

GetStaby™ kit Manual (v1.4)



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Table of contents

• Content and storage	2
• Material Safety and Data Sheet	3
• Licenses	4
• User Guide	4
○ Overview of the stabilization principle	4
○ Benefits of the Staby™ system	5
○ The 3 steps of the stabilization procedure	6
▪ Step 1. Isolation of the Staby™ cassette	6
▪ Step 2. Ligation of the Staby™ cassette in your vector	8
▪ Step 3. Transformation	9
○ Analysis of the clones	10
○ Troubleshooting	11
• References	11
• Related Staby™ products and services	12
• Staby™ products ordering information	13
• Worldwide ordering	14

Content and storage :

The GetStaby™ kit is shipped on **dry ice**.

Storage: -70 to -80°C.

Two different types of GetStaby™ kits are available: one containing CYS21 electrocompetent cells (in non self-standing tubes), and the other type containing chemically-competent CYS21 cells (in self-standing tubes). Electroporation is more efficient than chemical transformation.

Each kit contains one box with the following items:

Name	Concentration/remarks	Amount (GE-GSA1-10, GE-GSA1-12, 10 reactions)
<i>pGetStabyA</i> DNA Yellow cap	0.1 µg/µl	1 tube of 25 µl
CYS21 bacteria* Pink cap	Competent cells	10 tubes
<i>GetStaby</i> forward primer Red cap	0.1 µg/µl in water 5'CGT-AGG-CGG-TCA-CGA-CTT-TG3'	1 tube of 20µl
<i>GetStaby</i> reverse primer Red cap	0.1 µg/µl in water 5'TAG-TAA-CGG-CCG-CCA-GTG-TG3'	1 tube of 20µl
Regeneration medium White cap	2% Tryptone, 0.5% Yeast extract, 0.05% NaCl, 2.5 mM KCl, 10mM MgCl ₂	10 tubes of 1.5 ml
Manual		1

*The genotype of the CYS21 strain is: F, Cm^R, *mcrA*, *endA1*, Δ (*mrr-hsdRMS-mcrBC*) (restriction-, modification-), Φ 80*lacZ* Δ M15, Δ *lacX74*, *dcm*, *recA1*, Δ (*ara, leu*)7697, *araD139*, *galU*, *galK*, *nupG*, *rpsL*, *ccdB*⁺.

Material Safety Data Sheet:

Product and company identification:

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Fax: +32.71.37.60.57
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Hazards identification

There is no specific hazard concerning the products of the GetStaby™ kit.

First aid measures

- Inhalation: If one of the products of the GetStaby™ kit is inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
- Ingestion: Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of the products of the GetStaby™ kit are swallowed, call a physician immediately.
- Skin contact: In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.
- Eye contact: In case of contact with one of the products of the GetStaby™ kit, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

Fire-fighting measures

Use foam or all purpose dry chemicals to extinguish. Fire fighters should wear positive self-contained breathing apparatus and full turnout gear.

Accidental release measures

Immediately contact emergency personnel. Use suitable protective equipment (see below exposure controls and personal protection). For small spills add absorbent, scoop up material and place in a sealed, liquid-proof container for disposal. For large spills dike spilled material or otherwise contain material to ensure runoff does not reach a waterway. Place spilled material in an appropriate container for disposal. Minimize contact of spilled material with soils to prevent runoff to surface waterways.

Handling and storing

Keep the container tightly closed, in a cool and well-ventilated area.

Personal protection

The occupational exposure limits were not determined. Protect your skin and body using uniform or laboratory coat, chemical resistant, impervious gloves. Use safety glasses, face shield or other full-face protection if potential exists for direct exposure to aerosols or splashes.

Disposal consideration

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

N.B.: Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. To the best of our knowledge, the information contained herein is accurate. However, neither Delphi Genetics SA nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Licenses

The GetStaby™ kit is covered by worldwide patents. The kit is sold under a license from the *Université Libre de Bruxelles* (Belgium). **The kit is sold for research purpose only.** A license from Delphi Genetics SA is required for any commercial use (Please, contact Delphi Genetics SA at delphigenetics@delphigenetics.com).

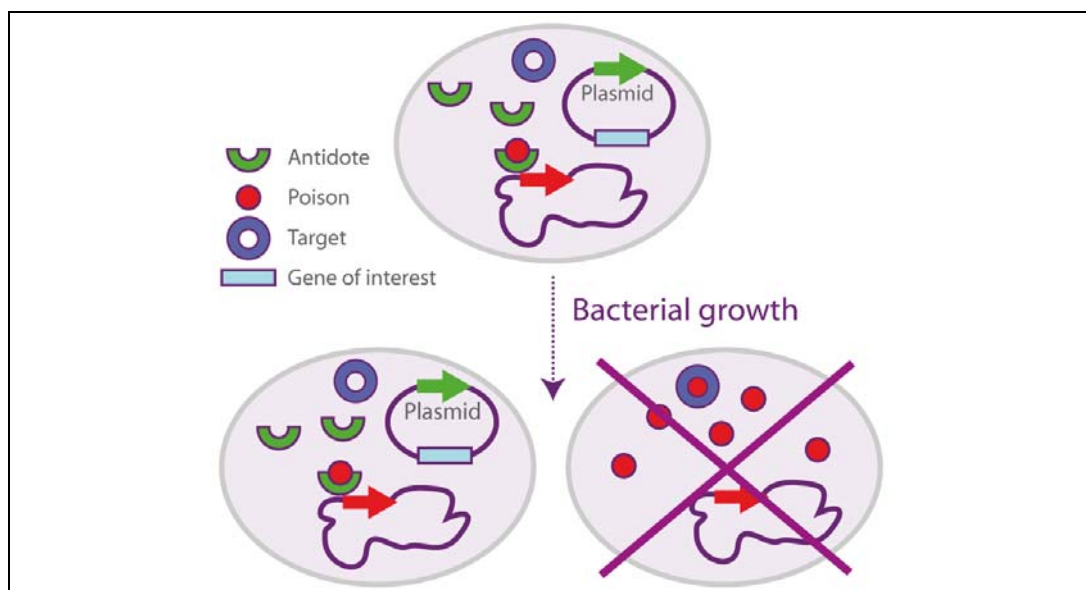
User Guide

Overview of the stabilization principle:

Higher plasmid stability = More DNA or more proteins.

The GetStaby™ kit is the easy way to stabilize your vector. In the kit, the antidote gene (*ccdA*) is localized in the plasmid DNA under the control of a constitutive promoter. On the other hand, the toxic gene (*ccdB*) is localized in the chromosome of the bacteria (cf. figure 1) and its expression is under the control of a promoter strongly repressed in the presence of the plasmid. When the plasmid is lost, the antidote is degraded and the production of the toxin is induced, causing cell death.

Figure 1: Principle of the stabilization system



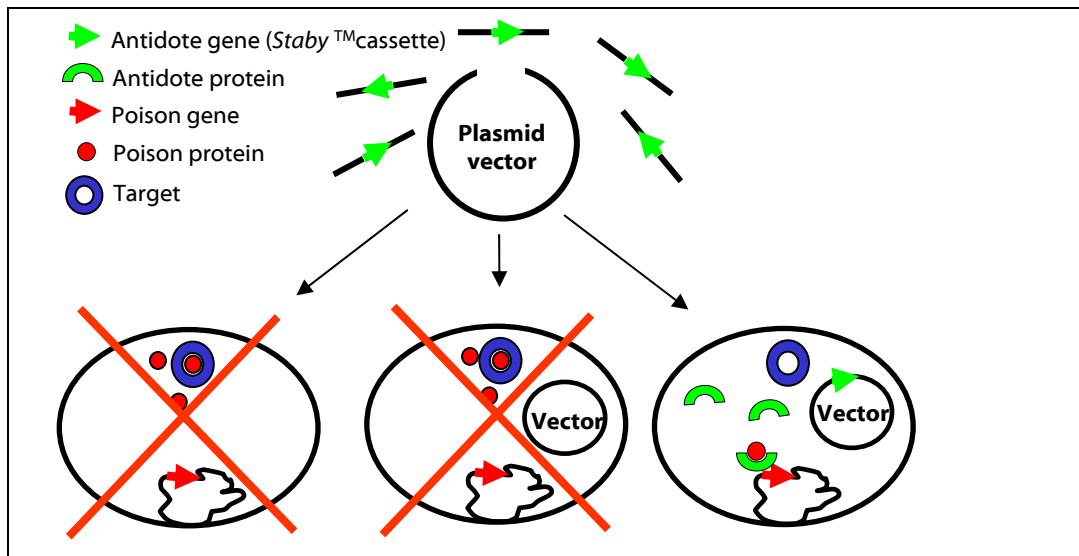
If some bacteria lose the vector, they will not obtain a selective (growth speed) advantage, but will die. In practice, this means that during bacterial growth, 100% of the bacteria will carry the vector.

Some inserts, when cloned into a classical vector, may cause instability of this vector resulting in low yield of DNA after extraction or low yield of protein production (in case of protein expression vector). The reasons of this instability are, for example, the toxicity of the insert and/or the secondary structure and/or the size of the vector. When using the unique selection technology of the GetStaby system, all the recombinants will be stabilized after selection and will yield high amounts of DNA or protein.

For manufacturers of recombinant DNA or proteins, this system offers a great benefit because it is an **antibiotic free system**. Therefore the manufactured product will also be free of traces of antibiotics.

When the *Staby*TM cassette (the DNA fragment encoding the antidote protein) is added to a vector, this vector is stabilized in any strain containing the *ccdB*-poison gene in its chromosome. The *Staby*TM cassette is isolated from the pGetStaby vector using restriction sites or PCR amplification. The insertion into any vector is easily selected using the antidote properties of the *Staby*TM cassette into CYS21 bacteria encoding the CcdB poison protein (see figure 2).

Figure 2: Selection of the insertion of the *Staby*TM cassette into a plasmid vector:



Benefits of the GetStabyTM system:

- The DNA or protein production is 3 to 5 times higher;
- Plasmids are perfectly stabilized without the use of antibiotics;
- The insertion of the stabilization cassette into any vector is easily selected using the antidote properties;
- When performing protein expression, the background of “parasite proteins” is reduced;
- The promoters typically used in DNA engineering and protein production remain available;
- The *Staby*TM System is usable in any culture medium (LB, SOC, SOB, YT or minimal media supplemented with a carbon source such as glucose or glycerol,...);
- When using Amp^R plasmids, no “satellite” colonies are observed even after extended incubation;
- The stabilization cassette linked to any part of the vector is easily exportable to other vectors.

The 3 steps of the stabilization procedure.

1) Isolation of the *Staby*TM cassette by restriction or PCR amplification



2) Ligation of the *Staby*TM cassette in your vector

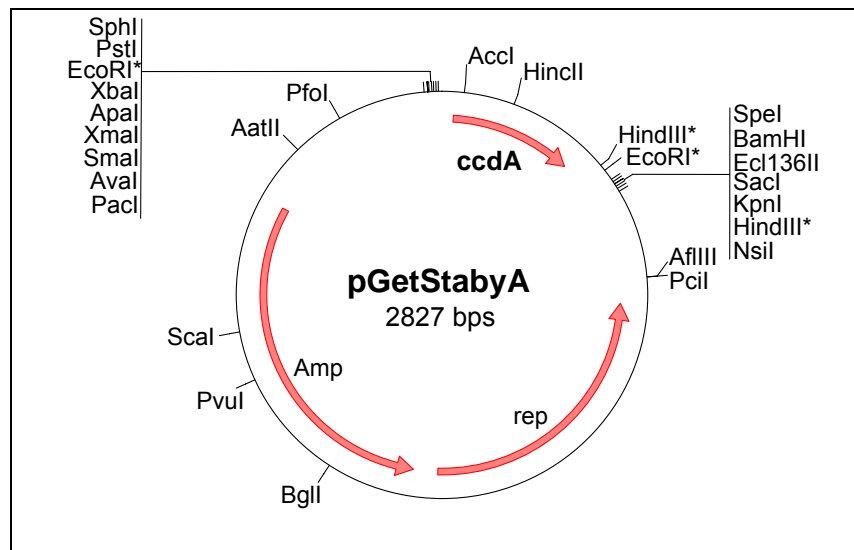


3) Transformation in the *CYS21 E. coli* cells

Step 1: Isolation of the *Staby*TM cassette by restriction or PCR amplification:

It is possible to stabilize your vector using two different isolation methods of the *Staby*TM cassette: restriction or PCR amplification. Many strategies are available for cloning the *Staby*TM cassette into your vector. The protocol provided below provides some guidelines to help you in case you would be somewhat unfamiliar with these techniques.

Figure 3: Restriction map of the *pGetStabyA* vector. All restriction sites represented are unique in the vector except for *HindIII* and *EcoRI* (cf asterisks (*)). Restriction map and sequence are available on line at www.delphigenetics.com



Protocol:

a) Restriction:

In the *pGetStaby*TM vector, the *Staby*TM cassette is bordered by several restriction sites. Hence, you can easily remove the *Staby*TM cassette from the vector using one of the restriction sites in the 5' end (PacI to SphI, see figure 3 below) and one of the restriction sites in the 3' end (HindIII to NsiI). EcoRI restriction sites are present on both sides of the *Staby* cassette and can thus be used to isolate this cassette by restriction with only one enzyme.

1. Choose the restriction site(s) to be used for the isolation of the *Staby* cassette. Check for the presence of identical or compatible restriction sites in your vector to be stabilized. If you don't find compatible restriction sites, you can use SmaI and Ecl136II restriction enzymes that generate blunt ends and choose any single restriction site into

your vector (see below how to make the ends of your vector will be blunted before ligation).

2. Digest the pGetStaby DNA according to the instructions of the enzyme(s) manufacturer (usually, about 1µg DNA).
3. Digest the DNA of the vector to be stabilized (usually, about 0.5µg DNA).
After restriction, if you have to blunt the ends of your vector (cloning of the Staby cassette using SmaI and Ecl136II into a non blunt-end site), add dNTPS (usually 0.033mM each) and blunting enzyme (T4 DNA polymerase or Klenow enzyme, usually 10 units). Check the manufacturer's instructions for the buffer compatibility, incubation temperature (usually 37°C for at least 30 minutes), etc
4. Dialyze separately both restrictions against sterile water using a filter with a 0.025µm pore size: add sterile water in a Petri dish and carefully place the filter on the water surface; delicately put the restriction product on the filter; wait 10 min; pipet back the restriction product and use it for ligation.
5. Inactivate the enzymes by incubation of both restrictions separately at 80°C for 20min. Check the efficiency of the restriction by agarose gel electrophoresis of an aliquot.
6. Optional: if your vector to be stabilized carries no antibiotic resistance gene or the ampicillin resistance gene, you must purify on gel the *Staby*TM cassette to avoid selection of colonies containing the parental *pGetStaby*TM vector instead of your construct.
7. Proceed to ligation or store the restriction products at -20°C.

b) PCR amplification:

1. Choose the restriction site(s) to be used for the insertion of the *Staby*TM cassette into your vector. Note that you need to generate blunt ends to your vector (restriction with a blunt-end cutting enzyme or restriction and blunting with T4 DNA polymerase or Klenow enzyme, see point 3 above).
2. Digest the DNA of the vector to be stabilized (usually, about 0.5µg DNA) according to the instructions of the enzyme(s) manufacturer.
3. Dialyze the vector restriction against sterile water using a filter with a 0.025µm pore size: add sterile water in a Petri dish and carefully place the filter on the water surface; delicately put the restriction product on the filter; wait 10 min; pipet back the restriction product and use it for ligation.
4. Inactivate the enzyme(s) by incubation of the restriction mix at 80°C for 20min.
5. Amplify the Staby cassette using the primers supplied with the kit (**GetStaby forward** and **GetStaby reverse**). Set up a 50 µl or 100 µl PCR reaction:
 - ✓ according to the manufacturer's recommendations;
 - ✓ using (preferably) a proof-reading polymerase or a polymerase mix having a proof-reading activity.

After PCR amplification, place the tube on ice.

6. Check the efficiency of the vector restriction and of the PCR amplification by agarose gel electrophoresis of an aliquot (the expected size of the PCR amplification is 427bp).
7. Purify your PCR product using columns (removal of the PCR primers) or by gel purification

a) Removal of the PCR primers. Several kits are available to remove left-over primers from PCR products. Perform this purification according to the manufacturer's recommendations. Elute your DNA using a small volume (30-50 µl) of a solution without EDTA (because EDTA inhibits the ligase).

b) Gel purification. Several kits are available to purify DNA fragments after agarose gel electrophoresis (generally, the band corresponding to the target PCR product is cut out of an agarose gel and the DNA is eluted from the excised small block of agarose). Perform this

purification according to the manufacturer's recommendations. Use 20 to 40 μ l of the PCR product to load the gel. Excise the target band from the agarose gel with a clean, sharp scalpel. Minimize the size of the gel slice containing your DNA fragment and transfer it to a sterile tube. Perform the DNA visualization on the gel and the excision steps quickly to avoid degradation of your DNA fragment by UV light. Use sterile plastic ware and gloves to minimize the presence of nucleases.

8. Proceed to ligation or store the restriction and PCR products at -20°C .

Step2: Ligation of the Staby cassette in your vector

Protocol:

1. Set up the following reaction in a sterile microcentrifuge tube according to the ligase manufacturer's recommendations. During manipulations, we recommend to keep the ligase at -20°C using a cold block.

Your restricted vector (usually ~ 0.11 pmole, the corresponding quantity in ng is the size of the vector (pb) x 0.07)	X μ l
Staby cassette (usually ~ 0.33 pmole which corresponds to ~ 94 ng)	Y μ l
Ligase buffer (according to the manufacturer's instructions)	
T4 DNA ligase (according to the manufacturer's instructions, usually 5 to 10 units)	
H ₂ O to reach a total volume of 20 μ l	
TOTAL	20 μl

2. Mix gently and incubate according to the manufacturer's instructions.
3. Inactivate the ligase by incubating the tube at 80°C during 20min.
4. Optional: If your vector carries no antibiotic resistance gene or the ampicillin resistance gene, it is recommended to digest your ligation mix with an enzyme that cuts in the *pGetStabyTM* vector but not in the expected construct (i.e., [your vector + Staby cassette]). This restriction will linearize the parental *pGetStabyTM* vector and will avoid selection of colonies containing this parental vector instead of your construct.
5. Proceed to transformation or store the ligation product on ice (several hours) or at -20°C (several days). After storage of the ligation product at -20°C , you might observe a small decrease in the total number of clones after transformation.

Step3: Transformation in the CYS21 E. coli cells

Selection of the recombinants is performed in the CYS21 E. coli strain. This strain contains the *ccdB* gene in its chromosome. Two different types of GetStaby™ kits are available. One type contains CYS21 electrocompetent cells, and the other type contains chemically competent CYS21 cells. Electroporation is more efficient than chemical transformation.

Protocol:

a) Transformation by electroporation:

1. Prepare LB plates containing the appropriate antibiotic according to the resistance encoded by your vector or no antibiotic if your vector does not encode a resistance. Let the plates dry and then warm them up at 37°C.
2. Set up your electroporator for bacterial transformation. Use the manufacturer's instructions. Classically, electroporation conditions are: 2,5 kV, 25 µF, and 200 Ohms.
3. Thaw (bring to room temperature) one vial of regeneration medium (white cap) per cloning reaction.
4. For each cloning reaction, place one vial of the **CYS21** electrocompetent cells (pink cap) and one electroporation cuvette on ice. Allow the cells to thaw on ice for 5-10 minutes.
5. Add 1 or 2 µl of the ligation product to one vial of the **CYS21** electrocompetent cells (pink cap). Stir gently to mix. Do not mix by pipetting up and down.
If you wish to use more than 2µl of the ligation mix, it is recommended to dialyze it against sterile water using a filter with a 0.025µm pore size. Add the sterile water in a Petri dish and carefully place the filter on the water surface. Delicately, put the ligation mix on the filter. Wait 10min, pipet back the ligation mix and add the dialyzed solution to the electrocompetent cells.
6. Transfer all the content of the tube (cells+DNA) to the pre-chilled electroporation cuvette.
7. Electroporate the cells according to the manufacturer's instructions.
If you experience electric arcing during electroporation, try again with a dialyzed product or reduce the voltage (10 to 20% less, 2kV instead of 2.5kV for example).
8. Quickly add 1ml of the regeneration medium (white cap) at room temperature and mix well.
9. If your vector carries ampicillin resistance or no antibiotic resistance, spread immediately 10, 20 and 100 µl of the product (from step 8) on different pre-warmed plates. Otherwise, incubate the product (from step 8) at 37°C for one hour before spreading 10, 20 and 100µl on different pre-warmed plates.
10. Incubate the plates overnight at 37°C.

b) Transformation using chemically competent cells:

1. Prepare LB plates containing the appropriate antibiotic according to the resistance encoded by your vector or no antibiotic if your vector does not encode a resistance. Let the plates dry and then warm them up at 37°C.
2. Set a water bath or a heating-bloc to 42°C
3. Thaw (bring to room temperature) one vial of regeneration medium (white cap) per cloning reaction.
4. For each cloning reaction, place one vial of the **CYS21** chemically-competent cells (self-standing tube with pink cap) on ice. Allow the cells to thaw on ice for 5-10 minutes.

5. Add 5 µl of the ligation product to one vial of the **CYS21** chemically competent cells (self-standing tube with pink cap). Stir gently to mix. Do not mix by pipetting up and down.
6. Incubate on ice for 30 minutes.
7. Heat-shock the bacteria by placing the vial at 42°C for 30 seconds without shaking.
8. Immediately transfer the tubes to ice and incubate for 2 minutes.
9. Add 250µl of room-temperature regeneration medium (white cap) and mix well.
10. If your vector carries the resistance to ampicillin or no antibiotic resistance, spread immediately 10, 20 and 100 µl of the product (from step 9) on different pre-warmed plates. Otherwise, incubate the product (from step 9) at 37°C for one hour before spreading 10, 20 and 100µl on different pre-warmed plates.
11. Incubate the plates overnight at 37°C.

Analysis of the clones:

Protocol

1. Pick about 10 colonies and culture each of them overnight in 10 ml of LB medium with or without the appropriate antibiotic (according to the resistance gene encoded by your vector).

Note: The stabilization is now effective; the ccdA gene is activated. Consequently, the plasmid is stabilized in the CYS21 strain and no antibiotic is required to select bacteria containing the plasmid. The stabilization system will insure high yield of plasmid DNA. However, the use of antibiotics is always possible and does not interfere with the stabilization system..

2. Extract plasmid DNA and analyze the constructions using your method of choice (restriction, sequencing, PCR screening, etc). Consult the literature to find the best adapted method and protocol (see Ausubel et al., 1995 or Sambrook et al., 1989). Sequencing primers (*GetStaby forward* and *GetStaby reverse* primers) are included in the kit (0.1 µg/µl, 16nmol/µl). The complete sequence of the *pGetStaby* vector is available on <http://www.delphigenetics.com>
3. *Optional:* For long-term storage of a recombinant clone, choose the culture of one clone containing the desired construct. Mix well 800 µl of the liquid culture with 800µl of sterile glycerol and transfer to a cryo-vial. Store at -70°C.

Troubleshooting:

Please note that most problems of cloning efficiency can be solved as described in the table below. However, due to intrinsic and specific properties of your vector, the number of recovered recombinants may vary.

Problem	Solution
No or Low amount of PCR product before cloning.	Check the PCR conditions
Multiple amplification bands observed in the PCR product	√ Either change the PCR conditions (annealing temperature, salt concentration) for increasing specificity or gel-purify (step 1, point b7) the <i>Staby</i> TM cassette before cloning into the vector. √ Use the primers provided with the kit or use purified primers.
No restriction of the vector or unexpected bands on gel after restriction	Check the expiration date and the manufacturer's conditions of the enzymes used. If you are using two different enzymes, check buffer compatibility for these enzymes. Test this compatibility by restriction in the same conditions but with the separate enzymes.
Arcing during electroporation	Check your electroporation conditions. Classical conditions for bacterial electroporation are: 25 μ F, 2.5kV, 200 Ohms. Electroporate only 1 or 2 μ l of your ligation mix. If you want to use more DNA or if you still experience arcing, dialyze your DNA sample using a 0.025 μ m filter and sterile water (cf. step 3, point 5).
Only a few or no colonies are observed after transformation of the ligation mix into the <i>CYS21</i> strain.	√ Check the DNA concentrations before ligation. Be sure to use the adequate DNA quantities mentioned in the manual. √ Check the quality of your DNA using agarose gel electrophoresis. √ During the DNA purification step, perform the visualization of the gel and the excision steps quickly to avoid degradation of your DNA fragment by UV light. √ Be sure that the DNA transformation was optimal. Check the electroporation conditions (see above). Check the temperature of the water bath or heating block used during transformation of chemically-competent bacteria. √ Check your plates with another strain which is resistant to the same antibiotic. If no growth is observed, check your antibiotic solution. <i>Remark: You can check the transformation efficiency by using the pGetStaby vector alone (10 to 50ng).</i>

References:

- Ausubel F., Brent R., Kingston R., Moore D., Seidman J.G., Smith J.A., Struhl K. 1995. Current Protocols in Molecular Biology. John Wiley and Sons edition. USA.
- Sambrook J., Fritsch E., Maniatis T. 1989. in Molecular Cloning: a laboratory manual, Second edition, Cold Spring Harbor Laboratory Press, Cold Spring Harbor, New York.

Related Staby™ products and services:



The **StabyCloning™ kit** is designed for the rapid, precise and efficient DNA cloning of PCR products. The complete cloning procedure is performed in one hour (including plating), the background is basically nil (the bacteria containing vectors without insert are killed), the PCR product is oriented, the plasmid is stabilized, and the export of the insert to another vector is easily selected.



The **StabyExpress™ T7 kit** contains all the key elements for cloning of a gene-of-interest and its expression in *Escherichia coli*. The kit combines two technologies (T7 expression and plasmid stabilization) that allow high-yield protein expression and standardization of the production-protocol.



The **GetStaby™ kit** allows easy addition of Delphi-Genetics' stabilization technology into your favourite vector. The technology is compatible with any expression system. Using this technology, your vectors are perfectly stabilized even without antibiotics.



The **Staby™ Codon T7 kit** combines three technologies to ensure high-yield and standardized expression of eukaryote proteins in *Escherichia coli*. These technologies are (i) T7-controlled expression, (ii) plasmid stabilization, and (iii) codon-usage adaptation of *E. coli* for the efficient expression of proteins that contain rare codons.



The **Cherry™ Express kit** allows direct visualization (by eye!) of your protein of interest during protein production in *E. coli* and protein purification. Special requirements or reagents are not needed. It is also possible to quantify the protein concentration at any step by spectral measurement. The Cherry™ Express kit combines multiple advantages: protein visualization, T7 expression, plasmid stabilization and codon-usage adaptation.



The **Staby™ Switch** medium is an auto-inducible medium (ready-to-use) designed for high-level protein expression using Staby™ products or any other IPTG-inducible bacterial expression system. Using Staby™ Switch medium, protein expression is automatically induced when high cell density is reached. Thus, it is neither necessary to add IPTG nor to monitor optical density during bacterial growth.



Staby™ Soft was specifically designed by Delphi Genetics to support the users of the Staby™ Operating System. This software package can perform customized gene-of-interest analysis to choose the most adapted kit and to optimize protein production.

For more information, please, consult www.delphigenetics.com

Staby™ products ordering information:

StabyExpress™		
GE-SET7-0505	StabyExpress T7 expression kit, electro-competent cells	5 reactions
GE-SET7-0707	StabyExpress T7 expression kit, chemically-competent cells	5 reactions
GE-SET7-1010	StabyExpress T7 expression kit, electro-competent cells	10 reactions
GE-SET7-1212	StabyExpress T7 expression kit, chemically-competent cells	10 reactions
GE-SET7-1111	Set of 10 cloning bacteria (CYS21) and 10 expression bacteria (SE1), electro-competent cells	10 reactions
GE-SET7-1313	Set of 10 cloning bacteria (CYS21) and 10 expression bacteria (SE1), chemically-competent cells	10 reactions
GE-SET7-2020	StabyExpress T7 expression kit, electro-competent cells	20 reactions
GE-SET7-2222	StabyExpress T7 expression kit, chemically-competent cells	20 reactions
GE-SET7-0020	Set of 20 expression bacteria (SE1), electro-competent cells, 50µl/tube	20 reactions
GE-SET7-0022	Set of 20 expression bacteria (SE1), chemically-competent cells, 100µl/tube	20 reactions
GetStaby™		
GE-GSA1-10	GetStaby kit, electro-competent cells	10 reactions
GE-GSA1-12	GetStaby kit, chemically-competent cells	10 reactions
StabyCloning™		
GE-STC1-10	StabyCloning kit, electro-competent cells	10 reactions
GE-STC1-12	StabyCloning kit, chemically-competent cells	10 reactions
GE-STC1-20	StabyCloning kit, electro-competent cells	20 reactions
GE-STC1-22	StabyCloning kit, chemically-competent cells	20 reactions
GE-STCB-20	Set of 20 cloning bacteria (CYS21) electro-competent cells (50µl/tube)	20 reactions
GE-STCB-22	Set of 20 cloning bacteria (CYS21) chemically-competent cells (100µl/tube)	20 reactions
Staby™Codon		
GE-SCT7-0505	StabyCodon T7 expression kit, electro-competent cells	5 reactions
GE-SCT7-0707	StabyCodon T7 expression kit, chimio-competent cells	5 reactions
GE-SCT7-1010	StabyCodon T7 expression kit, electro-competent cells	10 reactions
GE-SCT7-1212	StabyCodon T7 expression kit, chimio-competent cells	10 reactions
Staby™Switch		
GE-AIME-04	Auto-induction medium	2L
Cherry™Express		
GE-CET7-05	CherryExpress T7 expression kit, electrocompetent	5 reactions
GE-CET7-07	CherryExpress T7 expression kit, chimio-competent cells	5 reactions
GE-CET7-10	CherryExpress T7 expression kit, electrocompetent	10 reactions
GE-CET7-12	CherryExpress T7 expression kit, chimio-competent cells	10 reactions
Cherry™Codon		
GE-CCT7-05	CherryCodon T7 expression kit, electrocompetent	5 reactions
GE-CCT7-07	CherryCodon T7 expression kit, chimio-competent	5 reactions
GE-CCT7-10	CherryCodon T7 expression kit, electrocompetent	10 reactions
GE-CCT7-12	CherryCodon T7 expression kit, chimio-competent	10 reactions

Worldwide ordering:

You can order our products directly from Delphi Genetics worldwide (with the exception of Japan) using our online ordering platform (www.delphigenetics.com). Should you prefer to work with a local dealer, you can find a list of distributors on our website: <http://www.delphigenetics.com/international-distributors.html>

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