

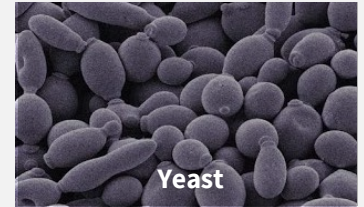
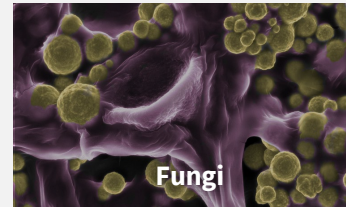
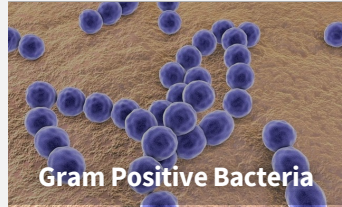
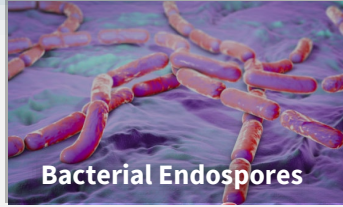
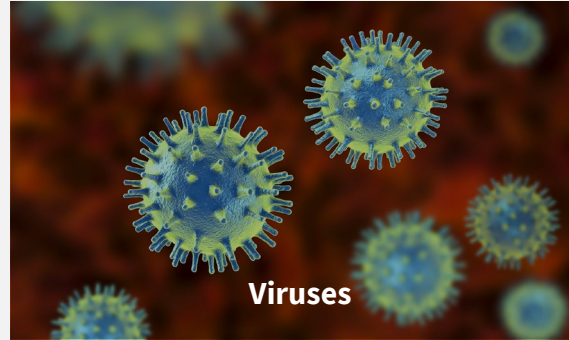
**Virus Inactivation
Using 405nm Light**



Vyv Antimicrobial Claim Expands to Include Viruses



The Power of
Visible (405nm)
Antimicrobial
Light

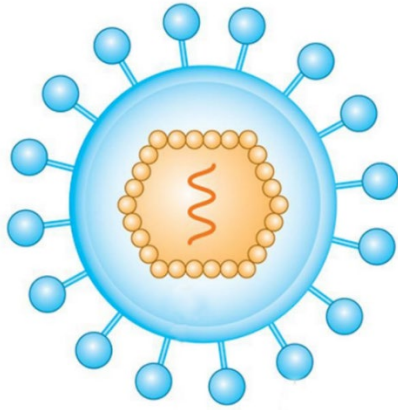


Vyv's New Claim

Vyv kills* viruses, bacteria, fungi, yeasts, mold.

**Testing on a non-enveloped virus (MS2 bacteriophage) showed a 99.985% reduction in controlled laboratory testing in 6 hours on hard surfaces. MRSA and E. coli showed 90%+ reduction in controlled laboratory testing in 24 hours on surfaces. Results may vary depending on the amount of light that is reaching the surfaces in the space where the product is installed and the length of time of exposure. Use of Vyv antimicrobial light is not intended to replace manual cleaning.*

Types of Viruses

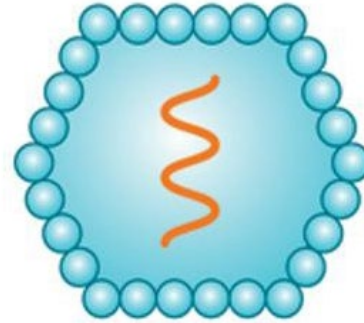


Enveloped Virus

Can cause persistent infections and must be transferred from host-to-host.

Examples:

SAR-CoV-2 (COVID-19), Influenza, Hepatitis B and C, and Hemorrhagic Fever (Ebola)



Non-Enveloped Virus

More resistant to both disinfectants and stresses like drying out or heat exposure.

Examples:

Norovirus (dysentery), Rhinovirus (common colds), and Poliovirus (Polio)

3rd Party Controlled Laboratory Testing

Using Vyv Technology (405nm Light)

- Testing was conducted using non-enveloped virus - MS2
- After 6 hours dried from a saline solution – achieved 99.985% reduction (>3.82 log reduction)
- After 6 hours dried from artificial saliva – achieved 99.41% reduction (2.23 log reduction)

As with any organism and with varying environments results may vary.

Virucidal Effects of 405nm light on SARS-CoV-2 and Influenza A Virus Report*

- Two enveloped viruses tested: SARS-CoV-2 & Influenza A
- Demonstrated inactivation of SARS-CoV-2 & Influenza A
- Between 55% (lower intensity) to 91% (higher intensity) in 4 hours
- Inactivated SARS-CoV-2 at 99.7% in 8 hours (higher intensity)
- Similar results were found with Influenza A

As with any organism and with varying environments results may vary.

* **Lighting a better future: the virucidal effects of 405 nm visible light on SARS-CoV-2 and influenza A virus**

Raveen Rathnasinghe, Sonia Jangra, Lisa Miorin, Michael Schotsasert, Clifford Yahnke, Adolfo García-Sastre

doi: <https://doi.org/10.1101/2021.03.14.435337>

Virus Testing Results

	Organism	Medium	Irradiance (mW/cm ²)	Time (hrs)	Result
Vyv	MS2	PBS (Saline)	2	6	>99.985%
Vyv	MS2	Artificial Saliva	2	6	99.41%
Mt. Sinai	SARS-CoV-2	PBS (Saline)	0.035	4 24	55% 90%
Mt. Sinai	SARS-CoV-2	PBS (Saline)	0.076	24	98%
Mt. Sinai	SARS-CoV-2	PBS (Saline)	0.15	4 24	64% 99.6%
Mt. Sinai	SARS-CoV-2	PBS (Saline)	0.6	1 8	72% 99.7%
Mt. Sinai	Influenza A	PBS (Saline)	0.6	1 4 8	31% 63% 82%



Testing demonstrates efficacy in both overhead lighting applications and embedded applications

Testing Summary

Vyv Non-Enveloped Virus Report

Designed testing protocol with third party lab to test surface inactivation of non-enveloped viruses in accordance with ASTM standards (Vyv's viral claims are based on these findings).

Virucidal Effects of 405nm light on SARS-CoV-2 and Influenza A Virus Report

Released a pre-publication paper on 405nm impact of surface inactivation of enveloped viruses.

All results released in March, 2021



Virus Inactivation Using 405nm Light



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