



Macromolecular Crowding In Cell Culture

Hyaluronic Acid Cocktail Composition for Enhanced Extracellular Matrix Deposition



Opportunity

In the fields of tissue engineering and regenerative medicine, creating cell culture environments that accurately mimic in vivo conditions is essential for effective extracellular matrix formation and proper cell differentiation. Researchers have long sought strategies to enhance ECM deposition through macromolecular crowding, aiming to optimize tissue regeneration and improve cell-based therapies.

Technology Overview

This technology differentiates itself by outperforming traditional agents, which have limitations in specificity and potential adverse effects. The unique pairing of varied hyaluronic acid molecular weights and high polydispersity not only tailors the microenvironment to more closely mimic in vivo conditions, but also modulates cell behaviour and differentiation more effectively. It selectively enhances extracellular matrix proteins (e.g. collagen III, IV, V, VI and laminin) deposition, improving stem cell behavior for tissue engineering.

Key Features/Advantages:

- Enhances selective extracellular matrix deposition.
- Creates a physiologically relevant macromolecular crowding environment, improving cell behaviour and differentiation in tissue engineering applications.
- Outperforms traditional macromolecular crowding agents in enhancing specific ECM components.
- Facilitates the development of more effective cell-based therapies and regenerative medicine strategies by mimicking in vivo extracellular matrix conditions.

Value Proposition:

Improves extracellular matrix formation

Markets:

- Tissue engineering cell cultures
- Regenerative medicine therapies
- In vitro drug screening platforms
- Stem cell expansion media

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