Campus.News for the Week of January 16, 2007

Novel Opioid Receptor Compounds Licensed to Alkermes

Mark Wentland, professor of chemistry and chemical biology at Rensselaer, has led a team in the discovery of a family of novel opioid receptor compounds that may be used in treating central nervous system disorders and addiction. The team included more than 15 undergraduate, graduate, and postdoctoral students in Rensselaer's department of chemistry and chemical biology. Jean Bidlack, professor of pharmacology and physiology at the University of Rochester, along with members of her pharmacology group, also contributed to the research.

In October, Rensselaer announced that they had entered into a license agreement granting Alkermes Inc. — a biotechnology company based in Massachusetts — with exclusive rights to the compounds discovered by Wentland and his team.

Rensselaer/Thomas Griffin

"This latest discovery is the result of an interdisciplinary collaboration between chemists and biologists," Wentland said. "In the process, we are working together to identify novel therapies to treat human diseases and find possible solutions that work. Most importantly, this discovery allows us to see the significant role that biotechnology plays in improving health, creating new materials for myriads of applications, and addressing some of the world's most challenging scientific problems. I am pleased to see this exciting technology move from the laboratory toward treating patients."

According to Alkermes, the compounds represent an opportunity for the company to develop important therapeutics for a broad range of diseases and medical conditions, including addiction, pain and other central nervous system (CNS) disorders. Alkermes will screen the library of compounds and plans to pursue preclinical work of an undisclosed, lead oral compound that has already been identified. The company will be responsible for the continued research and development of any resulting product candidates.

The initial research leading to Wentland's latest discovery was funded in 1999 through an $826,000 grant from the National Institutes of Health/National Institute on Drug Abuse (NIH-NIDA) in an effort to discover novel drugs to treat cocaine abuse. In 2002, Wentland's NIH grant was renewed for an additional $1.6 million, and he was awarded new funding from Albany Molecular Research Inc. for a postdoctoral associate position.

In his NIH-funded research program, Wentland has deliberately chosen an area with an unmet therapeutic need, cocaine addiction. One of Wentland's starting points is an opiate drug discovered in the 1960s called cyclazocine, which may produce the desired pharmacological effect. Cocaine itself stimulates reward pathways in the brain by increasing the release of a neurotransmitter called dopamine. Cyclazocine may dampen dopamine release by acting on two different types of cell surface receptors, according to Wentland. However, cyclazocine's short duration of action is a detriment to its therapeutic usefulness. The major thrust of his group's research was to correct this deficiency in cyclazocine and other lead compounds by designing and evaluating new derivatives.

Wentland straddles the boundary between basic and applied research. "Medicinal chemistry, foremost among traditional approaches to drug discovery and development, retains its value in a high-tech world," he said. A medicinal chemist is "a person whose primary aim is to get a drug into the clinic," he added.

In the future, Wentland will continue to work with Alkermes to develop the existing family of compounds and possible application to other diseases.

Read the full press release.

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