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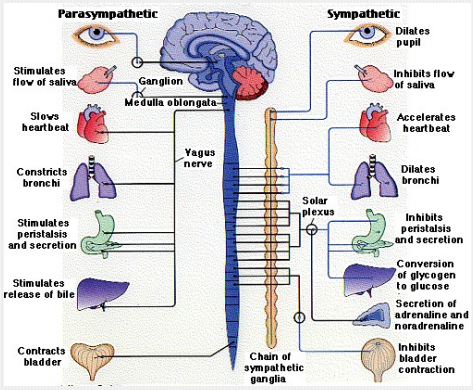
INTRODUCTION TO BASIC SYNTONIC SYNDROMES

Basic Syntonic Syndromes

- Will cover 90-95% of cases
- What caused the stress?
- Treat the problem, not the symptom

The Autonomic Nervous System

Sympathetic and Parasympathetic



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Sympathetic Actions

- Dilates the pupil
- Increases tearing
- Increases intraocular pressure
- Decreases accommodation
- Turns eye outward

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Sympathetic Actions

- Decreases mucus, saliva and digestion
- Decreases arterial dilation
- Increases pulse rate
- Increases blood pressure
- Increases blood sugar

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Sympathetic Activation

- Thyroid
- Adrenal Medulla
- Pituitary
- Gonads
- Muscles

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Post-Traumatic Vision Syndrome

- Exophoria/exotropia
- Reduced accommodation
- Reduced convergence
- Poor blink rate / poor tearing
- Photophobia

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Parasympathetic Actions

- Pupil constriction
- Decreases tearing
- Decreases intraocular pressure
- Increases accommodation
- Turns eye inward

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Parasympathetic Actions

- Increases mucus, saliva and digestion
- Decreases pulse rate
- Increases arterial dilation
- Decreases blood pressure
- Decreases blood sugar

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Parasympathetic Activation

- Parathyroids
- Adrenal cortex
- Digestive tract
- Liver
- Pancreas
- Spleen

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Light Action on the Visual System

- Light Pathways
- Effect on Autonomic Nervous System
- Frequencies of light and how they affect the visual system

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Light Pathways

- Nonvisual photoreceptors of the deep brain, pineal gland and retina
- Hypothalamus: suprachiasmatic nucleus>pituitary
- Pituitary: ACTH to adrenal gland
- >cortisol/stress hormone
- Pineal: melatonin production
- Retina: influences suprachiasmatic nucleus
- **Intrinsically photosensitive retinal ganglion cells**

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- **Intrinsically photosensitive Retinal Ganglion Cells**(ipRGCs), also called **photosensitive Retinal Ganglion Cells** (pRGC), or **melanopsin-containing retinal ganglion cells**, are a type of neuron (nerve cell) in the retina of the mammalian eye. While responses to light in mice lacking rods and cone cells were first noted in 1923,[1] they were forgotten, then rediscovered in the early 1990s.[2] The source of these responses was shown to be a special type of retinal ganglion cell, which, unlike other retinal ganglion cells, is intrinsically photosensitive. This means that they are a third class of retinal photoreceptors, excited by light even when all influences from classical photoreceptors (rods and cones) are blocked (either by applying pharmacological agents or by dissociating the ganglion cell from the retina). Photosensitive ganglion cells contain the photopigment melanopsin. The giant retinal ganglion cells of the primate retina are examples of photosensitive ganglion cells.

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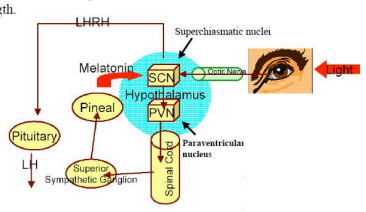
The pineal gland secretes melatonin and is a representation of day length.



High [melatonin] = short day length
Low [melatonin] = long day length

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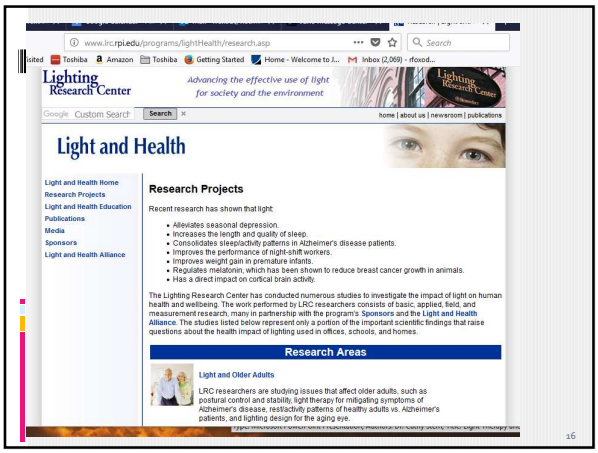
www.lrc.rpi.edu/programs/lightHealth/research.asp
Lighting Research Center
Advancing the effective use of light for society and the environment
Light and Health
Light and Health Home
Research Projects
Light and Health Education
Publications
Media
Sponsors
Light and Health Alliance
Research Projects
Recent research has shown that light:
• Alleviates seasonal depression.
• Increases the length and quality of sleep.
• Consolidates sleep/activity patterns in Alzheimer's disease patients.
• Improves the performance of night-shift workers.
• Improves weight gain in premature infants.
• Regulates melatonin, which has been shown to reduce breast cancer growth in animals.
• Has a direct impact on cortical brain activity.
The Lighting Research Center has conducted numerous studies to investigate the impact of light on human health and wellbeing. The work performed by LRC researchers consists of basic, applied, field, and measurement research, many in partnership with the program's Sponsors and the Light and Health Alliance. The studies listed below represent only a portion of the important scientific findings that raise questions about the health impact of lighting used in offices, schools, and homes.
Research Areas
Light and Older Adults
LRC researchers are studying issues that affect older adults, such as postural control and stability, light therapy for mitigating symptoms of Alzheimer's disease, restlactivity patterns of healthy adults vs. Alzheimer's patients, and lighting design for the aging eye.
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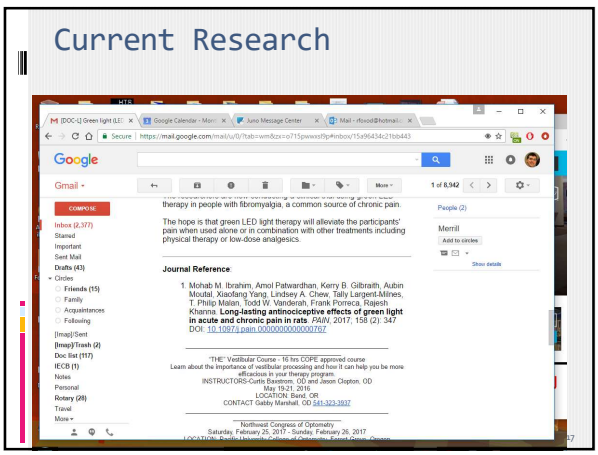
Current Research
Google
Gmail
therapy in people with fibromyalgia, a common source of chronic pain.
The hope is that green LED light therapy will alleviate the participants' pain when used alone or in combination with other treatments including physical therapy or low-dose analgesics.
Journal Reference:
1. Mohab M. Ibrahim, Amol Patwardhan, Kerry B. Gilbraith, Aubin Moutal, Xiaofang Yang, Lindsey A. Chew, Tally Largent-Milnes, T. Philip Malan, Todd W. Vanderah, Frank Porreca, Rajesh Khanna. Long-lasting antinociceptive effects of green light in acute and chronic pain in rats. PAIN, 2017; 158 (2): 347 DOI: 10.1097/j.pain.0000000000000767
"THE" Vestibular Course - 16 hrs COPE approved course
Learn about the importance of vestibular processing and how it can help you be more efficacious in your therapy program.
INSTRUCTORS-Curtis Baxstrom, OD and Jason Clopton, OD
May 19-21, 2016
LOCATION: Bend, OR
CONTACT Gabby Marshall, OD 541-323-3937
Northwest Congress of Optometry
Saturday, February 25, 2017 - Sunday, February 26, 2017
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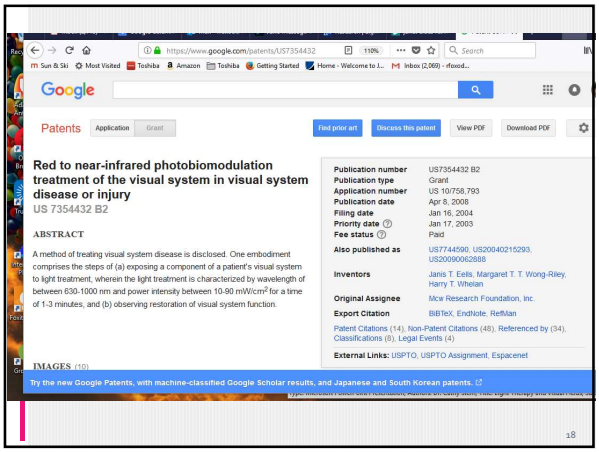
Google Patents
Application
Grant
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Red to near-infrared photobiomodulation treatment of the visual system in visual system disease or injury
US 7354432 B2
ABSTRACT
A method of treating visual system disease is disclosed. One embodiment comprises the steps of (a) exposing a component of a patient's visual system to light treatment, wherein the light treatment is characterized by wavelength of between 630-1000 nm and power intensity between 10-90 mW/cm² for a time of 1-3 minutes, and (b) observing restoration of visual system function.
Publication number US7354432 B2
Publication type Grant
Application number US 10/758,793
Publication date Apr 8, 2008
Filing date Jan 16, 2004
Priority date Jan 17, 2003
Fee status Paid
Also published as US7744590, US20040215293, US20090062888
Inventors Janis T. Eells, Margaret T. T. Wong-Riley, Harry T. Whelan
Original Assignee Mcw Research Foundation, Inc.
Export Citation BiBTeX, EndNote, RefMan
Patent Citations (14), Non-Patent Citations (48), Referenced by (34), Classifications (8), Legal Events (4)
External Links: USPTO, USPTO Assignment, Espacenet
IMAGES (10)
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journal homepage: www.elsevier.com/locate/ynbdi

A randomized, double-blind, placebo-controlled trial of blue wavelength light exposure on sleep and recovery of brain structure, function, and cognition following mild traumatic brain injury

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Blue light
Sleep
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DTI
VBM

ABSTRACT

Sleep and circadian rhythms are among the most powerful but least understood contributors to cognitive performance and brain health. Here we capitalize on the circadian resetting effect of blue-wavelength light to phase shift the sleep patterns of adult patients (aged 18–48 years) recovering from mild traumatic brain injury (mTBI), with the aim of facilitating recovery of brain structure, connectivity, and cognitive performance. During a randomized, double-blind, placebo-controlled trial of 32 adults with a recent mTBI, we compared 6-weeks of daily 30-min pulses of blue light (peak λ = 469 nm) each morning versus amber placebo light (peak λ = 578 nm) on neurocognitive and neuroimaging outcomes, including grey matter volume (GMV), resting-state functional connectivity, directed connectivity using Granger causality, and white matter integrity using diffusion tensor imaging (DTI). Relative to placebo, morning blue light led to phase-advanced sleep timing, reduced

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Balance Board – general considerations

NEUTRALIZATION KEY

Stimulate Sympathetic						Syntony						*Stimulate Parasympathetic*
αδ	αθ	α	δ	θ	μθ	μδ	μ	μυ	μπ	π	ω	ν	πω	υω

Add "S" to augment this side
Flash

L

Add "D" to augment this side
No Flash

Red end of spectrum= sympathetic stimulation

Blue end of spectrum= parasympathetic stimulation

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Red = sensory stimulant
Orange = motor stimulant
Yellow = intense motor stimulant

Green equalizes for physiological balance

Blue = sensory depressant
Indigo = motor depressant
Violet = intense sensory depressant

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α alpha = red

δ delta = amber

μ mu = green

υ upsilon = blue

ω omega = indigo

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The "Miracle Workers"

- Chronic Syndrome
- Acute Syndrome
- Amblyopia/Esotropia Syndrome
- Emotional / Adrenal Exhaustion Syndrome

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SYNTONIC COLOR NAMES

Red-Orange	αδ	Alpha Delta – "Lazy Eye Syndrome" amblyopia, eso, poor accommodation
Yellow-Green	μδ	Mu Delta – "Chronic Syndrome" physiological, toxic, neuroendocrine chronic imblance, allergy
Blue-Green	μν	Mu Upsilon – "Acute Syndrome" recent head trauma, high fevers, inflammation swelling, pain, HA, monocular diplopia
Indigo	νω	Upsilon Omega – "Pain Reliever" headaches, asthenopia
Ruby	αω	Alpha Omega – "Emotional Fatigue" poor coping, mood swings, αω pupil, frustration, adrenal fatigue

Alpha	α	= red
Delta	δ	= amber
Mu	μ	= green
Upsilon	ν	= blue
Omega	ω	= cobalt

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syntonicvision.com
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Lemon

Mu Delta – "Chronic Syndrome"
physiologic stabilizer

Dx: convergence excess, esophoria/esotropia
alpha omega pupil and poor oculomotor
constricted visual field for form or color
low recovery on ductions (especially BI)

Sx: toxic or neuroendocrine imbalance
chronic health problems or past trauma

Tx: stimulate sympathetic, create exo response

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Ruby

Alpha Omega – "Emotional Fatigue"
Syndrome

Dx: alpha omega pupil, fatigue exo, low breaks and recoveries (especially BO), adrenal fatigue

Sx: photophobia, transient blurred vision, fatigue, headache

Tx: balance parasympathetic and sympathetic

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Treatment Protocol (end at middle of spectrum)

Ruby

Alpha Omega

+

Lemon

Mu Delta

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Alpha Delta – "Amblyopia Syndrome"

Red-Orange sensory + motor stimulant

Dx: amblyopia, esotropia, poor accommodation, constricted visual field, reduced vergence ranges

Sx: reduced acuity on one eye, head tilt or turn, poor depth judgment, diplopia
also slow reading speed and poor handwriting

Tx: stimulate sympathetic
especially in long standing strabismus

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Alpha Delta – "Amblyopia Syndrome"

Red-Orange amblyopia, eso,
poor accommodation

Mu Delta – "Chronic Syndrome"

Lemon physiological, toxic,
neuroendocrine

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Why Red-Orange or Lemon ?

- Sympathetic Activation
- Sensory and Motor Stimulant
- For amblyopia, esotropia
- Stimulates Exo Response

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Treatment Protocol (end at middle of spectrum)

Red-Orange Alpha Delta

+

Lemon Mu Delta

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Ruby Alpha Omega – "Emotional Fatigue"

pupil, adrenal fatigue, emotional trauma, exhaustion, mood swings

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Color Combinations

- Alpha Delta + Mu Delta (esotropia)
- Alpha Omega + Mu Delta (80% of cases)
- Alpha Omega (alone)

Always end at the middle of the balance board

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Mu Upsilon – "Acute Syndrome"

Blue-Green recent head trauma, anoxia, stroke

Dx: exophoria, exotropia, convergence insufficiency (PTVS), alpha omega pupil, enlarged blind spot, poor ocm / accommodation

Sx: headache, motion sickness, vertigo, transient blurred vision, diplopia (monocular)

Tx: stimulate parasympathetic

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Why Indigo or Blue-Green ?

- Parasympathetic Activation
- Sensory and Motor Depressant
- For Pain and Spasm
- Stimulates Eso Response

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Upsilon Omega – "Pain Reliever"

not a syndrome

Indigo headaches, asthenopia

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Mu Upsilon – "Acute Syndrome"

Blue-Green recent head trauma, high fevers, inflammation, swelling, pain, HA, monocular diplopia

Upsilon Omega – "Pain Reliever"

Indigo (Violet) headaches, asthenopia

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Treatment Protocol (end at middle of spectrum)

Indigo

Upsilon Omega

+

Mu Upsilon

Blue-Green

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Color Combinations

- Mu-Upsilon
- Upsilon-Omega + Mu-Upsilon
- Omega + Mu-Upsilon

Treatment Protocol

- Frequency of light into the eye
- 20 minutes per session
- Minimum of 4x per week
- Progress Evaluation every 8 sessions
  repeat history, vision analysis, VF
- Low Risk and Few Side Effects

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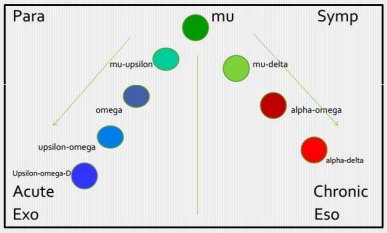
Hancock Decision Tree



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Questions?

- See you tomorrow!!

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