

**PIs:** Wook Jin (Eddie) Chae, PhD and Hisashi Harada, PhD

**Title:** Tumor-promoting Immune mechanisms via DKK1 in Head and Neck Cancer (HNSCC)

Head and neck cancer is the sixth leading cancer, and 600,000 cases are diagnosed globally. Conventional treatment approaches such as chemotherapy and radiation therapy have been associated with high morbidity and poor prognosis after relapsing within 3-5 years. In the recurrent and metastatic setting, two immunotherapeutics, pembrolizumab, and nivolumab, have been approved by FDA and EMEA for advanced head and neck cancer. However, not all head and neck cancer patients benefit from immunotherapy, urging a new therapeutic intervention based on novel research findings.

Importantly, expression levels of an immunomodulatory factor, Dickkopf1 (DKK1), are elevated in several human cancer types, including head and neck cancer. This finding indicates that the higher DKK1 expression correlates to poor prognosis. However, how DKK1 hijacks the immune system to favor head and neck cancer remains unknown.

Inspired by collaborations and promising preliminary data, our pilot project aims to obtain crucial results to address DKK1-mediated inflammation and tumorigenesis in mouse models and cell cultures of head and neck cancer. We will use genetic, pharmacological, molecular biological, and immunological approaches to achieve this goal. The project will be further strengthened by a team of scientists for biostatistics and clinical pathology to provide translational potential to a clinic.