bio-techne® | R&D SYSTEMS

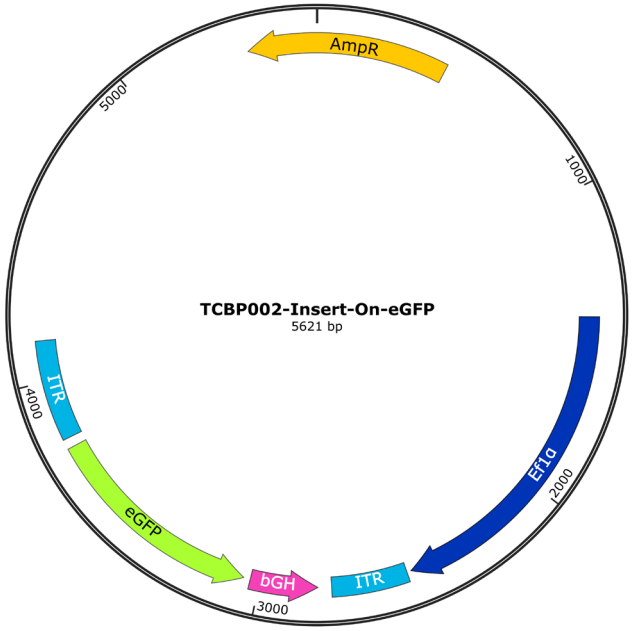
Catalog Number TCBP002-100

Mass 100 µg

TcBuster™ Transposon Insert On eGFP

Product Description

Gene	eGFP
Promoter	Ef1α
Transposon Insert Size	5621 bp *Entire vector integrates
Plasmid size	5621 bp
Backbone	pUC57
Concentration	100 µg at 2 mg/mL



Preparation and Storage

Formulation	Nuclease free water
Shipping	Ships at ≤ -20 °C.
Storage	Store at ≤ -20 °C. Use a manual defrost freezer and avoid repeated freeze-thaw cycles.

Limitations

- For laboratory research use only. Not for use in diagnostic procedures.
- For certain applications, results may vary due to differences in donor derived cell populations.

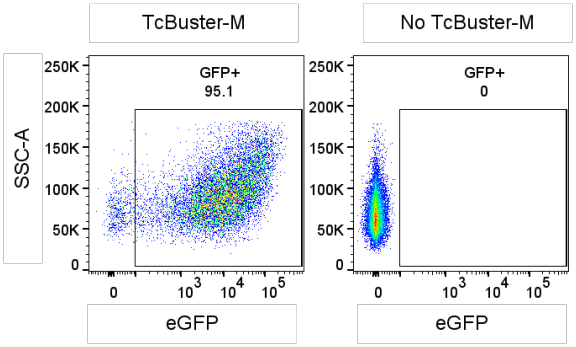
Required Reagents and Equipment

- Electroporation platform of user's choice
- TcBuster-M™ Transposase mRNA, Catalog # TCB-001.1-100 or TCB-001.1-500

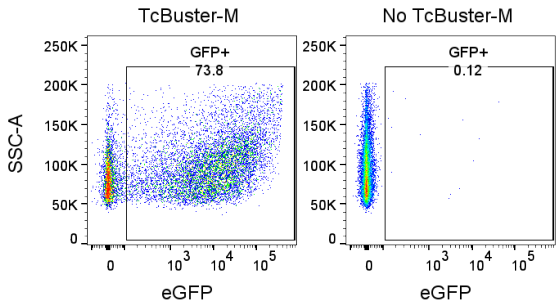
Intended Use and Technical Support

TcBuster Transposon Insert On eGFP is one part of the TcBuster system and is compatible with TcBuster transposases. Ensure that you have TcBuster-M mRNA (Catalog #: TCB-001.1-100, TCB-001.1-500) prior to using this product. It is highly recommended to deliver TcBuster system reagents (transposase mRNA and compatible DNA transposon) with an electroporation platform. 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), 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 non-viral gene delivery system, would like to inquire about custom transposons, contact our TcBuster scientific support team at techsupport@bio-techne.com for assistance.

Data Images



HEK293E cells edited with the TcBuster system express eGFP. HEK293E cells were gene edited with TcBuster-M (Catalog # TCB-001.1) transposase and Insert-On-eGFP (Catalog # TCBP002-100) transposon. On day 2 after gene editing, cells were analyzed by flow cytometry for expression of eGFP. Representative flow cytometry plots of HEK293E cells edited with or without TcBuster-M transposase.



CHO-K1 cells edited with the TcBuster system express eGFP. CHO-K1 cells were gene edited with TcBuster-M (Catalog # TCB-001.1) transposase and Insert-On-eGFP (Catalog # TCBP002-100) transposon. On day 2 after gene editing, cells were analyzed by flow cytometry for expression of eGFP. Representative flow cytometry plots of CHO-K1 cells edited with or without TcBuster-M transposase.

Background

The TcBuster system is a non-viral gene delivery system that enables stable gene transfer in most cell types. The TcBuster system belongs to the hAT-family of DNA transposons and is derived from the red flour beetle *Tribolium castaneum* (1). The system consists of the TcBuster-M transposase mRNA, which encodes for a hyperactive version of TcBuster transposase, and DNA transposon encoding multicistronic cargos for gene insertion (2). The Ef1α promoter sequence is commonly used to drive gene expression in mammalian cells. This promoter is known for its strong and constitutive activity and is often chosen for use in genetic engineering applications (3). eGFP is a variant of green fluorescent protein that is commonly used as a reporter gene in genetic engineering. This protein emits a bright green fluorescence when exposed to blue light, making it a useful tool for visualizing gene expression after genetic modification (4). The TcBuster Transposon Insert On eGFP is based on a genetic switch, called integration-coupled On (5). Gene expression can only occur once transposition has transpired. This transposon effectively eliminates any expression of the untransposed plasmid and GFP expression is a direct readout of cargo integration. bGH, or bovine growth hormone polyadenylation signal, is a common terminator in mammalian expression vectors. This sequence mediates efficient and accurate termination of the transcript (6).

Product Specific Notes

Transfer of TcBuster Transposon Insert On eGFP ("Product") is strictly prohibited. The Product is to be used for research use only, and not for clinical or commercial purposes. Full details of R&D Systems' Terms and Conditions of sale can be found online at: https://www.bio-techne.com/terms-and-conditions.

REFERENCES

1. Woodard, L.E. et al. (2012) PLOS One DOI: 10.1371/journal.pone.0042666
2. Skeate, J.G. et al. (2024) Molecular Therapy DOI: 10.1016/j.ymthe.2024.04.024
3. Kim, D.W. et al. (1990) Gene DOI: 10.1016/0378-1119(90)90091-5
4. Cormack, B.P. et al. (1996) Gene DOI: https://doi.org/10.1016/0378-1119(95)00685-0
5. Kumamoto, T. et al. (2020) Neuroresource DOI: https://doi.org/10.1016/j.neuron.2020.05.038
6. Goodwin, E.C. and Rottman, F. M., (1992) J Biol Chem DOI: https://doi.org/10.1016/S0021-9258(18)42005-4