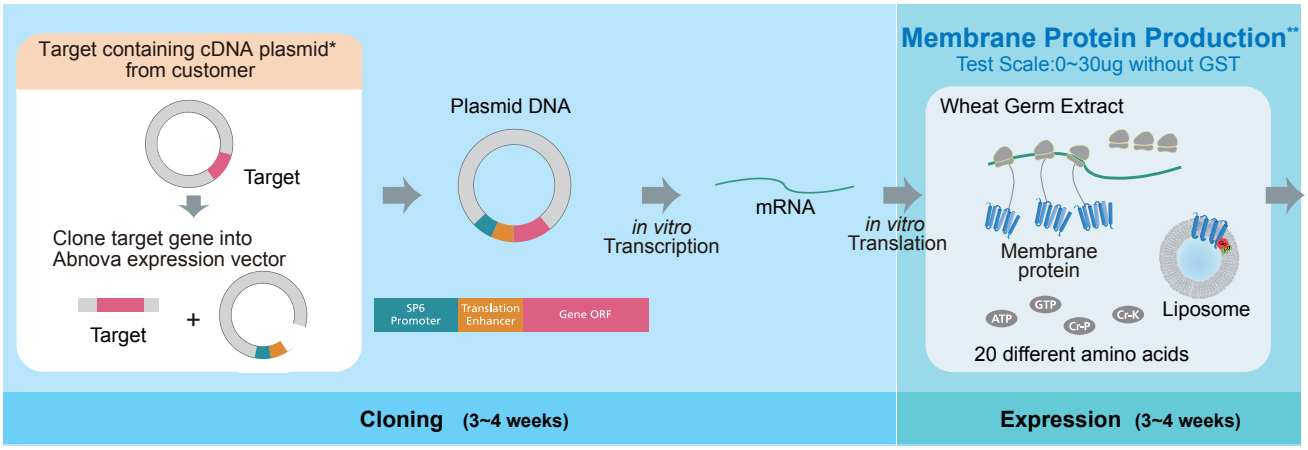
Abnova

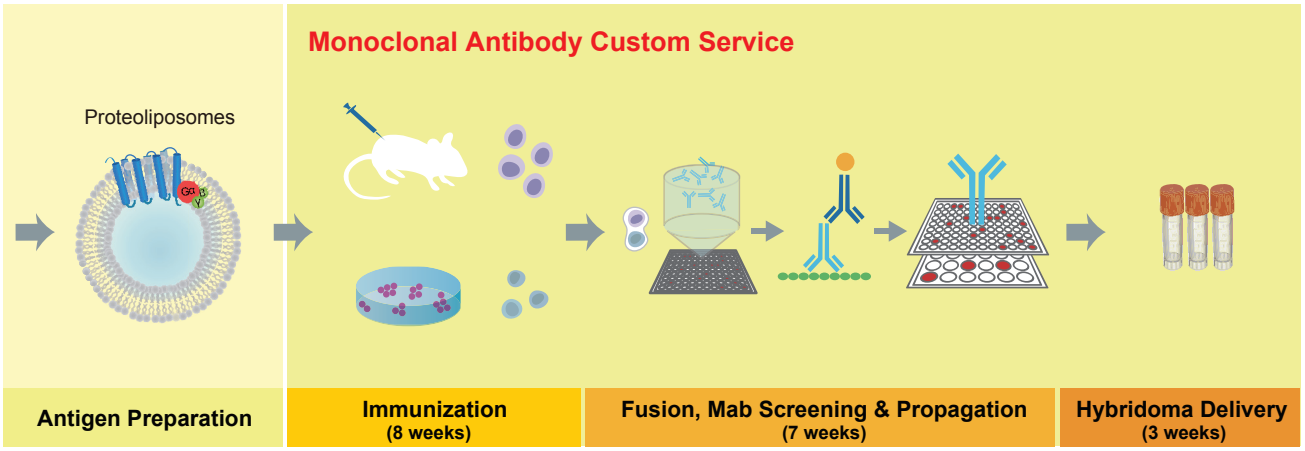
Custom Service for GPCR Mab Production

Custom GPCR Monoclonal Antibody

As the largest human membrane protein family responsible for functions such as sensory regulations and cellular responses, GPCRs are considered as one of the most valuable drug targets in pharmaceutical industry. Abnova has developed robust, reliable, and cost-effective high throughput platform of proteoliposome reconstitution system and monoclonal antibody (Mab) production targeting GPCRs to overcome the hindrance of lacking suitable antigen for producing high-quality Mabs.

By optimizing cell-free protein synthesis in the presence of liposomes and purification process via discontinuous sucrose density gradient centrifugation, soluble reconstituted GPCR proteoliposome antigens are synthesized. Abnova's exclusive techniques in manufacturing proprietary bioreagents allow us to not only produce GPCR proteoliposomes, amenable to functional analysis, but also generate customized Mabs with sensitivity, specificity and wide dynamic range. High successful rate on customized GPCR Mabs has also expanded our field to deliver Mabs targeting various membrane proteins as well.





*Extra cost will be applied if plasmid is synthesized by Abnova. **Larger scale will be quoted according to the yield of test scale.

Technology Comparison for Proteoliposome Expressions

	Conventional Expression System	Bilayer / Dialysis Technique	Bilyar Automation System
Stability	Low	Intermediate	High
Solubility	Low	Intermediate	High
Yield	Low	Low	High
Versatility	Low	Intermediate	High
Throughput	Low	Low	High

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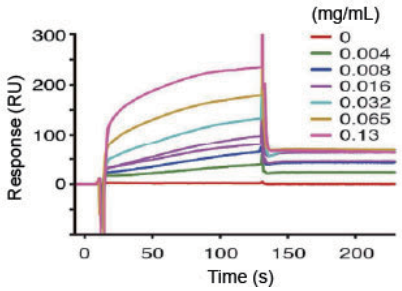
Demonstrations

Bioactivity Profile on GPCR Protein Synthesized by Bilayer Automation System

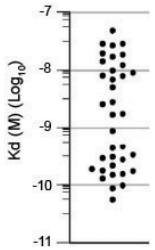
Surface Plasmon Resonance (SPR) Analysis of Wildtype DRD1



Ligand-binding activity of DRD1 was determined using SPR in which dopamine and histamine were immobilized onto the measuring cell and reference cell at the same level. Wildtype DRD1 specifically bound to dopamine at KD value of $0.7X10^{-6}$ M.

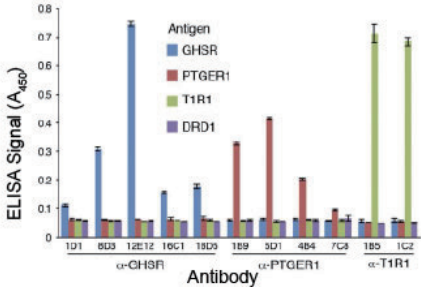
Characterization of Abnova's Monoclonal Antibody Against GPCR Proteins

Affinity Analysis of anti-DRD1 Mouse Mabs



Affinity of 36 mouse Mabs were evaluated using Scatchard plot with ELISA. The Kd values of mouse Mabs ranged from 10^{-7} M to 10^{-10} M, with half of the population showing high sensitivity toward DRD1.

Specificity Analysis of GPCR Mouse Mabs



Mouse Mabs against 3 different GPCRs, including GHSR (Class A), PTGER1 (Class A) and T1R1 (Class C), were evaluated using ELISA. All anti-GPCR Mabs showed specific interaction with its intended target antigen.

References

Takeda, H., et.al. (2015). Scientific Reports. DOI: 10.1038/srep11333
Goren, M.A. and Fox, B.G. (2008). Protein Expression and Purification. DOI:10.1016/j.pep.2008.08.002
Nozawa, A., et. al. (2016). Plant Cell Physiology. DOI:10.1093/pcp/pcm150

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