

UA startup Regulonix licenses non-opioid pain drug candidates that are more effective than morphine

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Researchers at the University of Arizona College of Medicine - Tucson have invented a new class of non-opioid compounds to treat pain. Animal testing has shown the drug candidates are more effective than morphine, non-addictive, and non-toxic at high doses. The UA has licensed the compounds to the startup Regulonix.

The company's co-founders, who are also the inventors, include Rajesh Khanna, PhD, associate professor of anesthesiology and neuroscience and professor of pharmacology; May Khanna, PhD, assistant professor of pharmacology; and Vijay Gokhale, PhD, senior research scientist at the UA BIO5 Institute.

The team worked with Tech Launch Arizona, the UA office that commercializes inventions stemming from research, to patent the technology and develop their startup company strategy.

"Chronic pain is widely prevalent and [opioid misuse](#) and overdose constitute major public health crises," says Dr. Rajesh Khanna, adding, "while opioids are unlikely to go away anytime soon, our task is to arm physicians with viable alternative options."

The nation's [opioid](#) crisis has skyrocketed over the past 10 years. According to the U.S. Centers for Disease Control and Prevention (CDC), 78 Americans die each day from an [opioid overdose](#). The

Department of Health and Human Services has declared this a national emergency.

The key to the UA technology is a focus on the Nav1.7 sodium channel, a part of the nerve cell membrane that has been linked to human pain disorders, which is not the primary target for opioids. Most [opioid drugs](#) induce analgesia - the inability to feel pain - mainly by inhibiting multiple opioid receptors; they address the pain problem, but also create a number of other effects, including an increased risk of addiction and overdose.

The compounds selected for further development that Regulonix is taking forward primarily affect the Nav1.7 sodium channel indirectly through a protein called CRMP2, collapsing response mediator protein 2, leaving the other channels relatively unaffected and thus not creating the corresponding negative effects.

The Department of Health and Human Services and the National Institutes of Health have awarded the company a Phase I STTR for \$300,000 for development.

Throughout the commercialization process, the Regulonix team has collaborated closely with Tech Launch Arizona, working with licensing manager for the UA College of Medicine - Tucson Lisa Lin, associate director for biomedical and life sciences licensing Rakhi Gibbons, and mentor-in-residence Michael Sember.

"Being able to work with a group like the Regulonix team to address such a huge social and medical challenge has been wonderful," says Gibbons. "We're excited to be able to have a hand in bringing such an impactful technology to the world at such a critical moment in time."

Provided by University of Arizona

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