Twin Times

Cover Story

The Vietnam Era Twin Registry would like to thank all our twins for their ongoing support and willingness to participate in all of our research studies.

The VET Registry has a new home. We are located in Seattle, Washington in the Seattle Epidemiologic Research and Information Center (ERIC) at VA Puget Sound Health Care System.

Edward Boyko, MD, MPH serves as Director of the VET Registry and the Seattle ERIC. The Seattle ERIC is a VA-funded center devoted to the development of research on health problems that are relevant to veterans. Dr. Boyko oversees all aspects of the VET Registry as its new Director. He is a board-certified general internal medicine physician who has spent the last 14 years providing clinical care to veterans. He is also an investigator who is trained in clinical and epidemiological research methods. His particular areas of interest are the causes of type 2 diabetes mellitus and its complications. He has worked with many other investigators on a variety of chronic and acute conditions including urinary tract infection, chronic bowel disease, hypertension, and obesity. Dr. Boyko is very familiar with research issues related to conducting studies among veterans from his own experience as a VA investigator and clinician. Dr. Boyko brings to the VET Registry an extensive knowledge of epidemiologic research, familiarity with VA clinical systems and awareness of the clinical concerns of veterans and VA administration.

Birute Curran, BSc, MPH is the new project manager and has been involved in the design and implementation of health management data systems. She has redesigned the data management system for the Registry and is continually developing methods to better accommodate the needs of the VET Registry participants and investigators.

The Seattle ERIC is a joint program of the VA Puget Sound Health Care System and the Department of Epidemiology at the University of Washington. The Seattle ERIC conducts collaborative research projects addressing the frequency and causes of health conditions and their outcomes in the veteran population. ERIC supported research includes descriptive epidemiology, studies of disease causation, and clinical epidemiologic studies of disease outcome. Its research portfolio emphasizes topics relevant to veterans health, including: aging, arteriosclerosis, cancer, central nervous system injuries, degenerative joint and bone diseases, dementia, diabetes, psychoses, substance abuse, prevention, special populations, service-related diseases and trauma. The center's overall mission is to improve the health and health care of veterans.

We say good-bye to Dr. Henderson and Mary Ellen Vitek and wish them the best!

With the move to Seattle the VET Registry has had to say farewell to its founder and Director, William Henderson and to its first Registry Coordinator, Ms. Mary Ellen Vitek. Both Dr. Henderson and Ms. Vitek were with the VET Registry since 1988.

Dr. Henderson was instrumental in the creation of the Registry and spearheaded the effort to obtain funding from the VA for its long-term support. Ms. Vitek was involved in numerous research studies and has had the pleasure of personally speaking to many of the VET Registry members. Both Dr. Henderson and Mary Ellen have asked us to extend their thanks and best wishes to the Registry members.

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News for Participants in the Vietnam Era Twin Registry
Volume 3, 2003

Did You Know...

In the 1940s, the widespread availability of penicillin and subsequent discovery of streptomycin led to a dramatic reduction in illness and death from infectious diseases. Unfortunately, the emergence of drug resistance in bacteria, parasites, viruses and fungi is swiftly reversing the progress prompted by the many miracle drugs developed over the last 50 years.

As long as antimicrobial drugs are used, drug resistance will remain a challenge.

The Centers for Disease Control and Prevention (CDC) envision a world in which antimicrobial resistance is a routine and manageable problem that does not compromise the availability of safe and effective drugs to treat infectious disease.

The CDC has recently released a plan, *Preventing Emerging Infectious Disease: A Strategy for the 21st Century*, which describes steps that we can take to move toward the realization of CDC's vision of a world in which all people join in a common effort to address today's emerging infectious diseases and prevent those of tomorrow.

For more information their website is: http://www.cdc.gov or write to:
Centers for Disease Control and Prevention
1600 Clifton Rd.
Atlanta, GA 30333
U.S.A.

STUDIES

Recently Completed Study:

Forgiveness and Spirituality in Coping with Combat Trauma

Principal Investigator –
Dr. Ming Tsuang,
Harvard University

This study examines attitudes towards forgiveness and spirituality to help veterans cope and adapt in response to combat trauma. Over 200 pairs of twins were mailed a self-administered questionnaire during 2002.

Thanks to all of you that participated in this study.

Current Ongoing Studies:

Pathological Gambling: Courses Consequences and Causes

Principal Investigator –
Dr. Seth Eisen,
Washington University

This groundbreaking research in pathological gambling involves 1200 twin pairs that will be interviewed by telephone about their gambling experiences.

Results from this study will estimate the prevalence of gambling subtypes which will prove useful for assessing risk and identifying treatment options. In addition, this study provides possible direction for future research on the developmental progression of pathological gambling disorder.

Interviewing for this study began in March of 2002 and will be completed by the end of 2003.

Vietnam Era Twins as Parents Study (TAP)

Principal Investigator -
Dr. Kathleen Bucholz,
Washington Univeristy

This study attempts to clarify the role of genetic and family environmental influences in the development of substance use and dependence associated with psychopathology and psychosocial functioning. This study includes spouses and children of 500 twin pairs as well as the twins themselves.

Some of the twins may have already been involved in our previous family study, and we would encourage you to participate in this study as well as your family members.

Interviewing for this study began in April 2003 and will continue for the next 2 years.

Mechanisms Linking Depression to Cardiovascular Disease

Principal Investigator -
Dr. Viola Vaccarino,
Emory University

The study includes 160 twin pairs and involves participants traveling to Atlanta and undergoing testing for early indications of cardiovascular disease. The study consists of an in-depth clinical evaluation of the cardiovascular system and involves a clinical interview and physical exam, laboratory testing, ambulatory electrocardiogram (Holter) monitoring, Positron Emission Tomography (PET) imaging of the heart, and ultrasound examination of the blood vessels in the neck and arm. The tests do not include an invasive procedure and most twins find them interesting.

As a special note for those who have already participated in this study, the coordinator, Susan Segrest unexpectantly passed away in May of this year. Her upbeat manner and enthusiasm, especially when working with the twins, is missed by all of us who had the good fortune to work with her.

Recruitment began in January 2002 and will be completed by the end of 2004.

A Longitudinal Twin Study of Cognition and Personality (VETSA)

Principal Investigators –
Dr. William Kremen,
University of California and
Dr. Michael J. Lyons,
Boston University

This study, known as the Vietnam Era Twin Study of Aging (VETSA), is a five-year project to assess 720 twin pairs in order to understand how cognitive, personality, psychosocial, health and medical factors interact to affect the aging process.

The VETSA study is a joint effort between Dr. Kremen and Dr. Lyons, giving twins a choice between the east and west coast at which to have their clinical examination. Participating twins are also encouraged to base their decision for participation not only at this time, but also the need for planned follow-up every 5 years.

(continued)

The participants will be divided into two age groups – 360 pairs who are 51 years old and 360 pairs who are 56 years old. By comparing monozygotic and dizygotic twins, researchers can determine how much a particular trait or behavior is determined by genetic influences, or unique environmental influences. By analyzing DNA from blood samples obtained from the twins, researchers will also search for specific gene markers associated with aging.

According to Dr. Kremen "this project will help us understand the dynamic interplay of biological and psychosocial environmental factors that create age-associated changes in health, cognition and personality. We'll be looking at factors such as how differences in diet and exercise and styles of coping with stress may influence blood pressure at midlife. Longer term this lets us examine how high blood pressure and its increased risk for stroke and other brain abnormalities may, in turn, affect memory later in life. By studying twins, we'll be able to examine both the relationships among those processes and the extent to which genetic and environmental influences play a role."

Having this project begin in midlife is a unique feature of this study. By studying adult aging early in midlife, investigators can assess individuals who are still in the 'prime of life' at baseline, yet are relatively close to the time when age-associated changes are likely to become more prominent.

Twin recruitment started in March of 2003 and is expected to continue for the next two years. It is estimated that clinical examinations will be completed in 2006.

VETSA Longitudinal MRI Twin Study of Aging

Principal Investigator –
Dr. William Kremen,
University of California

The VETSA study (explained above) will now include Magnetic Resonance Imaging (MRI) of the brain. The VETSA study emphasizes cognitive function and aging and adding an MRI component provides a direct measurement of the brain. Twins who are participating in the VETSA study will have the option of remaining at the study site for an additional day to receive this test.

Biological Markers for Post-Traumatic Stress Disorder

Principal Investigator –
Dr. Roger K. Pitman,
Harvard Medical School and
Massachusetts General Hospital

This study involves the reexamination of 80 twin pairs from a previous study by Dr. Pitman. This study aims to determine whether combat experience for PTSD is either a precursor or consequence of the condition. Combat experiences can be related to heightened emotionality that is theorized as a core mechanism of sustained posttraumatic dysregulation. This work will advance our understanding of the causes of maladjustment following exposure to traumatic stress.

Twin recruitment started in March of 2003 and all examinations will be concluded by 2005.

Memory and Hippocampus in Vietnam Veteran Twins with PTSD

Principal Investigator –
Dr. Douglas Bremner,
Emory University

This study examines the roles that the environment and genes play in PTSD. There will be 40 twin pairs involved in this study with different combat experiences, including no combat. The examination will consist of an in-depth clinical evaluation involving interviews, paper and pencil questionnaires, tests of memory, laboratory testing and Magnetic Resonance Imaging (MRI) of the brain. Twins will be traveling to Atlanta for these tests.

Twin recruitment began in September 2003 and all examinations will be completed by 2005.

Twin Family Study of Alcoholism Etiology: Wave 2

Principal Investigators –
Dr. Ted Jacob,
VA Palo Alto Health Care System and
Dr. William True, St. Louis University

This study examines how family influences and individual experiences lead to similarities and differences between parents and their children and how these experiences influence health and development. The study began in 1999 and participation involved answering telephone survey questions having to do with family lifestyle, school, work and health behaviors such as smoking, drinking, and use of other drugs. Mothers and children who participated in this study were also asked to complete questionnaires.

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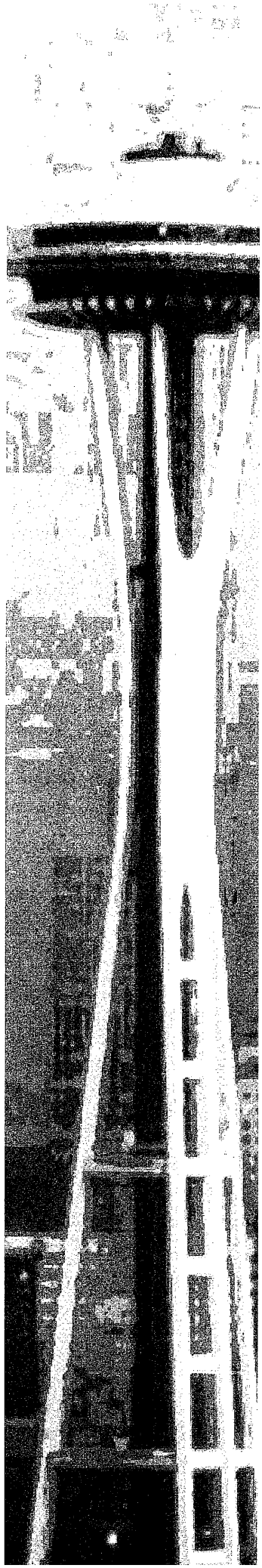

Who's Who at the VET Registry

Scientific Advisory Committee

Emil Coccaro, M.D.
Professor of Psychiatry, *College of Medicine, University of Chicago*

Theodore Colton, Sc.D.
Professor of Biostatistics, *Boston University School of Public Health*

Janice Dorman, Ph.D. Associate Professor of Epidemiology, *University of Pittsburgh, School of Public Health, Epidemiology and Human Genetics*

Walter E. Nance, M.D., Ph.D
Professor of Human Genetics, *Medical College of Virginia*

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Registry Staff

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Registry Director and Director, *Seattle Epidemiologic Research and Information Center, Seattle, WA*

Jack Goldberg, Ph.D. Registry Staff Epidemiologist, *University of Washington, School of Public Health*

Birute Curran, BSc., MPH
Program Manager

One egg or two . . . are you IDENTICAL?

"Are you identical?" is probably the most common question asked of twins. Twins from a male/female pair obviously have a definite answer, but twin pairs of the same sex cannot always respond with confidence. Zygosity refers to the number of fertilized eggs that produced the twin pair. Identical or monozygotic (MZ) twins are the result of a single embryo (created from one egg and one sperm) splitting at some stage in the first 14 days after conception and developing into two separate individuals with identical genes.

Non-identical or dizygotic (DZ) twins occur when two eggs are released at ovulation and are fertilized by two different sperm. DZ twins share the same amount of genes as ordinary siblings (50% on average). MZ twins share 100% of their genes and can be expected to be more consistently alike in traits that are influenced by genes.

Researchers learn about the effect genes and environment has on the individual by comparing sets of MZ and DZ twins. This makes the correct assessment of zygosity critical for their work.

An accurate and relatively inexpensive method for assessing zygosity is highly desirable. The most advanced and accurate method is DNA testing, but it isn't cheap. Other common methods of assessing zygosity are less expensive but aren't as reliable.

The simplest method has been to ask twins whether people can easily tell them apart. The trouble is that many factors, including the womb environment and birth circumstances - not to mention lifestyle choices (sun exposure, diet, and smoking!) - can produce distinguishing characteristics that make "identical" twins look very different. And DZ twins, like non-twin siblings, may share a strong family resemblance and look very much alike.

Counting the number of placentas at birth is another common but problematic method of assessing zygosity. MZ pairs usually, but not always, share one placenta, while DZ pair will always have two. The problem is that the correct number is not always easy to determine at birth. The placentas of a DZ pair can fuse together, appearing to be one, while there can be what looks like two placentas at the birth of MZ twins if the embryo splits in the earliest stages of development.

A third common method, blood group testing, also has limited usefulness. Different blood groups within the pair means the twins are definitely not MZ. Identical blood groups, however, mean little, as a high proportion of DZ twins, like non-twin siblings, will have inherited the same blood groups from their parents.

In comparison, the accuracy of DNA testing makes it the most desirable method despite the cost. When there are no differences found in the genes being compared for a zygosity test, the chances are less than 1 in 100 that the twins are DZ (in other words, the twins are 99% certain to be MZ).

DNA testing has shown that parents and twins themselves are not necessarily correct in their assessments of zygosity, particularly in relation to MZ twins.

Nevertheless, research has found that, in the absence of DNA testing, a good way to assess zygosity is to ask the twins the following questions:

Do you have the same eye color?
Do you have similar height, weight, and natural hair color and texture?
Were you usually mistaken for one another by *non-family* members as children?

If the answer is "yes", the pair is almost certainly MZ.

The VET Registry has determined through self-administered questionnaires that 46% of the registry twins are MZ (identical) and 54% are DZ (non-identical). When only looking at same sex pairs, the expectation is 50% MZ and 50% DZ, so we are close to the expected given that only males are included in the VET Registry.

STUDIES

(continued from page 3)

The 900 children who had originally participated in this study are now being invited for a second telephone interview. These interviews began in April 2003 and will continue for a year.

The VETR thanks everyone who originally participated in this study and we hope that you will encourage your family members to continue to participate.

DNA Repository

Several years ago the Vietnam Era Twin Registry Scientific Advisory Committee recommended as a new initiative the collection and maintenance of DNA samples from Registry twin pairs. The VET Registry has now moved forward and established the repository that over time will enhance the information collected from twins to the medical research community.

The Registry now requires all clinical studies to incorporate the collection of DNA from study participants. Twins who are now involved in clinical studies are being invited to participate in the DNA repository.

Before a twin decides whether to participate in the DNA repository, the procedures, confidentiality safeguards, and potential risks are explained in great detail. To be able to accommodate the wishes of the highest number of twins, a so-called layered consent process is used which allow twins to choose from several options with regard to how their DNA is used in current or future research studies. Such options include: 1) not having their samples used for any testing beyond the immediate goals of the study; 2) allowing for future testing of their samples restricted to the study for which they provided the sample; or 3) allowing unrestricted future research use of their samples. In any of these cases, twins are informed that any future use of their samples would have to be approved by the VET Registry plus an outside Human Subject Committee. Confidentiality safeguards include code number identifiers, and withholding of personal information from investigators who use these data. Only VET Registry staff are able to link DNA to a personal identifier.

VET Registry Website

A new VET registry web site is now available to provide you with additional information (www.vetr.org). The website is designed to provide information and services that will be useful to twins and also our researchers. Included will be the publications that have resulted from your participation in studies. These may be of benefit and interest to you as well as new researchers interested in studying twins.

The website will also include all of our policies and procedures for researchers, where the roles of both the VET Registry staff and investigators regarding the design and conduct of research studies are described.

Your comments will always be welcome, and we hope that we can continue to provide information that can be of assistance to you. Please feel free to visit us at **http://www.vetr.org**. A picture of the homepage is found on page 8.

The Bigger Picture

The International Society for Twins Studies (ISTS) is a global, nonpolitical, nonprofit, multidisciplinary scientific organization. Its purpose is to further research and public education in all fields related to twins and twin studies, for the mutual benefit of twins and their families and of scientific research in general. The Society was founded in Rome in 1974.

The journal Twin Research, published by Australian Academic Press, is the official journal of ISTS. It communicates results of original research on all aspects of twin studies. Special issues of this journal focus on one particular topic. For example, recent special issues appeared on Bereavement (June 2002) and another on Twin Registries (October 2002). In the latter issue, an article appeared on the VET Registry written by its staff that provides a general overview of our history and accomplishments to date. Articles also appear in this same issue on other twin registries located in the U.S. and abroad.

The society also organizes a triennial International Congress on Twin Studies. The most recent Congress was in London, UK in July 2001. The next congress will be held in Denmark in 2004.

For further information, the ISTS website is **http://www.ists.qimr.edu.au**

Posttraumatic Stress Disorder (PTSD)

PTSD is the development of characteristic symptoms following a psychologically distressing event that is outside the range of human experience. The stressor-producing situation is usually experienced with intense fear, terror and helplessness.

The characteristic symptoms involve re-experiencing (nightmares, intrusive recollections) the traumatic event, avoidance of stimuli associated with the event (thoughts, feelings or situations) or numbing of general responsiveness (feeling detached or estranged, lost feelings or interests in activities, intimacy problems), and increased arousal (difficulty falling asleep, hyper-vigilance, exaggerated startle response, difficulty in concentration and memory or completing tasks, explosive aggression). These symptoms must persist for at least one month for the diagnosis to be made.

Associated features are symptoms of depression and anxiety. Impulsive behavior is common. The individual may have organic mental disorder, such as failing memory, difficulty concentrating, emotional liability, headache and vertigo.

Monozygotic vs. Dizygotic

Twins typically describe themselves as identical or fraternal. Scientifically, identical twins are referred to as monozygotic, and fraternal twins are referred to as dizygotic. Monozygotic twins are derived from a single egg fertilized by a single sperm, while dizygotic twins are produced from two eggs fertilized by two separate sperm.

The Bookshelf

Nancy L. Segal. *Entwined Lives: Twins and what they tell us about human behavior* Dutton & Dial, 1999, Paperback: Signet, 2000

Nancy Segal is a well-known twin researcher, who is herself a twin. In this book she writes with fondness and fascination about the many twins she has met in her personal and professional life. *Entwined Lives* offers facts about twins, guidance, practical information and entertainment with some great photographs to help make her points. It contains a goldmine of information, anecdotes and insights for all twins.

Lawrence Wright. *Twins: And What They Tell Us About Who We Are* John Wiley & Sons, 1997

Editorial Review from *Publishers Weekly*
Twins and their implications are illuminated by a staff reporter for the New Yorker in this compelling, well-researched overview. Anchoring the reader in the historical mystique of twinship, Wright (Remembering Satan) documents humanity's low point in studying the special nature and possibilities of twins by recapping the horrific experiments of Josef Mengele. Wright proceeds to outline the newest research being conducted regarding twins, describing how separated-twin studies have thrown open the door on the

BIBLIOGRAPHY

Want to read more? Check out these articles

If you're interested in reading the original scientific articles based on data collected through the VET Registry, here's a list of some of the major articles recently published which are available upon request.

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Fischer ME, Vitek ME, Hedeker D, Henderson WG, Jacobsen SJ, Goldberg J. A twin study of erectile dysfunction. *Archives of Internal Medicine*, in press.

Anyone receiving medical attention or involved in medical research is being asked to sign HIPAA forms. What is HIPAA?

The Health Insurance Portability and Accountability Act of 1996 (HIPAA), was the result of efforts by the Clinton Administration and congressional healthcare reform proponents to reform healthcare. The goals and objectives of this legislation are to streamline industry inefficiencies, reduce paperwork, make it easier to detect and prosecute fraud and abuse and protect health insurance coverage for workers and their families when they change or lose their jobs.

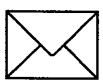
The HIPAA Privacy Rule generally covers Individually Identifiable Health Information (also referred to as Protected Health Information), which is, practically speaking, any information about a patient, including demographic data that may be identified with the patient.

To improve the efficiency and effectiveness of the health care system, the Health Insurance Portability and Accountability Act (HIPAA) of 1996 included a series of "administrative simplification" provisions that required the Department of Health and Human Services (HHS) to adopt national standards for electronic health care transactions. By ensuring consistency throughout the industry, these national standards will make it easier for health plans, doctors, hospitals and other health care providers to process claims and other transactions electronically. The law also requires the adoption of security and privacy standards in order to protect personal health information. HHS is issuing the following major regulations:

- Electronic health care transactions (final rule issued);
- Health information privacy (final rule issued);
- Unique identifier for employers (final rule issued);
- Security requirements (final rule issued);
- Unique identifier for providers (proposed rule issued; final rule in development);
- Unique identifier for health plans (proposed rule in development); and
- Enforcement procedures (proposed rule in development).

Although the HIPAA law also called for a unique health identifier for individuals, HHS and Congress have indefinitely postponed any effort to develop such a standard.

Under HIPAA, most health plans, health care clearinghouses and health care providers who engage in certain electronic transactions have two years from the time the final regulation takes effect to implement each set of final standards. More information about the HIPAA standards is available at http://www.cms.gov/hipaa.



We'd Like to Keep Mailing You *Twin Times*

We would like to keep you informed of VET Registry activities and ensure that you continue to receive Twin Times. Please provide us with your current address, telephone number and email by filling out the form and returning by mail to VET Registry P.O. Box 99332, Seattle, WA 98139-0332 or email us the information at info@vetr.org. If emailing, please include the 6-digit code on the mailing label.

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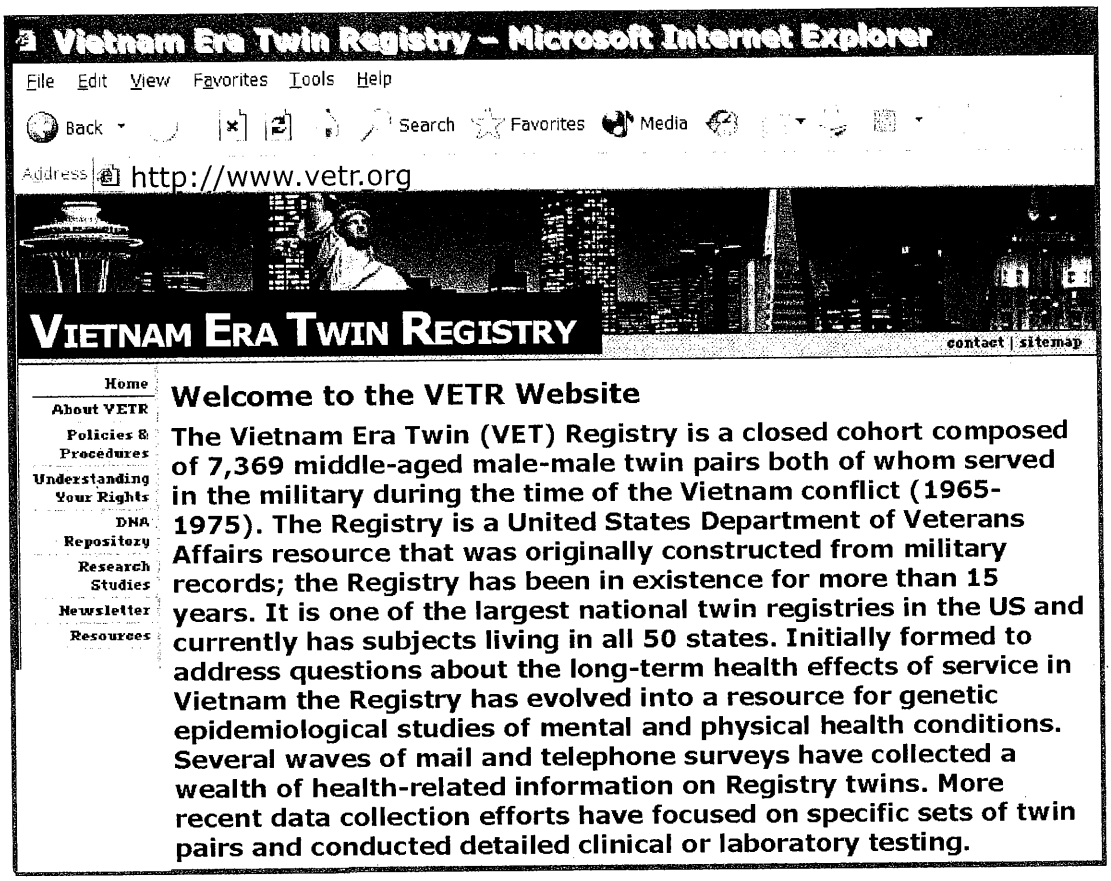
nature-vs.-nurture debate. This is tricky ground fraught with political and social-policy land mines, but Wright does an admirable job of sorting through the differing research in a well-reasoned, clearheaded manner. He also provides a plethora of anecdotes of eerie similarities between twins separated at birth, such as personal habits and choices in spouses and careers. One notable British pair who were reunited later in life shared such puzzling traits and life events as frugality, marriage to men they met at local dances at age 16 and an avoidance of voting, except for a single instance when they worked as polling clerks. They even shared the habit of pushing their noses up, which they inexplicably called "squidging." Clear and compulsively readable, Wright's slim book sheds light on the allure of twinship: "The fantasized twin that we carry about in our minds is not only an idealized partner in the experience of being who we are, he is also a means of escape from the life we are living." Informative if brief, it shows us that even in identical lives there is no escape from the solitary experience of selfhood. For those seeking more information, Wright's extensive bibliography offers a treasure trove of leads.

Twin Times

This newsletter is published by the Vietnam Era Twin Registry to provide participants with up-to-date information about activities and research related to the VET Registry. To obtain additional information about Twin Times *or the VET Registry, contact Birute Curran, registry project manager and newsletter editor, at 866-774-9647 (toll free) or email at info@vetr.org.*



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