Supplementary Table S1. *Databases used for the development of the miRNA SNiPer tool.*

miRNA SNiPer	Ensembl	miRBase	TargetScan	SNPchimp	Catalog	Reference
miRNA SNiPer 4.0 (15.8.2014)	release 76	release 21	release 6.2	SNPchimp v.2	MNPs in cattle	This study
miRNA SNiPer 3.0 (15.8.2012)	releases 68 and 66	release 19	release 6.2	-	Catalog 3.0 (farm animals)	Jevsinek Skok et al., 2013
miRNA SNiPer 2.0 (15.7.2012)	release 67	release 18	release 5.2	-	-	
miRNA SNiPer 1.1 (4.6.2012)	releases 66 and 64	release 18	release 5.2	-	-	Jevsinek Skok et al., 2012
miRNA SNiPer 1.0 (27.1.2012)	release 64	release 18	release 5.2	-	Catalog 1.0	Zorc et al., 2012

MNP: multiple nucleotide polymorphism

Supplementary Table S2. *Genomes with matching Ensembl and miRBase assemblies included in the miRNA SNiPer 4.0 tool.*

	Ensembl 76	**miRBase 21**
Genomes with matching Ensembl and miRBase assemblies		
chicken *Gallus gallus*	Galgal4	Gallus-gallus-4.0
zebra finch *Taeniopygia guttata*	taeGut3.2.4	taeGlu3.2.4
dog *Canis lupus familiaris*	CanFam3.1	CanFam3.1
horse *Equus caballus*	EquCab2	EquCab2.0
human *Homo sapiens*	GRCh38	GRCh38
orangutan *Pongo abelii*	PPYG2	PPYG2 *Pongo pygmaeus*
platypus *Ornithorhynchus anatinus*	OANA5	OANA5
mouse *Mus musculus*	GRCm38	GRCm38
rat *Rattus norvegicus*	Rnor_5.0	Rnor_5.0
cow *Bos taurus*	UMD3.1	UMD3.1
sheep *Ovis aries*	Oar_v3.1	OARv3.1
pig *Sus scrofa*	Sscrofa10.2	Sscrofa10.2
zebrafish *Danio rerio*	Zv9	Zv9
tetraodon *Tetraodon nigroviridis*	TETRAODON8	Tetraodon8
fruitfly	BDGP5	BDGP5.0

Drosophila melanogaster		
Genomes with non-matching Ensembl and miRBase assemblies		
opossum *Monodelphis domestica*	BROADO5	MonDom5
macaque *Macaca mulatta*	MMUL_1	CR_1.0
chimpanzee *Pan troglodytes*	CHIMP2.1.4	PanTro2.1.4
miRBase data not available		
cat *Felis catus*	Felis_catus_6.2	Not available
gibbon *Nomascus leucogenys*	Nleu1.0	Not available
Saccharomyces cerevisiae	R64-1-1	Not available
turkey *Meleagris gallopavo*	UMD2	Not available

Supplementary table S3. *Polymorphisms from commercial DNA-microarrays residing with miRNA gene regions in cattle, chicken, pig and sheep. Most of the SNPs overlap with pre-miRNA regions. In cattle and chicken six polymorphisms also resided within miRNA mature and seed regions. Out of these 46 polymorphic miRNAs 22 were intergenic; residing within protein-coding host gene.*

miRNA name	Array name*	rs number	SNP, array name	alleles	Genomic location	miRNA region	Host gene
bta-mir-32	Bov_AffyHD	rs377978899	AX-27617260	T/C	8: 100305174	premature	*TMEM245*
bta-mir-653	Bov_AffyHD	rs210132888	AX-25411531	A/G	4: 10653589	mature	*CALCR*
bta-mir-1291	Bov_AffyHD	rs110817643	AX-25972713	T/C	5: 31283924	seed	*SNORA2*,
							KANSL2
bta-mir-2292	Bov_AffyHD	rs209629713	AX-18879571	T/G	10: 67304464	seed	intergenic
bta-mir-2369	Bov_AffyHD,	rs135082893	AX-23296711,	A/G	22: 40172586	premature	*PTPRG*
	Bov_IlluHD		BovineHD2200011437				
bta-mir-6527	Bov_AffyHD,	rs110672364	AX-20181492,	T/C	13: 79549829	premature	*ADNP*
	Bov_IlluHD		BovineHD1300023001				
bta-mir-2355	Bov_GSeekHD,	rs110782690	BovineHD0200027534	A/G	2: 95834624	premature	*KLF7*
	Bov_IlluHD		BovineHD0200027534				
bta-mir-551b	Bov_IlluHD	rs135711811	BovineHD0100028452	A/G	1: 99671783	premature	intergenic
bta-mir-874	Bov_IlluHD	rs110808436	BovineHD0700014785	C/T	7: 50687460	premature	*KLHL3*
bta-mir-764	Bov_IlluHD	rs133587516	BovineHD3000019754	A/G	X: 67800471	premature	intergenic

bta-mir-2371	Bov_IlluHD	rs133066290	BovineHD2200013049	G/T	22: 45084598	premature	intergenic
bta-mir-2462	Bov_IlluHD	rs133596376	BovineHD0700024144	G/T	7: 82645316	premature	intergenic
gga-mir-124b	Chi_AffyHD	rs313414821	AX-76280403	A/G	23: 2183646	premature	intergenic
gga-mir-449a	Chi_AffyHD	rs14734667	AX-77194938	A/G	Z: 16561841	premature	*CDC20B*
gga-mir-451	Chi_AffyHD	rs316004208	AX-75934932	T/C	19: 5862883	premature	intergenic
gga-mir-460b	Chi_AffyHD	rs312563200	AX-76636017	T/G	4: 2677857	mature	intergenic
gga-mir-1458	Chi_AffyHD	rs318037097	AX-77124527	A/G	9: 10140276	premature	*U2SURP*
gga-mir-1605	Chi_AffyHD	rs318120419	AX-76704999	A/G	4: 62660899	mature	intergenic
gga-mir-1619	Chi_AffyHD	rs317855061	AX-80762545	C/G	20: 12990407	premature	*TSHZ2*
gga-mir-1625	Chi_AffyHD	rs312669708	AX-75843533	A/G	15: 7568834	premature	*TTC28*
gga-mir-1633	Chi_AffyHD	rs315305565	AX-80998524	C/G	8: 5302580	premature	intergenic
gga-mir-1654	Chi_AffyHD	rs313965319	AX-80970958	C/G	4: 88719872	premature	intergenic
gga-mir-1678	Chi_AffyHD	rs316970596	AX-75708874	T/C	12: 2560877	seed	*TRAIP*
gga-mir-1707	Chi_AffyHD	rs317792399	AX-75857341	T/C	17: 1824208	premature	intergenic
gga-mir-1747	Chi_AffyHD	rs316146257	AX-76125548	A/C	2: 61712163	mature	intergenic
gga-mir-1752	Chi_AffyHD	rs317410399	AX-76325015	A/G	25: 1457634	premature	*SYT11*
gga-mir-1762	Chi_AffyHD	rs15973568	AX-77134179	A/G	9: 13364408	premature	*IL1RAP*
gga-mir-1800	Chi_AffyHD	rs313122460	AX-76847518	A/G	5: 44412730	premature	*UNC79*
gga-mir-6560	Chi_AffyHD	rs14721055	AX-76948290	T/C	6: 31915249	premature	intergenic
gga-mir-6565	Chi_AffyHD	rs317939537	AX-77237123	A/G	Z: 55328645	seed	*ZNF462*
gga-mir-6575	Chi_AffyHD	rs316917518	AX-80786530	C/G	10: 2190036	premature	*SNUPN*
gga-mir-6578	Chi_AffyHD	rs313317647	AX-80781136	C/G	3: 104615552	premature	*HADHB*
gga-mir-6585	Chi_AffyHD	rs313282930	AX-75932106	A/G	19: 5052735	premature	intergenic

gga-mir-6589	Chi_AffyHD	rs313245867	AX-75630624	T/C	11: 10563130	premature	*WTIP*
gga-mir-6609	Chi_AffyHD	rs313235906	AX-75526135	T/C	1: 79371049	premature	intergenic
gga-mir-6675	Chi_AffyHD	rs314975023	AX-76307977	A/G	24: 3337510	premature	intergenic
gga-mir-6699	Chi_AffyHD	rs315627877	AX-76531793	T/G	3: 66859872	premature	*LACE1*
gga-mir-7441	Chi_AffyHD	rs316226699	AX-75858044	T/G	17: 2068115	premature	*EHMT1*
oar-mir-541	She_AgResHD	rs428016750	oar3_OAR18_64658432	A/C	18: 64658432	premature	intergenic
oar-mir-26a	She_AgResHD	rs416899392	oar3_OAR3_161555181	T/C	3: 161555181	premature	*CTDSP2*
ssc-mir-20b-1	Pig_GSeek80K	rs338088075	WU_10.2_X_126199852	T/C	X: 126199852	premature	intergenic
ssc-mir-371	Pig_Illu60Kv1	rs320008166	INRA0021527	A/G	6: 52738915	premature	intergenic

*SNP array names according to SNPchiMp:

Illumina Bovine3k BeadChip (2,900 SNP probes)
Illumina BovineLD BeadChip (6,909 SNP probes)
Illumina BovineLD v1.1 BeadChip (6912 SNP probes)
Illumina BovineSNP50v1 BeadChip (54,001 SNP probes)
Illumina BovineSNP50v2 BeadChip (54,609 SNP probes)
Illumina BovineHD BeadChip (777,962 SNP probes)
GeenSeek Genomic Profiler LD v1 (8,610 SNP probes)
GeneSeek Genomic Profiler LD v2 (19,721 SNP probes)
GeneSeek Genomic Profiler LD v3 (26,151 SNP probes)
GeneSeek Genomic Profiler HD (76,879 SNP probes)
Affymetrix Axiom ® Bovine (648,875 SNP probes)
Illumina Infinium PorcineSNP60 v1 BeadChip (62,163 SNP probes)
Illumina Infinium PorcineSNP60 v2 BeadChip (61,565 SNP probes)
GeneSeek-Neogen Genomic Profiler 10k BeadChip (10,241 SNP probes)
GeneSeek-Neogen PorcineSNP80 BeadChip (68,528 SNP probes)
Illumina Infinium EquineSNP50 BeadChip (54,602 SNP probes)
GeneSeek EquineSNP65 BeadChip (65,157 SNP probes)
Illumina Infinium Ovine SNP50 v1 BeadChip (54,241 SNP probes)

AgResearch OvineHD BeadChip (606,006 SNP probes)
Affymetrix Axiom ® Chicken (580,961 SNP probes)

***Supplementary table S4**. The catalog of MNPs within mature miRNA seed regions in cattle. 61 polymorphic miRNA genes include 148 polymorphisms, forming two or more consecutive polymorphisms in 65 cases: 56 dinucleotide polymorphisms (DNPs), including two cases of consecutive SNP and indel within bta-mir-2285l and bta-mir-2450d, three triple nucleotide polymorphisms (TNPs) within bta-mir-154b, bta-mir-212 and bta-mir-2466, four four-nucleotide polymorphisms within bta-mir-205, bta-mir-2987, bta-mir-2901 and bta-mir-6517, one five-nucleotide polymorphism within bta-mir-763 and one six-nucleotide polymorphisms within bta-mir-346 mature miRNA seed regions. Out of 148 collected polymorphisms there are 146 SNPs and two indel polymorphisms: one within bta-mir-2450d comprising 3 bp and one within bta-mir-2285l comprising 13 bp. Four bovine miRNA genes have two DNPs within one mature seed region: bta-mir-551a, bta-mir-877, bta-mir-1260b, and bta-mir-2415.*

miRNA name	Host gene	pre-miRNA location	Polymorphism ID	Polymorphism detail	Polymorphism location
bta-let-7b	intergenic	5:117120185-117120265[+]	rs459651530	SNP (G > T)	117120191
			rs479714052	SNP (A > G)	117120192
bta-let-7e	intergenic	18:58015036-58015114[+]	rs469527967	SNP (G > C)	58015047
			rs436704354	SNP (T > G)	58015048
bta-mir-9-1	intergenic	21:21250101-21250190[+]	rs454109370	SNP (G > T)	21250122
			rs470889289	SNP (T > G)	21250123
bta-mir-15a	intergenic	12:19596346-19596428[-]	rs446910362	SNP (G > T)	19596409
			rs462146224	SNP (C > T)	19596410
bta-mir-29a	intergenic	4:95402319-95402382[-]	rs474820286	SNP (G > T)	95402335

			rs442039243	SNP (G > A)	95402336
bta-mir-92a-2	intergenic	X:17917857-17917924[-]	rs456126739	SNP (A > C)	17917882
			rs471433708	SNP (T > A)	17917883
bta-mir-96	intergenic	4:94411193-94411295[-]	rs467662413	SNP (G > A)	94411267
			rs479729308	SNP (C > T)	94411268
bta-mir-125b-1	intergenic	15:33298815-33298902[-]	rs432479863	SNP (C > A)	33298881
			rs461386600	SNP (T > A)	33298882
bta-mir-132	intergenic	19:23651140-23651240[-]	rs462714904	SNP (G > A)	23651175
			rs481284131	SNP (A > G)	23651176
bta-mir-133a-2	*MIB1*, intron	24:34844415-34844501[+]	rs137070651	SNP (T > C)	34844471
			rs453577305	SNP (C > T)	34844472
bta-mir-136	intergenic, *bta-mir-433*	21:67431418-67431509[+]	rs456207375	SNP (C > T)	67431441
			rs476420449	SNP (A > C)	67431442
bta-mir-154b	intergenic	21:67598357-67598437[+]	rs481838108	SNP (T > C)	67598372
			rs451111223	SNP (C > T)	67598373
			rs467891415	SNP (T > A)	67598374
bta-mir-194-2	intergenic	29:43731460-43731542[+]	rs467314058	SNP (G > C)	43731475
			rs435906796	SNP (T > C)	43731476
bta-mir-196a-2	intergenic	5:26199801-26199885[-]	rs452341312	SNP (A > G)	26199863
			rs470861209	SNP (C > T)	26199864
bta-mir-199a-1	intergenic	16:40491602-40491705[-]	rs449833354	SNP (T > G)	40491634
			rs469817377	SNP (G > A)	40491635
bta-mir-205	intergenic	16:75799966-75800034[-]	rs475124045	SNP (T > G)	75800022

			rs436144399	SNP (G > A)	75800023
			rs456316908	SNP (A > T)	75800024
			rs476434413	SNP (A > C)	75800025
bta-mir-206	intergenic	23:24308042-24308127[+]	rs459589006	SNP (T > G)	24308099
			rs479577983	SNP (G > A)	24308100
bta-mir-212	intergenic	19:23651570-23651680[-]	rs472102044	SNP (C > A)	23651644
			rs439103821	SNP (A > C)	23651645
			rs456883153	SNP (A > C)	23651646
bta-mir-224	*GABRE*, intron	X:34664590-34664670[-]	rs448846818	SNP (A > T)	34664659
			rs467402295	SNP (C > T)	34664660
bta-mir-320a-1	intergenic	8:70060384-70060465[-]	rs453363074	SNP (C > A)	70060403
			rs438933190	SNP (A > C)	70060404
bta-mir-346	intergenic	28:41329055-41329149[-]	rs476404494	SNP (G > C)	41329124
			rs437163819	SNP (C > A)	41329125
			rs455988115	SNP (A > G)	41329126
			rs474527328	SNP (G > C)	41329127
			rs441539028	SNP (A > C)	41329128
			rs459876561	SNP (C > A)	41329129
bta-mir-371	intergenic	18:61145844-61145922[-]	rs434554305	SNP (C > A)	61145873
			rs451527434	SNP (T > A,G)	61145874
bta-mir-409b	intergenic	21:67603246-67603324[-]	rs469397798	SNP (C > A,G)	67603309
			rs437965754	SNP (C > G)	67603310
bta-mir-421	intergenic	X:82024079-82024163[+]	rs478791627	SNP (T > A)	82024127

			rs445711260	SNP (C > A)	82024128
bta-mir-449c	intergenic	20:23962986-23963091[-]	rs439749670	SNP (T > C)	23963065
			rs458268566	SNP (G > T)	23963066
bta-mir-455	*COL27A1*, intron	8:105147047-105147135[+]	rs457340111	SNP (C > G)	105147101
			rs471021037	SNP (A > T)	105147102
bta-mir-551a	*MEGF6,* intron	16:50741093-50741187[+]	rs136014887	SNP (C > T)	50741153
			rs482148314	SNP (G > T)	50741154
			rs449058712	SNP (C > G)	50741157
			rs467607990	SNP (C > A)	50741158
bta-mir-763	*HMGA,* intron	5:48164007-48164126[-]	rs433455703	SNP (A > C,G)	48164084
			rs456821331	SNP (G > C)	48164085
			rs476820905	SNP (C > G)	48164086
			rs435813492	SNP (T > C)	48164087
			rs455946744	SNP (G > C,T)	48164088
bta-mir-877	*ABCF1,* intron	23:28203151-28203252[-]	rs454510623	SNP (C > G)	28203237
			rs476247953	SNP (T > C)	28203238
			rs443320667	SNP (T > C)	28203240
			rs458682455	SNP (A > C,G)	28203241
bta-mir-1224	*VWA5B2,* intron	1:83546862-83546947[-]	rs433863816	SNP (G > C)	83546940
			rs452255928	SNP (T > C)	83546941
bta-mir-1260b	intergenic	15:14156932-14157031[-]	rs470364092	SNP (G > A)	14157005
			rs134960452	SNP (T > A,G)	14157006
			rs452203781	SNP (G > A)	14157009

			rs465785912	SNP (A > T)	14157010
bta-mir-1281	intergenic	5:112802157-112802210[+]	rs443114535	SNP (G > T)	112802191
			rs463223366	SNP (C > G)	112802192
bta-mir-1584	*TAGLN,* intron	3:9881758-9881830[+]	rs437900531	SNP (C > T)	9881808
			rs462384121	SNP (C > T)	9881809
bta-mir-1839	*MROH1,* intron *SCARNA15,* exon	14:1883846-1883917[-]	rs461162014	SNP (T > C)	1883906
			rs482944245	SNP (A > C)	1883907
bta-mir-2284n	intergenic	16:78343038-78343107[-]	rs441758056	SNP (A > C,T)	78343095
			rs455322691	SNP (C > T)	78343096
bta-mir-2285l	*FH1,* intron	2:103938884-103938965[-]	rs476688386	SNP (C > G,T)	103938909
			rs379852295	indel (GGGTTTTTCTCTA > -)	103938910
bta-mir-2286	intergenic	1:52194906-52194979[-]	rs470915147	SNP (T > G)	52194929
			rs441057138	SNP (G > C)	52194930
bta-mir-2291	intergenic	10:65462367-65462440[-]	rs452851516	SNP (T > C)	65462395
			rs472610965	SNP (C > G)	65462396
bta-mir-2308	*ARHGAP39,* intron	14:1566933-1567001[+]	rs434276652	SNP (T > G)	1566982
			rs455948057	SNP (T > G)	1566983
bta-mir-2309	*PLEC,* intron	14:2071851-2071925[+]	rs437935043	SNP (G > T)	2071862
			rs456349159	SNP (T > G)	2071863
bta-mir-2313	*GRAMD1B,* intron	15:34628901-34628974[+]	rs432053091	SNP (G > C)	34628914
			rs452225710	SNP (C > A)	34628915
bta-mir-2328	*ZNF821,* intron	18:39351757-39351834[+]	rs434053279	SNP (C > T)	39351768

			rs211359618	SNP (C > G)	39351769
bta-mir-2369	*PTPRG,* intron	22:40172533-40172602[-]	rs136780194	SNP (A > G)	40172555
			rs483309736	SNP (A > C)	40172556
bta-mir-2381	intergenic	24:49737880-49737949[+]	rs442506482	SNP (C > G)	49737929
			rs462738247	SNP (T > A,C)	49737930
bta-mir-2387	*GTf2IRD1,* intron	25:33439513-33439590[-]	rs451324215	SNP (T > A)	33439573
			rs476436791	SNP (T > G)	33439574
bta-mir-2397	*GLRX3,* intron	26:49743766-49743839[+]	rs452506488	SNP (G > T)	49743775
			rs460645228	SNP (T > G)	49743776
bta-mir-2399	*RBPMS,* intron	27:25707598-25707675[+]	rs449896100	SNP (C > A)	25707614
			rs470002702	SNP (T > C)	25707615
bta-mir-2402	intergenic	28:7879943-7880010[+]	rs460156761	SNP (T > C)	7879986
			rs137803906	SNP (A > C)	7879987
bta-mir-2408	*PC*, intron	29:45520786-45520846[-]	rs433109634	SNP (C > G,T)	45520802
			rs450254573	SNP (A > T)	45520803
bta-mir-2415	intergenic	3:102923772-102923838[+]	rs458298536	SNP (A > C)	102923818
			rs477821732	SNP (G > T)	102923819
			rs449638076	SNP (C > A)	102923822
			rs463459379	SNP (T > C)	102923823
bta-mir-2443	intergenic	5:117119640-117119712[+]	rs445345550	SNP (C > A)	117119654
			rs465311264	SNP (A > C)	117119655
bta-mir-2450d	*HTT,* intron	6:107740564-107740636[-]	rs135827669	indel (CAT > -)	107740588
			rs474210058	SNP (A > G)	107740589

bta-mir-2466	*PALLD,* intron	8:907842-907899[+]	rs439039274	SNP (T > C)	907847
			rs457487498	SNP (C > A)	907848
			rs476035710	SNP (C > G)	907849
bta-mir-2467	intergenic	8:1172021-1172099[-]	rs462529867	SNP (C > G)	1172052
			rs474685823	SNP (T > A)	1172053
bta-mir-2486	intergenic	X:92281828-92281906[-]	rs483300466	SNP (C > T)	92281856
			rs442854072	SNP (A > T)	92281857
bta-mir-2489	*SAMD12,* intron	14:48094677-48094754[+]	rs110544069	SNP (C > T)	48094694
			rs109834057	SNP (A > G)	48094695
bta-mir-2883	intergenic	18:8166056-8166120[+]	rs207829955	SNP (C > T)	8166103
			rs382388531	SNP (G > A)	8166104
bta-mir-2897	intergenic	18:54224747-54224815[+]	rs463016346	SNP (G > C,T)	54224751
			rs476574836	SNP (G > C,T)	54224752
			rs438868336	SNP (A > T)	54224753
			rs459001471	SNP (G > C)	54224754
bta-mir-2901	intergenic	18:40433025-40433107[+]	rs483315266	SNP (A > G)	40433089
			rs444655049	SNP (G > A)	40433090
			rs448380039	SNP (T > A,G)	40433091
			rs468599425	SNP (G > C)	40433092
bta-mir-2957	*COPZ2,* intron	19:39081172-39081242[-]	rs469287676	SNP (T > C)	39081234
			rs477805418	SNP (T > C)	39081235
bta-mir-6517	intergenic	10:42712635-42712712[+]	rs478343723	SNP (C > T)	42712646
			rs445261754	SNP (A > C)	42712647

			rs470115624	SNP (G > T)	42712648
			rs437133286	SNP (G > T)	42712649