ImmunoTools *special* Award 2015

Paweena Dana, PhD-student

Supervisors: Prof. Sopit Wongkham and
Dr. Kulthida Vaeteewoottacharn

Department of Biochemistry, Faculty of Medicine, Khon Kaen University, Khon Kaen 40002, Thailand

Role of CD147 in cholangiocarcinoma

CD147/EMMPRIN (extracellular matrix metalloproteinase inducer), a highly glycosylated transmembrane protein, is a member of the immunoglobulin super family. CD147 plays several roles in physiological condition. CD147 involves lymphocyte responsiveness, spermatogenesis, implantation, fertilization and neurological functions at early stages of development. CD147 serve as a receptor of secreted cyclophylin A which promote cell proliferation. An essential role of CD147 in modulating MMPs expression during normal tissue remodeling and differentiation were reported. CD147 can stimulate the production of several matrix metalloproteinases (MMP-1, MMP-2, MMP-3, MMP-9, MMP-14, MMP-15) in fibroblasts, endothelial cells and some epithelial cells. Two isoforms of CD147 are identified; membrane bound and soluble forms, which both forms can induce MMP expression. The expressions of CD147 was up-regulated at both mRNA and protein levels in several cancer cell types, including carcinomas of the urinary bladder, breast, lung, oral cavity, esophagus, skin, and lymphoma. Roles of CD147 have been proven in some cancers; suppression of CD147 reduces cancer cell proliferation in melanoma and gastric cancer; while, over-expression of CD147 promotes cell invasion and migration in hepatocellular carcinoma and pancreatic cancer. CD147 also plays role in anoikis resistance, chemoresistance, and anti-apoptosis.

CD147 is regulated by several growth factor such as EGF, IGF-I, TNF-α. EGF, IGF-I and TNF-α could induce CD147 expression in cancers including hepatocellcular carcinoma, lung adenocarcinoma and breast cancer. The expression of CD147 can stimulate the productions of proinflamatory and proangiogenic factors such as IL-1β, IL6, IL-8, IL-18 and VEGF. Well understanding in regulation of CD147 expression and protein–protein interactions is needed to open the view of therapeutic intervention strategies of many cancers.

Cholangiocarcinoma (CCA) is the primary cancer of the bile ducts. CCA arises from malignant transformation of cholangiocytes, the epithelial cells lining the biliary apparatus. CCA is rare in the United States and Europe where the tumor incidence is 1 per 100,000 people per year, whereas, CCA incidence is very high in Southeast and East Asia. Most recent review indicated that Thailand is the country with the highest incidence of CCA in the world. The problems of CCA are high morbidity and mortality rates, and difficult to early diagnosis, with most patients having advanced incurable disease at presentation and often these patients are deemed poor candidates for curative surgery. Treatment of cholangiocarcinoma is problematic. The best treatment is resection but most tumors are unresectable at diagnosis, mean survival in unresectable patients is 6 months. At the present, treatment for CCA remains less effective, so it is needed to develop novel chemotherapeutic strategies by explore molecular targets which are aberrant expression in the process of cholangiocarcinogenesis and progression.

The expressions of CD147 on CCA cell membrane as well as the soluble CD147 are of our interest. We would like to determine the association of CD147 on cytokine productions of CCA cell lines. The effects of various growth factors on CD147 together with inflammatory cytokine production in CCA cell lines will be determined. We found several ImmunoTools reagents as listed below are very useful for exploring the roles of CD147 on inflammatory cytokine production proposed in this study. These information may reveal the new targets for therapy of CCA in the future.

ImmunoTools *special* AWARD for **Paweena Dana** includes 23 reagents

FITC - conjugated anti-human CD29, CD61, IL-6, Control-IgG1, Annexin V,

PE - conjugated anti-human CD147,

APC - conjugated anti-human CD147,

human ELISA-set for 96 wells, human IL-6, human sCD147 (sEMMPRIN), (each 3 reagents),

recombinant human cytokines: rh IGF-I, rh IGF-II, rh IL-1beta /IL-1F2, IL-6, IL-8, rh IL-12, rh TGF-beta3, rh TNFα, rh VEGF-121, rh VEGF-A/VEGF-165

DETAILS more AWARDS