Generation of novel monoclonal antibody with the specificity for the mature stage of intestinal epithelial cells


Intestinal epithelial cells (IEC) create functionally heterogeneous boundary which provides barrier against the perturbation by plethora of potential pathogens and nonself antigens as well as to accept numerous nutrient substances for the host. In addition, IEC provide immunological nest for intraepithelial lymphocytes. However, it remains unknown whether the functional heterogeneity depends on subsets of IEC. In order to identify the subsets, we produced several monoclonal antibodies (mAbs) against surface protein of porcine IEC. IEC were isolated by the enzymatic digestion followed by the negative selection using MACS with anti porcine CD45 antibody from the small intestine. These purified IEC were used for the immunization of BALB/c mice. Among several clones, the western blotting study revealed that mAb #17-6 specifically reacted protein with Mw 16kDa of IEC. The immunohistochemical study by light and electron microscopy showed that mAbs #9-3 and #17-6 strongly reacted with microvilli of mature IEC in villus but not crypt epithilum. The findings suggest that the molecule recognized by these newly developed mAbs might be associated with the maturation process of IEC.