

# ALFRED: the ALlele FREquency Database

Kenneth K. Kidd<sup>1</sup>, Haseena Rajeevan<sup>1</sup>, Kei-Hoi Cheung<sup>2</sup>, Usha Soundararajan<sup>1</sup>, Shannon Stein<sup>1</sup>, Andrew J. Pakstis<sup>1</sup>, Judith R. Kidd<sup>1</sup>

<sup>1</sup>Department of Genetics & the <sup>2</sup>Center for Medical Informatics, Yale University School of Medicine

<http://alfred.med.yale.edu>

ALFRED is a free, web accessible, Google Map enabled, and curated compilation of allele frequency data on DNA sequence polymorphisms in anthropologically defined human populations. Reciprocal URL links exist to and from PharmGKB, dbSNP, and Genopedia HuGE Navigator as well as electronic links to the relevant scientific literature and to various ethnographic and molecular databases. A grant from the U.S. National Science Foundation (BCS-0725180) provides financial support to ALFRED so it can be an international resource for research and teaching in physical anthropology, human population genetics, and any other field that can benefit from easy access to data that are otherwise widely dispersed in the scientific literature. Currently, data from high throughput datasets are being added to ALFRED increasing the type and quantity of data considerably.

### Population Information

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**Population Information**

Name	ALFRED UID	Primary Language	Language Family
IKung San	P0000091K	JU/HOAN	Khoisan

Synonyms: *Zhu/wasi*; *Bushman*;

Geographic Location: 15S, 13E, 26S, 24E  
 Sites typed for this population: [View List](#)  
 Population Samples: [See Sample Information](#)  
 External Resources: [Ethnologue: Language Description Record](#) [Photo Collection Record](#) [Survival of the UKung San people in the Kalahari Desert Record](#) [Kung Bushmen tribes of the Kalahari Desert](#) [EthnoAtlas: Culture Data Record](#) [Ethnologue: Language Map Record](#) [iMuseum: Kung San Record](#) [Rosetta Project: Language Overview Record](#) [See references](#)  
 Population Description:

The IKung San are an African tribe located in Southern Africa. Today the IKung can be found in the region of the Kalahari Desert, primarily in Angola, Namibia, and Botswana. In the literature, the IKung San may also be known as IKung, Zhu/wasi and Bushman to name a few. Although the complete history of the IKung and just how long they have been in the area is unclear, modern archaeological evidence has shown that southern Africa was occupied by Later Stone Age peoples, who are thought to be ancestors of the IKung and other San peoples. However, many people believe these ancestors date much further back than the Stone Age.

Traditionally, the IKung are a nomadic tribe and rely on hunting and gathering as their primary means of subsistence. They are an egalitarian society with an emphasis on gift giving and reciprocity. The IKung have a strong division of labor with the men hunting and the women foraging/gathering. They generally live in camps that number from 10 to 30 individuals, although the number of individuals in each camp may change from day to day. Their religion may be characterized as traditional nature

Display of Pie Charts for multiple samples of a population

Click on the population pie chart to view samples pie charts for that population

This example displays different samples for Udmurt population for CCR5 32-bp Ins/Del site

Click on the individual pie chart for display of these information

Udmurt  
 Typed sample Size: 100  
 Population: <http://alfred.med.yale.edu/alfredrecord.asp?uid=P00005668>  
 Direction: [To here](#) [From here](#)

## ALFRED Homepage

The ALlele FREquency Database  
 A resource of gene frequency data on human populations supported by the U. S. National Science Foundation.

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Quick links:  
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 contact us

Map Interface Update: Now view allele frequency pie-charts on Google Map. For example [here](#) in the google map view of allele frequency pie-charts for rs1159918.

Quick Keyword Search:

Search Type:  Search Tables:

Any part of  Begins with  Loci  Site  Population

Highlights:  
 ALFRED now has data on 1,4915 polymorphisms, 669 populations and 290163 frequency tables (one population typed for one site).  
 October 2008 Newsletter is available now. Register to receive your copy.  
 Fst and Avg Heterozygosity available at [Summaries->Fst and Avg Het](#) and Polymorphism Information page.

### Frequency search result – Tabular format

Allele Frequency for Polymorphic Sites: [Help](#)

Locus Name: [Albinism](#)

Geographic Region	Population (Sample UID)	Typed Sample Size (n)	A, a info	Genotype info	Allele Symbol
Africa	Namoi (SA000116D)	28 (4/24/2002)	+	24 A	0.385 0.615
Africa	Sao (SA000117D)	30 (4/24/2002)	+	24 A	0.143 0.857
Africa	Sofia-Timara (SA000114E)	44 (4/24/2002)	+	24 A	0.421 0.579
Africa	Tsona (SA000115E)	28 (4/24/2002)	+	24 A	0.615 0.385

Typing Method: PCR-RFLP (Restriction Fragment Length Polymorphism)

Contributors: [Entered by ALFRED: Chantal, Jeff, Ross, Larawan](#)

### New Display Feature Under Summaries Tab

Under Table Numbers: Graphical Overview of the contents in ALFRED

- Number of allele frequency tables for each polymorphic site (ordered by site name)
- Number of allele frequency tables for each polymorphic site (ordered by #populations typed=0)
- Number of allele frequency tables for each population (ordered by population name)

Click on suitable button to view sites typed on >100, 99-50, 49-20 or <20 ALFRED populations separately.

This table displays number of populations typed for a site

ALFRED Populations per Site Summary - ordered by #populations typed

Site (UID)	Chrom	Locus Symbol	Populations typed
<a href="#">32bp Ins/Del (S1000676T)</a>	3	CCR5	260
<a href="#">rWA.com-mot STRP (S1000628E)</a>	12	VWF	201
<a href="#">ACE Ala del (S1000241H)</a>	17	ACE	189
<a href="#">TPA25 Ala insertion (S1000152D)</a>	8	PLAT	188
<a href="#">THO1 (AAATG) n tetranucleotide repeat (S1000509D)</a>	11	TH	179
<a href="#">D7S820 tetranucleotide repeat (S1001028L)</a>	7	D7S820	178

## Locus Information

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**Locus Information**

Name	ALFRED UID	Locus Symbol	Chromosome	Band Position
Alcohol Dehydrogenase 7 (class IV), mu or sigma polypeptide	LO000229N	ADH7	4	4q23-q24

Synonyms: *ADH 4*;

Frequency Display Formats:  [Reciprocal links to other databases](#)

Sites List: [See Sites List](#)

External Resources: [Enter Gene Locus Information](#) [OMIM description](#) [GDB gene information](#) [GenBank sequence](#) [UniProt](#) [PharmGKB Gene Information](#) [Genpep \(HuGE Navigator\)](#)

References: [See References](#)

Locus Description: The Class V Alcohol Dehydrogenase (ADH) gene ADH7. The entire family of ADH genes are listed separately as "Alcohol Dehydrogenase Gene family" (LO000381M).

Sites within this locus ordered by their chromosomal position in the latest NCBI build:

Site Name	dbSNP rs#	Chr-Position	Status	Site-Locus association updated according to NCBI build 36.1
<a href="#">C_2688538_10</a>	rs1789924	100493309	Now associated with <a href="#">ADH1C</a>	
<a href="#">R_2165671_10</a>	rs1154435	100504171	Now associated with <a href="#">rs1154435</a>	

### Display of Frequency Data as Pie Charts on Google Map

ALFRED Site and Locus Information

Site: [Locus](#)

[32bp Ins/Del](#) [Chromosome \(C-C motif\) receptor 5](#)

Albinism

## Polymorphism Information

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**Polymorphism Information**

Name	ALFRED UID	Locus Name	Locus Symbol
32bp Deletion	rs1789924	Chromosome (C-C motif) receptor 5	CCR5

Fst [0.067] Avg Het [0.047] # Populations Typed [260]

Synonyms: [rs1789924](#)

Frequency on Map:

Frequency Display Formats:   [Multiple frequency display formats](#)

Estimated Heterozygosity:  [Multiple frequency download formats](#)

Frequency Download: [See Download](#) [ALFRED link](#) [# of L](#) [Study](#)

External Resources: [GenBank sequence Record](#) [Ymap/Protocol Record](#) [dbSNP rs# Record](#)

References: [See References](#)

Polymorphism Description: This is a 32-bp deletion polymorphism in the coding region of CCR5 gene. This deletion results in the elimination of ten amino acid residues from the binding site of CCR5. As a result, the translated receptor is functionally inactive and cannot be used by HIV-1 as a coreceptor to gain entry into the cell. This mechanism underlies the protective character of CCR5-Δ32 mutation and hence the homozygous carriers are protected against HIV-1 infection.

Alleles:

Allele Name	Allele Symbol	Description
32 bp Deletion	-	5'-attcattacattaaa-3'
32 bp Insertion	+	5'-ttccatc ACAG "24 bp" CCAG accattaaa-3'

### Display of Sample size and ALFRED Link on Google Map

Site: [Locus](#)

[32bp Ins/Del](#) [Chromosome \(C-C motif\) receptor 5](#)

Albinism

Click on the individual pie chart for display of these information

Mardin  
 Typed sample Size: 172 Population:  
<http://alfred.med.yale.edu/alfredrecord.asp?uid=P00001177>

## Individual Genotype Data

Link to this data available from ALFRED homepage under New Features:

New Features:  
 Graphical Overview for markers typed on multiple populations. [Shortcut Navigation](#)  
 Genotype data: Individual typings available.  
 Suggestions or comments.

**GENOTYPES OF GLOBAL POPULATIONS**

About the Site | Browse Project Data | ALFRED | Links | Tutorial

General Information

The Genotypes for Global Populations (GGP) project is a complementary effort to ALFRED, which provides allele frequencies by population to provide genotypes for multiple polymorphisms by individuals in each population. Currently, data on several hundred SNPs for ~2000 individuals in 43 human populations are being made available. We expect additional SNPs to be added periodically for these individuals. Initial data will be from the laboratory of Dr. Kenneth K. Kidd, Department of Genetics, Yale University School of Medicine but if other investigators wish to collaborate, the site can add other populations for other polymorphisms.