

科目課程簡介

課目名稱：(中文) 幹細胞利基專題

(英文) Special Topics on Stem Cell Niches

授課老師：(課程負責人)李佳霖

學分數：2 學分

修課資格：需與老師討論加簽

課程目標：

- (1) 上課主要將以深入淺出方式講解幹細胞利基所扮演的角色及對幹細胞的影響，如自行更新、分化潛能、基因調控，並以各種幹細胞為例子說明，使學生不但能獲得更高階的幹細胞生物學知識及研究方法，並激發其思考發展未來研究的洞察能力。

授課方式：

- (1) 演講
- (2) 討論
- (3) 專題報告: 同學按本身之專長或研究興趣，挑選 SCI 相關領域前 10% 之論文，提出口頭報告，師生和同學間藉此多向充分討論，以期達到學識分享、教學相長的目的。

授課進度表

| 週次 | 授課內容 | |
|----|---|--|
| 1 | Section I: Universality of the Stem Cell Niche Concept: From Plants to Mammals | 1. Plants and Worms |
| 2 | | 2. Drosophila Gonads |
| 3 | | 3. Mammalian Male Gonads |
| 4 | | 4. Mammalian Hair Follicle Melanocytes |
| 5 | | 5. Mammalian Neuronal Cells |
| 6 | Section II: The | 6. Drosophila Gonadal Niche |
| 7 | Cellular and Molecular Structure of | 7. A. The HSC Bone Marrow Niche B. The Role of the Endothelium in the Processes of HSC Homing and Engraftment into the Bone Marrow |

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|----|---|---|
| 8 | Stem Cell Niches | 8. A. The Contribution of Endosteum-Lining Cells to the Formation the HSC Niche B. The Contribution of Perivascular Sites to the Formation of HSC Niches C. Contribution of Subendothelial-Region Cells in the Bone Marrow Stroma |
| 9 | | 9. Anchoring of HSCs to Their Niches |
| 10 | | 10. Molecular Signaling Controlling HSC in Their Niches |
| 11 | | 11. In Vitro Simulations of HSC Niches |
| 12 | | 12. A Critical View of Current Knowledge Regarding the Structure and Function of the HSC Niche |
| 13 | | 13. A. The Epithelial Stem Cell Niche B. Mammalian Neuronal Cell Niches C. Intestinal Niche |
| 14 | | Section III: The Molecular Basis of Stem Cell Niches |
| 15 | 15. Studies on Mammalian Stem Cell Self-Renewal: Relevance to the Niche | |
| 16 | 16. The Molecular Basis of Asymmetrical Divisions | |
| 17 | 17. Homeless Orphans: Stem Cells with Unknown Niches | |
| 18 | Section IV: Conclusions, Questions, and Enigmas | 18. A. Do Different Types of Stem Cells Exist, Some Niche-Dependent and Others Niche-Independent? B. Tissue Microenvironments Versus Stem Cell Renewal Niches C. Are There Niches for Multi/Pluripotency? |

成績評量：

| 計分項目 | 評分次數 | 配分比% |
|------|------|------|
| 出席 | 18 次 | 30% |
| 口頭報告 | 2 次 | 40% |
| 書面報告 | 1 次 | 30% |
| 總計 | | 100% |