Greetings, MURDOCK Study Participants! Welcome, summer time! While the pace of life often slows in the summer, the MURDOCK Study continues moving full speed ahead. We hope you enjoyed the Study Roundup in the spring newsletter, which highlighted studies currently underway. In this issue, we feature additional strategies identified as priorities for 2016.

Study Results: We are excited to share a synopsis of research results for different projects that are part of the MURDOCK Study on both a broad scale and in more specific detail. As a reminder, all share the common thread of utilizing valuable assets of the MURDOCK Study: engaging participants, analyzing samples and data, and utilizing the Duke-MURDOCK team to get a study up and running in Kannapolis. Visit www.murdock-study.org for more details about each study in our Research Roundup. We are thrilled to team up with you — our participants — to contribute to promoting research!

Project Blue: We’re rolling out a new phase of the MURDOCK Study called Project Blue, focused on the importance of annual follow-up and longitudinal research. The MURDOCK Study is a longitudinal study, which means we need to collect data after year after year so researchers can see how the health of participants changes over time. Longitudinal research is very helpful in determining patterns related to health and disease. More data from large groups — like the more than 12,000 MURDOCK Study participants — can provide rich information and insights for precision medicine and ultimately improve health outcomes for patients overall.

Project Blue is a new and exciting way to encourage our participants — YOU! — to follow-up. Starting the fall, Annual Follow-Up Forms will arrive in blue envelopes marked with the distinctive Project Blue logo. Watch for your blue envelope to arrive around the anniversary of your enrollment into the MURDOCK Study. Do you know someone who has been helped to understand their health better? Help encourage them to sign up for the MURDOCK Study! Project Blue is an easy way you can help us meet our goals for the study.

COPD: Read about our newest study, which will begin recruitment this summer. COPD is a chronic lung condition that makes it hard to breathe and can worsen over time. Cigarette smoking is the most common cause of COPD. Please stay tuned for more information about COPD. Here is the way to enroll!

Join us!
Don’t miss the Duke Dash 16 & Healthfest, the third annual MURDOCK Study Community Appreciation Event! If running isn’t for you, feel free to walk, cheer on fellow community members at the finish line, or sign up to volunteer! Stay for free Zumba, face painting, line dancing and more!
Where: Core Laboratory Building on the North Carolina Research Campus, 150 Research Campus Drive in Kannapolis
When: Register for the 5K (free) at www.murdock-study.com/dukedash5k or email murdock-study@duke.edu. The first 250 people will receive a free T-shirt! Want to volunteer or be a vendor? Contact Cammie Yarborough at cammie.yarborough@duke.edu or (704) 250-5861. The Duke Dash 5K is part of the Fun Kannapolis series and will take place rain or shine.

Congratulations, Dr. Califf!
MURDOCK Study founding father Robert Califf, MD, MACE, was confirmed as an overwhelming 89-4 vote of the U.S. Senate to lead one of the most influential health agencies in the world, the U.S. Food and Drug Administration. During Califf’s 35-year tenure as professor of cardiology at Duke, he served in many roles, including principal investigator for the MURDOCK Study.

Raffle Winners
Bob Martin
William “Bob” Martin of Concord fills out his MURDOCK Study Annual Follow-Up Form from the same way he exercises — with loyal dedication. Martin, 70, and his wife Billie were among the first people to sign up for the MURDOCK Study when Duke University launched the ambitious effort in 2009. Since then, the Martins have made sure to complete their Annual Follow-Up Form every year.

Rosa Castillo
Doing Zumba has paid off in more ways than one for Rosa Castillo of Charlotte. Castillo was participating in a Zumba at Charlotte Health Center when she learned about Duke University’s MURDOCK Study. She decided to enroll and continue to do the same. When she was picked, Castillo’s name was automatically entered in the Raffle of America.

Follow-Up Fact
FOLLOW-UP FACT
MURDOCK Study participants stayed out of the hospital in 2015 based on the Annual Follow-Up Forms received last year.

A newsletter for MURDOCK Study participants
Summer 2016

A note from your principal investigator
The MURDOCK Study heats up this summer
Sincerely yours,
**RESEARCH RUNDOWN**

**Multiple Sclerosis Study**

The Multiple Sclerosis Cohort has enrolled 9,000 participants with a goal of 10,000. Thanks to our participants, we are making exciting and important progress toward better predicting the onset and progression of MS.

- We have discovered a very promising signature for MS in the serum of participants not taking MS drugs, and now we are confirming the signature in a second group of participants.
- Our collaboration Dr. Matt Shihshah (Duke University) used study participant samples to develop a new model of how people who respond to the MS drug interferon beta differ from people who don’t.
- Our collaboration Dr. Dennis Ko (Duke University) has profiled differences in participant DNA sequence, gene expression, and protein levels as part of his studies on immune response to bacterial infection.
- We have uncovered an important new functional pathway implicated in MS development by determining the expression levels and DNA sequence variants of the gene IL7R and DDX39B in study participants.

**Memory and Cognitive Health Study**

Our Memory and Cognitive Health Study team has been collecting data from MURDOCK Study participants age 75 or older (1,158 are now enrolled) to help researchers understand how common health conditions, such as hypertension and diabetes, impact cognition.

Most recently, while the clinical team has been busy following up with 1,077 participants for their second in-person visit, we have begun to extend our study to analyze blood samples. Scientists are using metabolomics profiling to look for chemical signatures for cognitive disorders related to heart disease, as well as those associated with Alzheimer’s disease.

Another group of samples from the Memory and Cognitive Health cohort is undergoing “genotyping,” or determining a person’s genetic makeup, by looking at the DNA found in whole-blood. This will add significant information to this already valuable data set.

**Prostate Cancer Study**

The MURDOCK Study and Duke Cancer Institute (DCI) are collaborating on a study investigating racial disparities in prostate cancer. This study will use more than 600 MURDOCK Study samples, some from men who have prostate cancer and some from men who do not.

Our team members have been contacting MURDOCK Study participants to obtain specific medical record release forms and the response and enthusiasm from participants has been great.

Thank you!

Drew have obtained medical records and confirmed medical information, scientists will perform DNA and RNA sequencing on the samples. This research aims to identify patterns and frequency of novel-related splice variants that are shown to contribute to the aggressive biology of prostate cancer in African-American men.

This study has the potential to pave the way toward developing targeted approaches for prevention and treatment of the disease, which could help reduce prostate cancer disparities for African-Americans and improve outcomes for men of all races with aggressive disease.

**Type 2 Diabetes LIVE Study**

The Type 2 Diabetes LIVE Study has screened more than 400 people and enrolled 148, including 61 MURDOCK Study participants. Thank you! We will soon reach our enrollment goal of 150 participants. People from Cabarrus County, Kannapolis, Durham and New York have joined this study, which began in September 2014. We expect to complete the project and begin data analysis in early 2018. Participants contributed biological samples during the study, which are tested for cholesterol and blood sugar (RABLES).

We are studying a program called Learning In Virtual Environments or LIVE — a social network on the Internet set up to be a video game that allows people to talk with each other through avatars, or virtual representations of themselves. We want to find out if this “virtual environment” is ready to use, help patients learn more about managing their diabetes, and improves their blood sugar control.

**Healthy Aging Study**

The Healthy Aging Study is nearing completion of its goal of enrolling 1,000 study participants — only 80 to go! We examined the results of the first 760 participants with some interesting findings.

Participants in the study perform a series of daily physical tasks and wear a device that measures physical activity over seven days. We found that participants in the Healthy Aging Study performed slightly better than expected compared to other adults of similar age for most of the tests performed. In general, men scored better on the performance tests than women; this is expected. We also observed a gradual decline in test scores over each decade of age tested. The average number of steps walked each day among the 30-40 years olds was 6,775, compared to the 3,501 steps among those age 60 and above. In the next few months, we will examine the biological samples to learn more about the underlying biological contributions to health. We appreciate the commitment of our Healthy Aging Study participants and are eagerly awaiting results from the two-year follow-ups.

**MURDOCK Milestones**

Since 2009, the MURDOCK Study has enrolled more than 12,000 participants and collected nearly 500,000 biological samples. This new feature in your newsletter will highlight our progress or “programs.” Visit www.murdock-study.org to learn more, and stay tuned for more MURDOCK Milestones in future editions!

- The Multiple Sciences Study team has analyzed hundreds of samples to identify biomarkers or “fingerprint” that can better predict the onset and progression of MS.

- The Centenarian Study sequenced whole genomes of 19 participants at least 100 years old and found no variations in their genes that influence longevity.

- The UNC Nutrition Research Institute on the North Carolina Research Campus used 100 MURDOCK Study samples in the Male fertility Study to help understand whether a nutrient in foods like beets and spinach can improve sperm function in certain men.

**Long-Term What? Longitudinal research and why it matters**

In longitudinal research like the MURDOCK Study, scientists follow participants sequentially over a long period of time. This method of studying a community makes the MURDOCK Study a unique and powerful resource to investigators. Longitudinal research offers unusual benefits over other study models. The Annual Follow-Up Form provides a yearly update on the health of study participants, allowing researchers to determine patterns of disease development and progression that would be impossible to see with just the health snapshot taken during enrollment.

As an example, consider diabetes. By filling out the Annual Follow-Up Form each year and updating the MURDOCK Study on their health, medications, hospitalizations and other changes (or no changes at all), participants with diabetes or a family history of the disease gain researchers unique insights. People who have diabetes but did not require hospitalizations in the past year, or those who have a family history but no signs of the disease themselves, could give researchers clues about ways to help people with diabetes live healthier lives.

Because of the longitudinal design of the MURDOCK Study, every completed Annual Follow-Up Form becomes an invaluable part of the study, a crucial asset for researchers as they work toward developing better ways of treating and preventing a variety of diseases. Don’t forget to follow-up!

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**Project Blue celebrates your MURDOCK Study anniversary**

This year marks the anniversary of the date marking a notable event: “The Duke team has to agree with Webster — your enrollment in the MURDOCK Study is certainly a notable event!” Project Blue celebrates your decision to join one of the largest and most unique health research studies of its kind, with more than 12,000 participants.

Project Blue marks the anniversary of your enrollment and kicks off your annual follow-up period with the MURDOCK Study. Around your anniversary month, the team will contact you when it’s time to follow-up. Look for a blue envelope containing your Annual Follow-Up Form. These envelopes are convenient ways to complete your follow-up. You can mail your Annual Follow-Up Form each year for a chance to have your name listed in the Hall of Fame.

**MURDOCK Study**

Congratulations and thank you to the 15 newest members of the Follow-Up Hall of Fame! These MURDOCK Study participants were randomly chosen from among the 275 who marked five years of completing Annual Follow-Up Forms as of the previous quarter.

Be sure to fill out your Annual Follow-Up Form each year for a chance to have your name listed in the Hall of Fame.

- Barbara Daringburg
- Joyce玳ma
- Fuller Reese
- Luis Chai
- Stephen Lods
- Tammy Richardson
- Dorsey Ward
- Pranson Muldo
- Cathryn Winfield
- Kenneth Hartfield

**Reminder:** Starting this fall, look for your next Annual Follow-Up Form to arrive in a blue envelope around the anniversary of your enrollment in the MURDOCK Study!