CHAPTER V

CONCLUSION

This study aimed to generate and characterize a recombinant antibody fragment, scFv, which reacted specifically to CD147 and further investigated the biological properties, function and the effect of generated scFv on CD147 expression. Phage display technology was introduced to generate the functional antibody fragment to CD147. The recombinant antibody fragments, Fab and scFv, of the murine monoclonal antibody (clone M6-1B9) reacted specifically to CD147 as shown by indirect enzyme-linked immunosorbent assays (ELISA) using a recombinant CD147-BCCP as a target. This indicated that the Fab- and scFv-M6-1B9 displayed on phage surfaces were correctly folded and functionally active. In addition, the soluble scFv-M6-1B9 produced from *E. coli* HB2151 bound to CD147 surface molecule and restrained OKT3-induced T cell proliferation. We subsequently constructed a CD147-specific scFv that was expressed intracellularly and retained in the endoplasmic reticulum after adenoviral gene transfer. Likewise, soluble lysate of scFv-M6-1B9 from 293A cells, transduced with a scFv-M6-1B9 expressing adenovirus vector, recognized both recombinant and native CD147. These results indicate that scFv-M6-1B9 binds with high efficiency and specificity. Thereafter, the expression of CD147 on the surface of transduced cells was analyzed by flow cytometry. Importantly, scFv-M6-1B9 intrabody reduced the expression of CD147 on the cell surface of 293A, HeLa, and Jurkat cells suggesting that scFv-M6-1B9 is biologically active. Colocalization of scFv-M6-1B9 intrabody with CD147 in the ER network was

depicted using an immunofluorescence staining. In conclusion, we generated biologically active antibody fragments which bind specifically to both intracellular and extracellular CD147. The generated scFv-M6-1B9 may be an effective agent to study the cellular function of CD147 and may aid in efforts to develop a novel treatment for various human carcinomas.