

課程名稱：BMES525400 幹細胞與組織工程

學分數：3

時間：Thursday 2, 3, 4

地點：醫環系 R105

授課老師：張建文 (C.W. Chang)

助教： TBD

學習目標：本課程的教學目標在於使修課同學能對當代組織工程發展取得深入的認識，因此在課程內容將涵蓋三大部分，包括：(1) 幹細胞生物學入門；(2) 新穎組織工程材料與技術（高分子支架、奈米基因治療、3D 生物列印、細胞治療）；(3) 幹細胞、組織工程應用實例。

Goal: Three main parts will be covered in this course, including: (1) Introduction of stem cell biology ; (2) Biomaterials & technologies for tissue engineering ; (3) Medical applications of stem cells and tissue engineering.

課程內容

L1 Introduction

L2 Biology background for tissue engineering I (Cell biology)

L3 Biology background for tissue engineering II (ECM)/Tissue culture

L4 Stem cells I: embryonic stem cells / group discussion

L5 Stem cells II: iPSCs & adult stem cells / group discussion

L6 Biomaterials I: Stem Cells & Biomaterials introduction / group discussion

L7Biomaterials II: Surface engineering of biomaterials, polymeric biomaterials / group discussion

L8 Biomaterials III: Tissue engineering scaffold / group discussion

L9 Gene therapy / group discussion

L10 3D Bioprinting on tissue engineering / group discussion

L11 TE (Tissue Engineering) on cardiovascular system / group discussion

L12 TE on musculoskeletal system I / group discussion

L13 TE on skin / group discussion

Final Written Exam

上課參考資料

1. Principle of Tissue Engineering, 3rd edition Edited by Robert Lanza, Robert Langer and Joseph Vacanti, Academic Press. (The electronic copy is available from NTHU library)
2. Tissue Engineering, Bernhard ø. Palsson and Sangeeta N. Bhatia.

評分標準

上課參與 20%

小組報告 40%

期末考 40%

AI 使用

有條件開放，請註明如何使用生成式 AI 於課程產出 Conditionally open; please specify how generative AI will be used in course output