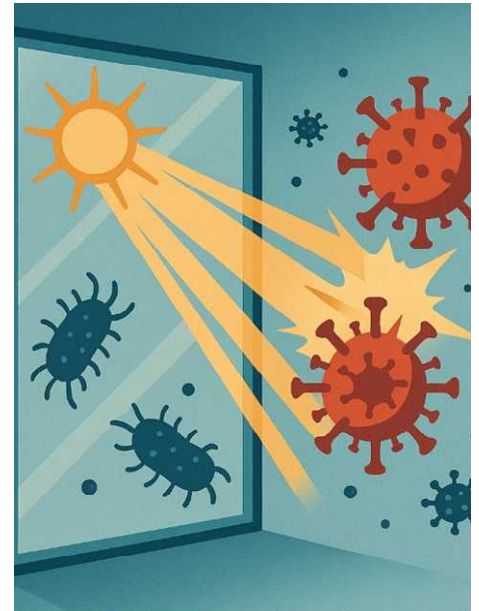


Antiviral Effect of Sunlight: Study Confirms Impact of Photobiologically Active Glazing

Introduction

Repeated experience with pandemics and waves of respiratory infections has shown that indoor air quality and lighting conditions are key factors influencing human health. In addition to air hygiene measures, natural sunlight is increasingly becoming the focus of research. Nature provides a proven regulatory agent – UVB radiation from the sun, which has bactericidal, fungicidal, and virucidal effects.

A recent study conducted by the University Hospital Regensburg (UKR), led by Prof. Dr. med. Mark Berneburg and Dr. rer. nat. York Kamenisch provides for the first time a solid **experimental proof**: natural sunlight filtered through the **photobiologically optimised special glazing from Sunexx GmbH** demonstrates **significant antiviral effect** – without any technical aids, chemical additives or energy input.



Model Experiment Demonstrates Significant Virus Inactivation

In a model experiment, **MS2 bacteriophages** – RNA viruses structurally similar to SARS-CoV-2 (a coronavirus surrogate) – were specifically irradiated with **UVB radiation** as it occurs indoors through Sunexx glazing. After just one UVB dose of 1000 mJ/cm², infectivity dropped significantly – with the number of particles remaining the same. This is the first time it's been shown that **sunlight integrated into architecture** can stay **biologically effective** through selective filtering.

Sunexx glazing selectively allows **biologically effective UVB wavelengths** in the range of 290–320 nm to pass through, while conventional glazing and especially low-E glass block them almost completely. Sunexx filters thus enable controlled transmission of antiviral and photobiologically active radiation without causing hazardous UV exposure.

Prerequisite for Medically and Architecturally Meaningful Sunlight Use: Reliable Protection Against Harmful Radiation.

These insights align closely with the findings from previous studies. Effective medical utilisation of sunlight only becomes sustainable when harmful radiation components are simultaneously blocked.

Earlier studies conducted by the **University Hospital Regensburg** and the **University of Tübingen** demonstrated that selectively filtered sunlight not only protects but also has regenerative effects, including:

- **Prevention of UVA1-induced DNA damage**
- **Protection of mitochondrial DNA**
- **Reduction of reactive oxygen species (ROS)**
- **Prevention of sun-induced skin ageing**
- **Inhibition of sunlight-induced matrix metalloproteinases (MMP1, MMP2, MMP3, MMP15),**
critical markers for skin damage and tumour formation

These results were published e.g. in the renowned journal ***Photochemical & Photobiological Sciences*** (SpringerNature).

Sunexx's filter and glazing technologies build upon these findings, combining targeted protection from harmful UV radiation with the selective transmission of biologically relevant UVB and IR-A wavelengths, proven to deliver antiviral, immunomodulatory, and cell-activating effects. These findings underpin the development of Sunexx filter glazing, combining protective effects with targeted photobiological activation.

Although not yet conclusively proven scientifically, users have observed and provided evidence of **cellular performance enhancement through the IR-A light that is transmitted.** "This is a very exciting and important topic, which Sunexx will investigate in more detail scientifically with Dr York Kamenisch", according to CEO Klaus Lang. "Additionally, radiophysical challenges arise due to significant differences in material, texture, colour, and coating of textiles regarding permeability and absorption of NIR rays, factors previously considered in selecting and optimising screens and materials for the HelioTent sun protection and tanning tent."

Sunexx glazing also transmits near-infrared radiation (IR-A), proven to **support mitochondrial cell activity** through **cytochrome-c oxidase (COX)**, an essential enzyme in **cellular energy generation** and **ATP synthesis**, vital for metabolism in humans, animals, and plants. Such beneficial effects are scarcely achievable in conventionally glazed interiors

This **expands the glazing's functionality** beyond mere disinfection towards cellular performance enhancement, immune modulation, psychological stabilisation, and triggering photobiological effects (e.g., vitamin D production), aligning with nature's intention.

Sunlight as an Underestimated Preventive Resource in Buildings

The study highlights that natural indoor sunlight, when spectrally filtered, effectively reduces infection risks – a **paradigm shift in building physics and technology**. Unlike air-based or chemical hygiene solutions, sunlight acts uniformly, silently, maintenance-free, and energy-autonomously.

This creates a photobiologically **active building concept** extending beyond classical lighting strategies, integrating health directly into architectural design.

The combination of protection and activation through optimised sunlight positions Sunexx glazing as a **sustainable technology for healthy living and working environments**.

Especially in times of increasing sensitivity to air quality, infection control and chronic vitamin D deficiency, the combination of UVB-transmitting glazing, brilliant transparency and protection against overheating offers a unique solution.

Conclusion:

Buildings Become Medically Effective Habitats and Preventive Health Measures

The findings are highly relevant for:

- Medical and care facilities where infection control is essential
- Modern work environments increasingly demanding daylight quality and health protection
- Residential construction increasingly geared towards healthy indoor climates, energy efficiency, and resilience

Study References:

- *"Investigation of the antiviral qualities of UVB irradiation filtered with Sunexx filter foils or Sunexx filter glasses in a bacteriophage bacteria system," University Hospital Regensburg, Prof. Dr. Mark Berneburg, Dr. York Kamenisch, March 2025.*
- *"Investigation of the HelioVital filter foil revealed protective effects against UVA1 irradiation-induced DNA damage and against UVA1-induced expression of matrix metalloproteinases (MMP1, MMP2, MMP3 and MMP15)" (Photochemical & Photobiological Sciences (2022) 21:361–372; <https://doi.org/10.1007/s43630-022-00177-4>)*

Press Release

Regensburg / Empfingen, 23. July 2025



About Sunexx® *** www.sunexx.de

Sunexx GmbH is a pioneer in the field of health-enhancing glazing and innovative sun protection technologies. Based in Empfingen, Germany, Sunexx has been developing highly specialised solutions for over two decades that make natural sunlight – the "elixir of life" – specifically and effectively usable and compatible for humans.

Sunexx's vision is to enable healthy living and working in harmony with nature. The aim is to restore to buildings the sunlight that modern architecture and construction technology increasingly block out, while blocking precisely those wavelengths that are crucial for health, immune function, mental well-being and performance.

Sunexx has been working closely with leading research institutes and university hospitals for many years. Studies prove highly efficient protection against skin damage as well as antiviral and photobiological effects.

The innovations are:

- Photobiologically effective glass solutions that allow UVB, visible and infrared light to pass through in an ideal balance
- Sun protection systems that not only keep out heat but also preserve biologically effective light
- High-purity, low-iron glass with brilliant clarity and selective spectral filtering

Further Information:

Sunexx GmbH

Zollernring 32

D-72186 Empfingen

Your contact: Dipl.-Wirt.-Ing. (FH) Klaus Lang

Telephone: +49-7485-9996-0

Fax: +49-7485-9996-44

Email: info@sunexx.de

Website: www.sunexx.de