

Gibson Assembly[®] HiFi 1 Step and Ultra Kits

Efficient, high fidelity, seamless assembly and cloning of multiple fragments

The Gibson Assembly[®] method (1, 2) allows the insertion of single or multiple DNA fragments into a vector in a single round of cloning without the need for compatible restriction sites. Developed by Dr. Daniel Gibson and colleagues at the J. Craig Venter Institute and Synthetic Genomics, Inc., the Gibson Assembly[®] method has been cited in over one thousand publications.

The Gibson Assembly Method

To perform Gibson Assembly[®] cloning, dsDNA fragments with 20–40 bp overlapping ends are generated by PCR, prepared by restriction digestion, or synthesized (e.g., DNA Tiles[™]). The insert(s) and vector DNA are combined with Gibson Assembly[®] reagents and incubated. During incubation, the Gibson Assembly reagents mediate the generation of compatible ends, followed by annealing, extension, repair and ligation to create a fully assembled seamless DNA construct.

Highlights

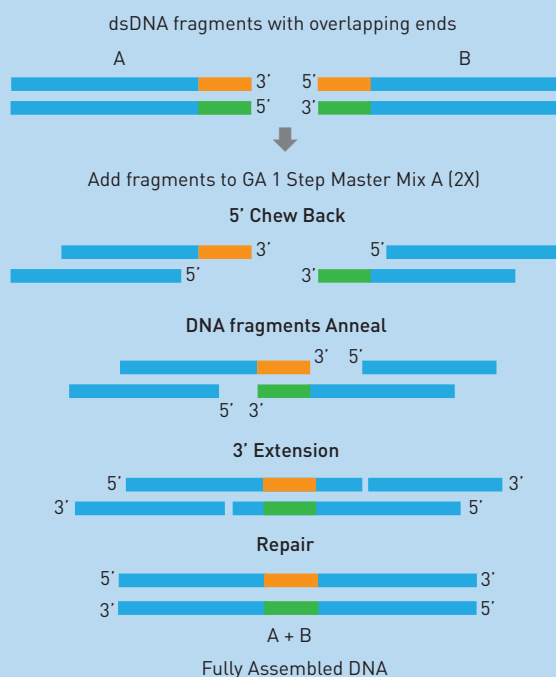
- **High fidelity seamless DNA assembly**
- **Simple design and few manipulations**
- **Faster than conventional cloning methods**
- **Resulting constructs are double stranded and ready for multiple downstream applications**
- **Formulated for a high degree of sequence accuracy**

How it Works

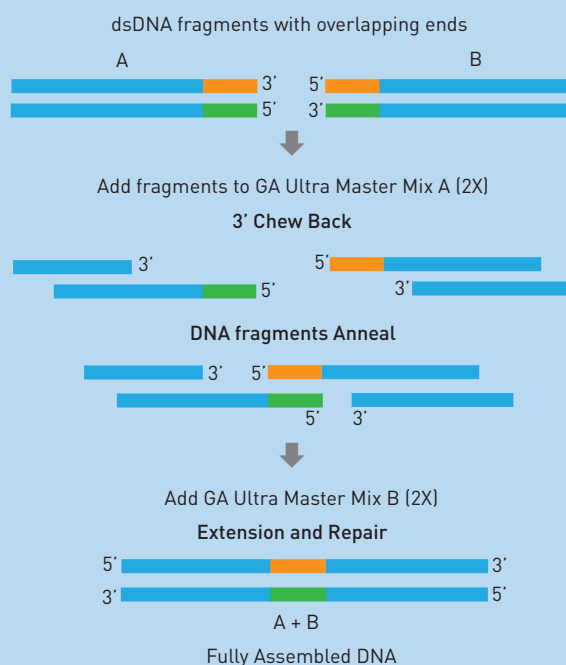
During assembly, DNA fragments undergo:

- Chew Back
- Annealing
- Extension
- Repair

Overview of the Gibson Assembly[®] HiFi 1 Step Method



Overview of the Gibson Assembly[®] Ultra Method



Applications

Multiple Insert Cloning- Clone multiple inserts without relying on the availability of restriction sites

Large Fragment Assemblies- Assemble gene clusters and genome-size fragments

Mutagenesis- Site-directed mutagenesis to make simultaneous changes in a single reaction

Synopsis

Robust, complex assemblies with 90–95% cloning efficiencies

Assembles without requiring restriction enzyme sites

Utilize any vector with simple design strategies

Fast, efficient, isothermal assemblies in 1 hour with the HiFi 1 Step Kit

Complex assemblies of up to 15 inserts simultaneously with the Ultra Kit

Key Features of Gibson Assembly® Kits

| Gibson Assembly® HiFi 1 Step Kit | Gibson Assembly® Ultra Kit |
|---|--|
| Assemble 1–5 DNA Fragments | Assemble up to 15 DNA Fragments |
| Suitable for fragments from 500 bp – 32 kb | Suitable for fragments from 100 bp – 100 kb |
| Use multi-stage assembly to create constructs up to 100 kb | Use multi-stage assembly to create constructs up to 1000 kb |
| Single temperature assembly in 1 hour | Multi-temperature assembly in ~80 minutes |
| Cloning efficiency >90% | Cloning efficiency ~95% |

| Product Ordering Information | |
|--|--------------|
| Product | VWR Cat. No. |
| Gibson Assembly® HiFi 1 Step Starter Kit | 10820-608 |
| Gibson Assembly® HiFi 1 Step Kit, 10 rxn | 10820-610 |
| Gibson Assembly® HiFi 1 Step Kit, 50 rxn | 10820-614 |
| Gibson Assembly® HiFi 1 Step Master Mix (2X), 10 rxn | 10820-612 |
| Gibson Assembly® HiFi 1 Step Master Mix (2X), 50 rxn | 10820-616 |
| Gibson Assembly® Ultra Starter Kit | 10820-618 |
| Gibson Assembly® Ultra Kit, 10 rxn | 10820-790 |
| Gibson Assembly® Ultra Kit, 50 rxn | 10820-794 |
| Gibson Assembly® Ultra Master Mixes (2X), 10 rxn | 10820-792 |
| Gibson Assembly® Ultra Master Mixes (2X), 50 rxn | 10820-652 |

References:


1. Gibson, D.G. et al. (2009) Nature Methods, 343-345
2. Gibson, D.G. et al. (2010) Nature Methods, 901-903

To place an order or request additional information please contact your local VWR Representative

Gibson Assembly® method is available under commercial license, please contact your VWR Representative for assistance. Synthetic Genomics® and Gibson Assembly® are registered trademarks of Synthetic Genomics Inc. Gibson Assembly® US Patent Nos. 7,776,532 and 8,435,736

Complete product information and additional resources are available at www.vwr.com

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