PB-23

以聚多巴胺顆粒熒光碳納米顆粒的製備

Preparation of polydopamine particles for Fluorescent carbon nanoparticles

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The study used Polydopamine nanoparticles synthesized by microwave heating the carbon nanoparticles having fluorescent properties, in an alkaline environment polymerized polydopamine nanoparticles. Using a microwave is a uniform, fast and safe heating, microwave digestion in a short period of polydopamine particles into nano-carbon particles, based on the most recent years of research, polydopamine nanoparticles have good biological phase capacitive, carbon particles can be used as bio-nano-probe applications.

PB-24

探討間質幹細胞在納米金複合材料上的分化能力

Differentiation Capacity of Mesenchymal Stem Cells in Nanogold Composites

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A series amount of nanogold particles (AuNPs) modified in two different natural extracellular matrix: fibronectin and collagen to form fibronectin-nanogold composites (FN-AuNP) and collagen-nanogold composites (Col-AuNP) were used as a model system in this study. The main goal of this study was intended to explore the molecular mechanism of cell mesenchymal stem cells (MSCs) migration, proliferation and differentiation capacity while cultured on FN-AuNP and Col-AuNP materials.

PB-25

Partial surface modification on bio-inspired dry adhesives for usage in humid environments

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We applied thermal imprinting to fabricate gecko-feet-like nanostructures on HDPE films and partially modified those surfaces via dopamine and catechol to enhance their adhesion to wetted substrates. About 400 nm diameter nanopillar-patterns were prepared using nanoimprint and solvent replacement techniques to fabricate a practical, large-area dry adhesive tape. The completeness of a surface was enhanced to 95% and the tape with 400 nm diameter nanopillars showed 3170 nN adhesion force and was able to suspend 1.05 kg per cm2. In order to apply the adhesive in a humid environment, we introduced the controlled catecholic functional group on the nanopillars using a layer-by-layer method and micro-contact printing to modify the surfaces. The nanopillared surfaces displayed both polar and nonpolar interaction with a substrate under water.

PB-26

間葉幹細胞分化能力探討藉由金奈米子幾丁聚醣複合薄膜

The Differentiation Ability of Mesenchymal Stem Cells on Nanogold-Chitosan Composite Films

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Stem cells have ability to differentiate through

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.

PB-27

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.

PB-28

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.

PB-29

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 β-Tricalcium Phosphate for Bone Graft by Calcium Silicate

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