

Wizard® Genomic DNA Purification Kit and the Isolation of Plant Genomic DNA

ABSTRACT

Genomic DNA was isolated from plant leaf tissue using the Wizard® Genomic DNA Isolation Kit (Cat.# A1120). Isolated DNA is suitable for PCR and restriction enzyme digestions.

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Introduction

The Wizard® Genomic DNA Purification Kit (Cat.# A1120) provides a simple and phenol-free method for the isolation of genomic DNA from different sources including bacteria, yeast, blood, and animal and plant tissues. The whole procedure can be finished in as little as two hours and the DNA obtained is suitable for many downstream applications like PCR and restriction enzyme digestion. For example, as little as 40mg of tomato leaf usually yields 7–12µg genomic DNA. However, if more plant material is available the amount of starting material can easily be scaled up without increasing the solutions or most of the incubation times as reported here. Both monocotyledon (corn) and dicotyledon (*Arabidopsis*) species were tested.

Leaf material from each species was frozen in liquid nitrogen and ground extensively (approximately 10 minutes). Ground tissue (40–250mg) was transferred to a microcentrifuge tube and processed according to the Wizard® Genomic DNA Purification Kit Technical Manual #TM050. There is no need to prolong the incubation times except for the RNase Solution treatment in Step 4, Section III.E. To completely remove RNA, it is better to incubate for 30 minutes instead of 15 minutes at 37°C.

Yields for *Arabidopsis* and corn from 40, 100, 150 and 250mg starting tissue are listed in Table 1. DNA was of high quality, with A260/A280nm ratios between 1.8 and 1.95. As shown in Figures 1 and 2, the DNA is suitable for PCR (Figure 1) and restriction enzyme digestion with BstXI (Figure 2). Therefore, the genomic DNA is free of contaminants and enzyme inhibitors that are often copurified when conventional methods are used.

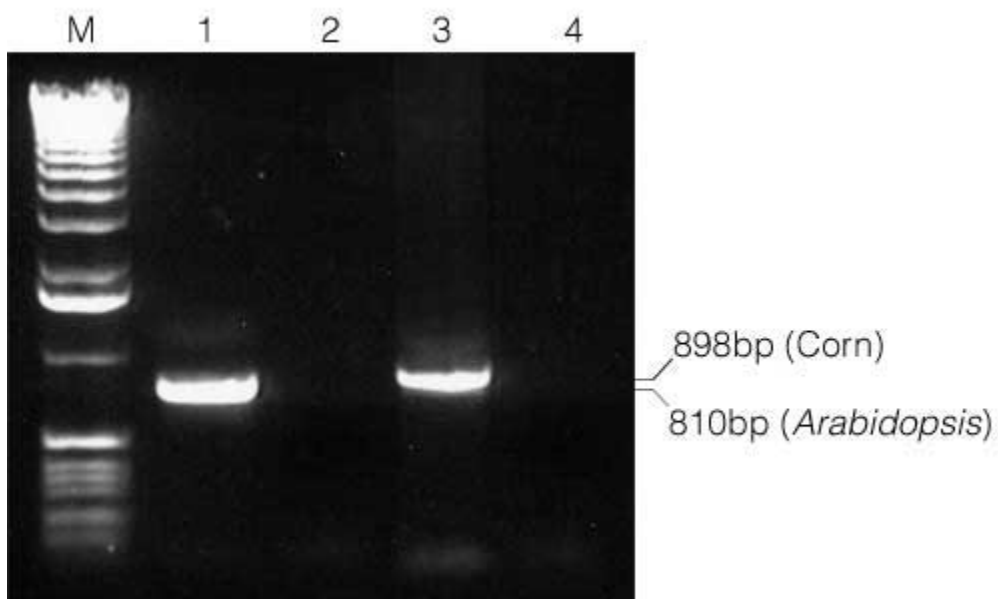


Figure 1. PCR of genomic DNA following isolation from *Arabidopsis* and corn. PCR products were resolved on a 1% agarose gel. Lane M, marker DNA (1kb ladder); lane 1, 810bp *Arabidopsis* product; lane 2, negative control for *Arabidopsis*; lane 3, 898bp corn product; lane 4, negative control for corn.

Note: Contact the author, [Sonja Vorwerk](#), for information regarding the oligonucleotide primers used in this report.

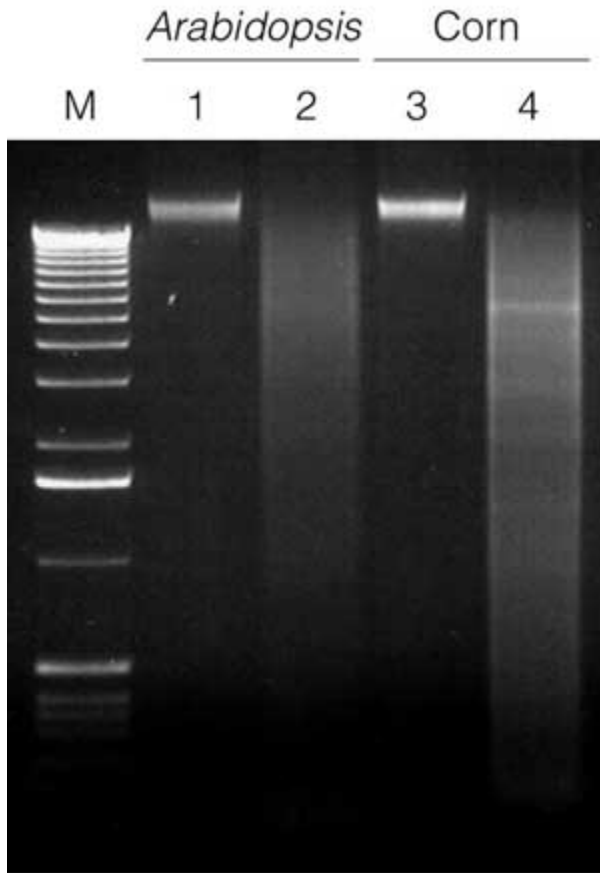


Figure 2. Restriction enzyme digestion of genomic DNA following isolation from *Arabidopsis* and corn. Genomic DNA was restricted with BstXI (10 μ g) and resolved on a 1% agarose gel. Lane M, marker DNA (1kb ladder); lane 1, *Arabidopsis* DNA, uncut; lane 2, *Arabidopsis* DNA, cut; lane 3, corn DNA, uncut; lane 4, corn DNA, cut.

Yield of Genomic DNA from Different Starting Amounts of Leaf Tissue. Values represent mean (+/-S.D.)		
Starting Amount	<i>Arabidopsis</i> (µg)	Maize (µg)
40mg	8.33 (+/-1.15)	7.67 (+/-0.58)
100mg	43.33 (+/-2.52)	40.67 (+/-6.66)
150mg	49.83 (+/-1.04)	47.17 (+/-2.75)
250mg	59.67 (+/-7.57)	60.00 (+/-4.00)

Table 1. Yield of Genomic DNA from Different Amounts of Leaf Tissue.

Yield of Genomic DNA from Different Starting Amounts of Leaf Tissue (mean ± SD).		
Starting Amount	<i>Arabidopsis</i> (µg)	Maize (µg)
40mg	8.33 (± 1.15)	7.67 (± 0.58)
100mg	43.33 (± 2.52)	40.67 (± 6.66)
150mg	49.83 (± 1.04)	47.17 (± 2.75)
250mg	59.67 (± 7.57)	60.00 (± 4.00)

Table 2. Yield of Genomic DNA from Different Starting Amounts of Leaf Tissue.

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