Lighting for the eye and brain

Thursday 21st October 21

www.sll.org.uk
@sLL100
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SLL Rep: Matthew Walsh
Glamox Luxonic

Speaker: Dr Denize Atan
Bristol Eye Hospital & University of Bristol

Speaker: Dr Shelley James
Age of Light Innovations

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Upcoming Events

• 26 October 2021 - Back to School: Are we getting the most from lighting upgrades in existing schools? (Webinar)

• 27 October 2021 - SLL & Signify in conversation with Andrew Bissell FSLL and Dr Christopher Kyba (Webinar)

• SLL South West Event – January 2022 TBC

Become a member? www.sll.org.uk
How does light influence the eye?

Dr Denize Atan
Consultant Neuro-ophthalmologist
University of Bristol & Bristol Eye Hospital
What is myopia?

**Normal vision**
- Image is inverted (your brain corrects the upside down image)
- The image is created on a focal point on the retina clearly and passes information to the brain

**Myopic vision**
- Image is inverted (your brain corrects the upside down image)
- Myopic eyes focus the image 'too early' and generate a focal point that is not on the retina, meaning the image appears blurry
Why is myopia a big problem?

- 28% of the world's population suffered from myopia in 2010, equal to 1.95 billion people.
- 50% are expected to be myopic by 2050, equal to 4.76 billion people.
- 938 million people are predicted to suffer from high myopia by 2050, which puts them at risk of more serious eye conditions.

Myopia is one of the most common causes of sight loss in the UK and the World.
Why is this happening?
It’s just our genetics, isn’t it?
"Miss! Are your classes making me blind?"

By James Gallagher
Health and science correspondent, BBC News

7 June 2018

Top Stories
Brexit bill finally gets through Parliament
After months of debate, the EU (Withdrawal) Bill clears Parliament and goes for Royal Assent.
1 hour ago

Hospital drugs left 456 patients dead
4 hours ago

Trump reverses migrant separation policy
3 hours ago

Features

Intense schooling linked to myopia

Join our Scrap the Cap campaign p 337
Legacy of pregabalin litigation p 338
End outdated outpatient clinics p 362
Update on chronic pancreatitis p 368
1 CPD hour in the education section
Genes and environment are both important.
What has changed?
How is daylight different to artificial light?
Genes linked to myopia are involved in the detection of light.
3 types of cell in the retina are directly sensitive to light.
The retina is an electrical circuit
Retinal dopamine levels fluctuate in response to light exposure and circadian rhythms.
Light influences risk of myopia in animal models
Bright Light Classrooms introduced in China
The brightness and colour spectrum of the BLC
Can artificial light mitigate against the risk of myopia?
Unanswered questions...

- Can we simply need to increase the brightness? What about the effect on reading comfort?
- What about colour spectrum? Is a wider spectrum always better?
- Can we translate findings in chicks and mice to humans?
- What are “safe” levels of artificial light (wrt brightness, colour spectrum, flicker)
If you would like to help take this research into the classroom, please let us know....

Denize.Atan@bristol.ac.uk
LunaTM makes 3,000,000 Teen Eyes Brighter in just four weeks!
- Brightness
- Timing
- Colour
- Flicker
Low light
50 lux

Living Room
200 lux

Office
500 lux

Supermarket
1000 lux

Rain
10,000 lux

Cloudy
20,000 lux

Bright
50,000 lux

Direct Sun
100,000 lux
Incandescent - up to 13% flicker

Fluorescent - up to 35% flicker

Same frequency (Hz) for both types of lights.

https://www.alexfergus.com/blog/light-flicker-health
• 40% don’t get enough sleep
• 50% homes disrupt 50% of sleep
• Depression obesity, behaviour...
• 30% in Nordic countries
• Vulnerable, risk-taking, grades...
Situation

- 6,000 ‘phantom array
- Sensitivity up to 21,000Hz
- 10% headaches
- 1% extreme reaction
- Young people,
- Learning difficulties
Sally was admiring the wet grass and noticed the dew created tiny little drops of water around her feet.
Are we getting the most from lighting upgrades in existing schools?

Bringing together stakeholders from government, education, design and manufacturing to share practical ideas on how we can get better value for money, improve quality and cut energy bills.
Society of Light and Lighting

Lighting for the eye and brain

Any questions?

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