

GEPHE SUMMARY

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|---|---|---------------------------------|------------------------------------|
| <p>OR7D4 (https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=^OR7D4^#gephebase-summary-title)</p> <p>Published</p> | <p>Gephebase Gene</p> <p>Entry Status</p> | <p>GP00000804</p> <p>Martin</p> | <p>GepheID</p> <p>Main curator</p> |
|---|---|---------------------------------|------------------------------------|

PHENOTYPIC CHANGE

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|---|---|---|---|---|
| <p>Physiology (https://www.gephebase.org/search-criteria?/and+Trait+Category=^Physiology^#gephebase-summary-title)</p> <p>Olfaction (https://www.gephebase.org/search-criteria?/and+Trait=^Olfaction^#gephebase-summary-title)</p> <p>Human/Chimpanzee ancestor</p> <p>Homo sapiens</p> <p>Taxon A</p> <p>Interspecific (https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=^Interspecific^#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>Homininae</p> <p>(https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Homininae^#gephebase-summary-title)</p> <p>-</p> <p>Homo/Pan/Gorilla group</p> <p>subfamily</p> <p>cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Sarcopterygii; Dipnotetrapodomorpha; Tetrapoda; Amniota; Mammalia; Theria; Eutheria; Boreoeutheria; Euarchontoglires; Primates; Haplorrhini; Simiiformes; Catarrhini; Hominoidea; Hominidae</p> <p>Hominidae (great apes) - (Rank: family)</p> <p>(https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9604)</p> <p>207598</p> <p>(https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=207598)</p> <p>is Taxon A an Intraspecies?</p> <p>No</p> | <p>Taxon B</p> <p>Latin Name</p> <p>Homo sapiens</p> <p>(https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Homo+sapiens^#gephebase-summary-title)</p> <p>Common Name</p> <p>human</p> <p>Synonyms</p> <p>human; man; Homo sapiens Linnaeus, 1758; Home sapiens; Homo sampiens; Homo sapeins; Homo sapien; Homo sapians; Homo sapien; Homo sapience; Homo sapiense; Homo sapients; Homo sapines; Homo spaiens; Homo spiens; Humo sapiens</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; Euarchontoglires; Primates; Haplorrhini; Simiiformes; Catarrhini; Hominoidea; Hominidae; Homininae; Homo</p> <p>Parent</p> <p>Homo () - (Rank: genus)</p> <p>(https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9605)</p> <p>NCBI Taxonomy ID</p> <p>9606</p> <p>(https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9606)</p> <p>is Taxon B an Intraspecies?</p> <p>No</p> | <p>Latin Name</p> <p>Common Name</p> <p>Synonyms</p> <p>Rank</p> <p>Lineage</p> <p>Parent</p> <p>NCBI Taxonomy ID</p> |
|---|---|---|---|---|

GENOTYPIC CHANGE

| | | | |
|--|--|---|--|
| <p>OR7D4</p> <p>OR19B; hg105; OR19-7; OR19-B; OR7D4P</p> <p>9606.ENSPO0000310488</p> <p>(http://string-db.org/newstring_cgi/show_network_section.pl?identifier=9606.ENSPO0000310488)</p> <p>Belongs to the G-protein coupled receptor 1 family.</p> <p>GO:0004930 : G protein-coupled receptor activity</p> <p>(https://www.ebi.ac.uk/QuickGO/term/GO:0004930)</p> <p>GO:0004984 : olfactory receptor activity</p> <p>(https://www.ebi.ac.uk/QuickGO/term/GO:0004984)</p> | <p>Generic Gene Name</p> <p>Synonyms</p> <p>String</p> <p>Sequence Similarities</p> <p>GO - Molecular Function</p> | <p>Q8NG98 (http://www.uniprot.org/uniprot/Q8NG98)</p> <p>ALI87882 (https://www.ncbi.nlm.nih.gov/nucore/ALI87882)</p> | <p>UniProtKB Homo sapiens</p> <p>GenebankID or UniProtKB</p> |
|--|--|---|--|

GO - Biological Process

GO:0007186 : G protein-coupled receptor signaling pathway
 (https://www.ebi.ac.uk/QuickGO/term/GO:0007186)

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)

Presumptive Null

No (https://www.gephebase.org/search-criteria?/and+Presumptive Null="No"#gephebase-summary-title)

Molecular Type

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

Aberration Type

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

SNP Coding Change

Nonsynonymous

Molecular Details of the Mutation

M273T

Experimental Evidence

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

| | Taxon A | Taxon B | Position |
|------------|---------|---------|----------|
| Codon | - | - | - |
| Amino-acid | - | - | - |

Main Reference

Dynamic functional evolution of an odorant receptor for sex-steroid-derived odors in primates. (2009) (https://pubmed.ncbi.nlm.nih.gov/19955411)

Authors

Zhuang H; Chien MS; Matsunami H

Abstract

Odorant receptors are among the fastest evolving genes in animals. However, little is known about the functional changes of individual odorant receptors during evolution. We have recently demonstrated a link between the in vitro function of a human odorant receptor, OR7D4, and in vivo olfactory perception of 2 steroidal ligands--androstenone and androstadienone--chemicals that are shown to affect physiological responses in humans. In this study, we analyzed the in vitro function of OR7D4 in primate evolution. Orthologs of OR7D4 were cloned from different primate species. Ancestral reconstruction allowed us to reconstitute additional putative OR7D4 orthologs in hypothetical ancestral species. Functional analysis of these orthologs showed an extremely diverse range of OR7D4 responses to the ligands in various primate species. Functional analysis of the nonsynonymous changes in the Old World Monkey and Great Ape lineages revealed a number of sites causing increases or decreases in sensitivity. We found that the majority of the functionally important residues in OR7D4 were not predicted by the maximum likelihood analysis detecting positive Darwinian selection.

Additional References

RELATED GEPHE

Related Genes

No matches found.

Related Haplotypes

5 (https://www.gephebase.org/search-criteria?/or+Gene Gephebase="OR7D4"/and+Taxon ID="207598"/or+Gene Gephebase="OR7D4"/and+Taxon ID="9606"#gephebase-summary-title)

EXTERNAL LINKS

COMMENTS