

GEPHE SUMMARY

|                                                                                                                                                                                                                             |                |            |              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|--------------|
| RXFP2 ( <a +rxfp2+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=">https://www.gephebase.org/search-criteria?/and+Gene+Gephebase="+RXFP2+"#gephebase-summary-title</a> ) | Gephebase Gene | GP00001019 | GepheID      |
|                                                                                                                                                                                                                             | Entry Status   | Martin     | Main curator |
|                                                                                                                                                                                                                             | Published      |            |              |

PHENOTYPIC CHANGE

|                                                                                                                                                                                                                                            |                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| Trait #1                                                                                                                                                                                                                                   | Trait Category         |
| Morphology ( <a +morphology+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait+Category=">https://www.gephebase.org/search-criteria?/and+Trait+Category="+Morphology+"#gephebase-summary-title</a> ) | Trait                  |
| Horns absence ( <a +horns+absence+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait=">https://www.gephebase.org/search-criteria?/and+Trait="+Horns+absence+"#gephebase-summary-title</a> )          | Trait State in Taxon A |
| Ovis aries                                                                                                                                                                                                                                 | Trait State in Taxon B |
| Ovis aries                                                                                                                                                                                                                                 |                        |

|                                                                                                                                                                                                                                                  |                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| Trait #2                                                                                                                                                                                                                                         | Trait Category         |
| Physiology ( <a +physiology+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait+Category=">https://www.gephebase.org/search-criteria?/and+Trait+Category="+Physiology+"#gephebase-summary-title</a> )       | Trait                  |
| Somatic sex change ( <a +somatic+sex+change+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait=">https://www.gephebase.org/search-criteria?/and+Trait="+Somatic+sex+change+"#gephebase-summary-title</a> ) | Trait State in Taxon A |
| -                                                                                                                                                                                                                                                | Trait State in Taxon B |
| -                                                                                                                                                                                                                                                |                        |

|                                                                                                                                                                                                                                                                                                                                                   |                             |                                                                                                                                                                                                                                                                                                                                                   |                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| Ancestral State                                                                                                                                                                                                                                                                                                                                   |                             |                                                                                                                                                                                                                                                                                                                                                   |                             |
| Data not curated                                                                                                                                                                                                                                                                                                                                  |                             | Taxonomic Status                                                                                                                                                                                                                                                                                                                                  |                             |
| Domesticated ( <a +domesticated+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=">https://www.gephebase.org/search-criteria?/and+Taxonomic+Status="+Domesticated+"#gephebase-summary-title</a> )                                                                                              |                             |                                                                                                                                                                                                                                                                                                                                                   |                             |
| Taxon A                                                                                                                                                                                                                                                                                                                                           | Latin Name                  | Taxon B                                                                                                                                                                                                                                                                                                                                           | Latin Name                  |
| Ovis aries ( <a +ovis+aries+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Ovis+aries+"#gephebase-summary-title</a> )                                                                                                | Common Name                 | Ovis aries ( <a +ovis+aries+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Ovis+aries+"#gephebase-summary-title</a> )                                                                                                | Common Name                 |
| sheep                                                                                                                                                                                                                                                                                                                                             | Synonyms                    | sheep                                                                                                                                                                                                                                                                                                                                             | Synonyms                    |
| Ovis ammon aries; Ovis orientalis aries; Ovis ovis; sheep; domestic sheep; lambs; wild sheep; Ovis aries Linnaeus, 1758                                                                                                                                                                                                                           | Rank                        | Ovis ammon aries; Ovis orientalis aries; Ovis ovis; sheep; domestic sheep; lambs; wild sheep; Ovis aries Linnaeus, 1758                                                                                                                                                                                                                           | Rank                        |
| species                                                                                                                                                                                                                                                                                                                                           | Lineage                     | species                                                                                                                                                                                                                                                                                                                                           | Lineage                     |
| cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Sarcopterygii; Dipnotetrapodomorpha; Tetrapoda; Amniota; Mammalia; Theria; Eutheria; Boreoeutheria; Laurasiatheria; Artiodactyla; Ruminantia; Pecora; Bovidae; Caprinae; Ovis | Parent                      | cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Sarcopterygii; Dipnotetrapodomorpha; Tetrapoda; Amniota; Mammalia; Theria; Eutheria; Boreoeutheria; Laurasiatheria; Artiodactyla; Ruminantia; Pecora; Bovidae; Caprinae; Ovis | Parent                      |
| Ovis () - (Rank: genus) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9935">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9935</a> )                                                                                                                                                                       | NCBI Taxonomy ID            | Ovis () - (Rank: genus) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9935">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9935</a> )                                                                                                                                                                       | NCBI Taxonomy ID            |
| 9940 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9940">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9940</a> )                                                                                                                                                                                          | is Taxon A an Intraspecies? | 9940 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9940">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9940</a> )                                                                                                                                                                                          | is Taxon B an Intraspecies? |
| No                                                                                                                                                                                                                                                                                                                                                |                             | No                                                                                                                                                                                                                                                                                                                                                |                             |

GENOTYPIC CHANGE

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                   |                                                                                                                        |                         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|------------------------------------------------------------------------------------------------------------------------|-------------------------|
| RXFP2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Generic Gene Name                 | Q8WXD0 ( <a href="http://www.uniprot.org/uniprot/Q8WXD0">http://www.uniprot.org/uniprot/Q8WXD0</a> )                   | UniProtKB Homo sapiens  |
| LGR8; GREAT; GPR106; INSL3R; LGR8.1; RXFP2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Synonyms                          | AGS77194 ( <a href="https://www.ncbi.nlm.nih.gov/nuccore/AGS77194">https://www.ncbi.nlm.nih.gov/nuccore/AGS77194</a> ) | GenebankID or UniProtKB |
| 9606.ENSPP00000298386<br>( <a href="http://string-db.org/newstring.cgi/show_network_section.pl?identifier=9606.ENSPP00000298386">http://string-db.org/newstring.cgi/show_network_section.pl?identifier=9606.ENSPP00000298386</a> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | String                            |                                                                                                                        |                         |
| Belongs to the G-protein coupled receptor 1 family.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Sequence Similarities             |                                                                                                                        |                         |
| GO:0017046 : peptide hormone binding<br>( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0017046">https://www.ebi.ac.uk/QuickGO/term/GO:0017046</a> )<br>GO:0008528 : G protein-coupled peptide receptor activity<br>( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0008528">https://www.ebi.ac.uk/QuickGO/term/GO:0008528</a> )<br>GO:0016500 : protein-hormone receptor activity<br>( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0016500">https://www.ebi.ac.uk/QuickGO/term/GO:0016500</a> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | GO - Molecular Function           |                                                                                                                        |                         |
| GO:0043066 : negative regulation of apoptotic process<br>( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0043066">https://www.ebi.ac.uk/QuickGO/term/GO:0043066</a> )<br>GO:0009755 : hormone-mediated signaling pathway<br>( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0009755">https://www.ebi.ac.uk/QuickGO/term/GO:0009755</a> )<br>GO:0007186 : G protein-coupled receptor signaling pathway<br>( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0007186">https://www.ebi.ac.uk/QuickGO/term/GO:0007186</a> )<br>GO:0008584 : male gonad development<br>( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0008584">https://www.ebi.ac.uk/QuickGO/term/GO:0008584</a> )<br>GO:0008285 : negative regulation of cell proliferation<br>( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0008285">https://www.ebi.ac.uk/QuickGO/term/GO:0008285</a> )<br>GO:0043950 : positive regulation of cAMP-mediated signaling<br>( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0043950">https://www.ebi.ac.uk/QuickGO/term/GO:0043950</a> )<br>GO:0007189 : adenylate cyclase-activating G protein-coupled receptor signaling pathway<br>( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0007189">https://www.ebi.ac.uk/QuickGO/term/GO:0007189</a> )<br>GO:0007193 : adenylate cyclase-inhibiting G protein-coupled receptor signaling pathway<br>( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0007193">https://www.ebi.ac.uk/QuickGO/term/GO:0007193</a> )<br>GO:0007190 : activation of adenylate cyclase activity<br>( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0007190">https://www.ebi.ac.uk/QuickGO/term/GO:0007190</a> )<br>GO:0001556 : oocyte maturation ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0001556">https://www.ebi.ac.uk/QuickGO/term/GO:0001556</a> ) | GO - Biological Process           |                                                                                                                        |                         |
| GO:0005886 : plasma membrane ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0005886">https://www.ebi.ac.uk/QuickGO/term/GO:0005886</a> )<br>GO:0005887 : integral component of plasma membrane<br>( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0005887">https://www.ebi.ac.uk/QuickGO/term/GO:0005887</a> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | GO - Cellular Component           |                                                                                                                        |                         |
| No ( <a href="https://www.gephebase.org/search-criteria?/and+Presumptive Null=~No~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Presumptive Null=~No~#gephebase-summary-title</a> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Presumptive Null                  |                                                                                                                        |                         |
| Gene Amplification ( <a href="https://www.gephebase.org/search-criteria?/and+Molecular Type=~Gene Amplification~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Molecular Type=~Gene Amplification~#gephebase-summary-title</a> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Molecular Type                    |                                                                                                                        |                         |
| Insertion ( <a href="https://www.gephebase.org/search-criteria?/and+Aberration Type=~Insertion~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Aberration Type=~Insertion~#gephebase-summary-title</a> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Aberration Type                   |                                                                                                                        |                         |
| 1-10 kb                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Insertion Size                    |                                                                                                                        |                         |
| 1833-bp genomic insertion located in the 3'-UTR region of RXFP2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Molecular Details of the Mutation |                                                                                                                        |                         |
| Linkage Mapping ( <a href="https://www.gephebase.org/search-criteria?/and+Experimental Evidence=~Linkage Mapping~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Experimental Evidence=~Linkage Mapping~#gephebase-summary-title</a> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Experimental Evidence             |                                                                                                                        |                         |
| Life history trade-offs at a single locus maintain sexually selected genetic variation. (2013) ( <a href="https://pubmed.ncbi.nlm.nih.gov/23965625">https://pubmed.ncbi.nlm.nih.gov/23965625</a> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Main Reference                    |                                                                                                                        |                         |
| Johnston SE; Gratten J; Berenos C; Pilkington JG; Clutton-Brock TH; Pemberton JM; Slate J                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Authors                           |                                                                                                                        |                         |
| Sexual selection, through intra-male competition or female choice, is assumed to be a source of strong and sustained directional selection in the wild. In the presence of such strong directional selection, alleles enhancing a particular trait are predicted to become fixed within a population, leading to a decrease in the underlying genetic variation. However, there is often considerable genetic variation underlying sexually selected traits in wild populations, and consequently, this phenomenon has become a long-discussed issue in the field of evolutionary biology. In wild Soay sheep, large horns confer an advantage in strong intra-sexual competition, yet males show an inherited polymorphism for horn type and have substantial genetic variation in their horn size. Here we show that most genetic variation in this trait is maintained by a trade-off between natural and sexual selection at a single gene, relaxin-like receptor 2 (RXFP2). We found that an allele conferring larger horns, Ho(+), is associated with higher reproductive success, whereas a smaller horn allele, Ho(P), confers increased survival, resulting in a net effect of overdominance (that is, heterozygote advantage) for fitness at RXFP2. The nature of this trade-off is simple relative to commonly proposed explanations for the maintenance of sexually selected traits, such as genic capture ('good genes') and sexually antagonistic selection. Our results demonstrate that by identifying the genetic architecture of trait variation, we can determine the principal mechanisms maintaining genetic variation in traits under strong selection and explain apparently counter-evolutionary observations.                                                      | Abstract                          |                                                                                                                        |                         |
| A 1.8-kb insertion in the 3'-UTR of RXFP2 is associated with polledness in sheep. (2015) ( <a href="https://pubmed.ncbi.nlm.nih.gov/26103004">https://pubmed.ncbi.nlm.nih.gov/26103004</a> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Additional References             |                                                                                                                        |                         |

RELATED GEPHE

|                   |                    |
|-------------------|--------------------|
| No matches found. | Related Genes      |
|                   | Related Haplotypes |

No matches found.

## EXTERNAL LINKS

## COMMENTS

<https://omia.org/OMIA000483/9940/>