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Anthropology and Anatomy

Roma People – Genetics and Anthropology

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Roma people are from long ago suspected of Indian ancestry. At first this supposition was proved by somatological observations. Generally different Roma appearance from neighbouring European populations was obvious but only since start of genetic surveys it was evident that Indian hypothesis is valid, and fully concordant with older anthropometric data.

Keywords: Roma, genetics, anthropometry, origins.

I. Historical background

Gypsies, who call themselves Roma, originated from people who left northern India between 5th and 11th century, probably around 8th century [5, 6, 9], and then reached through variety of ways almost all European countries (about 900 years ago appeared in the Balkans) [6], in turn, related to them Dom people [9] are present at the Middle East and north Africa. The two most likely are derived from the tribe Domba from north–western India [8].

II. Y–DNA

The main proof of the origin of the Gypsies from the Indian subcontinent is a very high percentage of "Indian" haplogroup H (exactly H1a1a–M82)[8]. Apart from India, does not meet such high frequency of this haplogroup. Moreover, among the Gypsies this haplogroup is more numerous than among the Hindus, which indicates so-called "founder effect" and the origin of Gypsies from a small group of Indian immigrants.



In Europe, only among the Serbs and Ukrainians H percentage oscillates around 1%, elsewhere is practically non-existent.

 Table 1. European Roma samples and two non-Roma European samples with biggest percentage of H haplogroup [11]

Population sample	n	H-haplogroup, %	Author
Slovakian Romani	62	30.65%	Pamjev et al. 2011
Portuguese Romani	126	16.67%	Gusmao et al. 2008
Kosovo, Belgrade, Vojvodina Romani	88	43.18%	Regueiro et al. 2011
Bulgarian Romani	248	39.52%	Gresham et al. 2001
Spanish Romani	27	18.52%	Gresham et al. 2001
Croatian Romani	377	20.16%	Battaglia et al. 2009
Macedonian Romani (Skopje)	257	13.23%	Peričić et al. 2005
Hungarian Romani	424	16.98%	Pamjav et al. 2011
Lithuanian Romani	20	50%	Gresham et al. 2001
Ukrainians (Slav)	92	1.1%	Battaglia et al. 2009
Serbians, Belgrade (Slav)	113	0.9%	Peričić et al. 2005

Table 2. Indian samples of H haplogroup [11]

Population sample	n	H-haplogroup, %	Author
Terai–Nepal	197	10.66%	Fornarino et al. 2009
Hindu New Delhi	49	10.2%	Fornarino et al. 2009
Andhra Pradesh Tribals	29	27.6%	Fornarino et al. 2009
Northwest India	842	14.49%	Rai et al.2012
South India	1845	20.05%	Rai et al.2012
Central India	863	14.83%	Rai et al.2012
North India	622	13.99%	Rai et al.2012
East India	1706	8.44%	Rai et al.2012
West India	501	17.17%	Rai et al.2012

III. mtDNA

Also, mtDNA haplogroups [5, 10] indicate the Indian origin of Roma, especially frequency of the South-Asian haplogroup M (exactly M5A1, M18 and M35b), which is present in Europe only in trace amounts in non-Gypsy populations.

IV. Blood groups

Also, since first studies of blood groups [9] it was showed a greater frequency of gene B (or group B) from blood group system AB0, than average frequency in Europe and comparable with India.

Population	Blood group B – min–max, %	Blood group B in Roma from the same territory, min–max, %
Romania	8–24	18–37
Former Yugoslavia and Hungary	15–26	20-41
Former USSR – Asiatic part	15–31	29
Other European populations	2–27	18-41
Turkey	11–28	
Syria		30–46
Iran	19–35	
Pakistan	21–44	
India	10–50	

 Table 3. Frequency of blood group B in some Roma populations and populations related to them [9]

V. Anthropometry

A very extensive list of masurements, cephalofacial indices and descriptive features presented Djaczenko [1] for Ukrainian Gypsies (area Starokozacze in southern Bessarabia belonging to Ukraine, n = 108). They gradually came to Ukraine from Romania in the fifteenth and eighteenth centuries.

Table 4. Anthropometric characteristics of Roma in Ukraine [12	2]
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Anthropological feature	Mean	SD
height	165.1	6.3
Cephalic index	79.1	—
head length [g-op]	186.4	5.2
head width [eu-eu]	147.4	5.7
less frontal width [ft-ft]	103.1	5
fronto-parietal index	69.99	-
Morphological facial index (calculated from dimensions: zy-zy i n-gn)	88.82	_
facial index (calculated from facial height from lower border of the eyebrows and zy-zy)	91	_
Morphological facial height [n–gn] , calculated: (facial height from the lower border of the eyebrows) – (nasal height from the lower border of the eyebrows – nasal height n-ns)	121.6	_
facial height (from lower border of the eyebrwos)	124.6	6.7
facial width [zy-zy]	36.9	5.1

Table 4- continued

physionomical facial height [tr-gn]	186	8.6
physionomical facial index	135.8	_
nasal index (calculated from dimensions al-al i n-ns)	71.01	_
nasal idnex (calculated from nasal height from the lower border of the eyebrows and al-al	65.9	_
nasal width [al-al]	36.5	2.8
Nasal height [n-sn]	51.4	3.5
nasal height from the lower border of the eyebrows	55.4	3.9
mandibular width [go-go]	107.5	5.2
mandibulo-zygomatic index	79.16	-
zygo-parietal index	92.13	-
nasal height index	42.26	-
height of upper lip (skin part)	12.3	2.6
height of both lips	16.4	3.1
width of the mouth	56.3	4.1
mouth index	29.12	-

<u>Technical notes</u>: Soviet authors use non-Martin nasal and morphological height (from lower border of eyebrows), so I provide also proper morphological facial height (nasal height from nasion was given by Djacenko in addition) and proper nasal index and morphological facial index.

Also nasal profile was given for bony part of the nose and cartilagous part separately. And later the mean profile was calculated from the two. More or less only profile for cartilagous part of the nose can be comapred with nasal profile figures given by non-Soviet authors, so I provide only this. I calculated also from the following dimensions, some indices like: zygomatico-parietal, fronto-parietal, zygomatico-mandibular, the height of the nose index and mouth index.

Table 5. Anthroscopic characteristics of Roma in Ukraine [12]

Trait			Grades						
Eye color on Bunak scale (1-12)	(2 grade) dark (1-4) 54%	(1 grade) mixed (5-8) 42%, and green-brown (5) 15%	(0 grade) light (9-12) 4%	mean value	: 1.5 (0-2)				
Hair color in Fischer scale	(4 grade) black (27) 18%	(3 grade) brownish black (4) 59%	(2 grade) dark brown (5) 19%	(1 grade) medium brown (7) 3%	(0 grade) darkblond (25) 1%	mean value: 2.9 (0-4)			
Height of nasal bridge	(2) medium: 44%	(3) high: 56%	mean value: 2.56 (1-3)						

Table 5-continued

Flattening of the nose ridge	(2) medium flattened: 15%	(3) arched: 85%	mean value: 2.	.85 (1–3)					
Nasal profile (cartilagous part)	(1) concave: 14%	(2) straight: 81%	(3) convex: 5%	mean value: 1.91 (1-3)					
Nasal tip	(1) up-turned: 47%	(2) horizontal: 34%	(3) depressed: 19%	mean value	e : 1.7	2 (1-	3)		
Beard density	(1) very weak: 2%	(2) weak: 2%	(3) medium: 30%	(4) strong: 30%	(5) v stror 36%	ery ng:	mean value: 3.96 (1–5)		
Hairness of the torso	(1) very weakor absent:37%	(2) weak: 21%	(3) medium: 24%	(4) strong: 15%	(5) very strong: 3%		mean value: 2.26 (1–5)		
Eyebrows density	(1) weak: 17%	(2) medium: 44%	(3) strong: 39%	mean value e: 2.22 (1–3)					
Palpebral opening width	(1) narrow: 4%	(2) medium: 67%	(3) wide: 29%	mean value	e: 2.61	(1–3	3)		
Eyefold	(0) absent: 40%	(1) weak: 40%	(2) medium: 18%	(3) strong:	2%	mea 0.82	nean value : .82 (0–3)		
Facial profile	(1) flat: 1%	(2) medium: 63%	(3) sharp: 36%	mean value	mean value : 2.35 (1–3)				
Malars prominency	(1) weak: 55%	(2) medium: 44%	(3) strong: 1%	mean value	mean value : 1.46 (1–3)				
Chin	(1) receding: 8%	(2) vertical: 39%	(3) pointed: 53%	mean value	e : 2.6	3 (1-	3)		
Occiput	(1) prominent: 29%	(2) rounded: 57%	(3) flattened: 14%	mean value	e: 1.85	5 (1-3	3)		

In comparison with other studied groups from Ukraine (mainly Ukrainians but also other minorities) Djaczenko found that Gypsies have the lowest cephalic index, the widest nose, darkest pigmentation, and the most dense beard. Generally those features are rather alien to Eastern European populations.

Those set of traits indicate Southern Caucasoid phenotypical influences with some affinities to Indian subcontinent (wider nose, or straight or less so concave profile which can be summarized as Robust Mediterranean or South-Asian morphotype) than for example Western Asia (which is known from narrow noses, with large convex minority – Balkan-Anatolian or Armenoid and South-Western Asiatic or Oriental morhotypes).

The trend is clear. The height is mostly low, rarely medium. Cephalic index is in mesocephalic range, except in Bosnia. The nose in Turkey, Bulgaria, Romania is medi-

J. Benes	a Hungary 1962	167.1	60.7	187.5	151.1	80.9	136.9	122.8	89.6	55	33.9	61.7	2.8	97.2			0	7.6	92.4	, ,	
J. Benes	Slovakia 1962	164.3	60.4	185.7	151.3	79.4	134.4	121.6	90.3	55.6	33.4	61.7	11.9	88.1			0	6.3	93.7	о С	
G.	Pilaric Macedonia 1961	163.6	I	186.1	146.1	78.6	135.7	120.5	88.9	51.5	35.7	69.8	I	I		I	I	I	ç	77	
Schade,	Pılarıc Croatia 1961		I	188.2	152	80.8	138.5	127	91.8	I	I	I	I	I			I	I		7.1	
н.	Stampach Czecho- slovakia 1929	163.7	I	190	149	78.5	1	1	1	1	1	1	1	I		0	15.3	84.7	9.3	3.7	
	Lebzelter Serbia 1922	162.7	I	185.5	147	78.3	135.6	120	88.4	52	33	63.3	0	100		0	7	93	2.2	0	
E. Pittard	Bulgaria 1904	165.6	I	189.9	146.8	77.3	137.2	1	I	50.5	36.5	72.9	I	I	I						
E. Pittard	Romania 1902	161	I	188.5	150	79.5	139.9	I	I	50.8	36.3	71.9	I	I	I	0.6 14.5	14.5	84.9	13.3	0.6	
Э	Pittard Turkey 1902	163.6	1	189.1	148.2	78.4	137	1	I	52.1	36.3	69.4	I	I	I						
L. Gluck	Bosnia 1897	167.8	I	190	145	76.4	135		I	54	34	63.9	0	28.6	71.4	0	3.6	96.4	17.8	357	
A. Weishach	Hungary 1889	165.5	62.6	188	150	79.7	139		I		35		0	27	73	0	5.9	94.1	3.8	13.6	
	ld year ation				n)	ıdex, %	n)		ial		(x, %.	light	light swarthy	swarthy	light	brown	dark/ black	light	mived	
Author	Country an of investige	Height (cm	Weight (kg	g - op (mm	eu - eu (mn	Cephalic in	zy - zy (mn	n - gn (mm	Morph. fac index, %.	n - sn (mm	al - al (mm	Nasal index		Skin color			Hair color	11411 20101		Eve color	

Table 6. Roma's anthropological data from Balkans and Central Europe [9]

um wide, and in Western Balkans and Central Europe is narrow. When it comes to face the data is very scarce, but everywhere is on average in the narrow range. Pigmentation of hair is very dark. Eyes are dark but there is a large mixed minority. Skin color is dark as for Europan standards.

In addiditon Coon[1] wrote that in France Roma's cephalic index is 79 and height is 166 cm (pre-war data). He also stated that straight hair are dominant among Roma people.

We can summarize those data in similar way as above Djaczenko evidence on Ukrainian Roma. There is a clear deviation from average south-eastern and central European phenotype toward South Asian morphological complex.

As an example we can use Serbian Roma sample [4, 9] from **Table 1**. Polish anthropologist Michalski [7] analyzed them individually by use of morphological-comparative method. He estimated frequencies of phenotypical combinations (morphotypes) among Serbian Roma and concluded that Southern Caucasoid complex of traits dominated and Northern and Eastern European were in small minority in comparison to ethnic Serbian sample. Balkan-Anatolian (Armenoid) complex have similar frequency in both groups. Also among Roma's Southern phenotypical complex (composed mainly from European Mediterranean morhotype) there was quite numerous minority of South-Asian (Robust Mediterranean) and South-Western Asiatic (Oriental) sets of traits.

Conclusion

As it has been shown above, despite their longtime coexistance with European peoples Roma people reserves high specifity in their genetics and consequently in their phenotype. This specifity is due to their origin from the Indian subcontinent.

As a graphical illustration of those suggestions it could be fair to show some random Roma phenotypes from Hungary and Balkans.



Fig 2. Serbian Roma – early 20th century [4]



Fig. 3. Hungarian Roma – women – late 20th century [2, 3]



Közép- és dél-európai cigány nők

Fig. 4. Hungarian Roma – women – late 20th century [2, 3]



Közép- és dél-európai cigány férfiak

Fig. 5. Hungarian Roma – men – late 20th century [2, 3]

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