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# **Ajna Light Theory and Science**

**Guy Harriman**

**June 2015**

## **The Ajna Light - What is it?**

The Ajna Light was developed in 2014 to help people explore their intimate connection with the wisdom of the universe.

The pineal gland is a vestigial third eye which is located at the exact center of the brain. It has all the characteristics of the two optical eyes we use for everyday vision. The pineal gland has the remnants of the cornea and retina, and has the same light sensitive cells as the eyes. In the 1970s Fritz-Albert Popp at the University of Marburg in Germany showed that the spectral distribution of the emission was from 200 to 800nm, the visible and ultraviolet wavelengths. He showed that they were generated and detected by the vibration of DNA in the cell's nucleus, at 4GHz. It is thought that these biophotons form a light based communication between all the cells in the body, including bacteria in the gut (which make up 90% of the 100 trillion cells in the body).

The chakra system is the basis of the energetic model of yoga theory. The ancient yogis were aware of the flow of light energy in the body. They called the channels along which it flows Nadis, meaning energy nerves. There are 64,000 nadis in the energy body, with the main centers lying along a core running in front of the spine called the shushumna. The seven chakras are located along the shushumna, from the first chakra (called the root or muladhara) at the perineum to the seventh chakra (called the crown or sarishrara) at the top of the head. The pineal gland is located at the sixth chakra, the Ajna chakra. Therefore the energetic information from the entire body travels up to the pineal gland.

The pineal gland generates an endogenous psychotropic chemical called DMT (dimethyl tryptamine). Tryptophan is the amino acid which is the precursor to DMT, but the body has an inhibitor enzyme which normally prevents DMT being made from tryptophan. The shamans of South America intuitively selected two herbs, the leaves of the Ayahuasca shrub family called Psychotria which contain DMT added to the Caapi vine, a source of monoamine oxidase inhibitor (MAOI) which turns off the enzyme preventing DMT conversion.

DMT is naturally generated twice in the lifetime, at birth and again at death. It is responsible for allowing these potentially traumatic emotional life transition processes to happen gracefully. After a near death experience, one's full life flashes by, and a tunnel of light appears. Both of these effects are due to the psychedelic effects of DMT.

Shamans use Ayahuasca to connect deeply to nature, to give them the wisdom of our total interconnection with all of life. DMT brings teaching as part of a spiritual journey. However, as a psychotropic drug it is illegal in many countries, and also has potential dangers. It is important to use it for healing and spiritual growth, not for entertainment or escape from reality. Each person has a different sensitivity, so they may be overdosed or under-dosed. It can also take some hours for the effect to wear off, during which the user may be dizzy and need to vomit.

In the early 19th century, a Czech anatomist Jan Purkyně was the first to document a hypnogogic effect, during which various patterns appear at different rates of flicker. This hypnogogic effect occurs when we transition between being awake and asleep, and is a form of trance or hypnosis. In the trance state, our mental defenses are lowered, and we are open to a greater awareness than our typical controlling egoic state. More recently, in the 1910s, there was interest in this effect for generating a meditative effect, as each of the four brainwave patterns (alpha - alert, beta - relaxed, delta - meditative and theta - sleep) are stimulated by specific flicker frequencies. In the 1990s it was popular to use goggles with low power

LEDs close to the eyes to produce this effect, but this is not a comfortable or powerful method of producing the hypnogogic effect.

The flicker effect has been studied since the 1960s using EEG. Similar to the use of binaural beats in music for hypnotherapy, the use of a constant flicker rate in lights will induce a trance state and entrainment of brainwaves. The Ajna Light uses this effect, but has other unique design characteristics which take the process much further than previous technology.

The Ajna Light uses the latest high power LEDs to allow the hypnogogic trance state to be induced easily and rapidly, and as soon as the Ajna Light stops playing the light pattern sequence, the receiver can quickly come back to the normal alpha or beta brainwave condition without the side-effects of Ayahuasca or LSD. The Ajna Light will take the user on a shamanic trance journey to connect to the root of their being, stimulating the pineal gland to open up psychic vision in a harmonious natural and powerful way, in balance with their own physiology.

## **Melanopsin**

The Ajna Light invokes the physiological phenomenon of melanopsin, which has three aspects. The ganglial cells residing in the pigment of the retina are found in two classes. One is used to visual purposes, and the other for detecting changes in season and other circadian rhythms. The visual aspect of melanopsin, in particular how it allows for high contrast sensitivity in low light conditions, was only discovered around 2010. The circadian rhythm aspect of melanopsin was discovered in the 1990s, although proposed earlier. Melanopsin stimulation also induces the tryptophan cascade, as a side effect of the circadian rhythm entrainment, a series of biochemical reactions which convert tryptophan to serotonin to DMT. Serotonin is present during the relaxation and sleep cycle. The molecule DMT is known as the God Molecule, as it is associated in high concentrations with spiritual consciousness. DMT is present in large concentrations during birth and at death. It helps the individual transition out of the uterus, and at death out of life, in a graceful manner. Near death experiences show a common pattern of transcendent subjective effects at these times, associated with the high levels of DMT. The Ajna Light, by stimulating melanopsin, causes a similar transcendent feeling, depending on how open the user is at the time of the session. Goggles and other Lights using halogen or warm light sources do not cause the melanopsin response present with the Ajna Light.

## **Visual Melanopsin**

A special subclass of mammalian photoreceptor cells resides in the ganglion cell layer of the inner retina. These intrinsically photosensitive retinal ganglion cells (ipRGCs) express a photopigment called melanopsin. These special cells have the ability to respond to light in the absence of all rod and cone photoreceptor input. Although relatively few in number, ipRGCs extend their dendrites or nerve fibers across much of the retina. Therefore they can function as contrast detectors to assess changes in ambient light levels. Phototransduction in ipRGCs happens through transient receptor potential channels. These channels resemble the phototransduction cascade of invertebrate more than vertebrate photoreceptors. In addition, ipRGCs convey contrast (irradiance) information via the optic nerve to influence several functions. These nerve cell's dendrites are either shared or run alongside the optic nerve cell fibers.

It is now known that photoreception in the mammalian retina occurs outside of rod and cone cells. Research since the late 1990s showed that the melanopsin expressing retinal ganglion cells (mRGCs) provide this non-rod non-cone photoreception. The research also explains their extensive contribution to sub-conscious light responses. However, it was assumed that these mRGCs do not have a role in visual perception. However, it is now understood that there is an very extensive mRGC input to the primary visual pathway. Mice have this mechanism extensively, with 40% of neurones in the mouse

visual thalamus having melanopsin signals, superimposed upon more conventional visual information. The current research, highlighted below, shows that mRGCs connect directly into the visual system. The Ajna Light directly stimulates this pathway by using cool white LED modules, which includes the 480nm melanopsin wavelength. Therefore activation of the waking visual system as well as the more indirect neural pathway from the retinal ganglial cells to the pineal gland described below (see pulsed melanopsin) occur together when using the Ajna Light. This combination may explain some of the subconscious and emotional clearing which has been observed using the Ajna Light over multiple sessions.

*quoted directly from web articles about mRGB retinal ganglion cells:*

ipRGCs are a novel mammalian photoreceptor whose morphological and physiological characteristics seem well suited for their primary role as light detectors for non-image forming visual reflexes. However, many mysteries remain, and an untold number of functions for this rare and special type of ganglion cell should not be overlooked. Their invertebrate-like phototransduction cascade makes them unique among all other known vertebrate photoreceptors, and provide a window into possible mechanisms of the evolution of the retina. In addition to their intrinsic melanopsin-driven photosensitivity, ipRGCs also receive rod and cone synaptic input and thus may provide the brain with different information in series, separated by complex spatial and temporal dynamics. Although they drive a number of tonic behaviors, requiring accurate representation of ambient light levels of long periods of time, ipRGCs have the ability to adapt to both light and darkness, and appear to have an ability to communicate back to the retina, possibly changing the functional properties of retinal circuitry. As the years catch up with this relatively young field of intrinsically photosensitive retinal ganglion cells, it is beginning to look like many ganglion cell types are melanopsin photoreceptive and have dual roles in both image processing, color processing and subconscious circadian photoentrainment.

It is now over 10 years since the remarkable discovery that photoreception in the mammalian retina occurs outside of rod and cone cells. In that time we have learnt a great deal about the melanopsin expressing retinal ganglion cells (mRGCs) that provide this non-rod non-cone photoreception, and about their extensive contribution to sub-conscious light responses. However, one idea that has persisted is that these mRGCs play little if any role in visual perception. Exciting new data challenge that view. Thus, we have recently described an extraordinarily extensive mRGC input to the primary visual pathway. This provides ~40% of neurons in the mouse visual thalamus with melanopsin signals, superimposed upon more conventional visual information.

mRGCs inform the brain about the irradiance (that is, brightness or intensity) and protracted presence of a light stimulus that is hitting the retina. This information isn't available from rods and cones because they either become saturated at low light levels (rods) or do not provoke much sustained activity in the brain (cones).

Rods and cones are the most well-known photoreceptors in the retina, activating in different light environments. Rods, of which there are about 120 million in the human eye, are highly sensitive to light and turn on in dim or low-light environments. Meanwhile the 6 million to 7 million cones in the eye are less sensitive to light; they drive vision in brighter light conditions and are essential for color detection.

Rods and cones were thought to be the only light-sensing photoreceptors in the retina until about a decade ago when scientists discovered a third type of retinal photoreceptor – the ipRGC, or intrinsically photosensitive retinal ganglion cell – that contains melanopsin. Those cells were thought to be needed exclusively for detecting light for non-image-dependent functions, for example, to control synchronization of our internal biological clocks to daytime and the constriction of our pupils in response to light.

“Rods and cones were thought to mediate vision and ipRGCs were thought to mediate these simple light-detecting functions that happen outside of conscious perception,” Schmidt said. “But our experiments revealed that ipRGCs influence a greater diversity of behaviors than was previously known and actually contribute to an important aspect of image-forming vision, namely contrast detection.”

The Johns Hopkins team along with other scientists conducted several experiments with mice and found that when melanopsin was present in the retinal ganglion cells, the mice were better able to see contrast in a Y-shaped maze, known as the visual water task test. In the test, mice are trained to associate a pattern with a hidden platform that allows them to escape the water. Mice that had the melanopsin gene intact had higher contrast sensitivity than mice that lack the gene.

“Melanopsin signaling is essential for full contrast sensitivity in mouse visual functions,” said Hattar. “The ipRGCs and melanopsin determine the threshold for detecting edges in the visual scene, which means that visual functions that were thought to be solely mediated by rods and cones are now influenced by this system. The next step is to determine if melanopsin plays a similar role in the human retina for image-forming visual functions.”

## **Tryptophan to DMT - Melanopsin Induced Cascade**

Melanopsin, the photopigment of retinal ganglion cells that interacts with retinal (vitamin A), has been shown to induce light sensitivity in non-sensitive cells. In retinal ganglion cells, Stimulation of melanopsin with sky blue light around 480nm wavelength activates transient receptor potential channels (TRP channels) via a G-protein signaling cascade, resulting in calcium influx. The melanopsin opens calcium channels in the cell which activates the NFAT pathway.

Tryptophan is a component of protein-rich foods. It is one of the twenty essential amino acids from which all proteins are made. Serotonin is generated at the end of the tryptophan processing reactions or cascade. Serotonin is seen as responsible for relaxation and sleep, although the full biochemistry is much more complex than that.

The three bioactive proteins or thermobiles are serum albumin, alpha lactalbumin and lactoferrin. Meditation research on spirit molecules has shown that alpha lactalbumin increases the following neurotransmitters in the chemical cascade starting from amino acid tryptophan -> serotonin -> melatonin -> pinoline -> 5-MeO-DMT (5-methoxy-dimethyltryptamine) -> DMT (dimethyltryptamine).

*quoted directly from web articles about tryptophan biochemistry:*

Chemistry of Consciousness & Re-Awakening of Spirit Molecules

Complete darkness profoundly changes the sensory sensibilities of the brain. The body is deprived of all visual reference. Sounds begin to fall away as we lose contact with the external world and turn the senses inward. The effect of darkness is to shut down major cortical centers in the brain, depressing mental and cognitive functions in the higher brain centers. Emotional and feeling states are enhanced, especially the sense of smell and finer senses of psychic perception. Dreams become more lucid, and the dream state manifests in our conscious awareness. Eventually, we awaken within ourselves the awareness of the Source, the spirit, the soul. We descend into the void, into the darkness of deep, inner space. The light appears.

The dark room environment dramatically alters the chemistry of the brain, manifesting especially in neuro-endocrine systems which govern consciousness and regulate body functions. An important neurotransmitter involved in waking consciousness (serotonin) converts into a regulatory hormone (melatonin) that shuts down the organ systems, quieting the body in preparation for the finer and

subtler realities of higher consciousness. The pineal gland initiates a cascade of inhibitory reactions, permitting visions and dream states to emerge in our conscious awareness. Eventually, the brain synthesizes the "spirit molecules" 5-methoxy-dimethyltryptamine (5-MeO-DMT) and dimethyltryptamine (DMT), facilitating the transcendental experiences of universal love and compassion.

Tryptophan  
Serotonin  
Melatonin  
Pinoline  
5-MeO-DMT  
DMT

The spirit molecules are synthesized from the amino acid tryptophan in a series of biochemical steps shown above. The spirit molecules enable the nourishment and sustenance of the soul, sought daily in deep sleep and dream.

The direct experience of consciousness is often discordant with the necessities of physical existence on Earth. Thus, in the waking state, the body inhibits 5-MeO-DMT and DMT synthesis by producing the compound MAO to deactivate the serotonin -- DMT pathway. To maintain its connection to the soul, however, the body must periodically inhibit the action of monoamine oxidase (MAO), allowing for DMT synthesis and a return to the Source. This is accomplished by enzyme inhibitors, such as harmine and harmaline, which are secreted by the pineal gland in response to circadian rhythms and the darkness of night. The pineal gland also produces the hormone melatonin, which helps regulate circadian rhythms in the body.

Daylight is the cue that inhibits our essential connection to the Source, but facilitates physical survival on Earth. The Dark Room experience relaxes this constraint, by inhibiting the inhibitor, thereby activating the consciousness connection; for example, the pineal secretion of harmaline inhibits MAO, itself an inhibitor, allowing synthesis of 5-MeO-DMT and DMT. Thus, in the Dark Room, our biochemical connections to the Source are re-established. The Dark Room facilitates the synthesis and accumulation of the spirit molecules (5-MeO-DMT and DMT) in the brain, and hence the experience of our true nature, of love and compassion energy, and our reconnection with the Divine Tao (Wu Chi).

### **Tryptophan (Psychoneurobiology)**

Increased brain serotonin levels improve the ability to cope with stress, while a decline in serotonin activity is associated with depression. Tryptophan is the amino acid that increases serotonin levels in the brain. Its transportation into the brain is dependent on other amino acids with a neutral charge. This influences tryptophan exchange via the ratio of tryptophan to the sum of other large neutral amino acids. A diet high in proteins that have high amounts of tryptophan may theoretically increase brain serotonin levels.

Twenty-nine (29) highly stress-vulnerable subjects and 29 other subjects participated in a double blind, placebo controlled study where all subjects were exposed to various experimental stresses after the intake of a whey protein (lactalbumin) or a casein supplement. Changes in mood, skin conductance, cortisol levels and plasma tryptophan/amino acid ratios were all assessed before and after the stress tests.

The researchers chose to assess lactalbumin protein fraction as it possesses one of the highest concentrations of tryptophan of any known protein. The scientists were interested to see if a protein

supplement could induce favorable brain serotonin levels.

Results showed while the casein supplement produced little effect, the whey protein supplement increased the plasma tryptophan/amino acid ratio by 48%. In the stress vulnerable subjects the whey protein decreased cortisol levels and reduced depressive feelings and improved their ability to cope with the tasks presented. The scientists suggested the results obtained could only mean the whey protein supplement was able to increase brain serotonin levels.

The bovine protein alpha-lactalbumin increases the plasma ratio of tryptophan to the other large neutral amino acids, and in vulnerable subjects raises brain serotonin activity, reduces cortisol concentration, and improves mood under stress.

**BACKGROUND:** Increased brain serotonin may improve the ability to cope with stress, whereas a decline in serotonin activity is involved in depressive mood. The uptake of the serotonin precursor, tryptophan, into the brain is dependent on nutrients that influence the cerebral availability of tryptophan via a change in the ratio of plasma tryptophan to the sum of the other large neutral amino acids (Trp-LNAA ratio). Therefore, a diet-induced increase in tryptophan availability may increase brain serotonin synthesis and improve coping and mood, particularly in stress-vulnerable subjects.

**OBJECTIVE:** We tested whether alpha-lactalbumin, a protein with high tryptophan content, may increase the plasma Trp-LNAA ratio and reduce depressive mood and cortisol concentrations in stress-vulnerable subjects under acute stress.

**DESIGN:** Twenty-nine highly stress-vulnerable subjects and 29 relatively stress-invulnerable subjects participated in a double-blind, placebo-controlled study. Subjects were exposed to experimental stress after the intake of a diet enriched with either alpha-lactalbumin or sodium-caseinate. Diet-induced changes in the plasma Trp-LNAA ratio and prolactin were measured. Changes in mood, pulse rate, skin conductance, and cortisol concentrations were assessed before and after the stressor.

**RESULTS:** The plasma Trp-LNAA ratio was 48% higher after the alpha-lactalbumin diet than after the casein diet ( $P = 0.0001$ ). In stress-vulnerable subjects this was accompanied by higher prolactin concentrations ( $P = 0.001$ ), a decrease in cortisol ( $P = 0.036$ ), and reduced depressive feelings ( $P = 0.007$ ) under stress.

**CONCLUSIONS:** Consumption of a dietary protein enriched in tryptophan increased the plasma Trp-LNAA ratio and, in stress-vulnerable subjects, improved coping ability, probably through alterations in brain serotonin.

A massive amount of evidence suggests that low serotonin levels are a common consequence of modern living. High levels of cortisol, a hormone produced by the adrenal glands in response to stress, and loss of sensitivity to insulin, which can be caused by eating too many foods high in simple sugars, are two of the biggest culprits, because they impair conversion of tryptophan to 5-HTP. In short, the lifestyle and dietary practices of many people living in this stress-filled era result in lowered levels of serotonin within the brain. Consequently many people are overweight, crave sugar and other carbohydrates, experience bouts of depression, get frequent headaches, and have vague muscle aches and pain. All of these have been helped by raising serotonin levels with glutathione supplement.

## **Pulsed Melanopsin**

The Ajna Light makes use of the physiological phenomenon of melanopsin, but combines it with pulsing. Biological systems are sensitive to pulsed signals, such as binaural and isochronic (constant drum beat rhythm) beats in music, and the flicker effect with light. This third vision system, in addition to the widely understood systems of the cones (color vision, mainly in the fovea) and rods (monochrome, mainly peripheral vision). It was first discovered and described in 1998, as the result of investigation of light sensitivity in frog skin cells.

Melanopsin happens most strongly at 481nm light wavelength (sky blue color, the dominant color of

light in evolution, and present in primitive physiology to measure the passing of the day and therefore calibrate the diurnal clock). We know little about it, as it is a recently discovered phenomenon. Purely on the physiological level, with constant illumination, the melanopsin effect is well understood. It brings the brain into synchrony with the circadian clock, timing all the cycles of hormones for alert sympathetic action during the day, and parasympathetic restorative and digestive processes at night.

*quoted directly from web articles:*

Melanopsin originates in the connective tissue of the retina, between the cones and rods. The cells which have this function are named intrinsically photosensitive Retinal Ganglion Cells (ipRGCs), and have been shown to conduct light directly to the hypothalamus for entrainment to the circadian rhythm. More specifically, the retinohypothalamic tracts allow signaling from the ipRGCs to the suprachiasmatic nucleus, a small region of typically 20,000 cells located in the hypothalamus, situated directly above the optic chiasm. Some people have a larger SCN, others smaller. The peak wavelength of sensitivity in the melanopsin system is 488nm, the color of sky blue, which was the dominant visual stimulation during aeons of evolution. The Ajna Light uses a peak of 5000 lumen of cool white LED light which includes this frequency. It is thought that by the stimulation of the hypothalamus, the same mechanism which occurs daily in deep sleep are induced. Deep sleep (delta brainwave) turns off parts of the brain to allow for detoxification of metabolic byproducts created during the activities of the day. This deactivation of the brain, possible while in the conscious state using the Ajna Light, allows the user to obtain an open connection to the quantum information field of consciousness. This phenomenon is observed in the feedback given by users of the Ajna Light.

It is not yet known what the effects of pulsed melanopsin stimulation are, but one [study](#) indicates that the retinal ganglionic cells respond by adjusting the size of the pupil just as well with 100us pulsed blue light as with full illumination, even though the subjects were not aware of the color blue used in the pulsed LED light.

Furthermore a [meta study](#) of pulsed melanopsin studies has the following conclusion:

"ipRGCs are a novel mammalian photoreceptor whose morphological and physiological characteristics seem well suited for their primary role as light detectors for non-image forming visual reflexes. However, many mysteries remain, and an untold number of functions for this rare and special type of ganglion cell should not be overlooked. Their invertebrate-like phototransduction cascade makes them unique among all other known vertebrate photoreceptors, and provide a window into possible mechanisms of the evolution of the retina. In addition to their intrinsic melanopsin-driven photosensitivity, ipRGCs also receive rod and cone synaptic input and thus may provide the brain with different information in series, separated by complex spatial and temporal dynamics. Although they drive a number of tonic behaviors, requiring accurate representation of ambient light levels of long periods of time, ipRGCs have the ability to adapt to both light and darkness, and appear to have an ability to communicate back to the retina, possibly changing the functional properties of retinal circuitry. The functional role these processes have on animal behavior remains to be understood. As the years catch up with this relatively young field of intrinsically photosensitive retinal ganglion cells, new and interesting cell types are being revealed and there is still much to learn in the future about them." For users wishing to explore their own consciousness without the use of psycho-active drugs, flickering lights are highly effective and beneficial. However, prior to the Ajna Light, the state of the art was very limited in its effectiveness, due to the use of much lower power LEDs in goggles, different colored LEDs, or much higher heat output lights such as halogen lights.

The very intense psycho-spiritual journeys reported by Ajna Light users (see the videos on the [Ajna Light website](#)), such as seeing guides, and having extended out of body experiences, do not happen on previous technology using just the flicker effect. Research is underway to understand the phenomenon

of melanopsin related to the Ajna Light.

## **Flicker Effect**

Since ancient times, the flicker effect has been used to create altered states of consciousness. As described in the [article](#):

"Apuleius experimented in 125 A.D. with the flickering light produced by the rotation of a potter's wheel, finding that it could reveal a type of epilepsy. Ptolemy studied in 200 A.D. the phenomenon of the flickering generated by sunlight through the spokes of a spinning wheel. He noted that patterns and colors appeared in the eyes of the observer and that a feeling of euphoria could be experienced. French psychologist Pierre Janet, one of the first who reported a "rescripting" procedure (see section on Clinical Considerations), noticed that the patients at Salpêtrière Hospital in Paris experienced reductions in hysteria and increased relaxation when exposed to flickering lights."

In the same article, the author concludes:

"Richardson & McAndrew showed that a photic-stimulation frequency of 6 Hz produced more imagery than did stimulation frequencies of 10 or 18 Hz. In another study by researchers Lehmann, Koukou & Andreae (1979), during which subjects were encouraged to absorb themselves in fantasy, 9 percent of imagery reports were given during alpha EEG and 59 percent during theta. Richardson and McAndrew (1990) stated that, "Of all the many procedures to bring about an equivalent of the naturally occurring hypnagogic state (Schacter, 1979) and which, in turn, facilitate the emergence into awareness of visual imagination images, the easiest, safest and potentially most precise in its effects, is photic stimulation." In the reports of Glickson (1986), Kooi (1971), and Moses (1970), there is evidence that changes in flash frequency can produce corresponding changes in dominant EEG frequency. These conclusions, along with the data from the previously noted studies, would seem to indicate that the use of L/S may indeed facilitate the uncovering of suppressed or repressed memories in the form of visual flashbacks or at least symbolically coded visual information related to the actual events. "

## **Photonic Brainwave Entrainment**

Light stimulation from the retina passes through the thalamus on the way to the occipital ridge at the back of the brain. The thalamocortical networks are made up of neurons in both the thalamus and cortex. The thalamus inhibits external stimuli from affecting the EEG when asleep - in the sleep state the EEG follows its internal 90 minute cycles of theta (REM) and delta (deep sleep) patterns, independent of outside light and sounds.

There are two main inputs to the thalamocortical region of the brain. Cortical neural mappings of external events enter into the ventrobasal thalamus. The neurons there project onto layer IV of the cortex as a result of specific external events. Similarly, nonspecific inputs give context from the internal state of the brain and enter into the centrolateral thalamus with axons in layers I and VI. Both types of thalamocortical neurons have synapses which connect to the pyramidal cortical cells which are thought to integrate them. In this way, external sensory information is introduced into the active context of cognition. The observed electrical effect of thalamocortical resonance from stimulation of the thalamocortical region produces coherent areas of similar EEG activity through vertical layers of the cortex.

There is a small bundle of nerves called the Pineal tract, which connects the thalamocortical region of the brain to the pineal gland, which lies outside the blood brain barrier in the "locus minimus" (literally meaning small place) in the center of the head. The Pineal tract therefore completes the connection between the ganglionic cells in the retina and the pineal gland, providing a complete pathway for the melanopsin effect stimulated by the Ajna Light.

It is therefore in the thalamus that external stimulation through pulsed light activates groups of neurons. The rhythmic EEG patterns seen, such as gamma frequencies in directed logical thinking, derive from cascading entrained firing of neurons in this region. By supplying a high level of external photonic stimulation, as the Ajna Light does, the entrainment of the brain effects the functioning of the thalamus, and therefore causes the hypnagogic effect of theta stimulation, and the deep meditative effect of delta stimulation.

Light stimulation is more effective in entraining the brain than sound stimulation, perhaps because of the greater number of neurons used for the visual system than the auditory system.

## **Reference material from Lucia Light website**

The pineal gland of the brain serves, among others, to perceive brightness through closed eyelids. In death, it secretes Dimethyltryptamine (DMT). DMT is also the central active substance in a South American plant known as “liana of death”. Indigenous healers claim that by consuming the plant they can reach a dimension of light where all healing starts. In the context of comprehensive research, Rick Strassmann (DMT – The Spirit Molecule, 2001) was able to prove that a massive release of DMT from the pineal gland is to be regarded as the neurological cause of near-death experiences. DMT is secreted directly into the liquor (brain fluid) and can thus reach the receptors in contact with brain fluid even after a cardiac arrest. After application of the corresponding DMT dose, Strassmann’s test persons repeatedly referred to impressive experiences in a supernatural light which they attributed healing and insight-inducing properties.

The brain is in a position to activate powers that can heal the body at any stage of illness. This phenomenon is known as spontaneous remission (sudden healing) and the subject of interdisciplinary research projects. Although it is unclear to date how the brain accomplishes this task, the persons concerned often describe sensations of light and warmth which they associate with this.

For a long time, light has played a central role in the treatment of various illnesses. Whether in the treatment of depression, tumours or compulsive disorders, the range of possible applications seems unlimited.

At the climax of spiritual experience we again encounter light phenomena.

Light and consciousness reflect the dual nature of one and the same phenomenon. Light manifests as matter and energy, consciousness as body and mind. And just like light, consciousness stultifies any attempt to lift its secret. Nobody knows the true nature of light or consciousness.

## **DMT theory**

[DMT Found in the Pineal Gland of Live Rats](#) by MIQEL on May 28, 2013 in News siamese\_seahorse\_fractal In a major breakthrough in consciousness and psychedelic studies, Cottonwood Research Foundation has published a paper (soon to appear in the Journal Biomedical Chromatography) documenting the presence of DMT in the brains of living rats.

For decades researchers have hypothesized that DMT may be one of the neurochemicals responsible for consciousness, dreams and visionary experiences. It’s certainly responsible for these and even weirder experiences for those who have smoked it or taken Ayahuasca. DMT has been documented as naturally occurring in human blood, but this was not conclusive evidence that it is produced in the brain. DMT is structurally related to Serotonin, Melatonin and Pinoline, so the small traces in human blood could be an enzymatic breakdown product of these precursor molecules.

Now we have clear proof of DMT being manufactured in the living Pineal Glands of rats, and that the genes responsible for this exist in the Pineal Gland and Retina! The first implication is that Yes, it truly

is a natural neurochemical responsible for modulating consciousness. It is not a foreign substance to the body & mind of mammals. Also, if found in rats in this context then it is almost certain to function similarly in humans.

*From the press release:*

We're excited to announce the acceptance for publication of a paper documenting the presence of DMT in the pineal glands of live rodents. The paper will appear in the journal *Biomedical Chromatography* and describes experiments that took place in Dr. Jimo Borjigin's laboratory at the University of Michigan, where samples were collected. These samples were analyzed in Dr. Steven Barker's laboratory at Louisiana State University, using methods that funding from the Cottonwood Research Foundation helped develop.

The pineal gland has been an object of great interest regarding consciousness for thousands of years, and a pineal source of DMT would help support a role for this enigmatic gland in unusual states of consciousness. Research at the University of Wisconsin has recently demonstrated the presence of the DMT-synthesizing enzyme as well as activity of the gene responsible for the enzyme in pineal (and retina). Our new data now establish that the enzyme actively produces DMT in the pineal.

The next step is to determine the presence of DMT in cerebrospinal fluid (CSF), the fluid that bathes the brain and pineal. CSF is a possible route for pineal-synthesized DMT to effect changes in brain function. Successfully establishing DMT's presence in this gland adds another link in the chain between the pineal and consciousness and opens new avenues for research.