

WELCOME

Welcome to the 12th edition of the Vietnam-Era Twin (VET) Registry newsletter, the *Twin Times*. In this issue you will find information about current and upcoming VET Registry studies as well as the latest news in twin research. Your continued participation in the VET Registry helps researchers make scientific advances to better inform the health care of Veterans like you.

We hope you enjoy this edition of the annual newsletter. Thank you for your participation in the VET Registry!

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VET Registry Researcher Spotlight: Yan V. Sun

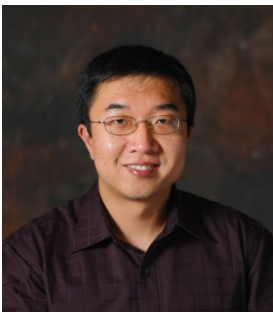


Image credit: Yan V Sun

Yan V. Sun, PhD, MS, is a genomic epidemiologist. Dr. Sun earned his doctoral degree in Biochemistry and Molecular Biology. He is an Associate Professor of Epidemiology and Biomedical Informatics at Emory University Rollins School of Public Health in Atlanta, Georgia.

Dr. Sun and the other VET Registry investigators are thankful for your involvement in the VET Registry. Your participation helps them make important contributions to science.

Dr. Sun is collaborating with other researchers at Emory University on the Emory Twin Study Follow-up (ETSF)—a VET Registry study in which some of you may be participating. The goal of this study is to increase understanding of changes in the heart and blood vessels that may occur due to stress. Dr. Sun's other research investigates health measures of heart disease across different ethnic groups, which can help us understand the causes of heart disease and improve preventive care and treatment.

Dr. Sun works primarily in epigenomic analyses, focusing on DNA changes. One of his studies investigates the complex biological responses to cigarette smoking and other environmental stressors using a joint metabolomic and epigenomic approach among twins.

Key Terms

The human genome: the complete set of DNA that makes up a unique individual. The **epigenome** comprises all the chemical compounds within the genome that regulate gene activity by switching genes "on" or "off" (gene expression).

Epigenetic changes: modifications to DNA that do not alter the DNA sequence, but affect gene expression, which impacts how cells use the DNA's instructions to build proteins and carry out functions. These modifications occur in response to lifestyle and environmental factors, such as smoking, diet, and exposure to diseases.

DNA methylation: a common type of epigenetic modification where small molecules called **methyl groups**, each consisting of one carbon atom and three hydrogen atoms, attach to segments of DNA. When methyl groups are added to a gene, that gene is switched "off" or silenced, and the gene no longer produces a protein.

References:

<https://ghr.nlm.nih.gov/primer/howgeneswork/epigenome>
<https://www.genome.gov/27532724/>

VA Brain Bank

The Seattle ERIC is planning to collaborate with the National Posttraumatic Stress Disorder Brain Bank (PTSD Brain Bank), which is part of the VA Biorepository Brain Bank (VABBB). A brain bank collects, processes, stores, and shares research specimens from donors for scientific studies. Donations are made after a person's passing with the permission of the donor and their family. Brain banks are essential resources for research on brain disorders, including identifying risk factors for diseases such as amyotrophic lateral sclerosis (ALS or Lou Gehrig's disease).

The PTSD Brain Bank is directed by Dr. Matthew Friedman from the VA National Center for PTSD's Executive Division in White River Junction, Vermont. The PTSD Brain Bank is enrolling both Veterans and non-Veterans with PTSD. The

VABBB, which is led by Neil Kowall, MD at the VA Boston Healthcare System, also oversees and operates two other brain banks: one focusing on ALS, and one on illnesses related to service during the 1990-91 Gulf War. The ALS and Gulf War Brain Banks only enroll Veterans. Any Veteran living in the US may enroll in the VABBB. Participants are asked to complete questionnaires about their health every 6-12 months and to donate their brain after their death.

The Seattle ERIC may send you an invitation to participate in the next few months. If you have questions, call 1-800-329-8387, ext. 61964 to talk to a VET Registry staff member.

Biospecimen Collection

The VET Registry biorepository is attempting to collect saliva samples from all VET Registry members - a huge endeavor! Our biospecimen repository—or biorepository—holds plasma, serum, and DNA extracted from blood and saliva samples provided by VET Registry members over the years. VET Registry investigators use data collected from measuring and analyzing the biospecimens to help answer health-related questions about Veterans.

We began shipping saliva collection kits to members in May 2017, and will continue mailing the kits over the next several years. The saliva and DNA will be used in future VET Registry research studies.

If you would like more information, or haven't received a kit and would like to participate now, call 1-800-329-8387, ext. 61964 to speak to a VET Registry staff member.

Survey of the VET Registry

The Seattle ERIC is planning to conduct a Registry-wide survey of health in 2019 as a follow-up to a registry-wide study conducted in 2011-2012, the Veteran Health Study. Every twin member in the VET Registry will be mailed an invitation to participate. The survey should take about 30-45 minutes to complete, and you will receive monetary compensation for your time.

The purpose of the survey is to better understand the longitudinal course of PTSD and its consequences into late life. In addition to questions about changes in your physical and mental health, the survey will include 9 questions on the

topic of moral injury. Like psychological trauma, moral injury describes extreme and unprecedented life experiences that may damage one's moral or ethical beliefs and values (1). While the concept behind moral injury is not new, more research is needed to further assess the concept and explore its potential health effects. For more information regarding moral injury, please visit (2).

1. https://www.ptsd.va.gov/professional/occurring/moral_injury_at_war.asp
2. <https://www.ptsd.va.gov/professional/newsletters/research-quarterly/v23n1.pdf>

While not part of the VET Registry, the National Aeronautics and Space Administration's (NASA) Twin Study has captured our attention. The study follows twin brothers Scott and Mark Kelly and is blazing new trails in human subjects research. This is the first study to integrate space research with omics—research on many different biomolecular levels—and it will contribute to the storehouse of knowledge for future space missions.

Scott spent almost a year in the International Space Station. Mark, a retired NASA astronaut, served as the control subject back on Earth. Scott and Mark both provided biological samples before, during, and after Scott's time in space, including blood, urine, saliva, and other bodily fluids. These samples are currently used in multiple studies to research human physiology, behavioral health, and microbiology, among others. Researchers are investigating how space flight might influence or modify organs like the heart and muscles, as well as the brain and one's perceptions and decision-making abilities. On the molecular level, researchers are exploring how the spaceflight environment—including radiation exposure and microgravity—affects the way cells function.

Findings from the NASA Twin Study shed light on how the body and brain react to extended time in space, holding implications for future space exploration such as long-duration trips to Mars. For those of us not planning on making that trip, however, the research is still important! The NASA Twin Study uses omics technologies to explore individual health, contributing to the field of precision medicine which constitutes personalized/individualized medicine. Precision medicine allows doctors to provide treatment based on an individual's unique genetics, body, and health, rather than on what is known to work for the overall population.

Reference: <https://www.nasa.gov/twins-study>



Image credit: NASA

Maintaining Contact

One of the ways we maintain the VET Registry resource is by updating our database with the latest and most accurate contact information on Registry members like you. With the correct contact information, we can mail you invitations to participate in research studies and send you updates like those described in this newsletter. To help us locate Registry members, we may reach out to family members, who are also members of the Registry, or use information from public databases. If we have an unreliable address, the U.S. Post Office may forward to us the next best address according to their records. We may also contract with a professional service to locate you by searching for a best match in public records.

If you recently had a change of address or phone number, please update and return the Contact Update Form on the back of this newsletter.

Thank you for your continued participation!

Did you Know?

March 29th is nationally observed as Vietnam War Veterans Day. The Seattle ERIC would like to thank you for your service.

NOT INTERESTED? You may decide to withdraw your membership in the Registry now or at any time in the future. To opt-out, contact us toll free at 1-800-329-8387 ext. 61964.

Seattle ERIC | S-152-E

Vietnam Era Twin Registry

VA Puget Sound Health Care System

1660 South Columbian Way

Seattle, WA 98108

**ADDRESS SERVICE REQUESTED**

CONTACT UPDATE FORM: *Please update your information*

TITLE _____ FIRST NAME _____ MI ____ LAST NAME _____

I'm a (*check one*): VET-R Twin Offspring of a VET-R Twin Mother of VET-R Offspring

Address 1: _____ City: _____ State: _____

Zip: _____ - _____ Country: _____

Address 2: _____ City: _____ State: _____

Zip: _____ - _____ Country: _____

Home Phone: _____ - _____ - _____ Cell Phone: _____ - _____ - _____

Work Phone: _____ - _____ - _____ Other Phone: _____ - _____ - _____ Type: _____

Email 1: _____ Email 2: _____

MAIL TO

Seattle ERIC | S-152-E
 Vietnam-Era Twin Registry
 VA Puget Sound Health Care System
 1660 S Columbian Way
 Seattle, WA 98108

CALL

Toll-free:
 1-800-329-8387 ext. 61964