

StarGate® – Combinatorial Cloning in One Tube

Introduction

Efficient procedures to generate functional recombinant proteins or protein complexes are of key importance in state-of-the-art life sciences. Many tools like various expression hosts (bacteria, yeast, insect and mammalian cells), promoters, affinity or fluorescent tags are currently available to express, purify, detect or immobilize recombinant proteins. Due to the diverse nature of proteins, however, it is impossible to predict which combination of these tools will perform best. Therefore, many have to be tried to identify the optimal solution.

To systemize and accelerate this initial search which is crucial for successful subsequent proteomic research, we have developed the StarGate® Cloning System. StarGate® offers rapid and highly efficient subcloning of an arbitrary gene – initially cloned into a Donor Vector – to simultaneously fuse it with many different genetic surroundings via transfer into Acceptor Vectors to generate Destination Vectors. The latter enable the efficient expression of your protein with various features (e.g., different tags and different promoters) in different hosts.

The StarGate® Top Benefits

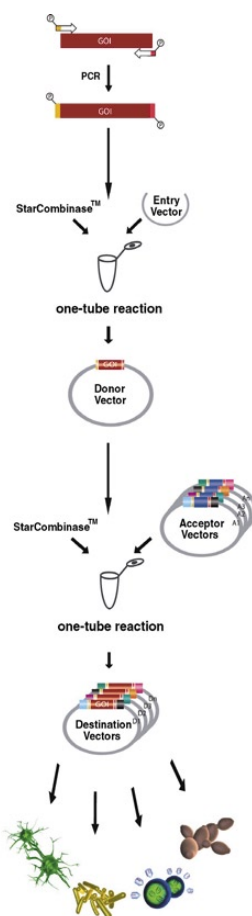
- One-tube subcloning procedure (1 hour)
- Cutting bands out of gels becomes superfluous
- Extremely short combinatorial sites (4 bases only) have minimal effect on the gene of interest
- Improved screening of different host/tag combinations
- Acceptor Vectors for different hosts with correlating features always yield exactly the same protein sequence
- Highest level cloning efficiency due to a directed reaction (no equilibrium)
- Once Donor Vector is sequenced no further verification is required

Further Useful Features

- StarGate® Fusion Cloning System, e.g., for generation of fusion proteins or of synthetic operons for expression of protein complexes
- Versatile StarGate® Mutagenesis System “StarChange”
- Free StarPrimer D’Signer Software 2.0
- Royalty-free License Policy “OpenGate®”
- Custom StarGate® Services

The Technology

StarGate® is a technology that allows the systematic combination of promoters (i.e., hosts), purification tag sequences or other genetic elements with any gene of interest (GOI) in a convenient cloning system. The core element of this new technology is the site-specific combinatorial enzyme formulation StarCombinase™, that makes cloning versatile, fast, easy and safe.



Step 1:

Donor Vector generation

In a first step, the gene of interest (GOI) is equipped at both ends with combinatorial sites (4 bases) by PCR and is inserted into an Entry Vector by a simple one-tube reaction.

Step 2:

Destination Vector generation

After sequence confirmation, the resulting Donor Vector is the origin for the highly parallel subcloning of GOI into a multitude of Acceptor Vectors, each providing a different genetic surrounding like host specific promoters and different purification tags, by a second simple one-tube reaction. The resulting Destination Vectors are then transformed into the corresponding host cells for further experiments.