Introduction to Cannabinoids & Terpenes

Officer Dick Downey's
Re-education Protocol

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What Are Cannabinoids?

The human body has in it certain fatty acids called ‘endocannabinoids’, which are chemical compounds that occur naturally in your body. These endocannabinoids modulate and regulate systems in the brain and body by binding to and stimulating at least two types of receptors named ‘CB1’ and ‘CB2’. Both of these receptors are a type of protein referred to scientifically as a ‘G protein’ and are embedded in cell membranes throughout the body.

CB1 receptors are primarily located on nerve cells in the brain and central nervous system, but they are also found in some organs and tissues such as the spleen, white blood cells, endocrine gland and parts of the reproductive, gastrointestinal and urinary tracts. CB2 receptors are found mainly on peripheral organs and throughout your immune system on white blood cells.

These endocannabinoids and their receptors function within what is referred to as the Endocannabinoid System (ECS), which creates and maintains internal balance, or homeostasis, for good health. The ECS does this, in part, by addressing inflammation throughout the body.

Note: For more information on the ECS, please see the document, *How Cannabis Works as a Medicine*.

Cannabinoids exist in three forms: 1) As ‘endocannabinoids’, which are produced naturally in the body. 2) As ‘phytocannabinoids’, which are found in abundance and variety in the cannabis plant; and, 3) As synthetic cannabinoids, which are manufactured artificially.

Cannabinoids in Cannabis

There are more than 80 different cannabinoid compounds that occur naturally in the cannabis plant. These phytocannabinoids (phyto = of a plant) are produced and concentrated in the plant’s resinous trichomes (see pic below).

The current scientific research and vast anecdotal evidence indicates that cannabis’ cannabinoids hold the secret to helping to prevent and heal many of the chronic diseases humans are facing. From cancer to Alzheimer's, cannabis and its cannabinoids (and terpenes) show great promise in addressing these and other medical conditions, sometimes dramatically.

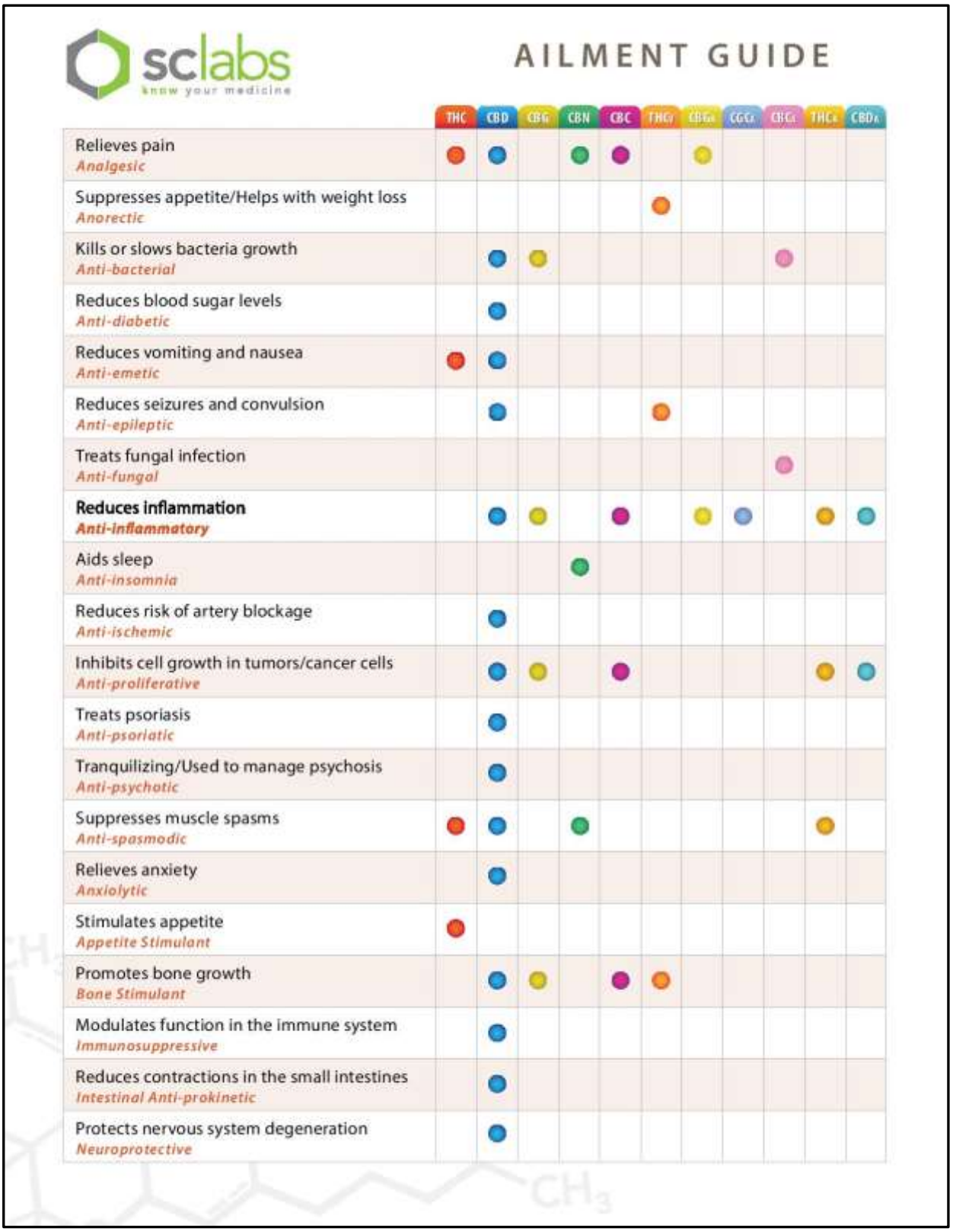
THC (Tetrahydrocannabinol) and CBD (Cannabidiol) are probably the most well-known cannabinoids in cannabis; however, at least 85 different cannabinoids have been identified and isolated from the cannabis plant. The scientific community is only beginning to discover their complexity and benefits.

A close up of the resinous trichomes on the cannabis plant, which contain cannabinoid and terpenoid compounds.

Source: http://www.dave-dewitt.com/

Cannabinoids & Their Healing Properties

This matrix illustrates some of the recognized healing properties of the most common cannabinoids in cannabis.



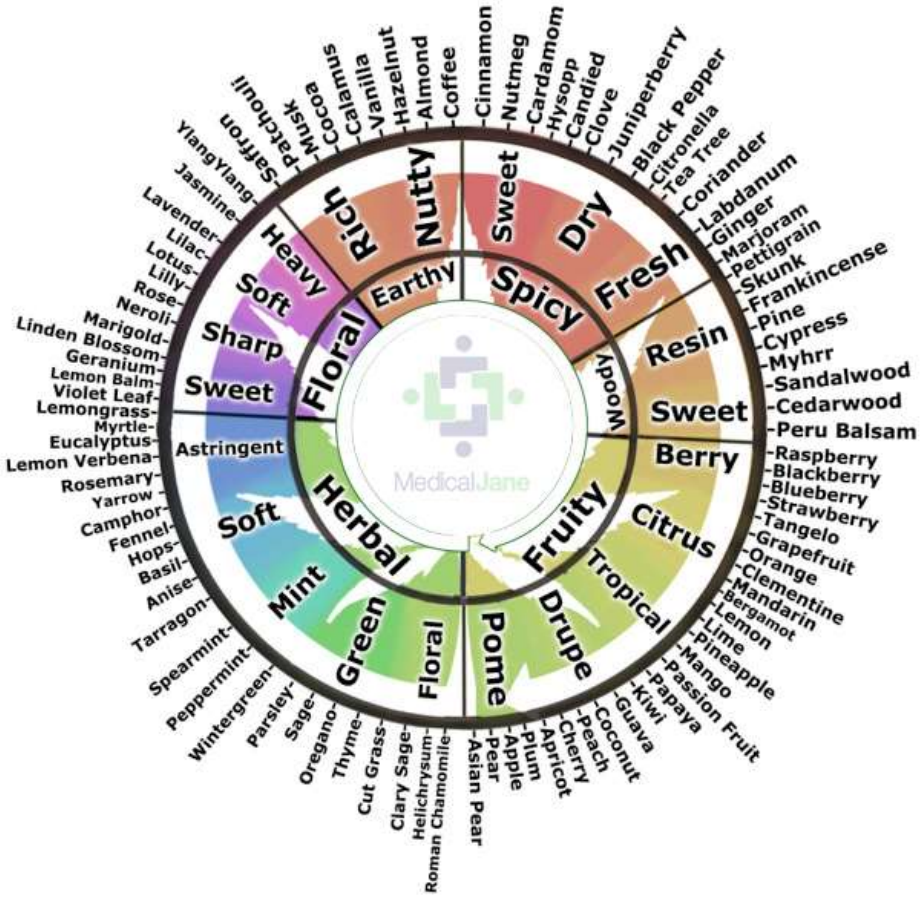
Source: SC Labs

What are Terpenes?

Terpenes, or terpenoids, provide cannabis with its unique aromas and contribute to its flavors and pigment as well. These volatile, unsaturated hydrocarbon molecules are found in the essential oils of all plants, giving every plant its unique odor profiles. In cannabis, there are over 200 distinct terpenes, which vary in concentrations from strain to strain and are found in the resinous trichomes of the plant.

Note: Flavonoid compounds in plants, including cannabis, are responsible for their specific colors.

Terpenes provide endless aromatic compounds, as shown in this terpene wheel graphic:



Source: medicaljane.com

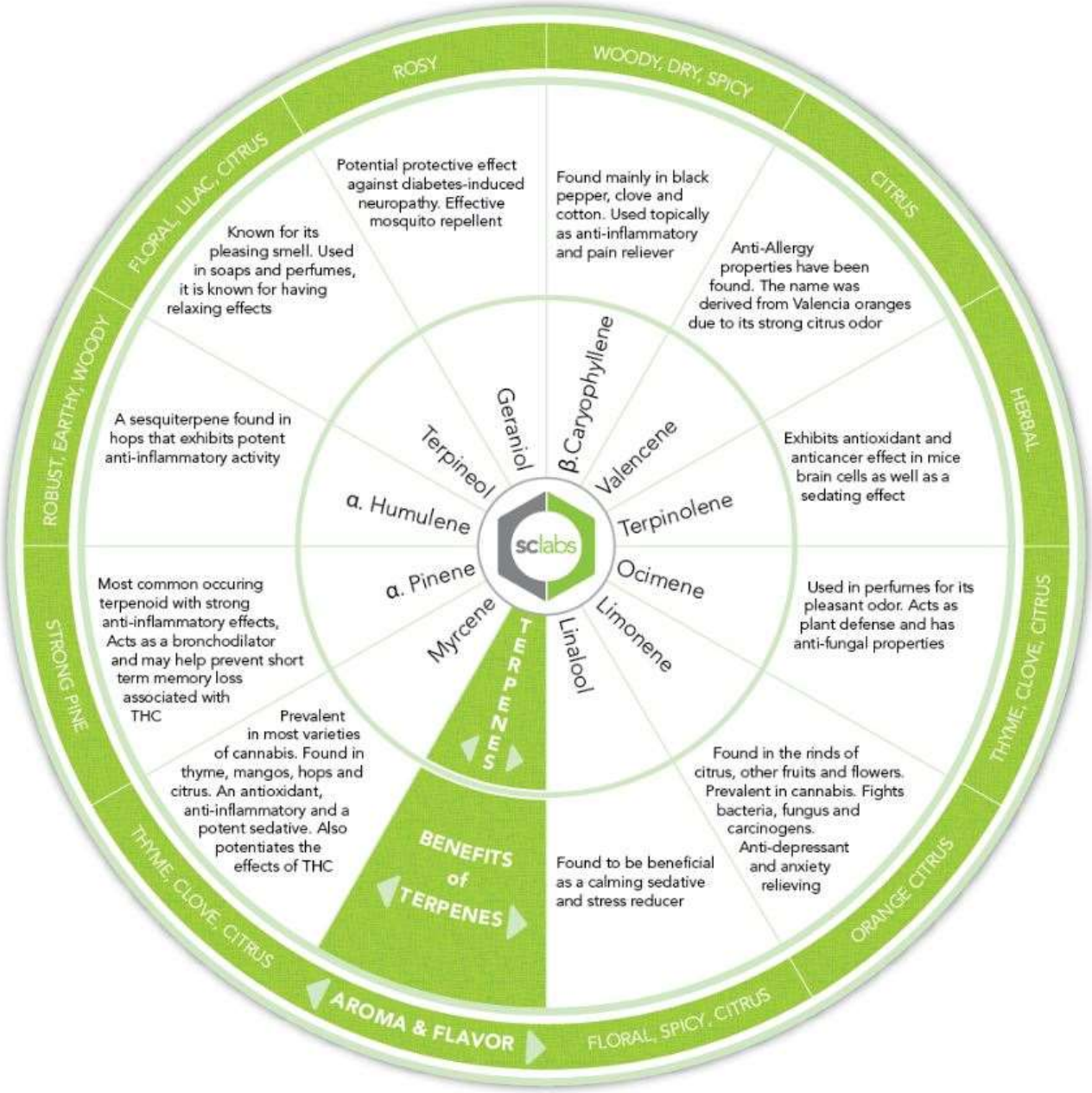
The Role of Terpenes in Plants

In addition to providing the aromas and flavors of a plant, terpenes also have been found to be essential building blocks of complex plant hormones and molecules, pigments, sterols and even the cannabinoids in cannabis. Terpenes also play a critical role by providing the plant with natural protection from bacteria and fungus, insects, and other environmental stresses.

The Medicinal Properties of Terpenes in Cannabis

The importance of terpenes in medicinal cannabis is becoming more evident as the research progresses. Terpenes are responsible for many of the subtle differences between strains and how they perform medically. Terpenes are also known as being a main contributor to cannabis' 'entourage effect', wherein the terpenes interact in a synergistic way with cannabis' cannabinoids to become more effective as a whole, rather than as individual chemical compounds. For example, when used in combination with cannabinoids, terpenes have an ability to alter the permeability of both cell membranes and the blood/brain barrier, causing THC and other active cannabinoids to have a faster onset and more thorough absorption.

This wheel graphic depicts the potential medicinal benefits of some common terpenes in cannabis, along with their aroma profile.



Source: SC Labs