

FUNDING PROGRAM FOR NEXT GENERATION WORLD-LEADING RESEARCHERS

Project Title: Interactions between normal and transformed epithelial cells-A road to establishment of a novel cancer therapy

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1. Background of research

Cancers arise from a mutation in a single cell within a tissue. However, at present, it remains unclear what happens at the interface between the newly transformed cell and the surrounding normal cells, which is still a black box in cancer biology. We are the first group that has revealed that the presence of surrounding normal cells substantially influences the signaling pathways and behavior of transformed cells, leading to cell death of the transformed cells and/or their elimination from the body.

2. Research objectives

How do normal and transformed cells recognize the differences between them and respond accordingly? We are going to identify key molecules that are involved in the intercellular recognition processes using newly established cell culture systems and various biochemical screenings. Furthermore, we will establish suitable mouse model systems to analyze the function of the identified molecules.

3. Research characteristics (incl. originality and creativity)

This project focuses on the 'social' interactions between normal and transformed epithelial cells which has been overlooked in the previous conventional cancer researches. We have published several papers on this issue in 2009-11, and are currently leading this newly emerging research field.

4. Anticipated effects and future applications of research

By analyzing molecules that specifically function at the boundary between normal and transformed epithelial cells, we would like to establish a novel type of cancer prevention and treatment and provide people with a 'cancer-free' life.