learn more about the CCTR, please go to www.cctr.vcu.edu. actions help further the outcomes of this effort. If you'd like to they are involved in research affiliated with the Twin Registry, their prevention plans. MATK twins should be proud to know that when disorders in order to accelerate the development of treatment and tocus is to advance our understanding of health conditions and VCU has now joined a national group of research centers whose significant funding to promote research at VCU. It also means that Health "Clinical and Translational Science Award" which provides was the first Virginia university to receive a National Institutes of strong partnerships are just one of the reasons that in 2010, VCU VCU and encourages community involvement in research. These (CCTR) which promotes cross-disciplinary research throughout with VCU's Center for Clinical and Translational Research as a resource for researchers, the MATR is a collaborative partner unique resource to universities across the country. Due to its value As the largest twin registry in the United States, the MATR is a

## Vital part of VCU The MATR—A unique and

We look forward to hearing

receive your email we will ask stories please give us a call at 1matr@vcu.edu. Once we help submitting your photos and story in an email and send it to you have any questions or need

and stories! Do you know that website, in our newsletters and

your current contact information

Please make sure to include

community. We post photos and them with the MATK then we will be able to share from you! your photos and/or story and you for your permission to use 800-872-8946. digital photos or type your twin in the email that you send us. It email? Simply affach your and stories to the MAIR via you can submit your twin photos in other MATR publications. Please send us your photos stories of our twins on our

## uoissimans MATR Photo and Story

## Twin Matters

A Family Newsletter from the Mid-Atlantic Twin Registry



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# Iwin Matters

A Family Newsletter from the Mid-Atlantic Twin Registry

## A Message From The Director

Dear MATR Participants and Families,

Greetings from Richmond, Virginia home of the Mid-Atlantic Twin Registry (MATR)! We have quite a few interesting studies going on right now and several prospective studies on the horizon. We want to keep our twins up to date on the happenings here at the MATR and have included some study updates so you can see the difference your participation

information about this year's Multiples Family Day at Kings Dominion. We are expecting a big turnout this year, so we hope you will stop by and join your fellow multiples for a day of fun at the park! This day will be a great opportunity for discounted park tickets and a lunch for multiples and their families. There will be many activities for families to participate in, including twin contests and more! If you have any questions or would like more information about the event, feel www.matr.vcu.edu or give us a call at 1-800-URA-TWIN. We hope to see you there! As always, thank you for your continued support of our research!

Judy Silberg, PhD MATR Scientific Director

## Women's Health and the **Female Microbiome**

A team of over 40 researchers at Virginia Commonwealth University (VCU) is making progress on a study of how vaginal microbes affect women's health. This \$8 million project is part of the Human Microbiome Project (HMP), an initiative funded by the National Institutes of Health (NIH) to learn more about of DNA from microbes. That's the equivalent the microbial communities on the human body, collectively called the human microbiome. The team at VCU is led by Dr. Gregory Buck, Dr. Lindon Eaves, Dr. Jerome F. Strauss and Dr. Cynthia Cornelissen.

The human body is covered with microorganisms, in fact, there are approximately ten times more microorganisms living in and on the human body than there are human cells. While some bacteria, fungi, and other microorganisms cause human disease, others contribute to health. For example, a group of bacteria called lactobacilli has long been known to play a role in vaginal health. These bacteria are related to the type of bacteria found in yogurt. Lactobacilli help to maintain a healthy acidic environment, and they help prevent the growth of other less healthy organisms.

The research team at VCU is investigating how communities of microbes are associated with various infections and conditions that affect women's health. The researchers examine the DNA sequences (genetic instructions) of the microbes to determine what types of bacteria are present in any given sample provided by the study participants. This approach allows them to survey the entire community of bacteria at once, and it also allows them to study

microbes that they cannot grow in the laboratory. The microbe's DNA contains its genetic instructions, and is made up of four chemical units called bases, represented by the letters A. C. G and T. So far, the research team has sequenced, or read, over 20 billion bases of reading Shakespeare's entire body of work over 4,000 times. Such immense data collection could not have been performed five years ago, but technological advances based on genome sequencing as well as support from the NIH have made it possible to collect this wealth of information.

This study is leading to new insights about how vaginal microbes affect women's health. To determine to what extent our microbial communities are influenced by our environment and our human genes, the study team is recruiting female identical and fraternal twin pairs ages 18 and older into the study. So far, 204 twins have participated in the study. The study will continue through the fall of 2013, and participant enrollment is ongoing. The researchers would like to thank all of the twins who have generously contributed to this research study!

### **SAVE THE DATE**

Saturday, June 18, 2011

for **Multiples** Family Day



## **Microbiome Study**

#### FEMALE TWINS NEEDED FOR STUDY OF WOMEN'S REPRODUCTIVE HEALTH

The MATR is conducting a new study on women's reproductive health with Dr. Gregory Buck at VCU. We are currently looking for pairs of female twins ages 18 and older that would be willing to travel to Richmond, Virginia to participate. You will be reimbursed for your time and travel. Dr. Buck hopes this study will lead to improved treatment and healthcare for women. If you are interested, please contact the MATR for more information at 1-800-URA-TWIN (1-800-872-8946).

#### In This Issue:

- Multiple's Day 2011
- Women and the **Female Microbiome**
- Rheumatoid Arthritis Study
- New MATR Survey
- Genetics of Twining

**GIA9** U.S. Postage Organization Nonprofit

## **New Mid-Atlantic Twin Registry Survey!**

#### What is it?

The MATR is preparing to launch a new survey which will enrich our Registry as a potential resource for researchers. This survey will ask questions about your health habits, health conditions and demographic characteristics. It will also ask questions about your personality as well as your social and political attitudes.

#### How is this different from other MATR surveys?

For the first time we will be offering the option of taking this survey online! The survey and data will be housed on a secure server and you only need internet access to complete the survey.

#### How do I get involved?

To participate, you need to be a registered, adult twin (over 18) or other multiple in our Registry (if you're not yet registered but want to participate, feel free to contact us to register!). You can let us know you're interested in participating in the survey by sending us an email or calling us at 1-800-URA-TWIN and leaving a message for us on our voicemail. Feel free to let us know if you have any questions. Remember, as with all MATR related activities, participation is voluntary and you can withdraw at any time. Plus, you do not have to answer any question that you're not comfortable answering!

#### How will my participation help?

Though you may not benefit directly from taking part, your participation will hopefully result in improving our understanding of certain health conditions and behaviors. We hope that with this improved understanding the scientific community will be better equipped to develop enhanced prevention methods and treatment plans.

## National Institute of Child Health & Human Development Study (NICHD)

The researchers for the NICHD Development & Aging study have been excited about their preliminary results. Currently, they are no longer collecting samples. If you've been part of this study, but still have not completed your sample collection, we will likely contact you regarding your study status and with information about how to return your kit to us. Thank you to all that participated in this exciting research!

## Details for Multiples Family Day at Kings Dominion

Don't miss out on the fun! Join us at Family Day!

Together with Kings Dominion, the June 18th! MATR is happy to offer discounted park discounted picnic lunch, and many photos be at the Eiffel Tower from  $10 \, \text{AM} - 8 \, \text{PM}$ to meet you and answer any questions you may have about the MATR. Visit our discounted park and picnic tickets for this

The MATR is grateful to have this Kings Dominion on Saturday, June 18, opportunity to show our appreciation for have the pleasure of sponsoring Multiples Twin Registry. We look forward to seeing you and your family in the park on



## **Rheumatoid Arthritis Study Begins**

This past fall, the MATR partnered with Dr. Jose Scher and other researchers from New York University's Hospital for Joint Disease to begin an ongoing study about rheumatoid arthritis (RA). Rheumatoid arthritis is a very painful health condition but unfortunately little is known about its causes. In order to learn more, the MATR conducted interviews with over 200 twins to determine how many of them suffer from RA. Since the researchers are now ready to launch the next step of their study on RA, the MATR will soon begin contacting pairs of identical twins where at least one of the twins has RA. You may be contacted by us about the new phase of the 'Rheumatoid Arthritis Study.' If you think you might be interested in participating in this study, please be sure to check out the advertisement in this Newsletter. Also, you may want to keep an eye on our web site, www.matr.vcu.edu, as well as future MATR newsletters for updates. Thank you to all the twins who have already participated in the screener!

## **Identical Twin Study Rheumatoid Arthritis!**

The MATR is collaborating with Dr. Jose Scher and his colleagues at New York University's Hospital for Joint Disease to study the causes of rheumatoid arthritis (RA). Dr. Scher is conducting this study to learn more about what causes RA and what determines its severity. To do so, he is inviting identical twin pairs ages 18 and older where at least one member of the pair is affected by RA to take part in his study. This study will not provide any sort of treatment, but hopes to collect important data that improve scientists' understanding of rheumatoid arthritis. We hope that with this improved understanding the scientific community will be better equipped to develop ways to treat or perhaps one day prevent rheumatoid arthritis.

If you are interested in taking part in this important research, please call the MATR at 1-800-URA-TWIN (800-872-8946) and leave a message or email us at matr@vcu.edu.

## The Genetics of **Twinning**

Many twins and parents of twins are often curious about whether or not having twins runs in families. There are multiple factors that can that play a role in twinning. For example, the older a woman is, the more likely she is to have twins. And while there are still many unanswered questions regarding the genetics of twinning, there is a known genetic and family history reason for twinning: hyper-ovulation. As you are probably aware, ovulation plays a large role in a woman's reproductive cycle and is the stage at which an egg is released and becomes available for fertilization. During normal ovulation, a single egg is released. However, during hyper-ovulation, multiple eggs are released. Having multiple eggs available for fertilization greatly increases the chance of conceiving fraternal twins. In families where the women carry the gene for hyper-ovulation, genetics would explain an increased chance for fraternal twins.

Because ovulation is specific only to the female reproductive cycle, hyper-ovulation is only expressed in women. This means that while some men may carry the gene for hyper-ovulation, a family history of twins doesn't make them more likely to have twins themselves. However these men can pass this trait on to their daughters through their genes, so that their daughters may be more likely to hyper-ovulate.

This is frequently why is seems as if twinning "skips" a generation. For instance, if someone's grandparents had fraternal twin sons due to hyperovulation, and those sons had singleton (non-twin) daughters that possibly inherited the hyper-ovulation gene, then those daughters would be more likely to have twins. You might be wondering, what about identical twins? It seems as though identical twins are essentially a 'fluke of nature.' Though research has been done to learn more about the genetics of identical twinning, currently there is little to suggest that having identical twins is anything more than a random event. Identical twins occur when a fertilized egg splits and develops into multiple embryos. However, having identical twins in your family does not make you more likely to have twins yourself, or for your children to have twins. If you happen to have multiple sets of identical twins in your family, consider it a rarity!



## **Chromosomes might be impacted by** stressful life events in childhood

progress identifying chromosomal changes that occur in individuals as they age. Most recently, the study has been investigating the chromosomal to stressful events in childhood. Little cumulative effects of childhood stress on individuals when they reach adulthood.

One approach for learning about the long term effects of childhood stress on adults is to study identical twins that differ for their exposure to a childhood researchers have found that those twins who endured stressful life events in certain types of chromosomal abnormalities than those that did not.

The researchers have also examined the telomere lengths of the chromosomes in this group of twins. Telomeres are repetitive sequences at the ends of chromosomes that do not code for genes (see Figure 1). Their function is to help

prevent chromosomes from fraying and to help protect the chromosomes. The telomere lengths of females with the

most extreme form of childhood stress were shorter than their co-twins who were not exposed to this extreme childhood stress. Interestingly, this was

Researchers in the Department of not the case for twins who reported less Pathology at VCU continue to make stressful forms of childhood adverse events as they did not have significantly shorter telomeres when compared to their identical co-twins.

In summary, this research has led changes that may result from exposure to new insights about the frequency and types of chromosomal changes that is known about the long-term, occur in the cells of adults who were exposed to stressful events in childhood. Given that many chronic, age-related diseases have a stressrelated basis; this study could provide a foundation for the development of a biomarker (biological indicator) for stress event(s). By doing this, the stress, which could play an important role in preventative medicine.

The researchers want to thank all childhood had greater frequencies of of the twins who have generously contributed to this research study!



Figure 1: Telomeres of each chromosome arm are shown as small green "dots" located at the tips of the chromosomes (long blue structures). Differences in the intensity of the green signals are quantified (using computerized imaging systems) and compared between co-twins to determine if there are differences in their

## Type 1 Diabetes and Diabetic Kidney **Complications in Identical Twins**

The MATR is working with researchers at the University of Minnesota on a study investigating kidney disease complications (diabetic nephropathy) frequently associated with type 1 diabetes. According to the National Kidney Foundation<sup>(1)</sup>, roughly one out of every three, about 30%, of the individuals that suffer from long-term type 1 diabetes will go on to develop kidney disease. With the hopes of developing better treatment and prevention plans, the University of Minnesota researchers will not only investigate the cellular and genetic differences between those that do and do not develop type 1 diabetes, but they will also study the differences between those that do and do not develop the kidney disease that is associated with type 1 diabetes. Since identical twin pairs are needed for this study, they have partnered with the MATR to help reach their study goals. If you or your twin indicated on one of our health surveys that you have diabetes, you may receive an invitation to participate in this study in the next few months. The MATR is excited to help with such an important project and we hope our twins will be too! (1) http://www.kidney.org/atoz/content/diabetes.cfm