT Project Coordinator
508-935-3451 or 800-601-3582. bjj@bu.edu

Paulina Drummond: Omni Coordinator:
508-935-3485 or 888-689-1682. omni@bu.edu

Linda Farese: Brain Donation Program Coordinator:
508-935-3488 or 800-248-0409. lfarese@bu.edu