

# Chattanooga Group Laser Products



# Low Level Laser Therapy FAQs



- What is Laser Therapy
- How does Laser work
- What are all my options
- Is all Light the same (Light is Light?)
- Why should I use Laser
- What are the Indications and Contraindications for Laser



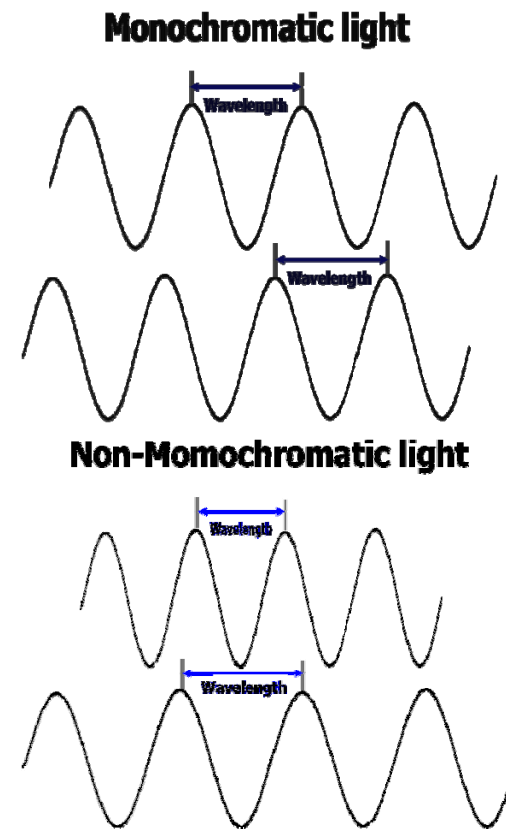
- Acronym for *Light Amplification by Stimulated Emission of Radiation*
- Low level laser therapy (LLLT) is the best term for the type of Lasers used in rehab
- Also referred to as “Therapeutic Laser”
- Simply another form of energy that can be used to create physiologic changes



# Characteristics of Laser Radiation: Monochromatic



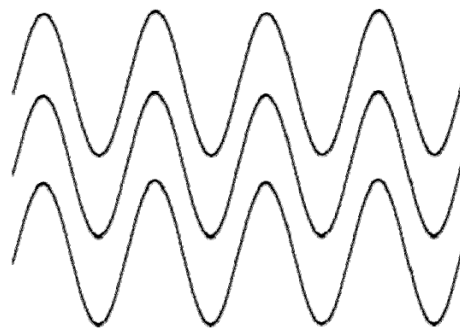
- Monochromatic
  - One color
  - One frequency
  - One wavelength



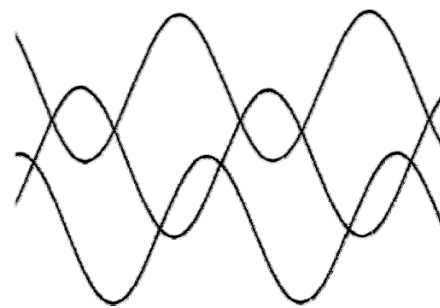
# Characteristics of Laser Radiation: Coherent

- Coherent
  - All waves are in phase
  - Light waves match identically in timing and spacing

**Coherent light**

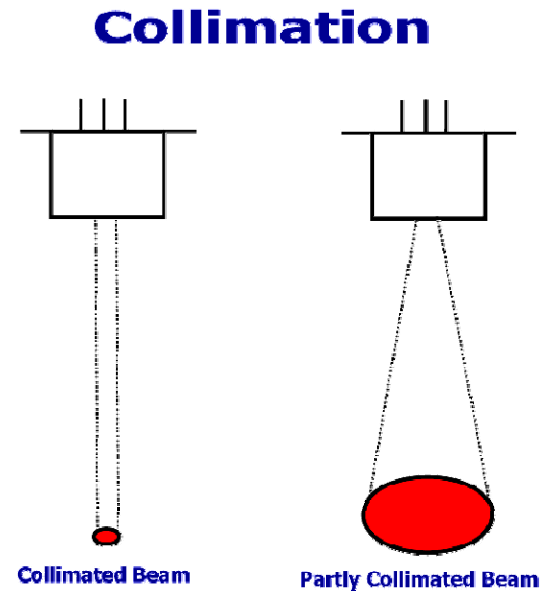


**Non-Coherent light**



# Characteristics of Laser Radiation: Collimated

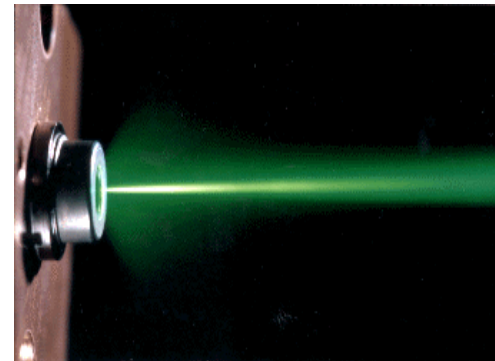
- Collimated
  - Light (photons) is focused with almost no divergence
  - Remains well focused as it moves through tissue
  - Focus affects penetration



# Unique Properties of Laser



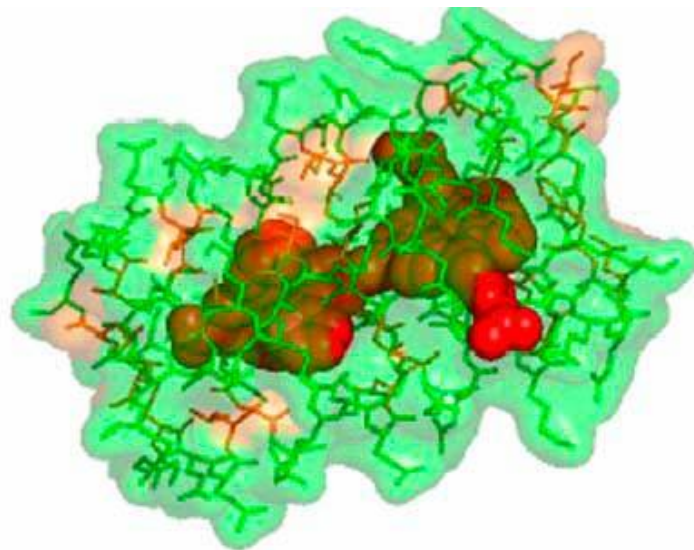
- Regular white light from a light bulb scatters light of multiple wavelengths in multiple direction
- Laser beams are concentrated light of a single wavelength, highly focused, aimed in a single direction with all waves in phase with each other



# Biology of Light Therapy



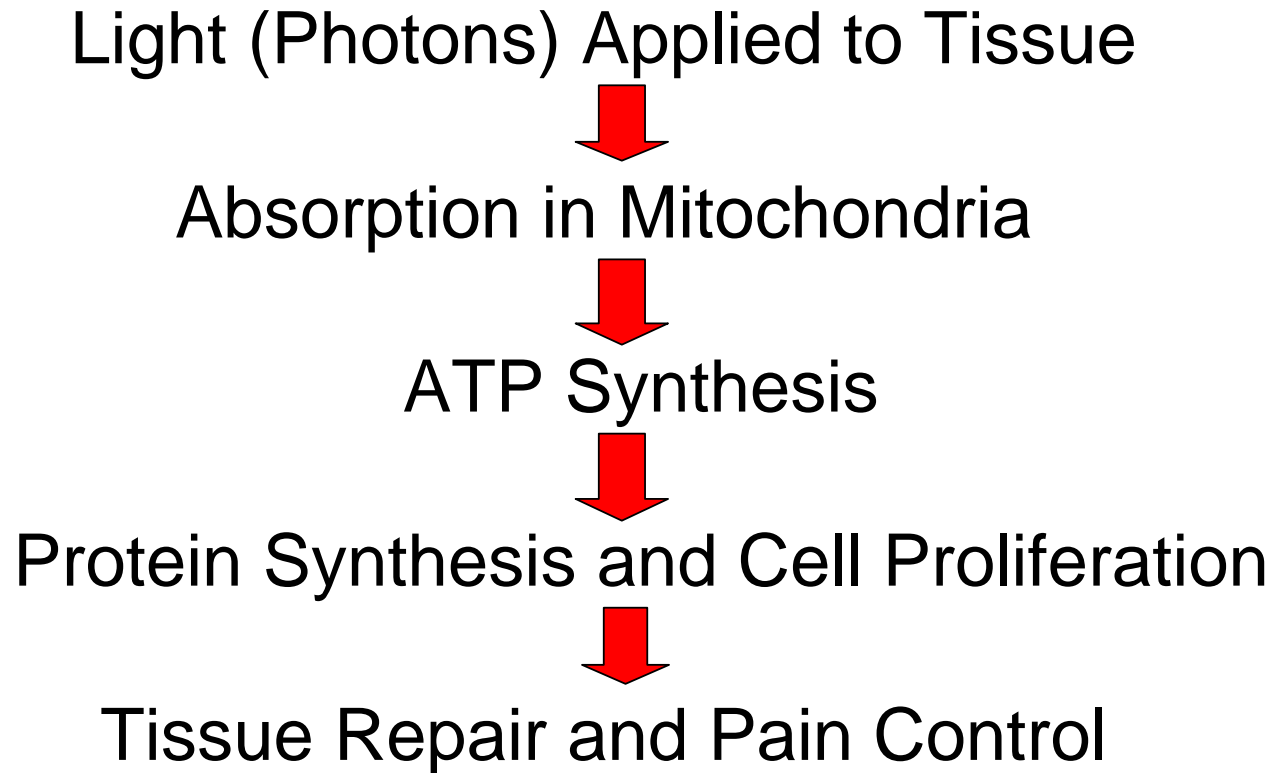
- Light enters the cell
- Molecules called chromophores react to it
  - Chromophores are in all tissues
  - Show wavelength specificity
- Photochemical reaction triggered
- Desirable physiological effects and clinical treatment outcomes



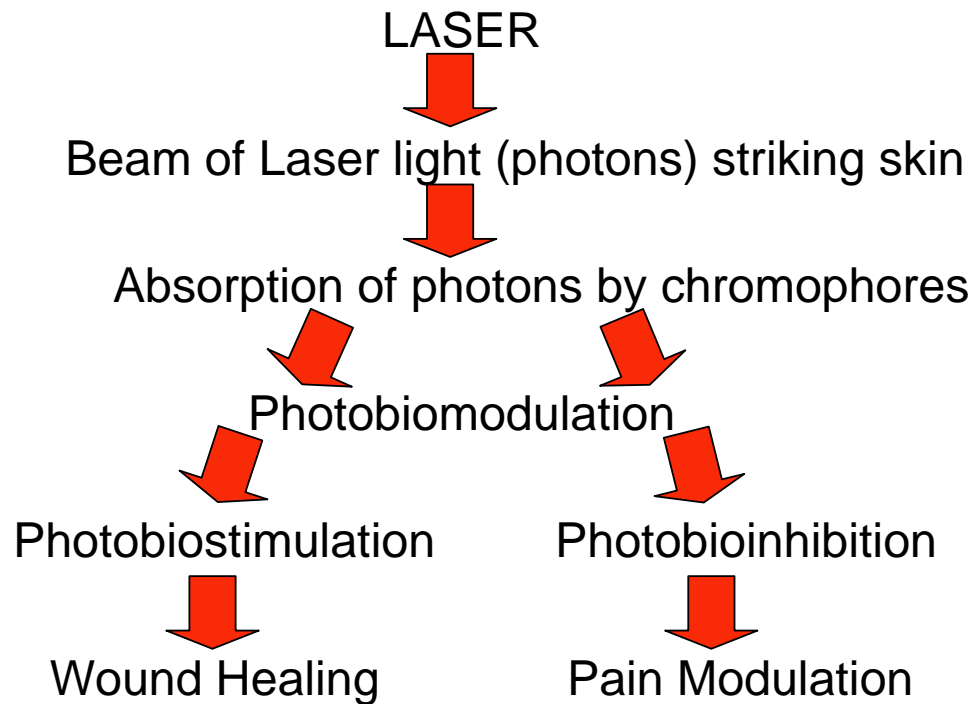


# LLLT Physiological Effects

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# Tissue Healing – Analgesia



# What are Chattanooga's Light Options?

- Laser Diode
- Super Luminous Diode
- Light Emitting Diode
- Combinations  
(Cluster Probes)



# Light Sources



- **Laser** diode
  - Collimated light (very focused)
  - Monochromatic (all one color)
  - Coherent (doesn't scatter)
  - Approx wavelength: 760-1000 nm
  - Deeper penetration
- **SLDs** produce not as focused, not all one color
  - Non-coherent
  - Any wavelength
  - Depth of penetration is much less than laser diode, typically greater than LEDs
  - Indicated for treatment of superficial tissue
- **LEDs** are Non-collimated (significantly less focused)
  - Non-coherent
  - Approx wavelength: 620-690 nm
  - Minimal penetration (several mm)
  - Indicated for treatment of very superficial tissue

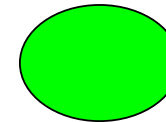
Laser



SLD



LED



# Cluster Probes



- Laser diodes can be combined with SLD'S and LED's to form a diode cluster
- Important to know what type of diodes are in the cluster
- Important to know the target tissue
- Allows for treating larger areas in less time



# Light is Light?

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- Frequency of Light can be the same and absorbed the same, but...
- Concentration of Light will affect how much is available for absorption, i.e. concentration of Light is similar to “Current Density” in electrotherapy
- As electrode size affects penetration in electrotherapy, Light concentration (spot size) affects absorption and therefore penetration

# Why Use Chattanooga Laser?

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- NEW Tool in the Toolbox
- Efficiency (Faster Treatment Times)
- Outcomes Lead to Increase in Referrals
- Cost Effective
- Latest Technology from an Established Respectable Company
- Complete Therapy System Available (E-stim, Ultrasound, EMG, EMG+Stim and Laser)
- No Goop!

# FDA cleared LLLT Indications



- Increase of localized circulation
- Relief of minor muscle and joint aches, pains and stiffness
- Relaxation of muscles
- Relief of muscle spasms
- Relief of minor pain and stiffness associated with arthritis



U.S. Food and Drug Administration





# Non-FDA cleared LLLT Indications

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- Inflammation
- Neuralgia
- Pain, acute and chronic
- Soft tissue injury, acute and chronic
- Tendinitis/Bursitis
- Triggerpoint
- Wounds, acute and chronic
- Joint disorders, chronic

# Contraindications

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- Over eyes
- Cancer
- Photophobia (sensitivity to light)
- Direct irradiation over the fetus or the uterus during pregnancy
- When using photosensitizing medication
- Over hemorrhage
- Over thyroid or endocrine glands

# Cautionary Comments

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- Read and review your operation manual
- Do not treat through clothing
- Pay attention to skin preparation
- Use 50-75% of recommended dosage when treating over dark tattoo or over dark pigmented skin

Questions?

Thank You!

