

GEPHE SUMMARY

<p>Taqpep (https://www.gephebase.org/search-criteria?/and+Gene+Gephebase+^Taqpep+^#gephebase-summary-title)</p> <p>Published</p>	<p>Gephebase Gene</p> <p>Entry Status</p>	<p>GP00001107</p> <p>Martin</p>	<p>GepheID</p> <p>Main curator</p>
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PHENOTYPIC CHANGE

<p>Morphology (https://www.gephebase.org/search-criteria?/and+Trait+Category+^Morphology+^#gephebase-summary-title)</p> <p>Coloration (coat) (https://www.gephebase.org/search-criteria?/and+Trait+^Coloration+^#gephebase-summary-title)</p> <p>Felis catus - various breeds</p> <p>Felis catus - various breeds ; including Norwegian Forest Cat</p> <p>Data not curated</p> <p>Intraspecific (https://www.gephebase.org/search-criteria?/and+Taxonomic+Status+^Intraspecific+^#gephebase-summary-title)</p>	<p>Trait Category</p> <p>Trait</p> <p>Trait State in Taxon A</p> <p>Trait State in Taxon B</p> <p>Ancestral State</p> <p>Taxonomic Status</p>	<p>Taxon A</p> <p>Latin Name</p> <p>Felis catus (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms+^Felis+catus+^#gephebase-summary-title)</p> <p>Common Name</p> <p>domestic cat</p> <p>Synonyms</p> <p>Felis domesticus; Felis silvestris catus; domestic cat; cat; cats; Felis catus Linnaeus, 1758; Korat cats L.</p> <p>Rank</p> <p>species</p> <p>Lineage</p> <p>cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Sarcopterygii; Dipnotetrapodomorpha; Tetrapoda; Amniota; Mammalia; Theria; Eutheria; Boreoeutheria; Laurasiatheria; Carnivora; Feliformia; Felidae; Felinae; Felis</p> <p>Parent</p> <p>Felis () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9682)</p> <p>9685 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9685)</p> <p>is Taxon A an Intraspecies?</p> <p>No</p>	<p>Taxon B</p> <p>Latin Name</p> <p>Felis catus (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms+^Felis+catus+^#gephebase-summary-title)</p> <p>Common Name</p> <p>domestic cat</p> <p>Synonyms</p> <p>Felis domesticus; Felis silvestris catus; domestic cat; cat; cats; Felis catus Linnaeus, 1758; Korat cats L.</p> <p>Rank</p> <p>species</p> <p>Lineage</p> <p>cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Sarcopterygii; Dipnotetrapodomorpha; Tetrapoda; Amniota; Mammalia; Theria; Eutheria; Boreoeutheria; Laurasiatheria; Carnivora; Feliformia; Felidae; Felinae; Felis</p> <p>Parent</p> <p>Felis () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9682)</p> <p>9685 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9685)</p> <p>is Taxon B an Intraspecies?</p> <p>No</p>
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GENOTYPIC CHANGE

<p>Lvrn</p> <p>Aqpep</p> <p>10090.ENSMUSP00000025358 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier=10090.ENSMUSP00000025358)</p> <p>Belongs to the peptidase M1 family.</p>	<p>Generic Gene Name</p> <p>Synonyms</p> <p>String</p> <p>Sequence Similarities</p> <p>GO - Molecular Function</p> <p>GO:0008270 : zinc ion binding (https://www.ebi.ac.uk/QuickGO/term/GO:0008270)</p> <p>GO:0042277 : peptide binding (https://www.ebi.ac.uk/QuickGO/term/GO:0042277)</p> <p>GO:0070006 : metalloaminopeptidase activity (https://www.ebi.ac.uk/QuickGO/term/GO:0070006)</p> <p>GO - Biological Process</p> <p>GO:0006508 : proteolysis (https://www.ebi.ac.uk/QuickGO/term/GO:0006508)</p>	<p>UniProtKB Mus musculus</p> <p>GenebankID or UniProtKB</p> <p>Q2KHK3 (http://www.uniprot.org/uniprot/Q2KHK3)</p> <p>()</p>
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GO:0043171 : peptide catabolic process
(<https://www.ebi.ac.uk/QuickGO/term/GO:0043171>)

GO - Cellular Component

GO:0016021 : integral component of membrane
(<https://www.ebi.ac.uk/QuickGO/term/GO:0016021>)

GO:0005886 : plasma membrane (<https://www.ebi.ac.uk/QuickGO/term/GO:0005886>)

GO:0005737 : cytoplasm (<https://www.ebi.ac.uk/QuickGO/term/GO:0005737>)

Presumptive Null

Yes ([#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Presumptive+Null=~Yes))

Molecular Type

Coding ([#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Molecular+Type=~Coding))

Aberration Type

SNP ([#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Aberration+Type=~SNP))

SNP Coding Change

Nonsense

Molecular Details of the Mutation

S59stop

Experimental Evidence

Candidate Gene ([#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Experimental+Evidence=~Candidate+Gene))

	Taxon A	Taxon B	Position
Codon	-	-	-
Amino-acid	Ser	STP	59

Main Reference

Specifying and sustaining pigmentation patterns in domestic and wild cats. (2012) (<https://pubmed.ncbi.nlm.nih.gov/22997338>)

Authors

Kaelin CB; Xu X; Hong LZ; David VA; McGowan KA; Schmidt-Käntzel A; Roelke ME; Pino J; Pontius J; Cooper GM; Manuel H; Swanson WF; Marker L; Harper CK; van Dyk A; Yue B; Mullikin JC; Warren WC; Eizirik E; Kos L; O'Brien SJ; Barsh GS; Menotti-Raymond M

Abstract

Color markings among felid species display both a remarkable diversity and a common underlying periodicity. A similar range of patterns in domestic cats suggests a conserved mechanism whose appearance can be altered by selection. We identified the gene responsible for tabby pattern variation in domestic cats as Transmembrane aminopeptidase Q (Taqpep), which encodes a membrane-bound metalloprotease. Analyzing 31 other felid species, we identified Taqpep as the cause of the rare king cheetah phenotype, in which spots coalesce into blotches and stripes. Histologic, genomic expression, and transgenic mouse studies indicate that paracrine expression of Endothelin3 (Edn3) coordinates localized color differences. We propose a two-stage model in which Taqpep helps to establish a periodic pre-pattern during skin development that is later implemented by differential expression of Edn3.

Additional References

RELATED GEPHE

Related Genes

6 (Agouti, Kit (type III receptor protein-tyrosine kinase), MC1R, Melanophilin (MLPH), tyrosinase (TYR), tyrosinase-related protein 1 (TYRP1)) (<https://www.gephebase.org/search-criteria?/or+Taxon+ID=~9685#/and+Trait=Coloration/and+groupHaplotypes=true#gephebase-summary-title>)

Related Haplotypes

2 (<https://www.gephebase.org/search-criteria?/or+Gene+Gephebase=~Taqpep#/and+Taxon+ID=~9685#/or+Gene+Gephebase=~Taqpep#/and+Taxon+ID=~9685#gephebase-summary-title>)

EXTERNAL LINKS

COMMENTS

@AllelicSeries <https://omia.org/OMIA001429/9685/>