

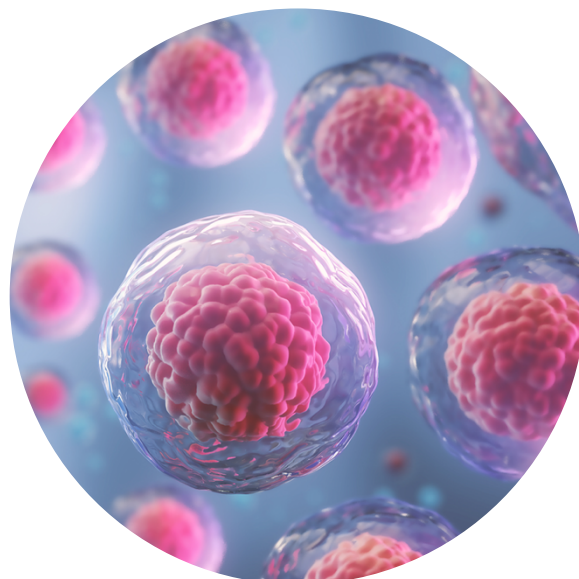
# Human Mesenchymal Stem Cells (HMSC)

FC-0020

FC-0034



This product is for Research Use Only.  
This product is not approved for human or  
veterinary use or for use in in vitro  
diagnostics or clinical procedures.

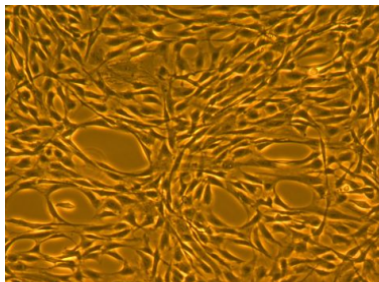


**LIFELINE**<sup>®</sup>  
CELL TECHNOLOGY

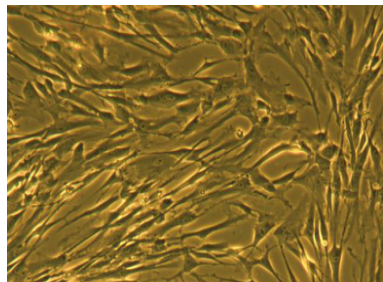
Better Solutions for  
Breakthrough Results

Human Mesenchymal Stem Cells-Adult (HMSC-Ad)

Human Mesenchymal Stem Cells-Wharton's Jelly (HMSC-WJ)



HMSC-Ad, passage4,  
4 days after inoculation with  
~4,500 cells/cm<sup>2</sup> (100X)



HMSC-WJ, passage3,  
5 days after inoculation with  
5,000 cells/cm<sup>2</sup> (100X)

**CELL FEATURES:**

- HMSC-Ad are isolated from adult lipoaspirate and are cryopreserved as secondary cells\*.
- HMSC-WJ are isolated from the Wharton's Jelly of human umbilical cord and are cryopreserved as secondary cells\*.
- HMSC are extensively tested for quality and optimal performance.
- Lifeline guarantees performance and quality.

**HUMAN MESENCHYMAL STEM CELLS ARE TESTED FOR:**

• Cell Count	HMSC-Ad – 1 x 10 <sup>6</sup> cryopreserved cells per vial HMSC-WJ – 500,000 cryopreserved cells per vial
• Morphology	Normal morphology for 3 passages
• Cell Viability	Minimum 70% viability when thawed from cryopreservation
• Sterility Testing	Negative for mycoplasma Negative for bacterial and fungal growth
• Virus Testing	Negative for HIV-1, HIV-2, HBV, and HCV by PCR
• Specific Staining	Positive <sup>§</sup> for CD29, CD44, CD73, CD90, CD105, CD166 Negative <sup>‡</sup> for CD14, CD31, CD34, CD45



Call Lifeline Technical Service and Sales at **877.845.7787**

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PART NUMBER	PRODUCT INFORMATION
<a href="#">FC-0020</a>	HMSC-WJ, Human Mesenchymal Stem Cells, Wharton's Jelly, Secondary – 500,000 cells per vial
<a href="#">FC-0034</a>	HMSC-Ad, Human Mesenchymal Stem Cells, Adult, Secondary – 1 x 10 <sup>6</sup> cells per vial
<a href="#">LL-0034</a>	StemLife™ MSC Medium Complete Kit (StemLife MSC Basal Medium, StemLife MSC LifeFactors™ Kit)
<a href="#">LS-1104</a>	GA Antimicrobial Supplement, 0.5 mL (Gentamicin 30 mg/mL, Amphotericin B 15 µg/mL); provided with purchase of LL-0034

PART NUMBER	RELATED PRODUCTS	FOR USE WITH PART NUMBER(S)
<a href="#">LL-0050</a>	AdipoLife™ DfKt™-1	<a href="#">FC-0034</a>
<a href="#">LL-0059</a>	AdipoLife DfKt-2	<a href="#">FC-0020</a>
<a href="#">LL-0052</a>	Oil Red O Staining Kit	<a href="#">LL-0050</a> <a href="#">LL-0059</a>
<a href="#">LM-0022</a>	ChondroLife™ Complete Chondrogenesis Medium	<a href="#">FC-0020</a> <a href="#">FC-0034</a>
<a href="#">LL-0051</a>	Alcian Blue Staining Kit	<a href="#">LM-0022</a>
<a href="#">LM-0023</a>	OsteoLife™ Complete Osteogenesis Medium	<a href="#">FC-0020</a> <a href="#">FC-0034</a>
<a href="#">CM-0058</a>	2% Alizarin Red Stain	<a href="#">LM-0023</a>

### Lifeline's Human Mesenchymal Stem Cells

Lifeline's Human Mesenchymal Stem Cells (HMSC) provide an ideal culture model for the study of multipotent stem cell biology. HMSC-Ad, and HMSC-WJ can each be expanded in an undifferentiated state for future differentiation to multiple lineages. Lifeline's HMSC may be differentiated down the typical mesenchymal lineages, such as adipogenic, chondrogenic, and osteogenic lineages.

Lifeline's HMSC are cryopreserved as secondary cells to ensure optimal phenotype and the highest viability and plating efficiency. Our HMSC are quality tested via flow cytometry to ensure proper expression of multiple markers of mesenchymal stem cells. There is a consensus in the published literature that mesenchymal stem cells do not express hematopoietic surface proteins such as CD45, CD34, and CD14, and that they do express STRO-1, SH-2 (CD105, endoglin), and SH3/SH4 (CD73). However, quantification of positive vs. negative expression is not universally standardized. Lifeline® has set stringent parameters for quantification of marker expression. Lifeline's HMSC are uniformly positive<sup>s</sup> for integrin CD29; matrix receptors CD44 and CD105; and stromal cell-associated markers CD73, CD90, and CD166. Lifeline's HMSC are uniformly negative<sup>+</sup> for hematopoietic lineage markers CD14, CD31, CD34, and CD45.

Lifeline's HMSC are not exposed to antimicrobials or phenol red when cultured in StemLife™ MSC Medium. Lifeline offers antimicrobials and phenol red; however they are not required for eukaryotic cell proliferation. A vial of



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Gentamicin and Amphotericin B (GA; LS-1104) is provided with the purchase of StemLife MSC Medium Complete Kit (LL-0034) for your convenience. The use of GA is recommended to inhibit potential fungal or bacterial contamination of eukaryotic cell cultures. Phenol Red (LS-1009) may be purchased, but is not required.

### Quality Testing for Guaranteed Consistency and Reproducible Results

Lifeline Cell Technology manufactures products using the highest quality raw materials and incorporates extensive quality assurance in every production run. Exacting standards and production procedures ensure consistent performance.

### The Lifeline Guarantee

Lifeline's rigorous quality control ensures sterility and performance to standardized testing criteria. Upon request, Lifeline will provide lot specific QC test results, material safety data sheets, and certificates of analysis. See complete guarantee/warranty statement at [lifelinecelltech.com](http://lifelinecelltech.com) or contact your Lifeline representative for more information.

All donated tissues have been obtained under proper informed consent and adheres to the Declaration of Helsinki, The Human Tissue Act (UK), CFR Title 21, and HIPAA Regulations relative to obtaining and handling human tissue for Research Use.

### Safety Statement

Lifeline recommends storing cryopreserved vials in liquid nitrogen vapor phase. Handle cryopreserved vials with caution. Always wear eye protection and gloves when working with cell cultures. Aseptically vent any liquid nitrogen from cryopreserved vials by carefully loosening the vial cap in a biosafety cabinet prior to thawing the vials in a water bath. If vials must be stored in liquid phase, the vials should be transferred to vapor phase storage or -80°C for up to 24 hours prior to being thawed.

*\*Lifeline Technical Note: There are different and often contradictory terminologies used by cell culture companies to define the passage number of cells. Lifeline's designation of 'primary cells' are cells that have been isolated from tissue, plated onto culture vessels, expanded, harvested and cryopreserved. The term 'secondary' indicates that the cells have been isolated, plated and expanded in culture vessels twice before being harvested for cryopreservation.*

*§Lifeline defines positive expression as when greater than 95% of the cell population expresses that cell marker.*

*‡Lifeline defines negative expression as when less than 2% of the cell population expresses that cell marker.*



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