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Technology/ Title	DBPR116/ An Antagonist-to-Agonist Allosteric Modulator- Pain Relief Agent with Limited Side Effects of Opioids	
Subtitle		
Technology Type	☐Biotechnology	☐Device/Diagnostics
	■Pharmaceutical	☐Others:_____
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Technology Description	The invention relates to antagonist-to-agonist allosteric modifiers (AAM) of a mu-opioid receptor (MOR) for treating an opioid receptor-associated condition. In the presence of this unique AAM (DBPR116), MOR could be selective activated by general opioid antagonist naloxone or naltrexone, and produces antinociceptive effect without developing severe side effects in vivo. In combination with naltrexone (1 mg/kg), the median effective antinociceptive dose (ED50) of the AAM in mouse model of acute thermal pain is lower than 10 mg/kg (i.v.). DBPR116 is a crystalline solid with acceptable maximum tolerate dose (MTD > 40 mg/kg) in rodents.	

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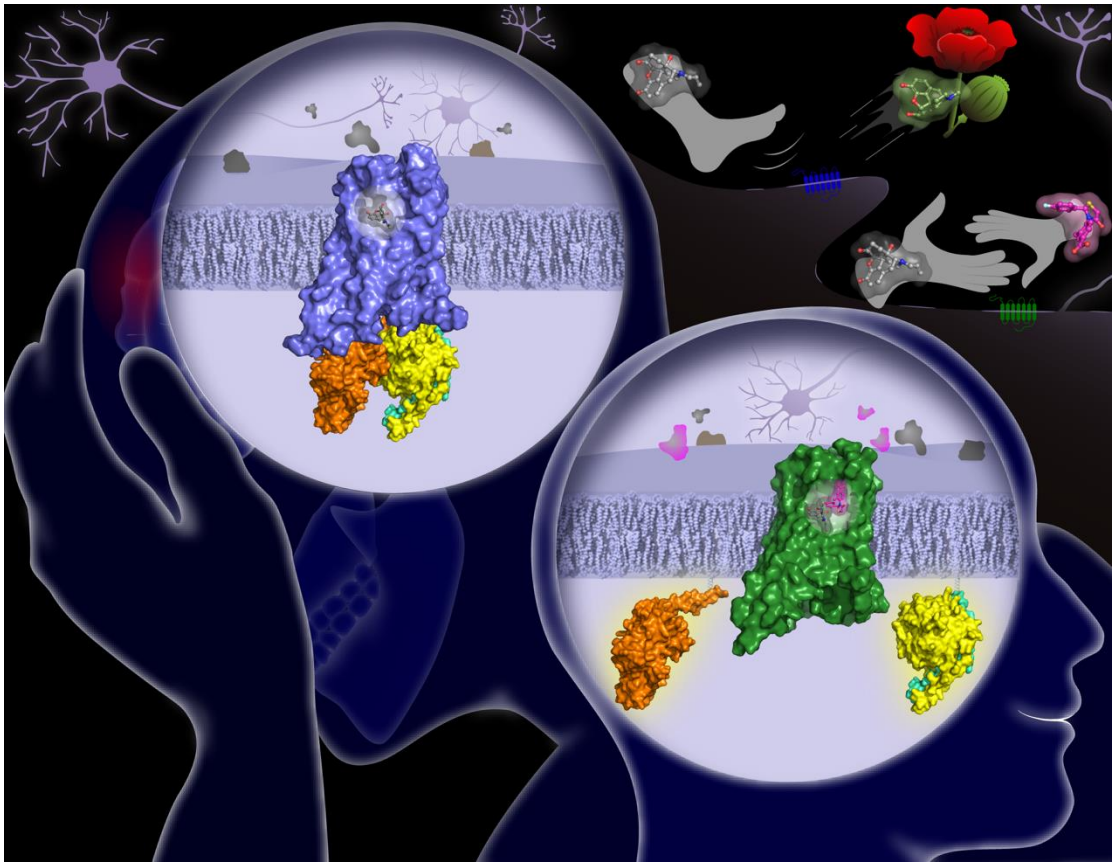
Intellectual Property	US9827228B2; US10544113B; TWI625120B; TWI691332B; EP3344997B; EP1060005; AU2017229129B; CN108883099B; CN108369222B; HK1258687; HK1253294; J/005474; J/005174; KR10-2365673; JP7132849; JP7181536; CA2996281
Key Publications	Shu-Yu Lin, Ya-Wen Tien, Yi-Yu Ke, Yung-Chiao Chang, Hsiao-Fu Chang, Li-Chin Ou, Ping-Yee Law, Jing-Hua Xi, Pao-Luh Tao, Horace H Loh, Yu-Sheng Chao, Chuan Shih, Chiung-Tong Chen, Shiu-Hwa Yeh, Shau-Hua Ueng (2022, Nov). Selective and antagonist-dependent μ-opioid receptor activation by the combination of 2-{[2-(6-chloro-3,4-dihydro-1(2H)-quinolinyl)-2-oxoethyl]sulfanyl}-5-phenyl-4,6-(1H,5H)-pyrimidinedione and naloxone/naltrexone. Bioorganic chemistry, 128,105905. Shu-Yu Lin, Yu-Hsien Kuo, Ya-Wen Tien, Yi-Yu Ke, Wan-Ting Chang, Hsiao-Fu Chang, Li-Chin Ou, Ping-Yee Law, Jing-Hua Xi, Pao-Luh Tao, Horace H. Loh, Yu-Sheng Chao, Chuan Shih, Chiung-Tong Chen, Shiu-Hwa Yeh, Shau-Hua Ueng (2019, Apr). The in vivo antinociceptive and

	μ-opioid receptor activating effects of the combination of N-phenyl-2',4'-dimethyl-4,5'-bi-1,3-thiazol-2-amines and naloxone. Eur J Med Chem, 167, 312-323.
Business Opportunity	There remain many unmet therapeutic needs in the treatment of pain, as well as high demand for analgesic treatments worldwide. In 2014, the global opioids market generated revenues over $20 billion. The invention demonstrates antinociceptive effect through MOR, so it is appropriate to use the DBPR116/naltrexone combination as most opioids for the treatment of acute and chronic pain, including renal colic, acute pancreatitis, angina, post-operative pain, chronic neuropathic pain, regional complex pain syndrome, chronic back pain and cancer pain, with fewer side effects. Due to the novel mechanism of action of DBPR116, there is few competitors relates to the invention. In the future, it should be a potentially First-in-Class drug for treating severe pain



This study proposes an innovative approach by developing a unique small-molecule modulator to transform traditional opioid antagonists into powerful and low-side-effect analgesics. This research will open up a new field of opioid-like drug development and contribute to the understanding of the structural and activity changes related to opioid receptor function.