

GENETIC VARIATION OF *HSP70.1* LOCUS IN CINISARA AND MODICANA CATTLE BREEDS

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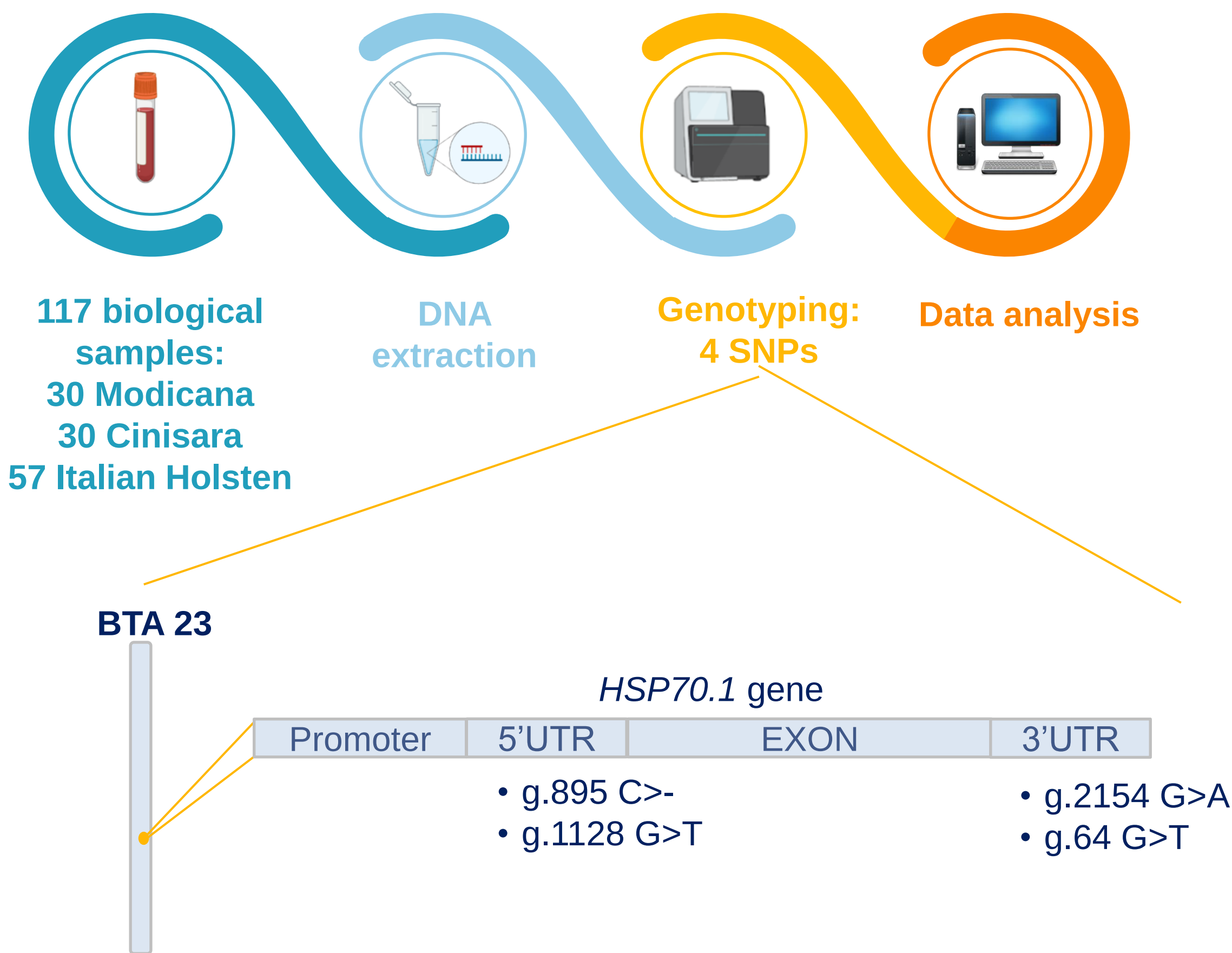


INTRODUCTION

Heat Shock Proteins (HSPs) are known to play crucial roles in environmental stress tolerance and thermal adaptation of animals. Among the HSP gene family, *HSP70.1* is believed to be temperature sensitive and induced by physiological, pathological, and environmental stressors. The present research aims to investigate the polymorphism of the *HSP70.1* gene (also known as *HSPA1A*) in two Sicilian native cattle breeds, Modicana and Cinisara, reared under hot climate conditions and, for comparison, in Italian Holstein.



MATERIAL AND METHODS



RESULTS

Table 1. Genotype and allele frequencies at the 4 analyzed SNPs

SNP	Breed	Genotypes (frequency %)			Allele frequency (%)	
		CC	C-	--	C	-
5'UTR 895 C>-	Modicana	25 (83.34)	4 (13.33)	1 (3.33)	90	10
	Cinisara	19 (63.34)	10 (33.33)	1 (3.33)	80	20
	Italian Holstein	47 (82.46)	9 (15.79)	1 (1.75)	90.35	9.65
5'UTR 1128 G>T	Modicana	0	10 (33.33)	20 (66.67)	16.7	83.3
	Cinisara	0	14 (46.67)	16 (53.33)	23.3	76.7
	Italian Holstein	0	11 (19.30)	33 (57.89)	12.5	87.5
3'UTR.64 G>T	Modicana	0	3 (10)	27 (90)	5.08	94.92
	Cinisara	0	3 (10)	27 (90)	5.08	94.92
	Italian Holstein	0	0	54 (100)	0	100
3'UTR 2154 G>A	Modicana	0	0	30 (100)	0	100
	Cinisara	0	0	28 (100)	0	100
	Italian Holstein	0	0	56 (100)	0	100

Table 2. Frequencies of haplotypes at the *HSP 70.1* locus in Sicilian cattle breeds

Modicana			Cinisara		
Haplotypes	Frequency	S.E	Haplotypes	Frequency	S.E
GCG	0.760	0.013	GCG	0.709	0.016
GCT	0.090	0.013	G-T	0.170	0.015
G-T	0.076	0.013	GCT	0.051	0.004
TCG	0.050	0.000	TCG	0.040	0.015
G-G	0.024	0.013	G-G	0.018	0.004

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CONCLUSIONS

The observed genetic variation at the *HSP70.1* locus provides new insights into the genetic determinism of thermotolerance in these Sicilian native breeds.