

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 R517

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) 組織工程相關材料與技術；(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:

(2/25) L1 Introduction

(3/3) L2 Biology background for tissue engineering I (Cell biology)

(3/10) L3 Biology background for tissue engineering II (ECM)/Tissue culture

(3/17) L4 Stem cells I: embryonic stem cells

(3/24) L5 Stem cells II: iPSCs & adult stem cells

(3/31) L6 Biomaterials I: Stem Cells & Biomaterials introduction/ Journal paper discussion 1

(4/14) L7 Biomaterials II: Surface engineering of biomaterials, polymeric biomaterials/ Journal paper discussion 2

(4/21) L8 Biomaterials III: Tissue engineering scaffold/ Journal paper discussion 3

(4/28) L9 Gene therapy I (Principles of genetic cloning) / Journal paper discussion 4

(5/5) L10 Gene therapy II (Gene delivery methods)/ Journal paper discussion 5

(5/12) Written Exam

(5/19) L11 TE (Tissue Engineering) on cardiovascular system / Journal paper discussion 6

(5/26) L12 TE on musculoskeletal system I / Journal paper discussion 7

(6/2) L13 TE on skin /Journal paper discussion 8

上課參考資料:

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

評分標準

上課參與 10%

口頭專題報告 20%

書面專題報告 20%

期中考 50%