

The Complete Guide to Red Light Therapy in 2020

plug into life



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*What's in
Store?*

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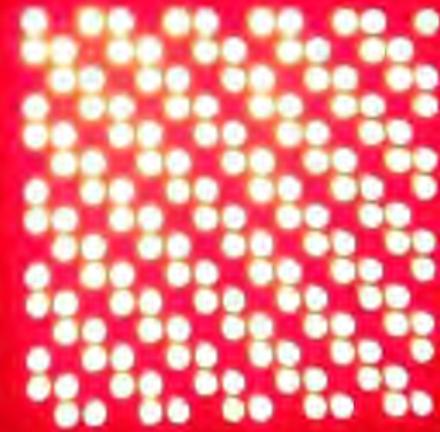
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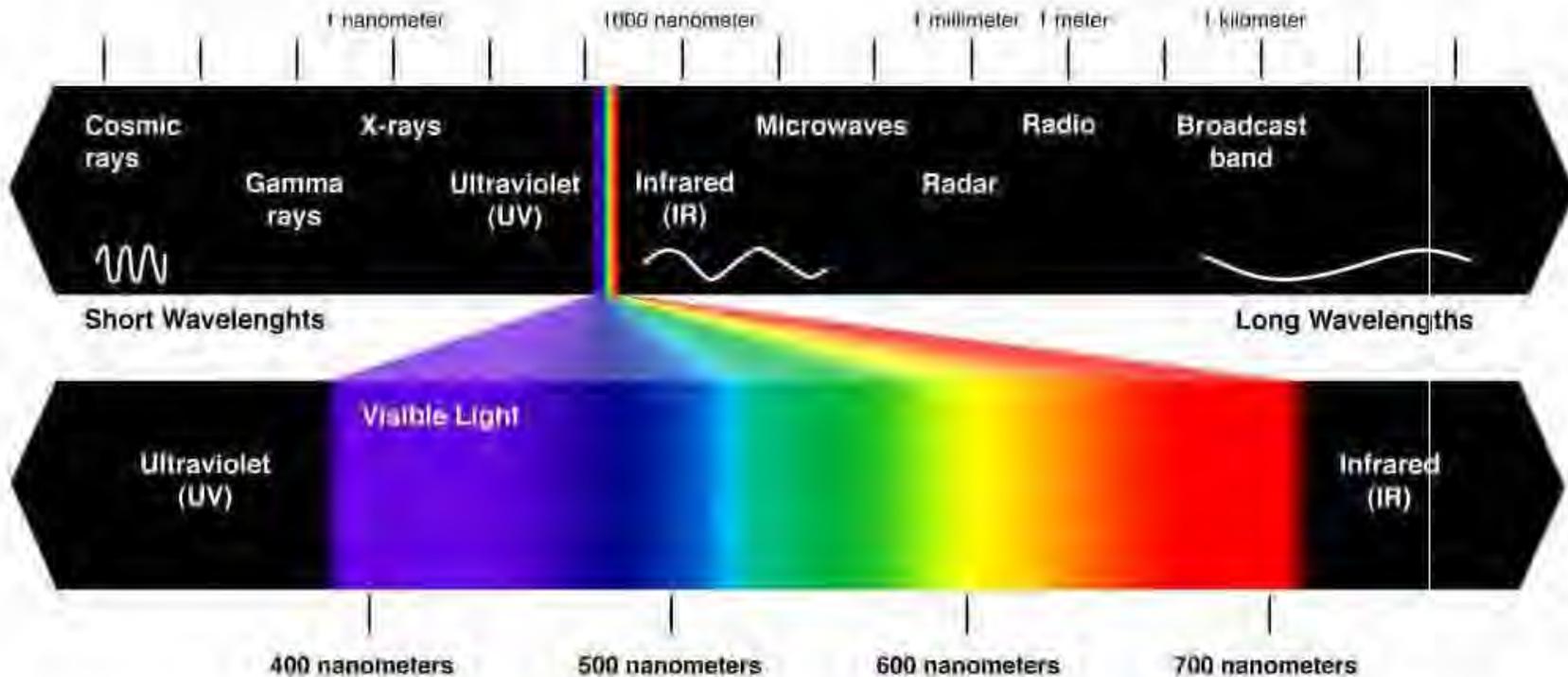
What is Red Light Therapy?

Red light therapy (RLT) - the layman's term for **photobiomodulation** - is the use of light at wavelengths specific to **cellular absorption** in order to elicit a multitude of benefits for living creatures.

- **photo** (from photon, or light)
- **bio** (life)
- **modulation** (change)



Red light is **visible light** in the wavelengths from a little over 600nm to about 700nm, while **near-infrared light** wavelengths (invisible to the human eye) run from 700nm to just over 1100nm.



The **shorter** wavelengths of light penetrate the outer layers of the skin (for superficial benefits) while the **longer** wavelengths have greater penetration (up to 15cm) for deep tissue results.

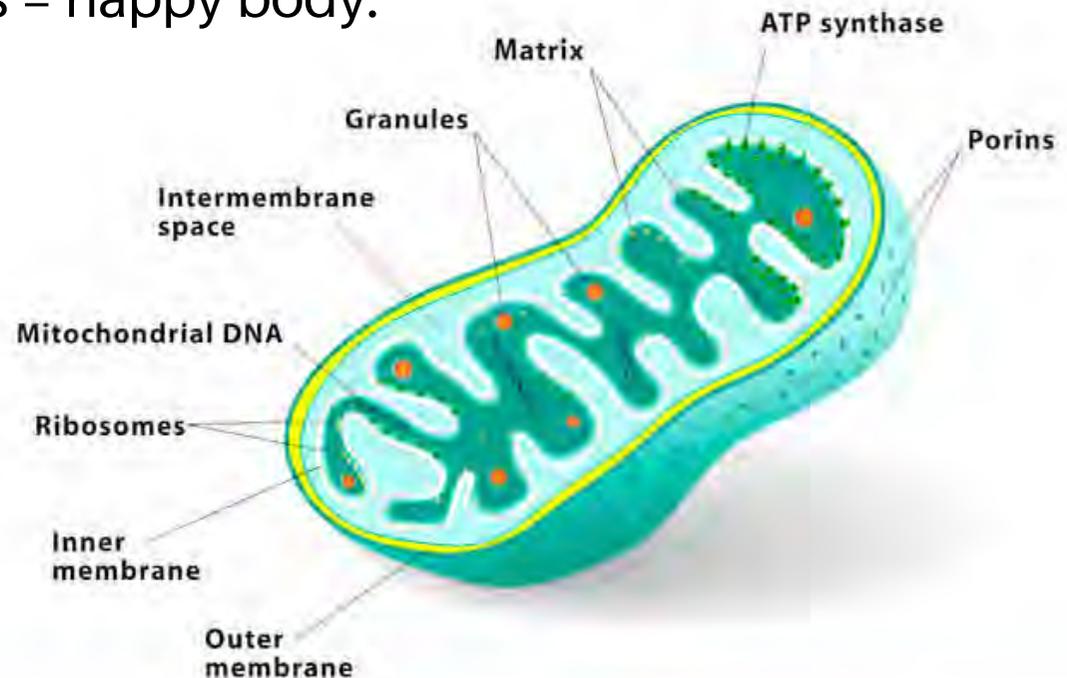
*Quick Biology
Class Refresher:*

When we speak about **cellular absorption**, we are referring to the light's ability to stimulate your **mitochondria**, the powerhouses of almost every cell in your body. Mitochondria generate **ATP**, the energy currency used by your cells to function.

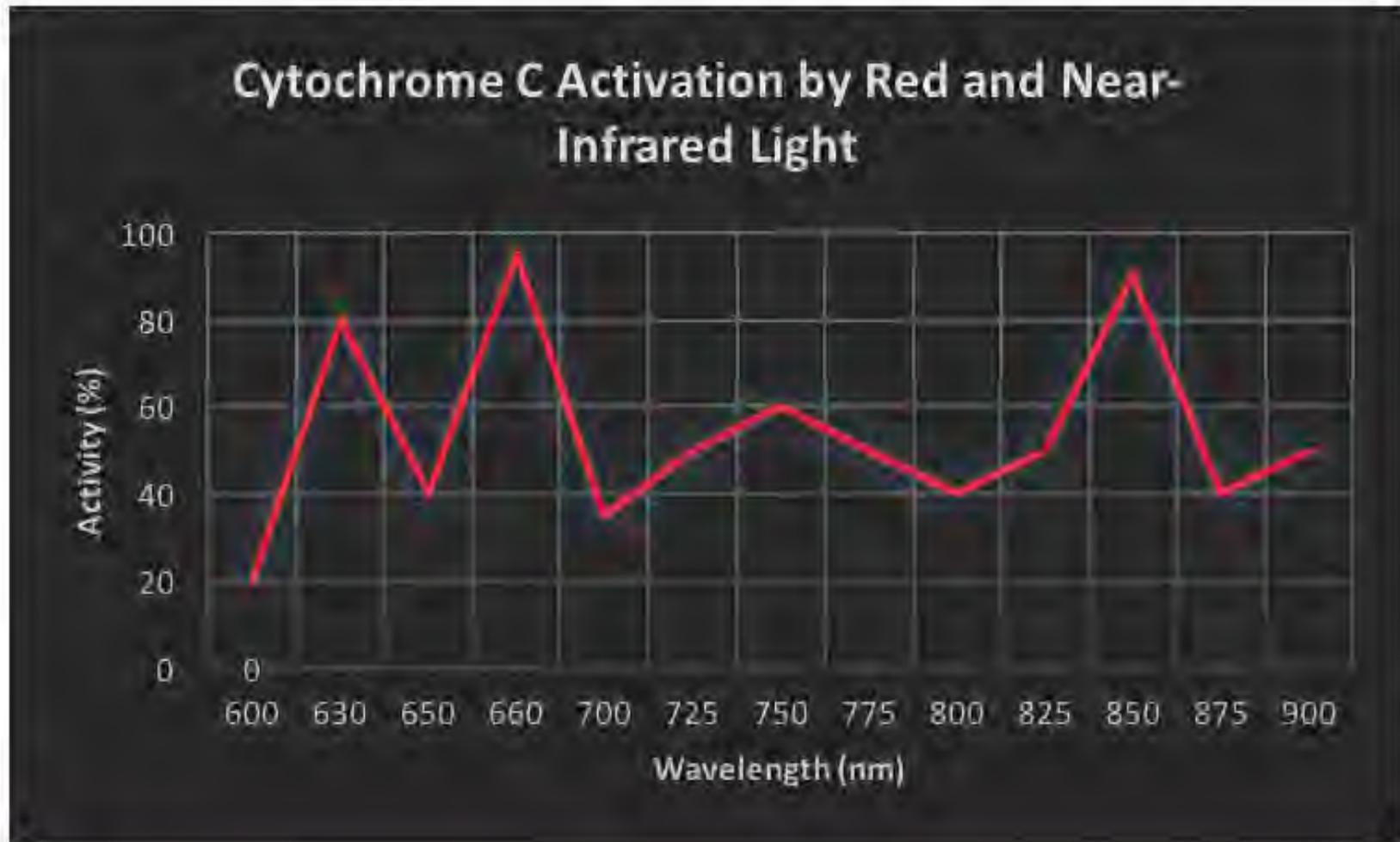
Summed up:

Happy mitochondria = happy cells = happy body.

This foundational impact on our cells is how RLT has a seemingly endless list of benefits.



It is also worth noting that not all wavelengths of red light are equally effective at stimulating your mitochondria. The evidence has pointed to very **specific wavelength ranges** for the most therapeutic benefit.



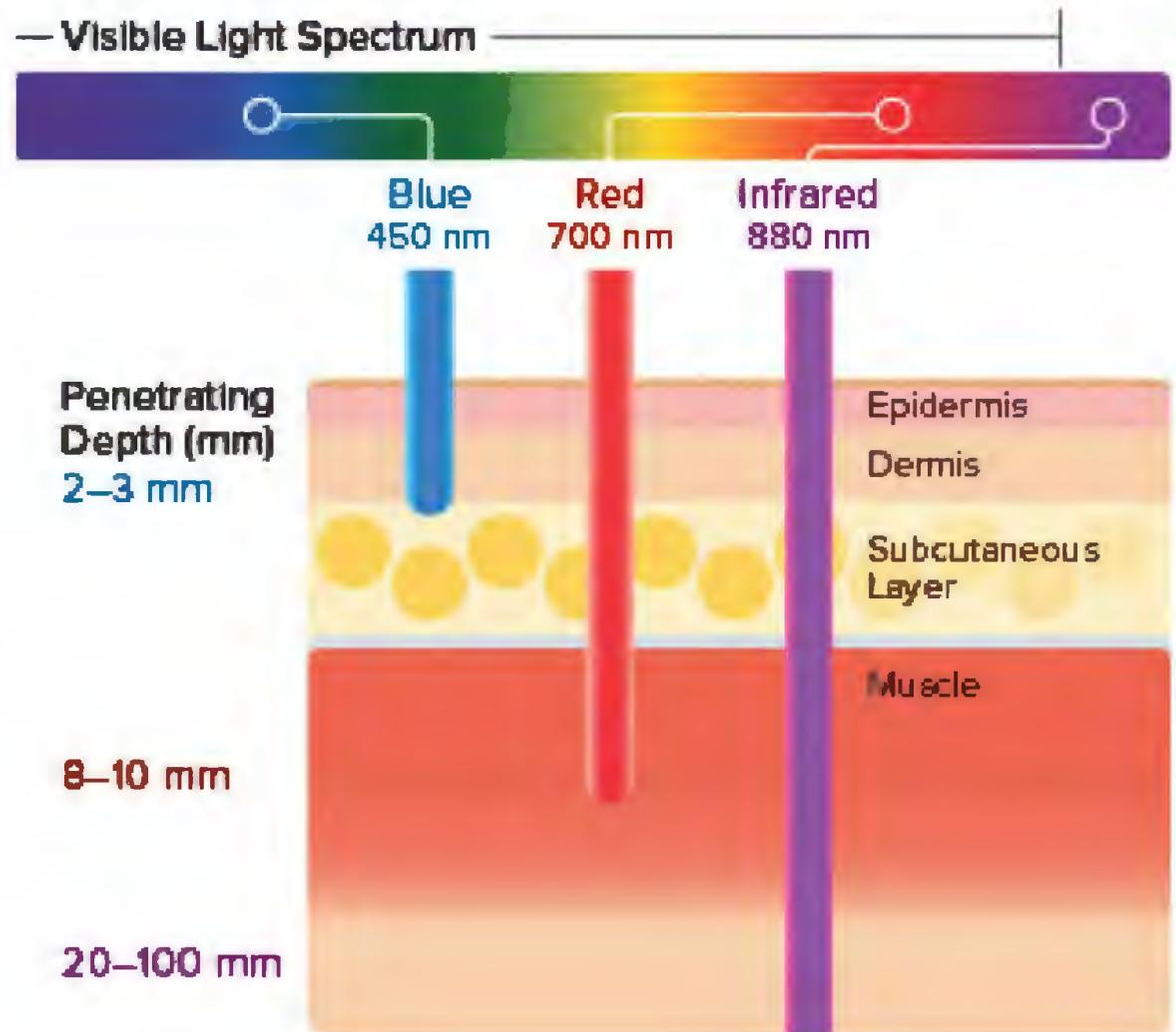
For superficial benefits, the optimal range is from 600 to 700nm whereas deeper tissues require wavelengths from 800 to 900nm.

So What?

If you are looking to reap the full benefits of RLT, you should be using a device which emits

multiple wavelengths

of light (for both superficial and deep benefits) which fall within the proven ranges.



*The Reason We
Showed Up:*

The Benefits

As we know, RLT affects us on a **cellular level**. This has led to an extensive range of benefits in the scientific literature.

We have provided a list of benefits below. We include the references so you can do further research according to your needs.





Skin Rejuvenation (1)(2)(3)(4)

- Decrease in thin lines & wrinkles
- Reduced redness
- Improved hyperpigmentation
- Better hair growth

Pain Relief (9)(10)(11)(12)(13)

- Neck and back pain
- Inflammation
- Fibromyalgia
- Bulging discs
- Arthritis

Skin Problem-Solving (5)(6)(7)(8)

- Acne incidence & scarring
- Eczema
- Burns
- Psoriasis
- Athlete's Foot

Other benefits (14)(15)(16)(17)

- Enhanced muscle recovery & growth
- Improved sleep quality and duration
- Improved hormonal balance
- Weight loss and hunger management

Using A Red Light Therapy Device:

For most people using a RLT device, following the guidelines provided with the device is sufficient. For others, measuring the **dosage** may become important - perhaps there is a specific scientific study that treats their ailment that they would like to replicate.



"The Lion doesn't need to understand the workings of his environment. He is perfectly in tune with nature and that is all that is required."

- **Dr Jack Kruse**

Understanding Dosage

When we speak about the dose of the therapy, we are simply referring to the amount of energy received by one area of your body, which is measured in **Joules per square centimetre (J/cm²)**. The recommended therapeutic dose by current literature varies, but it generally falls between **3J/cm²** and **50J/cm²**.

Note: For skin issues you only need a light dose (3J/cm² - 15J/cm²) whereas for deeper tissues a stronger dose (10J/cm² - 60J/cm²) may be required.

In order to calculate the dose of your session, it's important that you buy your device from a reputable company that provides you with some additional specifications.

Calculating Dosage

$$\text{Dose} = \text{Power Density} \times \text{Time} \times 0.001$$

Power density, also known as **irradiance**, is a specification you would ideally get from your RLT company. It is important to note that the **distance** between your body and your device will have an impact on the irradiance. Be sure to use a device that comes with a list of irradiances at varying distances.

As an example, using the **MyLight© Panel** from **Mychondria** which has an irradiance of 15.6 mW/cm² at 1 inch:

$$\begin{aligned} \text{Dose per minute} &= 15.6 \text{ mW/cm}^2 \times 60 \text{ (seconds)} \times 0.001 \\ &= \mathbf{0.94 \text{ J/cm}^2 \text{ per minute}} \end{aligned}$$

This means you could achieve a dose of 3J /cm² in ~3 minutes or a dosage of 20J /cm² in ~21 minutes.

*But
Hang On...*

Couldn't I just use a really powerful light for a shorter session?

This is a common question. The thing with RLT is that often a lower intensity of light over a longer duration leads to better results. This is because it gives your cells' **antioxidant capacity** a chance to keep up as your treatment progresses, leading to more effective therapy.

The research on RLT has found that the treatment has a **biphasic dose response**, too. What this means is that while too small a dose won't have any effect, a dosage which is too high also won't (and may even be harmful).



Final Recommendations

- **Start slow:** When starting out, you should use the minimum recommended dosage and work your way up. As mentioned earlier, your cells need a chance to adapt their antioxidant capacity. Start with 3 or 4 sessions per week and gradually increase to 7 sessions a week.
- **Time of day:** The most effective time of day to use your red light device is when it mimics the wavelengths of the sun (early sunrise and during sunset).



References

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