BPP Bioportide™ Bacterial Transformation Kit for *E. coli*

Cat. no. BPP-BPort-001

Product Overview

The BPP Bioportide™ kits provide a ready-to-use system for efficient transformation of various microorganisms, including *E. coli* and other gram-negative bacteria. The kit contains **lyophilized BPP Bioportide™**, and a separate vial of **sterile 50% glycerol** for storage at -20°C. BPP Bioportide™ facilitates the uptake of nucleic acids without preparing competent cells, heat shock or electroporation.

Components Supplied

1. **BPP Bioportide™**: Contains HEPES and arginine as buffer material. One vial contains **1 µg** of lyophilized BPP Bioportide™ which is sufficient for 10 ***E. coli* transformation reactions.** After recovery, each reaction yields approximately 1 ml of transformed cells for plating. Kits are available in sizes 10, 30, 50 and 100 reactions.
2. **BPP Bioportide™ Buffer**: delivered in a separate vial that contains 500 µl of sterile 50% glycerol.

Storage, Handling and Stability

- Store lyophilized BPP Bioportides™ at **-20°C** or -80°C for long-term storage.
- The **BPP Bioportide™ buffer** can also be stored at **-20°C** or -80°C.
- Once dissolved, the **BPP Bioportide™ working solution** must be stored at **-20°C**.

Caution

BPP Bioportides™ should be handled with care. The effects of prolonged or unprotected exposure are unknown. Users should always follow mandatory lab safety regulations and especially adhere to the following safety standards:

- Avoid skin or eye contact. Wearing gloves and eye protection when handling the product is strongly recommended. In case of contact, rinse skin or eyes thoroughly with water immediately.
- Do not inhale or consume. Avoid the formation of and exposure to aerosols, e.g. by working under a safety cabinet or in well-ventilated workspaces. Avoid ingestion.
- Do not use it while pregnant or breastfeeding.
- Use only as described in this manual. Do not leave open on a bench.

Product Description

BPP Bioportide™ is a recombinant protein with a molecular weight of roughly **37.5 kDa**. The exact size depends on the variant of BPP Bioportide™. Variants differ in their cell-penetrating domains, which are designed for specific cell envelope compositions. The protein facilitates the transport of nucleic acids, ranging from **22 nt to >10 kb**, into cells of a wide range of organisms, i.e. bacteria, archaea, fungi, plants, and animals (depending on the BPP Bioportide™ in use). Both **RNA** and **DNA**, including single- and double-stranded, linear or circular forms, can be transferred reliably.
BPP Bioportides™ are designed for robust performance in extreme environments (up to 80°C, pH > 9.0, high salt concentrations).

Key Features

- No need for competent cells, heat shock, or electroporation.
- Efficient transformation, with up to **4.4×10^7 cfu/µg** for **pUC19** in ***E. coli***.
- Works with **picogram** quantities of nucleic acids in ***E. coli.***
- Short and easy protocol.
- Suitable for special applications in *E. coli* like library cloning, fragment cloning or cloning of large plasmids (>10 kb).
- The standard reaction below uses a 10:1 BPP Bioportide™-to-nucleic-acid mass ratio. For short RNA (20–300 nt) or large plasmids (8–25 kb), use the Molar Ratio Calculator on our website to plan additional conditions

General Considerations

- You can adapt our standard protocol as a starting point to the specific needs of your *E. coli* strain.
- Note that you do not have to prepare competent cells although you can still use them for BPP Bioportide™ transformation. BPP Bioportide™ transformation works best with early to mid-log phase cells. **The optimal OD_{600} is 0.4 – 0.6**.
- You can use fresh cells as well as cells from a frozen glycerol stock.
- As the BPP Bioportide™ carrier domain has an affinity for polysaccharides, avoid those within the medium that you use for incubation.
- Consider using a known and easy to handle plasmid as control in addition to your main experiment.

General Transformation Protocol for *E. coli*

1. **Material preparation**
    - Grow cells according to your standard protocol. Optimal OD_{600} for BPP Bioportide™ transformation is 0.4 – 0.6. Alternatively, use a 50 µl aliquot from a frozen *E. coli* glycerol stock per reaction. Thaw your cells while the nucleic acid complex forms (Step 3).
    - At the end, one reaction of BPP Bioportides™ corresponds to a volume of transformed cells of 1 ml, which is available for plating. Please calculate the material for your planned experiments accordingly.
    - Prepare **SOC medium** and **LB agar plates** with appropriate antibiotics.
    - Warm SOC medium and LB plates to **37°C**.
2. **Prepare BPP Bioportide™ Working Solution**
    - Add **10 µl of BPP Bioportide™ buffer** to one vial of BPP Bioportide™ (yielding a **100 ng/µl working solution**). Mix gently by pipetting.
    - Incubate at **room temperature** for **20 minutes** without agitating.
3. **Prepare Nucleic Acid Mixture**
    - Mix **1 µl** of nucleic acid (10 ng/µl) with **1 µl** of **BPP Bioportide™ Working solution**.
    - Mix gently by pipetting. Incubate the mixture at **room temperature** for **10 minutes**.
4. **Transform the Cells**
    - Use **50 µl of *E. coli*** cells. If you use glycerol stocks, thaw for 5 minutes at 0-4°C.
    - Add **50 µl of cells** to the BPP Bioportide™/nucleic acid mixture (**2 µl**; see step 3) and keep at **0-4°C** for **10 minutes without shaking**.
5. **Recover and Plate**
    - Add **950 µl of SOC medium** to the cells and incubate at **37°C** with shaking at 100 rpm for **60 minutes**.
    - Spread 20–100 µl of recovered cells on selective LB agar. Dilute if needed to obtain countable colonies.
    - Incubate plates **overnight at 37°C**.

Documentation and support

Customer and technical support

Visit www.bpp-peptides.com for the latest service and support information.

Limited product warranty

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Revision

The information in this user guide is subject to change without notice.

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