Granny Storm Crow’s List – July 2013- part 3

The Synthetic Cannabinoids

**ABNORMAL CANNABIDIOL** - see CBD-ABN

**ACEA/ ARACHIDONYL-2’-CHLOROETHYLAMIDE** - CB1 agonist

Synthesis and characterization of potent and selective agonists of the neuronal cannabinoid receptor (CB1). (full – 1999) [http://jpet.aspetjournals.org/content/289/3/1427.long](http://jpet.aspetjournals.org/content/289/3/1427.long)


Opposing control of cannabinoid receptor stimulation on amyloid-beta-induced reactive gliosis: in vitro and in vivo evidence. (full - 2007) [http://jpet.aspetjournals.org/content/322/3/1144.long](http://jpet.aspetjournals.org/content/322/3/1144.long)


Attenuation of Experimental Autoimmune Hepatitis by Exogenous and Endogenous Cannabinoids: Involvement of Regulatory T Cells (full - 2008) [http://molpharm.aspetjournals.org/content/74/1/20.full?maxtoshow=&hits=80&RESULTFORMAT=&fulltext=cannabinoid&searchid=1&FIRSTINDEX=320&resourcetype=HWCIT#content-block](http://molpharm.aspetjournals.org/content/74/1/20.full?maxtoshow=&hits=80&RESULTFORMAT=&fulltext=cannabinoid&searchid=1&FIRSTINDEX=320&resourcetype=HWCIT#content-block)

Cannabinoid modulation of cutaneous Adelta nociceptors during inflammation. (full – 2008) [http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2585399/?tool=pubmed](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2585399/?tool=pubmed)

Cannabinoid-mediated antinociception is enhanced in rat osteoarthritic knees.
Cannabinoid receptor activation induces apoptosis through tumor necrosis factor alpha-mediated ceramide de novo synthesis in colon cancer cells. (full – 2008) 
http://clincancerres.aacrjournals.org/content/14/23/7691.long

Additive Interaction of the Cannabinoid Receptor I Agonist Arachidonyl-2-chloroethylamide with Etomidate in a Sedation Model in Mice (full – 2008) 

Peripheral cannabinoid CB1 receptors inhibit evoked responses of nociceptive neurones in vivo (abst – 2008) 

Endogenous cannabinoids induce fever through the activation of CB1 receptors. (full – 2009) 
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2765314/?tool=pubmed

The effects of intracerebroventricular AM-251, a CB1-receptor antagonist, and ACEA, a CB1-receptor agonist, on penicillin-induced epileptiform activity in rats. (full – 2009) 

Involvement of nitrergic system in the anticonvulsant effect of the cannabinoid CB(1) agonist ACEA in the pentylenetetrazole-induced seizure in mice. (abst – 2009) 

Involvement of nitric oxide in the gastroprotective effect of ACEA, a selective cannabinoid CB1 receptor agonist, on aspirin-induced gastric ulceration. (abst – 2009) 

Effect of arachidonyl-2'-chloroethylamide, a selective cannabinoid CB1 receptor agonist, on the protective action of the various antiepileptic drugs in the mouse maximal electroshock-induced seizure model. (abst – 2009) 

Role of cannabinoid CB1 receptors on macronutrient selection and satiety in rats. (abst – 2009) 

Regulatory Role of Cannabinoid Receptor 1 in Stress-Induced Excitotoxicity and Neuroinflammation (full - 2010) 
http://www.nature.com/npp/journal/vaop/ncurrent/full/npp2010214a.html

Alkamides and a neolignan from Echinacea purpurea roots and the interaction of alkamides with G-protein-coupled cannabinoid receptors. (abst – 2011) 

The Effect of Hypoxia on G Protein Coupled (CB1) Receptor Gene Expression in Cortical B50 Neurons in Culture (abst – 2011) 
http://www.maxwellsci.com/jp/abstract.php?jid=BJPT&no=92&abs=05


Contrasting effects of different cannabinoid receptor ligands on mouse ingestive behavior (abst – 2012) http://www.unboundmedicine.com/medline/ebm/record/22772336/abstract/Contrasting_effects_of_differen_t_cannabinoid_receptor_ligands_on_mouse_ingestive_behaviour


Opposing Roles for Cannabinoid Receptor Type-1 (CB(1)) and Transient Receptor Potential Vanilloid Type-1 Channel (TRPV1) on the Modulation of Panic-Like Responses in Rats. (abst – 2012) http://www.ncbi.nlm.nih.gov/pubmed/21937980


Distribution and function of the endocannabinoid system in the rat and human bladder.

Chronic activation of cannabinoid receptors in vitro does not compromise mouse islet function.

Revisiting CB1 receptor as drug target in human melanoma.

Study: Cannabis Agonists Produce Anti-Cancer Effects In Human Liver Cancer Cells

Anti-Cancer Effects In Human Liver Cancer Cells Produced By Cannabis Agonists

Type-1 (CB(1)) Cannabinoid Receptor Promotes Neuronal Differentiation and Maturation of Neural Stem Cells. (full – 2013)
http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0054271

Evaluation of anti-invasion effect of cannabinoids on human hepatocarcinoma cells.

Role of cannabinoid and vanilloid receptors in invasion of human breast carcinoma cells


Cannabinoids increase type 1 cannabinoid receptor expression in a cell culture model of striatal neurons: implications for Huntington's disease. (abst – 2013)


The role of α2-adrenoceptors in the anti-convulsant effects of cannabinoids on pentylenetetrazole-induced seizure threshold in mice. (abst – 2013)

AJULEMIC ACID/ AJA/ IP-751/ HU-239/ CT-3 - analog of Δ8-THC-11-oic acid

The Role of Cannabis and Cannabinoids in Pain Management  (full – 2002)  
http://www.humanhemphealth.ca/Russo-AAPM_chapter.pdf

Marijuana-Derived Compound Targets Pain, Inflammation  (news - 2002)  

Analgesic effect of the synthetic cannabinoid CT-3 on chronic neuropathic pain: a randomized controlled trial.  (full - 2003)  
http://jama.ama-assn.org/cgi/content/full/290/13/1757?maxtoshow=&hits=80&RESULTFORMAT=&fulltext=cannabis&searchid=1&FIRSTINDEX=0&resourcetype=HWCIT

http://www.aapsj.org/view.asp?art=aapsj070115

Ajulemic acid: A novel cannabinoid produces analgesia without a “high”  (abst - 2004)  

Ajulemic acid (IP-751): Synthesis, proof of principle, toxicity studies, and clinical trials  (full - 2005)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2751505/?tool=pubmed

Marijuana-Derived Drug Suppresses Bladder Overactivity And Irritation In Animal Models  (news - 2005)  

Cannabimimetic Properties of Ajulemic Acid  (full - 2006)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2633725/?tool=pmcentrez

Marijuana-Derived Drug Suppresses Bladder Pain In Animal Models  (news - 2006)  
http://www.sciencedaily.com/releases/2006/05/060521103039.htm

Cannabimimetic Properties of Ajulemic Acid  (full - 2007)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2633725/

In humans, ajulemic acid has a more favorable side-effect profile than THC for the treatment of chronic neuropathic pain  (full - 2007)  

Letter: Preclinical assessment of abuse liability of ajulemic acid  (letter - 2007)


Cannabinoids in the management of difficult to treat pain (full - 2008) [http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2503660/?tool=pmcentrez](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2503660/?tool=pmcentrez)


Cannabinoids, Endocannabinoids, and Related Analogs in Inflammation (full - 2009) [http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2664885/?tool=pmcentrez](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2664885/?tool=pmcentrez)


**AM-111/ D-JNKI-1/ XG- 102**

A peptide inhibitor of c-Jun N-terminal kinase protects against both aminoglycoside and acoustic trauma-induced auditory hair cell death and hearing loss. (full – 2003)  
http://www.jneurosci.org/content/23/24/8596.long

Cochlear implantation trauma and noise-induced hearing loss: Apoptosis and therapeutic strategies. (full - 2006)  

AM-111 reduces hearing loss in a guinea pig model of acute labyrinthitis. (abst – 2007)  

Intratympanic treatment of acute acoustic trauma with a cell-permeable JNK ligand: a prospective randomized phase I/II study (abst – 2007)  

AM-111 protects against permanent hearing loss from impulse noise trauma. (abst – 2007)  

AM-111 prevents hearing loss from semicircular canal injury in otitis media. (full – 2009)  

Blocking pro-cell-death signal pathways to conserve hearing. (abst - 2009)  

CONTROLLED-RELEASE APOPTOSIS MODULATING COMPOSITIONS AND METHODS FOR THE TREATMENT OF OTIC DISORDERS (full – 2010)  
http://www.faqs.org/patents/app/20100016218

Otoprotective Effect of AM-111 Also Shown In Model of Cochlear Ischemia (news – 2010)  

JNK plays a key role in tau hyperphosphorylation in Alzheimer's disease models. (abst – 2011)  

Protection against ischemic cochlear damage by intratympanic administration of AM-111. (abst – 2011)  

The JNK inhibitor XG-102 protects against TNBS-induced colitis. (full – 2012)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3302790/

Specific inhibition of the JNK pathway promotes locomotor recovery and neuroprotection after mouse spinal cord injury. (abst – 2012)  

Analysis: Drugmakers step up search for hearing loss medicines (news – 2012)  
http://www.reuters.com/article/2012/12/02/us-hearing-medicines-idUSBRE8B102H20121202

Molecular mechanisms involved in cochlear implantation trauma and the protection of hearing and auditory sensory cells by inhibition of c-Jun-N-terminal kinase signaling. (abst – 2013)  
**AM-251** – GPR 55 agonist, CB1 antagonist/ inverse agonist

Inhibition of Rat C6 Glioma Cell Proliferation by Endogenous and Synthetic Cannabinoids. Relative Involvement of Cannabinoid and Vanilloid Receptors (full - 2001)  
[http://jpet.aspetjournals.org/content/299/3/951.full](http://jpet.aspetjournals.org/content/299/3/951.full)

Influence of the CB1 receptor antagonist, AM 251, on the regional haemodynamic effects of WIN-55212-2 or HU 210 in conscious rats (full - 2002)  
[http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1573379/?tool=pmcentrez](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1573379/?tool=pmcentrez)

CB1 cannabinoid receptor antagonism promotes remodeling and cannabinoid treatment prevents endothelial dysfunction and hypotension in rats with myocardial infarction (full - 2003)  
[http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1573770/?tool=pmcentrez](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1573770/?tool=pmcentrez)

Vasodilator actions of abnormal-cannabidiol in rat isolated small mesenteric artery (full - 2003)  
[http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1573773/?tool=pmcentrez](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1573773/?tool=pmcentrez)

Cannabinoid CB2 receptor activation reduces mouse myocardial ischemia-reperfusion injury: involvement of cytokine/chemokines and PMN (full - 2003)  

Inhibition of Inflammatory Hyperalgesia by Activation of Peripheral CB2 Cannabinoid Receptors (full – 2003)  

Effects of cannabinoid receptor-2 activation on accelerated gastrointestinal transit in lipopolysaccharide-treated rats (full - 2004)  
[http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1575196/?tool=pmcentrez](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1575196/?tool=pmcentrez)

Up-Regulation of Cyclooxygenase-2 Expression Is Involved in R(–)-Methanandamide-Induced Apoptotic Death of Human Neuroglioma Cells (full - 2004)  
[http://science.iowamedicalmarijuana.org/pdfs/cancer/Hinz%202004.pdf](http://science.iowamedicalmarijuana.org/pdfs/cancer/Hinz%202004.pdf)

The cannabinoid 1 receptor antagonist, AM251, prolongs the survival of rats with severe acute pancreatitis. (full - 2005)  
[https://www.jstage.jst.go.jp/article/tjem/207/2/207_2_99/_pdf](https://www.jstage.jst.go.jp/article/tjem/207/2/207_2_99/_pdf)

Cannabinoids augment the release of neuropeptide Y in the rat hypothalamus (abst – 2005)  

Cannabinoid CB1 receptor antagonists cause status epilepticus-like activity in the hippocampal neuronal culture model of acquired epilepsy (full - 2006)
AM 251 produces sustained reductions in food intake and body weight that are resistant to tolerance and conditioned taste aversion (full - 2006)

Inhibition of Salivary Secretion by Activation of Cannabinoid Receptors (full - 2006)

Antinociceptive effect of cannabinoid agonist WIN 55,212–2 in rats with a spinal cord injury (full - 2006)

EFFECT OF CANNABINOIDS ON TESTICULAR ISCHEMIA-REPERFUSION INJURY IN RAT (full – 2006)

Cannabinoid derivatives induce cell death in pancreatic MIA PaCa-2 cells via a receptor-independent mechanism. (abst – 2006)

Cardiovascular effects of cannabinoids in conscious spontaneously hypertensive rats (full - 2007)

CANNABINOID-INDUCED HYPERPHAGIA: CORRELATION WITH INHIBITION OF PROOPIOMELANOCORTIN NEURONS? (full - 2007)

Cannabinoid action in the olfactory epithelium (full - 2007)

Ultra-low dose cannabinoid antagonist AM251 enhances cannabinoid anticonvulsant effects in the pentylenetetrazole-induced seizure in mice. (abst – 2007)

The local antinociceptive effects of paracetamol in neuropathic pain are mediated by cannabinoid receptors (abst – 2007)

Effect of Endocannabinoid System on the Neurogenic Function of Rat Corpus Cavernosum (abst – 2007)

Cannabinoids Inhibit HIV-1 Gp120-Mediated Insults in Brain Microvascular Endothelial Cells (full - 2008)
Attenuation of Experimental Autoimmune Hepatitis by Exogenous and Endogenous Cannabinoids: Involvement of Regulatory T Cells  (full - 2008)
http://molpharm.aspetjournals.org/content/74/1/20.full?maxtoshow=&hits=80&RESULTFORMAT=&fulltext=cannabinoid&searchid=1&FIRSTINDEX=320&resourcetype=HWCIT#content-block

Loss of cannabinoid receptor 1 accelerates intestinal tumor growth  (full - 2008)
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2561258/?tool=pubmed

Acute hypertension reveals depressor and vasodilator effects of cannabinoids in conscious rats  (full - 2008)
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2697765/?tool=pmcentrez

Activating Parabrachial Cannabinoid CB1 Receptors Selectively Stimulates Feeding of Palatable Foods in Rats  (full - 2008)
http://www.jneurosci.org/cgi/content/full/28/39/9702?maxtoshow=&hits=80&RESULTFORMAT=&fulltext=cannabinoid&searchid=1&FIRSTINDEX=0&resourcetype=HWCIT

Feeding induced by cannabinoinds is mediated independently of the melanocortin system.  (full - 2008)  http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2386290/?tool=pubmed

Acute effects of endocannabinoid anandamide and CB1 receptor antagonist, AM251 in the regulation of thyrotropin secretion.  (full – 2008)  http://www.jendocrinol.org/content/199/2/235.long


Effect of biliary cirrhosis on nonadrenergic noncholinergic-mediated relaxation of rat corpus cavernosum: Role of nitric oxide pathway and endocannabinoid system  (abst – 2008)
http://www.doaj.org/doaj?func=abstract&id=859538&q1=anandamide&f1=all&b1=and&q2=&f2=all&recNo=24&uiLanguage=en

Effect of anandamide in improving of the non-adrenergic non-cholinergic relaxation of the corpus cavernosum from diabetic rats  (abst – 2008)
http://www.doaj.org/doaj?func=abstract&id=859448&q1=anandamide&f1=all&b1=and&q2=&f2=all&recNo=25&uiLanguage=en


Synthetic and plant-derived cannabinoid receptor antagonists show hypophagic properties in fasted and non-fasted mice  (full - 2009)
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2697695/?tool=pubmed

Endocannabinoids in the rat basolateral amygdala enhance memory consolidation and enable glucocorticoid modulation of memory  (full - 2009)
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2660732/?tool=pmcentrez
Modulation of motor and sensory pathways of the peristaltic reflex by cannabinoids. (full – 2009)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2739820/?tool=pubmed

The effects of intracerebroventricular AM-251, a CB1-receptor antagonist, and ACEA, a CB1-receptor agonist, on penicillin-induced epileptiform activity in rats. (full – 2009)  

Effects of the cannabinoid CB1 receptor antagonist AM 251 on the reinstatement of nicotine-conditioned place preference by drug priming in rats. (full - 2009)  

Cannabinoids and neurodegenerative diseases. (abst - 2009)  


Regulation of the Hypothalamic-Pituitary-Adrenal Axis Circadian Rhythm by Endocannabinoids Is Sexually Diergic (full - 2010)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2964781/?tool=pmcentrez

International Union of Basic and Clinical Pharmacology. LXXIX. Cannabinoid Receptors and Their Ligands: Beyond CB1 and CB2. (full – 2010)  
http://pharmrev.aspetjournals.org/content/62/4/588.full.pdf+html

Cannabinoids excite circadian clock neurons. (full – 2010)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2927117/?tool=pubmed

GPR55 ligands promote receptor coupling to multiple signalling pathways. (full – 2010)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2931561/?tool=pubmed

Cannabinoid receptor CB1 mediates baseline and activity-induced survival of new neurons in adult hippocampal neurogenesis. (full - 2010)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2898685/?tool=pubmed

Spinal and peripheral analgesic effects of the CB cannabinoid receptor agonist AM1241 in two models of bone cancer-induced pain. (full - 2010)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2931557/?tool=pubmed

The Neuroprotective Effect of Cannabinoid Receptor Agonist (WIN55,212-2) in Paraoxon Induced Neurotoxicity in PC12 Cells and N-methyl-D-aspartate Receptor Interaction. (full – 2010)  

The Endocannabinoid System Tonically Regulates Inhibitory Transmission and Depresses the Effect of Ethanol in Central Amygdala. (abst - 2010)  
http://www.nature.com/npp/journal/v35/n9/abs/npp201070a.html


A Pilot Study into the Effects of the CB1 Cannabinoid Receptor Agonist WIN55,212-2 or the Antagonist/Inverse Agonist AM251 on Sleep in Rats (full – 2011) http://www.hindawi.com/journals/sd/2011/178469/


α-Tocopherol and α-tocopheryl phosphate interact with the cannabinoid system in the rodent hippocampus. (abst - 2011) http://www.ncbi.nlm.nih.gov/pubmed/21843633

Cannabidiol as an anti-arrhythmic, the role of the CB1 receptors. (abst – 2011) http://www.unboundmedicine.com/medline/ebm/record/22116907/abstract/17_Cannabidiol_as_an_anti_arrhythmic_the_role_of_the_CB1_receptors


Endocannabinoid CB1 receptors modulate visual output from the thalamus. (abst – 2011) http://www.ncbi.nlm.nih.gov/pubmed/21773721


Pot and Pumpkin Pie: Endocannabinoid System Enhanced by Vitamin E (news – 2011)
Cannabinoid Receptor Type 1 (CB1) Activation Inhibits Small GTPase RhoA Activity and Regulates Motility of Prostate Carcinoma Cells (full – 2012)
http://endo.endojournals.org/content/153/1/29.full

Differences in Spontaneously Avoiding or Approaching Mice Reflect Differences in CB1-Mediated Signaling of Dorsal Striatal Transmission. (full – 2012)
http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0033260

A Role for the Cannabinoid 1 Receptor in Neuronal Differentiation of Adult Spinal Cord Progenitors in vitro is Revealed through Pharmacological Inhibition and Genetic Deletion. (full – 2012) http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3265030/?tool=pubmed

Cannabinoid HU210 Protects Isolated Rat Stomach against Impairment Caused by Serum of Rats with Experimental Acute Pancreatitis. (full - 2012)
http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0052921

The cannabinoid receptor CB1 modulates the signaling properties of the lysophosphatidylinositol receptor GPR55. (full – 2012)
http://www.jbc.org/content/early/2012/11/16/jbc.M112.364109.long

Diet-dependent modulation of hippocampal expression of endocannabinoid signaling-related proteins in cannabinoid antagonist-treated obese rats. (full – 2012)

So what do we call GPR18 now? (full – 2012)

Neuron to Astrocyte Communication via Cannabinoid Receptors Is Necessary for Sustained Epileptiform Activity in Rat Hippocampus (full – 2012)
http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0037320

The effects of peptide and lipid endocannabinoids on arthritic pain at the spinal level. (full – 2012)
http://www.anesthesia-analgesia.org/content/early/2012/03/26/ANE.0b013e31824c4eeb.full.pdf

Critical role of the endocannabinoid system in mediating rapid glucocorticoid effects on memory for emotionally arousing experiences (link to PDF - 2012)
http://www.doaj.org/doi?func=abstract&id=1152481&q1=cannabinoid&f1=all&b1=and&q2=&f2=all&recNo=3&uiLanguage=en

Bidirectional regulation of endocannabinoid signaling in the amygdala contributes to activation and adaptation of the stress response (link to PDF – 2012)
http://www.doaj.org/doi?func=abstract&id=1152480&q1=cannabinoid&f1=all&b1=and&q2=&f2=all&recNo=4&uiLanguage=en

Opposing Roles for Cannabinoid Receptor Type-1 (CB(1)) and Transient Receptor Potential Vanilloid Type-1 Channel (TRPV1) on the Modulation of Panic-Like Responses in Rats. (abst – 2012) http://www.ncbi.nlm.nih.gov/pubmed/21937980


The interaction between intrathecal administration of low doses of palmitoylethanolamide and AM251 in formalin-induced pain related behavior and spinal cord IL1-β expression in rats. (abst – 2012) http://www.ncbi.nlm.nih.gov/pubmed/22201038

Medial prefrontal cortex endocannabinoid system modulates baroreflex activity through CB1 receptors (abst – 2012) http://ajpregu.physiology.org/content/302/7/R876.abstract?sid=952e2125-0502-477c-b603-30f0f3e51b55


The anti-nausea effects of CB(1) agonists are mediated by an action at the visceral insular cortex. (abst – 2012) http://www.ncbi.nlm.nih.gov/pubmed/22671779


Effects of gonadal hormones on the peripheral cannabinoid receptor 1 (CB1R) system under a myositis condition in rats. (abst – 2012) http://www.ncbi.nlm.nih.gov/pubmed/22940464


Role of endocannabinoids and cannabinoid-1 receptors in cerebrocortical blood flow regulation. (full – 2013) http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3537620/

Activation of Type 1 Cannabinoid Receptor (CB1R) Promotes Neurogenesis in Murine Subventricular Zone Cell Cultures (full – 2013) http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0063529


Involvement of prelimbic medial prefrontal cortex in panic-like elaborated defensive behaviour and innate fear-induced antinociception elicited by GABAA receptor blockade in the dorsomedial and ventromedial hypothalamic nuclei: role of the endocannabinoid CB1 receptor. (abst – 2013) http://journals.cambridge.org/action/displayAbstract?fromPage=online&aid=8874231


2-AG into the lateral hypothalamus increases REM sleep and cFos expression in melanin concentrating hormone neurons in rats. (abst – 2013) http://www.ncbi.nlm.nih.gov/pubmed/23603032


Impact of omega-6 polyunsaturated fatty acid supplementation and γ-aminobutyric acid on astrogliogenesis through the endocannabinoid system. (abst – 2013) http://www.ncbi.nlm.nih.gov/pubmed/23633391


Activation of Type 1 Cannabinoid Receptor (CB1R) Promotes Neurogenesis in Murine Subventricular Zone Cell Cultures. (abst – 2013) http://www.ncbi.nlm.nih.gov/pubmed/23704915


Effects of compounds that interfere with the endocannabinoid system on behaviors predictive of anxiolytic and panicolytic activity in the elevated T-maze (abst – 2013) http://www.ncbi.nlm.nih.gov/pubmed/23711591


Regulation of cell proliferation by GPR55/cannabinoid receptors using (R,R')-4'-methoxy-1-naphthylfenoterol in rat C6 glioma cell line (abst – 2013) http://www.abstractsonline.com/Plan/ViewAbstract.aspx?sKey=695437a2-7613-4bef-8697-2294df2da859&cKey=18ba6eb0-2e5f-4004-a56f-2d1f450e2ed1&mKey=9b2d28e7-24a0-466f-a3c9-07c21f6e9be9
(R,R’)-4’-methoxy-1-naphthylfenoterol Inhibits GPR55 signaling and the modulation of motility in human cancer cells  (abst – 2013)  
http://www.abstractsonline.com/Plan/ViewAbstract.aspx?sKey=25370896-7d13-4f15-be76-f664d79b577d&cKey=87b7fec1-45cc-42b7-aca7-48c6b1d42773&mKey=9b2d28e7-24a0-466f-a3c9-07c21f6e9be9

CB1 Cannabinoid Receptor Agonist Prevents NGF-Induced Sensitization of TRPV1 in Sensory Neurons.  (abst – 2013)  
http://www.ncbi.nlm.nih.gov/pubmed/23850608

CB1 and CB2 contribute to antinociceptive and anti-inflammatory effects of electroacupuncture on experimental arthritis of the rat temporomandibular joint.  
(abst – 2013)  

CB1 cannabionid receptor expressed in enteroendocrine cells mediates food intake in mice  (abst – 2013)  
http://edrv.endojournals.org/cgi/content/meeting_abstract/34/03_MeetingAbstracts/SAT-659?sid=89628f3e-b2f1-448c-b0df-98f390dfd2

Anandamide modulates the neuroendocrine responses induced by extracellular volume expansion.  (abst – 2013)  

Activation of spinal cannabinoid cb2 receptors inhibits neuropathic pain in streptozotocin-induced diabetic mice.  
(abst – 2013)  

Complex interaction between anandamide and the nitrergic system in the dorsolateral periaqueductal gray to modulate anxiety-like behavior in rats.  (abst – 2013)  

**AM-281** - CB1 antagonist and inverse agonist

Design and Synthesis of the CB1 Selective Cannabinoid Antagonist AM281: A Potential Human SPECT Ligand  (link to PDF – 1999)  
http://www.aapsj.org/view.asp?art=ps010204

[123I]AM281 single-photon emission computed tomography imaging of central cannabionid CB1 receptors before and after Delta9-tetrahydrocannabinol therapy and whole-body scanning for assessment of radiation dose in tourette patients.  
(abst – 2004)  

Effects of AM281, a cannabionid antagonist, on systemic haemodynamics, internal carotid artery blood flow and mortality in septic shock in rats  (full – 2005)  
http://bja.oxfordjournals.org/content/94/5/563.full

The analgesic activity of paracetamol is prevented by the blockade of cannabinoid CB1 receptors  (abst – 2005)  http://www.sciencedirect.com/science/article/pii/S0014299905013178


The GPR55 ligand L-alpha-lysophosphatidylinositol promotes RhoA-dependent Ca2+ signaling and NFAT activation.  (full – 2009)  http://www.fasebj.org/content/23/1/183.long

GPR55 ligands promote receptor coupling to multiple signalling pathways.  (full – 2010)  http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2931561/?tool=pubmed

Expression of cannabinoid CB1 receptors by vagal afferent neurons: kinetics and role in influencing neurochemical phenotype  (full – 2010)  http://ajpgi.physiology.org/content/299/1/G63.full?sid=fc6948f0-78cf-405c-981b-a6aa05ee417c

Cannabinoid receptor-dependent and -independent anti-proliferative effects of omega-3 ethanolamides in androgen receptor-positive and -negative prostate cancer cell lines.  (full – 2010)  http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2930808/?tool=pubmed

Angiotensin II induces vascular endocannabinoid release, which attenuates its vasoconstrictor effect via CB1 cannabinoid receptors.  (full – 2012)  http://www.jbc.org/content/early/2012/07/11/jbc.M112.346296.full.pdf+html

Early Endogenous Activation of CB1 and CB2 Receptors after Spinal Cord Injury Is a Protective Response Involved in Spontaneous Recovery  (full – 2012)  http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3496738/

The cannabinoid receptor CB1 modulates the signaling properties of the lysophosphatidylinositol receptor GPR55.  (full – 2012)  http://www.jbc.org/content/early/2012/11/16/jbc.M112.364109.long


Endogenous cannabinoid receptor CB1 activation promotes vascular smooth muscle cell proliferation and neointima formation. (full – 2013) http://www.jlr.org/content/early/2013/03/11/jlr.M035147.long


GPR55 and its interaction with membrane lipids: comparison with other endocannabinoid-binding receptors. (link to PDF - 2013) http://www.eurekaselect.com/105678/article


**AM-404** – cannabinoid transport inhibitor

Anandamide transport is independent of fatty-acid amide hydrolase activity and is blocked by the hydrolysis-resistant inhibitor AM1172. (full – 2004) http://www.ncbi.nlm.nih.gov/pmc/articles/PMC423268/


Enhancing Cannabinoid Neurotransmission Augments the Extinction of Conditioned Fear 

Anxiolytic-like properties of the anandamide transport inhibitor AM404. 

The Endogenous Cannabinoid Anandamide Produces δ-9-Tetrahydrocannabinol-Like Discriminative and Neurochemical Effects That Are Enhanced by Inhibition of Fatty Acid Amide Hydrolase but Not by Inhibition of Anandamide Transport 
(full - 2007) http://jpet.aspetjournals.org/content/321/1/370.full

Δ9-Tetrahydrocannabinol (THC) and AM 404 protect against cerebral ischaemia in gerbils through a mechanism involving cannabinoid and opioid receptors 
(full - 2007) http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2189998/?tool=pmcentrez

STUDIES OF ANANDAMIDE ACCUMULATION INHIBITORS IN CEREBELLAR GRANULE NEURONS 
(full – 2007) http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2248273/

Pharmacological elevation of anandamide impairs short-term memory by altering the neurophysiology in the hippocampus. 

The anandamide transport inhibitor AM404 reduces the rewarding effects of nicotine and nicotine-induced dopamine elevations in the nucleus accumbens shell in rats 

Role of endocannabinoid and glutamatergic systems in DOI-induced head-twitch response in mice. 

Endocannabinoid analogues exacerbate marble-burying behavior in mice via TRPV1 receptor. 

Effects of the anandamide uptake blocker AM404 on food intake depend on feeding status and route of administration. 

Inhibition of fatty acid amide hydrolase by URB597 attenuates the anxiolytic-like effect of acetaminophen in the mouse elevated plus-maze test. 

Peripheral antinociceptive effect of anandamide and drugs that affect the endocannabinoid system on the formalin test in normal and streptozotocin-diabetic rats. 
Involvement of the Endocannabinoid System in Ethanol-Induced Corticostriatal Synaptic Depression.  (abst – 2012)  

Diuretic effects of cannabinoids.  (abst – 2012)  

AM404 attenuates reinstatement of nicotine seeking induced by nicotine-associated cues and nicotine priming but does not affect nicotine- and food-taking.  (abst – 2013)  

AM-630 – CB2 antagonist

AM630, a competitive cannabinoid receptor antagonist.  (abst – 1995)  

Cannabinoid CB2 receptor activation reduces mouse myocardial ischemia-reperfusion injury: involvement of cytokine/chemokines and PMN   (full – 2003)  
http://www.jleukbio.org/cgi/content/full/75/3/453?maxtoshow=&hits=80&RESULTFORMAT=&fulltext=cannabinoid&searchid=1&FIRSTINDEX=320&resourcetype=HWCIT

Inhibition of Inflammatory Hyperalgesia by Activation of Peripheral CB2 Cannabinoid Receptors   (full – 2003)  

Antinociceptive effect of cannabinoid agonist WIN 55,212–2 in rats with a spinal cord injury   (full - 2006)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1861843/?tool=pmcentrez

Inhibition of Salivary Secretion by Activation of Cannabinoid Receptors   (full - 2006)  
http://ebm.rsmjournals.com/cgi/content/full/231/8/1421?maxtoshow=&hits=80&RESULTFORMAT=&fulltext=cannabinoid&searchid=1&FIRSTINDEX=880&resourcetype=HWCIT

The local antinociceptive effects of paracetamol in neuropathic pain are mediated by cannabinoid receptors   (abst – 2007)  

Regulation of Bone Mass, Osteoclast Function, and Ovariectomy-Induced Bone Loss by the Type 2 Cannabinoid Receptor   (full - 2008)  
http://endo.endojournals.org/cgi/content/full/149/11/5619?maxtoshow=&hits=80&RESULTFORMA&T=&fulltext=cannabinoid&searchid=1&FIRSTINDEX=240&resourcetype=HWCIT

Attenuation of Experimental Autoimmune Hepatitis by Exogenous and Endogenous Cannabinoids: Involvement of Regulatory T Cells   (full - 2008)  
http://molpharm.aspetjournals.org/content/74/1/20.full?maxtoshow=&hits=80&RESULTFORMAT=&fulltext=cannabinoid&searchid=1&FIRSTINDEX=320&resourcetype=HWCIT#content-block
Cannabinoid CB2 Receptor Potentiates Obesity-Associated Inflammation, Insulin Resistance and Hepatic Steatosis  (full - 2009)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2688760/?tool=pubmed

Cannabinoid receptor-dependent and -independent anti-proliferative effects of omega-3 ethanolamides in androgen receptor-positive and -negative prostate cancer cell lines.  (full – 2010)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2930808/?tool=pubmed

A nonsynonymous polymorphism in cannabinoid CB2 receptor gene is associated with eating disorders in humans and food intake is modified in mice by its ligands.  (abst – 2010)  

Cannabinoid receptor-2 (CB2) agonist ameliorates colitis in IL-10(-/-) mice by attenuating the activation of T cells and promoting their apoptosis.  (abst – 2011)  

Cannabinoid-2 Receptor Activation Protects against Infarct and Ischemia/Reperfusion Heart Injury.  (abst – 2011)  

The role of central CB2 cannabinoid receptors on food intake in neonatal chicks  (abst – 2011)  

Effects of a Selective Cannabinoid CB2 Agonist and Antagonist on Intravenous Nicotine Self Administration and Reinstatement of Nicotine Seeking.  (full – 2012)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3266883/?tool=pubmed

Early Endogenous Activation of CB1 and CB2 Receptors after Spinal Cord Injury Is a Protective Response Involved in Spontaneous Recovery  (full – 2012)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3496738/

The role of CB2 receptor ligands in human eosinophil function  (full – 2012)  

The maintenance of cisplatin- and paclitaxel-induced mechanical and cold allodynia is suppressed by cannabinoid CB2 receptor activation and independent of CXCR4 signaling in models of chemotherapy-induced peripheral neuropathy.  (full – 2012)  
http://www.molecularpain.com/content/8/1/71

Effect of omega-3 polyunsaturated fatty acids on the endocannabinoid system in osteoblast-like cells and muscle  (abst – 2012)  
http://docs.lib.purdue.edu/dissertations/AAI3444794/

Cannabinoids and muscular pain. Effectiveness of the local administration in rat.  (abst – 2012)  

Cannabinoids ameliorate disease progression in a model of multiple sclerosis in mice, acting preferentially through CB(1) receptor-mediated anti-inflammatory effects.  (abst - 2012)  


Mechanisms Of Cannabidiol Neuroprotection In Hypoxic-Ischemic Newborn Pigs: Role Of 5HT1A And CB2 Receptors. (abst – 2013) http://www.ncbi.nlm.nih.gov/pubmed/23587650


AM-678 - see JWH -100

**AM-694** – CB1 & CB2 agonist


Synthetic Cannabinoids - The Challenges of Testing for Designer Drugs (article – 2013)  

Toxicological profiles of selected synthetic cannabinoids showing high binding affinities to the cannabinoid receptor subtype CB1. (abst – 2013)  

A Case of Cannabinoid Hyperemesis Syndrome Caused by Synthetic Cannabinoids. (abst – 2013)  

**AM-1172** - anandamide transport inhibitor

Anandamide transport is independent of fatty-acid amide hydrolase activity and is blocked by the hydrolysis-resistant inhibitor AM1172. (full – 2004)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC423268/

New molecule may be basis for drugs that battle overeating and drug dependency (news – 2004)  

Easing anxiety with anandamide (news – 2004)  

Anandamide Compound Targets Brain's 'Bliss' System (news – 2005)  
http://alcoholism.about.com/od/cure/a/blnida050112.htm

STUDIES OF ANANDAMIDE ACCUMULATION INHIBITORS IN CEREBELLAR GRANULE NEURONS (full – 2007)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2248273/

**AM-1241** - CB2 agonist

Activation of CB2 cannabinoid receptors by AM1241 inhibits experimental neuropathic pain: Pain inhibition by receptors not present in the CNS (full - 2003)  
http://www.pnas.org/content/100/18/10529.full
Inhibition of Inflammatory Hyperalgesia by Activation of Peripheral CB2 Cannabinoid Receptors (full – 2003) 
http://journals.lww.com/anesthesiology/Fulltext/2003/10000/Inhibition_of_Inflammatory_Hyperalgesia_by .31.aspx


CB2 cannabinoid receptor activation produces antinociception by stimulating peripheral release of endogenous opioids (full - 2005) 
http://www.pnas.org/content/102/8/3093.full

Cannabinoid CB2 receptor agonist activity in the hindpaw incision model of postoperative pain. (abst - 2005) 

In vitro pharmacological characterization of AM1241: a protean agonist at the cannabinoid CB2 receptor? (full - 2006) 
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2013801/?tool=pubmed

AM1241, a cannabinoid CB2 receptor selective compound, delays disease progression in a mouse model of amyotrophic lateral sclerosis. (abst - 2006) 

The CB2 cannabinoid agonist AM-1241 prolongs survival in a transgenic mouse model of amyotrophic lateral sclerosis when initiated at symptom onset (full - 2007) 
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2819701/?tool=pmcentrez

Peripheral Cannabinoids Attenuate Carcinoma Induced Nociception in Mice (full - 2008) 
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2771220/

Selective Activation of Cannabinoid CB2 Receptors Suppresses Neuropathic Nociception Induced by Treatment with the Chemotherapeutic Agent Paclitaxel in Rats (full - 2008) 
http://jpet.aspetjournals.org/content/327/2/584.full#content-block

The endocannabinoid system in amyotrophic lateral sclerosis. (abst - 2008) 

Activation of the cannabinoid 2 receptor (CB2) protects against experimental colitis. (full - 2009) 

Spinal and peripheral analgesic effects of the CB cannabinoid receptor agonist AM1241 in two models of bone cancer-induced pain. (full - 2010) 
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2931557/?tool=pubmed

A cannabinoid 2 receptor agonist attenuates bone cancer-induced pain and bone loss. (abst - 2010) 

Cannabinoids attenuate cancer pain and proliferation in a mouse model.
Self-medication of a cannabinoid CB(2) agonist in an animal model of neuropathic pain. (abst – 2011)  

Regulation of hematopoietic stem cell trafficking and mobilization by the endocannabinoid system. (abst – 2011)  

Cannabinoid receptor 2 and its agonists mediate hematopoiesis and hematopoietic stem and progenitor cell mobilization. (abst – 2011)  

Antinociceptive effects induced through the stimulation of spinal cannabinoid type 2 receptors in chronically inflamed mice (abst - 2011)  

Effects of a Selective Cannabinoid CB2 Agonist and Antagonist on Intravenous Nicotine Self Administration and Reinstatement of Nicotine Seeking. (full – 2012)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3266883/?tool=pubmed

Therapeutic modulation of cannabinoid lipid signaling: Metabolic profiling of a novel antinociceptive cannabinoid-2 receptor agonist. (abst – 2012)  

Prevention of Fibrosis Progression in CCl4-Treated Rats: Role of the Hepatic Endocannabinoid and Apelin Systems (abst – 2012)  
http://jpet.aspetjournals.org/content/340/3/629.abstract?sid=ae58f15a-06bb-4a81-b850-61bb89fd59f5

Diuretic effects of cannabinoids. (abst – 2012)  

Cannabinoid Receptors as Therapeutic Targets for Dialysis-Induced Peritoneal Fibrosis. (abst – 2013)  

**AM-1346** - CB1 agonist

Synthetic Cannabinoid May Aid Fertility In Smokers (news - 2006)  
http://www.medicalnewstoday.com/articles/58063.php

Marijuana-like Chemical Can Restore Sperm Function Lost to Tobacco Abuse (news - 2006)  
http://www.rxpgnews.com/specialtopics/article_5093.shtml

Cannabis-based boost for smokers' suffering sperm (news - 2006)
Effects of AM1346, a high-affinity CB1 receptor selective anandamide analog, on open-field behavior in rats. (abst – 2007) http://www.ncbi.nlm.nih.gov/pubmed/17912052

Discriminative stimulus functions in rats of AM1346, a high-affinity CB1R selective anandamide analog. (full – 2008) http://www.springerlink.com/content/n278340k6q47141k/fulltext.html


**AM-1710** – CB2 agonist

Pharmacological characterization of AM1710, a putative cannabinoid CB(2) agonist from the cannabiliactone class: Antinociception without central nervous system side-effects. (abst – 2011) http://www.unboundmedicine.com/medline/ebm/record/21382397/abstract/Pharmacological_characterization_of_AM1710_a_putative_cannabinoid_CB_2__agonist_from_the_cannabiliactone_class:_Antinociception_without_central_nervous_system_side_effects_

The maintenance of cisplatin- and paclitaxel-induced mechanical and cold allodynia is suppressed by cannabinoid CB2 receptor activation and independent of CXCR4 signaling in models of chemotherapy-induced peripheral neuropathy (full – 2012) http://www.molecularpain.com/content/8/1/71


**AM-2201** – CB1 agonist


Identification and Structural Elucidation of Four Cannabimimetic Compounds (RCS-4, AM-2201, JWH-203 and JWH-210) in Seized Products. (abst – 2013)  

Qualitative Confirmation of 9 Synthetic Cannabinoids and 20 Metabolites in Human Urine Using LC-MS/MS and Library Search. (abst – 2013)  

Analysis of new classes of recreational drugs in sewage: Synthetic cannabinoids and amphetamine-like substances. (abst – 2013)  

Driving under the influence of synthetic cannabinoids ("Spice"): a case series. (abst – 2013)  

Validation of a Novel Immunoassay for the Detection of Synthetic Cannabinoids and Metabolites in Urine Specimens. (abst – 2013)  

K2 Toxicity: Fatal Case of Psychiatric Complications Following AM2201 Exposure. (abst – 2013)  

Identification and Structural Elucidation of Four Cannabimimetic Compounds (RCS-4, AM-2201, JWH-203 and JWH-210) in Seized Products (abst – 2013)  
http://jat.oxfordjournals.org/content/37/2/56.abstract?sid=7be65428-0f18-4917-884b-c35f5a2819af

A Case of Cannabinoid Hyperemesis Syndrome Caused by Synthetic Cannabinoids. (abst – 2013)  

**AM-2233** — CB1 agonist

F200A substitution in the third transmembrane helix of human cannabinoid CB1 receptor converts AM2233 from receptor agonist to inverse agonist. (abst – 2006)  


Another nail in coffin of synthetic cannabis (news – 2011)  

Characteristics of the designer drug and synthetic cannabinoid receptor agonist AM-2201 regarding its chemistry and metabolism. (abst – 2013)  
**AM-3506** — blocks the break-down of Anandamide

Inhibitor of fatty acid amide hydrolase normalizes cardiovascular function in hypertension without adverse metabolic effects.  (full – 2010)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3003779/

Sulfonyl fluoride inhibitors of Fatty Acid amide hydrolase.  (abst – 2012)  

Convergent translational evidence of a role for anandamide in amygdala-mediated fear extinction, threat processing and stress-reactivity  (abst – 2012)  

Acute reduction of anandamide-hydrolase (FAAH) activity is coupled with a reduction of nociceptive pathways facilitation in medication-overuse headache subjects after withdrawal treatment.  (abst – 2012)  


**AM-4054** - CB1 agonist

Behavioral Profile of the Novel Cannabinoid Agonist AM4054  (thesis - 2006)  
http://digitalcommons.uconn.edu/cgi/viewcontent.cgi?article=1016&context=srhonors_theses&sei-redir=1#search=%22am-4054%20%2Bcannabinoid%22

Effects of a Selective Cannabinoid Agonist and Antagonist on Body Temperature in Rats  (abst - 2007)  
http://www.fasebj.org/cgi/content/meeting_abstract/21/5/A409?maxtoshow=&hits=80&RESULTFORMATE=&fulltext=cannabinoid&searchid=1&FIRSTINDEX=800&resourcetype=HWCIT


Effects of anandamide and other CB1 ligands on cognitive function  (abst – 2013)  
http://www.fasebj.org/cgi/content/meeting_abstract/27/1_MeetingAbstracts/1097.10?sid=eea722c0-971c-4d4a-8b8c-38c0e63c19ad
**AM-4113** – CB1 antagonist

Effects of a Selective Cannabinoid Agonist and Antagonist on Body Temperature in Rats (abst - 2007)

http://www.fasebj.org/cgi/content/meeting_abstract/21/5/A409?maxtoshow=&hits=80&RESULTFORMAT=T=&fulltext=cannabinoid&searchid=1&FIRSTINDEX=800&resourcetype=HWCIT

The neutral cannabinoid CB₁ receptor antagonist AM4113 regulates body weight through changes in energy intake in the rat. (abst – 2011)


**AM-6545** – CB1 antagonist

Rehashing endocannabinoid antagonists: can we selectively target the periphery to safely treat obesity and type 2 diabetes? (full – 2010)


**AM-6546** – CB1 antagonist


**AM-6701** – equally blocks the break-down of 2-AG and anandamide

**AM- 6702** - strongly blocks the break-down of anandamide, weakly 2-AG

 Equipotent Inhibition of Fatty Acid Amide Hydrolase and Monoacylglycerol Lipase - Dual Targets of the Endocannabinoid System to Protect against Seizure Pathology. (abst – 2012)  

**AS- 1535907** synthetic, GPR119 agonist

 The role of small molecule GPR119 agonist, AS1535907, in glucose-stimulated insulin secretion and pancreatic β-cell function  
(abst – 2010)  

 Novel GPR119 agonist AS1535907 contributes to first-phase insulin secretion in rat perfused pancreas and diabetic db/db mice.  
(abst – 2010)  

**AS- 1907417** synthetic, GPR119 agonist

 AS1907417, a novel GPR119 agonist, as an insulinotropic and β-cell preservative agent for the treatment of type 2 diabetes.  
(abst – 2010)  

**CBD-ABN/ ABNORMAL CANNABIDIOL/ CAY10429** -

 Vasodilator actions of abnormal-cannabidiol in rat isolated small mesenteric artery  
(full - 2003)  
[http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1573773/?tool=pmcentrez](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1573773/?tool=pmcentrez)

 2-Arachidonylglyceryl ether and abnormal cannabidiol-induced vascular smooth muscle relaxation in rabbit pulmonary arteries via receptor-pertussis toxin sensitive G proteins-ERK1/2 signaling.  
(abst – 2007)  

 International Union of Basic and Clinical Pharmacology. LXXIX. Cannabinoid Receptors and Their Ligands: Beyond CB1 and CB2  
(full – 2010)  
N-arachidonoyl glycine, an abundant endogenous lipid, potently drives directed cellular migration through GPR18, the putative abnormal cannabidiol receptor  (full – 2010)
http://www.biomedcentral.com/1471-2202/11/44

Nonpsychotropic Cannabinoids, Abnormal Cannabidiol and Canabigerol-Dimethyl Heptyl, Act at Novel Cannabinoid Receptors to Reduce Intraocular Pressure.

The abnormal cannabidiol analogue O-1602 reduces nociception in a rat model of acute arthritis via the putative cannabinoid receptor GPR55.        (abst – 2011)

siRNA knockdown of GPR18 receptors in BV-2 microglia attenuates N-arachidonoyl glycine-induced cell migration       (full – 2012)
http://www.jmolecularsignaling.com/content/7/1/10


Involvement of a non-CB1/CB2 cannabinoid receptor in the aqueous humor outflow-enhancing effects of abnormal-cannabidiol.          (abst – 2012)

Mechanism of Central Atypical Cannabinoid Receptor GPR18-Mediated Hypotension in Conscious Rats          (abst – 2013)
http://www.fasebj.org/cgi/content/meeting_abstract/27/1_MeetingAbstracts/654.15?sid=eea722c0-971c-4daa-8b8c-38c0e63c19ad

Role of Central Atypical Cannabinoid Receptor GPR18 in Modulating Cardiovascular Function               (abst – 2013)
http://www.fasebj.org/cgi/content/meeting_abstract/26/1_MeetingAbstracts/663.10?sid=eea722c0-971c-4daa-8b8c-38c0e63c19ad

**CANNABINOR** -  CB2 agonist

Pharmos Initiates Phase I Trial of CB2-Selective Drug Candidate Cannabinor

Cannabinoid Receptor Agonist Significantly Reduces Post-Operative Pain, Study Says
Patent application title: Treatment Of Lower Urinary Tract Dysfunction With CB2-Receptor-Selective Agonists (full – 2009)

http://www.faqs.org/patents/app/20090312414


3 CARBOXAMIDO-5-ARYL-ISOXAZOLES – CB 2 agonists


CB – 65 - CB 2 agonist

The role of central CB2 cannabinoid receptors on food intake in neonatal chicks (abst – 2011) http://www.ncbi.nlm.nih.gov/pubmed/21927979


CESAMET – see NABILONE
**COMPOUND A** - CB1/2 agonist that is excluded from the brain

An Effective Prodrug Strategy to Selectively Enhance Ocular Exposure of a Cannabinoid Receptor (CB1/2) Agonist. (abst – 2013)  

**CP 47,497** - CB1 & CB2 agonist

Cannabimimetic activity from CP-47,497, a derivative of 3-phenylcyclohexanol  
(abst - 1982)  
[http://jpet.aspetjournals.org/content/223/2/516.abstract?maxtoshow=&hits=80&RESULTFORMAT=&fulltext=Hexahydrocannabinol&searchid=1&FIRSTINDEX=0&resourcetype=HWCIT](http://jpet.aspetjournals.org/content/223/2/516.abstract?maxtoshow=&hits=80&RESULTFORMAT=&fulltext=Hexahydrocannabinol&searchid=1&FIRSTINDEX=0&resourcetype=HWCIT)

The Conformational Properties of the Highly Selective Cannabinoid Receptor Ligand CP-55,940  
(full - 1996)  
[http://www.jbc.org/content/271/18/10640.full?maxtoshow=&hits=80&RESULTFORMAT=&fulltext=Hexahydrocannabinol&searchid=1&FIRSTINDEX=0&resourcetype=HWCIT](http://www.jbc.org/content/271/18/10640.full?maxtoshow=&hits=80&RESULTFORMAT=&fulltext=Hexahydrocannabinol&searchid=1&FIRSTINDEX=0&resourcetype=HWCIT)

Cannabinoids augment the release of neuropeptide Y in the rat hypothalamus  
(abst – 2005)  

Withdrawal Phenomena and Dependence Syndrome After the Consumption of "Spice Gold"  
(full - 2009)  
[http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2719097/?tool=pmcentrez](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2719097/?tool=pmcentrez)

Spice drugs: cannabinoids as a new designer drugs.  
(abst - 2009)  
[http://www.unboundmedicine.com/medline/ebm/record/19718488/abstract/%5BSpice_drugs:_cannabinoids_as_a_new_designer_drugs_%5D](http://www.unboundmedicine.com/medline/ebm/record/19718488/abstract/%5BSpice_drugs:_cannabinoids_as_a_new_designer_drugs_%5D)

Spice: a never ending story?  
(abst – 2009)  

Pharmacological properties and dependence liabilities of synthetic cannabinoids  
(abst – 2010)  

Monitoring of herbal mixtures potentially containing synthetic cannabinoids as psychoactive compounds.  
(abst – 2010)  

**THIS ISN'T YOUR MOTHER'S SPICE**  
(news - 2010)  

Now, There's a Test for That -- Norchem's "Fake Marijuana" Test Reveals Significantly Increased Abuse of Spice/K2  
(news - 2010)  
College students and use of K2: an emerging drug of abuse in young persons
(full – 2011)  http://www.substanceabusepolicy.com/content/6/1/16

Marijuana-based Drugs: Innovative Therapeutics or Designer Drugs of Abuse?
(full – 2011) http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3139381/?tool=pubmed

Beyond THC: The New Generation of Cannabinoid Designer Drugs.  (full – 2011)
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3187647/?tool=pubmed

Investigating a not-so-natural high.   (full – 2011)
http://pubs.acs.org/doi/full/10.1021/ac900564u

CP47,497-C8 and JWH073, commonly found in 'Spice' herbal blends, are potent and
efficacious CB(1) cannabinoid receptor agonists.  (abst – 2011)

A method for CP 47, 497 a synthetic non-traditional cannabinoid in human urine using
liquid chromatography tandem mass spectrometry.  (abst – 2011)

Synthetic cannabinoids in oral fluid.  (abst – 2011)

Cytotoxicity of synthetic cannabinoids found in "Spice" products: The role of
cannabinoid receptors and the caspase cascade in the NG 108-15 cell line.

Use of high-resolution accurate mass spectrometry to detect reported and previously
unreported cannabinomimetics in "herbal high" products.  (abst – 2011)

Effects of synthetic cannabinoids on electroencephalogram power spectra in rats.

The emergence and analysis of synthetic cannabinoids.  (abst – 2011)

Chemicals Used in "Spice" and "K2" Type Products Now Under Federal Control and

Characterization of In Vitro Metabolites of CP 47,497, a Synthetic Cannabinoid, in
Human Liver Microsomes by LC-MS/MS.  (full – 2012)


**CP 50,556-1 / LEVONANTRADOL** - CB1 & CB2 agonist


Marijuana-based Drugs: Innovative Therapeutics or Designer Drugs of Abuse?  (full – 2011)  http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3139381/?tool=pubmed

Levonantradol: asymmetric synthesis and structural analysis.  (abst – 2013)  http://pubs.rsc.org/en/Content/ArticleLanding/2013/CC/c3cc41388h

**CP 55,940** - CB1, CB2 & GPR-55 agonist

Molecular cloning of a human cannabinoid receptor which is also expressed in testis  (full – 1991)  http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1151556/

Cannabinoid receptor agonists inhibit Ca current in NG108-15 neuroblastoma cells via a pertussis toxin-sensitive mechanism.  (full - 1992)  http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1907498/?tool=pmcentrez&page=1

Cross-tolerance between delta-9-tetrahydrocannabinol and the cannabimimetic agents, CP 55,940, WIN 55,212-2 and anandamide.  (full - 1993)  http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2175863/?tool=pmcentrez&page=1


Involvement of Dynorphin B in the Antinociceptive Effects of the Cannabinoid CP55,940 in the Spinal Cord  (full - 1997)  http://jpet.aspetjournals.org/content/281/2/730.full

Cannabinoid Receptor Agonists Protect Cultured Rat Hippocampal Neurons from Excitotoxicity  (full - 1998)  http://molpharm.aspetjournals.org/content/54/3/459.full


Effects of cannabinoid receptor agonists on neuronally-evoked contractions of urinary bladder tissues isolated from rat, mouse, pig, dog, monkey and human  (full - 2000)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1571997/?tool=pmcentre

Cannabinoid CB1-receptor mediated regulation of gastrointestinal motility in mice in a model of intestinal inflammation  (full - 2001)  
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Cannabinoid Receptor Agonist 13, a Novel Cannabinoid Agonist: First in Human Pharmacokinetics and Safety (full – 2009)
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Hexahydrocannabinols, novel synthetic cannabinoid derivatives, suppress the tumor growth by inhibiting the VEGF secretion and angiogenesis (abst - 2009)  
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Induction of p53-independent apoptosis by a novel synthetic hexahydrocannabinol analog is mediated via Sp1-dependent NSAID-activated gene-1 in colon cancer cells (abst - 2010)  
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HU-210- CB 1 & CB 2 agonist


Suppression of Nerve Growth Factor Trk Receptors and Prolactin Receptors by Endocannabinoids Leads to Inhibition of Human Breast and Prostate Cancer Cell Proliferation  (full - 2000)  http://endo.endojournals.org/cgi/content/full/141/1/118

Effects of cannabinoid receptor agonists on neuronally-evoked contractions of urinary bladder tissues isolated from rat, mouse, pig, dog, monkey and human  (full - 2000)  
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Activation of cannabinoid receptors decreases the area of ischemic myocardial necrosis.  (abst - 2002)  
Increase of the heart arrhythmogenic resistance and decrease of the myocardial necrosis zone during activation of cannabinoid receptors (abst – 2002)  

The cannabinoids R(-)-7-hydroxy-delta-6-tetra-hydrocannabinol-dimethylheptyl (HU-210), 2-O-arachidonoylglycerylether (HU-310) and arachidonyl-2-chloroethylamide (ACEA) increase isoflurane provoked sleep duration by activation of cannabinoids 1 (CB1)-receptors in mice. (abst – 2002)  

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Cannabinoids spell relief in colon inflammation (news – 2004)  

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Cannabinoids promote embryonic and adult hippocampus neurogenesis and produce anxiolytic- and antidepressant-like effects (full - 2005)  
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Cannabinoids provide neuroprotection against 6-hydroxydopamine toxicity in vivo and in vitro: relevance to Parkinson's disease. (abst - 2005)  

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Marijuana May Spur New Brain Cells  (news - 2005)

Study Shows Marijuana Promotes Neuron Growth  (news - 2005)
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Marijuana May Grow Neurons in the Brain  (news - 2005)
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Excitotoxicity in a chronic model of multiple sclerosis: Neuroprotective effects of cannabinoids through CB1 and CB2 receptor activation.  (abst – 2007)
Repeated Cannabinoid Injections into the Rat Periaqueductal Gray Enhances Subsequent Morphine Antinociception  (full - 2008)  
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Cannabinoid receptor 1 is a potential drug target for treatment of translocation-positive rhabdomyosarcoma  (full - 2009)  
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The effects of cannabinoid drugs on abnormal involuntary movements in dyskinetic and non-dyskinetic 6-hydroxydopamine lesioned rats. (abst – 2011)  

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**HU-211 / DEXANABINOL/ ETS-2101** - CB 2 agonist


HU-211, a Novel Noncompetitive N-Methyl-D-Aspartate Antagonist, Improves Neurological Deficit and Reduces Infarct Volume After Reversible Focal Cerebral Ischemia in the Rat (full - 1995) http://stroke.ahajournals.org/cgi/content/full/26/12/2313

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HU-211, a nonpsychotropic cannabinoid, produces short- and long-term neuroprotection after optic nerve axotomy. (abst – 1996)  

Protection Against Septic Shock and Suppression of Tumor Necrosis Factor α and Nitric Oxide Production by Dexamabinol (HU-211), a Nonpsychotropic Cannabinoid  
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Cytokine production in the brain following closed head injury: dexamabinol (HU-211) is a novel TNF-alpha inhibitor and an effective neuroprotectant. (abst – 1997)  

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Cannabinoids in clinical practice. (abst - 2000)  

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Therapeutic potential of cannabinoids in CNS disease. (abst - 2003)  

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Cannabinoid May Treat Brain Cancer  
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**HU-308**  -  CB2 agonist

HU-308: a specific agonist for CB(2), a peripheral cannabinoid receptor.  (full - 1999)
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Activation of CB2 receptor attenuates bone loss in osteoporosis  (news - 2006)

Cannabinoid-2 receptor agonist HU-308 protects against hepatic ischemia/reperfusion injury by attenuating oxidative stress, inflammatory response, and apoptosis (full - 2007) http://www.jleukbio.org/cgi/content/full/82/6/1382

Endocannabinoids, cannabinoid receptors and inflammatory stress: an interview with Dr. Pál Pacher  (interview - 2007)
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The cannabinoids R(-)-7-hydroxy-delta-6-tetra-hydrocannabinol-dimethylheptyl (HU-210), 2-O-arachidonoylglycerylether (HU-310) and arachidonyl-2-chloroethylamide (ACEA) increase isoflurane provoked sleep duration by activation of cannabinoids 1 (CB1)-receptors in mice. (abst – 2002) http://www.ncbi.nlm.nih.gov/pubmed/12095655

**HU-320** -

**HU-239** - see Ajulemic Acid

**HU-331** -
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A Cannabinoid Anticancer Quinone, HU-331, Is More Potent and Less Cardiotoxic Than Doxorubicin: A Comparative in Vivo Study (full - 2007) [http://jpet.aspetjournals.org/content/322/2/646.full](http://jpet.aspetjournals.org/content/322/2/646.full)

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**HU-910** – CB2 agonist


**JD5037** - CB1 agonist with limited brain penetration

**JWH-015** – CB2 & GPR-55 agonist, mildly activates CB1 receptors

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**JWH-200**

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MDA-7 - strong CB2 agonist


Researchers investigating potential drug for treatement of Alzheimer's disease


**MDA- 19** – synthetic, strong CB2 agonist


**MT- 178** - CB2 agonist


**NABILONE/ CESAMET**


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"Herbal incense": Designer drug blends as cannabimimetics and their assessment by drug discrimination and other in vivo bioassays. (abst – 2013) 

A Case of Cannabinoid Hyperemesis Syndrome Caused by Synthetic Cannabinoids. (abst – 2013) 

Teen narrowly escapes death after smoking synthetic marijuana (news – 2013) 

Synthetic Marijuana Dangerous for Kidneys (news – 2013) 
http://www.sciencedaily.com/releases/2013/02/130208124553.htm

Study: Consumers Prefer Natural Cannabis Over Synthetic 'Marijuana' Herbal Products (news – 2013) 
http://norml.org/news/2013/01/10/study-consumers-prefer-natural-cannabis-over-synthetic-marijuana-herbal-products

Synthetic Marijuana Harms Kidneys of 16 Users, CDC Reports (news – 2013) 

Synthetic cannabis: how it's made, what's in it (news – 2013) 

Death link to synthetic cannabis (news – 2013) 
http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=10882473&ref=rss

Synthetic drugs carry risk of kidney damage (news – 2013) 

High K2 use rate among psych unit patients (news – 2013) 

'Legal high' users turn to real thing (news – 2013) 
SR-144528 - CB(2) receptor antagonist

N-arachidonoyl--serine is neuroprotective after traumatic brain injury by reducing apoptosis  (full – 2011)  http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3170948/

The effects of peptide and lipid endocannabinoids on arthritic pain at the spinal level. (full – 2012)  http://www.anesthesia-analgesia.org/content/early/2012/03/26/ANE.0b013e31824c4ebeb.full.pdf


Effects of the cannabinoid 2 receptor-selective agonist GW405833 in assays of acute pain-stimulated and paindepressed behavior in rats  (abst – 2013)  http://www.fasebj.org/cgi/content/meeting_abstract/27/1_MeetingAbstracts/886.9?sid=eea722c0-971c-4daa-8b8c-38c0c63c19ad


SURINABANT - CB1 antagonist


TAK- 875 - GPR- 40 agonist
TAK-875, an orally available G protein-coupled receptor 40/free fatty acid receptor 1 agonist, enhances glucose-dependent insulin secretion and improves both postprandial and fasting hyperglycemia in type 2 diabetic rats. (abst – 2011)

Takeda moves potential first-in-class diabetes drug into phase III (news – 2011)


Optimization of (2,3-dihydro-1-benzofuran-3-yl)acetic acids: discovery of a non-free fatty acid-like, highly bioavailable G protein-coupled receptor 40/free fatty acid receptor 1 agonist as a glucose-dependent insulinotropic agent. (abst – 2012)

TAK-875 versus placebo or glimepiride in type 2 diabetes mellitus: a phase 2, randomised, double-blind, placebo-controlled trial. (abst – 2012)

**TAK-937 - CB1 & CB2 agonist**

Contribution of Hypothermia and CB(1) Receptor Activation to Protective Effects of TAK-937, a Cannabinoid Receptor Agonist, in Rat Transient MCAO Model. (full – 2012) http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3397930/?tool=pubmed

Cerebroprotective effects of TAK-937, a cannabinoid receptor agonist, on ischemic brain damage in middle cerebral artery occluded rats and non-human primates. (abst – 2012)

Cerebroprotective effects of TAK-937, a novel cannabinoid receptor agonist, in permanent and thrombotic focal cerebral ischemia in rats: Therapeutic time window, combination with t-PA and efficacy in aged rats. (abst – 2013)

**URB-447 – CB1 antagonist**

URB - 597 / KDS-4103 - slows cannabinoid destruction in the body, not the brain.

Marijuana's Distant Relative May Be The Next Prozac; Chemical Reduces Anxiety Using Novel Nerve System In Body (news - 2002)  

Cannabis' Potential Exciting Researchers in Treatment of ALS, Parkinson's Disease - URB597 (news - 2004)  
http://www.illinoisnorml.org/index2.php?option=com_content&do_pdf=1&id=104

Antidepressant-like Activity and Modulation of Brain Monoaminergic Transmission by Blockade of Anandamide Hydrolysis. (full – 2005)  
http://www.pnas.org/content/102/51/18620.long

Depression: URB597 increases endocannabinoids in brain (news – 2005)  
http://www.xagena.it/news/medicinenews_net_news/158388770a41292b277c199ca8d95ccf.html

Blocking the destruction of endocannabinoids (news – 2005)  

Effects of endocannabinoid neurotransmission modulators on brain stimulation reward. (abst – 2006)  

The Endogenous Cannabinoid Anandamide Produces δ-9-Tetrahydrocannabinol-Like Discriminative and Neurochemical Effects That Are Enhanced by Inhibition of Fatty Acid Amide Hydrolase but Not by Inhibition of Anandamide Transport (full - 2007)  
http://jpet.aspetjournals.org/content/321/1/370.full

Parkinsons' Helped By Marijuana-Like Chemicals In Brain (news – 2007)  
http://www.medicalnewstoday.com/releases/62616.php

Actions of the FAAH inhibitor URB597 in neuropathic and inflammatory chronic pain models (full - 2006)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1751298/?tool=pmcentrez

Anti-dyskinetic effects of cannabinoids in a rat model of Parkinson's disease: role of CB1 and TRPV1 receptors (full - 2007)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2128772/?tool=pmcentrez

The CB1 Cannabinoid Receptor Mediates Excitotoxicity-induced Neural Progenitor Proliferation and Neurogenesis (full - 2007)  
http://www.jbc.org/content/282/33/23892.full
The fatty acid amide hydrolase inhibitor URB597 (cyclohexylcarbamic acid 3'-carbamoylbiphenyl-3-yl ester) reduces neuropathic pain after oral administration in mice. (full - 2007)  http://jpet.aspetjournals.org/content/322/1/236.long


Acute hypertension reveals depressor and vasodilator effects of cannabinoids in conscious rats  (full - 2008)  http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2697765/?tool=pmcentrez

The FAAH inhibitor URB-597 ameliorates cannabinoid withdrawal in mice  (abst - 2008)  http://www.fasebj.org/cgi/content/meeting_abstract/22/1_MeetingAbstracts/711.6?maxtoshow=&hits=80&RESULTFORMAT=&fulltext=cannabinoid&searchid=1&FIRSTINDEX=720&resourcetype=HWCIT

Inhibition of anandamide hydrolysis by URB597 reverses abuse-related behavior and neurochemical effects of nicotine in rats  (abst – 2008)  http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2663803/?tool=pubmed


Blockade of endocannabinoid-degrading enzymes attenuates neuropathic pain.  (full - 2009)  http://jpet.aspetjournals.org/content/330/3/902.full?sid=af53ea87-ab4b-426e-9c7e-8f750e9c4a17


Preservation of Striatal Cannabinoid CB1 Receptor Function Correlates with the Antianxiety Effects of Fatty Acid Amide Hydrolase Inhibition (full – 2010)  
http://molpharm.aspetjournals.org/content/78/2/260.long

Anandamide suppresses pain initiation through a peripheral endocannabinoid mechanism (full – 2010)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3260554/?tool=pubmed

Regulation of nausea and vomiting by cannabinoids (abst - 2010)  

Local application of the endocannabinoid hydrolysis inhibitor URB597 reduces nociception in spontaneous and chemically induced models of osteoarthritis. (abst – 2010)  
http://www.unboundmedicine.com/medline/ebm/record/21185649/abstract/Local_application_of_the_endocannabinoidhydrolysis_inhibitor_URB597_reduces_nociception_in_spontaneous_and_chemically_induced_models_of_osteoarthritis

Behavioural and molecular consequences of chronic cannabinoid treatment in Huntington's disease transgenic mice. (abst – 2010)  
http://www.unboundmedicine.com/medline/ebm/record/20600638/abstract/BehaviouralandmolecularconsequencesofchroniccannabinoidtreatmentinHuntington%27sdisease_transgenic_mice


A new drug that kills pain like marijuana, without getting you stoned (news – 2010)  

Pain target enzyme's working made crystal clear (news – 2010)  
http://www.rsc.org/chemistryworld/News/2010/May/26051001.asp

Endocannabinoid regulation of acute and protracted nicotine withdrawal: effect of FAAH inhibition. (full – 2011)  
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Increasing Antiproliferative Properties of Endocannabinoids in N1E-115 Neuroblastoma Cells through Inhibition of Their Metabolism. (full – 2011)  
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Administration of URB597, oleoylethanolamide or palmitoylethanolamide increases waking and dopamine in rats. (full – 2011)  
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L-Type Calcium Channel Mediates Anticonvulsant Effect of Cannabinoids in Acute and Chronic Murine Models of Seizure. (abst – 2011)  
Pharmacological elevation of anandamide impairs short-term memory by altering the neurophysiology in the hippocampus. (abst – 2011)  

Fatty acid amide hydrolase blockade attenuates the development of collagen-induced arthritis and related thermal hyperalgesia in mice. (abst - 2011)  

Role of endocannabinoid and glutamatergic systems in DOI-induced head-twitch response in mice. (abst – 2011)  

Regulation of nausea and vomiting by cannabinoids (abst – 2011)  

The endocannabinoid, anandamide, augments Notch-1 signaling in cultured cortical neurons exposed to amyloid-beta and in the cortex of aged rats. (full – 2012)  
http://www.jbc.org/content/early/2012/08/13/jbc.M112.350678.long

The fatty acid amide hydrolase inhibitor URB597 exerts anti-inflammatory effects in hippocampus of aged rats and restores an age-related deficit in long-term potentiation (full – 2012)  
http://www.jneuroinflammation.com/content/9/1/79

The association of N-palmitoylethanolamine with the FAAH inhibitor URB597 impairs melanoma growth through a supra-additive action (full – 2012)  
http://www.biomedcentral.com/1471-2407/12/92

Cannabinoid type-1 receptor reduces pain and neurotoxicity produced by chemotherapy. (full – 2012)  
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Modulation of neuropathic-pain-related behaviour by the spinal endocannabinoid/endovanilloid system (abst – 2012)  

Vascular metabolism of anandamide to arachidonic acid affects myogenic constriction in response to intraluminal pressure elevation. (abst – 2012)  


Medial prefrontal cortex endocannabinoid system modulates baroreflex activity through CB1 receptors (abst – 2012) http://ajpregu.physiology.org/content/302/7/R876.abstract?sid=952e2125-0502-477c-b603-30f0f3e51b55


The FAAH inhibitor URB597 efficiently reduces tyrosine hydroxylase expression through CB(1) and FAAH-independent mechanisms. (abst – 2012) http://www.ncbi.nlm.nih.gov/pubmed/22970888


Modulation by 17β-estradiol of anandamide vasorelaxation in normotensive and hypertensive rats: a role for TRPV1 but not fatty acid amide hydrolase. (abst – 2013)
Inhibition of fatty acid amide hydrolase activates Nrf2 signaling and induces heme oxygenase 1 transcription in breast cancer cells. (abst – 2013)

Inhibition of endocannabinoid degradation in experimental endotoxemia reduces leukocyte adhesion and improves capillary perfusion in the gut. (abst – 2013)

The complex effects of cannabinoids on insulin secretion from rat isolated islets of Langerhans. (abst – 2013)

Phencyclidine-induced social withdrawal results from deficient stimulation of cannabinoid CB1 receptors: implications for schizophrenia. (abst – 2013)

Full inhibition of spinal FAAH leads to TRPV1-mediated analgesic effects in neuropathic rats and possible lipoxygenase-mediated remodeling of anandamide metabolism. (abst – 2013)

Control of experimental spasticity by targeting the degradation of endocannabinoids using selective fatty acid amide hydrolase inhibitors. (abst – 2013)

The fatty acid amide hydrolase inhibitor, URB597, promotes retinal ganglion cell neuroprotection in a rat model of optic nerve axotomy. (abst – 2013)

Emotional, endocrine and brain anandamide response to social challenge in infant male rats. (abst – 2013)

Effects of anandamide and other CB1 ligands on cognitive function (abst – 2013)

Effects of compounds that interfere with the endocannabinoid system on behaviors predictive of anxiolytic and panicolytic activity in the elevated T-maze (abst – 2013)

The effects of anandamide signaling enhanced by the FAAH inhibitor URB597 on coping styles in rats. (abst – 2013)

Anandamide modulates the neuroendocrine responses induced by extracellular volume expansion. (abst – 2013)
**URB - 754** - slows cannabinoid destruction

The CB1 Cannabinoid Receptor Mediates Excitotoxicity-induced Neural Progenitor Proliferation and Neurogenesis (full - 2007) [http://www.jbc.org/content/282/33/23892.full](http://www.jbc.org/content/282/33/23892.full)


**URB - 937** - slows cannabinoid destruction


**WIN 55,212-2** - CB1 agonist


Cross-tolerance between delta-9-tetrahydrocannabinol and the cannabimimetic agents, CP 55,940, WIN 55,212-2 and anandamide. (full - 1993) [http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2175863/?tool=pmcentrez&page=1](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2175863/?tool=pmcentrez&page=1)

Cannabinoid Receptor Agonists Protect Cultured Rat Hippocampal Neurons from Excitotoxicity  (full - 1998)  http://molpharm.aspetjournals.org/content/54/3/459.full


Cannabinoids and Neuroprotection in Global and Focal Cerebral Ischemia and in Neuronal Cultures  (full - 1999)  http://www.jneurosci.org/cgi/content/full/19/8/2987?maxtoshow=&hits=80&RESULTFORMAT=&fulltext=cannabinoid&andorexactfulltext=and&searchid=1&FIRSTINDEX=0&sortspec=relevance&resourcetype=HWCIT


Involvement of Cannabinoid Receptors in the Intraocular Pressure-Lowering Effects of WIN55212-2  (full - 2000)  http://jpet.aspetjournals.org/content/292/1/136.long


Effects of cannabinoid receptor agonists on neuronally-evoked contractions of urinary bladder tissues isolated from rat, mouse, pig, dog, monkey and human  (full - 2000)  http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1571997/?tool=pmcentrez

Central and peripheral cannabinoid modulation of gastrointestinal transit in physiological states or during the diarrhoea induced by croton oil  (full - 2000)  http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1572019&tool=pmcentrez


The cannabinoid agonist WIN55,212-2 suppresses opioid-induced emesis in ferrets.  (link to PDF - 2001)
The cannabinoid CB1 receptor antagonist SR 141716A reverses the antiemetic and motor depressant actions of WIN 55, 212-2 (abst – 2001)

Increased Severity of Stroke in CB1 Cannabinoid Receptor Knock-Out Mice (full - 2002)

Contrasting effects of WIN 55212-2 on motility of the rat bladder and uterus. (full – 2002)

CB1 Receptors in the Preoptic Anterior Hypothalamus Regulate WIN 55212-2 [(4,5-Dihydro-2-methyl-4(4-morpholinylmethyl)-1-(1-naphthalenyl-carbonyl)-6H-pyrrolol[3,2,1ij]quinolin-6-one]-Induced Hypothermia (full - 2002)

A Peripheral Mechanism for CB1 Cannabinoid Receptor-Dependent Modulation of Feeding (full - 2002)

Influence of the CB1 receptor antagonist, AM 251, on the regional haemodynamic effects of WIN-55212-2 or HU 210 in conscious rats (full - 2002)

The potent emetogenic effects of the endocannabinoid, 2-AG (2-arachidonoylglycerol) are blocked by delta(9)-tetrahydrocannabinol and other cannabinoids. (full – 2002)

Effects of pharmacological manipulations of cannabinoid receptors on severity of dystonia in a genetic model of paroxysmal dyskinesia. (abst - 2002)

Inhibition of tumor angiogenesis by cannabinoids (full - 2003)

The Endogenous Cannabinoid System Regulates Seizure Frequency and Duration in a Model of Temporal Lobe Epilepsy (full - 2003)
Immunoregulation of a viral model of multiple sclerosis using the synthetic cannabinoid R(+)WIN55,212 (full - 2003)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC152941/?tool=pmcentrez

Cannabinoid receptor type 1 modulates excitatory and inhibitory neurotransmission in mouse colon (full – 2003)  
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Effect of WIN 55212-2, a Cannabinoid Receptor Agonist, on Aqueous Humor Dynamics in Monkeys (link to PDF - 2003)  
http://archopht.ama-assn.org/cgi/content/full/121/1/87?maxtoshow=&hits=80&RESULTFORMAT=&fulltext=marihuana&searchid=1&FIRSTINDEX=640&resourcetype=HWCIT


Cannabinoids: Defending the Epileptic Brain (full - 2004)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1176332/?tool=pmcentrez

The effect of WIN 55,212-2, a cannabinoid agonist, on tactile allodynia in diabetic rats. (abst – 2004)  

Marijuana-like compounds may aid array of debilitating conditions ranging from Parkinson's to pain (news – 2004)  

Enhancing Cannabinoid Neurotransmission Augments the Extinction of Conditioned Fear (full - 2005)  
http://www.nature.com/npp/journal/v30/n3/full/1300655a.html

Effects of cannabinoids on colonic muscle contractility and tension in guinea pigs. (full – 2005)  
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The cannabinoid receptor agonist WIN 55212-2 inhibits neurogenic inflammations in airway tissues. (full – 2005)  
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Systemic administration of WIN 55,212-2 increases norepinephrine release in the rat frontal cortex (abst - 2005)  

Cannabinoid Receptor-Mediated Apoptosis Induced by R(+)‐Methanandamide and Win55,212-2 Is Associated with Ceramide Accumulation and p38 Activation in Mantle Cell Lymphoma (full - 2006)  
http://molpharm.aspetjournals.org/content/70/5/1612.full
Increasing cannabinoid levels by pharmacological and genetic manipulation delay disease progression in SOD1 mice  (full - 2006)  http://www.fasebj.org/cgi/content/full/20/7/1003


Effects of a Cannabinoid Agonist on Spinal Nociceptive Neurons in a Rodent Model of Neuropathic Pain  (full - 2006)  http://jn.physiology.org/cgi/content/full/96/6/2984

The Endocannabinoid System Controls Key Epileptogenic Circuits in the Hippocampus (full - 2006)  http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1769341/?tool=pmcentrez

Antinociceptive effect of cannabinoid agonist WIN 55,212–2 in rats with a spinal cord injury (full - 2006)  http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1861843/?tool=pmcentrez

Activation of the Cannabinoid Type-1 Receptor Mediates the Anticonvulsant Properties of Cannabinoids in the Hippocampal Neuronal Culture Models of Acquired Epilepsy and Status Epilepticus (full - 2006)  http://jpet.aspetjournals.org/content/317/3/1072.full?maxtoshow=&hits=80&RESULTFORMAT=&fulltext=cannabinoid&searchid=1&FIRSTINDEX=320&resourcetype=HWCIT#ref-list-1

Cannabinoid Receptor Agonist-induced Apoptosis of Human Prostate Cancer Cells LNCaP Proceeds through Sustained Activation of ERK1/2 Leading to G1 Cell Cycle Arrest (full - 2006)  http://www.jbc.org/content/281/51/39480.full


Cannabinoid receptors as a target for therapy of ovarian cancer (abst - 2006)  http://www.aacrmeetingabstracts.org/cgi/content/abstract/2006/1/1084?maxtoshow=&hits=80&RESULTFORMAT=&fulltext=cannabinoid&searchid=1&FIRSTINDEX=560&resourcetype=HWCIT


Cannabinoids, in combination with (NSAIDS), produce a synergistic analgesic effect (news - 2006) http://www.norml.org/index.cfm?Group_ID=6819

Continuous infusion of the cannabinoid WIN 55,212–2 to the site of a peripheral nerve injury reduces mechanical and cold hypersensitivity (full - 2007) http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2013951/?tool=pmcentrez

The phytocannabinoid Δ9-tetrahydrocannabinivar modulates inhibitory neurotransmission in the cerebellum (full – 2007) http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2438968/

Antinociceptive effect of cannabinoid agonist WIN 55,212–2 in rats with a spinal cord injury (full - 2007) http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1861843/?tool=pmcentrez

Activation of cannabinoid CB1 and CB2 receptors suppresses neuropathic nociception evoked by the chemotherapeutic agent vincristine in rats. (full – 2007) http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2190028/?tool=pubmed

Subchronic cannabinoid agonist (WIN 55,212-2) treatment during cocaine abstinence alters subsequent cocaine seeking behavior. (full - 2007) http://www.nature.com/npp/journal/v32/n11/abs/1301365a.html

Cannabinoids elicit antidepressant-like behavior and activate serotonergic neurons through the medial prefrontal cortex. (full - 2007) http://www.jneurosci.org/cgi/content/full/27/43/11700

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Antinociceptive Synergy Between the Cannabinoid Receptor Agonist WIN 55,212-2 and Bupivacaine in the Rat Formalin Test (full - 2007) http://www.anesthesia-analgesia.org/content/104/3/719.full?maxtoshow=&hits=80&RESULTFORMAT=&fulltext=cannabinoid&searchid=1&FIRSTINDEX=320&resourcetype=HWCIT

Cardiovascular effects of cannabinoids in conscious spontaneously hypertensive rats (full - 2007) http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2190006/?tool=pmcentrez

Cross-sensitization and cross-tolerance between exogenous cannabinoid antinociception and endocannabinoid-mediated stress-induced analgesia (full - 2007) http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2771679/?tool=pubmed

Anti-dyskinetic effects of cannabinoids in a rat model of Parkinson's disease: role of CB1 and TRPV1 receptors  
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Cannabinoid self-administration in rats: sex differences and the influence of ovarian function  
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Development of pharmacoresistance to benzodiazepines but not cannabinoids in the hippocampal neuronal culture model of status epilepticus  
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Control of spasticity in a multiple sclerosis model is mediated by CB1, not CB2, cannabinoid receptors.  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2189718/?tool=pubmed

Anti-inflammatory property of the cannabinoid agonist WIN-55212-2 in a rodent model of chronic brain inflammation  

The synthetic cannabinoids attenuate allodynia and hyperalgesia in a rat model of trigeminal neuropathic pain.  

Cannabinoid receptors agonist WIN-55,212-2 inhibits angiogenesis, metastasis and tumor growth of androgen-sensitive prostate cancer cell CWR22R{nu}1 xenograft in athymic nude mice  
http://www.aacrmeetingabstracts.org/cgi/content/meeting_abstract/2007/1_Annual_Meeting/2195?maxtoshow=&hits=80&RESULTFORMAT=&fulltext=cannabinoid&searchid=1&FIRSTINDEX=720&resourcetype=HWCIT

Additive Effects of Timolol and Cannabinoids on Intraocular Pressure in a Rat Glaucoma Model  
http://abstracts.iovs.org/cgi/content/abstract/48/5/4807?maxtoshow=&hits=80&RESULTFORMAT=&fulltext=cannabinoid&searchid=1&FIRSTINDEX=560&resourcetype=HWCIT

Synthetic form of THC is an effective anti-depressant at low doses  

Cannabis: Potent Anti-Depressant In Low Doses, Worsens Depression At High Doses  

Chronic cannabinoid administration in vivo compromises extinction of fear memory.  
http://learnmem.cshlp.org/content/15/12/876.long

Topical WIN55212-2 Alleviates Intraocular Hypertension in Rats Through a CB1 Receptor-Mediated Mechanism of Action  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2637200/?tool=pmcentrez
Attenuation of Experimental Autoimmune Hepatitis by Exogenous and Endogenous Cannabinoids: Involvement of Regulatory T Cells (full - 2008)
http://molpharm.aspetjournals.org/content/74/1/20.full?maxtoshow=&hits=80&RESULTFORMAT=&fulltext=cannabinoid&searchid=1&FIRSTINDEX=320&resourcetype=HWCIT#content-block

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Acute hypertension reveals depressor and vasodilator effects of cannabinoids in conscious rats (full - 2008)  http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2697765/?tool=pmcentrez


Cannabinoid 2 receptor induction by IL-12 and its potential as a therapeutic target for the treatment of anaplastic thyroid carcinoma. (full - 2008)  http://www.nature.com/cgt/journal/v15/n2/full/7701101a.html

Differential effects of repeated low dose treatment with the cannabinoid agonist WIN 55,212-2 in experimental models of bone cancer pain and neuropathic pain. (abst - 2008)  http://www.aacrmeetingabstracts.org/cgi/content/meeting_abstract/2008/1_Annual_Meeting/4081?maxtoshow=&hits=80&RESULTFORMAT=&fulltext=cannabinoid&searchid=1&FIRSTINDEX=480&resourcetype=HWCIT

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Scientists are High on Idea that Cannabis Reduces Memory Impairment (news - 2008)  http://www.physorg.com/news146320102.html


WIN55,212-2, a Cannabinoid Receptor Agonist, Protects Against Nigrostriatal Cell Loss in the MPTP Mouse Model of Parkinson’s Disease (full - 2009)  http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2755595/?tool=pmcentrez

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http://ajpgi.physiology.org/cgi/content/full/296/1/G119?maxtoshow=&hits=80&RESULTFORMAT=&fulltext=cannabinoid&searchid=1&FIRSTINDEX=160&resourcetype=HWCIT

Cannabinoid Receptor Activation in the Basolateral Amygdala Blocks the Effects of Stress on the Conditioning and Extinction of Inhibitory Avoidance. (full - 2009) 
http://www.jneurosci.org/cgi/content/full/29/36/11078?maxtoshow=&hits=10&RESULTFORMAT=&fulltext=Dr.+Irit+Akirav++&andorexactfulltext=and&searchid=1&FIRSTINDEX=0&resourcetype=HWCIT

Effects of the cannabinoid CB1 receptor antagonist rimonabant on distinct measures of impulsive behavior in rats. (full – 2009) 
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http://science.iowamedicalmarijuana.org/pdfs/cancer/Luca%20et%20al%202009%2019539619.pdf

Endocannabinoids in the rat basolateral amygdala enhance memory consolidation and enable glucocorticoid modulation of memory. (full - 2009) 
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2660732/?tool=pmcentrez

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