This engineered painkiller works like an opioid but isn't addictive in animal tests

April 27 2018, by Melissa Healy, Los Angeles Times

Credit: CC0 Public Domain

Sometimes forgotten in the spiraling U.S. crisis of opiate abuse is a clinical fact about narcotic pain medications: addiction is basically an unwanted side effect of drugs that are highly effective at blunting pain.

Addiction, of course, is a particularly dangerous and disruptive side

effect, since it hijacks a patient's brain and demands escalating doses of opioid drugs to hold withdrawal symptoms at bay.

What if there were a drug that did the job opiods do best—relieve pain—without prompting many of their negative side effects, especially addiction?

A researcher from the University of Michigan Medical School may have done just that.

This week, Tomas Joaquin Fernandez described a process for designing opioid-like drugs that would act on pain receptors in the brain while blocking the receptors responsible for fostering dependence and building tolerance.

Using pain-relieving peptides released by the brain as models, Fernandez and his colleagues developed a library of "peptidomimetics." These agents were small enough to get into the brain, and they worked on different opioid receptors in different ways.

When they tested one such compound in mice, they found that it not only relieved pain, it also induced less build-up of tolerance and less physical dependence than morphine. In other words, it was less addictive.

"We are striving to solve the opioid epidemic by working at the most fundamental problem: the effective treatment of pain," said Fernandez, whose work was presented during the 2018 Experimental Biology meeting in San Diego.

"Our work can also provide other researchers with a better understanding of opioid receptors and interactions between receptors, which could be exploited to develop better options for pain management," he said.