mechanism that can be targeted for therapeutic intervention. DISCUSSION/SIGNIFICANCE OF IMPACT: This work informs drug design to address the growing threat of antibiotic resistance. The riboflavin biosynthetic enzymes do not have human homologs, so drugs designed to specifically target these enzymes will minimize off target effects.

364

The positive allosteric modulator BMS-122 increases the efficacy of opioid and non-opioid analgesics neuropathic pain

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OBJECTIVES/GOALS: Opioids treat pain but with the risk of severe adverse effects. The opioid positive allosteric modulator BMS-122 has been shown to enhance opioid antinociception in animal models without increasing adverse effects. However, whether BMS-122 is effective in chronic neuropathic pain is unknown. METHODS/STUDY POPULATION: We used two animal models: spared nerve injury (SNI) and tibial neuroma. Injuries were performed on male and female Sprague-Dawley rats. Animals developed robust sensitivity to tactile stimulation similar to that seen in patients. Animals with SNI received the mu-opioids methadone, morphine, and buprenorphine, or gabapentin (30 mg/kg, s.c.), with or without BMS-122 (10 mg/kg, s.c.). Tactile hypersensitivity was measured using von Frey filaments. Animals with tibial neuroma received methadone (s.c.) with or without BMS-122 (10mg/kg s.c.), and tactile hypersensitivity was measured using a modified Tinel's test, in which the neuroma was directly stimulated. RESULTS/ANTICIPATED RESULTS: Hypersensitivity following SNI was reversed with administration of high-dose opioids or gabapentin. Following pre-treatment with BMS-122 low, ineffective doses of opioid or gabapentin significantly reversed the hypersensitivity. Buprenorphine was unable to fully reverse the hypersensitivity alone but was fully efficacious in the presence of BMS-122. Animals with tibial neuroma developed hypersensitivity at the neuroma site, but the doses of methadone required to reverse this sensitivity also induced respiratory depression. In the presence of BMS-122, a low, non-effective, dose of methadone reversed hypersensitivity without depressing breathing. No sex differences were observed in either condition. DISCUSSION/SIGNIFICANCE OF IMPACT: These data show that positive allosteric modulators like BMS-122 provide an opioid-sparing effect in chronic neuropathic pain. Furthermore, BMS-122 appears to enhance endogenous opioid peptides to increase the effectiveness of non-opioid analgesics. Overall, these data support the continued development of modulators as therapeutics.

365

Dissemination methods to enhance research programs and translational science: Provided by the Wake Forest Clinical and Translational Science Institute (WF CTSI) Dissemination, Implementation, and Continuous Quality Improvement (DICQI) team

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OBJECTIVES/GOALS: The WF DICQI team uses targeted messaging across many platforms to inform investigators across the Advocate Health (AH) enterprise of available programs and services, turning research into action. Translational science is valued at Wake Forest University School of Medicine, the academic core of AH. METHODS/STUDY POPULATION: The DICQI team partners with all Wake Forest CTSI teams to create tailored communication and dissemination plans for their resources and initiatives, designed to help investigators translate research into practice. Participants include program leaders, staff, and high users of CTSI services. Efforts focus on interviewing previous program participants and producing related articles, alongside developing targeted plain language messaging for internal newsletters, social media, and providing customized flyers and email content. This initiative enhances awareness among investigators along with driving engagement and collaboration. RESULTS/ANTICIPATED RESULTS: These dissemination strategies motive investigators to use CTSI resources and engage in continuous learning. An increase in CTSI service usage is expected after implementing the dissemination plans. Plain language messaging and visually appealing graphics make scientific findings more accessible to a broader audience, so increased engagement on social media is also anticipated. These efforts make it easier for readers to understand research findings, apply them, and encourage collaboration. We will work with more AH centers and programs to create tailored plans and amplify the impact of WF CTSI. We plan to share our approach with other institutions, fostering collaboration nationwide. DISCUSSION/SIGNIFICANCE OF IMPACT: The WF CTSI DICQI's dissemination efforts are designed to increase awareness and utilization of available resources, which will drive more robust research from investigators, and more engagement from a broader audience, bridging practice–research collaboration across the AH enterprise.

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