MagAttract™ 96 Miniprep Handbook

For efficient, high-throughput preparation of plasmid DNA

December 2000

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MagAttract 96 Miniprep Core Kit Contents

Component	Contents
MagAttract™ Suspension (Miniprep)	1 x 100 ml
Buffer P1	1 x 440 ml
Buffer P2	1 x 440 ml
Buffer D3A*	6 x 247 ml
Buffer D3B	6 x 13 ml
Buffer DW4 (concentrate)*	3 x 291 ml
Buffer PE (concentrate)	6 x 100 ml
Buffer EB	1 x 250 ml
RNase A (100 mg/ml)	5 x 440 µl
Handbook	1

** Buffer D3A and Buffer DW4 contain chaotropic salts which are irritants. Take appropriate laboratory safety measures and wear gloves when handling.*

To be supplied by the user

Equipment

- Robotic workstation, e.g. BioRobot® 8000
- 96-Well Magnet Type B (cat. no. 9012916)
- 96-Well Magnet Type C (cat. no. 9013074)
- Reagent Holder, 5-trough 80 ml (cat. no. 9011758)
- MagAttract Suspension reservoir (e.g., Disposable Troughs, 20 ml, cat. no. 9232764)
- Buffer/liquid reservoirs (e.g., Disposable Troughs, 80 ml, cat. no. 9013653)

Consumables

- 96-well blocks for cell cultivation (e.g., Flat-Bottom Blocks, cat. no. 19579)
- Non-porous tape sheets for sealing 96-well microplates (e.g., Tape Pads, cat. no. 19570)
- Porous tape sheets for covering 96-well microplates during cell cultivation (e.g., AirPore™ Tape Sheets, cat. no. 19571)
- 96-well round-well blocks (e.g., Round-Well Blocks, cat. no. 19576)
- Flat-bottom 96-well microplates (e.g., 96-Well Microplates FB, cat. no. 36985)
- Round-bottom 96-well microplates (e.g., 96-Well Microplates RB, cat. no. 19581)

Reagents

- Ethanol (96–100%)
- Isopropanol (99+%)

Storage and Stability

All MagAttract 96 Miniprep System components except Buffer D3A should be stored dry at room temperature (15–25°C). Place Buffer D3A at 2–8°C upon arrival. Buffer D3A is stable for one year when stored at 2–8°C.

Note: After addition of Buffer D3A to Buffer D3B, complete Buffer D3 must be used within three days.

After addition of RNase A, Buffer P1 is stable for six months when stored at 2–8°C.

After addition of RNase A and isopropanol, Buffer DW4 is stable for six months when stored at 2–8°C.

Product Use Limitations

The MagAttract 96 Miniprep System is developed, designed and sold for research purposes only. It is not to be used for human diagnostic or drug purposes or to be administered to humans unless expressly cleared for that purpose by the Food and Drug Administration in the USA or the appropriate regulatory authorities in the country of use. All due care and attention should be exercised in the handling of many of the materials described in this text.

Product Warranty and Satisfaction Guarantee

QIAGEN® guarantees the performance of all products in the manner described in our product literature. The purchaser must determine the suitability of the product for its particular use. Should any product fail to perform satisfactorily due to any reason other than misuse, QIAGEN will replace it free of charge or refund the purchase price. We reserve the right to change, alter, or modify any product to enhance its performance and design. If a QIAGEN product does not meet your expectations, simply call your local Technical Service Department. We will credit your account or exchange the product — as you wish.

A copy of QIAGEN terms and conditions can be obtained on request, and is also provided on the back of our invoices. If you have questions about product specifications or performance, please call QIAGEN Technical Services or your local distributor (see inside front cover).

Technical Assistance

At QIAGEN we pride ourselves on the quality and availability of our technical support. Our Technical Service Departments are staffed by experienced scientists with extensive practical and theoretical expertise in molecular biology and the use of QIAGEN products. If you have any questions or experience any difficulties regarding the MagAttract 96 Miniprep System or QIAGEN products in general, please do not hesitate to contact us.

QIAGEN customers are a major source of information regarding advanced or specialized uses of our products. This information is helpful to other scientists as well as to the researchers at QIAGEN. We therefore encourage you to contact us if you have any suggestions about product performance or new applications and techniques.

For technical assistance and more information please call one of the QIAGEN Technical Service Departments or local distributors (see inside front cover).

Quality Control

As part of the stringent QIAGEN quality assurance program, the performance of components of the MagAttract 96 Miniprep System are routinely monitored. The particle size and binding capacity of the magnetic beads are tested, as are the pH and conductivity of the buffers.

Specifications

MagAttract 96 Miniprep System	
Bacterial-cell culture volume	1.25 ml
DNA binding capacity per 20 µl MagAttract Suspension (Miniprep)	up to 3.0 µg
Final volume of eluate*	15–25 µl

** Final volume of eluate obtained using the BioRobot 8000 protocol. Volume can be further reduced if required.*

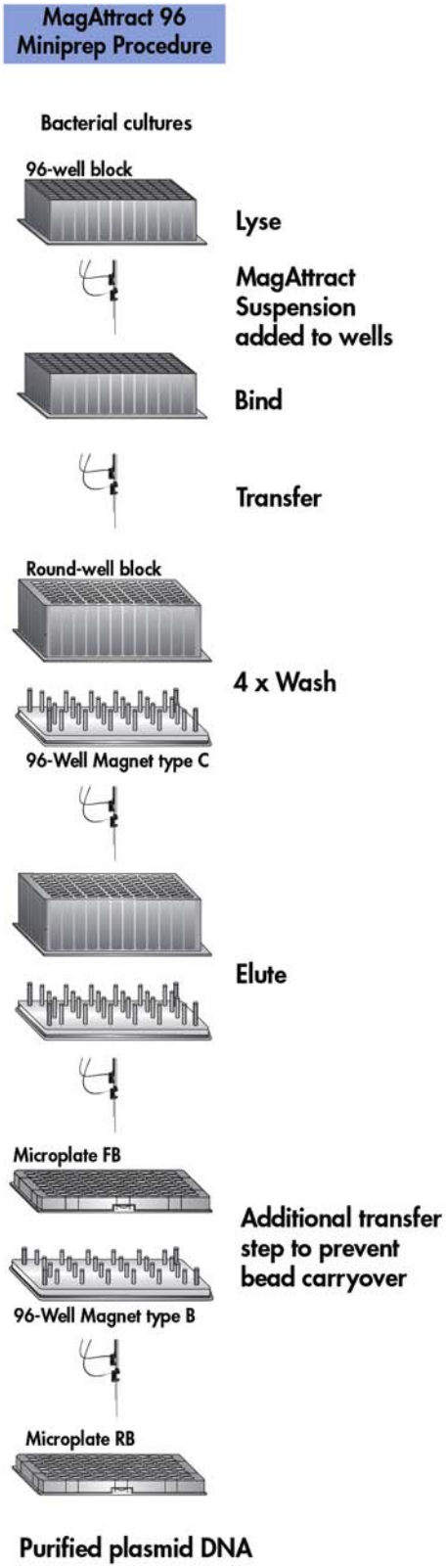
Introduction

The MagAttract 96 Miniprep System is designed for fully automated high-throughput plasmid minipreps. MagAttract technology provides high-purity plasmid DNA, which is ideally suited for direct use in applications such as automated sequencing. In this handbook we offer two protocols, a general protocol for application of the MagAttract 96 Miniprep Procedure on robotic workstations, and a specific protocol for use with the BioRobot 8000.

The MagAttract Purification Principle

The new MagAttract system combines the speed and efficiency of silica-based DNA purification with the convenient handling of magnetic beads. The MagAttract 96 Miniprep procedure combines this easy-to-automate magnetic-silica–bead technology with a novel plasmid purification method. The patent-pending chemistry enables purification of plasmid DNA directly from crude lysates without the need for a lysate clearing step. This new and unique approach allows walk-away automation of the purification procedure.

Bacterial cell cultivation and lysis are carried out in 96-well blocks, after which MagAttract Suspension is added to the crude lysate. Under the optimized buffer conditions, plasmid DNA selectively binds to the surface of the magnetic silica beads while genomic DNA and cellular debris stay in solution. The lysates are then transferred to 96-well round-well blocks for washing. Pure plasmid DNA is eluted with the provided low-salt Buffer EB into 96-well microplates and is ready for use in downstream applications.


MagAttract 96
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96-Well Magnet type C
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Microplate RB
Purified plasmid DNA

DNA yields and applications

The amount and quality of DNA obtained with the MagAttract 96 Miniprep procedure depends on the cultivation conditions and the host–vector system. Yields of up to 3 µg can be obtained from 1.25 ml of *E. coli* culture.

The purified plasmid DNA is suitable for automated sequencing applications, in particular those using cycle sequencing chemistries based on improved thermostable DNA polymerases (e.g., AmpliTaq® DNA Polymerase FS and ThermoSequenase™).

Handling guidelines for the 96-Well Magnets Type B and Type C

The QIAGEN 96-Well Magnets Type B and Type C are specifically designed for the rapid, efficient, and convenient separation of MagAttract beads from solutions in 96-well microplates and round-well blocks respectively. The magnets consist of an array of 24 powerfully magnetic NdFeB rods that fit between the wells of a multiwell plate or block. Each magnetic rod attracts the beads in four adjacent wells to one side of each well within seconds, and holds the beads in place while the buffer is removed. When the multiwell plate or block is removed from the magnet, the MagAttract beads are easily resuspended in buffer allowing thorough wash and elution steps to be performed.

Protocol for Cultivation of *E. coli* in a 96-Well Block

1. **Fill each well of a 96-well block (e.g., Flat-Bottom Blocks, cat. no. 19579) with 1.25 ml LB growth medium containing the appropriate antibiotics. Inoculate each well from a single bacterial colony. Incubate the cultures for 16–24 h at 37°C, with shaking, at 220–250 rpm.**

   The wells in the block can be protected against spillover by covering the block with adhesive tape. QIAGEN AirPore™ microporous tape sheets allow gas exchange during culture. If non-porous tape is used, use a needle to pierce 2–3 holes in the tape above each well for aeration.

   Note: We recommend use of LB medium for cell cultivation. Please note that a number of slightly different LB culture broths, containing different concentrations of NaCl, are commonly used.
   We recommend growing cultures in LB medium containing 10 g NaCl per liter (see Appendix B, page 23).

2. **Harvest the bacterial cells in the block by centrifugation for 5 min at 1500 x *g* in a centrifuge with a rotor for microplates (e.g., QIAGEN 4K15C or Beckman GS-6KR). The block should be covered with non-porous adhesive tape during centrifugation. Remove medium by inverting the block.**

   To remove the medium, peel off the tape and quickly invert the block over a waste container. Tap the inverted block firmly on a paper towel to remove any remaining droplets of medium.

   WARNING: Ensure that the rotor buckets have sufficient clearance to accommodate the block used for cultivation before starting the centrifuge.

Protocol for Adaptation of MagAttract Technology to Robotic Systems

This protocol gives guidelines for adapting the MagAttract 96 Miniprep procedure to robotic liquid handling and processing platforms. These guidelines should be used as a starting point for any optimization of the procedure that may be required.

Important notes before starting

- Add 2 vials (2 x 440 µl) RNase A to one bottle of Buffer P1.
- Add Buffer D3A (1 x 247 ml) to Buffer D3B (1 x 13 ml) and mix thoroughly to create Buffer D3. **Please note that once complete, Buffer D3 must be used within 3 days.**
- Add 125 ml isopropanol and 1 vial RNase A (1 x 440 µl) to each bottle of Buffer DW4 (291 ml) before use.
- Shake the bottle containing MagAttract Suspension well and vortex for 5 min (before first use) or 1 min (before subsequent uses) to ensure that the magnetic silica beads are fully resuspended before adding to the MagAttract Suspension reservoir.
- Add ethanol (96–100%) to Buffer PE before use (see bottle label for required volume).

Procedure

1. **Resuspend pelleted bacterial cells in 90 µl of Buffer P1 and shake for 4 min at approximately 1000 rpm.**

   Ensure that RNase A has been added to Buffer P1. No clumps should be visible after resuspension of the pellet.

2. **Add 100 µl of Buffer P2 to each sample and shake for 1 min at approximately 1000 rpm.**

If necessary, continue shaking until the solution becomes slightly clear.

3. **Incubate for 1 min at room temperature and shake for 1 min at approximately 1000 rpm.**
4. **Add 500 µl of Buffer D3 to each sample, incubate for 30 s, and shake for 2 min at approximately 1000 rpm.**

Make sure that you have completed Buffer D3 by mixing Buffers D3A and D3B. If necessary, continue shaking until the solution becomes slightly clear.

5. **Add 20 µl MagAttract Suspension to each sample and shake for 5 min at approximately 1000 rpm. Ensure that the MagAttract magnetic beads are homogeneously resuspended during this shaking step.**

   Ensure that the magnetic silica beads are fully resuspended before adding to the samples.

6. **Transfer the samples into a round-well block (e. g., Round-Well Blocks, Cat. No. 19576). During transfer, shake the block for 30 s every 2 min to keep the MagAttract Beads in suspension.**

7. **Transfer the round-well block onto the 96-Well Magnet Type C, allow the magnetic beads to separate for 1 min, and remove the supernatant.**

   To minimize danger of bead carryover, the supernatant should be removed from slightly off-center of each well.

8. **Add 200 µl of Buffer DW4 to each well and shake for 1 min at approximately 1000 rpm.**

   Ensure that RNase A and isopropanol have been added to Buffer DW4.

9. **Transfer the round-well block onto the 96-Well Magnet Type C, allow the magnetic beads to separate for 1 min, and remove the supernatant.**

To minimize danger of bead carryover, the supernatant should be removed from slightly off-center of each well.

10. **Add 200 µl of Buffer PE and shake for 30 s at approximately 1000 rpm.**

11. **Transfer the round-well block onto the 96-Well Magnet Type C, allow the magnetic beads to separate for 1 min, and remove the supernatant.**

    To minimize danger of bead carryover, the supernatant should be removed from slightly off-center of each well.

12. **Repeat steps 10 and 11 twice.**

13. **Add 50 µl of Buffer EB to each well and shake for 2 min at approximately 1000 rpm.**

14. **Transfer the round-well block onto the 96-Well Magnet Type C, allow the magnetic beads to separate for 1 min, and transfer 50 µl of the eluate to a 96-well flat-bottom microplate (e.g., 96-Well Microplates FB, Cat. No. 36985).**

    To minimize danger of bead carryover, the eluate should be removed from slightly off-center of each well.

15. **Transfer the 96-well microplate onto a Magnet Type B, allow the magnetic beads to separate for 1 min, and transfer the supernatant to a new 96-well microplate RB.**

The 96-Well Magnet Type B has shorter rods for use with microplates.

Note: This step is an extra precaution against bead carryover, and can be omitted if it is determined that a single transfer is sufficient for a specific application. Generally, a second transfer step is required if the purified DNA will be used in highly sensitive downstream applications for which bead carryover must be avoided at all costs.

16. **To remove ethanol present in eluate: Place the microplate containing the eluates onto a heating block at 75–80°C. Incubate for approximately 15 min until the volume of the eluates is reduced to 15–25 µl. The final volume of the eluate can be reduced further by longer incubation on the heating block.**

MagAttract 96 Miniprep Protocol using the BioRobot 8000

This protocol is a brief description of the steps performed by the BioRobot 8000 for plasmid minipreps using the MagAttract 96 Miniprep System. Please refer to the BioRobot 8000 User Manual and the context sensitive help in QIAsoft™ for further information.

Important notes before starting

- Add 2 vials (2 x 440 µl) RNase A to one bottle of Buffer P1.
- Add Buffer D3A (1 x 247 ml) to Buffer D3B (1 x 13 ml) and mix thoroughly to create Buffer D3. **Please note that once complete, Buffer D3 must be used within 3 days.**
- Add 125 ml isopropanol and 1 vial RNase A (1 x 440 µl) to each bottle of Buffer DW4 (291 ml) before use.
- Shake the bottle containing MagAttract Suspension well and vortex for 5 min (before first use) or 1 min (before subsequent uses) to ensure that the magnetic silica beads are fully resuspended before adding to the disposable trough.
- Add ethanol (96–100%) to Buffer PE before use (see bottle label for required volume).

Procedure

1. **Make sure that the BioRobot 8000 is switched on.**
2. **Switch on the computer and the monitor.**
3. **Launch QIAsoft 4.1, if necessary.**
4. **Start the Execute environment by pressing the "Execute" button in the QIAsoft Main Menu, if necessary.**
5. **Select "MagAttract Miniprep" from the protocol field and click "run" on the toolbar.**
6. **The "Layout Configuration" dialog box appears. Click "OK".**
7. **The "Select Samples" dialog box appears. Click "OK".**

A series of protocol messages will appear detailing the preparation steps required before the BioRobot protocol can continue.

8. Follow the instructions in each protocol message and click "Next" before proceeding.

Protocol message 1

Protocol Message
Fill both system liquid bottles with distilled water. Empty waste container.

Protocol message 2

Protocol Message
Place a 500 ml bottle of Buffer DW4 (with RNase A and isopropanol added) into Rotor Slot 2. Place a 500 ml bottle of Buffer PE (with ethanol added) into Rotor Slot 4.

Protocol message 3

Protocol Message
Place the 96-Well Magnet Type C into MP Slot 13. Place the 96-Well Magnet Type B into MP Slot 8. Place the heat-transfer adapter into the appropriate slot.

Protocol message 4

Protocol Message
Place the Flat-Bottom Block containing the bacterial pellets into the Shaker front/left position.

Protocol message 5

Protocol Message
Place a Round-Well Block onto the 96-Well Magnet Type C. Place a Microplate FB onto the 96-Well Magnet Type B. Place a Microplate RB into MP Slot 9.

Protocol message 6

Protocol Message
Place disposable 80 ml troughs into MP 12 Subslots 1, 2, 3, and 4. Fill the trough in MP 12 Subslot 1 with 15 ml Buffer P1 (with RNase A added).

Protocol message 7

Protocol Message

Fill the trough in MP 12 Subslot 2 with 15 ml Buffer P2.
Fill the trough in MP 12 Subslot 3 with 65 ml Buffer D3.
Fill the trough in MP 12 Subslot 4 with 11 ml Buffer EB.

Protocol message 8

Protocol Message

Ensure that the MagAttract Suspension is resuspended completely!
We recommend vortexing the suspension for at least 1 min.
Place a disposable 20 ml trough into MP 11 Subslot A and fill with 4 ml MagAttract Suspension.

9. Click "Continue"

The MagAttract 96 Miniprep Protocol now starts. A beeper will sound to let you know when the protocol has finished and a protocol message will appear.

Protocol Message

Process done.
The samples are on the Shaker front/left position.

10. Remove microplate containing eluate from the Shaker front/left position.

11. Click "Continue".

A choice box appears.

Protocol Message

Would you like to generate a report of this run?

12. If you would like to generate a report file select "yes".

A protocol message will appear.

Protocol Message

Please close all Buffer bottles in the reagent rotor after the end of the protocol.

13. Click "continue".

If you are not going to start the next miniprep preparation immediately, remove the Buffer PE and Buffer DW4 bottles from the reagent carousel and close them.

Troubleshooting Guide

The following troubleshooting guide may be helpful in solving any problems that may arise. The scientists at QIAGEN Technical Services are always happy to answer any questions you may have about both the information and protocol in this handbook or molecular biology applications in general (see page 6).

	Comments and suggestions
Low or no DNA recovery	
a) Poor growth of cultures	Determine the optimal cultivation time for the particular host strain–vector combination and adjust if necessary.
b) MagAttract Suspension was not completely resuspended	Before starting the procedure, ensure that the MagAttract Suspension is fully resuspended. Vortex for at least 5 min before first use, and for 1 min before subsequent uses.
c) Buffer PE did not contain ethanol	Ethanol must be added to Buffer PE (concentrate) before use. Repeat procedure with correctly prepared Buffer PE.
d) The robotic workstation could not detect the elution buffer	The robotic workstation could have problems with liquid detection if distilled water is used for elution. Use Buffer EB for elution to prevent this problem.
Contamination of DNA	
a) RNA contamination in the eluate	Ensure that RNase A is added to Buffers P1 and DW4. A low level of RNA contamination will not affect the quality of sequencing data.
b) Genomic DNA in the eluate	A low level of genomic DNA contamination will not affect the quality of sequencing data.
c) Magnetic bead carryover	Remove supernatant from magnetic beads carefully, and from slightly off-center of each well.

	Comments and suggestions
Overestimation of DNA yield upon spectrophotometric analysis	
a) RNA contamination in the eluate	Excess biomass due to rich-growth medium being used for cell cultivation can lead to RNA contamination of the eluate. Overestimation of yield can lead to failure of downstream applications. Use LB medium rather than rich media such as TB or 2 x YT for cell cultivation.
Low signals in sequencing applications	Increase the number of sequencing reaction cycles to 40, or perform serial dilutions to optimize template concentration.

Appendix A: Background Information

Growth of Bacterial Cultures

Plasmids are generally prepared from bacterial cultures grown in the presence of a selective agent such as an antibiotic (1, 2). The yield and quality of the plasmid DNA prepared may depend on a number of factors including plasmid copy number, size of insert, host strain, and culture medium.

Plasmid copy number

Some plasmids, such as the pUC series and derivatives, have mutations, which allow them to reach very high copy numbers within the bacterial cell. The MagAttract 96 Miniprep System is recommended for purification of high-copy plasmids only.

Please note: The copy number of plasmids can be substantially influenced by the cloned insert. For example, a high-copy pUC plasmid may behave like a medium- or low-copy plasmid when containing certain inserts (e.g., very large DNA fragments), resulting in lower DNA yields than expected.

Table 1. Origins of replication and copy numbers of various high-copy plasmids

DNA construct	Origin of replication	Copy number	Classification
Plasmids			
pUC vectors	pMB1*	500–700	high-copy
pBluescript® vectors	ColE1	300–500	high-copy
pGEM® vectors	pMB1*	300–400	high-copy
pTZ vectors	pMB1*	>1000	high-copy

** The pMB1 origin of replication is closely related to that of ColE1 and falls in the same incompatibility group. The high-copy plasmids listed here contain mutated versions of this origin.*

Host strains

Most *E. coli* strains can be used successfully to isolate plasmid DNA, although the strain used to propagate a plasmid has an effect on the quality of the purified DNA. Host strains such as DH1, DH10B, DH5α™, and C600 give high-quality DNA. The slower growing strain XL1-Blue also yields DNA of very high-quality which is well-suited for sequencing. Strain HB101 and its derivatives, such as TG1 and the JM series, produce large amounts of carbohydrates that are released during lysis and can inhibit enzyme activities if not completely removed (2). In addition, these strains have high levels of endonuclease activity which can reduce DNA quality. The methylation and growth characteristics of the strain should also be taken into account when selecting a host strain. XL1-Blue, DH10B, and DH5α are highly recommended for reproducible and reliable results.

Inoculation

Bacterial cultures for plasmid preparation should ideally be grown from a single colony picked from a freshly streaked selective plate. Subculturing directly from glycerol stocks, agar stabs, and liquid cultures is also possible, but may lead in rare cases to uneven yields of plasmid DNA.

The desired clones should be streaked directly after transformation onto a freshly prepared agar plate containing the appropriate selective agent, so that single colonies can be isolated. The agar plate used for the inoculation should not be older than one week. The colonies should be inoculated into a multiwell block containing media supplemented with the appropriate selective agent and grown with vigorous shaking for 16–24 hours. Cultivating bacteria for more than 24 hours is not recommended since cells begin to lyse, potentially reducing plasmid yields.

Antibiotics

Antibiotic selection should be applied at all stages of growth. Many plasmids in use today do not contain the *par* locus which ensures that the plasmids segregate equally during cell division. Daughter cells that do not receive plasmids will replicate much faster than plasmid-containing cells in the absence of selective pressure, and can quickly take over the culture. The stability of the selective agent should also be taken into account. Resistance to ampicillin, for example, is mediated by β-lactamase which is encoded by the plasmid-linked *bla* gene and which hydrolyzes ampicillin. Levels of ampicillin in the culture medium are thus continually depleted. This phenomenon is clearly demonstrated on ampicillin plates, where "satellite colonies" appear as the ampicillin is hydrolyzed in the vicinity of a growing colony. Ampicillin is also very sensitive to temperature, and when in solution should be stored frozen in single-use aliquots. The recommendations given in Table 2 are based on these considerations.

Table 2. Concentrations of commonly used antibiotics

	Stock solutions		Working concentration
Antibiotic	**Concentration**	**Storage**	**(dilution)**
Ampicillin (sodium salt)	50 mg/ml in H_2O	–20°C	100 µg/ml (1/500)
Chloramphenicol	34 mg/ml in ethanol	–20°C	170 µg/ml (1/200)
Kanamycin	10 mg/ml in H_2O	–20°C	50 µg/ml (1/200)
Streptomycin	10 mg/ml in H_2O	–20°C	50 µg/ml (1/200)
Tetracycline HCl	5 mg/ml in ethanol	–20°C	50 µg/ml (1/100)

Culture media

The MagAttract Procedure is optimized for use with cultures grown in standard Luria Bertani (LB) medium (see page 23). It is not recommended to use super-rich growth media such as TB (terrific broth) or 2x YT.

If rich media must be used, cell density should be checked by measuring the OD_{600} of the culture, which should not exceed 3 at the time of processing. If the cell biomass per well is too high, lysis will be inefficient, resulting in lower yield than expected. Furthermore, the excessive viscosity of the lysate can lead to shearing of bacterial genomic DNA and subsequent contamination of the plasmid DNA.

Appendix B

Table 3. Composition of Luria Bertani medium

Contents per liter	
Tryptone	10 g
Yeast extract	5 g
NaCl	10 g

Preparation of LB medium

Dissolve 10 g tryptone, 5 g yeast extract, and 10 g NaCl in 800 ml dH_2O. Adjust the pH to 7.0 with 1 N NaOH. Adjust the volume to 1 liter with dH_2O. Sterilize by autoclaving.

Appendix C: Recommendations for Capillary Sequencing

Plasmids purified using the MagAttract 96 Miniprep System were tested at QIAGEN for fluorescent capillary sequencing using the ABI PRISM® 3700 DNA Analyzer. Successful sequencing results were achieved using the following conditions:

Sequencing reaction setup

Template	300 ng
Primer	8 pmol
Premix	2 µl BigDye™ Terminator Ready Reaction Premix
5x *Taq* Polymerase Buffer	1 µl
Final Reaction Volume	10 µl

Cycling conditions

Denaturation	95°C; 30 s
Annealing	50°C; 10 s
Elongation	60°C; 4 min
Number of cycles	25 or 30

Dye-terminator removal

For the removal of the non-incorporated sequencing dyes, we strongly recommend use of the DyeEx™ 96 Kit for optimal results. Detailed protocols for the purification of fluorescent sequencing reactions can be found in the handbook supplied with this kit.

Sample loading

The best results at QIAGEN were obtained by using the "water loading" protocol, without prior denaturation of the purified sequencing reactions.

References

1. *Birnboim, H.C., and Doly, J. (1979) A rapid alkaline lysis procedure for screening recombinant plasmid DNA. Nucl. Acids Res.* ***7****, 1513–1522.*
2. *Ausubel, F.M. et al., eds (1991) Current protocols in molecular biology. Wiley Interscience, New York.*

Ordering Information

Product	Contents	Cat. No.
MagAttract 96 Miniprep Core Kit (24)	MagAttract Suspension (Miniprep) and buffers for 24 x 96 minipreps	120030
Consumables		
Flat-Bottom Blocks (24)	96-well blocks with 2 ml wells, 24 per case	19579
AirPore Tape Sheets (25)	Microporous tape sheets for covering 96-well blocks: 25 sheets per pack	120001
Tape Pads (5)	Adhesive tape sheets for sealing multiwell plates and blocks: 25 sheets per pad, 5 pads per pack	19570
Round-well blocks (24)	96-well blocks with 1.2 ml wells, 24 per case	19576
96-Well Microplates FB (24)	96-well microplates with flat-bottom wells, 24 per case	36985
96-Well Microplates RB (24)	96-well microplates with round-bottom wells plus lids, 24 per case	19581
Equipment		
96-Well Magnet Type B	Magnet for separating magnetic beads in wells of 96-well microplates	9012916
96-Well Magnet Type C	Magnet for separating magnetic beads in wells of 96-well round-well blocks	9013074
Reagent Holder, 5-trough 80 ml	Holder for Disposable Troughs	9011758
Disposable Troughs, 20 ml (10)	Troughs holding up to 20 ml of liquid; pack of 10	9232764
Disposable Troughs, 80 ml (10)	Troughs holding up to 80 ml of liquid; pack of 10	9013653

Notes

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Argentina
Tecnolab S.A.
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Tel: (011) 4555 0010
Fax: (011) 4553 3331
E-mail: info@tecnolab.com.ar
Web site: www.tecnolab.com.ar

Austria
VWR International GmbH
Zimbagasse 5
1147 Wien
Austria
Tel: (01) 576 00 0
Fax: (01) 576 00 350
E-mail: merck-wien@merckeurolab.at
Web site: www.vwr.com

Belgium/Luxemburg
Westburg b.v.
P.O. Box 214
3830 AE Leusden
The Netherlands
Tel: 0800-1-9815
Fax: (31) 33-4951222
E-mail: info@westburg.nl
Web site: www.westburg.nl

Brazil
Uniscience do Brasil
Av. Cândido Portinari, 933/937
05114-001 São Paulo - SP
Brazil
Tel: 011 3622 2320
Fax: 011 3622 2323
E-mail: info@uniscience.com
Web site: www.uniscience.com

China
Gene Company Limited
Unit A, 8/F., Shell Industrial Building
12 Lee Chung Street
Chai Wan, Hong Kong, P.R.C.
Tel: (852)2896-6283
Fax: (852)2515-9371
E-mail:
Hong Kong: info@genehk.com
Beijing: gene@public2.bta.net.cn
Shanghai: gene@public.sta.net.cn
Chengdu: gene@public.cd.sc.cn
Guangzhou:
gzyitao@public.guangzhou.gd.cn

Cyprus
Scientronics Ltd
34, Zenonos Sozou Str
1075 Nicosia
Tel: 02-357 22 765416
Fax: 02-357 22 764614
E-mail:
a.sarpetsas@biotronics.com.cy

Czech Republic
BIO-CONSULT spol. s.r.o.
Božejovická 145
142 01 Praha-Libuš
Tel/Fax: (420) 2 417 29 792
E-mail: bio-cons@login.cz
Web site: www.bio-consult.cz

Denmark
VWR International A/S
Roskildevej 16
2620 Albertslund
Tel: 43 86 87 88
Fax: 43 86 87 90
E-mail: info@dk.vwr.com
Web site: www.vwr.com

Egypt
Clinilab
P.O. Box 12 El-Manial
4, 160 St., El-Etehad Square
Riham Tower, El-Maadi
Cairo
Tel: 52 57 212
Fax: 52 57 210
E-mail: Clinilab@link.net

Finland
VWR International Oy
Niittyrinne 7
02270 Espoo
Tel: (09) 804 551
Fax: (09) 8045 5200
E-mail: info@fi.vwr.com
Web site: www.vwr.com

Greece
BioAnalytica S.A.
11, Laskareos Str.
11471 Athens
Tel: (10)-640 03 18
Fax: (10)-646 27 48
E-mail: bioanalyt@hol.gr

India
Genetix
C-88, Kirti Nagar
Lower Ground Floor
New Delhi-110 015
Tel: (011)-542 1714
or (011)-515 9346
Fax: (011)-546 7637
E-mail: genetix@nda.vsnl.net.in

Israel
Westburg (Israel) Ltd.
1, Habursekai St. Kiriat Ha'asakim
Beer Sheva 84899
Tel: 08-6650813/4
or 1-800 20 22 20 (toll free)
Fax: 08-6650934
E-mail: info@westburg.co.il
Web site: www.westburg.co.il

Korea
LRS Laboratories, Inc.
SongBuk P.O. Box 61
Seoul, 136-600
Tel: (02) 924-86 97
Fax: (02) 924-86 96
E-mail: webmaster@lrslab.co.kr
Web site: www.lrslab.co.kr

Malaysia
RESEARCH BIOLABS SDN. BHD.
11-A, Jalan BK 5A/2
Bandar Kinrara
47100 Puchong, Selangor Darul Ehsan
Tel: (603)-8070 3101
Fax: (603)-8070 5101
E-mail: biolabs@tm.net.my
Web site: www.researchbiolabs.com

Mexico
Quimica Valaner S.A. de C.V.
Jalapa 77, Col Roma
Mexico D.F. 06700
Tel: (55) 55 25 57 25
Fax: (55) 55 25 56 25
E-mail: qvalaner@infosel.net.mx

The Netherlands
Westburg b.v.
P.O. Box 214
3830 AE Leusden
Tel: (033)-4950094
Fax: (033)-4951222
E-mail: info@westburg.nl
Web site: www.westburg.nl

New Zealand
Biolab Scientific Ltd.
244 Bush Road
Albany, Auckland
Tel: (09)9806700
or 0800933966
Fax: (09)9806788
E-mail: info@biolab.co.nz
Web site: www.biolab.co.nz

Norway
VWR International AS
Kakkelovnskroken 1
P.B. 45, Kalbakken,
0901 Oslo
Tel: 22 90 00 00
Fax: 22 90 00 40
E-mail: info@no.vwr.com
Web site: www.vwr.com

Poland
Syngen Biotech Sp.z.o.o.
ul.Legnicka 62 A
54-204 Wroclaw
Tel: (071) 351 41 06
or 0601 70 60 07
Fax: (071) 351 04 88
E-mail: info@syngen.com.pl
Web site: www.syngen.com.pl

Portugal
IZASA PORTUGAL, LDA
Rua do Proletariado, 1 - Quinta do Paizinho
2795-648 Carnaxide
Tel: (21) 424 7312
Fax: (21) 417 2674

Singapore
Research Biolabs Pte Ltd
211 Henderson Road #14-01
Henderson Industrial Estate
Singapore 159552
Tel: 2731066
Fax: 2734914
E-mail: biolabs@singnet.com.sg

Slovak Republic
BIO-CONSULT Slovakia spol. s.r.o.
Ružová dolina 6
SK-821 08 Bratislava 2
Tel/Fax: (02) 5022 1336
E-mail: bio-cons@post.sk
Web site: www.bio-consult.cz

South Africa
Southern Cross Biotechnology (Pty) Ltd
P.O. Box 23681
Claremont 7735
Cape Town
Tel: (021) 671 5166
Fax: (021) 671 7734
E-mail: info@scb.co.za
Web site: www.scb.co.za

Spain
IZASA, S.A.
Aragón, 90
08015 Barcelona
Tel: (93) 902.20.30.90
Fax: (93) 902.22.33.66
E-mail: suministros@izasa.es

Sweden
VWR International AB
Fagerstagatan 18A
163 94 Stockholm
Tel: (08) 621 34 00
Fax: (08) 760 45 20
E-mail: info@se.vwr.com
Web site: www.vwr.com

Taiwan
TAIGEN Bioscience Corporation
3F. No. 306, Section 4
Chen-Der Road
111 Taipei
Taiwan, R.O.C.
Tel: (02) 2880 2913
Fax: (02) 2880 2916
E-mail: taigen@ms10.hinet.net

Thailand
Theera Trading Co. Ltd.
64 Charan Sanit Wong Road
(Charan 13) Bangkokyai
Bangkok 10600
Tel: (02) 412-5672
Fax: (02) 412-3244
E-mail: theetrad@samart.co.th

All other countries

QIAGEN GmbH, Germany