

# Additional file 1

**Table S1 Heritability ( $h^2$ ) and effect of paternal heat stress during spermatogenesis on daughters' performance**

Trait	Breed	N	$h^2$ in % $\pm$ SE	Effect of paternal heat stress before collections (in days) <sup>1</sup>			
				0	[1-10]	[11-20]	>20
Stature <sup>2</sup>	Hol	53,911	49 $\pm$ 2.1	0	0.0	0.0	0.0
	Mon	77,405	67 $\pm$ 1.7	0	0.0	0.0	-0.1
	Nor	21,376	60 $\pm$ 3.5	0	-0.2	-0.1	0.0
Milk yield (kg)	Hol	432,074	38 $\pm$ 0.8	0	5	-1	-4
	Mon	117,423	27 $\pm$ 1.4	0	7	9	-4
	Nor	86,520	31 $\pm$ 1.6	0	18	33	5
Fat yield (kg)	Hol	432,074	35 $\pm$ 0.8	0	0.4	0.0	0.6
	Mon	117,423	27 $\pm$ 1.4	0	0.4	0.4	-0.1
	Nor	86,520	30 $\pm$ 1.6	0	0.3	1.2	-1.6
Protein yield (kg)	Hol	432,074	31 $\pm$ 0.8	0	0.3	0.1	0.0
	Mon	117,423	24 $\pm$ 1.3	0	0.3	0.3	-0.2
	Nor	86,520	27 $\pm$ 1.5	0	0.6	1.2	-0.3
Somatic cell score	Hol	432,074	17 $\pm$ 0.7	0	0.00	-0.01	-0.01
	Mon	117,423	17 $\pm$ 1.1	0	-0.01	0.01	-0.03
	Nor	86,520	19 $\pm$ 1.3	0	0.01	0.01	-0.07
Clinical mastitis	Hol	246,761	1 $\pm$ 0.2	0	0.00	0.00	0.00
	Mon	54,096	1 $\pm$ 0.2	0	0.00	0.00	0.00
	Nor	36,323	2 $\pm$ 0.5	0	0.00	0.01	-0.07
Heifer conception rate (%)	Hol	610,953	1 $\pm$ 0.1	0	0.1	0.1	-0.2
	Mon	120,983	1 $\pm$ 0.2	0	-0.5	-0.7	-0.2
	Nor	95,840	1 $\pm$ 0.2	0	-0.8	-0.3	0.4
Cow conception rate (%)	Hol	300,260	2 $\pm$ 0.2	0	0.3	0.0	-1.1
	Mon	30,511	2 $\pm$ 0.6	0	0.5	2.3	2.3
	Nor	42,189	2 $\pm$ 0.4	0	-0.1	0.3	6.3

Hol=Holstein; Mon=Montbéliarde; Nor=Normande

<sup>1</sup>Days with THI>68 during spermatogenesis (60d to 0d prior to collection)

<sup>2</sup>Observation unit depends on cow breed: score from 1 to 9 in Holstein, cm in Montbéliarde and Normande breeds.

No significant difference between means (FDR<0.05)