

# Plasmid DNA Purification Services ver.2011

## Six Types of Services Tailored to Your Experiments

### 1) Standard Quality:

This service uses column-based purification method for plasmid less than 20 kb. Plasmid DNA purified by standard quality service typically contains 5 - 10 EU/ug of DNA and is suitable for many applications such as probe synthesis, in vitro RNA synthesis, DNA cloning, DNA sequencing, bacterial and yeast transformation. Restriction digestion with common enzymes is included in this service. Restriction analysis is included in this service.

### 2) Transfection Quality:

This service uses Qiagen's Endo-Free plasmid purification method for plasmid less than 20 kb. This service is recommended for endotoxin-critical applications such as transfection of mammalian cells and animal-related experiments. Plasmid DNA purified by transfection grade service typically contains 0.1 EU/ug of DNA. Restriction analysis is included in this service.

### 3) Express:

This low cost, fast turnaround, 250 ml-scale (equals to maxi prep) purification service is tailored for researchers who need small amount of DNA for their research. The service uses column-based purification method for plasmid less than 20 kb. Plasmid DNA purified by standard grade service typically contains 5 - 10 EU/ug of DNA and is suitable for many applications such as probe synthesis, in vitro RNA synthesis, DNA cloning, DNA sequencing, bacterial and yeast transformation. Restriction analysis is not included in this service.

### 4) Express Plus:

This low cost, fast turnaround, 250 ml-scale (equals to maxi prep) purification service is tailored for researchers who need small amount of DNA for their research. The service uses Qiagen's Endo-Free plasmid purification method for plasmid less than 20 kb. Plasmid DNA purified by Express Plus quality service typically contains 0.1 EU/ug of DNA and is recommended for endotoxin-critical applications such as transfection of mammalian cells and animal-related experiments. Restriction analysis is not included in this service.

### Quick Guide for Standard, Transfection, Express and Express Plus Plasmid Purification Services

	Standard	Transfection	Express	Express Plus
Production Scale	1 liter	1 liter	250 ml (same as Maxi prep)	250 ml (same as Maxi prep)
Typical yield	1.5 - 3.5 mg/liter	1.5 - 3.5 mg/liter	300 - 600 µg/250 ml	300 - 600 µg/250 ml
Endotoxin Removal	No	Yes	No	Yes
Turn around time	5 - 7 days.	6 - 8 days.	4 - 5 days.	4 - 6 days.

### 5) BAC Plasmid:

This service uses column-based proprietary techniques to purify BAC plasmid DNA. Our proprietary techniques give high yield and high quality plasmid DNA that is suitable for probe synthesis, in vitro RNA synthesis, DNA cloning and DNA sequencing. Plasmid DNA purified by BAC plasmid service typically contains 5 - 10 EU/ug of DNA. Only recombinant bacteria are accepted for this service. Restriction analysis is not included in this service. (If you use the BAC DNA for animal study, please contact us for more information on endotoxin removal service).

Production scale: 1 - 20 liters. Typical yield: 0.4 - 0.6 mg/liter. Turnaround Time: 8 - 10 days.

### 6) Mega Size Plasmid:

This service uses column-based proprietary techniques to purify plasmid DNA larger than 20 kb including PAC, P1, and Cosmids. Our proprietary techniques give high yield and high quality plasmid DNA that is suitable for probe synthesis, in vitro RNA synthesis, DNA cloning and DNA sequencing. Plasmid DNA purified by Mega Size plasmid service typically contains 5 - 10 EU/ug of DNA. Only recombinant bacteria are accepted for this service.

Production scale: 1 - 20 liters. Typical yield: 0.4 - 0.6 mg/liter. Turnaround Time: 8 - 10 days.



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**NIH BPA # HHSN263999900602B**



### Difference between Plasmid DNA Purification Services

	Standard	Transfection	Mega/BAC	Express	Express Plus
<b>Production scale</b>	1 liter	1 liter	1 liter	250 ml	250 ml
<b>Services for plasmids</b>	Less than 20 kb	Less than 20 kb	More than 20 kb	Less than 20 kb	Less than 20 kb
<b>Typical Yield</b>	1.5 – 3.5 mg	1.5 – 3.5 mg	0.4 – 0.6 mg	300 – 600 µg	300 – 600 µg
<b>For general molecular biology applications such as cloning, PCR, <i>in vitro</i> transcription, DNA probe synthesis</b>	Yes	Yes	Yes	Yes	Yes
<b>For endotoxin-critical applications such as cell transformation and animal-related applications</b>	No	Yes	No	No	Yes
<b>Endotoxin level</b>	5 - 10 EU/µg	< 0.1 EU/µg	5 - 10 EU/µg	5 - 10 EU/µg	< 0.1 EU/µg
<b>Restriction analysis included</b>	Yes	Yes	Yes	No	No
<b>Guarantee Yield</b>	0.3 mg/liter for low yield plasmid, 1 mg/liter for high yield plasmid	0.3 mg/liter for low yield plasmid, 1 mg/liter for high yield plasmid	0.3 mg/liter	100 µg/250 ml for low yield plasmid, 250 µg/250 ml for high yield plasmid	100 µg/250 ml for low yield plasmid, 250 µg/250 ml for high yield plasmid
<b>Turnaround time</b>	5 – 7 days	5 – 8 days	8 – 10 days	4 - 5 days	4 - 6 days
<b>List price*</b>	\$ 258 - \$ 284*	\$314 - \$ 340*	\$ 399*	\$ 116 - \$ 142*	\$ 137 - \$ 170*

\*Government contract, academic discount, volume discount are available. Please contact us for a quote.



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## Materials Required for the Services\*

- 1) Standard, Transfection, Express and Express plus quality plasmid purification (for plasmid 20 kb or less):  
**1 µg of plasmid DNA (2-3 µg on filter paper)**, or recombinant bacteria carrying a plasmid.
- 2) BAC and Mega Size plasmid Purification:  
Recombinant bacteria carry BAC, Cosmid, PAC, P1 plasmid or plasmid larger than 20 kb. **We do not accept plasmid DNA for this service.**

\*All materials we received will be returned to the contracting laboratory at the end of the service. Unless requested, we do not archive or save any materials in our laboratory.

## Services Description

- 1) Recombinant bacteria we received from the contracting laboratory will be streaked on agar plate with appropriate antibiotic. After over night growth, a freshly picked colony will be used as starting material.
- 2) Unless provided by the contracting laboratory, plasmid DNA we received will be transformed to DH5α. After over night growth, a freshly picked colony will be used as starting material.
- 3) We will grow **one liter** of the recombinant bacteria (Express Quality plasmid production is performed in **250 ml** culture) using our own optimized fermentation procedure. Ampicillin, kanamycin, chloramphenicol are provided at no charge. There will be an extra charge for other antibiotic.
- 4) Plasmid DNA from bacteria will be purified by column method.
- 5) Quality of the purified plasmid DNA will be assessed by optical density (O.D.) ratio between 260 and 280 nM and restriction analysis.
- 6) Standard and Express quality plasmid purification are performed using column-based Qiagen or compatible plasmid DNA purification kit. The purified DNA is dissolved in sterile TE or water as requested
- 7) Transfection and Express Plus quality plasmid purification are performed using Qiagen Endo-Free plasmid DNA purification kit. The purified DNA is dissolved in sterile, low endotoxin (< 10 EU/ml) TE or water as requested.  
**Though we do not test the endotoxin level in every DNA preparations, our routine quality control tests suggest the endotoxin level in our Transfection Grade preparation is about 0.1 endotoxin unit/µg of DNA.**
- 8) BAC and Mega Size plasmid purifications are performed using our optimized fermentation procedures.
- 9) Five vials of glycerol stocks of the recombination bacteria, a report with restriction analysis, and the purified plasmid DNA are provided for each purification service.
- 10) Except Express, Express Plus and BAC plasmid purifications, one restriction digestion with common enzymes is included at no charge. There will be an extra charge for uncommon enzymes and additional restriction digestion.

## Service Guarantee

- 1) Yield: We provide the contracting laboratory all the materials we obtained from each preparation. Since the yield of plasmid DNA varies depending on the nature of the plasmid, the host cell and other factors, we don't guarantee the yield per liter production.  
**We do guarantee**
  - i. Standard and Transfection Quality plasmid purification (typical yield: 1.5 - 3.5 mg/liter)  
A minimal DNA yield of at least **300 µg/liter** production for low copy plasmid and **1 mg/liter** production for high copy plasmid.
  - ii. Express and Express Plus quality plasmid purification (typical yield 300 - 600 µg/250 ml)  
A minimal DNA yield of at least **100 µg/250 ml** production for low copy plasmid and **250 µg/250 ml** production for high copy plasmid.
  - iii. BAC and Mega Size plasmid purification (typical yield 0.4 - 0.6 mg/liter)  
A minimal DNA yield of at least **300 µg/liter** production.  
**In the event that the production yield is lower than our guarantee, we will redo another production at no charge to the contracting laboratory.**
- 2) Quality: O.D. ratio between 260 and 280 is at least 1.7.
- 3) No other guarantee except stated above will be provided.



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**Ordering Information**

MS300	Standard quality plasmid DNA purification service	\$ 258
MS301	Standard quality plasmid DNA purification service + DNA transformation	\$ 284
MS302	Transfection quality plasmid DNA purification service	\$ 314
MS303	Transfection quality plasmid DNA purification service + DNA transformation	\$ 340
MS304	Mega size plasmid DNA purification service	\$ 399
MS305	Express quality plasmid DNA purification service	\$ 116
MS305A	Express quality plasmid DNA purification service + DNA transformation	\$ 142
MS306	Express Plus quality plasmid DNA purification service	\$ 137
MS306A	Express Plus quality plasmid DNA purification service + DNA transformation	\$ 170
MS307	BAC plasmid DNA purification service	\$ 399
MS308	Additional endotoxin removal service for BAC plasmid DNA purification	\$ 56
MS309	Additional reagent charge (special antibiotic, uncommon enzymes, etc.)	Inquire
MS311	Plasmid DNA transformation (DH5 $\alpha$ provided)	\$ 26
MS312	Additional Restriction Analysis	\$ 26

\* Government contract, academic discount, volume discount are available. Please contact us for a quote.

**Turnaround Time**

- 1) 3 - 4 working days for simple Express grade projects
- 2) 4 - 5 working days for simple Express grade projects with DNA transformation.
- 3) 4 - 6 working days for simple Standard grade and Transfection grade projects.
- 4) 5 - 8 working days for simple Standard grade and Transfection grade projects with DNA transformation.
- 5) 8 - 10 working days for simple BAC and Mega-Plasmid grade projects.
- 6) Additional time will be required for large projects.

**Related Services**

DNA sequencing Services

For more information, please contact us at 301-831-1377 or [info@mtrscientific.com](mailto:info@mtrscientific.com)



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### Plasmid DNA Purification Services Request Form

Date: \_\_\_\_\_ P.O. Number: \_\_\_\_\_

Investigator Name: \_\_\_\_\_

Address: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_ Email: \_\_\_\_\_

#### Plasmid Information:

Starting material: (Check one)  DNA (requires at least 1 µg as liquid, or 2-3 µg on filter paper ) Con.: \_\_\_\_\_

Colony on plate  Glycerol stock  Liquid culture  Other \_\_\_\_\_

Plasmid Name: \_\_\_\_\_ Size: \_\_\_\_\_

Host strain (if provided as bacteria): \_\_\_\_\_

Antibiotic: \_\_\_\_\_ (Amp, Kan, chloramphenical provided at no charge) Concentration: \_\_\_\_\_

Plasmid copy per bacterium: High (>10 copies, higher than 1 mg/liter), Low (< 10 copies, lower than 1 mg/liter), Unknown

Preferred host (if provided as DNA for transformation): (Circle one) DH5α, Provided: \_\_\_\_\_

Diagnostic enzyme(s): (Extra charge will be applied for uncommon enzymes. Restriction analysis is not included in Express, Express Pus and BAC plasmid purification services.)

1. \_\_\_\_\_ Expected fragments (in kb): \_\_\_\_\_

Additional information attached.

Plasmid DNA will be used for :  Cloning/probe synthesis/bacteria transformation  Cell transfection

Animal studies  Others: \_\_\_\_\_

#### Production Information:

Type of production:  Standard Quality  Transfection Quality  Mega Size Plasmid  BAC Plasmid (Check one)

BAC Plasmid for animal studies (plus endotoxin removal)  Express  Express Plus

Scale: (Circle one) Express scale (250 ml), 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 liters, other \_\_\_\_\_

DNA to be dissolved in: (Circle one) TE (standard), water (for DNA sequencing and electroporation).

Special instruction: \_\_\_\_\_

Lab use only: Material Received On: \_\_\_\_\_ By: (Circle one) Direct pick-up, Mail

Production No. \_\_\_\_\_ Date of completion: \_\_\_\_\_

Comments: \_\_\_\_\_



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## Frequently Asked Questions

### I. How much starting materials do I need to send you for the purification service?

If you send us bacteria, you can send us a plate, liquid culture in a tube, glycerol stock, or a slab. Please wrap the plate or tube with parafilm so it will not open during shipping. If you send it by mail, we recommend wrapping them with addition bubble wrap so they will not be crushed by automatic sorting machine.

If you send us DNA, we will need **at least 1 µg as liquid, or 2 - 3 µg on filter paper** for transformation.

### II. We need specific amount of plasmid DNA. How do you charge for the plasmid DNA purification services?

Since the yield of plasmid vary depending on the nature of the plasmid, instead of charging the services by quantity such as mg, we offer the services by liter production. In general, for a high copy plasmid such as pCDNA based plasmid, the average yield is between 2-4 mg per liter. We offer a guarantee yield of 1 mg per liter for high copy plasmid, 0.3 mg per liter for low copy plasmid such as BAC. If one needs specific amount of plasmid DNA, we can do a one-liter production first to get an estimate of yield of a particular plasmid, then we will send you a quote for the production of the specific amount of DNA requested.

### III. What kit do you use for the transfection grade plasmid purification service?

The kit we used for the service is Qiagen Endofree plasmid purification kit. For more information, please check their web site. <http://www1.qiagen.com/products/Plasmid/QIAGENPlasmidPurificationSystem/EndoFreePlasmidMegaKit.aspx>

### IV. What is the level of endotoxin in the plasmid DNA purified from your transfection grade purification service?

According to Qiagen, the endo-free kit can reduce endotoxin level to less than 0.1 EU/ug DNA (or 100 EU/mg DNA). We had independently verified their data using an independent testing company and showed that our preps contain about 0.1 EU/ug DNA (or 100 EU/mg DNA) or less of endotoxin.

### V. What is the difference on endotoxin level between standard and transfection grade plasmid DNA preparation?

Using an independent testing company, we found the standard grade plasmid DNA we prepared have about 5 - 10 EU/ug DNA (or 5000 - 10,000 EU/mg DNA) and the transfection grade plasmid DNA we prepared have about 0.1 EU/ug DNA (or 100 EU/mg DNA).

### VI. What test kit is used to detect endotoxin?

The most common test kit used to detect endotoxin is the LAL test sold by Cambrex Bioscience. We don't know what test Qiagen uses. The testing company we used uses the LAL test kit from Cambrex Bioscience. For more information on the LAL test, please check their web site. <http://www.cambrex.com/Content/bioscience/CatNav.oid.665.prodoid.KineticOCL>

### VII. Do you do endotoxin test on every DNA purified by the transfection grade purification service?

We purify plasmid DNA according to the procedures of the Qiagen's Endofree kit and don't do endotoxin test on every transfection grade plasmid DNA we purified. However, if our client needs us to perform the endotoxin test on the transfection grade DNA we prepared, we can send it out to an independent testing company to perform the test at extra charge.

As part of our quality control, we do test periodically using an independent testing company and found that our transfection grade plasmid DNA matched to the specification of Qiagen's Endofree kit's claim, that is, less than 0.1 EU/ug DNA (or 100 EU/mg DNA).

### VIII. What is the meaning of EU (endotoxin unit)?

According to Cambrex Bioscience, the maker of the LAL test kit, depending on the source of the endotoxin, the conversion from endotoxin units to nanograms will vary. The FDA initially defined the Endotoxin Unit (EU) as the endotoxin activity of 0.2 ng of Reference Endotoxin Standard, EC-2 or 5 EU/ng. To convert the current FDA RSE, EC-6 from EU's into ng, the conversion is 10 EU/ng. Previous versions of the BET chapter <85> in USP stated a suitable CSE has potency between 2 and 50 EU/ng.

### IX. What is the acceptable level of endotoxin in plasmid DNA used in cell transfection and animal experiments?

There is no general standard for cell transfection experiment because different cells response to endotoxin differently. For example, cells from neuronal region are more sensitive to endotoxin while fibroblast are less sensitive. It is commonly agreed that a preparation of 0.1 EU/ug DNA (or 100 EU/mg of DNA) or less should be used for both endotoxin sensitive cells and animal experiments. Most of the commercial endofree plasmid purification kits from companies such as Qiagen, Promega, Sigma are able to reduce endotoxin in a plasmid prep to about 0.1 - 0.5 EU/ug DNA (or 100-500 EU/mg DNA).

### X. What is the best way to ship starting materials for your purification services?

Within USA, one can send us DNA as liquid or on filter paper, glycerol stock, colonies on plate, liquid culture or bacteria slab. For our international clients, it is better to send us DNA so there is no dry ice or cold pack involved in the shipment to save shipping cost. We provided glycerol stock at no extra charge when we ship back the purified plasmid DNA to our client. Glycerol stock requires dry ice shipment. If one does not need glycerol stock back, please notify us and we will ship back the DNA in cold pack to reduce shipping cost.



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