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ADDRESSING THE OPIOID CRISIS WITH SAFER OPIOID PAIN RELIEVERS: IS IT POSSIBLE?

For thousands of years humans have used opioids acting at the mu opioid receptor (MOR), such as morphine, for pain relief and for their euphoric effects. Poppy-derived compounds, and especially their modern synthetic cousins such as fentanyl, deliver not only robust pain relief but also elicit a host of unwanted side effects. These include respiratory failure, a life-threatening outcome that sadly we see far too often in the global opioid crisis. The Bohn-Bannister research team has succeeded in dramatically improving respiratory safety in new pain relievers and are now studying whether properties such as addiction potential, constipation and drug tolerance can also be eliminated. These probe molecules will help untangle the mechanistic details of MOR signalling and its pharmacological effects. Respiratory safety appears to require robust G-protein-mediated MOR signalling with almost no measurable beta arrestin involvement. We have identified functionally biased and drug-like MOR agonists with this specific profile. Further, they are robust and respiratory-safe pain relievers in mice. These potentially safer opioids may be one of the tools that are badly needed to combat the opioid abuse epidemic.

Biography

Thomas D Bannister is a Senior Scientific Director of Molecular Medicine at Scripps Research in Jupiter, Florida. Scripps is a world leader in non-profit biomedical research. He has received his scientific training at Wabash College (A.B.), Yale University (M.S., M.Phil.), and finally at Indiana University (Ph.D.), where he studied natural products synthesis under the direction of William R. Roush. He then worked in the pharmaceutical industry as a Drug Discovery Medicinal Chemist for 14 years. In 2005, he came to Scripps Florida and built a highly collaborative research group that provides medicinal chemistry expertise to several project teams focused on the discovery of potential new drug and molecular probes. In particular, the group is now targeting various cancers, neurological disorders, and pain. The contributions of Dr. Bannister and co-workers to medicinal chemistry are reflected in over 85 published papers and patent applications. His work in collaboration with Laura Bohn, to be discussed here, is aimed at the discovery, evaluation, and optimization of safer pain relievers as part of an overall strategy to help combat the global opioid abuse epidemic.

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