

One drug, many diseases

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It seems too good to be true: a single drug that could treat humanity's worst afflictions, including atherosclerosis, cancer, Alzheimer's, Parkinson's and arthritis. All of these diseases have one thing in common—they involve an inflammatory protein called NLRP3. Now, biotech start-ups and pharmaceutical companies are racing to develop

drugs that inhibit the function of this protein, according to an article in *Chemical & Engineering News* (C&EN), the weekly newsmagazine of the American Chemical Society.

NLRP3 is part of a large protein complex called the inflammasome, which triggers a chain of events that makes cells break open and spill their inflammation-inducing contents. This protein is involved in so many diseases that [drug companies](#) don't even know where to begin, Associate Editor Ryan Cross writes. Scientists working to develop NLRP3 inhibitors also face other challenges: notably, the exact structure of the inflammasome remains mysterious.

Nevertheless, about a dozen companies have programs dedicated to blocking NLRP3 or related inflammasome proteins. One such inhibitor, called MCC950, blocks NLRP3 with high specificity in the lab. However, a small clinical trial of the compound by Pfizer showed weaker potency than expected, as well as liver damage at high doses. Some companies are now using MCC950 as a starting point to design safer and more effective molecules, while others are trying to find inhibitors unrelated to the compound. Currently, several NLRP3 inhibitors with a range of mechanisms are in preclinical, Phase I and Phase II trials, Cross reports.

More information: "Could an NLRP3 inhibitor be the one drug to conquer common diseases?," [cen.acs.org/pharmaceuticals/dr ... ommon-diseases/98/i7](https://cen.acs.org/pharmaceuticals/drugs/one-drug-many-diseases/98/i7)

Provided by American Chemical Society

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