



Dr. Ritu Chakravarti is the lead author of a new paper published in the Proceedings of the National Academy of Science detailing the development of a potential vaccine against rheumatoid arthritis | Photo source Daniel Miller / University of Toledo

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## RESEARCH COULD LEAD TO RHEUMATOID ARTHRITIS VACCINE

 HEALTH & WELLBEING

### Researchers have accidentally found a protein that could protect against rheumatoid arthritis and help sufferers recover

**Spotted:** Researchers at the University of Toledo have developed a new vaccine that could help prevent rheumatoid arthritis. The findings could be a significant development in the fight against this debilitating and painful disease, which affects around 1 percent of the global population, and for which there is currently no cure.

Rheumatoid arthritis is an autoimmune disease. It occurs when the body's immune system attacks healthy tissue in the joints, particularly those in the hands, wrists, ankles and knees. Lead researcher Dr. Ritu Chakravarti, and her team, were studying the role of a protein called 14-3-3 zeta in immune diseases. Based on previous work, the team thought the protein could be a potential trigger for rheumatoid arthritis.

However, they discovered instead that removing the protein using gene-editing technology actually led to early onset of arthritis, indicating that 14-3-3 zeta may actually provide protection against rheumatoid arthritis. Using this information, the team developed a vaccine using purified 14-3-3 zeta protein. They then demonstrated that the vaccine provoked an immediate immune response, providing protection against rheumatoid arthritis.

Dr. Chakravarti described the reaction of the researchers to their discovery, saying, "Much to our happy surprise, the rheumatoid arthritis totally disappeared in animals that received a vaccine. Sometimes there is no better way than serendipity. We happened to hit a wrong result, but it turned out to be the best result. Those kinds of scientific discoveries are very important in this field."

In the US alone, almost a quarter of the population suffer from some type of arthritis. It can be extremely debilitating, particularly in older people. There is no shortage of innovative treatments, from biodegradable [heat therapy patches](#) to [new delivery systems](#) for anti-inflammatory drugs, but the University of Toledo work may help to finally alleviate the worst symptoms for many.

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## **Takeaway:**

In addition to suppressing the development of arthritis, the vaccine has also been shown to significantly improve bone quality. This suggests that it could lead to long-term benefits. Currently, rheumatoid arthritis is generally treated with corticosteroids, broad scale immunosuppressive drugs or biologics that target specific inflammatory processes. While these treatments do alleviate pain, and may slow the progression of the disease, they can also be costly and leave patients more vulnerable to infection, neither of which is ideal. While the vaccine has undergone some animal trials, safety and toxicity studies, as well as human trials, are yet to come. But if successful, the vaccine could lead the way to entirely new treatments for different types of arthritis.