# MASTER'S THESIS

## ICG-001 inhibits metastasis of nasopharyngeal carcinoma via miRNA-134/β1-integrin axis

Chiang, Yiu Chun

*Date of Award:*
2020

# Abstract

**Background** ICG-001, an antagonist of CBP (CREB-binding protein), has been demonstrated to exert anti-tumor activity via the modulation of the Wnt signalling pathway. It has previously been demonstrated that miRNAs play an important role in ICG-001-mediated tumor suppression. In the present study, the role of miRNA-134 and β1-integrin in ICG-001-mediated anti-tumor activity in nasopharyngeal carcinoma (NPC) was examined.

**Methods** NPC cell lines including C666-1, HONE-1 and HK-1 were used in this study. RT-PCR and Western blot were used to study the expression of miRNA-134 and the protein expression of the target proteins, respectively. Confocal microscopy was used to analyse the subcellular localization of β1-integrin. In the functional studies, *in vitro* endothelial adhesion assay and *in vivo* nude mice model were used to evaluate the adhesion and migration of ICG-001-treated NPC cells in animals, respectively.

**Results** ICG-001 was found to up-regulate the expression of miRNA-134 and down-regulate β1-integrin in NPC cells. The effect was accompanied with the inhibition of the adhesion of NPC cells to lung endothelial cells. In addition, over-expression of miRNA-134 would down-regulate the expression of β1-integrin. Results from β1-integrin 3'UTR Renilla luciferase reporter assay confirmed that β1-integrin is a target of miRNA-134 in NPC cells. In the animal study, the ability of ICG-001-pretreated NPC cells or stable miRNA-134 expressing NPC cells to migrate to the mouse lung was greatly reduced.

**Conclusion** The CBP antagonist ICG-001 may further be developed as an anti-tumor agent for the treatment of nasopharyngeal carcinoma.

# Table of Contents