Membrane Protein Cell Line Development



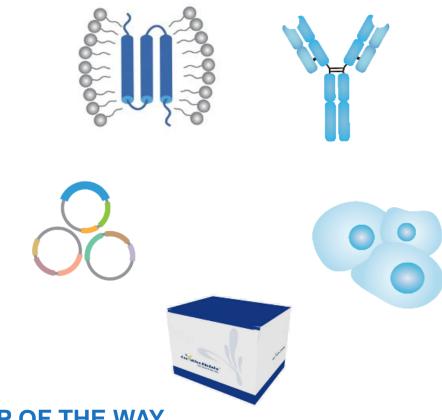
A novel method, a better outcome www.creative-biolabs.com

About Creative Biolabs



A novel mthod, a better outcome

- Leader in membrane protein innovations for the past 10 years
- Trusted by 50+ companies/academic researchers
- Extensive experience with 50+ membrane proteins: GPCRs | Ion channels |
 Transporters | Viral proteins
- Expertised in intractable membrane proteins
- Specialized in antibody discovery and engineering
- Experienced in stable cell line generation



With you in partnership EVERY STEP OF THE WAY

Our Services and Products



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Membrane protein production

Detergent | Liposome | Nanodisc | SMALPs | VLPs Full length | ECD | Partial region Cell-based system | Cell-free system GPCR | Ion channels | Transporters | Immune checkpoint inhibitors | IO targets | CART targets | CD antigens



Membrane antigen preparation | Antibody discovery | Hybridoma | Phage Library | B cell sorting

- Membrane Protein Drug Screening
- Membrane Protein Stable Cell Lines
- Virus-like Particles
- Cell-free kits

E. coli | Plant | Yeast | Human | Insect | Wheat germ | PURE | Rabbit reticulocyte





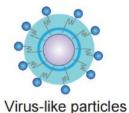


Extracellular region peptides

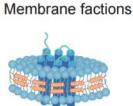


Liposomes

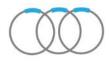












DNA molecules encoding proteins



SMALPs/Polymers

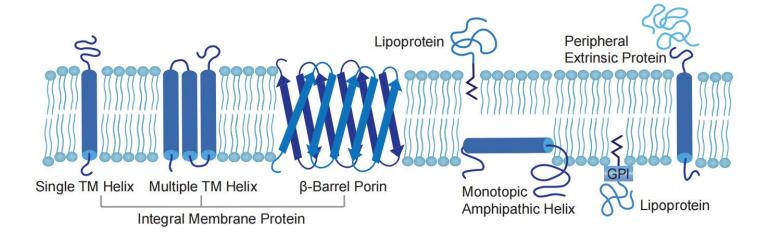
Membrane Protein Antigen Forms

Membrane Protein Introduction



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Membrane proteins mediate processes that are fundamental for the flourishing of biological cells, playing critical roles in cellular function and therapeutic targets. Membrane-embedded transporters move ions and larger solutes across membranes; receptors mediate communication between the cell and its environment, and membrane-embedded enzymes catalyze chemical reactions. One outstanding challenge is the difficulty in preparing a sufficient amount of these membrane proteins so as to be able to generate the functional antibody and conduct functional assays.



Classification of Membrane Protein

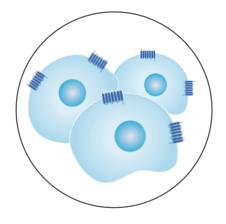
Membrane Protein Stable Cell Line Development Platforms

Membrane Protein Cell Line Platform (Overexpression, KD, KO)

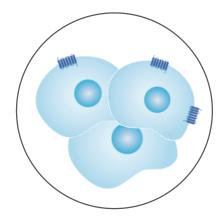


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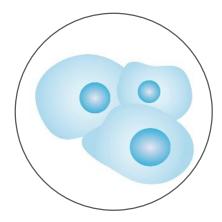
In contrast to transient expression, making stably transfected cell lines is a lengthy process that usually requires the stable integration of the recombinant DNA into the host cell genome. Membrane protein cell lines can be used for membrane protein expression, membrane protein antibody discovery, membrane protein functional study, membrane protein drug screening, *etc.* Creative Biolabs offers membrane protein cell lines that can overexpress, knockdown, or knockout the target protein of interest.



Membrane Protein Overexpression Lentivirus



Membrane Protein Knockdown siRNA shRNA



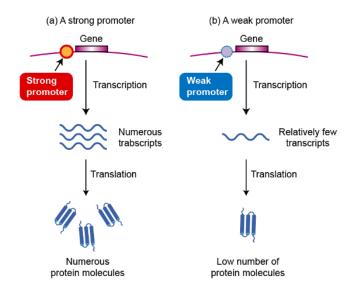
Membrane Protein Knockout CRISPR/Cas9

Membrane Protein Cell Line Platform (Constitutive or Inducible Overexpression)

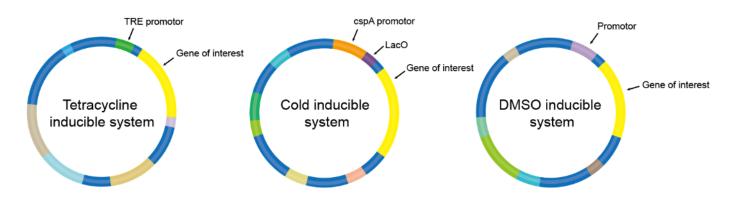


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Overexpressing a membrane protein may cause negative effects on cell growth, leading to a low expression level or even expression loss. Hence, it's critical to make a decision whether to use a constitutive promoter or an inducible promoter to express the membrane protein of interest. Creative Biolabs offers membrane protein cell line development service to help you stably express your gene of interest constitutively or inducibly. For constitutive expression, we have weak and strong promoters to fit your needs. For inducible expression, we have tetracycline inducible system, cold inducible system, and DMSO inducible system.



Strong and Weak Promoters for Constitutive Expression



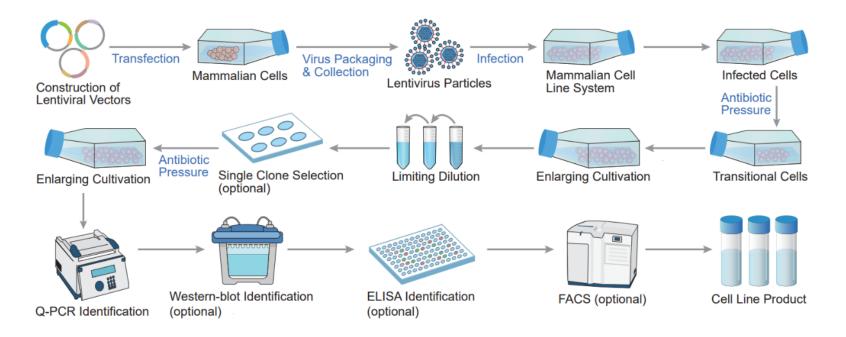
Inducible Expression System

Membrane Protein Cell Line Platform (Lentivirus System)



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Lentiviruses are used very widely to generate stable expression mammalian cell lines. They are used for both gene down-regulation (by using ShRNA) and for gene up-regulation (by using ORF of the gene of interest). We offer the 3rd generation lentivirus to get stable expression for most mammalian cell lines, which shows advantages of being safe and replication-incompetent.



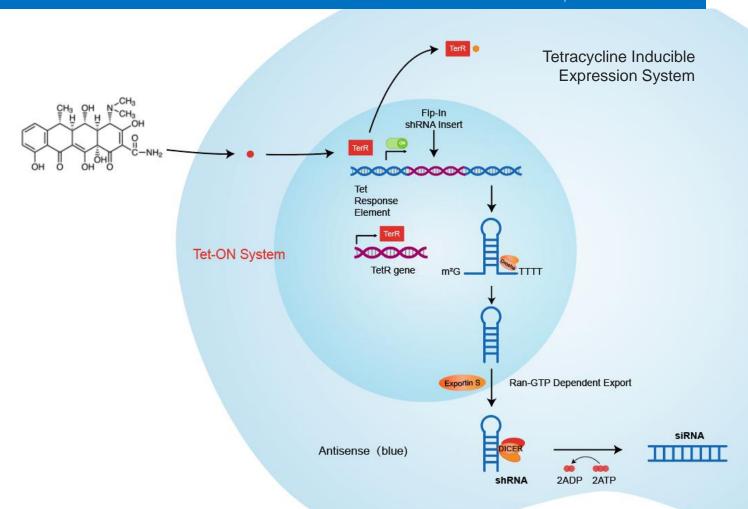
Lentivirus Expression System

Membrane Protein Cell Line Platform (Tetracycline Inducible System)



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Stable overexpression or knockdown of the gene of interest is unsuitable when manipulations of gene expression result in cell growth/proliferation defects or unwanted cell differentiation. Therefore, researchers have adapted the tetracycline repressor protein (TetR), taken from the *E. coli* tetracycline resistance operon, to generate very efficient and tight regulatory systems to express cDNAs in mammalian cells. In short, TetR has been modified to either (1) block initiation of transcription by binding to the Tet-operator (TO) in the promoter region upon addition of tetracycline (termed Tet-off system) or (2) bind to the TO in the absence of tetracycline (termed Tet-on system). The Tet-on system has been more extensively optimized, resulting in the development of very tight and efficient vector systems for cDNA expression.



Membrane Protein Cell Line Platform (Knockdown-siRNA/shRNA)



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A major approach in the field of mammalian cell biology is the manipulation of the expression of genes of interest in selected cell lines, with the aim to reveal one or several of the gene's function(s) using transient/stable overexpression or knockdown of the gene of interest. The simplest method for RNA interference is the cytosolic delivery of siRNA oligonucleotides; this technique is limited to cells capable of transfection and is primarily utilized during transient *in vitro* studies. The introduction of shRNA into mammalian cells through infection with viral vectors allows for stable integration of shRNA and long-term knockdown of the targeted gene. We offer different approaches to knocking down the membrane protein of interest.



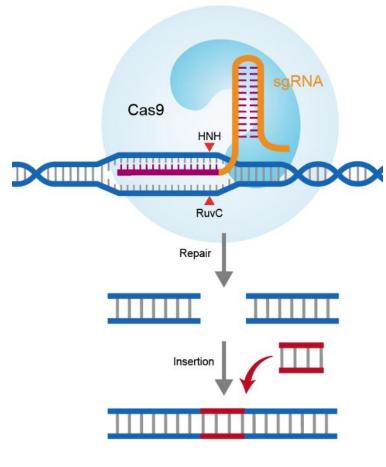
Structure of siRNA and shRNA. (A) siRNAs are short RNA duplexes with characteristic 2 nt 3' overhangs. (B) shRNAs consist of sense and antisense sequences separated by a loop sequence.

Membrane Protein Cell Line Platform (CRISPR/Cas9)



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The clustered regularly interspaced short palindromic repeats-associated protein 9 (CRISPR/Cas9) system has emerged as one of the most exciting tools for gene editing in recent years. The CRISPR/Cas9 system relies simply on base-pairing between the single-guide RNA (sgRNA) and the target DNA. With a minimal requirement in target design and straightforward construction of sgRNAs, it facilitates widespread application in fundamental research. We have CRISPR/Cas9 system to edit the membrane protein of interest.



CRISPR/Cas9 System



What We Offer



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Creating stable cell line is time-consuming and complex. Creative Biolabs offers a wide range of membrane protein stable cell line products to facilitate your projects. Our membrane protein stable cell line products include:

- Parental Cell Lines
- GPCR Cell Lines
- Ion Channel Cell Lines
- Transporter Cell Lines
- Immune Checkpoint Cell Lines
- Oncology Cell Lines
- Fc Receptor Cell Lines
- CD Cell Lines
- Virology Cell Lines

In addition, Creative Biolabs provides membrane protein stable cell line development services with the highest quality. Our expert team of scientists have years of experience creating stable cell lines, and will work with you to define the best development method for your particular cell line application.

Please contact us to discuss further. Our team member will respond to your inquiry within 1 business day.

