

## Studies on Blood Genetic Markers in Some Mongoloid Populations of Eastern Siberia

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To present new genetic information on northern peoples and to examine their relationship with Japanese, field-works were undertaken in summer in 1991 and 1993 to collect blood samples from indigenous populations of Mongoloid groups in Eastern Siberia and the Primorsky region.

### Materials

Buryat samples were provided from a hospital in Ulan-Ude. Evenki samples were collected at camp-sites and villages of Ust-Njukza, Ust-Urkema and Perbomaiskij near Tynda. Udeghe and Nanai samples were obtained in villages of Agzu and Krasnii Yar. Out of 687 samples only those whose parents were from a same ethnic group were chosen. They were 180 for Buryats, 194 for Evenkis and 110 for Udegghes. The Nanai group is excluded in this report, because most were 'mixed'.

### Results and Discussion

Table 1 presents allele frequencies for the 14 polymorphic systems investigated in the three Mongoloid populations in Russia. Data for a Japanese population are also given as reference.

Compared with Japanese, the three indigenous populations showed much more polymorphic in ACP, HP and AHS systems, and far less polymorphic in PGM, ESD and TF systems.

In addition, PLG\*M5, responsible for producing an inactive form of plasminogen, was first detected except Japanese. A considerably high incidence of GM\*ST gene was again observed in the Buryat population. the C1R(subcomponent R of complement 1) system proved to be a useful marker for examining Mongoloid populations.

Table 1. Allele Frequencies for 14 Genetic Markers

	ABO			ACP		PGM				ESD		
	O	A	B	A	B	1A	1B	2A	2B	1	2	V
Buryat	0.518	0.194	0.267	0.325	0.675	0.750	0.065	0.172	0.013	0.769	0.231	-
Evenki	0.558	0.178	0.264	0.246	0.754	0.813	0.083	0.083	0.021	0.762	0.238	-
Udeghe	0.610	0.152	0.219	0.327	0.673	0.768	0.005	0.155	0.073	0.714	0.286	-
C(Jpn)	0.559	0.271	0.170	0.213	0.787	0.696	0.092	0.155	0.057	0.628	0.364	0.008

	HP		GC		TF			PI				
	1	2	1F	1S	2	V	1	2	V	1	2	3
Buryat	0.315	0.685	0.517	0.297	0.178	0.008	0.819	0.164	0.017	0.831	0.136	0.033
Evenki	0.406	0.594	0.598	0.299	0.103	-	0.866	0.121	0.013	0.732	0.196	0.071
Udeghe	0.358	0.642	0.636	0.091	0.273	-	0.918	0.073	0.009	0.854	0.141	0.005
C(Jpn)	0.263	0.737	0.472	0.247	0.253	0.028	0.747	0.239	0.014	0.740	0.210	0.050

	CIR				AHS			PLG			
	1	2	5	V	1	2	V	A	B	M5	V
Buryat	0.614	0.267	0.116	0.003	0.603	0.394	0.003	0.925	0.050	0.022	0.003
Evenki	0.353	0.235	0.412	-	0.613	0.382	0.005	0.987	0.013	-	-
Udeghe	0.432	0.259	0.305	0.005	0.536	0.459	0.005	0.991	0.009	-	-
C(Jpn)	0.456	0.338	0.196	0.010	0.732	0.268	-	0.953	0.010	0.015	0.022

	GM				BF			13A				
	ag	axg	ab <sup>2</sup> st	afb <sup>1</sup> b <sup>3</sup>	F	S	S07	FV	1A	1B	2A	2B
Buryat	0.444	0.132	0.281	0.143	0.222	0.744	0.031	0.003	0.225	0.556	0.008	0.208
Evenki	0.590	0.103	0.227	0.080	0.075	0.920	0.003	0.003	0.201	0.678	0.003	0.119
Udeghe	0.581	0.196	0.164	0.059	0.123	0.868	-	0.010	0.209	0.650	0.032	0.109
C(Jpn)	0.453	0.158	0.269	0.121	0.182	0.795	-	0.023	0.275	0.620	0.007	0.098

Nei' standard genetic distances for each pair of the populations in Table 1 were calculated ( Table 2). Clustering was performed using the UPGMA method. Fig.1 is a dendrogram based on the above 14 loci. The Buryat shows a great affinity with Japanese, whereas the rest of

Table 2  
Nei's Genetic Distances between the Population Samples

	1)	2)	3)
1) Buryat			
2) Evenki	0.0257		
3) Udeghe	0.0174	0.0168	
4) Japanese	0.0145	0.0256	0.0324

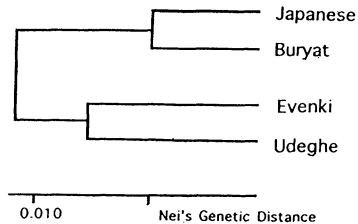


Fig.1. A UPGMA dendrogram between the examined four populations(14 loci)

a same tungusic-speaking group forms another cluster.

Several Russian investigators have been devoted to genetic studies of various isolated indigenous populations in Siberia, and have offered their results in literatures. Utilizing such data as well as those of neighboring countries, an additional "map" could be depicted. Fig. 2 is a dendrogram for 11 Mongoloid populations based on the 6 loci ( ABO, HP, GC, TF, ACP and PGM- any not subtyped). It includes further 7 populations whose data source are indicated below.

There are two main clusters. One consists of populations of Arctic peoples in Northern Siberia. The other comprises the populations of the Altaic language family, which appear to be separated into two groups according to their language affiliation. The exception is of the Udeghe. A plausible explanation is probably due to Chinese effects to that ethnic group.

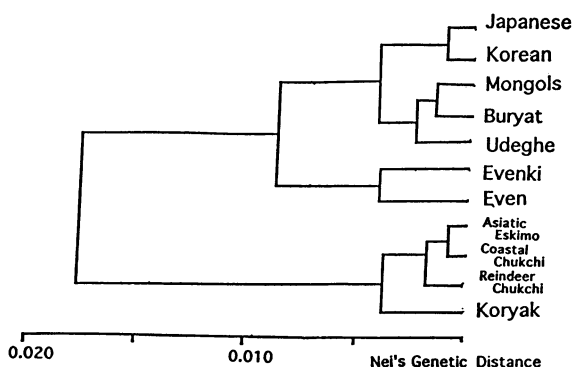


Fig.2. A UPGMA dendrogram between eleven Mongoloid populations(6 loci)

#### Data source for furthrt 7 populations:

Asiatic Eskimo, Coastal Chukchi and Reindeer Chukchi: Solovenchuk LL,1984. Koryak: Solovenchuk LL et al.,1985 Even: Posukh OL et al. 1990 Mongols: Batsuur Zh et al.,1991 Korean: Ohkura K et al.,1989, Jiujin X et al.,1986, Matsumoto H et al.,1980, Goedde HW et al.,1984.