Opioid Receptor Assay

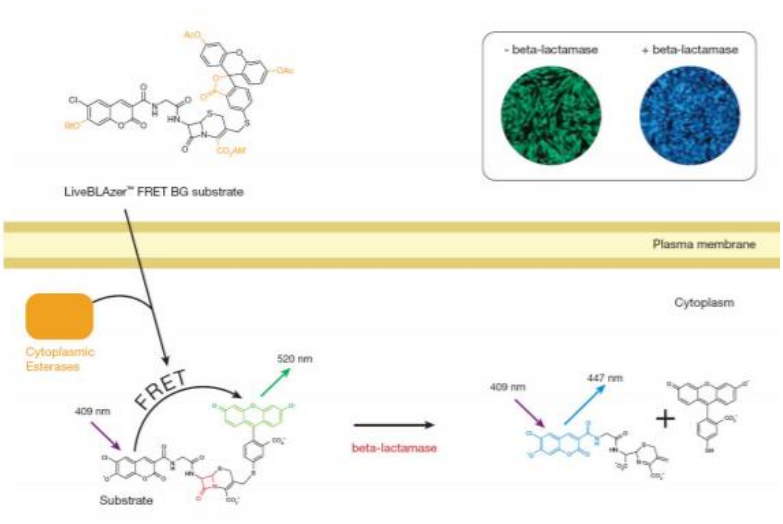
March 2020

This document describes the results with opioid receptor assay for Fentanyl Scents for K9 Training

What is Opioid Receptor Assay?

Opiates exert their effects in the central and peripheral nervous systems through interaction with mu, kappa, and delta, three major types of opioid receptors, which are structural homologues and belong to the G protein-coupled receptor (GPCR) family. G-protein cascades activated by these three receptors can reduce adenylyl cyclase activity, alter inositol trisphosphate turnover, activate G-protein-linked, inward potassium channels, and close calcium channels. These receptors mediate the actions of opiate drugs and endogenous opioid neuropeptides in producing euphoria, modulating pain perception, and altering other important functions in the central and peripheral nervous systems.

Opioid receptor assays are conducted using target cell lines to understand if a compound or formulation binds to an opioid at various concentrations, and results are plotted in a log scale. The Cell-based GPCR Profiling Service utilizes GPCR cell lines. That activate a stably integrated beta-lactamase (bla) reporter gene. When present, the bla enzyme cleaves the LiveBLAzer™-FRET B/G Loading Substrate to provide a selective and quantitative FRET-based readout of GPCR activity. The Assay provides a reliable, rapid, and sensitive method of analyzing the status of a wide range of opioid GPCRs upon exposure to drug candidates or other stimuli.



Results with Fentanyl Scents

The fentanyl scent imprint for K9 training was submitted to a third party laboratory for opioid receptor assays. The tests were performed at various concentrations.

No binding was observed for the fentanyl imprint aid at the lowest concentrations. The binding was tested for all three opioid receptors: mu, delta, and kappa.