Product Manual

Factor V Leiden (G1691A; R506Q) Genotyping Kit

Genotyping of the Factor V Leiden (G1691A) mutation

Catalog No.: 40-2035-10K Size: 100 Reactions Store at –20°C

For research use only. Not for use in diagnostic procedures for clinical purposes

20 years
results you can rely on
Gene Link™

Factor V Leiden (G1691A; R506Q) Genotyping Kit

Genotyping of the Factor V Leiden (G1691A) mutation
Catalog No.: 40-2035-10K
Size: 100 Reactions
Material Supplied

Storage Instructions:
Store at –20°C upon receipt.

	Catalog Number	Description	Size
❑	40-2035-11	Factor V Leiden (G1691A; R506Q) PCR Mix; 100 Reactions	100 Rxns.
❑	40-3001-16	Nuclease Free Water (DEPC Free) 1.6 mL	1.6 mL

Certificate of Analysis & Product Specifications

The Factor V Leiden (G1691A; R506Q) components supplied have been validated to amplify the F5 gene fragment spanning the G1691A mutation site. This is a ready to use PCR premix, add sterile water, DNA template and Taq Polymerase. The kit does not contain Taq polymerase.

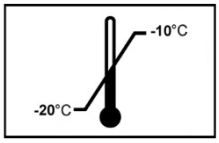
Manufacturing lot numbers are stated on the label of each product and accompanying packing slip.

Product Label Information

Factor V Leiden (G1691A; R506Q) Genotyping Kit

Genotyping of the Factor V Leiden (G1691A) mutation
Catalog No.: 40-2035-10K
Size: 100 Reactions

	Catalog No.	Description	Size
REF	40-2035-11	Factor V Leiden (G1691A; R506Q) PCR Mix; 100 Reactions	100 Rxns.
	40-3001-16	Nuclease Free Water (DEPC Free) 1.6 mL	1.6 mL

RUO Research Use Only		LOT
Research Use Only	**Storage** Store at -20°C to -10°C	**Lot Number** Stated on product tube and packing slip

		
Expiry One year from Date of Shipment	**Instructions** Consult product manual	**QR Code** Visit Gene Link website for product details

Factor V Leiden (G1691A) Genotype

The term "factor V Leiden" refers to the specific G-to-A substitution at nucleotide 1691 in the gene for factor V that predicts a single amino acid replacement (R506Q) at one of three APC cleavage sites in the factor Va molecule.

The gene for factor V is termed as F5 and the protein made by the F5 gene is termed as coagulation factor V

Factor V Leiden is the most common inherited form of thrombophilia. Between 3 percent and 8 percent of the Caucasian (white) population in the United States and Europe carry one copy of the factor V Leiden mutation in each cell, and about 1 in 5,000 people have two copies of the mutation. The mutation is less common in other populations.

Summary Gene Reviews
http://www.ncbi.nlm.nih.gov/bookshelf/br.fcgi?book=gene&part=factor-v-leiden
http://ghr.nlm.nih.gov/condition=factorvleidenthrombophilia

Background

The hemostatic regulation is an orchestrated balance of prothrombotic and antithrombotic factors in the vasculature. Activated Factor V (Va) serves as an essential protein cofactor in the prothrombinase complex for the conversion of prothrombin to thrombin by activated factor X (Xa). Activated protein C regulates the functionality of the complex by proteolytic degradation of factor Va at amino acid Arg506, Arg306, and Arg679.

When factor Va is resistant to degradation by activated protein C (APC), the anticoagulation pathway will not operate properly, and patients have an increased risk for thrombosis. Individuals with activated protein C resistance have a mutated factor V. More than 95% of cases are due to a point mutation, known as the factor V Leiden mutation. The factor V Leiden mutation is a single G-to-A nucleotide transition in exon 10 of the factor V gene. This alteration in the gene eliminates an *Mnl* I restriction site and also leads to a substitution of arginine with glutamine at amino acid residue number 506.

The factor V Leiden mutation is present in 3% to 8% of the general white population in heterozygous form. It is less common in other races and ethnic groups, such as those of African or Asian ancestry. The Factor V Leiden mutation is responsible for increased risk of venous thrombosis in heterozygotes as well as homozygotes. Heterozygotes for factor V Leiden have an approximately eightfold increased relative risk for the development of venous thrombosis, and homozygotes are estimated to have an approximately 90-fold increased relative risk.

Diagnosis / testing

Factor V Leiden thrombophilia is suspected in individuals with a history of venous thromboembolism (VTE) manifest as deep vein thrombosis (DVT) or pulmonary embolism, especially in women with a history of VTE during pregnancy or in association with oral contraceptive use, and in individuals with a personal or family history of recurrent thrombosis. The diagnosis of factor V Leiden thrombophilia is made either using a coagulation screening test or by DNA analysis of the *F5* gene, which encodes the factor V protein. The term "factor V Leiden" refers to the specific G-to-A substitution at nucleotide 1691 in the gene for factor V that predicts a single amino acid replacement (R506Q) at one of three APC cleavage sites in the factor Va molecule.

Material Supplied

1. A tube containing 1.3 mL of a 2X PCR premix for Factor V Leiden genotyping [Catalog No.: 40-2035-11]. The quantity supplied is sufficient for 100 regular 25 µL PCR reaction. This is a ready to use PCR premix, simply add water, template DNA and Taq polymerase.
2. A tube containing Nuclease free water [Catalog No.: 40-3001-16]

Procedure

A. PCR Mixture Preparation

A1. Thaw the supplied 2X PCR premix and nuclease free water on ice. Determine the number of PCR to perform and use the worksheet below to prepare the final PCR mixture. **Always prepare 10% more than the number of reaction to account for pipetting allowance. Use this factor in the worksheet**.

A2. The optimum concentration of template DNA is 200-500 ng in a volume of 2 µL. The volume can vary depending on the concentration of the sample DNA. The volume can be increased and thus add reduced volume of water to a final volume of 22 µL.

A3. The total volume of PCR is 25 µL and will be achieved by adding 3 µL of Taq Mix after the hot start thermal cycling is completed and the thermal cycler is on HOLD cycle at 60°C.

PCR Premix Preparation for Standard Taq Polymerase		
Component	**1 X 25 µl Rxn.**	**Worksheet**
2X PCR Mixture	12 µL	
Nuclease free water	12 µL	
Vortex. Transfer 20 µL to each sample tube. SAVE left over premix for step C1		
Template DNA (200-500 ng)	2 µL	Add DNA to each tube
Total Volume	22 µL	
After adding template DNA start hot start PCR File		

B. Thermal Cycler Files for Fragment Amplification

Program the following thermal cycler files.

B1. Hot Start

Hot Start		
Step	Time & Temperature	Cycles
Initial Denaturation	95°C for 5 minutes	1
Annealing	60°C Hold Infinity	Hold
Comments: Add Taq premix while on hold. See step C2		

B2. Amplification File

Amplification File (2 step, 40 Cycles)			
Step	**Temperature**	**Time**	**Cycles**
Denaturation	92°C	15 sec.	40
Annealing & Extension	55°C	1 minute	
Hold	12°C	Infinity	Hold

C. Taq Polymerase Mixture Preparation

C1. Prepare Taq polymerase enzyme as listed below.

Taq Polymerase Mix Preparation (EM)		
Component	**Per Rxn.**	**Worksheet**
Left Over Premix from Step A3	4 µL	
Taq Polymerase (5 unit/ µL)	0.5 µL	

C2. Add 3 µL of above Taq polymerase enzyme mix to each reaction at HOLD cycle after hot start.

D. Final PCR Start / Summary

D1. After completing Step A3 place tubes in thermal cycler and start thermal cycler Hot Start File programmed as in step B1.

D2. While thermal cycler is on HOLD cycle after Hot Start add 3 µL of above Taq polymerase enzyme mix from step C2.

D3. Start thermal cycler Amplification File programmed as in step B2.

E. Restriction Digestion & Agarose Gel Electrophoresis

Process amplified PCR product for Mnl I digestion as described below.

Mnl I digestion of F5 Exon 10 amplified fragments	
Component	**/ 20 µL Rxn**
PCR amplified fragment	17 µL
10 X Buffer	2 µL
Mnl I (5 unit/ µL)	1 µL
Incubate overnight at 37^{o}C	

Load 5 µL of undigested and 20 µL of Mnl I digested samples to a 1.6% agarose gel. Run at 60 mAmps till bromophenol dye is at bottom of gel.

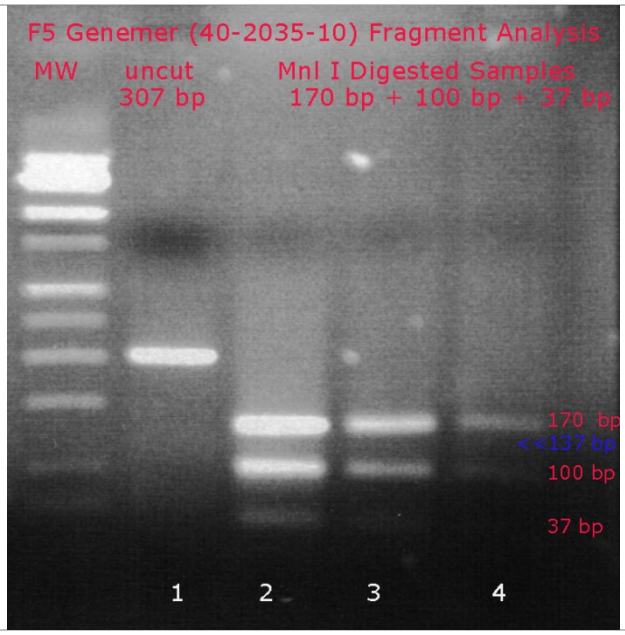
Results and Interpretation

The size of PCR amplified product before *Mnl*I digestion is 307 bp. The factor V Leiden mutation abolishes one of the two *Mn l*I restriction sites present in the PCR product.

Expected fragment sizes after *Mnl* I digestion is given below.

F5 Amplified Exon 10 Fragment Restriction Endonuclease Digestion			
PCR Amplified Fragment Size Undigested	**Fragment sizes after *Mnl* I digestion**		
	Normal	**Heterozygotes**	**Homozygotes**
307 bp	170+100+37 bp	170+137+100+37 bp	170+137 bp

F5 Exon 10 Genemer Amplification and Mnl I Digestion Pattern



Agarose gel electrophoresis of F5 exon 10 amplified fragment. Lane 1, 307 bp amplified fragment. Lanes 2-4 amplified fragments that were digested with Mnl I. Samples in lanes 2-4 show normal digestion pattern (**170+100+37 bp). Heterozygote genotype pattern will contain an additional fragment of 137bp. Homozygote pattern will contain only two fragments of 170 and 137 bp.**

References

1. Rosendaal FR, Koster T, Vandenbroucke JP, Reitsma PH (1995) High risk of thrombosis in patients homozygous for factor V Leiden (activated protein C resistance). Blood 85:1504–1508.
2. Poort SR, Rosendaal FR, Reitsma PH, Bertina RM (1996) A common genetic variation in the 3′-untranslated region of the prothrombin gene is associated with elevated plasma prothrombin levels and an increase in venous thrombosis. Blood 8:698–703.
3. Grody, WW, et al. (2001) Genetics in Medicine 3(2): 139-148.
4. Van Cott, EM, et al. (2002) Arch Pathol Lab Med 126: 577-582

Appendix

Genomic DNA Purification

Genomic DNA is usually extracted from blood. A simple procedure is given below that purifies ~10 µg DNA from 300 µl blood using a 30 minute procedure.

Omni-Pure™ Genomic DNA Purification System Catalog Number: 40-4010-01
Rapid DNA Purification Protocol for 300 µl Whole Blood

A. Initial Preparation

1. Label two sets of eppendorf tubes per sample.
2. Add 900 µl GD-1 solution (RBC Lysis Solution) to one tube for each sample.
3. Add 300 µl Isopropanol (2-propanol) to one tube for each sample. Cap the tubes.

B. Cell Lysis

1. To the tube containing 900 µl GD-1 solution (RBC Lysis Solution) using a filter tip pipet transfer 300 µl whole blood. Cap and gently mix by inversion. Incubate for 1-3 minutes at room temperature. Mix by inversion a few times during this incubation period. Incubate longer for fresh blood cells as they are intact and not lysed already.
2. Centrifuge at 3 K rpm for 20 seconds to pellet the white blood cells. A reddish white pellet should be clearly visible. Decant and discard supernatant leaving behind the last few droplets. Do not totally remove the supernatant.
3. Completely resuspend the white blood cell pellet by vigorously vortexing the tube. Ensure that the pellet is completely resuspended.
4. To the resuspended cells add 300 µl GD-2 solution (Cell Lysis Solution). Mix by gentle vortexing. You will notice release of DNA by the thickening of the liquid in the sample. Samples may be stored at this stage for processing later. It has been shown that the samples are stable in Cell Lysis Solution for at least 2 years at room temperature.

C. Protein Precipitation

1. Add 100 µl GD-3 solution (Protein Precipitation Solution) to the sample in cell lysis solution.
2. Vortex vigorously at for 20 seconds. Small particles of brown color will be appear and be visible at this stage.
3. Centrifuge at 5 K rpm for 1 minute to pellet the precipitated proteins. A clearly visible brown pellet containing proteins should be collected at the bottom of the tube.

D. DNA Precipitation

1. Decant the supernatant containing the DNA to a new appropriately labeled tube (see initial preparation above) containing 300 µl 100% Isopropanol (2-propanol).
2. Mix the sample by inversion till a visible white floating DNA strand-particle is identified. 30-40 mixing by inversion is usually sufficient.
3. Centrifuge at 6 K rpm for 1 minute to collect the DNA as a pellet. A white DNA pellet should be clearly visible.
4. Decant supernatant and place tube inverted on a clean Kimwipe™ tissue paper to drain the remaining supernatant.
5. To remove residual salts, add 300 µl of 70% ethanol. Vortex gently.
6. Centrifuge at 6 K rpm for 1 minute to collect the DNA as a pellet. Gently take out the tubes so that the pellet is not dislodged. While holding the tube, rotate tube so that you can watch the pellet. Now carefully decant the ethanol, keeping an eye on the pellet so that it does not flow away.
7. Place tube inverted on a clean Kimwipe™ tissue paper to drain the remaining ethanol.

8. Air dry the DNA pellet. Do not use vacuum.

E. DNA Reconstitution & Use

1. Add 100 µl of GD-4 solution (DNA Reconstitution Solution). Vortex gently. Incubate at 60°C for 5 minutes to facilitate dissolution or keep overnight at room temperature.
2. Store DNA at 4°C. For long-term storage, place sample at -20°C or -80°C.
3. Average yield of 10 µg is expected from 300 µl blood DNA. The range is between 5 µg to 15 µg.
4. The 100 µl of purified DNA obtained will have an average concentration of ~ 100 ng/µl.
5. For PCR amplification use 1-2µl.
6. Use 100 µl for restriction digestion followed by Southern blot analysis.
7. It is convenient to perform multiple 300 µl blood DNA purification instead of scaling up the procedure.

Genemer™ Product Ordering Information

Genemer™ Primer pair for gene or mutation specific amplification. Special optimized conditions may be required for certain amplifications

Product	Size	Catalog No.
Fragile X (spanning CGG triple repeat region) Genemer™; 10 nmols	10 nmols	40-2004-10
Huntington Disease (spanning CAG triple repeat region) Genemer™; 10 nmols	10 nmols	40-2025-10
Myotonic Dystrophy (spanning CTG triple repeat region) Genemer™; 10 nmols	10 nmols	40-2026-10
Friedreich's Ataxia (spanning GAA triple repeat region) Genemer™; 10 nmols	10 nmols	40-2027-10
Factor V Genemer™; 10 nmols	10 nmols	40-2035-10
Factor VIII (Hemophilia) Genemer™ Pack Genemer™; 10 nmols	10 nmols	40-2036-10
STS (Steroid Sulfatase) Genemer™; 10 nmols	10 nmols	40-2023-10
HGH (Human Growth Hormone) Genemer™; 10 nmols	10 nmols	40-2024-10
Sickle Cell Genemer™; 10 nmols	10 nmols	40-2001-10
RhD (Rh D gene exon 10 specific) Genemer™; 10 nmols	10 nmols	40-2002-10
Rh EeCc (Rh Ee and Cc exon 7 specific) Genemer™; 10 nmols	10 nmols	40-2003-10
Gaucher (various mutations) Genemer™; 10 nmols	10 nmols	40-2047-XX
Cystic Fibrosis (various mutations) Genemer™; 10 nmols	10 nmols	40-2029-XX
SRY (sex determining region on Y) Genemer™; 10 nmols	10 nmols	40-2020-10
X alphoid repeat Genemer™; 10 nmols	10 nmols	40-2021-10
Y alphoid repeat Genemer™; 10 nmols	10 nmols	40-2022-10

Genemer™ Control DNA Product Ordering Information

Genemer™ control DNA is a cloned fragment of the mutation region of a particular gene. These control DNA are an ideal genotyping template for optimizing and performing control amplification with unknown DNA.

Product	Size	Catalog No.
Sickle Cell Genemer control DNA (HbA, S and C available)	500 ng	40-2001-0X
GLFX CGG Genemer Control DNA; Fragile X (16, 29, 40, 60 & 90 CGG repeats available)	500 ng	40-2004-0X
GLHD CAG Genemer Control DNA; Huntington Disease (18, 34, 44, 89 & 134 CAG repeats available)	500 ng	40-2025-0X
GLDM CTG Genemer Control DNA; Myotonic Dystrophy (12, 45, 93, 129 & 194 CTG repeats available)	500 ng	40-2026-0X

GeneProber™ Product Ordering Information

The GeneProber™ product line is based on the chemiluminescent Southern blot detection method. Gene Link's non-radioactive detection systems for genotyping of triple repeat disorders are rapid, reliable and as sensitive as the ^{32}P labeled southern blots. No more decayed probes and radioactive exposure. Kits are available for reliable genotyping of the fragile X, myotonic dystrophy and other triple repeat mutation group disorders. **Unlabeled GeneProber™ probes are also available for radio labeling and radioactive based detection.** Gene Link strongly recommends the use of non-radioactive gene detection systems. Consider switching to Gene Link's product line of non-radioactive detection systems

Product	Size	Catalog No.
Fragile X GeneProber™ GLFX1 Probe unlabeled	500 ng	40-2004-40
Fragile X GeneProber™ GLFXDig1 Probe Digoxigenin labeled	110 µL	40-2004-41
Huntington's Disease GeneProber™ GLHD14 Probe unlabeled	500 ng	40-2025-40
Huntington's Disease GeneProber™ GLHDDig2X Probe Digoxigenin labeled	110 µL	40-2025-41
Myotonic Dystrophy GeneProber™ GLDM1 Probe unlabeled	500 ng	40-2026-40
Myotonic Dystrophy GeneProber™ GLDMDig2 Probe Digoxigenin labeled	110 µL	40-2026-41
Friedreich's Ataxia GeneProber™ GLFRDA21 Probe unlabeled	500 ng	40-2027-40
Friedreich's Ataxia GeneProber™ GLFRDADig21 Probe Digoxigenin labeled	110 µL	40-2027-41

GScan™ Products Product Ordering Information

Gene Link's GScan™ gene detection products are safe, convenient and sensitive, and afford automated compilation of data. The kits contain optimized PCR amplification reagents and a wide array of fluorescent-labeled primers for genotyping after PCR using fluorescent genetic analyzer instrument(s). Included in these kits are ready-to-run control samples of various repeats of the triple repeat disorder kit. These control samples are for calibration with the molecular weight markers for accurate size determination of the amplified fragments.
The GScan™ kits are simple and robust for routine triple-repeat detection of greater than 100 repeats of all triple repeat disorders listed, except Fragile X. The CGG repeat in Fragile X can be detected up to ~50 repeats.

Product	Size	Catalog No.
Fragile X GScan™ Kit for fluorescent detection; 100 reactions kit	1 kit	40-2004-15XX
Fragile X GScan™ Kit for fluorescent detection; 20 reactions kit	1 kit	40-2004-15FMS
Huntington's Disease GScan™ Kit for fluorescent detection; 100 reactions kit	1 kit	40-2025-15XX
Huntington's Disease GScan™ Kit for fluorescent detection; 20 reactions kit	1 kit	40-2025-15FMS
Myotonic Dystrophy GScan™ Kit for fluorescent detection; 100 reactions kit	1 kit	40-2026-15XX
Myotonic Dystrophy GScan™ Kit for fluorescent detection; 20 reactions kit	1 kit	40-2026-15FMS
Friedreich's Ataxia GScan™ Kit for fluorescent detection; 100 reactions kit	1 kit	40-2027-15XX
Friedreich's Ataxia GScan™ Kit for fluorescent detection; 20 reactions kit	1 kit	40-2027-15FMS

All Gene Link products are for research use only Current pricing are posted at http://www.genelink.com/

Related Products Ordering Information

Omni-Pure™ DNA & RNA Purification Systems

Product	Catalog No.	Size* (Purifications)
Omni-Pure™ Blood DNA Purification System	40-4010-01	100
Omni-Pure™ Blood DNA Purification System	40-4010-05	500
Omni-Pure™ Blood DNA Purification System	40-4010-10	1000
Omni-Pure™ Tissue DNA Purification System	40-4050-01	100
Omni-Pure™ Tissue DNA Purification System	40-4050-05	500
Omni-Pure™ Tissue DNA Purification System	40-4050-10	1000

*Sample volume for each purification system varies. Each purification yields sufficient quantity for desired applications.

Omni-Clean™ Gel DNA Purification and Concentration Systems

Product	Catalog No.	Size* (Purifications)
Omni-Clean™ Gel DNA Beads Purification System	40-4110-10	100
Omni-Clean™ Gel DNA Beads Purification System	40-4110-50	500
Omni-Clean™ Gel DNA Spin Column Purification System	40-4120-10	100
Omni-Clean™ Gel DNA Spin Column Purification System	40-4120-50	500
Omni-Clean™ DNA Beads Concentration System	40-4130-10	100
Omni-Clean™ DNA Beads Concentration System	40-4130-50	500
Omni-Clean™ DNA Spin Column Concentration System	40-4140-10	100
Omni-Clean™ DNA Spin Column Concentration System	40-4140-50	500

*Sample volume for each purification system varies. Each purification yields sufficient quantity for desired applications.

Omni-Pure™ Plasmid DNA Purification Systems

Product	Catalog No.	Size* (Purifications)
Omni-Pure™ Plasmid DNA Purification System	40-4020-01	100
Omni-Pure™ Plasmid DNA Purification System	40-4020-05	500

*Sample volume for each purification system varies. Each purification yields sufficient quantity for desired applications.

All Gene Link products are for research use only

Current pricing are posted at http://www.genelink.com/

Related Products Ordering Information

Taq Polymerase & Master Mix

Product	Catalog No.	Unit Size
Taq DNA Polymerase; 400 units; 5 µ/µL; 80 µL	40-5200-40	400 units
Taq PCR Kit; 200 x 50 µL reactions	40-5211-01	200 reactions
Taq PCR Kit with controls; 200 reactions	40-5212-01	200 reactions
PCR Master Mix (2X); 100 x 50 µL reactions (2 tubes x 1.3 mL)	40-5213-01	100 reactions
PCR Master Mix (2X); 200 x 50 µL reactions (4 tubes x 1.3 mL)	40-5213-02	200 reactions

Related Products Ordering Information

PCR Additives & Reagents

Product	Catalog No.	Unit Size
Taq DNA Polymerase 300 units; 5 µ/µL; 60 µL	40-5200-30	300 units
PCR Buffer Standard (10 X); 1.6 mL	40-3060-16	1.6 mL
PCR Buffer Mg Free (10 X) ; 1.6 mL	40-3061-16	1.6 mL
Taq Polymerase Dilution Buffer; 1 mL	40-3070-10	1 mL
dNTP 2mM (10X) ; 1.1 mL	40-3021-11	1.1 mL
$MgCl_2$; 25 mM; 1.6 mL	40-3022-16	1.6 mL
Omni-Marker™ Universal Unlabeled; 100 µL	40-3005-01	100 µL
Primer and Template Mix; 500 bp; 40 reactions; 100 µL	40-2026-60PT	100 µL
Nuclease Free Water; 1.6 mL	40-3001-16	1.6 mL
DMSO; 1 mL	40-3031-10	1 mL
TMAC (Tetramethyl ammonium chloride) 100 mM; ; 1 mL	40-3053-10	1 mL
KCl 300 mM; 1 mL	40-3059-10	1 mL
Betaine; 5M; 1 mL	40-3032-10	1 mL

Omni-Marker™

Product	Catalog No.	Unit Size*
Omni-Marker™ Universal unlabeled; 100 µL	40-3005-01	100 µL
Omni- Marker™ Universal unlabeled; 500 µL	40-3005-05	500 µL
Omni-Marker™ Universal unlabeled; 1 mL	40-3005-10	1 mL
Omni- Marker™ Low unlabeled;100 µL	40-3006-01	100 µL
Omni-Marker™ Low unlabeled; 500 µL	40-3006-05	500 µL
Omni- Marker™ Low unlabeled; 1 mL	40-3006-10	1 mL
Omni-Marker™ GScan-2 Tamra labeled 50 bp - 600 bp; 100 µL	40-3062-01	100 µL
Omni-Marker™ GScan-2 Tamra labeled 50 bp - 600 bp; 500 µL	40-3062-05	500 µL

All Gene Link products are for research use only Current pricing are posted at
http://www.genelink.com/

Southern Blot Buffers& Reagents

Product	Catalog No.	Unit Size
Agarose Tablets, 0.5 gm each 100 Tablets	40-3011-10	100 tablets
Agarose LE Molecular Biology Grade; 100 g	40-3010-10	100 g
Agarose LE Molecular Biology Grade; 500 g	40-3010-50	500 g
Hybwash A, Hybridization Wash Solution; 200 mL	40-5020-20	200 mL
Hybwash B, Hybridization Wash Solution; 100 mL	40-5021-10	100 mL
TAE Buffer; 50X Concentrate; 100 mL	40-3007-01	100 mL
TAE Buffer; 50X Concentrate; 1 L	40-3007-10	1 L
TBE Buffer; 5X Concentrate; 1 L	40-3008-10	1 L
10x Washing buffer; 200 mL	40-5025-20	200 mL
10% Blocking solution; 100 mL	40-5026-10	100 mL
Seq. Loading buffer; 1 mL	40-5027-00	1 mL
10x AP Detection buffer; 100 mL	40-5031-10	100 mL
Lumisol™ I Hybridization Solution; contains formamide; 200 mL	40-5022-20	200 mL
Lumisol™ II Hybridization Solution; for non-toxic hybridizations; 200 mL	40-5023-20	200 mL
Lumisol™ III Hybridization Solution; for oligo probes; 200 mL	40-5024-20	200 mL

Loading Buffers

Product	Catalog No.	Size
Gel Loading Buffer 5X BPB/XC non-denaturing; 1 mL	40-3002-10	1 mL
Gel Loading Buffer 5X BPB/XC non-denaturing; 15 mL	40-3002-15	15 mL
Gel Loading Buffer 10X BPB/XC non-denaturing; 1 mL	40-3003-10	1 mL
Gel Loading Buffer 10X BPB/XC non-denaturing; 15 mL	40-3003-15	15 mL
Gel Loading Buffer 5X Orange G/XC non-denaturing; 1 mL	40-3004-10	1 mL
Gel Loading Buffer 5X Orange G/XC non-denaturing; 15 mL	40-3004-15	15 mL
Gel Loading Buffer 2X BPB/XC Denaturing for Sequencing; 1 mL	40-5027-10	1 mL
Gel Loading Buffer 2X BPB/XC Denaturing for Sequencing; 15 mL	40-5027-15	15 mL
DNA SDS Gel Loading Buffer 5X BPB/XC DNA binding protein denaturing buffer; 1 mL	40-5028-10	1 mL
DNA SDS Gel Loading Buffer 5X BPB/XC DNA binding protein denaturing buffer; 15 mL	40-5028-15	15 mL
RNA Gel Loading Buffer 2X BPB/XC with ethidium bromide; 1 mL	40-5029-10	1 mL
RNA Gel Loading Buffer 2X BPB/XC with ethidium bromide; 15 mL	40-5029-15	15 mL
RNA Gel Loading Buffer 2X BPB/XC without ethidium bromide; 1 mL	40-5030-10	1 mL
RNA Gel Loading Buffer 2X BPB/XC without ethidium bromide; 15 mL	40-5030-15	15 mL

All Gene Link products are for research use only **Current pricing are posted at**
http://www.genelink.com/

Document Warranty and Liability

Information in this document is subject to change without notice. This document and all information presented in this document are written as a guide. Gene Link, Inc. does not warrant this document to be free of errors and assumes no responsibility for any errors that may appear in this document.
Gene Link disclaims all warranties with respect to this document, expressed or implied, including but not limited to those of merchantability or fitness for a particular purpose. In no event shall Gene Link be liable, whether in contract, tort, warranty, or under any statute or on any other basis for special, incidental, indirect, punitive, multiple or consequential damages in connection with or arising from this document, including but not limited to the use thereof.

Website: As the receipt of information on the Internet is highly dependent upon factors, including without limitations to, the user's computer, browser, operation system, etc., information may be perceived incorrectly. Therefore, Gene Link does not warrant or guarantee that the information contained on its website www.genelink.com is error free.

Product Warranty and Liability

Warranty: Gene Link makes no warranty of any kind, specifically disclaims and excludes all other warranties of any kind or nature, directly or indirectly, express or implied, including, without limitation, as to the suitability, productivity, durability, fitness for a particular purpose or use, merchantability, condition, or any other matter with respect to Gene Link products. Gene Link products are for research purposes only including custom products. There is no warranty or claim of its performance for any specific research application. All Gene Link products are guaranteed to meet or exceed the specifications stated. Each Gene Link product is shipped with documentation stating specifications and other technical information. If the product fails to meet the stated specifications the sole remedy is prompt replacement by Gene Link or within 30 days of purchase a refund of the purchased price.

Liability: Under no circumstances shall Gene Link be liable for any damages directly or indirectly related to Gene Link's products and services. Whether direct, incidental, foreseeable, consequential, or special (including but not limited to loss of use, revenue or profit), whether based upon warranty, contract, tort (including negligence) or strict liability arising in connection with the sale or the failure of Gene Link products to perform in accordance with the stated specifications.

Research Use Only. Not for use in diagnostic or clinical procedures.

Notice to Purchaser: The purchase of this product conveys to the purchaser the limited, non-transferable right to use the purchased amount of the product only to perform internal research for the sole benefit of the purchaser. No right to resell this product or any of its components is conveyed expressly, by implication, or by estoppel. This product is for internal research purposes only and is not for use in commercial applications of any kind, including, without limitation, quality control and commercial services such as reporting the results of purchaser's activities for a fee or other form of consideration. For information on obtaining additional rights, please contact support@genelink.com.

Gene Link, Inc.
190 Saw Mill River Road
Hawthorne, NY 10532
USA

Tel: (914) 769-1192
Email: support@genelink.com
www.genelink.com