

Drug targeting could aid immune diseases

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A new technique that targets drugs to specific cells could lead to improved therapies for diseases caused by an overactive immune response. The approach could help people affected by conditions such as arthritis and inflammatory bowel diseases, where the body's own immune system mistakenly attacks healthy tissues.

Researchers focused on a group of [immune cells](#) called macrophages – some of which help the body heal after injury, while others can promote harmful inflammation. The team at the University of Edinburgh sought to devise a new therapy to remove harmful macrophages while leaving healing cells unaffected

They coupled a drug compound to a carrier molecule that only becomes active in [acidic conditions](#), such as those found inside harmful macrophages. A fluorescent tag attached to the molecules enabled the team to track the cells affected by the drug. Lab tests on human macrophages showed the treatment preferentially affected inflammatory macrophages and did not affect healing cells.

Studies with zebrafish, which share features of their immune system with people, found the treatment helped to improve the recovery of tissues after injury. The team hopes their approach could lead to more effective therapies, with fewer side effects, for the treatment of immune-related diseases. Their research was published in the journal *ACS Central Science*.

"This is an important step forward in the design of more precise drugs

with fewer side effects. In future studies, we want to exploit this technology to improve the treatment of diseases in which macrophages and immune cells are important," says Dr Marc Vendrell.

More information: Antonio Fernandez et al. Chemical Modulation of in Vivo Macrophage Function with Subpopulation-Specific Fluorescent Prodrug Conjugates, *ACS Central Science* (2017). [DOI: 10.1021/acscentsci.7b00262](https://doi.org/10.1021/acscentsci.7b00262)

Provided by University of Edinburgh

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