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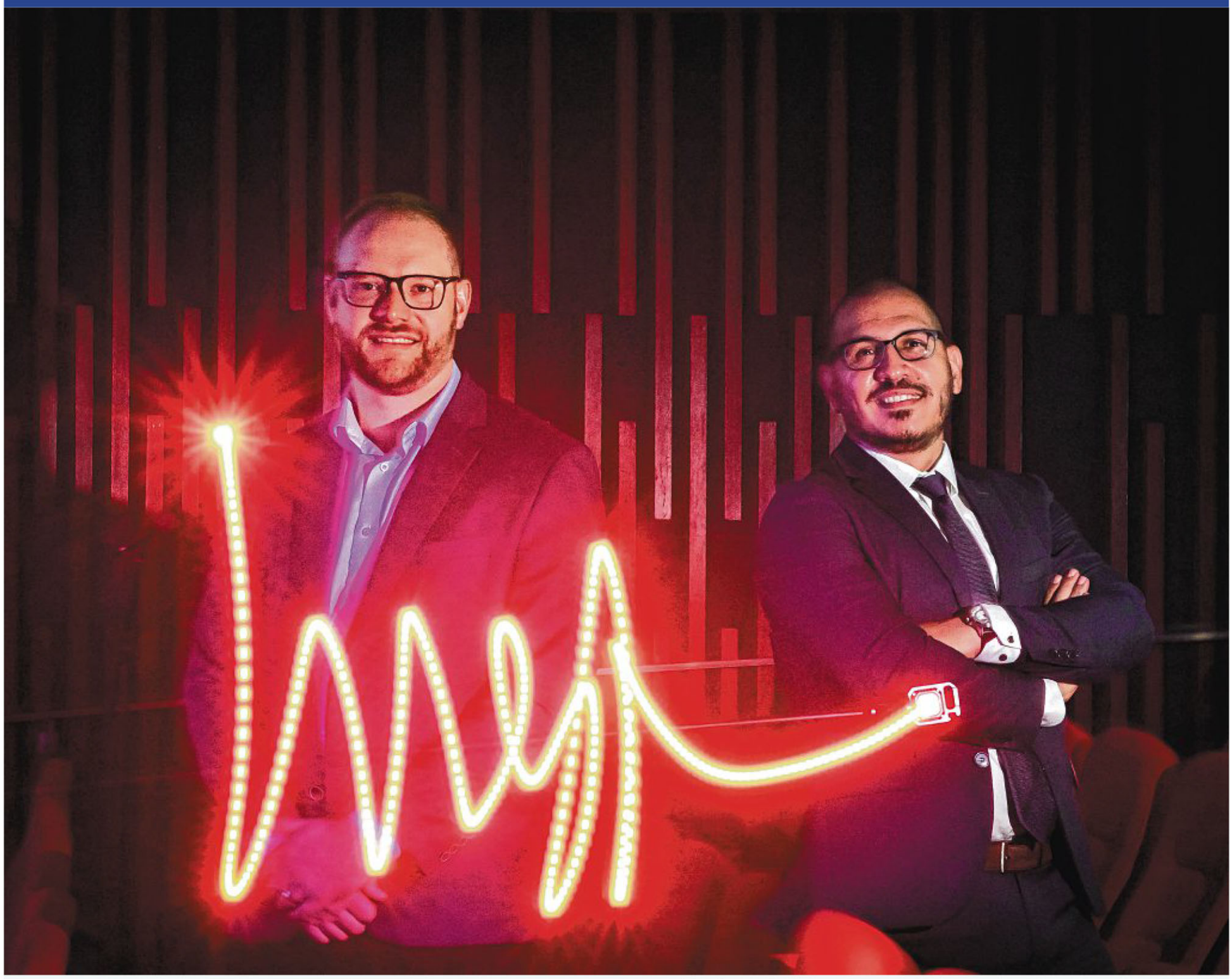
Shedding light on ways to improve sight



Researchers from the National University of Singapore and Technical University of Munich (TUM) are looking into how the right exposure to light throughout the day can help to reduce myopia rates in children, and help seniors better regulate their body clock. Led by Professor Manuel Spitschan (left) from TUM and Assistant Professor Raymond Najjar from NUS Medicine, the project will make use of a smartphone app to prompt people to step out into the sun if they spend too much time indoors, and avoid bright lights from evening onwards. ST PHOTO: LIM YAOHUI SEE THE BIG STORY • A5

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Study aims to reduce myopia in kids, help seniors sleep better

It seeks to optimise light exposure for participants, who get feedback via app

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Correspondent

A new research project is looking to optimise light exposure for schoolchildren and senior citizens, in order to reduce myopia rates in the young, and improve the sleep quality and mood of the elderly.

Led by Tumcreate, the research platform of the Technical University of Munich (TUM) in Singapore and the National University of Singapore's (NUS) Yong Loo Lin School of Medicine, the research project from 2023 to 2026 is funded by the National Research Foundation to the tune of $5 million.

Called LightSPAN, the project will have two studies – one involving children between the ages of seven and 10, and another involving older adults aged 65 and above – said researchers on Thursday at the Campus for Research Excellence and Technological Enterprise located in NUS.

All participants will be given a wearable light sensor that they put on throughout the day to measure visible and ultraviolet light exposure. The data collected will be used to provide personalised feedback through a smartphone app called LightUP.

Elderly participants and parents of children involved in the study will be able to get information on their light exposure trends and receive recommendations through the app on how to adapt their behaviour.

"You want to have bright days and dark nights. We want to maximise exposure to light during the day to have better alertness and better regulation of the circadian rhythm... The other aspect is to minimise light exposure at night, like having good curtains to block out light pollution," said Professor Manuel Spitschan, a professor of chronobiology and health at TUM and lead principal investigator of the project.

Circadian rhythms are physical, mental and behavioural changes that follow a 24-hour cycle.

Researchers recommend that children and the elderly have two hours of sunlight a day, and that can be done with 15-minute blocks throughout the day.

Conversely, to reduce light exposure at night, participants in the study will be advised to avoid the use of bright smartphones in the evening.

Assistant Professor Raymond Najjar, from the Department of Ophthalmology at NUS Medicine and also a lead principal investigator of the project, said outdoor exposure and natural sunlight have been proven to reduce myopia risk.

"Children today are experiencing insufficient outdoor and natural sunlight exposure, a concerning trend that is contributing to the alarming increase in childhood myopia. We need to stop or at least delay the onset of myopia in children, said Prof Najjar.

The study with children will involve 396 individuals, and last for a year. A third of the participants will have changes in their classroom lighting, another third will rely on the smartphone app to get adequate light exposure, while the final third will be a control group.

For the study with senior citizens, researchers will recruit 90 people for the seven-month trial. Along with their light exposure, their physical activity, sleep, mood and cognition will be measured as well.

Prof Spitschan said that as people age, sleep becomes more fragmented, and this affects a person's body clock. This can have a negative effect on a senior citizen's mood and cognitive function.

It is hoped that optimal light exposure can help to mitigate the effects of disruption to an elderly person's body clock, he added.

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Professor Manuel Spitschan (far left) and Assistant Professor Raymond Najjar are the lead principal investigators of the research project, which is funded by the National Research Foundation to the tune of $5 million. ST PHOTO: LIM YAOHUI

RIGHT AMOUNT AT RIGHT TIME

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