

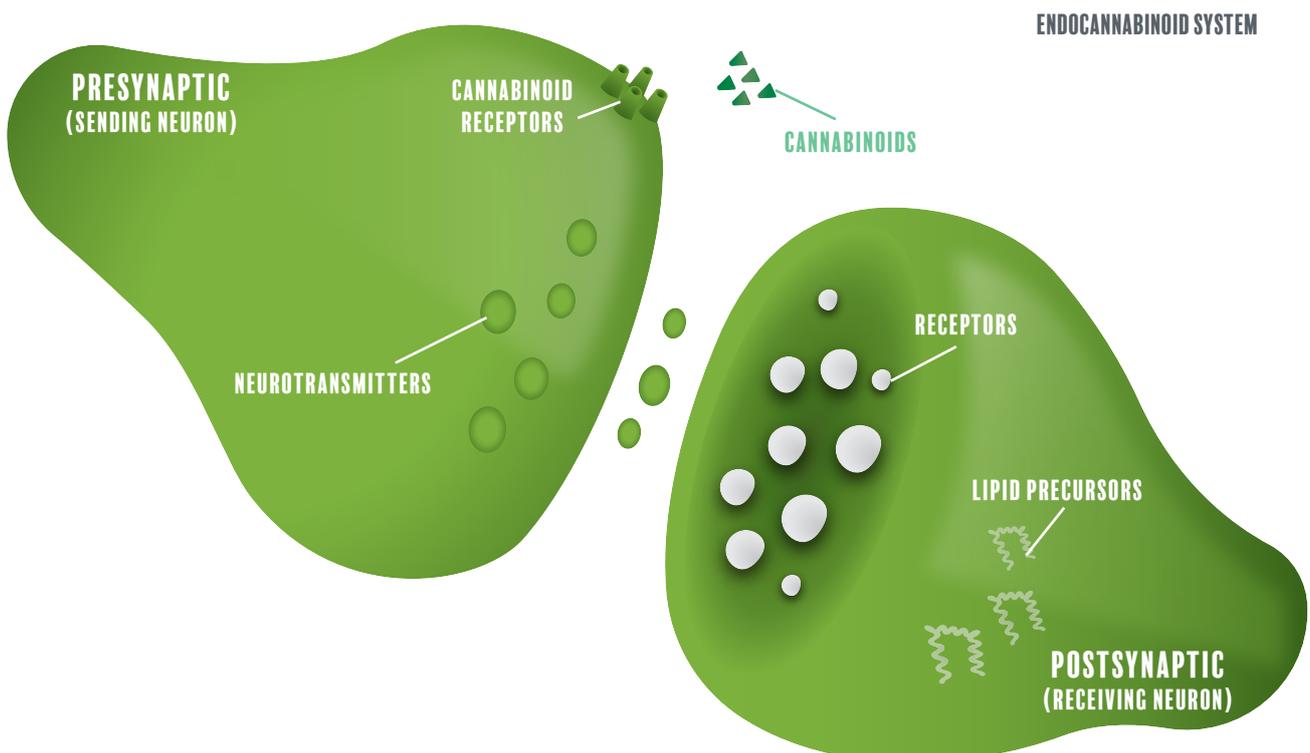


# ASK THE SCIENTIST

## What is the endocannabinoid system?

By Richard Cunningham, PhD

Search for the ECS online and you're instantly blinded by graphics and definitions only a scientist could understand. So, we asked our go-to scientist Dr Richard Cunningham to break it all down.



## DID YOU KNOW?

THE ECS IS INVOLVED IN THE REGULATION OF A LARGE RANGE OF PHYSIOLOGICAL FUNCTIONS IN THE BODY INCLUDING MOOD, MEMORY, FERTILITY, PAIN-SENSATION AND APPETITE.

### First of all, what is a cannabinoid?

A cannabinoid is a class of chemical compounds that bind to the cannabinoid receptors found within the human body. They are all hydrophobic/lipid soluble molecules. This means they don't mix well with water.

A receptor is a protein molecule that receives chemical messages from outside of a cell and there are two main cannabinoid receptors found within the body. These are CB1 and CB2.

CB1 receptors are found mainly in the central nervous system and also in organs like the liver, lungs and kidneys, while CB2 receptors are more associated with tissues of the immune system.

When a cannabinoid binds to a cannabinoid receptor, it acts as an agonist, which means it activates the receptor to produce a biological tissue response. Whereas cannabinoid antagonists block a cannabinoid receptor from being activated by an endocannabinoid.

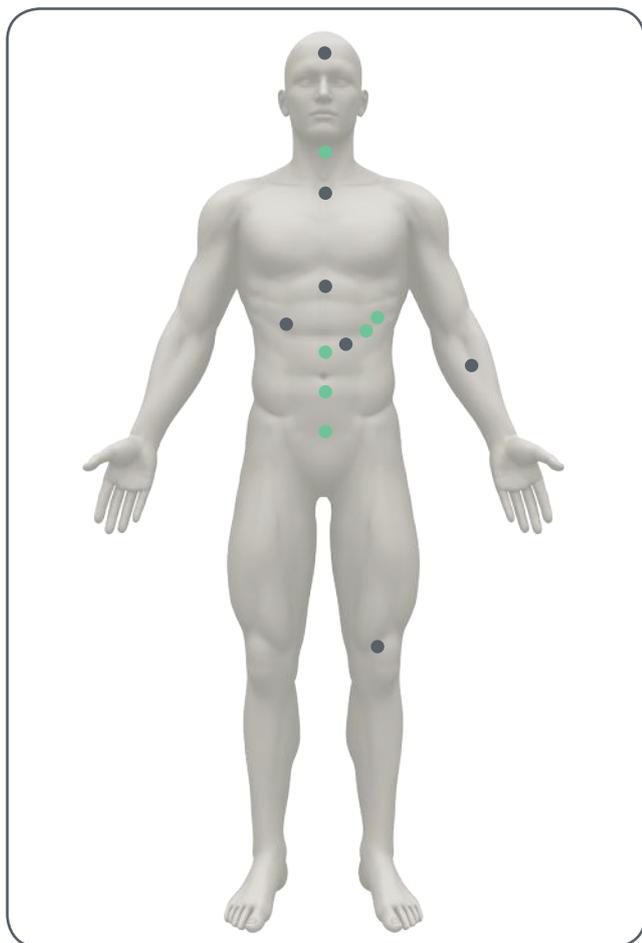
Naturally occurring cannabinoids within the body are known as endocannabinoids, from plants phytocannabinoids such as that from the cannabis plant, and lastly synthetic cannabinoids which are manufactured artificially.

The grouping of the cannabinoid receptors, receptor proteins and endocannabinoids make up what is called the endocannabinoid system (ECS).

The ECS is involved in the regulation of a large range of physiological functions in the body including mood, memory, fertility, pain-sensation and appetite.

As such administration of phytocannabinoids and synthetic cannabinoids which are not naturally found in the body can influence physiological functions mentioned earlier, such as mood, pain-sensation and appetite. And this happens through interactions with the cannabinoid receptors of the body.

Different cannabinoids will have different physiological responses through how and which receptors they bind to, such as the appetite stimulating effect of THC, and the pain-relieving effects of CBD.



● CB1 = The brain and nervous system, as well as the lungs, liver and kidneys

● CB2 = Gastrointestinal system, tonsils and spleen

**DO YOU HAVE A SCIENCE QUESTION FOR DR RICHARD? EMAIL YOUR QUESTIONS TO THE EDITOR AND THEY MAY BE FEATURED IN THE NEXT ISSUE OF VAPOURROUND:**

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### About the scientist:

Dr Richard Cunningham has a PhD in medicinal chemistry from Queen's University Belfast where he also worked as post-doctoral researcher for a number of years before working in the US at the Mitchell Cancer Institute in Alabama. Among his areas of expertise are organic synthesis, nucleosides, nucleotides, cellular biology, vitamins, aminoglycosides, drug delivery, phosphorous chemistry and chemical analysis. He is now the director of quality at Liquid Sciences LLC in the UK.