一種新的 3D 細胞列印支撐物

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2000/08 至 2009/07 國立中興大學化學工程學系(所) 教授

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1992/08 至 1994/07 中原大學醫學工程學系 副教授

市場及需求:

1. 組織工程與再生醫學
2. 藥物開發
3. 幹細胞研究

技術摘要:

利用商品化的藥品即可混合製備出可簡單移除的支撐材料，輔助 3D 生物列印成型。當支撐材料與生物支架列印完成後，利用特定方式，方能與 3D 生物支架脫離，且不會造成細胞毒性，為一容易移除的支撐材料。此外，還可藉由改變配方比例進行調控支撐材的強度。

優勢:

1. 簡易移除
2. 價格便宜
3. 具有多重反應(如溫度、酸鹼值)

競爭產品:

1. Infinity™ Rinse-Away support material

專利簡述:

本研究團隊近年來對於生醫材料的選擇與 3D 生物列印的應用有相當的了解，不僅在國際上發表了許多不同生醫材料(水膠)對細胞的影響外，3D 生物列印在神經與軟骨的修復上也有不錯的成果。由於此支撐材料非常容易移除外，還可藉由調整比例調控支撐材料的強度，也具有溫度與酸鹼敏感的特質，在 3D 生物列印上具有相當的應用潛力，故相關材料、技術與應用已申請專利保護。

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A newly supporting material for 3D cell printing

PI： Prof. Shan-hui Hsu; Institute of Polymer Science and Engineering, National Taiwan U.

Experience:

2009-08 ~ Institute of Polymer Science and Engineering, National Taiwan University; Professor

2000-08 ~ 2009-07 Department of Chemical Engineering, National Chung Hsing University; Professor

1996-08 ~ 2000-07 Department of Chemical Engineering, National Chung Hsing University; Associate Professor

1992-08 ~ 1994-07 Department of Biomedical Engineering, Chung Yuan Christian University; Associate Professor

Market Needs:

1. Tissue engineering and regenerative medicine
2. Drug development
3. Stem cell research

Our Technology:

The supporting material was easily developed by commercial chemicals and could facilitate to build complex structures or cell-laden constructs with designed patterns. After 3D bioprinting of supporting materials within the cell-laden hydrogels, we used the specific method to remove the supporting material. Cells remained alive and proliferated in printed hydrogel scaffolds after sacrificing the supporting material.

Strength:

This support material is cheap, easy development, easy to remove, and have multi-responsive properties. That is suitable for 3D bioprinting.

Competing Products:

1. Infinity™ Rinse-Away support material

Intellectual Properties:

Our team has accumulated experiences and scientific achievements on the investigation of biomaterials for 3D bioprinting. Our developed 3D bioprinting technique involving cells embedded in the thermoresponsive biodegradable bioink offers new possibilities for future applications of 3D bioprinting in neural tissue engineering.

Contact (do not need to fill out):

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