And its choice might not even be the woman's partner.

https://www.youtube.com/watch?v=xu-bh0k5BkQ&t=191s

Transcript

We've all been taught the same story. Reproduction is a race.

Millions of sperm compete in an Olympic lavel marathon, and the fastest, strongest one to reach the egg is the winner.

New research is flipping the traditional narrative on its head.

The interaction between the egg and sperm is far more complex than a simple race. It is more like a chemical dialogue. Human egg isn't just a passive prize waiting to be claimed. It's actually [music] a sophisticated selector that can choose which men's sperm it prefers.

And its choice might not even be the woman's partner.

While an egg doesn't have a brain to make conscious decisions, it utilizes cheotractants, chemical signals released into the follicular fluid surrounding the egg. This process is known as chemotaxis.

In 2020, researchers discovered something incredible. They used a clever experimental setup to observe this chemical choice in real time.

They collected follicular fluid and sperm from different couples undergoing fertility treatment.

They then set up choice chambers where sperm from one man were exposed to follicular fluid from two different women.

In chamber A, researchers placed the follicular fluid, the nutrient-rich liquid that surrounds a maturing egg from the man's actual partner.

In chamber B, they placed follicular fluid from a stranger, a woman he had never met.

By removing the egg and using only the fluid, [music] the researchers were able to prove that the choice happens through pure chemistry, not physical contact.

They then [music] placed the man's sperm in a neutral starting area where they had an equal choice to swim toward either chamber.

If fertilization were just a random race, roughly 50% of the sperm should have gone to the partner's fluid and 50% to the stranger's fluid. But the [music] results were not 50/50. A specific woman's follicular fluid consistently attracted more sperm from certain men regardless of whether they were her partner or not.

In [music] many trials, sperm showed a stronger response to the follicular fluid of a non-partner female than to their own partners.

It sounds like the sperm is making the choice, but the sperm is simply responding to the environment the egg has created.

Think of it like a magnet and a piece of metal. The metal moves toward the magnet, but it's the magnet's invisible field that determines how fast and in which direction the metal travels.

The follicular fluid surrounds the egg act like a perfume. If the sperm have the right receivers for that specific woman's perfume, they swim in a straight fast line directly toward the source.

Their tails beat more efficiently.

If the chemicals don't match, the sperm swim aimlessly, turn in circles, or just don't move toward the egg at all, even if they are physically healthy.

The experiment showed that a woman's body doesn't know or care who her social partner is. Her eggs are programmed to look for the best genetic puzzle piece to complete the DNA.

And sometimes a stranger's sperm provides a more diverse and healthy immune system match than her partners does.

It's also important to note that these studies involved couples undergoing fertility treatment where communication between sperm and egg may already be affected.

Evolution wants offspring with a diverse immune system. If a man's genetic profile is too similar to the woman's, the egg might reject his sperm chemically to avoid genetic issues.

If a stranger's profile offers a better immune boost for a future baby, the egg signals his sperm more loudly.

This discovery helps explain why some perfectly healthy [music] couples struggle with unexplained infertility.

It's not that something is broken. It might actually be a result of chemical incompatibility at this microscopic level.

The egg signals simply aren't tuned to that [music] specific partner's sperm. Next time you think about conception, remember it's not just a race. It's a complex chemical conversation where the egg always has the final word.

This phenomenon is called cryptic female choice.