

### FUN FACTS!

Sometimes, doctors can hear TWO tiny heartbeats when twins are in the womb!

A pair of conjoined twins in British Columbia have a “neural-bridge” and can read each other’s minds!

Identical twins DO NOT have identical fingerprints.

40% of twins invent their own language.

### Introduction

Happy New Year and welcome to the 14th edition of the Michigan State University Twin Registry (MSUTR) Newsletter! This edition includes research findings from our studies, an article about a new kind of twin, a brief history of twin studies around the world, and information about participating in our current twin studies.

First, we would like to share with you a few of the recent milestones reached by the MSUTR:

- Over 32,500 twins have now participated in a Michigan Twins Project (MTP) study, including over 4,800 twins who participated in the Children of Twins Project (COT).
- Over 650 twins have completed the Michigan Twin Neurogenetics Study.
- Over 1,165 twins have participated in the Twin Study of Hormones and Behavior across the Menstrual Cycle study.
- The MSUTR has started recruiting for a new study: A Twin Study of Mood, Behavior, and Hormones in Males.

This research would not be possible without the generosity of the twin participants, their parents, and the 100+ research assistants who dedicated over 60,000 hours of their time to the projects! Thank you for making our research possible and for making a difference in our quest to understand the origins of major medical, psychological, and social difficulties!

As always, feel free to contact us about anything in this newsletter or any of our studies!

Sincerely,

Drs. Alex Burt and Kelly Klump  
(Directors of the MSUTR)

### Research Findings From Our Studies!

A recent study combined anonymized Michigan State University Twin Registry (MSUTR) twin height and weight data with twin data from 22 other countries! The total combined sample included 960,859 twins, ranging from 1 – 103 years old. They are conducting many sets of analyses, examining a number of important scientific questions. Of these, there was one we thought might be particularly interesting to our MSUTR families. Specifically, there appears to be an interesting relationship between height, weight, and zygosity (i.e., whether twins are identical or fraternal). Research suggests differences in height and body mass index (BMI) are influenced by zygosity, such that fraternal twins are, on average, taller than identical twins, with average differences of up to 2cm in childhood and 0.9cm in adulthood! BMI also appears to be slightly greater in fraternal twins than in identical twins. Put another way, fraternal twins appear to generally be taller and have a greater BMI than do identical twins in childhood. The reasons for zygosity differences in height and BMI are not clear. One interesting possibility suggests that vascular and/or placental factors during identical twin pregnancies may play a role. Of note, though, these differences appear to decrease in adulthood, suggesting that these effects may not be permanent.

Source:

Jelenkovic, A., Yokoyama, Y., Sund, R., Honda, C., Bogl, L. H., Aaltonen, S., ... Silventoinen, K. (2015). Zygosity Differences in Height and Body Mass Index of Twins From Infancy to Old Age: A Study of the CODATwins Project. *Twin research and human genetics : the official journal of the International Society for Twin Studies*, 18(5), 557–570. doi:10.1017/thg.2015.57

### MORE FACTS!

Moms of twins have longer lifespans!

Twins have an extra nine months of bonding time, as they begin fraternizing in the womb!

Twins often lead very similar lives, even when raised apart. One famous example is the “Jim Twins”!



# A History Lesson in Twin Studies

Twin studies remain an incredibly valuable research tool for scientists. But when did twin studies begin? Francis Galton was one of the first scientists to recognize the value of twins for studying the heritability of traits. In 1875, he wrote a paper titled “The History of Twins and their Character,” which describes the importance of twins in estimating the relative impacts of nature versus nurture. Years later, in 1979, Thomas Bouchard used a population of fraternal and identical twins reared apart in a study attempting to prove genetic determinism. He found that identical twins raised apart were found to lead very similar lives despite distance. In 1990, geneticist Claude Bouchard performed a study analyzing genes for body-fat storage, comparing weight gain between twin pairs. He discovered that twins gained weight in similar amounts and places, however both varied between pairs of twins. Today, researchers around the world utilize twin studies to contribute to scientific knowledge. Scientists have even sent twins to space to help determine the impact of prolonged space travel!

Source: <https://www.smithsonianmag.com/science-nature/brief-history-twin-studies-180958281/>

## A New Kind of Twin?

Historically, pairs of twins have been categorized into one of two classes; identical or fraternal. However, recent research suggests there may be a new type of twin, which scientists are calling “semi-identical”. An ultrasound of an expecting mother in Australia indicated twins sharing the same placenta, a common characteristic of identical twins. However, eight weeks later, a follow-up scan discovered that the twins were of different sex, a distinguishing factor of fraternal twins. As sex is determined by a gene, these twins could not share all the same genes. Genetic testing revealed that these twins shared about 78% of DNA, which puts them in the middle of identical and fraternal! This rare phenomenon is most likely caused by a process known as polyspermy, in which multiple sperm fertilize one egg. The two different sperm cells result in the difference in DNA!

Source: <http://sitn.hms.harvard.edu/flash/2019/new-kind-twin/>



## Our Current Studies

### **Study 1. Twin Study of Hormones and Behavior across the**

**Menstrual Cycle:** This project investigates changes in hormones and behavior across the menstrual cycle in female twins ages 15-30. We are currently focusing our recruitment on twin pairs in which one or both co-twins are taking hormonal contraceptives. Participating twins are paid up to \$300 for completion of the study.

### **Study 2. A Twin Study of Mood, Behavior, and Hormones in Males:**

This study investigates differences in hormones and behavior across puberty in identical and fraternal male twin pairs between the ages of 7 and 17. At least one parent/caregiver is required to participate with the twins, and participating families are paid up to \$250 upon completion of one in-person assessment.

**Study 3. Michigan Twin Neurogenetics Study:** This study investigates brain and behavior development in twins ages 12-17 that have previously participated in The Twin Study of Behavioral and Emotional Development in Children (TBED-C). The study includes an MRI session and takes place at the University of Michigan. Participating families are paid up to \$375 for completion of the study.

**Study 4. Michigan Twins Project & Children of Twins Project:** These related studies are focused on developing a registry of twins ages 3-55 born in Michigan. To participate, adult twins and parents of child twins complete a brief questionnaire that assesses family composition and health status. The questionnaire may be completed using our online system or via the mail. Participating twins/families are sent a gift card to thank them for their participation and are given the opportunity to be contacted about future twin studies.

If you are interested in **Study 1** or know someone who is, please contact us at:  
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If you are interested in **Study 2**, or know someone who is, please contact us at:  
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If you are interested in **Study 3**, or know someone who is, please contact us at:  
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If you are interested in **Study 4**, or know someone who is, please contact us at:  
msutr@msu.edu  
or call (517) 432-5604

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Twin Facts Sources: <https://twentytwowords.com/17-mind-blowing-facts-about-twins-that-seem-too-weird-to-be-true/>

<https://www.everydayhealth.com/healthy-living-pictures/wonderful-and-wacky-facts-about-twins.aspx#10-more-fast-facts-about-twins>