THE PINEAL =
THIRD EYE =
BIO-CLOCK-REGULATOR

Author - Editor: Professor of Medicine Desire’ Dubounet, D. Sc. L.P.C.C April 30, 2015 for Medical Expose’
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Light synchronizes our internal clock

Light does us good. We experience that every year at the beginning of spring. As the days get brighter and longer, we feel fitter, our spirits rise and we are generally more focused and more productive than in the dark winter months.

This shows that we need light for more than just vision. Recent studies confirm that light has another important function: it synchronizes our internal clock – the complex system that coordinates all our bodily functions in a 24-hour rhythm.

Third photoreceptor in the eye

The biological effectiveness of light is possible thanks to a third photoreceptor in the eye discovered by scientists in 2002. Prior to that, only two types of receptor were known: cones for colour vision and more light-sensitive rods, which enable us to see even when illuminance is low. But a few years ago, researchers discovered special ganglion cells in the retina that do not have a visual function. They
contain a light-sensitive pigment called melanopsin and respond very sensitively to the blue content of light.

The newly discovered photoreceptors have a direct link to the brain: the ganglion cells send signals through the retino-hypothalamic tract, which connects them directly with the so-called master clock – the suprachiasmatic nucleus (SCN) that coordinates the many tiny clocks in the body – the pineal gland and the hypothalamus, which is probably the most important control centre of the autonomous nervous system.

**Hormones as messenger substances**

Melanopsin receptors are evenly spread over the retina and are most sensitive in the lower part of it. They supply the brain with information that helps determine whether we are alert or sleepy – because the light signals they pass on are an important cue for synchronising our circadian rhythms, the biological processes that occur in cycles of around 24 hours.

The messenger substances of the internal clock – providing the driving force for the sleep/wake rhythm – are hormones. Melatonin and cortisol, in particular, play an important role here because they impact on the body in opposite cycles.

- Melatonin makes us feel drowsy and slows down bodily functions for a good night's sleep. The organism is put, as it were, on the back burner. In this phase, the body secretes growth hormones that repair cells at night. In the morning, the level of melatonin in the blood falls.

- From around 3 a.m. onwards, the adrenal cortex produces cortisol, a stress hormone that stimulates metabolism and programmes the body for day-time operation. The mood-enhancing, motivating messenger serotonin helps us reach a number of performance peaks during the day. During the course of the afternoon, the cortisol level in the blood falls and, when daylight fades, the internal clock switches to night.

Biologically effective light raises spirits

But to work smoothly, our body's hormone balance needs to be supported by external stimuli. That calls for the right light. Light with a high blue content in the morning ensures that melatonin production is effectively suppressed and cortisol can take over. We are bright-eyed and motivated.
At the same time, however, light with a high blue content late in the evening can disrupt our internal clock — because while natural light weakens and turns yellow in the evening, cool white artificial light slows down melatonin production. As a result, we find it harder to fall asleep, sleep less deeply and do not feel rested the next day. Lack of light also puts stress on our body, leads to listlessness and, in the dark winter months, to seasonal depression (Seasonal Affective Disorder = SAD).

Where light fails to play its important role as pacemaker, our internal clock is soon disrupted. Dynamic lighting can support the effect of daylight indoors. Biologically efficient, it ensures that we can perform during the day and sleep well at night — so "healthy" light impacts positively on our wellbeing in not just one way but two.

**Blue light is the key**

Daylight white light with a high blue content (wavelengths between 460 and 480 nm) is the most biologically effective.
FIGURE 6. SPECTRAL RESPONSE FOR AMBIENT LIGHT SENSING AND PROXIMITY SENSING
Natural Spectrum® Light Therapy

Balanced Broad Spectrum Light

Smaller Lens — Focused Light Rays

Well-stimulated photoreceptors

Human-Eye Response

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BIOLOGICAL CLOCKS

- **Circadian rhythms** – daily cycles of ~ 24 hours
- **Pineal gland** regulation – releases melatonin
- **Suprachiasmatic Nucleus (SCN)** acts as a biological clock
  - Found in the hypothalamus
  - Just above the optic chiasm
  - Receives info from the retina
- **Retinohypothalamic pathway**
- **GABA** released from the hypothalamus shuts down arousal systems
Necessity of Sleep

4.2 Why do people need to sleep and how does it work?

- **Circadian rhythm** – 24 hour bodily rhythm
- **Hypothalamus** – tiny section of brain influences glandular system
- **Suprachiasmatic nucleus** – internal clock tells people wake up/fall asleep and tells pineal gland secrete melatonin for sleepiness

A pineal gland. Fluoride is deposited here as a result of fluoridated products.
By Steven Bancarz | Is it possible that you literally have a third eye that connects you to spiritual dimensions? The pineal gland is something that is spoken of in the New Age community as being the intuition organ and the connection point between body and spirit, but very few people realize that the pineal gland is in fact a literal eye.

The pineal gland is a pea-sized gland in the exact geometric center of the brain and comes from the root word “pinea” which is Latin for “pinecone”. Pinecone symbolism appears all over the ancient world from the Sumerian, Greek, and Roman traditions, to the Vatican’s “Court of the Pine Cone” and staff of the Pope. It is highly reverenced to be of high psychic and spiritual significance, and bindis are often word in Hindu culture as a way of signifying the pineal gland’s importance with spiritual wakefulness. Why are so many ancient cultures obsessed with pineal gland symbolism? The answer may be found when biophysical analysis is done of the pineal glands interior.

"Under the skin in the skull of a lizard lies a light-responsive “third eye” which is the evolutionary equivalent of the bone-encased, hormone-secreting pineal gland in the human brain. The human pineal is denied access to light directly, but like the lizard’s “third eye,” it shows enhanced release of its
hormone, melatonin, during the night. The challenge is to understand the mechanisms which regulate the synthesis and release of melatonin. The pineal gland is the ‘mind’s eye.’ Dissected, the reptile’s pineal looks much like an eye, with the same shape and tissue.” – Dr. Cheryl Craft, Ph.D., Chair of the Department of Cell and Neurobiology, University of Southern California.

What’s fascinating is that the interior of the pineal gland actually has retinal tissue composed of rods and cones (photoreceptors) inside its interior lining just like the eye, and is even wired into the visual cortex in the brain. “The photoreceptors of the retina strongly resemble the cells of the pineal gland”. Dr. David Klein, Science Daily. It even has vitreous fluid in it like an eye does. An article in Science News stated the following:

“The retina and the pineal gland are the organs primarily responsible for the body’s recognition and sophisticated processing of external light. Until recently these two organs in mammals seemed to have little else in common and were consequently studied by separate groups of scientists. But a new alliance of researchers is now exploring striking similarities that are speeding research efforts in both fields. Their findings suggest that the pineal gland was the evolutionary precursor to the modern eye. While it turned out that the retinal rhythm is independent of the pineal gland, once the groups of scientists began working together they discovered surprising similarities between the two organs, including the presence of photoreceptors.”

Furthermore, a study published in Experimental Eye Research revealed that “Although the mammalian pineal gland is considered to be only indirectly photosensitive, the presence of proteins in the pineal gland which are morally involved in phototrasduction (light sensing) in the retina, raises the possibility that direct photic events may occur in the mammalian pineal gland”.

I think it’s a funny coincidence that the organ that has for thousands of years been called a 3rd eye actually has all of the components needed for a functioning eye. It is possible that when ancient traditions spoke of a “third eye” that they knew what they were talking about? On top of all of this, the pineal gland is also thought to secrete a chemical known as DMT, which has the nickname of “The Spirit Molecule”. DMT is believed to be release during dreaming, during spiritual and mystical experiences, and during the time of death. It a chemical compound that, when ingested, has the most powerful hallucinogenic effects out of any other drug. The molecule that is speculated to give us all spiritual experience just so happens to be housed in the pineal gland.

French philosopher René Descartes (1596-1650) emphasized the pineal gland in his writings, calling it the seat of the soul and "The part of the body in which the soul directly exercises its functions." He contended that this was centre at which the soul and body interacted, and where we receive our messages from the Divine. Even Jesus says in Matthew 6-22: “The light of the body is the eye: if therefore thine eye be single, thy whole body shall be full of light.”, so the idea of there being a spiritual eye is no new idea.
This is not proof that the pineal gland is a spiritual eye seeing into other dimensions, but it is proof that it has the biological potential to be an actual eye. So now we have a solid scientific evidence to establish that the pineal gland is in fact a third eye, and we can now begin to speculate why it evolved and if it serves any purpose of spiritual significance.

For example, a lot of people who have had out-of-body experiences report a silver cord linking their astral body back to their physical body located either in between the eyes or at the back of the head where the pineal gland would be. Could it be that our astral body, which exists in our physical body yet has access to higher dimensions, receives literal information from psychic and spiritual realms in the form of photons and images, which then get fired down the silver cord into the visual cortex of the brain where they get processed by the rods and cones in the pineal gland? Is the pineal gland a little television for worlds unseen to the biological eye? With the scientific proof that this gland can function like an eye, we now have these avenues open for speculation.

Unfortunately, the pineal gland can become calcified from heavy metals and fluoride which can restrict its biological function as a producer of melatonin (which regulates sleep cycles) and may also inhibit and psychic or spiritual function it may have.

http://www.scienceofdetox.com

Here is what you need to do to start to detox and awaken this shining gem of an endocrine gland:

1. Stop the calcification of the gland by reducing halides. These come in the form of fluoride, chlorine, and bromide, all of which come into your body primarily through the water you drink and bathe in. Install a water purification system. Drink only de-chlorinated and de-fluorinated water.
2. Remove the use of pesticides, fungicides, and mercury (from toxic fish primarily), and other toxins from your diet. Only purchase organic, non-GMO foods. It is no mistake that Monsanto and companies like them have invested so heavily in keeping you ‘unrealized.’ Not only do GMO foods cause cancer, but they inhibit the functioning of the pineal gland.
3. Stop using sugar, caffeine, and alcohol to numb yourself. While these ‘drugs,’ and yes they are drugs if you consider how they affect your brain chemistry, can give you a temporary fix, they also impede the pineal gland’s functioning and add to its calcification.
4. Reduce refined starches, they turn to sugar in your body any how, and can impede the functioning of the pineal gland. Instead eat complex starches like brown rice, or spelt flour.
5. Reduce stress. Cortisol and Adrenaline, as well as other hormones that are created by the adrenal glands when you are stressed can interfere with melatonin and serotonin, the sister hormones to DMT, or the pineal elixir that helps us wake up. Interestingly, we make more melatonin when we are in complete darkness. This is what allows the ‘inner’ light to shine more brightly. While you can sleep for three days straight, this is hard to do without some kind of sleeping pill. The ancient yogis and shamans would sit in caves in meditation in order to induce higher levels of melatonin, and thus awaken their pineal glands.
6. Stop Smoking. Tobacco smoke is toxic for the body in general, but has extremely detrimental effects on pineal health. This is true of marijuana as well.
7. Drugs like cocaine, heroine, etc. cause the pineal gland to falter and can awaken portals of spiritual reality prematurely, or cause them to be very distorted. They can also shut down our faculties for ‘higher awareness’ altogether.
8. Eat raw cacao – or dark chocolate. Chocolate in its pure form can help to decalcify the pineal gland.
9. Consume neem extract. Neem is one of India’s super herbs. It has been used for thousands of years and purifies almost every system of the body.
10. Reduce meat and dairy.
11. Reduce acidic beverages like soda, and energy drinks (also due to sugar and caffeine content).

Below is a list, in no particular order, of 8 supplements that will boost your pineal gland function, help in its decalcification, and support you on your journey of personal and spiritual cultivation. Some of the supplements offer similar results, so it is up to you to decide which combination of supplements will work best for you.

1. **Melatonin**

The pineal gland already produces the hormone melatonin, which affects the body’s circadian rhythms of waking and sleeping. Melatonin is also associated with relaxation and visualization, and people often take melatonin supplements as a sleep aid or to help overcome jet-lag due to travel. When purchasing melatonin supplements, make sure the products are plant-based and not animal tested. It is suggested that you always start with the smallest dosage possible and do not use any melatonin supplement for longer than three months.

*Recommended products:*

- NOW Foods Melatonin 5mg Vcaps
- Natrol Liquid Melatonin

2. **Oregano Oil and Neem Extract**

Both oregano oil and neem extract help in the purification process, helping to remove existing calcification within the pineal gland, in addition to purifying the body’s systems, especially the endocrine system. Neem has been used in this way in India for thousands of years. In the western world, oregano oil is also becoming a holistic way of fortifying the immune support system. In the longer term, both of these supplements will act as a natural antibiotic against new calcium shells created by nanobacteria.

*Recommended products:*

- Joy of the Mountains Oregano Oil (100% Certified Organic)
- Wild Oregano Oil, Super Strength, 100% Organic
- Neem Aura Neem Leaf Extract
3. Raw Cacao

Raw, organic chocolate in its purest form can help detoxify the pineal gland because of cacao’s high antioxidant content. Cacao will also help stimulate the third eye.

Recommended products:

- Alive and Aware Certified Organic Raw Cacao Nibs
- Navitas Naturals Cacao Powder, Organic
- Earth Circle Organics Verified Raw Balinese Cacao Powder

4. Chlorophyll-rich Superfoods

Supplements like spirulina, chlorella, wheatgrass and blue-green algae are examples of chlorophyll-rich superfoods that offer similar benefits to eating leafy greens but with much more nutrition packed into a small serving. These supplements assist in the decalcification of the pineal gland due to their strong detoxification properties.

Recommended products:

- Ultimate Superfoods Raw Chlorella/Spirulina Tablets
- NuSci Organic Spirulina Powder
- Mercola Organic Broken Cell Wall Chlorella
- Swanson Greenfoods 100% Certified Organic Chlorella Powder
- Klamath Blue Green Algae Capsules
- Rejuvenate Forever Organic Wheatgrass Growing Kit

Resources:

- The Green Foods Bible: Everything You Need to Know about Barley Grass, Wheatgrass, Kamut, Chlorella, Spirulina and More
- The Wheatgrass Book: How to Grow and Use Wheatgrass to Maximize Your Health and Vitality
5. Raw Apple Cider Vinegar

A natural detoxifier, raw apple cider vinegar helps decalcify the pineal gland due to its malic acid properties. Malic acid is an organic compound that gives fruits their sour taste. When taken as a supplement, it supports the digestive system and helps the body detoxify. Apple cider vinegar has many health benefits, many of which are listed here. Ensure that the brand you buy is raw and packaged in a glass container.

Recommended products:

Bragg Apple Cider Vinegar, Organic Raw Unflavored

Resources:


6. Iodine

Many of us have been exposed to sodium fluoride due to fluoridation of our water systems, and this has also resulted in the calcification of the pineal gland. Iodine, naturally occurring in plants such as seaweed, effectively improves the removal of sodium fluoride via urine. Unfortunately, the Western diet has left us deficient of this vital mineral while our bodies need it most. To avoid calcium deficiency when taking iodine supplements, a diet incorporating many organic foods such as kale, broccoli, almonds, oranges, flax seed, sesame seeds, dill, thyme and other dried herbs is recommended. It is suggested that a non-GMO lecithin supplement is also taken to compliment iodine intake.

Recommended products:

Detoxadine: High-Quality Daily Iodine Supplement from Global Healing

Now Foods Kelp capsules with Natural Iodine

Annie Chun’s Seaweed Snacks, Roasted Wasabi

Now Foods Sunflower Lecithin

7. Organic Blue Ice Skate Fish Oil and Activator X (Vitamin K1/K2)

If you’d like to take a natural supplement to decalcify your pineal gland, organic blue ice skate fish oil may be one of the most powerful options out there. This oil contains Activator X – a detoxifier discovered by Weston Price that combines Vitamins K1 and K2 – which allows for the body to remove calcium from various locations throughout the body, such as the pineal gland and the arteries. Instead of eliminating the excess calcium, as iodine does, Activator X places it in areas where calcium is most needed, such as bones and teeth. It has been reported to reverse damage done by calcification which results in diseases such as atherosclerosis and osteoporosis. It also helps reverse tooth decay. It is suggested that Activator X supplements are be taken with Vitamin A and D3.

Recommended products:
8. Boron/Borax

Another good supplement that can be used to remove fluoride from the human body is the mineral Boron. It is naturally present in beets, which can be eaten raw, steamed, cooked as well as in a powder supplement. It is also present in other foods, such as dried plums. Borax is an inexpensive source of boron that can be bought in most grocery stores.

Recommended products:
- TwinLab – Tri-Boron Capsules
- Liquid Ionic Minerals Boron
- Frontier Natural Products Organic Beet Pow

Key Protein is Linked to Circadian Clocks, Helps Regulate Metabolism

Study Sheds Light on Molecular Basis for Metabolic Health and Disease

June 18, 2013

Inside each of us is our own internal timing device. It drives everything from sleep cycles to metabolism, but the inner workings of this so-called “circadian clock” are complex, and the molecular processes behind it have long eluded scientists.

But now, researchers at the Gladstone Institutes have discovered how one important protein falls under direct instructions from the body’s circadian clock. Furthermore,
they uncover how this protein regulates fundamental circadian processes – and how disrupting its normal function can throw this critical system out of sync.

In the latest issue of the *Journal of Neuroscience*, Gladstone investigator Katerina Akassoglou, PhD, and her team reveal in animal models how the production of the *p75 neurotrophin receptor* (p75NTR) protein oscillates in time with the body’s natural circadian clock – and how these rhythmic oscillations help regulate vital metabolic functions. This discovery underscores the widespread importance of p75NTR by offering insight into how the circadian clock helps maintain the body’s overall metabolic health.

Virtually every organism on the planet – from bacteria to humans – has a circadian clock, a biological timing mechanism that oscillates with a period of about 24 hours and is coordinated with the cycle of day and night.

While it runs independent of external cues, it is influenced by the rhythms of light, temperature and food availability. Intriguingly, recent studies have also found a link between circadian clocks and metabolism.

“Important metabolic functions are also heavily influenced by circadian clocks, which is why activities such as chronic night-shift work – which can cause a misalignment of this clock – increase one’s risk for metabolic and autoimmune diseases such as obesity, Type 2 diabetes, cancer and multiple sclerosis,” said Akassoglou, who is also a professor of neurology at UC San Francisco, with which Gladstone is affiliated. “In this study, we pinpointed p75NTR as an important molecular ‘link’ between circadian clocks and metabolic health.”
Key Protein Found Throughout the Body

Originally, p75NTR was only thought to be active in the nervous system. Later studies found it to be active in many cell types throughout the body, suggesting that it impacts a variety of biological functions.

Last year, Gladstone researchers discovered that p75NTR was present in the liver and in fat cells, and that it regulates glucose levels in the blood – an important metabolic process. Since these findings uncovered a link between p75NTR and metabolism, the research team tested – first in a petri dish and then in animal models – whether there was also a link between p75NTR and the circadian clock.

Bernat Baeza-Raja, PhD

The team focused on two genes called Clock and Bmal1. These so-called “circadian regulator genes,” and others like them, are found throughout the body. Their activity controls the body’s circadian clock. The researchers wanted to see if there was a connection between these circadian genes and p75NTR.

“Our initial experiments revealed such a connection,” recalls Gladstone postdoctoral fellow Bernat Baeza-Raja, PhD, the paper’s lead author. “In individual cells, we saw that p75NTR production was controlled by Clock and Bmal1, which bind directly to the gene that codes for the p75NTR and start production of the protein.”

P75NTR’s Impact on Circadian Clock Systems

But perhaps even more important than how p75NTR was produced was when. The team found that p75NTR production, like the circadian clock genes themselves, oscillated in a 24-hour cycle – in sync with the cells’ natural circadian rhythm. Experiments in mouse models further supported these findings.
And when the team genetically modified a group of mice so that it lacked the circadian *Clock* gene, everything else fell out of sync. The circadian oscillation of p75NTR production was disrupted, and p75NTR levels dropped.

However, what was most fascinating, say the researchers, was how a drop in p75NTR levels then affected a variety of circadian clock systems. Specifically, the regular oscillations of other circadian genes in the brain and the liver became disrupted, as well as genes known to regulate glucose and lipid metabolism.

“The finding that a loss of p75NTR affected circadian and metabolic systems is strong evidence that this protein is intricately tied to both,” said Life Sciences Institute director Alan Saltiel, PhD, who is also a professor at the University of Michigan and was not involved in the study. “It will be fascinating to see what additional insight Dr. Akassoglou and her team will uncover as they continue to examine the role of p75NTR in circadian clocks and metabolic function.” “While these findings reveal p75NTR to be an important link between circadian clocks and metabolism, the system is complex, and there are likely other factors at play,” said Akassoglou. “We are currently working to identify the relationship between the circadian clock, metabolism and the immune system, so that one day we could develop therapies to treat diseases influenced by circadian clock disruption – including not only obesity and diabetes, but also potentially multiple sclerosis and even Alzheimer’s disease.”


**The human pineal gland and melatonin in aging and Alzheimer's disease.**

**Wu YH**, **Swaab DF**.

**Author information**

**Abstract**

The pineal gland is a central structure in the circadian system which produces melatonin under the control of the central clock, the suprachiasmatic nucleus (SCN). The SCN and the output of the pineal gland, i.e. melatonin, are synchronized to the 24-hr day by environmental light, received by the retina and transmitted to the SCN via the retinohypothalamic tract. Melatonin not only plays an important role in the regulation of circadian rhythms, but also acts as antioxidant and neuroprotector that may be of importance in aging and Alzheimer's disease (AD). Circadian disorders, such as sleep-wake cycle disturbances, are associated with aging, and even more pronounced in AD. Many studies have reported disrupted melatonin production and rhythms in aging and in AD that, as we showed, are taking place as early as in the very first preclinical AD stages (neuropathological Braak stage I-II). Degeneration of the retina-SCN-pineal axis may underlie these changes. Our recent studies indicate that a dysfunction of the sympathetic regulation of pineal melatonin synthesis by the SCN is responsible for melatonin changes during the early AD stages. Reactivation of the circadian system (retina-SCN-pineal pathway) by means of light therapy and melatonin supplementation, to restore the circadian rhythm and to relieve the clinical circadian disturbances, has shown promising positive results.
Pineal Gland Disease and Disorders

- Conditions [A]
  
  Melatonin Deficiency: Functional deficiency of melatonin production by the pineal gland

  § Melatonin Excess: Excess production of melatonin by the pineal gland

- Associated Syndromes and Etiologies A
  
  Melatonin deficiency is associated with insomnia. Melatonin excess is associated with seasonal affective disorder (SAD).

  Melatonin Deficiency [A]
  
  Signs and Symptoms B
  
  - Insomnia
  - Anxiety
  - Elevated estrogen/progesterone ratio
  - Immune suppression
  - Lowered basal body temperature

  Medical History A
  
  - Evaluate history for family history of insomnia, circadian rhythm patterns, light and electromagnetic radiation exposure, stress, and head trauma.

  Laboratory Tests A
  
  - Saliva and plasma tests are useful to detect melatonin levels. Note that the half-life of melatonin is 20-50 minutes.

  Therapeutics A
  
  - Lifestyle
    
    - Minimize exposure to artificial light (or any type of electromagnetic radiation) after sundown.
    
    - Promote a regular circadian rhythm with daytime exercise and light exposure.
    
    - Meditate or practice other types of stress reduction techniques.
    
    - Maintain regular habits or sleep/waking/eating etc.

  - Clinical Nutrition
    
    - Avoid simple carbohydrates and other high glycemic foods.
    
    - Avoid caffeine and other stimulants.
    
    - Avoid alcohol.
    
    - Avoid cherries and cherry juice, which have been shown to increase melatonin.
    
    - Eat adequate protein. High tryptophan foods (turkey, chicken, soy, whole grains) support melatonin synthesis.

  Melatonin Nutraceuticals
THE PINEAL GLAND DIET

The pineal gland is known as the master gland, the gland that governs over our third eye & the center of psychic awareness in the human mind. It's smaller than a bean and is located inside a 'cave' behind the pituitary gland. It produces melatonin, a hormone that regulates daily body rhythms, directly with the day and night cycles.

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It physically affects every system in your body and it has the potential to determine the expansion or contraction of your psychic awareness, consciousness & experience with the divine.

NOURISH IT WITH SUNLIGHT

Sunlight should be enjoyed for at least 30 minutes a day, to fully engage the pineal gland it should be taken through the pupils.

VEGGIES & VITAMINS

Sun-dried veggies such as seaweed & veggies that contain high amounts of vitamin D, B-vitamins & iodine such as kombu, arame, wakame, dulse, nori & others.

GREEN COLORED VEGGIES

This gland absorbs the properties of their green color & distributes them to the appropriate systems of the body. Dark leafy greens like kale, turnip greens, mustard greens, bok choy and collard greens are very nourishing.

RAW FOODS

Activate it eating by eating more raw foods: a vegan or vegetarian diet. Running an ozone machine at home to clean the air & drinking filtered water.

LIMIT MEAT CONSUMPTION

Including fish that has high amounts of mercury. When you eat meat you're ingesting the animals' DNA (positive & negative experiences included). This interferes with the gland's ability to take on its own psychic awareness & blueprint of the individual.

SLEEP

This gland is activated by the production of serotonin that is produced when the brain is asleep. Eat almonds, bananas, rice, hot peppers, potatoes & black-eyed peas to increase serotonin production

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**Pineal Gland**

The pineal gland is about the size of a grain of rice, is shaped like a tiny pine cone (hence its name), and is located in the center of the brain in a tiny cave, behind and above the pituitary gland. For years, mystics considered it to be the seat of the mystical third eye, whereas the medical community considered it *vestigial* and, thus, pretty much non-functioning. Since then, the mystics have not necessarily been refuted, but the medical community has been. The pineal gland is now known to be the major source of melatonin production in the body. It is full size in children, a size it maintains throughout adulthood -- although its weight can drop significantly starting with puberty. And it is not unusual for the gland to literally calcify in many adults. The gland most likely plays a significant role in sexual maturation, circadian rhythm and inducing sleep, and in seasonal affective disorder and depression. In animals, it plays a key role in hibernation.

![Pituitary and Pineal Glands](image)

**Melatonin**

The trigger for production and release of melatonin is total darkness -- any light in the room will inhibit this process. Today, however, living in a world with nightlights in the bedroom or streetlights sneaking through the window, we actually have an epidemic of people with insufficient melatonin production, even at a very young age. The problem doesn't just come from light falling on our eyes while we sleep, but from light falling on any part of the body. Even if you wear an eye-mask, if any light is falling on your arms or chest or feet, that's enough to slow melatonin production. Without artificial light, we would normally be in total darkness 8--12 hours a night, producing melatonin during all of those hours. Living in a city or suburban area may cut the hours of total darkness to six or less, and in many cases, zero. Melatonin levels also decline significantly as we age. Since its discovery in 1958, melatonin has been studied extensively and shown to be widely beneficial to the body. The benefits of supplementation to compensate for abnormally low production in the body include:

- **Better Sleep** -- Lowered levels of nighttime melatonin reduce the quality of sleep, resulting in the need for more sleep. If your pineal gland does not produce adequate melatonin early enough in the evening, both the quality and quantity of your sleep may suffer. Lack of melatonin may make it difficult for you to fall asleep or may cause you to wake up too soon. Too much melatonin and you will feel exhausted or "drugged" throughout the day. By taking melatonin instead of other sleep aids, rapid eye movement (REM) sleep (dreaming) is not suppressed nor does it induce "hangover" effects when used as directed.
• Enhanced Immune Function -- Many people report that supplementation with melatonin has significantly reduced their incidence of colds and infections. The exact way in which melatonin affects the immune system is not known. However, since much of the activity of the immune system takes place at night, some researchers have proposed that melatonin interacts with the immune system during sleep, helping to buffer the adverse effects of stress. It has been proposed by some that the increased incidence of cancer we see today is partially due to the extended time we are exposed to artificial lighting. This is reflected in the fact that melatonin levels in breast cancer and prostate cancer patients are half of normal.

• Powerful Antioxidant Capabilities -- Melatonin is one of the most powerful antioxidants produced in the body. In addition, since it is both water and fat-soluble, melatonin can reach almost every cell in the body. However, since it cannot be stored in the body, it must be replenished daily.

• Mood Elevator -- Nighttime melatonin levels are low in people with major depressive and panic disorders. Individuals with mood swings or who are melancholic also have lower melatonin levels. Both seasonal affective disorder (SAD) and cyclic depressions are related to the peaks and valleys of melatonin levels.

Third eye

While the physiological function of the pineal gland remained unknown until recently, mystical traditions and esoteric schools, have long considered the pineal gland to be the connecting link between the physical and spiritual worlds...and the seat of extrasensory perception. I am not here to argue the spiritual qualities of the pineal gland, nor talk about its extrasensory capabilities, excepting one: its sensitivity to light.

As medically theorized, the pineal gland responds to the ebbs and flow of light entering our eyes during the day. In the evening, the pineal gland reacts to the diminishing levels of daylight and starts to produce melatonin, which is then released into the blood and flows through the body making us drowsy. Its secretion peaks in the middle of the night during our heaviest hours of sleep. In the morning, bright light shining through the eyelids reaches the pineal gland which reacts by switching off the production of melatonin, thus removing the desire to sleep. And we wake!

But this description is incomplete in one significant aspect. As it turns out, the pineal gland can be diminished not only by light shining on the eyelids, but by light shining anywhere on the body. Literally, light striking any part of your skin can reduce production of melatonin from the pineal gland. It seems the pineal can "see without eyes." How's that for ESP? Even more interesting is the fact that in some lower vertebrates the pineal gland actually has a well-developed eye-like structure and is considered by some scientists to be the evolutionary forerunner of the modern eye. In other vertebrates, though not organized as an eye, it functions as a light receptor -- effectively a third eye.
In any case, the key when it comes to the pineal gland and melatonin is that it's important to sleep in a darkened room, with no light coming through the curtains or night lights turned on in the room. And wearing eyeshades won't help as the pineal can sense any light shining on your skin. Failure to sleep in a darkened room will inhibit melatonin production, which presents a series of health problems, not the least of which is an inability to sleep deeply. But beyond that, if continued for too long, it will literally shut down the pineal and cause it to atrophy. At that point, your only choice will be to use melatonin supplements.
The **pineal gland** (also called the pineal body, epiphysis cerebri, epiphysis or the "third eye") is a small endocrine gland in the vertebrate brain. It produces melatonin, a hormone that affects the modulation of wake/sleep patterns and photoperiodic (seasonal) functions.
Circadian rhythm and the Pineal

A circadian rhythm is an endogenously driven roughly 24-hour cycle in biochemical, physiological, or behavioural processes. Circadian rhythms have been widely observed, in plants, animals, fungi and cyanobacteria (see bacterial circadian rhythms). The term "circadian" comes from the Latin circa, meaning "around", and diem or dies, meaning "day". The formal study of biological temporal rhythms such as daily, tidal, weekly, seasonal, and annual rhythms is called chronobiology. Although circadian rhythms are endogenous ("built-in", self-sustained), they are adjusted (entrained) to the environment by external cues called zeitgebers, the primary one of which is daylight.

History

The earliest known account of a circadian process dates from the 4th century BC, when Androsthenes, a ship captain serving under Alexander the Great, described diurnal leaf movements of the tamarind tree.

The first recorded observation of an endogenous circadian oscillation was by the French scientist Jean-Jacques d'Ortous de Mairan in 1729. He noted that 24-hour patterns in the movement of the leaves of the plant Mimosa pudica continued even when the plants were kept in constant darkness, in the first experiment to attempt to distinguish an endogenous clock from responses to daily stimuli.
In 1896, Patrick and Gilbert observed that during a prolonged period of sleep deprivation, sleepiness increases and decreases with a period of approximately 24 hours. In 1918, J.S. Szymanski showed that animals are capable of maintaining 24-hour activity patterns in the absence of external cues such as light and changes in temperature. Joseph Takahashi discovered the first mammalian 'clock gene' in 1994.

The term "circadian" was coined by Franz Halberg in the late 1950s.

**Criteria**

To be called circadian, a biological rhythm must meet these four general criteria:

1. **The rhythms repeat once a day (they have a 24-hour period).** In order to keep track of the time of day, a clock must be at the same point at the same time each day, i.e. repeat every 24 hours.

2. **The rhythms persist in the absence of external cues (endogenous).** The rhythm persists in constant conditions with a period of about 24 hours. The rationale for this criterion is to distinguish circadian rhythms from simple responses to daily external cues. A rhythm cannot be said to be endogenous unless it has been tested in conditions without external periodic input.

3. **The rhythms can be adjusted to match the local time (entrainable).** The rhythm can be reset by exposure to external stimuli (such as light and heat), a process called entrainment. The rationale for this criterion is to distinguish circadian rhythms from other imaginable endogenous 24-hour rhythms that are immune to resetting by external cues and, hence, do not serve the purpose of estimating the local time. Travel across time zones illustrates the ability of the human biological clock to adjust to the local time; a person will usually experience jet lag before entrainment of their circadian clock has brought it into sync with local time.

4. **The rhythms maintain circadian periodicity over a range of physiological temperatures (exhibit temperature compensation).** Some organisms live at a broad range of temperatures, and the thermal energy will affect the kinetics of all molecular processes in their cell(s). In order to keep track of time, the organism's circadian clock must maintain a roughly 24-hour periodicity despite the changing kinetics, a property known as temperature compensation.

**Origin**

Photosensitive proteins and circadian rhythms are believed to have originated in the earliest cells, with the purpose of protecting the replicating of DNA from high ultraviolet radiation during the daytime. As a result, replication was relegated to the dark. The fungus *Neurospora*, which exists today, retains this clock-regulated mechanism.

Circadian rhythms allow organisms to anticipate and prepare for precise and regular environmental changes; they have great value in relation to the outside world. The rhythmicity appears to be as important in regulating
and coordinating internal metabolic processes, as in coordinating with the environment. This is suggested by the maintenance (heritability) of circadian rhythms in fruit flies after several hundred generations in constant laboratory conditions, as well as in creatures in constant darkness in the wild, and by the experimental elimination of behavioural but not physiological circadian rhythms in quail.

The simplest known circadian clock is that of the prokaryotic cyanobacteria. Recent research has demonstrated that the circadian clock of Synechococcus elongatus can be reconstituted in vitro with just the three proteins of their central oscillator. This clock has been shown to sustain a 22-hour rhythm over several days upon the addition of ATP. Previous explanations of the prokaryotic circadian timekeeper were dependent upon a DNA transcription/translation feedback mechanism.

In 1971, Ronald J. Konopka and Seymour Benzer first identified a genetic component of the biological clock using the fruit fly as a model system. Three mutant lines of flies displayed aberrant behaviour: one had a shorter period, another had a longer one, and the third had none. All three mutations mapped to the same gene, which was named “period”. The same gene was identified to be defective in the sleep disorder FASPS (Familial advanced sleep phase syndrome) in human beings thirty years later, underscoring the conserved nature of the molecular circadian clock through evolution. Many more genetic components of the biological clock are now known. Their interactions result in an interlocked feedback loop of gene products resulting in periodic fluctuations that the cells of the body interpret as a specific time of the day.

A great deal of research on biological clocks was done in the latter half of the 20th century. It is now known that the molecular circadian clock can function within a single cell; i.e., it is cell-autonomous. At the same time, different cells may communicate with each other resulting in a synchronised output of electrical signaling. These may interface with endocrine glands of the brain to result in periodic release of hormones. The receptors for these hormones may be located far across the body and synchronise the peripheral clocks of various organs. Thus, the information of the time of the day as relayed by the eyes travels to the clock in the brain, and, through that, clocks in the rest of the body may be synchronised. This is how the timing of, for example, sleep/wake, body temperature, thirst, and appetite are coordinately controlled by the biological clock.

**Importance in animals**

Circadian rhythmicity is present in the sleeping and feeding patterns of animals, including human beings. There are also clear patterns of core body temperature, brain wave activity, hormone production, cell regeneration and other biological activities. In addition, photoperiodism, the physiological reaction of organisms to the length of day or night, is vital to both plants and animals, and the circadian system plays a role in the measurement and interpretation of day length.
Timely prediction of seasonal periods of weather conditions, food availability or predator activity is crucial for survival of many species. Although not the only parameter, the changing length of the photoperiod ('daylength') is the most predictive environmental cue for the seasonal timing of physiology and behavior, most notably for timing of migration, hibernation and reproduction. 

Impact of light–dark cycle

The rhythm is linked to the light–dark cycle. Animals, including humans, kept in total darkness for extended periods eventually function with a freerunning rhythm. Each "day", their sleep cycle is pushed back or forward, depending on whether their endogenous period is shorter or longer than 24 hours. The environmental cues that reset the rhythms each day are called zeitgebers (from the German, "time-givers"). It is interesting to note that totally-blind subterranean mammals (e.g., blind mole rat Spalax sp.) are able to maintain their endogenous clocks in the apparent absence of external stimuli. Although they lack image-forming eyes, their photoreceptors (detect light) are still functional; as well, they do surface periodically.

Freerunning organisms that normally have one or two consolidated sleep episodes will still have them when in an environment shielded from external cues, but the rhythm is, of course, not entrained to the 24-hour light–dark cycle in nature. The sleep–wake rhythm may, in these circumstances, become out of phase with other circadian or ultradian rhythms such as metabolic, hormonal, CNS electrical, or neurotransmitter rhythms.

Recent research has influenced the design of spacecraft environments, as systems that mimic the light–dark cycle have been found to be highly beneficial to astronauts. 

Arctic animals

Norwegian researchers at the University of Tromsø have shown that some Arctic animals (ptarmigan, reindeer) show circadian rhythms only in the parts of the year that have daily sunrises and sunsets. In one study of reindeer, animals at 70 degrees North showed circadian rhythms in the autumn, winter, and spring, but not in the summer. Reindeer at 78 degrees North showed such rhythms only autumn and spring. The researchers suspect that other Arctic animals as well may not show circadian rhythms in the constant light of summer and the constant dark of winter.

However, another study in northern Alaska found that ground squirrels and porcupines strictly maintained their circadian rhythms through 82 days and nights of sunshine. The researchers speculate that these two small mammals see that the apparent distance between the sun and the horizon is shortest once a day, and, thus, a sufficient signal to adjust by.

Butterfly migration

The navigation of the fall migration of the Eastern North American monarch butterfly (Danau plexippus) to their overwintering grounds in central Mexico uses a time-compensated sun compass that depends upon a circadian clock in their antennae.
In plants

Diagram showing a small portion of the transcriptional feedback loop in *Arabidopsis*. LHY and CCA1 are considered negative elements due to its repression against TOC1 in the morning while TOC1 is considered a positive element because it results in increased transcription of LHY and CCA1 during the evening because of its accumulation.

Plant circadian rhythms tell the plant what season it is in and when to flower for the best chance of attracting insects to pollinate them and can include leaf movement, growth, germination, stomatal/gas exchange, enzyme activity, photosynthetic activity, and fragrance emission. Circadian rhythms occur as a biological rhythm with light, are endogenously generated and self sustaining, and are relatively constant over a range of ambient temperatures. Circadian rhythms feature a transcriptional feedback loop, a presence of PAS proteins, and several photoreceptors that fine-tune the clock to different light conditions. Anticipation of changes in the environment changes the physiological state that provides plants with an adaptive advantage. A better understanding of plant circadian rhythms has applications in agriculture such as helping farmers stagger crop harvests thus extending crop availability, and to secure against massive losses due to weather.

Clocks are set through signals such as light, temperature, and nutrient availability, so that the internal time matches the local time. Light is the signal and is sensed by a wide variety of photoreceptors. Red and blue light are absorbed through several phytochromes and cryptochromes. One phytochrome, phyA, is the main phytochrome in dark-grown seedlings, but rapidly degrades in light to produce Cry1. Phytochromes B–E are more stable with phyB the main phytochrome in light-grown seedlings. The cryptochrome (cry) gene is also a light-sensitive component of the circadian clock. Cryptochromes 1–2 (involved in blue–UVA) help to maintain the period length in the clock through a whole range of light conditions.

The central oscillator generates a self-sustaining rhythm and is made of two genes: CCA1 (Circadian and Clock Associated 1) and LHY (Late Elongated Hypocotyl) that encode closely related MYB transcription factors that regulate circadian rhythms in *Arabidopsis*. When CCA1 and LHY are overexpressed (under constant light or dark conditions) plants become arrhythmic and mRNA signals reduce contributing to a negative feedback loop. CCA1 and LHY expression oscillates and peaks in early morning while TOC1 oscillates and peaks in
early evening. From past observations and studies, it is hypothesised that these three components model a negative feedback loop in which over-expressed CCA1 and LHY repress TOC1 and over-expressed TOC1 is a positive regulator CCA1 and LHY. [25]

**Biological clock in mammals**

![Diagram illustrating the influence of light and darkness on circadian rhythms and related physiology and behaviour through the suprachiasmatic nucleus and the pineal in humans.](image)

The primary circadian “clock” in mammals is located in the suprachiasmatic nucleus (or nuclei) (SCN), a pair of distinct groups of cells located in the hypothalamus. Destruction of the SCN results in the complete absence of a regular sleep–wake rhythm. The SCN receives information about illumination through the eyes. The retina of the eye contains “classical” photoreceptors (“rods” and “cones”), which are used for conventional vision. But the retina also contains specialized ganglion cells which are directly photosensitive, and project directly to the SCN where they help in the entrainment of this master circadian clock.

These cells contain the photopigment melanopsin and their signals follow a pathway called the retinohypothalamic tract, leading to the SCN. If cells from the SCN are removed and cultured, they maintain their own rhythm in the absence of external cues.

The SCN takes the information on the lengths of the day and night from the retina, interprets it, and passes it on to the pineal gland, a tiny structure shaped like a pine cone and located on the epithalamus. In response, the pineal secretes the hormone melatonin. Secretion of melatonin peaks at night and ebbs during the day and its presence provides information about night-length.
Several studies have indicated that pineal melatonin feeds back on SCN rhythmicity to modulate circadian patterns of activity and other processes. However, the nature and system-level significance of this feedback are unknown.

The circadian rhythms of humans can be entrained to slightly shorter and longer periods than the Earth's 24 hours. Researchers at Harvard have recently shown that human subjects can at least be entrained to a 23.5-hour cycle and a 24.65-hour cycle (the latter being the natural solar day-night cycle on the planet Mars). [26]

**Determining the human circadian rhythm**

The classic phase markers for measuring the timing of a mammal's circadian rhythm are:

- melatonin secretion by the pineal gland
- core body temperature [27]
- plasma level of cortisol [28]

For temperature studies, subjects must remain awake but calm and semi-reclined in near darkness while their rectal temperatures are taken continuously. The average human adult's temperature reaches its minimum at about 05:00 (5 a.m.), about two hours before habitual wake time, though variation is great among normal chronotypes.

Melatonin is absent from the system or undetectably low during daytime. Its onset in dim light, dim-light melatonin onset (DLMO), at about 21:00 (9 p.m.) can be measured in the blood or the saliva. Its major metabolite can also be measured in morning urine. Both DLMO and the midpoint (in time) of the presence of the hormone in the blood or saliva have been used as circadian markers. However, newer research indicates that the melatonin offset may be the more reliable marker. Benloucif et al. in Chicago in 2005 found that melatonin phase markers were more stable and more highly correlated with the timing of sleep than the core temperature minimum. They found that both sleep offset and melatonin offset were more strongly correlated with the various phase markers than sleep onset. In addition, the declining phase of the melatonin levels was more reliable and stable than the termination of melatonin synthesis. [27]

One method used for measuring melatonin offset is to analyse a sequence of urine samples throughout the morning for the presence of the melatonin metabolite 6-sulphatoxymelatonin (aMT6s). Laberge et al. in Quebec in 1997 used this method in a study that confirmed the frequently found delayed circadian phase in healthy adolescents. [29]

A third marker of the human pacemaker is the timing of the maximum plasma cortisol level. Klerman et al. in 2002 compared cortisol and temperature data to eight different analysis methods of plasma melatonin data, and found that "methods using plasma melatonin data may be considered more reliable than methods using CBT or cortisol data as an indicator of circadian phase in humans." [28]
Outside the "master clock"

More-or-less independent circadian rhythms are found in many organs and cells in the body outside the suprachiasmatic nuclei (SCN), the "master clock". These clocks, called peripheral oscillators, are found in the oesophagus, lungs, liver, pancreas, spleen, thymus, and the skin. Though oscillators in the skin respond to light, a systemic influence has not been proven so far. There is also some evidence that the olfactory bulb and prostate may experience oscillations when cultured, suggesting that these structures may also be weak oscillators.

Furthermore, liver cells, for example, appear to respond to feeding rather than to light. Cells from many parts of the body appear to have free running rhythms.

Purkinje effect Your Eye likes toward Shift to Blue

The Purkinje effect (sometimes called the Purkinje shift, or dark adaptation) and named after the Czech anatomist Jan Evangelista Purkyně) is the tendency for the peak luminance sensitivity of the human eye to shift toward the blue end of the color spectrum at low illumination levels. This effect introduces a difference in color contrast under different levels of illumination. For instance, in bright sunlight, geranium flowers appear bright red against the dull green of their leaves, or adjacent blue flowers, but in the same scene viewed at dusk, the contrast is reversed, with the red petals appearing a dark red or black, and the leaves and blue petals appearing relatively bright.

The sensitivity to light in scotopic vision varies with wavelength, though the perception is essentially black-and-white. The Purkinje shift is the relation between the absorption maximum of rhodopsin, reaching a maximum at about 500 nm, and that of the opsins in the long-wavelength and medium-wavelength cones that dominate in photopic vision, about 555 nm.

In visual astronomy, the Purkinje shift can affect visual estimates of variable stars when using comparison stars of different colors, especially if one of the stars is red.

Physiology

The effect occurs because the color-sensitive cones in the retina are most sensitive to green light, whereas the rods, which are more light-sensitive (and thus more important in low light) but which do not distinguish colors, respond best to green-blue light. This is why humans become virtually color-blind under low levels of illumination, for instance moonlight.

The Purkinje effect occurs at the transition between primary use of the photopic (cone-based) and scotopic (rod-based) systems, that is, in the mesopic state: as intensity dims, the rods take over, and before color disappears completely, it shifts towards the rods' top sensitivity.
Use of red lights

The insensitivity of rods to long-wavelength light has led to the use of red lights under certain special circumstances – for example, in the control rooms of submarines, in research laboratories, aircraft, or during naked-eye astronomy.\cite{6}

Under conditions where it is desirable to have both the photopic and scotopic systems active, red lights provide a solution. Submarines are dimly lit to preserve the night vision of the crew members working there, but the control room must be lit to allow crew members to read instrument panels. By using red lights, or wearing red goggles, the cones can receive enough light to provide photopic vision (namely the high-acuity vision required for reading). The rods are not saturated by the bright red light because they are not sensitive to long-wavelength light, so the crew members remain dark adapted.\cite{7} Similarly, airplane cockpits use red lights so pilots can read their instruments and maps while maintaining night vision to see outside the aircraft.

Red lights are also often used in research settings. Many research animals (such as rats and mice) have limited photopic vision - as they have far fewer cone photoreceptors.\cite{8} By using red lights, the animal subjects remain "in the dark" (the active period for nocturnal animals), but the human researchers, who have one kind of cone (the "L cone") that is sensitive to long wavelengths, are able to read instruments or perform procedures that would be impractical even with fully dark adapted (but low acuity) scotopic vision.\cite{9} For the same reason, zoo displays of nocturnal animals often are illuminated with red light.

Light and the biological clock

Light resets the biological clock in accordance with the phase response curve (PRC). Depending on the timing, light can advance or delay the circadian rhythm. Both the PRC and the required illuminance vary from species to species and lower light levels are required to reset the clocks in nocturnal rodents than in humans.

Lighting levels that affect the circadian rhythm in humans are higher than the levels usually used in artificial lighting in homes. According to some researchers\cite{33} the illumination intensity that excites the circadian system has to reach up to 1000 lux striking the retina.

In addition to light intensity, wavelength (or colour) of light is a factor in the entrainment of the body clock. Melanopsin is most efficiently excited by light from the blue part of the spectrum (420–440 nm\cite{34} according to some researchers while others have reported 470–485 nm). These blue wavelengths are present in virtually all light sources, therefore their elimination requires special lights or filters which appear amber.
It is thought that the direction of the light may have an effect on entraining the circadian rhythm; light coming from above, resembling an image of a bright sky, has greater effect than light entering our eyes from below.

According to a 2010 study completed by the Lighting Research Center, daylight has a direct effect on circadian rhythms and, consequently, on performance and well-being. The research showed that students who experience disruption in lighting schemes in the morning consequently experience disruption in sleeping patterns. The change in sleeping patterns may lead to negatively impacted student performance and alertness. Removing circadian light in the morning delays the dim light melatonin onset by 6 minutes a day, for a total of 30 minutes for five days.

**Enforced longer cycles**

Modern research under very controlled conditions has shown the human period for adults to be just slightly longer than 24 hours on average. Czeisler et al. at Harvard found the range for normal, healthy adults of all ages to be quite narrow: 24 hours and 11 minutes ± 16 minutes. The "clock" resets itself daily to the 24-hour cycle of the Earth's rotation.

The 28-hour day is presented as a concept of time management. It builds on the fact that the week of seven days at 24 hours and a "week" of six days at 28 hours both equal a week of 168 hours. To live on the 28-hour day and six-day week would require staying awake for 19 to 20 hours and sleeping for eight to nine hours. Each "day" on this system has a unique light/dark pattern.

Studies by Nathaniel Kleitman in 1938 and by Derk-Jan Dijk and Charles Czeisler in 1994/5 have put human subjects on enforced 28-hour sleep–wake cycles, in constant dim light and with other time cues suppressed, for over a month. Because normal people cannot entrain to a 28-hour day in dim light if at all, this is referred to as a forced desynchrony protocol. Sleep and wake episodes are uncoupled from the endogenous circadian period of about 24.18 hours and researchers are allowed to assess the effects of circadian phase on aspects of sleep and wakefulness including sleep latency and other functions.

Early research into circadian rhythms suggested that most people preferred a day closer to 25 hours when isolated from external stimuli like daylight and timekeeping. Early investigators determined the human circadian period to be 25 hours or more. They went to great lengths to shield subjects from time cues and daylight, but they were not aware of the effects of indoor electric lights. The subjects were allowed to turn on light when they were awake and to turn it off when they wanted to sleep. Electric light in the evening delayed their circadian phase. These results became well-known. Researchers allowed subjects to keep electric lighting on in the evening, as it was thought at that time that a couple of 60W bulbs would not have a resetting effect on the circadian rhythms of humans. More recent research has shown that adults have a built-in day, which averages just over 24 hours, that indoor lighting does affect circadian rhythms and that most people attain their best-quality sleep during their chronotype-determined sleep periods.
Human health

Timing of medical treatment in coordination with the body clock may significantly increase efficacy and reduce drug toxicity or adverse reactions. For example, appropriately timed treatment with angiotensin converting enzyme inhibitors (ACEi) may reduce nocturnal blood pressure and also benefit left ventricular (reverse) remodelling.\textsuperscript{[44]}

A short nap during the day does not affect circadian rhythms.

A number of studies have concluded that a short period of sleep during the day, a \textit{power-nap}, does not have any measurable effect on normal circadian rhythms, but can decrease stress and improve productivity.\textsuperscript{[45][46]}

There are many health problems associated with disturbances of the human circadian rhythm, such as seasonal affective disorder (SAD), delayed sleep phase syndrome (DSPS) and other circadian rhythm disorders.\textsuperscript{[47]} Circadian rhythms also play a part in the reticular activating system, which is crucial for maintaining a state of consciousness. In addition, a reversal in the sleep–wake cycle may be a sign or complication of uremia\textsuperscript{[48]} azotemia or acute renal failure.

Studies have also shown that light has a direct effect on human health because of the way it influences the circadian rhythms.\textsuperscript{[49][50][51][52]}

Circadian rhythm and airline pilots

Due to the work nature of airline pilots, who often traverse multiple timezones and regions of sunlight and darkness in one day, and spend many hours awake both day and night, they are often unable to maintain sleep patterns that correspond to the natural human circadian rhythm; this situation can easily lead to fatigue. The NTSB cites this situation as a contributing factor to many accidents\textsuperscript{[53]} and has conducted multiple research studies in order to find methods of combating fatigue in pilots.\textsuperscript{[54][55]}

Disruption

Disruption to rhythms usually has a negative effect. Many travellers have experienced the condition known as jet lag, with its associated symptoms of fatigue, disorientation and insomnia.
A number of other disorders, for example bipolar disorder and some sleep disorders, are associated with irregular or pathological functioning of circadian rhythms. Recent research suggests that circadian rhythm disturbances found in bipolar disorder are positively influenced by lithium’s effect on clock genes.\textsuperscript{56}

Disruption to rhythms in the longer term is believed to have significant adverse health consequences on peripheral organs outside the brain, particularly in the development or exacerbation of cardiovascular disease.\textsuperscript{57} The suppression of melatonin production associated with the disruption of the circadian rhythm may increase the risk of developing cancer.\textsuperscript{58}

**Effect of drugs**

Circadian rhythms and clock genes expressed in brain regions outside the SCN may significantly influence the effects produced by drugs such as cocaine.\textsuperscript{59,60} Moreover, genetic manipulations of clock genes profoundly affect cocaine’s actions.\textsuperscript{61}

The pineal gland is shaped like a tiny pine cone, hence its name. The pineal gland is located near to the center of the brain, between the two hemispheres, tucked in a groove where the two rounded thalamic bodies join. Unlike much of the rest of the brain, the pineal gland is not isolated from the body by the blood-brain barrier system. It is reddish-gray and about the size of a pea (8 mm in humans), located just rostro-dorsal to the superior colliculus and behind and beneath the stria medullaris, between the laterally positioned thalamic bodies. It is part of the epithalamus. It is a midline structure, and is often seen in plain skull X-rays, as it is often calcified.
Calcification is typically due to intake of the fluoride found in water and toothpaste. It was the last endocrine gland to have its function discovered.

**Metaphysics + the Pineal**

The pineal gland's location deep in the brain seems to intimate hidden importance. In the days before its function as a physical eye that could see beyond space-time was discovered, it was considered a mystery linked to superstition and mysticism.

Today it is associated with the sixth **chakra** whose awakening is linked to prophecy and and increased psychic awareness as consciousness ascends.

[Diagram of Chakras]

**Chakras** Spiraling Wheels or Cones of Energy
The pineal gland, or third eye, is located in the geometric center of the brain. This correlates to the location of the Great Pyramid in the center of the physical planet.

This pineal gland is activated by Light, and it controls the various bio-rhythms of the body. It works in harmony with the hypothalamus gland which directs the body's thirst, hunger, sexual desire and the biological clock that determines our aging process. When it awakens, one feels a pressure at the base of the brain.

While the physiological function of the pineal gland has been unknown until recent times, mystical traditions and esoteric schools have long known this area in the middle of the brain to be the connecting link between the physical and spiritual worlds. Considered the most powerful and highest source of ethereal energy available to humans, the pineal gland has always been important in initiating supernatural powers. Development of psychic talents has been closely associated with this organ of higher vision.

When awakened, the third acts as a 'stargate' that
To activate the 'third eye' is to raise one's frequency and moving into higher consciousness - all is a consciousness experience perceived through the Eye of Time or Third Eye. Meditation, Visualization Yoga, and all forms of Out of Body travel, open the Third Eye and allow you to 'see' beyond the physical. As you practice, you will get it faster and more frequently. Your psychic abilities will increase as well as your dream time messages. You may first begin with your eyes closed, but as you practice, you will be able to open your third eye by focusing your attention and receiving messages with your physical eyes open. Planetary vibration/frequency is accelerating exponentially, allowing souls to peer into other realms far more easily than in the past. Frequency will continue to rise until consciousness evolves out of the physical in the next few years.

The pineal gland corresponds with divine thought after being touched by the vibrating light of Kundalini. It starts its ascent towards the head center after responding to the vibrations from the 'light in the head.' The light is located at the top of the sutratma, or 'soul thread', which passes down from the highest plane of our being into the physical vehicle.

Conclusion

We'll pause here and pick up our discussion of the endocrine system in the next newsletter with an exploration of the thyroid and parathyroid glands. One of the interesting things you'll notice is that as we move down through the body, you'll find that you have progressively more options for altering the behavior of your endocrine glands. That said, you can nevertheless consider using the following supplements to assist the hypothalamus, the pituitary, and the pineal glands in the optimal performance of their basic functions.
- hGH secretagogue -- available throughout the internet
- Timed release melatonin
- Hypothalamus PMG from Standard Process -- available throughout the internet
- Pituitrophin PMG from Standard Process -- available throughout the internet
Seven Major Chakras and
Major Endocrine Glands

Male  Female
Crown  Pineal gland
Third Eye
Throat
Heart
Solar Plexus
Sacral
Ovary
Root

Put your body's systems BACK IN BALANCE.
The upper brain or higher cortex as it is called is where eloquent superior brain functions resides. Here we expand our mind to see the rights of other, to see a society, to feel a God, to feel a connection, an interdependence that transcends the selfish. Here we learn to control the instinct to kill, to steal, to lie. People are now taught respect, love, devotion, discipline, and all of the higher grandiose human abilities that inspire us to be more than just a simple fight for greed, anger, self gratification. The higher functioning brain can understand big concepts such as international, holistic, the angel. The small lower lizard geek brain fears big words and tries to stifle them.

The lower brain is also referred to as the lizard brain. It is designed for personal survival. It monitors the need for the basic essentials for self preservation. Anger, hate and aggression reside here. Thus the search for food, clothes, shelter become territorial and this leads to greed. Mind and more dictate all action. Thus killing, stealing, lying to survive is fine. Social moire, laws and ethics are not important. Self gratification is all as that the lizard brain does not see past itself. Thus the psychopath is dominated by the lower lizard brain. The fear of humiliation also resides here and exposure of false belief must be avoided. All of our education process is designed in some way to transcend the small selfish lizard brain.

The world today has slipped backwards to a “Jack ass” society of self gratification and selfishness. Many people have lost sight of the higher respectful brain function. Our education system has failed.

The world must choose now as to which direction it will proceed. The lizard brain selfish depletion of the world resources for greed, or the cooperative, respectful was of the higher brain. Do we want to share the glory, the blissful grandeur, or hoard hate and fight each other in a pool of blood.

The Angel has brought us the message in many ways. Education is the key and there is one way to break the hold of the greedy and stop the hypocrisy of a false equal society. All men are created by the education process. All men are not created equal, until education is equal.

There is one clear step to the future:

Equal Economic Education
The Hermetian Emerald Tablet of Desiré

Desiré is the creator, developer and the leading pioneer in the medical art of Quantum Electro Dynamic Biofeedback. By first developing the Quantum Quality Control system of homeopathic electrical signature analysis, then developing the EPFX and the SCI0 system of measuring the human Electro-Physiological Reactivity of a patient to the QQC signals, a new medicine of electrical energetic medicine was created. After twenty years of clinical scientific research and millions of safe and effective patient visits the art is firmly established in medicine.

There is no such thing as noise. Noise is only information we do not understand.

Desiré Dubonet

Desiré has been nominated for the Nobel Prize in Medicine for over two decades. Her advances and patents in VoltAmetry, Electro-Physiological Reactivity, TVEP, and Homeopathy, are Legendary and World Renown.

Quantum Electro Dynamic Biofeedback