

## **Stress-Induced Apoptosis of LRCs and CD98-Positive Cells in Hair Follicle Bulge**

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Stress-induced alopecia in mice characterize premature onset of catagen accompanied by apoptosis predominantly in bulge region of hair follicle, the residence of stem cells and transit-amplifying cells. However, our understanding still elucidated which type of bulge cells have been more sensitive destroyed, if these attack would be associated with irreversible hair growth inhibition. Therefore, we investigated stress-induced bulge region apoptosis using LRCs(BrdU) and NOVEL transit-amplifying cell marker(CD98) in chronic stress mouse model. Using anti-BrdU, anti-CD98 antibodies and TUNEL kit, triple-immunofluoresce method was performed to study hair follicle bulge region apoptosis. Statistical analysis were done by the Mann-Whitney U/Wilcoxon rank tests (SAS ver. 9.0). High levels of BrdU- and CD98-positive cells expressed in bulge region, and expression of CD98-positive cells were more expressed than that of BrdU. Intrafollicular apoptosis was significantly increased in stressed groups ( $p < 0.0001$ ). Apoptosis of BrdU ( $p < 0.001$ ) and CD98-positive cells ( $p < 0.01$ ) in stressed group was significantly increased. Taken together, these results suggest both LRCs and CD98-positive cells of bulge region have sensitive response to stress. Despite the precise mechanism of cell death by stress is obscure; stress may lead to permanent hair loss.

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