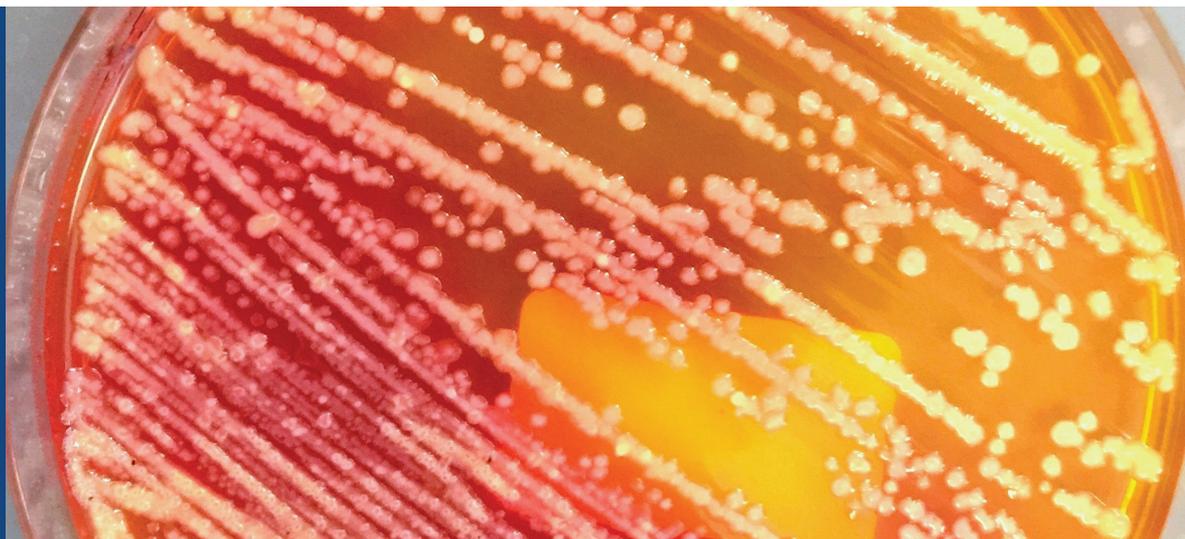


## Summary

Charles River offers a comprehensive testing portfolio to ensure maintenance of the germ-free status of your colony, both screening animals directly and indirectly via environmental cage/isolator swab.



360 DIAGNOSTICS™

# Microbiome: Comprehensive Germ-Free Health Screening

Husbandry of germ-free (mouse) colonies is a challenge for any animal facility. Successful maintenance and production of germ-free animals requires accurate, sensitive, and robust collection and testing methods. Although little has changed in the way we manage germ-free animals, screening methods have improved. Microbial culture and microscopy remain the most sensitive method of detecting contamination from common laboratory exposure<sup>1</sup>.

Accurate and sensitive detection of these agents requires aerobic and anaerobic cultures of samples obtained from the isolator environment, individual cages, and animals. Anaerobic agents are the most difficult to detect from oxygen-containing environments and therefore require special equipment, anaerobic collection culture media, anaerobic chambers, and powerful microbial identification technologies<sup>2</sup>.

Comprehensive germ-free testing is necessary to ensure that animal colonies do not possess *any* bacteria.

## Aerobic Culture

Aerobic bacteria and obligate anaerobes will both grow in oxygen-rich conditions. Having the ability to grow even sensitive organisms using various media and techniques ensures that customers will have a full picture of the bacteriological flora associated with their animals. Samples submitted for aerobic culture are plated onto both general and specialized media to help recover even organisms that are less hardy, then incubated promptly after receipt in order to ensure organism viability is preserved.

## Anaerobic Culture

Anaerobic bacteria cannot live or grow when oxygen is present. Since air is toxic to anaerobic bacteria, contact with the air would result in a false-negative culture result. It is critical to process in conditions where the oxygen level is greatly decreased. At Charles River, axenic animals and samples submitted for axenic cultures are processed under anaerobic conditions. Anaerobic cultures are plated for observation of bacterial cells and a wet mount is performed in an anaerobic chamber.

EVERY STEP OF THE WAY

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## References:

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2. Singhal, N., Kumar, M., Kanaujia, P. K., & Viridi, J. S. (2015). MALDI-TOF mass spectrometry: an emerging technology for microbial identification and diagnosis. *Frontiers in Microbiology*, 6, 791.  
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