Alcohol research has focused on the identification of brain mechanisms that support reinforcing actions of alcohol and the changes in neural function induced by chronic alcohol consumption. Chronic exposure to alcohol induces changes in neural circuits that control motivational processes, including affect, arousal, reward, and stress; important components in decision making. These changes broadly impact systems utilizing signalling molecules such as dopamine and the endogenous opioid peptides, leading to a dysregulation of these systems in alcohol dependence. Indeed antagonism of the μ-opioid receptor has for long been understood as a clinical relevant mechanism leading to a reduction of positive reinforcement of alcohol. In addition, at polymorphisms at the μ-opioid receptor gene modulate treatment responsiveness and seems to predict relapse highlighting the importance of this mechanism.

However, contemporary findings highlight an emerging role of κ-opioid receptors (KORs) and their endogenous ligands dynorphins in alcohol dependence. κ-opioid receptors reside within brain circuitry underlying the complex integration of information related to different behavioral domains such as motivation, negative affect, and decision-making. Recent data supporting the role of the dynorphin/κ system in mediating negative affective states also help to explain significant co-morbidity between alcohol use disorders and affective disorders. Taken together, the dynorphin/κ system is altered in alcohol dependence and represents a potential therapeutic target to combat alcoholism.