High-Throughput Livestock DNA Extraction Performance

High-throughput extraction workflows for bovine, ovine, porcine, equine and poultry samples used in SNP genotyping and NGS pipelines.

Performance Summary

METRIC	RESULT
SPECIES TESTED	Bovine, Ovine, Porcine, Equine, Poultry
SAMPLE TYPES TESTED	Tissue, TSU, Hair, Blood
TYPICAL YIELD	10ng/µL – 300ng/µL (dsDNA, fluorescence-based quant – Qubit)
INPUT MASS	5-25mg
FRAGMENT SIZE	~52kb
FORMAT	Magnetic Bead
AUTOMATION COMPATIBILITY	KingFisher, Hamilton, Tecan

Large-scale livestock genotyping programs require DNA extraction workflows that deliver consistent DNA yield and fragment integrity at high throughput while maintaining low per-sample costs.

Sample types such as ear punches, blood, semen, and hair follicles vary in cellular content and can introduce inhibitors that affect downstream assays.

Azora Biosciences has developed extraction workflows optimised for livestock samples including bovine, ovine, porcine, and equine, supporting high-volume genotyping pipelines used in breeding programs and veterinary diagnostics.

Core DNA Extraction Technology

Samples are lysed using a surfactant-based lysis buffer system with nuclease inhibitors and buffering components, enabling efficient disruption of cellular membranes and stabilisation of genomic DNA during extraction. DNA is subsequently captured on either silica-functionalised magnetic beads or silica membrane columns under chaotropic binding conditions. A single wash step is then used to remove residual impurities, followed by elution in Tris-EDTA buffer to generate purified genomic DNA suitable for downstream genotyping and sequencing workflows.

Fluorescence-quantified dsDNA Yields

Species	Sample Type	Binding Technique	Yield (dsDNA, Qubit, ng/µL)	Fragment Size Peak
Bovine	TSU – Tissue Punch	Magnetic Beads (Si-OH)	227	~ 52kb
Bovine	TSU - Preservative	Magnetic Beads (Si-OH)	16.0	Not available
Ovine	TSU – Tissue Punch	Magnetic Beads (Si-OH)	216	Not available
Porcine	Tissue Samples	Magnetic Beads (Si-OH)	131	Not available
Equine	Hair (20 Follicles)	Magnetic Beads (Si-OH)	6.9	Not available
Chicken	Blood in ethanol	Magnetic Beads (Si-OH)	29.2	Not available

Note: DNA yields are quantified using fluorescence-based dsDNA assays (Qubit), which measure only double-stranded DNA. Spectrophotometric methods (A260) commonly used in competitor specifications may overestimate DNA yield due to co-quantification of RNA and other contaminants.

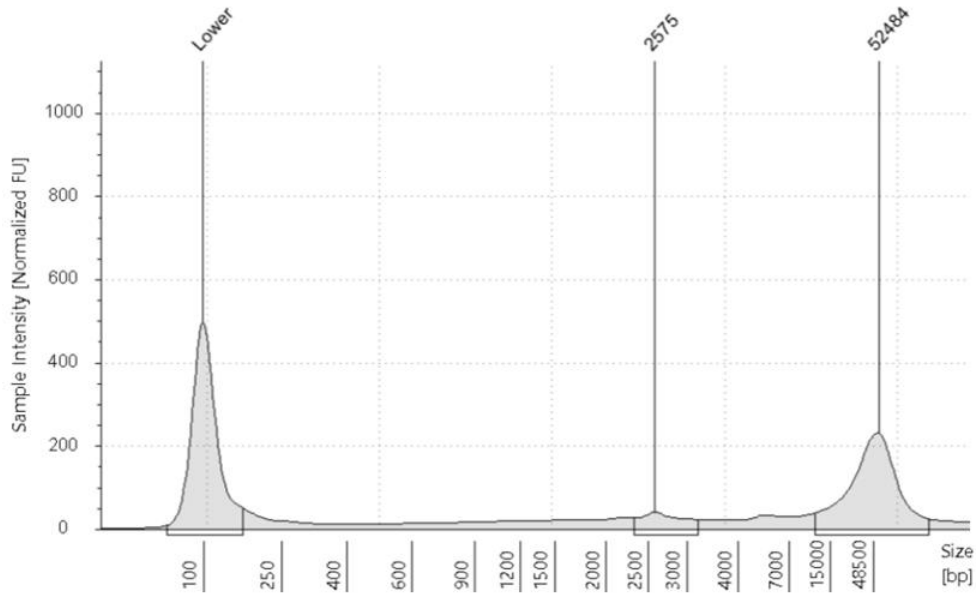

Figure 1. Fragment size distribution of bovine TSU DNA extracted using Azora workflow.

Downstream Genotyping Compatibility

- SNP Genotyping Microarrays (Infinium, Axiom)
- Sequence-Based Genotyping
- PCR-based SNP genotyping (KASP, PACE, TaqMan)

Use Cases

- Livestock breeding programs
- Parentage verification
- Genomic selection pipelines
- Veterinary genetic testing