J Clin Exp Dermatol Res 2016, 7:4 (Suppl)
http://dx.doi.org/10.4172/2155-9554.C1.036

# 8th Clinical Dermatology Congress

**August 24-25, 2016 Sao Paulo, Brazil**

## Mohs micrographic surgery

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Mohs micrographic surgery (MMS) is a method of excision that provides complete microscopic control of tumor margins and offers cure rates superior to those of other treatment options. It is most commonly used for cutaneous malignancies and can be used for benign neoplasms in special situations. It is a meticulous technique performed by a physician skilled in cutaneous surgery and pathology, in which horizontal frozen histologic sections of the surgical margins of the excised tumor are generated for the most complete microscopic examination possible. Residual malignant extensions of the margins are mapped and excised selectively until the entire tumor is removed. This selective removal of malignant tissue allows preservation of healthy tissue and thus smaller defects. Defects may be repaired immediately, allowed to heal by second intention or undergo delayed reconstruction. MMS is usually per¬formed in an outpatient setting over several hours using local anesthesia. In this presentation, all steps of MMS will be reviewed. Pitfalls and MMS use in rare or challenging situations will be presented and discussed.

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## Why red-haired individuals are so prone to developing melanoma?

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Variants in the melanocortin-1-receptor (MC1R) gene, encoding a trimeric G protein-coupled receptor activated by α-melanocyte-stimulating hormone (α-MSH) are frequently associated with red or blonde hair, fair skin, freckling and skin sensitivity to ultraviolet (UV) light and several (RHC-variants) also associate with increased melanoma risk. However, not all of these associations have been attributed to phenotype, suggesting that some variants affect melanoma risk independent of phenotype. We have introduced MC1R loss-of-function mutations into the albino mice with complete absence of melanin and found that MC1R loss-of-function mutations augment UV-induced melanoma development *in vivo*, independent of their effects on pigmentation. For the additional roles of MC1R in melanoma development beyond pigmentation, MC1R controls UVB-induced G1-like cell cycle arrest and subsequent onset of premature senescence in melanocytes, abrogation of which contributes to melanoma development. Mechanistically, wt-MC1R stabilized PTEN against proteolytic degradation under UV exposure, resulting in inhibition of AKT phosphorylation and activation after UV exposure. These results provided a key insight into why red haired people are more likely to get melanoma and will potentially lead to the development of novel strategies and identification of therapeutic targets for melanoma toward developing targeted therapies in preventing and treating red-haired population suffering from melanoma.

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