

into a diverse range mitotic cell division for specific cell types. In this study, we prepared the AuNPs while incorporated into chitosan to form nanogold-chitosan composite films (AuNP-Chi). We use mesenchymal stem cells (MSCs) as model system to investigate the differential ability of MSCs on AuNP-Chi. The cell adhesion ability, gene expression level and stem cells differentiation ability was performed in this study.

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奈米金-聚乙二醇/氫氧基磷灰石合成膜在間葉幹細胞之效用

**Effect Mesenchymal Stem Cells on Nanogold-polycaprolactone/Hydroapatite Composite Films**

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Vascularization and osteogenesis play a critical role for bone tissue regeneration. The main goal of this proposal was intended to design a kind of ideal biomaterial for bone tissue engineering application. A simple surface modification method, comprising of a thin coating with nanogold particles (AuNPs) and poly (ethylene glycol) (PEG)/ hydroxyapatite (HA) was developed to improve the biocompatibility required for bone tissue regeneration. The behavior of mesenchymal stem cells (MSCs) while cultured on this biomaterials by using *in vitro* study in order to confirm the regeneration ability induced by AuNPs/PEG-HA. The better biocompatibility and cellular biological performance, such as cell growth effect, bone tissue differentiation capacity, migration ability was attributed to the extensively modified material surface morphological changing in the incorporated of a small amount of AuNPs at optimal concentration. We hope this novel

PEG-AuNPs/PCL-HA biomaterials combination of MSCs can provide effective clinical strategies for bone tissue engineering in the future.

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探討間葉幹細胞與奈米金粒子間的生物相容性與良好行為

**Biocompatibility and Favorable Behavior between Mesenchymal Stem Cells and Nanogold Particles**

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The lack of basic knowledge concerning stem cell biology-survival, migration, differentiation, integration in a contribution exposure for nanoparticles. A major challenge to the development of clinical applied stem cell therapy in medical practice remains the lack of efficient stem cell biosafety tracking methods and evaluate the biocompatibility between stem cells and nanogold particles (AuNPs). The aim of this study is to investigate mesenchymal stem cell-AuNPs interactions by using *in vitro* cell study.

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藉由矽酸鈣調控纖維母細胞生長因子從三鈣磷酸鹽骨填補物的釋放行為

**Regulation of Fibroblast Growth Factor-2 Release Ability of  $\beta$ -Tricalcium Phosphate for Bone Graft by Calcium Silicate**

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