

A few suggestions from Granny-

Convert the PDF to a WORD file! That should give you a navigation bar which makes using the List so much easier! No more scrolling down “forever” to find what you need!

Try reading the related **news articles first**, then move on to abstracts, then the full studies.

Print up a copy of the Mini-dictionary to have handy while reading the studies.

Always have a second window open to plug in those “weird words”. Usually you won’t even need to open a link- the definition is often visible in the excerpts that are shown. **Write down the definition** on a 3 x 5 card, or make the Mini-dictionary into a WORD file and add it there.

As studies age, they are often freed up for public use. I will often find a new abstract at PubMed (“ncbi” in the URL), but during the time between my collecting the abstract, and your clicking the link, they sometimes make the study “open access”. My link will take you to just the abstract, but up in the right corner will be a link to the full study either at PubMed, or another site. **Always check for the full study!** Also, don’t be afraid of going to PubMed- they don’t bite, and the site is simple and user-friendly.

Remember that studying the endocannabinoid system is brand-new science. Everyone, even the PhDs, are still figuring things out!

Please share the List with your friends!

Granny Storm Crow's List - January 2014

MINI-DICTIONARY- Sci-Speak to English

Just a few definitions to help you along.

Acetylcholine – a common neurotransmitter

Acute- sharp or severe in effect; intense

Adipose tissue - fat

Adipocyte – a fat cell

Adjunct – a medication used in conjunction with another to help it work better

2-AG- A “messenger chemical” made by your body – similar to THC

Agonist – a chemical that activates a receptor

Allodynia- pain due to a stimulus which does not normally cause pain, (ie- a light touch)

Allosteric- works through a “back door” mechanism, not the usual binding site

Analgesic – pain relieving

Analogue – a synthetic version

Anandamide/ AEA - a “messenger chemical” made by your body – similar to THC

Angiogenesis - making new blood vessels, often to feed a tumor
Antagonist – a chemical that blocks the action of an agonist
Antigen- a substance which causes an immune response
Anti-nociception- pain relieving
Anxiolytic – calming, anti-anxiety
Apoptosis - a process that leads to the normally programmed death of a cell.
Aqueous humor – the liquid between the colored iris and the clear cornea of your eye
Ataxia - lack of muscle coordination during movements like walking, or picking up objects
Autophagy – the cell self-destructs, literally “eats itself”

Beta amyloid plaque / β -amyloid/ $A\beta$ – the stuff that gums up your brain in Alzheimer’s
Biphasic – different results for different doses, THC stops or causes nausea depending on dose
Bronchodilator – opens up the lungs

Cannabinoids –they activate CB receptors and are made in your body, cannabis or labs.
Cannabinomimetic – acting like a cannabinoid
Carcinoma - cancer
Cachexia – severe wasting away due to illness
Central nervous system/CNS - the brain and spinal cord
Cholinergics- drugs that inhibit, enhance, or mimic the action of acetylcholine
Chronic – long term
Cirrhosis – scarring (usually) of the liver, impairing function
Cogeners- related chemicals
Cross tolerance – tolerance to a drug causes tolerance to another, similar, drug
Cryofixed - frozen with liquid nitrogen for electron microscopic examination
Cutaneous – pertaining to the skin
Cytotoxic – poisonous to living cells

Demyelinating diseases - diseases in which the myelin on nerves is destroyed, as in MS
Dopamine - a neurotransmitter that helps control the brain's reward and pleasure centers
Dose-dependent manner – the more they got, the better it worked
Downregulation – a decrease in number
Dysregulation – malfunctioning, out of kilter

Emesis- vomiting
Endocannabinoid – a chemical messenger made by your body- anandamide and 2-AG
Endocannabinoid System/ ECS – a system of chemical receptors on and between your cells
Endogenous – made in your own body, opposite of exogenous
Epidermal – pertaining to the skin
Epithelial cells –cells lining of your gut and surfaces of structures throughout the body
Excitotoxic- when nerve cells are damaged or killed by over-stimulation
Exogenous - from outside the body, opposite of endogenous

Extracellular – outside of the cells

FAAH/ Fatty acid amide hydrolase – an enzyme that breaks down anandamide

Follicle - sac or cavity having excretory, secretory, or protective function: a hair follicle,

Ganglia/ ganglion – a bunch of nerves outside the CNS, or some gray matter bits in the brain

Genotype - all the genetic traits of an organism, both visible and hidden

Gut microbiota - microorganisms that live in the digestive tract

Hemp – Cannabis sativa, usually with a low level of THC

Hematopoiesis – the making of new blood cells in bone marrow

Hepatic – pertaining to the liver

Hippocampus – part of the brain, controls mood and memory.

Homeostasis - your body keeping everything in balance and working right

Hydrolysis - breaking down a compound using enzymes

Hyper- over, above, extreme

Hyperalgesia – severe pain

Hyperemesis – severe vomiting

Hyperphagic – over-eating

Hyperthermia – a fever

Hypo- under, or below

Hypophagic – under-eating

Hypothermia – lowered body temperature

Hypoxia – not getting enough oxygen

Idiopathic- of unknown cause

Indica - short plants, broad leaves, solid buds; “heavy” body high, good pain relief, some CBD

In silico – done on a computer

In vivo – in a live animal

In vitro – in a test tube

Infarction – damage from a lack of blood due to a blood vessel blockage

Intraocular – inside the eye

Intrathecal injection - injected under the arachnoid membrane of the brain or spinal cord

Intrauterine – inside the uterus

Inverse agonist- binds to a receptor like an agonist, but causes the opposite effect

Ischemia – damage from lack of blood to an area

Jejunum - the middle section of the small intestine in most higher animals

Lactating - producing breast milk, nursing

Ligand - a chemical that binds to a receptor- THC is a ligand of CB1 and CB2 receptors
Lipids – fats and oils

Macrophages - specialized cells that attack foreign substances, disease germs and cancer cells

MAGL - an enzyme that breaks down 2-AG

MAPK-JNK signal pathway- the way the receptor's message gets into the nucleus' DNA

Metabolites – what's left over after your body breaks down a compound

Metastasis – spreading through the body

Microphage - a white blood cell capable of ingesting bacteria, etc.

Micturation – urination, peeing

Modulate – control or regulate something

Murine - mouse

Mydriasis - a disorder in which the pupil of the eye dilates abnormally, and stays dilated

Myelin – a protective covering on the axion part of a nerve cell

Myocardial – pertaining to the heart muscle

Nanomolar – a very tiny amount

Necrotic – dead or dying

Nephro – referring to the kidneys

Neurogenesis – new brain cells are being formed

Neuropathic Pain – pain due to nerve injury

Neuroprotective – protects nerves and brain cells

Neurotransmitter - a chemical messenger that carries messages between neurons and other cells

Neutrophil – the most common type of white blood cell

Nociceptive –experiencing pain from a stimulus such as heat or tissue damage

Nociceptor – pain nerve

Nonpsychoactive – won't get you high

Nonpsychotropic – won't get you high

Occluded – blocked up, as in an occluded artery

Ocular – referring to the eye

Olfactory – pertaining to smell, odor detection

Oromucosal – pertaining to the lining inside of the mouth

Osteoblast – a cell that makes new bone

Osteoclast - cell that eats away and breaks down bone causing bone resorption

Palliative - health care focused on relieving and preventing suffering

Partial agonist- doesn't activate receptor fully, may "hog" receptors, blocking full agonists

Pathogenesis - the origin and development of a disease

Peptide – string a bunch of peptides together, and you get a protein

Peripheral nervous system (PNS) - the nerves and ganglia outside of the brain and spinal cord

Peritoneal – pertaining to the peritoneum that lines the walls of the abdominal cavity

Phenotype- the genetic traits that you can see

Phytocannabinoid – a cannabinoid produced by a plant – THC and CBD are examples

Phyto - referring to plants

Phytochemical – a compound produced by a plant

Polymorphism – having more than one form, different phenotypes in genes

Porcine – pertaining to pigs

Prions – they cause Mad Cow Disease

Pruritus – chronic itchiness

Pulmonary –pertaining to the lungs

Receptors - These receive the chemical messages and send them into our cells.

Refractory pain- pain not responding to the usual treatments, stubborn pain

Renal - pertaining to the kidneys

Reperfusion damage- damage caused when blood returns to an area

Reuptake - reabsorption of a substance by the cells that originally produced it

Ruderalis – small, short-season, autoflowering strains, potency varies

Sativa – tall plant, long skinny leaves, slow maturing; a mental/ party high, occasional paranoia

Sebaceous glands- oil glands in the skin

Seronegative - testing negative for a disease

Seropositive - testing positive for a disease

Teratologic – causing birth defects

Terpinoids – gives cannabis its odor, may help cannabinoids to enter cells more easily

Transgenic – genetically modified, a GMO

Trichome – in cannabis, it usually refers to tiny mushroom-shaped structures that hold THC

Trigeminal nerve – responsible for sensation in the face, and biting and chewing

Upregulation – increase in number

Uveitis - infection of the middle layer of the eye involving the iris, ciliary body and/or choroid.

Vascular – referring to blood vessels

Vasodilator – expands the blood vessels

Vasoconstrictor – contracts the blood vessels

Visceral - pertaining to internal organs, guts

Xenograft - transplanting living cells, tissues or organs from one species into another

Just for fun- some of the old intros!

July 2013

Well, it has finally happened! The List is too darn big for some e-mail accounts to handle. So I have divided the List into 4 parts- The "**Natural Cannabinoids and Conditions**" is the largest part, and will be of the most use to the majority of you since it contains the more recent studies. A few older, but useful, topics appear in this section, such as "Storage" and "History". Topics that have "**Pre- 2000 Studies**" are marked with an asterisk, (ASTHMA*), to alert you that older studies do exist.

The studies in the "**Synthetics**" will be of more interest to those in the medical professions. However, when a synthetic compound is useful for a certain condition, the study will be added in that section in the "Natural Cannabinoids and Conditions", as well as in the "Synthetics". While "**The Endocannabinoid System**" provides an overview of how the cannabinoids affect virtually all of our body's functions.

Cannabinoid studies are coming out at an ever increasing rate, and frankly, it was getting hard to navigate through all those studies. The List has to change with the times!

And the times are changing! Two states have legalized cannabis, and others are considering it! At no time, since before the 1930s, have so many people supported medical use of cannabis! CNN's Dr. Sanjay Gupta has publicly changed his stance on cannabis and admitted to having tried it! And that same week, CNN ran a story about a child finding relief from severe epilepsy with a "high CBD" cannabis extract. The facts about cannabis being a safe and effective medicine for many conditions are slowly trickling into the mainstream media!

We can speed up that trickle of information! The medical facts about cannabis speak for themselves, but it is up to us to get the facts to the public! Each one of you knows someone who could benefit from the information in this List, a relative, a friend, or co-worker. It takes only a moment to forward the List.

Your doctor, unless he is the exception, has **not** educated himself about cannabis. Send him a few abstracts to get his interest! (The Post Office delivers mail without a return address- you can even stay anonymous!) And our politicians are worst of all! One activist described talking with our politicians as like "talking to teenagers who had never heard of cannabis"! That they are so ignorant about even the most basic facts about cannabis, and yet are in charge of making our laws on it, is mind-boggling!

We have the facts on our side. All we need to do is speak the truth clearly, and repeatedly, until cannabis is fully legalized! The prohibitionists have spread their lies for the last three quarters of a century, but their lies cannot stand up to the truth that we possess. And as my Grandfather said, "If the truth won't do, then something is wrong!"

Jan- 2012- Well, here I am again, staring at this blank screen, trying to figure out what to say so you will share the information I have gathered. “Once the medical facts about cannabis become known, the need for legalization becomes obvious!” How many times have I said that? I need YOU to educate those around you. I can’t do it alone!

At times, it seems so futile- this never-ending battle against ignorance about cannabis. But I can’t give up - this simple herb has some amazing uses and people need to know what it can do.

Cannabis should be treated like any other medicinal herb, because that’s what it is, just an herbal medicine with a rather pleasant side effect- you feel “high”. Unlike common aspirin, cannabis never kills by overdose. Compared to some pharmaceutical’s side effects, the “cotton-mouth”, “red eye”, “munchies” and “feeling a just bit too good” from using cannabis seems so trivial!

As Americans, we should be free to exercise our right to choose the type of medicines that we take. Anyone exhibiting the first signs of Alzheimer’s should be able to choose between Aricept, Marinol, or natural cannabis to slow the deposit of mind-clogging amyloid plaque.

“When tested at double the concentration of THC, Aricept blocked plaque formation only 22% as well as THC, and Cognex blocked plaque formation only 7% as well as THC.” (Marijuana May Slow Alzheimer's - WebMD, 2006)

Marinol is just a capsule of a pure synthetic THC dissolved in sesame oil. It will work, but some people find that it causes anxiety because it lacks CBD (cannabidiol) to balance the THC high.

Natural cannabis has CBD and other cannabinoids in it, which act in a different way to slow the progress of Alzheimer’s. (“Cannabidiol and other cannabinoids reduce microglial activation in vitro and in vivo: relevance to Alzheimer’s disease” - Molecular Pharmacology, 2011) I know which I would logically choose, but in 2/3s of the US, and everywhere by federal law, that choice is forbidden to us. Our government has banned our best choice!

Then there are thousands facing the severe nausea of chemotherapy- will they be able to keep an anti-nausea pill down long enough for it to work? Wouldn’t it be simpler to inhale some cannabis vapor, or smoke, and get almost instantaneous relief? In 16 states, you can!

And the pain from cancer? “Medical Marijuana a Success in Israel” – *“More than two-thirds of cancer patients who were prescribed medical marijuana to combat pain are reportedly satisfied with the treatment”* Are we less free than the Israelis? THEY are free to get legal, prescribed cannabis for cancer pain- are you? Our neighbor, Canada, has legal medical cannabis, and their government grows cannabis for patients! And surprise! The US has 4 federally legal MMJ patients and grows for them. The program is closed. No new patients allowed! Why? And why is cannabis research, all but banned in the US? This prohibitionist foolishness has to end!

2012 is supposed to be a time of change, an “interesting” year. It is time for us to demand a change in the laws on cannabis! We must keep telling the truth, keep presenting the facts to our friends and our families. The facts are there in PubMed- cannabis IS medicine! Our government lies to us about cannabis! And folks- **“If the truth won’t do, then something is wrong!”**

July 2011- This year's message to all of you is a little different. I am going to be explaining a major scientific discovery- the Omega-3 / CB1 connection, and how it affects your healing with cannabis! But to understand fully this discovery, we need to revisit Biology 101.

Every cell in your body has tiny chemical receptors all over the cell's "skin" or cell membrane. These receptors work kind of like an ignition switch- you put the right type of chemical "key" into a receptor and it "turns on" some kind of action. The type 1 cannabinoid receptors (CB1s) are the ones we are interested in looking at. They are found both in the body and the brain.

"Turning on" a CB1 receptor with either an endocannabinoid that your body makes, or a phytocannabinoid like THC, can result in many different things occurring. A cancer cell may be "told" to die through a process called *apoptosis*, it may activate a basic instinct such as nursing, soothe an irritated digestive tract, or simply ease your pain. The CB1 receptors in your brain are the ones to blame, or praise, for the cannabis "high".

Every time a cell divides, whether it is a brain cell, or a body cell, it needs to make new "skin" to grow back to its full size, and that involves making a whole bunch of new receptors.

And this is where the cutting-edge science starts-- to make functional CB1 receptors, you absolutely need Omega-3! In "***Nutritional omega-3 deficiency abolishes endocannabinoid-mediated neuronal functions***", the Omega-6-rich "western diet" is implicated in our declining mental and physical health. The "ideal" proportion of Omega-6 to Omega-3 is around 3 to 4 parts Omega-6 to every 1 part Omega-3. Our "western diet" can deliver up to a 50 to 1 ratio!

When no Omega-3 is available, our bodies will "jury-rig" a new receptor with an Omega-6 where there should be an Omega-3. This results in a small, but important chunk, the Gi/o effector protein, not getting attached. As with a machine, the pieces need to be assembled right to work!

A drop in the number of working CB1 receptors is an early clinical sign in Parkinson's, colon cancer, Huntington's, and heralds a high risk for premature birth. Mice bred to be low in CB1 receptors have more severe heart attacks and strokes. Cancers ravage them. They age and become senile earlier than normal mice. They are used to study neurological conditions and bowel disorders. They often seem depressed. They sound a lot like many modern Americans.

The three most common sources of Omega-3 are fish oil, flax seed oil and hemp seed oil.

Cannabis is an effective and safe herbal medicine, but we need functioning CB1 receptors for it to work its miracles. Virtually every person needs more Omega-3 in their diet, but none as much as the medical users of cannabis! Cannabis heals us using our cannabinoid receptors, and also provides the Omega-3 that we need to make healthy CB receptors, so we can heal. And that is the simple, but scientific truth.

If the truth won't do, then something is wrong!

Intro - 2008

"If the truth won't do, then something is wrong!"

Those were the furious words of my grandfather to my Mother. I had walked in from joyfully stuffing my face with red raspberries in the garden, straight into "war zone"! My gentle grandfather in a fury, his hand raised! Mom was just beginning to shrink back away from him. They saw me and quickly sent me away. But it was too late, the scene and the words were seared into my 5-year-old brain. That was over 55 years ago, but I still remember it clearly. My grandfather was a minister, one very short step away from God in my 5 year old mind. It was one of those life changing moments. It is still rare for me to tell a lie. I never found out what my Mother's lie was.

As I child, I suffered a traumatic head injury. Another child tried to murder me with a hammer. I was left with frequent migraines. At 19, like many rebellious teens, I tried cannabis. It took about a year for me to make the connection between using cannabis and the absence of my normally frequent migraines. I have used cannabis ever since.

I am an avid reader. While perusing an old book on herbal medicine, I read how the little old ladies of Mexico made and used a cannabis/tequila rub on their arthritic hands. Then I met Joey, an epileptic musician. He told me another interesting fact- when he had pot he could cut his medication in half! On a camping trip years later, I smelled an unmistakable odor. Following my nose, I was totally shocked to find a grandmotherly lady in her 70s puffing away on a delicate oriental pipe. "Parkinson's. And the pot's way cheaper than the pills!" Her nephew kept her well supplied, she said. We had a nice chat about various medical uses of cannabis.

Epilepsy, Parkinson's, arthritis, and my migraines! What else was it good for? Yet every news article on cannabis that I saw, claimed one new horror after another. Men grew breasts and were impotent. Women became sterile or miscarried. It made you crazy and murderous. Made you lazy and do nothing. It caused cancer and heart attacks...What I had learned on my own and from others and what I was being told in the press were so different!

What was the truth? I began researching. I printed the first studies up and kept them in a notebook, just as a personal reference. The notebook quickly filled. I started a Word file of the URLs and on July 30 2007, I posted it. It continues to grow.

Here's some of what I have found. All I've done is copy the URLs, then put them all in some semblance order for everyone to use as a reference. Please feel free to share this list with anyone who could benefit from it.

The original introduction for the List-

July 30, 2007

It's my 60th birthday! That's a pretty big milestone. I've out-lived my beautiful, crazy mother (59 years 11 months) and I've been married and toking for 40 years. So, since 60 rolls around only once, I decided to give you a gift! I thought I'd share my notebook with you. It is a compilation of medical studies, news articles and information on cannabis.

In addition to the obvious use of people who are ill getting information on what might heal them, I hope that many of you will take up a challenge from me. I want this spread around- to your doctor, your politicians, ministers, and anyone who could use the info.

Information does no good if it is hoarded. If you know someone who is ill, copy and paste the part they need, or print up the article, and mail it to them (anonymously, might be a good idea in a lot of cases). Also, send a page or three of a print out of the titles and URLs and a typed message (again anonymously) leading to this post to your doctor. Something simple, like "Want to know more? Visit here!" and give the URL.

I'm hoping that in return for the hours I spent collecting this, you will give me a present in return- mailing this out and telling others. By spreading knowledge to help others, you give them power over their own lives! Knowledge is power! And the truth will set us free (to smoke our pot in peace!) - Storm Crow