



## Strategies for the Elimination of Mycoplasma Contamination from Laboratory Incubators

### Introduction:

*Mycoplasma* contamination poses a significant challenge in cell culture laboratories, compromising research integrity and leading to inaccurate experimental results. Estimates for the incidence of *Mycoplasma* contamination vary from 10% to 36% of cell lines used in laboratory procedures. Laboratory incubators, being a critical environment for cell growth, are prone to *Mycoplasma* contamination. This paper explores effective strategies to eliminate *Mycoplasma* contamination from laboratory incubators, ensuring reliable and consistent cell culture experiments.

### I. Cleaning and Decontamination Procedures:

To eliminate *Mycoplasma* contamination, thorough cleaning and decontamination protocols are essential. The following steps can be employed:

1. **Regular Cleaning:** Implement a stringent cleaning regimen for laboratory incubators, involving the removal of all cell culture vessels, shelves, and trays. Clean surfaces using appropriate disinfectants, such as 70% ethanol or other proven disinfectants, to effectively eliminate mycoplasma.
2. **Disinfection:** After cleaning, disinfect the incubator using a sterilizing agent, such as nebulized hydrogen peroxide (nHP), Paracetic acid (PA) or ultraviolet (UV) light. These methods are highly effective in eradicating *Mycoplasma* and other contaminants.
3. **Periodic Maintenance:** Establish a maintenance schedule for incubators to ensure proper functioning and prevent *Mycoplasma* contamination. This includes regular replacement of filters, inspection of seals, and calibration of temperature and humidity controls.

### II. Isolation and Quarantine:

Preventing *Mycoplasma* contamination requires isolating potentially contaminated cell lines and practicing strict quarantine measures:

1. **Isolation:** Identify and segregate *Mycoplasma* -contaminated cell lines from healthy ones. Store contaminated cultures separately, preferably in sealed containers, to prevent cross-contamination.



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2. Quarantine: Newly obtained or suspected cell lines should be quarantined for *Mycoplasma* testing before integration into the laboratory workflow. Maintain a dedicated space for quarantine and perform regular testing to ensure early detection and prompt elimination of contamination sources.

### III. Regular Testing:

Regular and rigorous testing protocols are indispensable in identifying mycoplasma contamination and taking appropriate measures:

1. Testing Methods: Employ validated *Mycoplasma* detection methods, such as polymerase chain reaction (PCR) or DNA staining assays. These tests are highly sensitive and specific, allowing for accurate detection of *Mycoplasma* contamination.
2. Frequency: Establish a periodic testing schedule to ensure the timely identification of *Mycoplasma* contamination. Regular testing, at least once a month, is recommended, especially for high-throughput laboratories with extensive cell culture activities.
3. External Testing: Periodically utilize external services or contract laboratories for mycoplasma testing to obtain an independent and unbiased assessment of incubator and cell culture contamination.

### Conclusion:

*Mycoplasma* contamination represents a persistent challenge in laboratory incubators and can compromise the validity of cell culture experiments. By implementing robust cleaning and decontamination procedures, ensuring isolation and quarantine practices, and implementing regular *Mycoplasma* testing, laboratories can significantly reduce the risk of contamination. Maintaining a vigilant approach towards *Mycoplasma* elimination is crucial for generating reliable and reproducible experimental results, thus promoting the advancement of scientific research.

### References

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