

## Development of an efficient labeled phage display system for the selection of internalizing ligands

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Phage display, a technology for selecting novel ligands against targets, has been modified and improved for use in a variety of applications.<sup>1,2</sup> For a more efficient selection of internalizing ligands, we established a “labeled phage display system”. This system has no need of antibody labeling for screening strategy using ELISA. Therefore, it’s an efficient method to save time and money. Moreover, since labeling is applied directly to the displayed protein, tracking the internalization of ligands is possible in cell-based panning and screening strategy. To optimize this system, a well-known single-chain variable fragment (scFv) targeting human epidermal growth factor receptor 2 (HER2) was displayed on labeled M13 phage. Cell-based ELISA internalization assay was optimized using various cell lines with different HER2 expressions. The labeled phage display system highlights the possibility of efficient screening for the selection of novel internalizing ligands.

### References

- <sup>1</sup> Yun, S., Lee, S., Park, J. P., Choo, J., & Lee, E. K. *Journal of biotechnology* **2019**, 289, 88-92.
- <sup>2</sup> Lim, C. C., Woo, P. C., & Lim, T. S. *Scientific reports* **2019**. 9(1), 1-15.