

New Paper Published Last Week



Article | [Open access](#) | Published: 26 August 2026

Sunlight exposure is associated with lower blood glucose levels and type 2 diabetes

[Andrew C. Stevenson](#), [Richard B. Weller](#), [Pelle Lindqvist](#) & [Chris Dibben](#) 

[Scientific Reports](#) (2026) | [Cite this article](#)



DETAILED COMPOSITION OF THE SOLAR SPECTRUM



Circadian - Mice

The role of daylight exposure on body mass in male mice

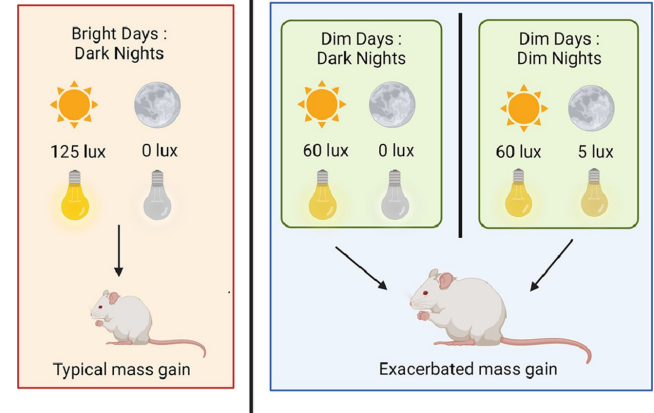
O.Hecmarie Meléndez-Fernández^{a,*}, James C. Walton^a, A.Courtney DeVries^{a,b,c},
Randy J. Nelson^a

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^c West Virginia University Cancer Institute, West Virginia University, Morgantown, WV 26505, USA

- Male Swiss Webster mice
- ALAN ↑ body mass
- Dim daylight ↑ body mass, independent of nighttime light exposure

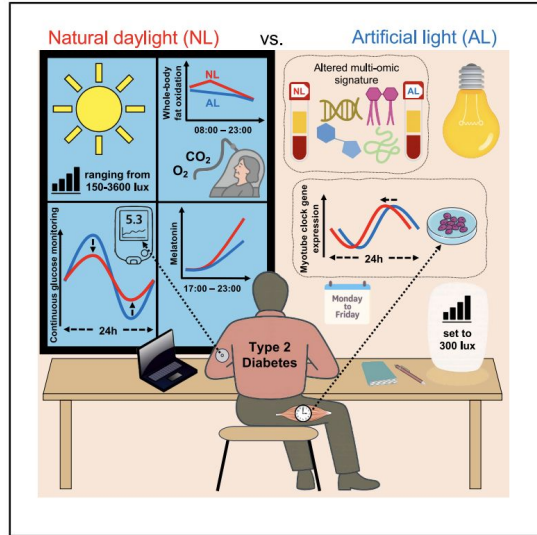


Circadian - Humans

Cell Metabolism

Natural daylight during office hours improves glucose control and whole-body substrate metabolism

Graphical abstract



Article

Authors

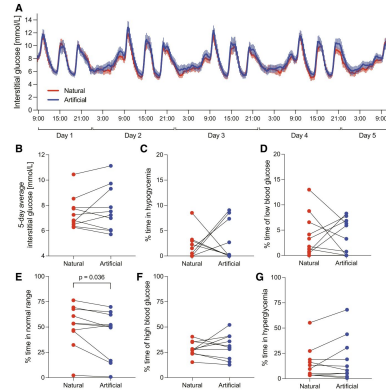
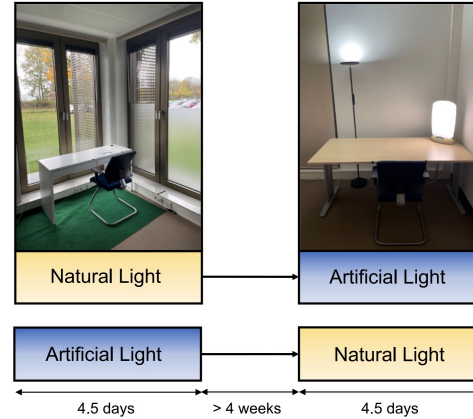
Jan-Frieder Harmsen, Ivo Habets,
Andrew D. Biancolini, ...,
Patrick Schrauwen, Charna Dibner,
Joris Hoeks

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In brief

Harmsen et al. compared the metabolic impact of natural daylight vs. artificial office lighting in individuals with type 2 diabetes over 5 days. Daylight improved glucose homeostasis, whole-body fat utilization, and evening melatonin levels and altered the blood multi-omic signature along with 24-h rhythms in skeletal muscle.



- T2D
- Primary endpoint (4.5-day avg. glucose)
 - No sig. diff
- ↑ % in normal glucose range
- Myotubes produced a phase advance after daylight exposure

Sian Geldenhuys,¹ Prue H. Hart,¹ Raelene Endersby,¹ Peter Jacoby,¹ Martin Feelisch,² Richard B. Weller,³
Vance Matthews,⁴ and Shelley Gorman¹

Ultraviolet Radiation Suppresses Obesity and Symptoms of Metabolic Syndrome Independently of Vitamin D in Mice Fed a High-Fat Diet

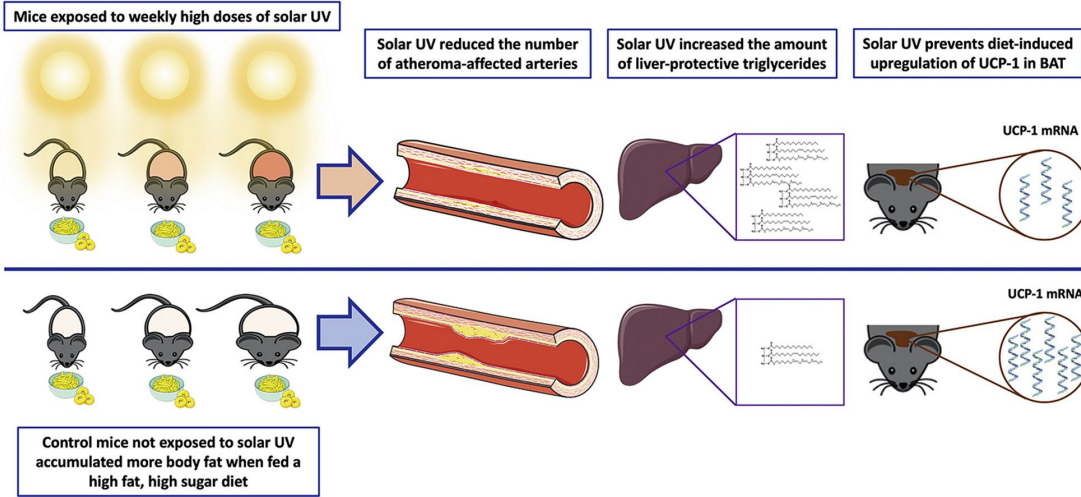
- High-fat diet
- Long-term low-dose UV or dietary vitamin D supplementation
- UVR, but not dietary vitamin D, reduced weight gain, white fat accumulation, cholesterol, glucose intolerance, and insulin resistance
- NO mechanism
 - mitochondria biogenesis within brown adipose tissue
 - NO as a modulator of insulin and glucose transport

Diabetes 2014;63:3759–3769 | DOI: 10.2337/db13-1675

UV - Mice

Exposure to solar ultraviolet radiation limits diet-induced weight gain, increases liver triglycerides and prevents the early signs of cardiovascular disease in mice

A.L. Ferguson^{a,b,c}, L.F. Kok^a, J.K. Luong^{a,b}, M. Van Den Bergh^{a,b}, K.S. Bell-Anderson^{b,d}, D.J. Fazakerley^{b,d}, S.N. Byrne^{a,b,e,*}

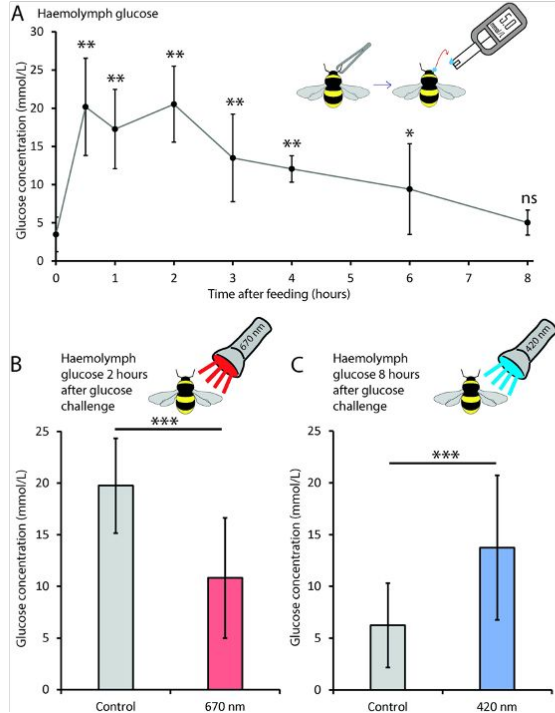


- Mice eating a high fat high sugar diet gained 33% less body fat when exposed to UV.
- UV prevents fat accumulation even *after* the start of a high fat high sugar diet.

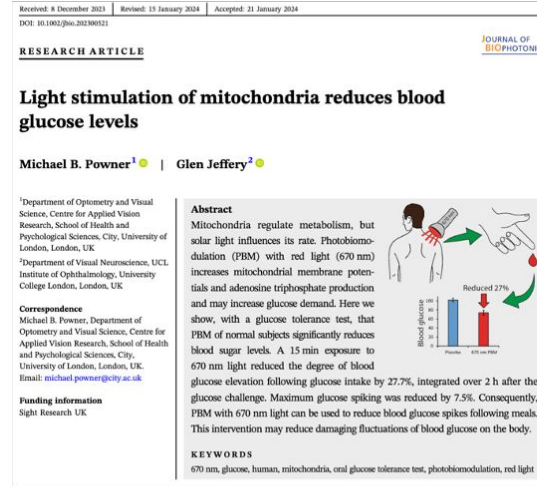
NOT MUCH :(

Red and Infrared - Humans

670nm = 45% ↓ in peak haemolymph glucose
420nm = 54.5% ↑ in glucose levels



670nm = 27.7% ↓ in blood glucose elevation



850nm = 11% ↓ AUC | No NIR = 7% ↑ AUC
OGTT & CGM



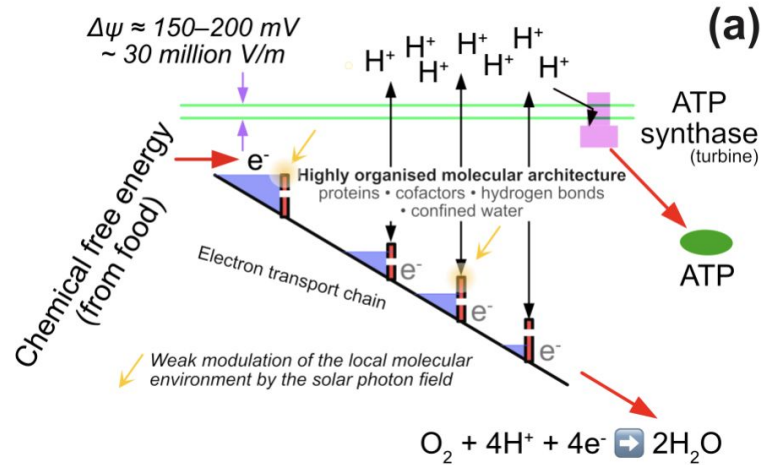
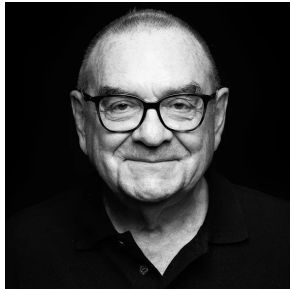
Figure 2. Experimental lighting conditions in the control and intervention workstations. Representative photographs of the study workstations under the two

Red and Infrared - Humans

Metabolism in the Solar Photon Field A physical framework for photon-assisted modulation of mitochondrial electron-transfer kinetics

 Robert A. E. Fosbury,  Roger Seheult,  Scott Zimmerman,  Glen Jeffery

doi: <https://doi.org/10.64898/2026.08.11.744135>



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- **Convergent evidence**
 - **Greater sunlight exposure** was associated with **lower blood glucose** levels and **lower incidence of T2D**

Average UVA Exposure With Blood Glucose Levels

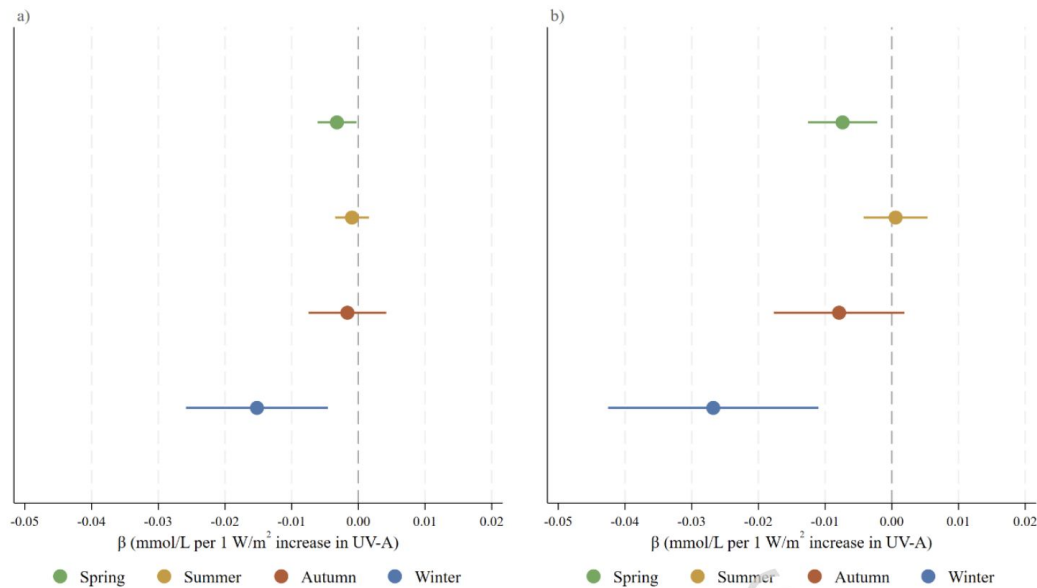


Figure 1. Change in blood glucose levels (mmol/L) for a one unit increase in 2-day average Ultraviolet-A (UVA) and 7-day average UVA. Models were adjusted for 2-day maximum daily temperature and 7-day average maximum daily temperature. N=429,368

Ambient UVA Exposure and Predicted Blood Glucose Concentrations

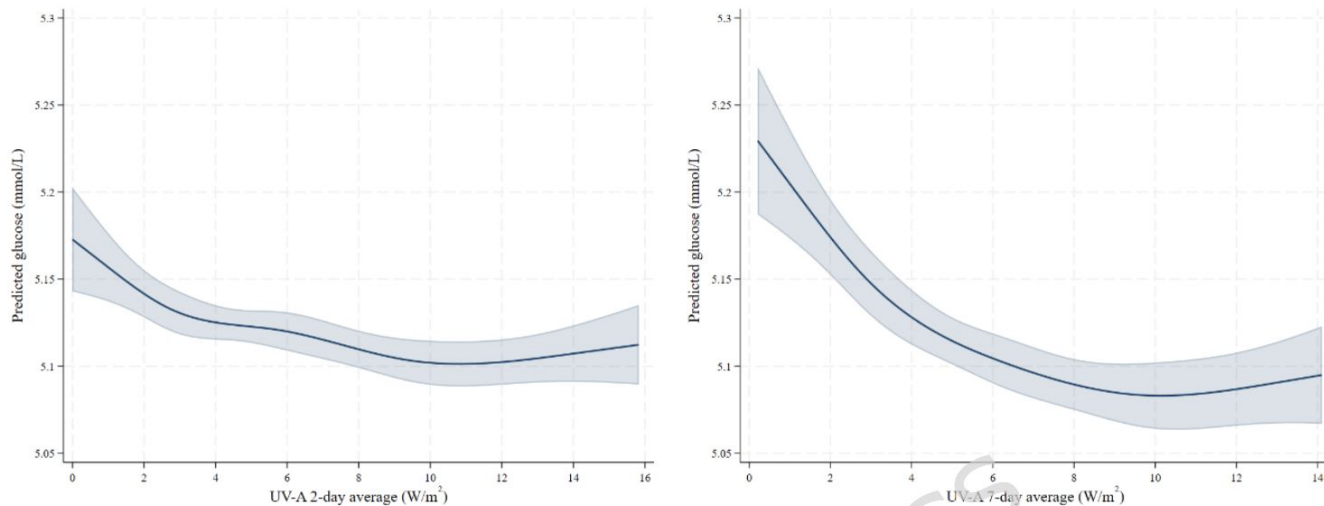


Figure 2. Associations between ambient ultraviolet A (UVA) radiation exposure and predicted glucose concentrations (mmol/L). The left panel shows the association between 2-day average UVA exposure and predicted glucose levels and the right panel shows the association for 7-day average UVA exposure.

Solarium Use and T2D

adjusted for:
sex,
body mass index,
smoking status,
education, physical
activity, employment
status, deprivation
and history of mental
health concerns;
n=408,531

