GS02-1 **High-throughput screening of "cell-internalizing monoclonal antibody", a potent anti-tumor drug delivery carrier**

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Since antibody therapy was in practical use in 1990s, it has remained a centerpiece of the biomedicines. Some monoclonal antibodies (mAbs) are known as blockbuster drugs generating more than $1 billion of revenue for each year. Recently, antibody-drug conjugate (ADC) for cancer therapy was developed as a newcomer of antibody therapy. Because of its direct cytotoxicity different from conventional antibody therapy activating the host immunity, they are useful for immuno-deficiency patient with lymphoma or frequently administrated anti-cancer agents. Although, for the development of effective ADCs, "cell internalizing mAb" for delivery of an anti-cancer drug into the cell is needed, "Cell internalizing mAb" was difficult to isolate. The cause was thought that the screening method of "cell internalizing mAb" is still not developed. Here, we show the phage display based high-throughput screening system of cell internalizing activity of mAb. Using this technique, we successfully isolated "cell internalizing mAb" from over millions mAbs repertoire in immune phage antibody library within one month. Moreover, in characteristic evaluation of some candidates, we revealed that their cell internalizing activities are not correlated with those of affinity. This interesting result suggested that the rapid screening of cell internalization in addition to affinity based selection is useful to isolate effective "cell internalizing mAbs". Our screening method enables rapid screening of mAbs which have both high affinity and internalizing ability, and will accelerate the development of ADC.