



SRI International

The Northern California Twin Registry Newsletter



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Greetings and Happy New Year!

We hope this newsletter finds you well and enjoying the New Year. We thought a newsletter at this time would be a good way to update you on Registry activities and future opportunities for Registry members.

Membership. The Registry is currently 2,060 members strong. This number includes 1,800 adults and 260 children.

Registry membership has been growing steadily since we started in 1995. We owe our thanks to the many members who keep us informed of address changes and who refer new twin pairs to the Registry. We are finding that the referral process is as powerful as advertising in maintaining a stable membership.

Having a growing membership sounds like a good idea, but *what does it really mean?*

- We can propose interesting studies that involve twins. And these proposed studies have a much greater chance of

being funded when we can show evidence of an increasing membership from which to invite twins to participate in studies.

- Information gathered in twin studies can provide clues that can help sort out the influence of environment and genetic factors especially if *both* identical (MZ) and fraternal (DZ) twins are included.
- There is power in numbers: Studies with greater numbers of twins produce stronger and more reliable results that can be reported with greater confidence.

Nicotine Study Results

We all know that women and men behave and think differently about many things; one of these is smoking cigarettes. Studies have shown that men are heavier smokers than women, and more men than women are addicted to cigarettes. Discovering the cause of this difference has important implications for prevention and treatment programs specifically targeted to the different needs of women and men.

When a person smokes, the nicotine and other toxins found in cigarette smoke quickly penetrate the lung tissue and go into the blood stream. The blood carries these compounds to the liver, where they are metabolized or broken down into byproducts. Researchers have thought that women and men may differ in the speed with which nicotine is metabolized in the body. It has been suggested that men smoke more because they metabolize nicotine faster. Because they need to maintain a certain concentration of nicotine in their body to feel satisfied and not to crave cigarettes, men end up smoking more cigarettes per day.

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In the recently completed nicotine metabolism study that included 139 twin pairs and 15 siblings of twins, we found quite the opposite—that it is the women who metabolize nicotine faster than the men, after we adjust for body size differences between women and men! This finding means that differences between women and men in the amount of cigarettes smoked cannot be explained by gender differences in nicotine metabolism. Perhaps differences between women and men lie in the effects of nicotine on the brain. The interest and search for the cause in gender differences in cigarette smoking and addiction continue!

Pop Quiz on Twins

1. *True or False:* The Wright brothers were twins.
2. *True or False:* The musician Liberace was a twin.
3. Who was the first twin to reach 400 home runs in his Major League career?
4. Of every 1,000 births, how many are identical twins: 3, 6, 10?
5. If your mother is an identical twin, what is your relationship to her twin's child?
6. How tall are the world's tallest female twins: 6' 2", 6' 4 ¾", or 6' 7 ½"?
7. What country has the highest incidence of fraternal twins?
8. When did the first successful separation of conjoined twins take place: 1943, 1948, 1952, or 1957?
9. Why are DZ twins just as important in research as MZ twins?

Answers on Page 4

Current Studies

We have three ongoing studies that involve both MZ and DZ twins.

Two of these studies (*Impact of Genetics on Digoxin Pharmacokinetics* and *Impact of Genetics on Metformin Pharmacokinetics*) are being conducted at UCSF. These two commonly prescribed medications (*Digoxin* is used to regulate the heart and *Metformin* is a medication used in the treatment of diabetes) are being used to help researchers learn more about genetic variation in how the body absorbs and disposes of medication. Working with both MZ and DZ twins provides a unique opportunity for understanding the relative importance of heredity and environment.

Jill Rubin is recruiting twins for these two studies. If you'd like more information, please **call Jill at 800/605-3645**. She'd especially like to hear from **fraternal twins**, since she's been successful in recruiting the required number of the identical twins.

We recently completed data collection for the *Mutagen Sensitivity Study*. We want to thank the many twins and siblings who helped us successfully complete this phase of the study by agreeing to participate. The next phase of the study will involve data analysis.

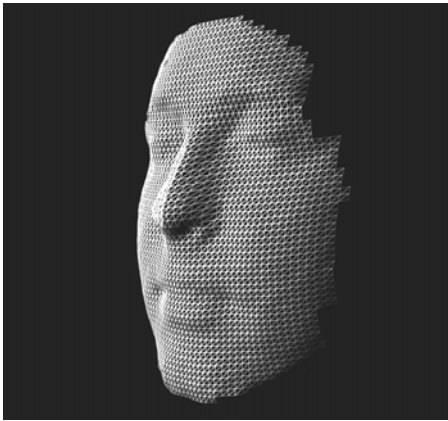
The study will help scientists explain why only a fraction of individuals who are exposed to cancer-causing agents actually develop cancer.

Thus, the study was designed to include the involvement of fraternal and identical twins so that the genetic (family history) and environmental (exposure) interactions in the development of cancer can be understood and early detection and prevention measures implemented.

It will be another 9-12 months before all data is analyzed and results produced. We will definitely provide Registry members with findings once they are available.

Twins in 3D

Over the summer we had the opportunity to assist A4Vision (a local company involved in homeland security issues) in refining their facial identification technology. A total of 38 identical twin pairs participated in a 'photo session'. The technology then created a 3D mask of each twin. The masks of each twin in a pair were then compared for differences that uniquely identify each twin and distinguish them from each other (key cranial-facial landmarks like the size of the bridge of the nose and eye sockets). An example is shown below.



Example of A4Vision 3D Mask

The twins challenged the technology but in the end it was able to distinguish each twin from the other.

Participants will soon receive a copy of their own mask on a CD.

Youth Registry Twins



We are hoping to involve the younger twins in a study on how sleep patterns change from childhood to adulthood. This new research would involve overnight studies (with a parent) in our new sleep laboratory.

\$\$\$ Referral Reward Program \$\$\$

There wouldn't be an SRI Northern California Twin Registry without you!

We are grateful for the growing membership and your participation in the various studies we've been funded to conduct. Because twins seem to know other twins, your referrals have helped considerably in the growth of the Registry.

We will continue to offer a referral fee of \$25 to acknowledge your help in maintaining a viable Registry.

In addition to receiving \$25 for every pair who is referred and registers, we would like to reward you further. For each referral, your name will be added to a pool of names of others who have referred twins to the Registry. Every 3 months we will select two names. Winners of this drawing will receive a gift certificate from local merchants (Block Buster, Borders, Barnes & Noble, etc). If you're notified, you can choose which gift certificate you'd like.

Status of Female Twin Study

Are those of you who answered a questionnaire about lifetime estrogen use wondering what happened to the study? Well here's the latest—it's in the works.

Your responses to the questionnaire became part of a proposal to the National Institute for Health to learn about the contribution of genetic and environmental factors in menopause. The proposal was not funded in the latest round, but we received constructive feedback which we are incorporating into a revised proposal. We are very excited about this study and are hopeful that it will be funded in the coming year.

Facts, Not Fiction

1,800

Number of adult Registry members aged 18-89.

70

Percent of members who are female.

65

Percent of adult Registry twins who are identical.

49

Percent of Registry twins who have a Bachelor's or Master's degree.

130

Young twin pairs (ages 1-17) in the Registry. It's an even split between male and female and fraternal twins are in the lead at 49%--identicals are close at 42% and 9% don't really know.

162 & 19

The total number of twin pairs and their siblings who completed the nicotine study.

How to Contact Us

- ❖ **You can visit our Website at <http://www.sri.com/twin/>** to learn about what we're doing. Adult twins interested in registering can do so on this website.
- ❖ **You can email us at sri.twin@sri.com** to ask questions, update us with a new address or telephone number, or just to check in with us.
- ❖ **You can call 1-800-SRI-TWIN**
We check for messages daily, and we will do our best to return your call as soon as possible.

Collaboration with the Chinese National Twin Registry

Three of our staff members recently visited China and met with the directors of China's Centers for Disease Control (CCDC). In the past 5 years, the CCDC has been successful in establishing a 7-city twin registry that has a goal of recruiting up to 40,000 twin pairs.

Discussions resulted in the design of a study to look at nicotine use in approximately 10,000 Chinese twin pairs. We are currently writing a proposal to be submitted to NIH in January. If funded, it would begin in September 2004.

Answers to Pop Quiz

1. False. Orville and Wilbur Wright were not twins; however, they had fraternal twin siblings.
2. True. Liberace, born May 16, 1919, had a twin who died at birth.
3. Jose Canseco, born in Cuba on July 2, 1964, has a twin, Ozzie. Ozzie's also a baseball player.
4. About 3 out of every 1,000 births are identical twins.
5. On the family tree, you are first cousins; genetically, you are the same as half-siblings.
6. At 6 ft. 4 ¾ in., Heather and Heidi Burge, born November 11, 1971, are the tallest female twins.
7. In Nigeria's Yoruba tribe, 46 of every 1,000 pregnancies are fraternal twins.
8. On December 14, 1952, the first successful separation of conjoined twins was performed at Mount Sinai Hospital in Cleveland, Ohio.
9. In order to sort out the influence of genetics on a behavior, both types of twins are equally important. It is the comparison of the similarities of MZ cotwins to the similarity of DZ cotwins that reveal the importance of genetic influences. If MZ cotwins are more similar than DZ cotwins, this would suggest that genetics plays a role in the behavior. On the other hand, if no differences are seen, this would suggest other influences like environmental factors (education, socio-economic status) are important for the behavior.

