

Supplementary Material

Cow_SoX-1	MYSMMETDLHSPGGAQAPTNLSGPAGAGGGGGGGGGG---SKANQDRVRRKPMNAFMVWSRGQRRKMAQENPKMHNSEISKRLGAEWKVM	87
Buffalo_SoX-1	MYSMMETDLHSPGGAQAPTNLSGPAGAGGGGGGGGGG---SKANQDRVRRKPMNAFMVWSRGQRRKMAQENPKMHNSEISKRLGAEWKVM	88
Goat_SoX-1	MYSMMETDLHSPGGAQAPTNLSGPAGAGGGGGGGGGGGSKANQDRVRRKPMNAFMVWSRGQRRKMAQENPKMHNSEISKRLGAEWKVM	90
Sheep_SoX-1	MYSMMETDLHSPGGAQAPTNLSGPAGAGGGGGGGGGG---SKANQDRVRRKPMNAFMVWSRGQRRKMAQENPKMHNSEISKRLGAEWKVM	89
Cow_SoX-1	SEAEKRPFIDEAKRLRALHMKEHPDYKYRPRRKTLLKKDKYSLAGLLAAGAGGGAAVAVGVGAAAVGQRLSPGGAAGGGYAHVNGW	177
Buffalo_SoX-1	SEAEKRPFIDEAKRLRALHMKEHPDYKYRPRRKTLLKKDKYSLAGLLAAGAGGGAAVAVGVGAAAVGQRLSPGGAAGGGYAHVNGW	178
Goat_SoX-1	SEAEKRPFIDEAKRLRALHMKEHPDYKYRPRRKTLLKKDKYSLAGLLAAGAGGGAAVAVGVGAAAVGQRLSPGGAAGGGYAHVNGW	180
Sheep_SoX-1	SEAEKRPFIDEAKRLRALHMKEHPDYKYRPRRKTLLKKDKYSLAGLLAAGAGGGAAVAVGVGAAAVGQRLSPGGAAGGGYAHVNGW	179
Cow_SoX-1	ANGAYPGSVAAAAAAAAAMQEAQLAYGQHPGAGGAHPHAHPAHPAHPHHPHAPHNPQPMHRYDMGALQYSPISNSQGYMSASPSGYGGLP	267
Buffalo_SoX-1	ANGAYPGSVAAAAAAAAAMQEAQLAYGQHPGAGGAHPHAHPAHPAHPHHPHAPHNPQPMHRYDMGALQYSPISNSQGYMSASPSGYGGLP	268
Goat_SoX-1	ANGAYPGSVAAAAAAAAAMQEAQLAYGQHPGAGGAHPHAHPAHPAHPHHPHAPHNPQPMHRYDMGALQYSPISNSQGYMSASPSGYGGLP	270
Sheep_SoX-1	ANGAYPGSVAAAAAAAAAMQEAQLAYGQHPGAGGAHPHAHPAHPAHPHHPHAPHNPQPMHRYDMGALQYSPISNSQGYMSASPSGYGGLP	269
Cow_SoX-1	YGAAGGAHQNSAVAAAAAAAAASSGALGALGSLVKSEPSGPPAAHSRAPCPGDLREMISMYLPAGEGGDPAQAQSRRLHSLPPHYQAG	357
Buffalo_SoX-1	YGAAGGAHQNSAVAAAAAAAAASSGALGALGSLVKSEPSGPPAAHSRAPCPGDLREMISMYLPAGEGGDPAQAQSRRLHSLPPHYQAG	358
Goat_SoX-1	YGAAGGAHQNSAVAAAAAAAAASSGALGALGSLVKSEPSGPPAAHSRAPCPGDLREMISMYLPAGEGGDPAQAQSRRLHSLPPHYQAG	360
Sheep_SoX-1	YGAAGGAHQNSAVAAAAAAAAASSGALGALGSLVKSEPSGPPAAHSRAPCPGDLREMISMYLPAGEGGDPAQAQSRRLHSLPPHYQAG	359
Cow_SoX-1	AGANGTVPLTHI	369
Buffalo_SoX-1	AGANGTVPLTHI	370
Goat_SoX-1	AGANGTVPLTHI	372
Sheep_SoX-1	AGANGTVPLTHI	371

Figure S1. Comparative amino acid analysis of Sox1 gene in Cattle, buffalo, Sheep, and Goat

Cow_SoX-2	MYNMMETELKPPGPGQQTSGGGGGGGG---NSTAAAAGGNQKNSPDRVRRKPMNAFMVWSRGQRRKMAQENPKMHNSEISKRLGAEWKLLSETE	89
Buffalo_SoX-2	MYNMMETELKPPGPGQQTSGGGGGGGG---NSTAAAAGGNQKNSPDRVRRKPMNAFMVWSRGQRRKMAQENPKMHNSEISKRLGAEWKLLSETE	90
Goat_SoX-2	MYNMMETELEKPPGPGQQTSGGGGGGGG---NSTAAAAGGNQKNSPDRVRRKPMNAFMVWSRGQRRKMAQENPKMHNSEISKRLGAEWKLLSETE	89
Sheep_SoX-2	MYNMMETELKPPGPGQQTSGGGGGGGG---NSTAAAAGGNQKNSPDRVRRKPMNAFMVWSRGQRRKMAQENPKMHNSEISKRLGAEWKLLSETE	89
Cow_SoX-2	KRPFIDEAKRLRALHMKEHPDYKYRPRRKTLLMKDKYTLPGGLLAPGGNSMASGCVGVGAGLGAGVNRMDSYAHMNGWSNGSYSMMD	179
Buffalo_SoX-2	KRPFIDEAKRLRALHMKEHPDYKYRPRRKTLLMKDKYTLPGGLLAPGGNSMASGCVGVGAGLGAGVNRMDSYAHMNGWSNGSYSMMD	180
Goat_SoX-2	KRPFIDEAKRLRALHMKEHPDYKYRPRRKTLLMKDKYTLPGGLLAPGGNSMASGCVGVGAGLGAGVNRMDSYAHMNGWSNGSYSMMD	179
Sheep_SoX-2	KRPFIDEAKRLRALHMKEHPDYKYRPRRKTLLMKDKYTLPGGLLAPGGNSMASGCVGVGAGLGAGVNRMDSYAHMNGWSNGSYSMMD	179
Cow_SoX-2	QLGYPQHPGLNAHGAAQMPMHRYDVSALQYNSMTSSQTYMNGSPTYSMSYSQQGTPGMALGSMGVSVKSEASSPPVVTSSSHSRAPCC	269
Buffalo_SoX-2	QLGYPQHPGLNAHGAAQMPMHRYDVSALQYNSMTSSQTYMNGSPTYSMSYSQQGTPGMALGSMGVSVKSEASSPPVVTSSSHSRAPCC	270
Goat_SoX-2	QLGYPQHPGLNAHGAAQMPMHRYDVSALQYNSMTSSQTYMNGSPTYSMSYSQQGTPGMALGSMGVSVKSEASSPPVVTSSSHSRAPCC	269
Sheep_SoX-2	QLGYPQHPGLNAHGAAQMPMHRYDVSALQYNSMTSSQTYMNGSPTYSMSYSQQGTPGMALGSMGVSVKSEASSPPVVTSSSHSRAPCC	269
Cow_SoX-2	AGDLRDMISMYLPGREVEPEPAAPSRRLHMSQHYQSGFVPGTAINGTLPLSHM	320
Buffalo_SoX-2	AGDLRDMISMYLPGREVEPEPAAPSRRLHMSQHYQSGFVPGTAINGTLPLSHM	321
Goat_SoX-2	AGDLRDMISMYLPGREVEPEPAAPSRRLHMSQHYQSGFVPGTAINGTLPLSHM	320
Sheep_SoX-2	AGDLRDMISMYLPGREVEPEPAAPSRRLHMSQHYQSGFVPGTAINGTLPLSHM	320

Figure S2. Comparative amino acid analysis of Sox2 gene in cattle, buffalo, sheep, and goat

Cow_SOX-3	-----MRPARDHASGASSLRG	GPADLARTTAASLPFPDPRAQRPPSAPPT	45
Buffalo_SOX-3	MIGQGASLQACQSPGLRVARGGPSNPEGSEQVYKRPGERPTRLR	MRPARDHASGASSLRG	90
Goat_SOX-3	-----MRPARDHASGASSLRG	GPADLARTTAASLPFPDPRAQRPPSAPPT	45
Sheep_SOX-3	-----MRPARDHASGASSLRG	GPADLARTTAASLPFPDPRAQRPPSAPPT	45
Cow_SOX-3	ESPGLFTVAAPAPGAPSPATLAHLLPAPAMYSLLET	ELKNPVGPPTPAAGAGGPAAPGGAGKSSANAGGGANAGGSSGGASAGGGGGG	135
Buffalo_SOX-3	ESPGLFTVAAPAPGAPSPATLAHLLPAPAMYSLLET	ELKNPVGPPTPAAGAGGPAAPGGAGKSSANAGGGANAGGSSGGASAGGGGGG	180
Goat_SOX-3	ESPGLFTVAAPAPGAPSPATLAHLLPAPAMYSLLET	ELKNPVGPPTPAAGAGGPAAPGGAGKSSANAGGGANAGGSSGGASAGGGGGG	135
Sheep_SOX-3	ESPGLFTVAAPAPGAPSPATLAHLLPAPAMYSLLET	ELKNPVGPPTPAAGAGGPAAPGGAGKSSANAGGGANAGGSSGGASAGGGGGG	135
Cow_SOX-3	GGGGGG-SDQDRVKRPMAFMVWSRGQRRKMALENPKMHNSEISKRLGADWKLLTDAEKRPFI	EAKRLRAVHMKEYPDYKYRPRRKT	224
Buffalo_SOX-3	GGGGGG-SDQDRVKRPMAFMVWSRGQRRKMALENPKMHNSEISKRLGADWKLLTDAEKRPFI	EAKRLRAVHMKEYPDYKYRPRRKT	270
Goat_SOX-3	GGGGGG-SDQDRVKRPMAFMVWSRGQRRKMALENPKMHNSEISKRLGADWKLLTDAEKRPFI	EAKRLRAVHMKEYPDYKYRPRRKT	224
Sheep_SOX-3	GGGGGG-SDQDRVKRPMAFMVWSRGQRRKMALENPKMHNSEISKRLGADWKLLTDAEKRPFI	EAKRLRAVHMKEYPDYKYRPRRKT	224
Cow_SOX-3	TLLKKDKYSLPGGLLPPGAAAAAAAAAAAAASSPVGVGQR	LDTYTHVNGWANGAYSLVQEQ	314
Buffalo_SOX-3	TLLKKDKYSLPGGLLPPGAAAAAAAAAAAAASSPVGVGQR	LDTYTHVNGWANGAYSLVQEQ	360
Goat_SOX-3	TLLKKDKYSLPGGLLPPGAAAAAAAAAAAAASSPVGVGQR	LDTYTHVNGWANGAYSLVQEQ	314
Sheep_SOX-3	TLLKKDKYSLPGGLLPPGAAAAAAAAAAAAASSPVGVGQR	LDTYTHVNGWANGAYSLVQEQ	314
Cow_SOX-3	LQYSPMPPGAQSYMNAAAAAAAAAASGYGSMAPSA	AAAAAAAAAYGQQPAAAAAAAAAMSLGPMGT	404
Buffalo_SOX-3	LQYSPMPPGAQSYMNAAAAAAAAAASGYGSMAPSA	AAAAAAAAAYGQQPAAAAAAAAAMSLGPMGT	450
Goat_SOX-3	LQYSPMPPGAQSYMNAAAAAAAAAASGYGSMAPSA	AAAAAAAAAYGQQPAAAAAAAAAMSLGPMGT	404
Sheep_SOX-3	LQYSPMPPGAQSYMNAAAAAAAAAASGYGSMAPSA	AAAAAAAAAYGQQPAAAAAAAAAMSLGPMGT	404
Cow_SOX-3	MISMYPGGDAADAASPLP	GGRLHSHVHQHYQAGTAVNGTVPLTHI	451
Buffalo_SOX-3	MISMYPGGDAADAASPLP	GGRLHSHVHQHYQAGTAVNGTVPLTHI	497
Goat_SOX-3	MISMYPGGDAADAASPLP	GGRLHSHVHQHYQAGTAVNGTVPLTHI	451
Sheep_SOX-3	MISMYPGGDAADAASPLP	GGRLHSHVHQHYQAGTAVNGTVPLTHI	451

Figure S3. Comparative amino acid analysis of Sox3 gene in cattle, buffalo, sheep, and goat

Cow_SOX-4	MVQQTNNAENTEALLAGESSDSGAGLELGIASSPTPGSTASTGGKADDP	PSWCKTPSGHIKRP	MNAPMVWSQIERRKIMEQSPDMHNAEIS	90		
Buffalo_SOX-4	MVQQTNNAENTEALLAGESSDSGAGLELGIASSPTPGSTASTGGKADDP	PSWCKTPSGHIKRP	MNAPMVWSQIERRKIMEQSPDMHNAEIS	90		
Goat_SOX-4	MVQQTNNAENTEALLAGESSDSGAGLELGIASSPTPGSTASTGGKADDP	PSWCKTPSGHIKRP	MNAPMVWSQIERRKIMEQSPDMHNAEIS	90		
Sheep_SOX-4	MVQQTNNAENTEALLAGESSDSGAGLELGIASSPTPGSTASTGGKADDP	PSWCKTPSGHIKRP	MNAPMVWSQIERRKIMEQSPDMHNAEIS	90		
Cow_SOX-4	KRLGKRWLLKDSKIPFIREAERLRLKHMADYPDYKYRPRKKVKS	GNANSGSAAAAASKPGEKGD	KVGGSGHGGGGGGSHAGGGGGG	180		
Buffalo_SOX-4	KRLGKRWLLKDSKIPFIREAERLRLKHMADYPDYKYRPRKKVKS	GNANSGSAAAAASKPGEKGD	KVGGSGHGGGGGGSHAGGGGGG	180		
Goat_SOX-4	KRLGKRWLLKDSKIPFIREAERLRLKHMADYPDYKYRPRKKVKS	GNANSGSAAAAASKPGEKGD	KVGGSGHGGGGGGSHAGGGGGG	180		
Sheep_SOX-4	KRLGKRWLLKDSKIPFIREAERLRLKHMADYPDYKYRPRKKVKS	GNANSGSAAAAASKPGEKGD	KVGGSGHGGGGGGSHAGGGGGG	180		
Cow_SOX-4	ASGGGANSKPAQKKSCGSKVAGGGV	GKPHAKLILAGGGGKAAATA	ASASSSSSSS--FAAEQAGAAALP	MGAAAAADH	HSLYKARTP	268
Buffalo_SOX-4	ASGGGANSKPAQKKSCGSKVAGGGV	GKPHAKLILAGGGGKAAATA	ASASSSSSSS--FAAEQAGAAALP	MGAAAAADH	HSLYKARTP	268
Goat_SOX-4	ASGGGANSKPAQKKSCGSKVAGGGV	GKPHAKLILAGGGGKAAAV	ASASSSSSSSSSFAAEQAGAAALP	MGAAAAADY	HSLYKARTP	270
Sheep_SOX-4	ASGGGANSKPAQKKSCGSKVAGGGV	GKPHAKLILAGGGGKAAATA	ASASSSSSSSSSFAAEQAGAAALP	MGAAAAADH	HSLYKARTP	270
Cow_SOX-4	--GASASAAAASAGLAAPGKHL	AEKKV	KRVYLFGGGASSSPVGGV	GAGADPSDPLGLYEEGGAGCSPD	GPSLSGRSSAASSPAAGRSP	356
Buffalo_SOX-4	--GASASAAAASAGLAAPGKHL	AEKKV	KRVYLFGGGASSSPVGGV	GAGADPSDPLGLYEEGGAGCSPD	GPSLSGRSSAASSPAAGRSP	356
Goat_SOX-4	SASASASAAAASAGLAAPGKHL	AEKKV	KRVYLFGGGASSSPVGGV	GAGADPSDPLGLYEEGGAGCSPD	GPSLSGRSSAASSPAAGRSP	360
Sheep_SOX-4	SASASASAAAASAGLAAPGKHL	AEKKV	KRVYLFGGGASSSPVGGV	GAGADPSDPLGLYEEGGAGCSPD	GPSLSGRSSAASSPAAGRSP	360
Cow_SOX-4	ADHRSYASLRAASPAPSSAPSHASSS	ASASSSSSSSSSSSSSSSSSS	SSSSSSDDEFEDDLLDLPSSNFES	MSLGSFSSSSALDRDLDFNFEP	445	
Buffalo_SOX-4	ADHRSYASLRAASPAPSSAPSHASSS	ASASSSSSSSSSSSSSSSSSS	SSSSSSDDEFEDDLLDLPSSNFES	MSLGSFSSSSALDRDLDFNFEP	446	
Goat_SOX-4	ADHRSYASLRAASPAPSSAPSHASSS	ASASSSSSSSSSSSSSSSSSS	SSSSSSDDEFEDDLLDLPSSNFES	MSLGSFSSSSALDRDLDFNFEP	449	
Sheep_SOX-4	ADHRSYASLRAASPAPSSAPSHASSS	ASASSSSSSSSSSSSSSSSSS	SSSSSSDDEFEDDLLDLPSSNFES	MSLGSFSSSSALDRDLDFNFEP	449	
Cow_SOX-4	GSGSHFEPDYCTPEVSEMISGDWLESSISNLVFTY				481	
Buffalo_SOX-4	GSGSHFEPDYCTPEVSEMISGDWLESSISNLVFTY				482	
Goat_SOX-4	GSGSHFEPDYCTPEVSEMISGDWLESSISNLVFTY				485	
Sheep_SOX-4	GSGSHFEPDYCTPEVSEMISGDWLESSISNLVFTY				485	

Figure S4. Comparative amino acid analysis of Sox4 gene in cattle, buffalo, sheep, and goat

Cow_SOX-5	MLTDPDLPQEFERMSSKRSPASPYGEADGEVAMVTSRQKVEEESDGLPAFHLPLHVSPNKPHEEFQPVSLLTQETCGHRTPTASQHNMTM	90
Buffalo_SOX-5	MLTDPDLPQEFERMSSKRSPASPYGEADGEVAMVTSRQKVEEESDGLPAFHLPLHVSPNKPHEEFQPVSLLTQETCGHRTPTASQHNMTM	90
Goat_SOX-5	MLTDPDLPQEFERMSSKRSPASPYGEADGEVAMVTSRQKVEEESDGLPAFHLPLHVSPNKPHEEFQPVSLLTQETCGHRTPTASQHNMTM	90
Sheep_SOX-5	MLTDPDLPQEFERMSSKRSPASPYGEADGEVAMVTSRQKVEEESDGLPAFHLPLHVSPNKPHEEFQPVSLLTQETCGHRTPTASQHNMTM	90
Cow_SOX-5	EVDGNKMSSFAPHNSSTSPQKAEEGGRQSGESLSSTTLGTPERRKGLADVVDTLKQRKMEELIKNEPEETPSIEKLLSKDWDKLLAM	180
Buffalo_SOX-5	EVDGNKMSSFAPHNSSTSPQKAEEGGRQSGESLSSTTLGTPERRKGLADVVDTLKQRKMEELIKNEPEETPSIEKLLSKDWDKLLAM	180
Goat_SOX-5	EVDGNKMSSFAPHNSSTSPQKAEEGGRQSGESLSSTTLGTPERRKGLADVVDTLKQRKMEELIKNEPEETPSIEKLLSKDWDKLLAM	180
Sheep_SOX-5	EVDGNKMSSFAPHNSSTSPQKAEEGGRQSGESLSSTTLGTPERRKGLADVVDTLKQRKMEELIKNEPEETPSIEKLLSKDWDKLLAM	180
Cow_SOX-5	GSGNFGEIKGTPESLAEKERQLMGMINQLTSLREQLLAHDEQKLAASQIEKQRQOMELARQQQEQTARQQQLLQQQHKNLLQQQIQ	270
Buffalo_SOX-5	GSGNFGEIKGTPESLAEKERQLMGMINQLTSLREQLLAHDEQKLAASQIEKQRQOMELARQQQEQTARQQQLLQQQHKNLLQQQIQ	270
Goat_SOX-5	GSGNFGEIKGTPESLAEKERQLMGMINQLTSLREQLLAHDEQKLAASQIEKQRQOMELARQQQEQTARQQQLLQQQHKNLLQQQIQ	270
Sheep_SOX-5	GSGNFGEIKGTPESLAEKERQLMGMINQLTSLREQLLAHDEQKLAASQIEKQRQOMELARQQQEQTARQQQLLQQQHKNLLQQQIQ	270
Cow_SOX-5	QVQGQLPLMIPVFPDQRTLAAAQQGFLPPGFPSYKAGCSDPYVQLIPTMAAAAAATPGLGPLQLQQLYAAQLAAMQVSPGGKLP	360
Buffalo_SOX-5	QVQGQLPLMIPVFPDQRTLAAAQQGFLPPGFPSYKAGCSDPYVQLIPTMAAAAAATPGLGPLQLQQLYAAQLAAMQVSPGGKLP	360
Goat_SOX-5	-VQGQLPLMIPVFPDQRTLAAAQQGFLPPGFPSYKAGCSDPYVQLIPTMAAAAAATPGLGPLQLQQLYAAQLAAMQVSPGGKLP	359
Sheep_SOX-5	QVQGQLPLMIPVFPDQRTLAAAQQGFLPPGFPSYKAGCSDPYVQLIPTMAAAAAATPGLGPLQLQQLYAAQLAAMQVSPGGKLP	360
Cow_SOX-5	VSQGNLGAAVSPTS IHTDKSTNSPPPKSKDEVAQPLNLSAKPKTSDGKSPTSPTSPHMPALRINSAGPLKASVPASLASPSARVSTIGY	450
Buffalo_SOX-5	VSQGNLGAAVSPTS IHTDKSTNSPPPKSKDEVAQPLNLSAKPKTSDGKSPTSPTSPHMPALRINSAGPLKASVPASLASPSARVSTIGY	450
Goat_SOX-5	VSQGNLGAAVSPTS IHTDKSTNSPPPKSKDEVAQPLNLSAKPKTSDGKSPTSPTSPHMPALRINSAGPLKASVPASLASPSARVSTIGY	449
Sheep_SOX-5	VSQGNLGAAVSPTS IHTDKSTNSPPPKSKDEVAQPLNLSAKPKTSDGKSPTSPTSPHMPALRINSAGPLKASVPASLASPSARVSTIGY	450
Cow_SOX-5	LNDHDAVTKAIQEARQMKQLRREQQVLDGKVAVVNSLGLNCRTEKEKTTLES LTQQLAVKQNEEGKFSHAMMDFNMSGSDSGSAGVSE	540
Buffalo_SOX-5	LNDHDAVTKAIQEARQMKQLRREQQVLDGKVAVVNSLGLNCRTEKEKTTLES LTQQLAVKQNEEGKFSHAMMDFNMSGSDSGSAGVSE	540
Goat_SOX-5	LNDHDAVTKAIQEARQMKQLRREQQVLDGKVAVVNSLGLNCRTEKEKTTLES LTQQLAVKQNEEGKFSHAMMDFNMSGSDSGSAGVSE	539
Sheep_SOX-5	LNDHDAVTKAIQEARQMKQLRREQQVLDGKVAVVNSLGLNCRTEKEKTTLES LTQQLAVKQNEEGKFSHAMMDFNMSGSDSGSAGVSE	540
Cow_SOX-5	SRIYRESRGRGSNEPHIKRPMNAFMVWAKDERRKILQAFPDMHNSNISKILGSRWKAMTNLEKQPYEEQARLSKQHLEKYPDYKYP	630
Buffalo_SOX-5	SRIYRESRGRGSNEPHIKRPMNAFMVWAKDERRKILQAFPDMHNSNISKILGSRWKAMTNLEKQPYEEQARLSKQHLEKYPDYKYP	630
Goat_SOX-5	SRIYRESRGRGSNEPHIKRPMNAFMVWAKDERRKILQAFPDMHNSNISKILGSRWKAMTNLEKQPYEEQARLSKQHLEKYPDYKYP	629
Sheep_SOX-5	SRIYRESRGRGSNEPHIKRPMNAFMVWAKDERRKILQAFPDMHNSNISKILGSRWKAMTNLEKQPYEEQARLSKQHLEKYPDYKYP	630
Cow_SOX-5	KRTCLVDGKKLRIGEYKAIMRNRQEMRQYFNVGQQAQIPIATAGVVYPGAIAMAGMPSPHLPSEHSSVSSSPEPGMPVIQSTYGVKGE	720
Buffalo_SOX-5	KRTCLVDGKKLRIGEYKAIMRNRQEMRQYFNVGQQAQIPIATAGVVYPGAIAMAGMPSPHLPSEHSSVSSSPEPGMPVIQSTYGVKGE	720
Goat_SOX-5	KRTCLVDGKKLRIGEYKAIMRNRQEMRQYFNVGQQAQIPIATAGVVYPGAIAMAGMPSPHLPSEHSSVSSSPEPGMPVIQSTYGVKGE	719
Sheep_SOX-5	KRTCLVDGKKLRIGEYKAIMRNRQEMRQYFNVGQQAQIPIATAGVVYPGAIAMAGMPSPHLPSEHSSVSSSPEPGMPVIQSTYGVKGE	720
Cow_SOX-5	PHIKEEIQAEDINGE IYDEYDEEEDDPDVDYGSSENHIAGQAN	764
Buffalo_SOX-5	PHIKEEIQAEDINGE IYDEYDEEEDDPDVDYGSSENHIAGQAN	764
Goat_SOX-5	PHIKEEIQAEDINGE IYDEYDEEEDDPDVDYGSSENHIAGQAN	763
Sheep_SOX-5	PHIKEEIQAEDINGE IYDEYDEEEDDPDVDYGSSENHIAGQAN	764

Figure S5. Comparative amino acid analysis of Sox5 gene in cattle, buffalo, sheep, and goat

Cow_SoX-6	-MLSSSEVLADVVRRESRIEENKKS--SHFIRMSSKQATSPFACTADGEEAMTQDLTSREKEEGSDQHVASHLPLHPIMHNKPHSEELPTLV	87
Buffalo_SoX-6	-MPSSSEVLADVVRRESRIEENKKS--SHFIRMSSKQATSPFACTADGEDAMTQDLTSREKEEGSDQHVASHLPLHPIMHNKPHSEELPTLV	87
Goat_SoX-6	MYLFFSELICICLHVRRQKTWADMYSTDTRMSSKQATSPFACTADGEEAMTQDLTSREKEEGSDQHVASHLPLHPIMHNKPHSEELPTLV	90
Sheep_SoX-6	-MPSSSEVLADVVRRESRIEENKKS--SHFIRMSSKQATSPFACTADGEEAMTQDLTSREKEEGSDQHVASHLPLHPIMHNKPHSEELPTLV	87
Cow_SoX-6	NTIQDADWDVSLSSQQRMESENKLCSLYSFRNTSTSPHKPDEGSRDREMTSVTFGTPEERRKGLADVVDTLKQKKLEEMTRTEQEDS	177
Buffalo_SoX-6	NTIQDADWDVSLSSQQRMESENKLCSLYSFRNTSTSPHKPDEGSRDREMTSVTFGTPEERRKGLADVVDTLKQKKLEEMTRTEQEDS	177
Goat_SoX-6	NTIQDADWDVSLSSQQRMESENKLCSLYSFRNTSTSPHKPDEGSRDREMTSVTFGTPEERRKGLADVVDTLKQKKLEEMTRTEQEDS	180
Sheep_SoX-6	NTIQDADWDVSLSSQQRMESENKLCSLYSFRNTSTSPHKPDEGSRDREMTSVTFGTPEERRKGLADVVDTLKQKKLEEMTRTEQEDS	177
Cow_SoX-6	SCMEKLLSKDWEKMERLNTSELLGEIKGTPESLAEKERQLSTMITQLISLREQLLAHDEQKLAASQIEKQRQQMDLARQQEQIARQ	267
Buffalo_SoX-6	SCMEKLLSKDWEKMERLNTSELLGEIKGTPESLAEKERQLSTMITQLISLREQLLAHDEQKLAASQIEKQRQQMDLARQQEQIARQ	267
Goat_SoX-6	SCMEKLLSKDWEKMERLNTSELLGEIKGTPESLAEKERQLSTMITQLISLREQLLAHDEQKLAASQIEKQRQQMDLARQQEQIARQ	270
Sheep_SoX-6	SCMEKLLSKDWEKMERLNTSELLGEIKGTPESLAEKERQLSTMITQLISLREQLLAHDEQKLAASQIEKQRQQMDLARQQEQIARQ	267
Cow_SoX-6	QQQLLQQQHKINLLQQQIQ-VQGHMPLMIPFPHDQRTLAAAAAAQQGFLFPPGITYKPGDNYPVQFIPSTMAAAAASGLSPQLQKGH	356
Buffalo_SoX-6	QQQLLQQQHKINLLQQQIQ-VQGHMPLMIPFPHDQRTLAAAAAAQQGFLFPPGITYKPGDNYPVQFIPSTMAAAAASGLSPQLQKGH	357
Goat_SoX-6	QQQLLQQQHKINLLQQQIQ-VQGHMPLMIPFPHDQRTLAAAAAAQQGFLFPPGITYKPGDNYPVQFIPSTMAAAAASGLSPQLQKGH	359
Sheep_SoX-6	QQQLLQQQHKINLLQQQIQ-VQGHMPLMIPFPHDQRTLAAAAAAQQGFLFPPGITYKPGDNYPVQFIPSTMAAAAASGLSPQLQKGH	357
Cow_SoX-6	VSHPQINPRLKGLSDRLGRSLDTFEHGGGHSYNHKQIEQLYAAQLASMQVSPGAKMPSTPQPPNAGAVSPTGIKNEKRGTSPTVQVKDE	446
Buffalo_SoX-6	VSHPQINPRLKGLSDRLGRSLDTFEHGGGHSYNHKQIEQLYAAQLASMQVSPGAKMPSTPQPPNAGAVSPTGIKNEKRGTSPTVQVKDE	447
Goat_SoX-6	VSHPQINPRLKGLSDRLGRSLDTFEHGGGHSYNHKQIEQLYAAQLASMQVSPGAKMPSTPQPPNAGAVSPTGIKNEKRGTSPTVQVKDE	449
Sheep_SoX-6	VSHPQINPRLKGLSDRLGRSLDTFEHGGGHSYNHKQIEQLYAAQLASMQVSPGAKMPSTPQPPNAGAVSPTGIKNEKRGTSPTVQVKDE	447
Cow_SoX-6	AAAQPLNLSSRPKTVPEPVKSPTSPTQSLFASAKTSPVNLPNKSSIPSPIGGSLGRGSSLGKWKSQHQEETVELDILSSLSNLPALFGDQDT	536
Buffalo_SoX-6	AAAQPLNLSSRPKTVPEPVKSPTSPTQSLFASAKTSPVNLPNKSSIPSPIGGSLGRGSSLGKWKSQHQEETVELDILSSLSNLPALFGDQDT	537
Goat_SoX-6	AAAQPLNLSSRPKTVPEPVKSPTSPTQSLFASAKTSPVNLPNKSSIPSPIGGSLGRGSSLGKWKSQHQEETVELDILSSLSNLPALFGDQDT	539
Sheep_SoX-6	AAAQPLNLSSRPKTVPEPVKSPTSPTQSLFASAKTSPVNLPNKSSIPSPIGGSLGRGSSLGKWKSQHQEETVELDILSSLSNLPALFGDQDT	537
Cow_SoX-6	VMKAIQEARMKREIQREQQQQPHGVGDKLSTLNNMGLNCRNEKERTRFENLGPQLTGKSSDGLKGGVIDLTRPEDAEGSKAMNGS	626
Buffalo_SoX-6	VMKAIQEARMKREIQREQQQQPHGVGDKLSTLNNMGLNCRNEKERTRFENLGPQLTGKSSDGLKGGVIDLTRPEDAEGSKAMNGS	627
Goat_SoX-6	VMKAIQEARMKREIQREQQQQPHGVGDKLSTLNNMGLNCRNEKERTRFENLGPQLTGKSSDGLKGGVIDLTRPEDAEGSKAMNGS	629
Sheep_SoX-6	VMKAIQEARMKREIQREQQQQPHGVGDKLSTLNNMGLNCRNEKERTRFENLGPQLTGKSSDGLKGGVIDLTRPEDAEGSKAMNGS	627
Cow_SoX-6	AAKLQYYCWPTGGATVAEARVYRDARGRASSEPHIKRPMNAFMVWAKDERRKILQAFPDMHNSNISKILGSRWKSMSNOEKOPYEEQA	716
Buffalo_SoX-6	AAKLQYYCWPTGGATVAEARVYRDARGRASSEPHIKRPMNAFMVWAKDERRKILQAFPDMHNSNISKILGSRWKSMSNOEKOPYEEQA	717
Goat_SoX-6	AAKLQYYCWPTGGATVAEARVYRDARGRASSEPHIKRPMNAFMVWAKDERRKILQAFPDMHNSNISKILGSRWKSMSNOEKOPYEEQA	719
Sheep_SoX-6	AAKLQYYCWPTGGATVAEARVYRDARGRASSEPHIKRPMNAFMVWAKDERRKILQAFPDMHNSNISKILGSRWKSMSNOEKOPYEEQA	717
Cow_SoX-6	RLSKIHLEKYPNYKYKPRPKRTCIVDGKKLRIGEYKQLMRSRRQEMRQFFTVGQQPQIPITTTGTGVVYPGAIMTATTPSPQMTSDCSST	806
Buffalo_SoX-6	RLSKIHLEKYPNYKYKPRPKRTCIVDGKKLRIGEYKQLMRSRRQEMRQFFTVGQQPQIPITTTGTGVVYPGAIMTATTPSPQMTSDCSST	807
Goat_SoX-6	RLSKIHLEKYPNYKYKPRPKRTCIVDGKKLRIGEYKQLMRSRRQEMRQFFTVGQQPQIPITTTGTGVVYPGAIMTATTPSPQMTSDCSST	809
Sheep_SoX-6	RLSKIHLEKYPNYKYKPRPKRTCIVDGKKLRIGEYKQLMRSRRQEMRQFFTVGQQPQIPITTTGTGVVYPGAIMTATTPSPQMTSDCSST	807
Cow_SoX-6	SASPEPSLPVIQSSYGMKTDGGSLAGNEMINGEDEMEMYDDYEDDPKSDYSSENEAPEAVSAN	869
Buffalo_SoX-6	SASPEPSLPVIQSSYGMKTDGGSLAGNEMINGEDEMEMYDDYEDDPKSDYSSENEAPEAVSAN	870
Goat_SoX-6	SASPEPSLPVIQSSYGMKTDGGSLAGNEMINGEDEMEMYDDYEDDPKSDYSSENEAPEAVSAN	872
Sheep_SoX-6	SASPEPSLPVIQSSYGMKTDGGSLAGNEMINGEDEMEMYDDYEDDPKSDYSSENEAPEAVSAN	870

Figure S6. Comparative amino acid analysis of Sox6 gene in cattle, buffalo, sheep, and goat

Cow_SoX-7	-----	0
Buffalo_SoX-7	MRGWSPAPAPGPRDHRRLLPPGRRHLRCELAGRGAAPGLRGTDPREPPGRRRGPGAGARWGSPPPPASPPGRSERGRGCPGRREGARAV	90
Goat_SoX-7	-----	0
Sheep_SoX-7	-----	0
Cow_SoX-7	-----MASLLGTYPWPEGLECPALEAELS DGLSPPAAP	33
Buffalo_SoX-7	KEGGAAPPSSRVIGGRSLSKLINKGPGRCRPSWTPQPVRRGPGQRPPDDAKRGDPRAAMASLLGTYPWPEGLECPALEAELS DGLSPPAAP	180
Goat_SoX-7	-----MASLLGTYPWPEGLECPALEAELS DGLSPPAAP	33
Sheep_SoX-7	-----MASLLGTYPWPEGLECPALEAELS DGLSPPAAP	33
Cow_SoX-7	RPPGDKGSESRIIRPMNAFMVWAKDERKRLAVQNPDLHNAELSKMLGKSWKAL TLSQKRPHYVDEAERLRLQHMQDYPNYKYRPRRKKQAK	123
Buffalo_SoX-7	RPPGDKGSESRIIRPMNAFMVWAKDERKRLAVQNPDLHNAELSKMLGKSWKAL TLSQKRPHYVDEAERLRLQHMQDYPNYKYRPRRKKQAK	270
Goat_SoX-7	RPPGDKGSESRIIRPMNAFMVWAKDERKRLAVQNPDLHNAELSKMLGKSWKAL TLSQKRPHYVDEAERLRLQHMQDYPNYKYRPRRKKQAK	123
Sheep_SoX-7	RPPGDKGSESRIIRPMNAFMVWAKDERKRLAVQNPDLHNAELSKMLGKSWKAL TLSQKRPHYVDEAERLRLQHMQDYPNYKYRPRRKKQAK	123
Cow_SoX-7	RLCKRVDPGFLLSSLSRDQNSLPEKRGGGRGAPGEKEDRGEYSPLSALPGLRGC FHDGPAGG-SGGGGT PGSVDAYPYGLTPPEMSPLD	212
Buffalo_SoX-7	RLCKRVDPGFLLSSLSRDQNSLPEKRGGGRGAPGEKEDRGEYSPLSALPGLRGC FHDGPAGG-SGGGGT PGSVDAYPYGLTPPEMSPLD	359
Goat_SoX-7	RLCKRVDPGFLLSSLSRDQNSLPEKRGGGRGAPGEKEDRGEYSPLSALPGLRGC FHDGPAGG-SGGGGT PGSVDAYPYGLTPPEMSPLD	212
Sheep_SoX-7	RLCKRVDPGFLLSSLSRDQNSLPEKRGGGRGAPGEKEDRGEYSPLSALPSLRGC FHDGPAGGSGGGGT PGSVDAYPYGLTPPEMSPLD	213
Cow_SoX-7	VLEPEQTFSSA CQEDHAHSRRIAHLPGPPYSPEYAPNPLHCGHPLGSLALGQSSGVSMMSTVPGCPPSPAYYSQAAYPPLHNLHAHLG	302
Buffalo_SoX-7	VLEPEQTFSSA CQEDHAHSRRIAHLPGPPYSPEYAPNPLHCGHPLGSLALGQSSGVSMMSTVSGCPPSPAYYSQAAYPPLHNLHAHLG	449
Goat_SoX-7	VLEPEQTFSSA CQEDHAHSRRIAHLPGPPYSPEYAPNPLHCGHPLGSLALGQSSGVSMMSTVPGCPPSPAYYSQAAYPPLHNLHAHLG	302
Sheep_SoX-7	VLEPEQTFSSA CQEDRAHSRRVAHLPGPPYSPEYAPNPLHCGHPLGSLALGQSSGVSMMSTVPGCPPSPAYYSQAAYPPLHNLHAHLG	303
Cow_SoX-7	QLSPPPEHPGFALDQLSQVELLGDMDRNEFDQYLNTPGHPDSSAAGALSAQGAVSQVTPTGPTETSLISVLADATATYYNSYSVS	387
Buffalo_SoX-7	QLSPPPEHPGFALDQLSQVELLGDMDRNEFDQYLNTPGHPDSSAAGALSGQGAVSQVTPTGPTETSLISVLADATATYYNSYSVS	534
Goat_SoX-7	QLSPPPEHPGFALDQLSQVELLGDMDRNEFDQYLNTPGHPDSSAAGALSGQGAVSQVTPTGPTETSLISVLADATATYYNSYSVS	385
Sheep_SoX-7	QLSPPPEHPGFALDQLSQVELLGDMDRNEFDQYLNTPGHPDSSAAGALSGQGAVSQVTPTGPTETSLISVLADATATYYNSYSVS	386

Figure S7. Comparative amino acid analysis of Sox7 gene in cattle, buffalo, sheep, and goat

Cow_SOX-8	MGSRTEGGALWQPLKETCCGSPRGDRSPAAAAVSGLGSGHRTATSGPRAAAQRPSTRCASLVRASPRAAAPMLDMSEARAQPPCSPSGT	90
Buffalo_SOX-8	MGSRTEGGALWQPLKETCCGSPRGDRSPAAAAVSGLGSGHHAATSGPRAAAQRPSTRCASLVRASPRAAAPMLDMSEARAQPPCSPSGT	90
Goat_SOX-8	MGSRTEGGALWQPLKETCCGSPRGDRSPAAAAVSGLGSGHCTATSDPRAAAQRPSTRCASLVRASPRAAAPMLDMSEARAQPPCSPSGT	90
Sheep_SOX-8	-----MLDMSEARAQPPCSPSGT	18
Cow_SOX-8	ASSMSHVEDSDSDAPPSPTGSEGLGRAAGAGGGGRGDAEEAADERFPACIRDAVSQVLKGYDWSLVPMPVRRGGGGGALKAKPHVKRPMNA	180
Buffalo_SOX-8	ASSMSHVEDSDSDAPPSPTGSEGLGRAAGAGGGGRGDAEEAADERFPACIRDAVSQVLKGYDWSLVPMPVRRGGGGGALKAKPHVKRPMNA	180
Goat_SOX-8	ASSMSHVEDSDSDAPPSPTGSEGLGRAAGAGGGGRGDAEEAADERFPACIRDAVSQVLKGYDWSLVPMPVRRGGGGGALKAKPHVKRPMNA	180
Sheep_SOX-8	ASSMSHVEDSDSDAPPSPTGSEGLGRAAGAGGGGRGDAEEAADERFPACIRDAVSQVLKGYDWSLVPMPVRRGGGGGALKAKPHVKRPMNA	108
Cow_SOX-8	FMVWAQAARRKLDQYPHLHNAELSKTLGKLWRLLESEKRPFVEEAERLRVQHKKDHPDYKYQPRRRKSVKTGQSDSDSGAELGHHHPGS	270
Buffalo_SOX-8	FMVWAQAARRKLDQYPHLHNAELSKTLGKLWRLLESEKRPFVEEAERLRVQHKKDHPDYKYQPRRRKSVKTGQSDSDSGAELGHHHPGS	270
Goat_SOX-8	FMVWAQAARRKLDQYPHLHNAELSKTLGKLWRLLESEKRPFVEEAERLRVQHKKDHPDYKYQPRRRKSVKTGQSDSDSGAELGHHHPGS	270
Sheep_SOX-8	FMVWAQAARRKLDQYPHLHNAELSKTLGKLWRLLESEKRPFVEEAERLRVQHKKDHPDYKYQPRRRKSVKTGQSDSDSGAELGHHHPGS	198
Cow_SOX-8	MYKTDAGLGDAAHHS DHTGQTHGPPTPPTPKTDLHHGGKQELKLEGRRLVDSGRQNIDFSNVDISELSSEVIGNMDTFDVHEFDQYLPL	360
Buffalo_SOX-8	MYKTDAGLGDAAHHS DHTGQTHGPPTPPTPKTDLHHGGKQELKLEGRRLVDSGRQNIDFSNVDISELSSEVIGNMDTFDVHEFDQYLPL	360
Goat_SOX-8	VYKTDAGLGDAAHHS DHTGQTHGPPTPPTPKTDLHHGGKQELKLEGRRLVDSGRQNIDFSNVDISELSSEVIGNMDTFDVHEFDQYLPL	360
Sheep_SOX-8	VYKTDAGLGDAAHHS DHTGQTHGPPTPPTPKTDLHHGGKQELKLEGRRLVDSGRQNIDFSNVDISELSSEVIGNMDTFDVHEFDQYLPL	288
Cow_SOX-8	NGHSALPAEPGQAAAAGSYGGASYSHSGAASIGASPVWAHKGTSPASASPTAEPAPRPHIKTEQLSPGHYGDQSHGSPGHADYGSYSAQA	450
Buffalo_SOX-8	NGHSALPAEPGQAAAAGSYGGASYSHSGAAGIGASPVWAHKGTSPASASPTAEPAPRPHIKTEQLSPGHYGDQSHGSPGHADFGSYSAQA	450
Goat_SOX-8	NGHSALPAEPGQAAAAGSYGGASYSHSGAASIGASPVWAHKGTSPASASPTAEPAPRPHIKTEQLSPGHYGDQSHGSPGHADYGSYSAQA	450
Sheep_SOX-8	NGHSALPAEPGQAAAAGSYGGASYSHSGAASIGASPVWAHKGTSPASASPTAEPAPRPHIKTEQLSPGHYGDQSHGSPGHSDYGSYSAQA	378
Cow_SOX-8	SVTTAAPAAAASSFTSSQCDYTDLQAPSYYPFPFGYPSGLYQYPYFHSRRPYASPLLGGLSVPPAHSPPSNWEQPVYTTLTRP	534
Buffalo_SOX-8	SVTTAAPAAAASSFTSSQCDYTDLQAPSYYPFPFGYPSGLYQYPYFHSRRPYASPLLGGLSVPPAHSPPSNWEQPVYTTLTRP	534
Goat_SOX-8	SVTTAAPAAAASSFTSSQCDYTDLQAPSYYPFPFGYPSGLYQYPYFHSRRPYASPLLGGLSVPPAHSPPSNWEQPVYTTLTRP	534
Sheep_SOX-8	SVTTAAPAAAASSFTSSQCDYTDLQAPGYSPFPFGYPSGLYQYPYFHSRRPYASPLLGGLSVPPAHSPPSNWEQPVYTTLTRP	462

Figure S8. Comparative amino acid analysis of Sox8 gene in cattle, buffalo, sheep, and goat

Cow_SoX-9	MNLLDPFMKMTDEQEKGLSAAPSPMTSEDSAGSPSPSGSGSDTENTRPQENTFPKGEPLKKESEEDKFPVCIREAVSQVLKGYDWTLPV	90
Buffalo_SoX-9	MNLLDPFMKMTDEQEKGLSAAPSPMTSEDSAGSPSPSGSGSDTENTRPQENTFPKGEPLKKESEEDKFPVCIREAVSQVLKGYDWTLPV	90
Goat_SoX-9	MNLLDPFMKMTDEQEKGLSAAPSPMTSEDSAGSPSPSGSGSDTENTRPQENTFPKGEPLKKESEEDKFPVCIREAVSQVLKGYDWTLPV	90
Sheep_SoX-9	MNLLDPFMKMTDEQEKGLSAAPSPMTSEDSAGSPSPSGSGSDTENTRPQENTFPKGEPLKKESEEDKFPVCIREAVSQVLKGYDWTLPV	90
Cow_SoX-9	MPVVRVNGSSKNKPHVKRPMNAFMVWAQAARRKLDQYPHLHNAELSKTLGKLRLLNESEKRPFFVEEAERLRVQHKKDHDPYKYQPRRRK	180
Buffalo_SoX-9	MPVVRVNGSSKNKPHVKRPMNAFMVWAQAARRKLDQYPHLHNAELSKTLGKLRLLNESEKRPFFVEEAERLRVQHKKDHDPYKYQPRRRK	180
Goat_SoX-9	MPVVRVNGSSKNKPHVKRPMNAFMVWAQAARRKLDQYPHLHNAELSKTLGKLRLLNESEKRPFFVEEAERLRVQHKKDHDPYKYQPRRRK	180
Sheep_SoX-9	MPVVRVNGSSKNKPHVKRPMNAFMVWAQAARRKLDQYPHLHNAELSKTLGKLRLLNESEKRPFFVEEAERLRVQHKKDHDPYKYQPRRRK	180
Cow_SoX-9	SVKNGQAEAEAEAPEQTHISPNAIFKALQADSPHSSSGMSEVHSPGEHSGSQSQGPPTPPTTPKTDVQPGKADLKREGRPLPEGGRQPPIDF	270
Buffalo_SoX-9	SVKNGQAEAEAEAPEQTHISPNAIFKALQADSPHSSSGMSEVHSPGEHSGSQSQGPPTPPTTPKTDVQPGKADLKREGRPLPEGGRQPPIDF	270
Goat_SoX-9	SVKNGQAEAEAEAPEQTHISPNAIFKALQADSPHSSSGMSEVHSPGEHSGSQSQGPPTPPTTPKTDVQPGKADLKREGRPLPEGGRQPPIDF	270
Sheep_SoX-9	SVKNGQAEAEAEAPEQTHISPNAIFKALQADSPHSSSGMSEVHSPGEHSGSQSQGPPTPPTTPKTDVQPGKADLKREGRPLPEGGRQPPIDF	270
Cow_SoX-9	RDVDIGELSSDVISNMETFDVHEFDQYLPPNGHPGVPATHGQVYTGSGYVSSSTAASPAGAGHVWMSKQQAAPPPPPFQQPPPPPPQPAPP	360
Buffalo_SoX-9	RDVDIGELSSDVISNMETFDVHEFDQYLPPNGHPGVPATHGQVYTGSGYVSSSTAASPAGAGHVWMSKQQAAPPPPPFQQPPPPPPQPAPP	360
Goat_SoX-9	RDVDIGELSSDVISNMETFDVHEFDQYLPPNGHPGVPATHGQVYTGSGYVSSSTAASPAGAGHVWMSKQQAAPPPPPFQQPPPPPPQPAPP	360
Sheep_SoX-9	RDVDIGELSSDVISNMETFDVHEFDQYLPPNGHPGVPATHGQVYTGSGYVSSSTAASPAGAGHVWMSKQQAAPPPPPFQQPPPPPPQPAPP	359
Cow_SoX-9	QAPPQPPAPQAPPAQPPAPPQAPPQQQ-PPPPPP-AHALGALGSEPGPAQRTHIKTEQLSPSHYSEPPQHSPPQIAYSFPFSLPHYGPSYP	448
Buffalo_SoX-9	QAPPQPPAPQAPPAQPPAPPQAPPQQQ-PPPPPP-AHALGALGSEPGPAQRTHIKTEQLSPSHYSEPPQHSPPQIAYSFPFSLPHYGPSYP	449
Goat_SoX-9	QAPPQPPAPQAPPAQPPAPPQAPPQQQ-PPPPPP-AHALGALGSEPGPAQRTHIKTEQLSPSHYSEPPQHSPPQIAYSFPFSLPHYGPSYP	449
Sheep_SoX-9	QAPPQPPAPQAPPAQPPAPPQAPPQQQ-PPPPPP-AHALGALGSEPGPAQRTHIKTEQLSPSHYSEPPQHSPPQIAYSFPFSLPHYGPSYP	449
Cow_SoX-9	PITRAQYDYNDPQNSGAYYSHAAGQSGLYSTFSYMSPAQRPMYTPPIADTSGVPSIPQTHSPQHWEQPVYTQLTRP	524
Buffalo_SoX-9	PITRAQYDYNDPQNSGAYYSHAAGQSGLYSTFSYMSPAQRPMYTPPIADTSGVPSIPQTHSPQHWEQPVYTQLTRP	525
Goat_SoX-9	PITRAQYDYSDPQNSGAYYSHAAGQSGLYSTFSYMSPAQRPMYTPPIADTSGVPSIPQTHSPQHWEQPVYTQLTRP	525
Sheep_SoX-9	PITRAQYDYSDPQNSGAYYSHAAGQSGLYSTFSYMSPAQRPMYTPPIADTSGVPSIPQTHSPQHWEQPVYTQLTRP	525

Figure S9. Comparative amino acid analysis of Sox9 gene in cattle, buffalo, sheep, and goat

Cow_SoX-10	MAEEQDLSEVELSPVGSEEPRLSPGSAPSLGPDGGGGGGGSGLRASPGPGELGKVKKEQQDGEADDDKFPVCIREAVSQVLSGYDWTLP	90
Buffalo_SoX-10	MAEEQDLSEVELSPVGSEEPRLSPGSAPSLGPDGGGGGGGSGLRASPGPGELGKVKKEQQDGEADDDKFPVCIREAVSQVLSGYDWTLP	90
Goat_SoX-10	MAEEQDLSEVELSPVGSEEPRLSPGSAPSLGPDGGGGGGGSGLRASPGPGELGKVKKEQQDGEADDDKFPVCIREAVSQVLSGYDWTLP	90
Sheep_SoX-10	MAEEQDLSEVELSPVGSEEPRLSPGSAPSLGPDGGGGGGGSGLRASPGPGELGKVKKEQQDGEADDDKFPVCIREAVSQVLSGYDWTLP	90
Cow_SoX-10	VPMPVVRVNGASKSKPHVKRPMNAFMVWAQAARRKLDQYPHLHNAELSKTLGKLRLLNESDKRPFIEEAERLRMQHKKDHDPYKYQPRR	180
Buffalo_SoX-10	VPMPVVRVNGASKSKPHVKRPMNAFMVWAQAARRKLDQYPHLHNAELSKTLGKLRLLNESDKRPFIEEAERLRMQHKKDHDPYKYQPRR	180
Goat_SoX-10	VPMPVVRVNGASKSKPHVKRPMNAFMVWAQAARRKLDQYPHLHNAELSKTLGKLRLLNESDKRPFIEEAERLRMQHKKDHDPYKYQPRR	180
Sheep_SoX-10	VPMPVVRVNGASKSKPHVKRPMNAFMVWAQAARRKLDQYPHLHNAELSKTLGKLRLLNESDKRPFIEEAERLRMQHKKDHDPYKYQPRR	180
Cow_SoX-10	RKNGKAAQGESECPGGEAEQGGAAAIQAHYKSAHLDRHPGEGSPMSDGNPEHPSGQSHGPPPTPPTPKTELQSGKADPKRDGRSLGEGG	270
Buffalo_SoX-10	RKNGKAAQGESECPGGEAEQGGAAAIQAHYKSAHLDRHPGEGSPMSDGNPEHPSGQSHGPPPTPPTPKTELQSGKADPKRDGRSLGEGG	270
Goat_SoX-10	RKNGKAAQGESECPGGEAEQGGAAAIQAHYKSAHLDRHPGEGSPMSDGNPEHPSGQSHGPPPTPPTPKTELQSGKADPKRDGRSLGEGG	270
Sheep_SoX-10	RKNGKAAQGESECPGGEAEQGGAAAIQAHYKSAHLDRHPGEGSPMSDGNPEHPSGQSHGPPPTPPTPKTELQSGKADPKRDGRSLGEGG	270
Cow_SoX-10	KPHIDFGNVDIGEISHEVMSNMETFDVAELDQYLPPNGHPGHVGGYSAAGYGLGSALAVASGHSAWISKPPGVALPTVSPPGVDAKAQVK	360
Buffalo_SoX-10	KPHIDFGNVDIGEISHEVMSNMETFDVAELDQYLPPNGHPGHVGGYSAAGYGLGSALAVASGHSAWISKPPGVALPTVSPPGVDAKAQVK	360
Goat_SoX-10	KPHIDFGNVDIGEISHEVMSNMETFDVAELDQYLPPNGHPGHVGGYSAAGYGLGSALAVASGHSAWISKPPGVALPTVSPPGVDAKAQVK	360
Sheep_SoX-10	KPHIDFGNVDIGEISHEVMSNMETFDVAELDQYLPPNGHPGHVGGYSAAGYGLGSALAVASGHSAWISKPPGVALPTVSPPGVDAKAQVK	360

Cow_SOX-10	TETAGPQGPPHYTDQPSTSQIAYTSLSLPHYGSAPPSISRPFQDYSDHQPSGPIYGHSGQTSGLYSAPSYMGPQRPLYTAISDPSPSGP	450
Buffalo_SOX-10	TETAGPQGPPHYTDQPSTSQIAYTSLSLPHYGSAPPSISRPFQDYSDHQPSGPIYGHSGQTSGLYSAPSYMGPQRPLYTAISDPSPSGP	450
Goat_SOX-10	TETAGPQGPPHYTDQPSTSQIAYTSLSLPHYGSAPPSISRPFQDYSDHQPSGPIYGHSGQTSGLYSAPSYMGPQRPLYTAISDPSPSGP	450
Sheep_SOX-10	TETAGPQGPPHYTDQPSTSQIAYTSLSLPHYGSAPPSISRPFQDYSDHQPSGPIYGHSGQTSGLYSAPSYMGPQRPLYTAISDPSPSGP	450
Cow_SOX-10	QSHSPTHWEQPVYTTLSRP	469
Buffalo_SOX-10	QSHSPTHWEQPVYTTLSRP	469
Goat_SOX-10	QSHSPTHWEQPVYTTLSRP	469
Sheep_SOX-10	QSHSPTHWEQPVYTTLSRP	469

Figure S10. Comparative amino acid analysis of Sox10 gene in cattle, buffalo, sheep, and goat

Cow_SOX-11	MVQQAESLEAESNLPREALDTEEGEFMACSPVALDESDDPWCKTASGHIKRPMNAFMVWSKIERRKIMEQSPDMHNAEISKRLGKRWKML	90
Buffalo_SOX-11	MVQQAESLEAESNLPREALDTEEGEFMACSPVALDESDDPWCKTASGHIKRPMNAFMVWSKIERRKIMEQSPDMHNAEISKRLGKRWKML	90
Goat_SOX-11	MVQQAESLEAESNLPREALDTEEGEFMACSPVALDESDDPWCKTASGHIKRPMNAFMVWSKIERRKIMEQSPDMHNAEISKRLGKRWKML	90
Sheep_SOX-11	MVQQAESLEAESNLPREALDTEEGEFMACSPVALDESDDPWCKTASGHIKRPMNAFMVWSKIERRKIMEQSPDMHNAEISKRLGKRWKML	90
Cow_SOX-11	KDSEKIPFIREAERLRKHMADYPDYKYRPRKKPKMDPSAKPSAGQSPKSAAGGGGG-SAGAGAGGGAKTSKGSSKKCKLKAAPAA	179
Buffalo_SOX-11	KDSEKIPFIREAERLRKHMADYPDYKYRPRKKPKMDPSAKPSAGQSPKSAAGGGGG-SAGAGAGGGAKTSKGSSKKCKLKAAPAA	179
Goat_SOX-11	KDSEKIPFIREAERLRKHMADYPDYKYRPRKKPKMDPSAKPSAGQSPKSAAGGGGG-SAGAGAGGGAKTSKGSSKKCKLKAAPAA	180
Sheep_SOX-11	KDSEKIPFIREAERLRKHMADYPDYKYRPRKKPKMDPSAKPSAGQSPKSAAGGGGG-SAGAGAGGGAKTSKGSSKKCKLKAAPAA	180
Cow_SOX-11	GGAKAGAGKAAQPGDGGGAGDDYVLGSLRVSGAGKTVKCVFLDDDEDEDEDEDELQLRKQEVDEDDDEPPPHAQLLQPPGQPPPPPLL	269
Buffalo_SOX-11	GGAKAGAGKAAQPGDGGGAGDDYVLGSLRVSGAGKTVKCVFLDDDEDEDEDEDELQLRKQEVDEDDDEPPPHAQLLQPPGQPPPPPLL	269
Goat_SOX-11	GGAKAGAGKAAQPGDGGGAGDDYVLGSLRVSGAGKTVKCVFLDDDEDEDEDEDELQLRKQEVDEDDDEPPPHAQLLQPPGQPPPPPLL	270
Sheep_SOX-11	GGAKAGAGKAAQPGDGGGAGDDYVLGSLRVSGAGKTVKCVFLDDDEDEDEDEDELQLRKQEVDEDDDEPPPHAQLLQPPGQPPPPPLL	270
Cow_SOX-11	RRYSVAKVPASPTLSSAAESPEGASLYDEVVRAAASGAGGGSRLYYSFKNITKQHPPLAQPALSPASARSVSTSSSSSSSSGGGGGG---	356
Buffalo_SOX-11	RRYSVAKVPASPTLSSAAESPEGASLYDEVVRAAASGAGGGSRLYYSFKNITKQHPPLAQPALSPASARSVSTSSSSSSSSGGGGGGSS	359
Goat_SOX-11	RRYSVAKVPASPTLSSAAESPEGASLYDEVVRAAASGAGGGSRLYYSFKNITKQHPPLAQPALSPASARSVSTSSSSSSSSGGGGGGSS	360
Sheep_SOX-11	RRYSVAKVPASPTLSSAAESPEGASLYDEVVRAAASGAGGGSRLYYSFKNITKQHPPLAQPALSPASARSVSTSSSSSSSSGGGGGGSS	360
Cow_SOX-11	-SSSSSSGGEDADDLMFDLSLNFSQSAHAGDQQLGGGAAAGNLSLSLVKDLDSFSEGLGSHFEPDYCTPELSEMIAGDWLEANFS	445
Buffalo_SOX-11	SSSSSSGGEDADDLMFDLSLNFSQSAHAGDQQLGGGAAAGNLSLSLVKDLDSFSEGLGSHFEPDYCTPELSEMIAGDWLEANFS	449
Goat_SOX-11	-SSSSSSGGEDADDLMFDLSLNFSQSAHAGDQQLGGGAAAGNLSLSLVKDLDSFSEGLGSHFEPDYCTPELSEMIAGDWLEANFS	449
Sheep_SOX-11	-SSSSSSGGEDADDLMFDLSLNFSQSAHAGDQQLGGGAAAGNLSLSLVKDLDSFSEGLGSHFEPDYCTPELSEMIAGDWLEANFS	448
Cow_SOX-11	DLVFTY	451
Buffalo_SOX-11	DLVFTY	455
Goat_SOX-11	DLVFTY	455
Sheep_SOX-11	DLVFTY	454

Figure S11. Comparative amino acid analysis of Sox11 gene in cattle, buffalo, sheep, and goat

Cow_SOX-12	MVQQRGARAKRDGGPPPPGPGPAEEGAREPGWCKTSPSGHIKRPMAFMVWSQHERRKIMDQWPDHNAEISKRLGRRWQLLDSEKIPFV	90
Buffalo_SOX-12	MVQQRGARAKRDGGPPPPGPGPAEEGAREPGWCKTSPSGHIKRPMAFMVWSQHERRKIMDQWPDHNAEISKRLGRRWQLLDSEKIPFV	90
Goat_SOX-12	MVQQRGARAKRDGGPPPPGPGPAEEGAREPGWCKTSPSGHIKRPMAFMVWSQHERRKIMDQWPDHNAEISKRLGRRWQLLDSEKIPFV	90
Sheep_SOX-12	MVQQRGARAKRDGGPPPPGPGPAEEGAREPGWCKTSPSGHIKRPMAFMVWSQHERRKIMDQWPDHNAEISKRLGRRWQLLDSEKIPFV	90
Cow_SOX-12	REAERLRLKHMADYPDYKYRPRKSKGAPAKARPRPPGGGGGSRKPKGPQLPGRGRRRAAGPLGGGAAAPEDDDDEDEELLEVLVE	180
Buffalo_SOX-12	REAERLRLKHMADYPDYKYRPRKSKGAPAKARPRPPGGGGGSRKPKGPQLPGRGRRRAAGPLGGGAAAPEDDDDEDEELLEVLVE	180
Goat_SOX-12	REAERLRLKHMADYPDYKYRPRKSKGAPAKARPRPPGGGGGSRKPKGPQLPGRGRRRAAGPLGGGAAAPEDDDDEDEELLEVLVE	180
Sheep_SOX-12	REAERLRLKHMADYPDYKYRPRKSKGAPAKARPRPPGGGGGSRKPKGPQLPGRGRRRAAGPLGGGAAAPEDDDDEDEELLEVLVE	180
Cow_SOX-12	TPGRELWRMVPAGRAARGPVERAQGPSGEGAAVTAASPTPSEDEEPEEEEEEEEEEEGEEKVASGEEPLGFLSRGPPGPAGLDCSALD	270
Buffalo_SOX-12	TPGRELWRMVPAGRAARGPVERAQGPSGEGAAVTAASPTPSEDEEPEEEEEEEEEEEGEEKVASGEEPLGFLSRGPPGPAGLDCSALD	270
Goat_SOX-12	TPGRELWRMVPAGRAARGPVERAQGPSGEGAAVTAASPTPSEDEEPEEEEEEEEEEEGEEKVASGEEPLGFLSRGPPGPAGLDCSALD	270
Sheep_SOX-12	TPGRELWRMVPAGRAARGPVERAQGPSGEGAAVTAASPTPSEDEEPEEEEEEEEEEEGEEKVASGEEPLGFLSRGPPGPAGLDCSALD	270
Cow_SOX-12	RDPDLPPPSGTSHFEPDYCTPEVTEMIAGDWRPSSIADLVFTY	314
Buffalo_SOX-12	RDPDLPPPSGTSHFEPDYCTPEVTEMIAGDWRPSSIADLVFTY	314
Goat_SOX-12	RDPDLPPPSGTSHFEPDYCTPEVTEMIAGDWRPSSIADLVFTY	314
Sheep_SOX-12	RDPDLPPPSGTSHFEPDYCTPEVTEMIAGDWRPSSIADLVFTY	314

Figure S12. Comparative amino acid analysis of Sox12 gene in cattle, buffalo, sheep, and goat

Cow_SOX-13	MERPGAAPAAPPPPGWPPRPFGLTSPRSWKQAPFLHPLLMMSMRSPGSAQLVLDVGTMVNCTVKAEGKKEPCYEDPQGSATAAABSQPG	90
Buffalo_SOX-13	MERPRAAAAAPPPPGWPPRPFGLTSPRSWKQAPFLHPLLMMSMRSPGSAQLVLDVGTMVNCTVKAEGKKEPCYEDPQGSATAAABSQPG	90
Goat_SOX-13	-----MSMRSPGSAQLVLDVGTMVNCTVKAEGKKEPCYEDPQGSATAAABLQPG	49
Sheep_SOX-13	MERAGAAPAAPPPPGWPPRPFGLTSPRSWKQAPFLHPLLMMSMRSPGSAQLVLDVGTMVNCTVKAEGKKEPCYEDPQGSATAAABSQPG	90
Cow_SOX-13	DPARTPQNGADPQAPTQGDRIQCVSQDSSSLENSSESPEPRRPGGSEAAAGSQEKLDFNRLKEVVPAIEKLLSSDWEKFLGRSSVETK	180
Buffalo_SOX-13	DPARTPQNGADPQAPAQGDRIQCVLQDSSSLENSSESPEPRRPGGSEAAAGSQEKLDFNRLKEVVPAIEKLLSSDWEKFLGRSSVETK	180
Goat_SOX-13	DPARPAQNGADLQAPAQ-----DSSSLENSSESPEPRRPGGSEAAAGSQEKLDFNRLKEVVPAIEKLLSSDWEKFLGRSSVETK	129
Sheep_SOX-13	DPARPAQNGADLQAPAQ-----DSSSPENSSESPEPRRPGGSEAAAGSQEKLDFNRLKEVVPAIEKLLSSDWEKFLGRSSVETK	170
Cow_SOX-13	DVKGTKESLAEKELQLLVMIHQLSALRDQLLTAHSEQKNMAAMLLEKQQQMELARQQEQIARQQQLIQQQHKINLLQQIQQVNMMPY	270
Buffalo_SOX-13	DVKGTKESLAEKELQLLVMIHQLSALRDQLLTAHSEQKNMAAMLLEKQQQMELARQQEQIARQQQLIQQQHKINLLQQIQQVNMMPY	270
Goat_SOX-13	DVKGTKESLAEKELQLLVMIHQLSALRDQLLTAHSEQKNMAAMLLEKQQQMELARQQEQIARQQQLIQQQHKINLLQQIQQVNMMPY	219
Sheep_SOX-13	DVKGTKESLAEKELQLLVMIHQLSALRDQLLTAHSEQKNMAAMLLEKQQQMELARQQEQIARQQQLIQQQHKINLLQQIQQVNMMPY	260
Cow_SOX-13	VMIPAFPPSHQPLPVTSDSQLALPIQPIPKPVEYPLQLLHSPPEPVVVRPGALPBAHHPLQEPSQPLNLTAKPKASELPNSSSSPNLKLS	360
Buffalo_SOX-13	VMIPAFPPSHQPLPVTSDSQLALPIQPIPKPVEYPLQLLHSPPEPVVVRPGALPBAHHPLQEPSQPLNLTAKPKASELPNSSSSPNLKLS	360
Goat_SOX-13	VMIPAFPPSHQPLPVTSDSQLALPIQPIPKPVEYPLQLLHSPPEPVVVRPGPLSAHHPLQEPSQPLNLTAKPKASELPNSSSSPNLKLS	309
Sheep_SOX-13	VMIPAFPPGHQPLPVTSDSQLALPIQPIPKPVEYPLQLLHSPPEPVVVRPGPLSAHHPLQEPSQPLNLTAKPKASELPNSSSSPNLKLS	350

Cow_SoX-13	NCGPRPPSHGAPTLDLQANPPSLPLGFLGEGDAVTKAIQDARQLLHGHSALDTSAPSAPFRKDLISVDTSPAKERLEDSCVHPLEEAMLG	450
Buffalo_SoX-13	NCGPRPPSHGAPTLDLQANPPSLPLGFLGEGDAVTKAIQDARQLLHGHSALDTSAPSAPFRKDLISVDTSPAKERLEDSCVHPLEEAMLG	450
Goat_SoX-13	NCGPRPPSHGAPTLDLQANPPSLPLGFLGEGDAVTKAIQDARQLLHGHSALDTSAPSAPFRKDLISVDTSPAKERLEDSCVHPLEEAMLG	399
Sheep_SoX-13	NCGPRPPSHGAPTLDLQANPPSLPLGFLGEGDAVTKAIQDARQLLHGHSALDTSAPSAPFRKDLISVDTSPAKERLEDSCVHPLEEAMLG	440
Cow_SoX-13	CDMDGSRHFPESRNSHIKRPMAFMVWAKDERRKILQAFPDMHNSISKILGSRWKSMSNQERQPYEEQARLSRQHLEKYPDYKYKPR	540
Buffalo_SoX-13	CDMDGSRHFPESRNSHIKRPMAFMVWAKDERRKILQAFPDMHNSISKILGSRWKSMSNQERQPYEEQARLSRQHLEKYPDYKYKPR	540
Goat_SoX-13	CDMDGSRHFPESRNSHIKRPMAFMVWAKDERRKILQAFPDMHNSISKILGSRWKSMSNQERQPYEEQARLSRQHLEKYPDYKYKPR	489
Sheep_SoX-13	CDMDGSRHFPESRNSHIKRPMAFMVWAKDERRKILQAFPDMHNSISKILGSRWKSMSNQERQPYEEQARLSRQHLEKYPDYKYKPR	530
Cow_SoX-13	PKRTCIVEGKRLRVGEYKALMRRTRQDARQSYATPQQTSTQVQMSPSSEVLYPRVAGVPLAQPLVEHCVPRLDPNMPVIVNTCSLREEGEG	630
Buffalo_SoX-13	PKRTCIVEGKRLRVGEYKALMRRTRQDARQSYATPQQTSTQVQMSPSSEVLYPRVAGVPLAQPLVEHCVPRLDPNMPVIVNTCSLREEGEG	630
Goat_SoX-13	PKRTCIVEGKRLRVGEYKALMRRTRQDARQSYATPQQTSTQVQMSPSSEVLYPRVAGVPLAQPLVEHCVPRLDPNMPVIVNTCSLREEGEG	579
Sheep_SoX-13	PKRTCIVEGKRLRVGEYKALMRRTRQDARQSYATPQQTSTQVQMSPSSEVLYPRVAGVPLAQPLVEHCVPRLDPNMPVIVNTCSLREEGEG	620
Cow_SoX-13	TEDRHSAADGEVYRYSEDEDSEGEKSDGELVVLT	666
Buffalo_SoX-13	TEDRHSAADGEMRYRYSEDEDSEGEKSDGELVVLT	666
Goat_SoX-13	AEDRHSAADGEMRYRYSEDEDSEGEKSDGELVVLT	615
Sheep_SoX-13	AEDRHSAADGEMRYRYSEDEDSEGEKSDGELVVLT	656

Figure S13. Comparative amino acid analysis of Sox13 gene in cattle, buffalo, sheep, and goat

Cow_SoX-14	MSKPSDHIKRPMAFMVWSRGQRKMAQENPKMHNSEISKRLGAEWKLLSEAEKRPYIDEAKRLRAQHMKEHPDYKYRPRRKPNLLKDD	90
Buffalo_SoX-14	MSKPSDHIKRPMAFMVWSRGQRKMAQENPKMHNSEISKRLGAEWKLLSEAEKRPYIDEAKRLRAQHMKEHPDYKYRPRRKPNLLKDD	90
Goat_SoX-14	MSKPSDHIKRPMAFMVWSRGQRKMAQENPKMHNSEISKRLGAEWKLLSEAEKRPYIDEAKRLRAQHMKEHPDYKYRPRRKPNLLKDD	90
Sheep_SoX-14	MSKPSDHIKRPMAFMVWSRGQRKMAQENPKMHNSEISKRLGAEWKLLSEAEKRPYIDEAKRLRAQHMKEHPDYKYRPRRKPNLLKDD	90
Cow_SoX-14	RYVFPLPYLGDTPDKAAGLPVGASDGLLSAPEKARAFPPASAPYSLDPAQFSSSAIQKMGEVPHLATGALPYASTLGYQNGAFGSL	180
Buffalo_SoX-14	RYVFPLPYLGDTPDKAAGLPVGASDGLLSAPEKARAFPPASAPYSLDPAQFSSSAIQKMGEVPHLATGALPYASTLGYQNGAFGSL	180
Goat_SoX-14	RYVFPLPYLGDTPDKAAGLPVGASDGLLSAPEKARAFPPASAPYSLDPAQFSSSAIQKMGEVPHLATGALPYASTLGYQNGAFGSL	180
Sheep_SoX-14	RYVFPLPYLGDTPDKAAGLPVGASDGLLSAPEKARAFPPASAPYSLDPAQFSSSAIQKMGEVPHLATGALPYASTLGYQNGAFGSL	180
Cow_SoX-14	SCPSQHTHTHPSPTNPGYVPCNCTAWSASTLQPPVAYILFPGMTKTGIDPYSSAHATAM	240
Buffalo_SoX-14	SCPSQHTHTHPSPTNPGYVPCNCTAWSASTLQPPVAYILFPGMTKTGIDPYSSAHATAM	240
Goat_SoX-14	SCPSQHTHTHPSPTNPGYVPCNCTAWSASTLQPPVAYILFPGMTKTGIDPYSSAHATAM	240
Sheep_SoX-14	SCPSQHTHTHPSPTNPGYVPCNCTAWSASTLQPPVAYILFPGMTKTGIDPYSSAHATAM	240

Figure S14. Comparative amino acid analysis of Sox14 gene in cattle, buffalo, sheep, and goat

Cow_SOX-15	MAVPGSSHDQAWNLD	PTPTAPTSSSSGQEREG	AGSP	VVSRGLPLEKVKRPMNAFMVWSSAQR	RQMAQQNPKMHNSEISKRLGAQWKLL	90
Buffalo_SOX-15	MAVPGSSHDQAWNLD	PTPTAPTSSSSGQEREG	AGSP	VVSRGLPLEKVKRPMNAFMVWSSAQR	RQMAQQNPKMHNSEISKRLGAQWKLL	90
Goat_SOX-15	MAVPGSSHDQAWNLD	PTPTAPTSSSSGQEREG	AGSP	VVSRGLPLEKVKRPMNAFMVWSSAQR	RQMAQQNPKMHNSEISKRLGAQWKLL	90
Sheep_SOX-15	MAVPGSSHDQAWNLD	PTPTAPTSSSSGQERED	AGST	VVSRGLPLEKVKRPMNAFMVWSSAQR	RQMAQQNPKMHNSEISKRLGAQWKLL	90
Cow_SOX-15	GEDEKRPFVEEAKRLRARHLRDY	PDYKYP	RRKSK	NSAGAGSPHF	SQSGGVAGGGPVWGP	GYAANQGS
Buffalo_SOX-15	GEDEKRPFVEEAKRLRARHLRDY	PDYKYP	RRKTK	NSAGAGSPHF	SQSGGVAGGGPVWGP	GYAANQGS
Goat_SOX-15	GEDEKRPFVEEAKRLRARHLRDY	PDYKYP	RRKTK	NSAGAGSPHF	SQSGGVAGGGPVWGP	GYAANQGS
Sheep_SOX-15	GEDEKRPFVEEAKRLRARHLRDY	PDYKYP	RRKTK	NSAGAGSPHF	SQSGGVAGGGPVWGP	GYAANQGS
Cow_SOX-15	HCKPEGSPCSLPQSNPRLQGELL	TA	YSPY	PP	PGSPPLYNPP	LSGTPLPLTHL
Buffalo_SOX-15	HCKPEGSPCSLPQSNPRLQGELL	TA	YSPY	PP	PGSPPLYNPP	LSGTPLPLTHL
Goat_SOX-15	HCKPEGSPCSLPQSNPRLQGELL	TA	YSPY	PP	PGSPPLYNPP	LSGTPLPLTHL
Sheep_SOX-15	HCKPEGSPCSLPQSNPRLQGELL	TA	YSPY	PP	PGSPPLYNPP	LSGTPLPLTHL

Figure S15. Comparative amino acid analysis of Sox15 gene in cattle, buffalo, sheep, and goat

Cow_SOX-17	MSSPDAGYASDEQSQR	SALPAVMAGL	GPCPWAESLS	PLGDMKMKGEAAA	SAGAPAGPAGRAKGE	SRIR	RMNAFMVWAKDERKRLAQ	90
Buffalo_SOX-17	MSSPDAGYASDEQSQR	SALPAVMAGL	GPCPWAESLS	PLGDMKMKGEAAA	SGGAPAGPAGRAKGE	SRIR	RMNAFMVWAKDERKRLAQ	90
Goat_SOX-17	MSSPDAGYASDEQSQR	SALPAVMAGL	GPCPWAESLS	PLGDMKMKGEAAA	SGGAPAGPAGRAKGE	SRIR	RMNAFMVWAKDERKRLAQ	90
Sheep_SOX-17	MSSPDAGYASDEQSQR	SALPAVMAGL	GPCPWAESLS	PLGDMKMKGEAAA	SGGAPAGPAGRAKGE	SRIR	RMNAFMVWAKDERKRLAQ	90
Cow_SOX-17	PDLHNAELSKMLGKSWKAL	TAEKRPFVEE	EAERLRVQHM	QDHPNYKYR	PRRRKQVKRL	KRV	EGGFLHGLAEP	PAAALGPEGGRVAMDGLG
Buffalo_SOX-17	PDLHNAELSKMLGKSWKAL	TAEKRPFVEE	EAERLRVQHM	QDHPNYKYR	PRRRKQVKRL	KRV	EGGFLHGLAEP	PAAALGPEGGRVAMDGLG
Goat_SOX-17	PDLHNAELSKMLGKSWKAL	TAEKRPFVEE	EAERLRVQHM	QDHPNYKYR	PRRRKQVKRL	KRV	EGGFLHGLAEP	PAAALGPEGGRVAMDGLG
Sheep_SOX-17	PDLHNAELSKMLGKSWKAL	TAEKRPFVEE	EAERLRVQHM	QDHPNYKYR	PRRRKQVKRL	KRV	EGGFLHGLAEP	PAAALGPEGGRVAMDGLG
Cow_SOX-17	LPFPEQGF	PAGPPL	PPHGGHYRDC	PGLGAPQLD	GYLPTP	DTSP	LDGVEP	DPAFFAAPLPADCP
Buffalo_SOX-17	LPFPEQGF	PAGPPL	PPHGGHYRDC	PGLGAPQLD	GYLPTP	DTSP	LDGVEP	DPAFFAAPLPADCP
Goat_SOX-17	LPFPEQGF	PAGPPL	PPHGGHYRDC	PGLGAPQLD	GYLPTP	DTSP	LDGVEP	DPAFFAAPLPADCP
Sheep_SOX-17	LPFPEQGF	PAGPPL	PPHGGHYRDC	PGLGAPQLD	GYLPTP	DTSP	LDGVEP	DPAFFAAPLPADCP
Cow_SOX-17	LHPRLGPE	TAGPAMP	GLLAPPSALHMYG	PVGSQ	AAAAGGG	GRGFQMP	PPPP	HGPGQSP
Buffalo_SOX-17	LHPRLGPE	TAGPAMP	GLLAPPSALHMYG	PVGSQ	AAAAGGG	GRGFQMP	PPPP	HGPGQSP
Goat_SOX-17	LHPRLGPE	TAGPAMP	GLLAPPSALHMYG	PVGSQ	AAAAGGG	GRGFQMP	PPPP	HGPGQSP
Sheep_SOX-17	LHPRLGPE	TAGPAMP	GLLAPPSALHMYG	PVGSQ	AAAAGGG	GRGFQMP	PPPP	HGPGQSP
Cow_SOX-17	QYLHFVCKPEMGL	YP	GH	DAGVTLP	DGHGALSSV	VS	DASSAVY	CNYPDV
Buffalo_SOX-17	QYLHFVCKPEMGL	YP	GH	DAGVTLP	DGHGALSSV	VS	DASSAVY	CNYPDV
Goat_SOX-17	QYLHFVCKPEMGL	YP	GH	DAGVTLP	DGHGALSSV	VS	DASSAVY	CNYPDV
Sheep_SOX-17	QYLHFVCKPEMGL	YP	GH	DAGVTLP	DGHGALSSV	VS	DASSAVY	CNYPDV

Figure S16. Comparative amino acid analysis of Sox17 gene in cattle, buffalo, sheep, and goat

Cow_SoX-18	MQRSPVLGYGAQDDPPARRDCAWAPGPGAAAEPRLPAVPPVPP--TAPAAPASPPSPRRSPPRSPEPGRYGLSPAGRGERQGTDESRIIR	87
Buffalo_SoX-18	MQRSPVLGYGAQDDPPARRDCAWAPGPGAAAEPRLPAVPPVPP--TAPAAPASPPSPRRSPPRSPEPGRYGLSPAGRGERQGTDESRIIR	87
Goat_SoX-18	MQRSPVLGYGAQDDPPARRDCAWAPGPGAAAEPRLPAVPPVPPVPTAPAAPASPPSPRRSPPRSPEPGRYGLSPAGRGERQGTDESRIIR	90
Sheep_SoX-18	MQRSPVLGYGAQDDPPARRDCAWAPGPGAAAEPRLPAVPPVPP--TAPAAPASPPSPRRSPPRSPEPGRYGLSPAGRGERQGTDESRIIR	87
Cow_SoX-18	PMNAFMVWAKDERKRRLAQQNPDLHNAVLSKMLGKAWKELSPAERKPFVEEAERLRVQHRLDHPNYKYPRRKKQARKARRLEPGLLLPGL	177
Buffalo_SoX-18	PMNAFMVWAKDERKRRLAQQNPDLHNAVLSKMLGKAWKELSPAERKPFVEEAERLRVQHRLDHPNYKYPRRKKQARKARRLEPGLLLPGL	177
Goat_SoX-18	PMNAFMVWAKDERKRRLAQQNPDLHNAVLSKMLGKAWKELSPAERKPFVEEAERLRVQHRLDHPNYKYPRRKKQARKARRLESGLLLPGL	180
Sheep_SoX-18	PMNAFMVWAKDERKRRLAQQNPDLHNAVLSKMLGKAWKELSPAERKPFVEEAERLRVQHRLDHPNYKYPRRKKQARKARRLESGLLLPGL	177
Cow_SoX-18	APPPPPPPPE--PFPAATGPARVFRELPLPGAEDGLGLPTPERSPLDGLPEGAAFFPPPAAPEDCSLRAFRAPYGAELPRNPGGCFG	265
Buffalo_SoX-18	APPPPPPPPE--PFPAATGPARVFRELPLPGAEDGLGLPTPERSPLDGLPEGAAFFPPPAAPEDCSLRAFRAPYGAELPRNPGGCFG	265
Goat_SoX-18	APPPPPPPPE--PFPAATGPARVFRELPLPGAEDGLGLPTPERSPLDGLPEGAAFFPPPAAPEDCSLRAFRAPYGAELPRNPGGCFG	269
Sheep_SoX-18	APPPPPPPPE--PFPAATGPARVFRELPLPGAEDGLGLPTPERSPLDGLPEGAAFFPPPAAPEDCSLRAFRAPYGAELPRNPGGCFG	267
Cow_SoX-18	APPAAELRTAPGPAALCGLYYSAPGAPGPGP--YGPPLSPPPEAPPLESAEPLGPAADLWADVLDLTFDQYLNCSTRPDAAGLPYHVA	353
Buffalo_SoX-18	APPAAELRTAPGPAALCGLYYSAPGAPGPGP--YGPPLSPPPEAPPLESAEPLGPAADLWADVLDLTFDQYLNCSTRPDAAGLPYHVA	355
Goat_SoX-18	APPAAELRTAPGPAALCGLYYSAPGAPGPGP--YGPPLSPPPEAPPLESAEPLGPAADLWADVLDLTFDQYLNCSTRPDAAGLPYHVA	357
Sheep_SoX-18	APPAAELRTAPGPAALCGLYYSAPGAPGPGP--YGPPLSPPPEAPPLESAEPLGPAADLWADVLDLTFDQYLNCSTRPDAAGLPYHVA	355
Cow_SoX-18	LAKLAPRTMTCPEESSLIAALSDASSAVVYYSACISG	389
Buffalo_SoX-18	LAKLAPRTMTCPEESSLIAALSDASSAVVYYSACISG	391
Goat_SoX-18	LAKLAPRTMTCPEESSLIAALSDASSAVVYYSACISG	393
Sheep_SoX-18	LAKLAPRTMTCPEESSLIAALSDASSAVVYYSACISG	391

Figure S17. Comparative amino acid analysis of Sox18 gene in cattle, buffalo, sheep, and goat

Cow_SoX-21	MSKPVDHVKKRPMNAFMVWSRAQRRKMAQENPKMHNSEISKRLGAEWKLLTESEKRRPFIDEAKRLRAMHMKHEHPDYKYRPRRKPKTLLKKD	90
Buffalo_SoX-21	MSKPVDHVKKRPMNAFMVWSRAQRRKMAQENPKMHNSEISKRLGAEWKLLTESEKRRPFIDEAKRLRAMHMKHEHPDYKYRPRRKPKTLLKKD	90
Goat_SoX-21	MSKPVDHVKKRPMNAFMVWSRAQRRKMAQENPKMHNSEISKRLGAEWKLLTESEKRRPFIDEAKRLRAMHMKHEHPDYKYRPRRKPKTLLKKD	90
Sheep_SoX-21	MSKPVDHVKKRPMNAFMVWSRAQRRKMAQENPKMHNSEISKRLGAEWKLLTESEKRRPFIDEAKRLRAMHMKHEHPDYKYRPRRKPKTLLKKD	90
Cow_SoX-21	KFAFPVPYGLGGVADAHPALKAGAGLHAGAGSGGLVPESELLANPEKAAAAAAAAAARVFFPQSAAAAAAAAAAAAAGSPYSLDDLGSKM	180
Buffalo_SoX-21	KFAFPVPYGLGGVADAHPALKAGAGLHAGAGSGGLVPESELLANPEKAAAAAAAAAARVFFPQSAAAAAAAAAAAAAGSPYSLDDLGSKM	180
Goat_SoX-21	KFAFPVPYGLGGVADAHPALKAGAGLHAGAGSGGLVPESELLANPEKAAAAAAAAAARVFFPQSAAAAAAAAAAAAAGSPYSLDDLGSKM	180
Sheep_SoX-21	KFAFPVPYGLGGVADAHPALKAGAGLHAGAGSGGLVPESELLANPEKAAAAAAAAAARVFFPQSAAAAAAAAAAAAAGSPYSLDDLGSKM	180
Cow_SoX-21	AEISSSSSGLPYASSLGYPTAGAGAFHGAAAAAAAAAAAAAGGHTHSHSPGNPGYMIPCNCSAWPSPLQPPPLAYIILLPGMGKPLQDPYP	270
Buffalo_SoX-21	AEISSSSSGLPYASSLGYPTAGAGAFHGAAAAAAAAAAAAAGGHTHSHSPGNPGYMIPCNCSAWPSPLQPPPLAYIILLPGMGKPLQDPYP	270
Goat_SoX-21	AEISSSSSGLPYASSLGYPTAGAGAFHGAAAAAAAAAAAAAGGHTHSHSPGNPGYMIPCNCSAWPSPLQPPPLAYIILLPGMGKPLQDPYP	270
Sheep_SoX-21	AEISSSSSGLPYASSLGYPTAGAGAFHGAAAAAAAAAAAAAGGHTHSHSPGNPGYMIPCNCSAWPSPLQPPPLAYIILLPGMGKPLQDPYP	270
Cow_SoX-21	AAAYAAAL	277
Buffalo_SoX-21	AAAYAAAL	277
Goat_SoX-21	AAAYAAAL	277
Sheep_SoX-21	AAAYAAAL	277

Figure S18. Comparative amino acid analysis of Sox21 gene in cattle, buffalo, sheep, and goat

Cow_SOX-30 MERARPEQPPQQRQLPRATPPRPLRPAPPPLPVEGASFRAAAATEPSPSPPTPCAAAATVASSCGEPSASGVQPAARRLLQVKPEQVLLL 90
Buffalo_SOX-30 MERARPEQPPQQRQLPRATPPRPLRPAPPPLPVEGASFRAAVTEPSPSPPTPCAAAATVASSCGEPSASGVQPAARRLLQVKPEQVLLL 90
Goat_SOX-30 MERARPEQPPQQRQLPRATPPRPLRPAPPPLPVEGASFRAAAAATEPSPSPPTPCAAAATVASSCGEPSASGVQPAARRLLQVKPEQVLLL 90
Sheep_SOX-30 MERARPEQPPQQRQLPRATPPRPLRPAPPPLPVEGASFRAAAAATEPSPSPPTPCAAAATVASSCGEPSASGVQPAARRLLQVKPEQVLLL 90

Cow_SOX-30 PPGPPLQAREESAATSPAQARLLQLRPELLLLPPPPASEGIPCRPELHPLQPRALHVKAEKQEPGGLDLAGPRRAVEACPKTSRTV 180
Buffalo_SOX-30 PPGPPLQAREEGAATSPAQARLLQLRSELLLLPPPPASEGIPCRPELHPLQPRALHVKAEKQEPGGLDLAGPRRAVEACPKTSRTV 180
Goat_SOX-30 PPGPPLQAREEGAATSPAQARLLQLRPELLLLPPPPASEGVP CRPELHPLQPRALHVKAEKQEPGGLDLAGPRRAVEACPKTSRTV 180
Sheep_SOX-30 PPGPPLQAREEGAATSPAQARLLQLRPELLLLPPPPASEGVP CRPELHPLQPRALHVKAEKQDPGGLDLAGPRRAVEACPKTSRTV 180

Cow_SOX-30 KAEGSGPLNSRRGEEKKGLAEAEIVSYAAKGEEGKSLAVLREGVIKTEAPERLREDCRLSTEPASNGLAHGSKDVILTQPSAFGPHQQ 270
Buffalo_SOX-30 KAEGSGPLNSRRGEEKKGLAEAEIVSYAAKGEEGKSLAVLREGVIKTEAPERLREDCRLSTEPASNGLAHGSKDVILTQPSAFGPHQQ 270
Goat_SOX-30 KAEGSGPLNSRRGDEKKKGLAEAEIVSYAAKGEEGKSLAVLREGVIKTEAPERLREDCRLSTEPASNGLAHGSKDVILTQPSAFGPHQQ 270
Sheep_SOX-30 KEGSGPLNSRRGDEKKKGLAEAEIVSYSAKGEEGKSLAVLREGVIKTEAPERLREDCRLSTEPASNGLAHGSKDVILTQPSAFGPHQQ 270

Cow_SOX-30 DLRIPLTLHTVPPGARIQFQGGPPSELIRLTKVPLTPVPIKMQSLEPSVKIETKDVPLTVLPSDAGIPDTPFSKDRNGHVKRPMAFMV 360
Buffalo_SOX-30 DLRIPLTLHTVPPGARIQFQGGPPSELIRLTKVPLTPVPIKMQSLEPSVKIETKDVPLTVLPSDAGIPDTPFSKDRNGHVKRPMAFMV 360
Goat_SOX-30 DLRIPLTLHTVPPGARIQFQGGPPSELIRLTKVPLTPVPIKMQSLEPSVKIETKDVPLTVLPSDAGIPDTPFSKDRNGHVKRPMAFMV 360
Sheep_SOX-30 DLRIPLTLHTVPPGARIQFQGGPPSELIRLTKVPLTPVPIKMQSLEPSVKIETKDVPLTVLPSDAGIPDTPFSKDRNGHVKRPMAFMV 360

Cow_SOX-30 WARIHRPALAKANPAANNAEISVOLGLEWNKLSEEQKPPYDEAQKIKEKHREEFPGWVYQPRPGKRRRFPPLSVSVFSGTQNIISTNP 450
Buffalo_SOX-30 WARIHRPALAKANPAANNAEISVOLGLEWNKLSEEQKPPYDEAQKIKEKHREEFPGWVYQPRPGKRRRFPPLSVSVFSGTQNIISTNP 450
Goat_SOX-30 WARIHRPALAKANPAANNAEISVOLGLEWNKLSEEQKPPYDEAQKIKEKHREEFPGWVYQPRPGKRRRFPPLSVSVFSGTQNIISTNP 450
Sheep_SOX-30 WARIHRPALAKANPAANNAEISVOLGLEWNKLSEEQKPPYDEAQKIKEKHREEFPGWVYQPRPGKRRRFPPLSVSVFSGTQNIISTNP 450

Cow_SOX-30 -TIYPYRSPTYSVVIPSLONAITHPVGESPPTIQLPTPAVQRPSITLFPQSVSSTAQVAVQAPSLPLRPALPPQRFAGPSQADTHQLHS 539
Buffalo_SOX-30 -TIYPYRSPTYSVVIPSLONAITHPVGESPPTIQLPTPAVQRPSITLFPQSVSSTAQVAVQAPSLPLRPALPPQRFAGPSQADTHQLHS 539
Goat_SOX-30 TTIYPYRSPTYSVVIPSLONTITHPVGESPPTIQLPTPAVQRPSITLFPQSVSSTAQVAVQAPSLPLRPALPPQRFAGPSQADTHQLHS 540
Sheep_SOX-30 TTIYPYRSPTYSVVIPSLONTITHPVGESPPTIQLPTPAVQRPSITLFPQSVSSTAQVAVQAPSLPLRPALPPQRFAGPSQADTHQLHS 540

Cow_SOX-30 GVNRSVKRPTPVSLNSTNRIPTSASPAHSRFATSTIQPKKEYPSVSTCPRSSTPISQAPPIPHSHYQPSPLGHPAALFGTPPRFSFHHPY 629
Buffalo_SOX-30 GVNRSVKRPTPVSLNSTNRIPTSASPAHSRFATSTIQPKKEYPSVSTCPRNSTPISQAPPIPHSHVFQPPPLGHPAALFGTPPRFSFHHPY 629
Goat_SOX-30 GVNRSVKRPTPVSLNSTNRIPTSASPAHSRFSTSTIQPKKEYPSVSTCPRSSTPISQAPPIPHSHVYQPPPLGHPAALFGTPPRFSFHHPY 630
Sheep_SOX-30 GVNRSVKRPTPVSLNSTNRIPTSASPAHSRFSTSTIQPKKEYPSVSTCPRSSTPISQAPPIPHSHVYQPPPLGHPAALFGTPPRFSFHHPY 630

Cow_SOX-30 FLPGPHYFPSSTCPYSRPPFGYGNFPSSMPECLGYEDRYQKHEAMFSALNRDYPFRDYPDERAHNEDSRSCENMDGTSYYNSHCHSGEE 719
Buffalo_SOX-30 FLPGPHYFPSSTCPYSRPPFGYGNFPSSMPECLGYEDRYQKHEAMFSALNRDYPFRDYPDERAHNEDSRSCENMDGTSYYNSHCHSGEE 719
Goat_SOX-30 FLPGPHYFPSSTCPYSRPPFGYGNFPSSMPECLGYEDRYQKHEAMFSALNRDYPFRDYPDERAHNEDSRSCENMDGTSYYNSHCHSGEE 720
Sheep_SOX-30 FLPGPHYFPSSTCPYSRPPFGYGNFPSSMPECLGYEDRYQKHEAMFSALNRDYPFRDYPDERAHNEDSRSCENMDGTSYYNSHCHSGEE 720

Cow_SOX-30 YLNPMPQLDIGALENVFTAPTSTPSSIQQVNVVDSDEEEEEKVLRNL 766
Buffalo_SOX-30 YLNPMPQLDIGALENVFTAPTSTPSSIQQVNVVDSDEEEEEKVLRNL 766
Goat_SOX-30 YLNPMPQLDIGALENVFTAPTSTPSSIQQVNVVDSDEEEEEKVLRNL 767
Sheep_SOX-30 YLNPMPQLDIGALENVFTAPTSTPSSIQQVNVVDSDEEEEEKVLRNL 767

Cow_SOX-1	AGANGTVPLTHI	369
Buffalo_SOX-1	AGANGTVPLTHI	370
Goat_SOX-1	AGANGTVPLTHI	372
Sheep_SOX-1	AGANGTVPLTHI	371

Figure S19. Comparative amino acid analysis of Sox30 gene in cattle, buffalo, sheep, and goat



Figure S20. Comparative amino acid analysis of Sry gene in cattle, buffalo, sheep, and goat

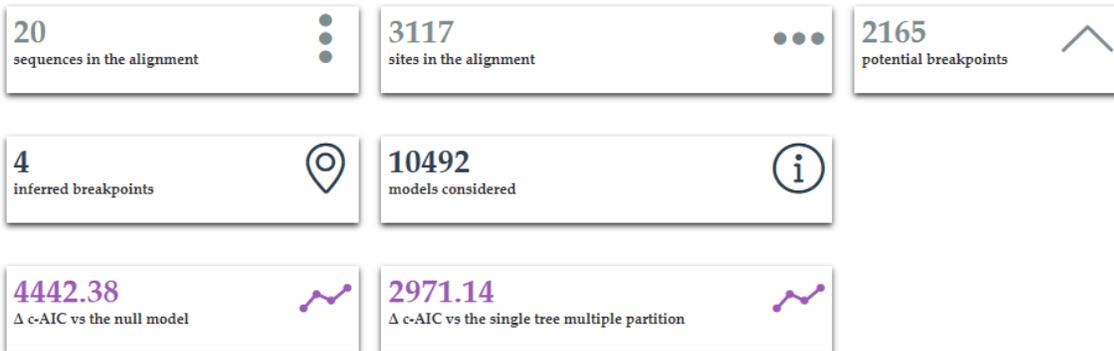


Figure S21. Analysis of GARD

Table S1: Buffalo and cattle Sox gene family with chromosome number and location

Gene	Buffalo		Cattle	
	Chromosome	Position	Chromosome	Position
SOX1	13	1124390...1127795	12	86018990..86022110
SOX2	1	130731784...130734338	1	85302293..85303771
SOX3	X	118463501...118465239	Unplaced Scaffold	4426849..4429001
SOX4	2	15869169...15873430	23	36517935..36522538
SOX5	4	33262643...34419596	5	85456814..86631212
SOX6	16	48888897...49605774	15	35834420..36548505
SOX7	3	71168529...71174671	8	8558547..8565620
SOX8	24	41398973...41403986	25	788544..793550
SOX9	3	4493353...4498743	19	58918901..58922699
SOX10	4	10196777...10207847	5	109757715..109768623
SOX11	12	90353529...90362307	11	90946223..90955282
SOX12	14	22918829...22921779	13	60689766..60694687
SOX13	5	79338823...79383069	16	1867662..1912526
SOX14	1	176274075...176276138	1	131371915..131372637
SOX15	3	35785580...35787156	19	27319235..27321042
SOX17	15	59969970...59975876	14	22229926..22231726
SOX18	14	29832918...29834810	13	53823431..53825287
SOX21	13	20645934...20650444	12	69200712..69204003
SOX30	9	41564987...41608436	7	69215442..69297855
Sry	Y	150...839	Y	42225210..42225899

Table S2. Functional effect of mutations in Sox genes in buffalo

	Mutation	Polyphen2	Mupro	Provean	I-Mutant	Phd-Snp	SIFT	SNAP ²	Predict SNP	Meta SNP	SNAP	
<i>SOX-1</i>												
	A223P	BENIGN	DECREASE	Neutral	Increase	Neutral	Tolerated	Effect	Neutral	Neutral	NA	Synonymous
<i>SOX-4</i>												
	T225A	UNKNOWN	DECREASE	Neutral	Decrease	Neutral	Tolerated	Neutral	Neutral	Neutral	NA	Synonymous
<i>SOX-5</i>												
	A84T	BENIGN	DECREASE	Neutral	Decrease	Neutral	Tolerated	Neutral	Neutral	Neutral	NA	Synonymous
	P362S	BENIGN	DECREASE	Deleterious	Decrease	Neutral	Not Tolerated	Effect	Neutral	Neutral	NA	Non Synonymous
<i>SOX-6</i>												
	L2P	UNKNOWN	DECREASE	Neutral	Decrease	Neutral	Not Tolerated	Neutral	Neutral	Neutral	NA	Non Synonymous
	E45D	BENIGN	INCREASE	Neutral	Decrease	Neutral	Tolerated	Effect	Neutral	Neutral	NA	Synonymous
	S66P	BENIGN	INCREASE	Neutral	Increase	Neutral	Tolerated	Effect	Neutral	Neutral	NA	Synonymous
	I138M	BENIGN	DECREASE	Neutral	Decrease	Neutral	Tolerated	Neutral	Neutral	Neutral	NA	Synonymous
	S476P	BENIGN	DECREASE	Neutral	Increase	Neutral	Tolerated	Neutral	Neutral	Neutral	NA	Synonymous
<i>SOX-7</i>												
	R168S	BENIGN	DECREASE	Neutral	Decrease	Neutral	Tolerated	Effect	Neutral	Neutral	Neutral	Synonymous
	S264G	BENIGN	DECREASE	Neutral	Decrease	Neutral	Tolerated	Neutral	Neutral	Neutral	Neutral	Synonymous
	P276S	BENIGN	DECREASE	Neutral	Decrease	Neutral	Tolerated	Effect	Neutral	Neutral	Neutral	Synonymous
	A352G	BENIGN	DECREASE	Neutral	Decrease	Neutral	Tolerated	Neutral	Neutral	Neutral	Neutral	Synonymous
<i>SOX-8</i>												
	R42H	POSSIBLY DAMAGING	INCREASE	Neutral	Decrease	Neutral	Not Tolerated	Effect	Neutral	Neutral	NA	Synonymous
	T43A	BENIGN	DECREASE	Neutral	Decrease	Neutral	Not Tolerated	Effect	Neutral	Neutral	NA	Synonymous
	S270G	BENIGN	DECREASE	Neutral	Decrease	Neutral	Tolerated	Neutral	Neutral	Neutral	NA	Synonymous
	T382A	BENIGN	INCREASE	Neutral	Decrease	Neutral	Tolerated	Neutral	Neutral	Neutral	NA	Synonymous
	S391G	PROBABLY DAMAGING	DECREASE	Neutral	Decrease	Neutral	Tolerated	Effect	Neutral	Neutral	NA	Synonymous
	Y443F	BENIGN	INCREASE	Neutral	Decrease	Disease	Not Tolerated	Effect	Deleterious	Neutral	NA	Non-Synonymous
<i>SOX-9</i>												
	A372P	UNKNOWN	DECREASE	Neutral	Increase	Neutral	Tolerated	Effect	Neutral	Neutral	NA	Synonymous
	P374Q	UNKNOWN	DECREASE	Neutral	Increase	Disease	Tolerated	Neutral	Neutral	Neutral	NA	Synonymous
<i>SOX-11</i>												
	G351S	UNKNOWN	DECREASE	Neutral	Increase	Neutral	Tolerated	Neutral	Neutral	Neutral	NA	Synonymous
<i>SOX-13</i>												

	G5R	UNKNOWN	INCREASE	Neutral	Increase	Neutral	Not Tolerated	Effect	Deleterious	Neutral	Disease	Non-Synonymous
	F20V	UNKNOWN	DECREASE	Neutral	Decrease	Neutral	Not Tolerated	Effect	Deleterious	Disease	Disease	Non-Synonymous
	F39L	UNKNOWN	DECREASE	Neutral	Decrease	Neutral	Not Tolerated	Effect	Neutral	Disease	Disease	Non-Synonymous
	T83A	BENIGN	DECREASE	Neutral	Decrease	Neutral	Tolerated	Neutral	Neutral	Neutral	Disease	Synonymous
	T95I	BENIGN	INCREASE	Neutral	Increase	Neutral	Not Tolerated	Effect	Neutral	Neutral	Disease	Synonymous
	T106A	BENIGN	INCREASE	Neutral	Decrease	Neutral	Tolerated	Neutral	Neutral	Neutral	Neutral	Synonymous
	S116L	BENIGN	INCREASE	Neutral	Decrease	Neutral	Not Tolerated	Neutral	Neutral	Neutral	Disease	Synonymous
	G166D	BENIGN	DECREASE	Neutral	Decrease	Neutral	Tolerated	Neutral	Neutral	Neutral	Neutral	Synonymous
	A315T	BENIGN	DECREASE	Neutral	Decrease	Neutral	Tolerated	Neutral	Neutral	Neutral	Neutral	Synonymous
	G610S	BENIGN	DECREASE	Neutral	Decrease	Neutral	Tolerated	Neutral	Neutral	Neutral	Neutral	Synonymous
	V642M	BENIGN	DECREASE	Neutral	Decrease	Neutral	Tolerated	Effect	Neutral	Neutral	Neutral	Synonymous
SOX-15												
	D15E	BENIGN	DECREASE	Neutral	Increase	Neutral	Tolerated	Neutral	Neutral	Neutral	Neutral	Synonymous
	S124T	BENIGN	INCREASE	Neutral	Decrease	Neutral	Tolerated	Neutral	Neutral	Neutral	Disease	Synonymous
	T205P	DAMAGING	DECREASE	Neutral	Decrease	Neutral	Not Tolerated	Effect	Neutral	Neutral	NA	Non-Synonymous
	P211L	BENIGN	DECREASE	Neutral	Decrease	Neutral	Tolerated	Effect	Neutral	Neutral	Neutral	Synonymous
SOX-17												
	A52G	BENIGN	DECREASE	Neutral	Decrease	Neutral	Tolerated	Neutral	Neutral	Neutral	Neutral	Synonymous
	P374S	UNKNOWN	DECREASE	Neutral	Decrease	Neutral	Tolerated	Neutral	Neutral	Neutral	Neutral	Synonymous
SOX-18												
	A314V	BENIGN	DECREASE	Neutral	Increase	Neutral	Tolerated	Neutral	Neutral	Neutral	NA	Synonymous
	S363T	PROBABLY DAMAGING	INCREASE	Neutral	Increase	Neutral	Tolerated	Neutral	Neutral	Neutral	NA	Synonymous
SOX-21												
	A119T	BENIGN	INCREASE	Neutral	Decreases	Neutral	Not Tolerated	Neutral	Neutral	Neutral	NA	Synonymous
SOX-30												
	P21S	UNKNOWN	DECREASE	Neutral	Decrease	Neutral	Tolerated	Neutral	Neutral	Neutral	Neutral	Synonymous
	P28A	UNKNOWN	DECREASE	Neutral	Decrease	Neutral	Not Tolerated	Effect	Neutral	Neutral	Neutral	Non-Synonymous
	A42V	POSSIBLY DAMAGING	INCREASE	Neutral	Increase	Neutral	Not Tolerated	Neutral	Deleterious	Neutral	Neutral	Synonymous
	C53W	PROBABLY DAMAGING	INCREASE	Neutral	Increase	Neutral	Not Tolerated	Effect	Deleterious	Disease	Disease	Non-Synonymous
	S103G	BENIGN	DECREASE	Neutral	Decrease	Neutral	Not Tolerated	Neutral	Neutral	Neutral	Neutral	Synonymous

	P118S	PROBABLY DAMAGING	DECREASE	Neutral	Decrease	Neutral	Not Tolerated	Neutral	Neutral	Neutral	Neutral	Synonymous
	T179R	BENIGN	DECREASE	Neutral	Increase	Neutral	Not Tolerated	Effect	Deleterious	Neutral	Disease	Non-Synonymous
	A230V	BENIGN	INCREASE	Neutral	Decrease	Neutral	Not Tolerated	Neutral	Neutral	Neutral	Neutral	Synonymous
	N253S	BENIGN	DECREASE	Neutral	Decrease	Neutral	Tolerated	Neutral	Neutral	Neutral	Neutral	Synonymous
	S542N	BENIGN	INCREASE	Neutral	Increase	Neutral	Not Tolerated	Neutral	Neutral	Neutral	Disease	Synonymous
	S555N	BENIGN	DECREASE	Neutral	Decrease	Neutral	Not Tolerated	Effect	Neutral	Neutral	Neutral	Synonymous
	S590N	BENIGN	DECREASE	Neutral	Decrease	Neutral	Not Tolerated	Effect	Neutral	Neutral	Disease	Synonymous
	I604V	BENIGN	DECREASE	Neutral	Increase	Neutral	Tolerated	Neutral	Neutral	Neutral	Neutral	Synonymous
	Y605F	PROBABLY DAMAGING	DECREASE	Neutral	Increase	Neutral	Not Tolerated	Effect	Deleterious	Disease	Disease	Non-Synonymous
	S608P	BENIGN	INCREASE	Neutral	Increase	Neutral	Tolerated	Neutral	Neutral	Neutral	Neutral	Synonymous
	E696D	PROBABLY DAMAGING	DECREASE	Neutral	Decrease	Neutral	Not Tolerated	Effect	Deleterious	Neutral	Neutral	Non-Synonymous
	I724M	BENIGN	DECREASE	Neutral	Decrease	Neutral	Tolerated	Neutral	Neutral	Neutral	Neutral	Synonymous
	SRY											
	V14G	BENIGN	DECREASE	Neutral	Decrease	Neutral	Tolerated	Neutral	Neutral	Neutral	NA	Synonymous
	Q17H	BENIGN	DECREASE	Neutral	Decrease	Neutral	Tolerated	Effect	Neutral	Neutral	NA	Synonymous
	T19N	BENIGN	INCREASE	Neutral	Decrease	Neutral	Tolerated	Neutral	Neutral	Neutral	NA	Synonymous
	L29S	BENIGN	DECREASE	Neutral	Decrease	Neutral	Not Tolerated	Effect	Neutral	Neutral	NA	Synonymous
	H45N	BENIGN	INCREASE	Neutral	Decrease	Neutral	Tolerated	Neutral	Neutral	Neutral	NA	Synonymous
	V54I	BENIGN	DECREASE	Neutral	Increase	Neutral	Tolerated	Neutral	Neutral	Neutral	NA	Synonymous
	V63L	BENIGN	DECREASE	Deleterious	Decrease	Disease	Not Tolerated	Effect	Deleterious	Disease	NA	Non-Synonymous
	W64G	BENIGN	DECREASE	Deleterious	Decrease	Disease	Not Tolerated	Effect	Deleterious	Disease	NA	Non-Synonymous
	R68Q	BENIGN	DECREASE	Neutral	Decrease	Neutral	Tolerated	Neutral	Neutral	Neutral	NA	Synonymous
	R69K	BENIGN	DECREASE	Deleterious	Decrease	Disease	Not Tolerated	Effect	Deleterious	Disease	NA	Non-Synonymous
	R70Q	BENIGN	DECREASE	Deleterious	Decrease	Disease	Not Tolerated	Effect	Deleterious	Disease	NA	Non-Synonymous
	V72L	BENIGN	INCREASE	Neutral	Increase	Neutral	Not Tolerated	Neutral	Neutral	Neutral	NA	Synonymous
	D83K	BENIGN	DECREASE	Neutral	Decrease	Disease	Not Tolerated	Effect	Deleterious	Disease	NA	Non-Synonymous

	W92G	BENIGN	DECREASE	Deleterious	Decrease	Disease	Not Tolerated	Effect	Deleterious	Disease	NA	Non-Synonymous
	A112S	BENIGN	DECREASE	Neutral	Decrease	Disease	Not Tolerated	Effect	Neutral	Disease	NA	Non-Synonymous
	R128K	BENIGN	DECREASE	Neutral	Decrease	Neutral	Tolerated	Neutral	Neutral	Neutral	NA	Synonymous
	P132L	BENIGN	INCREASE	Neutral	Decrease	Neutral	Tolerated	Neutral	Neutral	Neutral	NA	Synonymous
	Q172H	BENIGN	DECREASE	Deleterious	Decrease	Disease	Not Tolerated	Effect	Neutral	Neutral	NA	Non-Synonymous
	K201R	BENIGN	DECREASE	Neutral	Increase	Neutral	Tolerated	Effect	Neutral	Neutral	NA	Synonymous
	A210E	BENIGN	DECREASE	Neutral	Decrease	Neutral	Not Tolerated	Effect	Neutral	Neutral	NA	Synonymous
	C214F	BENIGN	DECREASE	Neutral	Increase	Neutral	Tolerated	Effect	Neutral	Neutral	NA	Synonymous