Antibody Expression Vector

pFB-CLIg-rk1-b9: Rabbit IgK1-b9 Allotype Light Chain Mammalian Expression Vector

Catalog#: AEV-33

Product Overview

In the context of rabbit antibody engineering, there are multiple types of kappa light chain constant regions. While the rabbit has two main kappa isotypes (K1 and K2), K1 is the dominant form, representing about 90% of the repertoire. Within K1, several genetic variants (allotypes) exist, with **b4** and **b9** being the most frequently discussed in the literature.

Comparison of b4 vs. b9 for Antibody Engineering

Feature	K1-b4 Allotype	K1-b9 Allotype
Prevalence	Most common in standard lab rabbits.	Found in specific pedigreed strains.
Disulfide Bond	Interdomain bond between Cys80 (VL) and Cys171 (CL).	Interdomain bond between Cys108 (VL) and Cys171 (CL).
Engineering Utility	High in native rabbit systems.	Superior for chimeric/recombinant work.
Expression Level	Can be poor in chimeric formats (e.g., mouse-rabbit).	Consistently higher in chimeric and recombinant formats.

This vector is a constitutive mammalian expression vector designed to deliver exceptionally high levels of antibody expression. This circular vector features an enhanced, full-length CMV promoter and other expression elements that typically enable higher expression levels. It can be used in suspension-adapted cells, such as Expi293F™ and ExpiCHO™, for transient protein expression. Additionally, it can serve as a Geneticin®-selectable expression plasmid for engineering stable cell lines. The vector carries an ampicillin resistance gene.

Specifications

Antibiotic Resistance	Ampicillin (AmpR)
Constitutive or Inducible System	Constitutive
Delivery Type	Transfection
Promoter	CMV
Product Type	Mammalian Expression Vector
Cloning Method	Restriction Enzyme (5'-AgeI; 3'-XhoI) or Homologous Assembly

Contents & Storage

- 5.0 µg of pFB-CLIg-rk1 in Tris-EDTA buffer
- Store at -20°C. Vectors are guaranteed stable for 12 months when properly stored.

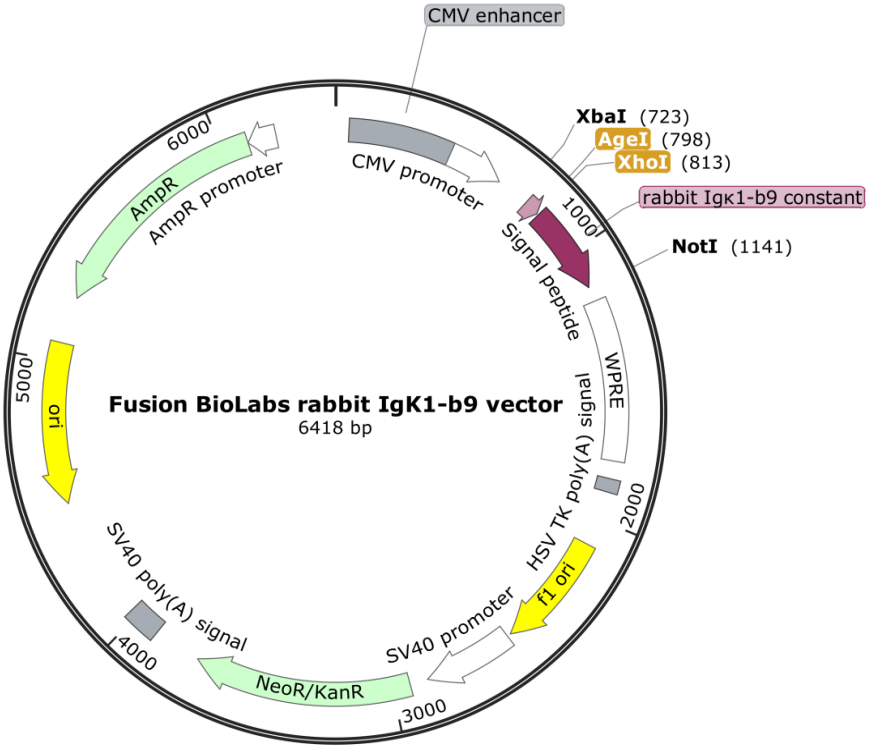
Materials required for antibody generation and isotype switching

- pFB-CHIg-rG expressing the rabbit heavy chain.

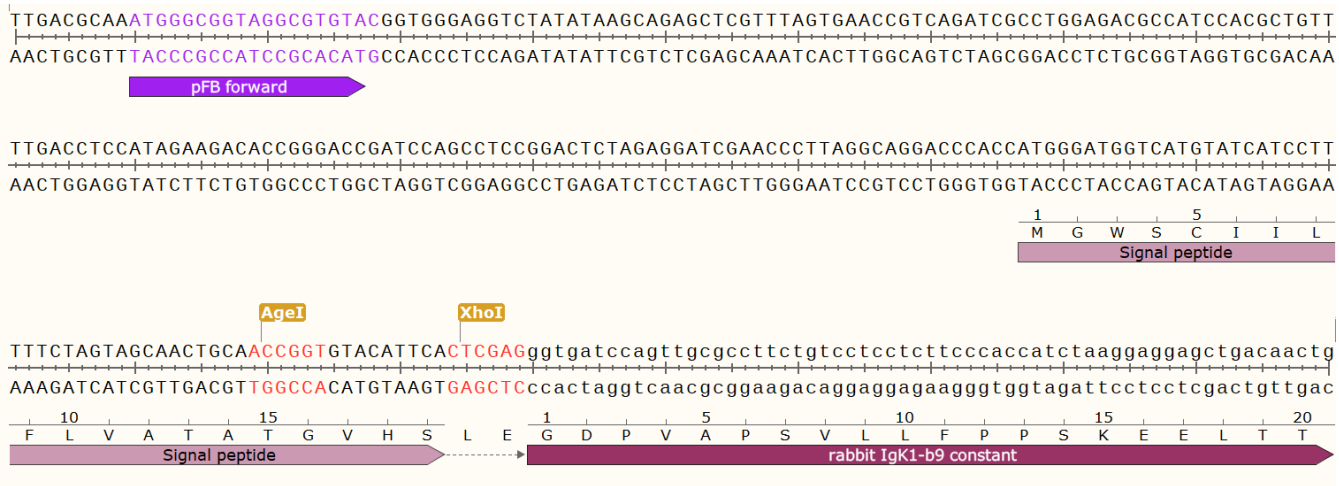
Vector usage

- **Entire rabbit IgG monoclonal antibodies production**: cloning your heavy/light chain variable regions in the cloning sites to preserve the integrity of the heavy/light chain constant region;
- **Isotype switching**: pFB-CLIg-rk1 with pFB-CHIg-rG expressing the rabbit heavy chain could be switched a monoclonal antibody from one isotype to another, therefore, maintaining the generated new antibodies with the same antigen affinity (epitopes) but with different effector functions (enhanced or reduced or even disabled ADCC and CDC).

Vector map



Cloning Map



Primer Design for Restriction Enzyme Cloning (Traditional)

Forward primer: 5'- CTAGTAGCAACTGCAACCGGTGTACATTCAN_{VLF}(15-18)

Reverse Primer: 5'- AGGCGCAACTGGATCACCCTCGAGN_{VLR}(15-18)

N_{VLF}(15-18): append 15-18 bases encoding 5-6 amino acids starting from the beginning of the VL region to the end of the forward primer.

N_{VLR}(15-18): append the Reverse Complement DNA Sequence of 15-18 base encoding 5-6 amino acids of starting from the end of the VL region to the reverse primer (LE diamino acid will be inserted between VL and CL).

Primer Design for Homologous Recombination Cloning (Seamless)

Forward primer: 5'- CTAGTAGCAACTGCAACCGGTGTACATTCAN_{VLF}(15-18) -3'

Reverse Primer: 5'- AGGCGCAACTGGATCACCN_{VLR}(15-18) -3'

N_{VLF}(15-18): append 15-18 bases encoding 5-6 amino acids starting from the beginning of the VL region to the end of the forward primer.

N_{VLR}(15-18): append the Reverse Complement DNA Sequence of 15-18 bases encoding 5-6 amino acids starting from the end of the VL region to the reverse primer.

Sequencing primer for confirming the correct VL insert (included in the Kit)

pFB forward: 5'- ATGGGCGGTAGGCGTGTA-3'