TECHNICAL NOTE

Optimal Cell Culture Flasks for Serum-Free Human Primary Embryonic Fibroblast Growth

INTRODUCTION

MP Biomedicals has developed flasks and trays for cell culture designed with the highest quality plastics to ensure optimal growth, health, and maintenance of various cell types. We evaluated the quality of the cell culture flasks by growing sensitive human primary embryonic fibroblasts cells (MRC5 cells) under serum-free conditions—a notably challenging environment for maintaining adherent cells integrity. This technical note outlines the features, methodologies, and results supporting the superior performance of MP Bio's cell culture plastics.

PRODUCT OVERVIEW

MP Bio's cell culturing plastics are available in various sizes, ranging from 25 cm^2 to 6,310 cm^2, catering to diverse efficiency and scalability research requirements. They are a versatile solution for the expansion and maintenance of various cell lines and primary cells. These plastics ensure optimal cultivation, with yields ranging from 0.5 to 500 million cells.

Key Features:

- **Tissue Culture (TC)-Treated Surface:** Promotes cell adhesion and growth.
- **Serum-Free Compatibility:** No FBS or coating needed for cell adherence.
- **Leak-Free Construction:** Prevents contamination, ensuring reliability.
- **Graduated on Both Sides**
- **Stackable Configuration**
- **Sterilized by gamma-irradiation**
- **Pyrogen, DNase & RNase-Free**

Product Name	Common Name	Volume	Size	Cat. No.
Cell Culture Flask, 25 cm^2, vent cap, TC-treated	T25 Flask	25 cm^2	Case of 200	096140200
Cell Culture Flask, 75 cm^2, vent cap, TC-treated	T75 Flask	75 cm^2	Case of 100	096141100
Cell Culture Flask, 175 cm^2, vent cap, TC-treated	T175 Flask	175 cm^2	Case of 30	096142030
Cell Culture 1-Tray, 630 cm^2	Cell factory	630 cm^2	Case of 1	0961430011
Cell Culture 1-Tray, 630 cm^2	Cell factory	630 cm^2	Case of 14	096143001
Cell Culture, 10-Tray, 6310 cm^2	Cell factory	6310 cm^2	Case of 2	096144002
Cell Culture, 10-Tray, 6310 cm^2	Cell factory	6310 cm^2	Case of 6	0961440026

METHODOLOGY

We evaluated the efficacy of MP Bio's cell culture plastics with a primary embryonic fibroblast cell line (MRC5 cells) under serum-free conditions, which poses a challenge for traditional mammalian cell culture.

Serum-Free Media: We prepared a proprietary serum-free, animal component-free, and chemically defined media designed specifically for expanding MRC5 cells and virus production. The formula uses optimal levels of growth factors, amino acids, vitamins, and other components for expanding MRC5 cells.

Cell Seeding: MP Bio flasks and competitor flasks, with TC-treated surfaces, were seeded with MRC5 cells at the same density.

Incubation: Cells were incubated at 37 °C for 2–3 days, allowing for optimal growth and expansion.

Cell Imaging: After incubation, we imaged the cells using bright-field microscopy at 4X magnification to assess attachment and morphology.

RESULTS

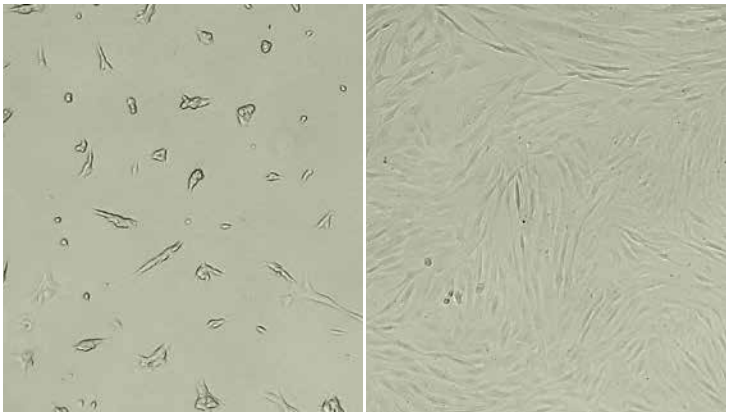

Figure 1. Superior fibroblast attachment and morphology with MP Biomedicals' flasks.

Left Panel: MRC5 cells in serum-free media on a competitor's flask surface showing poor attachment and morphology.

Right Panel: MRC5 cells in serum-free media on an MP Bio flask showing robust cell attachment and characteristic fibroblast morphology. These findings demonstrate the reliability of TC-treated MP Bio flasks, which remain effective even without serum-loaded extracellular matrix proteins.

CONCLUSION

We validated the performance of MP Bio's cell culture flasks under serum-free conditions, observing improved cell attachment and morphology. MP Bio's high-quality plastics also support robust cell growth with FBS or human serum. These cell culture flasks have successfully supported the growth of various cell types, including cancer cells, epithelial cells, and skin cells, such as HEK293, VERO cells, NIH 3T3 cells, and HRECs cells.

MP Bio's cell culture plastics establish a new standard for supporting growing cells during maintenance, expansion, and yields in serum-free cell culture research. The versatility and reliability of these plastics render them indispensable tools for scientists and researchers aiming for excellence in their experiments. Integrating these plastics into cell culture protocols enables researchers to elevate the quality and dependability of their results.

MP BIOMEDICALS

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