

Bulletproof Armor Made of Human Cells? Scientists Create Gel that Stops Supersonic Projectiles

By [Study Finds](#)

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Could a gel made out of human proteins create the next generation of bulletproof body armor? Scientists have created a biogel that is capable of stopping supersonic objects — such as a speeding bullet.

Scientists at the University of Kent say it could ensure the safety of military and police personnel, as well as guard airplanes and spacecraft against flying debris.

The protective material contains a protein found in human cells. Known as talin, it reforms in response to external forces.

"Each molecule has 13 'switches' that can unfold when force is applied," says project leader Professor Benjamin Goult in a statement, according to SWNS. "These refold after force is removed - enabling shock absorption."

The team adapted the ends of three switches and then linked them together using water and a gelling agent to form a mesh. When something hits it, the energy unfolds the modified talin rather than converting into heat — as is the case with existing materials.

In experiments, a piston fired tiny particles of basalt and larger pieces of shrapnel at a sample placed in front of an aluminum plate. Even at supersonic speeds of a mile a second, twice as fast as firearm bullets, the gel stopped them in their tracks.

The breakthrough opens the door to [next-generation bulletproof armor](#).

"Talin is cells' natural shock absorber. It contains a series of binary switch domains which open under tension and refold again once tension drops," Prof. Goult says, according to SWNS.

"This response to force gives talin its incredible properties, [protecting our cells](#) from the

effects of large force changes.”

Traditional body armor has its flaws

Current body armor has a bulky ceramic face with a fiber-reinforced composite backing. While this may be good at [stopping bullets](#) and flying debris, it is ineffective against kinetic energy which can cause physical trauma to the body behind the armor.

Moreover, due to reduced structural integrity, traditional body armor frequently sustains permanent damage after a hit, barring continued usage. Talin-based alternatives could be a viable replacement for existing conventional technologies.

“It offers a lighter, more durable armor shielding the wearer from a wider spectrum of injuries - including those brought on by shock,” Prof. Goult tells SWNS.

Energy-dissipating materials are required to efficiently [collect space debris](#), dust, and tiny meteoroids for scientific investigation. They can trap and store projectiles after impact and help construct expensive equipment, increasing astronauts’ durability and safety.

They may also replace gels used in the industry which are prone to melting due to temperature increases brought on by projectile impact. The team is now working with a company to develop the gel as a component of body armor.

Other proteins labeled with markers can bind to talin. Damage could be identified by adding fluorescent protein.

“There’s an analogy with autopilots in planes. A lot of private planes don’t contain autopilots,” Prof. Goult says.

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The study is published on the science website bioRxiv.

South West News Service writer Mark Waghorn contributed to this report.

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