



胡 育 誠 教 授

YU-CHEN HU, PROFESSOR

- 國立臺灣大學 學士，民國八十一年
- 美國馬里蘭大學 碩士，民國八十五年
- 美國馬里蘭大學 博士，民國八十八年
- B.S. National Taiwan University, 1992
- M.S. University of Maryland USA, 1996
- Ph.D. University of Maryland USA, 1999

主要研究領域

▪ 基因治療

發展桿狀病毒作為基因治療載體，探討影響基因傳遞與表現之機轉及以分子生物技術改良其基因表現。

▪ 組織工程與再生醫學

應用桿狀病毒傳遞生長因子基因或non-coding RNA以促進組織再生。

▪ 疫苗開發

開發類病毒顆粒及self-amplifying mRNA作為腸病毒及動物疫苗平台。

▪ 利用CRISPR/CRISPRi進行基因修改及調控

利用CRISPR/CRISPRi技術調控代謝相關基因，進而增加目標產物之產量，或調控幹細胞分化，並應用於組織工程。

▪ 癌症治療

結合基因治療於癌症治療。

Main Research Interests

▪ Gene Therapy

Development of baculovirus as a gene delivery vector. Application of molecular biology techniques to enhance and prolong transgene expression. Exploiting synthetic biology concept to develop baculovirus vectors for diverse applications.

▪ Tissue Engineering

Development of novel baculovirus vectors to deliver anabolic genes and/or non-coding RNA to promote tissue regeneration/repair.

▪ Development of New Vaccine Platform

Development of virus-like particle (VLP) and self-amplifying mRNA as new vaccine platforms.

▪ CRISPR-based Genome Editing and Regulation

Combining CRISPRi and CRISPRa to manipulate the cellular metabolic networks to exploit cells for bio-derived product production or to regulate cell differentiation for tissue regeneration.

▪ Cancer Therapy

Combination of baculovirus-mediated gene therapy, anti-angiogenesis or miRNA for cancer therapy.

代表作 (Selected Publications)

- Hsu, M.-N., Yu, F.-J., Chang, Y.-H., Huang, K.-L., Pham, N. N., Troung, A.V., Lin, M.-W., Nguyen, N.T.K., Hwang, S.-M., **Hu, Y.-C.*** 2020 Sep. CRISPR interference-mediated Noggin knockdown promotes BMP2-induced osteogenesis and calvarial bone healing. *Biomaterials*. 252: 120094. (**IF 10.317**).
- Hsu, M.-N., **Hu, Y.-C.***. Local magnetic activation of CRISPR. 2019 Feb. *Nature Biomedical Engineering*. 3: 83-84. (**IF 18.952**).
- Hsu, M-N., Chang, Y.-H., Truong, V. A., Nguyen, N.T.K., **Hu, Y.-C.*** 2019 Dec. CRISPR technology for stem cell engineering and regenerative medicine. *Biotechnology Advances* 37:107447. (**IF 10.744**).
- Truong, V. A., Hsu, M-N., Nguyen, N.T.K., Lin, M-W., Shen, C.-C., Lin, C.-Y., **Hu, Y.-C.*** 2019. July. CRISPRai for simultaneous gene activation and inhibition to promote stem cell chondrogenesis and calvarial bone regeneration. *Nucleic Acids Research*. 47: e74 (**IF 11.501**).
- Shen, C.-C., Hsu, M.-N., Chang, C.-W., Lin, M.-W., **Hu, Y.-C.***. 2019 Feb. Synthetic switch to minimize CRISPR off-target effects by self-restricting Cas9 transcription and translation. *Nucleic Acids Research*. 47: e13 (**IF 11.501**).
- Lin, M.-W., Tseng, Y.-W., Shen, C.-C., Hsu, M.-N., Hwu, J.-R., Chang, C.-W., Yeh, C.-J., Chou, M.-Y., Wu, J.-C., **Hu, Y.-C.***. 2018, Sep. Synthetic switch-based baculovirus for transgene expression control and selective killing of hepatocellular carcinoma cells. *Nucleic Acids Research*. 46: e93 (**IF 11.501**).
- Hsu, M.-N., Liao, H.-T., Li, K.-C., Chen, H.-H., Yen, T.-C., Makarevich, P., Parfyonova, Y., **Hu, Y.-C.***. 2017 Sep. Adipose-derived stem cell sheets functionalized by hybrid baculovirus for prolonged GDNF expression and improved nerve regeneration. *Biomaterials*. 140: 189-200 (**IF 10.317**)
- Lo, S.-C., Li, K.-C., Chang, Y.-H., Hsu, M.-N., Sung, L.-Y., Troung, A.V., **Hu, Y.-C.***. 2017 April. Enhanced critical-size calvarial bone healing by ASCs engineered with Cre/loxP-based hybrid baculovirus. *Biomaterials*. 124: 1-11 (**IF 10.317**).
- Li, K.-C., Chang, Y.-H., Yeh, C.-L., **Hu, Y.-C.***. 2016 Jan. Healing of osteoporotic bone defects by baculovirus-engineered bone marrow-derived MSCs expressing microRNA sponges. *Biomaterials*. 7 4: 155-166 (**IF 10.317**).
- Chen, C.-L., Tseng, Y.-W., Wu, J.-C., Chen, G.-Y., Lin, K.-C., Hwang, S.-M., **Hu, Y.-C.***. 2015 March. Suppression of hepatocellular carcinoma by baculovirus-mediated expression of long non-coding RNA PTENP1 and microRNA regulation. *Biomaterials*. 44: 71-81 (**IF 10.317, High Cite paper**).