bio-techne® | R&D SYSTEMS

Catalog Number TCB-001.1-GMP

Size 500 µg

TcBuster-M™ GMP Transposase mRNA

Non-Viral Gene Delivery Reagent

Product Description

TcBuster-M GMP transposase mRNA encodes a hyperactive version of TcBuster transposase. TcBuster is a non-viral DNA transposon system that enables gene transfer and stable integration in cells (Figure 1). TcBuster-M transposase, a member of the hAT superfamily of transposons, was originally isolated from the red flour beetle, Tribolium castaneum, before undergoing directed evolution (1,2). TcBuster mediates transposition of DNA cargo fanked by inverted terminal repeats (ITRs) that facilitate transposase binding. This product was manufactured and tested under cGMP guidelines. This product was produced using non-animal reagents in an animal-free laboratory.

Attribute	Description
Manufacturing Process	*In vitro* transcribed mRNA, including polyadenylation and capping
mRNA Length	2154 nt
Capping Mechanism	M7G
Concentration	2.5 mg/mL
Formulation	1 mM Sodium Citrate

Intended Use

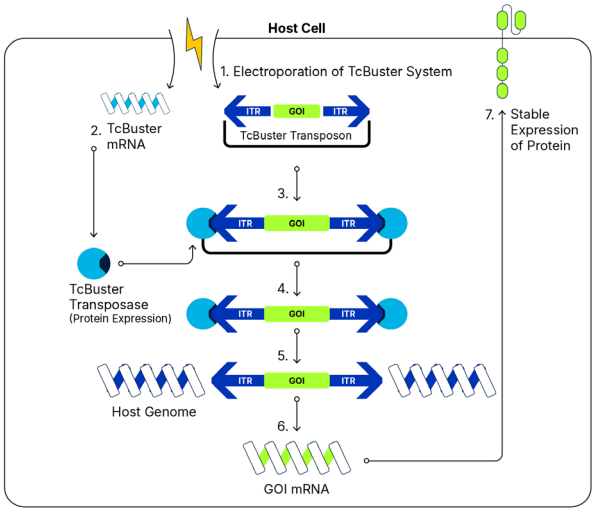
For pre-clinical or *ex vivo* clinical use. The TcBuster system is a versatile genome editing tool and has applications in a wide variety of cell types. Examples include, but are not limited to, the transposition of immune cells (T, NK) (3,4), induced pluripotent stem cells (iPSCs), and bioproduction cell lines (CHO, HEK, etc.). Broad application will require independent experimental optimization and/or process development. If you have any technical questions about the TcBuster DNA transposon system, contact our Technical Support Team at techsupport@bio-techne.com for assistance.

Storage & Stability

Store TcBuster-M at ≤ -70 °C. Use a manual defrost freezer and avoid repeated freeze-thaw cycles. Refer to the Certificate of Analysis for the Use by Date.

FIGURE // 01

The TcBuster Non-Viral Gene Delivery System



1. TcBuster system reagents are introduced into the cells via electroporation.
2. TcBuster-M mRNA is translated into TcBuster-M transposase enzyme.
3. TcBuster-M transposase binds to inverted terminal repeats (ITRs) on the TcBuster DNA transposon.
4. TcBuster-M transposase cuts gene(s) of interest (GOI) from transposon.
5. TcBuster-M inserts GOI into the host genome.
6. Inserted GOI is transcribed into mRNA.
7. Translated GOI protein is stably expressed in cells.

Precautions

This product must be handled with the utmost care to prevent product degradation. It is recommended to limit RNAses in the work environment when handling TcBuster-M. TcBuster-M is subject to degradation upon exposure to environmental RNases, especially those found in human saliva, hair, and skin, as well as those originating from target cells. Appropriate PPE must be employed to protect product integrity: face shield or procedure mask, hair net, clean lab coat or gown, Tyvek® sleeves, and clean nitrile gloves. Do not touch containers or tubes with bare hands. Use aseptic technique as appropriate when working with mRNA. Use RNase decontamination agent. Refer to appropriate Safety Data Sheet when working with chemicals.

Limitations

- For certain applications, results may vary due to differences in donor derived cell populations.

Reagents & Equipment

REQUIRED

- **TcBuster system specific DNA transposons**
- **Electroporation platform of user's choice**

RECOMMENDED

RNase decontaminant and RNase free environment to safeguard against RNase contamination.

- RNase inhibitor
- RNase decontamination agent
- Proper PPE
- Cell washing

Reagent Preparation

This preparation is suggested to limit RNase exposure. TcBuster-M comes ready to use and should be stored as supplied at ≤ -70 °C. It is recommended to thaw TcBuster-M on ice for 30 minutes or until thawed. Use as supplied, as it is not recommended to re-use this product.

REFERENCES

1. 1. Skeate, J.G et al. (2024) Molecular Therapy DOI: 10.1016/j.ymthe.2024.04.024
2. 2. Woodard, L.E et al. (2012) PLOS One DOI: 10.1371/journal.pone.0042666
3. 3. Wong, D.P et al. (2022) Nature Communications DOI: 10.1038/s41467-021-27853-w
4. 4. Gurney, M et al. (2022) Cytotherapy DOI: 10.1016/j.jcyt.2022.07.008

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