



GLUTEN FREE PSYCHIATRY
PODCAST

THE ENDOCANNABINOID SYSTEM

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PHYTOCANNABINOIDS vs ENDOCANNABINOIDS

PHYTOCANNABINOIDS ARE NATURALLY-OCCURRING AND CONCENTRATED IN THE OIL RESIN OF THE CANNABIS LEAVES AND BUDS. WHEREAS, ENDOCANNABINOIDS ARE CANNABINOIDS THAT OUR BODIES PRODUCE INTERNALLY.

Phytocannabinoids

The cannabis plant and other plants produce cannabinoids, which interact with our body's receptors. These plant cannabinoids are known as phyto-cannabinoids. Phyto is a prefix that means "pertaining to derived from plants". They are categorized as any plant-derived natural product with the capability to directly interact with the body's cannabinoid receptors or share chemical similarity with cannabinoids.



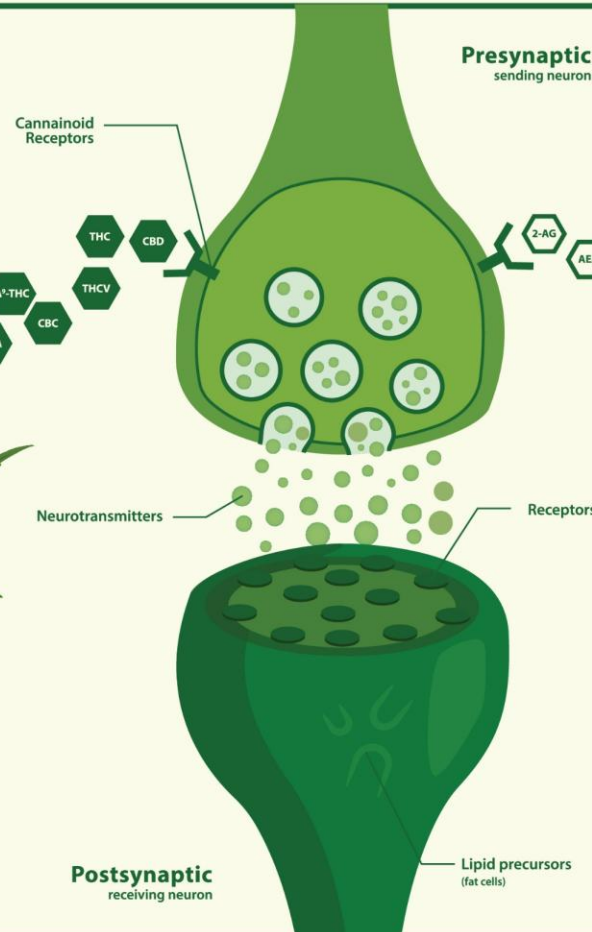
Cannabis

Endocannabinoids

The endocannabinoid system (ECS) is a biological system composed of endocannabinoids, which are endogenous lipid-based retrograde neurotransmitters that bind to cannabinoid receptors, and cannabinoid receptor proteins that are expressed throughout the vertebrate central nervous system (including the brain) and peripheral nervous system. The endocannabinoid system remains under preliminary research, but may be involved in regulating physiological, appetite, pain-sensation, and in mediating the pharmacological effects of cannabis.



Human



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WHAT IS HEMP?

Kingdom *Plantae* – Plants

Subkingdom *Tracheobionta* – Vascular plants

Superdivision *Spermatophyta* – Seed plants

Division *Magnoliophyta* – Flowering plants

Class *Magnoliopsida* – Dicotyledons

Subclass *Hamamelididae*

Order *Urticales*

Family *Cannabaceae* – Hemp family

Genus *Cannabis* L. – hemp **P**

Species *Cannabis sativa* L. – marijuana **P**

<https://plants.usda.gov/java/ClassificationServlet?source=display&classid=CASA3>



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THE GOVERNOR OF HOMEOSTASIS: ECS



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BRAIN-DERIVED NEUROTROPHIC FACTOR

J Neurophysiol 104: 1923–1932, 2010.
First published August 18, 2010; doi:10.1152/jn.00472.2010.

BDNF Evokes Release of Endogenous Cannabinoids at Layer 2/3 Inhibitory Synapses in the Neocortex

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Lemtiri-Chlieh F, Levine ES. BDNF evokes release of endogenous cannabinoids at layer 2/3 inhibitory synapses in the neocortex. *J Neurophysiol* 104: 1923–1932, 2010. First published August 18, 2010; doi:10.1152/jn.00472.2010. The neurotrophin brain-derived neurotrophic factor (BDNF) is a potent regulator of inhibitory synaptic transmission, although the locus of this effect and the underlying mechanisms are controversial. We explored a potential interaction between BDNF and endogenous cannabinoid (endocannabinoid) signaling because activation of type 1 cannabinoid (CB1) receptors

highest levels in the neocortex and hippocampus (Masana et al. 1993). Within the neocortex, trkB is predominantly localized to layers 2/3 and 5 (Cabelli et al. 1996; Fryer et al. 1996; Miller and Pitts 2000). At the subcellular level, trkB and p75 are expressed in postsynaptic dendrites and axon terminals (Aoki et al. 2000; Gomes et al. 2006), in glutamatergic neurons (Cabelli et al. 1996), and in GABAergic neurons (Drake et al. 1999).

BDNF is a potent modulator of GABAergic transmission

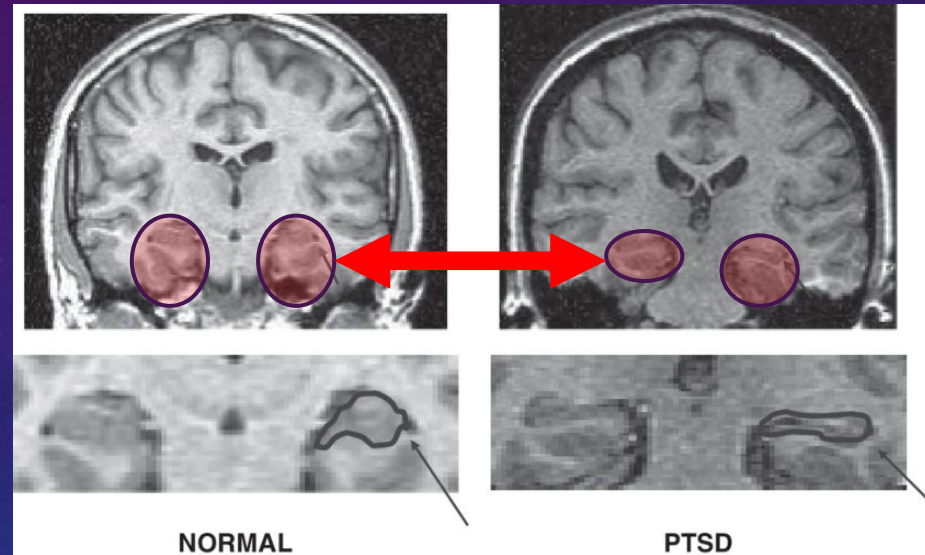
<https://journals.physiology.org/doi/full/10.1152/jn.00472.2010>



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REVERSIBLE CHANGES IN THE HIPPOCAMPUS

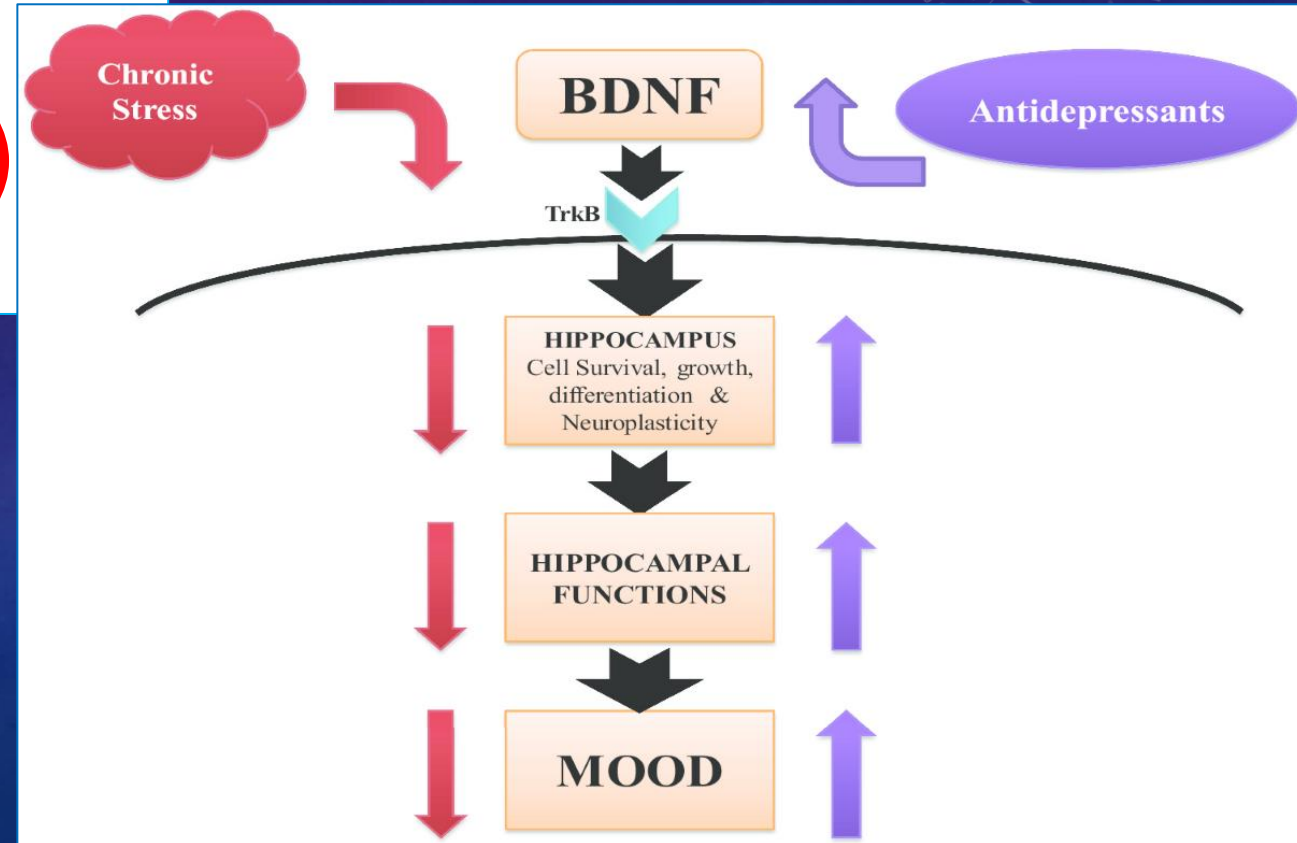
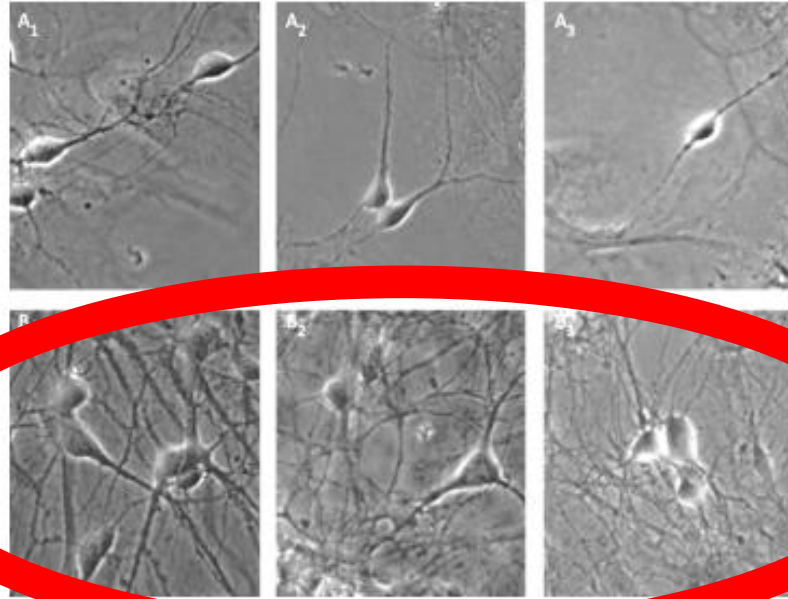


PTSD, TBI, Sleep Deprivation, Major Depressive Episodes



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It works like this; when you're depressed, avoiding social contact or overwhelmed with trauma and grief for a period of a few months or more, your brain chemistry changes. As Brain-Derived Neurotrophic Factor (BDNF) decreases, so too do neurons and connections between surviving neurons in your brain. See the graph below to get a visual of the top three rows of a mouse brain without BDNF and the bottom three rows with plenty of BDNF.





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DR. ETHAN RUSSO

Cannabis and Cannabinoid Research
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**Cannabis and
Cannabinoid Research**

Mary Ann Liebert, Inc. publishers

REVIEW

Open Access

Clinical Endocannabinoid Deficiency Reconsidered: Current Research Supports the Theory in Migraine, Fibromyalgia, Irritable Bowel, and Other Treatment-Resistant Syndromes

Ethan B. Russo*



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<https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfcfr/CFRSearch.cfm?fr=101.93>



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	Medical Marijuana	CBD Oil	Full-Spectrum (Minus THC) Oil
Origins	Government supplies are weaker and trashy	Cannabinol oil	Over 400 ingredients
Legal states	10 24 recreational, 33 38 medical	50	50
THC levels	Varies	None	<0.07%
CBD levels	More THC in <i>C. sativa</i> than CBD	Oil-based = 6% absorption	Water-based = 94% absorption



WHAT HEMP IS NOT?

- Marijuana
- Illegal
- A problem with employers
- A performance-enhancing substance
- Associated with the side effects of THC: anxiety, increased appetite, lethargy, cognitive slowing, decreased psychomotor coordination and reaction processing



WHY DO WE CARE?

- All vertebrates produce endocannabinoids
- The endocannabinoid receptor system is the largest in the human body
- It directly affects the Brain-Derived Neurotrophic Factor's work on the hippocampus after trauma



HEALTH BENEFITS

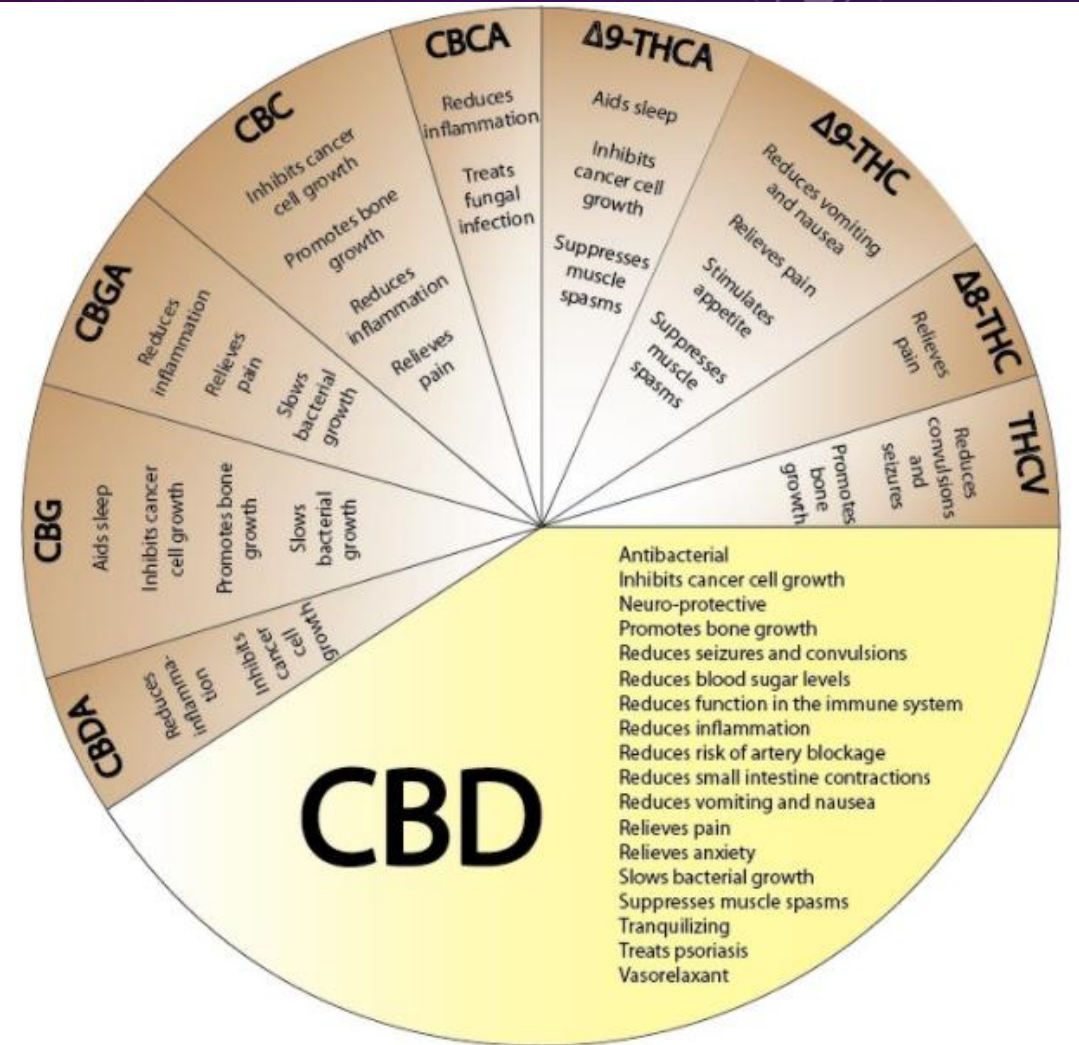
- <https://www.projectcbd.org/science>
- <https://echoconnection.org/education/>



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