Department of Pharmacology Seminar Series



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Delta Opioid receptors: Important Role In wound healing

In addition to its analgesic functions, the peripheral opioid receptor system affects skin homeostasis through effects on cell differentiation, proliferation, apoptosis, migration and adhesion. Our group has shown that delta-opioid receptor (DOR) knockout mice reveal as phenotype an atrophic epidermis and over-expression of keratin 10. In addition, the DOR knockout mice have delayed wound healing in a burn wound model and have on the wound margin epidermal hypertrophy and over-expression of dermal MMP-2 and Collagen IV. This suggests that DOR effects keratinocyte migration and/or proliferation during skin homeostasis.

Recent results from our group reveal that not only keratinocytes, but also human fibroblasts are under control of delta opioid receptors and its ligands. We used an in-vitro wound scratch model using human immortalized keratinocytes (N/TERTS) and primary human fibroblasts and we could observe that the DOR ligands were much more stimulating migration than MOR ligands and that there exists a complicated agonist/antagonist relationship. New results on mice by using topically applied opioid ligands show a significant improvement of wound healing in a full thickness, punch biopsy model. In addition, for the past a few years, it has been our major task to ask what is the molecular consequence of delta opioid receptor activation in keratinocytes and how could that influence skin differentiation, homeostasis and finally wound healing. Our discovery of a transcription factor exclusively expressed in epidermis and acts as a bi-functional transcription factor activating and repression of keratin expression is involved in this important signaling pathway.

> Date: Time: Venue: Chairperson:

> > National University

of Singapore

Thursday, 9 April, 2015 4:30 pm – 5:30 pm MD6-01-02 Dr. Deron R. Herr

National University

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