

ATAD3A as a novel mitochondrial oncogene in head and neck squamous cell carcinoma

Caleb Jensen¹, Liwei Lang², Yong Teng^{2,3}

¹ Department of Biology, College of Science and Mathematics, Augusta University, Augusta, GA, USA

² Department of Oral Biology and Diagnostic Sciences, Dental College of Georgia, Augusta University, Augusta, GA, USA

³ Georgia Cancer Center, Medical College of Georgia, Augusta University, Augusta, GA, USA

Abstract

For patients with head and neck cancer whose tumors are HPV negative HPV(-), current therapy does not lead to significant longevity and most succumb to loco-regional recurrence of the primary tumor. We discovered that HPV(-) head and neck squamous cell carcinoma (HNSCC) highly expressed ATPase family AAA-domain containing protein 3A (ATAD3A). ATAD3A is the mitochondrial protein, which has been demonstrated as an oncogene in breast and lung cancer. However, nothing has been reported regarding its role in HNSCC. Using the HPV(-) HNSCC cell line HN12 as a cell model, we show here that knockout of ATAD3A expression by CRISPY-CAS9 in HNSCC cells, leading to reduced cell proliferation and decreased the ability of colony formation and anchorage-independent growth in soft agar. Importantly, ATAD3A loss also significantly suppressed HNSCC cells to grow in 3D culture. Together, these findings suggest the potential oncogenic role of ATAD3A in HNSCC cells, and implicate that ATAD3A represents a promising target for better treatment of patients with HPV(-) HNSCC.

Key words: HNSCC, ATAD3A, 3D culture, oncogene

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