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Biochemistry and Molecular Biology Brown Bag Series

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"ΔNp63α Positively Regulates ERK3 Expression in Squamous Cell Carcinoma of the Skin"

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11:00 AM

129 Medical Sciences Building

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http://www.med.wright.edu/bmb

Title: ΔNp63α Positively Regulates ERK3 Expression in Squamous Cell Carcinoma of the Skin

Presenter: Eid Alshammari

Abstract:

Squamous Cell Carcinoma (SCC) is a cancer originated from abnormal squamous cells. It includes many types of cancer in different organs, such as squamous cell skin carcinoma (SCC) of the skin and squamous cell lung carcinoma (SCLC). p63, a member of p53 gene family, is known to be important for epithelial tissue growth and development. ΔNp63α, a main isoform of p63, is highly expressed in both SCC of the skin and SCLC and plays important roles in SCC development. Extracellular signal regulated kinase 3 (ERK3) is an atypical member of MAPK family. It possesses a single phosphorylation site (serine 189) in its activation loop, which makes it different from the conventional MAPKs. Similar to ΔNp63α, the expression level of ERK3 is upregulated in both SCC of the skin and SCLC. While ERK3 was shown to promote invasiveness of squamous cell lung cancer, little is known about ERK3's role in squamous cell cancer of the skin. In addition, how ERK3 expression is upregulated in SCCs remains largely unknown. Given that the expression levels of both ΔNp63α and ERK3 are upregulated in SCCs, we want to test whether ΔNp63α, as a transcriptional factor, regulates ERK3 expression in SCCs and if ERK3 acts as a downstream mediator of ΔNp63α in controlling squamous cell carcinoma cell growth and invasiveness. Indeed, ΔNp63α and ERK3 are co-overexpressed and have positive correlation in tissue microarrays of normal human skin, squamous cell carcinomas of the skin and basal cell carcinoma of the skin as well. In addition, silencing ΔNp63α reduced ERK3 expression level in HaCaT keratinocytes and A431 squamous cell carcinoma cells. Moreover, silencing either ΔNp63α or ERK3 greatly enhanced A431 cell migration. However, knockdown of ERK3 in squamous cells does not show significant effect on cell proliferation. These findings support our hypothesis that ERK3 is transcriptionally regulated by ΔNp63α and mediates ΔNp63α's roles in squamous cell carcinoma of the skin.