

# Multiple functions of PPAR- $\beta$ during wound repair

The three isotypes of Peroxisome Proliferator-Activated Receptor (PPAR), designated PPAR $\alpha$  (NR1C1), PPAR $\beta$  (NR1C2) and PPAR $\gamma$  (NR1C3) belong to the nuclear receptor superfamily. They are activated by fatty acids and their derivatives, as well as hypolipidemic and antidiabetic drugs. Their dysfunction has been implicated in the manifestation of many diseases and illnesses, ranging from obesity to cancer. The role of the PPAR $\beta$  isotype during wound healing will be discussed. With respect to the mouse epidermis, PPARs are expressed during foetal development but they disappear progressively from the interfollicular epithelium after birth. Interestingly, PPAR $\alpha$  and  $\beta$  expression is reactivated in the adult epidermis after various stimuli, resulting in keratinocyte proliferation and differentiation. Using PPAR $\alpha$ ,  $\beta$  and  $\gamma$  mutant mice, we demonstrate that PPAR $\alpha$  and  $\beta$  are important for the rapid re-epithelialization of a skin wound and that each of them plays a specific role in this process. These findings reveal unpredicted roles of PPAR $\alpha$  and  $\beta$  in adult mouse epidermal repair. PPAR $\alpha$  plays a role in the infiltration of leucocytes during inflammation. PPAR $\beta$  is an important early transcription factor relaying inflammatory signals at the cell surface into specific gene expression patterns, which define appropriate cellular responses such as apoptosis, proliferation, differentiation and migration. This discovery of an important role for PPAR $\beta$  and its ligands in the keratinocyte response to injury fills a major gap in our understanding of the molecular mechanisms involved in skin repair and highlights PPAR $\beta$  as a possible target for wound healing drugs.

Dr Andrew Tan Nguan Soon



Institute of Animal Biology , Department of Biology  
Universite de Lausanne, Switzerland

**Date:** Friday January 10, 2003  
**Venue:** LT 20  
**Time:** 4 - 5 pm  
**Host:** Professor Ding Jeak Ling

All are welcome