Research & Table Clinic Day 2020 Structured Abstract

TITLE: ATAD3A plays an oncogenic role in head and neck cancer

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OBJECTIVES: With approximately 500,000 new cases diagnosed each year, head and neck squamous cell carcinomas (HNSCC) remain one of the leading causes of cancer-related deaths. Thus, there is great interest to identify novel therapeutic targets against HNSCC. In this project, we aim to gain a deeper appreciation of ATAD3A, the ATPase family AAA-domain containing protein3A, and its oncogenic role in HNSCC, as well as its potential as a target in future patient therapies.

METHODS: ATAD3A knockout cells were generated by CRISPR-Cas9 editing system. Cancer cell growth was assessed by MTT, colony formation, soft agar, and 3D cell cultures. Protein levels were examined by Western blotting. Particularly, for 3D cell cultures, cells were seeded into the SeedEZ scaffold supplied with the complete medium, followed by DAPI/Phalloidin double staining and imaging under a fluoresce microscope.

RESULTS: Knockout of ATAD3A in HN12 cells was validated though western blotting and subsequently showed to significantly decrease cell proliferation and colony formation after three days and three weeks, respectively. Furthermore, loss of ATAD3A expression led to reduced cell growth in 3D culture system, as revealed by decreased DAPI/Phalloidin intensity after fourteen days in the SeedEZ scaffold.

CONCLUSIONS: ATAD3A is required and sufficient to drive HNSCC oncogenesis.

LEARNING OBJECTIVES:

1. Determine whether ADAD3A plays a critical role in driving the oncogenetic process in HNSCC cells.