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High quality reagents support stem cell expansion in a single use bioreactor

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Human mesenchymal stromal/stem cells (hMSCs) are used extensively in clinical studies for therapeutic agents and as drug discovery tools. Currently, in vitro culture methods are proving cumbersome to scale. We have previously demonstrated an expansion paradigm that uses a scalable, single use, stirred tank bioreactor with microcarrier scaffold for hMSC expansion. A bioreactor system enables direct monitoring for the specific characteristics of hMSCs at any point during the expansion, thus assuring product quality and consistency. There is a desire to remove animal-derived materials from the production process to minimize risk to the patient for a product that is minimally processed. We are evaluating alternatives to serum including human-derived material and other reduced serum formulations. Additionally, we have identified reagents that support robust growth in traditional 2D and more advanced suspension culture while maintaining cellular phenotype and functional potential. These materials can be used in place of currently used reagents to support xeno-free cell therapy production with confirmed consistency, quality and reproducibility in large scale in vitro systems.

Biography

Julie Murrell is a Senior R&D Manager for Stem Cell Biology and Collaborations at EMD Millipore. She has led an early technology assessment group for the past 7 years and has been part of the Stem Cell group for 3 years. Through that time, she has led the efforts to establish robust assays and identify new targets as key quality attributes for large scale stem cell manufacturing, with a special focus on hMSCs. Her background is in cell and molecular biology. Her multi-disciplinary background has led to innovative team-driven approaches in the field of stem cell production.

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