

MULTIFUNCTIONAL COMPOSITE MEMBRANE FOR SKIN TISSUE ENGINEERING AND THERAPY

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Polymeric nanostructured membranes represent appealing biomaterials for tissue engineering and regeneration. Specific membrane properties provide the biochemical stimuli and mechanical support able to boost cellular adhesion, proliferation and differentiation. Through the modulation of the preparation process parameters, membranes with specific functionalities and structural features can be designed as biomimetic microenvironments and innovative tools for the control of cellular morpho-functional behaviour [1-2].

Engineered biodegradable membranes in combination with human skin cells have been successfully created as skin models, recapitulating the natural milieu of the in vivo skin layers [3-5]. The membrane porous structure, in addition, act as a protective barrier for skin damages, ensuring oxygenation and repair.

As a further advanced membrane design, the membrane loading with bioactive molecules represents an additional challenging strategy to trigger or modulate biological processes, needed for skin tissue regeneration and repair. Innovative multifunctional composite membranes, combining polymeric materials with nanoparticles and bioactive molecules, will be presented in this work as advanced instructive biomaterials for skin tissue engineering and therapy.

References

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