



## **The HealthE™ Advantage**

### *Optimized spectrum for human health and productivity*

What is the secret to Lighting Science's HealthE™ lighting solutions? In short, our patent-protected solutions are the only lighting products in the world that are both bio-centric (i.e., focused on human health and productivity) and human-centric (i.e., focused on providing light that is visually pleasing and easy to work or relax under).

Specifically, our proprietary technology allows us to engineer products that emit a spectrum of light that simultaneously (i) optimizes the biological effect of light (maximizing or minimizing blue light, or more specifically melanopic lux) for a given lumen output level, while still achieving (ii) high color rendering (color rendering index > 70 and even CRI > 90) and high R9 (deep red) values (the most difficult part of the spectrum to achieve good color rendering), and (iii) visually-pleasing white light (color temperatures of ~2700K for pre-sleep and ~6000K for awake & alertness).

How do we do this? Our secret is the deep understanding of both LED technology and spectrum that our R&D engineers, physicists, and scientists have developed over decades working with NASA and top academic institutions. As opposed to color or color temperature (which can be perceived by the human eye), spectrum encapsulates all the wavelengths of light that blend together and result in the color that we see. Spectrum matters because specific wavelengths of light (most notably blue light, defined as having wavelengths between 460-480nm) have distinct biological effects. For example, blue light activates melanopsin cells – the third photoreceptor in the human eye (rods and cones are the other two). The melanopsin systems modulates the human circadian rhythm and cognition, which in turn control a whole host of biological functions including hormone secretion, digestive, bladder and immune system function, alertness, focus, and sleepiness.

Our GoodDay™ solutions have the highest biological impact (i.e., melanopic lux) values in the world for a lighting solution that provides white visible light. As a result of our patented technology and know-how, our solutions deliver more lumens in the 460-485nm wavelength range than competitors – maximizing biological impact and allowing you to reach peak performance and promote healthy circadian functioning.



Our GoodNight™ solutions have the lowest melanopic lux for high-quality white visible light, thereby not stimulating melanopsin cells at night. As a result of our patented technology and know-how, our solutions deliver fewer lumens in the 460-485nm wavelength range than competitors – minimizing biological impact and allowing you to complete night time activities without any negative impact to your sleep or circadian rhythm.

Our new Genesis platform, and its DynaSpectrum™ light engine, is the first all-in-one HealthE™ lighting solution in the world. DynaSpectrum™ allows us to deliver a biologically-optimized spectrum of light for every time of the day – on demand. Lighting Science’s spectral algorithms (for color mixing) enable us to continuously product “natural” white light with biologically-correct spectrum as desired by users to improve their productivity, health, and wellness.

A serious word of warning: beware of the imitators (often large well known brands) who claim to achieve health & wellness, sleep, and productivity benefits using old fashioned “color temperature” shifting methods (versus Lighting Science’s optimized spectrum control technologies). Color temperature shifting has been repeatedly scientifically proven to be ineffective – still providing too much blue wavelength light for pre-sleep environments and too little blue wavelength light for situations requiring awake and alert circadian stimulus.