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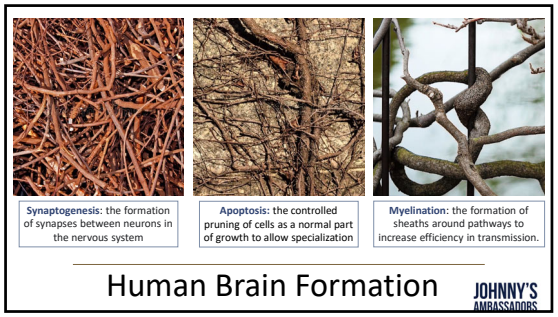

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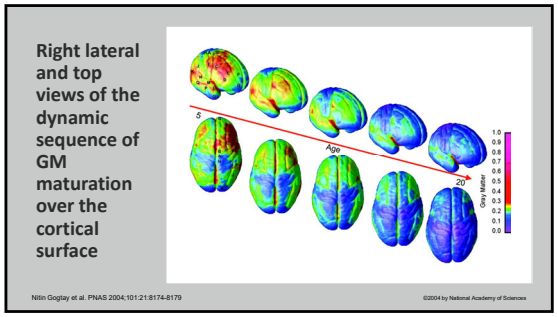

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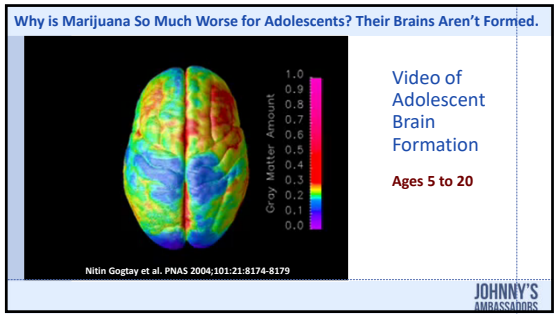

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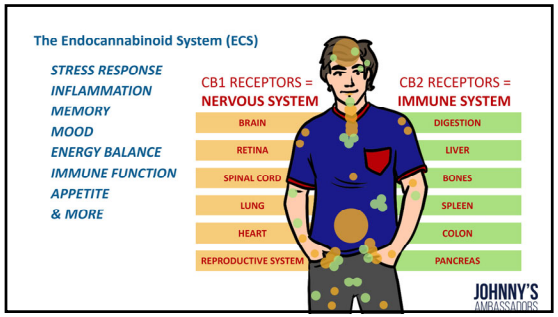

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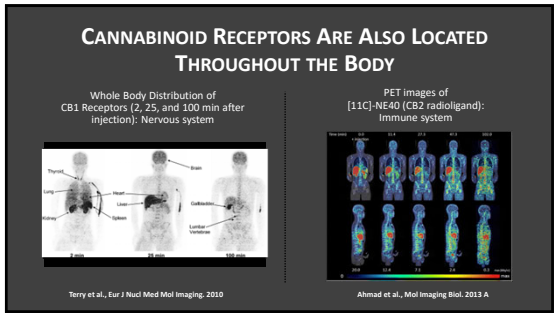

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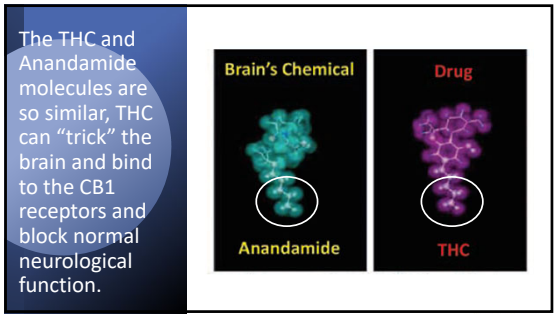

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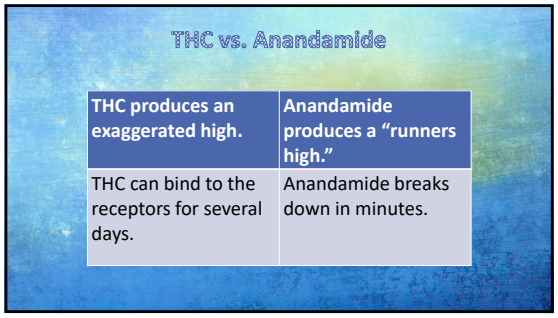

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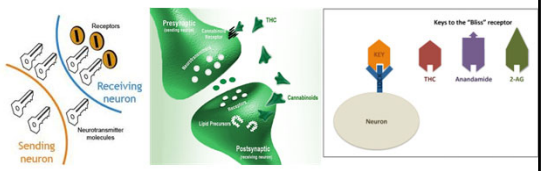
The Endocannabinoid System



Receptors = Locks
Neurotransmitters = Keys

Multiple keys can activate the same lock

JOHNNY'S AMBASSADORS

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Science Timeline

THC was identified as the primary active cannabinoid that caused the "high"

1964

1988

Cannabinoid receptors were identified as the sites in the brain and body where THC acts

Anandamide, the natural chemical that binds to the receptors was identified, so it was labeled an "endocannabinoid," which unfortunately gave people the mistaken impression cannabis was made to fit in our bodies naturally.

1992

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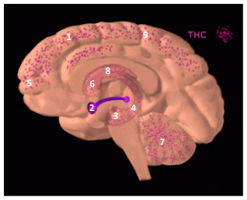
Regions of the Brain Containing CB1 Receptors Impacted During Adolescent Brain Formation

Brain Part	Function	THC Impact
1. Prefrontal cortex	Executive function and higher reasoning	Increases impulsiveness and reduces judgment
2. Nucleus accumbens	The reward circuit releases dopamine	Overabundance can contribute to hallucinations.
3. Amygdala	Emotions, fear, anxiety	Increases paranoia, panic
4. Hippocampus	Learning new information	Impairs memory
5. Orbitofrontal cortex	Motivation and drive	Decreases desire to do things
6. Basal ganglia	Planning and starting movement	Slows reaction time
7. Cerebellum	Motor skills, balance	Impairs coordination
8. Hypothalamus	Eating, sex drive	Increases appetite
9. Neocortex	Feeling and movement	Alters sensations



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WHAT AREAS OF YOUR BRAIN ARE IMPACTED BY THC?

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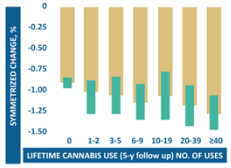
Association of Cannabis Use During Adolescence With Neurodevelopment – JAMA Psychiatry. Published online June 16, 2021

- Images from 799 participants at 14 years old and then again at 19 years old.
- Change in cortical thickness in millimeters at varying levels of lifetime cannabis use.



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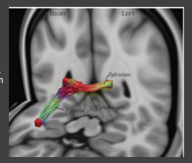
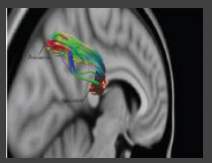
MULTIPLE STUDIES SHOW ALTERED BRAIN STRUCTURE AND FUNCTION IN YOUTH WHO REGULARLY USE CANNABIS

Early (<18y) Cannabis Use Decreases Axonal Fiber Connectivity

Precuneus to splenium



Fimbria of hippocampus, hippocampal Commissure, and splenium



Axonal paths with reduced connectivity (measured with diffusion-weighted MRI) in cannabis users (n=59) than in controls (N=33).

Source: Zalesky et al Brain 2012

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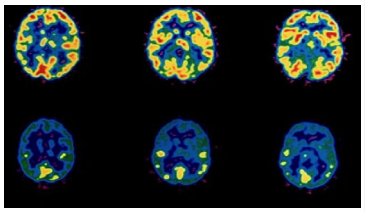
HYPOFRONTALITY



Active marijuana use can reduce the activity in several Frontal Lobe regions.

This is called **HYPOFRONTALITY**.

It can arrest youth brain development and impair problem solving, judgment, decision making, working memory, organization, planning, and prioritization.

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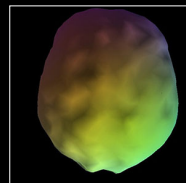
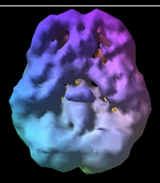


CLINICS



HEALTHY BRAIN

MARIJUANA USER'S BRAIN

Healthy Brain vs. Marijuana Brain

JOHNNY'S AMBASSADORS

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The Adolescent Biological Imperative

- It's in a teenager's nature to be impulsive.
- Their brains don't fully develop until mid-20s, so they can't make sound judgments.
- Young people are driven to take risks and explore the world.
- They want to break away from their parents and become independent.
- This can lead to destructive behaviors such as drug and alcohol use, reckless risk-taking, and other dangerous conduct.
- We must teach them to treat their brains as their best friends.

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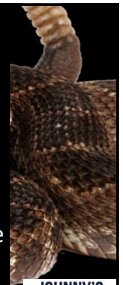
Teach a Healthy Fear of Marijuana

What did you teach your children about rattlesnakes?

STAY AWAY, because it can bite you!



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Please Become One of Johnny's Ambassadors!

Sign Up	Join our weekly newsletter: JohnnysAmbassadors.org/blog
Share	Join and share our Facebook posts: facebook.com/groups/JohnnysAmbassadors
Show Up	Join us for the 2nd Annual #StopDabbing Walk on Sunday, September 18, 2022: StopDabbingWalk.com
Speak Out	Get involved: JohnnysAmbassadors.org/join
Support	We gratefully accept donations: johnnysambassadors.org/donate

JOHNNY'S AMBASSADORS

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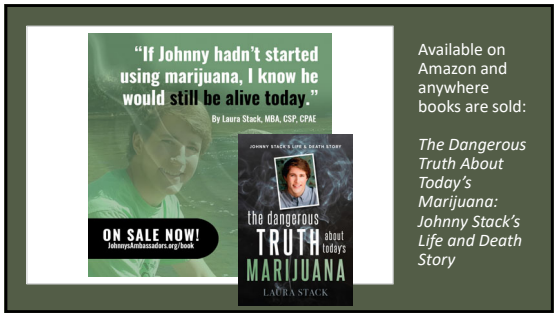

Available on Amazon and anywhere books are sold:

The Dangerous Truth About Today's Marijuana: Johnny Stack's Life and Death Story

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Scan This QR Code To Go To Our LinkTree For a Complete List of Free Educational Resources!

Questions? Email me at
Laura@JohnnysAmbassadors.org

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