

## Technical Note

### MagSi-DNA Animal and KingFisher Flex

#### Description

MagSi-DNA Animal allows fast and cost-effective extraction of DNA from various samples like blood, semen, hairs, saliva/swabs or lysed tissue. This universal DNA purification kit is optimized to extract DNA from these sample materials with the highest purity and delivering DNA which is suitable for genotyping assays or other qPCR based analysis. The extraction chemistry is validated on different species, e.g. horse, swine, dog, cattle and can be customized to meet any specific requirements of yields, purity, working volumes, allowing applications such as STR analysis, Illumina Infinium bead arrays and targeted sequencing data from various animal samples. The kit includes magnetic particles and can be easily automated on the KingFisher Flex magnetic particle processor (Thermo Fisher Scientific).

First, animal samples are incubated in Lysis Buffer U1 to release DNA from animal cells. After a centrifugation step to spin down sample debris, the cleared lysate is transferred to a deepwell plate for DNA extraction on the KingFisher Flex.

The KingFisher Flex instrument can process up to 96 samples in a single run. It uses magnetic rods that collect and transfer magnetic particles across microplates with a carousel-based design, eliminating the need for multiple pipette tips.

Carefully designed rod covers prevent from cross-contamination and allow for reproducible and efficient sample mixing and magnetic particle resuspension. The instrument can be integrated with liquid handling workstations and most other lab equipment typically found in DNA extraction processes, providing a walk-away solution.

#### User notes

- KingFisher Flex protocols are available on request (email: [info@magtivio.com](mailto:info@magtivio.com))
- The instrument protocol is compatible with BindIt™ 4.0 software
- For tips and advice on how to adapt the instrument protocol for software of the KingFisher 96 or MagMax Express instruments, please email [info@magtivio.com](mailto:info@magtivio.com)
- For further information about the MagSi-DNA Animal kit, please refer to the Product Manual.
- MagSi-DNA Animal is optimized for DNA extraction from blood, semen, hairs, and saliva/swabs. For other samples, the Lysis Buffer U1 can be exchanged with Lysis Buffer VT, offering a flexible solution for different sample types in a single extraction run.

Table 1: Reagents and equipment

Product	Art. No.	Required number per run
MagSi-DNA Animal (96 preps)	MDKT00150096	-
MagSi-DNA Animal (10x96 preps)	MDKT00150960	-
KingFisher Flex magnetic particle processor	5400620*	-
KingFisher Flex 96 Deepwell head	24074431*	-
2 ml Deepwell Plate with square wells for KingFisher™	MDPL00200060	4
200 µL square-well Elution Plate for KingFisher™	MDPL00190060	1
96 well Tip-Comb for KingFisher™	MDPL00210060	1

\*supplied by Thermo Fisher Scientific

## Importing the instrument protocol

To save the MagSi-DNA Animal protocol to your KingFisher Flex instrument:

- Open the BindIt software
  - Press “Connect” and select the KingFisher Flex instrument that you want to save the protocol to
  - Press “Transfer...” and select the folder you want to save the protocol to, e.g. User Protocols – DNA/RNA
1. Press “Upload” and select the protocol that you want to import: “MagSi-DNA-Animal.bdz”
  2. Optionally choose your own name for the protocol, and press OK. The software will now transfer the protocol to your KingFisher Flex instrument

## Protocol MagSi-DNA Animal

1. Fill the plates as described in Table 2:
  - Sample Plate (MagSi-AG IV and Binding Buffer U1 only)
  - Wash Buffer I (2 plates)
  - Wash Buffer II
  - Elution Buffer
2. Prepare a lysis Working Solution by adding Proteinase K and DTT to Lysis Buffer U1 as following:
  - Per 400 µL Lysis Buffer U1, add 20 µL Proteinase K (10 mg/mL), 20 µL DTT (1 M) (optional), and 10 µL RNase A (10 mg/mL) (optional)
  - Prepare a little more Lysis Working Solution than needed due to loss during pipetting (e.g. for 96 extraction prepare solution for 100 extractions).
3. Add 400 µL Lysis Working Solution to the sample material. Mix the samples on a plate shaker to increase lysis efficiency
4. Incubate samples at 56°C for 3 hours and then centrifuge 10 min at maximum speed to spin down cell debris
5. Transfer 300 µL lysate to the sample plate
6. Switch on the KingFisher Flex magnetic particle processor and select the “MagSi-DNA-Animal” protocol from the User Protocols
7. Start the protocol
8. Load the plates to the instrument, following the instructions on the instrument display
9. Make sure that all plates are inserted in the same orientation (especially when using partially filled plates). Place the A1 well of each plate to the A1 mark on the instruments turntable
10. At the end of the method remove all plates from the instrument. Follow the instructions on the instrument display

**Table 2.** Plate filling instructions for KingFisher Flex and MagSi-DNA-Animal protocol

Plate name	Plate type	Reagent	Volume
Sample Plate	2 ml Deepwell Plate with square wells for KingFisher™	Lysate Binding Buffer U1 MagSi-AG IV	300 µL 500 µL 20 µL
Wash Buffer I - 1	2 ml Deepwell Plate with square wells for KingFisher™	Wash Buffer I	800 µL
Wash Buffer I - 2	2 ml Deepwell Plate with square wells for KingFisher™	Wash Buffer I	800 µL
Wash Buffer II	2 ml Deepwell Plate with square wells for KingFisher™	Wash Buffer II	800 µL
Elution Buffer	200 µL square-well Elution Plate for KingFisher™	Elution Buffer	150 µL
Tip plate	2 ml Deepwell Plate with square wells for KingFisher™	Empty, for loading Tip-Comb only	N/A