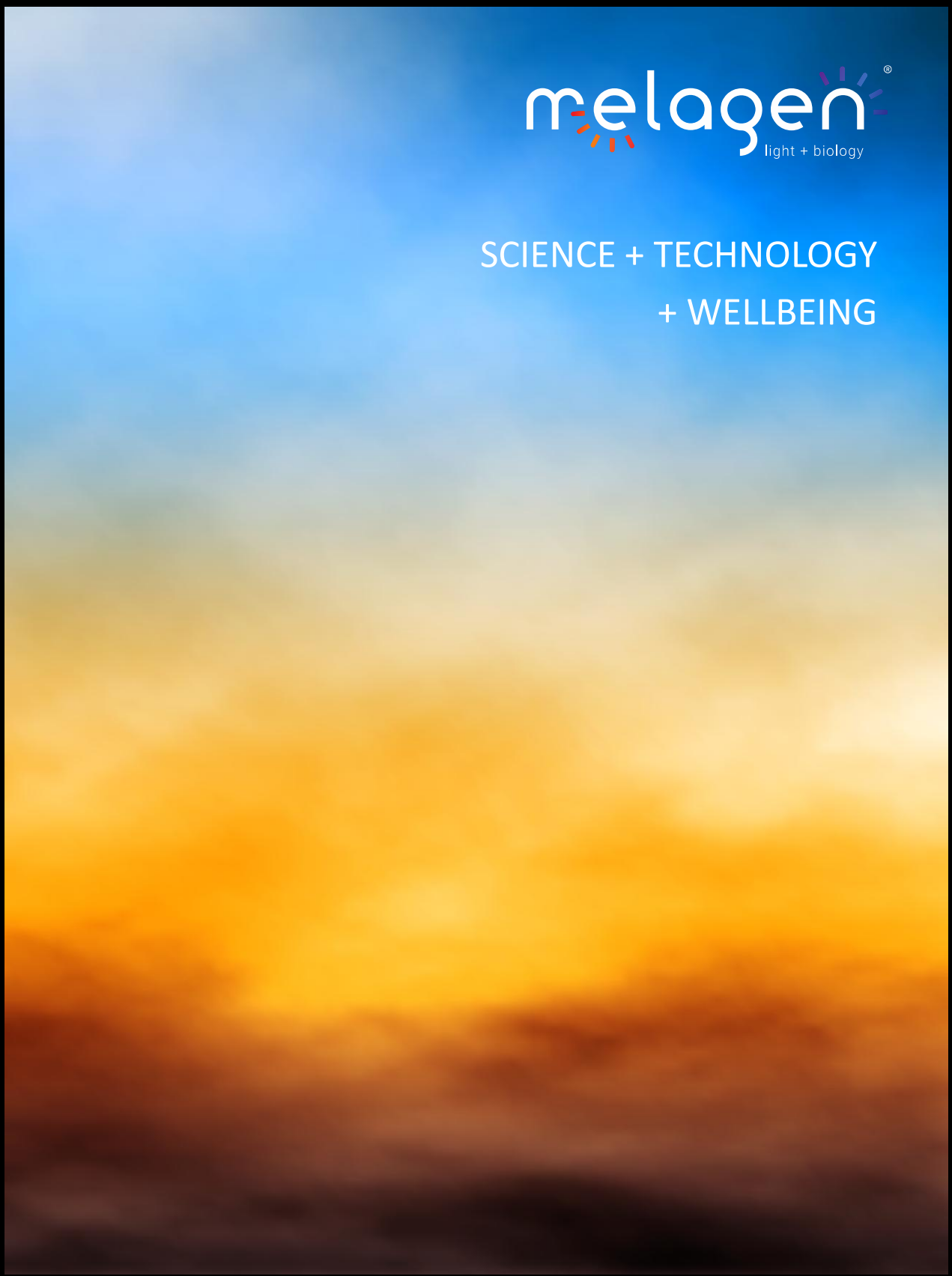
melagen®
light + biology

SCIENCE + TECHNOLOGY + WELLBEING



MelaGen Overview -October 2025

Versalux

WELCOME TO THE MELAGEN OVERVIEW

This document will give you a glimpse into the science that ultimately led to the creation of MelaGen in 2019/20. It also highlights many peer reviewed papers and case studies which since 2020, have validated the impact that non-visual light has on human wellbeing.

If anything, the emerging science is showing us how little our understanding is of the importance of our relationship to light.

A quote from the “Lady with the Lamp”

> “The craving for 'the return of the day', which the sick so constantly evince, is generally nothing but the desire for light.”

Florence Nightingale

TABLE OF CONTENTS

WHO ARE WE?

VERSALUX LIGHTING SYSTEMS

We're in the business of providing state-of-the-art lighting systems and believe in continually evolving our product offering for the betterment of humanity.

After all – **lighting is for people.**

WHAT SETS US APART?

Our unwavering dedication to research, innovation and excellence in lighting design and engineering has helped us establish a solid reputation and relationships with prominent international designers and members of Academia.

We have been in lighting for over **45 years – we're proud of our tenure and believe it shows our dedication to our profession.**

Versalux Lighting Systems head office in Mitcham, Australia. Warehouse & production facility consisting of 3000m² and office & administration 500mm²

INTRODUCTION TO MELAGEN®

MelaGen® is a world-leading lighting technology incorporated into a range of products that uses actual science. It promotes wellbeing by increasing alertness, improving mood and promoting sleep.

It is the result of over 3 years of research in cooperation with:

1. CRC for Alertness, Safety and Productivity (Alertness CRC) an Australian Federal Government initiative
2. Monash University
3. Versalux Lighting Systems

THE PROCESS

Alertness CRC with Monash University research showed the far-reaching impact of non-visual light on our physical and mental wellbeing. Specifically, blue light.

The findings showed that this effect can change our circadian rhythms, influence cognition, promote or deter both illness and mental health and ultimately influence our lifespan.

The scientists then modelled the impact of the amount of blue light in a light source to the response of our 24-hour clock. This modelling provided a much clearer indication of what type of light we require and at the right time.

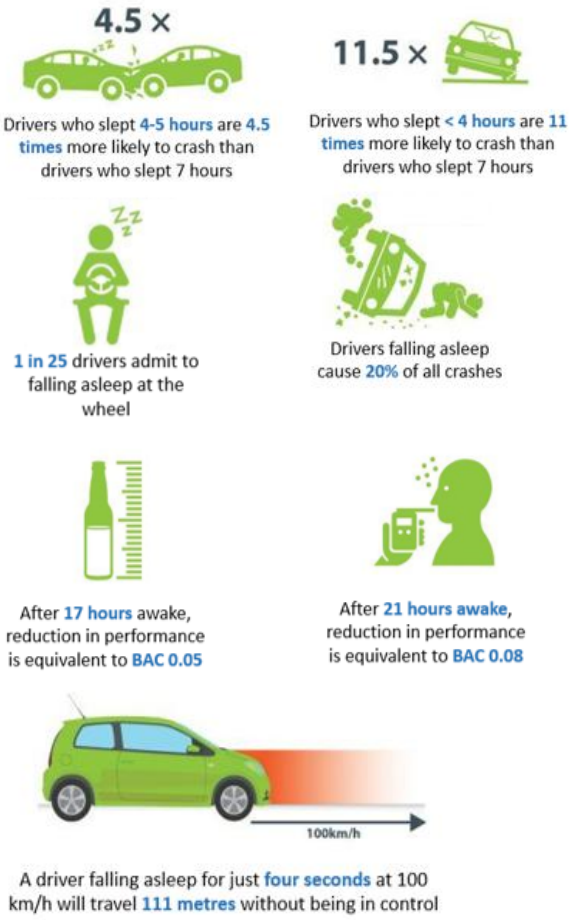
THE RESULT

Versalux Lighting Systems then developed MelaGen®, an easily programable system, in line with the specific blue-enriched and blue-depleted wavelengths.

This dynamic lighting system can be applied to any built environment, helping to regulate the benefits of both visual and non-visual light.

THE SCIENTIFIC RESEARCH FATIGUE

FATIGUE CAUSES MORE CAR ACCIDENTS:



A SLEEP DEPRIVED BRAIN HAS MULTIPLE ALERTNESS AND ATTENTION ISSUES:

- Reduces concentration
- Delays response time
- Increases lapses in attention
- Distractibility resulting in task switching

COGNITIVE FUNCTION AND EMOTIONAL REGULATION ISSUES ARISE:

- Memory problems and poor communication
- Poor decision making and judgement
- Impulsivity and lack of inhibitory control
- Frustration and irritability
- Poor social interactions
- Parts of the brain can unconsciously have a microsleep

FATIGUE IN THE WORKPLACE CAN SPARK CATASTROPHE:

- Mortality rates in some hospitals, 48 hours after admission, can **increase significantly** on weekends – and also between 6pm and 8am!
- Significant catastrophic world events that are known to have Fatigue as contributing factors as shown below:


Chernobyl Disaster


Exxon Valdez


Space Challenger

THE SCIENTIFIC RESEARCH.
SLEEP & CIRCADIAN RHYTHMS

THE CIRCADIAN RHYTHM

All life on earth, has adapted to the 24-hour day night cycle, in synchronization with the earth's rotation around the sun.

To anticipate events timed with the earth's rotation, all organisms contain an internal timekeeper. We call this cycling pattern, circadian rhythms.

To align specific biological functions to night and day, the circadian rhythm continually uses light cues to synchronize the clock to the external light and dark cycle.

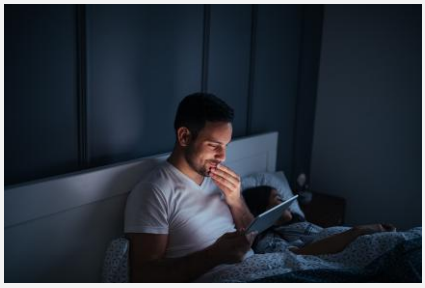
This relationship between the 24-hour day/night cycle and the trillions of clocks in the human body is intrinsic to our survival. Our 24-hour Circadian Rhythm is the clock most affected by this relationship.

Artificial light, in the 20th Century, has created a world of "perpetual light". Humans are now able to influence how long we stay awake for, which in turn manipulates this circadian rhythm.

SCIENTIFIC FINDING: BLUE ENRICHED LIGHT ENHANCES ALERTNESS



SCIENTIFIC FINDING: BLUE ENRICHED LIGHT SUPPRESSES MELATONIN AND DELAYS SLEEP

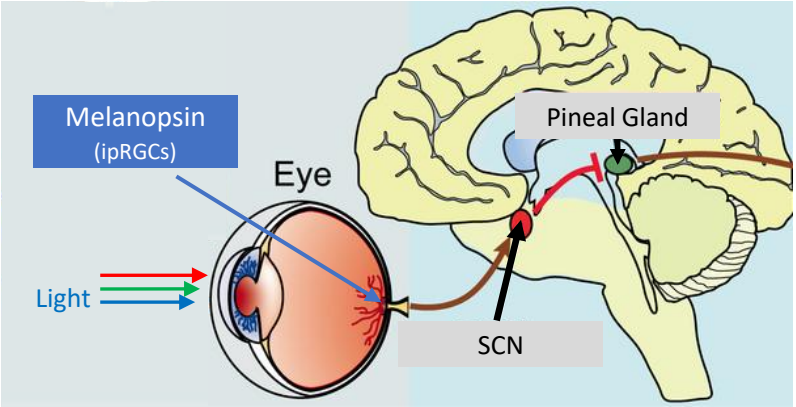

THE NEGATIVE IMPACT: SLEEP AFFECTS ALL FACETS OF OUR WELLBEING

MELATONIN BENEFITS BEYOND A GOOD NIGHT'S SLEEP:

- Anti-aging
- Immune boosting
- Migraine relief
- Skin health
- Anti-Cancer
- Anti-Oxidant benefits
- Anti-Depression
- Menopause symptoms relief
- Insomnia cure

THE SCIENTIFIC RESEARCH
SLEEP & CIRCADIAN RHYTHMS

WHY ARE CIRCADIAN RHYTHMS INFLUENCED BY LIGHT?



MELANOPSIN
A photopigment which is sensitive to blue light (480-490 nm) and is found in the ipRGCs (intrinsically photosensitive retinal ganglion cells) of the human eye.

Melanopsin communicates directly with the SCN, and not the visual cortex

SUPRACHIASMATIC NUCLEUS (SCN)
Circadian controller also called the "master clock"

It regulates the release of melatonin by the pineal gland.

- Sunrise / Daylight - signals wakefulness and the SCN suppresses melatonin release
- Sunset / Night-time - signals sleep time and the SCN signals the pineal gland to release melatonin

PINEAL GLAND
Produces and secretes the hormone Melatonin

MELATONIN
Regulates the sleep-wake cycle and orients the body's circadian rhythm

The definitions shown here are simplified for the purpose of this document.

WHY ARTIFICIAL LIGHT AND TECHNOLOGY AFFECT CIRCADIAN RHYTHMS

Humans, like all life on earth, have adapted to the 24-hour day-night cycle …over 100,000 lux during the day and .05-0.1 lux at night.

In less than a century, we've completely reversed the natural balance of bright days and dark nights. The transition of the workforce from being rural and outdoors, to being urban and mostly indoors has dramatically reduced our exposure to natural sunlight.

Conversely, artificial lighting floods our nights, keeping us awake, disrupting our sleep, and altering our biology in ways we are only beginning to understand.

LEDs have much higher levels of blue light, than incandescent light sources. See below. Laptops, tablets and phones can have much higher levels of blue light.

In less than a century, we've completely reversed the natural balance of bright days and dark nights

IMPACT OF INADEQUATE SLEEP ON THE BRAIN & EMOTIONS

BLOOD FLOW CHANGES IN THE BRAIN DUE TO FATIGUE

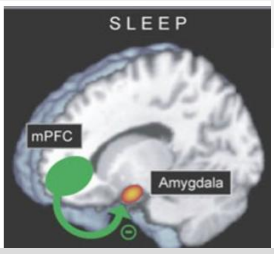
During sleep restriction there is reduced functional connectivity between the emotion regulation centre and the emotion processing centre. This increases emotional reactivity to negative stimuli.

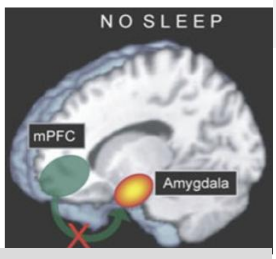
Generally, the frontal lobes provide inhibition to the amygdala. However, when the amygdala is activated, **"amygdala hijack" can result in emotional overload and impaired rationality, leading to rapid, unthinking reactions**.

Amygdala Hijack
Watch video here

Amygdala
The amygdala serves as a central hub for:

- Emotion
- Memory
- Decision-making
- Social cognition
- Plays a key role in processing fear, aggression, and anxiety
- Triggers the flight, fight or freeze response





The image to the right, shows amygdala activation after no sleep for 24-hours. It can increase by up to 60%

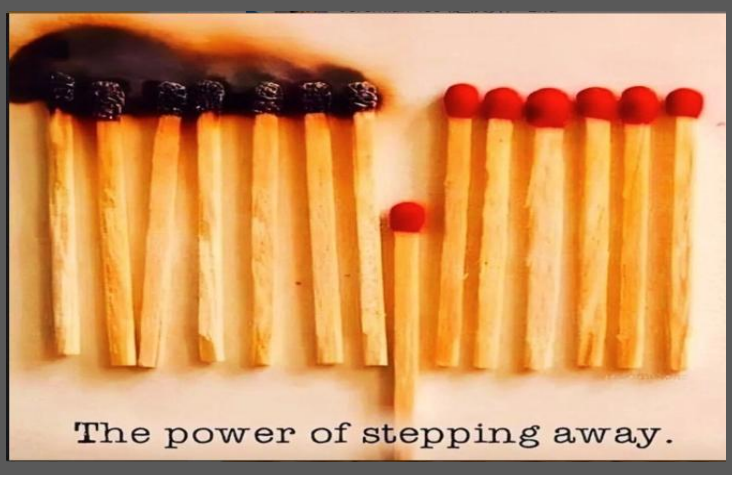
IMPACT OF INADEQUATE SLEEP:

- Increases fear response
- Lowers inhibition
- Enhances impulsivity to negative stimuli
- Alters emotional regulation:
  - Irritability
  - Emotional reactivity
  - Poor social interactions

Sleep deprivation lowers inhibition and enhances impulsivity to negative stimuli

Source: https://www.sciencedirect.com/science/article/abs/pii/S016643281000656X

"Inadequate sleep increases fear response"



EMERGING SCIENCE - Mental Health / Mood

frontiers

Frontiers in Neurology

ORIGINAL RESEARCH article

Front. Neurol., 26 March 2021

Sec. Sleep Disorders

Volume 12 - 2021 | https://doi.org/10.3389/fneur.2021.625443

Exposure to Blue Wavelength Light Is Associated With Increases in Bidirectional Amygdala-DLPFC Connectivity at Rest

Anna Alkozei [1] Natalie S. Dailey [1†] Sahil Bajaj [2†] John R. Vanuk [1]

Adam C. Raikes [1] William D. S. Killgore [1*]

DLPFC (Dorsolateral PFC)

Region in the prefrontal cortex of the brain that plays a vital role in:

- Executive functions
- Working memory
- Cognitive flexibility
- Planning, and
- Abstract reasoning

Amygdala

It serves as a central hub for:

- Emotion
- Memory
- Decision-making
- Social cognition
- Plays a key role in processing fear, aggression, and anxiety
- It triggers the flight, fight or freeze response

"Blue light exposure may positively influence mood by modulating greater information flow between the amygdala and the DLPFC,

…**which may result in greater engagement of cognitive control** strategies that are needed to perceive and regulate arousal and mood."

"there is evidence to suggest that the amygdala receives direct projections from ipRGCs (*see page 8*) and that swift modulations of

…amygdala activation may contribute to the antidepressant effect of blue wavelength light"

Source: https://www.frontiersin.org/journals/neurology/articles/10.3389/fneur.2021.625443/full

EMERGING SCIENCE - Mental Health / Mood

OXFORD ACADEMIC Journals

SLEEP®

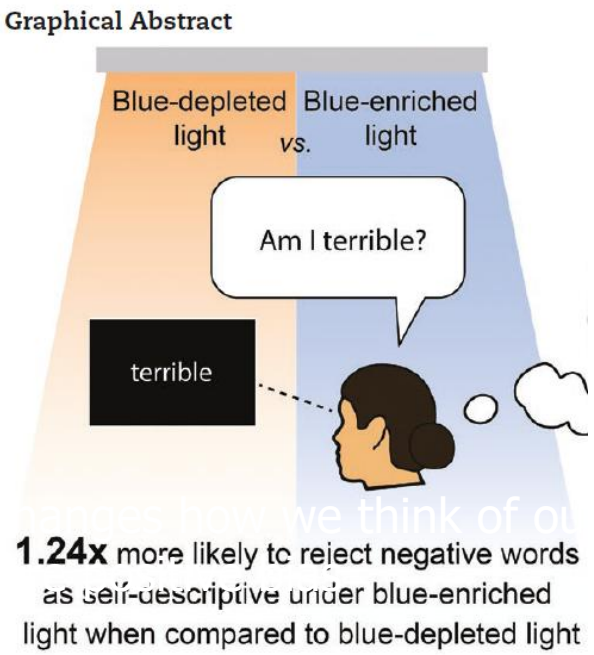
Malisa T Burge , Ronel A Lumapas , Alicia C Lander , Brianna G Thomas , Andrew J K Phillips , Sean W Cain ✉

Sleep, Volume 48, Issue 7, July 2025, zsaf034, https://doi.org/10.1093/sleep/zsaf034

BLUE LIGHT INFLUENCES NEGATIVE THOUGHTS OF SELF

MelaGen Blue changes how we think of ourselves resulting in a more positive bias

With MelaGen Blue the subjects were 1.24x more likely to reject negative words



Source: https://academic.oup.com/sleep/advance-article/doi/10.1093/sleep/zsaf034/8039206

This research is based on MelaGen LEDs

EMERGING SCIENCE - Mental Health

LIGHT EXPOSURE & MENTAL HEALTH

medRxiv
THE PREPRINT SERVER FOR HEALTH SCIENCES

SCIENTIFIC FINDING: Low daytime light and bright night-time light are associated with psychiatric disorders: an objective light study in >85,000 UK Biobank participants

View ORCID ProfileAngus C. Burns, View ORCID ProfileDaniel P. Windred, View ORCID ProfileMartin K. Rutter, View ORCID ProfilePatrick Olivier, View ORCID ProfileCéline Vetter, View ORCID ProfileRicha Saxena, View ORCID ProfileJacqueline M. Lane, View ORCID ProfileAndrew J. K. Phillips, View ORCID ProfileSean W. Cain **doi:** https://doi.org/10.1101/2022.10.16.22280934

"Greater **night-time light exposure** was associated with increased risk for major depressive disorder, generalized anxiety disorder, PTSD, psychosis, bipolar disorder, and self-harm behaviour.

Independent of night-time light exposure, greater **daytime light exposure** was associated with reduced risk for major depressive disorder, PTSD, psychosis, and self-harm behaviour."

"Avoiding light at night and seeking light during the day may be a **non-pharmacological means of broadly improving mental health**"

This graph is adapted from this source: https://www.nature.com/articles/s44220-023-00135-8

EMERGING SCIENCE - SSRIs

IMPACT OF SSRIs (antidepressants) ON LIGHT SENSITIVITY AND SLEEP

The SSRI citalopram increases the sensitivity of the human circadian system to light in an acute dose

E. M. McGlashan [1] · L. S. Nandam [2] · P. Vidafar [1] · D. R. Mansfield [1,3] · S. M. W. Rajaratnam [1] · S. W. Cain [1]

Received: 11 June 2018 / Accepted: 31 August 2018 / Published online: 15 September 2018

Release of Melatonin (Melatonin Onset)

- Healthy sleeper, under dim light: 2-hours 40 minutes before bedtime
- Healthy sleeper with a placebo and exposed to 100 lx room light (no SSRIs): 1-hour 9 minutes before bedtime
- Healthy sleeper with SSRIs and exposed to 100 lx room light**: 9-minutes after bedtime**

1 in 7 Australians take antidepressants

more than 3.5M in 2021–22

...one of the highest prescribing rates in the world

Findings

Exposure to 100 lx (at night) with a placebo, **delayed the release of melatonin by 1-hour 31 minutes**

Exposure to 100 lx (at night) with the SSRI, **delayed the release of melatonin by 2-hour 49 minutes**

Source: https://link.springer.com/article/10.1007/s00213-018-5019-0

EMERGING RESEARCH – SSRIs

ROYAL COMMISSION INTO AGED CARE QUALITY & SAFETY: CARE, DIGNITY & RESPECT (2021)

Assault

"In 2019–20, residential aged care services reported 5718 allegations of assault under the mandatory reporting requirements

KPMG conducted a study for the Australian Department of Health and estimated that a further 27,000 to 39,000 assaults occurred that were exempt from mandatory reporting."

Restraints

"For example, the approved provider of the Earle Haven aged care facility on the Gold Coast disclosed, when asked in June 2019:

- **71%** of its residents received psychotropic medication
- **50%** were physically restrained"

- Psychotropic medication: any drug capable of affecting the mind, emotions, and behaviour (including SSRIs)-

Source: Royal Commission into Aged Care Quality and Safety Final Report: Care, Dignity and Respect Volume 2 The current system Pages 94, 97

ChoosingTherapy.com

Mental Health Issues | Relationships | Quizzes | Therapy | Medication | Reviews | Therapy Worksheets

Side Effects of Selective Serotonin Reuptake Inhibitors (SSRIs)

- Insomnia
- Dizziness
- Suicidal thoughts or actions
- Bruising or unusual bleeding
- Symptoms of mania or hypomania
- Seizures or convulsions
- Allergic reactions
- Muscle rigidity, fever, tremors, and/or seizures
- Nausea, Diarrhea, Upset stomach
- Loss of appetite
- Increased sweating
- Anxiety
- Erectile and ejaculation difficulties
- Difficulty achieving orgasm
- Reduced sex drive
- Fatigue or drowsiness

Source: https://www.choosingtherapy.com/ssri-side-effects/

EMERGING SCIENCE – Aged Care

REDUCED FALLS IN AGED CARE RESIDENTS

The research was based on the premise that…

"…blue enriched light during the daytime …improves alertness, cognition and subsequent night's sleep"

SUMMARY:

- 2 x Aged Care Facilities tested
- 758 residents (30% being dementia patients)
- Testing period: 2 years

METHOD:

- Blue enriched light (6000K) during the day
- Blue reduced light (3000K) during the night
- No change to control

FINDINGS:

FALLS WERE REDUCED BY 43%

(most of the reduction in falls was at night)

*In Australia, falls are the 12th highest cause of death in women, and 15th highest in men

Source: https://www.jamda.com/article/S1525-8610(22)00471-6/fulltext

*This study utilized LEDs with a colour temperature over 6000K to test the efficacy of blue enriched light. MelaGen Blue was not available at the time

EMERGING SCIENCE – Shift Workers

OXFORD ACADEMIC | Journals | Books

SLEEP®

Circadian-informed lighting improves vigilance, sleep, and subjective sleepiness during simulated night-shift work

Hannah Scott ✉ , Alisha Guyett , Jack Manners , Nicole Stuart , Eva Kemps , Barbara Toson , Nicole Lovato , Andrew Vakulin , Leon Lack , Siobhan Banks , Jillian Dorrian , Robert Adams , Danny J Eckert , Peter Catcheside

Sleep, Volume 47, Issue 11, November 2024, zsae173,
https://doi.org/10.1093/sleep/zsae173
Published: 30 July 2024 **Article history** ▾

Findings

"These findings highlight the potential for lighting interventions to help:

- Enhance worker performance,
- Bolster overall safety,
- Mitigate health risks,

...particularly in workplace settings with chronic dim lighting such as those found across healthcare, manufacturing, and defense industries."

"The circadian-informed lighting interventions significantly accelerated participants' adjustment to night work, which could have important implications for improving the health and performance of those who regularly work night shifts."

"Participants slept 52 minutes longer by day 7, with circadian-informed lighting versus control"

Source: https://academic.oup.com/sleep/article/47/11/zsae173/7724228

EMERGING SCIENCE – Shift Workers

BLUE LIGHT IMPROVES ALERTNESS AND SLEEP WITH SHIFT WORKERS

Hazeldenes Chicken Farm

Preliminary Lighting Intervention -Overview

- The area for the intervention was the spin chiller room within the primary processing building at Hazeldene's Chicken Farm
- Hazeldene's shift workers experience high levels of stress and require frequent breaks
- Due to COVID-19, sick days, leave days and shift swaps, statistical analysis is limited, as the number of participants was 12

Preliminary Findings

- "all employees experienced a reduction in sleepiness"
- "80% of the employees had an increase in sleep duration"

"the workers slept an average of 30 minutes longer each night"

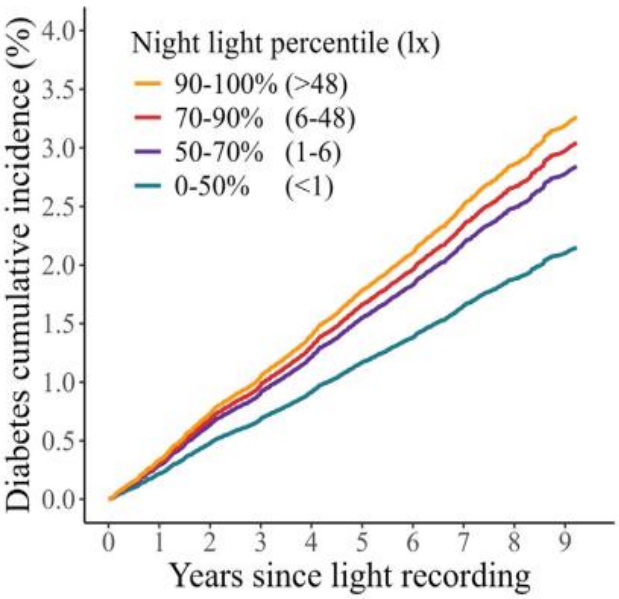
This research is based on MelaGen LEDs

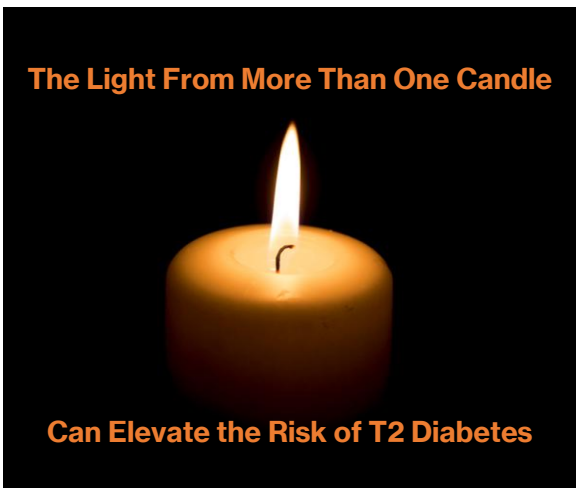
EMERGING SCIENCE –Type 2 Diabetes

LIGHT EXPOSURE & TYPE 2 DIABETES

THE LANCET *Regional Health* Europe

SCIENTIFIC FINDING: Personal light exposure patterns and incidence of type 2 diabetes: analysis of 13 million hours of light sensor data and 670,000 person-years of prospective observation





Source: https://www.thelancet.com/journals/lanepe/article/PIIS2666-7762(24)00110-8/fulltext

This 24-hour day-night cycle is vital for a variety of physical functions including blood sugar regulation

"Unnatural" light or darkness can interfere with the finely tuned release of hormones, leading to metabolic dysfunction

Participants with higher nighttime light exposure had up to a **67 per cent greater chance of developing T2 diabetes**

Source: https://www.thelancet.com/journals/lanepe/article/PIIS2666-7762(24)00110-8/fulltext

EMERGING SCIENCE – Education

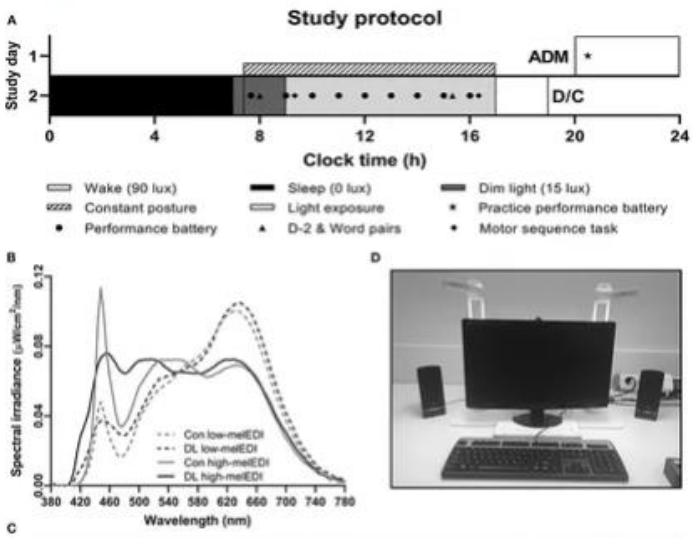
DAYTIME EXPOSURE TO BLUE LIGHT IMPROVES COGNITIVE PERFORMANCE IN COLLEGE-AGED ADULTS

Leilah K. Grant[1,2] Brianne A. Kent[1,2] Matthew D. Mayer[1] Robert Stickgold[3,4]
Steven W. Lockley[1,2] Shadab A. Rahman[1,2*]

SUMMARY:

- 39 College students were tested with varying Melanopic "blue enriched light exposure"
- Duration: 7 days and nights
- Limited to a maximum of only 7 hours sleep per night

Figure 1



FINDINGS:

"Exposure to short-wavelength (blue) enriched …light during the daytime is associated with:

- Significantly less sleepiness
- Better working memory, processing speed, and procedural learning
- Performance speed on a PC learning task was **3.2 times faster"**

PERFORMANCE, MEMORY AND ALERTNESS WERE INCREASED

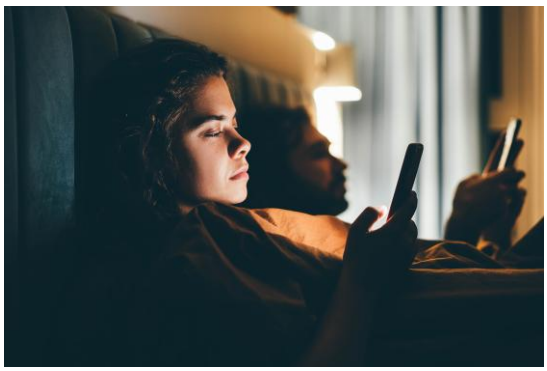
Source: https://www.frontiersin.org/articles/10.3389/fneur.2021.624217/full#main-content

*This study utilized LEDs with a colour temperature over 6000K to test the efficacy of blue enriched light. MelaGen Blue was not available at the time

THE SCIENTIFIC RESEARCH
ONGOING RESEARCH

AREAS CURRENTLY BEING RESEARCHED (AS AT SEPTEMBER 2023)

- Exposure to blue light can suppress melatonin in some people for up to 2 hours.
- SSRIs (anti-depressants) can increase sensitivity to light, causing a semi-permanent jetlagged state.
- Fear response changes with inadequate sleep.
- Alertness and cognition changes with MelaGen® Blue light.
- HRV increases with MelaGen® ReFresh (2200K) – blue depleted.


THE CONCLUSION

MELANOPIC LUX IS THE KEY

- ✓ Melanopic Lux was strongly associated with melatonin suppression.
- ✓ Melanopic Lux (not colour temperature) was the only significant predictor in the model.
- ✓ **High Melanopic Lux delays slow wave and REM sleep.**

What is Melanopic Lux

Melanopic Lux is a term used to describe the measure of light which activates melanopsin (ipRGCs) in the human eye.

This is primarily blue light at 480/490nm
…like a Blue Sky

The M/P Ratio is Melanopic lx/Photopic lx

How to apply the M/P ratio

Obtain the M/P ratio for a specific MelaGen product and apply the following:
Photopic Lux x M/P ratio = Melanopic lux*

Example:
COMO Blue with M/P ratio of 0.9
400 lux (photopic) x 0.9 = 360 Melanopic lux*

**Vertical light on the cornea*

APPLYING THE SCIENCE
THE TECHNOLOGY

By applying the science, Versalux Lighting Systems proudly offers MelaGen® in blue-enriched technology for alertness, and blue-depleted technology for areas requiring sleep:

melagen Blue

Our blue-enriched technology, with excellent colour characteristics of 4200K, CRI90 and R9 90+

melagen Refresh

Our blue-depleted technology boasting amazing CRI90 and colour temperature of 2200K

melagen Regen

A combination of both MelaGen® Blue and MelaGen® ReFresh allowing for the transition between blue-enriched and blue-depleted

OUTSTANDING COLOUR PROPERTIES

MelaGen® Blue 4200K (enriched blue light)

Emulating the natural white light of a blue sky

In a world first, MelaGen® Blue provides high levels of Melatonin suppression with a light source that is **visually indistinguishable** from those typically used in the commercial, health, education and correctional sectors. The energizing white light increases alertness and well-being.

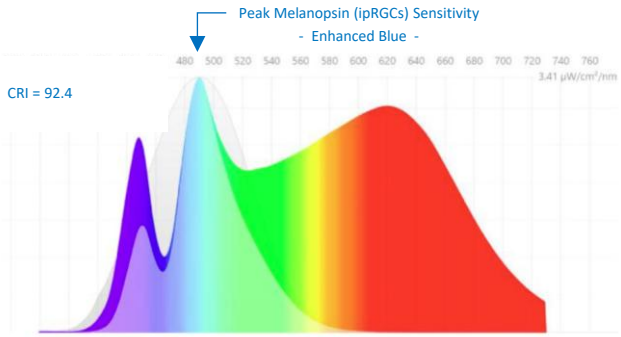
MelaGen® ReFresh 2200K (reduced blue light)

Emulating a golden sunset or candlelight

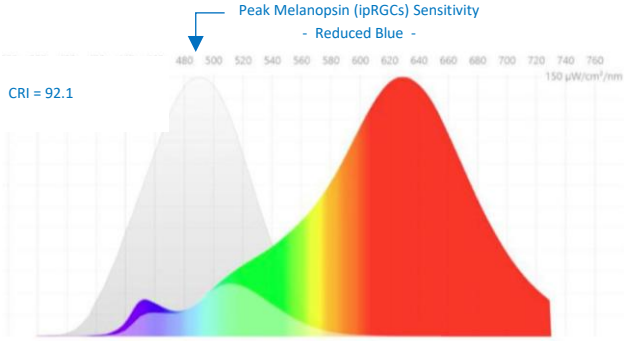
The reduction of blue light (480/490nm) in MelaGen® ReFresh allows for the natural release of Melatonin while still rendering colours, natural and sharp to the human eye. **This is a world first.** The alluring warmth of MelaGen® ReFresh is like a golden sunset or candlelight, engendering a feeling of calmness

MelaGen has almost the same amount of blue as sunlight

(M/P ratio 0.06 difference)



The peak energy for MelaGen® Blue is at the wavelength of 480/490nm. This is the optimal wavelength for Melanopsin stimulation



MelaGen® ReFresh has a significant drop in energy in the blue wavelength, at 480/490nm. Thus, reducing the potential for Melanopsin stimulation

APPLYING THE SCIENCE THE TECHNOLOGY

WHY IS COLOUR RENDERING IMPORTANT?

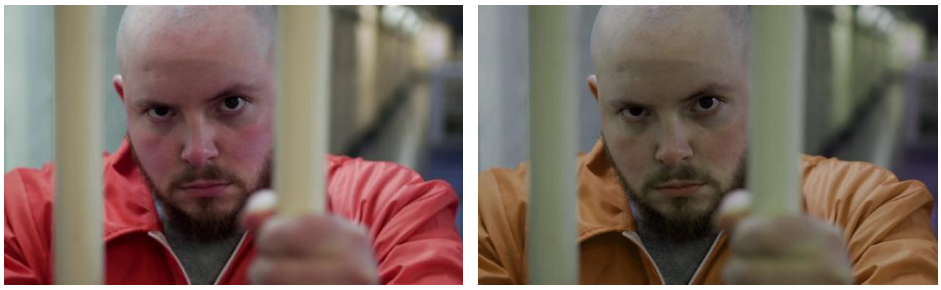
Colour Rendering Index (CRI) is the measure of how accurately a light source renders the colour of an object, when compared to sunlight. CRI100 is the highest rating.

As the CRI increases, more shades of colour become apparent to the human eye. Like the apples in the adjacent images, details, contrast, and colours are enhanced.

A CRI90+ ensures colours are crisp and truer to life. Details look sharper, enabling easier attention to detail. Décor like paint colour, furniture, carpets etc. look their best.

Overall, a higher CRI can improve many facets of human perception. For example, facial expressions, product displays, attention to detail like working in a kitchen, or even reading a book.

The same apple, with the same colour temperature loses shades of colour with the reduction in colour rendering (CRI).



*High colour rendering highlights the red face and white knuckles in the left image. Low colour rendering does not show as clearly, the extent of this prisoner's emotions in the right image

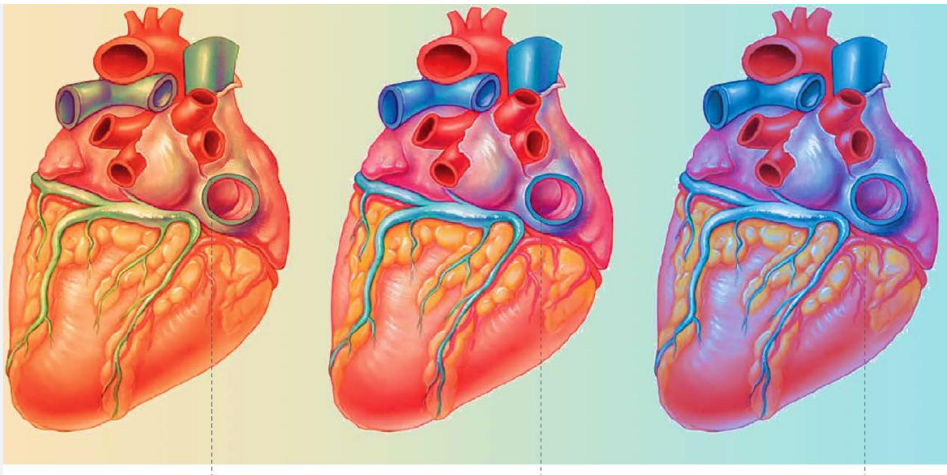
WHY IS COLOUR TEMPERATURE IMPORTANT?

Both CRI and Colour temperature are necessary metrics when considering the spectral performance of a light source and its impact in the built environment.

The colour temperature is the measure of how warm or how cool light appears to the eye.

In Australia, the midday sun can be over 6000K resulting in vivid blues and greens. While the setting sun can be around 2200K adding richness to reds, oranges and yellows.

The image to the right shows the impact that colour temperature has on our perception of colour.



COLOUR TEMPERATURE

2700K
Red and Orange colours are enhanced.
Blues appear darker.
Slight yellow tint on white and green

3500K / 4000K
Neutral colour appearance.
Most colours are enhanced equally.
No yellow or blue tint on white

5000K
Blue is enhanced.
Red is flattened.
Slight blue tint on white.

APPLYING THE SCIENCE

melagen Blue

MELAGEN® BLUE

FOR WORKSPACES REQUIRING ALERTNESS (ESPECIALLY SHIFT WORK)

Blue-enriched | 4200K, CRI90 | Suppresses Melatonin | Indistinguishable from Conventional Commercial Lighting

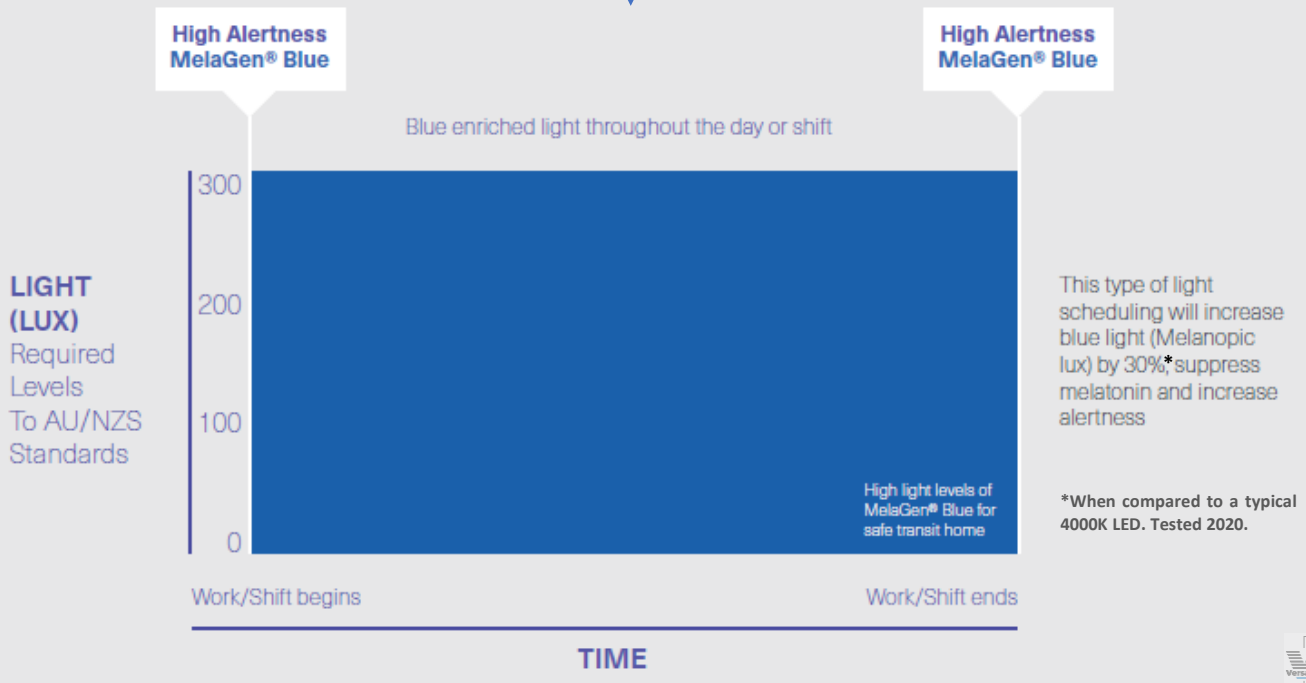
Apply MelaGen® Blue technology in areas where productivity is required, or for occupants to benefit from an increase in alertness

- Offices
- Education
- Defence
- Food Processing Facilities
- Emergency and Critical Services
- Mental Health Facilities
- Transportation and Supply Chain
- All Workplace Areas with Shift Workers

INSTALLING & SCHEDULING

Spaces that require high-productivity or require the suppression of melatonin should be Blue-enriched 100% of the time.

Therefore, simply install a MelaGen® Blue enabled lighting product into the required space. No dimming, programming or scheduling is required.



APPLYING THE SCIENCE

melagen Regen

MELAGEN® REGEN

FOR SPACES ENCOMPASSING THE 24-HOUR SLEEP-WAKE CYCLE

Transitions from Blue Enriched (4200K) to Blue-depleted (2200K) | CRI90+ | Realigns Circadian Rhythms | High Visual Acuity

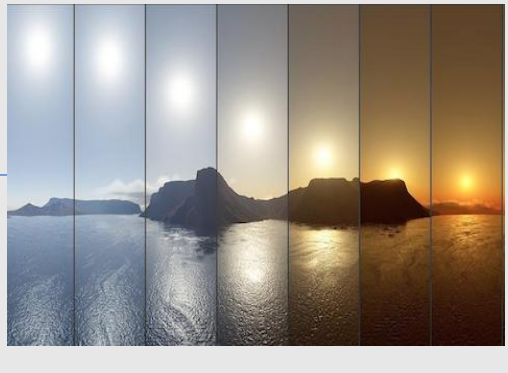
Apply MelaGen® ReGen technology in permanently-occupied spaces whose occupants will benefit from a natural circadian rhythm

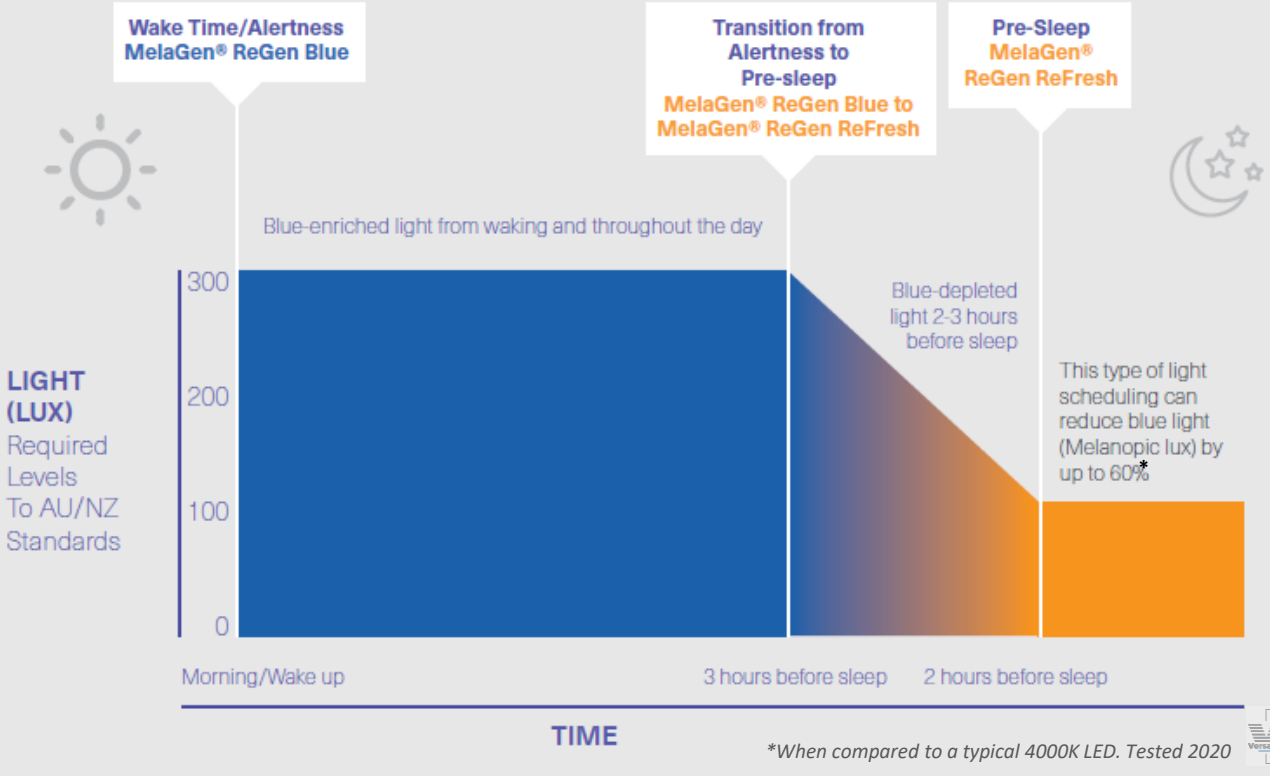
- Aged Care
- Hospitals
- Correctional Facilities
- Rehabilitation & Wellness Centres
- Defence
- Emergency Services

INSTALLING & SCHEDULING

MelaGen® ReGen can transition from MelaGen® Blue to MelaGen® ReFresh (and back again) instantly if required. However, it is recommended to schedule the transition over an hour to mimic a natural sunset.

The MelaGen® Regen, consists of a 2-channel LED board and driver. This easily integrates with DALI2 and can also be optioned for Bluetooth wireless lighting systems.





*When compared to a typical 4000K LED. Tested 2020

MELAGEN® ENABLED PRODUCTS.

MelaGen® technology can be added to these Versalux product families – with many available in different sizes, outputs and application suitability.

COMO Family
Premium downlights
IP65

SUSA Family
Premium surface-mount
downlights IP65

LUCCA 350mm
Low-profile circular luminaire
IP44

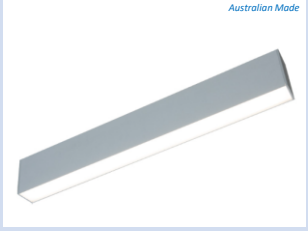
INFINITI Family
Australian made aluminium
linear profile

ORTA Family
Commercial, Healthcare luminaire,
Backlit, IP54

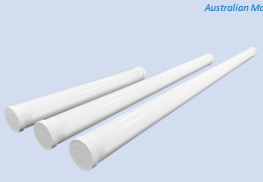
COMO ALAV
Premium downlights with anti-
ligature and anti-vandal
properties IP65 IK10

ENDURALUX Family
Non-ligature cell luminaire
IP54 IK10++

PROTECTALUX Family
Non-ligature cell luminaire
IP65 IK10++



NICO Overbed
For hospital bedrooms, aged
care, nursing homes IP44



VRLX Family
Flexible industrial tube luminaire
Ip66 ik09

VANTAGE Family
Low profile and high-output
commercial luminaire IP65 IK10

MELAGEN® PROJECTS

Adelaide Sexual Health-
Adelaide Women's Prison-
Atlas Mines*
Auckland High Court-
Austin Health-
Barwon Health-
Bayview High School-
Bellevue Heights-
Botany Downs-
Bowral Hospital-
Bridges Puckapunyal-
Central City Birthing Unit-
Centre Education Programme School Loganholme-
Chemo Unit Wonthaggi-
Crafter Medical Centre-
Cranbourne Integrated Child Care-
CSL Banksia - Pns Building-
Dandenong Hospital-
Eastcon - Kew Office*
Eastern Mental Health (Maroondah)*
Emerson School-
Gatton Pris Stg 2-
Geelong Clinic-
Glenallen School Refurbishment-
Goodstart Elara Marsden Park-
Goulburn Valley Hospital-
Hazeldene Spin Chiller-
Ipswich Mental Unit*
Jabiru Health Centre-
Jackson School-
Janai – Jewellery
John Hunter Hospital-
Lipa Pharmaceuticals Production Area-
Low Dep Mental Health-
Mansfield School of Autism-
Mercy Hospital-
Milldale School-
Monash Health-
Monash Mosquito Program-
Moorabbin Hospital - Level 3-
Mount Eliza Terraces -Mental Health*
Mount Isa Hospital, Block C, Level 2 Isolation-
Mt Albert Grammar-
Myross Bush School-
National Gallery Of Victoria-
North West Women's Prevention and Recovery*
Royal Melbourne Hospital*
Northern School of Autism-
Otago Uni B/Shop-
Our Lady Help of Christians –Wendouree-
Pacific Private Day Hospital - Proposed Theatre Level 2-
Platinum Dermatology-
Radcliffe Dunedin-
Resthaven (Aged Care)*
Scdhb Endoscopy-
Singleton Birthing Suites-
St Columba Caboolture-
St John Of God-
St Vincent Hospital-
Starship PICU & Atrium Clinic-
Stockland Elara Marsden Park Child Care-
Te Whaitua Maori-
Tower Automation-
Very Special Kids (VSK) –Hospice*
Wigram School-
Windsor Private Mental Health*
Women's & Children's Hospital –Sustainment*
Woodford Youth Justice (under construction)*
Zoos Victoria - Healesville Sanctuary-

* Projects with MelaGen ReGen: transitioning from blue enriched to blue depleted, per the 24-hour Circadian day/night cycle
- Projects with MelaGen Blue only

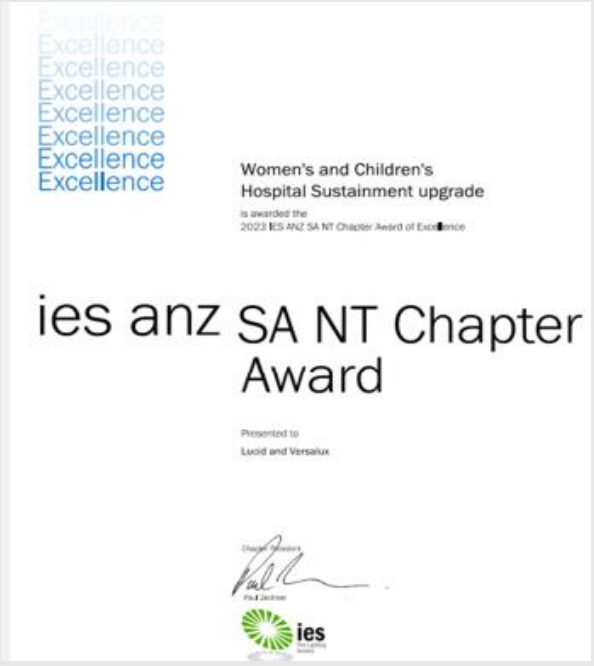
MELAGEN® AWARDS

COOPERATIVE RESEARCH AUSTRALIA

Excellence in Innovation Award 2020

IES ANZ SA NT CHAPTER

2023 Award for Excellence



"This system goes beyond the traditional tunable white approach, which merely alters the colour temperature of LEDs. Instead, it precisely...

...modulates the intensity of blue-enriched light throughout the day, mimicking the natural rhythm of circadian lighting"

RESOURCES
HANDY LINKS FOR MORE INFORMATION

LIGHT BEYOND VISION

- Versalux & Research Team
  Full Brochure (PDF download)
- 2020 Webinar: Sean Cain & Vince Macri (YouTube)

CIE INTERNATIONAL COMMISSION ON ILLUMINATION

- CIE Position Statement on Non-Visual Effects of Light – Recommending Proper Light at the Proper Time, 2nd Edition – October 2019 (PDF download)
- Position Statement on the Blue Light Hazard – April 2019 (PDF download)

IES – USA (ILLUMINATING ENGINEERING SOCIETY)

- Circadian Lighting: a Neuroscientist's Perspective – 2019 (web page)
- High Colour Rendering can enable Better Vision without requiring More Power (web page)

LED'S MAGAZINE

- Oil and Gas Industry Issues – Circadian Lighting Guidelines (view article)
- LEDs Magazine Lighting for Health and Wellbeing Conference (view article)

MELAGEN® MEDIA RELEASES

- Blue Light helps the Body Clock Tick – Science Meets Business (view article)
- Harnessing light to benefit our hospitals – Hospital and Healthcare (view article)
- View full MelaGen® Website here.
- View MelaGen® Definitions here.

THE COST OF INADEQUATE SLEEP

- Clare Anderson: Light Beyond Vision – Melbourne 2019 (YouTube)
- Ian Dunican: Sleep In… and Win! TEDxPerth (YouTube)
- Matt Walker: Sleep is Your Superpower TED Talk (YouTube)

MONASH UNIVERSITY RECENT PAPERS (AUSTRALIAN RESEARCH)

- Do No Harm: The Beginning of the Age of Healthy Hospital Lighting (web page)
- A Blue-Enriched, Increased Intensity Light Intervention to Improve Alertness and Performance in Rotating Night Shift Workers in an Operational Setting (PDF download)
- High Sensitivity and Interindividual Variability in the Response of the Human Circadian System to evening light (web page)
- Afraid of the Dark: Light acutely suppresses activity in the human amygdala (web page)
- The Dark Side: How too much light is making us sick (web page)

ADDITIONAL RESEARCH

- We can read each other's emotions from subtle changes in facial colour (web page)
- Facial Colour is an Efficient Mechanism to Visually Transmit Emotion (web page)
- Impact of Upgraded Lighting on Falls in Care Home Residents (web page)
- Royal Commission into Aged Care Quality and Safety Final Report

WELL BUILDING

- Circadian Lighting Design – WELL v2 Q1 2021 (view guidelines)

Versalux Lighting Systems
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