Operator's Manual

MaGELin
Western Transfer System

IBI Catalog Number: **IB94500 / IB95000**

IBI SCIENTIFIC

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A. Safety Information

Important Safety Information!

- Please read this manual carefully before operating your new IBI Western Transfer System.
- This manual contains important operating and safety information.
- To best use the product, please read the entire manual carefully prior to use.
- To avoid possible injury, this product should only be used for its intended purpose.

B. Package Contents

Upon receiving this product, please verify all of the noted parts and accessories are contained in this package.

IB92500

- MaGELin Buffer Tank
- Patented MaGELin Vented Lid
- Western Transfer Blot Module
- Two Cassette Assemblies
- One Set of Power Cords (Red and Black)
- Operation Manual

IB95000

- Western Transfer Blot Module
- Two Cassette Assemblies
- Operation Manual

NOTE: Carefully inspect all items in the package to insure no items are broken or missing. If there are items broken, please inspect the package carefully for signs of shipping damage. If there is ANY sign of shipping damage, please contact the carrier and file a claim with them immediately. Contact the distributor from which you purchased the item or IBI Scientific for assistance at (800) 253-4942 or (563) 690-0484.

C. Product Specifications

	Height	Width	Length
System Dimensions	17.0cm	17.0cm	18.0cm
Module Dimensions	17.0cm	7.0cm	11.5cm
Max. Gel Dimensions		10.0cm	10.0cm

Maximum Buffer Capacity: 1150ml

NOTE: Acrylic components are not compatible with chlorinated hydrocarbons (e.g. chloroform), aromatic hydrocarbons (e.g. toluene, benzene), acetone, ethanol, or 2 amino-2 methyl-1, or 3 propanediol. Use of such organic solvents voids all warranties.

D. Introduction

Blotting was first introduced by Southern Methode, in 1975 as a technique for blotting DNA fragments from agarose electrophoresis gels onto nitrocellulose strips, now known as Southern blots. The transferred DNA could then be hybridized to radiolabeled RNA or DNA for the localization of complementary strands. The procedure was adapted for RNA (Northern Blots) and Proteins (Western Blots). Western blots are now commonly refereed to as Immunoblotting of proteins.

In 1979 Towbin first proposed electrophoretic transfer as a means of increasing speed of transfer. Electrophoretic transfer requires specific equipment and high amperages which generate heat. Keeping the system cool is always a challenge. Resolution tends to be sharper as well since lateral diffusion is minimized.

Immunoblotting is widely used as a powerful technique for the detection and identification of proteins using antibodies. This process involves the separation of protein samples by vertical polyacrylamide electrophoresis (PAGE), followed by the transfer of the separated proteins, or peptides from the PAGE gel onto a thin support membrane. The membrane immobilizes and binds the proteins in a pattern resembling the original PAGE gel. The membrane containing the proteins or peptides is referred to as the blot. The blot is then developed with labeled antibodies specific to the proteins/peptides of interest. Western blotting techniques, in general, result in very high resolution and sensitivity with relativity few problems related to protein-antibody ratios.

The IBI Western Transfer Protein System allows rapid Transfer of protein/peptide samples from Polyacrylamide gels to membranes of either 8 x 10cm or 10x10cm formatted gels. The transfer system accommodates two to four cassettes for transfer depending upon the format. Mini PAGE gels or Mini Agraose gels can be transferred in the module within a high intensity field while maintaining comparable resolution.

E. Description of Major Parts

Cassette Assemblies

Each unit comes with two preassembled cassettes. These cassettes are vented to allow complete circulation of the buffer. The anode side (RED) has a lip which lines up with a lip on the cathode side (Clear), A clear clamp then slides over the lips of the cassette to hold the sandwich together. When assembled the cassette slides into the frame of the module. A gel sandwich is formed by stacking a fiber pad, filter paper, transfer membrane, the desired gel, filter paper, and fiber pad onto the anode (RED) side of the cassette. Next, fold cathode (CLEAR) side on top of the stack, thus closing the sandwich. Once compressed, remove air bubbles from the sandwich and slide the cassette clamp into place, this will secure the assembled cassette.

Western Blot Module

The Cassette Module consists of two slots which each hold a cassette in place. After the Gel Sandwich is complete, the cassette assemblies are slipped into the frame. The Blot Module supports the Cassettes in the buffer reservoir. The anode (RED) side of the cassettes should always be placed against the clear side of Blot Module.

Buffer Chamber

The Buffer Chamber holds the blot module for the transfer process. On each side of the Buffer Chamber are notches of differing sizes. The Blot Module is lowered into the Buffer Chamber such that the anode side fits into the narrow notch and the cathode side fits into the wider notch. Once the Module is set in the Buffer Chamber the buffer can be added.

Vented Lid

The patented vented lid allows heat to dissipate during the electrotransfer process. This feature helps keep the environment of the buffer chamber cool. The lid also has patented gravity electrical connectors which increase user safety by breaking the electrical connection when the lid is removed.

CAUTION: Always wear gloves when working with acrylamide gels. Acrylamide is a known Neurotoxin, and may be harmful.

F. Buffer Chamber Preparation

Prior to assembling the Cassette, prepare the required buffer (See section on buffer selection). Place 1500ml of cold buffer in the Buffer Chamber and place in the refrigerator until needed.

NOTE: If longer runs are required, make buffer cubes by pouring buffer into a small ice cube container and freezing prior to use.

G. Assembling the Gel Cassette

Preparation of Gel and Membranes

NOTE: Always Wear gloves when handling the membranes
Buffer should be chilled prior to use.

- After the separation process is complete remove the gel from the cassette/ glass plates. Place the gel into a container containing the selected transfer buffer with gentile agitation and equilibrate for 15 minutes to 1 hour depending upon thickness.
- Select the appropriate type of membrane needed for the transfer. Cut the membrane and the filter papers to the dimension of the gel, notch the top left corner of the membrane as a reference point.
- Soak the Fiber pads, Filter paper and transfer membrane in cold Transfer buffer until saturated.

NOTE: If using PVDF membranes wet then presoak in Methanol for 30 seconds prior to buffer.

Preparation of Cassette Assembly

Place the RED section of the cassette in a container with the clear section facing up. Place one of the Fiber pads on it. Continue with the following steps making sure not to trap any air bubbles:

- Filter paper
- Transfer Membrane
- Gel (be sure to carefully reference left side of gel with notch)
- Filter paper
- Fiber pad

Fill a container with buffer and place the top section of the cassette on layer starting from left to right Compressing the entire stack from left to right to remove any air bubbles. While compressing the sandwich remove the cassette, the outside edge of the cassette has a lip on either side, slide the cassette clip over these to secure the cassette.

Assembly of Transfer module

Index the Cassette with the anode side (RED) facing the clear side of the Blot Module. Slide the Cassette into the Blot module making sure it is firmly seated. Repeat the above for any additional Cassettes making sure the clips are not over lapping and they are properly seated. Place the Module into the Buffer Chamber and fill with buffer taking care not to fill beyond the top of the Transfer Module. Add a small stir bar in the front part of the Buffer Chamber to help maintain temperature and buffer concentration.

H. Transferring Gel to Membrane

Running conditions

Place the Vented Lid on the Buffer Chamber and plug the power cords into the power supply.

A. Native and Denatured PAGE gels

1. Native Page Gels Towbin Buffer
- 25 mM Tris, pH 8.3, 192 mM glycine, w/o Methanol
- 80 volts 350 mA

2. Denatured PAGE Gels Towbin Buffer
- 25 mM Tris, pH 8.3, 192 mM glycine, 20% methanol, .025-.1% SDS
- 100 volts 350 mA

B. DNA or RNA

1. TAE
- 20 mM Tris, pH 7.8, 10 mM Sodium Acetate, 0.5 mM EDTA
- 80 Volts 500 mA

2. TBE
- 50 mM Tris, pH 8.3, 50mM Sodium Borate, 1.0 mM EDTA
- 80 Volts 500mA

Membrane Selection

Nitrocellulose
- Good binding capacity proteins bind by hydrophobic interactions
- Pore Size .45µm .22µm
- Western Transfer
- Amino acid analysis

Nylon
- Microporous membrane modified with strongly basic charged groups binds negatively charged macromolecules DNA or RNA with Low background
- Pore Size .45µm
- Can Re-probe
- Southern Transfer
- Northern Transfer
- Solid phase immobilization
- Enzyme immobilization
- Gene probe assays

PVDF

- High binding capacity
- High hydrophobic binding solvent resistant
- Compatible with Protein stains and immunodetection Techniques
- Pore Size .45µm .22µm
- Can Re-probe
- Western Transfer
- Protein Sequencing
- Amino Acid Analysis
- Solid Phase Assay Systems

Buffer Preparation Proteins

Towbin Buffers for Native Gels

Towbin Buffer pH 8.3

25mM TRIS, 192 mM glycine, 20% Methanol

- 3.0gm TRIS
- 14.4gm Glycine
- 200ml Methanol
- add dd H_2O to 1L

Towbin Buffers for Denatured Gels

Towbin Buffer pH 8.3, No Methanol

25mM TRIS, 192mM Glycine

- 3.0gm TRIS
- 14.4gm glycine
- add dd H_2O to 1L

Buffer Preparation DNA / RNA

Tris Acetate EDTA Buffer (TAE):

1X Working Concentration:	10X Stock Solution:
40 mM Tris base	48.4gm Tris Base
20 mM Glacial Acetic Acid (NaOAc)	16.4gm or 11.42ml NaOAc
1.0 mM EDTA	3.36gm EDTA or 10ml 0.5M EDTA (pH 8.0)
pH 8.3	dd H2O to 1L

Tris Borate EDTA Buffer (TBE):

1X Working Concentration:	10X Stock Solution:
89 mM Tris Base	108gm Tris Base
89 mM Boric Acid	55gm Boric Acid
1.0 mM EDTA	3.36gm EDTA or 10ml 0.5M EDTA (pH 8.0)
pH 8.0	dd H_2O to 1L

I. Running the Transfer Unit

1. Place the lid on top of the Buffer Chamber to fully enclose the cell. The correct orientation is made by matching the black banana jack with the black cord on the lid.

NOTE: The lid is indexed so it will only connect one way.

2. Attach the electrical leads to a power supply (200V minimum) with the proper polarity.
3. SH-500 power supplies regulate in constant voltage mode and are listed in the Troubleshooting Section (Section 9).
4. Apply the power to the UPS Protein system. The recommended power condition for optimal transfer is 100 volts, constant voltage setting. No adjustment of the setting is necessary for thickness of gels. The usual run time is approximately 60 to 90 minutes.
5. If constant current mode is selected, monitor the current. (An increase to 400mA reflects an increase of Joule heating the voltage must be decreased.)
6. When transfer is complete turn off the Power Supply and unplug. Remove the Transfer Module from the Reservoir. Take each Cassette from the Transfer Module and recover the Blotting Membrane be careful to keep the notched in the proper location for reference.

J. Electrophoretic Transfer Options

Denatured SDS PAGE Gels

1. Remove the lid and clamps, wearing gloves carefully pull the Gel Sandwich out of the lower buffer chamber.
2. Place the Gel Sandwich horizontally on the benchtop. Take care to remove any casting tape that may remain on glass plates. Gently separate the plates by inserting a flat edge spatula in between them and lifting it in an upward motion. The gel should come free of the plate.

K. Maintenance

Care must be observed in the handling of this unit.

DO NOT expose the unit to temperatures above 60°C

DO NOT expose the unit to organic solvents
DO NOT clean the unit with abrasive cleaners or cleaning aids.

Use mild cleaning solution (dish soap recommended) for routine cleaning. For heavier dirt, hand wash with soft cloth. In most cases, a rinse in deionized water is sufficient to clean the unit. To remove residual Ethidium Bromide from the gel unit, soak occasionally in 1% commercial bleach solution for 16 hours, and rinse well.

NOTE: The degradation of acrylic by solvents may result in substantial discoloration, cracking, warpage or etching of the electrophoresis unit. DO NOT apply any of the following solvents to the unit: benzene, xylene, toluene, chloroform, carbon tetrachloride, alcohol, phenol, ketones, or esters. Do not use the Delrin combs supplied with this unit in formaldehyde for long periods of time. The formaldehyde damages these combs with long exposures.

L. Replacement Parts & Accessories

Western Transfer Accessory Items and Replacement Parts:

Catalog #	Description
IB50500	Replacement Power Cords
IB92040	Replacement Buffer Tank
IB92050	Replacement Gel Capture
IB92060	Replacement Lid
IB92072	Replacement Tank Connector Kit
IB92080	Ice Pack
IB95010	Transfer Membrane, Thin Blot Paper-10 Pack
IB95011	Transfer Membrane, Thick Blot Paper-10 Pack
IB95020	Transfer Membrane, .2µm Nitrocellulose-10 Pack
IB95021	Transfer Membrane, .45µm Nitrocellulose-10 Pack
IB95030	Transfer Membrane, .2µm PVDF-10 Pack
IB95031	Transfer Membrane, .45µm PVDF-10 Pack
IB95040	Buffer Foam Pads-4 Pack

M. Related IBI Products

IB50000 IBI QSH Lab-Pal (5 X 7cm Horizontal Electrophoresis Unit)
Comes complete with buffer tank, vented lid, 2-place casting tray, two 1.5mm by 5-tooth combs, four glass slide, power cords, and manual.

IB51000 IBI QS-710 (7 X 10cm Horizontal Electrophoresis Unit)
Comes complete with buffer tank, vented lid, casting fixture and UVT tray, two 1.5mm by 8-tooth combs, power cords, leveling bubble and manual.

IB53000 IBI MP-1015 (10 X 15cm Horizontal Electrophoresis Unit)
Comes complete with buffer tank, vented lid, casting fixture and UVT tray, two 2.0mm by 16-tooth combs, power cords, buffer port set, leveling bubble and manual.

IB56000 IBI HR-2025 (20 X 25cm Horizontal Electrophoresis Unit)
Comes complete with buffer tank, vented lid, casting fixture and UVT tray, two 2.0mm by 20-tooth combs, power cords, buffer port set, leveling bubble and manual.

IB57000 IBI HR-2525 (25 X 25cm Horizontal Electrophoresis Unit)
Comes complete with buffer tank, vented lid, casting fixture and UVT tray, four 2.0mm by 50-tooth combs, power cords, buffer port set, leveling bubble and manual.

IB62000 IBI VCV Vertical Electrophoresis System (18 X 22cm Vertical Electrophoresis Unit)
Comes complete with main assembly, safety cover, three glass plates (inner, outer, and frosted), one 1.5mm by 12-tooth and 1.5mm by 20-tooth combs, a 1.5mm spacer set (which includes one bottom and two sided spacers as well as two spacer tabs), one set of power cords, four sandwich clips, and manual.

IB80000 IBI STS-45i Manual Sequencer (36 X 43cm Vertical Electrophoresis Unit)
Comes complete with main assembly, aluminum thermoplate, two glass plates, one 0.4mm comb and spacer set (includes two 32-tooth and 64-tooth conventional combs, two 64-tooth sharkstooth combs, one bottom and two sided spacers and four spacer tabs) one set of power cords, and manual.

IB94000	IBI MaGELin Universal Protein System (for Cast-Your-Own or Precast Gels) Comes complete with buffer tank, gel capture device, vented lid, vertical casting fixture, two sets of 0.8mm side spacers, three outer glass plates, three inner notched plates, two 0.8mm by 12-tooth combs, power cords, and manual
SH-300	IBI 300V Power Supply (300V / 400mA / 120W) The SH-300 has constant voltage or constant current capability, memory settings, and a LED display. Comes complete with power supply, 120V grounded power cord, and manual.
SH-500	IBI 500V Power Supply (500V / 300mA / 150W) The SH-500 has constant voltage or constant current capability, memory settings, gel saver feature, and a LED display. Comes complete with power supply, 120V grounded power cord, and manual.

N. Related IBI Certified Reagents

IB01010	6X Loading Dye	5ml
IB01015	5X RNA Gel Loading Dye Kit	100RxN
IB01020	10X TBE Pouch	1 Pouch
IB01030	25X Tris-Acetate EDTA Buffer Pouch	1 Pouch
IB74020	Acridine Orange	25gm
IB70016	Acrylamide:Bisacrylamide, 29:1	40gm
IB70017	Acrylamide:Bisacrylamide, 29:1	200gm
IB70020	Acrylamide	100gm
IB70022	Acrylamide:Bisacrylamide, 19:1	40gm
IB70023	Acrylamide:Bisacrylamide, 19:1	200gm
IB70024	Acrylamide	500gm
IB70026	Acrylamide	1.5kg
IB70028	Acrylamide	3kg
IB70018	Acrylamide:Bisacrylamide, 37.5:1	40gm
IB70019	Acrylamide:Bisacrylamide, 37.5:1	200gm
IB70010	Acryliqud-40 (40% (w/v) Acrylamide solution)	500ml
IB70035	Agarose	25gm
IB70040	Agarose	100gm
IB70041	Agarose	250gm
IB70042	Agarose	500gm
IB70045	Agarose	1kg
IB70050	Agarose, Low Melting Point	50gm
IB70051	Agarose, Low Melting Point	25gm
IB70056	Agarose, Low Melting Point	100gm
IB70057	Agarose, Low Melting Point	250gm
IB70058	Agarose, Low Melting Point	500gm
IB70059	Agarose, Low Melting Point	1Kg
IB70052	3:1 Super Sieve Agarose	50gm
IB70053	3:1 Super Sieve Agarose	250gm
IB70054	Ultra Sieve Agarose	25gm
IB70055	Ultra Sieve Agarose	250gm
IB70060	Agarose, PFGE	25gm
IB70061	Agarose, PFGE	50gm
IB70062	Agarose, PFGE	100gm
IB70063	Agarose, PFGE	250gm
IB70064	Agarose, PFGE	500gm
IB70065	Agarose, PFGE	1Kg
IB15720	Alcohol-Anhydrous (Ethanol)	500ml
IB15721	Alcohol-Anhydrous (Ethanol)	1L
IB15724	Alcohol-Anhydrous (Ethanol)	4L
IB15620	Ammonium Acetate	500gm
IB70080	Ammonium Persulfate	100gm
IB02040	Ampicillin, Sodium Salt	25gm
IB70100	Bisacrylamide	25gm
IB70102	Bisacrylamide	100gm

IB70096	Boric Acid	2.5kg
IB74040	Bromophenol Blue	25gm
IB02010	Carbenicillin	1gm
IB02020	Carbenicillin	5gm
IB37060	Cesium Chloride, Optical Grade	100gm
IB37062	Cesium Chloride, Optical Grade	1kg
IB37042	Cesium Chloride, Technical Grade	1kg
IB02080	Chloramphenicol	25gm
IB05040	Chloroform	500ml
IB21040	Dithiothreitol (DTT)	5gm
IB21045	Dithiothreitol (DTT)	25gm
IB70180	EDTA, disodium salt	100gm
IB70182	EDTA, disodium salt	500gm
IB70184	EDTA Solution (0.5M), pH 8	100ml
IB70185	EDTA Solution (0.5M), pH 8	4x100ml
IB40060	Ethidium Bromide	5gm
IB40075	Ethidium Bromide Solution, 10mg/mL	10ml
IB72028	Formamide, ACS Grade	500ml
IB72020	Formamide, Spectral Grade	100ml
IB72024	Formamide, Spectral Grade	500ml
IB02030	Gentamycin Solution	20ml
IB15760	Glycerol	500ml
IB15762	Glycerol	1L
IB70194	Glycine	2.5kg
IB05080	Guanidine Hydrochloride	500gm
IB05085	Guanidine Hydrochloride Solution (6M)	500ml
IB05100	Guanidine Thiocyanate	500gm
IB01120	HEPES, Sodium Salt	100gm
IB01130	HEPES, Free Acid	50gm
IB01131	HEPES, Free Acid	250gm
IB01132	HEPES, Free Acid	500gm
IB01133	HEPES, Free Acid	1Kg
IB70012	InstaBIS-(2% (w/v) Bisacrylamide solution)	500ml
IB70000	InstaPAGE-(30% sol., 19:1 Acrylamide:Bisacrylamide)	500ml
IB70001	InstaPAGE-(30% sol., 19:1 Acrylamide:Bisacrylamide)	1L
IB70002	InstaPAGE-(30% sol., 29:1 Acrylamide:Bisacrylamide)	500ml
IB70003	InstaPAGE-(30% sol., 29:1 Acrylamide:Bisacrylamide)	1L
IB70004	InstaPAGE-(30% sol., 37.5:1 Acrylamide:Bisacrylamide)	500ml
IB70005	InstaPAGE-(30% sol., 37.5:1 Acrylamide:Bisacrylamide)	1L
IB70006	InstaPAGE-(40% sol., 29:1 Acrylamide:Bisacrylamide)	500ml
IB70007	InstaPAGE-(40% sol., 29:1 Acrylamide:Bisacrylamide)	1L
IB70008	InstaPAGE-(40% sol., 37.5:1 Acrylamide:Bisacrylamide)	500ml
IB70009	InstaPAGE-(40% sol., 37.5:1 Acrylamide:Bisacrylamide)	1L
IB70014	InstaPAGE-(40% sol., 19:1 Acrylamide:Bisacrylamide)	500ml
IB70015	InstaPAGE-(40% sol., 19:1 Acrylamide:Bisacrylamide)	1L
IB02100	IPTG	1gm
IB02105	IPTG	5gm
IB02125	IPTG	25gm
IB05120	Isobutanol	500ml
IB15730	Isopropanol	500ml
IB15735	Isopropanol	1L
IB02120	Kanamycin Sulfate	25gm
IB15750	Methanol - HPLC Grade	1L
IB15755	Methanol - Ultra Pure Grade	500ml
IB15756	Methanol - Ultra Pure Grade	1L
IB15757	Methanol - Ultra Pure Grade	4L
IB74050	Methylene Blue, Chloride, trihydrate	25gm
IB70170	MOPS	100gm
IB70175	MOPS Decp, 10X	100ml
IB05160	Phenol - Crystalline	100gm
IB05164	Phenol - Crystalline	500gm
IB05174	Phenol Chloroform Solution	400ml

IB05182	Phenol, Buffer Saturated, pH 6.6-8.0	100ml
IB05184	Phenol, Buffer Saturated, pH 4.3	100ml
IB05400	Proteinase K	100mg
IB05406	Proteinase K Solution (20mg/mL)	5ml
IB07080	Sarkosyl	100gm
IB07060	Sodium Dodecyl Sulfate (SDS)	100gm
IB07062	Sodium Dodecyl Sulfate (SDS)	500gm
IB07064	Sodium Dodecyl Sulfate (SDS) Solution, 20%	100ml
IB72010	SSC (20X)-Nucleid Acid Prep and Blotting Solution	1L
IB72015	SSPE (20X) - Nucleid Hybridization Solution	1L
IB02180	Streptomycin Sulfate	25gm
IB37160	Sucrose	1kg
IB70120	TEMED	50gm
IB02200	Tetracycline Hydrochloride	25gm
IB70142	Tris	500gm
IB70144	Tris	1kg
IB70145	Tris	5kg
IB70150	Tris Borate EDTA (10X TBE Buffer)	1L
IB70153	Tris Borate EDTA (10X TBE Buffer)	4L
IB70154	Tris Borate EDTA (10X TBE Buffer)	10L
IB70155	Tris Borate EDTA (20X Modified TBE Buffer)	1L
IB70160	Tris Acetate EDTA (10X TAE) Buffer	1L
IB70162	Tris-Hydrochloride	500gm
IB07100	Triton X-100	100ml
IB72060	Urea	500gm
IB72064	Urea	2.5kg
IB02260	X-GAL	1gm
IB02264	X-GAL	100mg
IB72120	Xylene Cyanol FF	25gm

I. References

1.) Lehrach, H., et al. 1977. Biochemistry 16:4743.

2.) Sambrook, J., Fritsch, E.F., and Maniatis, T., (1989). Molecular Cloning, A Laboratory Manual, volume 1. Cold Spring Harbor Press, New York.

3.) Selden, R.F. (1988) Analysis of RNA by Northern Hybridization," in Current Protocols in Molecular Biology, F.M. Ausubel, et. al, editors, volume 1, p.4.9.1. Green Publishing Associates and Wiley-Interscience.

J. Limited Warranty

Our limited warranty for all electrophoresis gel boxes is four (4) years to the original buyer only (non-transferable). Warranty does not apply to electrodes or platinum wires.

Our limited warranty as noted above extends to the direct end user of IBI Scientific products only. This warranty is in lieu of all other warranties whether expressed or implied, including warranties of merchantability or fitness for a particular purpose. In no situation shall IBI Scientific be liable for any incidental or consequential damages of any kind, even though IBI Scientific has been advised of the possibility of such damages arising out of, or resulting from, the products or the use or modification thereof or due to the breach of this warranty or any other obligation of IBI Scientific to the customer, whether based on contract, tort, or any other legal theory. In no such event shall IBI Scientific be liable for damages which exceed the purchase price of any products.

For further assistance please contact IBI Scientific Technical Service at (800) 253-4942, (563) 690-0484 or visit us on the web at www.ibisci.com.