

MACHEREY-NAGEL

Working with RNA – Do it right!

Bioanalysis



Sample Matrices: Your Challenge – Our Solution

Isolation of high quality RNA from various sample matrices

- Inhibitor free RNA for RT-PCR and other downstream applications
- Specialized beads for cell disruption of difficult samples
- Optimized buffers for outstanding yields

MACHEREY-NAGEL

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Blood

Challenge:

- Anticoagulants (typically EDTA) can inhibit downstream analysis

Solution:

- Washing with two different buffers removes salts, metabolites and macromolecular cellular components



REF 740200.50

Plasma and biological fluids

Challenge:

- Purification of small RNAs

Solution:

- Special buffer chemistry enables purification of small RNAs (>18 nt)



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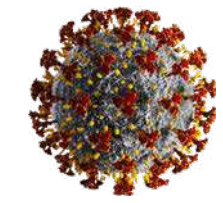
Viruses

Challenge:

- Low virus concentration
- Inhibitors e.g. salts, metabolites and soluble macromolecular cellular components

Solution:

- Carrier RNA improves RNA-binding and recovery
- Removal of potential inhibitors by simple wash steps with alcoholic buffers



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Cells and tissue

Challenge:

- Homogenization of samples including mouse tissue (liver, brain) and various tumor cell lines

Solution:

- Easy sample homogenization with NucleoSpin® Filters



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FFPE-Tissue

Challenge:

- Paraffin removal
- Decrosslinking after formalin fixation

Solution:

- Paraffin dissolver (patent pending)
- Unique decrosslink buffer



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Bacteria and yeast

Challenge:

- Disruption of the physical cell structure

Solution:

- Sample lysis via bead beating with MN Bead Tubes Type B (glass beads) (not included)



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Plants and fungi

Challenge:

- Inhibitors e.g. starch, sugar, secondary metabolites and other compounds
- Physical structure of seeds, roots, stems, needles, etc.
- Cell debris can block the column

Solution:

- Two different buffers remove impurities and metabolites
- Removal of plant debris with the NucleoSpin® Plant and Fungi Filter
- Sample disruption with MN Bead Tubes Type G (steel beads), Type C (corundum beads) (both not included)



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Insects

Challenge:

- Physical and biochemical structure of chitin shells

Solution:

- Sample lysis via bead beating with MN Bead Tubes Type G (steel beads) (not included)



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Stool

Challenge:

- Inhibitors e.g. polysaccharides, urates and lipids
- Sample composition

Solution:

- The combination of mechanical homogenization and chemical lysis results in an optimal RNA yield
- Inhibitor removal with the NucleoSpin® Inhibitor Removal Column



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Soil

Challenge:

- Diverse sample composition (forest soil, river sediment or cropping soil)
- High content of inhibitory substances (humic components)
- Low amounts of RNA

Solution:

- Sample lysis via bead beating with MN Bead Tubes Type A (ceramic beads)
- NucleoBond® technology enables high sample input and pure RNA



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HOW TO work with RNA

Consumables

Use sterile, disposable polypropylene tubes and sterile RNase-free tips. Keep your tubes closed during preparation whenever possible. Glassware should be oven baked for at least 2 hours at 250 °C before use.

Sample Protection

Whenever possible, use fresh sample material. Alternatively, you can protect your RNA samples from degradation by the following measures:

- Freezing in liquid nitrogen
- Storage at -80 °C
- Using RNA stabilization reagents such as NucleoProtect® RNA

Do not let your samples thaw prior to contact with lysis buffer!

Storage

Always store eluted RNA on ice to ensure optimal stability. Store your RNA at -20 °C for short term and -70 °C for long term.

If you need your isolated RNA more frequently, try to aliquot your samples into smaller volumes to avoid repeated freeze/thaw cycles which reduce the integrity of your RNA. When thawing your samples, always thaw them on ice to avoid degradation of your RNA!



Work Environment

- Wear gloves during RNA preparation and change them frequently to create an RNase-free work environment
- Be aware of others working with RNases in close proximity and try to avoid working at the same time
- If you use RNases yourself, change your lab coat before you start your RNA preparation
- Optimally, select a specific workbench for RNA preparation only
- Try to minimize communication during RNA preparation or use a mask to prevent RNase-containing saliva droplets from entering your samples

Sample Disruption

Keep your equipment cool and perform sample disruption in liquid nitrogen. If you have difficulties, take a look at the protocols of our RNA kits. They contain specific instructions for the successful disruption of your sample material.



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