

3D Model of Crystallized Human Cannabinoid Receptors

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Endocannabinoids are endogenous, lipid-based neurotransmitters that bind to cannabinoid receptors. The endocannabinoid system modulates numerous neurological and physiological processes, including the medicinal effects of cannabis. Both primary cannabinoid receptors, CB2 and CB1, share similar structure yet differ in function. While CB1 is found primarily in the central nervous system, CB2 is mainly expressed in the immune system. Li and colleagues reported the crystalline structure of CB2 using the CB2 antagonist AM10257, and CB2 and CB1 were found to be homologous in forty-four percent of their sequencing. Because of this homology, many cannabinoids have the ability to bind to both CB1 and CB2. The differing effects of ligand binding at each receptor may hold insight into the design of receptor-specific drugs for the treatment of neuropathic pain, neurodegenerative disorders, and neuroinflammation. However, more is known about the structural components of binding at active sites of the CB1 receptor compared to the CB2 receptor. Our project designed and created a 3D model of both CB1 and CB2 with the compound AM10257 using TinkerCAD and Ultimaker Cura, in order to create a visual aid for understanding the differences between these receptors.