A novel Antibody based approach to Cancer Treatment

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Cancer is one of the leading causes of death among the human race. No valid modalities of treatment other than surgical treatment have been established for this disease. We aimed to identify and to characterize cancer using large number of human monoclonal antibodies (mAbs) which are specific against their surface for new molecular targeted immunotherapy. In order to find proper targets for therapeutic antibodies against cancers we developed a screening strategy. We used a huge phage library of human antibodies. At the first step we comprehensively isolated many monoclonal antibodies (mAbs) that specifically bound to surface of cancer cells. Development of ICOS (Isolation of antigen/antibody complexes through organic solvent) method allowed us to succeed in isolation of a huge number of mAbs with various characteristics (Y Akahori et al. 2009). At the next step we selected clones that showed tumor-specific staining patterns in immunohistochemical (IHC) analysis by using many fresh cancer tissues reseted. Many surgeons took part in this project. Finally the antigens recognized by these clones were identified by immunoprecipitation (IP) followed by analysis with mass (MS) spectrometry (G Kurosawa et al. 2009). We have succeeded in identification of 29 tumor-associated antigens (TAAs) and in isolation of 441 human mAbs that specifically bound to one of the 29 TAAs (G Kurosawa et al. 2008). In these screenings of the library, rounds of the selection process, mixing of cells and phage particles centrifugation growth of phages, were repeated three to four times in each screening. Therefore, numbers of phages of the clones whose antigens were abundantly present on the cell surface increased during the screenings. Recently we developed a new method for isolation of clones whose antigens were less abundantly present on the cell surface. Hence, we would like to talk on these methodology and discuss regarding this “A novel antibody based approach to Cancer Treatment” in this plenary session.