**Title**: Understanding the impact of angiopoietin-like protein 4 (ANGPTL4) on keratinocytes migration and proliferation using time lapse microscopy and live cell imaging

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**Introduction**

Skin wound healing involves both epithelia cell proliferation and migration, which are modulated by numerous secretory factors. Fasting-induced Adipose Factor (FIAF) was shown to be upregulated during wound healing, however its effects on migration and proliferation of keratinocytes remains unclear. By using immortalized form of keratinocytes (HaCaT) and FIAF-knockdown keratinocytes (HaCaT\textsubscript{KD}) with and without proliferation inhibitor (Mitomycin C), we aim to determine the effect of FIAF on keratinocyte migration and proliferation during wound healing.

**Aims**

To determine if FIAF is involved in the migration and proliferation during *in vitro* scratch wound

**Methods**

- Subculturing/Seedings of cells
- Incubate for 1 day to confluency
- Scratching of cells
- Live cell imaging using time-lapse microscopy

**Results & Discussions**

Images of (a, b) HaCaT cells and (c, d) HaCaT\textsubscript{KD} (FIAF-knockdown) under normal culture condition and upon treatment with mitomycin C (b, d) at indicated time intervals of 0, 2, 4 and 6 hours.

Size of wound inflicted: approx 200μm

Our results reveal that the deficiency in FIAF expression impairs cell migration. HaCaT cells migrate faster to close the *in vitro* wound when compared to HaCaT\textsubscript{KD} cells. In a separate experiment, Mitomycin C was added to determine the rate of migration of the cells independent of cell proliferation. Our findings showed that the migration rate of HaCaT cell was significantly faster HaCaT\textsubscript{KD} cells in the absence of cell proliferation, but still slower than cells under normal condition. These observations underscore the role of FIAF in both cell proliferation and migration during wound healing.

**Conclusion**

Our results reveal that the deficiency in FIAF expression impairs cell migration. HaCaT cells migrate faster to close the *in vitro* wound when compared to HaCaT\textsubscript{KD} cells. In a separate experiment, Mitomycin C was added to determine the rate of migration of the cells independent of cell proliferation. Our findings showed that the migration rate of HaCaT cell was significantly faster HaCaT\textsubscript{KD} cells in the absence of cell proliferation, but still slower than cells under normal condition. These observations underscore the role of FIAF in both cell proliferation and migration during wound healing. Further studies will establish the molecular mechanism of its action.