



# HYPOTHALAMIC NEWSLETTER



Welcome to this edition's Hypothalamic Newsletter! We will be discussing genes and the environment, neurotransmitters and mood, and brainwaves.

## Genes and The Environment

The effect on the brain from environmental features has long been known. Recently, more research regarding the role of the gene x environment interaction surfaced the crucial nature of positive parenting. The dopamine D4 receptor (DRD4) has been implicated in ADHD development. The DRD4-7R allele mutation has been correlated with a lack of impulse control and novelty seeking. It has also been found in men convicted of violent crimes and martial arts fighters.

Because of this, researchers had originally presumed that the mutation gives higher bias toward dysfunctional and antisocial behaviour. However, studies have found that positive parenting in children with the 7R allele were more sensitive to the reward of parental support, showing that early intervention with positive support structures can increase prosocial behaviour even more than in children without the 7R allele. Rather than a linear convergence toward crime risk, the allele instead has been shown to provide a wider range of behavioural outcome.

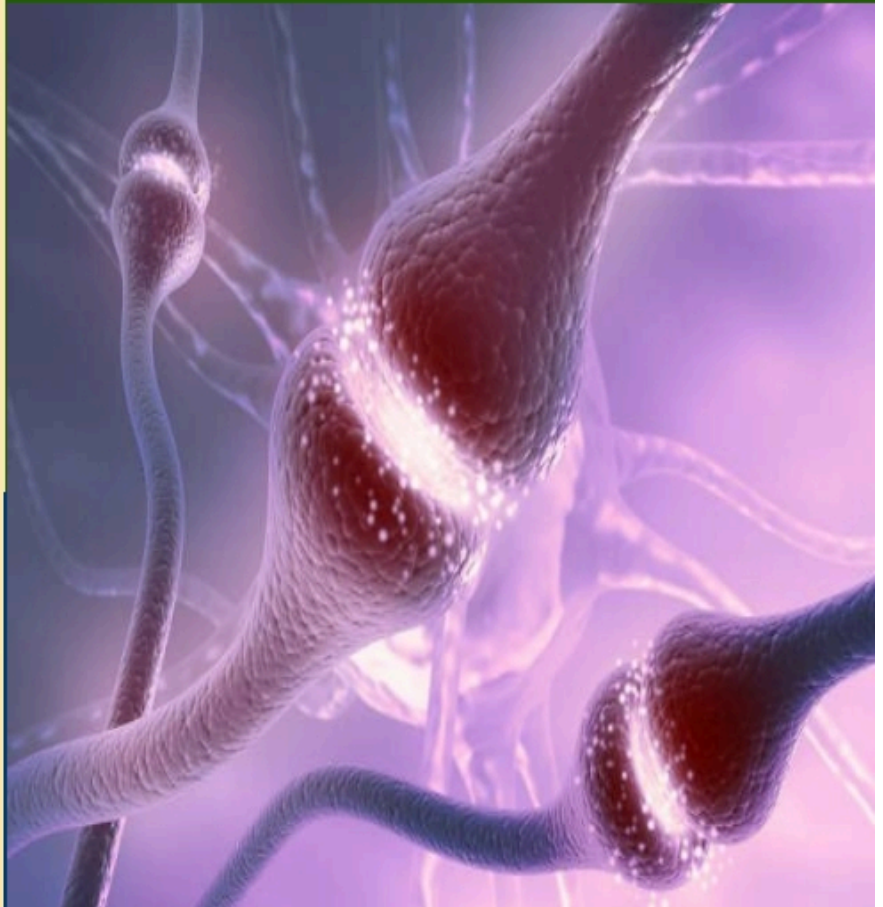
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## Neurotransmitters and Mood

Neurotransmitters are chemical messengers that control a wide range of physical and emotional functions, including cognitive and mental functioning, emotional moods, and pain response. Neurotransmitters regulate almost every function in the human body. Neurotransmitter, hormone, and brain chemical interactions all have a significant impact on general health and well-being. We feel more driven, motivated, and lively when our concentration and focus are good. Unfortunately, when neurotransmitter levels are low, these stimulating and motivational messages are missing, making us feel anxious, lethargic, and out of control. Disrupted connection between the brain and the body can have significant physical and mental health consequences. Depression, anxiety, and other mood disorders are considered to be linked to neurotransmitter abnormalities.

Serotonin, Dopamine, and Norepinephrine are some of the more prevalent neurotransmitters that control mood. One of the most prevalent causes of mood disorders is a serotonin deficiency.



Serotonin is essential for our pleasure and is essential for our emotions since it protects us from anxiety and sadness. Furthermore, your hormones and estrogen levels might alter the levels of serotonin and explain why some women are having difficulties with premenstrual and menopause. In addition, stress can significantly lower your supply of serotonin. For motivation, energy, interest and drive, dopamine and norepinephrine are important. When we have not enough of them, we do not feel alive, we are struggling to initiate or complete activities, lack focus, no energy and no motivation. In medicine, low levels of these neurotransmitters have been known for years to induce a number of ailments and disorders.



## What are Brainwaves?

Brainwaves in the brain are electrical drives. The conduct, emotions, and ideas of an individual are conveyed within our brains between the neurons. All brain waves are created via communicating masses of neurons with each other via synchronized electrical pulses. At different frequencies, our brain waves occur. Some of them are quick, some of them slow. These EEG bands have classical names such as delta, theta, alpha, beta, and gamma. The cycles per second or hertz are measured (Hz). Delta brain waves (1-3 Hz) are brainwaves with the slowest and greatest amplitude, and we feel it during sleeping. In general, the dominant brainwave states have varying levels of consciousness. The brain waves (4-7 Hz) reflect a dreamy day, a spacious mental condition linked to the inefficiency of thought.



Theta brain wave activity in extremely slow levels is a highly calm state that represents the creeping zone between waking and sleep. Slower and bigger brainwaves (8-12 Hz.) are alpha. They are relaxed and reflect the brain moving into an idle gear, waiting to be reacted to if necessary. If we close our eyes and start to portray something pleasant, the alpha brain waves will grow. Beta brain waves (13–38 Hz) are smaller, quicker brainwaves linked with an externally focused state of intellectual engagement. The quickest and most delicate brain waves are gamma brainwaves (39 - 42 Hz). Gamma rhythms modify awareness and awareness.



# Brainwaves Continued

Individuals with ADHD and learning difficulties tend to have sluggish, theta and alpha, excessive waves. In executive (frontal) regions of the brain, when an excessive quantity of slow waves is present, attention, behavior and/or emotions cannot be controlled. Betas show attentiveness and anxiousness during waves on the brain. These waves cannot be controlled since they are unconscious. Instead, attempt to repair the main reason by perturbing your brain waves.

**Gamma**  
(<25 Hz)



**Awareness**

**Beta**  
(13-25Hz)



**Alertness**

**Alpha**  
(8-12 Hz)



**Relaxed**

**Theta**  
(4-7 Hz)



**Tired**

**Delta**  
(1-3 Hz)



**Sleep**