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Improved treatment for alcohol use disorders, chronic pain, mood disorders

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Helping people with addictions has become a research passion for Purdue University's Richard van Rijn, who is leading a team to make drug discoveries to support millions around the world dealing with alcohol use disorders, chronic pain and mood disorders.

"These disorders are currently not adequately managed," said van Rijn, an assistant professor of medicinal chemistry and molecular pharmacology. "Better medications that take a more holistic approach and produce fewer side effects will be beneficial. We have discovered that two peptides—which are naturally metabolic products of Rubisco, a large protein found in many plants like spinach—may aid in the development of these new medications."

This discovery by the Purdue team provides a new avenue for the development of medications that provide therapeutic relief for a patient without causing unwanted side effects. The discovery is published in the Dec. 24 edition of *European Neuropsychopharmacolgy*.

"We are part of an exciting new area of drug discovery, which aims to develop molecules that only activate the cellular signaling pathways associated with their therapeutic effect," van Rijn said. "We discovered that these peptides selectively activate the known beneficial pathways without activating the 'side-effect pathways' of the receptor."

Van Rijn, in collaboration with Purdue professors Darci Trader and Markus Lill, is actively pursuing synthetic and computational strategies

to improve these peptides to make them more effective.

He said there is a reason for optimism as the initial rubiscolin peptides are already being investigated in preclinical studies for their ability to regulate dietary intake and are even commercially available in anti-aging skin products.

Preclinical studies suggest the peptides to be orally bioavailable and able to penetrate the blood-brain barrier, both of which are necessary for a drug to effectively treat a disorder of the central nervous system.

The discovery of these peptide's exciting pharmacology is closely related to other research from van Rijn's lab, including patent-pending innovations dealing with the simultaneous treatment of alcohol disorder and depression.

He has worked with the Purdue Office of Technology Commercialization to patent his previous technologies.

More information: Robert J. Cassell et al, Rubiscolins are naturally occurring G protein-biased delta opioid receptor peptides, *European Neuropsychopharmacology* (2018). DOI: 10.1016/j.euroneuro.2018.12.013

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