The Thermo Scientific™ Phire™ Tissue Direct PCR Master Mix and Kit have been developed for direct amplification of DNA from a wide variety of animal and human tissues. The sample size recommendations below are based on several organisms and tissue types tested. Additional optimization may be needed when starting to perform direct PCR reactions on a new sample, but the recommendations can be used as guidelines.

In general, we recommend taking the smallest piece of sample possible to minimize the amount of inhibitors in the PCR reaction.

Note on the direct protocol: The direct protocol is recommended only for short amplicons (<500 bp for fish fins and <1 kb for other tissues).

Tissue sample		Direct protocol (50 µL reaction)	Dilution protocol* (20 µL Dilution Buffer + 0.5 µL DNARelease Additive)
Mouse	Ear	0.3 mm punch	2 mm punch
	Tail	0.3 mm punch	1–3 mm tail section
	Hair	1–5 hairs with follicles	>3 hairs with follicles
	Embryo	–	0.5 x 1 mm piece
	Organs** (such as spleen)	1 x 1 mm piece	1 x 1 mm piece
	Cultured cells (fibroblasts)†	–	10,000 cells
Human	Teeth	1 mm piece	13–15 mg
	Skin	0.3 mm punch	2 mm punch
	Fingernails	1 x 2 mm or <1 mg	~7 mg
	Saliva	0.2–0.5 µL	5 µL
	Amniotic fluid	0.5–2 µL	–
C. elegans		2–25 worms	25–40 worms‡
Drosophila		Wing (e.g., 1 x 2 mm)	Whole organism
Zebrafish	Fin (tail)	0.3 mm punch	1 x 5 mm piece
Whitefish	Fin (tail)	1 mm piece	1 x 5 mm piece
	Scale	0.3 mm punch	1 scale (approx. 2 mm diameter)
Agrilus viridis		–	One leg or 0.5 x 1 mm piece of body
Animal hair		1–5 hairs with follicles	>3 hairs with follicles
Bird feather		1–2 mm piece of quill end	2–3 mm piece of quill end
Muscle tissue		0.3 mm punch	2 mm punch

*Make sure the sample is covered with solution. If larger samples are used, adjust the volumes of Dilution Buffer and DNARelease™ Additive accordingly.

**The direct protocol is not recommended for fat or bone tissue.

†The cells were trypsinized, washed with PBS, and collected by centrifugation.

‡If fewer worms are used, adjust the volume of the Dilution Buffer and DNARelease Additive accordingly.

Find out more at **thermofisher.com/directpcr**

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