Our research focuses on the neurobiological mechanisms underlying chronic pain and opioid analgesia. In rodent models of chronic pain, we investigate molecular and cellular pathways that regulate pain hypersensitivity, sensory pain-induced negative emotions, and functional interactions between sensory and affective dimensions of pain in the context of opioid-induced analgesic and emotional effects. Our studies use the brain circuits in the rostral ventromedial medulla and central nucleus of the amygdala as the model systems for molecular, synaptic, cellular and behavioral analysis of the pain mechanisms. Especially in recent years, we study the epigenetic mechanisms—histone acetylation and DNA methylation—for the development of chronic pain and sensory pain-induced negative emotions, and use optogenetic techniques to delineate the synaptic circuits in the brainstem and forebrain involved in behavioral regulation of pain hypersensitivity and associated emotional disorders.