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

Your Challenge – Our Solution

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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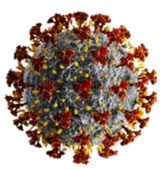
Viruses

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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Your Challenge – Our Solution

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.

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 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!

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.

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!

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