

# CANNABIS AND HEMP association



## The Coevolution of Homosapiens and Cannabis: A Theory

The Smithsonian Institute believes early humankind developed from 2-6 million years ago, while Wikipedia believes 4-5million.

Cannabis first most closely related species nettles orginated 55 million years ago, according to author Chris Duval of Cannabis. With Cannabis Indica originating from the Himalayan Mountain region and sativa from Central Asia. The next cousin Hops, is said to orginate around 6 million years ago, thus cannabis is projected to appear around 35 million years ago.

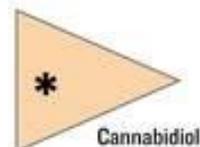
The aboriginal cannabis family varies from North and South Asia in tolerance of different climates and day length conditions of different latitudes. This survival skill is proved vital for the species.

In *The Botany of Desire*, the author Michael Pollan explains, much like the brain is "pre-wired" to receive the chemicals of endorphins and serotonin, so too is it prewired to receive the cannabinoids (chemicals, including the high inducing THC, found in marijuana). Pollan claims that there are "Cannabinoid receptors" located all over the body allowing the whole body to experience the 'high' usage of marijuana produces.

### Why does pot do so many things to the human body and brain?

Because chemical compounds in marijuana fit like keys into receptors on cells all over the human body. Those receptors control processes ranging from pain and thought to inflammation and the immune system. The receptors are ther because they also serve as keyholes to chemicals produced within the human body.

Compounds found in marijuana that fit into chemical receptors in the human body



\* CDB does not directly "fit" the keyhole in the CB1 and CB2 receptors. But it has powerful indirect effects still being studied.

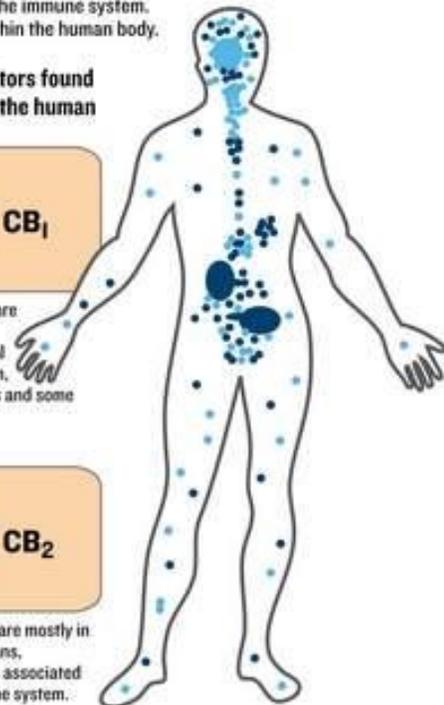
Cannabinoid receptors found on cell surfaces in the human body



CB1 receptors are concentrated in brain, central nervous system, but also nerves and some other organs.



CB2 receptors are mostly in peripheral organs, especially cells associated with the immune system.



Source: Samantha Miller, Project CBD, various research papers

NICK HUDDOK/The Record

- In 1988, Allyn Howlett, a researcher at the St. Louis University Medical School, discovered a specific receptor for THC in the brain -- a type of nerve cell that THC binds to like a molecular key in a lock, causing it to activate.
- Receptor cells form part of a neuronal network; the brain systems involving dopamine, serotonin and the endorphins are three such networks.
- When a cell in a network is activated by its chemical key, it responds by doing a variety of things: sending a chemical signal to other cells, switching a gene on or off, or becoming more or less active.
- Depending on the network involved, this process can trigger cognitive, behavioral or psychological changes. Howlett's discovery pointed to the existence of a new network in the brain.
- In 1992, some thirty years after his discovery of THC, Raphael Mechoulam (working with a collaborator, William Devane) found it: the brain's own endogenous cannabinoid. He named it "anandamide," from the Sanskrit word for "inner bliss."

<http://www.theweeklyconstitutional.com/news/headlines/472-humans-evolved-to-smoke-pot#sthash.Y65gcZFQ.dpuf>

50 million years ago India collided into Asia from a geological uplift which produced the Himalyan mountains as a result. The uplift and latitude produced variation in THC production. We now know that THC is produced as a sunscreen for Ultraviolet-B to protect the plant from radiation. Exposure to solar radiation increases at lower latitudes and higher elevations.

Some HID lamps make use of radioactive substances such as krypton-85 and thorium.<sup>[2][3][4][5][6]</sup> These isotopes help start the lamps and improve lamp operating characteristics.<sup>[2][4]</sup>

These isotopes produce ionizing radiation. It is because of their particular ionisation properties that they are used in lamps.<sup>[4]</sup> They produce alpha and beta radiation which causes high ionization inside the lamp but without being able to escape from the lamp.<sup>[4]</sup> The amount of gamma radiation produced by the isotopes that can escape from the lamp is negligible.<sup>[4]</sup> From Wikipedia

The way plant chemicals bind with receptors have lead to three primary suggesstions:

1. Surrepitious mimic theory-claims plant ligands surrepitious mimics of endogenous ligands produced by animals by altering it's chemicals to mimic ours.
2. Horizontal gene transfer-the direct non-sexual transmission of DNA between genomes of unrelated, reproductively isolated organisms. HGT could be vectored by parasites capable of bridging hosts between THC and the CB1 receptor. This theory is losing credibility however.
3. The Vestigial Receptor Hypothesis-We presume the proto-CB receptor and its ligand evolved in primitive organisms that predated divergence between animals and plants around 1billion years ago. The proto-CB receptors evolved into organizms which later became animals wheras organizms which evolved into plants lost the need for CB receptors.

Cannabis is the flagship bearer of cannabinoids but it is widely believed that prior to its 34million year history previous organisms produced cannabinoid compounds.

According to GW Pharmaceuticals humans first encountered cannabis between 12,000 and 1.75 million years ago and this was not the first, but the latest link between an ancient ligand and an ancient receptor.

The vestigial receptor hypothesis assumes that pairs of receptors and ligands evolved during the earliest multicellular organisms when membrane proteins became necessary for cell-to-cell signalling. So you see that plants evolved to retain the ligands, animals evolved to retain the CB receptors.

<https://books.google.com/books?id=AznCzOxvrtwC&printsec=frontcover&dq=cannabis+coevolution+gw+pharmaceuticals&hl=en&sa=X&ei=FlEzVKqaE471sQSK3ICADw&ved=0CB0Q6AEwAA#v=onepage&q=cannabis%20coevolution%20gw%20pharmaceuticals&f=false>