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ISOP 17025 TEST facilities within EPA and FDA guidelines

- Bio-Aerosol Test Chambers - Aerosolized Pathogen Species
- Test Chamber Standard Room Size 800 Cubic Feet (10'x10'x8')
- Contact time 30-60 minutes
- Virus non-enveloped positive-stranded RNA surrogate

Airborne Pathogens and HAI's

It has been estimated that airborne transmission accounts for 10% to 25% of HAI's,[1] although more recent studies have concluded that the role of airborne trans-mission may be underestimated due to the difficulty of culturing many airborne organisms and the complexities of assessing the role such pathogens play in the contamination of environmental surfaces and subsequent contact transmission.2 Landmark studies [3,4] along with many other studies [5,6] have indicated a strong connection between contamination in the air during surgeries and SSI rates. Clinical trials carried out in Britain, Europe, and the United States have confirmed that between 80% and 90% of bacterial contaminants found in the wound after surgery come from colony forming units (cfu) present in the air of the operating theatre.[7]

99.9995% Airborne Virus Kill:

- non-enveloped positive-stranded RNA
- Influenza
- Norovirus
- Rubeola (includes Measles)
- Varicella (Chicken Pox)
- Hepatitis A, B, C, D, E
- Human Immunodeficiency (HIV)

MS2 Bacteriophage (MS2), 15597-B1
This virus is a non-enveloped positive-stranded RNA virus of the bacteriophage family Leviviridae. Bacterial cells are the hosts for bacteriophages, and E. coli 15597 serves this purpose for MS2 bacteriophage. Its small size, icosohedral structure, and environmental resistance has made MS2 ideal for use as a surrogate virus (particularly in place of picornaviruses such as poliovirus and human norovirus) in water quality and disinfectant studies.
Permissive Host Cell System for MS2: Escherichia coli , 15597

99.9999% Airborne Bacteria Kill:

- C diff - Clostridium Difficile
- TB - Tuberculosis
- Methicillin Resistant Staphylococcus aureus (MRSA)
- Vancomycin Resistant Enterococcus faecalis (VRE)
- Streptococcus pneumoniae
- Streptococcus Group A and B
- Pertussis (Whooping Cough)
- Pseudomonas aeruginosa

Enterococcus faecalis ATCC 29212 - a vancomycin-sensitive strain, has been extensively used as a representative control strain for clinical and laboratory experiments. Here we report the draft genome and annotation of this strain, containing 3,027,060 bp, with a G+C content of 37.2% in 126 contigs (≥500 bp).

Pseudomonas aeruginosa ATCC 27853 - is usually used to test antimicrobial activity (6). Its genome sequencing will help us to understand the pathogenesis of this pathogen. Pseudomonas aeruginosa ATCC 27853 was obtained from the China General Microbiological Culture Collection Center (CGMCC) as CGMCC 1.2387.Pseudomonas aeruginosa is a common bacterium that can cause disease in animals and humans. It is found in soil, water, skin flora, and most man-made environments throughout the world. It is an opportunistic pathogen for both humans and plants

Staphylococcus aureus ATCC 700699 - is **g**ram-positive nonmotile coccus that grows in aerobic and anaerobic conditions, in which it forms grape-like clusters. Staphylococcus aureus is one of the major causes of community- acquired and hospital-acquired infections. It produces numerous toxins including superantigens that cause unique disease entities such as toxic-shock syndrome and staphylococcal scarlet fever. Mu50 is a MRSA strain with vancomycin resistance isolated in 1997.

Strepoccous speices ATCC 9884 - Group G B-hemoy;ic streptococci primamary isolates obtained for testing from laboratory strains Microbiologists American type ATCC 9884. Streptococcus pneumoniae is the most common cause of pneumonia as well as a number of invasive diseases, such as meningitis and sepsis, and non-invasive mucosal diseases, such as otitis media and sinusitis. It causes severe morbidity and mortality worldwide, especially in young children and the elderly.

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99.9999% Airborne Bacteria Kill: (continued)

Baell/us subtilis - this bacteria is Gram-positive, rod shaped, capable of forming endospores. Endospores of Bacillus subtilis can tolerate harsh environmental conditions such as UV exposure and high temperatures.Typically found in soil, this species is not known to cause disease in healthy individuals, but can be considered an opportunistic pathogen among the immuno-compromised. Baell/us sublt!is endopores serve as one of the models for evaluating the effectiveness of sporicides and sterilants.

Mycobaderium smegmatis ATCC 607: - this bacteria is an acid-fast, bacillus-shaped, aerobic microorganism that is commonly used a surrogate model for M. tuberculosis and is found in soil, plants, and water. M. Smegma/is is non-pathogenic to humans except in rare cases, and is considered saprophytic. Unlike other pathogenic Mycobacterium, M. Smegma/is isn't dependent on living in animals. M. smegma/is shares a number of morphological traits with M. Tuberculosis including the distinctive waxy cell wall that provides a robust resistance to chemical disinfectants and sanitizers. The quick growth rate of this microorganism is ideal for in-vitro testing, as other bacteria in this Genus may take several weeks to demonstrate growth. Due to the non-pathogenic nature of this organism, it is used as a M. Tuberculosis model for aerosol disinfection testing.

99.97% Airborne Fungi Kill:

- Candida auris
- Aspergillosis (niger and fumigatus)

Cladosporium cladosporioides 16022 - This heavily sporulating fungi is a dematiaceous mold, meaning that it is characterized by the olive-to-black pigmentation of its conidia and hyphae. It is prevalent in indoor and outdoor environments, and is a plant pathogen that affects wheat. Frequently isolated from air, Cladiosporium has a world-wide presence and is one of the early colonizers of humid indoor environments growing on such substrates as gypsum, paper, paint, and textiles. As a common allergen, this species has been known to induce hay fever and asthma in humans.

1 Brachman, P.S. 1970. “Nosocomial infection—Airborne or not?” In-ternational Conference on Nosocomial Infections, pp. 189–192. American Hospital Association.

2. Beggs, C.B. 2003. “The airborne transmission of infection in hospital buildings: Fact or fiction?” Indoor and Built Environment, 12(1–2), 9–18.

3. Lidwell, O.M., et al. 1982. “Effect of ultraclean air in operating rooms on deep sepsis in the joint after total hip or knee replacement: a randomized study.” BMJ 285: 10-4.

4. Lidwell, O.M. 1983. “Sepsis after total hip or knee joint replacement in relation to airborne contamination.” Phil Trans R Soc B 302:583–592.

5. Memarzadeh, F., and A.P. Manning. 2002. “Comparison of operat-ing room ventilation systems in the protection of the surgical site.” ASHRAE Transactions 108:3–15.

6. Simsek Yavuz, S., et al. 2006. “Analysis of risk factors for sternal sur-gical site infection: emphasizing the appropriate ventilation of the operating theaters.” Infect Control Hosp Epidemiol 27:958–63.

7. Howorth, F.H. 1985. “Prevention of airborne infection during sur-gery.” Lancet. 325: 386–388.

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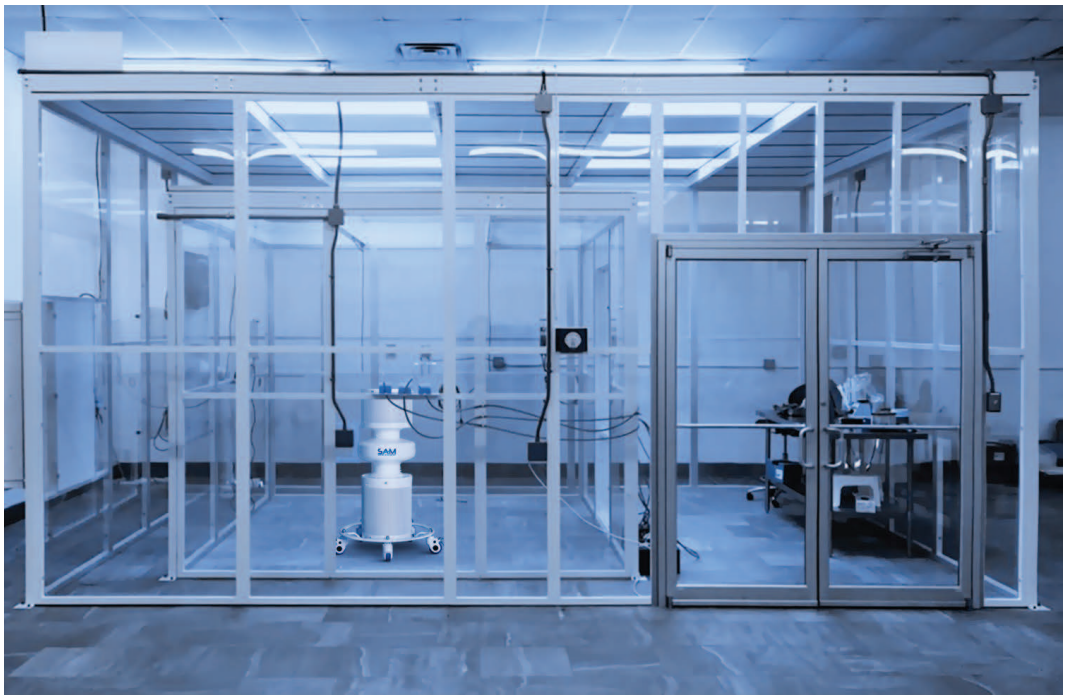
Tested in an EPA and FDA compliant testing laboratory.



The S400 being tested under EPA and FDA compliant conditions at Microchem Laboratory.

Microchem Laboratory is one of just a few labs in the US to provide custom aerobiological testing services for antimicrobial devices. Their laboratory has the capacity to perform testing with UV devices designed to decontaminate an entire room.

The Scientific Air S400 studies are done by treating aerosolized microorganisms with antimicrobial devices in full room size test chambers. A bioaerosol containing a regulated concentration of microorganisms is generated within the containment chamber to test the ability of Scientific Air S400's patented process using ultraviolet light to kill airborne bacteria, virus, and mold.

Laboratories can not aerosolize pathogens. However, many surrogates are used that are representative of pathogenic microorganisms but with considerably less risk to scientists.

For more information about the bacteria, viruses, and fungal species that are aerosolized for the S400 testing, go our **evidence page,** and click on any testing results for more information.

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