

## ***A bit of Science Behind Red Light Therapy for Hair Growth***

Red Light Therapy, also known as Low-Level Laser Therapy (LLLT) or Photobiomodulation (PBM), uses low-intensity red or near-infrared light to stimulate cellular processes that promote hair growth.

### **Mechanisms of Action:**

1. **Increased ATP Production:** Red Light Therapy stimulates the production of adenosine triphosphate (ATP), the energy currency of cells. Increased ATP production enhances cellular metabolism, promoting hair growth.
2. **Improved Blood Flow:** Red Light Therapy increases blood flow to the scalp, delivering oxygen and nutrients to hair follicles. This enhances the health and vitality of hair follicles.
3. **Reduced Inflammation:** Red Light Therapy has anti-inflammatory effects, reducing inflammation in the scalp that can contribute to hair loss.
4. **Stimulation of Hair Follicle Stem Cells:** Red Light Therapy stimulates the proliferation of hair follicle stem cells, promoting the transition from the resting phase to the growth phase.
5. **Increased Collagen Production:** Red Light Therapy enhances collagen production, improving skin and scalp health.

### **Key Molecules and Pathways Involved**

1. **Nitric Oxide (NO):** Red Light Therapy increases NO production, which relaxes blood vessels, improving blood flow to the scalp.
2. **Vascular Endothelial Growth Factor (VEGF):** Red Light Therapy up regulates VEGF, promoting angiogenesis (the formation of new blood vessels) and enhancing blood flow to the scalp.
3. **Catenin Pathway:** RLT activates this pathway, which regulates hair follicle development and growth.

### **Optimal Parameters for Red Light Therapy**

- Wavelength: 630-700 nm (red light) or 780-850 nm (near-infrared light)
- Treatment Duration: 10-30 minutes per session
- Frequency: 2-3 times per week

*A better understanding behind the science of RLT for hair growth is why we think you can harness the power of this non-invasive, pain-free treatment to promote healthy hair growth and address hair loss concerns.*