

## GEPHE SUMMARY

	Gephebase Gene	GephelD
lysozyme ( <a href="https://www.gephebase.org/search-criteria?/and+Gene">https://www.gephebase.org/search-criteria?/and+Gene</a> Gephebase="lysozyme">#gephebase-summary-title)	GP00000556	Main curator
Published	Entry Status	Martin

## PHENOTYPIC CHANGE

	Trait Category		
Physiology ( <a href="https://www.gephebase.org/search-criteria?/and+Trait">https://www.gephebase.org/search-criteria?/and+Trait</a> Category="Physiology">#gephebase-summary-title)	Trait		
Digestion (anaerobic enzymatic activity) ( <a href="https://www.gephebase.org/search-criteria?/and+Trait=Digestion+(anaerobic+enzymatic+activity)">https://www.gephebase.org/search-criteria?/and+Trait=Digestion+(anaerobic+enzymatic+activity)</a> #gephebase-summary-title)	Trait State in Taxon A		
Other birds	Trait State in Taxon B		
Opisthocomus hoazin	Ancestral State		
Taxon A	Taxonomic Status		
Intergeneric or Higher ( <a href="https://www.gephebase.org/search-criteria?/and+Taxonomic">https://www.gephebase.org/search-criteria?/and+Taxonomic</a> Status="Intergeneric or Higher">#gephebase-summary-title)			
Taxon A		Taxon B	
Aves ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=Aves">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=Aves</a> #gephebase-summary-title)	Latin Name	Opisthocomus hoazin ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=Opisthocomus+hoazin">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=Opisthocomus+hoazin</a> #gephebase-summary-title)	Latin Name
birds	Common Name	-	Common Name
avian; birds	Synonyms	Opisthocomus hoazin hoazin; hoatzin; Opisthocomus hoazin (Statius Mueller, 1776)	Synonyms
class	Rank	species	Rank
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Sarcopterygii; Dipnotetrapodomorpha; Tetrapoda; Amniota; Sauropsida; Sauria; Archelosauria; Archosauria; Dinosauria; Saurischia; Theropoda; Coelurosauria	Lineage	cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Sarcopterygii; Dipnotetrapodomorpha; Tetrapoda; Amniota; Sauropsida; Sauria; Archelosauria; Archosauria; Dinosauria; Saurischia; Theropoda; Coelurosauria; Aves; Neognathae; Opisthocomiformes; Opisthocomidae; Opisthocomus	Lineage
Coelurosauria () - (Rank: no rank) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=436492">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=436492</a> )	Parent	Opisthocomus () - (Rank: genus) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=30418">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=30418</a> )	Parent
8782 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=8782">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=8782</a> )	NCBI Taxonomy ID	30419 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=30419">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=30419</a> )	NCBI Taxonomy ID
No	is Taxon A an Infraspecies?	is Taxon B an Infraspecies?	No

## GENOTYPIC CHANGE

LYZ1	Generic Gene Name	UniProtKB Bos taurus
-	Synonyms	GenebankID or UniProtKB
-	String	
	Sequence Similarities	
Belongs to the glycosyl hydrolase 22 family.		
GO:0003796 : lysozyme activity ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0003796">https://www.ebi.ac.uk/QuickGO/term/GO:0003796</a> )	GO - Molecular Function	
GO:0050829 : defense response to Gram-negative bacterium ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0050829">https://www.ebi.ac.uk/QuickGO/term/GO:0050829</a> )	GO - Biological Process	
GO:0050830 : defense response to Gram-positive bacterium ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0050830">https://www.ebi.ac.uk/QuickGO/term/GO:0050830</a> )		
GO:0019835 : cytolysis ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0019835">https://www.ebi.ac.uk/QuickGO/term/GO:0019835</a> )		
GO:0007586 : digestion ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0007586">https://www.ebi.ac.uk/QuickGO/term/GO:0007586</a> )		

Mutation #1

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
Coding ( <a href="https://www.gephebase.org/search-criteria/?and+Molecular+Type=%Coding%#gephebase-summary-title">https://www.gephebase.org/search-criteria/?and+Molecular+Type=%Coding%#gephebase-summary-title</a> )	Molecular Type
SNP ( <a href="https://www.gephebase.org/search-criteria/?and+Aberration+Type=%SNP%#gephebase-summary-title">https://www.gephebase.org/search-criteria/?and+Aberration+Type=%SNP%#gephebase-summary-title</a> )	Aberration Type
Nonsynonymous	SNP Coding Change
R14E	Molecular Details of the Mutation
Candidate Gene ( <a href="https://www.gephebase.org/search-criteria/?and+Experimental+Evidence=%Candidate+Gene%#gephebase-summary-title">https://www.gephebase.org/search-criteria/?and+Experimental+Evidence=%Candidate+Gene%#gephebase-summary-title</a> )	Experimental Evidence

	Taxon A	Taxon B	Position
Codon	-	-	-
Amino-acid	Arg	Glu	14

Molecular adaptation of a leaf-eating bird: stomach lysozyme of the hoatzin. (1994) ( <a href="https://pubmed.ncbi.nlm.nih.gov/7815930">https://pubmed.ncbi.nlm.nih.gov/7815930</a> )	Main Reference
Kornegay JR; Schilling JW; Wilson AC	Authors
This report describes a lysozyme expressed at high levels in the stomach of the hoatzin, the only known foregut-fermenting bird. Evolutionary comparison places it among the calcium-binding lysozymes rather than among the conventional types. Conventional lysozymes were recruited as digestive enzymes twice in the evolution of mammalian foregut fermenters, and these independently recruited lysozymes share convergent structural changes attributed to selective pressures in the stomach. Biochemical convergence and parallel amino acid replacements are observed in the hoatzin stomach lysozyme even though it has a different genetic origin from the mammalian examples and has undergone more than 300 million years of independent evolution.	Abstract
	Additional References

Mutation #2

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
Coding ( <a href="https://www.gephebase.org/search-criteria/?and+Molecular+Type=%Coding%#gephebase-summary-title">https://www.gephebase.org/search-criteria/?and+Molecular+Type=%Coding%#gephebase-summary-title</a> )	Molecular Type
SNP ( <a href="https://www.gephebase.org/search-criteria/?and+Aberration+Type=%SNP%#gephebase-summary-title">https://www.gephebase.org/search-criteria/?and+Aberration+Type=%SNP%#gephebase-summary-title</a> )	Aberration Type
Nonsynonymous	SNP Coding Change
V21E	Molecular Details of the Mutation
Candidate Gene ( <a href="https://www.gephebase.org/search-criteria/?and+Experimental+Evidence=%Candidate+Gene%#gephebase-summary-title">https://www.gephebase.org/search-criteria/?and+Experimental+Evidence=%Candidate+Gene%#gephebase-summary-title</a> )	Experimental Evidence

	Taxon A	Taxon B	Position
Codon	-	-	-
Amino-acid	Val	Glu	21

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	Additional References

Mutation #3

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
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Coding ( <a href="https://www.gephebase.org/search-criteria?/and+Molecular Type=^Coding">#gephebase-summary-title)</a>	Molecular Type		
SNP ( <a href="https://www.gephebase.org/search-criteria?/and+Aberration Type=^SNP">#gephebase-summary-title)</a>	Aberration Type		
Nonsynonymous	SNP Coding Change		
N75D	Molecular Details of the Mutation		
Candidate Gene ( <a href="https://www.gephebase.org/search-criteria?/and+Experimental Evidence=^Candidate Gene">#gephebase-summary-title)</a>	Experimental Evidence		
	Taxon A	Taxon B	Position
Codon	-	-	-
Amino-acid	Asn	Asp	75
			Main Reference
Molecular adaptation of a leaf-eating bird: stomach lysozyme of the hoatzin. (1994) ( <a href="https://pubmed.ncbi.nlm.nih.gov/7815930">https://pubmed.ncbi.nlm.nih.gov/7815930</a> )	Authors		
Kornegay JR; Schilling JW; Wilson AC	Abstract		
This report describes a lysozyme expressed at high levels in the stomach of the hoatzin, the only known foregut-fermenting bird. Evolutionary comparison places it among the calcium-binding lysozymes rather than among the conventional types. Conventional lysozymes were recruited as digestive enzymes twice in the evolution of mammalian foregut fermenters, and these independently recruited lysozymes share convergent structural changes attributed to selective pressures in the stomach. Biochemical convergence and parallel amino acid replacements are observed in the hoatzin stomach lysozyme even though it has a different genetic origin from the mammalian examples and has undergone more than 300 million years of independent evolution.	Additional References		

Mutation #4			
No ( <a href="https://www.gephebase.org/search-criteria?/and+Presumptive Null=^No">#gephebase-summary-title)</a>	Presumptive Null		
Coding ( <a href="https://www.gephebase.org/search-criteria?/and+Molecular Type=^Coding">#gephebase-summary-title)</a>	Molecular Type		
SNP ( <a href="https://www.gephebase.org/search-criteria?/and+Aberration Type=^SNP">#gephebase-summary-title)</a>	Aberration Type		
Nonsynonymous	SNP Coding Change		
D87N	Molecular Details of the Mutation		
Candidate Gene ( <a href="https://www.gephebase.org/search-criteria?/and+Experimental Evidence=^Candidate Gene">#gephebase-summary-title)</a>	Experimental Evidence		
	Taxon A	Taxon B	Position
Codon	-	-	-
Amino-acid	Asp	Asn	87
			Main Reference
Molecular adaptation of a leaf-eating bird: stomach lysozyme of the hoatzin. (1994) ( <a href="https://pubmed.ncbi.nlm.nih.gov/7815930">https://pubmed.ncbi.nlm.nih.gov/7815930</a> )	Authors		
Kornegay JR; Schilling JW; Wilson AC	Abstract		
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Mutation #5	
No ( <a href="https://www.gephebase.org/search-criteria?/and+Presumptive Null=^No">#gephebase-summary-title)</a>	Presumptive Null
Coding ( <a href="https://www.gephebase.org/search-criteria?/and+Molecular Type=^Coding">#gephebase-summary-title)</a>	Molecular Type
SNP ( <a href="https://www.gephebase.org/search-criteria?/and+Aberration Type=^SNP">#gephebase-summary-title)</a>	Aberration Type
Nonsynonymous	SNP Coding Change
	Molecular Details of the Mutation

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

	Taxon A	Taxon B	Position
Codon	-	-	-
Amino-acid	Arg	Lys	126

Molecular adaptation of a leaf-eating bird: stomach lysozyme of the hoatzin. (1994) (<https://pubmed.ncbi.nlm.nih.gov/7815930>)

Main Reference

Kornegay JR; Schilling JW; Wilson AC

Authors

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Abstract

Additional References

## RELATED GEPHE

No matches found.

Related Genes

No matches found.

Related Haplotypes

## EXTERNAL LINKS

## COMMENTS

@SeveralMutationsWithEffect