ProductFinder
Product Catalog
New
All Products
Assays
Automation
DNA
RNA
RNAi
PCR
Protein
Transfection
Lab Essentials
Products by Application
Products by Lab Focus
Products by Technology
Products by Genes

DNeasy Plant Mini Kit

For isolation of up to 30 µg total cellular DNA from plant cells and tissues, or fungi

- Pure DNA, free from contaminants and enzyme inhibitors
- Rapid isolation of ready-to-use DNA
- No organic extraction, no ethanol precipitation

Ordering Information | Product Details | Resources

DNeasy Plant Mini Kit

Format:	Mini spin columns with 2 ml collection tubes
Sample source:	Plant cells and tissues, fungi
Sample size:	Up to 100 mg wet weight
Preparation time:	<1 hour
Typical yield:*	3–30 µg
Elution volume:	50–400 µl

** DNA yields vary between different species and tissues depending on genome size, ploidy, cell number, and age of tissue sample. Lower and higher range values correspond to arabidopsis and wheat, respectively.*

The DNeasy Plant Mini Kit allows rapid and efficient isolation of high-quality DNA from a wide variety of plant species and tissue types including the most demanding sources (see table "Selection of Plant Species Processed with DNeasy Kits"). Samples may be fresh, frozen, or dried. The optimized DNeasy Plant procedure incorporates the QIAshredder spin column, a unique filtration and homogenization column that efficiently removes cell debris and improves sample handling following lysis.

Selection of Plant Species Processed with DNeasy Kits

Abies alba (silver fir)	*Nicotiana tabacum* (tobacco)
Aesculus hippocastanum (horse chestnut)	*Oryza sativa* (rice)[4]
Arabidopsis thaliana (thale cress)	*Pelargonium* sp. (geranium)[4]
Avena sp. (oat)	*Petunia* sp.[4]
Brassica napus (oilseed rape)	*Pinus sylvestris* (Scotch pine), *P. brutia*[5]
Brassica oleracea (kohlrabi)	*Populus tremula* (aspen)
Chicorium endivia (chicory)	*Pseudotsuga menziesii* (Douglas fir)
Citrullini lanatus (water melon)	*Quercus robur*, *Q. petrea* (oak)[6,7]
Egeria sp.	*Rhododendron* sp.[2,4]
Fagus sylvatica (beech)[1]	*Rubus idaeus* (raspberry)
Helianthus spp. (sunflower)	*Solanum tuberosum* (potato)
Hordeum vulgare (barley)[2]	*Sphagnum palustre* (moss)
Humulus sp. (hops)	*Spinacia oleracea* (spinach)
Hydrilla sp.	*Taxus baccata* (yew)
Kalanchoe spp.	*Triticum aestivum* (wheat)[4]
Lupinus sp.	*Ulmus glabra* (elm)[6]
Lycopersicon esculentum (tomato)[3]	*Vitis* spp. (grape)[6]
Myriophyllum sp.	*Zea mays* (maize)

Young leaves or needles (and other tissues, as indicated) were collected and immediately flash frozen. DNA isolation was then performed with the DNeasy Plant Mini Kit. [1]Beechnut, [2]dried leaves, [3]callus, [4]leaves from adult plant, [5]endosperm, [6]old leaves, rich in carbohydrates, [7]buds. For more information on DNA isolation from other species including fungi, call QIAGEN Technical Services or your local distributor.

Principle

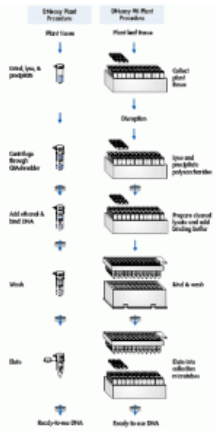
DNeasy Plant Kits use advanced silica-gel–membrane technology and simple spin procedures to isolate highly pure total cellular DNA from plant tissues and cells or fungi. DNeasy technology replaces cumbersome DNA isolation procedures such as CTAB, phenol, or chloroform extraction. Using the DNeasy procedure, alcohol precipitation is not necessary — purified DNA is ready for immediate use. Absorbance scans of DNeasy purified DNA show a symmetrical peak at 260 nm (see figures "DNA Purity Depends on Isolation Method — A" and "DNA Purity Depends on Isolation Method — B"), confirming that the DNA is free of impurities, including enzyme inhibitors. DNeasy sample preparation technology is fully licensed, allowing DNeasy purified nucleic acids to be used in any molecular assay or other downstream application without risk of patent infringement.

Procedure

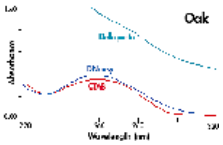
Samples are first mechanically disrupted and then chemically lysed. RNA is removed by RNase digestion during lysis. Cell debris is removed and samples are filtered and homogenized by centrifugation through a QIAshredder spin column. Buffering conditions are adjusted, precipitating proteins and polysaccharides, and the lysate is loaded onto the DNeasy Plant spin column. During a brief spin, DNA selectively binds to the silica-gel membrane while contaminants pass through. Remaining contaminants and enzyme inhibitors are removed in one or two efficient wash steps. Pure DNA is then eluted in water or low-salt buffer, ready for use (see flow chart "DNeasy Plant and DNeasy 96 Plant Procedures").

Downstream applications

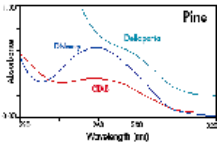
Images



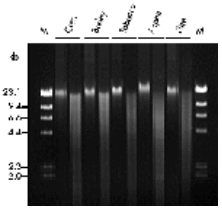
DNeasy Plant and DNeasy 96 Plant Procedures



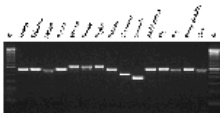
DNA Purity Depends on Isolation Method — A



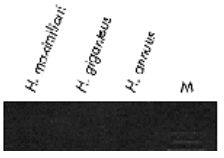
DNA Purity Depends on Isolation Method — B



Pure DNA (20–25 kb) for Restriction Analysis

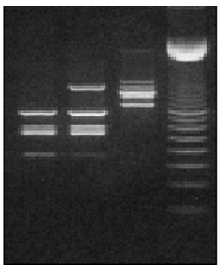


PCR Analysis of DNA from Different Plant Species



The DNeasy Plant procedure yields pure nucleic acid, free of polysaccharides and other secondary metabolites often copurified using conventional methods. Such impurities can interfere with spectrophotometric readings and inhibit enzymatic reactions. DNeasy purified DNA is sized up to 40 kb (see figure "Pure DNA (20–25 kb) for Restriction Analysis"), and is suitable for downstream applications such as:

- PCR (see figure "PCR Analysis of DNA from Different Plant Species")
- AFLP
- RFLP
- RAPD (see figure "RAPD Analysis of Sunflower Species")
- Southern blotting
- Microsatellite analysis
- Real-time PCR



RAPD Analysis of Sunflower Species

Cited References

1. *Dellaporta, S.L. (1983) A plant DNA minipreparation: version II. Plant Mol. Biol. Rep. 1, 19.*
2. *Doyle, J.J. and Doyle J.L. (1987) A rapid DNA isolation procedure for small quantities of fresh leaf tissue. Phytochem. Bull. 19, 11.*

For more information about fast and successful genotyping see our combined QIAGEN Multiplex PCR Kit and DNeasy Kit product profile (96 KB, PDF Format).

Contact more

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