

# 2

## 2.7 Gene analysis

173 Nucleic Acid Extraction kits

174 Mupid<sup>®</sup>-One electrophoresis system

175 Agarose

176 Molecular weight DNA markers



# Nucleic Acid Extraction kits

## Kits for total RNA extraction

### RNA Insta-Pure

For gene expression studies, Northern blotting, hybridization, poly-A+ selection and reverse transcription.

- ▣ Single-step method (1–2 hours) for the isolation of total RNA
- ▣ From tissues, cells, bacteria, plants and yeasts
- ▣ Undegraded RNA free of protein and DNA contamination
- ▣ The purified RNA contains the entire spectrum of RNA strands, including small RNAs (4–5 S)

#### Size and storage

Ready-to-use, 1 bottle contains 100 ml.

Refrigerate at 2–8 °C. Do not freeze.

Stable for 9 months, refer to expiration date.

#### Expected yields of RNA per mg of tissue (10<sup>6</sup> cells)

- ▣ Liver and spleen 6–10 µg
- ▣ Kidney 3–4 µg
- ▣ Skeletal muscles and brain 1–1.5 µg
- ▣ Placenta 1–4 µg
- ▣ Epithelial cells 8–15 µg
- ▣ Fibroblasts 5–7 µg

RNA insta-pure		
Description	Quantity	Reference
RNA Insta-Pure	100 ml	KP-0100-01

## Kits for total RNA, DNA and protein extraction

### TRI Insta-Pure

- ▣ Three-step isolation of RNA, DNA and proteins:
  - ▣ Total RNA ready for Northern / dot blotting, poly-A+ selection and reverse transcription isolated in 1 hour, undegraded and free of proteins and DNA.
  - ▣ Total DNA ready for restriction analysis, Southern and dot blotting, PCR and cloning isolated in 3 hours by selective DNA precipitation from the organic phase
  - ▣ Proteins ready for Western blotting isolated in 3 hours
- ▣ From tissues or cultured cells of human, animal, plant, yeast, bacterial or viral origin
- ▣ The isolation method for RNA, DNA and proteins is built on the single-step liquid phase separation (RNA Insta-Pure, see above)
- ▣ TRI Insta-Pure includes phenol and guanidium thiocyanate in a monophasic solution.

#### Size and storage

Tri Insta-Pure is available ready-to-use in bottles of 100 ml.

Store at 2–8 °C. Protect from long exposure (days) to light.

#### Expected yields of nucleic acid per mg of tissue (10<sup>6</sup> cells)

- ▣ 1–15 µg of RNA
- ▣ 2–7 µg of DNA

Tri insta-pure		
Description	Quantity	Reference
TRI Insta-Pure	100 ml	KP-0130-01

## Kit for DNA extraction

### GeneReleaser®

GeneReleaser® achieves lysis, releasing amplifiable DNA/RNA from minute amounts of material directly in the amplification tube in as little as 5 minutes using the microwave protocol and 10 minutes using the thermocycler protocol. Full protocols are available for DNA/RNA preparation from diverse types of samples, including:

- ▣ Avian Viruses
- ▣ Mouse Tail
- ▣ HIV/WBC
- ▣ *Mycobacterium tuberculosis*
- ▣ Paraffin Embedded Tissue
- ▣ Plant Tissue
- ▣ Semen/Sperm
- ▣ Soil or Sea Sediment
- ▣ Whole Tissue
- ▣ Yeast

#### GeneReleaser® saves time, reduces costs, and minimizes the possibility of contamination

- ▣ Allow extractions and PCR in a single tube
- ▣ Samples can be PCR ready in as little as 5–10 minutes
- ▣ GeneReleaser® ensures improved PCR sensitivity by sequestering inhibitors, allowing for use of samples as small as 1 µl of blood, 1 mm sections of tissue, and 5 µl of serum.

#### Size and storage

GeneReleaser® is provided as a ready-to-use stock sufficient for 100 or 400 assays. Typically, 1 µl of sample is lysed in a total volume of 20 µl. Store at 4 °C. Do not freeze.

GeneReleaser		
Description	Quantity	Reference
GeneReleaser®	100 assays	KA-0010-10
	400 assays	KA-0010-40

# Mupid®-One electrophoresis system

## Performance and safety

- Made of resistant electronic components and plastics
- Multichannel pipette compatible
- Safe to use (lid with switch slits)
- Compatible with gel casting sets of previous Mupid® versions
- CE labeled

The following accessories are included with the electrophoresis system


- Gel Maker Set (3 trays + 4 combs + 1 stand)
- Tank and Lid
- Power supply


## Safe

- The main power cannot be operated without the lid.
- A water guide allow good drainage when washing.

## Smart

### Timer Function

 The timer can be user-set from 1 to 99 minutes (includes alarm) with pause modes available.

 **Faster Electrophoresis** 135V 100V 50V 25V 70V 35V 18V  
7 kinds of output voltages are available. These output levels are adjusted thanks to pulses of constant peak voltage (140 V).

### Controlled Electrophoresis

The Mupid®-One controls the voltage so that it can maintain the current at or below peak value for continuous operation.

### Global Input Voltage Compatibility

Variable input voltage of 100 to 240 V supports use virtually anywhere in the world.



## Convenient

- Removable tank easily washed
- Multichannel pipette loading
- Up to 104 samples in 130 x 122 mm gel (4 rows of wells, running length of 2.7 cm)
- Short Gel casting time
- Gel solution up to 120 ml can be poured into the Gel Tray
- Variable sizes of gels (see below)
- Only 270 - 320 ml of buffer and 50 to 120 ml of agarose are required to run a gel

## Separate accessories for Mupid®-One

1. **Tank and Lid** (MU-0041-TK)  
Tank size: 183 x 56 x 162 mm  
Lid size: 197 x 38 x 170 mm
2. **Power supply** (MU-0041-PS)  
Power supply size: 170 x 62 x 75 mm

3. **Gel Casting Stand** (MU-0041-SD) **(1)**

Many combs setting grooves are provided in the stand. Supports a maximum of 4 combs per gel with easy position change.

4. **Large Gel Tray** (MU-0041-LT) **(2)**

It can make up to 4 rows of wells (running length of 2.7 cm), so can handle up to 10<sup>4</sup> samples (26 x 4 = 104).

5. **Small Gel Tray** (MU-0041-ST) **and Center Partition** **(3)**

It can make up a gel for running 26 or 13 samples. Install at the center of Gel Casting Stand for using the Small Gel Tray.

6. **Comb** (MU-0041-SC) **(4)**

4 combs can be used for Large Gel Tray. 1 comb can be used for Small Gel Tray.

7. **Gel Maker Set** (MU-0041-MS)

2 Small Gel Trays, 1 Large Gel Tray, 4 combs, 1 Gel Casting Stand



## Mupid®-One

Description	Reference
Mupid®-One electrophoresis system complete apparatus	MU-0041

# Agarose

Agarose is a purified linear galactan hydrocolloid isolated from agar or agar-bearing marine algae. Structurally, it is a linear polymer consisting of alternating D-galactose and 3,6-anhydro-L-galactose units.

As a gelling agent, agarose is used:

1. To separate nucleic acids electrophoretically because its gels have larger pore sizes than polyacrylamide gels at low concentrations.
2. To demonstrate cross reaction in IEP (Immuno electrophoresis) and Ouchterlony (double diffusion) plates in which antibody-antigen precipitin lines are studied
3. To make gel plates or overlays for cells in tissue culture
4. To form a gel matrix (either beaded and/or crosslinked), which can be used in chromatographic separations.

Produced with care, these products are 100 % pure, have no detectable DNase or RNase activity and form strong gels with very low background.

## Agarose specifications

Description	Molecular Biology Grade	Small Fragments	AgaTabs
Nucleic acid length range	100 -10.000 bp	< 1000 bp	> 1000 bp
Gelling temperature*	37 ~ 39 °C	32.5 ~ 38 °C	37 ~ 39 °C
Melting temperature	88 ~ 90 °C	85 °C	88 ~ 90 °C
Gel strength*	> 1500 g/cm <sup>2</sup>	> 1400 g/cm <sup>2</sup>	> 1500 g/cm <sup>2</sup>
DNase or RNase activity	ND	ND	ND
DNA binding	ND	ND	ND
Electroendosmosis	0.1 ~ 0.2	0.06 ~ 0.14	0.1 ~ 0.2
Sulfate	< 0.1 %	< 0.1 %	< 0.1 %

\* measured in 1.5 % agarose solution

**Molecular Biology Grade Agarose** is ideally suited for routine analysis of DNA or RNA by gel electrophoresis and blotting.

**Small Fragment Agarose** is a Molecular Biology grade agarose that provides superior resolution of nucleic acid fragments below 1000 base pairs.

**AgaTabs** is a Molecular Biology Grade agarose provided as a tablet format (300 x 0.5 g tablets / pack) useful for RNA manipulations.



- ❖ Cleaner and safer
- ❖ No more weighing
- ❖ Accurate portion amount

## Agarose

Description	Weight	Reference
Molecular Biology Grade Agarose	100 g	EP-0010-01
	500 g	EP-0010-05
	1 kg	EP-0010-10
Small Fragment Agarose	50 g	EP-0020-05
	100 g	EP-0020-10
AgaTabs	300 tabs/150 g	EP-0030-15

Smart Ladder

Smart Ladder SF



Most popular ready-to-use  
Molecular Weight Marker

Optimal Small Fragment  
Agarose concentrations

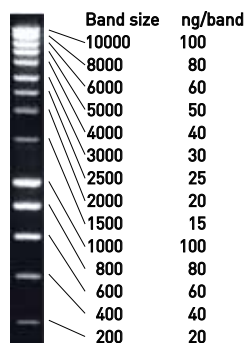
Size (Base Pairs)	Final Agarose Concentration (%)	
	1 x TAE Buffer	1 x TBE Buffer
500 - 1.000	3.0	2.0
100 - 500	4.0	3.0
10 - 100	6.0	5.0

# Molecular Weight DNA Ladders

## SmartLadders

The SmartLadders are popular ready-to-use molecular weight markers, especially designed for easy DNA quantification as well as size determination.

### SmartLadder



#### Size range

14 spaced bands from 200 to 10 000 bp. The 1000 and 10 000 bp bands have a higher intensity than the others to allow quick and easy identification. The size of each band is an exact multiple of 100 bp.

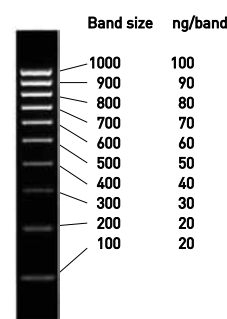
#### Quantification

Using a standard loading of 5 µl, each band corresponds to an exact quantity of DNA, from 20 to 100 ng.

#### Storage

- 1 month at room temperature
- 6 months at 4 °C
- Long term storage at -20 °C

### SmartLadder SF



#### Size range

10 regularly spaced bands from 100 to 1000 bp. The 1000 bp band has a higher intensity than the others to allow quick and easy identification. The size of each band is an exact multiple of 100 bp.

#### Quantification

Using a standard loading of 5 µl, each band corresponds to a precise quantity of DNA from 20 to 100 ng.

#### Storage

- 1 month at room temperature
- 6 months at 4 °C
- Long term storage at -20 °C

#### SmartLadder

Description	Size	Quantity	Lanes	Reference
SmartLadder	200 to 10000 bp	750 µg	1000	MW-1700-10

#### SmartLadder SF

Description	Size	Quantity	Lanes	Reference
SmartLadder SF	100 to 1000 bp	190 µg	400	MW-1800-04

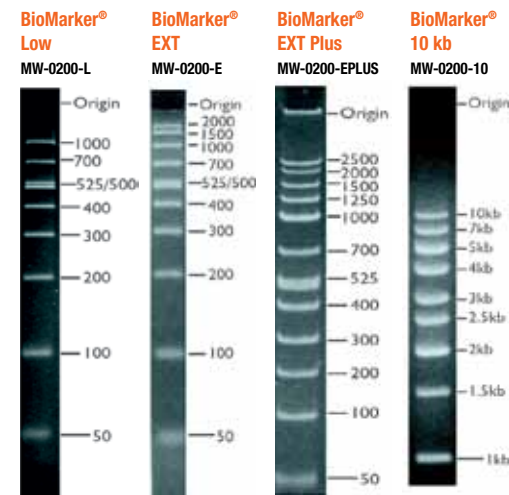
## BioMarker®

### Expanding the frontiers of double-stranded DNA size accuracy

BioMarker® products from BioVentures provide accurate sizing of dsDNA bands over different ranges with nine bands of equal ethidium bromide intensity. Pretreated to expose 5'OH groups, the markers are kinase ready, require no dephosphorylation, and offer stability at ambient temperatures. BioMarkers are optimal for determining size standards for gel electrophoresis, capillary electrophoresis, gel filtration chromatography and HPLC.

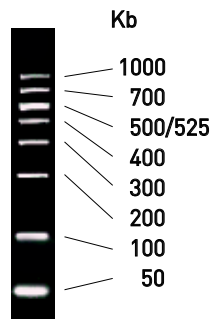
All BioMarker® products arrive complete with 6 x tracking dye and protocols.

Store at 4 °C.



BioMarkers® are also available in custom configurations, labelled with biotin or rhodamine.

## BioMarker® Low



BioMarker® Low contains linear double-stranded DNA bands of 50, 100, 200, 300, 400, 500, 525, 700 and 1000 bp. The concentration of each band is 50 ng/ 5 µl of BioMarker® Low applied.

### BioMarker® Low

Description	Lanes	Quantity	Reference
BioMarker® Low	50 assays	22.5 µg	MW-0200-L
BioMarker® Low biotinylated	50 assays	22.5 µg	MW-0200-LB
BioMarker® Low Rhodamine	50 assays	22.5 µg	MW-0200-LR

## Marker for Genotyping, RFLP, TILLING

MapMarker® are fluorescent-based DNA Size Standards for capillary electrophoresis.

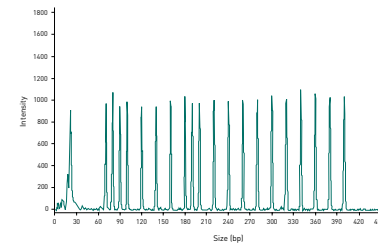
MapMarker® are sets of high quality fluorescent-labeled DNA fragments designed to provide consistent intensities and migration patterns for DNA sizing standards and are compatible with all fluorescent-based separation instruments systems. MapMarker® DNA fragments are uniformly spaced to provide accurate base calling and precision sizing of samples.

MapMarker® contains singular DNA strands with a single fluorophore and bands ranging from 50 to 1000 base pairs. Only single strands are labeled with a single dye; the products are available with all of the most commonly used fluorescent dyes, including rhodamine, tetramethylrhodamine, x-rhodamine, fluorescein and Radiant Dye 632 (orange channel).

MapMarker® are stable for a minimum of 18 months when stored in the dark at 4 °C.

**Custom configurations and dyes are available, please inquire.**

## MapMarker® 400

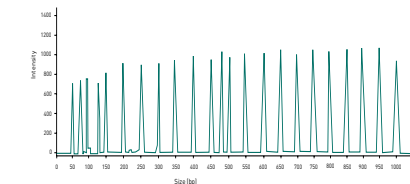


The fragments are at 70, 80, 90, 100, 120, 140, 160, 180, 190, 200, 220, 240, 260, 280, 300, 320, 340, 360, 380, and 400 bases.

### MapMarker® 400

Description	#Lanes	Reference
MapMarker® 400 labelled with FAM	800	MW-0190-80FAM
MapMarker® 400 labelled with TAMRA	800	MW-0190-80TMR
MapMarker® 400 labelled with ROX	800	MW-0190-80ROX

## MapMarker® 1000



The fragments are at 50, 75, 100, 125, 150, 200, 250, 300, 350, 400, 450, 475, 500, 550, 600, 650, 700, 750, 800, 850, 900, 950 and 1000 bases.

### MapMarker® 1000

Description	#Lanes	Reference
MapMarker® 1000 labelled with ROX	800	MW-0195-80ROX
MapMarker® 1000 labelled with FAM	800	MW-0195-80FAM
MapMarker® 1000 labelled with TAMRA	800	MW-0195-80TMR