

# How can twins have different fathers?

March 14 2016, by Michael Carroll, Manchester Metropolitan University

---



Credit: AI-generated image ([disclaimer](#))

The recent report from northern Hòa Bình province in Vietnam of twins born to two different fathers has been making headlines around the world. The father of the twins took the infants for DNA tests where it was revealed he was the biological father to just one of them - the other twin was [fathered by another man](#). How could a set of twins have different fathers?

This is an extremely rare occurrence in humans and is known as heteropaternal superfecundation. We don't know exactly how often this occurs and cases only arise when suspicious family members request DNA testing. But one study estimated that it might occur in as many as [one in 400](#) (0.25%) twin births in the US. Another study reported that among non-identical [twins](#) whose parents had been involved in paternity suits [the frequency was 2.4%](#).

## Conception challenge

For heteropaternal superfecundation to occur, the mother's body must release two eggs during ovulation that are then fertilised by two sperm cells from two different men. The odds of one sperm fertilising an egg during one instance of intercourse are actually rather small. So the chances of two sperm cells from different males being successful are even smaller, relying on a culmination of timing and superb reproductive biology. A rare event indeed.

From the millions of sperm deposited during intercourse, only a few hundred or less reach the eggs. The sperm's journey through the female reproductive tract is an arduous process and they they must circumnavigate the cervix, uterus and fallopian tubes to reach the eggs. At the same time they have to survive the harsh environment of the female reproductive tract and avoid the woman's immune response, which sees white blood cells target [sperm cells](#) as invaders.

Fertilisation is also a matter of timing. The ovulated egg is available for a short window (12-24 hours) and so the sperm must be present in the fallopian tube during that time for fertilisation to occur. In the case reported from Vietnam, the woman would have had to have intercourse with two different men over a short period - within at least a day before or after ovulation - for both eggs to be fertilised.

Almost [one in 100 births](#) in the UK and US are to non-identical or "dizygotic" twins, although the global frequency varies widely with factors such as genetics, nutrition status and BMI all playing a role. Rates also increase considerably with maternal age, probably because of changes in reproductive hormone levels. Women aged 35-39 are [four times as likely](#) to have dizygotic twins than those aged 15-35.

## Copulation competition

Although heteropaternal superfecundation is rare in humans, it is [not uncommon in nature](#) and has been reported in many animal species including dogs, cats, cows, mink and rodents. What's more, in many species that have multi-pair copulations, the males have developed a variety of strategies to ensure their sperm reach the egg.

This can include evolving strange penile structures to scoop out rival [sperm](#) ([as in dragonflies](#) and damselflies), or damage the female, thus preventing subsequent mating (referred to as traumatic insemination. This phenomenon is referred to as "[sperm competition](#)". It has even been suggested that the shape of the [human](#) penis evolved to function as a displacement device to remove any semen [deposited by a previous male](#).

*This article was originally published on [The Conversation](#). Read the [original article](#).*

Source: The Conversation

Citation: How can twins have different fathers? (2016, March 14) retrieved 24 April 2024 from <https://medicalxpress.com/news/2016-03-twins-fathers.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is

provided for information purposes only.