EURx® Molecular Biology Products

GeneMATRIX Universal DNA/RNA/Protein Purification Kit

Universal kit for isolation of genomic DNA, total RNA and total protein from the same biological sample from bacteria, tissue, plant, yeast and cell culture.

Cat. no. E3597

Version 2.1

February, 2011

Note: *Store DNA and RNA binding spin-columns at 2÷8°C.*

For research use only.
Not for drug, household or other uses.

EURx Ltd. 80-297 Gdansk Poland ul. Przyrodnikow 3, NIP 957-07-05-191, KRS 0000202039,
www.eurx.com.pl orders: email: orders@eurx.com.pl tel. +48 58 524 06 97, fax +48 58 341 74 23

Note 1: *This kit is designed for isolation of genomic DNA, total RNA, and total protein simultaneously from a single biological sample.*

Note 2: *The kit is designed to purify DNA/RNA/Protein from a bacteria, tissue, plant, yeast or cell culture.*

Note 3: *DNA binding capacity is 20 µg per spin-column. Loading more than 20 µg DNA may lead to DNA contamination of the RNA eluate.*

Note 4: *The RNA binding capacity is 100 µg per spin-column.*

Note 5: *Avoid overloading the mini columns. Overloading will significantly reduce yield and purity and may block the mini columns.*

Note 6: *Add 10 µl β-mercaptoethanol (β-ME) per 1 ml buffer Lyse ALL before use. Lyse ALL is stable for 1 month after addition of β-ME.*

Note 7: *Add 10 µl β-mercaptoethanol (β-ME) per 1 ml buffer DRP before use. Buffer DRP is stable for 1 month after addition of β-ME.*

Note 8: *Add 25 µl β-mercaptoethanol (β-ME) and 10 µl* **Bromophenol Blue** *per 1 ml buffer PLB before use. After addition of β-ME store buffer PLB at 2÷8°C.*

Note 9: *Certain bacterial species are resistant to lysis, thus supplementary enzymes other than lysozyme may be necessary. For example, lysis of Staphylococcus is much more efficient with lysostaphin.*

Note 10: *For efficient lysis of yeast species zymolase or lyticase is necessary.*

Note 11: *All solutions should be kept tightly closed to avoid evaporation and resulting components concentration changes.*

Equipment and reagents to be supplied by user:

1. *For all protocols: β-mercaptoethanol (14.3 M, β-ME), ethanol 96-100%, microcentrifuge, disposable gloves, sterile RNase-free pipet tips, sterile RNase-free 1.5-2 ml tubes.*
2. *For bacteria protocol – lysosyme.*
3. *For tissue and plant protocol – equipment for sample disruption and homogenization, depending on the method chosen: mortar and pestle and liquid nitrogen or handheld rotor-stator homogenizer.*
4. *For yeast protocol – buffer SE: 1 M sorbitol, 0.1 M EDTA, and lyticase/zymolase.*

Protocol

Part I Disruption, homogenization and DNA binding.

Animal tissue

1. *a) Grind animal tissue under liquid nitrogen to a fine powder using previously cooled mortar and pestle. Place sample material in RNase-free, cooled 2 ml Eppendorf tube. Add 200 µl* **Lyse ALL** *and 300 µl* **DRP** *buffer to a tissue powder. Mix thoroughly by vortexing vigorously.*

   b) Place the weighed tissue (fresh or frozen) in a suitably sized vessel for homogenizer. Add 300 µl **DRP** *buffer and homogenize using conventional rotor-stator homogenizer until the sample is homogeneous. Add 200 µl* **Lyse ALL** *to the homogenized sample. Mix thoroughly.*

Note 1: *If using mortar and pestle, do not use more than 20 mg tissues. If using rotor-stator homogenizer use up to 10 times less tissues. We recommend homogenization with rotor-stator homogenizer for maximum total RNA yields.*
Note 2 *To obtain high yield of RNA a tissue fragment should be thoroughly grinded to a fine powder.*
Note 3: *Frozen tissue should not be allowed to thaw during handling.*
Note 4: *Ensure that β-ME is added to Lyse ALL and to DRP buffer.*

2. *Centrifuge sample for 3 min at maximum speed.*

3. *Carefully transfer the supernatant to the DNA binding spin-column placed in a 2 ml collection tube. Centrifuge at maximum speed for 1 minute.*

4. *Store the DNA binding spin-column at room temperature 15÷25°C or at 2÷8°C for later DNA purification (part IV of the protocol).* **Use the flow-through for RNA purification.** *Follow the point 1. part II of the protocol (RNA isolation).*

Plant

1. *a) Grind plant tissue under liquid nitrogen to a fine powder using previously cooled mortar and pestle. Place sample material (max. 100 mg) in RNase-free, cooled 2 ml Eppendorf tube. Add 200 µl* **Lyse ALL** *and 100 µl* **DRP** *buffer to a plant tissue powder. Mix thoroughly by vortexing vigorously.*

   b) Place the weighed plant tissue (fresh or frozen) in a suitably sized vessel for homogenizer. Add 200 µl **Lyse ALL** *and 100 µl* **DRP** *buffer and homogenize using conventional rotor-stator homogenizer until the sample is homogeneous.*

Note 1: *If using mortar and pestle, do not use more than 100 mg plant tissues. If using rotor-stator homogenizer use up to 10 times less plant tissues. We recommend homogenization with rotor-stator homogenizer for maximum total RNA yields.*
Note 2 *To obtain high yield of RNA a tissue fragment should be thoroughly grinded to a fine powder.*
Note 3: *Frozen plant tissue should not be allowed to thaw during handling.*
Note 4: *Ensure that β-ME is added to Lyse ALL and to DRP buffer.*

2. *Centrifuge sample for 4 min at maximum speed.*

3. *Carefully transfer the supernatant to the new, RNase-free, Eppendorf tube and add 200 µl* **DRP** *buffer.*

4. *Carefully transfer the supernatant to the DNA binding spin-column placed in a 2 ml collection tube. Centrifuge at maximum speed for 1 minute.*

5. *Store the DNA binding spin column at room temperature 15÷25°C or at 2÷8°C for later DNA purification (part IV of the protocol).* **Use the flow-through for RNA purification.** *Follow the point 1. part II of the protocol (RNA isolation).*

Yeast

1. *Harvest yeast cells by centrifugation at 5000 x g for 5 min at 4°C and discard the supernatant, ensuring that all liquid is completely removed.*

   Note 1: *Do not use more than 5 x10^7 yeast cells.*

2. *Resuspend cells in 500 µl lyticase/zymolase-containing buffer* **SE** *(see note 3 below)***.** *Incubate for 30 min at 30°C.*

   Note 1: *For high yield isolation it is critical to completely resuspend yeast cells.*
   Note 2: *Due to the different growth characteristics of yeast species, performing a preliminary experiment to determine the optimal starting volume is recommended. Weight of pellet should not exceed 100 mg per one minikolumn.*
   Note 3: *Prepare buffer SE: 1 M sorbitol, 0.1 M EDTA. Just before use, add: 0.1 % β-mercaptoethanol and 50 u lyticase/zymolase per 1 x 10^7 cells.*

3. *Pellet the spheroplasts at 300 x g (app. 3000 rpm) for 3 minutes. Discard the supernatant.*

4. *Add 200 µl* **Lyse ALL** *and 350 µl* **DRP** *buffer to the sample and mix thoroughly by pipetting and vortexing vigorously.*

   Note 1: *Ensure that β-ME is added to Lyse ALL and to DRP buffer.*

5. *Centrifuge sample for 2 min at maximum speed.*

6. *Carefully transfer the supernatant to the DNA binding spin-column placed in a 2 ml collection tube. Centrifuge at maximum speed for 1 minute.*

7. *Store the DNA binding spin column at room temperature 15÷25°C or at 2÷8°C for later DNA purification (part IV of the protocol).* **Use the flow-through for RNA purification.** *Follow the point 1. part II of the protocol (RNA isolation).*

Bacteria

1. *Pellet bacteria from overnight culture by centrifugation (for 5 min at 4°C) and discard the supernatant, ensuring that all liquid is completely removed.*

   Note 1: *Do not use more than 1x10^9 bacteria.*
   Note 2: *The highest quality DNA is obtained from bacterial culture, which are either in log phase or early stationery phase.*

2. *Resuspend the bacterial pellet in 200 µl lysosyme-containing* **Lyse ALL** *buffer. Mix by vortexing.*

Note 1: *Add lysosyme to the Lyse ALL buffer: 500 µg/ml lysosyme for Gram$^-$ bacteria or 5 mg/ml lysosyme for Gram$^+$ bacteria.*
Note 2: *Ensure that β-ME is added to Lyse ALL.*

3. *Incubate the sample at room temperature for:*
   a) 3-5 min gram-negative bacteria
   b) 5-10 min gram-positive bacteria

4. *Add 300 µl buffer* **DRP** *to the sample. Mix thoroughly by vortexing vigorously.*

Note 1: *Ensure that β-ME is added to buffer DRP.*

5. *Centrifuge sample for 2 min at maximum speed.*

6. *Carefully transfer the supernatant to the DNA binding spin-column placed in a 2 ml collection tube. Centrifuge at maximum speed for 1 minute.*

7. *Store the DNA binding spin column at room temperature 15÷25°C or at 2÷8°C for later DNA purification (part IV of the protocol).* **Use the flow-through for RNA purification.** *Follow the point 1. part II of the protocol (RNA isolation).*

Cell culture

1. *Centrifuge the cell culture in the 2 ml Eppendorf tube for 5 min at 1000 x g.*

Note 1: *Do not use more than 1x10^7 cells.*

2. *Add 400 µl buffer* **DRP** *to the cell pellet. Mix thoroughly by vigorous vortexing and pipetting for homogenization.*

Note 1: *It is possible to use rotor-stator for homogenization cells at this step. Homogenization with rotor-stator generally results in higher genomic DNA yields. Homogenize cells for 30 s in 400 µl DRP buffer per prep using a rotor-stator homogenizer.*
Note 2: *Ensure that β-ME is added to DRP buffer.*

3. *Add 100 µl* **Lyse ALL** *to the homogenized sample. Mix thoroughly.*

Note 1: *Ensure that β-ME is added to Lyse ALL buffer.*

4. *Centrifuge sample for 2 min at maximum speed.*

5. *Carefully transfer the supernatant to the DNA binding spin-column placed in a 2 ml collection tube. Centrifuge at maximum speed for 1 minute.*

6. *Store the DNA binding spin column at room temperature 15÷25°C or at 2÷8°C for later DNA purification (part IV of the protocol).* **Use the flow-through for RNA purification.** *Follow the point 1. part II of the protocol (RNA isolation).*

Part II RNA isolation.

1. *To the flow-through from DNA binding step (last step in part I of the protocol), add 300 µl ethanol (**96-100 %**). Mix thoroughly by pipetting. Do not centrifuge.*

   Note 1: *A precipitate may form after addition of ethanol.*

2. *Apply the sample, including any precipitate, to the RNA binding spin-column placed in a 2 ml collection tube. Centrifuge for 1 min at 11000 x g.* **Transfer the flow-through to a 2 ml tube for protein purification** *(part III of the protocol).*

3. *Add 400 µl of* **Wash DN1** *buffer to the RNA binding spin-column and centrifuge at 11000 x g for 1 minute. Remove the spin-column, pour off supernatant and place back into the receiver tube.*

   Note 1: *This step effectively eliminates remaining DNA. However, for RNA applications that are very sensitive to traces amounts of DNA, in the next step use Appendix 1 (page 8) with optional on-column DNase digestion.*

4. *Add 650 µl of* **Wash RBW** *buffer and spin down at 11000 x g for 1 minute.*

5. *Remove the spin-column, pour off supernatant and place back into the receiver tube.*

6. *Add 350 µl of* **Wash RBW** *buffer and spin down at 11000 x g for 2 minutes.*

   Note 1: *Be careful not to contaminate the sample while removing spin-column from receiver tube. Check whether membrane is completely dry. If not, pour off supernatant and place back spin-column into the receiver tube and spin down for additional 1 minute.*

7. *Place spin-column into new receiver tube (1.5-2 ml) and add 40-60 µl RNase-free water directly onto the membrane.*

   Note 1: *It is not necessary to close the tube at this step.*

8. *Centrifuge for 2 min at 11000 x g.*

9. *Remove spin-column, cap the receiver tube. RNA is ready for analysis/manipulations. Store the samples at -20°C or below.*

Part III Protein precipitation.

1. *To the flow-through from RNA binding step (step 2 in part II of the protocol), add 2 volumes of ethanol (**96-100 %**). Mix thoroughly. Incubate at 2÷8°C for 30 min.*

2. *Centrifuge at maximum speed for 20 minutes at 4°C, and carefully decant the supernatant.*

3. *Add 300 µl of* **70%** *ethanol to the protein pellet. Vortex well and centrifuge at maximum speed for 10 minutes at 4°C, remove the supernatant.*

4. *Dry the protein pellet for 5-15 minutes at room temperature.*

5. *Dissolve the protein pellet in 80-150 µl protein loading buffer* **PLB** *(Note 2).*

Note 1: *Buffer PLB is a sample buffer for use in SDS-PAGE analysis. If the proteins will not be analyzed by SDS-PAGE, use a buffer compatible with the intended application. As a result of the method of isolation the precipitated protein is highly denatured and shows reduced solubility in water. Dissolution the precipitate is possible in PLB buffer or other solution containing a high concentration of detergent (eg 1.5 - 5% SDS). Therefor, Bradford and Lowry assays are not applicable for quantifying protein yield. For protein quantitation, use the Bicinchoninic Acid Assay (BCA).*

Note 2: *In the case of SDS-PAGE analysis add 25 µl β-mercaptoethanol (β-ME) and 10 µl* **Bromophenol Blue** *per 1 ml buffer PLB before use. After addition of β-ME store buffer PLB at 2÷8°C.*

Note 3: *In case of PLB buffer ingredients precipitation warm up until clarified.*

6. *Incubate for 5 minutes at 95°C to dissolve and denature sample.*
7. *If some insoluble material is still visible, centrifuge at maximum speed for 1 minute. The supernatant is ready to use in downstream applications such us SDS-PAGE and others.*

Note 1: *Sample can be stored at 2÷8°C for short period or at -20°C for several months.*

Part IV Genomic DNA purification.

1. *Add 400 µl of* **Wash RB1** *buffer to the DNA binding spin column (from the last step of part I of the protocol) and centrifuge at 11000 x g for 1 minute.*
2. *Remove the spin-column, pour off supernatant and place back into the receiver tube.*
3. *Add 650 µl of* **Wash RBW** *buffer and spin down at 11000 x g for 1 minute.*
4. *Remove the spin-column, pour off supernatant and place back into the receiver tube.*
5. *Add 350 µl of* **Wash RBW** *buffer and spin down at 11000 x g for 2 minutes.*

Note 1: *Be careful not to contaminate the sample while removing spin-column from receiver tube. Check whether column is completely dry. If not, pour off supernatant and place back spin-column into the receiver tube and spin down for additional 1 minute.*

6. *Place spin-column into new receiver tube (1.5-2 ml) and add 50-100 µl of* **Elution** *buffer heated to 80°C directly onto the membrane to elute bound DNA.*

Note 1: *It is not necessary to close the tube at this step.*

7. *Incubate spin-column/receiver tube assembly for 2 minutes at room temperature.*
8. *Centrifuge for 2 min at 11000 x g.*
9. *Remove spin-column, cap the receiver tube. Genomic DNA is ready for analysis/manipulations. It can be stored either at 2÷8°C (preferred) or at -20°C (avoid multiple freezing and defrosting of DNA).*

Appendix 1:

RNA Purification with On-Column DNase digestion

Note 1: *Use this protocol after step with Wash DN1 in standard procedure in* **Part II RNA isolation.**
Note 2: *On-column DNase digestion can only be carried out using* **DNR** *buffer which comes with the kit. Other DNase buffers are not compatible with on-column DNase digestion.*
Note 3: *DNase I is not supplied with this kit.*
Note 4: *Prepare DNase I solution before starting this procedure. Add 1 U of DNase I per 50 µl DNR buffer. Do not add more than 2 µl DNase I solution per 50 µl DNR buffer. Dissolve solid DNase I in the storage buffer (50 mM Tris-acetate pH 7.5, 10 mM $CaCl_2$ and 50% v/v glycerol) in a concentration of 1U/µl and then add 1 U DNase I per 50 µl DNR buffer.*
Note 5: *DNase I is sensitive to physical denaturation. Be careful not to mix DNase vigorously.*
Note 6: *Use only RNase-free DNase I.*

1. *After the step with* **Wash DN1** *and centrifugation remove the spin-column, pour off supernatant and place back into the receiver tube.*

2. *Add 50 µl* **DNR** *buffer, with DNase I added, directly onto the membrane and place on the benchtop at room temperature for 10 minutes. Do not centrifuge.*

   Note 1: *Ensure that DNase I is added to buffer DNR. See note 4 above.*

3. *Add 400 µl* **Wash RB1** *buffer and spin down at 11000 x g for 1 minute.*

4. *Remove the spin-column, pour off supernatant and place back into the receiver tube.*

5. *Follow the point 4. Part II of the protocol (RNA isolation page 6).*

Nucleic Acids Purification Systems

	Cat.No.	Package
GeneMATRIX AGAROSE - OUT DNA Purification Kit	*E3540-01*	*50 preps*
Kit for purification of DNA from agarose gels.	*E3540-02*	*150 preps*
GeneMATRIX BACTERIAL & YEAST GENOMIC DNA Purification Kit	*E3580-01*	*50 preps*
Kit for purification of DNA from Gram-positive and Gram-negative bacteria, yeast.	*E3580-02*	*150 preps*
GeneMATRIX BASIC DNA Purification Kit	*E3545-01*	*50 preps*
Universal kit for purification of PCR products / DNA after enzymatic reactions, isolation of DNA from agarose gels and isolation of plasmid DNA from bacteria.		
GeneMATRIX BIO-TRACE DNA Purification Kit	*E3510-01*	*25 preps*
Kit for purification of DNA from various samples for clinical and forensic analysis.	*E3510-02*	*100 preps*
GeneMATRIX BONE DNA Purification Kit	*E3560-01*	*25 preps*
Kit for isolation of DNA from animal or human bones.	*E3560-02*	*100 preps*
GeneMATRIX CELL CULTURE DNA Purification Kit	*E3555-01*	*50 preps*
Kit for purification of DNA from human and animal cell cultures.	*E3555-02*	*150 preps*
GeneMATRIX FOOD DNA Purification Kit	*E3525-01*	*25 preps*
Kit for purification of DNA from food.	*E3525-02*	*100 preps*
GeneMATRIX HUMAN BLOOD RNA Purification Kit	*E3596-01*	*25 preps*
Kit for isolation of total RNA from fresh human blood.		
GeneMATRIX PCR / DNA CLEAN - UP DNA Purification Kit	*E3520-01*	*50 preps*
Kit for purification of PCR products / DNA after enzymatic reactions.	*E3520-02*	*150 preps*
GeneMATRIX PLANT & FUNGI DNA Purification Kit	*E3595-01*	*50 preps*
Kit for purification of total DNA from plants, fungi and lichens.	*E3595-02*	*150 preps*
GeneMATRIX PLASMID MINIPREP DNA Purification Kit	*E3500-01*	*50 preps*
Kit for isolation of high-purity plasmid DNA (1.5-4 ml bacterial culture).	*E3500-02*	*150 preps*
GeneMATRIX QUICK BLOOD DNA Purification Kit	*E3565-01*	*50 preps*
Kit for quick purification of DNA from fresh or frozen blood.	*E3565-02*	*150 preps*
GeneMATRIX SHORT DNA Clean-Up Purification Kit	*E3515-01*	*25 preps*
Kit for purification of short single-stranded and double-stranded DNA fragments after enzymatic reactions	*E3515-02*	*100 preps*
GeneMATRIX SOIL DNA Purification Kit	*E3570-01*	*50 preps*
Kit for purification of DNA from soil.	*E3570-02*	*100 preps*
GeneMATRIX STOOL DNA Purification Kit	*E3575-01*	*50 preps*
Kit for purification of DNA from stool samples.	*E3575-02*	*100 preps*
GeneMATRIX SWAB EXTRACT DNA Purification Kit	*E3530-01*	*25 preps*
Kit for purification of DNA from swabs for clinical and forensic analysis.	*E3530-02*	*100 preps*
GeneMATRIX TISSUE DNA Purification Kit	*E3550-01*	*50 preps*
Kit for purification of DNA from human and animal tissues.	*E3550-02*	*150 preps*
GeneMATRIX TISSUE & BACTERIAL DNA Purification Kit	*E3551-01*	*50 preps*
Kit for purification of DNA from human and animal tissues, cell cultures and bacteria.	*E3551-02*	*150 preps*
GeneMATRIX UNIVERSAL DNA/RNA/Protein Purification Kit	*E3597-01*	*25 preps*
Kit for purification of total DNA/RNA/Protein from the same biological sample.	*E3597-02*	*100 preps*
GeneMATRIX UNIVERSAL RNA Purification Kit	*E3598-01*	*25 preps*
Kit for purification of total RNA from tissues, plants, bacteria, yeast and cell cultures.	*E3598-02*	*100 preps*
GeneMATRIX UNIVERSAL RNA/miRNA Purification Kit	*E3599-01*	*25 preps*
Kit for isolation of total RNA and miRNA from the tissues, plants and cell cultures.	*E3599-02*	*100 preps*
MICELLULA DNA Emulsion & Purification Kit	*E3600-01*	*50 preps*
For Emulsion PCR and other DNA targeted enzymatic reactions.	*E3600-02*	*150 preps*

SELECTION OF THE KITS DEPENDING ON THE TYPE OF ISOLATED MATERIAL			AGAROSE – OUT	BACTERIAL & YEAST GENOMIC	BIO – TRACE	BASIC	BONE	CELL CULTURE	FOOD	HUMAN BLOOD RNA	PCR / DNA CLEAN-UP	PLANT & FUNGI	PLASMID MINIPREP	QUICK BLOOD	SHORT / DNA CLEAN-UP	SOIL	STOOL	SWAB EXTRACT	TISSUE	TISSUE & BACTERIAL	UNIVERSAL DNA/RNA /PROTEIN	UNIVERSAL RNA	UNIVERSAL RNA /miRNA	MICELLULA DNA
DNA	GENOMIC	BACTERIA		X																X				
		YEAST		X																				
		CELL CULTURE						X											X	X				
		PLANT AND FUNGI										X												
		BLOOD												X										
		SOIL														X								
		STOOL															X							
		SWAB																X						
		SOLID TISSUES																	X	X				
		LIQUID TISSUES																	X	X				
		RODENT TAILS																	X	X				
		HAIR																	X	X				
		INSECTS																	X	X				
		URINE																	X	X				
		BONE					X																	
		BIOLOGICAL TRACES			X																			
		FOOD							X															
	PLASMID	BACTERIA				X							X											
		YEAST		X																				
	ISOLATION FROM AGAROSE GELS		X			X																		
	PURIFICATION OF PCR PRODUCTS/DNA AFTER ENZYMATIC REACTIONS					X					X				X									X
DNA/RNA/PROTEIN FROM THE SAME BIOLOGICAL SAMPLE		ANIMAL TISSUE																			X			
		PLANT TISSUE																			X			
		BACTERIA																			X			
		YEAST																			X			
		CELL CULTURE																			X			
RNA	TOTAL RNA LONGER THAN 200 BASES	ANIMAL TISSUE																				X		
		PLANT TISSUE																				X		
		BACTERIA																				X		
		YEAST																				X		
		CELL CULTURE																				X		
		HUMAN BLOOD								X														
	miRNA AND TOTAL RNA	ANIMAL TISSUE																					X	
		PLANT TISSUE																					X	
		CELL CULTURE																					X	

GeneMATRIX *is synthetic, new generation DNA- and RNA-binding membrane, selectively binding nucleic acids to composite silica structures. Novel binding and washing buffers are developed to take full advantage of* **GeneMATRIX** *capacity, yielding biologically active, high-quality nucleic acids. Matrix is conveniently pre-packed in ready-to-use spin-format. Unique chemical composition of the matrixes along with optimized construction of spin-columns improve the quality of final DNA or RNA preparation. To speed up and simplify isolation procedure, the key buffers are colour coded, which allows monitoring of complete solution mixing and makes purification procedure more reproducible.*

As a result, we offer kits, containing matrixes and buffers that guarantee rapid, convenient, safe and efficient isolation of ultrapure nucleic acids. Such DNA or RNA can be directly used in subsequent molecular biology applications, such as: restriction digestion, dephosphorylation, kinasing, ligation, protein-DNA interaction studies, sequencing, blotting, in vitro translation, cDNA synthesis, hybrydization among others. Additional advantage is reproducibility of matrix performance, as component preparation is carried at Eurx Ltd.

GeneMATRIX DNA/RNA/Protein Purification Kit *is designed for rapid purification of genomic DNA, total RNA and total protein simultaneously from a single biological sample from a wide variety of bacterial physiological groups, animal tissue, plant and from a wide variety of yeast strains. Samples are first disrupted, homogenized and lysed in the presence of lysis and denaturing buffers, which inactivates DNases and RNases as well as proteases. In the next stage, DNA binding spin columns reduce viscosity of the lysate and bind DNA fragments. Then sample is applied to a RNA binding spin column where all RNA molecules are adsorbed to the matrix and contaminants are efficiently washed away. High-quality RNA is then eluted in RNase-free water. Typical yields are up to 100 µg total RNA longer than 200 bases. Proteins are precipitated from the flow-through of RNA binding spin column and are pelleted by centrifugation. The kit includes buffer PLB which is compatible with SDS-PAGE for dissolving the protein pellet. This kit is ideal for researchers who are interested in studying the genome, proteome and transcriptome of a single sample.*