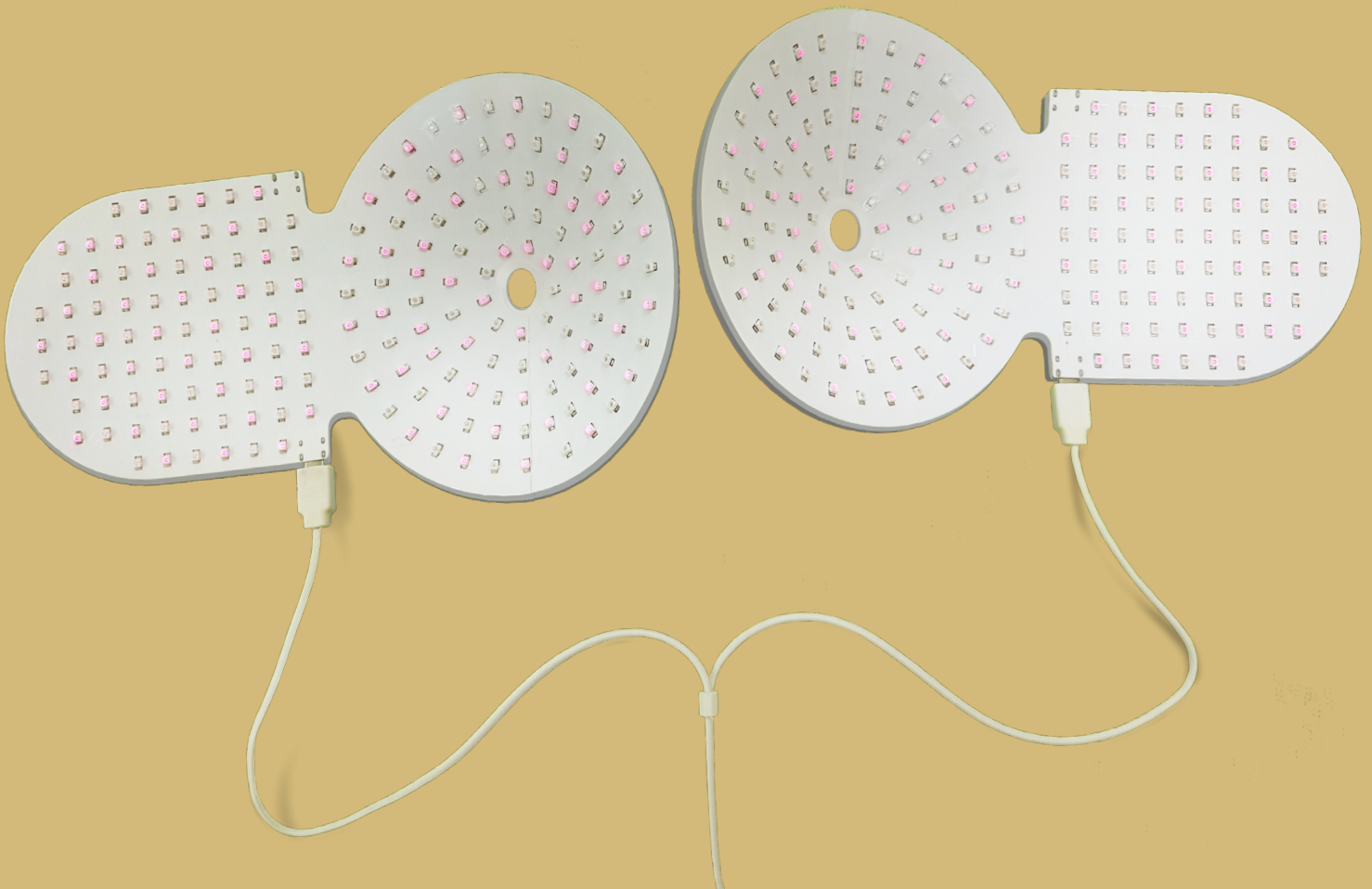


# HB-P01

# Photobiomodulation (PBM) Technology Homecare Device



# Near-Infrared High-technology for your Health Made for women



# Portable Photobiomodulation (PBM) Technology

Photobiomodulation (PBM) refers to a term in which particular wavelength of light penetrates to the mitochondria in the cells to activate ATP, NO, and ROS production. PBM has been acknowledged as a primary keyword as the future clinical method in the medical subject headings (MeSH) of the research papers published by the US National Institute of Health (NIH).

## Product Specifications

**Device:** Breast PBM Irradiator

**Irradiation Power:** Customizable 7 levels

**Power:** Input 110V~230V / 50~60Hz

Output 12V 5A max 34-35W

**Applicable region:** All parts of the body

**Time:** Selectable, 30-min or 60-min

**Weight:** Total 270g

**Wavelength:** 840-860nm; 930-950nm

**Beam Angle:** 110-120 degrees

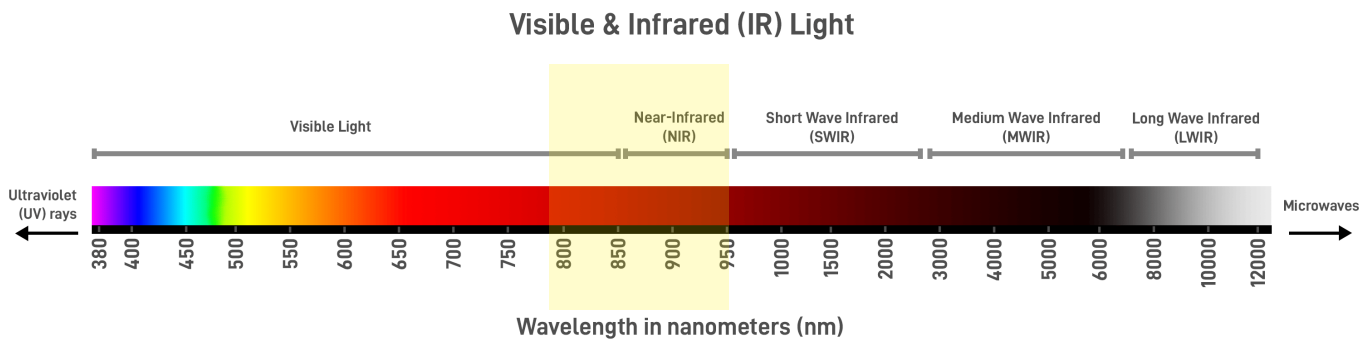
**Amount of Chips:** Total 360 chips. Maximum current 90mA per chip

**Customizable modes:** 8-level Nogier Frequencies

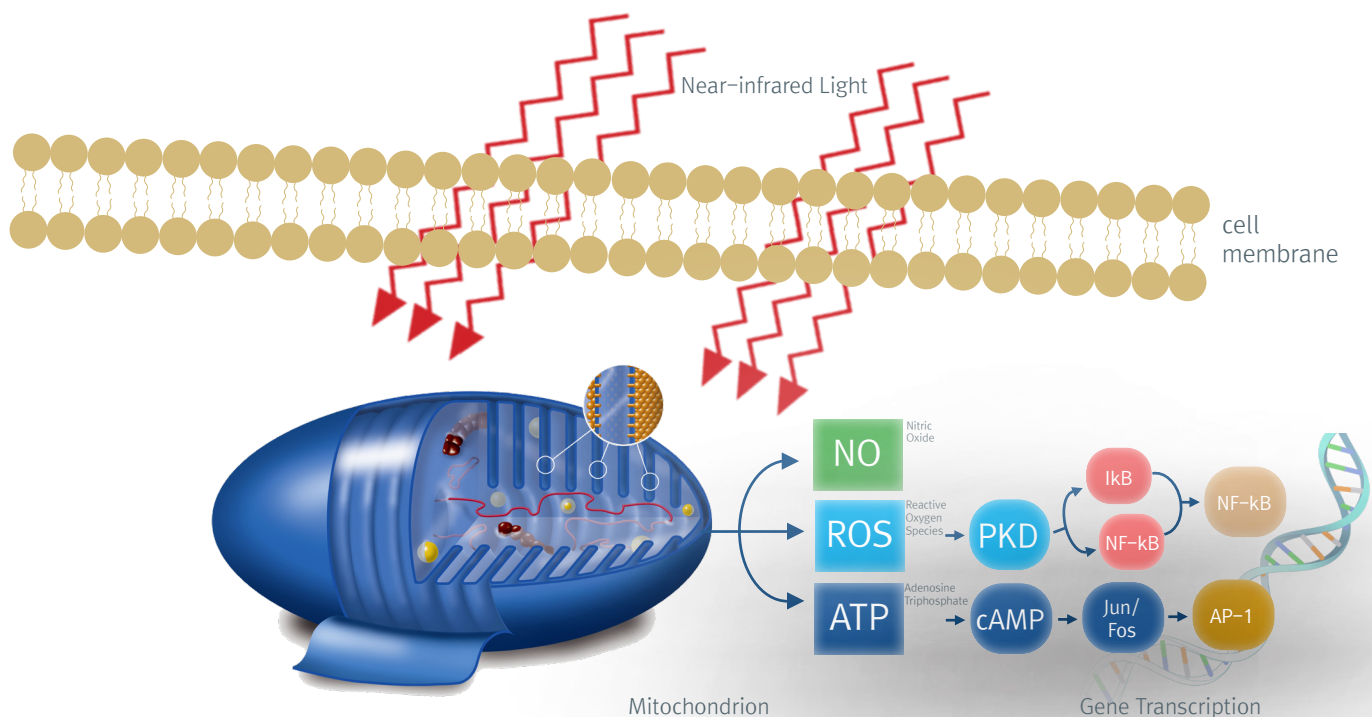
# What is PBM?

PBM technology is characterized by the absorption of light absorbers called cytochrome oxidase (CCO enzyme) in cells when tissues are irradiated with specific wavelengths of force, which produce much more ATP.

At the same time, nitrogen oxide (NO) is produced from endothelial cells of blood vessels, which improve blood circulation by increasing the elasticity of blood vessels, and as a result, nutrients and oxygen can be transferred smoothly to cells.

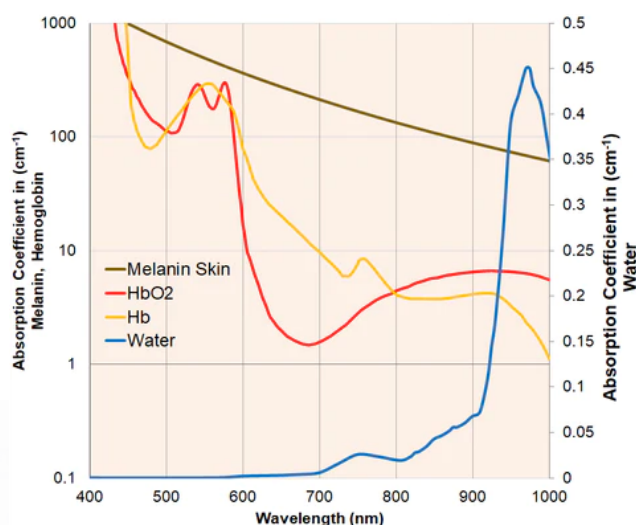


## PBM THERAPY MECHANISM



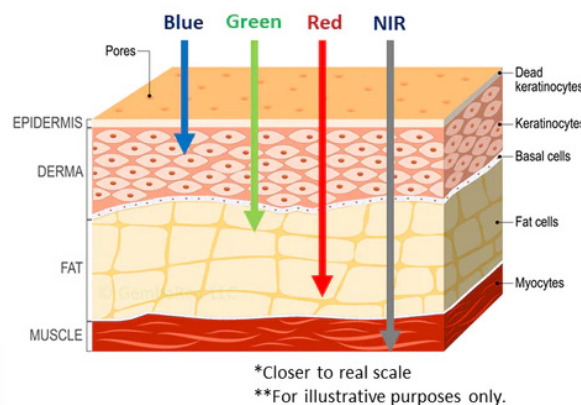
# Powerful Healing of Low-level Laser Therapy (LLLT)

Low-level laser therapy typically includes light wavelengths of visible light, generally red light, to near-infrared (NIR) light spectrum. Typically, most studies agree that NIR penetrates much deeper into the skin more than red wavelengths. A review article by Dr. Hamblin stated that red wavelengths (600–700nm) penetrated up to 1mm while NR (780–980nm) penetrated more to 2mm with 63% intensity reaching those depths (Zein, Selting & Hamblin, 2018). Most studies agree that around 810nm offers the best penetration as it is the lowest intersection point of absorption factors (water, hemoglobin and melanin). Our breast PBM Irradiator is equipped with LED chips ranging from 840–950nm.



## Optical Window for Skin Absorption Spectrums for Water, Hemoglobin and Melanin

Penetration is mostly wavelength dependent due to the optics of the skin. Optical window is the least absorption by melanin, hemoglobin and water between 600nm to 900nm. (Image retrieved from <https://gembared.com/blogs/musings/how-deep-does-red-and-near-infrared-wavelengths-penetrate-into-the-body-marketing-vs-science>)



## Relative Penetration in the Skin

Attenuation down to 1% occurs for light wavelengths of 250–280 nm at around 40  $\mu\text{m}$  depth; for 300 nm at 100  $\mu\text{m}$ ; for 360 nm at 190  $\mu\text{m}$ ; for 400 nm at 250  $\mu\text{m}$ ; for 700 nm at 400  $\mu\text{m}$ ; for 1.2  $\mu\text{m}$  at 800  $\mu\text{m}$ \* similar diagram from the following study (Ash, Dubec, Donne & Bashford, 2017). (Image retrieved from <https://gembared.com/blogs/musings/how-deep-does-red-and-near-infrared-wavelengths-penetrate-into-the-body-marketing-vs-science>)

## References

- Ash, C., Dubec, M., Donne, K., & Bashford, T. (2017). Effect of wavelength and beam width on penetration in light-tissue interaction using computational methods. *Lasers in medical science*, 32(8), 1909–1918. <https://doi.org/10.1007/s10103-017-2317-4>
- Zein, R., Selting, W., & Hamblin, M. R. (2018) Review of light parameters and photobiomodulation efficacy: Dive into complexity. *Journal of Biomedical Optics*, 23(12), 120901.



# PBM THERAPY BENEFITS

## Enhancement in the blood & lymph circulation

Blood vessels in healthy young people are elastic. However, as you get older, your blood vessels become less elastic. Therefore, improving blood circulation is the elasticity of capillaries. Cytochrome oxidase (cytochrome oxidase.CCO enzyme) produces NO through a specific parameter source. Nitrogen oxide (NO) produced in mitochondria of vascular endothelial cells improves vascular elasticity.



## Blood Circulation

## Lymph Circulation

Faster Injury Recovery

**Pain Relief**

## Hormonal Balance

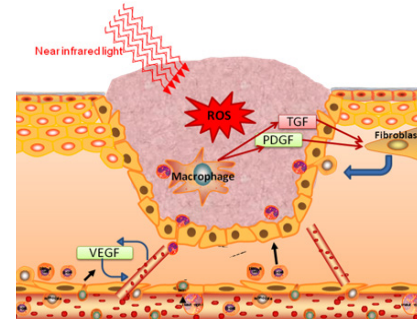
Wound Healing

## How PBM therapy works inside the body:

- ✓ Increase in oxygen consumption
- ✓ Increased activity of the mitochondria
- ✓ Increase in ATP and cAMP
- ✓ Release of Nitric Oxide (NO)
- ✓ Short occurrence of ROS
- ✓ Molecular change to the calcium

## Wound Healing

Wounded cells exposed to light induce reactive oxygen species (ROS) in which leads to the growth factor expression, including platelet derived growth factor (PDGF) and transforming growth factor as shown in the image. This process fosters increased collagen synthesis, increased blood vessel development, and less inflammation. Such reactions enhances the wound healing.<sup>1</sup>



<sup>1</sup>Reference: Huang, Y. Y., Mroz, P & Hamblin, M. R. (2009). Basic Photomedicine. <http://www.photobiology.info/Photomed.html>.

Recover from hair loss **Immunity Care**  
**COVID-19** Prevention & Treatment  
Teeth & gum care **Wellness care**

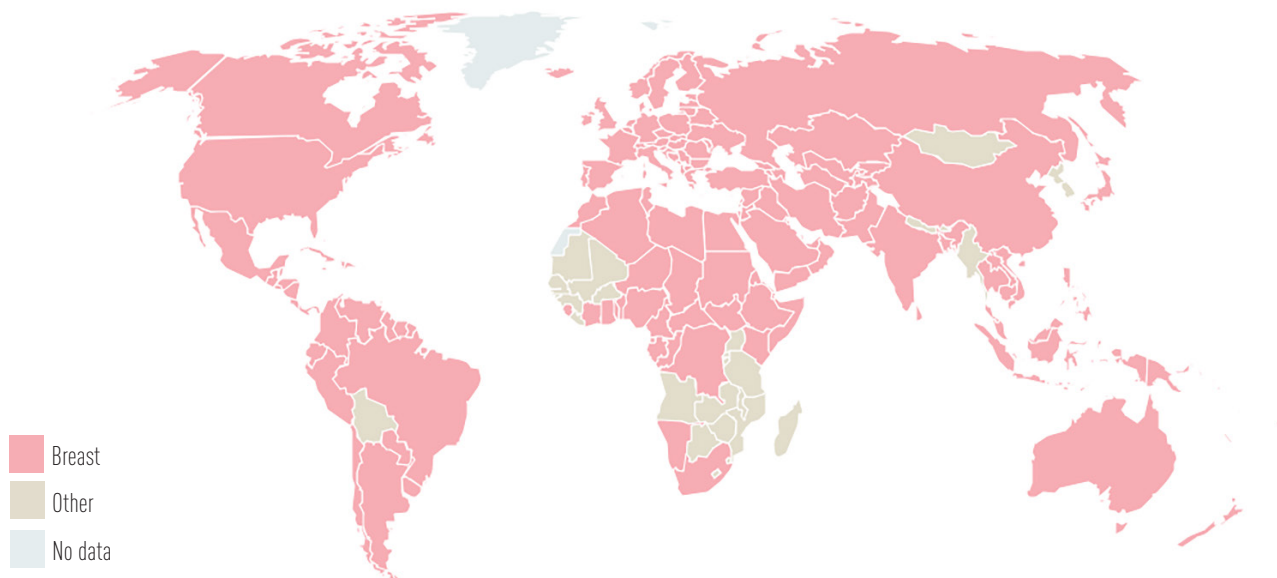
- ✓ Generation of the growth factors
- ✓ Extracellular matrix deposition
- ✓ Increase in the cellular activity
- ✓ Increase in the cell multiplication
- ✓ Suppression of anti-apoptosis
- ✓ Active signaling of the mitochondria

# Prevent **breast cancer** with the world's only **Breast PBM Irradiator**



## Most Frequently Diagnosed Cancer in Women: Breast cancer

Countries where breast cancer is the most frequently diagnosed cancer in women, 2018



## Reference

Ferlay, J., Ervik, M., et al. (2018). Global Cancer Observatory: Cancer Today. Lyon, France: IARC





Women go through so many stages in life. With a sincere gratitude to our mothers, Huelight's Breast PBM Irradiators have been specially made for moms in mind. Especially, after the birth of a child, breastfeeding may be a pleasant yet painful experience when the breasts become tense and swollen. Just daily 30-min breast PBM care can promote breast health and better lymph circulation.







## Applicable Conditions

---



Pre-/postpregnancy: mastitis, breastmilk flow

Premenstrual syndrome (PMS): breast pain, breast engorgement

Breast cancer prevention & pre-/postsurgery

Breast lump

Lymph node pain

Breast & lymph node inflammation

Perimenopause

**Convient + Efficient  
Solution to lymph  
circulation and  
healthy, beautiful  
breasts.**



# Hue Light

IMMUNITY CARE SYSTEMS

## Hue Light Co., Ltd.

info@huelight.kr

+82-2-898-2116

SK Technopark E-1311, 60, Haan-ro,  
Gwangmyeong-si, Gyeonggi-do, Republic of Korea

www.huelight.kr