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INTRODUCTION TO BASIC SYNTONIC SYNDROMES

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Financial Relationships Disclosure

Dr. Robert Fox hereby states he has no financial relationships related to the content of this lecture.

All relevant relationships have been mitigated.

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Basic Syntonic Syndromes

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

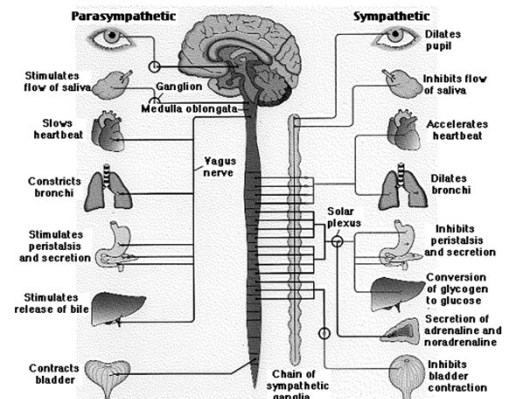
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The Autonomic Nervous System

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

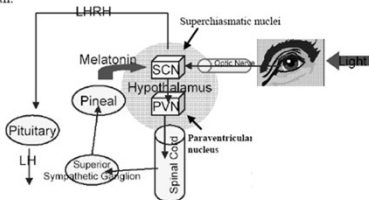
- Nonvisual photoreceptors of the deep brain, pineal gland and retina
- Hypothalamus: suprachiasmatic nucleus > pituitary
- Pituitary: ACTH to adrenal gland
• > cortisol/stress hormone
- Pineal: melatonin production
- Retina: influences suprachiasmatic nucleus
- Intrinsically photosensitive retinal ganglion 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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Lighting Research Center
Advancing the effective use of light for society and the environment

Light and Health

Research Projects

Recent research has shown that light:

- Alleviates seasonal depression.
- Increases the length and quality of sleep.
- Consolidates sleep/wake 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.

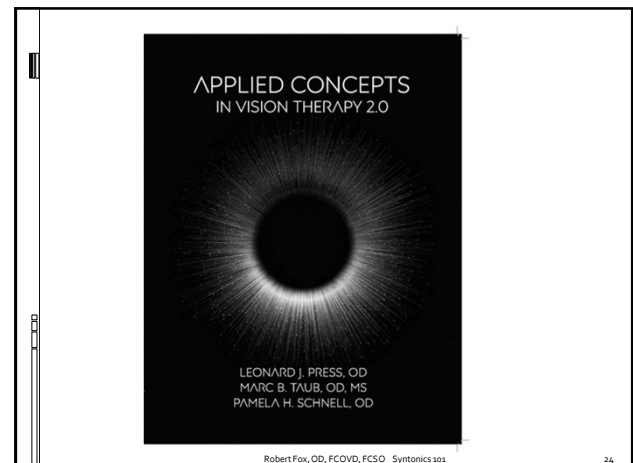
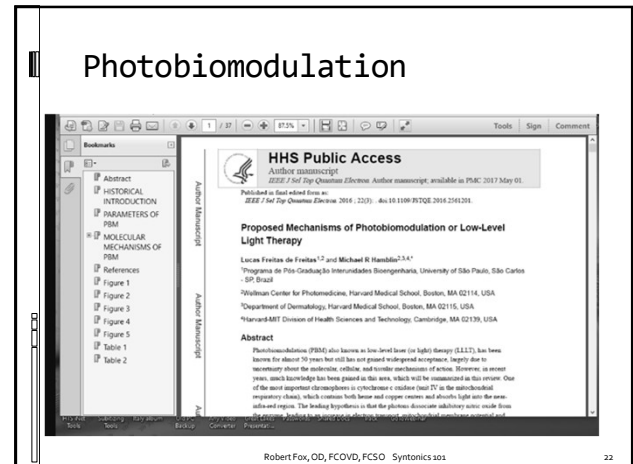
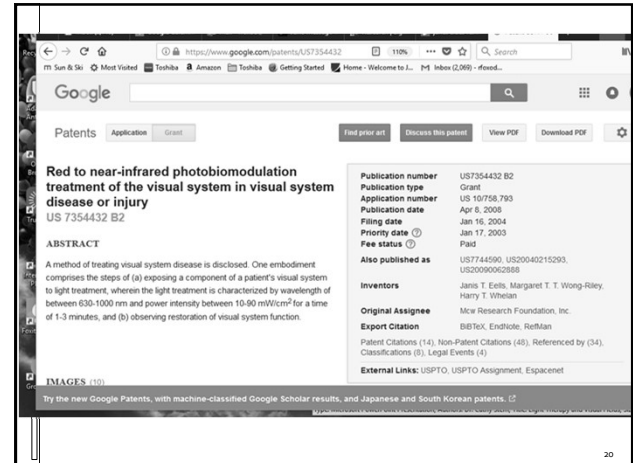
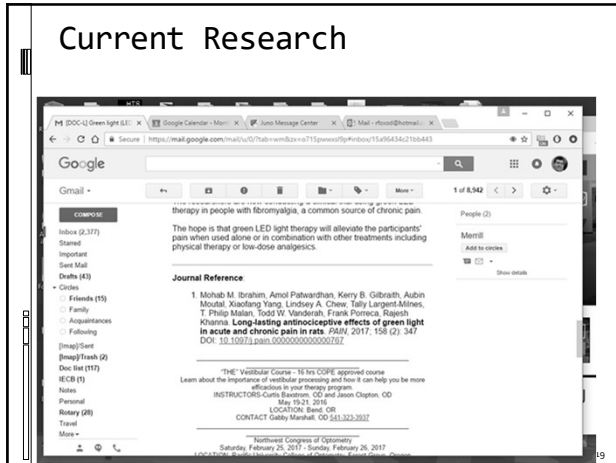
Research Areas

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, rest/active patterns of healthy adults vs. Alzheimer's patients, and lighting design for the aging eye.

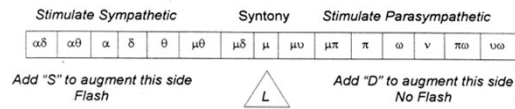
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Current Research



Balance Board – general considerations

NEUTRALIZATION KEY



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

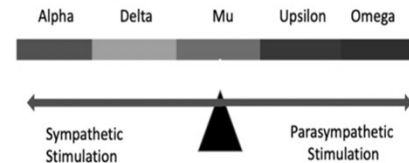
δ delta = amber

μ mu = green

ν upsilon = blue

ω omega = indigo

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Autonomic Nervous System
Physiological Balance

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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

$\alpha\delta$	Alpha Delta – "Lazy Eye Syndrome"
Red-Orange	amblyopia, exo, poor accommodation
$\mu\delta$	Mu Delta – "Chronic Syndrome"
Yellow-Green	physiological, tonic, neuroendocrine chronic imbalance, allergy
$\mu\nu$	Mu Upsilon – "Acute Syndrome"
Blue-Green	recent head trauma, high fevers, inflammation swelling, pain, IIA, monocular diplopia
$\nu\omega$	Upsilon Omega – "Pain Reliever"
Indigo	headaches, asthenopia
$\alpha\omega$	Alpha Omega – "Emotional Fatigue"
Ruby	poor coping, mood swings, eye pupil, frustration, adrenal fatigue
Alpha	α = red
Delta	δ = amber
Mu	μ = green
Upsilon	ν = blue
Omega	ω = cobalt

$$\frac{1}{\sqrt{1 + \frac{1}{\mu^2}}} \approx \frac{1}{\sqrt{1 + \frac{1}{\mu^2}}} \approx \frac{1}{\sqrt{1 + \frac{1}{\mu^2}}}$$

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www.collegesyntonicoptometry.com

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 Mu Delta – “Chronic Syndrome”
Lemon 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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 Alpha Omega – “Emotional Fatigue”
Ruby 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)

	Alpha Omega
Ruby	+
	Mu Delta
Lemon	

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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,
mm 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,

○ Mu Delta – “Chronic Syndrome”
Lemon physiological, toxic,
 neuroendocrine

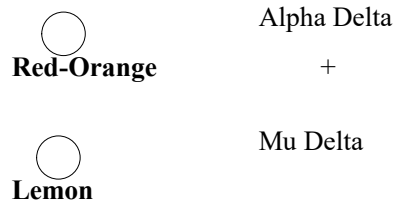
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Why Red-Orange or Lemon ?

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

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Treatment Protocol (end at middle of spectrum)



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Nascentization

- Usually used for amblyopia
- Local vs Non-Local
- Red lens over non-dominant eye
- Syntonizer just has diffusing filter
- Do for 3 minutes prior to syntononic treatment



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Alpha Omega – “Emotional Fatigue”

Ruby 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)

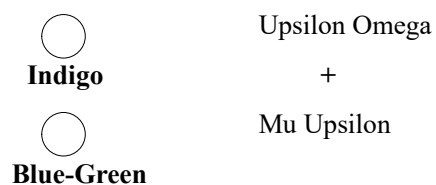
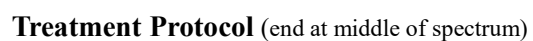
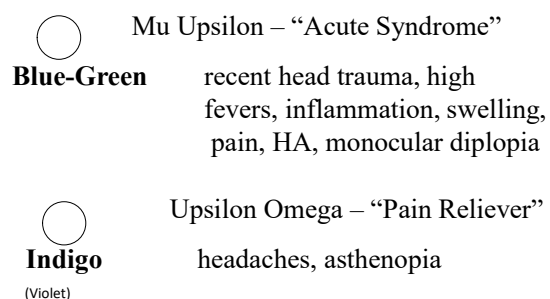
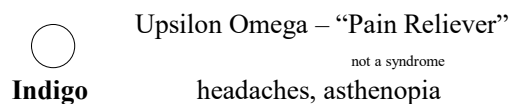
Tx: stimulate parasympathetic

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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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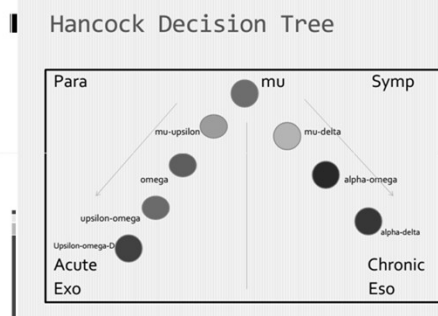


Color Combinations

- 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



Questions?

- See you tomorrow!!